

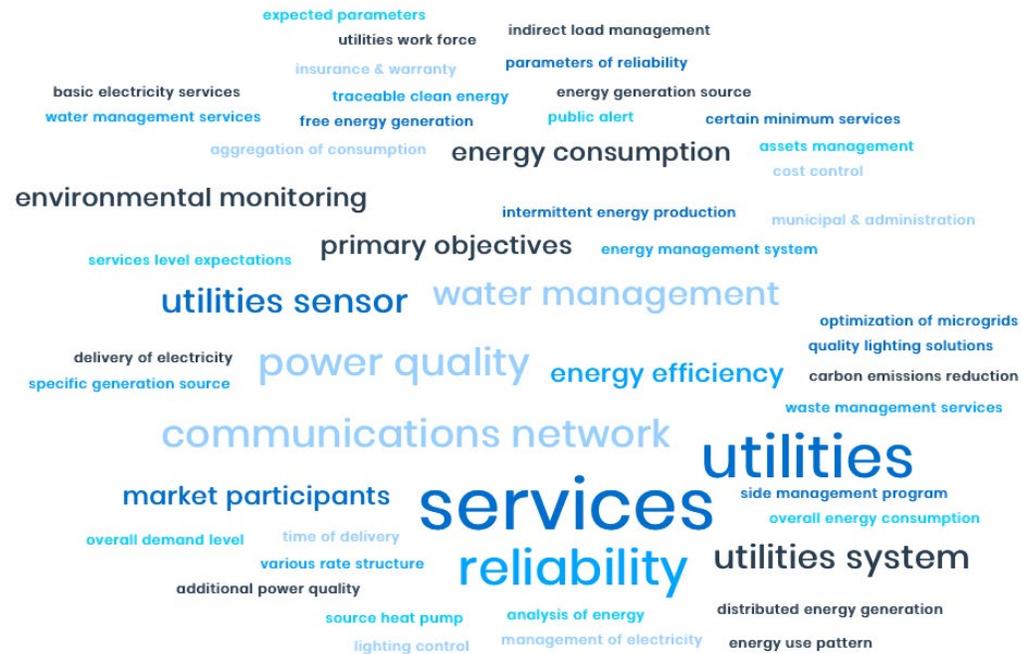
Expanding the Scope of Commercial Opportunities for Investor-Owned Electric Utilities

GMLC Report
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Motivation for Research: *Taxonomy*



Observation

New technologies are giving customers of all scales new options for generating, managing and consuming electricity and that this is changing the traditional utility business model of electricity service

- Initial literature review revealed >100 specific offerings and >80 “generic” services
- But no comprehensive catalog of full suite

Objective

Develop a complete and organized taxonomy of “alternative commercial opportunities”

Motivation for Research: *Regulatory & Policy Resource*



- Regulators must still adjudicate on and rationalize responses to utility proposals
- Is there a way to identify and organize technical and policy related questions while recognizing complicated, overlapping and state-specific issues?
- A combined resource to provide regulatory community with a resource to support informed, robust consideration of “alternative commercial opportunities”



“Alternative Commercial Opportunity”?



- “Electricity Delivery” includes a wide range of electric utility rate structures, customer classes, performance standards and regulatory strategies.
 - ▣ This paper is not intended to be an examination of new rate structures or performance-based regulation.
- “Alternative Commercial Opportunity” includes all other businesses opportunities a utility *might* pursue.
 - ▣ This paper is also not examining potential shareholder-funded business ventures.



