

A Framework for Organizing Current and Future Electric Utility Regulatory and Business Models

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- Summary Webinar -

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Outline

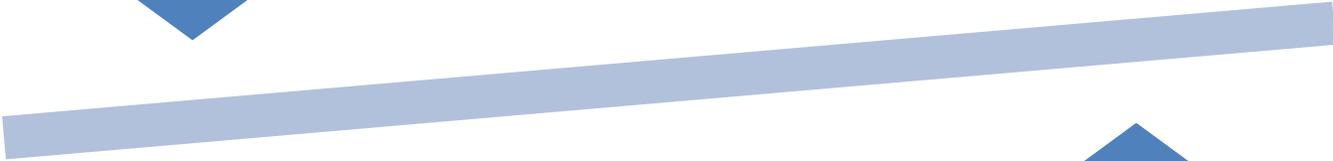
- ◆ **Introduction**
- ◆ Incentives under traditional regulation
- ◆ Incremental changes
- ◆ Applying the framework to more fundamental changes
- ◆ Conclusions

Trends Shaping the Regulatory and Business Environment



Revenues

Enabling policies and cost reductions are resulting in increased penetration of EE, PV and other DER causing projected electric sales growth to be flat or negative



Prospect of large capital investments in T&D system upgrades and new generation to replace aging infrastructure, modernize the grid, enhance resiliency, and respond to environmental regulations



Costs

Regulatory and Utility Business Models: Recent Activity

- ◆ There is a considerable amount of ongoing research, discussions and advocacy aimed at defining, analyzing, and promoting alternative utility business models
- ◆ **Utilities and investors** are concerned with managing risks of regulatory uncertainty, maintaining revenue sufficiency, and addressing reliability concerns from under-investment in infrastructure
- ◆ **Some efficiency and clean energy advocates** assert that existing utility business model may pose significant challenges to certain types of clean energy futures driven by technology innovation and customer access
- ◆ **Some state policymakers and regulators** are considering new approaches to elicit improvements in the electric system, given reliability and grid restoration problems during recent weather-related crisis events
 - Examples: Reforming the Energy Vision (NY); Grid Resiliency Task Force (MD)

Scoping Study

- ◆ Assess link between regulatory/utility business models and the goals of policymakers
- ◆ Develop a more holistic assessment and consistent framework for depicting profit motivation and achievement that is aligned with public policy goals
- ◆ Provide a lens through which to evaluate proposed changes to current regulatory/utility business models

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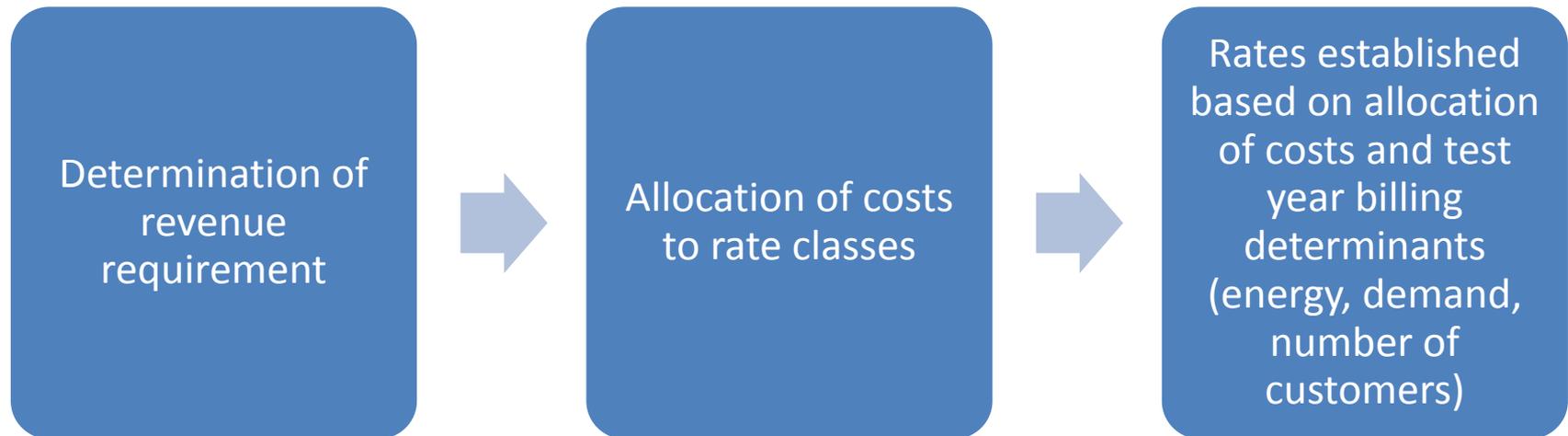
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Simplified Overview of Traditional Cost of Service (COS) Regulation

◆ Ratesetting objectives

- ❑ Stable revenue (utility) and stable retail rates (customer)
- ❑ Efficient use of energy (customer) and capital (utility)
- ❑ Fair, equitable and understandable rates (customer)

