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Policy note

Framing of customer engagement opportunities and renewable energy integration by electric utility representatives

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ABSTRACT

Distributed and renewable energy technologies are changing the electricity sector and altering traditional relationships between electric utilities and their customers. This analysis involving focus groups with fourteen electric utilities in seven U.S. states (California, Illinois, Massachusetts, Minnesota, New York, Texas, and Vermont) demonstrates divergence in framing among utility representatives in terms of how they characterize customer engagement opportunities and renewable energy integration. This research is among the first qualitative studies comparing utility representatives' discourse across the United States. Utilities in Texas and Vermont are particularly divergent especially in their framing of customer engagement opportunities during this time of energy transition.

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1. Introduction

Electric utilities play a critical role in society; their historical purpose has been to generate and distribute electricity to households, communities, businesses and other organizations, recovering their costs through rates charged (Wilson et al., 2008). During the current recent period of rapid technological change, the traditional role of electric utilities is shifting. As their costs have fallen (Trancik, 2015), distributed and renewable energy have been deployed at faster rates than the most sophisticated energy models predicted (Roberts, 2012). With growing opportunities for customers to generate and store their own electricity, purchase “green” power, and reduce consumption through energy efficiency improvements and demand-side management, the conventional business models of electric utilities are being challenged (Wilson et al., 2008). Some within the electricity sector describe this phenomenon as “the utility death spiral” (Graffy and Kihm, 2014;

Felder and Athawale, 2014). Others welcome innovation and the transformation of power systems (Lacey, 2013; Pentland, 2014; Stephens et al., 2015).

During this time of rapid technological change, growing policy pressures related to climate change, decreasing costs, and growing consumer engagement on energy issues, electric utilities worldwide are responding in different ways. While some are resisting shifts from the legacy energy system, others are embracing ambitious goals, particularly in terms of expanding the use of renewable energy resources to as high as 100% at the country (Strunz, 2014), state, and city levels (Vermont Public Service Department, 2014). Tension lies in determining how much consumers and “prosumers” (consumers who produce their own electricity) should support the fixed transmission and distribution costs of the legacy system (Bagozzi, 2008; Grijalva and Tariq, 2011; Warrick, 2015; David, 2014), as well as backup resources for reliability. Incumbent utility organizations play a critical role in the changing energy landscape. However, the diversity of responses to the forces of change in terms of organizational culture are under-analyzed in the research literature on energy transitions (Wilson et al., 2008; Hirsh, 1989; Nonnes, 2004). Acknowledging this gap, this research considers the nature of utility engagement with customers, particularly with regard to the potential of renewable energy resources.

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This research examines variation in how electric utility representatives characterize customer engagement opportunities and renewable energy integration, paying specific attention to divergence based on different ownership structures and state contexts. To assess variation, we conducted focus groups with representatives from 14 utilities across seven different states in the United States to contrast the priorities and perspectives revealed for different types of utilities. We first provide background on the structures of electric utilities and the energy policy context of the seven different states. We then explain the focus group methodology, followed by a discussion of the results, and conclusions that highlight larger implications.

2. Structure of electric utilities

Electric utilities can be organized as public and private organizations, and they are sometimes considered a hybrid form due to extensive yet differentiated regulation. Utilities generate electric power, operate high-voltage transmission systems to bring power to central sub-stations, and run the low-voltage distribution grids that bring electric power to customers. In the United States, there are three main types of utilities: investor owned utilities (IOUs), municipally owned utilities (munis), and cooperatively owned utilities (co-ops) (Wilson et al., 2008). While IOUs are privately owned, both munis and co-ops reflect democratic ideals of serving the public through participatory representation and local control (Atkinson and Halvorsen, 1986).