Alternative Commercial Opportunity: *Two Criteria*



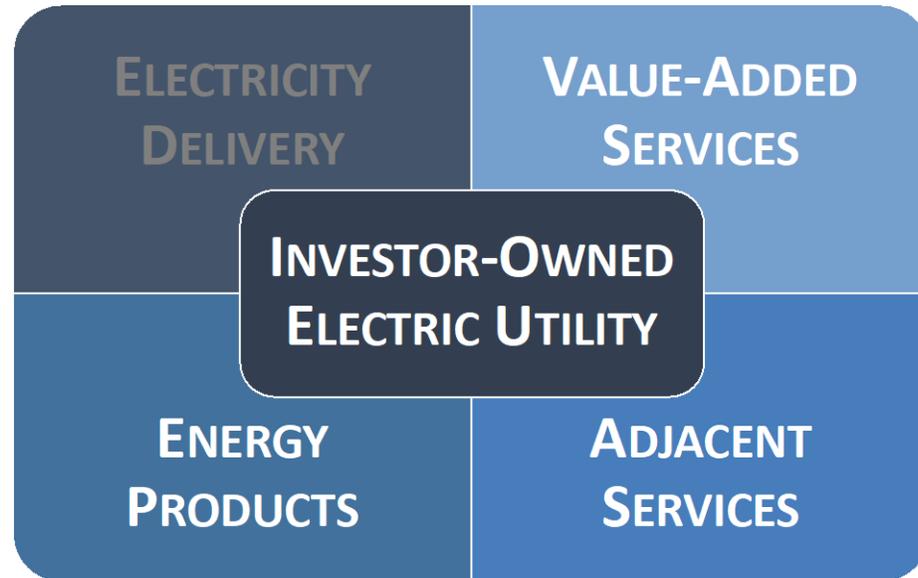
1. Specific Transaction



2. Regulated Assets



Taxonomy: *Three Classes*

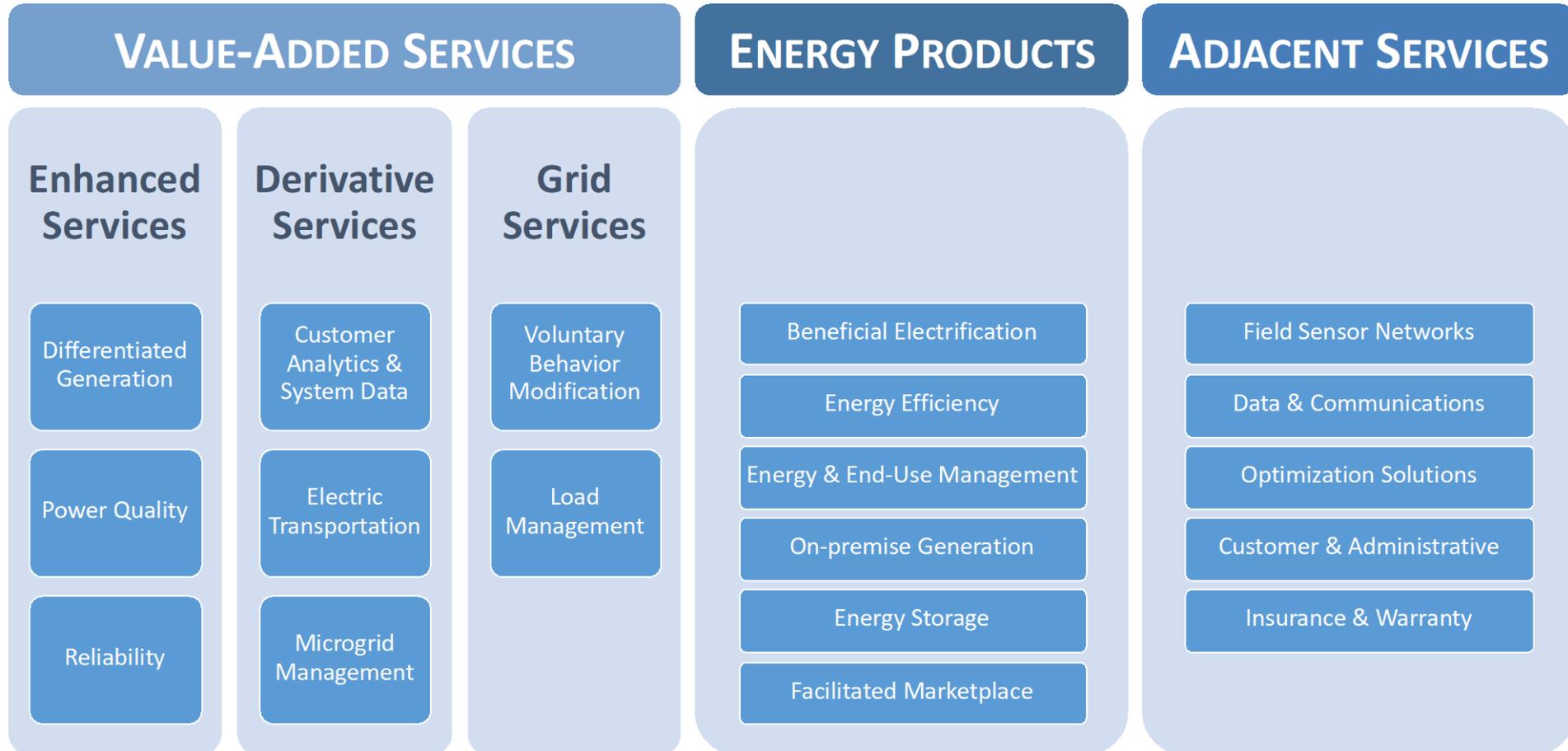


Three broad classes identified that (roughly) correspond to relationship to energy delivery:

