

Reducing Rate Shocks



Original-cost ratemaking
doesn't suit the challenges
facing utilities today.

BY A. LAWRENCE KOLBE, PHILIP Q HANSER, BIN ZHOU



lectric, gas, and water utilities will need to invest hundreds of billions of dollars in coming years, much of it on environmental, efficiency, or asset replacement measures that increase costs but leave demand unchanged or even reduced. Under traditional regulation, this is a recipe for rate shocks that will create problems for utilities, customers, and regulators alike. It's time for a fresh look at alternatives to traditional original cost regulation that mitigate rate shocks while still making utility investors whole.

Three alternatives have worked successfully in other contexts.

Original vs. Current Cost

The debate between original-cost and current-cost rate bases has a long history. The issue was temporarily resolved in favor of original cost—either directly or via fair-value rate base procedures that replicated the original cost outcome—by the U.S. Supreme Court's 1944 *Hope* decision.¹ The debate flared anew in the 1972 *Williams* dispute before the Interstate Commerce Commission (ICC), a debate inherited by the Federal Energy Regulatory Commission (FERC) when it began operations in 1977 and finally resolved with FERC Opinion 154-B in 1985.² Opinion 154-B instead adopted original cost trended for inflation (designated trended original cost, or TOC) for the equity portion of oil pipeline rate bases. TOC was chosen in part because the ICC had used a form of fair value rate base that wasn't original cost by another name, so a switch to original cost (OC) would take billions of dollars of oil pipeline property without compensation.³ Extensive competition in the oil pipeline industry also played an important role, however, since OC isn't well suited to competitive industries. Competitive prices are based on current values, not historical book values.

While high inflation fears have receded in the U.S. for the moment, non-original cost forms of ratemaking in addition to TOC, particularly levelized rates—*i.e.*, rates that stay fixed in nominal dollars—have gradually gained wide acceptance

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holdouts still hewing strongly to OC.⁴ Nevertheless, massive future investment requirements make the time ripe for a reexamination of the OC mechanism. Despite favorable capital market conditions—particularly very low interest rates—these investments will materially affect the utilities' financial health, funding availability, and rates. Innovative approaches are needed to maintain utilities' credit worthiness and mitigate the resulting rate shocks.

To cope with such challenges, various measures have been applied—such as mergers and acquisitions, access to tax-exempt or government-guaranteed funding, the addition of construction work in progress (CWIP) to the rate base, deferred regulatory assets, and automatic cost riders. Notwithstanding these efforts, OC ratemaking for lumpy investments—*i.e.*, those that are large relative to the existing rate base—not only leads to material

for FERC-regulated natural gas pipelines and electric transmission. Alternatives to OC also are used by independent power producers, renewable energy producers, and utility planners responsible for generation assets. In all of these cases, competition can be an important driver.

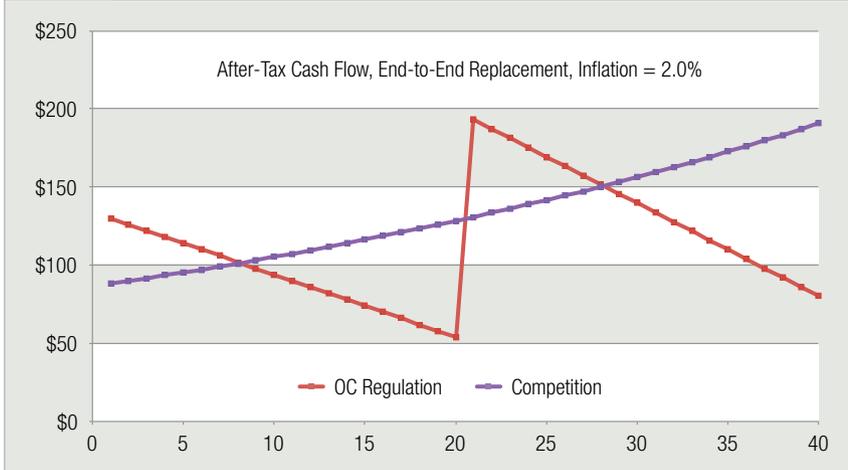
Integrated electric utilities, electricity and gas local distribution companies (LDC), and water companies remain the only regulated

1. *Federal Power Commission et al. v. Hope Natural Gas Co.*, 320 U.S. 591; 64 S. Ct. 281; 88 L. Ed. 333; 1944 U.S. LEXIS 1204.
2. *Williams Pipe Line Co.*, Docket Nos. OR79-1-000 and 022 (Phase I) Opinion No. 154-B; *Opinion and Order on Remand*, U.S. Federal Energy Regulatory Commission, June 28, 1985.
3. In the years after TOC was proposed and adopted, it became common to refer to original cost as "DOC," for "depreciated original cost," but this is a misnomer. Both TOC and OC rate bases are depreciated, although in different manners. We therefore retain the abbreviations "OC" and "TOC," which were used in the testimony by Prof. Stewart C. Myers that first recommended TOC to the FERC in the *Williams* proceeding. (Author Kolbe assisted Myers in developing this testimony.)

