Regulatory Incentives and Disincentives for Utility Investments in Grid Modernization

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https://emp.lbl.gov/publications/regulatory-incentives-and

REGULATORY INCENTIVES AND DISINCENTIVES FOR UTILITY INVESTMENTS IN GRID MODERNIZATION

Steve Kihm, Seventhwave
Janice Beecher, Institute of Public Utilities, Michigan State University
Ronald Lehr
Seventhwave delivers trusted expertise for bold energy leadership. We advance powerful strategies for real energy impacts through engineering, education and research.

MISSION
To inspire real and lasting change that advances economic and environmental sustainability.
Analytical Triumvirate

- **Beecher**: Traditional regulation, if properly applied, can provide incentives for grid modernization.

- **Lehr**: Traditional regulation, including its litigious processes, is not conducive to making a transition to a modern grid.

- **Kihm**: Incentives vary based on circumstances—to understand whether incentives or disincentives exist we need to understand shareholder value.
A Brief Summary of Co-Author Perspectives
Janice Beecher, PhD
"People call for a new paradigm, [saying] that the current regulatory model doesn’t fit with modernization So you hear that we need ‘incentive regulation.’ But from my perspective, [regulation] is always about incentives. The dichotomy between traditional and incentive regulation is false."
“At a minimum, prudence should be defined in terms of enforceable standards and generally accepted utility practices, both of which can be substantially strengthened in light of technological advances and opportunities as well as dynamic supply and demand conditions.”
“The granting of **an exclusive franchise** to a monopoly by the state **has strings attached.**”

“The **regulatory compact** is not set in stone. It is a living and evolving charter.”
“Motivating utilities toward evolving social ends should not automatically be viewed as outside of the scope of the paradigm or beyond the model and the means already available to economic regulators.”
“Meaningful regulatory reform does not necessarily require paradigmatic change. Without a doubt, what might have been considered prudent even a decade ago would not be considered prudent today, let alone for a utility of the future.”
“For grid modernization, we need a new prudence rather than a new paradigm.”
“To neglect the power of economic regulation to limit, channel, and mold the behavior of regulated firms is to neglect the very purpose of ‘regulation in the public interest’... **In the hands of capable regulators, and guided by clear requirements, the traditional model actually provides very powerful performance incentives.**”
Ron Lehr, JD
“New information from applications of new communications technologies enables consumers to become energy producers and to take more responsibility for their energy use. But traditional regulation doesn’t incent utilities to support increased consumer sovereignty.”
“Return-on-equity incentives encourage utilities to invest in capital projects. They lack equivalent incentives for operations and customer engagement – operating expenses rather than capital expenses. Only providing incentives to invest capital stands in the way of innovation.”
“A variety of factors stand in the way of creating well targeted and well aligned utility incentives, including litigated processes, poor communications, relationships that do not build trust, and lack of consensus about outcomes.”

“ Regulation can get us there, but it will be a long road if we just try to litigate our way there.”
“Among these alternatives are regulatory options that put relatively less regulatory time and effort into addressing the question ‘did we pay the right amount for what we got’ and more regulatory time and effort into anticipating the future, asking ‘what do we want, and how do we pay for that’?”
Steve Kihm, CFA
Overview

• Can utilities raise capital for grid modernization? **Yes**

• Do utility managers see value for **current shareholders** in grid modernization projects? **Maybe**

  This is the relevant question.

• Shareholder value (stock price)
  – risk, return and scale

• **Utility managers**, not the capital markets, decide whether investments should be made
Proper framing of the problem

Capital Allocation
Evidence, Analytical Methods, and Assessment Guidance
October 19, 2016

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Energy Analysis and Environmental Impacts Division
Credit Suisse *Distributing Cash to Shareholders*

**Exhibit 10: Total Shareholder Yield for the S&P 500 versus the Cost of Equity (1982-2013)**

- **Cost of Equity**
- **Total Shareholder Yield**

Cost of equity for S&P 500

*Source: Aswath Damodaran; S&P Dow Jones Indices, Liang and Sharpe, Credit Suisse estimates.*
Beyond 2019, we assume a system wide normalized 10% average allowed ROE and 0.5% average annual long-term usage growth. We assume a 7.5% cost of equity in our discounted cash flow valuation. This is lower than the 9% rate of return we expect investors will demand of a diversified equity portfolio. A 2.25% long-term inflation outlook underpins our capital cost assumptions. Our cost of capital assumption is 5.9%.
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Who makes investment decisions?

Capital allocation is a senior management team’s most fundamental responsibility...The objective of capital allocation is to build long-term value per share.

As EEI explains, “these projects also carry the most upfront development time, longer construction schedules, and overall risk.” However, without a sufficient ROE, electric utilities are likely to choose short-term, more local projects, instead of riskier, more strategic options. (Emphasis added.)

As EEI explains, “these projects also carry the most upfront development time, longer construction schedules, and overall risk.” However, without a sufficient ROE, electric utilities are likely to choose short-term, more local projects, instead of riskier, more strategic options. (Emphasis added.)


