MRIs for HQD

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Introduction

Québec's Régie de l'Energie is developing a *mécanisme de réglementation incitative* ("MRIs") for Hydro-Quebec Distribution ("HQD")

The Régie chose Pacific Economics Group Research ("PEG") to study & testify on desirable MRI characteristics

This presentation discusses key characteristics of an MRI for HQD that are based on my research, testimony, and information request responses

Plan of Presentation

Context

Introduction to MRIs

Attrition Relief Mechanisms

Other Design Issues

Summary of Recommendations

Context

Key Considerations

HQD provides nearly all power distributor services in Québec.

Large industrial customers play important role in Québec's economy

HQD Regulatory System

- Frequent rate cases
- Forward test years
- Index-based envelope for O&M expenses
- Pass-through and/or variance accounts for power supply, transmission, pension & benefit, and amortized demand-side management ("DSM") expenses

>>> High regulatory cost

Weak incentives for HQD to…

- contain capital expenditures ("capex"), power supply and transmission expenses
- suppress peak loads (e.g., with rate designs)

Key Considerations (*cont'd*)

Article 48.1 of Act requires MRI for the "distribut*eur*" (not "distribut*ion"*) to "ensure efficiency gains"

MRI(s) must fulfill three objectives:

- Ongoing improvement in performance and service quality
- Cost reduction that is beneficial to both consumers and the distributor
- Streamlining of the rate setting process

Obligations of distributor include Article 73

> Distributor must obtain authorization to construct assets *subject to the conditions and in the cases determined by regulation by the Régie*

Key Considerations (*cont'd*)

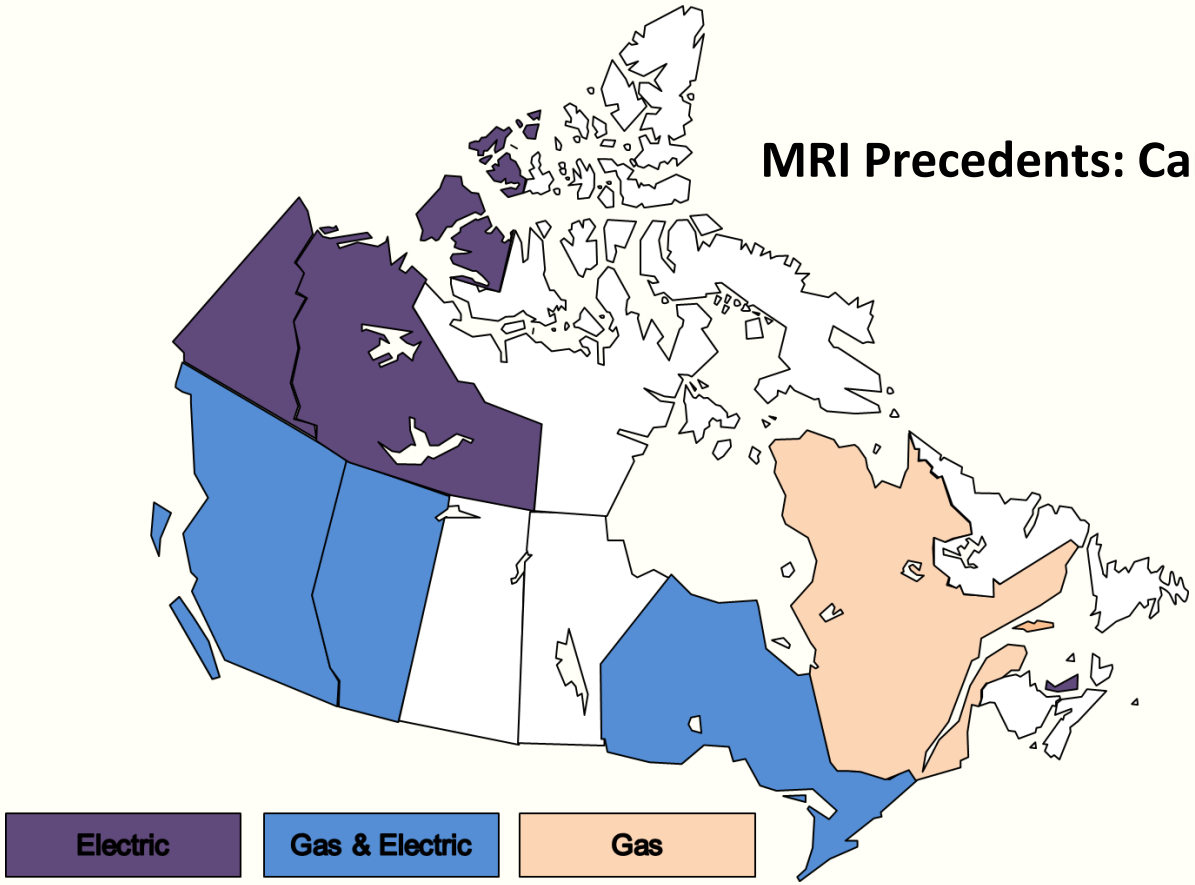
Conservation & demand management are important

