

Future Test Years: When Are They in the Public Interest?

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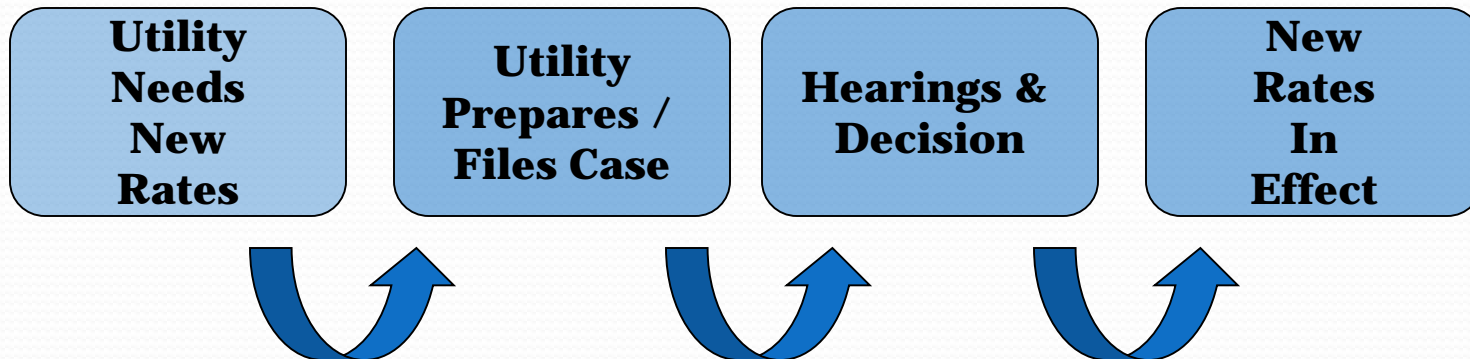
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Topics

- Reasons for a future test year (FTY)
- Meaning of “just and reasonable” rates
- Challenges for a commission
- Commission experiences
- Final comments

Main Reason for a Future Test Year: Regulatory Lag

- Regulatory lag refers to the time period between when (1) a change in cost or demand conditions necessitates a change in rates and (2) the new rates are put into effect.



Definition of a Test Year

- **Test Year:** An actual or hypothetical 12-month period over which utility calculates its costs, including both operating and capital cost, and revenues to determine the need for a change in rates
 - ✓ Joint consideration of revenue requirements and billing determinants in setting new rates
 - ✓ Application of the “matching principle” for achieving consistency between costs and revenues (e.g., new plant reducing operating costs)
 - ✓ *Example of a utility filing in early 2016:* 2015 (HTY), 2016 (hybrid), 2017 (FTY)

Different Test Years (Rate Case Filed in Early 2016)

