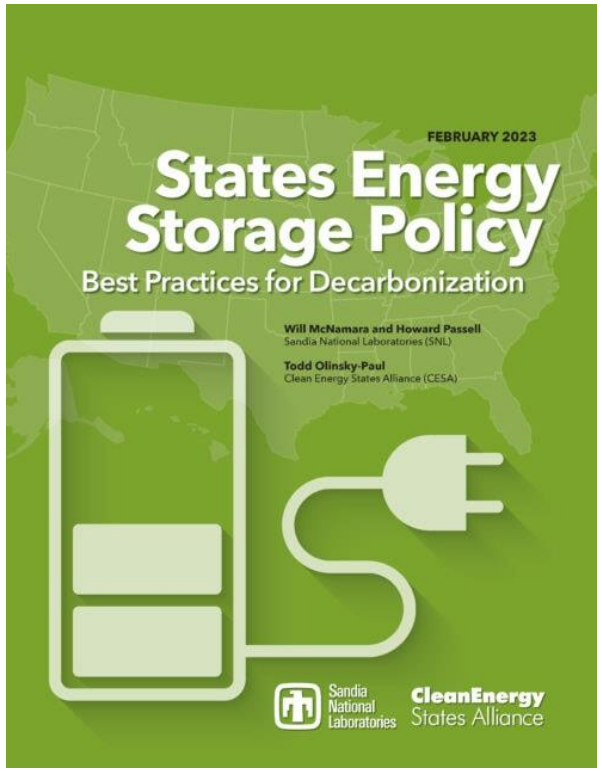
Energy Storage Challenges
Takeaways from State Case Studies

CESA 100% Clean Energy Summit
March 18, 2023

Todd Olinsky-Paul
Senior Project Director
Clean Energy States Alliance



STATE CASE STUDIES: COMMON CHALLENGES EMERGED

Case studies focused on five key states: **California, Illinois, Massachusetts, New York,** and **Oregon**

Through interviews with policymakers, common barriers were identified, including:

- Grid **interconnection** barriers
- Questions of **equity** in energy storage program development
- Uncertainties about storage **valuation**, especially non-energy and non-monetizable benefits
- Difficulties in harnessing storage to meet **state energy and environmental goals**, especially distributed storage
- **Knowledge barriers**, especially with regard to future energy needs and future storage capabilities
- Uncertain or divided **regulatory authority**
- Insufficiently developed **markets**
- Questions about **who should pay** for energy storage investments, and how to allocate costs equitably
- Perceived **high costs** of energy storage
- Uncertainties about how to bring energy storage to **scale**, especially to provide longer-duration grid services

