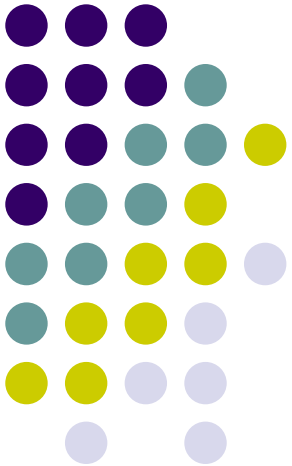
Assessing the Incentive Regulation Plans of Enbridge Gas Distribution and Union Gas

Larry Kaufmann, *Senior Advisor*
Pacific Economics Group Research

Toronto, Ontario
April 29, 2011



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Introduction

Enbridge Gas Distribution (EGD) and Union Gas (Union) are operating under incentive regulation plans from 2008 through 2012

Staff of the Ontario Energy Board (OEB) is undertaking an assessment of the Enbridge and Union IR plans

Pacific Economics Group Research (PEG) will advise Staff during this assessment

This presentation briefly describes some of the main issues to be addressed by PEG and preliminary thoughts on how we intend to approach this review

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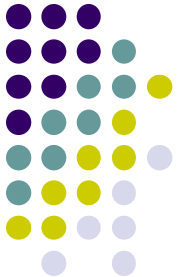
Information to Be Reviewed in Assessment



PEG will review a variety of data to inform our assessment

Some of this will be “raw” data collected and/or provided directly by the companies

- Rate changes
- Service quality indicators
- Financial indicators
- Z factor filings
- ESM filings
- Customer additions – actual vs. forecast

Some data will be more “processed” *e.g.*

- Average use factors and comparisons
- Total Factor Productivity (TFP) trends

Information to Be Reviewed in Assessment (Cont'd)

PEG estimated TFP for EGD and Union during our work in the last gas incentive regulation proceeding

The sample period was 2000-2006

We can (probably) update this TFP analysis entirely with data the companies provide annually, since 2008, as part of their IR filings

However, we will need to obtain some necessary data for 2007

We are also likely to require some additional data on changes in company business conditions since 2006

- Total km of main
- Composition of gas main (bare steel, cast iron etc.)
- Other?

TFP Assessment: Background

In most index-based PBR plans, maximum allowed rates or revenues are adjusted by a formula that contains an inflation factor, X factor and Z factor

In a typical North American plan, a "competitive market paradigm" is used to calibrate the terms of the adjustment formula

Logic: If an industry earns a competitive return, *% change Prices = % change Unit Cost*

> > > Price cap formula is calibrated to track the industry's unit cost trend

% change Unit Cost = % change Input Prices - % change TFP

TFP = Total Factor Productivity

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TFP Assessment: Background (Con't)

Most X-factors in approved North American price cap plans are calibrated to track industry total factor productivity TFP trend

Total Factor Productivity

TFP = Output/Input

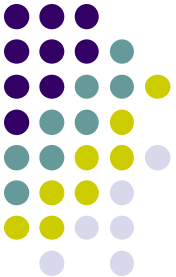
TFP Growth = Changes in Output Quantity minus Changes in Input Quantity

Output quantity and input quantity often measured with indexing methods

Index-based TFP estimates also develop estimates of industry input price measures

TFP can also be estimated econometrically

TFP Assessment: Background (Cont'd)



Both index-based and econometric methods have been used to estimate productivity in incentive regulation applications

Both approaches were also explored in last gas incentive regulation proceeding

However, index-based methods are much more common

TFP Assessment: Background (Cont'd)

Indexing methods compute measures of comprehensive output quantities (Y) and input quantities (X)

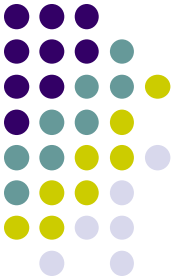
Change in TFP (ΔTFP) is then computed as

$$\Delta TFP = \Delta Y - \Delta X$$

Output quantity a weighted average of customers and delivery volumes

Input quantity a weighted average of capital and O&M inputs

TFP Assessment: Background (Cont'd)