HTY
**Calendar
Year 2015**

FTY
**Calendar Year
2017 (Fully)**

**Calendar Year
2016 (Partial
or Hybrid)**

Rate Year
**Calendar Year
2017**

States Use Different Test Years

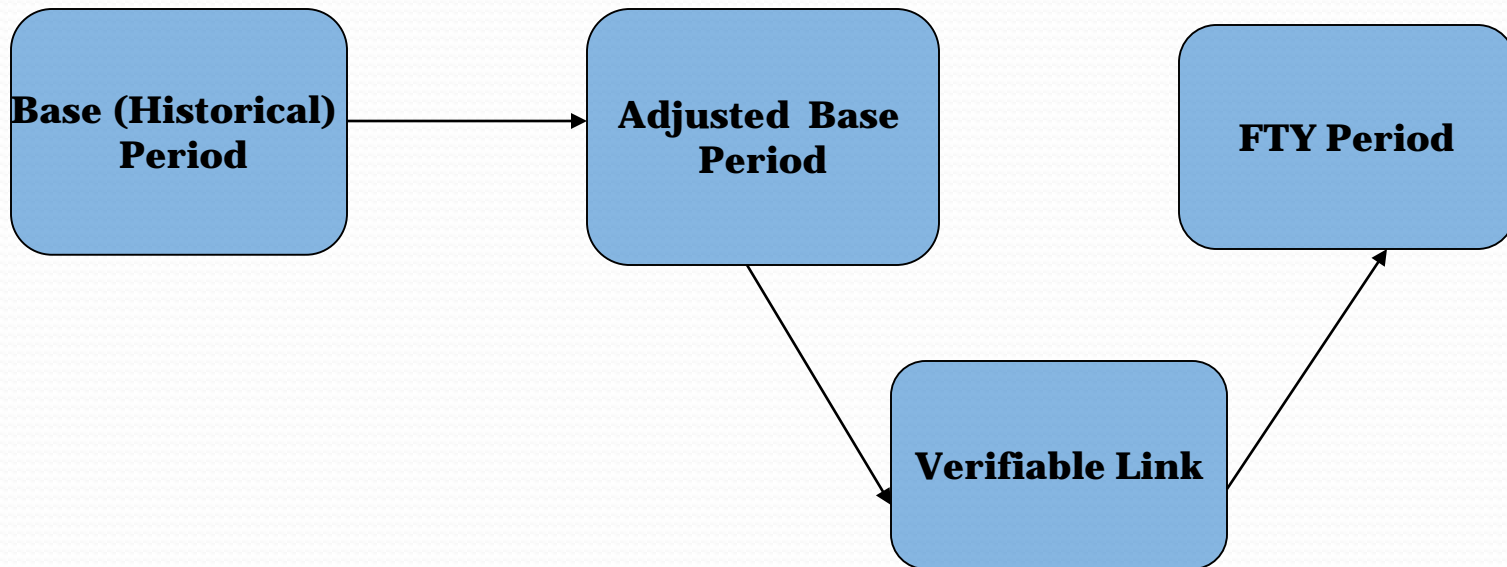
- 15 usually use fully-forecasted
- 20 usually use historical (with and without “known and measurable” changes)
- Others allow (a) partially-forecasted (“hybrid”) or (b) commission discretion (e.g., what a commission considers most appropriate given market conditions and the ability to evaluate a utility’s FTY filing)
- Over half of the states now allow the use of a test year other than historical, and this number has grown over time
- Usually the starting time for an FTY is when new rates will first go into effect
- Still deep opposition to an FTY by commissions in a number of states

Basic Elements of an FTY

- Differences from historical and *pro forma* test years
- Forecasts
- Matching revenues with costs
- Essential filing requirements
 - ❖ Documentation
 - ❖ Supporting analyses
 - ❖ Assumptions

The Need for a Baseline

- It is essential to have a baseline for evaluating projections (e.g., to establish a verifiable link between an historical and future test year)



General Perception of Different Test Years

| Type of Test Year | Pros | Cons |
|----------------------------------|---|--|
| <i>Historical</i> | Uses verifiable actual data | Assumes a static environment |
| <i>Historical with Pro Forma</i> | Allows for known and measurable changes | Falls short as representative of the period of new rates |
| <i>Future</i> | Better reflects conditions during the period of new rates | Places burden on a commission to validate that forecasts are (a) reasonably accurate and (b) reflect a prudent utility |

Two Perspectives on FTYs: Framing the Issue

- *Utility/investor perspective*
 - Avoids earnings shortfalls from regulatory lag
 - Gives customers better price signals
 - Supports new investments
 - Necessary for a reasonable opportunity to earn the authorized rate of return
 - The current dynamic environment warrants the use of an FTY
 - The future is unlike the past; reliance on historical experience can provide a false sense of accuracy
- *Public-interest perspective*
 - Goal of “just and reasonable” rates
 - Incentives for cost efficiency: A second side to regulatory lag
 - Utility management affects actual earnings
 - It is necessary to validate the accuracy and reasonableness of forecasts
 - Trade-off between the precision of historical data and their representativeness for the test period
 - *Pro forma* HTY adjusting for “known and measurable changes” might be the preferred test year

Two Sides of the “Regulatory Compact” for Achieving Just and Reasonable Rates

- A utility has a reasonable opportunity to earn its authorized rate of return
- Costs recovered by a utility should reflect prudent and efficient management
- **The objective is therefore to give a utility a fair chance of earning its authorized ROE with prudent management**
- It is not obvious *ex ante* what test year is preferable for a particular rate case
- Policy questions
 - › What test year can best achieve these outcomes?
 - › What conditions would most support a specific test year?
 - › What trade-offs would the commission have to make?
 - › Is the appropriate test year rate-case specific?

