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THE ART—AND CHALLENGES—OF MONETIZING RESILIENCE

by David Chiesa

In this edition of Industry Perspectives, S&C Electric Company's David Chiesa explores the ins and outs of monetizing resilience, and how the industry is working to place a value on energy stability.

Various folks have tried to place a value on resilience, including universities,government agencies, large industrials, and utilities. Each has found difficulty developing a means to calculate the value.

Let's narrow our focus for monetizing resilience down to investor-owned utilities (IOUs). There are really three means by which IOUs can attempt to measure the value of resilience: through the impact on regulatory indices, operations and maintenance (O&M) activities, and the cost to their customers. But each has its own set of challenges.

From a regulatory perspective, a utility could weigh the effect resilience has on the indices on which their utility commission rates them SAIDI, SAIFI, or MAIFI. If the utility has any form of performance-based rates, one can then "dollarize" the impact of resilience. This method could be done on a case-by-case basis for individual utilities. The struggle here is some states measure these indices but don't act on them, so they don't provide utilities with a monetary incentive—positive or negative.

In terms of O&M, one could suggest there's a tangible cost to a utility each time its system doesn't operate properly. The key question is, how much? Just because a fuse or piece of switchgear operates, it may be doing exactly what it was designed to do. Is that a normal operation? Some might say it's not because something non-normal prompted the event. Utilities must be careful in determining cost related to equipment operations when the equipment is doing exactly what it's designed to do. It will require significant root-cause analyses to determine whether the equipment is properly reacting to a situation outside of utility control.

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The key to unlock the equation is this: Each time a non-normal state occurs on a utility system, somebody must fix it. Some non-normal states can be fixed remotely with outage-management or distribution-management systems, SCADA, etc. But any time a utility dispatches a line crew or someone must take an action, there's a cost associated with it. A utility could suggest the worker is employed full time anyway, so there's no actual cost to redirect what that person is doing. But that's not accurate. There is at least an opportunity cost to address the problem and likely a fuel cost to go to the problem area.

What do I mean by opportunity cost? You staff your team for normal operations. They are normally working on maintenance or a capital-improvement project. When a nonnormal event occurs, workers get diverted away from those planned activities. When the planned things don't get done, they become critical because they weren't done. Or, in many cases, a non-normal event occurs after working a whole day on a planned activity. In this case, a utility must send someone out to fix the issue after hours, resulting in overtime expenses.

There is always a cost associated with nonnormal events, even if someone already employed at the utility is assigned to fix the issue.

Some utilities are thinking ahead of the curve. Florida Power & Light, Ameren, and the municipal utility EPB of Chattanooga, Tennessee, understand that O&M eats into the percentage return they get for their capital investment for running the grid. Their actual return—the one that goes to their investors—is affected by the amount of O&M spent. There's only a specific amount of O&M included in their rate model. If they go above that amount, they eat the difference. If they go below that, they're able to provide a better return or make further investments to the grid.

I don't want you to forget about the third facet of the cost of resilience: measuring the cost to customers. Customers bear the real brunt of poor resilience. Because the current trend is to seek cost recovery from the utilities, their claims

might be slightly overstated. That makes it difficult to get the actual real cost. But make no mistake, every time power is interrupted, even for a fraction of a second, it's absolutely a real cost to customers. The ICE calculator from Lawrence Berkeley National Laboratory is about the only means to impartially arbitrate the societal cost of outages.

Let's review: there's the regulatory slice, the O&M slice, and then the customer slice to the cost-of-resilience pie. The only relatively straightforward slice to dollarize is the regulatory one because it clearly defines penalties or bonuses if performance-based rates are in place. If a utility doesn't have performance-based rates, then the regulatory slice, just like the other two means to dollarize resilience, is only half-baked.

I'd be interested in learning how your utility sets a value on its grid resilience.

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