4. Several factors might have contributed to alternative methods' lack of penetration for these entities. First, these companies tend to be natural or statutory monopolies. There is no competition to speak of, hence no pressure for the utilities to adopt TOC or levelized rates. Second, regulatory commissions tend not to change unless someone can demonstrate a real need. Both affected parties and regulatory agencies must invest time and effort to change prior practice, and such investments are unlikely to happen unless badly needed. Third, pipelines and transmission lines often consist of discrete investments, while electric and gas distribution systems and water companies have traditionally tended to have more continuous investments and a smoother profile of investments by vintage. The distortions due to OC-based pricing for any given asset are diminished for companies with smooth investment profiles. Lastly, since capital costs for electric and gas LDCs represent a relatively small proportion of the final electricity or gas prices, the OC-based distortions may not have registered.

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FIG. 1 COMPETITIVE CAPITAL CHARGES VS. OC CAPITAL CHARGES



rate hikes in the short and medium terms, but also provides perverse incentives for utilities to reject energy-efficient but capital-intensive projects that would result in large rate hikes under OC. Levelized rates, TOC, or similar approaches are ready solutions that could have an immediate positive effect on consumer rates and long-term energy efficiency. Such a change in methodology also could help to accelerate capital investment and provide an economic stimulus to the economy.

Investment Without Growth

Companies in the electricity, natural gas, and water industries face potential problems.

In the electric power industry, concerns about global climate change and the need for greater energy security are expected to bring about an ambitious and costly upgrade to U.S. electricity utility infrastructure, without increasing electricity demand. To the contrary, the industry focus on more energy-efficient products and demand response programs will reduce demand and magnify the effect on rates. Various forecasts of electricity utility capital expenditures exist. For example, the Edison Electric Institute recently predicted that the industry needs to spend about \$80 billion each year on infrastructure, approximately double the amount in 2004.^{5,6} In response to environmental regulations and to diversify its resource portfolio, the industry also will have to make major changes in its fuel sources and generating plants. In some cases new transmission capacity will be needed.⁷ Public entities such as Bonneville Power Administration and Western Power Administration also are expected to upgrade

their infrastructure materially.⁸

The challenges aren't shared evenly among electric utilities. Companies with larger and older coal fleets face significant environmental retrofit costs. Companies near transmission constraints, or without renewable resources, must pay higher costs. The requirements for load-reducing energy efficiency and demand response programs vary by state as well. Environmental compliance cost and infrastructure upgrades easily could dwarf the remaining rate bases of small to medium-sized utilities.

Slow load growth worsens the rate effect of these investments. Load growth

has been slowed by the economy and will probably remain so. Forecasted 20-year growth rates in electricity start from a base that is only slightly above 1 percent annually. Energy efficiency and demand response programs reduce that rate, possibly even to a negative value.⁹

The predictable result of high capital expenditures and slow load growth—rate shock—has already resulted in complaints and investigations from state regulators and consumer groups. For example, AEP's Kentucky Power in February 2012 proposed a \$940 million scrubber project at its Big Sandy Plant to reduce sulfur-dioxide emissions. The project would cause rates to increase by about 31 percent for customers in 22 of the poorest counties in the commonwealth. In response to ratepayer objections, the utility chose to withdraw its request in May 2012.¹⁰

Natural gas LDCs face similar problems. They are under federal pressure to accelerate upgrades of existing infrastructure for safety reasons.¹¹ At the same time, load growth is slowing and the potential for operating efficiency gains has fallen.¹² The result is the same: potential rate shock.

Likewise, cost estimates for required investments in the water industry range from hundreds of billions to a trillion dollars by 2035, with a potential for "catastrophic failures ... a ticking time bomb waiting for a place to happen."¹³ Note that only a small part of the water industry is investor-owned. However, rate-setting

5. "Electricity: The Future Starts Here," Thomas Kuhn, Edison Electric Institute Wall Street Briefing, Feb. 8, 2012.

6. Another example is a Brattle study for the Edison Foundation "Transforming America's Power Industry," 2008, which foresees about \$1 trillion in non-generation capital expenditures by the industry between 2010 and 2030.

7. Peter Fox-Penner, *Smart Power: Climate Change, The Smart Grid, and The Future of Electric Utilities*, Island Press, Washington, D.C., 2009.

8. Moody's, "US DOE's Electricity Grid Plan Is Credit Positive for Power Marketing Administrations," March 26, 2012.

9. "Demand Response & Energy Efficiency: The Long View," by Ahmad Faruqi, 2010.

