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APPENDIX 4

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Future Test Years

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Future Test Years: Challenges Posed for State Utility Commissions

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Executive Summary

Over the past several decades, public utilities have lobbied hard for changes in traditional rate-of-return (ROR) ratemaking when conditions arise that threaten their financial viability. More recently, they have gone before state legislatures and petitioned utility commissions for additional expedient cost recovery in the form of cost trackers, surcharges, revenue decoupling, and formula rates. On occasion, they have also pushed for a future test year (FTY) in determining rate changes. An FTY uses projections of costs and revenues, usually over a 12-month period during which new rates would apply, as the basis for rate changes. The selection of a test year can affect future rates. Depending on conditions, for example, an FTY can either reduce or increase rates over what they would be under a historical test year (HTY).

Understandably, utilities tend to endorse an FTY when it would increase their rates in a period of rising average cost and are silent during periods of declining costs. Utilities have stressed the adverse effects of regulatory lag and the need to file frequent rate cases in the face of rising average cost. Specifically, they contend that current market and operating conditions inevitably cause a utility's total costs to grow more than sales between rate cases, in the process eroding their earnings, a trend they find particularly worrisome in an era of large investments. Overall, utilities argue that the ratemaking paradigm needs to adapt to current conditions if regulation is to fairly compensate utility shareholders and serve the long-term interest of customers. One particular change advocated by utilities is the use of an FTY. An FTY usually covers the first 12 months when new rates would go into effect, or what some analysts call the "rate year" or "test period."

The reader might ask why a commission should rely on anything other than an FTY, since good ratemaking requires that new rates reflect the utility's costs and sales, at least over the first several months that they are in effect. Ratemaking, after all, is prospective, and an FTY matches the test year with the effective period of new rates. Although in theory this argument seems indisputable, it ignores the reality that forecasts are susceptible to error and some costs and sales elements are inherently difficult to predict. Another factor, as this paper stresses, is that utilities would have incentives to present biased forecasts that are not always easy for commission staff and interveners to uncover. A commission would be presumptuous to assume that forecasted costs and sales are more accurate than modified HTY data accounting for "known and measurable" changes. In fact, many commissions have taken this view, which seems sensible and in line with their mandate to set "just and reasonable" rates.

In sum, an environment of rising average cost does not constitute a sufficient condition for the use of an FTY. Supporters of an FTY give this false impression, which ignores the reality of utility forecasts being susceptible to bias and inherent error. Information asymmetry, which is an acute problem in public utility regulation, makes it difficult for commissions to evaluate a utility's forecasts in terms of their accuracy and objectivity.

Utilities contend that rising average cost requires an FTY for ratemaking if they are to have a reasonable opportunity to earn their authorized rate of return. They see shortening

regulatory lag as essential for achieving this outcome. "Regulatory lag" refers to the time gap between when a utility undergoes a change in cost or sales levels and when the utility can reflect these changes in new rates. This gap has long been contentious within the regulatory arena in different contexts, with varying interpretations as to its positive and negative effects on utility customers and the public interest. Several state commissions view regulatory lag in a positive light by giving utilities greater incentive to manage their costs. Partly for this reason, they look more favorably upon HTYs than FTYs.

Although financially viable utilities is a regulatory goal, state utility commissions have a duty to take a broader and more balanced perspective by considering whether the use of an FTY would serve the public interest. What might best serve utility interest might violate the public interest. For example, utility over-collections between rate cases is a serious problem, especially when it leads to "exorbitant" actual rates of return for a number of consecutive years. Commissions should recognize that over-collections are just as troubling as under-collections.

Commissions should ask how an FTY would benefit utility customers. Commissions set rates using the "just and reasonable" standard as the primary goal. This standard recognizes the prominence of both utility financial viability and prudent utility operation. The utilities' one-sided view of FTYs gives little attention to this second aspect of good ratemaking. Utilities also underemphasize the role that management plays in affecting their rate of return. The fact that they are earning below their authorized rate of return may stem from less-than-optimal management practices.

This paper will first discuss the arguments for an FTY and why utilities have advocated it for ratemaking. It will then identify the major elements of an FTY and what challenges they pose for state utility commissions. The paper will look at, for example, what can go wrong if a commission is unable to sufficiently evaluate a utility's forecasts in rate cases. Although in theory an FTY seems appealing, its effect on the public interest hinges on a commission capability to meet the challenges that it presents. In other words, the merits of an FTY rest on the details of whether the forecasts (1) reflect prudent utility management and (2) contain a minimal margin of error. After all, if a utility makes poor forecasts, if a cost or sales element is susceptible to a potentially large forecasting error, or if the utility biases its forecasts that go undetected, an FTY could easily take money away from utility customers and give it to the utility and its shareholders. This paper shows that when the utility wants to avoid what analysts call a "ratchet effect," it could attempt to inflate its costs in line with its forecasts. Customers end up paying excessively for service while utility shareholders earn lower returns. In effect, this avoidance benefits utility management at the expense of two of its major stakeholders: customers and shareholders.

Finally, this paper suggests how commissions can execute an FTY to minimize problems that can harm utility customers. A fundamental, and perhaps the most serious, obstacle to this goal is information asymmetry that places commissions in a tough position to evaluate the reasonableness of a utility's forecasts. If commissions are unable to perform this evaluation—for example, because of deficient resources—utilities can charge higher rates that hurt the economic well-being of their customers.

Table of Contents

Future Test Years
Challenges Posed for State Utility Commissions

I. An Historical Perspective

Although traditional rate-of-return (ROR) procedures have dominated ratemaking for decades, state commissions have a history of adapting to a changing environment when doing so is in the public interest.[1] Take the example of the rising average cost of utility service, which started to emerge in the late 1960s. General inflation, oil price shocks, declining productivity growth, and stricter environmental standards were major factors leading to increases in electricity generating costs. Commissions were unable to include these cost increases in rates fast enough to prevent utility profits from falling. At the same time, utilities' sales growth started to decline in response to rising electricity prices and a slowdown in economic activity. Overall, electric utilities' earnings were eroding because of regulatory lag.[2] In response, many state commissions adopted fuel adjustments clauses, future test years, Construction Work in Progress (CWIP) in rate base, and new rate designs (e.g., marginal-cost pricing) to mitigate the problem.[3]

Over the past several years, both electric and gas utilities have continued to petition their state public utility commissions in addition to increasingly lobbying state legislatures for what they call "innovative ratemaking mechanisms" that deviate from traditional ratemaking practices.[4] In fact, one can go as far back as the late 1960s and early 1970s to see that utilities

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[1] *See* Douglas N. Jones, "Agency Transformation and State Public Utility Commissions," *Utilities Policy*, Vol. 14 (2006): 8-13; and Douglas N. Jones, "Regulatory Concepts, Propositions, and Doctrines: Casualties and Survivors," *Journal of Economic Issues*, Vol. 22, no. 4 (December 1988): 1089-1108.

[2] "Regulatory lag" refers to the time gap between when a utility undergoes a change in cost or sales levels and when the utility can reflect these changes in new rates.

[3] Other actions included hypothetical capital structures and a year-end rate base. Most utilities also can file for emergency rate relief anytime it encounters a serious financial problem; the commission could specify conditions for a utility to file an emergency or interim rate filing petitioning for immediate rate relief.

[4] Traditional ratemaking refers to the application of cost-of-service methods for setting rates that determine the utility's authorized of return. Features of this method include: (a) new rates remains fixed until the commission approves new rates after a comprehensive rate case; (b) the utility has a reasonable opportunity to earn its authorized rate of return; (c) rates only reflect prudent and efficient utility costs; (d) the balancing of utility customer and shareholder interests is an overriding goal; (e) the selected test year tries to matches revenues with costs over the first year of new rates; (f) the utility's actual rate of return between rate cases deviate from the authorized return because of unexpected movements in sales

also pushed for new ratemaking mechanisms to accommodate what they perceived as the changing market and operating environment. This time the new ratemaking mechanisms have encompassed a wider umbrella. Both electric and natural gas utilities in recent years, for example, have expanded their use of nontraditional ratemaking mechanisms to include different cost trackers for a large number of utility activities, revenue decoupling, formula rates, and surcharges for new investments.[5]

All of these mechanisms have resulted in the shifting of risk from utility shareholders to customers. In fact, these mechanisms collectively have accommodated utilities over time by giving them more financial security. But as some analysts have argued, these mechanisms have weakened the incentive of utilities to manage their operations and investments efficiently, in part because of the erosion of regulatory lag. These mechanisms may also jeopardize prudence reviews, which along with regulatory lag are arguably the most effective regulatory tools to motivate utility cost efficiency.

One mechanism that utilities have intermittently pushed for over the past 40 years is a future test year (FTY) for setting general rates. Utilities have exhibited "cherry picking" by pushing for FTYs when it favors their financial position; they did not lobby for FTYs when average cost was falling, as continuation of an historical test year (HTY) would bolster their financial position.[6]

Utilities favor FTYs under predictable conditions: slow sales growth, large new investments and, overall, rising average cost.[7] An increase in average cost means that, given a

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and costs; and (g) regulatory lag can either benefit or harm utilities, depending on whether average cost is decreasing or increasing.

[5] *See* Pacific Economics Group Research, *Alternative Regulation for Evolving Utility Challenges: An Updated Survey*, prepared for the Edison Electric Institute, January 2013 at http://www.eei.org/whatwedo/PublicPolicyAdvocacy/StateRegulation/Documents/innovative_regulation_survey.pdf. Cost trackers, for example, are a general category of devices that allow current recovery of costs in specified categories; revenue trackers compensate a utility for revenue losses between rate cases because of energy-efficiency programs and other factors (e.g., the price elasticity of demand).

[6] During the 1950s and 1960s, for example, the cost of generation, both because of scale economies and technological advances, declined and demand for electricity grew at a robust rate. Rate reviews were relatively infrequent and utilities consistently earned above their authorized rate of return.

[7] One way to define average cost is the price of inputs divided by total factor productivity (TFP). TFP in turn is the output divided by the input. Growth in TFP can originate from different sources, including technology advances, economies of scale, higher output, less waste of internal resources, and more efficient mix of inputs. Some of these factors fall within the control of utility management, while others fall outside. Mathematically, any increase in average cost results from the combined percentage increase in input prices and the level of inputs exceeding the percentage increase in output (*see* footnote 8). A slowdown of output growth along with inflation and new investments creates a condition of rising average cost. With price, or average revenue fixed between rate cases, an increase in average cost inevitably leads to the lowering of a utility's earnings or profits. This creates what analysts called

fixed price between rate cases, a utility's earnings will erode. By definition, average cost increases when total cost grows by a higher percentage than output or sales. Total cost, in turn, grows whenever the price of inputs used by a utility rises or the utility increases its inputs (e.g., labor, materials, physical capital). So three general factors affect average cost: changes in input prices, the level of inputs, and sales.[8] Some critics of an HTY, which has dominated state-commission ratemaking through the years, have argued that it is non-compensatory when the utility's average cost is higher in the rate year than in the historical test year, which could start as long as two years prior to the rate year (i.e., the first 12 months of new rates).[9]

II. The Current Status of Future Test Years

A. Trend toward FTYs

A recent survey noted that:

> Forward test years were adopted in many jurisdictions during the 1970s and 1980s when rapid price inflation and major plant additions coincided with slowing growth in average use…Several additional states have recently moved in the direction of FTYs. Many of these states are in the West, where comparatively rapid economic growth has required more rapid build out of utility infrastructure. FTYs were recently sanctioned legislatively in Pennsylvania.[10]

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earnings attrition. Conversely, in an environment where a utility's productivity is growing rapidly and inflation is low, a utility's earnings is likely to increase between rate cases above the authorized rate of return set in the last rate case.

[8] Specifically, average cost increases when the combined growth in input prices and levels exceeds the growth in sales. Under a condition of moderate to high inflation, large investments in new facilities and slow sales growth, average cost would likely rise. Average cost equals total cost divided by the output level (Total cost, in turn, equals the sum of the product of input prices and input levels.) Rearranging terms, average cost (AC) equals:

$$AC = \text{price of inputs/total factor productivity}$$

Thus, % ΔAC equals % Δ price of inputs minus % Δ total factor productivity, or % Δ price of inputs plus % Δ inputs minus % Δ output. As an example, if input prices increase by an average three percent, input levels by one percent and output by two percent, average cost would rise by two percent.

[9] These critics, utilities, have included Wall Street, consultants working for industry and some economists.

[10] Pacific Economics Group Research LLC, *Alternative Regulation for Evolving Utility Challenges: An Updated Survey*, prepared for the Edison Electric Institute, January 2013, 29 at http://www.eei.org/whatwedo/PublicPolicyAdvocacy/StateRegulation/Documents/innovative_regulation_survey.pdf. Since this survey, Indiana has allowed utilities to use an FTY.

The survey shows that 23 states allow or require commissions to use an FTY for ratemaking, at least for electric utilities.[11] In addition to Pennsylvania, recent states that have allowed an FTY include Indiana and New Mexico. Over half of the states now allow the use of a test year other than historical, and this number has grown over time.[12]

B. Continued commission opposition to FTYs

How many additional states will allow or require FTYs over the next several years is hard to predict. The research for this paper has shown that many commissions hold FTYs in deep contempt. It seems unlikely that they will switch to an FTY in setting rates unless forced to by their legislatures. A past order by the Public Service Commission of Utah exemplifies why many parties have a negative disposition toward FTYs:

> Our concerns with future test periods include the diminished economic examination and accountability, replacement of actual results of operations data with difficult-to-analyze projections, ability of parties to effectively analyze the Company's forecasts, dampening of the efficiency incentive of regulatory lag, playing to the Company's strength from control of critical information, and shifting of the risks of the future to ratepayers.[13]

In the past ten years, some commissions have studied different test years and decided against the use of an FTY. One such commission is the Iowa Utilities Board. In a 2004 report to the state's General Assembly, the Board concluded that:

> [The] implementation of the future test-year option would significantly increase costs of ratemaking during the transition and probably in the long-term. It also finds use of a future test year over the current hybrid approach will not necessarily provide rates that more accurately reflect a utility's cost of providing service.

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[11] State statutes, rules, and practices have laid out three distinct conditions for use of an FTY: (a) the commission must use an FTY, (b) the commission must use an FTY if the utility proposes one (e.g., Michigan, Minnesota), and (c) the commission has the discretion to choose a test year, including an historical, future or hybrid (several states). The last condition allows the commission to weigh the evidence in deciding on what test year the utility should use. Although it gives the commission flexibility to decide on a case-by-case basis, the downside is that the time parties need to present their arguments and for the commission to rule might reduce scrutiny of other important issues in a rate case.

[12] A 2009 survey conducted by the NARUC Subcommittee on Accounts, with only 20 state utility commissions responding, showed that 6o percent used an HTY with "known and measurable" changes of state utility commissions, 35 percent used either an HTY or FTY and 5 percent only used an FTY.

[13] Public Service Commission of Utah, *In the Matter of the Application of PacifiCorp for approval of Its Proposed Electric Service Schedules and Electric Service Regulations, Order Approving Test Period Stipulation,* Docket No. 04-035-42, 3, October 20, 2004.

Iowa's hybrid approach allows for consideration of evidence outside the historical test year. [14]

In Nevada, a report to the state's legislatures by the Public Utilities Commission recommended:

> …the hybrid test period for its energy utilities that starts with the most recent 12-month historical date and adjusts all major costs of service elements for reasonably known and measurable data through the rate effective period. The Commission believes this hybrid test period has more advantages than either the fully forecasted methodology or the more restrictive hybrid methodology, which adjusts for 7-months of data…this hybrid approach leverages the existing ratemaking methodology, providing consumers, regulated utilities and the regulatory community with more consistency than the fully forecasted test year methodology.[15]

As with many other commissions, the Washington Utilities and Transportation Commission relies on a modified historical test year. The commission believes that this approach avoids the problems with an FTY while also recognizing the need to adjust historical data. As articulated in a recent rate case:

> [I]n Washington, we use a modified historic test year approach. We start with audited results from a recent 12 month period, but we modify those results to reflect changes that substantial evidence, timely presented, shows have occurred during the pendency of a rate case, or will occur in the rate year that begins at the conclusion of the proceeding…*This approach reduces regulatory lag without burdening ratepayers with unnecessary costs determined on the basis of the more speculative future test year approach to ratemaking that is used in some jurisdictions.* Our approach strikes a balance that motivates…utilities subject to our jurisdiction to carefully manage their costs and revenues going forward and take full advantage of their opportunity to recover fully all fixed and variable costs including a reasonable return on capital investments.[16] [Emphasis added]

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[14] Iowa Utilities Board, *Review of Utility Ratemaking Procedures*, Report to the Iowa General Assembly, January 2004, 13 at http://www.state.ia.us/iub/docs/reports/noi032_FinalReport.pdf.). The Board added that it can consider capital investments in service within nine months after the end of the test year for rate base inclusion.

[15] Public Utilities Commission of Nevada, *Report to the 74th Session of the Nevada Legislature: Alternatives to the Historical Test Year Methodology for Setting Public Utility Rates in Nevada*, May 10, 2006, 17.

[16] Washington Utilities and Transportation Commission, *Order 11, Docket UE-090704 and UG-090705*, April 2, 2010, 11 at http://www.utc.wa.gov/docs/Pages/DocketLookup.aspx?FilingID=090704.

A modified HTY adjusts historical data for unreasonable and non-recurring costs and sales in addition to accounting for expected changes in the future (i.e., "known and measurable" changes). As with an FTY, the intent is to reflect cost and sales conditions expected for the period of new rates. Many commissions implicitly consider a modified HTY to satisfy the "balancing act" by making adjustments to mitigate regulatory lag while protecting customers from paying for "speculative" costs.

This paper addresses whether the continued resistance to an FTY reflects what some critics of commissions would describe as "status quo bias" or, instead, a rational position given the risks, especially to utility customers, associated with an FTY.[17] Utilities and Wall Street tend to criticize commissions for not changing to an FTY. As discussed in this paper, these critics have a credibility gap in advancing FTYs as supporting the public good, since they take a clearly narrow and biased perspective on FTYs that downplays the negatives. As discussed later, these negatives have the effect of redistributing economic welfare from customers to utilities.

III. Different Test Years and Regulatory Lag

A. Sources of regulatory lag

How does the selection of a test year affect regulatory lag? A test year is an actual or hypothetical 12-month period over which a utility calculates its costs, including both operating and capital costs, and revenues to determine the need for a rate change.[18] At the core of a test year is the "matching principle" for achieving consistency between costs and revenues. The utility would thus consider jointly revenue requirements and billing determinants in setting new rates.

Regulatory lag can be understood as the period between the beginning of the test year and the starting period for new rates. If the HTY is the calendar 2012, for example, and new rates do

[17] "Status quo bias" refers to a situation in which a commission would stick with its current practices and policies even if change would better serve the public interest. Some analysts would label this behavior bureaucratic inertia.

[18] In determining the required revenue change, the commission compares the revenue requirement and revenues under present rates. Specifically, revenue deficiency equals

$$RR_{ty} - GR_{pr}$$

RR_{ty} equals the test-year determined revenue requirement, and GR_{pr} equals the gross revenues under present rates. If the utility expects a shortfall in revenues to meet its revenue requirement, it might decide to file for a rate increase.

not go into effect until January 2014, the lag would be 24 months.[19] In the context of this paper, regulatory lag is the time between a test year and the rate year.

Four events encompass regulatory lag:

1. The utility recognizes the need for new rates—for example, because of earnings erosion caused by costs rising faster then revenues.[20]

2. The utility prepares and files a rate case.

3. The commission conducts hearings and issues a decision.

4. New rates go into effect.

The time between events (1) and (3) can extend longer than one year, depending on the preparation time for filing new rates and the length of a rate case. Assuming that it takes a utility four months to prepare a rate case and the rate case itself lasts nine months, the time duration would be 13 months. Say that the utility sees its cost increasing and earnings eroding in October 2012. It promptly prepares a rate case and files with the commission in February 2013. The commission makes a decision in November 2013. The new rates do not take effect until January 2014.

B. Three kinds of test years

There are three general groupings of test years (*see* Figure 1). Using our previous example, an historical test year would be 2012, in which the utility would have actual data for the 12-month period. An HTY uses data for a 12-month period that ends prior to a rate filing. A partially future or hybrid test year could cover the last six months of 2012 and the first six months of 2013.[21] A future test year could be the calendar year 2014.

For the historical test year, the new rates starting in 2014 depend on cost and demand conditions in 2012. If these conditions change between the two years, the new rates could create

[19] January 2012 is the beginning of the test year and the starting point for the new rates is January 2014.

[20] Attrition or erosion refers to the tendency for a utility's rate of return or profits to fall since the last rate case. On the opposite side of the spectrum is the term accretion, which refers to a utility "overearning" between rate cases.