Ratemaking process – General rate case



Incentives Under Traditional COS

- ◆ A utility that can:
 - Keep growth in these other cost elements below revenue growth will see profits in excess of authorized levels
 - Promote growth in sales in excess of cost growth will likewise see profits in excess of authorized levels
- ◆ Any reduction in revenues, without corresponding reductions in costs, lowers utility profits

Incentives Under Traditional COS

Profit Motivation

- ◆ **Authorized Profit** = Return-on-Equity x Share of Ratebase funded by Equity
 - Under Traditional COS, if return-on-equity > cost-of-capital then utility will overinvest in assets (Averch-Johnson effect)
- ◆ Alternatively, a utility could focus efforts not on investing in new assets but rather extracting maximum value of existing assets thru more efficient use of them

● Traditional COS



Profit Motivation Spectrum

Incentives Under Traditional COS

Profit Achievement

- ◆ **Achieved Profit** = (Retail Rate x Billing Determinants) – (Operating Expenses + Debt Cost + Depreciation + Taxes)
- ◆ Under Traditional COS, utility will seek to promote increased sales to increase revenues more than costs
- ◆ Alternatively, a utility may seek to promote its energy services if revenues are collected based on providing value-added services to customers

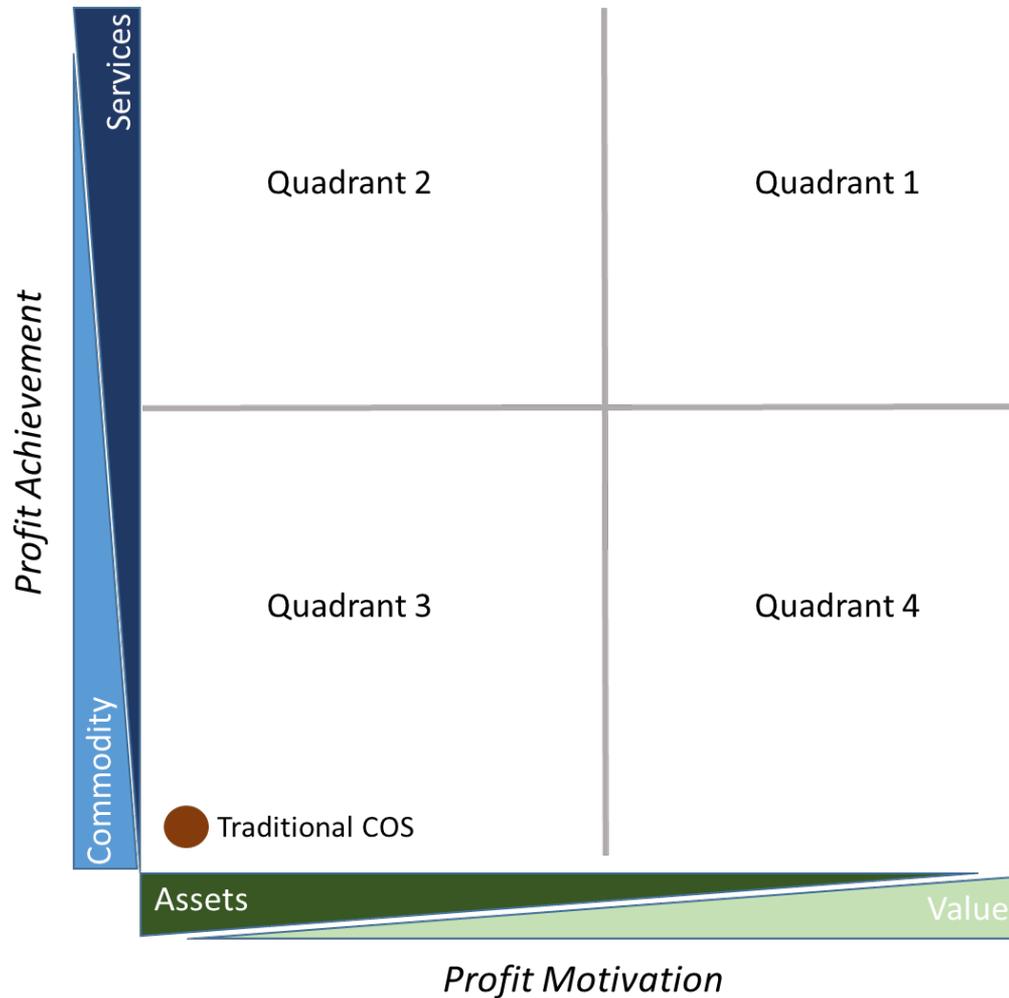
● Traditional COS

Commodity

Services

Profit Achievement Spectrum

Framework for Electric Utility Regulatory and Business Models

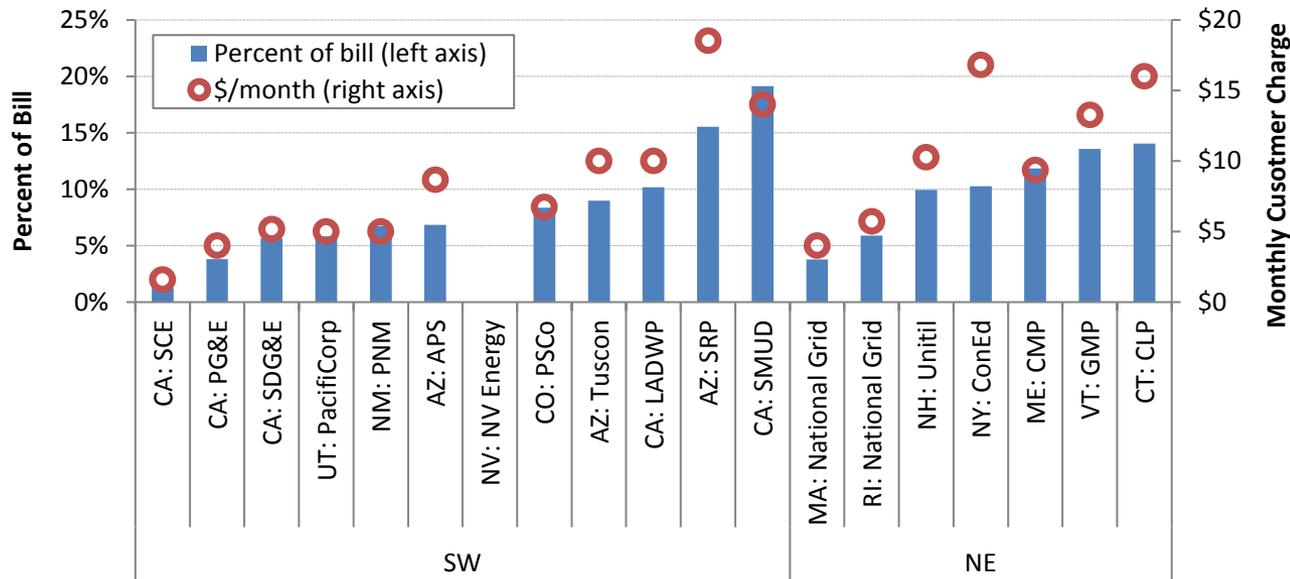


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“Revenue Erosion” Effect

- ◆ Revenue collection largely driven by volumetric sales as residential rates include very modest fixed charges

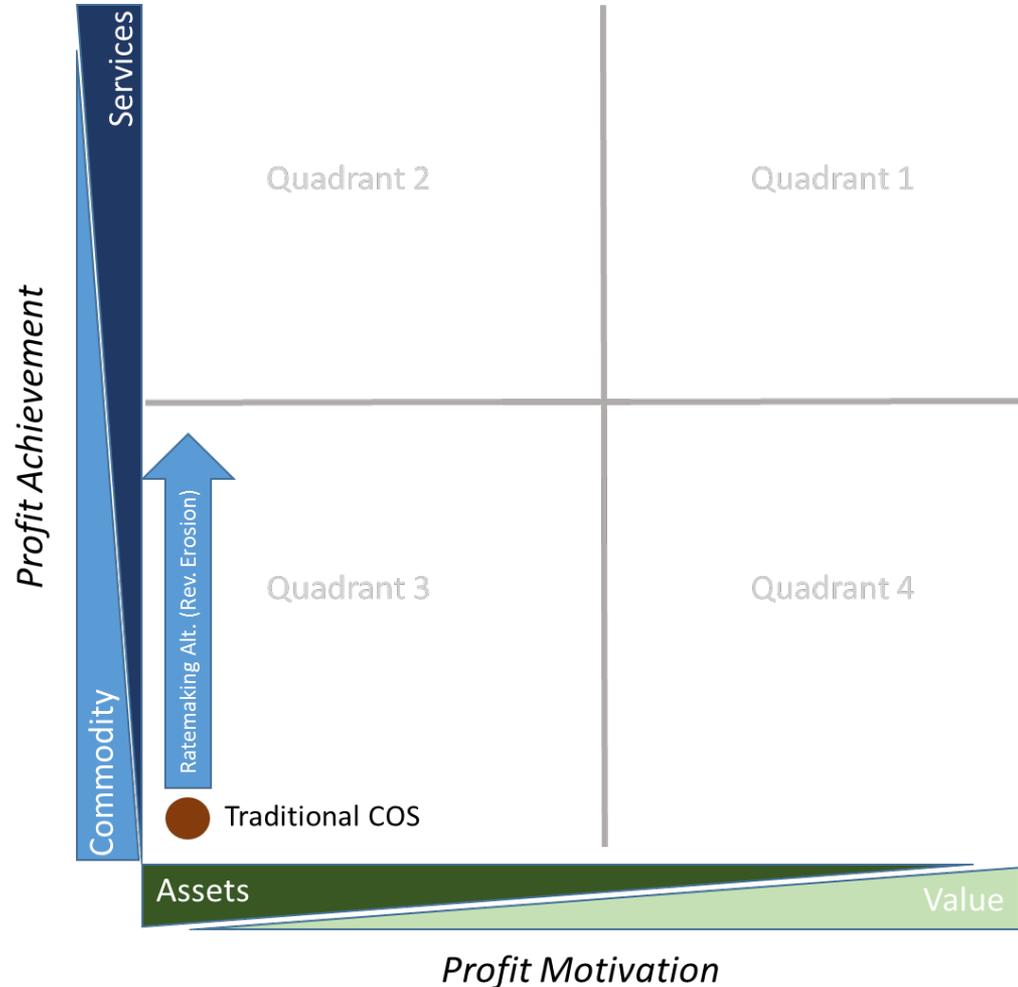


- ◆ Lower sales from EE & DER results in lower collected revenues between rate cases

