A Roadmap for Commercializing Microgrids in California

October 2, 2017

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California Public Utilities Commission

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Purpose of the Workshop

- Review the work completed to date
- Review results of Energy Commission funded microgrid research designed to support the development of the Microgrid Roadmap
- Review results of Energy Commission funded microgrid research survey designed to support the development of the Microgrid Roadmap
- Review the Draft Microgrid Roadmap posted on September 29, 2017
- Discuss the action times and the priorities that should be assigned to each
- Discuss process to obtain and incorporate recommended changes and improvements from workshop participants into the Draft Roadmap
- Discuss next steps in finalizing and Publishing the Microgrid Roadmap
10:00 Opening Comments:
- CPUC: Jose Aliaga-Caro
- CAISO: Peter Klauer/Kristina Osborne
- Energy Commission: Mike Gravely

10:15 Recap of the Earlier Microgrid Workshops: Mike Gravely

10:25 Results of Navigant Microgrid Study: Adam Forni
- Navigant Consulting

11:00 Results from Microgrid Internet: Jeff Root
- Survey Ecotech Resources
Agenda

11:30am  Review Draft Microgrid Roadmap  Mike Gravely
         Jose Aliaga-Caro
         Peter Klauer

Topic:  Overview of Draft Roadmap

Topic:  Key Issues Facing Commercializing Microgrids in California

Noon – 1pm  Lunch Break
Agenda

1:00pm Return from Lunch All

1:05pm Review Draft Microgrid Roadmap Mike Gravely
Jose Aliaga-Caro
Peter Klauer

Topic: Key Issues Facing Commercialization Microgrids in California

2:00pm Review Draft Microgrid Roadmap Mike Gravely
Jose Aliaga-Caro
Peter Klauer

Topic: Microgrid Roadmap Action Items
3:00pm  Review Draft Microgrid Roadmap  
Mike Gravely  
Jose Aliaga-Caro  
Peter Klauer  

Topic:  Any Recommended New Sections to the Draft Roadmap

3:20pm  Public Comment  
All

3:45pm  Steps in Finalizing the Microgrid Roadmap  
Mike Gravely

4:00pm  Adjourn  
All
Agenda

Recap of the Earlier Microgrid Workshops

Mike Gravely
MICROGRID SURVEY RESULTS
Survey and Results Completed by Ecotech Resources, Inc.

Compiled for California Microgrid Roadmap Workshop
Presented: October 2, 2017
Review of Draft Roadmap

ROADMAP FOR COMMERCIALIZING MICROGRIDS IN CALIFORNIA
Review of Draft Roadmap

• Overall Understanding of the Roadmap:
  – Purpose of the Roadmap
  – What is possible in the future
  – How will the Roadmap be used
  – How can you improve the Roadmap while in draft form
  – What are the future opportunities to implement the Roadmap
Chapter 1
Why Microgrids are Important to California

• What is a Microgrid

• What can Microgrids Accomplish

• What is the value of Microgrids
Chapter 2

Key Issues Facing Commercializing Microgrids in California

• How Microgrids Operate and their value
• Improving the Electric Grid with Microgrids
• How Microgrids Can Play a Role in Implementing the State’s Policy Goals
  – Microgrids can Increase the Penetration of Renewables on the California grid
  – Microgrids can Support California's Policy to Permit High Concentration of DERs on the Grid
• How Do Microgrids Operate in the Current California Regulatory Framework?
  – Emerging Role of State Regulation in Microgrid Development
• Technical Challenges Facing Microgrids
• Understanding the Economics of Microgrids
Chapter 3
Roadmap Actions

Microgrid Operation and Value

1. Develop non-proprietary, publicly available educational and guidance materials for microgrids.

2. Develop, evaluate, and publish improved metrics to assess microgrid system performance.

3. Complete research that defines the building blocks necessary to implement microgrids from start to finish.
Chapter 3
Roadmap Actions

Improving the Electric Grid with Microgrids

1. Develop methods to reduce cost barriers for microgrid participation in grid services requiring special metering and telemetry equipment.