[21] Minnesota is a state that relies heavily on a partial future test year. The FTY usually starts when interim rates go into effect, which is within 60 days of a utility's rate filing. One rationalization for defining the test year this way is that it differs little from an HTY adjusted for "known and measurable" changes.

a gap between the authorized and actual rate of return.[22] When using an historical test year, the utility usually normalizes and annualizes its costs and sales[23]; it may also make adjustments for "known and measurable" changes.[24] These last two actions convert the raw HTY data to be more representative of the conditions during the effective period of the new rates (i.e., the rate year or, as some call it, the test period). These adjustments would tend to increase the likelihood that the utility would earn its authorized rate of return.[25]

The partially future or hybrid test year would mitigate regulatory lag when compared with the HTY, as the new rates would account for conditions in the first half of 2013, which is closer in time to when the new rates go into effect.[26] Actually, although at the outset of the rate case the utility presents six months of forecasts, as the case progresses the utility might substitute actual data for some of its forecasts. For example, the commission could allow the utility to use actual data for the first four months of 2013. The test year would then represent 10 months of actual data and two months of forecasts.[27]

The future test year, in its purest form, forecasts all the costs and sales elements for the first 12 months of new rates. An FTY, therefore, begins after a rate case and normally at the time when new rates would go into effect.[28]

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[22] This discrepancy mostly affects equity holders, as revenue shortfalls cut into the utility's rate of return on equity. On the other hand, changing conditions could make the HTY favorable to the utility and its shareholders. For example, sales could increase enough to more than offset any inflation and new investments.

[23] The utility would normalize weather for projecting sales; it could also normalize rate case expenses and storm damage. An annualization adjustment would involve, say, a wage increase in effect for only five months to cover the entire HTY.

[24] These changes can include those that have already taken place after the end of the HTY or changes that are likely to happen in the near future (which is more contentious and speculative). For the latter, usually the commission would require a high probability of occurrence.

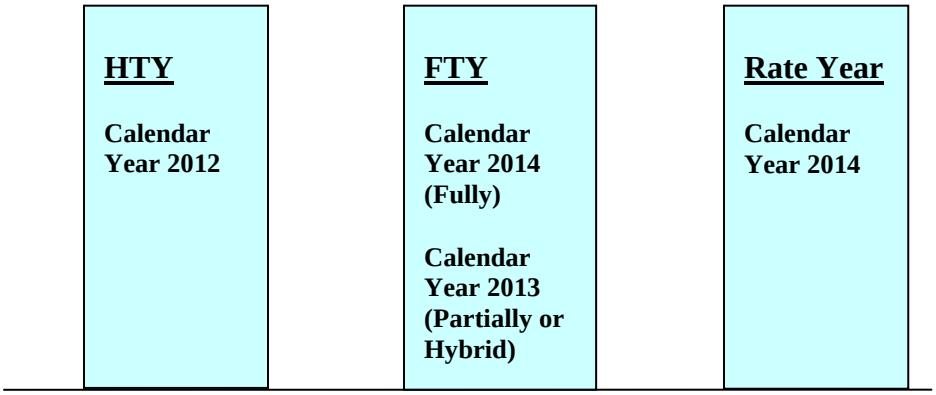
[25] These adjustments are arguably the most contentious aspect of HTYs.

[26] Some analysts refer to them as a rolling test year; for example, a test year that always takes 3 quarters of actual data and 3 months of forecasts.

[27] Unlike a FTY, the hybrid test year ends prior to the effective date of new rates.

[28] In a different sense, an FTY can begin after the period of the latest available actual data for costs and sales.

Figure 1: Different Test Years (Rate Case Filed in Early 2013)



IV. Framing the Issue: Two Different Perspectives

A. Utility/investor perspective

Utility management and their investors understandably place primary consideration on the effect of a test year on the utility's finances. They view regulatory lag in an era of increasing costs and slowing sales growth as detrimental to their interests. [29] Utilities contend, for example, that regulatory lag can limit their ability to raise capital for new investments and to remain financially viable. As expressed on the website of the National Association of Water Companies (NAWC):

> In a rising-cost industry with heavy capital investment requirements, the use of historic test years assures there will be no return on or recovery of capital that is invested during the test year and thereafter until the utility files another rate case. Any return on such investments could therefore be delayed for a number of years. This discourages necessary investment during these periods and skews construction and investment timing based on artificial test year issues rather than system needs and efficient construction planning processes. Due to regulatory lag, strictly historical test years can virtually ensure that the utility does not earn its allowed rate of return, thereby increasing risk and the cost of capital.[30]

In various forums, utilities and their investors have argued that an FTY would:

[29] Compared to the late 1960s and early 1970s, current conditions of low inflation and interest rates have helped to control utilities' average cost, making the argument for FTYs less tenable.

[30] C:\My Documents\Rate Design\NAWC Prospectively Relevant Test Year.mht. The link contains a table of the test years used in the 50 states and the District of Columbia for water utilities.

1. *Avoid earnings shortfalls from regulatory lag.* Utilities point to the divergence between the authorized and actual rate of return as a measure of excessive regulatory lag; they contend that during a period of rising average cost, a commission should use an FTY to set new rates; otherwise, they are unlikely to have a reasonable opportunity to earn their authorized rate of return.

2. *Support new investments, especially by shortening the lag time for recovering the costs for new facilities.* Otherwise, a utility may have to file rate cases more frequently just to get new facilities into rate base.

3. *Give customers better price signals by setting rates that are more closely aligned with a utility's actual costs during the effective rate period.*

4. Since the future is unlike the past because of economic and operational changes, historical data, even with piecemeal adjustments, *give a false sense of accuracy*.[31]

As will be discussed later in this paper, many state commissions believe that regulatory lag provides an important incentive for efficient utilities operations. There is no clear answer to the question of optimal regulatory lag.[32] Several commissions are also leery of the accuracy of forecasts and their manipulation by utilities to support higher rate increases, matters that this paper addresses later.

B. Broader public-interest perspective

The task for commissions is to translate stakeholders' interest into the public or more general interest. This is an essential feature of the "balancing act" of regulation in which commissions try to avoid certain outcomes, notably excessive rates and suppression of utility investors. FTYs are definitely beneficial to utilities and their investors. Why else would they propose them, other than to reduce the risk of earnings shortfalls? The relevant question for commissions is how an FTY would promote the interest of utility customers. The answer is not so obvious, as this paper argues.

The "balancing act" often uncovers the extreme positions of parties, whether they are utilities or interveners. It requires commissions to make trade-offs between various ratemaking objectives in reaching an outcome that best serves the general public. For example, although an

[31] Similarly, as discussed later, a false impression occurs when presuming that when the utility directly forecasts costs and sales over the period of new rates, those forecasts would accurately represent future conditions.

[32] When the utility initiates rate reviews, it is in a position to manipulate the regulatory process to its advantage. Yet if reviews occur at fixed intervals, such as under a price-cap regime, the utility would have an incentive to inflate costs just prior to a review so as to receive higher rates in the following period.

FTY could help the utility financially, it may expose customers to the risks of forecasting error and bias.

Listening to Wall Street and utility investors gives the impression that commissions are the sole reason for utilities not earning their authorized rate of return. They tend not to blame management when utilities lose customers or allow the efficiency of their operations to deteriorate. Instead, investors expect commissions to compensate utilities even when utility management is at fault. Specifically, they want commissions to grant utilities prompt and guaranteed cost recovery.[33]

For FTYs, utilities like to emphasize the benefits while downplaying the negatives. They tend to overstate the ease with which a commission and other parties can evaluate their forecasts.[34] They place primary focus on the financial effect of ratemaking practices. Consumer groups often concentrate on the negatives of FTYs while slighting their benefits. They tend to unequivocally reject FTYs in principle, while actual conditions may sometimes justify them.[35] The job of commissions is to sift through the conflicting evidence in approving "just and reasonable" rates.

Commission rejection of an FTY may be more of a rational response than inertia. Inertia implies a rigid commission position toward an FTY, no matter the circumstance or what the evidence shows (i.e., status quo bias, in which the commission sticks with an HTY no matter the environment or expected outcome). It seems more plausible that rejection of an FTY reflects the reluctance of a risk-averse commission to accept a mechanism with uncertain outcomes that could make matters worse. Some commissions find the evidence for an FTY to be speculative, inconclusive, and biased.[36] Even if exaggerated, this perception reflects a common belief among both commissioners and staff that using an FTY could lead to an undesirable outcome, irrespective of the utility's costs, demand, and operating conditions.

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[33] *See*, for example, Chairman Mark Sievers, "Wall Street Meets Main Street: The Regulator's View," presentation at the Mid-America Regulatory Conference, June 11, 2013, 9 at http://www.marc2013.com/CLE/SieversWall%20Street%20Meets%20Main%20Street.pdf.

[34] Utilities give the false impression that they do not have much of an advantage over other parties in understanding their operations and what constitutes efficient management. To the contrary, they have a pronounced advantage over other parties that makes evaluating the utility forecasts such a difficult task.

[35] These conditions include capability of parties to review a utility's forecasts, the absence of ratemaking mechanisms to allow a utility to recover costs between rate cases (e.g., cost trackers, infrastructure surcharges, revenue decoupling) and rapidly rising average cost.

[36] Poor forecasts are the product of ignorance, bias, or a combination of both.

1. Achieving "just and reasonable" rates

The acceptability of a test year depends on its ability to produce outcomes compatible with the standards underlying "just and reasonable" rates. The test year provides a foundation for determining such rates.

Legal precedent dictates that commissions must set reasonable rates that allow a prudent utility to operate successfully, maintain its financial integrity, attract capital, and compensate its investors in line with actual risks.[37] The emphasis is then on the results reached, not on the methods used. One obvious implication is that the appropriate test year depends on its likelihood of leading to "just and reasonable" rates.

"Just and reasonable" rates have two primary traits. First, rates should reflect the costs of an efficient and prudent utility. Second, rates allow a prudent utility a reasonable opportunity to receive sufficient revenues to attract new capital and not encounter serious financial problems. The first condition prevents customers from paying for costs that the utility could have avoided with efficient or prudent management. In using an FTY, excessive costs can also include "phantom" expenditures that the utility forecasts and that are included in rates but are not actually incurred. Commissions attempt to protect customers from excess utility costs in part by scrutinizing a utility's costs in a rate case.

A prudent utility should have a fair chance of earning its authorized rate of return. Yet this condition does not guarantee that the utility will earn close to or at its authorized rate of return. Part of the reason why a utility may experience earnings shortfalls is management's inability to control costs. Under traditional ratemaking practices, the commission normally does not allow a utility to make up any lost profits, which would constitute retroactive ratemaking.[38]

If commissions want to guarantee that the utility will recover its authorized earnings, they would favor a rate design that allows the utility to recover all of its fixed costs in a monthly service charge or a customer charge.[39] Since generally commissions do not, they implicitly recognize the positive incentive effect from allowing a utility's actual rate of return to deviate from the authorized level. Commissions also know that if a utility is continuously earning below its authorized rate of return, the utility can always file a general rate increase.

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[37] The U.S. Supreme Court outlined these conditions in its 1944 order for *FPC v. Hope Natural Gas Co.*, 320 U.S. 591, 605 (1944).

[38] Variants of traditional ratemaking, such as formula rate plans, are not retroactive because the regulator does not look back to alter past rates, but instead provides notice that future rates will be adjusted pursuant to a specific formula.

[39] Such a rate design would not guarantee the utility earning its authorized rate of return, as unexpected variable costs would cause the utility's earnings to decline.

2. The positive side of regulatory lag

Economic theory predicts that the longer the regulatory lag, the more incentive a utility has to control its costs; when a utility incurs costs, the longer it has to wait to recover those costs, the lower its earnings are in the interim. The utility, consequently, would have an incentive to minimize additional costs. As economist and regulator Alfred Kahn once remarked:

> Freezing rates for the period of the lag imposes penalties for inefficiency, excessive conservatism, and wrong guesses, and offers rewards for their opposites; companies can for a time keep the higher profits they reap from a superior performance and have to suffer the losses from a poor one.[40]

Commissions rely on regulatory lag as an effective tool for motivating utilities to act efficiently. Specifically, they view it as essential to limit risk shifting to utility customers from utility "mistakes."

Regulatory lag is a less-than-ideal method, however, for rewarding an efficient, and penalizing an inefficient, utility. Some of the additional costs could fall outside the control of a utility (e.g., increase in the price of materials), and any cost declines might not correlate with a more managerially efficient utility (e.g., deflationary conditions in the general economy). As discussed elsewhere in this paper, commissions are more receptive to an FTY when (1) regulatory lag causes a substantial downward movement in a utility's rate of return between rate cases, and (2) the utility has displayed good forecasting capability, as evidenced by its past track record.

3. Relevant policy questions

Commissions should ask what test year would best produce "just and reasonable" rates, in addition to other regulatory objectives. Specifically, what conditions would most support a specific test year? Is the preferred test year sensitive to an individual utility's operating and market conditions? The preferred test year hinges on several factors. They include:

1. *The ability of the commission to validate the accuracy and reasonableness of cost and revenue projections.* Some commissions might have to augment their staff expertise by hiring more economists and forecasters to review utility projections; commissions need a different skill set in reviewing an FTY filing versus an HTY filing.

2. *The increased cost and complexity of rate cases that an FTY would cause, net of the expected decrease in the frequency of rate cases over time, especially in a period of rising average cost.*

[40] Alfred E. Kahn, *Economics of Regulation, Vol. 2* (New York: John Wiley & Sons, 1971), 48.

3. *The perceived fairness of customers prepaying for utility activities before they occur*; that is, the utility recovering costs before they are incurred or for activities that may not happen (i.e., "phantom" activities).[41]

4. *The trade-off between the accuracy of historical data and their representativeness for the test period*. Historical data, even when adjusted, might poorly reflect conditions over the period of new rates; accurate forecasts compatible with prudent costs for a future period, however, are difficult for utilities to produce, and even harder for commissions to evaluate.

5. *A dynamic environment in which the future is unlike the past and might deviate substantially from the past in terms of utility cost, operating, and demand conditions*.

6. *Overall, the test year that provides a better picture of the actual conditions a utility will face over the period of new rates.*

V. Basic Elements of a Future Test Year

A. Difference from a modified historical test year

The comprehensive nature of an FTY makes it distinct from a modified HTY. Every cost and revenue item requires a forecast. As proponents of an FTY have argued, an HTY, even when adjusted for "known and measurable" changes, may poorly represent actual conditions during the period of new rates. It may require a utility, for example, to rely on growth in sales, economies of scale, and productivity gains to avoid "earnings" erosion until it files the next rate case.

An FTY makes it more difficult for commission staff and other parties to review a utility's rate filing. It requires evaluating all the utility's cost subaccounts and revenue categories with enough skill and resources to make a valid judgment.

B. Matching revenues with costs

Two core features of a test year are (1) that the calculations of revenues, expenses, and rate base occur over the same time period and (2) the presence of consistency among the different costs and sales elements. The latter requires, for example, that the variable-cost[42]

[41] One prime example is customers paying for a new generating facility before it begins operation. The utility might include the plant in rate base using, for example, a 2014 test year. The expectation is that the utility will start operating the plant in 2014. The plant may get delayed to 2015, but the utility in the meantime received approval to start recovering its cost in 2014.

[42] Variable costs are costs that vary with the level of sales or output.

forecasts are compatible with the sales forecasts and that operating costs account for new facilities added to the rate base.

One problem with adjusting an HTY for "known and measurable" changes is that the utility could make adjustments to some costs or revenue[43] components but not others because they are either difficult to measure or speculative in nature. As an example, completion of a new facility is imminent, so it receives test-year inclusion, but any savings in system operating cost or increase in revenues generated by the facility may get excluded. The utility's filing in this example violates the "matching principle" and would tend to support an excessive rate increase.

C. Should commissions prefer price caps?

One might then ask whether commissions should view price caps as an alternative to ROR regulation using an FTY. A generic price-cap formula contains a specified price index (PI) from which a productivity measure (X) is subtracted:

$$\%\Delta P = \%\Delta PI - \%\Delta X,$$

The allowed percentage increase in price ($\%\Delta P$) equals the percentage increase in some specified price index ($\%\Delta PI$) minus the percentage increase in productivity ($\%\Delta X$).[44] Productivity growth, for example, could reflect the average historical gains for a peer group of utilities. It could measure technological improvements for an industry or for the economy as a whole. The price index could encompass a broad range of commodities that are either regional or national in scope. One possible choice is the Consumer Price Index.

Unlike ROR regulation using a FTY, price caps rely on cost and productivity estimates for the industry or at least not directly for an individual utility. A utility could then profit from keeping changes in its costs below the industry average. Whereas under ROR regulation the utility uses itself as the benchmark, price caps include a benchmark exogenous to the control of an individual utility.

Under price caps, the utility has strong incentives to grow sales and manage costs. Price caps compared to ROR regulation, at least in theory, promote cost efficiency because price adjustments do not reflect changes in a utility's cost, and rate reviews take place at predetermined

[43] Revenue issues include utility versus non-utility operating revenues, weather adjustments, off-system power and gas sales, contracts, promotional and other discount rates, unbilled revenues (billing lags), imputed revenues, deferred revenues, and sales growth forecasts.

[44] See, for example, Paul L. Joskow and Richard Schmalensee. "Incentive Regulation for Electric Utilities," *Yale Journal on Regulation*, Vol. 4, No.1 (Fall 1986): 1-49.

multiyear intervals prescribed by regulators.[45] Price caps should, therefore, provide utilities with stronger incentives when prices relate to cost factors outside the control of an individual utility, and regulators do not readjust the price-cap formula whenever a utility is earning above-normal (or below-normal) profits or for some arbitrary reason.[46]

A problem with price caps is that a utility's earning might fluctuate to extreme levels. Commissions tend to frown upon utilities' earning a "high" rate of return. More generally, they also might feel uncomfortable about a ratemaking mechanism that accommodates a wide range of utility profits.

D. Filing requirements

1. Essential information

Commissions should require at least three things from utilities that propose an FTY: (1) documentation, (2) supporting analyses, and (3) assumptions. Utilities should file these items at the same time they submit their FTY rate request.[47]

Utilities should provide complete documentation to allow a thorough review by commission staff and interveners of the forecasting methodology, data sources, assumptions, and the past forecasting record of the utility. These parties should have access to transparent information from the utility that allows them to understand and verify the forecasts. Only then can a commission rule on the validity of the utility's forecasts in setting new rates.[48]

Utilities should link their projections with historical data to provide a "bridge." Otherwise, the utility would find it easier to hide costs from commission staff and interveners. The utility should provide at least three years of historical data, with more years preferred for recognizing trends and better judging the utility's forecasts.

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[45] In effect, prices caps have commission-determined regulatory lag; for example, once the commission sets base rates in a rate case, the utility cannot file another rate case for five years. Under ROR regulation, utilities control the timing of rate cases.

[46] As a rule, the "ratchet effect" would affect utility behavior under price caps any time it expects current benefits of increased efficiency to be "taken away" in the form of lower future prices. If so, utility incentives to control costs would converge toward those under ROR regulation.

[47] The utilities should file their data in executable electronic format.

[48] One question relates to whether the commission should allow a utility to file confidential data in support of its FTY. What is a reasonable standard for which the commission should grant confidentiality on future projected data? It could allow confidentiality of some data with good cause but not enough to jeopardize transparency, which is so important in reviewing a utility's rate proposal.

2. An example of utility modeling

If the utility used a statistical (e.g., econometric) method for forecasting,[49] the utility should provide the commission with various information. First, the utility should explain the theoretical construct of the model: What were the reasons for choosing the predictors specified in the model? Why did the utility choose a linear, quadratic, or other functional model for the model?

Second, the utility should provide the entirety of the data used in estimating the model. Regulatory staff might want to replicate the results by re-estimating the model with actual data used by the utility. Third, the utility should document the statistical procedures used and their rationales. Fourth, the utility should document the underlying assumptions of the predictors used in the model (e.g., price in a sales model). What did the utility assume, for example, about economic growth and inflation rates for materials? As expressed by the noted statistician, Nate Silver:

> When we make a forecast, we have a choice among many different methods…The way to become more objective is to recognize the influence that our assumptions play in our forecasts and to question ourselves about them…You will need to learn how to express—and quantify—the uncertainty in your predictions. You will need to update your forecast as facts and circumstances change.[50]

Finally, the utility should demonstrate the forecasting ability of its model. How well did the model forecast past costs or sales, assuming that the utility knew the values of the predictors?[51] In this example, any forecasting error would result from how the utility specified and estimated the model, rather than from making wrong assumptions about the predictors.