10. Reuters, "Update 1-AEP drops scrubber request for Big Sandy coal unit," May 30, 2012. See also "Industry in Transition," interview with AEP CEO Nicholas Akins, by Michael T. Burr, *Public Utilities Fortnightly*, June 2013.

11. Yardley Associates, "Gas Distribution Infrastructure: Pipeline Replacement and Upgrades," prepared for the American Gas Foundation, July 2012, p. 7.

12. *Ibid.*, p. 13.

13. Black & Veatch, "2012 Strategic Directions for the U.S. Water Utility Industry," 2012.

strategies that apply mostly to investor-owned utilities also could be adapted to publicly owned entities, at least in part.

In the face of such massive investment costs, utilities must focus on mechanisms to make a fair return politically feasible, while still providing adequate liquidity, cash flows, and credit ratings. Mechanisms used to soften the effect include increasing the frequency of filing rate cases,¹⁴ industry consolidation,¹⁵ accessing tax-exempt funding,¹⁶ and putting CWIP into the rate base. The gas industry's mitigation approaches include infrastructure cost trackers, fixed base-rate surcharges, and deferred regulatory assets between rate cases.¹⁷

The challenges ahead, however, call for more fundamental changes.

Ratemaking Mechanisms

All of the ratemaking mechanisms in this analysis provide a fair opportunity to earn the return on and of capital in theory, but their implications for customers' rates can differ greatly. In particular, OC can generate rate shocks for lumpy capital investments, disproportionately burdening the early consumers and severely distorting the price signals needed for efficient resource allocation.¹⁸

Most utility investments must be recovered over many years through annual capital charges. Capital charges have two main components: a return on capital (*i.e.*, a rate of return on the investment), and a return of capital (*i.e.*, a recovery of the amount invested). A useful analogy is a home mortgage. Part of each month's payment is interest to the bank (return on capital), and part reduces the outstanding principal balance (return of capital).

The two key issues for the determination of the relevant annual capital charge are: 1) what rate of return should be used; and 2) what pattern of capital charges should be applied over the life of an investment? The required rate of return on capital is known as the "cost of capital," a standard topic in rate cases. This analysis assumes this rate has already been determined and focuses instead on the appropriate pattern of capital charges over the asset's life. For simplicity, it ignores taxes, rate structure issues, and any differences in the cost of capital.

The general task is to determine how to recover the cost of an investment through a series of expected capital charges over its life. However, an effectively infinite number of annual capital recovery patterns over the life of an asset could, if the market permitted, fully recover the capital amount invested.

Original-cost ratemaking is incompatible with competition, particularly for lumpy investments.

Which of those patterns makes the most economic sense is the fundamental issue. The answer depends on the circumstances, but a useful starting point is the pattern that replicates the capital charge implicit in competitive prices.

An instructive analogy: the price of tomatoes depends neither on the age of the tractor nor when the farmer bought the land on which they grow.¹⁹ Therefore, the annual capital charge implicit in competitive prices

is independent of the ages of the assets used by any particular competitor. This is illustrated in Fig. 1, which contrasts the competitive pattern of capital charges in equilibrium with that under OC for end-to-end replacement of a single asset.

The figure contrasts the annual capital charges with end-to-end replacement of 20-year assets under: 1) competition and 2) OC regulation with straight-line depreciation, both under the rather optimistic assumption that inflation remains at a modest 2 percent for the entire 40-year period. Both lines provide fair recovery of and on capital over the life of each asset, but only the competition line replicates the capital charges that are implicit in competitive prices in equilibrium. That is, only the competition line satisfies the tomatoes theorem.²⁰

The competitive capital charge in any year simply grows at the rate of inflation and is independent of the age of company's assets. As a result, end-to-end replacement of assets happens smoothly, without discontinuities. Any competitor making a

14. The number of rate case filings jumped from 42 in 2008 to 66 in 2009, 55 in 2010 and 50 in 2011. (EEI Rate Case Summary, Q4 2011, at p.1.)

15. For example, Duke and Progress Energy listed three drivers for utility consolidation: 1) competition for capital to fund major capital investments required to replace aging infrastructure and comply with increasing stringent environmental regulations; 2) increasing customer rates in an uncertain economic environment; and 3) need for scale benefits and continuing productivity gains. See Duke-Progress Energy presentation to EEI Financial Conference, Nov. 8, 2011.

16. Wisconsin Electric Power availed itself of Wisconsin's Environmental Trust Funding mechanism to secure approximately \$430 million in environmental financing for one of its past projects. Similar mechanisms have been used in West Virginia and North Carolina.