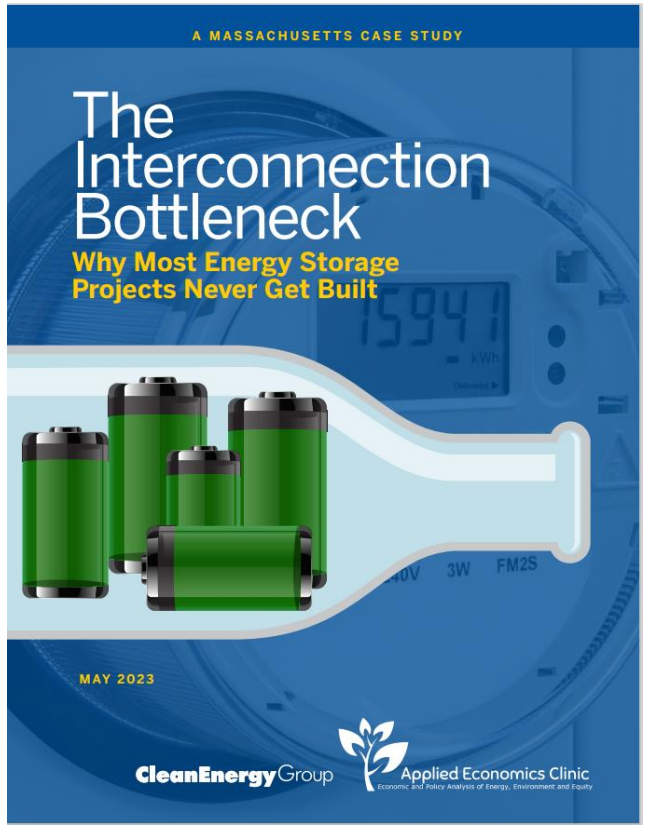
Grid Interconnection Barriers

Problem: Most proposed storage projects fail to achieve interconnection approval, due to high costs, long interconnection queues, and storage-specific barriers (both on distribution and transmission grids)

Solutions:

- Update and revise interconnection processes to incorporate storage operational characteristics
- Socialize required grid upgrade costs (reform “cost causation” model)
- Plan grid upgrades in a proactive, integrated and system-wide manner

New CEG report on interconnection barriers – webinar May 23



Equity in Energy Storage Program Development

Problem: How to provide equitable access to energy storage benefits, despite challenges such as high prices, immature markets

Solutions: Integrate equity provisions into state energy storage programs. For example:

- Incentive program adders (CT Energy Storage Solutions program)
- Equity carve-outs (CA SGIP program)
- Community storage (SMUD Storage Shares program)
- Technical assistance for multi-family affordable housing and other low-income community facilities (CEG TAF)
- Deployment grants for underserved and frontline communities (DOE Office of Electricity ES4SE program)

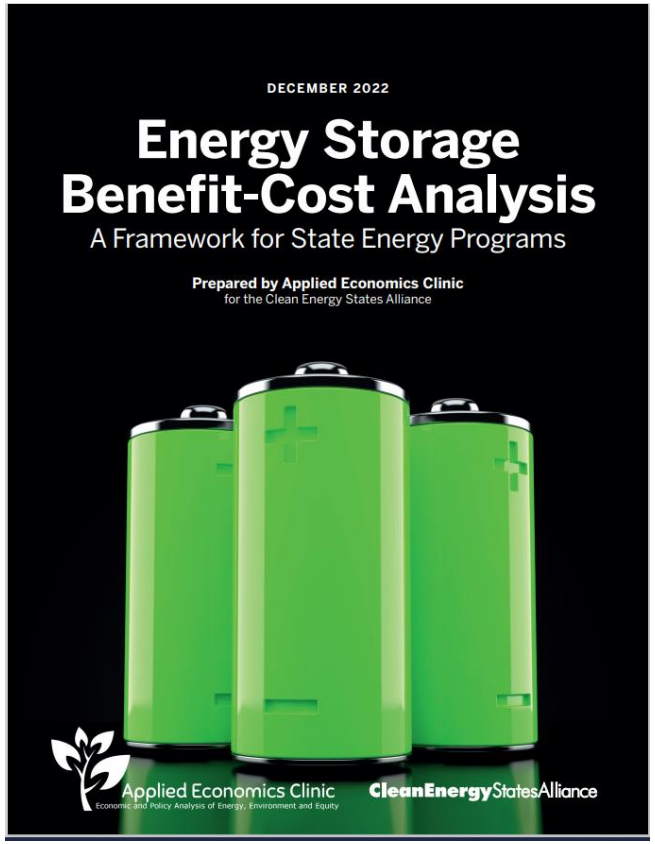
Storage Valuation, Especially Non-Energy and Non-Monetizable Benefits

Problem: markets are immature, lack pricing signals for many storage services

Solution: States fully value storage services even when markets do not; incentives are structured to compensate for immature storage markets

- States incorporate non-energy and non-monetizable benefits into storage cost-benefit analyses, and assign values – any value is better than no value!
  - Non-energy e.g. GHG emissions reductions
  - Non-monetizable e.g. improved energy resilience for critical facilities

- States employ BCA best practices to ensure storage is fairly evaluated for cost-effectiveness (utility IRP cost-effectiveness analyses often leave significant storage benefits off the table) – see CEG framework report on state storage BCA best practices