In sum, any of the above factors could affect the forecasts and would be difficult to rebut by other parties. The utility could simulate a model several times and present in a rate filing the result that most favors its position (e.g., the forecast that shows the lowest sales growth). Although parties could dispute the forecast, they may find it hard to argue the superiority of an alternate forecast. The utility, for example, might use a quadratic model because it forecasts the lowest sales growth while a linear model would show a higher growth, but the choice is not easy for other parties to defend as more valid.

For many items forecasts are not robust, in that they are highly sensitive to future scenarios of the world. Electricity sales for next year depend on economic conditions, price,

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[49] Some utilities apply econometrics methods to forecast sales and selective cost components.

[50] Nate Silver, *The Signal and the Noise: Why So Many Predictions Fail—But Some Don't* (New York: The Penguin Press, 2012), 72-3.

[51] *See* Part VI.D.2 for a more detailed discussion.

weather, and energy-efficiency behavior. Arguments over the numerical value for each predictor—and how it affects electricity sales—would be contentious and time consuming in a rate case. More important, the commission has the tricky task of selecting what it considers the most accurate single-point forecast. Basing a decision solely on a single-point or "best guess" forecast is risky. Usually in different contexts it is valid only when (1) the decision maker places a high degree of confidence in a single-point forecast, and (2) the consequences of an incorrect forecast are small.

A key question for commissions is whether forecasts from a model or other methodologies are sufficiently accurate for setting rates. For sales and large cost components, the forecasting error in percentage terms could be small and still have a non-trivial effect on the utility's earnings. Supporters of an FTY emphasize the deficiency of an HTY to accurately represent costs and revenues in the rate year. There is no guarantee, however, that forecasting them over the same period would produce more accurate results. Forecasters, as a general matter, tend to overstate the accuracy of their predictions even when those predictions are based on sound techniques. When adding the "bias" element inherent in a utility's forecasts (discussed later), one can easily imagine why an FTY might fail to better represent the utility's cost, operating and other conditions over the rate year.

One last point is that commissions should subject outside forecasts produced by reputable firms to the same scrutiny they would apply to a utility-produced forecast. They cannot take for granted that a forecast produced by an outside firm is sound and objective. The firm might have a reputation for producing results that favor a utility or other clients' positions in regulatory and other venues.

VI. Specific Challenges for State Commissions

A report by the NARUC Staff Subcommittee on Accounting and Finance laid out the basic questions on test years that commissions need to address:

> 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?[52]

Below are the major challenges of FTYs for commissions. Although they should not automatically disqualify the use of FTYs for ratemaking, they do pose special problems that

[52] NARUC Staff Subcommittee on Accounting and Finance, *Rate Case and Audit Manual*, Summer 2003, 10 at http://www.ipu.msu.edu/library/pdfs/NARUC%20Ratecase%20Audit%20Manual.pdf.

commissions need to address carefully. If commissions do not, an FTY could harm utility customers.

A. Information asymmetry

The core problem with FTYs for commissions is information asymmetry. Commissions are at a distinct disadvantage relative to the utility in interpreting and evaluating the utility's performance. Commissions generally lack the knowledge, for example, to detect when the utility is efficient or inefficient, and the opportunities for utilities to minimize their costs. As part of their duties, they need to evaluate whether the utility's projected costs reflect competent utility management, or imprudent management. A utility naturally would argue that its projections reflect its best effort given the conditions it faces.[53] To rebut this claim, commission staff and interveners would need to provide evidence to the contrary. They can show, for example, the invalidity of some assumptions or forecasting methodologies that underlie their predictions.

One basic question centers on who has the burden of proof in providing information in support of its position. Assume that a utility proposes an FTY. Should the utility have the duty to show that using an FTY rather than a modified HTY would more likely produce "just and reasonable" rates? Or should other parties have the burden to show that a modified HTY would produce more socially desirable rates? Who has the burden of proof could influence the commission's decision. A persuasive argument for placing the burden on a utility is that it possesses superior expertise in accessing and interpreting relevant information. Efficiency and "fairness" considerations, along with the general principles of law, suggest that the party with the best access to information should have the burden of proof. For example, a utility should back up its claim of superiority of an FTY over other test years. Of course, commissions should exercise caution in interpreting information originating from one party with definite self-interest motivations.[54] That is why parties have to scrutinize the utility's filing and frequently supplement it with information from other sources. The commission would be well-advised to have as its mantra "Don't trust and do verify."

Although the utility may have the burden to demonstrate the reasonableness of its predictions, any proposed adjustments by other parties would require an evaluation showing the predictions' shortcomings. The utility has a big advantage over other parties in knowing its prudent costs. It is hard for commission staff and interveners to either (1) show that the utility's costs are excessive or (2) produce independent forecasts that reflect efficient utility management. For the commission, it comes down to a judgment call in determining the appropriate cost for an FTY. Probably the truth lies somewhere between the utility's high forecasts and the interveners' low forecasts.

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[53] Some utilities might want to give the impression that they have little control over certain costs or that whatever control they might have, they have done their best in managing.

[54] As a rule, commissions should apply caution in interpreting information that is asymmetrical, insufficient, and uncertain.

B. Acceptable format for data submittal

Commissions should require utilities to present certain data in a format that allows other parties to review it without great difficulty. Good examples of comprehensive and standard data-filing requirements are Illinois[55], New Mexico[56] and Wisconsin.[57]

In presenting its forecasts, a utility should file sufficient documentation to permit a thorough review by the commission and non-utility stakeholders of the forecasting methodology, data sources, assumptions for the predictors, and the past forecasting record of the utility.[58] Only then can the commission judge the validity of the forecasts. If the utility used a model for forecasting a specific cost or sales element, the utility should demonstrate the forecasting ability of its model. How well did the model, for example, forecast in the past?

C. Compatibility of rate-base treatment of new projects with the "used and useful" test

FTYs pose a special problem for commissions in regard to how they should address unexpected delays, cost overruns, and even cancellation of new facilities. If the utility's forecast turns out to be overly optimistic, customers may end up paying for new facilities prior to in-service status. As an example, a commission may approve a 2014 test year that included costs for a new electric transmission facility expected to be in service by June of that year. Assume that the facility encounters delays that set a new expected completion date of early 2015. Customers are then paying for the facility without receiving any benefits from it. This prepayment might not pose a problem in states that allow, for example, CWIP in rate base, but for other states it would. Can we then conclude that an FTY is not permissible in the latter states, or that they need to give special treatment to new facilities?

Take the example of a "used and useful" state (i.e., a state that allows a utility cost recovery only after a facility is in service and benefiting its customers) where a utility expects a new facility to come into service part way through the test period. In avoiding the situation described above, the commission could:

- Exclude the facility as part of the revenue requirement calculation in the rate case, and

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[55] *See* http://www.icc.illinois.gov/docket/files.aspx?no=02-0509&docId=51197.

[56] *See* http://www.nmcpr.state.nm.us/nmac/parts/title17/17.001.0003.htm.

[57] *See* Wisconsin Public Service Commission, "Investor Owned Utility Rate Cases Data Submittal Requirements Request for Change in Rates," Commission staff correspondence, April 6, 1995

[58] *See* the discussion in Part V.D.2.

- Only add it into rates when the facility comes on line and the commission determines its costs to be prudent in a separate proceeding.

This approach is not reliant on the construction-completion date and the cost projections; it also does not require customers to prepay for the facility prior to its in-service date. Finally, this approach also would reduce regulatory lag by allowing the utility to start recovering its costs prior to filing a new rate case. If the utility operated under an HTY, for example, the utility would have to file a new rate case before recovering any of the costs for a new facility completed outside the test year. Exceptions are when the utility has a special surcharge or tracker that allows it to recover costs in the absence of a general rate case.[59]

D. Checking for the accuracy of past forecasts

1. Three commission actions

Commissions can do three things. They can require utilities to measure the accuracy of their past forecasts. Commissions can then compare the actual costs and revenues with what the utility forecasted during the previous rate cases.[60] If a utility applied a model to derive these forecasts, it should identify the different causes of forecast errors. To what extent were errors the result of (1) wrong assumptions for specific predictors or (2) model estimation errors? The legitimacy of applying the same model to predict the future partially depends on the model's historical forecasting performance.

A commission can also view whether forecast errors occurred predominantly in one direction: Were cost forecasts consistently high or sales forecasts consistently low? Finally, a commission can rely on past forecasting errors as a guide to set a tolerance level for using an FTY. If past forecasts exhibited large errors, a commission might want to consider alternatives to using an FTY for setting future rates. Consistently biased and faulty forecasts can provide support, for example, for reverting to an HTY adjusted for "known and measurable" changes.

2. One measure of forecasting accuracy

One simple measure of forecasting accuracy *ex post facto* is to compare the actual outcomes with the forecasts. This is expressed mathematically as:

$$E_t = C_t^a - C_t^e$$

[59] A commission may consider appropriate a so-called negative tracker or rider in the event customers are paying for a new plant that unexpectedly encountered delays in completion and thus not providing them with any benefits. The rider, which would involve the utility crediting customers, could continue until the time that the plant actually goes into service. I thank Bill Steele for this thought.

[60] Analysts refer to any discrepancies as *ex post* forecasting variances.

E_t is the forecast error for year t, C_t^a is the actual outcome (say) for a cost element for year t, and C_t^e is the forecast for year t.[61] Forecast errors measured with historical data provide an indicator of a model's past performance. A measurement of forecast error can also apply to forecasts from utility budgets or other procedures. Generically, forecast errors provide a track record of a utility's past performance in forecasting individual cost and revenue components. They can identify forecast bias and whether the utility has performed better or worse over time. Has the utility, for example, improved its forecasting ability during the past two years relative to earlier years?

Forecast errors can offer a guide to the model's future forecasting performance. But often they will understate the error because of market and other dynamics that could jeopardize the forecasting accuracy of the model for future periods.[62]

Calculating forecast errors for several years can reveal whether the utility was consistently biased in one direction. The caveat is that a utility might intentionally inflate its actual costs to align with its forecast. As discussed later, a utility may seek self-fulfilled prophecy to avoid the consequences of the "ratchet effect."

When outcomes vary from the forecasts, the commission should distinguish between two causes: faulty forecasts, and unexpected events that a prudent forecast could not have accounted for. From an analytical perspective, the objective should be to minimize forecast error by creating the best possible forecast; for example, producing unbiased forecasts from a sound statistical model. Commissions should require utilities to forecast with valid methods and verifiable data. This standard requires that utilities apply generally acceptable statistical and modeling techniques. If utilities fall short in meeting it, commissions should reject their forecasts or at least question the forecasting method.

Finally, forecasting errors from models can result from mistaken assumptions and the wrong theory. The wrong theory might result in model misspecification with important predictors excluded. The underlying theory might predict, for example, that natural gas sales depend on the wrong factors or ignore certain factors that are important. If, for example, general economic conditions play an important role in affecting sales, ignoring this factor could produce biased forecasts that would systematically over- or under-forecast sales for a future test year.

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[61] Variants of this measure express the error in percentage terms or as a root mean square error over several periods.

[62] An estimated model may have good statistical properties from applying historical data, but perform poorly in forecasting. One explanation is that a structural change in the electricity or natural gas market could make the historical relationships between cost or sales and their predictors irrelevant for forecasting the future. One example involves the future availability of new energy-efficiency hardware, which could make consumers more responsive to increased prices in the future than historically.

E. Determining criteria for judging forecasts

Before its evaluation, a commission should consider drafting guidelines on criteria for judging forecasts: Should sales forecasts rely on generally acceptable modeling and statistical techniques? What factors should a utility consider in forecasting sales and costs? What inflation index should it use? How will a commission assess the reasonableness of the assumptions underlying the forecasts?

F. Limited time to evaluate utility projections

Utilities have a distinct "resource" advantage over other parties that they can better exploit under an FTY rate filing. Given the limited time for rate cases and the complexity of evaluating forecasts, parties may have insufficient time to thoroughly assess a utility's forecasts.

One possible outcome is the utility hiding inflated costs and not "getting caught." Utilities would (1) have an incentive to overstate its costs, as discussed elsewhere in this paper and (2) vigorously challenge other parties who propose to adjust the costs downward.

G. Updating revenues and costs during a rate case

As part of guidelines, a commission can lay out criteria for updating the utility's filing during a rate case. These criteria can apply to all test years, whether historical or future in nature: For an HTY, updates would make actual costs and sales more current; updates for an FTY would involve using more current data to revise forecasts; if, for example, the utility used a statistical model for forecasting, it could add more data points to re-estimate the model.

The commission may want to limit updates to major developments. Any updates should give other parties adequate time to review them. If a utility proposes a partial FTY, the more updating the commission allows the more the test year becomes historical in nature.

H. Are less-than-perfect forecasts more representative of the future than historical conditions?

This question lies at the crux of selecting the appropriate test year. As argued earlier, if the utility has a poor track record of forecasting, an HTY, even with all of its flaws, might be preferred. A utility should lose the opportunity to use an FTY, for example, if previous forecasts turned out grossly wrong and the utility earned exorbitant returns.

I. Utility incentive for misreporting costs and revenues

Commissions observe forecasts but not the effort or competence of utility management, except for crude measures (e.g., labor costs, plant availability); utilities have the information edge, knowing their own effort, output and skill level; this asymmetry makes it difficult to distinguish between forecasts reflecting prudent and imprudent costs.

1. Three questions

- **Why would a utility be more inclined to overstate costs than to understate costs?** The utility expects the commission to lower its cost forecasts, so it would tend to initially file inflated costs.[63] There is little payback for a utility that hedges on the low side. The likelihood of the utility's actual costs being higher would increase, thus jeopardizing its rate of return and penalizing shareholders.

- **How serious is this problem?** It depends on the ability of a utility to get away with reporting inflated costs. For example, the utility might ask for recovery of costs in a rate case no matter how frivolous or unlikely they are. It has little to lose if the commission catches it (except for the credibility of future forecasts); if the commission approves the cost, the utility recovers "phantom" or imprudent costs. The result is that the utility's customers are paying excessively for utility service.

- **How can a commission detect overstating of costs?** It can observe any systematic bias in past forecasts. For example, it may detect constant overforecasting of a certain cost item for a number of years. The only way for a commission to uncover inflated costs, although admittedly imperfect, is to do a thorough review of the assumptions, methodologies and other factors underlying the forecasts. This activity requires a commission staff with adequate resources and skills. It also subtracts time from other crucial rate-case matters that could lead to ill-informed decisions.

2. The "ratchet effect"

a. Definition and conventional view

The "ratchet effect" involves the commission's adjusting future forecasts based on past forecasting errors. The commission observes the utility's actual costs *ex post* to reset a future price. The "ratchet effect" reflects dynamic strategic behavior that analysts often ignore in comprehending the actions of public utilities and their regulators.

One conceivable utility response to regulatory lag is to reduce costs during the initial years after new rates and increase costs right before the next rate review. The latter action could justify a higher future rate, while the former action could allow the utility to retain the cost savings during most of the time between rate cases. For example, the utility might try to fool the commission into thinking that it is a high-cost utility so that it can charge higher rates in the future.

An argument made by FTY proponents is that the "ratchet effect" reduces the incentive of a utility to overstate forecasted costs in a rate case. Since the interaction between the utility

[63] Conceivably, a commission's downward adjustment of a utility's forecasts could leave the utility in no better position than under an HTY.

and commission is a repeated game, the commission can learn more about the accuracy of a utility's forecasts over time as it (1) observes the utility's actual costs and (2) compares them with the forecasts filed in previous rate cases; thus, the utility would acquire a reputation for its ability to forecast. Gross bias, for example, could damage the utility's credibility. Another possible check on utility misreporting is other parties' monitoring the utility's forecasts.[64]

Traditional ratemaking would then seem to "penalize" a utility for overstating its costs or understating its sales in a future rate case. For example, assume that a utility has an incentive to overstate its costs for an FTY. To the extent that it can misreport its expectation of the true cost, the utility can earn, without taking any incremental actions, an above-normal ROR without the commission knowing it until a later time. The commission at some future time could apprehend this strategic behavior and, in effect, transfer the excess earnings in the next rate case to the utility's customers.

b. An illustration of utility avoidance of a "ratchet effect"

Using a simple equation to more formally illustrate the previous discussion, the net gain to a utility from misreporting estimated costs is,

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

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

The net gain to the utility, NG_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.

Alternatively, the utility could avoid a "ratchet effect" by intentionally inflating its costs right before a new rate case to close the gap between its forecasted and actual costs. In other words, a utility may initially overforecast its costs in the last rate case and then make sure that actual costs do not fall far below them.

An example is a utility projecting costs of $110 million but knowing that with efficient management it can achieve a cost of $100 million. Assume that the commission allows the $110

[64] This action assumes that other parties have the capability to detect misreporting.

million for setting new rates. If the utility achieves $100 million, which the utility could easily do, its shareholders would benefit from a higher rate of return. But the utility might conclude that in the next rate case the commission would adjust its cost forecasts because it overestimated its previous cost by 10 percent. To avoid this "ratchet effect," the utility might decide to allow its costs to attain closer to or at the $110 million level.[65] The end result is that (1) utility management would have excess money to spend, funded by its customers, and (2) shareholders would earn close to their authorized ROR because management prefers to spend the excess money rather than giving the money back to shareholders in the short run. This behavior seems more rational if one presumes the importance of utilities' retaining credibility with their past forecasts for future rate cases. If utilities are high with their cost forecasts a few times or even once, understandably they may believe that the commission would more likely adjust downward their forecasts in the future. On the margin, a utility may decide that inflating costs to lessen forecasting error is in its best long-term interest.

J. Utility incentive for efficient operation

Whether using an historical or future test year, a utility retains (at least until the next rate case) every dollar that is saved: By lowering its input prices or improving its overall cost efficiency (e.g., productivity), a utility actually would earn a higher rate of return until the commission "takes it away." The commission might do this by implicitly setting a higher productivity target in the next rate case to account for improved efficiency gains in the preceding periods. The "ratchet effect"—namely, lower costs today translate into lower rates in the future—dilutes a utility's incentive to improve its efficiency: The utility would receive no benefits beyond the next rate case when the regulator reflects past improvements in future rates. Knowing this possibility, a utility subject to ROR regulation (no matter the test year) would have an incentive to inflate its costs shortly before the next rate case.

As discussed in the last section, FTYs can have a negative effect on cost efficiency. One reason is self-fulfilling predictions to avoid a "ratchet effect." Another possible reason lies with imputing in an FTY expected cost increases yet to be determined. A utility, for example, might have a weaker incentive to negotiate wage increases below the amount already included in rates. A third reason lies with information asymmetry, in which a commission would find it difficult to identify imprudent costs in a utility's rate filing. As such, the threat of disallowed costs lessens and thereby removes an important tool for commissions to control a utility's costs. Overall, an FTY would seem to score poorly in achieving cost efficiency.

K. FTYs and utility risk

Historically, commissions have approved cost trackers, revenue decoupling, and infrastructure surcharges to avoid earnings erosion because of unforeseen or immeasurable events at the time of the last rate case. The argument for these out-of-rate-case mechanisms is

[65] By our assumption, this cost level would reflect utility inefficiency, since it is $10 million above the level that the utility knows it could achieve with prudent management.

strongest when a commission relies on a historical test year that disregards expected developments during the rate year. Assume that a certain operating cost has trended upward (e.g., 2 percent per year) over the past several years. Assume also that the commission allows only a historical test year. In this example, the utility is likely to under-recover this cost item. What effect this outcome would have on the utility's overall rate of return depends on (1) the magnitude of any cost increase relative to the utility's earnings and (2) whether other costs fell while new rates were in effect.

As a practice, commissions do not expect utilities to earn exactly their authorized rate of return during each future period over which new rates are in effect.[66] Commissions implicitly impute a risk premium in the authorized rate of return, partially to account for volatility in earnings from unexpected fluctuations in costs or revenues. Out-of-rate-case mechanisms intend to mitigate business risk. "Business risk" refers to the uncertainty linked to the operating cash flows of a business. Business risk is multi-dimensional, inclusive of sales, cost, and operating risks. Both commissions and utility management can affect business risk.

To the extent that an FTY better projects costs and sales for future periods, as argued by FTY proponents, it should improve a utility's financial condition (e.g., interest coverage, credit rating) and lower its risk.[67] If so, should not a commission contemplate lowering the utility's authorized rate of return?[68] After all, FTYs do not decrease overall risk; instead, they shift risk from utility shareholders to customers. At least, that is the utilities' intent, as they would tend to overstate their costs and understate their revenues under current rates. Although utilities would have a similar incentive under an HTY, their ability to avoid misreporting detection would be greater under an FTY. One reason is that utilities can more easily hide "inflated costs" when making forecasts rather than reporting their actual costs, which are subject to strict audits. When a utility makes a false report of its actual costs, it can suffer a severe sanction. No such penalty occurs when the utility makes an inaccurate forecast.