Cost is especially sensitive to peak demand

Strong support for DSM by policymakers

Introduction to MRIs

MRI Precedents: Canada



Multiyear Rate Plans

PEG recommends a *comprehensive* MRI featuring multiyear rate plan

Multiyear rate plan…

- Best satisfies Article 48.1
- Stronger performance incentives
- Lower regulatory cost
- Demand side management and marketing flexibility can be encouraged
- Widely used in distribution regulation

In this presentation "multiyear rate plan" = "MRI"

Key Characteristics of MRIs

Rate case moratorium (typically 3-4 years)

Attrition relief mechanism automatically escalates rates for changing business conditions without tracking utility's *actual* costs

Cost trackers (i.e., pass-through and variance accounts) (e.g., for energy)

Targeted performance incentive mechanisms

Plan termination provisions

Some plans also feature
- Earnings sharing mechanisms
- "Off-ramp" mechanisms
- Revenue decoupling
- Marketing flexibility

Key Characteristics of MRIs

Capital Cost = Return on Rate Base + Depreciation + Taxes

= r x Rate Base + d x Rate Base + t x Earnings

where

r = rate of return on rate base
d = depreciation rate
t = tax rate

Attrition relief mechanisms typically address *all three* kinds of capital cost

Some plans permit revenue adjustment for change in the *rate* of return (r).

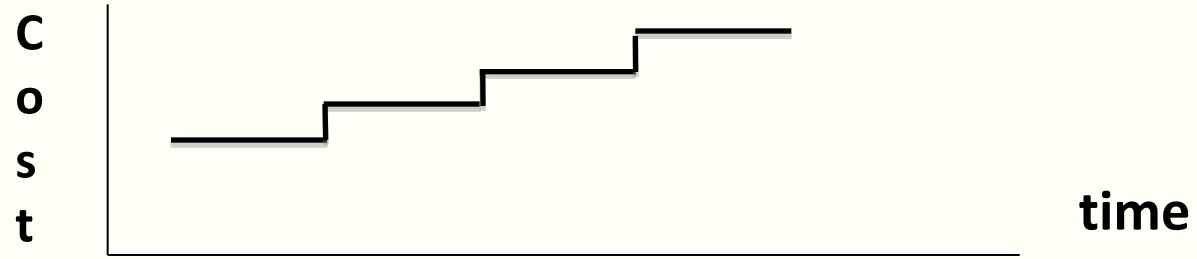
Z factors often permit adjustments for changes in tax rates and accounting standards

