Evidence on Customers' Value in Electric Rate Cases

Evidence on the costs, quality and value of electric utility service, from the customer perspective, will have an increasing role in rate cases. Its importance will grow with increased dependence on uninterrupted service, increased disruption from prolonged interruptions, and increased expectations ratcheting up what is deemed 'adequate service.' What evidence will best demonstrate that an investment is needed to keep up with customers' expectations and maintain the value they receive?

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I. Introduction

As outlined in an article in *The Electricity Journal* last issue, compelling evidence on the costs, affordability, reliability, quality, and overall value of electric utility service, from the individual customer perspective, will have an increasing role in base rate cases before state public utility commissions.[1] The importance of value evidence will grow with our increased dependence on uninterrupted electric service, the increased disruption from prolonged multi-day interruptions of service (sometimes crippling), and the increased expectations of the public and public utility commissions ratcheting up what is deemed by them to be "adequate service."

The trend is unmistakable. Consider the last decade. With the meteoric adoption of invaluable Internet and mobile

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services, and our hyper-dependence on them, electricity's value has soared. So too has the impact of electric service interruptions particularly those debilitating whole communities for days. Imagine where electricity's value will climb to, by the mid-21st century, and the devastating impact of multi-day interruptions then. At the rate that electricity's value is increasing, widespread prolonged interruptions in mid-century will be catastrophic and unacceptable.

Investment in the electric grid that cost-efficiently minimizes the incidence, breadth, and duration of these devastating interruptions should be, in today's parlance, a no-brainer. Society invests in much the same way to diminish the likelihood and effect of military attack, terrorism, crime, disease, pollution, and fire on life, health, and property.

To make the case, for the consideration of public utility commissions, that such cost-efficient investment in the grid is in the public interest given the threat of widespread prolonged interruptions of electric service, what evidence can be brought to bear? What quantifications can applicants in rate cases – regulated electric distribution utilities – introduce to enable public utility commissions to assess where overall customer value stands today and will stand tomorrow, without a proposed investment, and to determine whether the investment would improve customer value (net of customer cost)?

> Resilience is something we all want in our utility systems and commissions and utilities are hard at work addressing reliability and resilience for the systems they oversee... To better accommodate resilience into the world of regulatory review, however, we need to sharpen its definition and provide a more rigorous set of analytic tools to evaluate it.[2]

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II. Quantifying Customers' Costs, Affordability, Quality and Value in Understandable Terms

In the base rate cases of regulated electric distribution utilities before state public utility commissions the focus is rarely on the customer perspective, on what are the costs of individual customers and are these just and reasonable? Rather, the focus is commonly on the utility perspective, on what is the cost of the customers' utility in aggregate and by functional category and is it just and reasonable?

Yet, it would be a rather simple matter, to provide the customer perspective, to characterize the costs of individual customers and consider whether these are proportionate with the value that customers receive. It would not be more complicated than: (a) analyzing the bills of customers, (b) representing their statistical variation, and (c) putting the results in terms that commissions and the public can easily relate to, with meaningful comparisons.

Each utility has a database of customers' monthly bills. Analyzing them reveals that in any one month, a utility's residential customers vary considerably in their kilowatt-hour usage and thus their costs for electric service. This is true for small commercial customers, too, as well as for medium-size and large commercial customers within business categories such as supermarkets, hospitals, big box stores and pharmacies.

The statistical variation in customers' costs can be well represented as a statistical distribution. In a given month, how many of our residential customers paid $1 to $1.25 per day for electric service? How many paid $1.25 to $1.50 per day? How many paid $1.50 to $2 per day?

A small complication is that customer bills are generally for a 30-day period that begins during one calendar month and ends in the subsequent month. For instance, a customer's bill might be for the 30-day period ending May 16. The bill starts in mid-April and ends in mid-May

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