2. Clarify the microgrid participation rules and requirements to provide multiple revenue streams. Where possible, leverage the rules and requirements being developed for the energy storage industry or other DER systems.

3. Develop and validate new benefit metrics for system resiliency that are provided by microgrids.
Chapter 3
Roadmap Actions

Microgrids Role to Implement State’s Policy Goals

1. Develop different microgrid use cases that will support increased penetrations of renewables on the California electric grid.

2. Develop state level strategies to open wholesale and retail markets to microgrids that will support California’s future energy policy goals.

3. Facilitate opportunities to work with California Tribal Communities and other special entities that want to include future microgrids in their utility operations.

4. Complete detailed research studies and analysis on the role microgrids play in California utilities to meet future policy goals.

5. Define the role of microgrids in future grid management with higher concentrations of DERs.
Chapter 3
Roadmap Actions

Microgrid Technical Challenges

1. Develop and publish new processes and procedures where existing and future microgrids can provide publicly available lessons learned from fielded and operating microgrids.

2. Complete research to identify new opportunities for potential economic revenue streams for microgrids for services they can provide their owner/operator, the utilities, and the California ISO.

3. Develop a process to reduce the risks and problems of microgrid islanding.

4. Prepare guidelines to assist local government agencies and others in selecting and supporting future microgrid projects.
Chapter 3
Roadmap Actions

Microgrid Technical Challenges

5. Evaluate how microgrids can provide new options to address the impacts of the aging California natural gas infrastructure.

6. Define minimum cybersecurity requirements for microgrids.

7. Analyze and compare the commercial viability of different microgrid configurations.

8. Fund technical research to address current regulatory issues facing microgrid deployments.
Chapter 3
Roadmap Actions

How Microgrids Operate in the Current California Regulatory Framework

1. Develop microgrid service standards necessary to meet state and local permitting requirements.

2. Develop methods to reduce cost barriers for microgrid interconnection requirements.

3. Develop guidelines that determine what impact studies are required for microgrids to connect to the utility grid.

4. Determine if separate utility rates and tariffs are necessary to support microgrids.

5. Form a working group to codify standards and protocols needed to meet California utility and California ISO microgrid requirements.
Chapter 3
Roadmap Actions

Economics of Microgrids

1. Develop and validate new benefit metrics for the system reliability provided by microgrids.

2. Enact the state approved rules under which microgrids can participate in wholesale and retail markets.

3. Define different revenue streams available to microgrids beyond the ones that currently exist, such as volt-amp reactive (VAR) services, flexible energy services, and emergency services.
Recommended New Sections to the Draft Roadmap:

1. Chapter 1: Why Microgrids are Important to California

2. Chapter 2: Key Issues Facing Commercializing Microgrids in California

3. Chapter 3: Roadmap Actions
Steps in Finalizing the Microgrid Roadmap

- Review Comments and Discussions from Oct 2\textsuperscript{nd} Workshop
- Review Comments that Come in by October 20\textsuperscript{th}
- Determine if an additional WebEx Workshop is needed
- Agencies complete internal reviews of Proposed Draft Roadmap
- Agencies Publish Microgrid Roadmap
Written comments: This workshop is using an electronic commenting system for submitting written comments. Stakeholders wishing to submit comments should complete the form provided on the EPIC docket webpage at: https://efiling.energy.ca.gov/Ecomment/Ecomment.asp?docketnumber=16-EPIC-01.

Written comments should be submitted by **5:00 p.m. on October 20, 2017.** All written comments will become part of the public record of this proceeding.
The Energy Commission encourages use of its electronic commenting system, but written comments may also be submitted by e-mailing them to the Dockets Office, or by

U.S. Mail to:
California Energy Commission
Dockets Office, MS-4
Re: Docket No. 16-EPIC-01
1516 Ninth Street
Sacramento, CA 95814-5512

If you choose not to use the electronic filing system, please include the docket number 16-EPIC-01 on any e-mailed or written comments.

Comments may be e-mailed to docket@energy.ca.gov.
Questions
Closing Comments