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Resolving the conflict between new and old: A comparison of New York, California and other state DER proceedings☆

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ABSTRACT

Distributed energy resources present opportunities to serve grid and customer need through two-way power flow. New values, methods, and planning are required to efficiently interconnect and utilize DERs. This paper analyzes New York's and California's DER proceedings to provide a comparison of the similarities and differences between these and other states that will result in different levels of deployments and valuations of DERs.

1. The transition to a high distributed energy resource (DER) penetration future: phases and pilots

DERs represent significant change in the value and operation of the distributed electricity system. DERs create the opportunity for bidirectional energy flows that change how the grid, customers, and regulators interact. New regulations, systems, technologies, and use applications are required to adapt the distribution system to DERs.

Various states are addressing the integration and value of DERs to the grid and ratepayers. These values range from resiliency, to greenhouse gas (GHG) reduction. This paper will look at the strategies that California, New York, and others states are taking to incentivize, integrate, and value DERs.

Both California and New York seek to achieve similar goals in the future deployment and utilization of DERs but face different challenges in light of existing regulations and number of installed DERs. The following illustrates their similarities:

- Reduce greenhouse gas (GHG) emissions 40% below 1990s levels by 2030 and 80% below 1990 levels by 2050;
- Generate 50% of electricity from renewable energy;
- Achieve energy efficiency targets:
  - New York: 23% decrease in building consumption from 2012 levels;
  - California: cumulative doubling of energy efficiency cost savings by 2030;
- Accurately calculate the locational and timing value of DERs;
- New regulations that account for both sides of the electric meter, increased DER penetration, and dynamic load management; and
- A single state independent system operator that can align state policy with access and utilization of the wholesale market.

The major differences are their regulatory approaches, existing data and advanced metering infrastructure (AMI) deployment, and desire to change the existing distribution utility model. The New York Reforming the Energy Vision (REV) proceedings stems from a single inception point and framework to redefining the utility model as a collection of functions called a Distribution System Platform (DSP). The DSP structure attempts to combine the planning and operations of the utility with the future development of enabling markets, implemented by utility Distributed System Implementation Plans (DSIP). In contrast, California lacks a single framework to address DERs or change the existing utility revenue model. California's regulatory proceedings and statutory mandates see DERs as one piece of a complex regulatory regime that prioritizes increasing the number of DERs through net energy metering (NEM) and other incentives, such as the Self-Generation Incentive Program (SGIP), and pilots to test technology and business cases. California operates with fully implemented AMI that provide real-time meter data, as compared to New York where AMI implementation is just beginning.

This article will address the regulatory structure in New York and California regarding: system planning; hosting capacity; data sharing; interconnection; and benefit-cost analysis. These categories allow some level of comparison to understand why each state will come to different

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Table 1
How California is incentivizing investment in self-generation technologies.

Program	Incentive	Interconnected
Net Energy Metering (NEM)	Residential Rate or TOU Rate	~5,228.73 MW (June 2017)
California Solar Initiative (CSI)	IOUs: 1940 MW POU: 700 MW New Solar Homes Partnership (NSHP): 360 MWs	• IOU: 1813 MW of installed capacity with reserve funding for 140 MW (June 2016) • POU: ~400 MW (December 2015) • NSHP: 192 MW (October 28, 2016)
CSI Thermal	200,000 installations	Unknown
Multi-Family Affordable Solar Housing (MASH) Program and Single-Family Affordable Solar Homes (SASH)	$216 Million: 35 MW (SASH) and 15 MW (SASH) installations by 2021	• MASH: 24.67 MW (December 2015) • SASH: 17.2 MW (December 2015)
Self-Generation Incentive Program (SGIP)	Funded for a total of $566,692,308 thru 2019	2185 projects ranging from natural gas internal combustion generators/ microturbines, PV, and fuel cells with the next funding phase targeting advanced energy storage projects
Publicly Owned Utilities (POUs):	Collective incentive program of $700 million to install 784 MW of solar installations	Unknown

DERs integration outcomes.

