

DOE-OE Energy Storage Technology Advancement Partnership  
(ESTAP) Webinar

# State of the U.S. Energy Storage Industry: 2020 Year in Review

February 25, 2021



U.S. DEPARTMENT OF  
**ENERGY**

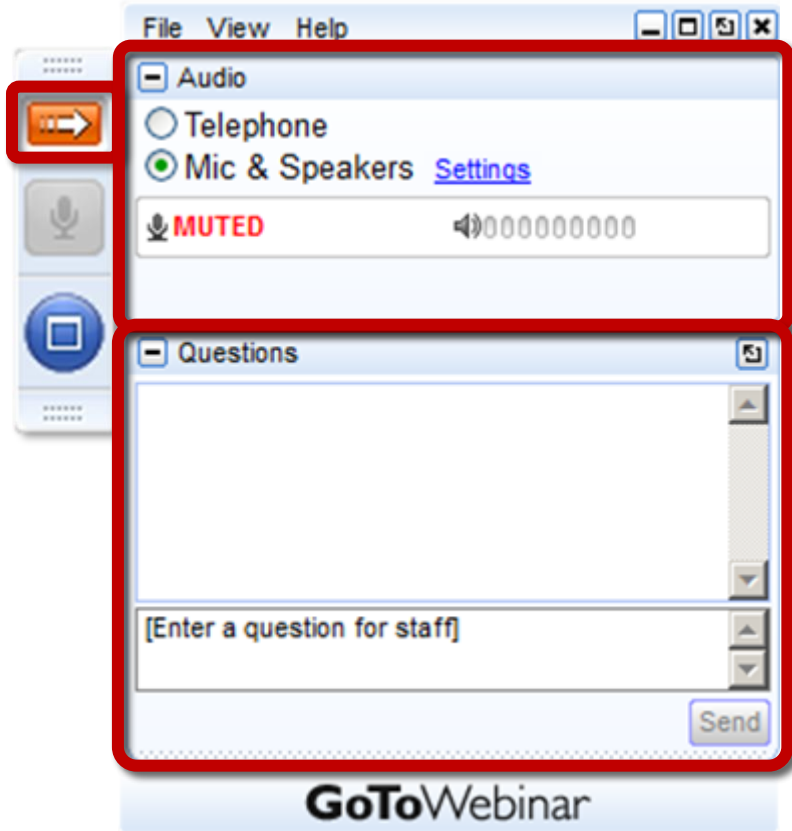


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# CleanEnergy States Alliance



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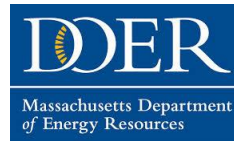
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NYSERDA



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Innovation is in our nature.