17. Yardley Associates, *op cit.*, pp. 15-18.

18. For general references on the issues, please see S.C. Myers, A.L. Kolbe, and W.B. Tye, "Regulation and Capital Formation in the Oil Pipeline Industry," *Transportation Journal*, Vol. 23, No. 4 (Summer, 1984), pp. 25-49 (MKT 1); S.C. Myers, A.L. Kolbe, and W.B. Tye, "Inflation and Rate of Return Regulation," *Research in Transportation Regulation*, Vol. 2 (1985), pp. 83-119 (MKT 2); A.L. Kolbe, "How Can Regulated Rates—and Companies—Survive Competition?" *Public Utilities Fortnightly*, April 4, 1985, pp. 1-7; and W.B. Tye and A.L. Kolbe, "Optimal Time Structures for Regulated Industries," *Transportation Practitioners Journal*, Vol. 59, No. 2 (Winter 1992), pp. 176-196.

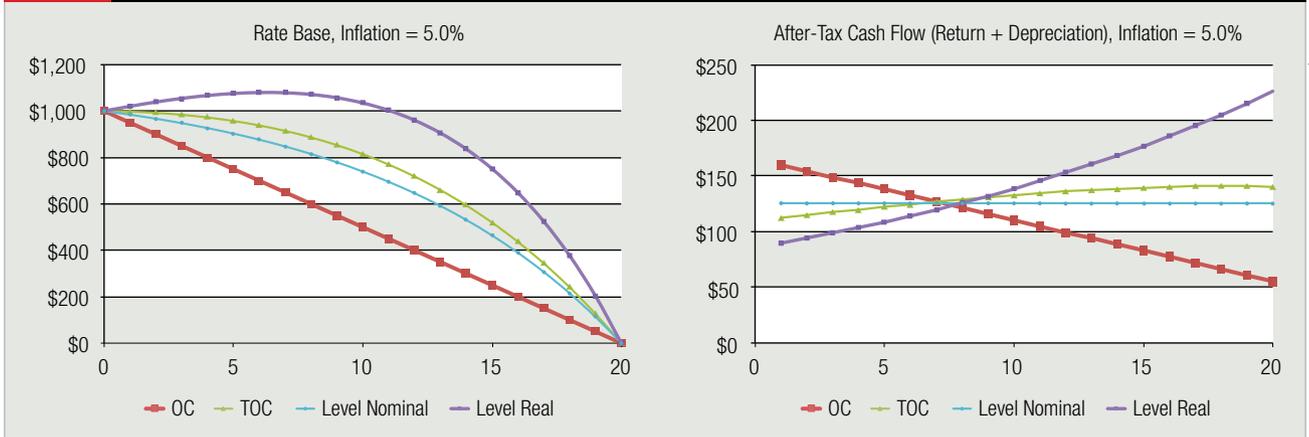
19. The authors acknowledge Prof. Myers for this analogy, sometimes called the "tomatoes theorem."

20. Note that competitive prices are level in real terms, but capital charges won't be when the asset's output varies from year to year. In that case, level real capital charges per unit of production are the competitive standard of comparison, which can readily be calculated. See particularly Kolbe, *op. cit.*

FIG. 2

RATE BASE AND CAPITAL CHARGE UNDER ALTERNATIVE RATEMAKING METHODOLOGIES

Source: The Brattle Group



replacement decision in the middle of this company’s life (say in year 10) would charge exactly the same nominal amount in years 11 to 30 on its new asset as the company in the figure does. In contrast, a new investment under OC in year 10 would produce a fresh rate spike at that point.²¹

Thus, OC is simply incompatible with competition, particularly with lumpy investments. If a firm faces both OC regulation and competition, it risks having its earnings restrained by competition in the early years of major new investments, while regulation restrains its rates in the later years. Moreover, even regulated companies without competition face rate shocks from lumpy new investments that are both unnecessary and without analogues in other markets. Fortunately, alternatives to the OC pattern of capital charges exist that can mitigate or entirely avoid such problems.

OC remains the most widely used form of regulation in North America, but elsewhere regulation based on prices trended for inflation less a productivity adjustment, or “RPI – X” is common.²² Additionally, TOC has been used explicitly for oil pipeline equity, and level nominal capital charges—which are akin to home mortgage payments—are often used for new projects, such as gas pipelines that face some level of competition from established pipelines.

This experience leads naturally to four benchmark methodologies: OC, TOC, level nominal rates, and level real rates (*i.e.*, rates that are level in dollars of constant purchasing power). The “competition” line in Figure 1 depicts level real capital charges, since competitive prices on average grow at the rate of inflation, although the rate in individual markets differs.

21. Under OC—and possibly under level nominal rates, a method discussed below—changes in the rate of inflation affect the nominal cost of capital and, in principle, also cause discontinuities in rate levels. In contrast, a change in the rate of inflation simply changes the slope of the lines under competition and TOC without a discontinuity.

