# A Simple Solution to a Very Old Problem

*The authors propose to eliminate the perverse incentives utilities have to resist energy-reduction options by guaranteeing approved fixed-cost recovery, while offering positive incentives, as well.*

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## I. Introduction

In the current environment of high oil and gas prices, high reliance on imported oil (and, soon, liquefied natural gas) and grave concerns about global climate change, it is clearly imprudent to continue to forego cost-effective options to reduce energy use. Yet our current practice of assigning the sales-volume risk to regulated utilities creates perverse incentives for them to resist anything that would reduce sales, including such important cost-effective options as energy conservation, peak-load shaving, and distributed generation. The regulatory literature has long recognized these perverse incentives. However, very little has been done to date to address this problem.

These perverse incentives can and should be eliminated right away. Sales volume risk can be shifted from utilities to ratepayers. Approved fixed-cost recovery can be guaranteed for the utility, using a balancing account to manage the fluctuations in sales volume. After the perverse incentives are eliminated, positive incentives for cost-effective energy efficiency can be adopted as well.

## II. The Problem

At present, utility fixed-cost recovery depends on sales

 1040-6190/$–see front matter  doi:/10.1016/j.tej.2006.04.005 

volume. Whether or not utilities operate in a deregulated environment, retail rates allow recovery of most/all fixed costs on a ''per-kWh sold'' basis. Consequently, utilities have incentives to resist reductions in sales volume to protect the recovery of fixed costs. Indeed, in most jurisdictions, utilities have incentives to increase sales, so that they can over-recover fixed costs. This over-recovery goes straight to their bottom line, and any under-recovery directly reduces their bottom line, at least until a subsequent rate case.

Further, the percentage change in earnings is much greater than the percentage change in sales, due to the cost and financing structure of regulated electric utilities. See **Table 1**.

In this example, a revenue decline of 5 percent results in a 9 percent decline in profits after tax.

Since stock prices are very sensitive to earnings, stockholders and senior executives will care a lot about such a reduction in sales volume. This is particularly so for the senior executives who have their own personal compensation tied to earnings and share price.

The natural reaction of utility management is to resist anything that reduces sales volume. But some of the things that would reduce sales volume would be very good for society as a whole.

**Table 1:** Illustrative Example—Effect of 5% Reduction in Sales on Profits after Tax ($/kW-year)

| Sales (% of forecast) | 100% | 95% | Difference (%) |
|---|---|---|---|
| Revenue | $390 | $371 | 5 |
| Variable costs including fuel | $200 | $190 | 5 |
| Gross margin | $190 | $181 | 5 |
| Depreciation | $ 33 | $ 33 | 0 |
| Fixed O&M | $ 15 | $ 15 | 0 |
| Interest | $ 38 | $ 38 | 0 |
| Profit before tax | $104 | $ 95 | 9 |
| Tax | $ 42 | $ 38 | 9 |
| Profits after tax | $ 63 | $ 57 | 9 |

These include energy efficiency efforts to reduce the use of energy, peak load reduction efforts to reduce the use of energy on peak, when the least efficient generators are used, and distributed generation, which can be more efficient, particularly when waste heat recovery is employed.

Clearly, it is unwise to provide such perverse incentives. These perverse incentives should have been eliminated long ago. But since they still exist in almost all jurisdictions, now is the time to eliminate them, at long last.

## III. A Solution

A simple way to eliminate these perverse incentives is to break the link between fixed-cost recovery and sales volume, which means shifting the sales-volume risk from the shareholder to the ratepayer, who can directly control the use of electricity.

One way of doing this is to guarantee approved fixed-cost recovery for the utility independent of sales volume and to use a balancing account to manage the fluctuations in sales volume. Rates would continue to be set to recover approved fixed costs at the approved forecast of sales volume. But if, in any given year, volume is higher than forecast, any amount of over-recovery flows into the balancing account. The utility recovers the approved fixed costs and no more. If volume is lower than forecast, the fixed-cost recovery shortfall is made up from the balancing account. The utility always recovers 100 percent of its approved fixed costs.

In our example (above), a 5 percent reduction in sales volume would result in an under-recovery of fixed costs of $9/kW-year (see change in gross margin). The utility would show full cost recovery in reported earnings by shifting funds from the balancing account. If there were inadequate funds in the

balancing account, the balancing account would carry a negative balance, which would be automatically added to fixed-cost recovery in the following year, increasing rates.

If there were no funds in the balancing account, the entire $9/kW-year would be recovered in rates in the proceeding year, increasing the fixed-cost-recovery portion of rates by 5 percent, from $190/kW-year to $199/kW-year (plus an appropriate return on the $9/kW-year that was not recovered). In this example, a 5 percent increase in the fixed-cost recovery portion of rates would increase the consumer's bill by about 2.5 percent. Then, in the following year, if sales volume were on forecast, the utility would recover $199/kW-year and over-recover actual fixed costs ($190/kW-year) by $9/kW-year, which would flow into the balancing account, where the negative balance would be reduced to zero.