- 1) Value-Added Services
- 2) Energy Products
- 3) Adjacent Services



Taxonomy: *Service Portfolios*



Portfolio: *Value-Added Services* (1/3)



Definition: Utility-delivered products and services that are tailored to specific customer needs or preferences.

- *Differentiated Generation* – based on specific attributes or electricity source (e.g., wind, solar, etc.)
- *Power Quality* – additional equipment or power conditioning for certain applications that have specific parameters (e.g., voltage management, surge protection)
- *Reliability* – backup power for critical applications on or dedicated to customer premise



Portfolio: *Value-Added Services* (2/3)

VALUE-ADDED SERVICES

Derivative Services

Customer Analytics & System Data

Electric Transportation

Microgrid Management

Definition: Utility-delivered products and services that influence electricity consumption or provide other values.

- *Analytics* – including sophisticated energy use patterns, load profiles to enhance customer asset management, operations, cost management, etc.
- *Transportation* – managed charging strategies to maximize benefits, reduce risks and enhance equipment.
- *Microgrid* – optimization to enhance reliability, costs, or other services from customer-owned assets



Portfolio: *Value-Added Services* (3/3)



Definition: Utility-delivered products enabling the customer to receive or provide other grid services.

- *Behavior* – reductions in total electricity consumption or otherwise improve grid operations without regard to specific time periods.
- *Load Management* – direct device control, indirect load management, or other specific load modifications with the goal of enhancing grid reliability and flexibility.



Portfolio: *Energy Products*

ENERGY PRODUCTS

Beneficial Electrification

Energy Efficiency

Energy & End-Use Management

On-premise Generation

Energy Storage

Facilitated Marketplace

Definition: Products directly or indirectly offered by the utility for purchase by customers that may contribute to grid operations or public policy objectives. Examples include:

- Electric water and space heating
- Ground- or air-source heat pumps
- Controls and sensors
- Rooftop solar
- Battery storage systems
- Online marketplaces



Portfolio: *Adjacent Services*

ADJACENT SERVICES

Field Sensor Networks

Data & Communications

Optimization Solutions

Customer & Administrative

Insurance & Warranty

Definition: Utility-offered services with no direct connection to electricity delivery but leverage existing utility assets and capabilities.

- gunshot detection
- environmental monitoring
- wireless and broadband capabilities
- optimization of municipal utility, waste, and water management systems
- workforce and customer relations facilities (e.g., call centers)



