

CAPITAL BIAS IN REGULATION AND EMERGING METHODS TO MITIGATE IT

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RoE vs Market Cost of Equity

- Return on Equity and the *market* cost of equity are distinct but related concepts.
- Regulators set RoE. Capital markets and investor expectations/behavior establish the cost of equity.
- Matching RoE and cost of equity is difficult in the long-run
- It is reasonable for utilities to have a modest incentive to invest in their systems
 - $\text{RoE} > \text{market cost of equity}$ – New capital investments create shareholder value
 - $\text{RoE} < \text{market cost of equity}$ – New capital investments destroy shareholder value
 - $\text{RoE} = \text{market cost of equity}$ – Investments are made at cost

For more, see LBNL paper from Kihm, Satchwell, & Cappers on the impact of investment growth on utility stock prices:
<http://eta-publications.lbl.gov/sites/default/files/lbni-1005828.pdf>



It's regulation that creates capital bias

- Capital bias helped grow the grid when expanding access was the focus.
- Now that the grid is built out, it can be counterproductive for system efficiency.
- Technology has changed. There are more ways to meet system needs than utility-owned poles and wires.
- Utilities incur an **opportunity cost** when capital investment is deferred, reduced, or avoided.
 - Demand reductions reduce the need for new T&D investment
 - Service-based solutions can replace capital investments



Service alternatives can increasingly replace traditional capital investments

Capital Solution

Service Solution

IT

Servers, software and
IT infrastructure

vs.

Cloud Computing

T&D

Transformers,
substations etc.

vs.

Demand management,
dispatch rights for
DER, NWAs

Supply

Utility-owned
generation

vs.

PPAs, demand
management

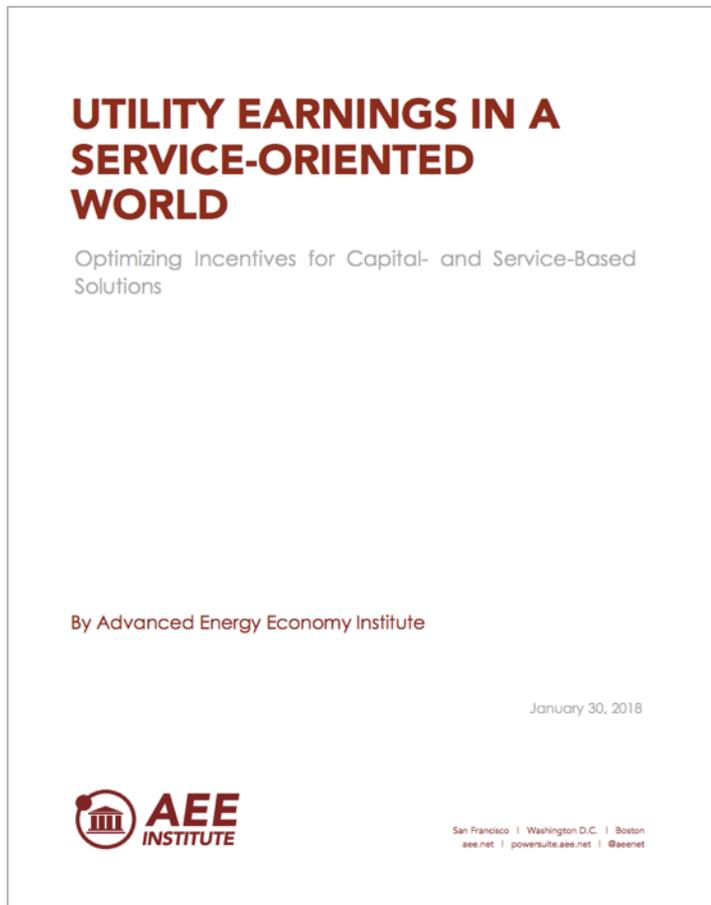


Optimizing capex & service solutions: options for mitigating capital bias

- Regulatory capital bias can create a dilemma: a service solution can be better for customers but worse for utilities.
- Several approaches to overcome this bias:
 1. Treating the service solution as an **O&M expense**, and allowing the utility to earn a specified **profit margin on top of that**, OR
 2. Allowing the utility to **put the service solution in rate base** and earn on it like a traditional capital investment, AND/OR
 3. Allowing the **utility and customers to share in the savings** between what the traditional capital solution would have cost and the less expensive service solution



A recent paper that explores several regulatory options in depth



- Paper explores:
 - What regulatory options can level the earnings opportunities for service-based alternatives?
 - Which regulatory options best align cost savings for customers and utility earnings? (“win-win”)



