

An Update from California

California Public Utilities Commission

National Town Meeting on Demand Response and Smart Grid

May 21, 2014



Opening Statements

- **Change is happening**
- **New technologies and new players are bringing new benefits to the state**
- **New technologies and new players are bringing new challenges to the grid**
- **New ways of thinking to effectively address the challenges**
- **Customers are an integral part of meeting the various energy and environmental goals of California**



What do we have now?

- **Future rate designs**
  - TOU
  - CPP
- **Demand Response**
  - Aggregators
  - Wholesale markets
- **Distributed Energy Resources**
  - NEM
  - Storage
  - Solar
- **Energy Efficiency**
  - Codes and standards
  - Utility programs
- **AMI and Data Access**
  - Green Button

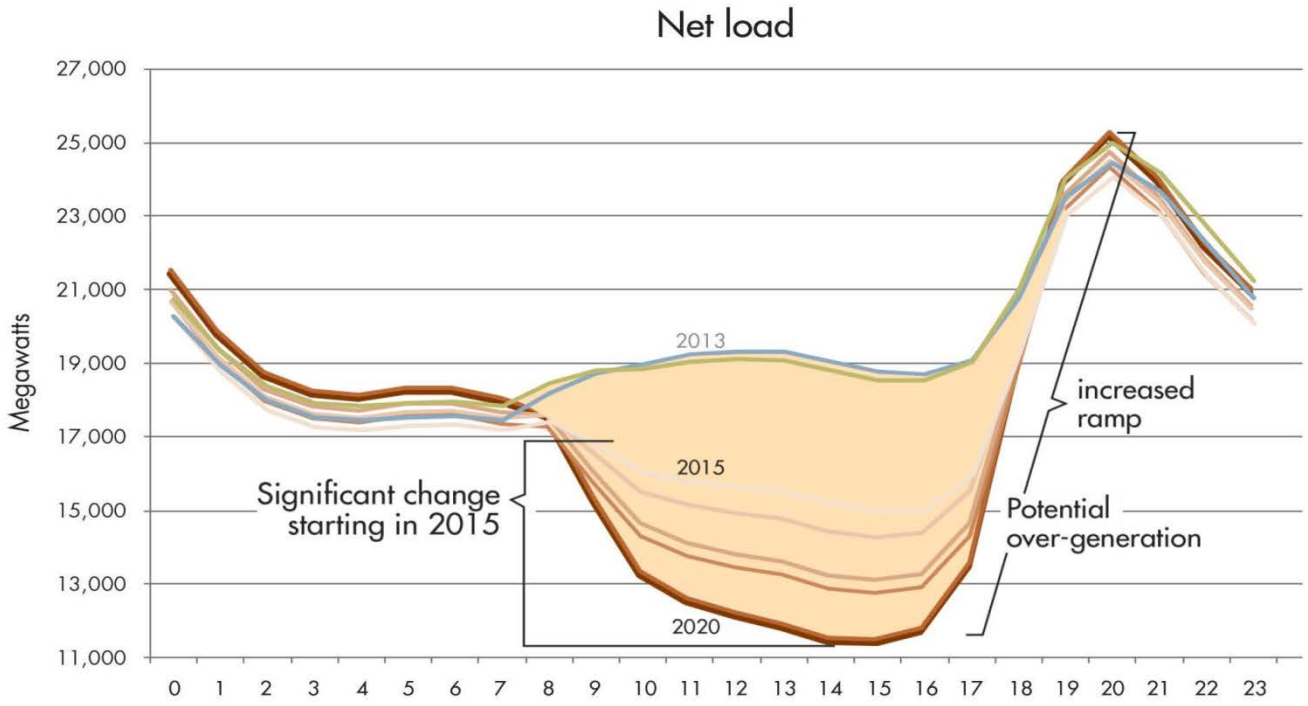


What is going on with the utility?

- **DER Integration**
  - Reliability
  - Resilience
- **New market participants**
  - Revenue collection
  - Platform for innovation
- **Demand Response**
  - Moving to making DR procured resource
- **Energy Storage**
  - Requiring utilities to procure 1.3 GW of energy storage by 2020
  - 50/50 utility owned vs third party owned
- **Business Model implications???**
- **Still must be cost-effective**
  - GRCs
  - Risks

Big scary graph

Growing need for flexibility starting 2015





So what?