2. California's emphasis on procurement of DER resources

California's programs center on incentivizing investment in self-generation technologies, with most installation being rooftop PV solar energy systems. These programs interconnected more than 5500 megawatts (MW) of distribution photovoltaic (PV) energy resources as of June 2017. As of October 2016, California renewable distributed generation totaled 9400 MW, with an additional 900 MW expected to come on-line and another 1800 MW of capacity incentives authorized to reach a goal of 12,000 MW for 20 MW or smaller systems, including SGIP (CEC, 2016A). The range of programs is illustrated in Table 1.

Recent efforts seek to increase other DER types, including energy storage and electric vehicles (EVs), to increase the planning and operational value of DERs for either end-use customers or distribution operators (DOs) without a significant change to the utility business model. Load-serving entities (LSEs) remain the vehicle by which California orchestrates its policy, statutory, and regulatory goals under its integrated resource plan (IRP) rulemaking and integrated distributed energy resources (IDER) proceeding to identify optimal portfolios of resources that reduce GHGs and integrate renewable energy. These mandates are more broadly implemented through distribution resource planning, energy efficiency, general rate cases, time-of-use tariffs/residential rate design reform, interconnection reform, transportation electrification, advanced energy storage, and NEM successor proceedings.

2.1. The DER action plan policy guidance

California lacks an overall statutory or regulatory DER vision comparable to New York's REV. The California Public Utilities Commission (CPUC) adopted a DER Action Plan policy in November 2016 that lays out a long-term vision of objectives, scope, and structure for CPUC action (CPUC, 2016a). This document recognizes the many statutory mandates that are driving active independent and/or interrelated administrative proceedings without a clearly articulated statutory or regulatory framework for DERs. The DER Action Plan creates 17 vision elements and 35 action elements grouped into three tracks: (1) rates and tariffs, (2) distributed grid infrastructure, planning, interconnection, and procurement, and (3) wholesale DER market integration and interconnection. The CPUC intends for the Plan to guide implementation of DER policy across 15 CPUC proceedings and two CAISO stakeholder initiatives as a living document.

The DER Action Plan's Track 1 Rates and Tariff efforts revolve around time-of-use (TOU) rates. The guidance informs active non-residential customers TOU proceedings by working to align with the CAISO market for peak and non-peak time periods as well as pilots to address issue that include demand charges and cost recovery. TOU rates for residential customers exist as opt-in and default pilots that will determine additional reform and characteristics for future NEM TOU rates. Utility general rate cases are shifting TOU peak to 4–9 pm – with SDG&E recently receiving approval – and evaluate rate design for renewable energy integration through pilots and off-peak demand charge incentives.

Actions related to DER Action Plan Track 2 are discussed in Section 2.2 and those related to Track 3 are discussed in Section 5.2.

2.2. Hosting capacity and data disclosure to third parties

Connecting retail rates to DER integration and NEM successor tariffs stands as a major issue for the CPUC. The active Distribution Resource Plan (DRP) and Integrated Distributed Energy Resource (IDER) proceedings evaluate the methods for locational value(s) in utility planning, operations, and third-party access. The DER Action Plan Track 2 guidance focuses on these long running, highly technical open proceedings to determine the method for locating and valuing DERs in IOU service territories.

The CPUC DRP R. 14-08-013 proceeding evaluates the efficacy of integration capacity analysis (ICA) by DER quantity and type and locational net benefits analysis (LNBA) for optimal location to inform benefit-cost analysis through pilots. Completed pilot Project A (Dynamic Integrated Capacity Analysis) and B (Optimal Location Benefit Analysis Methodology) tested this methodology to ensure third-party access to continuously updated capacity information based on constraints and interconnected DERs. Additional pilots test locational benefits to validate net benefit with the LNBA, demonstrate distribution operations with high DER penetrations, and validate microgrid applications. The proceeding remains very active through the pilot process with working groups forming the basis of evaluating and changing the methodologies. How these methods will work with ongoing evaluations of existing cost-effectiveness tests for DER remains unclear, but a method that captures the locational and system-wide values should result.

California IOUs provide their respective ICA results in circuit level DER interconnection on-line GIS maps, tools, and Excel sheet format. The pilots and the evolving data mark the progress of creating third-party access while maintaining existing privacy requirements and