Culture and practice within electric utilities are influenced by and reflect both organizational and regulatory structures. IOUs, which currently serve 72 percent of the U.S. population, are private companies financed by shareholder equity and bond debt. They typically are larger financially than municipal utilities and can also have multi-state operations or multiple subsidiaries (Regulatory Assistance Project, 2011). IOUs are subject to federal and state economic regulations, with new projects and investments approved by public utility commissions. In traditionally regulated states, utilities are authorized to earn a return on their investment. In restructured states, generation is separated from other functions and customers are able to choose their suppliers (Hirsh, 1999; KaTeske, 2002). Munis are the most numerous type of utility; more than 2000 munis serve 21 million customers accounting for 15 percent of electricity sales (APPA, U.S., 2013). While the majority of munis are small and serve rural communities, some are large (for example, the Los Angeles Department of Water and Power provides power and water to more than a million customers). Munis can access tax-exempt financing to fund their projects. Munis are governed either directly by the local city council or by another locally elected body, although some state's munis and co-ops are also subject to state regulation (RAP, 2011). Munis may be vertically integrated and generate their own power or only purchase power for distribution, making them transmission dependent. Rural electric co-ops are nonprofit organizations; the 912 generation and distribution co-ops cover 70 percent of the U.S. land area, serve 19 million customers, and account for 12 percent of electricity sales (APPA, U.S., 2013). They generally serve sparsely populated rural areas, are tax exempt, and qualify for low-rate federal loans for infrastructure investments. Co-ops are owned by their customer members and are governed by a membership-elected board that is responsible for setting policy and procedures for its management. Financing, governance structure, and regulatory environment all contribute to utility organizational culture and shape relationships with customers. We hypothesize that the type of ownership influences the views of utility representatives in terms of customer engagement opportunities and that publicly owned munis and member owned cooperatives may be more positively inclined

toward engagement due to their ownership structure and generally smaller scale.

3. State-level energy policy context

While all utilities are required to comply with federal laws and regulations governing wholesale electricity markets and environmental protection, the locus of much energy policy in the United States is at the state level and thus varies across the country (Fischlein et al., 2014; Wilson and Stephens, 2009). State-level heterogeneity in energy resources, energy consumption patterns, and the political and economic context for energy is substantial (Stephens et al., 2008, 2014). States also vary in the scale of electricity production, consumption, and price (Tables 1 and 2). This research involved utilities from seven different states: California, Illinois, Massachusetts, Minnesota, New York, Texas, and Vermont. California and Texas are both very large states with distinctly different energy policy profiles. Vermont is among the smallest of the states, known for relatively progressive energy policy (McKibben, 2015). From a policy perspective, Massachusetts and New York are important states in the Northeast, while Minnesota and Illinois are both influential states in the Midwest. We hypothesize that the state context (i.e., socio-political and economic factors and public policies) shapes views of utility representatives about customer engagement opportunities and renewable energy integration.

Among the seven states included in this research, diversity also exists in the number and types of electric utilities within each state and the percentage of electricity provided from each type of utility (Table 2). Munis and co-ops account for more than 30% of sales in Minnesota and Texas although they make up less than 5% of sales in California and New York. Although munis and co-ops serve fewer communities than IOUs, these customer-owned organizations are important to the electric utility landscape. This research includes IOUs, munis, and co-ops in order to understand diversity among these different types of organizations.

4. Methods

To explore variation in framing about customer engagement opportunities and renewable energy integration in the context of different ownership structures and different states, we conducted a series of 14 focus groups in seven different states (one IOU and one muni or co-op in each state). Focus groups are semi-structured discussions used to explore a specific set of issues; the group interaction encourages respondents to explore and clarify individual and shared perspectives (Tong et al., 2007). Conducting the same focus group protocol with different organizations enables comparative analysis.

We conducted the focus groups between September 2012 and June 2013. Each focus group included four to eight employees from the same electric utility. Focus groups consisted mainly of engineers, analysts, and public relations staff. Each session followed a set of guiding questions asking the participants to discuss challenges and opportunities of electric industry change and key actors involved in that change. Details of the focus group protocol are provided in the supplementary materials. Responses to the focus group questions were analyzed to assess whether customer engagement opportunities and renewable energy integration were characterized in positive or negative ways.

Audio recordings of the focus groups were professionally transcribed and content analysis (Mayring, 2000) was conducted using NVivo text analysis software. A codebook was developed iteratively to characterize how customer engagement and renewable energy were discussed and represented during each focus group. A variety

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