NARUC Rate Case Audit Manual (2003)

“Whether using a future or historic test year, the auditor should judge the appropriateness of the test year that has been proposed. Is it representative, after adjustments, of the period in which rates take effect?”

“When looking at a future test year, one will want to examine the test year selected for reasonableness. Is this period mandated by rules, statute, or Commission directive? Is the test year founded on a historical base or documented figures, such that its projections are readily understandable and traceable?”

Specific Challenges

- Information asymmetry
 - ✓ How does a commission know that the utility's forecasts are reasonable and objective?
 - ✓ Burden should be on the utility to support the reasonableness of its forecasts
 - ✓ Analogy with the "market for lemons"
 - ✓ Implication for appropriate rate mechanism
- Acceptable format for submitting an FTY filing
- Satisfying the "matching principle"
- Detection of trends in individual cost elements and sales
- Updating sales and costs during a rate case
- Evaluation of forecasting methods and assumptions
- Are less-than-perfect projections more representative of the future than historical conditions?
 - ✓ If they are not, then the commission should use an historical test year, if it has an option

Specific Challenges – *continued*

- Checking for the accuracy of past projections
- Utility incentive for overstating costs and understating revenues (i.e., misreporting and the “ratchet effect”)
- Utility incentive for efficient operation: does an FTY diminish the incentive?
- Determination of the effect, if any, of a FTY on the utility’s cost of capital
- New staff skill set – more economists and forecasters (e.g., evaluate sales forecasts from an econometric model)
- Evaluation of the accuracy of forecasts
 - ✓ For example, even though the utility has the burden of proof for showing that its forecasts are accurate and reasonable, how can the commission verify this?
 - ✓ Are forecasts accurate enough for setting rates?

Information Asymmetry

- A seminal economics article on the market for “lemons” says that in markets plagued by information asymmetry, the market participant holding an information advantage will likely dominate the outcome at the expense of others
 - For an FTY, the implication is that any outcome would be favorable to the utility in achieving higher profits or other goals that are harmful to its customers
- Information asymmetry reflects the relatively less knowledge that a commission has on the relationship between forecasted costs and utility-management competence
 - When a utility files a cost forecast, how does the commission know whether it reflects competent management?
 - The analyst or auditor can evaluate the forecast applying state-of-the-art techniques; still, a level of uncertainty remains that leaves unknown the utility’s level of managerial competence embedded in the forecast
- Supporters of an FTY seem to understate the seriousness of information asymmetry

The Ratchet Effect

- The regulator observes a utility's actual past costs to reset the future price
- *Formula*

$$NB_u = (c^r - c^e) - b \cdot (c^r - c^e) = (c^r - c^e) \cdot (1 - b)$$

- The net benefit to the utility (NB_u) equals the difference between reported costs (c^r) to the commission and the utility's expected costs (c^e), minus the proportion (b) of the misreporting level ($c^r - c^e$) that the commission deducts from the utility's forecasted costs in the next rate case
- As the value of "b" approaches one, the ratchet effect strengthens: The utility suffers from misreporting in previous periods by being granted lower rates in the future
- In the extreme case where "b" equals one, a utility's overreporting of cost in an earlier period (thereby increasing its rates) is fully offset by lower rates in later periods; the utility would benefit marginally, since its discount rate is greater than zero; thus, regulatory lag provides the utility with some incentive to control costs, even with a "ratchet effect"
- The commission would presumably look at a utility's costs and deduct from them the amount that the utility overforecasted in a prior period

The Sources of Forecasting Error from an Econometric Model

A general single-equation econometric model for forecasting natural gas sales:

$$S_{ng} = a_0 + b_1X_1 + b_2X_2 + b_3X_3 + \dots + b_nX_n + u_t$$

- A model could identify several predictors, but some of them may add little to the model's forecasting capability
- The predictors may have similar characteristics, which can lead to what econometricians call multicollinearity
- The model may omit important predictors
- The values for the predictors themselves might depend on the forecasted variable (e.g., natural gas price, which is a predictor of total natural gas demand, is itself a function of demand)
- The modeler faces difficulties in determining values for the predictors
- The estimated relationships between predictors and the forecasted variable using historical data may differ for future periods
- Forecasters/decision-makers often adjust in an ad hoc way the output of models to account for factors not subject to quantification

Budgeting and Forecasting

- Utilities using an FTY rely largely on the budgeting process for forecasts; the question then becomes how to translate budgeted costs and revenues into an FTY forecast
 - ✓ Does the utility use a “best practice” budgeting process?
 - ✓ Does the utility adequately document its budget?
 - ✓ How does budgeting link to the utility's long-range planning?
 - ✓ Does the utility provide supporting analyses?
 - ✓ Do budgets satisfy the “matching principle”?
 - ✓ Are budgets forecasts or, instead, goals that do not represent “best guess” cost estimates?
 - ✓ What assumptions does the utility make?
 - ✓ What are the cost drivers?