By shifting the sales volume risk from the shareholders to the ratepayers, the ratepayers may have to pay higher rates than otherwise in some years, but in other years they would pay less than otherwise (when the positive balance in the balancing account was used to reduce rates), and the average rate would be about the same over time.

More importantly, the shareholders would be protected from sales volume risk, and management would have no incentive to oppose cost-effective measures to reduce energy use, reduce peak loads, or install distributed generation.

Society as a whole would be better off as a result of additional cost-effective conservation, peak-load reduction, and distributed generation. But because existing fixed costs would need to be allocated over fewer units (kWhs and/or kWs), overall rates might increase, at least in the initial years.

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This higher-rate effect would be at least partially (and perhaps totally) offset by the utility's lower cost of capital. By shifting the sales volume risk from shareholders to ratepayers, the utility's overall level of risk is reduced, as reflected in substantially reduced volatility in fixed-cost recovery. This reduced volatility would mean that the utility could finance itself with more debt and less equity and perhaps with reduced rates paid on debt (i.e., interest) and equity (i.e., allowed ROE) as well. This would reduce the utility's cost of capital. A lower cost of capital would mean that consumer rates could be reduced because the sum of the interest, profits, and taxes required to earn the lower cost of capital would be reduced.[1]

In the example above, if the reduced volatility of cash flows enabled the utility to increase its debt financing from 50 percent to 55 percent, with corresponding reductions in equity, the required fixed-cost recovery would be reduced by about 5 percent and consumer rates would be reduced by about 4 percent. If the market cost of equity were also reduced by half a percentage point as a result of lower volatility, the combined rate reduction would be 5 percent.

In the long run, increased conservation, peak-shaving, and distributed generation would also reduce the need for additional capital investment in generation, transmission, and distribution assets and hence reduce the need to incur additional fixed costs. This would also result in lower fixed costs and average rates, in the long run.

Society as a whole would be much better off with less energy use, less energy imports, less greenhouse gas emissions, and less need for new generation and transmission capacity. Consumers who adopt options that are good for society would be better off, too. Their bills would be lower because the decrease in their consumption

 1040-6190/$–see front matter  doi:/10.1016/j.tej.2006.04.005 

would offset the possible increase in rates, in the short run. The ones who do not adopt these options might be worse off, in the short run, but not the long run. The equity seems about right.

Isn't this a no-brainer? The time to do it is now!

## IV. Positive Incentives – One Example

The most important first task is to eliminate the perverse incentives, as discussed above. Then, once we have created a level playing field, we can focus on positive incentives for utilities to pursue meaningful options to reduce energy use.

A powerful positive incentive would be to focus the utility's desire for growth in earnings at a glaring market imperfection, namely the difference between private and societal discount rates with respect to investments in energy efficiency.

Utilities want to grow earnings because stock prices are higher when earnings are higher and growing. Further, utilities would be frustrated by the effect of eliminating the perverse incentives on the need for new capacity. Investments in new capacity are a wonderful way to grow earnings, and the opportunities for these investments would be substantially reduced. There would be a ''growth gap'' that the utilities would want to fill.

The glaring market imperfection is that households and industry apply a much higher discount rate to investments in reduced energy use than the rate that society would use to value these investments.[2] Hence, a lot of cost-effective investments (at society's discount rate) have not been made and are not being made.

One program would help solve both problems: it would authorize/encourage utilities to invest in energy-reduction options and charge a regulated rate to the customers that benefit directly. For example, the utility could install energy-efficient windows on an existing home and charge the homeowner an annual fee (amortized over the life of the investment) to recover the cost of the new windows at a regulated rate of return. Similarly, a utility could install distributed generation at a site and charge a regulated fee to the owner of that site.

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The effect would be that the customer would not have to make any initial payment for the energy-saving option and would pay an annual fee that reflects a discount rate much lower than the customer would apply. Many more energy-savings investments would be made.

Also, the effect would be that the utilities could grow rate base and earnings by making investments in energy efficiency. Utilities would have strong positive incentives to develop, market, and sell as many cost-effective options as possible, but they would still have to sell the customer on agreeing to make the annual payments over the life of the investment.[3]

The effect would be replacing investments in generation, transmission, and distribution assets with assets that reduce energy use. This would be good for society as a whole, for the customers who benefit directly, and for the utilities.

Is this another no-brainer?■

**Endnotes:**

**1.** For a fuller discussion of the effect of cash flow volatility on the cost of capital, see ''Capacity Markets and Market Stability'' by Hoff Stauffer in last month's issue of *The Electricity Journal*.

**2.** For evidence that private discount rates exceed social discount rates, see, for example, Paul Joskow, *Utility-Subsidized Energy-Efficiency Programs*, ANNUAL REV. OF ENERGY & THE ENV'T., Nov. 1995, at 526–534.

**3.** Existing rules for evaluating the prudence and usefulness of such investments could be used to determine which such investments pass the test of being beneficial from society's perspective.