Attrition Relief Mechanisms

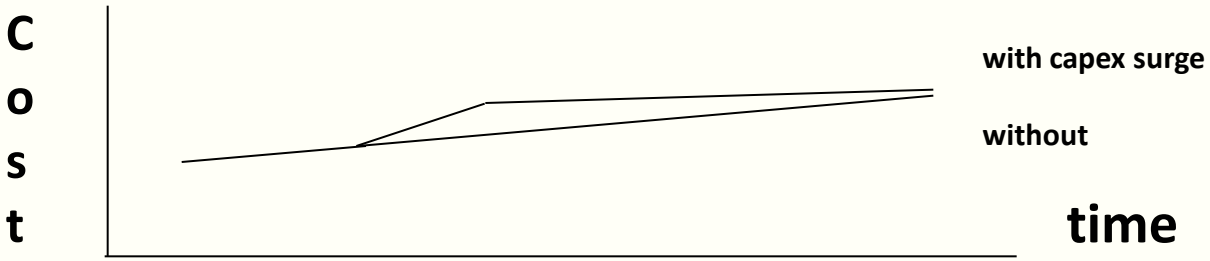
Utility Cost Growth Patterns

Utility cost trajectory can influence design of attrition relief mechanisms

Vertically Integrated Electric Utilities



Energy Distributors



Indexed Attrition Relief Mechanisms

Basic Idea — Rate escalation indexed to inflation and other external cost drivers based on statistical cost research

Cost theory provides rationale for revenue cap index:

trend Cost = trend Input Prices – trend Productivity + trend Scale

Multiple dimensions of operating scale drive power distributor cost

- Customers
- Line km
- Peak demand

Customers highly correlated with peak demand

Indexed Attrition Relief Mechanisms (*cont'd*)

Revenue cap index formula:

$$growth\ Revenue^{HQD} = Inflation^{Quebec} - X + Customers^{HQD} + Y + Z$$

X = "X-factor" = Productivity offset
Y = "Y-factor" separately addresses some costs (e.g., energy)
Z = "Z-factor" adjusts revenue for miscellaneous events (e.g., storms)

Equivalently:

$$growth\ (Revenue/Customer)^{HQD} = Inflation^{Quebec} - X + Y + Z$$

Precedents: Enbridge Gas Distribution & SoCalGas (expired), Alberta gas distributors, FortisBC, Gazifère (expired), Gaz Métro (forthcoming?)

Indexed Attrition Relief Mechanisms (*cont'd*)

Pro

- Prompt, automatic relief for inflation & customer growth
- Power distributors typically have gradual productivity growth
- HQD's productivity growth should especially gradual
- Most parties agree on the scale escalator
- Sidesteps cost forecasts
- Utilities must face external productivity growth standard

Con

- Required statistical cost research can be complex, controversial
- Doesn't easily accommodate capex surges
- Cost trackers for extra capital revenue can be problematic

>>> PEG recommends revenue cap indexes for most HQD customers

X Factors

X = Base Productivity Trend + Stretch Factor

Base Productivity Trend

Base productivity trend commonly reflects industry productivity research, not "judgement" (e.g. ALTA, BC, ON)

e.g., Productivity index trends of utility peer group

Productivity trend of subject utility is also pertinent

Independently funded study desirable

X factor controversies have recently been pronounced in Canada

- Peer group
- Sample period
- Capital cost methodology

Stretch Factor

Rationale:

Due to strong performance incentives created by MRI, utility should achieve productivity growth exceeding the industry norm

But customers may not see the benefit unless it is guaranteed

- Utility may fail to achieve productivity growth
- Utility may achieve productivity growth but not share it with customers
  - Strategic deferrals
  - Exaggerated cost forecasts in next rate case

Common stretch factor range [0.2% – 0.5%]

Precedents:

- ALTA, BC, ON
- *Not just first generation* plans
- Ontario stretch factors based on econometric cost benchmarking

Summary of X Factor Precedents[1]

		Acknowledged Productivity Trend (A)	Stretch Factor [1] (B)	X-Factor [2]
Averages*	Gas Distributors	0.63%	0.49%	1.12%
	Electric Utilities	0.85%	0.32%	1.19%
	Power Distributors	0.76%	0.36%	1.20%
	All Utilities	0.74%	0.42%	1.16%

*Averages exclude X factors that are percentages of inflation.

[1] Some approved X factors are not explicitly constructed from such components as a base productivity trend and a stretch factor. Many of these are the product of settlements.

[2] X factors may not be the sum of the acknowledged productivity trend and the stretch factor, where these are itemized, for the following reasons: (1) a macroeconomic inflation measure is employed in the attrition relief mechanism, (2) a revenue cap index does not include a stand alone scale variable, or (3) the X factor may incorporate additional adjustments to account for special business conditions.