Mitigating “Revenue Erosion” Effect

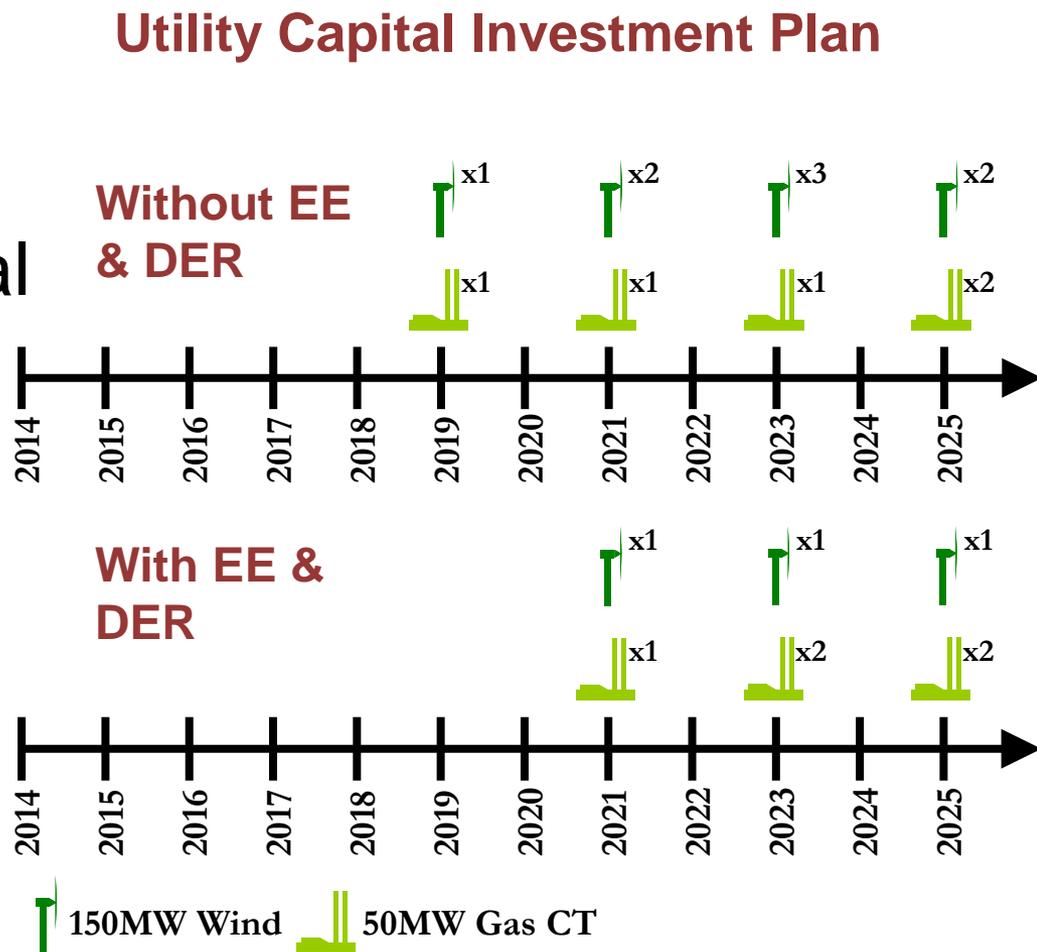
Focus on Electricity as Service

- ◆ **Rate design** – Higher fixed charges or higher demand charges for electric commodity service
- ◆ **Lost revenue mechanism** – Provide utility opportunity to recover “lost revenues” due to lower sales because of EE & DER
- ◆ **Decoupling** – Break link between commodity sales level and collected revenue



