Sandia PUC Policy and Outreach, and Energy Storage and Decarbonization Modeling with PUCs

DOE OE Energy Storage Program Annual Meeting and Peer Review

Howard Passell
SNL Policy and Outreach Program

Sandia is funded by the Energy Storage (ES) Programs Office in the DOE Office of Electricity to provide policy analysis and outreach for regulatory commissions around the U.S.

Washington DC DOEE, Oct./Nov. 2022
FEMA & ISU Microgrids & ES Webinar Series, June/July 2021
Wisconsin PSC Webinar Series, April-July, 2021
NECPUC ES Webinar Series, Mar.-June 2021
New Jersey BPU ES Webinar Series, Jan.-Mar. 2021
Iowa State Univ./MISO ES Webinar Series, July-Oct. 2020
Utah Governor’s Office of Energy Development Webinar Series, July-Aug. 2020
Maryland PSC Webinar Series, Mar.-Apr. 2020
Nevada PUC Workshop, Jan. 2020
Southeast Energy Storage Symposium & PUC Workshop (with Southern Research)
New Mexico PRC workshops/webinars, 2019 & 2020 and ongoing
California Energy Commission (CEC), June 14, 2019, Sacramento: Energy Storage Academy
Hawaii PUC, Dec. 7, 2018, Honolulu: ES Introductory Workshop
Since Covid, most webinars are ~2 hours/session, 4-6 sessions over 4-8 weeks, with experts from across the national labs, academia, industry, and NGOs

- ES Systems Overview
- Chemistries and Technologies
- Policy and Regulatory Perspectives
- Applications & Value Streams
- Using Analytics to Improve the Value Proposition
- System Design & Installation
- Commissioning & Interconnection
- ES Project Case Studies & Financing
- Safety
- Grid Resilience
- ES as a Non-Wires Alternative for New Generation, Transmission, & Distribution
Putting the “Policy” in Policy and Outreach . . .

Publications led by Will McNamara

**Issue Briefs, White Papers & Policy Analysis**

- Energy Storage & Resource Adequacy
- Energy Storage as a Transmission Asset
- State Level Incentives for Energy Storage
- Energy Storage to Replace Peaker Plants
- Long-Duration Energy Storage Policy Issues
- Seeking Energy Equity Through Energy Storage
- FERC Order 841 Compliance
- FERC Order 2222 Impacts
- TOU Rates & BTM Energy Storage
- Rate Design for BTM Energy Storage
- State Policy Analyses: CA, IL, MA, MD, NM, NY, NJ, OR, TX, WA
Energy Storage and Decarbonization Modeling for Regulators in NM and Illinois

Engages NM PRC, EMNRD, and PNM in NM, and ICC in Illinois

Allows policy makers to experiment with different strategies for meeting NM’s ETA requirement for carbon-free electricity

Stakeholder-driven process assures that:
-- stakeholders understand abilities and limitations of the model
-- modelers understand the system and have all the right data and info
-- model will be used by policy makers and other stakeholders

System dynamics (SD) modeling environment, accommodates thinking, including interconnections, interdependencies, non-linearities, time lags, and unintended consequences

User-friendly, graphical, real time modeling provides tool for exploration, education, and consensus building
Overall Framework

**Model Inputs**
- Planning Scenarios
  - Load Forecasts
  - Renewable Profiles
  - Economic Data
  - Power System Data
  - Policies/Retirements

**Planning Tools & Analysis**
- Long-term Expansion Planning Model
- Resilience Analysis
- Resource Adequacy
- Production Cost Model

**Stakeholder Evaluation & Testing**
- Stakeholder-Driven Input Scenarios
- Operational Performance Evaluation: Lite & Fast
- Lite Production Cost Model

- Stakeholder-Driven Systems Dynamics Tool

**Stakeholder Driven scenarios**
- Planning Scenarios
- Extreme Events
- ELCC & Reserve Req.
- Resource portfolios

**Operational Performance Evaluation**
- Full Realism
- Lite & Fast

Scenario Data

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Many thanks . . .

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Sandia management

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DOE OE ES Program Manager

• Dr. Imre Gyuk

And all the staff from the Energy Storage Program from across all the labs who present in workshops - notably Patrick Balducci, Ray Byrne, Dan Borneo, Matt Paiss, Mike Robb, Jeremy Twitchell, Charlie Vartanian, who have all made repeated appearances . . .