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[66] This statement supports the contention that commissions do not intend the prices they set in a rate case to reflect a utility's actual cost of service for each future year. Commissions, however, judge that the prices they approve will allow the utility an opportunity (i.e., a reasonable chance) to earn its authorized rate of return or some return within a specified "dead band."

[67] *See*, for example, Mark Newton Lowry et al., *Forward Test Years for U.S. Electric Utilities*, prepared for the Edison Electric Institute, August 2010, 49-52 at http://www.eei.org/whatwedo/PublicPolicyAdvocacy/StateRegulation/Documents/EEI_Report%20Final_2.pdf.

[68] How much commissions should lower the authorized rate of return is a difficult question. By shifting risk from utility shareholders to customers and decreasing the risk of under-recovery, an FTY should reduce the utility's cost of capital. In other words, an FTY should reduce the risk premium that prospective investors place on a utility.

L. Bridging historical data with forecasts

As part of standard reporting in rate cases, commissions should require a utility to provide a verifiable link or bridge between an historical and future test year as a point of reference.[69] Without this benchmark, parties reviewing a utility's filing would lack essential information for judging the validity of the forecasts. They would find it difficult, for example, to understand the foundation or basis for the forecasts.

M. Identifying the preferred forecasting approach

The preferred approach for forecasting depends on the traits of individual costs and revenues elements. For some costs, assuming no change or a change based on recent trends or on inflation indices could be appropriate. A utility using these simple methods should justify their use and the assumptions underlying them. For other cost items, a more sophisticated approach, such as statistical modeling, might produce better forecasts.[70] Below are six general approaches for forecasting:

1. **Inflation factor:** Global Insight, for example, forecasts inflation rates for labor, materials and services used by utilities; it also provides price indexes for detailed O&M expenses itemized in the Uniform System of Accounts. A utility might also use some macro inflation index, such as the GDP Implicit Price Index. The assumption is that a particular cost item will grow only because of inflation, with no change in labor, materials or other resources.

2. **Change in both activity level and inflation:** The change in cost component "i" (e.g., administration expenses) can equal $\Delta Cost_i = \Delta Activity_i \cdot \Delta Cost\ per\ Activity_i$, which depends on both the change in activities and the inflation rate for labor and other inputs. In evaluating a cost change, commission staff and interveners should review the utility assumptions about the inflation rate and change in activity levels, with each quantified and properly supported. If the utility assumes more maintenance activities, for example, it should explain the reason and measure the effect on cost.[71]

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[69] The historical test year can represent the base year. One definition of the base year is the most recent calendar year for which the utility had information in preparing its rate case.

[70] These models can include time-series models that produce price forecasts based on past values of price; and econometric models that relate cost or sales to variables (i.e., predictors) that explain their movements over time. Statisticians refer to time-series models as *autoregressive models*. In an autoregressive model, a cost or sales component in the current period represents a weighted average of past observations of the same component going back several periods, plus a random disturbance in the current period. *See*, for example, Robert S. Pindyck and Daniel L. Rubinfeld, *Econometric Models and Economic Forecasts* (New York: McGraw-Hill Book Company, 1976), 458.

[71] Utilities will often forecast their O&M costs based on budget data. Some analysts consider budgets "wish lists" and not best-guess cost estimates for specific utility functions. Budgets may not

3. **Historical average:** If a cost or revenue component displays erratic behavior, the best approach might be to use a multi-year (e.g., three-to-five-years) average rather than assigning a high weight to the latest observation.

4. **Modeling:** For some cost and sales components, accurate forecasts require an analytical framework with good predictive capability and data.

5. **Trends:** A trend is the persistent tendency of a cost or sales element to move in one direction, either upward or downward; if sales exhibit a linear trend, it is then growing or shrinking at a constant rate over time. Detecting trends require observations over a number of years.[72] Some analysts argue that five years of historical data is the minimum for recognizing past trends.

6. **No change:** The latest observation is appropriate, assuming no expected change in the cost or sales element. The utility might expect, for example, wages to remain constant over the rate year or the price of postage stamps to stay the same.

Rather than evaluating the utility's forecasts, commission staff and interveners might want to derive their own forecasts. They will find this approach costly and subject to tough cross-examination and rebuttal by the utility if their forecasts differ greatly from the utility's and support a lower rate increase than what the utility proposes.

N. The risk associated with selecting the wrong test year

Applying the wrong test year can lead to either excessive or deficient rates:

- Using an FTY when the market environment is stable may lead to excessive rates because of forecasting error and utility gaming (i.e., biased projections). Some costs and sales elements are inherently difficult to forecasts even just for a year ahead.

- An HTY can produce deficient rates when utility total cost is rising faster than sales, causing a utility's rates to fall below its average cost.

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always align with sales or other costs, violating the "matching principle" that is essential for a test year. For example, if a utility develops a budget for each function separately and not jointly with other budgets, inconsistency among different budget items may result.

[72] What is the relationship, for example, between sales in a historical context and expected sales during the period of new rates? Assume that natural gas sales (in therms) over the last five years are as follows: 15 million, 16 million, 14 million, 13.5 million, and 17.5 million. What sales level is representative of expected sales over the period of new rates? What factors should a utility consider? What are the major determinants of sales? Do past sales reflect a trend or a cyclical pattern? Does the recent high growth in sales indicate robust growth over the next few years?

In either instance, utility rates would not satisfy the "just and reasonable" standard that most commissions define for ratemaking. How a commission decides on the test year hinges on its risk aversion toward selecting the wrong test year and its interpretation of the available information.[73] Would a commission more disfavor excessive or deficient rates? Which test year would estimate the most accurate costs and sales over the test period or the first 12 months of new rates?

Decision making under uncertainty sometimes accounts for what analysts call *Type I* and *Type II* errors (*see* Table 1). Errors in the context of test years relate partially to how much a utility's actual ROR deviates from its authorized ROR. In deciding on the appropriate test year, a Type I error can cause a dead-weight loss from excessively high rates, as the utility captures more of the economic welfare gain (i.e., of the otherwise consumer surplus[74]) from sales. The utility also might have the incentive to realize its inflated-cost forecast (i.e., cost inefficiency) to avoid a "ratchet effect" (as discussed earlier) and lost credibility of its forecasting capability in future rate cases. Another possible adverse outcome is the utility earning excessive returns because of biased projections not detectable by commission staff or interveners.

A Type II error can lead to a utility not investing in facilities and undertaking other actions that would benefit customers in the long run. The utility might encounter serious financial difficulties because of rates lagging behind costs. The utility sees its credit rating drop, it suffers cash-flow problems, and its actual rate of return is (say) at least 100 basis points below its authorized return. These outcomes depend on the availability of other ratemaking mechanisms to mitigate regulatory lag, such as cost trackers and revenue decoupling.

Because utilities assign a high cost to a Type II error, their preference is for a FTY. In contrast, because consumer groups would tend to place a high value on avoiding a Type I error,

[73] One commission, the Public Service Commission of Utah, identified eight factors for selecting a test year. They are: (a) the general inflation rate; (b) changes in the utility's investments, revenues or expenses; (c) changes in utility services; (d) the availability of accurate data to non-utility parties; (e) the ability to match the utility's investments, revenues, and expenses; (f) whether the utility's costs are increasing or decreasing; (g) incentives to efficient management; and (h) the expected length of time for new rates. (Public Service Commission of Utah, *In the Matter of the Application of PacifiCorp for Approval of Its Proposed Electric Service Schedules and Electric Service Regulations, Order Approving Test Period Stipulation*, Docket No. 04-035-42, October 20, 2004.)

[74] *Consumer surplus* is the difference between the value that consumers place on a good or service and the amount that they actually pay. Technically, consumer surplus is the area under the demand curve and above the price. When customers pay a higher utility rate, their consumer surplus decreases by the sum of (a) the loss in net benefits from less consumption and (b) the additional payment for consuming at the actual level compared with what they would have paid at the same consumption level under a lower rate. When the higher rate is above the utility's prudent costs, it results in what economists call a "deadweight loss" (i.e., aggregate economic-welfare loss).

their preference is for an HTY.[75] A commission must trade off the two types of error in reaching a decision: Reducing one type of error compromises the other. For example, in reducing the risk from an FTY (Type I error), the commission takes the chance in selecting an HTY that produces deficient rates and financial problems for the utility.

If a commission views the two errors in terms of an excessively high or low ROR, it might want to consider an earnings-sharing plan or what some analysts call a *formula rate plan*. A formula rate plan is a ratemaking method in which the utility adjusts periodically (e.g., annually) its base rates without a general rate case, conditioned on an actual ROR on equity that falls outside some commission-defined band. The band might encompass, for example, 100 basis points above and below the ROR on equity authorized by the commission in the last rate case.[76]

Table 1: The Risk of Choosing the Wrong Test Year

Test year	**Actual risk**	
	Stable conditions	*Dynamic conditions*
Future	***Type I error***	Preferred
Historical	Preferred	***Type II error***

[75] This observation is consistent with the prevalent opposition by consumer groups to an FTY, evident in their position and testimony in rate cases.

[76] Supporters argue that these plans help stabilize a utility's rate of return without a full-blown rate case review, thereby avoiding serious financial problems and preventing excess profits. Opponents argue that they shift risk to customers and give utilities weak, or even distorted, incentives to manage their costs.

VII. Recommendations for State Utility Commissions

Those commissions studying or applying FTYs for ratemaking might want to keep the following points in mind:

1. **The merits of an FTY depend on the availability of other ratemaking mechanisms that mitigate regulatory lag.**
   These mechanisms include CWIP in rate base, revenue decoupling, trackers, surcharges and formula rates.[77] Should a commission consider an FTY as a first or last resort for mitigating regulatory lag?[78] When a commission allows adjustment mechanisms triggering cost recovery between rate cases to protect the utility from unpredictable costs, sales, and other outcomes, an FTY has less justification as a ratemaking tool for utilities.

2. **Commissions should not underestimate the challenges of information asymmetry as it relates to FTYs.**
   A seminal economics article on the market for "lemons" (i.e., defective products) concludes that in markets plagued by information asymmetry, the market player 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.[79] Information asymmetry reflects the relatively little 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 competence embedded in the forecast. Supporters of an FTY seem to understate the seriousness of information asymmetry. States with large commission staffs might also not regard information asymmetry as a major problem, but smaller commissions and consumer groups would undoubtedly have a different view.

[77] A primary intent of these mechanisms is to mitigate risks to utilities from bad projections for test-year costs and revenues.

[78] This paper makes no judgment on the superiority of any one mechanism in reducing regulatory lag. Each has its advantages and disadvantages, making it difficult to rank them based on their capability to best advance the public interest.

[79] George A. Akerlof, "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism," *The Quarterly Journal of Economics*, Vol. 84, No. 3 (August 1970): 488-500.

3. **Commissions may want to consider developing a rule or policy statement.** They can specify conditions for acceptability of an FTY filing. A commission can prescribe a standard format or a set of minimum requirements for presenting FTY data. This mandate would help parties to facilitate the interpretation and evaluation of the utility's forecasts.

4. **Commissions could hold a technical conference or workshop.** This recommendation is especially relevant for states allowing or requiring an FTY for the first time. An FTY involves myriad technical issues that parties should try to resolve prior to rate cases. (The Appendix contains a list of questions that address the major issues.) Otherwise, rate cases themselves will involve their resolution, which deducts from the time for covering other rate-case matters. The commission will inevitably suffer through a "learning curve" before reaching a comfort level with FTYs.

5. **Commissions may want to look closely at the incentives that an FTY provides utilities for reporting their costs and sales.** In avoiding a "ratchet effect," a utility might inflate its costs to align its forecasted and actual costs. The consequence is customers overpaying for utility service and the utility's credibility maintained because of its apparent "reasonable forecasts." Since an FTY weakens the incentive effect of regulatory lag in addition to making it more difficult for commissions to exclude imprudent costs in rates, cost inefficiency is more likely to occur. Utility customers inevitably shoulder the excessive costs in the form of higher rates.

6. **Commissions should understand that applying forecasting methods for setting rates places a higher premium on accuracy than for other applications.** Commissions should consider demanding a small tolerable margin of error for costs and sales forecasts.[80] For example, the utility's projecting a sales increase of 0.5 percent when the actual increase was 1.5 percent could have a significant effect on its rate of return. A commission might ask whether it can rely on costs and sales forecasts for setting "just and reasonable" rates when accuracy is so important, as alleged by critics of an HTY. Often forecasters in different contexts express their predictions as a range of values within which an event (e.g., future sales) has a high probability of occurring. The uncertainty of predicating costs and sales gives theoretical support for commissions to look at a range of possible future scenarios, rather than focusing only on the most probable future state (i.e., the "best guess" forecast). In other words, for different decisions commissions should not put all of their faith in one forecast, even if that forecast is superior to all other forecasts. Yet in setting rates, commissions have no choice but to select a single forecast, knowing with almost absolute certainty that it will

[80] Assume that a utility inflates its costs by 3 percent and that its profits or margins are 20 percent of costs. The utility's margins or ROR would increase by 15 percent. If the authorized ROR on equity is 10 percent, the actual ROR would increase to 11.5 percent.

contain a margin of error. In some instances, forecasts are no more than an educated guess, which makes them especially suspect for setting rates. The policy question ultimately reduces to: Are forecasts sufficiently accurate for use in setting rates that are unlikely to result in an "extreme" rate of return, especially on the high side?

7. **Commissions will need to decide whether (a) they should rule at the beginning of a rate case the appropriate test year or (b) utilities should have the discretion to select a test year.**
   One view is that commissions should have the discretion to choose the test year, assuming they have the authority. The preferred test year from a public-interest perspective depends on the actual conditions facing a utility.[81] Why should commissions allow the utility to select the test year when they should expect a utility to choose one that best advances its interest rather than the public interest? What happens, for example, if a utility proposes an FTY and the commission staff, along with interveners, believes it is incapable of evaluating the forecasts? In this instance, the utility has a distinct incentive to inflate its costs and hopes that the commission would not detect them. This utility prerogative is akin to allowing the utility to choose rate design or a cost-of-service methodology, with the commission relegated to a secondary role in fine-tuning the proposals. Most commissions would understandably find this status unacceptable. Legislatures threaten the independence of state commissions when they mandate the use of a specific test year, no matter the circumstances or actual conditions faced by a utility

8. **Commissions may want to select a test year in individual cases based on a risk-based framework.**
   The preferred commission decision comes down to its risk aversion toward negative outcomes, given the available information. Some parties might have more concern with the possibility of using an FTY under stable conditions and risking excessive rates—what we previously called a Type I error. Other parties (namely, utilities and their investors) might assign a high risk to using an HTY under dynamic conditions—what we previously called a Type II error. Consistent with the "balancing act" feature of regulation, a commission must inevitably weigh the different outcomes in selecting a test year for the public good.

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[81] For example, *Section 54-4-4(3) of the Utah Code Annotated* states:

> If in the commission's determination of just and reasonable rates the commission uses a test period, the commission shall select a test period that, on the basis of evidence, the commission finds best reflects the conditions that a public utility will encounter during the period when the rates determined by the commission will be in effect.

The commission must then consider which test year would better represent future conditions over the rate year. For example, when it expects a utility's average cost to increase and deems the utility's forecasts to be reasonably accurate, an FTY would seem more appropriate than an HTY.

Appendix: Questions to Ask about Future Test Years

State utility commissions should ask several questions about FTYs, a simple concept, but as examined in this paper, posing tough challenges for state public utility commissions. The questions include:

1. Does the use of an FTY motivate utilities to overstate costs and understate revenues under present rates? If so, how can a commission address this problem?

2. Does an FTY advance the "balancing act" aspect of public utility regulation? Does it, for example, unduly favor utilities at the expense of their customers?

3. What conditions should hold to justify the use of an FTY?

4. What are the risks associated with using the wrong test year?

5. Can utilities manipulate their costs and revenue forecasts to inflate rates with unlikely detection by the commission and interveners?

6. What incentive does a utility have under different test years to control costs between rate cases?

7. Does an FTY improve a utility's financial condition to justify a lower authorized rate of return?

8. What rules should a commission have on forecast updates?

9. Does the commission have adequate staff resources to adequately evaluate utility forecasts?

10. How can a commission know the reasonableness of a utility's forecasts?

11. What is the level of forecasting errors that a commission should tolerate?

12. Who should bear the consequences of large forecasting errors?

13. How can a commission evaluate past forecasts to guide future forecasts?

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Future Test Years:
Evidence from State Utility Commissions

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Executive Summary

In July 2013, the National Regulatory Research Institute (NRRI) published a paper that identified factors for state utility commissions to consider in both deciding whether to allow a future test year (FTY) and executing it when deemed appropriate or required. From a theoretical and public-interest perspective, the paper discussed specific conditions that would mitigate problems with FTYs and help to establish "just and reasonable" rates.

In the course of that study, it was found that little empirical evidence exists on the operation of an FTY from the regulatory perspective: Have FTYs met the expectations of those commissions who strive to establish "just and reasonable" rates? Have commissions confronted serious problems causing them to shy away from using an FTY in their rate proceedings? Do commissions take common actions in reviewing utility forecasts and addressing problems that arise from an FTY? Are there "best practices" that commissions have deployed throughout the years to most effectively use FTYs in setting rates?

This survey paper tries to answer these questions as well as others. NRRI sent out 14 general questions to 21 state utility commissions that have used FTYs in setting utility rates. Fourteen commissions replied. Responses to some questions reflected commonalities across states while other responses were more heterogeneous, suggesting varying experiences and views on the part of those commissions that have applied FTYs in their ratemaking.

One general finding was that most commissions using an FTY have had an overall positive experience, with no thought to discard an FTY in subsequent rate cases. Although in some instances commissions endured initial difficulties, they were able eventually to overcome them. A few commissions reported continuing challenges with (1) evaluating utility forecasts and (2) addressing utility incentives for biasing their forecasts to favor a larger rate increase. Several commissions stressed the importance of auditing, thorough reviews, and reliance on evidence presented during a rate case to determine the appropriate test-year costs.

This paper should provide useful information to three groups of state commissions: (1) those that have used FTYs for a number of years; (2) those that have little or no experience with them but are planning on using FTYs more often in the future; and (3) those that are contemplating the use of FTYs but are under no mandate to do so. Learning from others is a crucial part of improving the effectiveness of any organization, including state utility commissions. By knowing how different states have handled the major challenges with FTYs, other states can benefit by avoiding pitfalls and implementing "best practices" or at least proven practices that can better serve the public.

The survey for this study addresses a broad range of regulatory topics related to FTYs. They include:

- Motivation behind FTYs
- Overall experience and impression

- Problems encountered and corrective actions
- Determination of reasonable costs and sales based on adjustments of utility forecasts or development of independent forecasts
- Responsible party for demonstrating the reasonableness of a utility's forecasts
- Use of a baseline to evaluate forecasts
- Utility methodologies for forecasting operation and maintenance expenses
- Adjustments to the authorized rate of return on equity (ROE) because of reduced regulatory lag
- Determination of costs reflecting prudent utility management
- Increased burden on commissions posed by use of an FTY in rate cases
- Retrospective comparison of forecasted costs (sales) and actual costs (sales)
- Reconciliation of the "used and useful" standard for new projects with an FTY
- True-up adjustments from forecasting errors
- Key factors for determining "just and reasonable" rates from use of an FTY

Table of Contents

Future Test Years: Evidence from State Utility Commissions

I. Purpose of Study

This study provides empirical evidence on the experiences of state utility commissions with future test years (FTYs). As far as the author knows, no other study contains similar information on this topic.

In July 2013, NRRI authored a paper that discussed the arguments for an FTY and why utilities have advocated it for ratemaking.[1] As its major objective, the paper examined the primary components of an FTY and the challenges they pose for state utility commissions. It suggested how commissions can best protect utility customers from the risks that underlie an FTY.[2] The paper identified information asymmetry as the most serious contributor to risk: It complicates a commission's ability to know whether a utility's forecasts are unbiased and reasonable.[3] It enumerated several challenges surrounding an FTY. The major ones are: (1) evaluation of cost and sales forecasts, (2) a utility's incentive to bias its forecasts in support of a larger rate increase, (3) the "ratchet effect" causing distortive utility behavior,[4] (4) added complexity in rate cases, (5) additional staff requirements, and (6) assurance of prudent utility management or cost efficiency.[5]

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[1] Ken Costello, "Future Test Years: Challenges Posed for State Utility Commissions," Briefing Paper No. 13-08, July 2013 at http://www.nrri.org/documents/317330/d9437527-da9d-4b27-be60-d0eb7f6c52ba.

