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

GMLC Report
02/24/2021

Cameron Brooks
Peter Cappers
Andy Satchwell
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”
“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
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

**Value-Added Services**
- Enhanced Services
  - Differentiated Generation
  - Power Quality
  - Reliability
- Derivative Services
  - Customer Analytics & System Data
  - Electric Transportation
  - Microgrid Management
- Grid Services
  - Voluntary Behavior Modification
  - Load Management

**Energy Products**
- Beneficial Electrification
- Energy Efficiency
- Energy & End-Use Management
- On-premise Generation
- Energy Storage
- Facilitated Marketplace

**Adjacent Services**
- Field Sensor Networks
- Data & Communications
- Optimization Solutions
- Customer & Administrative
- Insurance & Warranty
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)

**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
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*

**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*

**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

1910s
Regulated
Monopolies

1930s
Universal
Electrification

1970s
PURPA

1990s
Retail Restructuring

2000+
Connected, distributed
and intelligent energy
innovation,...
Policy: Guiding Issues

- Market Structure
- Competition
- Market Risk Strategy
- Customer Value Case
- Regulatory Business Model
- Transition Strategies
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
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?
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

Is it “plant”?

If not, is it allowed at all?

Rate base return? Sales margin?

All customers? Or active ones?
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

Cameron Brooks
(303) 957-7667
cbrooks@e9insight.com

Peter Cappers
(315) 637-0513
pacappers@lbl.gov