Performance-Based Ratemaking to Drive Least-Cost Planning

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Matthias Fripp
Asst. Prof. of Electrical Engineering
University of Hawaii at Manoa

Renewable Energy and Island Sustainability (REIS) program
University of Hawaii Economic Research Organization (UHERO)

mfripp@hawaii.edu
http://ee.hawaii.edu/~mfripp
• By regulation, HECO’s only profit is based on the amount of assets they own
  – We will punish HECO for doing the right thing
    • Earnings per share will drop if they accept renewable power instead of using their own thermal plants
  – HECO is moving ahead with renewables anyway, but we’re not making it easy

• Solution: peg HECO profits to performance instead of capital assets
  – Savings from building a better power system (2¢–8¢/kWh) are much larger than HEI’s profits (~1.2¢/kWh)
  – There’s room for a win-win solution
Utility Rates of Return

• Utility dividends: around 4% of share price
  – This is what the market is willing to accept for investments in utilities

• Allowed rates of return on equity invested in ratebase: around 10%
Averch-Johnson Effect (1962)

If a regulated company is given a rate of return on equity that is above the market rate, they have an incentive to build too many assets or “gold plate” their assets.

Suppose a utility issues $100 million in common stock and invests the proceeds in ratebased assets:

- dividend yield would stay constant if they paid another $4M/year in dividends (4% of new stock value)
- income will rise by $10M/year (10% allowed return)
- company has $6M extra to enrich dividends (higher earnings per share, EPS); eventually stock price rises
Averch-Johnson Corollary

If a regulated company is given a rate of return on equity that is above the market rate, they have an incentive not to retire their assets.

Suppose a utility retires plants with book value of $100 million and uses proceeds to buy back common stock:

- company can now pay out $4M less per year and maintain same 4% dividend yield
- but income drops by $10M/year (10% allowed return)
- earnings on remaining shares will be reduced by $6M
- stock price falls until dividend yield returns to market rate (4%)
“Competitive bidding, unless the Commission finds it to be unsuitable, is established as the required mechanism for acquiring a future generation resource or a block of generation resources.”

“Competitive bidding shall enable the comparison of a wide range of supply-side options, including PPAs, utility self-build options, turnkey arrangements (i.e., build and transfer options), and tolling arrangements where practical.”

– Hawaii Public Utilities Commission, 2006
Unintended Consequences

Current situation:
- HEI owns thermal plants which are receiving above-market return on equity
- New wind and solar power will not be owned by HEI
- Adding new wind and solar will lead to retirement of old thermal plants

Consequences:
- Switching to wind and solar will undermine HEI share price
- The utility’s share price is maximized by preserving the status quo or seeking waivers for new utility-owned generators
What to Do?

**Problem:** We pay HEI entirely based on the size of their ratebase, but we want them to be indifferent about the size of the ratebase

**Solution:** Pay them for performance instead of ratebase
A Better Way to Pay

Reduce allowed return on equity from 10% to 4%

- Then changing the ratebase will not affect HEI’s dividend yield
  - $100M of rate base is retired and proceeds are used to buy back stock; earnings drop by $4M/year and earnings requirement drops by $4M/year; earnings per share are unchanged
- HEI earnings per share will be the same whether they own their own generation or buy power from IPPs or customers

Accumulate rest of profit in neutral or pro-customer ways

- **neutral**: give HEI 0.7¢ per kWh of power delivered (or avoided via DG or efficiency)
  - HEI maximizes sales (and profits) by choosing a least-cost plan
- **pro-renewable**: give HEI 3.5¢ per kWh of renewable power consumed in 2018, tapering down to 0.7¢ by 2045
- **other metrics and baselines**: reliability, carbon-intensity, average power price, stable power price…

HEI makes the same profit as before, but now its incentives align with what the ratepayers (or at least regulators!) want
Earnings with Performance-Based Rates

“Oahu Gen Co” Earnings per Share

$/share/year

2017 2020 2022 2025 2030 2035 2040 2045

PSIP, ratebase-only profit

SWITCH, ratebase-only profit

SWITCH, performance-based profit
Effect on Environmental Policy

Suppose Hawaii adopts a carbon tax…

- **Ratebase-based profit:** HEI’s most profitable option is to keep oil plants running and pass the tax through to ratepayers

- **Sales-based profit:** HEI can boost sales and profits by offering lower-cost renewable power
  - customer interests feedback to HEI’s interest
  - market-oriented incentives have the expected effect
Soundest way to calculate market-based return on equity is to look at what the market is paying for the returns they are getting (discounted cash flow model):

\[
\text{market rate of return} = \text{market dividend yield} + \text{expected dividend growth rate}
\]

- **Dividend yield for all utility stocks is about 4%**
  - market buys shares, boosting stock price, until dividend yield reaches this level
- **In utility rate of return studies, expected dividend growth rate is based on analyst estimates of 5–6%/year long-term dividend growth for utility sector**
  - implication is that investors buy utility stocks because they get 4% now and expect dividends per share to grow by 5–6% per year; so HEI must pay 9–10% to attract capital
  - utility dividends per share do not actually grow; analyst growth estimates evaporate as long-term becomes short-term
    - the market does not require 10% dividends to buy HEI shares; they bid up the HEI share price until the yield drops to 3.75%
    - the market is not counting on dividend growth for HEI; HEI dividend per share has been $0.31 for 76 quarters in a row
- **Using an above-market rate blocks progress toward a cheaper, cleaner power system**