<https://info.aee.net/reports>

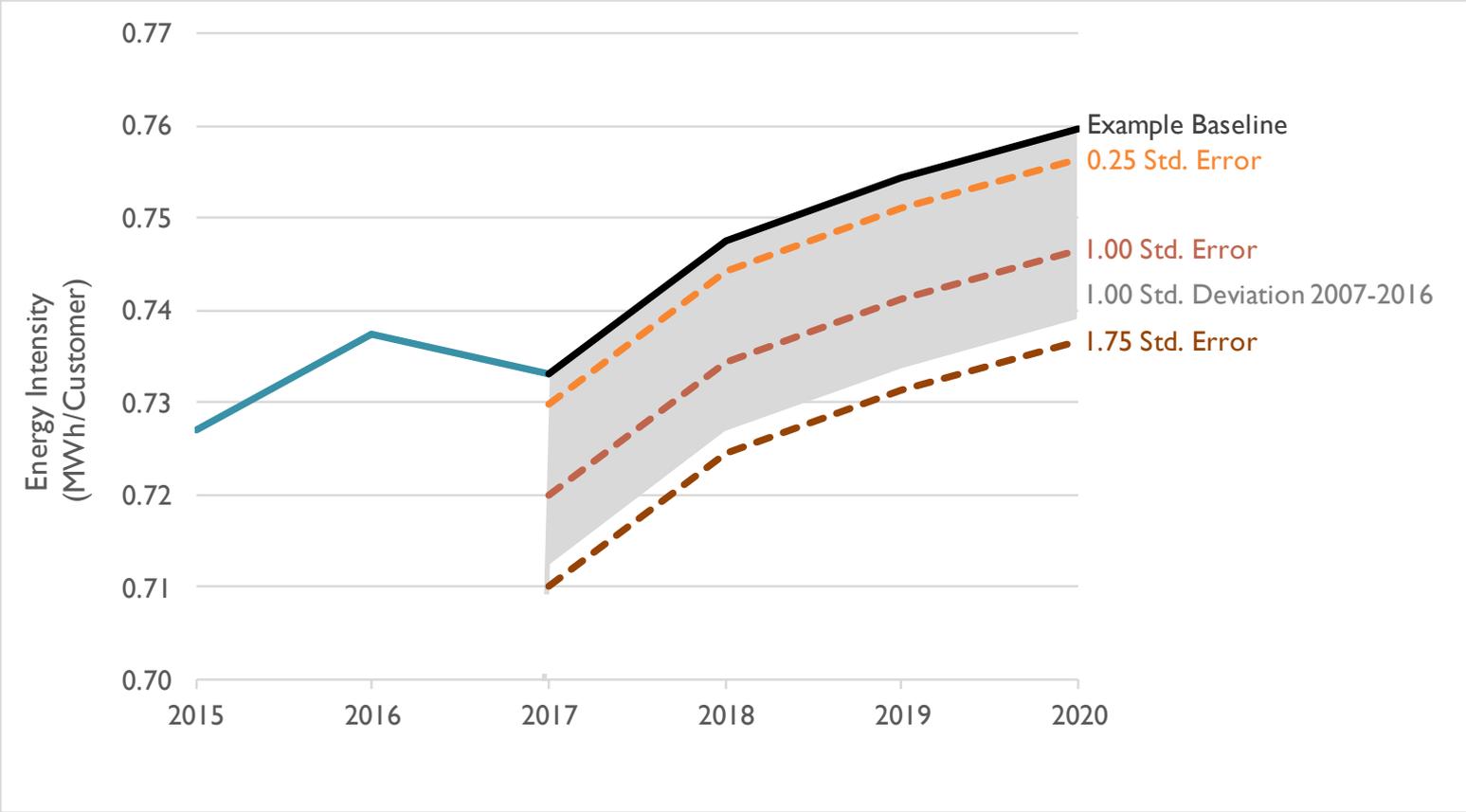
Performance incentives: mitigating capital bias in outcomes

- There are many options for performance incentives. They can be used to counterbalance capital bias.
- Reductions in peak demand decrease opportunity for T&D investment on capacity expansion.
- Performance incentives can help reduce a utility's opportunity cost from peak demand reductions.
 - Program-based: incentives for meeting metrics on program-specific performance (peak time rebates, storage, DR)
 - System-wide: incentives for measureable reductions in system-wide peak demand



Performance incentives: an example of a system-wide metric

Targeted reductions for average per customer energy consumption



Performance incentives: some considerations

- System-wide metrics pose both challenges and benefits
 - Allows for greater creativity and flexibility for utilities to achieve demand reductions
 - Measurement and showing causality between reductions and utility actions can be difficult
- Can be provided as a share of net benefits
- To be effective, incentive needs to result in net savings for customers but also overcome a utility's opportunity cost
- Capital spend and distribution system planning must be adjusted to result in actual savings to customers



Optimizing inputs and performance incentives work together

Optimize Inputs

- Make the utility earnings-neutral btwn service & capital solutions
- Utility can choose solutions based on merit, not type



- Capital bias mitigated
- Customer and utility interests better aligned



Incent Outcomes (Performance)

- Utility earns from peak demand reductions
- Offset to forgone earnings on T&D
- Customers save

Emerging options build on, not replace, cost-of-service



Thanks

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