22. This regulatory approach began in the U.K., with “RPI” representing the “retail price index” and “X” the productivity adjustment.

Figure 2 depicts the time patterns of rate bases and capital charges under these four methodologies, assuming a constant 5-percent inflation rate and 30-year asset lives.²³ OC exhibits the fastest capital recovery among the three, shown as the most rapid reduction in rate base (left figure) and highest initial capital charges (right figure). Under these assumptions, level nominal rates produce the next-fastest capital recovery and next-highest capital charges in the early years, but higher capital charges than OC in the later years. TOC using real straight-line depreciation produces still slower rate base reductions, as well as lower capital charges than level nominal rates in the early years and higher ones later. Level real rates recover capital most slowly and have the lowest initial capital charges. Note that despite the different patterns over time, the present values of the cash flows generated over the life of the investment are identical under all four approaches and equal the initial \$1,000 investment in each case.

Environmental compliance cost and infrastructure upgrades could dwarf the remaining rate bases of small to medium-sized utilities.

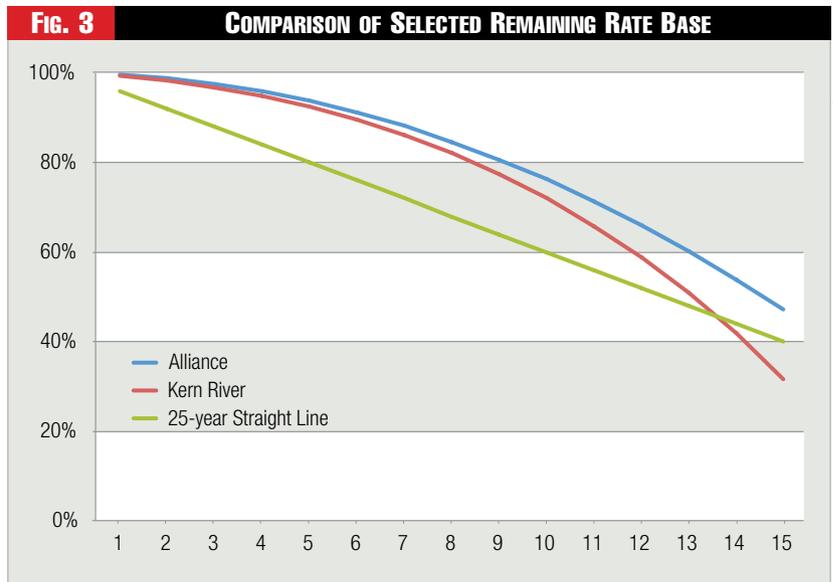
Alternatives to OC do work in practice. As noted, a form of TOC was adopted for oil pipelines in the FERC’s Opinion

23. Although inflation has been modest in recent years, there’s no reason to expect this always to be the case. The 5 percent rate might seem high at present—or perhaps not, for readers worried about the Fed’s increase in the money supply in recent years. However, it better illustrates the differences among the methods than a smaller rate would. The figures depict an investment of \$1,000 time-zero dollars, as shown at the start of the rate base graph. The overall after-tax rate of return (*i.e.*, on total assets, not just equity) is 11 percent, corresponding to a 5 percent inflation rate and a real overall cost of capital = $[(1.11/1.05) - 1] = 5.7$ percent. The basis of this figure, including the formulas used, is in an Appendix available by request from the authors.

154-B in 1985, in part because of the level of competition in that industry. Subsequently, in response to the Energy Policy Act of 1992, the FERC streamlined regulation for most oil pipelines by simply indexing their rates for inflation.²⁴ This approach is generally consistent with the RPI – X approach developed in the UK.

While gas pipelines were administered in a way that minimized competition when the FERC was created, they have since become far more subject to competition. The FERC generally has permitted more flexibility, for example, via negotiated rates for new pipelines. Level nominal gas pipeline rates are now commonplace. For example, the FERC allowed Kern River Pipeline (1992 in service), Mojave Pipeline (1997 in service),²⁵ and Portland Natural Gas Transmission (2002 in service)²⁶ to use some form of levelized rates. For these new pipelines, the carrier and shippers often negotiate a long-term shipping contract over a large portion of the capacity, which also makes the financing feasible. Typically, a high percentage, say 70 percent, of the invested capital is recovered over a 15-year contract period, roughly corresponding to debt schedules as well. The exact method to derive the capital recovery pattern is negotiated between the parties and sometimes subject to regulatory scrutiny.²⁷ Figure 3 plots the resulting rate bases from Alliance Pipeline and Kern River against 25-year straight line depreciation. The two gas pipelines' levelized rates have slower depreciation rates in the early years.

