State Energy Storage Policy

Vermont House Committee on Energy & Technology
April 5, 2017

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Innovation in Finance, Technology & Policy

CleanEnergyStatesAlliance
Agenda for this presentation:

• Introduction to Clean Energy States Alliance (CESA) and Energy Storage Technology Advancement Partnership (ESTAP)
• Introduction to Clean Energy Group (CEG) and the Resilient Power Project
• State policy landscape for storage
• Policy Resources
• Questions
Energy Storage Technology Advancement Partnership (ESTAP)

- Conducted by CESA
- Under contract with Sandia National Laboratories, with funding from US DOE-OE

**ESTAP Key Activities:**

1. **Disseminate information to stakeholders**
   - ESTAP listserv >3,000 members
   - Webinars, conferences, information updates, surveys.

2. **Facilitate public/private partnerships to support joint federal/state energy storage demonstration project deployment**

3. **Support state energy storage efforts with technical, policy and program assistance**

**ESTAP Project Locations**
Clean Energy Group (CEG)  www.cleanegroup.org
Resilient Power Project

• Increase public/private investment in clean, resilient power systems
• Engage city officials to develop resilient power policies/programs
• Protect low-income and vulnerable communities
• Focus on affordable housing and critical public facilities
• Advocate for state and federal supportive policies and programs
• Technical assistance for pre-development costs to help agencies/project developers get deals done
• See  www.resilient-power.org  for reports, newsletters, webinar recordings

www.cleanegroup.org
www.resilient-power.org
CEG Resilient Power Project: Supporting More than 50 Projects

- **City of Boulder**: emergency center, shelter, wildfire center, wastewater treatment, public housing
- **California Multifamily Affordable Housing**: AB 693 150,000 units
- **Chicago Housing Authority**: 1,900 public housing units; senior, childcare, and health centers
- **Massachusetts Community Clean Energy Resiliency Initiative**: 11 communities, 28 projects
- **New York/New Jersey**: 9 multifamily affordable housing projects, community shelter
The Landscape for Storage: a patchwork quilt of markets, regulations, utility programs and state incentives

**California**
- ES capacity mandate – 1.3 GW by 2020
- SGIP incentive

**New York**
- NY Prize microgrid grants

**ISO-NE**
- Utility capacity and Transmission cost savings

**Northeastern Resilient Power Programs**
- MA, NJ, NY, CT

**Washington**
- Grid modernization grants

**Oregon**
- ES capacity mandate
- ES valuation study

**Hawaii**
- Net metering cap

**Behind the meter benefits:**
- Demand charge management
- Solar self-consumption (High electricity prices/NEM caps/low NEM rates/TOU rates)
- Resiliency

**Massachusetts**
- ES grants, incentives
- ES policy suite
- Utility procurement

**New York**
- NY Prize microgrid grants

**ISO-NE**
- Utility capacity and Transmission cost savings

**PJM wholesale frequency regulation market**
- Premium for fast response resources
- Lowered barriers to entry for distributed resources
New England States Storage Policy/Programs

New York:
- Microgrids Grants
- Green Bank finance
- REV Grid Modernization

New Jersey:
- Storage Grants
- Storage Rebates

Maryland:
- Game Changer Grants
- Microgrids study
- Proposed ES study, tax incentives, solar+storage grants

Massachusetts:
- Resiliency Grants
- Storage Grants
- Integration of Storage into existing incentive programs
- Utility procurement
- ES study
- Grid modernization

New Hampshire:
- Grid Modernization

Rhode Island:
- Microgrids Program

Connecticut:
- Microgrids Grants
- Tri-State Storage RFP
- DR & ES RFP
ISO-New England: Does this curve look familiar?
California “Duck” Curve
ISO-New England: Does this curve look familiar?
Vermont: GMP Microgrid, Rutland (Stafford Hill)

- Funding: $40K VT DPS, $250K DOE-OE
- Total cost: $12 M
- Payback < 7 years via utility capacity and transmission cost reductions
- Follow-on projects:
  - 14 LMI high-efficiency modular homes equipped with resilient power solar+storage (rural mobile home replacement project)
  - Burlington Electric Dept solar+storage microgrid at Burlington Airport

- 4 MW batteries (lithium ion and lead acid) + 2 MW PV microgrid
- Sited on closed landfill (brownfield redevelopment)
- Provides resilient power for school (public shelter)
- Project partners: Green Mountain Power, Dynapower, VT DPS, DOE, Sandia, CESA
Peak hour 3:00-4:00 PM

This single 2-hour battery discharge saved GMP $200,000
Project Summary: 2 MW / 3 mWh lithium ion battery project, connected with 3.4 MW solar PV at utility substation; islanding capability to support municipal emergency facility.