- **Flips peak/off-peak expectations**
- **What happened to all the peak??**
  - Remember, system built to peak.
- **Electricity available all the time**
- **Where does all this DG go?**
- **Who pays for this grid?**
- **Impact from distribution grid onto transmission grid and wholesale markets**
- **Clear need for something to be done**
  - Distribution System Operator
  - Wires Only
  - Business as usual
- **How to better manage distribution impacts**
  - DER is growing
  - Microgrids are on their way
- **Let's not forget, rate design is also changing**



Rule 21

- **Open rulemaking seeks to "ensure that the interconnection process is timely, non-discriminatory, cost-effective, and transparent."**
- **In order to better integrate rooftop solar, CPUC proceeding to revise interconnection rules**
  - Development of standardized forms and agreements
- **Requirements for smart inverters on new solar PV**
  - Working with standards organizations to develop California modification to IEEE and UL standards
  - *"Recommendations for Updating the Technical Requirements for Inverters in Distributed Energy Resources"*
    - Includes detailed Phase I Autonomous Inverter Functionalities recommendations
    - Second phase to focus on communications between the grid operator and distributed energy resource, and a third phase to identify and address additional advanced inverter functionalities.
- **AB 327 requires a distribution resources plan**



About Microgrids

- **Gaining interest around the country**
  - Reliability and resiliency
- **A group of interconnected loads or DER acting as a single, controllable entity**
  - Capable of islanding
- **Need to maintain safety of grid**
- **Can support localized problems, if sited appropriately**
  - Reliability
- **Identification of benefits to customers, grid, and/or microgrid operators**
- **Again, how to integrate potential large loads “disappearing” from distribution grid**
- **Cost recovery**
- **Changing nature of distribution utility**
  - Distribution System Operator



Access to Customer Usage Data

- **Customer allowed to authorize a third party to access their usage information**
- **Enables greater analytics and market product development**
- **Green Button Download My Data active for electric companies since 2011**
- **Green Button Connect My Data live this year for all three IOUs**
- **Utilities and CPUC Staff have been active in development of ESPI and Green Button**
  - NAESB REQ 21 and REQ 22
  - SGIP PAP 20
- **Recent decision directs utilities to post on web page monthly aggregated data by zip code for all customer classes**
- **Privacy rules also adopted**
  - If you do access rules, should do privacy rules at the same time.



Where to go from here?

- **Technology is changing the way customers, utilities, and the market will consume, deliver, and sell electricity.**
- **Think products and services, not programs.**
  - Programs are what utilities offer to customers
  - Products and services are what customers want to purchase
- **Changes utility interest**
  - Manages reliability
  - Procures products
  - Like an ISO
- **Change is coming**
  - NEM
  - Microgrids
  - Renewables
  - Use of data for EE and DR services
- **This also applies to regulators**
  - New York
  - Hawaii



One Final Word: Customers

- **Without customer acceptance, how successful can we be?**
- **Customers simply want the lights on.**
- **Keep it simple.**
- **There is not one average customer**
  - Respond to different messages through different mediums
- **We are expecting more from customers**
  - New rates
  - More DR and EE
  - DER
- **Customer expectations are changing though**
  - Technology
  - Third parties
  - Electric vehicles
- **How much is too much??**
  - Customer as energy manager??
  - Automation



For Further Information

CPUC Smart Grid webpage:
http://www.cpuc.ca.gov/PUC/energy/smartgrid.htm

PPD White Paper “Customers as Grid Participants”:
http://www.cpuc.ca.gov/NR/rdonlyres/A0A816A2-9F1C-4F34-90DB-C23551F09738/0/PPDCustomerRoleMay15th.pdf

PPD White Paper “Microgrids: A Regulatory Perspective”:
http://www.cpuc.ca.gov/NR/rdonlyres/01ECA296-5E7F-4C23-8570-1EFF2DC0F278/0/PPDMicrogridPaper414.pdf

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