[2] Risks derived from three sources: (a) forecasts are susceptible to error, (b) some costs and sales elements are inherently difficult to predict, and (c) utilities would have incentives to present biased forecasts that are not always easy for commission staff and interveners to uncover.

[3] Commissions are at a distinct disadvantage relative to the utility in interpreting and evaluating the utility's performance. Commissions generally lack the knowledge, for example, to detect when the utility is efficient or inefficient, as well as the opportunities for utilities to minimize their costs.

[4] The "ratchet effect" involves the commission's adjustment of future forecasts based on past forecasting errors. The commission observes the utility's past actual costs to reset a future price. The "ratchet effect" reflects dynamic strategic behavior that could motivate a utility to intentionally inflate its costs to increase the price that a commission will allow in a future rate case.

[5] Three theoretical reasons exist for why utilities may not achieve maximum cost efficiency. One reason is self-fulfilling predictions to avoid a "ratchet effect." (*See* the previous footnote.) Another possible reason lies with imputing in an FTY expected cost increases yet to be determined. A utility, for example, might have a weaker incentive to negotiate wage increases below the amount already included in rates. A third reason is the previously discussed information asymmetry, in which a commission would

This survey study focuses on "implementation" factors, problems, and techniques used by state utility commissions in setting utility rates based on FTY calculations. Two commissions responding to the survey indicated that they have approximately 35 years' experience with FTYs. Although most other commissions have used FTYs for a far shorter time, they provided valuable information on how they mitigated problems with FTYs to ensure "just and reasonable" rates.

Specifically, this study addresses the following ten questions:

1. What commission oversight and other procedures seem to work best?

2. Why was use of an FTY instituted in the first place?

3. Was there a learning curve in which the commission had to acquire new skills and expertise?

4. Do utilities provide a baseline for their forecasts?[6]

5. What indices do utilities use to forecast operation and maintenance (O&M) expenses?[7]

6. How do commissions determine the accuracy of forecasts, which after all is the most important and difficult challenge they face with an FTY? Are the forecasts, for example, reasonably accurate and compatible with prudent utility management?

7. Do utilities have an incentive to misreport their costs and sales to justify a higher rate increase?[8]

8. Who has the burden of proof in determining reasonable forecasts?[9]

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find it difficult to identify imprudent costs in a utility's rate filing. As such, the threat of disallowed costs lessens, thereby removing an important tool for commissions to control a utility's costs.

[6] As part of standard reporting in rate cases, commissions may require a utility to provide a verifiable link or bridge between an historical and a future test year as a point of reference. Without this benchmark, parties reviewing a utility's filing would find it more difficult to review the forecasts. As an example, the historical test year can represent the baseline.

[7] Global Insight, for example, forecasts inflation rates for labor, materials, and services used by utilities; it also provides price indexes for detailed O&M expenses itemized in the Uniform System of Accounts. A utility might also use some macro inflation index, such as the GDP Implicit Price Index.

[8] Although utilities would have a similar incentive under an HTY, their ability to avoid detection of misreported costs and sales would appear to be greater under an FTY. One reason is that utilities can more easily hide "inflated costs" when making forecasts rather than reporting their actual costs, which are subject to strict audits. When a utility makes a false report of its actual costs, it can suffer a severe sanction. No such penalty occurs when the utility makes an inaccurate forecast.

9. Do commissions take into account the lower risk to utilities, relative to an historical test year (HTY), in authorizing the rate of return on equity (ROE)?[10]

10. How do commissions treat costs for a new project that is not in service at the time of a rate case?[11]

11. Do commissions allow for true-ups or post adjustments when forecasts turn out to be substantially in error?

12. What are the key factors in setting "just and reasonable" rates[12] when using an FTY?

II. Background on Future Test Years

State statutes, rules, and practices have laid out three distinct conditions for use of an FTY: (1) The commission must use an FTY under all circumstances, (2) the commission must use an FTY if the utility proposes one, and (3) the commission has the discretion to choose a test

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[9] One basic question centers on who has the burden of proof in providing information in support of its position. Assume that a utility proposes an FTY. Should the utility have the duty to show that its forecasts are reasonable, or do other parties have the duty to demonstrate that the utility's forecasts are unreasonable? Who has the burden of proof could influence the commission's decision.

[10] To the extent that an FTY better forecasts, relative to an HTY, costs and sales for future periods (i.e., the rate periods), as argued by FTY proponents, it should improve a utility's financial condition (e.g., interest coverage, credit rating) and lower its risk. (*See*, for example, Mark Newton Lowry et al., *Forward Test Years for U.S. Electric Utilities*, prepared for the Edison Electric Institute, August 2010, 49-52 at http://www.eei.org/whatwedo/PublicPolicyAdvocacy/StateRegulation/Documents/EEI_Report%20Final_2.pdf).

[11] FTYs may pose a special problem for commissions in dealing with unexpected delays, cost overruns, and even the cancellation of new capital projects. If the utility's forecast turns out to be overly optimistic, customers may end up paying for new capital projects prior to in-service status. As an example, a commission may approve a 2014 test year that included costs for a new electric transmission facility expected to be in service by June of that year. Assume that the facility encounters delays that set a new expected completion date of late 2015. Customers are then paying for the facility without receiving any benefits from it. This prepayment might not pose a problem in states that allow, for example, CWIP in rate base, but for other states it could.

[12] Legal precedent dictates that commissions must set reasonable rates that allow a prudent utility to operate successfully, maintain its financial integrity, attract capital, and compensate its investors in line with actual risks. (The U.S. Supreme Court outlined these conditions in its 1944 order for *FPC v. Hope Natural Gas Co.*, 320 U.S. 591, 605 (1944).) The Court's decision emphasized the results reached, not the methods used. One obvious implication is that the most appropriate test year would best produce "just and reasonable" rates.

year, including an historical, future, or hybrid year.[13] The last condition allows the commission to weigh the evidence in deciding on what test year the utility should use.[14]

A recent study noted that:

> Forward test years were adopted in many jurisdictions during the 1970s and 1980s when rapid price inflation and major plant additions coincided with slowing growth in average use…Several additional states have recently moved in the direction of FTYs. Many of these states are in the West, where comparatively rapid economic growth has required more rapid build out of utility infrastructure.[15]

A 2012 survey reported that 23 states allow or require commissions to use an FTY for ratemaking, at least for electric utilities.[16] In addition to Indiana, which the survey did not include, the other most recent states passing legislation that allow an FTY are Pennsylvania and New Mexico.[17] Over half of the states now allow the use of a test year other than historical, and this number has grown over time.[18]

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[13] The third condition is the most common of the three.

[14] One example is Utah. *Section 54-4-4(3) of the Utah Code Annotated* states:

> If in the commission's determination of just and reasonable rates the commission uses a test period, the commission shall select a test period that, on the basis of evidence, the commission finds best reflects the conditions that a public utility will encounter during the period when the rates determined by the commission will be in effect.

The Public Service Commission of Utah has identified eight factors for selecting a test year. They are: (a) the general inflation rate; (b) changes in the utility's investments, revenues, or expenses; (c) changes in utility services; (d) the availability of accurate data to non-utility parties; (e) the ability to match the utility's investments, revenues, and expenses; (f) whether the utility's costs are increasing or decreasing; (g) incentives to efficient management; and (h) the expected length of time for new rates. (Public Service Commission of Utah, *In the Matter of the Application of PacifiCorp for Approval of Its Proposed Electric Service Schedules and Electric Service Regulations, Order Approving Test Period Stipulation*, Docket No. 04-035-42, October 20, 2004.)

[15] *See* Pacific Economics Group Research, *Alternative Regulation for Evolving Utility Challenges: An Updated Survey*, prepared for the Edison Electric Institute, January 2013, 29 at http://www.eei.org/whatwedo/PublicPolicyAdvocacy/StateRegulation/Documents/innovative_regulation_survey.pdf. Since this survey, Indiana has allowed utilities to use an FTY.

[16] *See* Pacific Economics Group Research, *Alternative Regulation for Evolving Utility Challenges: An Updated Survey*.

[17] As of the time of this writing, Pennsylvania has just completed a rate case using an FTY for the first time; a rate case is before the New Mexico Public Regulation Commission in which the

A. Test year as the base for ratemaking

A test year is the foundation for utility ratemaking: It forms the basis for computing the required revenue increases for a utility to have a reasonable opportunity to recover its costs plus earn a sufficient rate of return to attract new capital in serving the long-term interest of its customers.[19] A test year represents a 12-month period over which the utility calculates its revenues and costs (i.e., revenue requirements) to determine the size of a rate increase. For example, in determining the required rate increase to overcome a revenue deficiency, the commission compares the revenue requirement and revenues under present rates. Specifically, revenue deficiency equals

$$RR_{ty} - GR_{pr}$$

RR_{ty} equals the test-year determined revenue requirement, and GR_{pr} equals the test-year determined gross revenues under present rates. At the core of a test year is the "matching principle" for achieving consistency between costs and revenues. The utility would thus consider jointly revenue requirements and billing determinants in setting new rates.

A commission would allow a rate increase when evidence shows that the utility would suffer a shortfall in revenues under present rates to meet its revenue requirement. If a commission approves, for example, a rate increase of 5 percent, it judges that rates must rise by this amount for the utility to cover its revenue requirements. The commission based its decision on test-year data. Using an FTY instead of an HTY, for example, would inevitably lead to a different commission ruling on the required rate increase.

B. Different test years

There are three general groupings of test years (*see* Figure 1). Assume that a utility files a rate case in February 2013. An HTY would be 2012, in which the utility would have actual data for the 12-month period. An HTY uses data for a 12-month period that ends prior to a rate filing. A partially future or hybrid test year could cover 2013.[20] An FTY could be the calendar

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petitioning utility has proposed an FTY; and no utility has yet come forward in Indiana proposing an FTY.

[18] Both utilities and commissions would more likely favor an FTY when average cost increases. This condition occurs when the combined growth in input prices and levels exceeds the growth in sales. For example, with moderate to high inflation, large investments in new facilities, and slow sales growth, average cost would likely rise. Failure to account for the higher average cost in setting rates would likely lead to more frequent rate cases and revenue deficiencies.

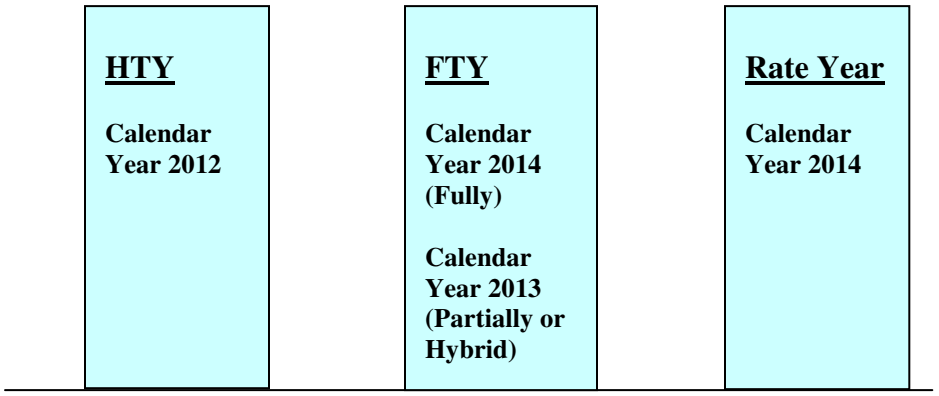
[19] To balance utility-customer and -investor interests, the revenue increases should be no more than are necessary to achieve financial health for the utility.

[20] The test year would then include actual data as well as forecasts. As the rate case proceeds, the utility could increasingly substitute actual data for forecasts.

year 2014. The FTY, in its purest form, forecasts all the costs and sales elements for the first 12 months of new rates. An FTY, therefore, begins after the completion of a rate case and normally at the time when new rates would go into effect.[21]

Using one kind of test year rather than another would inevitably lead to different calculations for revenue requirements and revenues under present rates. The selection of a test year, therefore, plays a pivotal role in determining new rates.

Figure 1: Different Test Years (Rate Case Filed in February 2013)



[21] Generically, an FTY can begin after the period of the latest available actual data for costs and sales.

III. Survey Approach

NRRI sent out 14 general survey questions on August 7, 2013 to 21 state utility commissions that allow FTYs (s*ee* Appendix A).[22] Some states did not respond, and two states (Louisiana and Maine) replied that they have never used a FTY in a rate case.[23] In total, NRRI received responses from 14 commissions. The vast majority of responding states answered all the questions.

Although 14 responses might at first glance seem low when compared with the total number of state utility commissions, they represent over 70 percent of the states that allow an FTY. Two of the states indicated that they have approximately 35 years of experience with FTYs; other commissions have used FTYs for several years. The survey responses as a whole should provide a fairly comprehensive and accurate picture of how state commissions have dealt with FTYs in rate cases. In particular, they show how commissions have addressed the challenges that FTYs pose in setting "just and reasonable" rates.

IV. Summary of Survey Responses

NRRI received 14 responses from state utility commissions (s*ee* Appendix B). The majority of responses for some questions were uniform; responses to other questions were more heterogeneous, reflecting the varying experiences and views of those commissions that have used FTYs.

One general finding was that most commissions using an FTY have had an overall positive experience. Although in some instances these commissions endured initial difficulties, they were able eventually to overcome or at least mitigate them. A few commissions reported that they were still struggling with certain problems, such as evaluating utility forecasts and

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[22] The author identified those states from reviewing different sources that listed states allowing an FTY. The author had to use some judgment, as these sources do not count the same number. NRRI decided not to send out the survey to three commissions—Indiana, New Mexico, and Pennsylvania—that presently allow an FTY but have either no or minimal experience with it.

[23] The Maine commission stated that:

> There has been no specific action by the Maine Public Utilities Commission (MPUC) addressing the use of a future test year. In some circumstances, the MPUC has allowed the use of a test year end rate base but typically uses a historical test year with adjustments for known and measurable changes to determine the revenue requirement. Pursuant to Maine Law Court precedent, we also allow for attrition which involves projected sales via a sales forecast and generally trending expenses based upon an inflation factor. The use of these types of attrition adjustments to determine test year revenue and expenses has some characteristics similar to a future test year.

dealing with utility incentives for biasing their forecasts to favor a larger rate increase. Several commissions stressed the importance of auditing, thorough review, and reliance on evidence presented during a rate case to evaluate utility forecasts. These commissions ostensibly believe that a sufficient record with evidence provided by diverse interveners would allow them to make an informed decision.

A summary of the responses to the 14 questions follows:

1. **Most state commissions initiated the decision to use an FTY.**
   They rationalized that under certain conditions, an FTY was appropriate, for example to reduce (a) regulatory lag,[24] (b) the discrepancy between actual and test-year costs, and (c) the frequency of rate cases. A number of commissions felt that an FTY offered these advantages, compared with an HTY. As summarized by one commission, "The propriety or impropriety of a test year depends upon how well it accomplishes the objective of determining a fair rate of return in the future." In other states, such as Kentucky, Michigan, Mississippi, and Utah, the legislature authorized the commission to use an FTY.[25]

2. **Most reported commissions expressed confidence in using an FTY.**
   They have had overall positive experiences, with no thought to discard an FTY in subsequent rate cases. Two commissions felt that that an FTY posed no additional problems over an HTY.[26] One commission derives its confidence from the review of the forecasts by an independent certified public accountant. Some commissions did report, however, some initial transitional difficulties. One commission noted reduced problems after it hired a consultant to provide training to staff on FTYs. One problem reported by a few commissions was evaluating the reasonableness of budget data as forecasts. Some commissions also said it took some time for them to reach a comfort level with an FTY.[27] One commission stressed the difficulty of selecting the most appropriate test year in individual rate cases. Another commission identified the problem of approving capital expenditures for plant additions not yet incurred.

[24] "Regulatory lag" refers to the time gap between when a utility undergoes a change in cost or sales levels and when the utility can reflect these changes in new rates.

[25] The survey did not ask whether the commission has to use an FTY when a utility files one.

[26] Some of the respondents presumably have never worked with an HTY, so their answers were more speculative in nature than based on actual experiences.

[27] One commission expressed enough concern about utility forecasts that it plans to open an investigation in the near future.

3. **Most commissions make adjustments to utility forecasts.**
   A few commissions (e.g., New York, Wisconsin) develop independent forecasts for utility sales. Most frequent, commission staff and interveners use utility forecasts as the starting point for determining reasonable forecasts. Forecasting requires substantial expertise and resources that several commissions presumably feel they lack.[28]

4. **Almost all of the commissions reported that the burden lies with a utility to demonstrate the reasonableness of its forecasts.**
   One commission mentioned that the burden lies with commission staff or interveners to show that the utility's forecasts were inappropriate. As another commission reported, some interveners simply attempt to discredit the utilities' forecasts, while others file their own testimony with independent forecasts. Another commission noted that interveners and staff provide information in addition to the utility's forecasts to build a complete record for the commission to make its determination of reasonableness. One commission identified several filing requirements for utilities to demonstrate the reasonableness of their forecasts. Most commissions presumably take the view that utilities possess superior expertise in accessing and interpreting relevant information to use in forecasts. In theory, efficiency and "fairness" considerations dictate that the party with the best access to information should have the burden of proof. Most commissions seem to concur with this belief.

5. **Most commissions require or encourage a utility to present historical data along with its FTY forecasts.**
   In many instances, the historical data acts as a baseline to "bridge" the past with the future. As part of standard reporting in rate cases, several commissions indicated that they mandate or encourage utilities to provide a verifiable link or bridge between an historical and future test year as a point of reference.[29] Presumably, in the absence of this information, commission staff and interveners would find it more difficult to evaluate the validity of utility forecasts. One commission even requires utilities to file information on its five most recent calendar years' financial results.

[28] One interpretation is that some commissions may also feel that it is not their role to develop independent forecasts: Utilities have better information on market conditions and their operations than they do.

[29] The historical test year can represent the base year. One definition of the base year is the most recent calendar year for which the utility had information in preparing its rate case. One respondent defines the HTY as consisting of operating results, with normalizing adjustments, for a 12-month period expiring at the end of a calendar quarter no earlier in time than 150 days before the date of filing.

6. **Utilities use different indices and methods to forecast operation and maintenance (O&M) expenses. Several commissions found problems with budget data for forecasting.**
   Some utilities use Global Insight indices,[30] while others use the GDP Implicit Price Index. One commission averages two different indices to arrive at a forecast. Another commission requires utilities to decompose an increase in forecasted O&M expenses (classified by function and cost element) caused by inflation and activity level.[31] Other respondents did not indicate whether they evaluate a change in expenses from historical levels by reviewing the utility assumptions about the inflation rate and change in activity levels, with each quantified and properly supported. Six commissions noted problems with using budget data to derive forecasts. They included the difficulty of doing independent verification, the conversion of budget data to a regulatory cost-of-service format, and the interpretation of budget data; for example, are they a "wish list" or an actual forecast?

7. **No commission reported adjusting downward a utility's rate of return on equity (ROE) from use of an FTY.**
   One commission said that any reduction in utility risk would reveal itself in the estimated cost of capital. As another commission expressed, "Decisions about utility specific risk factors are embedded in the selection of a comparable group of utilities on which the ROR and ROE analysis is based." One commission commented that the tradeoff between certainties within an HTY versus the forecasts of an FTY would dictate which has more risk. For those commissions that have no or little experience with an HTY over the last several years, it is understandable that they would not make any adjustments in the absence of a reference point.

8. **A common response was that a commission can best determine that a utility's cost forecasts reflect prudent management by auditing, thorough review, and reliance on evidence presented during a rate case.**
   Only a couple of commissions reported that utilities have an incentive to overstate their costs.[32] One commission expressed that utilities seem to pad their cost forecasts

[30] Global Insight forecasts inflation rates for labor, materials, and services used by utilities; it also provides price indexes for detailed O&M expenses itemized in the Uniform System of Accounts.

[31] For example, the change in cost function "i" (e.g., administration expenses) can equal $\Delta Cost_i = \Delta Activity_i \cdot \Delta Cost\ per\ Activity_i$, which depends on both the change in activities and the inflation rate for labor and other inputs. In evaluating a cost change, commission staff and interveners could review the utility's assumptions about the inflation rate and change in activity levels.

[32] Although not explicitly stated, the presumption may be that a utility would get caught if it attempted to inflate cost forecasts, either in a current rate case (e.g., via auditing or commission review) or afterwards, as the "ratchet effect" would adjust a utility's cost forecasts downward based on past inflated forecasts (*see* footnote 4).

to increase the chances of meeting or exceeding their authorized rate of return. One reason might be that utilities expect the commission to lower their cost forecasts, so they would tend initially to file inflated costs. One commission noted that a one-year litigated rate plan limits the incentive to inflate cost forecasts, as the effect is short lived because actual rate-year costs become the basis for the next test year; the same commission remarked that multiyear rate plans that contain an earnings sharing component also limit any benefits from erroneous cost forecasts.