“Lost Earnings Opportunity” Effect

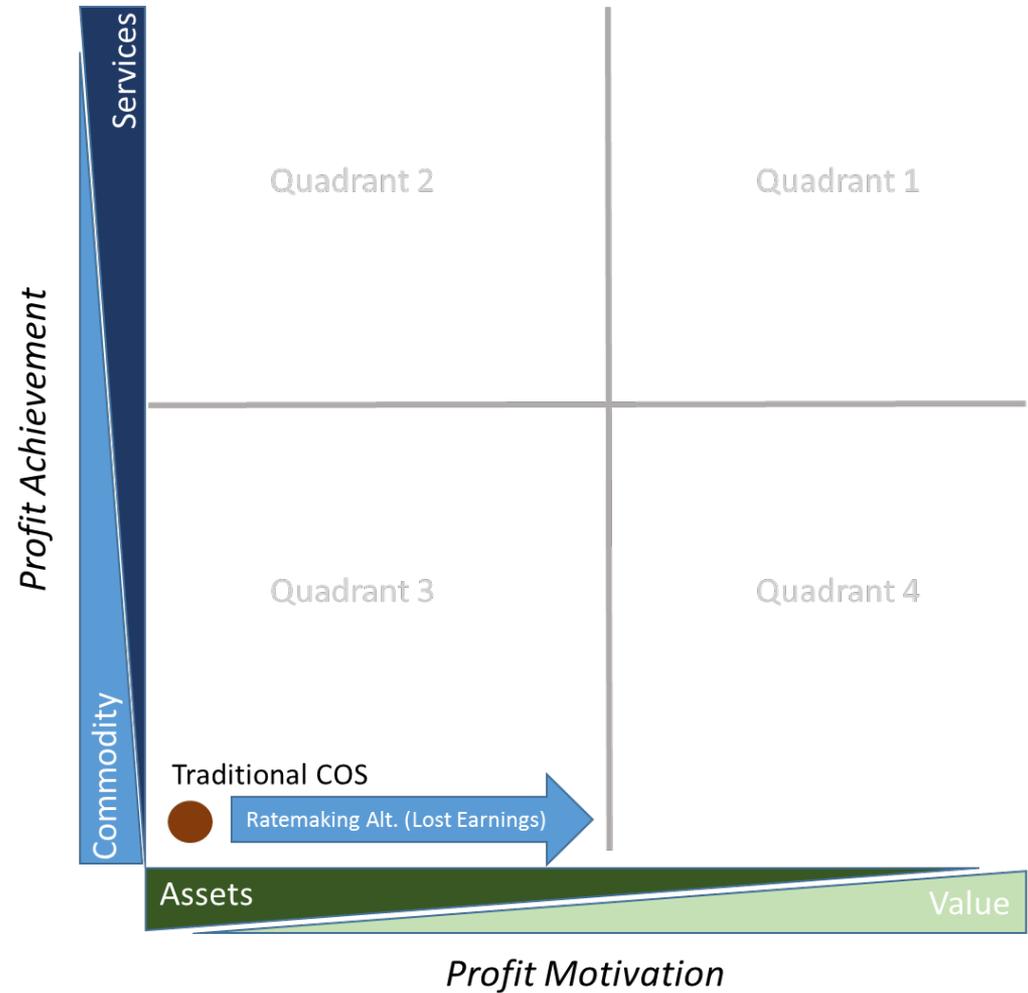
- ◆ Lower commodity sales and peak demand from EE & DER results in deferral of GT&D investments
- ◆ Foregone capital investments represents lost earnings opportunity for the utility