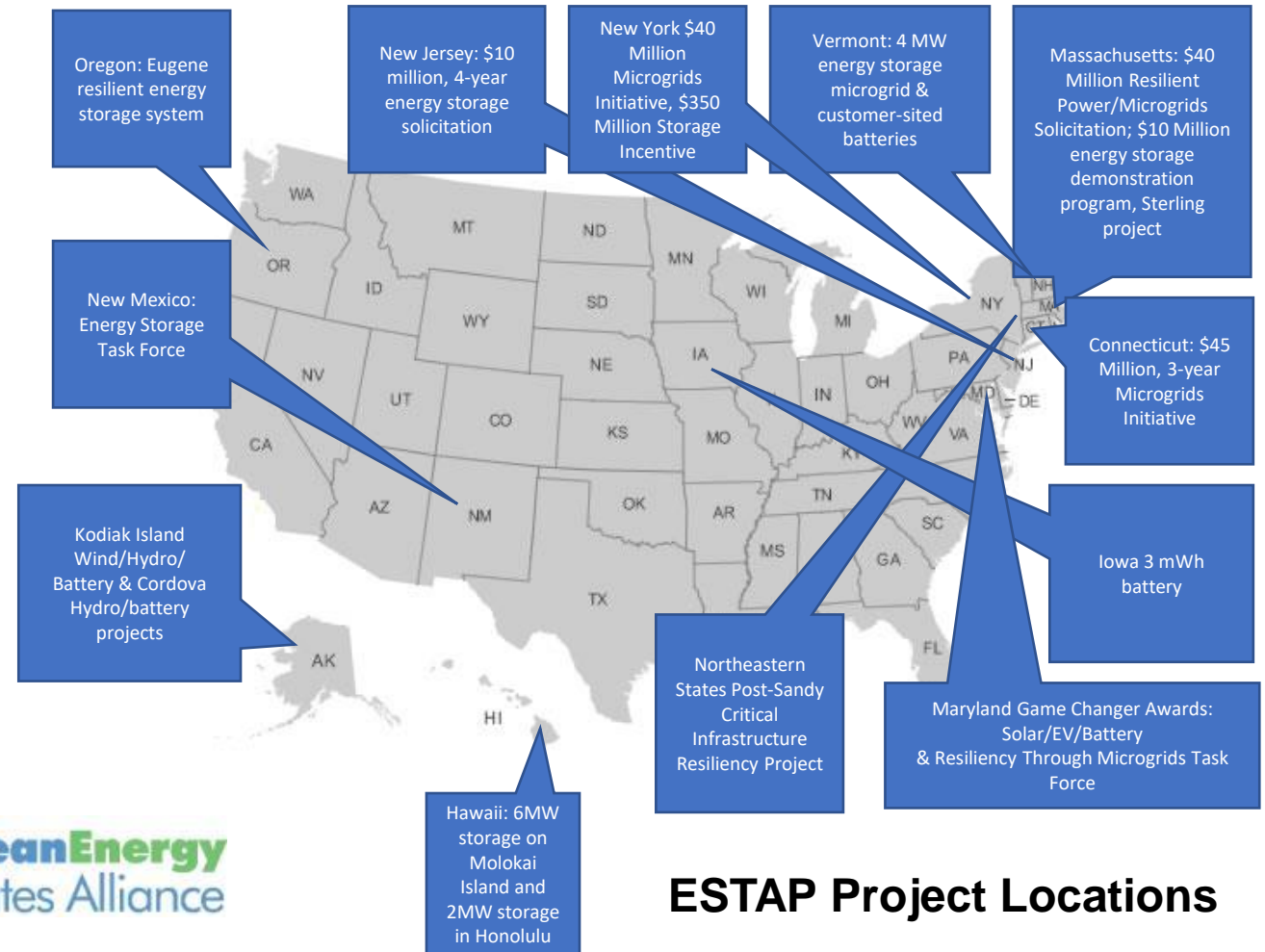


# DOE-OE Energy Storage Technology Advancement Partnership

The **Energy Storage Technology Advancement Partnership (ESTAP)** is a US DOE-OE funded federal/state partnership project conducted under contract with Sandia National Laboratories.

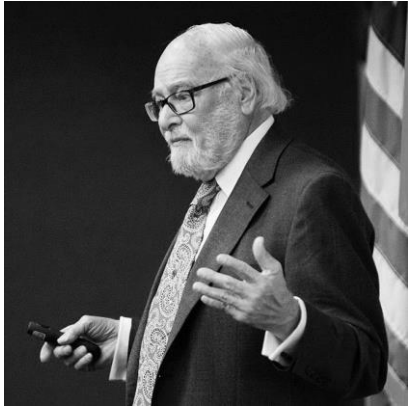
## ESTAP Key Activities:

1. Facilitate public/private partnerships to support joint federal/state energy storage demonstration project deployment
2. Disseminate information to stakeholders
  - ESTAP listserv >5,000 members
  - Webinars, conferences, information updates, surveys.
3. Support state energy storage efforts with technical, policy and program assistance



**ESTAP Project Locations**

# Thank You!



**Dr. Imre Gyuk**

Director, Energy Storage Research,  
U.S. Department of Energy



**Dan Borneo**

Engineering Project/Program Lead,  
Sandia National Laboratories



# Webinar Speakers



**Dr. Imre Gyuk**

Director, Energy Storage  
Research, U.S.  
Department of Energy



**Dan Finn-Foley**

Head of Energy Storage,  
Wood Mackenzie Power &  
Renewables



**Todd Olinsky-Paul**

Senior Project Director,  
Clean Energy States  
Alliance (moderator)



# Grid Scale Energy Storage: The Things that Matter

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IMRE GYUK, DIRECTOR,  
ENERGY STORAGE RESEARCH, DOE-OE

# Surviving COVID Pandemic

Yes, but what about the rest of the world?



