Is No Cost Too High to Get Low Prices?

Theresa Flaim
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Data analysis graciously provided by Jeff Roark of TVA.
Outline

- Defining the problem we’re trying to solve
- Pricing in markets compared to regulation
- Economic implications of building a surplus to try to lower market prices
Defining the problem

• If market prices are too high, what is the standard for comparison?
  ◦ Where they would have been if we had continued with cost-based regulation?
  ◦ Where we thought they were going to be when we started down this path?
  ◦ Where they should be going forward?

• If change is warranted, what is the objective?
  ◦ Lower customer bills?
  ◦ Encourage more efficient energy use?
  ◦ Improve total social welfare (impacts on producers and consumers)?

• My main focus is on the feasibility and cost of attempting to lower customer bills
Market vs. Regulated Pricing

- **Market Prices**
  - Forward-looking, based on marginal cost
  - Don’t reflect sunk costs

- **Regulated Prices** – based on average, historic costs. Only reflect marginal costs to the extent they impact the average

\[
\text{Regulated Price (¢/kWh)} = \frac{\text{Fixed Costs} + \text{Fuel Costs} + \text{O&M Costs}}{\text{Energy Sales (kWh)}}
\]

\[
\text{Fixed Costs} = \text{Depreciation of original investment & maintenance capital, fixed price contracts, financing costs, etc.}
\]
### Regulated vs. Market Prices – Mid 1990s

<table>
<thead>
<tr>
<th>What happens to prices when there is:</th>
<th>Regulated monopoly</th>
<th>Competitive markets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Excess</strong> generating capacity</td>
<td>↑</td>
<td>↓</td>
</tr>
<tr>
<td><strong>Declining</strong> natural gas costs</td>
<td>↓ Depend on capacity mix &amp; fuel contracts</td>
<td>↓</td>
</tr>
<tr>
<td>New capacity <strong>cheaper</strong> than old capacity</td>
<td>↓ or ↔</td>
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On the eve of deregulation, average embedded generation costs were 6 ¢/kWh in upstate New York. Average market prices were 2 – 3 ¢/kWh.
Regulated vs. Market Prices – Today

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<th>What happens to prices when there is:</th>
<th>Regulated monopoly</th>
<th>Competitive markets</th>
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</thead>
<tbody>
<tr>
<td>A shortage of generating capacity</td>
<td>↓</td>
<td>↑</td>
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<tr>
<td>Increasing natural gas costs</td>
<td>Depends on capacity &amp; contract mix</td>
<td>↑</td>
</tr>
<tr>
<td>New capacity more expensive than old capacity</td>
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When natural gas prices are $10-15/MMBtu, electricity prices can be in the range of 10-15¢/kWh due to fuel costs alone.
Economic Implications of Building Excess Capacity

- It is clear that adding more generation would, all else equal, lower *market prices*
- It is not clear that the savings from lower market prices would offset the costs to customers who pay
  - How much, what type and where will generation be added?
  - Is the goal to reduce scarcity rents (shortage costs)?
  - Is the goal to change the fuel that’s on the margin in the market? (gas vs. coal)
  - Who will pay for the excess generation? Will choice be withdrawn at the retail level? How can free riders be prevented, since anyone who buys from the market would benefit from lower prices?
In states with deregulated markets, 59% of the capacity and 37% of the energy was gas-fired in 2006.
Economic Implications — cont’d

- It is reasonable to expect that building excess capacity would reduce the frequency of scarcity pricing

- Given the capacity mix of deregulated markets in aggregate:
  - It would be extremely expensive to add enough capacity to eliminate natural gas on the margin in most hours
  - Is it even feasible to site and construct that much coal in states like CA, NY, MA, DE, etc.?

- A complete assessment must consider the impact on suppliers as well as consumers
Economic Implications — cont’d

- What if the bill savings to consumers simply equal the revenue losses to suppliers?
  - The result is simply a transfer payment, i.e., the net impact on social welfare would be a wash.
  - There would be no economic rationale for subsidizing the investment in reserves.

- What are the likely long-run effects?
  - How will competitive suppliers react to this type of regulatory intervention?
  - If the perceived investment risk increases, we could actually have less investment and higher capacity costs than if we had chosen not to intervene.
Back to first principles: what are we trying to achieve?

A structure that attempts to provide a price that is “the lower of cost or market” is not sustainable.

Marginal and average costs are rarely the same and move in opposite directions for predictable reasons.

So the fundamental design issues that confront us are still the same:

| Who decides? | • How much excess capacity to build?  
|             | • What type of fuel?  
|             | • Where to site?  |

| Who builds? | • Utility under rate-base construction?  
|             | • Competitive supplier?  |

| Who pays? | • All consumers in the market?  
|           | • Captive utility customers only?  |

| Who bears the risk? | • What if the project turns out to cost more than originally anticipated?  
|                     | • What happens when the industry goes through another cycle and market prices are below average again? |
Appendix

2006 Electricity Generation by Fuel Source
Regulated vs. Deregulated States
2006 Energy Generation Analysis

“Regulated” versus “Unregulated” States

Unregulated States
- Total Generation TWh: 1,142.5
- Total Consumption TWh: 1,320.0
- Surplus (Deficit) TWh: (177.5)

Regulated States
- Total Generation TWh: 2,904.0
- Total Consumption TWh: 2,551.0
- Surplus (Deficit) TWh: 353.0

Source: EIA Power Plant Databases (EIA-906 and EIA-920)
Unregulated States = CA, CT, DC, DE, MD, MA, ME, MI, NH, NY, NJ, MT, RI, TX