Electricity Currents

Calif. Confronts Changing Role of Distribution

Regulators in the U.S. and elsewhere are waking up to the reality that the underlying forces that long defined the power industry are rapidly and fundamentally changing. This means that the rules and precedents that guided them in the past are no longer applicable, or even appropriate, in how the industry is to be regulated in the future. In fact, it is not clear whether segments of the industry need to be regulated at all, since most of the changes are taking place on the *customer side* of the meter, which has traditionally been outside their purview.

The second big state to embark on an exercise of regulatory self-examination is **California**, following a path not dissimilar to the one pursued by **New York**.

To set the context of the debate, it is helpful to point out that California's three **investor-owned utilities** (IOUs) collectively spend roughly $6 billion per year on **distribution grid investments**, a small fortune even in California. They do this through periodic proposals

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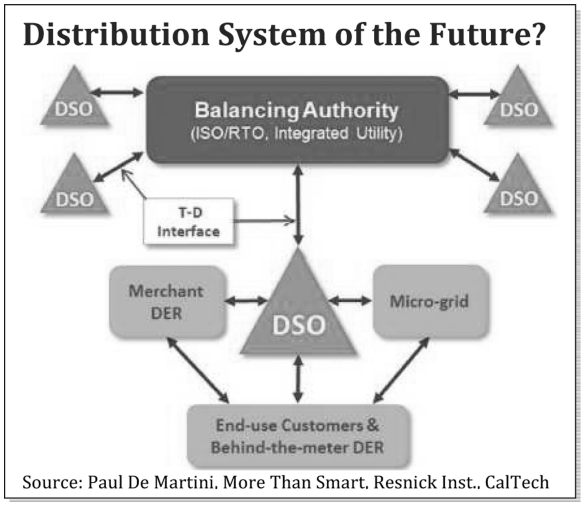

In Electricity Currents This Month:

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A Few Bright Spots Aside, Nuclear Power Is on Road To Permanent Decline

Nuclear power is gradually losing out to other fuels and technologies, according to **Mycle Schneider Consulting**, a Paris-based firm. ***The World Nuclear Industry Status Report 2014*** concludes that nuclear power's share of global commercial primary energy production declined to 4.4 percent, a level last experienced in 1984, when nuclear's fortune was rising and seemed bright. Its share of global electricity generation, a more significant metric, has also declined from a peak of 17.6 percent in 1996 to 10.8 percent in 2013.

scenario seem plausible. Morgan Stanley concluded:

For every $25/kWh reduction in the cost of lithium-ion batteries, we estimate the all-in cost of power to customers falls by about $0.01, or about 15 percent of the residential customer price for grid charges.

By 2028, Tesla could enable as many as 3.9 million customers to own EVs and/or batteries–that would mean that roughly 8 percent of U.S. homes would have the capability to store one hour of electricity, according to the report.

While studies such as this have a sobering effect, many experts do not envision mass customer defections any time soon, even if storage technology improves and its costs decline. There are many deciding factors that could prevent full defection, including convenience, capital cost, and trust in the technology, Morgan Stanley acknowledges.

Others, this editor included, agree. Fixed charges would have to rise to punitive levels before most consumers would wish to cut the cord. Moreover, a solar-plus-storage system that matches the level of reliability and power quality provided by the current grid will be atrociously expensive when viewed from a societal perspective.

Relying on the existing grid, for which all customers have paid dearly, is likely to be more practical and economical. Which is one more reason why the industry and its regulators should think twice before raising fixed charges to excessive levels.■

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submitted to the state's regulator, the **California Public Utilities Commission** (CPUC), called **Distribution Resources Plan proposals** or DRPs.

Currently, however, DRPs have no mechanisms to specifically account for or integrate the growing amounts of **rooftop solar PVs, energy storage, electric vehicles** (EVs), or **demand response** (DR).

The regulators in California, like those in New York and Hawaii, to name a few, have lately awakened to realize that business as usual is not going to cut it in the future. By some estimates, California could amass some 15 GW of **distributed energy resources** (DERs) within a decade–the terms refers to self-generation, storage, or devices on the customer side of the meter. Forecasts of how much in DERs may be added to the network and when vary, but many expect some 12 GW of distributed (meaning customer-side) solar PVs, at least 1.3 GW of grid-scale storage (mandated by regulations), and who knows how much DR and distributed storage in the form of batteries and EVs.

Neither the IOUs nor the CPUC can ignore this much DERs while spending $6 billion per annum on distribution investments. That, in a nutshell, is the focus of the investigation.

In mid-August 2014, the CPUC initiated a regulatory proceeding, known as **order instituting rulemaking** (OIR), to examine the future role of **distribution system** as forces beyond its control reshape the power sector that it still regulates.

At the heart of the OIR, which may be found in its entirety at the CPUC Web site at http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M102/K036/102036703.pdf, is how to encourage the IOUs to modernize California's aging distribution grid by incorporating *non-utility*