[1] Attachment HQTD-PEG 14

>>> North American regulators have never acknowledged negative power distribution productivity trend

Alternative Approach I: Forecasting

Basic Idea

Revenue escalation based on multiyear cost forecast

Typically results in predetermined, fixed adjustments

e.g., *3% in 2018, 2.5% in 2019 etc.*

Controversy centers on forecasts of "controllable" costs (opex & capex)

Precedents:

ON, NWT, YUK, CA, NY, & WA

Alternative II: Forecasting (cont)

Pro

Accommodates capex surges
Sidesteps index research
Quebec has forward test year tradition

Con

Stair steps don't reflect real-time inflation
Multiyear cost forecasts difficult to review
Utilities incentivized to exaggerate cost growth
Preapproval of capex budgets
Hard to ascertain customer value
Utility eludes industry productivity growth standard

>>> Increased need for regulators to commission independent engineering and benchmarking studies
Regulators may require benchmarking or productivity-based budgeting

Alternative II: Hybrid

Basic Idea

Hybrid approaches combine elements of indexing & forecasts

Different RAM design approaches for different cost components

O&M expenses	Indexed, typically "inflation-only"
Capital	Forecasted

Precedents:

- "Old School" California approach
- Southern California Edison, Hawaiian Electric Companies
- Toronto Hydro-Electric (features "C Factor")

Other Design Issues

Capital Cost Trackers

Utilities operating under MRIs with index-based caps can experience capital revenue shortfalls if capex surges

Capital cost trackers can provide supplemental revenue

Tracker design a *major* source of controversy in Alberta MRI proceedings

Capital Cost Tracker: Pro

- "Idiosyncratic" capex not reflected in X factor
- Fair to compensate utility for *mandated* capex (e.g., highway relocations)
- Compensation for capex surges can reduce risk, make indexing possible

Capital Cost Trackers (*cont'd*)

Capex Tracker Con

- Capex surges include capex incurred by utilities in productivity sample
- Assets produce capital revenue *surpluses* in later plans
- Utilities highlight capital revenue shortfalls while ignoring surpluses
- Companies incentivized to exaggerate capex needs

>>> Material risk of overcompensation

- Utilities evade utility productivity growth standard
- Requires implicit preapproval of capex plans
- Difficult to ascertain need for capex surges
- True-ups to actual plant additions weaken performance incentives

Capital Cost Trackers (*cont'd*)

Remedies for Capital Tracker Problems

- Limit scope of capex eligible for tracking
- Incentivize trackers (e.g., hard caps & partial true ups of underspends)
- Raise X to ensure customers benefit of industry productivity growth in the long run

Recommendations

No capital cost tracker for HQD

If capital cost trackers are permitted, details left to Phase 3

Z factor can address “idiosyncratic” and “mandated” capital costs

Marketing Provisions

MRIs with *price* caps encourage better marketing in two ways

1.Stronger Marketing Incentives

Under *price* caps utilities

… keep more benefits from good marketing, attentive service

… absorb more losses from bad marketing, inattentive service

2. Increased Marketing Flexibility

Regulators can permit more marketing flexibility

- Costs must be allocated to service classes less frequently
- "Core" customers can be insulated from rate and service offerings to other classes between rate cases

>>> Many price cap plans have marketing flexibility (e.g., light-handed regulation of discounts & optional rates and services)

Encouraging Distributed Energy Resources

HQD has weak incentives to embrace all distributed energy resources

- DSM
- Experimental rate designs
- Distributed generation and storage

Problems

HQD's "throughput incentive" to boost sales *looms larger in MRIs*

Frequent rate cases, cost trackers weaken HQD's cost containment incentives

Utilities indifferent to environmental externalities

"4 legged stool" supports distributed energy resources

- Track DSM expenses
- DSM performance incentive mechanisms
- Comprehensive MRI
- Revenue decoupling

Revenue Decoupling

Basic Idea

Use variance accounts and rate riders to help *actual* revenue track *allowed* revenue

Decoupling: Pro

- Eliminate throughput incentive
- Reduce risk of rate designs that foster DSM
- General risk reduction
- Eliminate revenue forecast controversy in forward test year rate cases

Decoupling Con

Some loads merit encouragement (e.g. Price-sensitive industrial customers)