Mitigating “Lost Earnings Opportunity” Effect

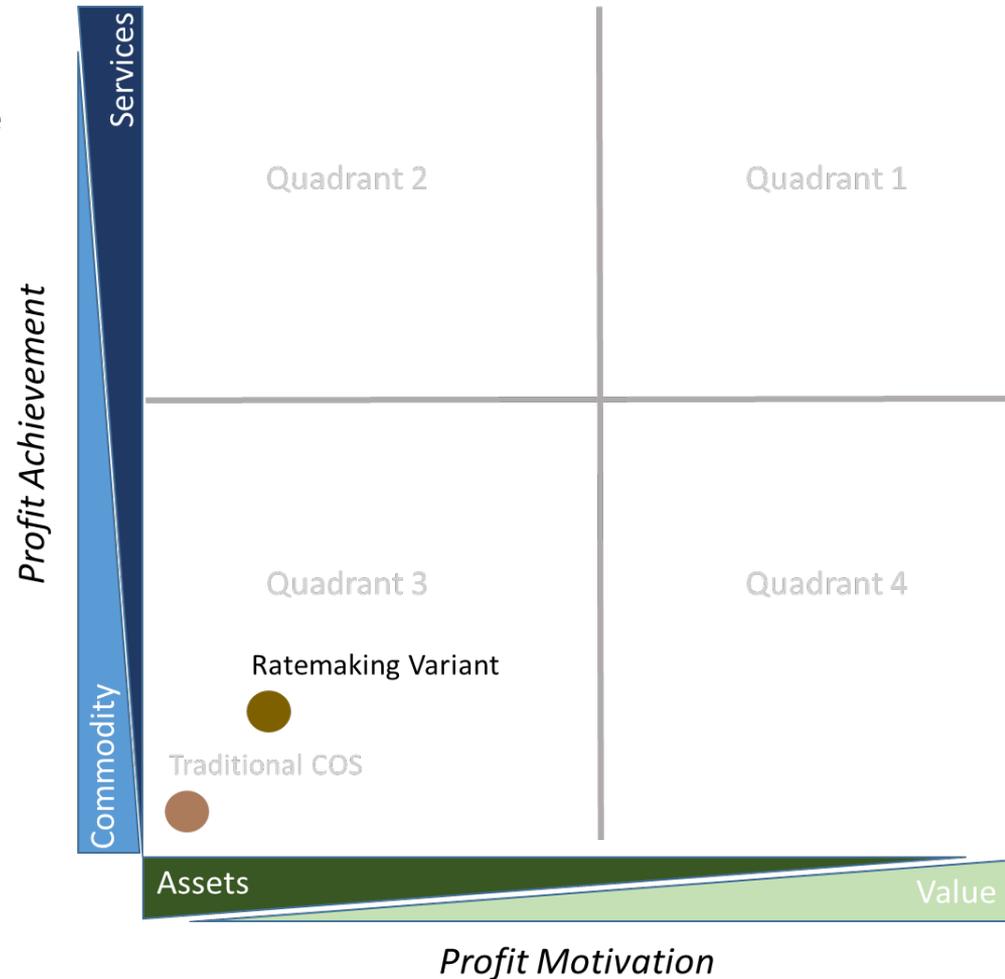
Focus on Increasing Value of Assets

- ◆ **Shared Savings**— % of net benefits or avoided costs
- ◆ **Cost bonus** – % of expenditures for meeting goals
- ◆ **Cost capitalization** – Ratebase program expenditures and/or asset investment costs



Incremental application of mitigation measures under Traditional COS

- ◆ Current application of COS regulation is not pure
- ◆ Includes modest movements along both axes
- ◆ Profit motivation still based more on assets than value
- ◆ Profit achievement still based more on sales than services

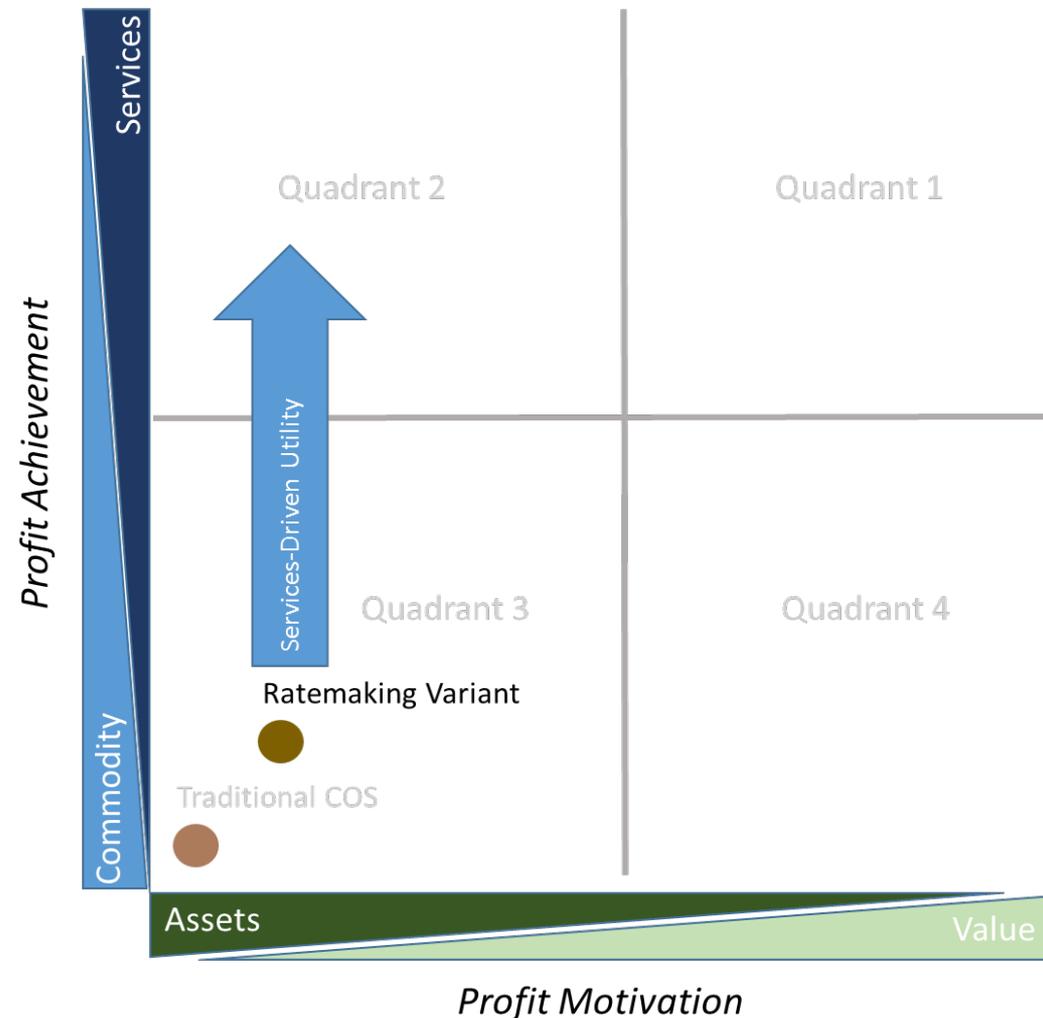


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Creating a Services-Driven Utility

- ◆ Utility provides/enables valued added services (e.g., EE, PV, DR, storage, home automation, etc.)
- ◆ Services priced to collect sufficient revenue to cover fixed costs (incl. returns)
- ◆ Profit achievement focused more on services enabled or delivered by utility and/or third parties than commodity sales