Adaptations of Utility Regulation Over Time

1880s

Electric Pioneers



2000+

Connected, distributed and intelligent energy innovation,,,



1910s

Regulated Monopolies

1930s

Universal Electrification

1970s

PURPA

1990s

Retail Restructuring



Policy: *Guiding Issues*



Policy: *Market Structure*



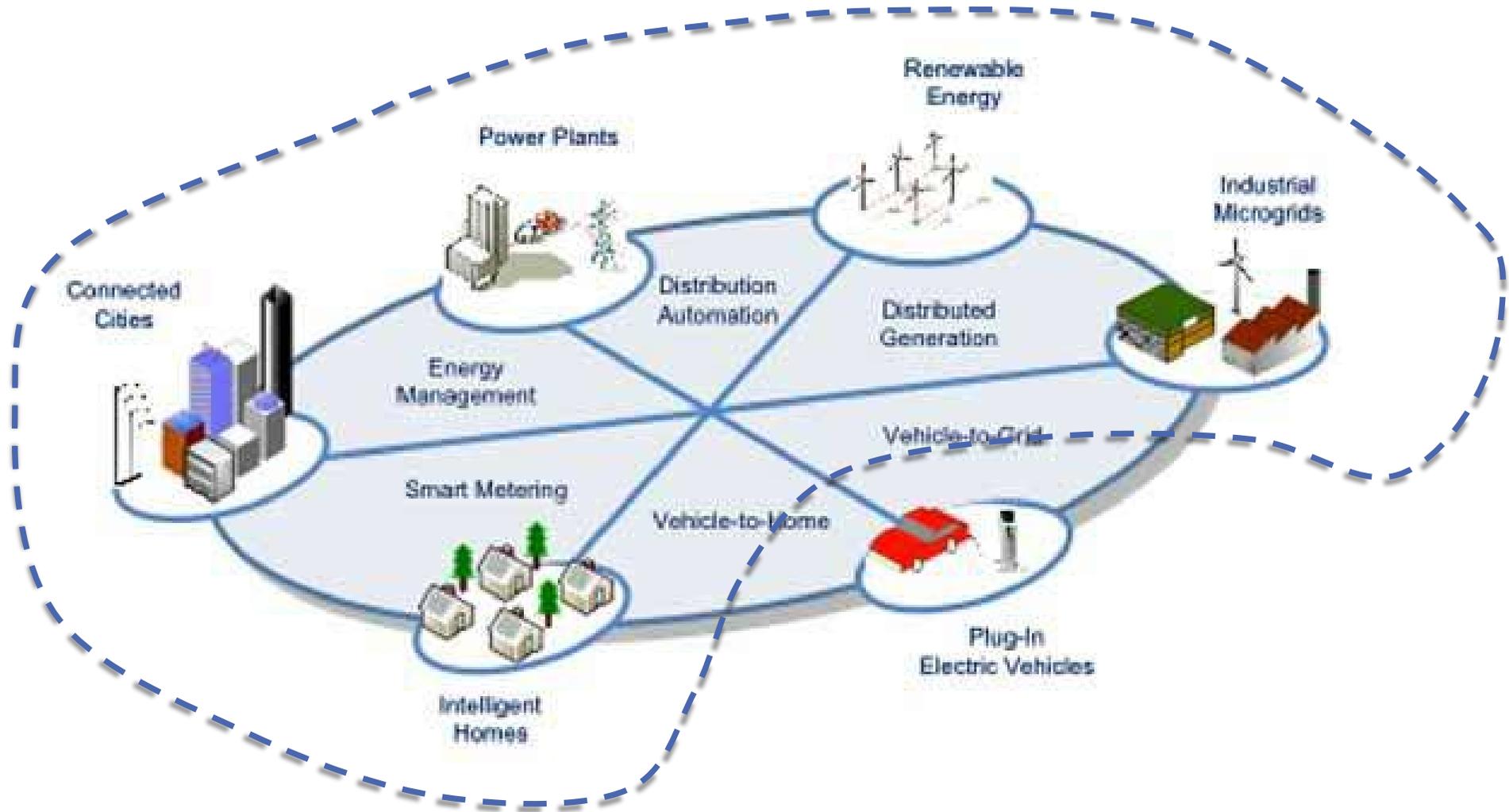
Market structure defines the macro-level activities, transactions, and customers of the utility

- Including relationships between wholesale and distribution markets, distribution system and end-use customer
- Market structure bounds the footprint of the regulated entity by defining both where the utility has a protected market and what activities are restricted

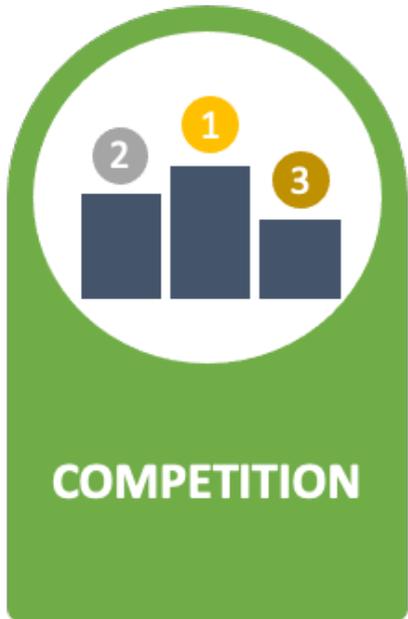




EVSE: *Market Structure*



Policy: *Competition*



Competition defines the micro-level forms of engagement between the utility and the other market participants

- How should utilities procure necessary grid resources and services?
- What access to the regulated system is afforded to non-utility actors?
- Who can and can not participate in the marketplace?





EVSE: *Competition*



Policy: *Market Risk Strategy*



Electric utilities face myriad physical, financial, and security risks. Regulators determine the allocation of risk through market design.