NRRI Survey Study

- Provides real-world evidence on the experiences of state utility commissions with FTYs
- Complements earlier NRRI study on FTYs
- Focus on “implementation” factors, problems and techniques used by state utility commissions in setting utility rates based on FTY calculations
- NRRI sent out 14 general survey questions in August 2013 to 21 state utility commissions that allow FTYs
- In total, NRRI received responses from 14 commissions; the vast majority of states answered all of the questions

The Responses

- Most state commissions initiated the decision to use an FTY
- Most commissions expressed confidence in using an FTY to set rates
- Most commissions make adjustments to utility forecasts, rather than deriving independent forecasts
- Almost all of the commissions reported that the burden lies with a utility to demonstrate the reasonableness of its forecasts

The Responses – *continued*

- Several commissions reported that they can best determine whether a utility's cost forecasts reflect prudent management by (1) auditing, (2) thorough review, and (3) reliance on evidence presented during a rate case
- A few commissions still struggle with evaluating utility forecasts and dealing with utility incentives for biasing their forecasts to favor a larger rate increase
- Some commissions make post-adjustments to rates when actual costs or revenues deviated from their forecasted levels

Survey Responses from the Wisconsin PSC

- The greatest difficulty with FTYs lies with the inherent differences of opinion between staff, utilities and intervenors as to forecasted revenues and expenses
- The Commission has many years of experience with FTYs and is comfortable with them
- Independent forecasts are often used for sales
- Commission staff normally adjusts the utility's forecasts for O&M expenses, net investment rate base, capital structure, working capital, and taxes
- The burden is on the utility to support its rate-filing application; intervenors and staff provide additional information to build a complete record for the Commission
- The Commission requires the filing of historical information as a benchmark for evaluating forecasts
- Some utilities have a propensity to forecast their costs and revenues conservatively in order to increase the chances of meeting or exceeding its authorized ROE
- The Commission has made adjustments to subsequent cost forecasts reflecting past forecasting errors, usually in the form of budget-to-actual adjustments
- The Commission can always bring a utility in for a rate review if earnings are too high or low

Final Comments

- Commissions should study closely the incentives that an FTY provide utilities for reporting their costs and sales
- Information asymmetry is a big problem with FTYs
- The benefits of FTYs depend on the presence of other regulatory-lag mitigating mechanisms – for example, CWIP in rate base, revenue decoupling, trackers, surcharges, price caps, formula rates
- In lieu of a conventional FTY, for example, commissions and utilities might want to consider a multiyear rate plan
- Applying forecasting methods for setting rates places a higher premium on accuracy than for other applications
- Commissions may want to consider (assuming they have the authority) whether (1) they should decide at the beginning of a rate case the appropriate test year or (2) utilities have the discretion for selecting a test year
- Commission decisions involving the selection of a test year on a case-by-case basis require an assessment of *Type I* and *Type II* errors, as all decisions carry some risk

The Risk of Choosing the Wrong Test Year

| Test year | Actual risk | |
|------------|----------------------------|-----------------------------|
| | <i>Stable conditions</i> | <i>Dynamic conditions</i> |
| Future | <i>Type I error</i> | Preferred |
| Historical | Preferred | <i>Type II error</i> |