Harnessing storage to meet state energy and environmental goals, especially distributed storage

Problem: Incentivizing more energy storage deployment does not necessarily result in reduced GHG emissions, increased resilience, increased renewables/electrification, or a modernized grid

Solution: Incentivize storage services/use, not just installation

Examples:

CA SGIP and emissions benefits

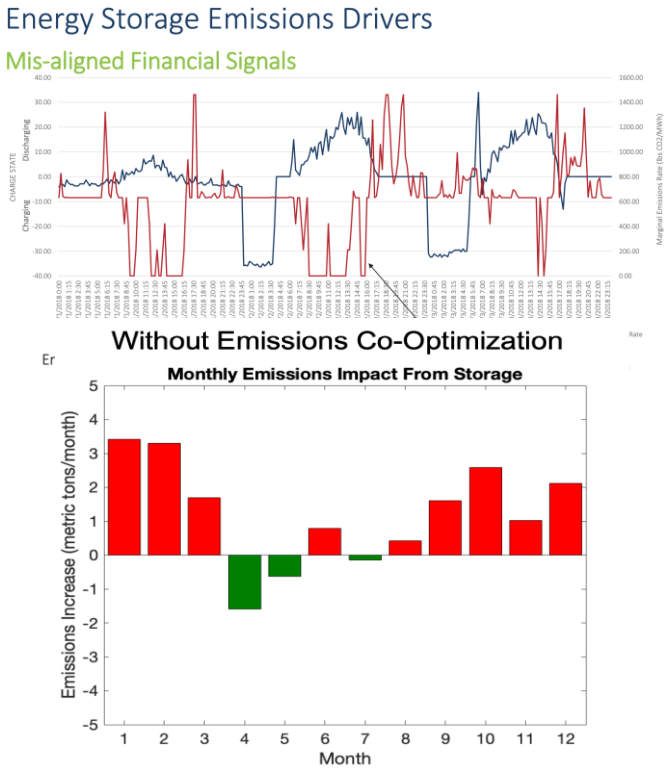
ConnectedSolutions and related program models (MA, CT, RI, VT)

MA Clean Peak Energy Standard

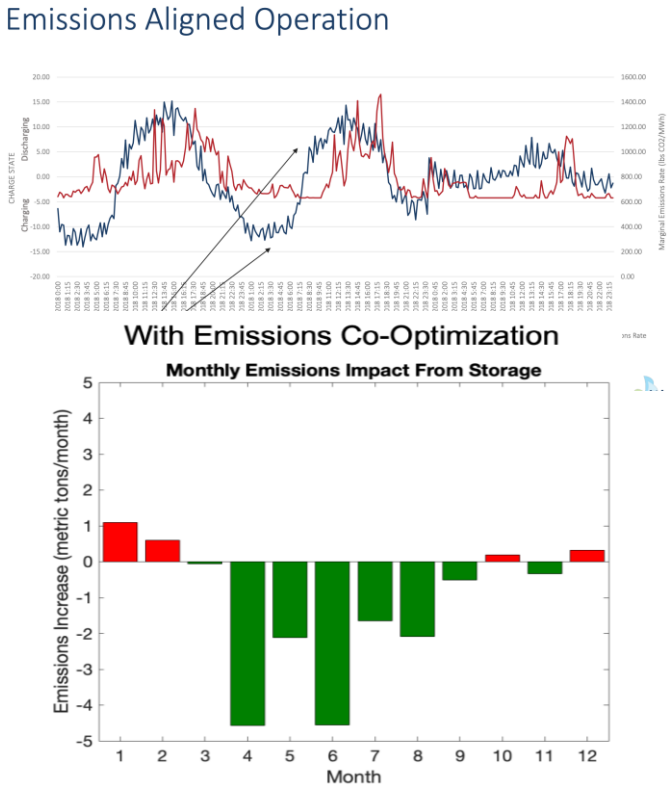
Example: California SGIP (Self Generation Incentive Program)

- When California incentivized battery *deployment only*, it made GHG emissions *worse*.
- California solved their emissions problem by making 50% of the battery incentive contingent on battery *use* (batteries charging and discharging *at the right times)*.