9. **Most commissions made minimal adjustments in their internal operations when initially using an FTY.**
   Some commissions reported that they had to acquire new staff expertise. Almost all commissions replied that a FTY took little if any time away from addressing other rate case topics. Only one respondent mentioned that given the limited time for rate cases and the complexity of evaluating forecasts, parties may have insufficient time to assess a utility's forecasts.

10. **Most commissions make adjustments, or consider making adjustments, to cost forecasts based on past forecasting errors.**
    They indicated that they use different methods to measure forecasting error, including simply calculating the variance between actual and forecasted costs. Most respondents factor the accuracy of past forecasts in evaluating current forecasts. Commissions can then compare the actual costs with what the utility forecasted in a previous rate case. One commission uses what it calls a budget-to-actual analysis to uncover any consistent variance in one direction or the other. Another commission attempts to reconcile test-year forecasts with actual costs. Although not accounting for past forecasting errors, one commission requires electric and gas utilities to submit an O&M benchmark analysis with their rate-case filings, in order to test the reasonableness of the forecasted O&M expenses. If the forecasted expenses are higher than those calculated under the benchmark methodology, the commission requires the utility to provide justification for the variance.

11. **Several commissions review the accuracy of past sales forecasts.**
    Some commissions reported evidence of under-forecasting sales.[33] One commission, in contrast, noted that electric utilities have over-forecasted sales over the past few years. There seems to be less commission scrutiny of utility sales than costs in a rate case. This observation is somewhat puzzling, as sales and costs together determine new rates. One possible explanation is that the popularity of revenue decoupling has lessened the importance of accurate sales forecasts.

[33] Under-forecasts have the effect of justifying a higher rate increase, in the same way that over-forecasts of costs would.

12. **Most FTY states subject to a "used and useful" standard include major capital projects as part of the revenue requirement, as long as (a) the commission found the costs prudent and (b) a project is scheduled for in-service during the test year.**
    One commission allows utilities to recover their costs outside of a general rate case, as long as the projected in-service date is within 18 months of the closing of a rate case. Two commissions allow for step increases to synchronize a rate change with the in-service date.[34] One commission that uses a multiyear rate plan remarked that projects scheduled for in-service would be included in the revenue requirements for the year of their completion.

13. **A few commissions indicated that they make post-adjustments to rates when actual costs or revenues have deviated from their forecasted levels.**
    They focus on different components, with some making revenue true-ups (e.g., via revenue decoupling), one making power cost adjustments, and others making adjustments when the actual rate of return departs from the authorized level (e.g., via formula rates or rate-stabilization plans). These post-adjustments deviate from traditional ratemaking practices, which change rates only at the end of a general rate case.[35] One respondent noted that the commission can always call a utility in for a rate review if earnings are too high, with the option to make rates subject to refund from that time on, pending review of the financial information.

14. **A major factor in setting "just and reasonable" rates by using an FTY is good auditing, a thorough review of a utility's forecasts, and reliance on evidence presented during a rate case.**
    Having an expert staff is also a contributing factor. Good communications between parties and staff objectivity are a third group of factors identified by one commission. Some commissions noted that an open and transparent process is a key factor. Other commissions said that true-up mechanisms constrained a utility's actual rate of return within a tolerable band to assure "just and reasonable" rates.

[34] For one of the states, when a large project receives certification, rates then increase.

[35] The exception is when a utility has a tracker or rider that allows recovery of specified costs outside of a rate case.

Appendix A: Survey Questions

1. What was the impetus behind your state allowing a future test year (FTY)?

   a. Did your state pass legislation that would allow it?

   b. Did your commission initialize action—for example, in an order or rulemaking?

   c. What was the major reason for allowing an FTY in your state? Was there, for example, recognition that giving utilities an option to file an FTY would be appropriate under certain conditions?

2. What has been your commission's experience so far with FTYs?

   a. What problems have arisen? For example, has your commission found it difficult to evaluate certain forecasts or found staff lacking sufficient time to evaluate a utility's forecasts?

   b. Has your commission shied away from an FTY because of problems?

   c. Does the commission feel confident in evaluating forecasts to determine new rates?

   d. Was there a learning curve that your commission had to go through in gaining comfort with an FTY? What problems would you expect a commission to confront when first using an FTY?

   e. What is your commission's overall experience with FTYs?

3. Does your staff make independent forecasts, or does it make adjustments to the utility's forecasts?

4. Does your commission require a utility to demonstrate the reasonableness of its forecasts, or do interveners and staff have the burden to demonstrate the unreasonableness of the utility's forecasts?

5. Does your commission require a baseline from which to evaluate a utility's forecasts?

   a. If yes, how does it define the baseline?

   b. Does the utility, for example, have to file an HTY as a baseline?

6. What methodologies or indices do utilities usually use to forecast operation and maintenance (O&M) expenses?

    a. Is there a specific inflation index (e.g., Global Insights, GDP Implicit Price Index) that utilities used?

    b. Do commission staff see any problems in a utility's using budget data to forecast O&M expenses?

7. Does your commission view an FTY relative to an HTY as reducing a utility's risk, thus justifying a lower authorized rate of return?

8. How does your commission determine that the cost forecasts reflect prudent utility management?

    a. What actions has the commission taken in assuring that customers are not paying for unreasonable or imprudent costs?

    b. Does your commission believe that utilities have an incentive to misreport their costs and sales to justify a higher rate?

9. What adaptations did your commission make when first allowing utilities to file an FTY?

    a. Did the commission have to hire new staff and staff with different expertise?

    b. Did the commission have to devote less time to other rate case matters?

10. Does your commission retrospectively compare the utility's forecasted costs allowed in rates with actual costs?

    a. If it does, what methodology does it use to measure the difference?

    b. Is there any evidence that a utility has consistently over-forecasted costs?

    c. If so, has your commission made adjustments to subsequent cost forecasts reflecting past forecasting errors?

11. Does your commission retrospectively compare the utility's forecasted sales allowed in rates with actual sales?

    a. If it does, what methodology does it use to measure the difference?

    b. Is there any evidence that a utility has consistently under-forecasted sales?

    c. If so, has your commission made adjustments to subsequent sales forecasts reflecting past forecasting errors?

12. If your commission requires a project to be "used and useful" before a utility can recover any of its costs from its customers, how does this mandate reconcile with an FTY?

    a. Does your commission, for example, exclude the project cost as part of the revenue requirement in a general rate case?

    b. Does your commission, as an alternative, add the project cost to rates only after (1) the project comes on line and (2) the commission has determined the cost to be prudent, in a separate proceeding?

13. Does your commission make any true-ups or post-adjustments to rates when a utility's actual costs or sales depart from their forecasts? If it does, what are the necessary conditions?

14. From your experience, what would you identify as key factors in assuring utility customers that rates based on an FTY are "just and reasonable"?

Appendix B: State-by-State Survey Responses

State	1. What was the impetus behind your state allowing a future test year (FTY)? a. Did your state pass legislation that would allow it? b. Did your commission initialize action—for example, in an order or rulemaking? c. What was the major reason for allowing an FTY in your state? Was there, for example, recognition that giving utilities an option to file an FTY would be appropriate under certain conditions?
Alabama	(FTYs apply only to major gas utilities) (a) No, (b) Yes, (c) The Alabama Public Service Commission employs a formulaic approach, Rate Stabilization and Equalization (Rate RSE), as opposed to traditional rate case methodology. Rate RSE had been in place for several years, but it was proving to be too cyclical. The quarterly test periods were leading to increases or decreases "pancaking" on each other before they affected the bottom line. Thus, a FTY was employed to stabilize rates and income.
Connecticut	Connecticut often approves multi-year rate plans where the starting point is the test year. Test year adjustments are made to arrive at the adjusted test year and additional pro forma adjustments are made to arrive at a Company's rate year request. Subsequent years of a multi-year rate plan are additive to the forecast results of the Company's rate year request. PURA reviews actual test year results as well as previous periods, generally 3-5 years as well as forecast/budgeted amounts and underlying assumptions. This is in keeping with PURA's charge of maintaining just and reasonable rates; (a) No, (b) No, (c) Multi-year rate plans were seen as providing rate stability to customers while avoiding the costs associated with more frequent rate applications and to reduce regulatory lag for utilities.
Florida	(a) No. In an electric rate case from 1981 (Docket No. 810002-EU) a party had asserted that Section 366.06(1), F.S., which refers to "a current record of the net investment . . . in property "used and useful"" precluded the use of a projected test period. The Commission noted that it did not subscribe to such a narrow interpretation and that our statute did not specify that a particular type of test period must be used, and instead cited to a former court case that observed that "the propriety or impropriety of a test year depends upon how well it accomplishes the objective of determining a fair rate of return in the future." The Commission concluded that it had "the lawful authority to approve, analyze and utilize for ratemaking purposes the projected data presented and supported by the Company in this case." (b) Through orders, (c) See *Response 1(a)* above.

State	1. What was the impetus behind your state allowing a future test year (FTY)? a. Did your state pass legislation that would allow it? b. Did your commission initialize action—for example, in an order or rulemaking? c. What was the major reason for allowing an FTY in your state? Was there, for example, recognition that giving utilities an option to file an FTY would be appropriate under certain conditions?
Illinois	Illinois has allowed a future test year since before 1982; (a) No, (b) The use of a future test year was addressed in rulemaking and prescribed in 83 Ill. Adm. Code 285 and in General Order 210 prior to 1982. The use of a future test year is now codified in 83 Ill. Adm. Code 287, (c) Unknown.
Kentucky	(a) Yes, (b) Yes, however, on appeal by the Office of the Attorney General, the decision was overturned and the matter was ultimately addressed via legislation, (c) Utilities' low actual returns compared to allowed returns.
Michigan	(a) Yes, (b) and (c) Unsure.
Minnesota	(a), (b) Yes - Minn. Rules, parts 7825.3800 through 7825.4600 allow the use of a projected fiscal year for the rate-case test year, (c) Don't know; FTYs (i.e. projected fiscal years) have been allowed and used by most utilities for over 30 years.
Mississippi	(a) Yes, (b) Our Commission has approved formulary rate plans for one electric IOU and two natural gas utilities which provide for future test years; both electric IOUs in the state filed rate cases in early 2000s with projected test years, (c) FTYs were approved long ago in the state; I do not know the reasoning other than to more accurately calculate rates.

State	1. **What was the impetus behind your state allowing a future test year (FTY)?** a. **Did your state pass legislation that would allow it?** b. **Did your commission initialize action—for example, in an order or rulemaking?** c. **What was the major reason for allowing an FTY in your state? Was there, for example, recognition that giving utilities an option to file an FTY would be appropriate under certain conditions?**
New York	Periods of extraordinary capital expansion and rapid changes in operating conditions that occurred during the early 1970's was the impetus behind New York State moving to a FTY; (a) No, (b) Yes, in a 1972 Con Edison rate case, the Commission urged utilities to submit, in addition to an historical test period, a projected test year consisting of the most recent 6-months' actual experience and 6-months' forecast data on the theory that the most recent results would be a better proxy for the future than a fully historic test period. Over the course of several years, the use of this data set, along with the associated updates of the partially forecast test periods, as actual results became known, led to a record that included eight different test periods, which the Commission viewed as unworkable. As a result, the Commission issued a *Statement of Policy on Test Periods in Major Rate Proceedings* on November 23, 1977 in Case 26821 that set a clear, specific policy on test years, designed to enhance the Commission's ability to set rates properly for the future; (c) The major reason for allowing FTY was to better align cost recovery with incurred costs. The goal in setting rates is to accurately reflect what the utility's revenues, operating expenses and conditions will be in the period for which rates are set (the "Rate Year"). The rates should then produce the required revenues in the period during which those rates will be in effect.
Oregon	The impetus of a future test year is the idea that the costs and revenues should be reflective of the time period that the rates will be in effect. The Oregon PUC has a long history of using future test periods.

State	1. What was the impetus behind your state allowing a future test year (FTY)? a. Did your state pass legislation that would allow it? b. Did your commission initialize action—for example, in an order or rulemaking? c. What was the major reason for allowing an FTY in your state? Was there, for example, recognition that giving utilities an option to file an FTY would be appropriate under certain conditions?
Tennessee	At least since 1986, the Authority has used a future test year, which has played a big part in rate cases. The premise was to set rates at a level that would be reasonable for the foreseeable future. The agency reasoned that a future period better reflected the foreseeable future; (a) No, (b) In an Authority order in addition to a Tennessee Court of Appeals Order: "The Commission (now authority) has the discretion to choose a historical test period, a forecasted period, a combination of the two, or any other accepted method in rate making." [*American Association of Retired Persons v. Tennessee Public Service Commission*, 896, S.W.2d 127 (Tenn. Ct. App. 1994)]; (c) The agency chooses the test periods on which rates are set and historically the agency's goal is simply to choose a period and/or amounts that best reflect the results of the utility in the foreseeable future.
Utah	(a) Yes, (b) No, (c) An FTY would be appropriate under certain conditions.
Wisconsin	The Commission has used a future test year approach for at least 35 years and there is no knowledge available regarding the transition to a future test year.
Wyoming	(a) No, (b) No.

State	2. What has been your commission's experience so far with FTYs? a. What problems have arisen? For example, has your commission found it difficult to evaluate certain forecasts or staff lacking sufficient time to evaluate a utility's forecasts? b. Has your commission shied away from an FTY because of problems? c. Does the commission feel confident in evaluating forecasts to determine new rates? d. Was there a learning curve that your commission had to go through in gaining comfort with an FTY? What problems would you expect a commission to confront when first using an FTY? e. What is your commission's overall experience with FTYs?
Alabama	(a) There never seems to be enough time, but as RSE allows for continuous correction and monitoring, it works out, (b) No, (c) Yes, (d) Certainly, there were things that we had to learn. We had to delve heavily into the budget process, both on the revenue and expense side. We had to hone our expertise in comparing last year to this year, including "getting down into the weeds" occasionally to determine whether budget assumptions were correct or needed to be refined, (e) Good.
Connecticut	(a) Connecticut has one of the shortest review periods for rate cases in the country, which is 150 days extendable to 180 days pursuant to §16-19(b) of the General Statutes of Connecticut (Conn. Gen. Stat.); this short timeframe makes it challenging to evaluate forecasts, (b) No, Connecticut continues to evaluate rate years based on historical data with known changes and future years of rate plans using a combination of inflation adjusted accounts and testing budgeted assumptions, (c) Yes, however taking into consideration the short time frame mentioned above, it is a challenging task to accomplish, (d) Developing a comfort level with a particular utility's forecasts and a willingness to except some uncertainty around the "used and useful" principle is part of the process. Part of the uncertainty can be managed through subsequent order compliance for assurance of expenditures, (e) Up to this point, it has been positive.

State	2. What has been your commission's experience so far with FTYs? a. What problems have arisen? For example, has your commission found it difficult to evaluate certain forecasts or staff lacking sufficient time to evaluate a utility's forecasts? b. Has your commission shied away from an FTY because of problems? c. Does the commission feel confident in evaluating forecasts to determine new rates? d. Was there a learning curve that your commission had to go through in gaining comfort with an FTY? What problems would you expect a commission to confront when first using an FTY? e. What is your commission's overall experience with FTYs?
Florida	(a) Generally, no; the utilities proposing a projected test year have the burden of proof to adequately support the reasonableness of their projections, typically with prefiled testimony of individuals knowledgeable of various aspects of the projections; Staff evaluates the reasonableness and sufficiency of the record presented, (b) No, (c) Yes, (d) No, (e) See *Response 2(a).*
Illinois	(a) A future test year is no more difficult than a HTY, (b) No, (c) the Commission relies heavily on the review of the forecasts by an independent certified public accountant that examines the preparation and presentation of the utility schedules supporting the future test year in terms of their compliance with the Guide for Prospective Financial Information by the American Institute of Public Accountants, (d) Yes, (e) Positive
Kentucky	(a) No major problems – time is no more an issue than in HTY cases; the legislation on FTYs extended the suspension period by one month, from 5 to 6, (b) No, (c) Generally yes, (d) There was a learning curve; however, this was somewhat mitigated by the Commission hiring a consultant to provide training to staff on FTYs, (e) Mixed, as some utilities do a better job in their forecasting than others and the majority of cases that have been filed using an FTY have been resolved via settlements between the utility and interveners.
Michigan	(a) Certain forecasts are more difficult than other to evaluate but we would not necessarily characterize this as a problem, (b) The law allows for it, but the Commission has not rejected a FTY to date, (c) Don't know, (d) Don't know, (e) The Commission have reviewed 20 cases that use an FTY.

State	2. What has been your commission's experience so far with FTYs? a. What problems have arisen? For example, has your commission found it difficult to evaluate certain forecasts or staff lacking sufficient time to evaluate a utility's forecasts? b. Has your commission shied away from an FTY because of problems? c. Does the commission feel confident in evaluating forecasts to determine new rates? d. Was there a learning curve that your commission had to go through in gaining comfort with an FTY? What problems would you expect a commission to confront when first using an FTY? e. What is your commission's overall experience with FTYs?
Minnesota	(a) No more so than any other forecasts; the rules require baseline information grounded in actual, unadjusted numbers for the most recent fiscal year in addition to the projected fiscal year, (b) No, (c) Yes, however PUC staff's role is advisory; as such, the PUC and its staff are primarily responsible for evaluating the utilities' and the interveners' evaluations rather than actually conducting its own evaluation, (d) Don't know; FTYs (i.e. projected fiscal years) have been allowed and used by most utilities for over 30 years, (e) Probably very similar to what would be expected in states that allow normalized, historical test years adjusted for "known and measurable" changes; one, ongoing challenge has been how to deal with proposed updates to projected information.
Mississippi	Mixed; (a) We use two types of projections in FTYs: "historical figures adjusted for known and measurable changes and pure projections. Known and measurable changes can be objectively verified and we have few issues with these. Pure projections are difficult to verify due to lack of models, lack of time and, in some cases, lack of expertise; there is, however, a "look-back" on each projected filing following completion of the test year. If the utility over or under earns, there is provision for a refund or surcharge, (b) Our Commission has expressed concern about pure projections and will likely open an investigation at an undetermined future date (c) No, (d) Our Commission has expressed concern about pure projections and will likely open an investigation at an undetermined future date, (e) Mixed, as described above.

State	2. What has been your commission's experience so far with FTYs? a. What problems have arisen? For example, has your commission found it difficult to evaluate certain forecasts or staff lacking sufficient time to evaluate a utility's forecasts? b. Has your commission shied away from an FTY because of problems? c. Does the commission feel confident in evaluating forecasts to determine new rates? d. Was there a learning curve that your commission had to go through in gaining comfort with an FTY? What problems would you expect a commission to confront when first using an FTY? e. What is your commission's overall experience with FTYs?
New York	The New York Commission has been employing the use of FTYs for over 35 years. The continued use of FTYs demonstrates its preference over the alternatives experimented with during the mid-1970s; (a) The experience, expertise, and academic diversity of the New York Commission Staff makes it well suited to evaluate sales, capital, O&M, and financial forecasts; the 11-month regulatory process that is employed in setting rates affords Staff and other parties sufficient time to evaluate a utility's forecasts, as well as other issues presented in a major rate proceeding, (b) No, (c) Because it has been using FTYs over the last 35 years, the Commission has gained a level of familiarity and experience with evaluating forecasts that causes it to continue using FTYs over other alternative test periods, (d) As with any transition, there was a learning curve. The New York Commission went from using a HTY, to a projected test year consisting of the most recent 6-months' actual experience and 6-month's forecasted data, to a fully forecasted rate year. Expected problems with first using a FTY may include timing issues and differences in forecasting approaches. Uniform ratemaking practices should be established and various approaches should be tailored to meet the Commission's needs. For example, major storm damage costs are volatile and unpredictable so over time the Commission has generally adopted a reserve ratemaking approach to address recovery of these specific costs, (e) Again, the New York Commission has over 35 years of experience using FTYs. While always challenging, the rate setting process employed in New York results in reasonable outcomes based on sound ratemaking principles.
Oregon	No significant problems have arisen from the use of future test periods.

