Rate Design, Grid Services, and Distribution Planning

July 29th, 2016
Agenda

NEM and Rate Design

Grid Services and Planning
Distributed solar is still in its infancy, but steadily progressing towards dynamic, flexible, and controllable assets.
New York Solar Progress Partnership

Joint NEM successor proposal by NY IOUs and solar parties

- First collaboration with solar industry and utilities to develop long-term solar policy to benefit ratepayers
- Keeps full-retail NEM for rooftop solar through 2020
- Acknowledges that solar DERs can benefit the grid and should receive corresponding compensation

### Rooftop solar
- NEM until 2020 as default transition date
- Projects grandfathered for 15-25 year term, to be decided by PSC
- Transition to a locational value tariff after 2020, to be defined later

### Community solar
- Customers keep NEM over time while community system assumes locational value + a transitional gap credit
- Developer to pay difference between retail rate and LMP+D+E
- Projects awarded value for energy production for term of 15-25 years
- Priority in the interconnection queue based on location
NY: Maintain NEM through 2020 for rooftop solar, while transitioning *Community Solar* to LMP+D+E

Source: Solar Progress Partnership Comments on an Interim Successor to Net Energy Metering
Optional Smart Energy Home Rate
EFCA Smart Energy Home Rate Proposal in New York

Grid Price Signals
- Time Dependent Rates
  - Summer
    - Superpeak
    - Peak
    - Midpeak
    - Offpeak
  - Winter
    - Peak
    - Offpeak

Flexible Grid Services
- Dispatchability Compensation
  - Annual Capacity Credit
  - Upfront Deployment Incentive (Temporary)

&

Fixed Charge / Minimum Bill

= Smart Energy Home Rate

Source: "Initial Comments of the Energy Freedom Coalition of America in Response to the Commission’s Notice Soliciting Comments and Proposals on An Interim Successor to Net Energy Metering", NY Public Service Commission Case, April 2016
NEM penetration in Nevada is still very low

Revitalize distributed solar market, then evaluate NEM successor options as penetration increases

Net Energy Metering

Net Energy Metering Successor Potential Options:

- NEM with increased Minimum Bill
- NEM with Mandatory TOU (e.g. California)
- Value of Solar (e.g. New York)
- NEM with Export Cap
- Other potential structures
Agenda

NEM and Rate Design

Grid Services and Planning
What Should the 21\textsuperscript{st} Century Grid Look Like?

Today

Future
Distributed Energy Resource Aggregation

Utilize portfolios of distributed energy resources to provide grid services

Distributed Energy Resources (DERs)

Aggregated DER Portfolios

Grid Services
- Demand Response / Dynamic Capacity
- Ramping / Ancillary Services
- Voltage & Reactive Power
- Contingency Support
Engaged consumers are increasingly able to manage their own energy and provide grid services.
However, distribution planning must be modernized in order to capture DER benefits.

A holistic approach to meeting grid needs and expanding customer choice by unlocking the benefits of distributed energy resources.
Benefits of *Integrated Distribution Planning*  
*Value of Small & Targeted Infrastructure Solutions*

**Option 1: Bulky Deployment**

- Conventional Solution
- Conventional Idle Capacity
- Planning Reserve Margin
- Demand

**Option 2: Targeted Deployment**

- Distributed Solution
- DG Idle Capacity
- Planning Reserve Margin
- Demand
Grid planning data must be transparent and accessible to enable industry innovation.
**Executive Summary**

Designing the electric grid for the 21st century is one of today’s most important and audacious challenges. Regulators, legislators, utilities, and private industry are evaluating ways to both modernize the aging grid and monetize our electricity supply, while also enabling customer choice, increasing reliability and reliability, and improving public safety, all at an affordable cost.

However, modernizing an aging grid will require significant investments over and above those seen in any recent period—potentially exceeding $1.5 trillion in the U.S. over the next 20 years. Given the large sums of money required to finance the long-term impact of today’s decisions, it is imperative that such investment is deployed wisely, cost-effectively, and in ways that leverage the best technology and take advantage of customers’ desire to manage their own energy.

In this report, we explore the feasibility of distributed energy resources (DERs) to maximize revenue benefits while minimizing the risk. In fact, we quantify the net economic benefits from transitioning DERs deployed in the next few years, which could be worth over $14 billion a year in California alone by 2020. Then, we apply the methodology to the most recently available Investor Owned Utility (IOU) General Rate Cases (GRC) filings—Pacific Gas and Electric 2017 GRC—in order to evaluate whether DBRs can cost-effectively replace real-world planned distribution capacity projects. Finally, we evaluate the impediments to capturing these benefits in practice. These structural impediments undermine the deployment of optimal solutions and pose economic risks to consumers, who ultimately bear the burden of an expensive grid. Accordingly, we suggest several ways to overcome these impediments by improving the prevailing utility regulatory and planning models.

**Distributed Energy Resources Offer a Better Alternative**

This report presents an economic analysis of building and operating a 21st century power grid—a grid that leverages the full potential of distributed energy resources such as rooftop solar, smart inverters, energy storage, energy efficiency, and controllable loads. We find that an electric grid leveraging DERs offers an economically better alternative to the centralized design of today. DERs bring greater local economic benefits at lower cost, enable more affordability and consumer choice, and improve flexibility in grid planning and operation, all while facilitating the decarbonization of our electricity supply.

![Bar chart showing the benefits of DERs over time](chart.png)
Thank you