Project Benefits and Revenue Streams:
- Backup power to support town police station / dispatch center during grid outages;
- Cost savings through reduction of SMLD’s capacity and transmission obligations to ISO-NE;
- Revenues from electricity arbitrage
- Integration of intermittent solar PV

Project partners: SMLD, DOER, DOE-OE, SNL, CESA
Project funding: State CCERI grant, US DOE grant
Project timeline: Groundbreaking in October 2016, commissioning by end of year
Sterling, MA Monthly Peak Reduction

Single Day Viewer
( > ) Fri Dec 16 2016 00:00:00 - Sat Dec 17 2016 00:00:00 ( <= )

2 hr = $17,000 savings
State Policy and Programs
California Energy Storage Procurement Mandate and Incentives

Energy Storage Procurement Mandate

- 1.325 GW by 2020
- Sub-targets for transmission, distribution and customer-sited storage
- IOUs have individual targets
- SCE procurement exceeded requirements

Self Generation Incentive Program (SGIP)

- $83M/year
- Program reopens May 1, 2017
- 75% of incentives reserved for energy storage
  - 15% reserved for residential storage
- Storage incentives set at 36-50 cents/watt-hour (expected to decrease)
Massachusetts Energy Storage Initiative

- Energy Diversity Act (2016)
- State of Charge report (2016)
  - State energy storage roadmap and analysis; recommendations for energy storage policy and program development
- $10M ACES Energy Storage Demonstration Grants (2017)
- Utility Procurement Targets (due July 2017)
- SMART Solar Incentives (due January 2018)
- Microgrids program
- Resilient fueling stations program
- Grid modernization
- Energy efficiency plans
- Alternative portfolio standard
- Rebates

With federal and foundation support, CEG/CESA is providing free technical assistance to DOER awardees for project implementation, as well as to DOER and MassCEC for policy and program development.
CEG proposal for Northeastern States Collaborative on Energy Storage Policy

- Northeastern states share similar markets (within ISO-NE)
- States can learn from the experience, lessons and analysis of Massachusetts
- States can share knowledge gained through their own experience
- States can collectively apply for DOE and foundation funding to support energy storage policy development
- States can collaborate on policies of regional importance
  - ISO regulatory reforms
  - Market development
  - Industry development
  - Utility interconnection issues
Resources
Massachusetts Energy Storage Report and Legislation

*State of Charge* report

- Optimization modeling results: 1,766 GW energy storage in MA by 2020
- Policy recommendations: 600 MW energy storage in MA by 2025

Massachusetts Energy Diversity Act

- Distribution utilities may now own energy storage in MA
- DOER directed to develop utility storage targets by June 2017; 3-year compliance and reevaluation schedule
What Is Solar+Storage

Why Solar+Storage for LMI Communities?
- Cost Savings
- Resiliency

Policy Tools
- Grants and Rebates
- Utility Mandates/Procurement Targets and Portfolio Standards
- Incorporating Solar+Storage into Existing Programs
- Tax Incentives and Alternative Ownership Structures
- Financing and Clean Energy Financial Institutions
- Market-Based Tools and Regulatory Reform
- Technical Assistance, Tools, and Resources

Conclusions
CEG Resilient Power Handbook

What States Should Do: A Guide to Resilient Power Programs and Policy

- Focus on solar+storage
- Information on state resilient power programs
- Lessons learned
- Best practices and policy recommendations
CEG Foundations Report

A Resilient Power Capital Scan: How Foundations Could Use Grants and Investments to Advance Solar and Storage in Low-Income Communities

• CEG report published 2017
• Intended to help foundations direct their philanthropic efforts
• Identifies five market barriers to the deployment of solar+storage technologies in low-income communities
• Proposes more than 50 investment interventions that could address these five primary barriers
• Many of these interventions could be adopted by states and municipalities, and/or by NGO partners
Other CESA/CEG Resources:

- Procurement guide for municipalities (SNL)
- Energy storage technical reports
- Energy storage economic analyses
- Demonstration project case studies
- Webinars and reports
- Online resources

www.cesa.org/projects/energy-storage-technology-advancement-partnership/

www.resilient-power.org
Thank You

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