Index-based approaches to TFP measurement

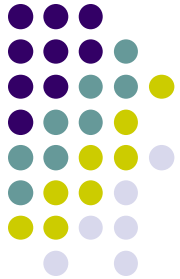
Pros

- Relatively simple
- Requires less cross sectional data
- Relies on well established techniques
- Relatively well understood and transparent

Cons

- May not reflect diversity among distributors
- Will not necessarily yield reliable estimates of future TFP trends if business conditions in future differ from the past
- Requires relatively extensive time series data, ideally at least 10 years

TFP Assessment: Background (Cont'd)

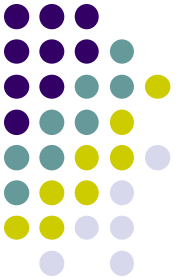


Econometric techniques can also be used to decompose TFP growth into its various components

- Time trend/technological change
- Realization of economies of scale
- Changes in customer density
- System characteristics and investment requirements
- Changes in efficiency per se

Estimated impact of various "TFP drivers" can be used to project TFP growth going forward given estimates of expected changes in business conditions

TFP Assessment: Background (Cont'd)



Econometric approaches to TFP measurement

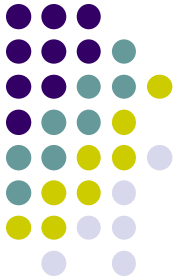
Pros

- Can be tailored to reflect diversity in distributor business conditions
- Can capture differences in future business conditions compared with past
- Does not require as extensive time series data

Cons

- More complex
- More cross sectional data typically required
- Techniques and results less well understood

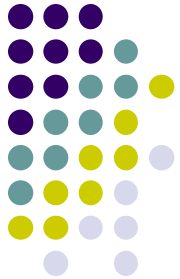
TFP Assessment: Background (Cont'd)



Our preliminary view is that PEG will:

- Estimate TFP growth for EGD and Union using index-based methods
- Estimate TFP using index-based methods for peer utilities of EGD and Union
- Decompose TFP growth to improve our understanding of the sources of TFP growth under the companies' IR plans

TFP Assessment: Estimating TFP for EGD and Union



PEG will review Company data provided under IR settlement agreements to see whether it is adequate for estimating TFP after 2008

We will then prepare a data request for the necessary 2007 data, and any necessary post-2007 data

We will then integrate with existing database and compute EGD and Union TFP from 2000 through 2009 (or 2010)

TFP Assessment: Peer Comparisons

PEG will also estimate TFP for a sample of US gas distributors

US sample period likely to end in 2009

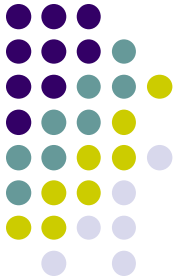
We will also select a certain number of "peer" utilities for both EGD and Union for the basis of TFP comparisons

Possible ways of selecting peers

1. Clustering algorithms
2. Similarity of changes in business conditions *e.g.*

    Customer growth
    Changes in customer density
    Changes in bare steel main (proxy for replacement investment)

TFP Assessment: Econometric Decomposition of TFP Growth

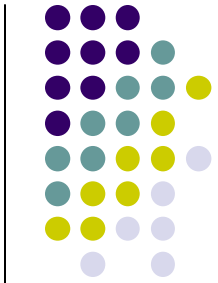


PEG will also estimate drivers of TFP growth using a well-developed framework and data from EGD, Union and the US sample

TFP decomposition should provide valuable information on why TFP growth has been changing *e.g.* how much due to possible differences in scale economies, reflecting slower economic growth in 2008-09?

TFP decomposition likely will be applied to EGD, Union, and selected peers

Average Use Assessment: Information from IR Plans

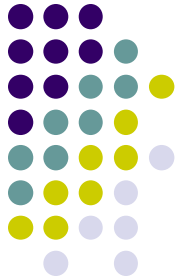


Both EGD and Union have AU factors as part of their IR plans, although they are calculated differently

PEG will review these and compare to previous AU trends for the companies

The main focus will be on changes in weather-normalized volumes per customer

Average Use Assessment: Average Use Trends of Peers



PEG will also compare companies' AU trends with those of US gas distributors and selected peers

We will compute average use per customer for US distributors after normalizing for weather and, potentially, economic conditions

PEG has current weather normalization models which will be updated for these analyses

Next Steps

Data request to companies

Staff assessment plan