Econometric Benchmarking of Hydro One's Total Distribution Costs

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Project Overview

▶ *Hydro One engaged PSE to recommend an appropriate stretch factor for the upcoming IR application*

▶ *PSE conducted an econometric study of the total distribution costs of Hydro One*

  ▶ *Major obstacle: Hydro One serves a very rural territory*

    ▶ *Service territory covers around 75% of the Province*
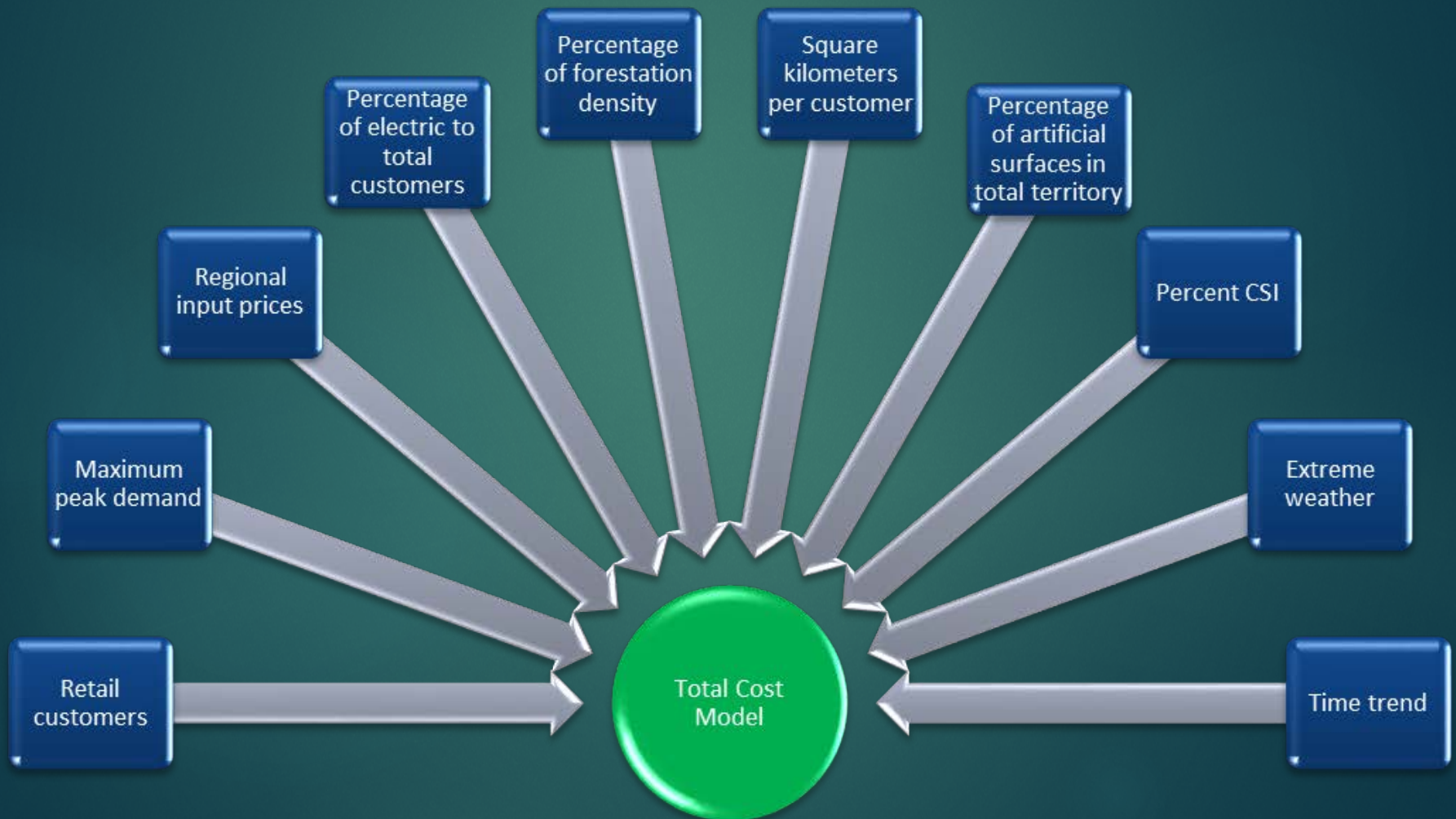
Benchmark Study Process

1. Assemble variables for an applicable dataset
   - Total costs and explanatory variables
2. Estimate an econometric model that expresses the relationship between total costs and the explanatory variables
3. Produce a "total cost benchmark" for Hydro One determined by the model and Hydro One's explanatory variable values
4. Compare the benchmark to Hydro One's actual total costs
5. Use results to formulate stretch factor recommendation

Data Sample

- Need data from both large and rural utilities
- PSE gathered and processed a U.S. dataset that includes both investor-owned utilities (IOUs) and Rural Electric Cooperatives (RECs)
  - IOUs tend to be larger (a number of IOUs have more customers than Hydro One)
  - RECs serve the rural areas of the States (a number of RECs have fewer customers per square kilometer)
- Dataset includes 380 U.S. distributors spanning the years of 2002 to 2015
  - 3,998 observations

Total Cost Econometric Model

VARIABLE KEY

N=	Number retail customers
D=	Maximum peak demand
A=	Square kilometers of territory per customer
E=	Percent electric customers
F=	Percent forestation in service territory
CSI=	Percent customer service and information expenses
W=	Extreme weather
Art=	Percent of territory that is artificial surfaces

EXPLANATORY VARIABLE	ESTIMATED COEFFICIENT	T STATISTIC		EXPLANATORY VARIABLE	ESTIMATED COEFFICIENT	T STATISTIC
N	0.813	129.841		CSI	0.010	9.138
NN	0.130	10.376				
ND	-0.134	-6.014		W	0.00001	13.306
D	0.096	15.887		Art	1.868	23.074
DD	0.019	1.886				
				Trend	-0.002	-3.948
A	0.066	31.479				
				Constant	12.070	1357.518
E	0.109	12.191				
				Adjusted R-Squared	0.996	
F	0.057	25.112				
				Sample Period:	2002-2015	
				Number of Observations	3998	

Benchmark Scores

▶ Score is based on the % difference between actual total cost and the benchmark total cost

$$\% \ Difference = Natural \ Log \left(\frac{Actual \ Total \ Cost}{Benchmark \ Total \ Cost} \right)$$

▶ Positive score means actual costs are higher than benchmark costs

▶ Negative score means actual costs are lower than benchmark costs

Hydro One Scores

Year	% Difference from Benchmark
2013	+27.2
2014	+31.3
2015	+25.5
Average 2013-2015	**+28.0**

PSE Stretch Factor Recommendation

- We currently recommend a stretch factor of 0.6%

- In the 4th Generation IR Decision (Case EB-2010-0379) a benchmark score above 25% receives the highest stretch factor of 0.6%

  - Based on most recent information and updated annually

- Recommendation is subject to change if new years and benchmarking results become available

Thank You:

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