FERC explained that, “[t]he benefits of using a levelized methodology are that shippers benefit from rates being lower during the early years after the project goes into service, than they would be under a traditional rate design. The pipeline benefits by securing construction loans as well as competing with other well established pipelines in the area charging low rates,” and “this levelization keeps initial rates from being prohibitive to pipeline



customers and promotes the construction of new pipelines.”²⁸

More recently, electric transmission companies also have applied for and been granted levelized rates. Citizen Energy’s new transmission line is such an example. In its decision, the FERC concluded that “Citizens proposed levelized approach is reasonable in the context of rate recovery for a single asset and will ensure a constant revenue stream.”²⁹

The price of tomatoes depends neither on the age of the tractor nor when the farmer bought the land.

Alternative rate profiles also have been used extensively in electricity sales and power plant planning studies. For example, independent power producers often sell electricity under long-term power purchase and sales agreements (PPA), with electricity prices indexed to the inflation rate. PPAs for wind and solar power usually have this feature as well. In studies of different generation technologies, analysts, government agencies such as Energy Information Administration (EIA), and academic researchers typically rely on levelized rates to evaluate the merits of different technologies.³⁰

Over the years, objections have been raised to TOC as an alternative to traditional OC. Many of these objections appear in a 1991 *Energy Law Journal* article by Kilpatrick and Melvin

24. Information on the history and nature of oil pipeline regulation may be found at www.ferc.gov/industries/oil.asp.

25. *Mojave Pipeline Co.*, 81 FERC ¶ 61,150 (1997).

26. *Kern River Gas Transmission Co.*, 114 FERC ¶ 63,031 (ALJ Initial Decision), *aff'd in part, rev'd in part, & modified*, Opinion No. 486, 117 FERC ¶ 61,077 (2006), *order on reh'g and establishing procedures*, Opinion No. 486-A, 123 FERC ¶ 61,056 (2008), *order on reh'g*, Opinion No. 486-B, 126 FERC ¶ 61,034 (2009), *order on reh'g and establishing procedures*, Opinion No. 486-C, 129 FERC ¶ 61,240 (2009), *order on reh'g*, Opinion No. 486-D, 133 FERC ¶ 61,162 (2010).

27. See discussion of the NPV approach and the “iterative” regulatory asset approach (Portland Natural Gas Transmission System, Opinion No. 510, 134 FERC ¶ 61,129, Opinion and Order on Initial Decision, (2011)).

28. *Kern River*, FERC Opinion 486, (2006).

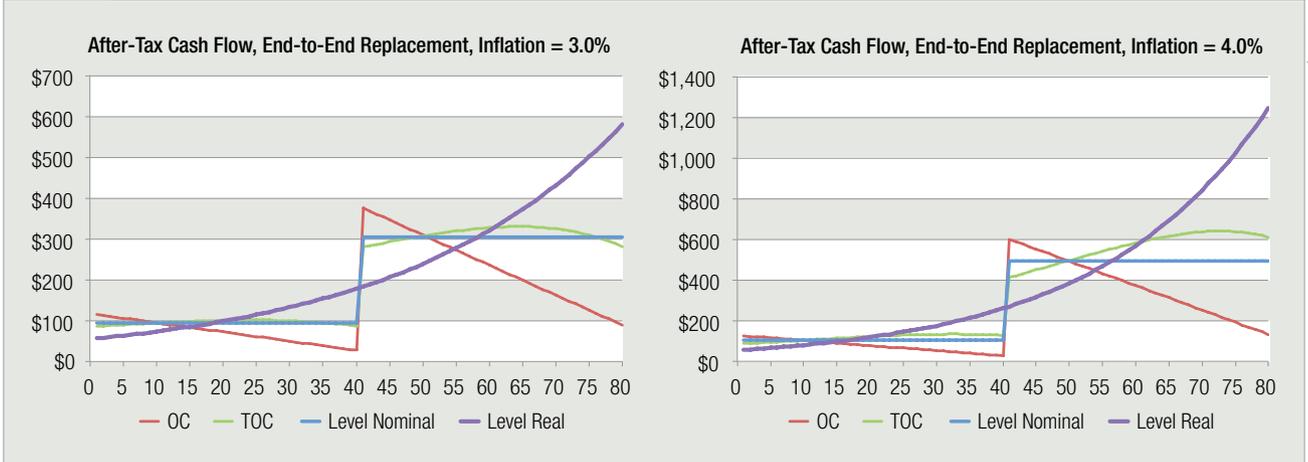
29. Citizen Energy, 129 FERC ¶ 61,242, *Order on Transmission Rate Incentives and Capital Cost Recovery Methodology*, 2009.