State	2. What has been your commission's experience so far with FTYs? a. What problems have arisen? For example, has your commission found it difficult to evaluate certain forecasts or staff lacking sufficient time to evaluate a utility's forecasts? b. Has your commission shied away from an FTY because of problems? c. Does the commission feel confident in evaluating forecasts to determine new rates? d. Was there a learning curve that your commission had to go through in gaining comfort with an FTY? What problems would you expect a commission to confront when first using an FTY? e. What is your commission's overall experience with FTYs?
Tennessee	(a) Forecasting is not an exact science, but we have several qualified employees with a great amount of experience in this filed. Forecasting is predicated to a large degree on utility provided data, so if the data is incorrect the conclusions drawn from that data may also be flawed. For example, the utility files its capital expenditures budget and it gets accepted, but the utility does not make all forecasted plant additions. This problem has arisen and now investment trackers may be used in future rate cases; we sometimes require quarterly reports of capital projects. Another example is the forecasted date that a large industrial customer will begin service. Fluctuations in this date can cause revenue forecasts to be flawed; (b) No, (c) Yes, the practice is common in most every rate case. An exception might be a very small utility, (d) the main problem that occurs is not gathering enough evidence from the utility to calculate growth/decline rates or not being familiar with how to properly conduct or analyze the utilities' regression analysis, (e) Positive.
Utah	(a) No. This question may be better asked of the Utah Division of Public Utilities, which is the state investigative agency for public utility rate filings, (b) No; but the Commission has identified concerns with FTYs. (See, for example, Public Service Commission of Utah, *In the Matter of the Application of PacifiCorp for approval of its Proposed Electric Service Schedules and Electric Service Regulations, Order Approving Test Period Stipulation*, Docket No. 04-035-42 3, October 20, 2004), (c) Yes, (d) Yes, especially the problem of determining the most appropriate test year under the circumstances, (e) The Utah Commission has not undertaken an evaluation of this question.

State	2. What has been your commission's experience so far with FTYs? a. What problems have arisen? For example, has your commission found it difficult to evaluate certain forecasts or staff lacking sufficient time to evaluate a utility's forecasts? b. Has your commission shied away from an FTY because of problems? c. Does the commission feel confident in evaluating forecasts to determine new rates? d. Was there a learning curve that your commission had to go through in gaining comfort with an FTY? What problems would you expect a commission to confront when first using an FTY? e. What is your commission's overall experience with FTYs?
Wisconsin	(a) The greatest difficulty is the inherent differences of opinion between staff-utility-interveners as to forecasted revenues and expenses, (b) Not applicable, (c) The Commission has been using the method for many years so there is a demonstrated comfort with it, (d) Not applicable, (e) It has been a positive one.
Wyoming	(a) Verifying forecasts can be difficult and takes much more time than the traditional historical test year, (b) No, (c) Yes, (d) Yes; the biggest problems were verifying data, matching of rate base items and rates, and making certain that data used is accessible, (e) Overall, Wyoming's experience has been positive; the utilities that have used FTYs provide data either through testimony or discovery; forecasting accuracy and accountability is a concern, along with accessibility of the data filed with an FTY, the reasons for the use of the forecast, the length of the forecast and why it is reasonable.

State	3. Does your staff make independent forecasts, or does it make adjustments to the utility's forecasts?
Alabama	The starting point is the gas utility's budget, compared to the previous year's actual and budget. The staff then suggests changes. We do not have authority to make unilateral changes. We have a limited complaint process whereby we can formally challenge a provision if we see the need. It has recently been strengthened, in the staff's favor, for one gas utility and the other gas utility is pending.
Connecticut	We use a combination of both.
Florida	See *Response 2(a)*. Staff evaluates the appropriateness of the forecasts and recommends adjustments when warranted.
Illinois	Parties to the case make adjustments to the utility's forecasts.
Kentucky	Staff makes adjustments.
Michigan	Both, but most times staff makes adjustments to the utility's forecast.
Minnesota	PUC staff does not make independent forecasts. The Commission either adopts the utility's forecast, the Department of Commerce, Division of Energy Resource's forecast, another intervener's forecast, or adopts an adjusted version of one of the parties' forecasts.
Mississippi	We do not make independent forecasts; we conduct reasonableness tests, however, on the utility's forecasts.
New York	Both, depending on the circumstances and available data, Staff may make independent forecasts, which it often does with electric and gas sales and has done with property taxes. More commonly, Staff may make adjustments to the utility's forecasts, as it does with payroll expense, O&M, and capital expenditures.
Oregon	Staff makes adjustments to the company forecasts by either constructing new forecasts or adjusting the company's forecasts. The choice is issue/facts dependent.

State	3. Does your staff make independent forecasts, or does it make adjustments to the utility's forecasts?
Tennessee	In Tennessee, Staff acts as advisors and provides the Directors (Commissioners) with its own forecast based upon the record. That is why data gathering is so important. The utilities' forecasts are fairly supportable in most areas, but generally (in Staff's opinion) there are areas that may be not be reasonable or do not represent the best outcome. In this instance, Staff proposes adjustments to the forecasts.
Utah	This question might be better asked of the Utah Division of Public Utilities.
Wisconsin	Independent forecasts are often used for sales. The staff normally makes adjustments to the utility's forecasts in the areas of O&M expenses, net investment rate base, capital structure, working capital, and taxes.
Wyoming	Interveners make adjustments to the utility forecasts.

State	4. Does your commission require a utility to demonstrate the reasonableness of its forecasts, or do interveners and staff have the burden to demonstrate the unreasonableness of the utility's forecasts?
Alabama	See *Response 3* above. Additionally, the burden is generally on the staff or the Attorney General (as consumer advocate) to demonstrate that the budget is inappropriate. See also *Response 8* below.
Connecticut	Utilities are required to demonstrate the reasonableness of their forecasts.
Florida	See *Response 2(a)*. The utility has the burden of proof.
Illinois	*83 Ill. Adm. Code 285* includes various requirements for the utility to demonstrate the reasonableness of its forecasts. These include the provision of the following information when the utility files a case: (1) Comparison of Prior Forecasts to Actual Data – Prior Three Years, (2) Statement from the Independent Certified Public Accountants, (3) Statement on Assumptions Used in the Forecast (that the forecast contains the same assumptions and methodologies used in forecasts prepared for management or other entities, such as the Securities Exchange Commission), (4) Inflation (identification of the rate of inflation used in forecast to various accounts), (5) Budgeted Non-Payroll Expense to Actual (for the last three years).
Kentucky	Utilities must demonstrate the reasonableness of their forecasts.
Michigan	A utility must support its request which includes its forecasts.
Minnesota	The utility carries the burden of proof in matters coming before the Commission. "The burden of proof to show that the rate change is just and reasonable shall be upon the public utility seeking the change." Minn. Stat. § 216B.16, subd. 4.
Mississippi	If we question a forecast, the burden of proof lies with the utilities.
New York	The burden of proof is on the utility, as provided in *Part 61.1 of NYCRR16*.
Oregon	The utility has the burden of proof.

State	4. Does your commission require a utility to demonstrate the reasonableness of its forecasts, or do interveners and staff have the burden to demonstrate the unreasonableness of the utility's forecasts?
Tennessee	The burden rests with the utility to prove its case. Interveners take different approaches. Some interveners simply try to discredit the utilities' proposals while others (often the Consumer Advocate) file their own testimony with supporting information. Staff, as advisors, prepares its own recommendation based upon the evidence in the record, including the forecasts.
Utah	The Commission requires a utility to demonstrate the reasonableness of its forecasts.
Wisconsin	The utility must support its application. Interveners and staff provide additional information to build a complete record for the Commission to make its determination of reasonableness.
Wyoming	The utilities have the burden to demonstrate the reasonableness of their forecasts.

State	5. Does your commission require a baseline from which to evaluate a utility's forecasts? a. If yes, how does it define the baseline? b. Does the utility, for example, have to file an HTY as a baseline?
Alabama	No
Connecticut	The starting point is generally the test year.
Florida	(a) Utilities proposing a projected test year are required to file (1) an HTY, (2) one- year out projected test year and (3) second-year out projected test year, (b) See *Response 5(a)*.
Illinois	(a) A baseline is not defined; but the information that is identified in *Response 4* is used to evaluate forecasts, (b) The utility must provide historical information.
Kentucky	Yes; (a) It is a 12-month "base period" consisting of both historical and forecasted information; at the time an application is filed, the base period must include a minimum of 6 months of historical information and a maximum of 6 months of forecasted information; the utility must update the base period during the course of the case so that it is fully historical by the time the Commission must make a decision on the utility's rate request, (b) In addition to the base period discussed above, the utility must file information on its 5 most recent calendar years' financial results.
Michigan	No; a utility must file an HTY filing but it does not have to be the baseline.
Minnesota	(a), (b) The rules require baseline information defined as unadjusted numbers for the most recent fiscal year in addition to unadjusted numbers for the projected fiscal year.
Mississippi	(a) Yes, the baseline is historical figures, (b) Yes.
New York	Yes, the utility is required to file an HTY as the baseline (pursuant to the *Policy Statement*). The HTY consists of operating results, with normalizing adjustments, for a twelve-month period expiring at the end of a calendar quarter no earlier in time than 150 days before the date of filing. Utilities also present information on actual results that bridge the gap between the historical and forecast period (the linking period).

State	5. Does your commission require a baseline from which to evaluate a utility's forecasts? a. If yes, how does it define the baseline? b. Does the utility, for example, have to file an HTY as a baseline?
Oregon	For some issues, the utility may use a historical period as a baseline and then make known and measurable adjustments to derive the test year projections. In other issues, such as loads, it will construct a forecast.
Tennessee	(a) The Authority looks at a historical test period (chosen by the agency) and makes normalizing adjustments to get a baseline, (b) Yes, utilities have to file an HTY.
Utah	Yes; (a) It is defined in *Utah Administrative Code R746-700-20(A)*; briefly, the utility must provide the unadjusted and adjusted actual results of operations for the historical 12-month period contained in the last reported results of operations report semi-annually filed with the Commission, (b) See *Response 5 (a)* above.
Wisconsin	Utilities must provide historical information for sales, O&M expenses, rate base (e.g., expenditures, timing of additions, etc.), and working capital balances.
Wyoming	Yes, (a) The historical test year have been used as a baseline, (b) Yes, in many cases the Commission has required utilities to do so.

State	6. What methodologies or indices do utilities usually use to forecast operation and maintenance (O&M) expenses? a. Is there a specific inflation index (e.g., Global Insights, GDP Implicit Price Index) that utilities used? b. Do commission staff see any problems in a utility's using budget data to forecast O&M expenses?
Alabama	The budget process is a bottom up process that is reviewed at each level of management and then usually sent back down for rework. The first time is more of a wish list, and the second or third iteration gets to be more realistic. If staff requests, it can meet with department heads or lower to discuss the decisions and assumptions involved in developing the budget; (a) No, (b) There are always problems in any methodology, but using the budget is a workable solution, particularly with the safeguards (complaint proceeding) recently instituted.
Connecticut	(a) The most recent rate case uses the Gross Domestic Product Price Index, (b) No, budget data is essentially the pro forma adjustment from test year to rate year; previous years budgets and actual results have been used as a reasonableness of the budget process; assumptions going forward are tested, accounts are tested and outliers are analyzed.
Florida	(a) No, (b) See *Response 2(a)*; this would be determined on a case-by-case basis, based upon the record.
Illinois	(a) There is no specific inflation index that the utilities use, (b) No.
Kentucky	(a) No, (b) There have been some minor problems related to some utilities' internal budget processes.
Michigan	(a) Varies by utility; Blue Chip is common, (b) Many factors could influence this response; budget data can be useful but can also be problematic.
Minnesota	(a) No, (b) Budget data is commonly used by utilities to forecast future test-year O&M expenses.
Mississippi	(a) No, (b) Yes, in terms of doing an independent verification.

State	6. What methodologies or indices do utilities usually use to forecast operation and maintenance (O&M) expenses? a. Is there a specific inflation index (e.g., Global Insights, GDP Implicit Price Index) that utilities used? b. Do commission staff see any problems in a utility's using budget data to forecast O&M expenses?
New York	(a) The Commission has relied on the gross domestic product implicit price deflator (GDP-IPD) as an inflation index per the attached Notice issued April 14, 1992 in Case 92-M-0184 (*Proposed Change in the Index Used to Measure Inflation for Use in Rate Making Proceedings*); this index is typically used to inflate historic O&M expenses into future rate year dollars, (b) Yes, as outlined in the *Policy Statement*, forecast material should be developed from the historical base. For O&M expenses, changes in prices and in activity levels should be fully and separately detailed by functional groups and elements of cost. All assumptions of changes in price inputs because of inflation or other factors or changes in activity levels due to modified work practices or other reasons should be separately developed. The format used in presenting utility budgets of future operations produced for a utility's internal purposes will not meet these requirements without substantial modification.
Oregon	Well known price index forecasts such as Global Insights are used. Using budget data is not typically used as there is often a difference between budget and actual.
Tennessee	Utilities rely on growth rates, weather studies, regression analysis, inflation indices, and so forth; (a) Different utilities use different inflation factors, (b) As a starting point, no; staff examines any budgets, reviews historical invoices and makes known and reasonable changes; forecasts are then based upon all the information we gather.
Utah	(a) Sometimes, (b) Yes, rates must be tied to cost of service.
Wisconsin	(a) The Commission uses Global Insight and Blue Chip Economic Forecasts and averages the two to get our annual inflation forecasts. NYMEX is used for projecting gas prices when estimating electric fuel expense, (b) A utility can forecast its O&M expenses however it wants to; staff then reviews the forecast for reasonableness. Budget data is probably the most useful data for a utility to base its FTY costs.
Wyoming	(a) Global Insights are most frequently used, (b) Yes.

State	7. Does your commission view an FTY relative to an HTY as reducing a utility's risk, thus justifying a lower authorized rate of return?
Alabama	Not necessarily, as an HTY implies a traditional rate case which in turn implies a chance to over-earn. There is no such opportunity with a Rate RSE.
Connecticut	Increases to such areas as plant, operations and maintenance in subsequent years of a rate plan should provide for a greater predictability in operational performance and should be reflected in a utility company's risk profile.
Florida	No
Illinois	The Commission has not made any exogenous adjustments to the cost of common equity estimates for utility sample companies when setting the authorized rate of return for FTYs.
Kentucky	The Commission has not authorized a lower rate of return due to utility using a FTY.
Michigan	The Commission has not commented on this relationship in isolation.
Minnesota	The Minnesota Commission normally does not make adjustments to the ROR or ROE adjustments for specific risk factors. Decisions about utility specific risk factors are embedded in the selection of a comparable group of utilities on which the ROR and ROE analysis is based.
Mississippi	The issue has been informally raised but not acted upon or investigated.
New York	It is widely held (by the financial community, industry analysts, and credit rating agencies) that use of a FTY improves earnings, improves credit ratings, and reduces risks. It follows logically that these factors all support a lower allowed ROE.
Oregon	Oregon has a long history of using future test periods. There is no adjustment to the cost of capital.
Tennessee	To my knowledge no adjustment has ever been made to ROE as a result of choosing a future test year over a HTY. I do not recall the issue coming up.
Utah	In the two litigated cases in the past decade on rate of return, the Commission has not tied the rate of return decision to use of an FTY.

State	7. Does your commission view an FTY relative to an HTY as reducing a utility's risk, thus justifying a lower authorized rate of return?
Wisconsin	Much would depend on the preparation of an HTY. Consideration of known and significant costs arising during the period when rates would be in effect is important. Not recognizing those changes would have a negative effect on earnings. What the trade-off is between certainties within an HTY vs. forecasts of an FTY would dictate which has more risk.
Wyoming	There has been no specific adjustment to a rate of return recognizing a decrease in utility risk.

State	8. How does your commission determine that the cost forecasts reflect prudent utility management? a. What actions has the commission taken in assuring that customers are not paying for unreasonable or imprudent costs? b. Does your commission believe that utilities have an incentive to misreport their costs and sales to justify a higher rate?
Alabama	The staff conducts an annual rate review plus smaller quarterly reviews that tend to identify any weaknesses in a budget. However, there has to be a certain amount of trust and rapport involved; (a) RSE provides for quarterly rate adjustments; these quarterly points of test can only yield no change or downward adjustments, (b) We have no evidence nor do we believe that gas utilities misreport costs or sales.
Connecticut	(a) Discovery through audit, interrogatories, cross-examination as well as orders to utilities for follow up reporting post the final Decision, (b) There are always differences of opinions regarding forecasts; all parties have different motivations as to how conservative or accurate any particular forecast may be.
Florida	(a) See *Response 2(a)* above, (b) No.
Illinois	(a) If the Commission finds that the cost forecast includes unreasonable or imprudent costs, the costs are excluded from the requested revenue requirement, (b) Unable to answer.
Kentucky	(a) See *Responses 3-5*, (b) Not just a result of using FTY.
Michigan	(a) Cannot speak for the Commission, but the objective (and process) of rate cases is to aid in determining what is reasonable, (b) Can't speak for the Commission.
Minnesota	(a) Rate cases are referred to the state's Office of Administrative Hearings for a contested case proceeding in which the reasonableness and prudence of the company's costs and proposed rates are evaluated and tested before being authorized by the Commission, (b) No more so than would normally be expected. The Commission believes its existing processes protect ratepayers.
Mississippi	(a) We require a look-back, (b) Yes.

State	8. How does your commission determine that the cost forecasts reflect prudent utility management? a. What actions has the commission taken in assuring that customers are not paying for unreasonable or imprudent costs? b. Does your commission believe that utilities have an incentive to misreport their costs and sales to justify a higher rate?
New York	(a) Staff performs a full audit of the HTY and a thorough evaluation of the linking period and FTYs; moreover, staff analyzes the utility's cost control, procurement, and contracting processes and procedures; staff reviews capital projects and programs, monitors construction of major projects, and performs routine site visits; the utilities and Staff support their positions with testimony and exhibits, (b) a one-year litigated rate plan limits the incentive to inflate cost forecasts, and the impact is short lived because actual rate-year costs become the basis for the next test year; multi-year rate plan agreements limit the impact on erroneous cost forecasts with the use of earnings sharing mechanisms (ESM).
Oregon	Utilities have the burden of proof that the forecasts are reasonable. Oregon also operates under a "used and useful" statute that does not allow major investments to be placed in rates until they are "used and useful". Typically an audit is completed prior to costs being placed in rates.
Tennessee	Historical results provide great guidance and large variances indicate red flags. Still, management decisions are difficult and expensive to audit. One area that is of growing concern is the use of corporate service companies. Although one can audit the allocation methodology (between states), without auditing the underlying management decisions of the service company (staff levels, salaries….) that drive the costs, it is difficult to reach conclusions; (a) The Authority has ordered a few management audits resulting from rate cases; on the commodity side there are incentive plans for gas utilities to obtain the best commodity and transport rates or its consumers, (b) The reported costs are generally harder to misreport, but it happens; we hope it can be found; forecasts, however, can sometimes be extreme.
Utah	(a) The Commission relies on the record evidence in each general rate case or other rate setting proceeding and (b) The Commission has not undertaken a formal evaluation of this issue.

State	8. How does your commission determine that the cost forecasts reflect prudent utility management? a. What actions has the commission taken in assuring that customers are not paying for unreasonable or imprudent costs? b. Does your commission believe that utilities have an incentive to misreport their costs and sales to justify a higher rate?
Wisconsin	(a) Staff audit of the utility's application is one important step in that process. In addition, for large construction projects, the Commission requires a construction authorization or a Certificate of Public Convenience and Necessity whereby the utility needs authorization from the Commission before it can begin construction. The reasonableness of the estimated costs and prudence of the project are addressed in these proceedings, (b) The utilities are subject to external financial audits of their financial statements. There is the consideration that a utility would forecast its costs and revenues conservatively in order to increase the likelihood of meeting or exceeding its authorized ROE. We have seen differing approaches in this regard among the state's utilities. Some appear more prone than others to building in a cushion in their forecasts.
Wyoming	(a) Monitoring the earnings levels between rate cases (forecast versus actual) on an account-by-account basis, (b) Yes.

State	9. What adaptations did your commission make when first allowing utilities to file an FTY? a. Did the commission have to hire new staff and staff with different expertise? b. Did the commission have to devote less time to other rate-case matters?
Alabama	(a) No, (b) No
Connecticut	(a) No, (b) No.
Florida	(a) Unknown, but over time the overall composition of staff with certain areas of expertise or specialization may have evolved, (b) No.
Illinois	(a) The Commission required new staff to review the costs included in the requested revenue requirements to be designated as Certified Public Accountants, (b) No.
Kentucky	No specific adaptations were made; (a) No, (b) No.
Michigan	(a) Not for the FTY law, (b) No.
Minnesota	(a) Don't know - current staff did not work for the Commission when FTYs were first allowed, (b) Don't know - current staff did not work for the Commission when FTYs were first allowed.
Mississippi	(a) and (b) No.
New York	Generally, the Commission made no significant adaptations to (1) staffing levels or (2) reviewing other rate case matters when moving to FTYs. Staff transitioned from the use of historical, partial historical and partial forecast, to fully forecasted test years over several years; (a) No, (b) No.
Oregon	No adjustments were made as far as we can recall.
Tennessee	(a) I think the existing staff was used, but I am not sure; I know presently that we train new employees, (b) Not sure, and, like most Commissions, we try to evaluate and review all aspects of a rate case, which can be overwhelming; our first approach is to focus on large categories, e.g., salaries and wages, management services, capital budgets taxes…. ; I would not go as far to say that forecasting takes away time from our evaluation.