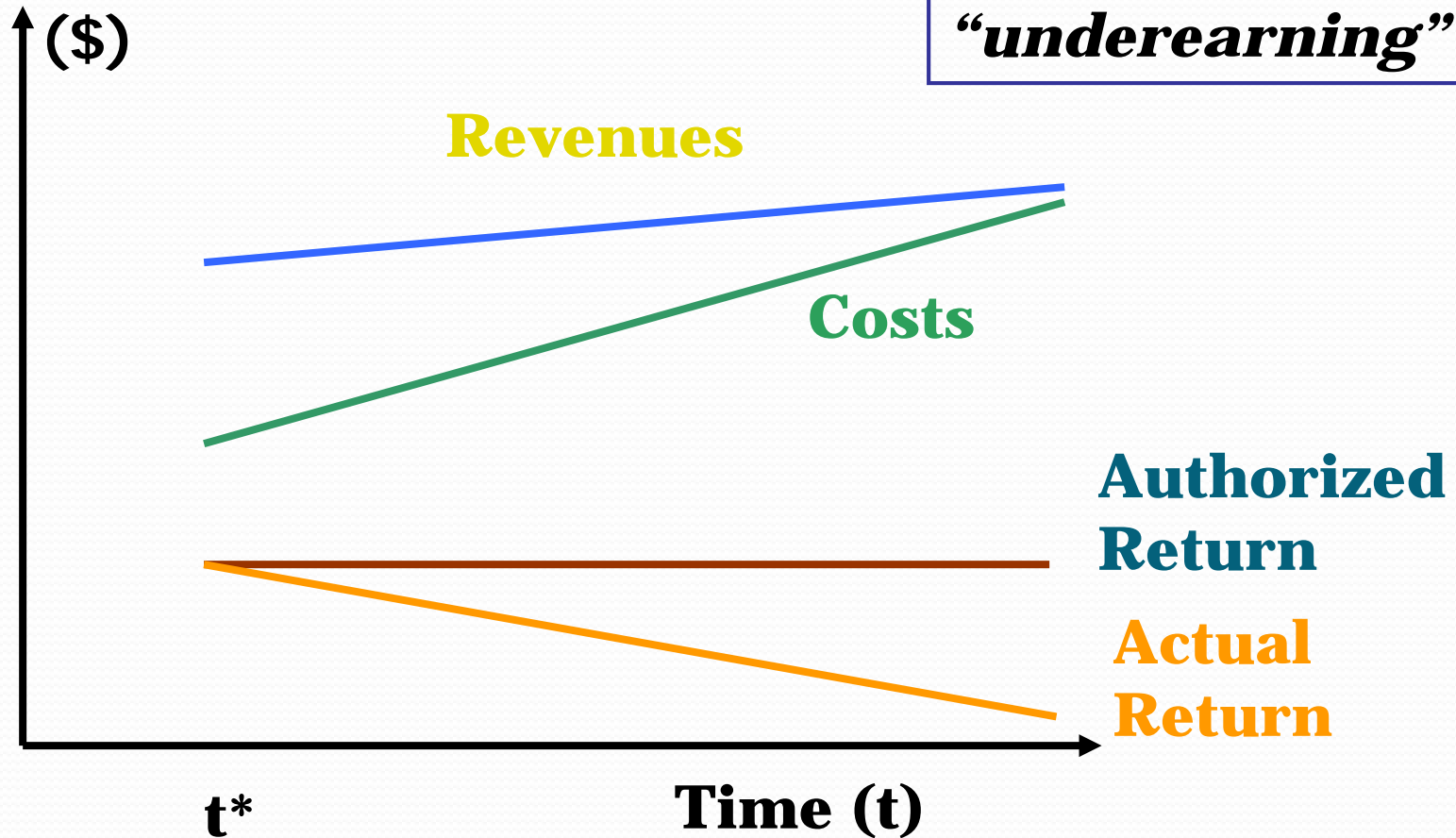
Appendix

Attrition or Erosion

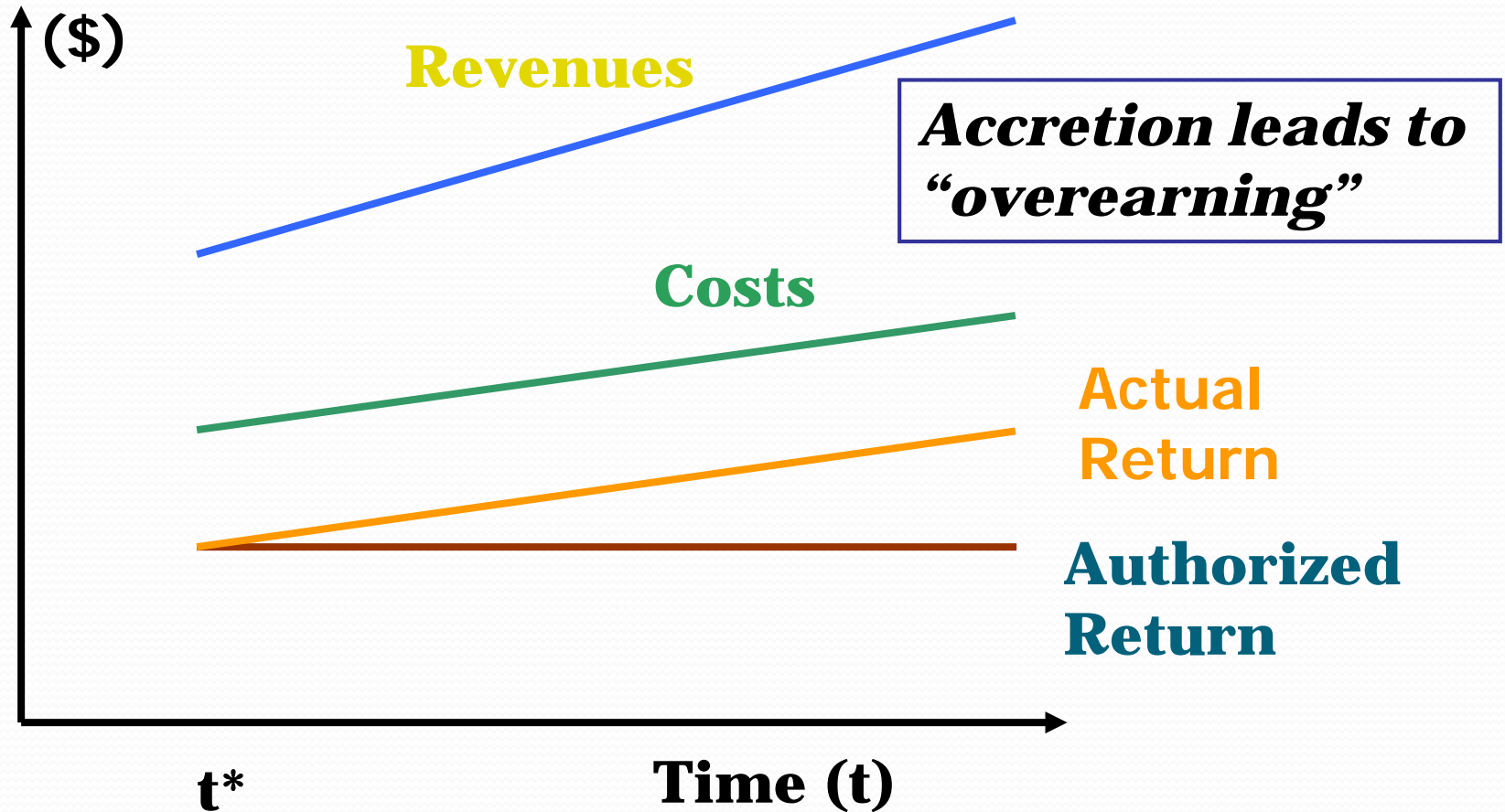
- Attrition or erosion refers to the tendency for a utility's rate of return or profits to fall over the time new rates are in effect
 - ✓ If we recognize the possibility of attrition, we should also recognize its converse, accretion i.e., that the utility's earnings might rise over time

Attrition

***Attrition leads to
“underearning”***



Accretion



Regulation – Myth & Reality

- **Myth:** Utilities are *guaranteed* a profit or rate of return
- **Reality:** Utilities are given the *prospective opportunity* to earn a reasonable profit, not a guarantee
 - ❖ There is normally no provision for over-collections or under-collections (no retroactive ratemaking or true-up mechanism)
 - ❖ Utility management affects actual earnings
 - ❖ Incentive problems can arise from automatic true-ups, either to adjust rates up or down

Example of FTY Requirements (Illinois)

- Comparison of prior forecasts to actual outcomes for prior three years
- Independent accounting review
- Assumptions used in the forecasts
- Inflation rate
- Comparison of budgeted non-payroll expense to actual
- Budgeted payroll expense
- Budgeted number of employees