Incentivizing deployment



Incentivizing use



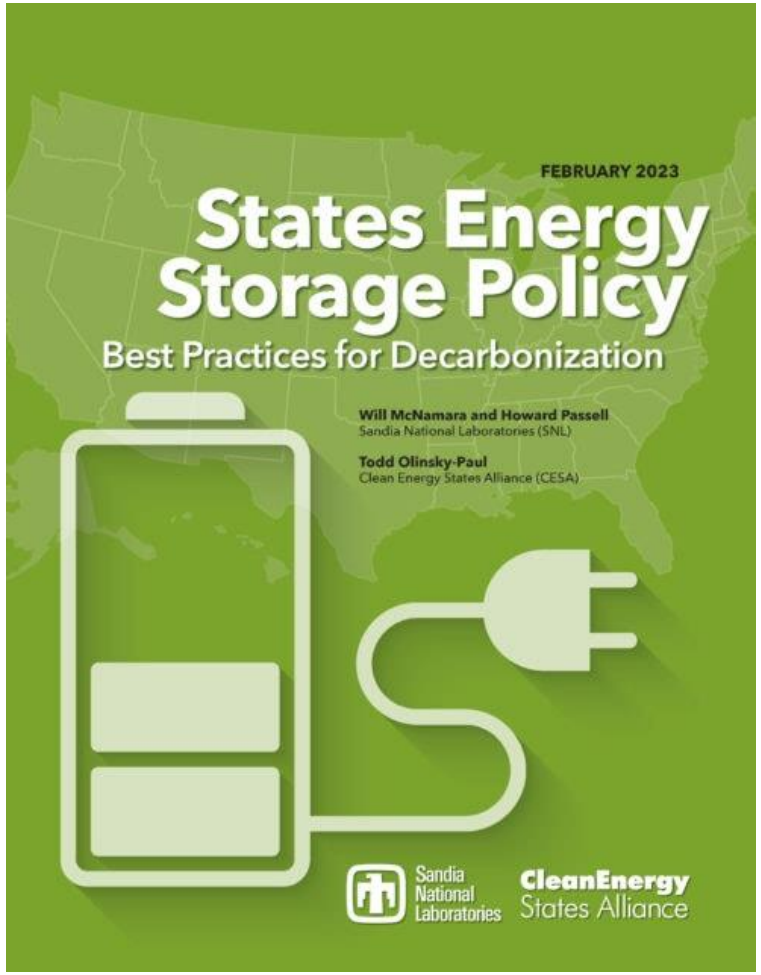
Takeaways

- **Good News: Energy storage has arrived!**
  - Lots of energy storage in interconnection queues
  - Leading clean energy states adopting storage targets and incentives
  - Battery demand exceeding supply

- **Bad News: Energy storage has arrived!**
  - New technology is challenging legacy systems
    - Interconnection processes
    - Regulatory structures
    - Program structures (NEM, RPS, energy efficiency plans)
    - Wholesale market rules
    - Valuation and cost-effectiveness
  - Storage industry ecosystem needs to develop
    - Raw materials sourcing
    - Reuse and recycling
    - Standardized financing and contracting
    - Permits and standards
    - Insurance, warranties
    - Commoditization of all kinds
  - Huge and immediate need to scale up storage production and deployment

DOWNLOAD THE REPORT

Download the full report:
https://www.cesa.org/resource-library/resource/states-energy-storage-policy-best-practices-for-decarbonization/



THANK YOU

Contacts:

Will McNamara
jwmcnam@sandia.gov
(505) 206-7156

Todd Olinsky-Paul
Todd@cleanegroup.org
(845) 625-8807

CESA thanks Sandia National Laboratories and US DOE, Office of Electricity for generously supporting this work