- Rate design can shift risk from ratepayers to shareholders (and vice versa)
- Rate riders and charges can insulate utilities from risk
- Is risk allocation reasonable and equitable?
- Are new risks being introduced? (e.g., cyber)

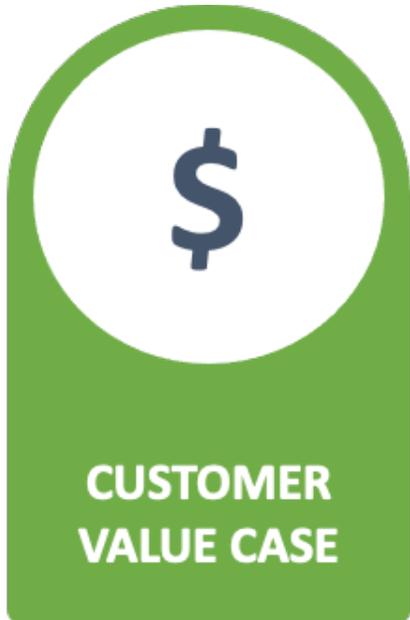




EVSE: *Market Risk Strategy*



Policy: *Customer Value Case*



Customer value determines whether the use of regulated assets or regulated capital will yield compelling benefits for traditional customer.

- Are utility's capabilities well-suited to the opportunity?
- Is there sufficient benefit for all customers?
- Do financial implications of expanding the monopoly footprint warrant approval of the proposal?





EVSE: *Customer Value Case*



What does "the customer" need?

- Siting?
- Cost control?
- Consumer protection?
- Market Development?



Policy: *Regulatory Business Model*



Regulators establish incentives to motivate utility behavior, traditionally through a return on approved capital investments that is recovered from customers.

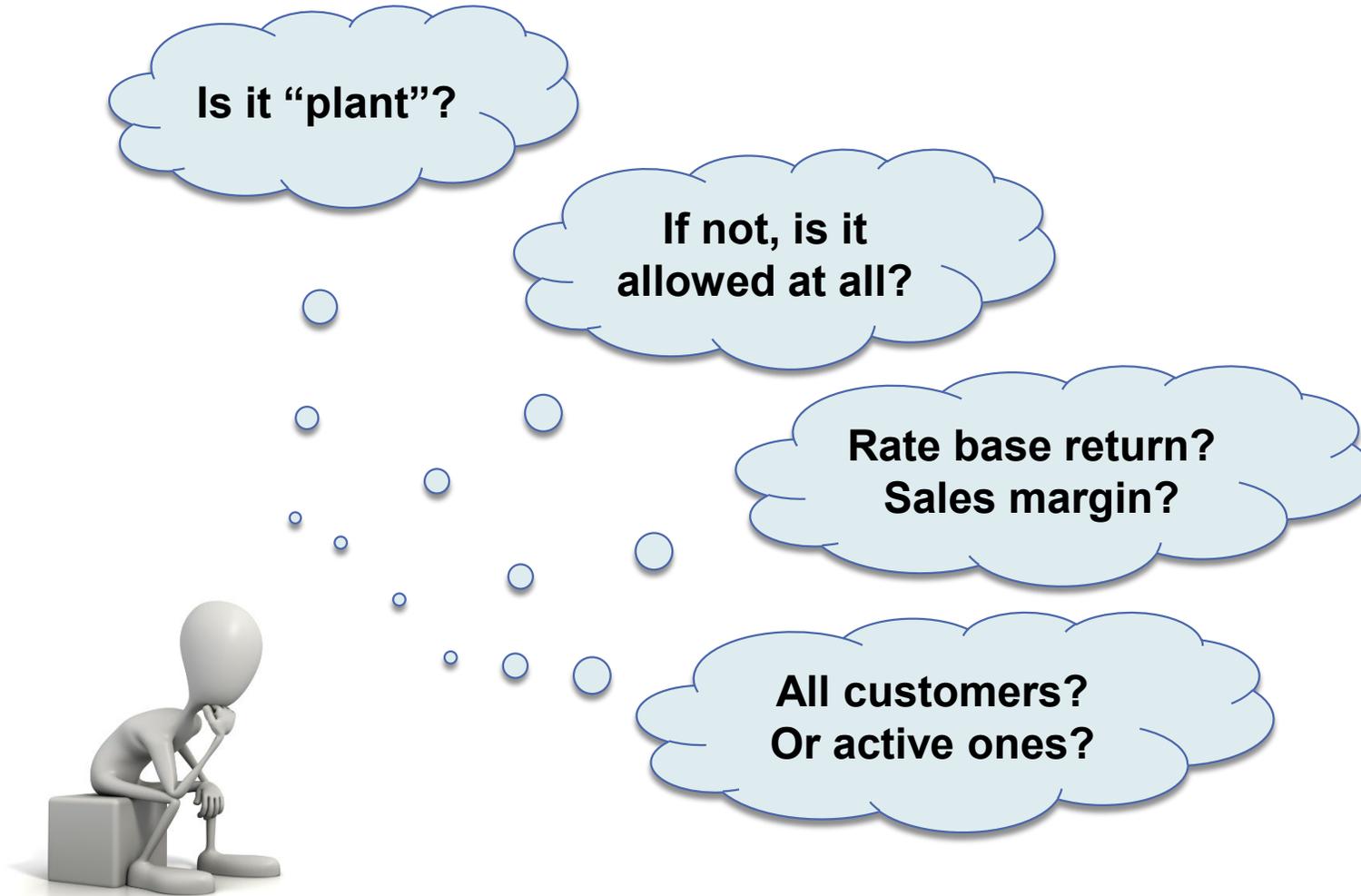
Four distinct business model mechanisms include:

- Rate of return on capital invested
- Performance incentives
- Cost margins
- Transaction or performance fees





EVSE: *Regulatory Business Model*



Policy: *Transition Strategies*



Regulators can also use ongoing proceedings and deliberations to align outcomes across multiple dockets with long-term transformation objectives.

- How can this support long-term electric utility sector transformation and grid modernization strategies?
- How can a more engaged consumer base catalyze larger dynamics in the industry and public policy?
- Can regulators support the integration of advanced technologies, customer preferences and policy objectives?





EVSE: *Transition Strategies*

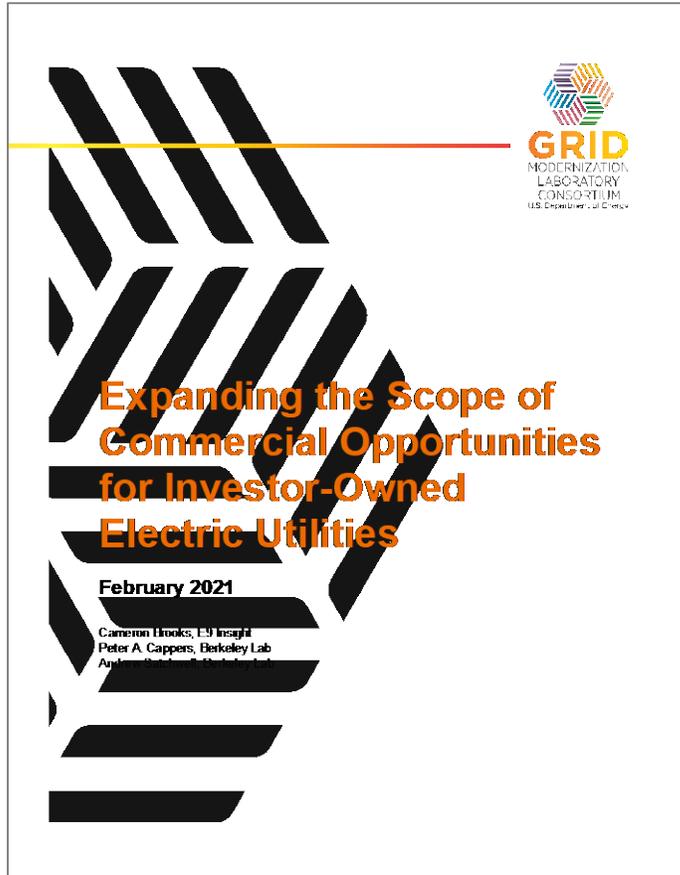


Conclusions

- The electric industry has advanced and co-evolved with core principles of natural monopoly and consumer protection.
- Regulatory strategies have evolved with advancing technology, new economies of scale, and changing customer demands.
- Today, new technologies and engaged customers are pushing some utilities and regulators towards new strategies that promote growth and transformation.
- This report serves as a resource for policy makers, regulators, and stakeholders to support informed and robust planning and adjudication.



Access the Report



Available from:

<https://emp.lbl.gov/publications/expanding-scope-commercial>



Questions & Comments

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