30. See, e.g., Lazard Ltd, 2009, “Lazard Cost of Energy Analysis: Version 3.0”; EIA, 2011, “*Levelized Costs in the Annual Energy Outlook 2011*”; and S. Borenstein, 2011, “The Private and Public Economics of Renewable Electricity Generation,” NBER Working Paper No. 17695.

FIG. 4

END-TO-END REPLACEMENT FOR ALL FOUR METHODOLOGIES

Source: The Brattle Group



(1991).³¹ Their chief objection, as we read it, is that regulated rates don't actually follow the pattern illustrated for OC in Figure 2.³² While they suggest multiple reasons for this (*e.g.*, operating costs on old assets are higher) the chief cause appears to be that new investments are continually being added to the rate base, smoothing out the front-end load on new assets. The Kilpatrick and Melvin article doesn't cite three earlier papers³³ that answer a number of the objections. In particular, one paper shows mathematically that while asset base growth mitigates the problems with OC, it doesn't replicate equilibrium competitive pricing except by an extremely unlikely coincidence, and perturbations to the requisite conditions require many years to overcome.³⁴ That said, it's true that OC has survived in part because its worst flaws only appear when new investments are lumpy, the focus of the present analysis.

Three issues, however, could require attention in the present context: debt service, dividend policy, and ratemaking mechanisms for existing assets.

Utilities traditionally have used more debt than most companies, in part because as natural monopolies they are (supposedly) low risk, and in part because the front-end load under OC makes it easy to service the debt associated with a

new investment. Companies that have to switch from an old OC rate base to an alternative other than OC will generate less cash in the early years, as illustrated in Figure 4 for the cases in which long-run inflation is at 3 percent and 4 percent and asset lives are 40 years rather than the previous figures' 20 years.³⁵ (Note the difference in scales.)

For competitive companies in equilibrium, cash flows on old assets are higher than under OC, which avoids not only rate shocks for customers, but also major changes in interest coverage for bondholders. A switch in methodology to avoid OC-driven rate shocks on a lumpy investment necessarily also generates less cash for debt service (assuming regulators and possible competitors would let it earn the OC cash flows in the face of a rate shock in the first place). The transition from OC to an alternative approach

therefore might involve lower debt service payments in the earlier years, either due to lower debt levels or to modified debt instruments (*e.g.*, supplementing ordinary debt with deep discount instruments).

The same forces that reduce cash flow for debt service reduce cash flow for dividends. Utilities traditionally serve a

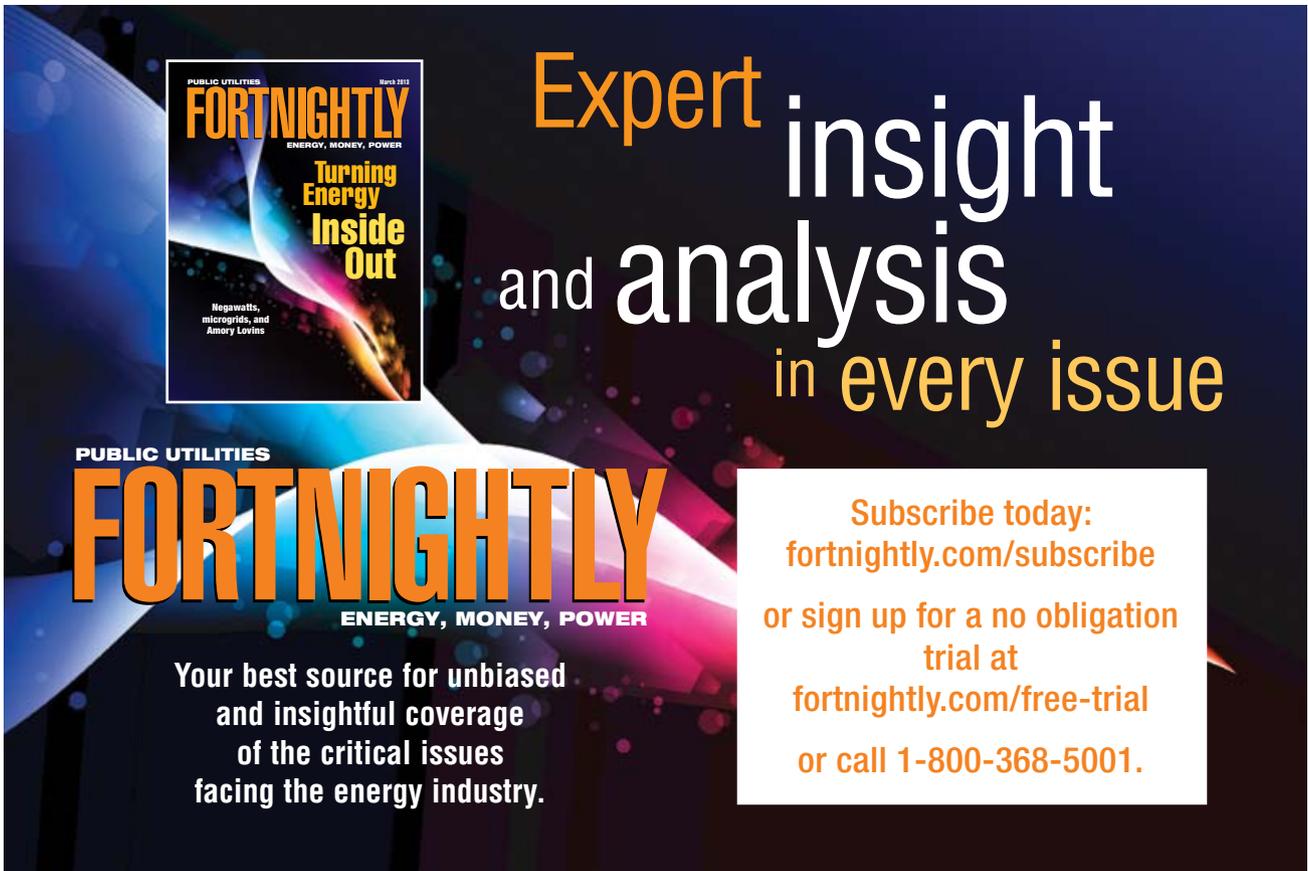
35. Alternative assumptions here are intended to improve understanding of how the various methods perform under different conditions. For example, if long-run inflation remains low, there isn't much difference between TOC with real straight-line depreciation and level nominal rates. However, if long-run inflation ends up being higher, TOC could serve as a useful intermediate step between level nominal and level real rates. As noted earlier, the best approach will vary with the circumstances.