This is not saying utilities couldn’t raise capital. It’s saying they won’t want to invest in transmission.
Shareholder value is created when a firm invests in a project that earns a return \( (r) \) that exceeds the cost of the capital used to finance it \( (k) \).

\[ r > k \]
When $r$ is less than $k$

Several decades ago utility executives en masse issued statements that they were going to avoid large-scale plant investment whenever possible, even if load continued to grow. Their statements were grounded in the financial concepts we discuss here. At that time the Congressional Budget Office feared that the disincentive for utilities to make plant investment could lead to a more-expensive power supply.

*The nation’s electricity supply could become less cost-effective if regulatory incentives continue to bias utilities away from capital investments* (CBO 1986).

What model were utilities operating under that created a disincentive, not an incentive, to invest in plants? The same one in place today.

Kihm, Barrett, & Bell, 2014, ACEEE Summer Study
The value proposition

If $r$ exceeds $k$, the more capital we invest ($I$) the more value we create.

\[ V = (r - k) \times I \]

(value engine)

risk, return, and scale
The value proposition

If \( r \) exceeds \( k \), the more capital we invest (\( I \)) the more value we create.

\[
V = (r - k) \times I
\]

(value engine)

How does the policy affect the utility’s systematic risk?

How does the policy affect the expected return on equity?

risk, return, and scale

What are the scale differences between the utility’s resource options?
Xcel Energy

Beyond 2019, we assume a system wide normalized 10% average allowed ROE and 0.5% average annual long-term usage growth. We assume a 7.5% cost of equity in our discounted cash flow valuation. This is lower than the 9% rate of return we expect investors will demand of a diversified equity portfolio. A 2.25% long-term inflation outlook underpins our capital cost assumptions. Our cost of capital assumption is 5.9%.
To get the full price impact you would use such a model

\[ P = \frac{N \ BVPS \ r \ (1 - b) + (r - k)I}{N \ (k - b \ r)} \]
If both cars could be purchased for $15,000, which model would attract more buyers?

Honda Civic

BMW Series 7
Now which model would attract more buyers?

Honda Civic
$22,000

BMW Series 7
$97,000
The Value Line Investment Survey

PNM RESOURCES NYSE-PNM

RECENT PRICE 32.30  PE RATIO 18.9 (Trailing: 17.0)  RELATIVE PE RATIO 1.03  DIVIDEND YLD 2.7% VALUE LINE

TIMELINESS 5 Lowered 9/30/16
SAFETY 3 Lowered 5/10/16
TECHNICAL 3 Lowered 9/30/16
BETA .75 (1.00 = Market)

2019-21 PROJECTIONS

<table>
<thead>
<tr>
<th>Price</th>
<th>Gain</th>
<th>Ann's Total Return</th>
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<tr>
<td>High</td>
<td>Low</td>
<td>45 (+40%) 11% 2%</td>
</tr>
<tr>
<td>30</td>
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Insider Decisions

Institutional Decisions

% TOT. RETURN 9/16


2016 2017 2019-21

<table>
<thead>
<tr>
<th></th>
<th>Return on Total Cap’l</th>
<th>Return on Shr. Equity</th>
<th>Return on Com Equity</th>
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</thead>
<tbody>
<tr>
<td>5.0%</td>
<td>5.5%</td>
<td>7.5%</td>
<td>7.5%</td>
</tr>
<tr>
<td>7.5%</td>
<td>8.0%</td>
<td>9.5%</td>
<td>9.5%</td>
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</tbody>
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Energy Analysis and Environmental Impacts Division
High returns on equity don’t attract more capital

The market uses pricing so that capital flows easily to all utilities regardless of the return on equity the utility earns.

**Fig 1: Value Line Electric Utilities**

Stock Price to Book Value and Corporate Returns on Equity

- **PNM Resources**
- **Alliant Energy**
High returns on equity don’t attract more capital

The market uses pricing so that capital flows easily to all utilities regardless of the return on equity the utility earns.
New investors expect to earn about the same return on all utility stocks.

Capital attraction does not depend on the utility’s return on equity (market pricing ensures this result).
High returns create value for present investors

For every dollar invested
Alliant creates more value for present shareholders

Alliant: \[ V = (0.125 - 0.075) \times I \]

PNM: \[ V = (0.095 - 0.075) \times I \]
But do not benefit new shareholders (pricing)

\[
\text{Alliant: } V = (0.125 - 0.075) \times I
\]

\[
\text{PNM: } V = (0.095 - 0.075) \times I
\]

Stocks are priced so that those providing new capital to either company expect to earn about the same return.
Here the project with the larger scale will create more value per-share for investors.

Substations: \[ V = (0.100 - 0.070) \times 500,000,000 = 15,000,000 \]

Two Way Flows: \[ V = (0.100 - 0.070) \times 400,000,000 = 12,000,000 \]

Can we provide an incentive to invest in the two-way flow project?
Return on equity can sometimes drive the result

Yes, if we set the return high enough.

Substations: \[ V = (0.100 - 0.070) \times 500,000,000 = 15,000,000 \]

Two Way Flows: \[ V = (0.120 - 0.070) \times 400,000,000 = 20,000,000 \]

Now the project with the higher return will create more value per-share for investors.
But not always

But not just any higher return will do the trick.