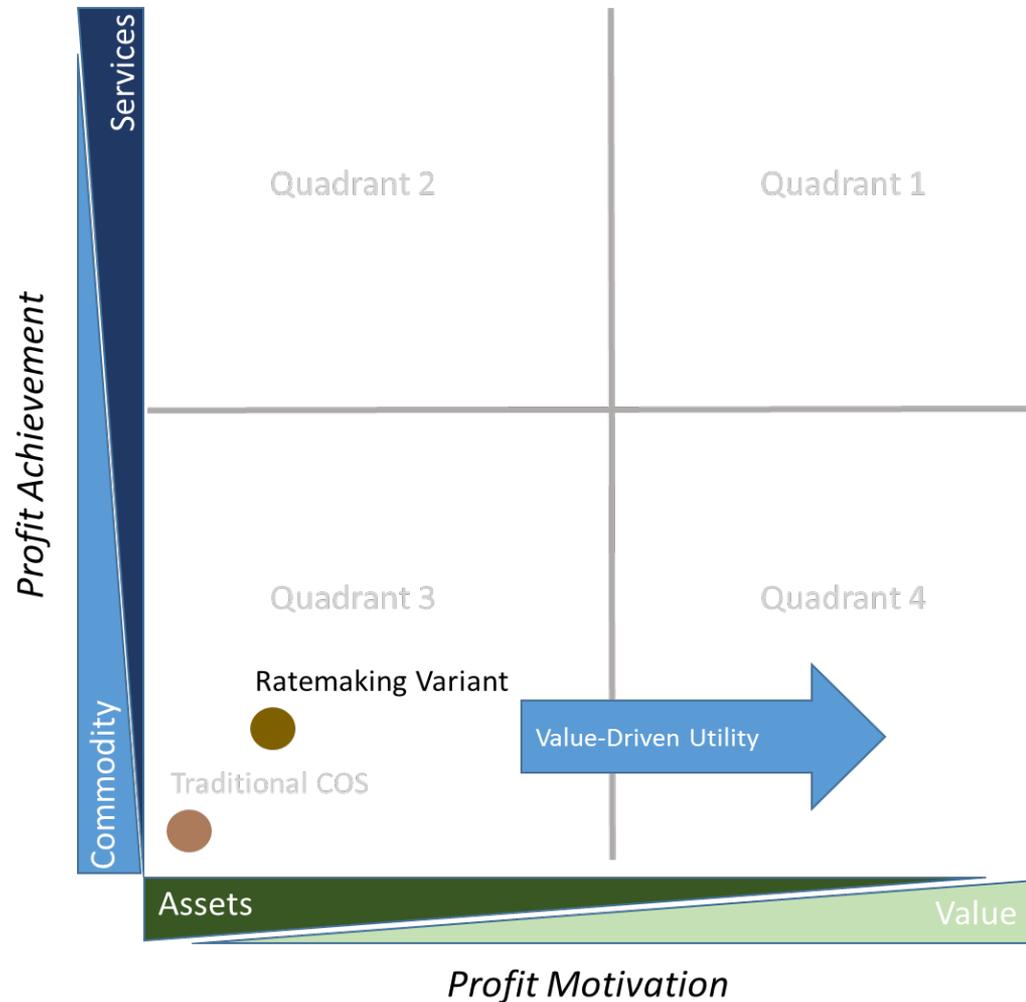
Creating a Services-Driven Utility

Regulatory and Policy Implications

- ◆ Role of utility would potentially change
 - Regulators will need to consider impacts on competitive markets
 - Utility may need to grant access to customer information and utility networks
- ◆ Utilities and customers would face new risks
- ◆ Changes in pricing – especially for energy services
 - Properly attributing costs to specific energy services

Creating a Value-Driven Utility

- ◆ Utility's profit motivation comes more from maximizing extraction of value from existing assets than investing in assets
 - ❑ Incremental investments made to meet/exceed targets or goals
- ◆ Performance-based regulation ties utility revenues to performance relative to goals
 - ❑ Examples of goals: Outage management, MW of interconnected DERs
 - ❑ Goals can be targeted or comprehensive