31. Kilpatrick, H.E. Jr., and D.H. Melvin, "The Trended vs. Depreciated Original Cost Controversy: How Real Are the Real Returns?" *Energy Law Journal*, Vol. 12:323 (1991), pp. 323-337.

32. They also object that there is no economic proof that the capital charges that underlie competitive prices are, in equilibrium, equivalent to TOC with the proper depreciation schedule rather than to OC. The tomatoes theorem makes this self-evident; electricity prices for integrated utilities plainly vary with the average age of the rate base, but no one expects tomatoes grown on long-held land with old tractors to be sold at a lower price than those grown on freshly purchased land using new tractors.

33. MKT 1, MKT 2, and Kolbe *op. cit.*

34. MKT 2, pp. 113-116. Also, Kolbe *op. cit.*, shows how to adjust the real level rate for income taxes, expected changes in productivity or technology, and expected variations in sales or throughput.



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cliente that values dividends, which the front-end load under OC also facilitates. Utilities might have to put more emphasis on dividend growth and less on immediate dividends under a change in ratemaking methodologies.

The key in these two areas, of course, is noted above: in the face of rate shocks, will traditional OC rates actually be recoverable? Can regulators pass the full OC capital charge along to customers if the required rate increase is high? Even if regulators do so, will demand support the required rate level? Even a statutory monopoly faces competition from other energy sources or switches to a more efficient capital stock, if prices get too high. More fundamentally, we know these two problems can be overcome, because non-OC ratemaking methods have actually been used.

Similarly, we know the third potential problem can be solved because there has been experience in treating different assets differently for ratemaking purposes. One example is the use of CWIP in the rate base. Another example is Opinion 154-B, where the FERC treated oil pipeline equity differently from oil pipeline debt, effectively creating parallel rate bases. A utility revenue requirement could keep track of old and new assets using two different methodologies, although the details would need to be worked out carefully. Also, keeping the old methodology for old assets would help with the debt service and dividend policy issues, since a switch in approach for old assets would reduce current

cash flow on the old rate base.³⁶ That said, the best solution to this issue also might vary with the specific context.

Adopting Alternatives

To alleviate rate shocks and send better price signals to customers, utilities should consider alternatives to the traditional original cost approach for major capital investments. Utilities and utility regulators also will benefit, because the alternatives make it easier to compensate utilities adequately in the face of customer discontent.

Adopting such approaches now will help give utilities confidence to take advantage of today's low interest rates, which might accelerate construction and thereby help both the local and the national economy. Of course, as with all material changes in ratemaking approach, it will be important to minimize risks due to the transition itself. This might involve legislation, project financing, or other pre-commitment mechanisms to reassure investors and thereby to minimize transition costs for customers. However, these, too, are problems that we know can be overcome, since alternatives to traditional ratemaking have been successful in other contexts. ■

36. When switching rate base methodologies, the starting rate base under the new system must equal its final value under the old system to avoid uncompensated windfall gains and losses. See MKT 2, pp. 111-112.