

Efficiency Factor (X-Factor) Determination



NARUC Energy Regulatory Partnership Program

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and
The Vermont Public Service Board*

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Overview

- ❖ *Alternative Regulation*
- ❖ *Basic Revenue/Price Inflator Formulae*
- ❖ *Establishing the Productivity Adjustment*



Alternative Regulation

- ❖ Replaces traditional cost-of-service regulation
- ❖ Intent is to move away from cost-plus ratemaking and replace with incentives for regulated company to operate efficiently
- ❖ Utility has the opportunity to increase its earnings based upon the incentives built into structure.



Alternative Regulation Options

❖ Revenue Sharing

- requires utility to return to ratepayers some or all of its earnings above a specified level

❖ Targeted incentives

- Utility may earn additional, defined, amounts of revenue by taking specified actions.
- Can be used to encourage efficiency improvements at individual plants



Alternative Regulation Options (cont'd)

- ❖ Revenue Adjustment or Price Caps
(focus here)
- ❖ In US, alternative regulation proposals
arose in telecommunications area



Alternative Regulation Options (cont'd)

- ❖ Regulators used mix of price/revenue adjustments and revenue sharing
 - Allow adjustment to rates
 - Revenue sharing serves as protection for company and ratepayers in case balances in formula are not correct
- ❖ Revenue Sharing and, over time, price caps were expected to yield better results



Price Cap or Revenue Adjustment Formula

- ❖ Basic Formula for adjustment
 - Inflation - X +/- z
- ❖ X is the Productivity Adjustment
- ❖ Z is known as the exogenous factor
- ❖ Some formulae also take into account customer growth, on the assumption that serving more customers increases costs and therefore cost-normalization is needed



Price Caps – Inflation Factor

- ❖ Generally intended to reflect expectation that prices will change over time in some relationship to overall economic costs
- ❖ Important to choose factor that reasonably reflects input price increases
- ❖ Typical US measure – Consumer Price Index or some subset



Price Caps – Productivity Factor

- ❖ In economic terms – productivity is ratio of the output quantity index to the input quantity index
- ❖ Used to measure the efficiency of firms converting inputs to outputs
- ❖ Reflects technology changes, economies of scale, firm's efficiency relative to portion of economy included in inflation measure



Price Caps – Productivity Factor (cont'd)

- ❖ Accurate measurement requires detailed study of cost inputs
- ❖ Concept is to make sure that utility is rewarded for its actions to improve efficiencies



Price Caps – Productivity Factor (cont'd)

- ❖ Productivity Factor can also be adjusted to create incentives
 - For example, FCC allowed companies to choose between two different factors, based upon whether they would share revenues or not
 - Can select higher factor to create stronger incentive for utility to improve performance



Productivity Factor – Vermont Experience

- ❖ First adopted for telecommunications in 1994
 - X Factor set at 4.5%
 - New plan in 2000. Rate freeze adopted, which implicitly set X factor as equal to inflation
 - Telecom plan still in effect



Productivity Factor – Vermont Experience (cont'd)

- ❖ Vermont Gas plan adopted in 2007
 - Operating costs per customer are adjusted by inflation – X factor
 - X factor set at 0.39%



Productivity Factor – Vermont Experience (cont'd)

❖ Green Mountain Power Plan

- Built in level of rate increase permitted
- No explicit productivity factor or inflation adjustment.
- Relatively small level of rate increase permitted keeps rate increase below inflation
- Coupled with revenue sharing, so that if excessive earnings, rates will be reduced



Productivity Factor – Vermont Experience (cont'd)

❖ Central Vermont

- Largest electric utility
- Rate adjustment equal to inflation – X
- X factor set at 1%. Based upon testimony from Company
- Board did not include adjustment for customer growth based on assumption that no growth would occur



Productivity Factor – Vermont Experience (cont'd)

- ❖ Telecommunications – Rates frozen since 2000. Earnings stable as well, until recently
- ❖ Gas – allowed smooth rate adjustments, but no sharing triggered
- ❖ Electric
 - GMP – rate adjustments occurred without sharing
 - CVPS – first rate adjustment was below cap set using formula



Revenue Adjustment – Z Factor

- ❖ Allows adjustment to formula to reflect exogenous events
- ❖ Generally, factor tries to capture specific events outside of utility's control that may alter the balance in the basic formula
 - Example: Tax that affects only electric utility
- ❖ In Vermont, adjustment used one time
 - Green Mountain Power experienced unusual costs responding to outages from severe storm
 - Net affect is approximately 0.3%