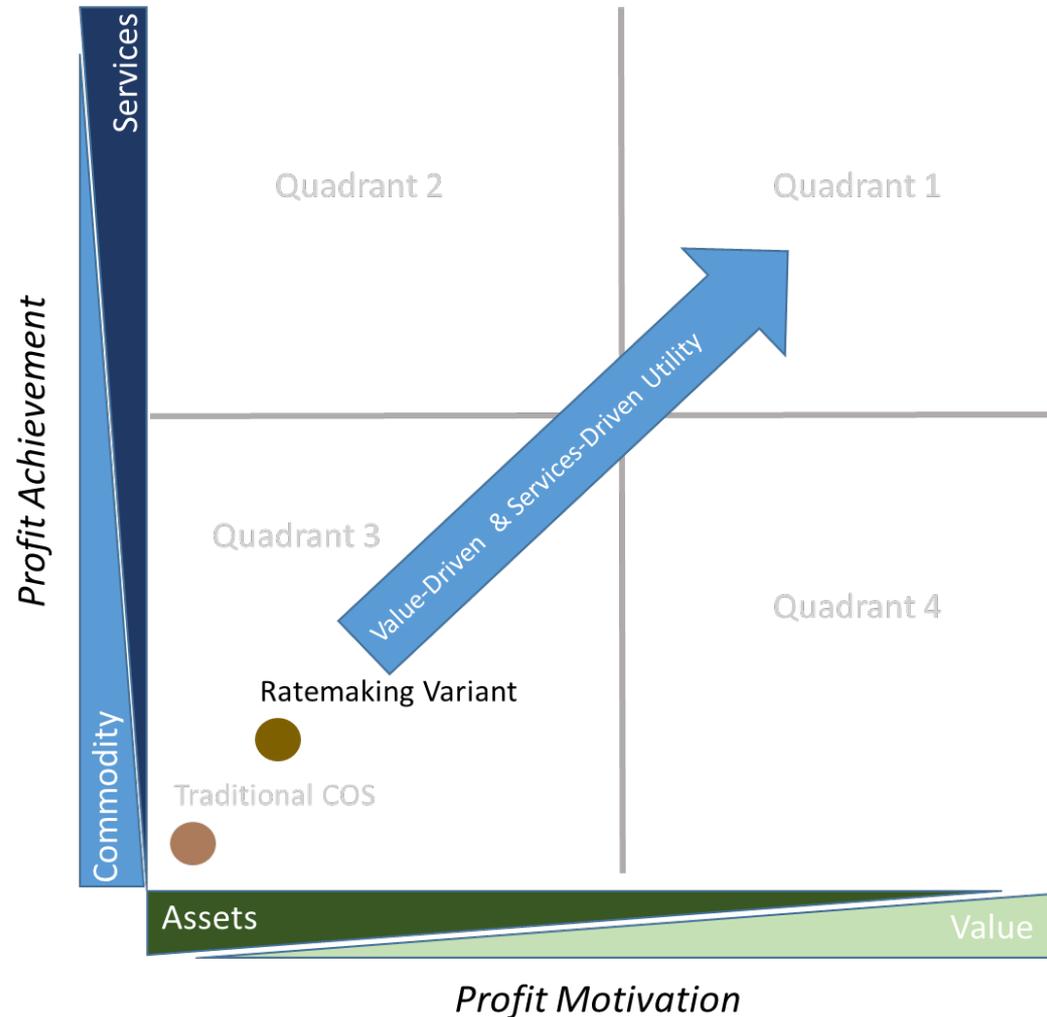
Creating a Value-Driven Utility

Regulatory and Policy Implications

- ◆ Does not necessarily suggest change in utility roles
- ◆ Different financial risks for utility
 - Profits are contingent on meeting goals and not necessarily levels of costs and sales between rate cases
- ◆ Limited experience in the U.S. with comprehensive PBR approaches
 - Some experience with “targeted PBR” focused on particular areas of utility performance (e.g., successful achievement of energy savings goals)

Creating a Value-Driven and Services-Driven Utility

- ◆ Fundamental and comprehensive change where profit achievement based more on services than commodity and profit motivation based more on value than assets
 - May result in utility competitively or exclusively offering value-added services under PBR
- ◆ Approach may result in complete paradigm shift in the way utilities are rate regulated



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Transitioning to New Utility Business Models

- ◆ States will consider new regulatory framework and business models at their own pace; expect diverse approaches and watch the early movers
- ◆ Effective transition strategies can mitigate risk
- ◆ Transition strategies should address the following:
 - Market structure
 - Asset ownership
 - Planning/Operation responsibility
 - Utility role in providing services
 - Openness of utility networks
 - Regulatory process
 - Leverage experience
 - Incremental changes to COS regulation
 - Assessing and ensuring customer benefits

Areas for Future Research

- ◆ Application of financial principles in assessing utility returns and risk
- ◆ Detailed transition strategies and options for PBR
- ◆ Design of performance incentive mechanisms related to grid modernization
- ◆ Openness of customer information and utility networks
- ◆ Development of proper and fair pricing of value-added services

LBNL *Future Electric Utility* Regulation series

- ◆ *Electric System Functions and Roles in a High Distributed Energy Resources (DER) Future* (August 2015)
Co-authors Steve Corneli/NRG and Steve Kihm/Seventhwave
- ◆ *Planning, Market Design, Operation and Oversight of the Distribution System in a High DER Scenario* (August 2015)
Co-authors Paul De Martini/Newport Consulting Group and Lorenzo Kristov/CAISO
- ◆ *Performance-Based Regulation in a High DER Future* (October 2015)
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- ◆ *Unbundling and Pricing of Distribution System Services in a High DER Future* (November 2015)
Co-authors Ryan Hledik/The Brattle Group and Jim Lazar/Regulatory Assistance Project
- ◆ *Utility Resource Planning for a High DER Future* (December 2015)
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Questions?

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