>>> Decoupling often excludes large volume customers

Revenue Decoupling

Recommendations

Revenue caps and decoupling for most HQD customers

Price caps & marketing flexibility for large industrial customers

Precedents

Price caps widely used in MRIs for energy and telecom utilities

e.g., ALTA, ON, MA

Revenue decoupling often excludes large volume customers

New York MRIs exclude large volume customers from decoupling

Plan Termination Provisions

Many plans call for rate case

But rate cases pose problems

- Cost & billing determinant forecasts may be exaggerated
- Cost containment incentives weaken in last plan years
- Rebasing & capital cost trackers both invite strategic cost deferrals

<u>Efficiency carryover mechanisms</u> are potential solution

>>> PEG recommends efficiency carryover mechanism for HQD

Efficiency Carryover Mechanism

Basic Idea

- Revenue requirement not 100% trued up to utility's cost in rate case
- Reward utilities when customers get good value in the next plan
- Penalize poor value
- Benchmarking useful for recognizing value

Rationale

- Encourage lasting cost savings
- Discourage strategic deferrals
- Less need for lengthy plan period

Precedents

Alberta, Australia, National Grid (MA, NY, RI)

Performance Metrics

Performance metrics quantify utility activities in key performance areas

Several potential uses

- Monitoring Only
- Monitoring with Target
- Performance Incentive Mechanisms

Performance metric systems typically involve different approaches for different metrics

Performance Metrics (cont'd)

Performance incentive mechanisms traditionally used in MRPs to address concerns about adverse impacts of stronger cost containment incentives

- Reliability
- Customer service
- Worker Safety

DSM performance incentive mechanisms widely used in USA, include amortization of DSM expenses

>>> Amortization of DSM expenses strengthens HQD's incentives for conventional conservation but not for peak demand management or "market transformation" initiatives

Performance Metrics (cont'd)

HQD also needs upgraded *cost* performance metrics

Productivity indexes

- O&M
- Capital
- Multifactor

Statistical (e.g. econometric) benchmarking

- Cost
- Reliability

Power Supply

HQD has weak incentives to contain power supply costs

- Cost tracker
- HQP is principal supplier

Various tools available to strengthen incentives

- Power supply performance incentive mechanism
- Incentivized cost tracker
- Performance incentive mechanism for peak load management

Precedents

- Numerous precedents for gas supply cost performance incentive mechanisms
- California gas utilities have combined MRIs with gas supply PIMs
- Several examples of incentivized trackers for electric power and fuel costs
- Power distributors in US are often providers of last resort

Performance Metric Recommendations

	Performance Incentive Mechanisms	Other Metrics
	Distribution	
Reliability	SAIDI (IEEE 1366 standard, rural & urban) SAIFI (IEEE 1366 standard, rural & urban)	Worst performing circuits MAIFI
Customer Service	Telephone response time Appointments kept Timeliness of connections	Customer satisfaction Customer complaints Invoice accuracy
CDM	Peak load savings Conservation Savings	CDM expenses Customers enrolled in CDM programs
Safety	Worker safety	Deaths from electrocution in general population
Cost	Power Supply Cost	O&M, capital, and multifactor productivity indexes Unit cost metrics (O&M, total cost, losses) Consumption on inactive meters
Other		Electric Vehicles AMI used & useful (e.g., customer engagement) Third party cooperation Transparency in regulation

Summary of Recommendations

Summary of MRI Recommendations

	HQD
Basic Approach to Incentive Regulation	Multiyear rate plan
Revenue Caps or Price Caps	Revenue caps for most customers Price caps for industrial customers
Relaxing the Revenue/Usage Link	Revenue decoupling for small volume customers LRAMs for large volume customers
Attrition Relief Mechanism	Indexation
Phase 2 Studies	Productivity & Benchmarking
Y factors	Power Supply, Transmission, CDM
Z Factors	Yes
Incentive Compatible Menus	Worthwhile for both, but may be premature. Independent forecasting must improve.
Performance Incentive Mechanism	Reliability Safety Customer Service Power Supply Cost Peak Load Management
Earnings Sharing Mechanism	Yes
Off Ramps	Yes
Marketing Flexibility	Yes
Plan Term	4 years
Regulation of Autonomous Systems	Included in Plan