Substations: \[ V = (0.100 - 0.070) \times 500,000,000 = 15,000,000 \]

Two Way Flows: \[ V = (10.5\% - 0.070) \times 400,000,000 = 14,000,000 \]

Now the project with the lower return will create more value per-share for investors (scale again dominates).
Don’t confuse the shareholder groups

New shareholders provide all of this capital

Present shareholders capture the value gain as a windfall

Substations: \( V = (0.100 - 0.070) \times 500,000,000 = 15,000,000 \)

Two Way Flows: \( V = (10.5\% - 0.070) \times 400,000,000 = 14,000,000 \)

New shareholders earn the cost of equity based on what they paid for the stock
Note that an opportunity to invest in a project offering more than the cost of capital generates an immediate capital gain for investors. This is a windfall gain, since it is realized \textit{ex ante}.

Incentives for grid modernization?

\[ V = (r - k) \times l \]
(value engine)

It’s all about the details
There are no general answers
Do these policies create incentives?

- Different rates of return and costs of capital for different utility assets *(it depends on r, k, and l)*
- De-risking certain resource types *(it depends on r, k, and l)*
- Providing rate base treatment for certain expense items *(it depends on r, k, and l)*
- Formula rates *(it depends on r, k, and l)*
- Price caps *(it depends on r, k, and l)*
- Earnings sharing mechanisms *(it depends on r, k, and l)*
Beware of statements such as

“Utilities have an incentive to...”
or “Utilities have a disincentive to...”

Ask: Which utility?

Ask: What’s the action in question?

Incentives/disincentives depend on circumstances
Why Many Corporate Managers Struggle With the Shareholder Value Concept
Capital Allocation
Evidence, Analytical Methods, and Assessment Guidance

October 19, 2016

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Capital allocation is a senior management team’s most fundamental responsibility. The problem is that many CEOs don’t know how to allocate capital effectively. The objective of capital allocation is to build long-term value per share.
“I happen to have a talent for allocating capital.”

Warren Buffett
Berkshire Hathaway vs. S&P 500

Price Index (1964=100, Log Scale)

- Berkshire Hathaway
- S&P 500

BUSINESS INSIDER

Energy Analysis and Environmental Impacts Division
Buffett on why CEOs often don’t maximize shareholder value

This point can be important because the heads of many companies are not skilled in capital allocation. Their inadequacy is not surprising. **Most bosses rise to the top because they have excelled in an area such as marketing, production, engineering, administration or, sometimes, institutional politics.**
Once they become CEOs, they face new responsibilities. They now must make capital allocation decisions, a critical job that they may have never tackled and that is not easily mastered. To stretch the point, it’s as if the final step for a highly-talented musician was not to perform at Carnegie Hall but, instead, to be named Chairman of the Federal Reserve.
CEOs who understand shareholder value are the exception.

Thorndike spent eight years working on the book and interviewed all the living CEOs he studied. The CEOs he ended up profiling were Tom Murphy of Capital Cities, Henry Singleton of Teledyne, Bill Anders of General Dynamics, John Malone of TCI, Katharine Graham of The Washington Post Co., Bill Stiritz of Ralston Purina, Dick Smith of General Cinema, and Warren Buffett of Berkshire Hathaway.
CEOs who understand shareholder value are the exception

Managers don’t understand the counterintuitive concept of value maximization
  Mauboussin
  Buffett
  Thorndicke

Managers do understand the concept, but they prefer to act in their own interest (agency theory)
  Jensen-Meckling

Managers should not attempt to maximize shareholder value, but should consider all stakeholders (legal argument)
  Stout
Agency theory: Agents (managers) will act in their own interests, which sometimes conflict with those of shareholders (principals).


THEORY OF THE FIRM: MANAGERIAL BEHAVIOR, AGENCY COSTS AND OWNERSHIP STRUCTURE

Michael C. JENSEN and William H. MECKLING*

University of Rochester, Rochester, NY 14627, U.S.A.

Received January 1976, revised version received July 1976
The notion that corporate law requires directors, executives, and employees to maximize shareholder value simply isn’t true... *The idea is a fable.*
This does not suggest that shareholder value is not important—it’s just not the only thing that’s important.
Implications

![Graph comparing Berkshire Hathaway vs. S&P 500](image)

Price Index (1964=100, Log Scale)

- **Berkshire Hathaway**
- **S&P 500**

- **Business Insider**

Energy Analysis and Environmental Impacts Division

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Incentives for other utility types

• Municipally-owned utilities

• Cooperative utilities

• B corporations
Possible incentives for non-profit utilities

• No shareholders, so the focus must shift to managers

• Incentive compensation is as desirable in the nonprofit sector as in the for-profit world, but, unlike the latter, which bases incentive payments on organizational profitability, nonprofits need to structure their systems on other performance measures. (Frank A. Monti, CPA)

• What is essential is that the nonprofit clearly specify—in advance of implementing the plan—the performance measures against which individual performance will be measured. (Frank A. Monti, CPA)

• See http://www.massnonprofit.org/expert.php?artid=2869&catid=18
Questions?

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