State	9. What adaptations did your commission make when first allowing utilities to file an FTY? a. Did the commission have to hire new staff and staff with different expertise? b. Did the commission have to devote less time to other rate-case matters?
Utah	The Commission established filing requirements through a rule for applications seeking use of an FTY, and required the electric utility to file variance reports in order to review forecasts after the fact; (a) No and (b) Yes.
Wisconsin	As stated above, the Commission has used a future test year approach for at least 35 years and there is no knowledge available regarding the transition to a future test year.
Wyoming	(a) No, (b) No.

State	10. Does your commission retrospectively compare the utility's forecasted costs allowed in rates with actual costs? a. If it does, what methodology does it use to measure the difference? b. Is there any evidence that a utility has consistently over-forecasted costs? c. If so, has your commission made adjustments to subsequent cost forecasts reflecting past forecasting errors?
Alabama	Yes; (a) We use trend and comparative analysis to compare year to year; the real answer here, however, is the quarterly true-ups, (b) Consistent givebacks under Rate RSE could be interpreted that way, but the givebacks tend to negate the usefulness of such an overstatement, (c) Yes.
Connecticut	(a) In subsequent rate cases or as the result of a utility that is exceeding its allowed ROE by one percentage point for six consecutive months (*Conn. Gen. Statute §16-19g*), (b) Yes, the Authority rarely accepts a company's forecasts without adjustment, (c) Past experience with any particular company is instructive when determining the appropriateness of any forecast.
Florida	No; the Commission, however, requires electric and gas utilities to submit an O&M benchmark analysis with rate case filings. The purpose of the O&M analysis is to test the reasonableness of the forecasted O&M expenses. If the forecasted expenses are higher than calculated under the benchmark methodology, the Commission requires the utility to provide justification for the variance.
Illinois	(a) The comparison of budgeted costs to actual costs is done in subsequent rate cases to determine the accuracy of a utility's forecasting system, (b) If there is evidence that a utility has consistently over-forecasted costs, an adjustment to the forecast will be proposed in a subsequent rate case, (c) Yes.
Kentucky	No; (b) No
Michigan	The Commission does not do so in any procedural setting.
Minnesota	Not on a routine basis at this time, (a), (b) and (c) Not applicable.

State	10. Does your commission retrospectively compare the utility's forecasted costs allowed in rates with actual costs? a. If it does, what methodology does it use to measure the difference? b. Is there any evidence that a utility has consistently over-forecasted costs? c. If so, has your commission made adjustments to subsequent cost forecasts reflecting past forecasting errors?
Mississippi	Yes; (a) A recalculation of the revenue requirement using historical figures, (b) No, (c) Not applicable.
New York	Yes. Staff performs a reconciliation of the test year with the previous rate year and reconciles the rate year with the linking period and test year to identify drivers in the rate increase requested. In addition, most major utilities have earnings sharing mechanisms (ESM) as part of multi-year rate plans which provide for a partial sharing of the effects of variances between rate case forecasts and actual results. The ESMs are reviewed and analyzed by Staff to determine major drivers of differences. In those instances where a major utility does not have a multi-year rate plan, Staff will routinely perform an after the fact reconciliation of the rate year forecasts with actual results; (a) Staff uses the reconciliation method to measure the difference. The reconciliation is a line-by-line comparison of the revenue-requirement income statement to identify major drivers of the difference in allowed vs. actual return on equity, (b) There is no evidence, which Staff is aware, that a utility has consistently over-forecasted costs, (c) In its evaluation of forecasts, Staff routinely looks for derivations and adjusts subsequent forecasts based on previous results.
Oregon	Yes, staff reviews the historical accuracy of forecasts.
Tennessee	The Authority does not formally do this, but Staff, on its own, reviews its forecasts with actual results, (a) We do not use a formal methodology, (b) Yes, in many instances; in one recent case a utility forecasted a certain number of employees that the Authority accepted in forecasting salaries and wages expense (and benefits); The utility never came close to hiring the number of employees it forecasted, (c) Past utility actions and performance are reviewed and taken into account.

State	10. Does your commission retrospectively compare the utility's forecasted costs allowed in rates with actual costs? a. If it does, what methodology does it use to measure the difference? b. Is there any evidence that a utility has consistently over-forecasted costs? c. If so, has your commission made adjustments to subsequent cost forecasts reflecting past forecasting errors?
Utah	Yes, in balancing account rate proceedings; (a) The method varies depending on the type of balancing account, (b) The Commission has not undertaken a formal evaluation of this issue, (c) Yes, as the energy balancing account and renewable energy certificate revenue credit balancing account both measure the difference between forecast and actual costs or revenue.
Wisconsin	(a) We often employ budget-to-actual analyses to see if a utility is consistently under- or over-forecasting specific areas. We also get monthly ROE reports that show earnings for the most recent 12 months. Material variances can then be investigated as to origin, (b) As noted in *Response 8(b)*, sometimes there is, (c) Yes, usually in the form of budget to actual adjustments.
Wyoming	Yes, staff conducts these analyses; (a) Actual versus forecast, trended over time, (b) Staff analyzes the forecasts on an account by account basis; these analyses have shown so far no pattern of over-forecasting for those utilities that have used forecasted test years; for most utilities, however, an FTY has not been used for a long period of time; many have only used it once, so far.

State	11. Does your commission retrospectively compare the utility's forecasted sales allowed in rates with actual sales? a. If it does, what methodology does it use to measure the difference? b. Is there any evidence that a utility has consistently under-forecasted sales? c. If so, has your commission made adjustments to subsequent sales forecasts reflecting past forecasting errors?
Alabama	Not as an isolated event, but sales are always a factor in what we are examining; (a) Not applicable, (b) No, (c) Not applicable.
Connecticut	(a) Infrequently in a rate increase application, a past forecast will be reviewed for accuracy to judge the reliability of projected forecasts, (b) No, (c) Not applicable.
Florida	Yes, but not to adjust rates for forecast inaccuracies; each year the utilities submit ten-year site plans (a type of integrated resource plan); as part of our evaluation, staff calculates historical forecast accuracies for the utilities, (a) A simple comparison of forecasted values for kWh, kW, and customers to actual values, (b) No; in fact in recent years, the trend across all Florida utilities has been to over-forecast, (c) No.
Illinois	The Commission does not typically compare forecasted sales allowed in rates with actual sales.
Kentucky	No; (b) No
Michigan	The Commission does not do so in any procedural setting.
Minnesota	Interveners in utility rate cases often make this comparison in their pleadings; (a) Utilities in Minnesota are required to file Jurisdictional Annual Reports each year, pursuant to Minn. Rules, 7825.4700 - 7825.5400; interveners often compare the data reported in these reports to the data filed in a rate case, (b) This is a case-by-case determination based on the merits of the forecast presented in the docket, (c) In one recent rate case, the Commission found that the forecasted sales data was unreliable and used the Company's actual sales data for the test year.
Mississippi	Yes; (a) Look-back and formulary rate plans, (b) No, (c) Not applicable.

State	11. Does your commission retrospectively compare the utility's forecasted sales allowed in rates with actual sales? a. If it does, what methodology does it use to measure the difference? b. Is there any evidence that a utility has consistently under-forecasted sales? c. If so, has your commission made adjustments to subsequent sales forecasts reflecting past forecasting errors?
New York	Yes, as part of the calculation of Revenue Decoupling Mechanism (RDM) billing adjustments; (a) Staff uses the reconciliation method to measure the difference, (b) There is no evidence, which Staff is aware, that a utility has consistently under-forecasted sales; regardless, under the RDM approaches adopted for the major utilities, sales forecast issues are largely moot, (c) In its evaluation of forecasts, Staff routinely looks for deviations between past actual and past forecasts and adjusts forecasts based on previous results.
Oregon	Yes, staff reviews the accuracy of past forecasts.
Tennessee	The Authority does not formally do this, but Staff, on its own, reviews its forecasts with actual results. We receive information from utilities via required monthly reports; (a) There is no formal methodology, (b) Generally yes, (c) The revenue side is easier to forecast because you have so much historical data (customers, usage…); this makes it more difficult for a utility to state that revenues will decline by a large amount when revenues have been increasing for the past ten years; expenses, however, are more difficult to forecast due to more unknowns such as inflation.
Utah	Yes, this comparison is provided in the electric utility's energy balancing account proceeding; (a) The Commission relies on a simple comparison of actual sales to test year sales, (b) The Commission has not undertaken a formal evaluation of this issue, (c) Only with respect to the balancing account, as noted above.
Wisconsin	(a) Yes, it does. It compares actual weather-normalized sales to the utility's filed forecast over several years, (b) Sometimes there is, (c) although staff normally prepares its own sales forecast, it is useful to know how the utility's filed forecasts compare to actual results.
Wyoming	Yes; (a) Comparison analysis (forecast versus actual) over several years with comparisons of projections and assumptions to actual results, (b) No.

State	12. If your commission requires a project to be "used and useful" before a utility can recover any of its costs from its customers, how does this mandate reconcile with an FTY? a. Does your commission, for example, exclude the project cost as part of the revenue requirement in a general rate case? b. Does your commission, as an alternative, add the project cost to rates only after (1) the project comes on line and (2) the commission has determined the cost to be prudent, in a separate proceeding?
Alabama	Projects that are not considered "used and useful" can be excluded from the budget; (a) Not applicable, (b) Not applicable.
Connecticut	(a) Projects scheduled for completion by the mid-point of the rate year would be part of the revenue requirements; for a multi-year rate plan, projects scheduled for completion would be included in revenue requirements for the year of the completion, (b) In the past, Connecticut has allowed for limited reopened proceedings to include projects that were not incorporated in single-year rate Decisions.
Florida	Electric utilities are required to file for a need determination for proposed power plants and transmission lines. If approved, construction of the facilities is deemed appropriate. The revenue requirement impact is based on the in-service date of the facilities. The Commission has approved the use of step increases to time the rate increase to the in-service date, (b) These decisions would usually be made independent of the decision to use an FTY. If the project was scheduled to be in service during the FTY, in whole or in part, it likely would be factored into test year revenue requirements. Such decisions would be highly case-specific, however.
Illinois	Only projects that would be "used and useful" when put into service in the test year are included in rate base; (a) No, (b) No.
Kentucky	The Commission does not require a project to be "used and useful".
Michigan	(a) and (b) The Commission uses its discretion based on record evidence.

State	12. If your commission requires a project to be "used and useful" before a utility can recover any of its costs from its customers, how does this mandate reconcile with an FTY? a. Does your commission, for example, exclude the project cost as part of the revenue requirement in a general rate case? b. Does your commission, as an alternative, add the project cost to rates only after (1) the project comes on line and (2) the commission has determined the cost to be prudent, in a separate proceeding?
Minnesota	(a) No; the Commission has allowed projects forecasted to be completed and in-service, for example, by the end of, the forecasted test year to be included in the test-year rate base; also, Minn. Stat. 216B.16, subd. 6a, Construction work in progress, authorizes the inclusion of construction work in progress (CWIP) with an offset for an allowance for funds used during construction (AFUDC) in determining a utilities' revenue requirement, (b) Not applicable.
Mississippi	The project should become used and useful during the rate period; (a) It would be excluded only if it would not be used and useful during the rate period, (b) No, at least, not in every case; for example, there is a proposal currently before the Commission to implement rates for Mississippi Power Company's Kemper Plant to begin recovery before the commercial operation date of the plant and before a final determination has been made; the Commission agreed in principle to such an approach in a Settlement Agreement, but the implementation is currently under review and could be rejected by the Commission.

State	**12. If your commission requires a project to be "used and useful" before a utility can recover any of its costs from its customers, how does this mandate reconcile with an FTY?** **a. Does your commission, for example, exclude the project cost as part of the revenue requirement in a general rate case?** **b. Does your commission, as an alternative, add the project cost to rates only after (1) the project comes on line and (2) the commission has determined the cost to be prudent, in a separate proceeding?**
New York	Capital projects must be in-service before the utility can place them in rate base. In general, this in-service requirement operates in the same way as a "used and useful" standard. In New York, projects which meet this "in-service" test are eligible to recover the associated return on and return of capital in rates. Because New York rate cases use FTYs, projections of capital project costs and in-service dates must be made by the utilities and evaluated by the Commission; (a) Not routinely, as noted above, typically projections of major (and minor) capital project costs and in-service dates are used to shape the FTY rate base; there are exceptions, however. Concerns about a major project based, for example, on its cost, need, justification, or schedule may prompt the Commission to undertake a prudence review. If a prudence review is done, some or all of the project costs may be excluded from rate base and, therefore, from the utility's revenue requirement until the determination on prudence is made, (b) As noted in *Response 12 (a)*, if a project were carved out for a separate prudence review, some or all of the project's costs may be excluded from rate base and revenue requirements while the prudence review is being completed.
Oregon	Yes, the "used and useful" statute is *ORS 757.355*.
Tennessee	Staff reviews all projects and seeks detailed explanations for their necessity. Staff also reviews cost projections, amounts capitalized and so forth; (a) If a project is found not to meet the "used and useful" test the Authority could exclude the project (of course circumstances as to why it became unusable would play a big part in that assessment), (b) Rates for projects are generally included in base rates established in rate cases. Amounts are recorded in plant in service accounts, CWIP and AFDUC. Recently, however, the use of trackers has been considered or the deferral of project costs for later recovery has been allowed. For example, utilities, upon request, have been allowed to defer costs associated with transmission and distribution integrity management programs and then later seek recovery when final amounts are known.

State	**12. If your commission requires a project to be "used and useful" before a utility can recover any of its costs from its customers, how does this mandate reconcile with an FTY?** **a. Does your commission, for example, exclude the project cost as part of the revenue requirement in a general rate case?** **b. Does your commission, as an alternative, add the project cost to rates only after (1) the project comes on line and (2) the commission has determined the cost to be prudent, in a separate proceeding?**
Utah	Rates must be "just and reasonable" for any cost recovery (see Utah Code Annotated (UCA) 54-4-4). The extent to which public utility plant is "used or to be used" (see *UCA 54-2-1(8)*) and the costs "just and reasonable" is the subject of rate recovery proceedings, regardless of test year. In addition to seeking cost recovery in a general rate case, Utah law allows public utilities to seek cost recovery of major plant additions outside of a general rate case, provided the projected in-service date of additions is within 18 months of the date of a final general rate case order (see *UCA 54-7-13.4*); (a) No, (b) No.
Wisconsin	(b) For large construction projects, the Commission requires a construction authorization or a Certificate of Public Convenience and Necessity whereby the utility needs authorization from the Commission before it can begin construction. The prudence determination is made during that authorization process. Regarding costs being included in rates, the Commission often provides a 50 percent current return on Construction Work in Progress (CWIP). Carrying costs on CWIP are either recovered currently or are recorded as an Allowance for Funds Used During Construction (AFUDC). If the timing of construction expenditures is particularly uncertain, the Commission may authorize the utility to record 100 percent AFUDC on the associated CWIP. Alternatively, if the utility is constructing a power plant or something that requires an unusually large amount of capital, the Commission may authorize a 100 percent current return on CWIP to improve the utility's cash flow during construction. Also, the Commission has implemented two-step rate changes in a single proceeding. When the large project receives its certificate, rates then increase.
Wyoming	Through stipulations, rate basing of capital projects has been included at the time it was expected to go into service through phase-in rates.

State	13. Does your commission make any true-ups or post-adjustments to rates when a utility's actual costs or sales depart from their forecasts? If it does, what are the necessary conditions?
Alabama	If the projected return at the following September 30 (end of the Fiscal Year) is above the allowed ROE, rates must be reduced to bring them to the adjusting point.
Connecticut	In the past, the Authority allowed tracking mechanisms for items such as pension expense. Recently, Connecticut enacted full decoupling for gas, water and electric utilities. While the mechanics slightly differs among utilities, they all employ annual revenue true-ups. There are no conditions for gas and water. Their over- or under-billings are trued-up to the revenue authorized in their last rate increase application. The mechanics for gas utilities are still being decided by the Authority, but ultimately gas also will include an annual true-up mechanism.
Florida	No
Illinois	No
Kentucky	No
Michigan	The Commission has, in certain instances, approved a revenue decoupling mechanism which would, to some degree, be impacted by sales.
Minnesota	No
Mississippi	Yes, the utility's actual earned ROI or ROE is compared to a range of no change calculated using the utility's approved ROE and ROI. If the actual return exceeds a certain level (e.g. 100 basis points above or below the approved ROI), an adjustment is made.
New York	Yes, for delivery revenues subject to an RDM, forecasted annual revenues are trued up with actual revenues. In a one-year litigated case, several expense categories can be subject to true-up, such as pension and OPEBs, environmental costs, storm costs, carrying costs associated with plant balances (downward only), and tree trimming (downward only). Multi-year rate plans may include additional true-ups, such as for property taxes and tax law changes. These reconciliations are done only if provided for in the Commission decision setting the rates.

State	13. Does your commission make any true-ups or post-adjustments to rates when a utility's actual costs or sales depart from their forecasts? If it does, what are the necessary conditions?
Oregon	Power cost adjustments and decoupling adjustments are the main ways of making adjustments.
Tennessee	Although we generally do not, we do have an experimental program in place for Chattanooga Gas Company for the revenue side of business. It attempts to keep revenues per customer constant (recognizing the decline in usage per customer) by adjusting rates up or down to maintain a predetermined revenue benchmark per customer. The Authority is currently reviewing that mechanism in a contested case proceeding.
Utah	Yes, the energy balancing account and renewable energy certificate revenue credit balancing account proceedings provide a recovery mechanism for differences between certain forecasts and actual cost/revenue.
Wisconsin	The only time the Commission authorizes a true-up or post-adjustment to rates is when a utility has authority or the Commission issues an order to defer costs or revenues associated with a particular activity. Without such authority or order, such adjustments would be considered retroactive ratemaking, which is prohibited in Wisconsin. The Commission can always bring a utility in for a rate review if earnings are too high or low, with the option, when earnings appear too high, to make rates subject to refund from that time on, pending review of financial information. Conversely, a utility has the ability to file for rate review at any time.
Wyoming	No.

State	14. From your experience, what would you identify as key factors in assuring utility customers that rates based on an FTY are "just and reasonable"?
Alabama	The true-up mechanism assures that rates, revenue, and return are all within the allowed range.
Connecticut	The discovery phase is obviously the most important factor in the process of deciding what is "just and reasonable". Through audit, interrogatories, cross-examination and subsequent requests for information, the Company is held to a certain standard of proving its request and having the request withstand scrutiny. The authority monitors utility performance post final Decision through order compliance for project completion and overall capital spending, as well as utility reported ROEs throughout the in-between rate case period.
Florida	See *Response 2(a)* above.
Illinois	The additional information (See *Response 4*) that is required when a future test year is used provides the assurances that rates based on a FTY are "just and reasonable".
Kentucky	To a great extent, the key is the sophistication of a utility's forecasting capabilities.
Michigan	A rate case with sufficient evidence and participation.
Minnesota	Reliability of the underlying sales and weather data and the methodology used to conduct the forecast.
Mississippi	I would allow an FTY only in general rate cases if pure projections are used in which the projections can be fully vetted by experts. I would also provide for regular earnings reviews.
New York	The key factors in assuring utility customers that rates based on a FTY are "just and reasonable" are Staff's expertise and the rate setting process. Staff consists of experienced professionals with background in accounting, economics, engineering, and law. The rate setting process is a rigorous, comprehensive process that is presided over by an Administrative Law Judge.

State	14. From your experience, what would you identify as key factors in assuring utility customers that rates based on an FTY are "just and reasonable"?
Oregon	Using a sound and well reasoned record of evidence by which to base decisions, and using an open process with public input are keys to having rates that are just and reasonable.
Tennessee	In establishing rates on future test years, the Authority takes into account all known and measurable changes for the historical period, then ascertains from the utility all changes anticipated in the foreseeable future. Since rates will continue into the future, it makes sense to match those rates with future costs of service rather than historical costs.
Utah	The Commission has not undertaken a formal review of this issue.
Wisconsin	(1) Utility rate applications are audited by Commission staff, (2) Commission staff compares forecasts to historical experience, (3) Commission staff reviews the ongoing actual return on equity over time compared to authorized, (4) Good, professional communication between Commission staff, the utilities, and interveners and (5) Commission staff objectivity, both real and perceived, greatly enhances the process.
Wyoming	Analyses of the forecasts, including third party forecasts, assumptions, and so forth during rate cases, as well as actual versus forecast analyses after the rate-effective period.