# Safety Issues

Fires, Toxic Materials, Water/Air Pollution

# Domestic Manufacturing

# Regional Supply Chain

Material Security

# Circular Economy

Recycling, Reuse

# Social Equity

DOE Workshop April, 2021

# Long Duration Storage

DOE Workshop March 5-10, 2021

100% Decarbonization  
by 2050 ?



# State of the US Energy Storage Industry



**Dan Finn-Foley**

Head of Energy Storage

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## About Wood Mackenzie

We provide commercial insight and access to our experts leveraging our integrated proprietary metals, energy and renewables research platform

Wood Mackenzie is ideally positioned to support consumers, producers and financiers of the new energy economy.

- Acquisition of MAKE and Greentech Media (GTM)
- Leaders in renewables, EV demand and grid-connected storage
- Over 500 sector-dedicated analysts and consultants globally, including 75 specifically to power and renewables
- Located close to clients and industry contacts



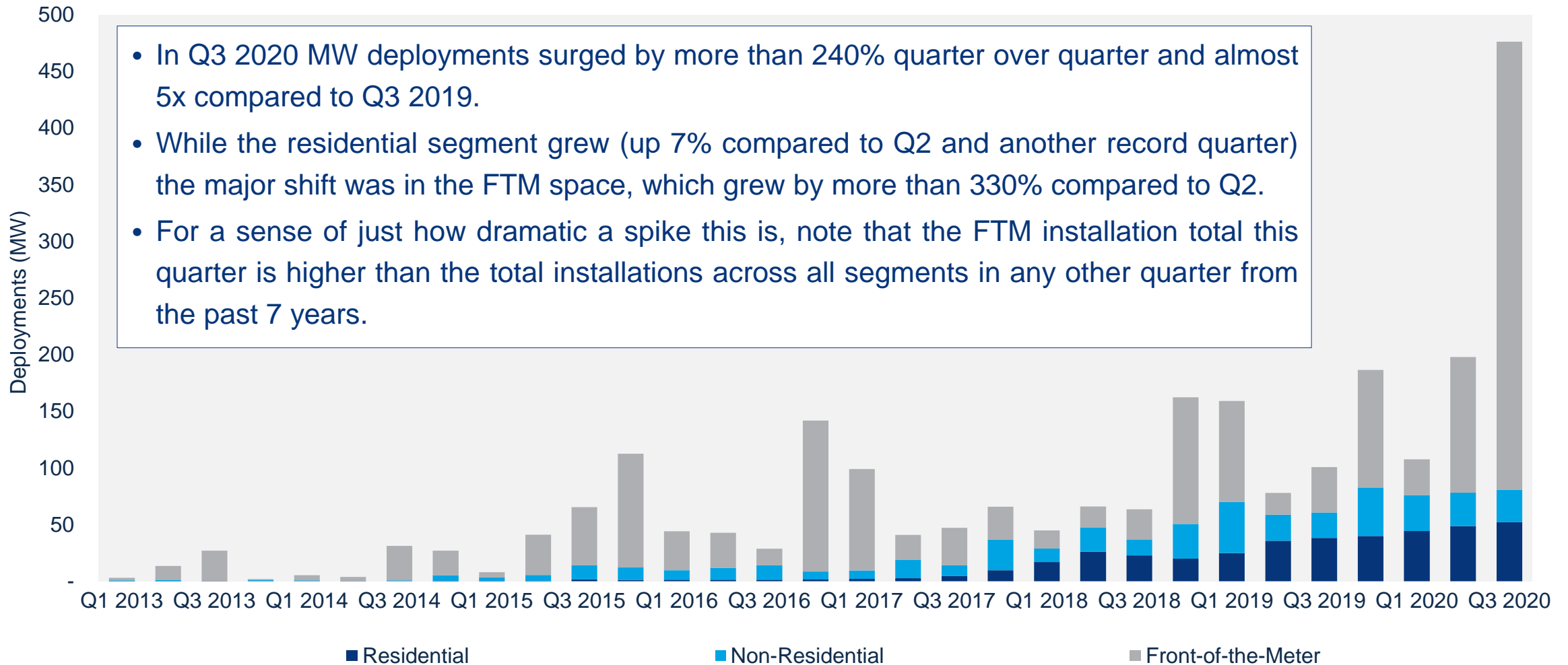
Wood Mackenzie offices



Wood Mackenzie Power & Renewables offices

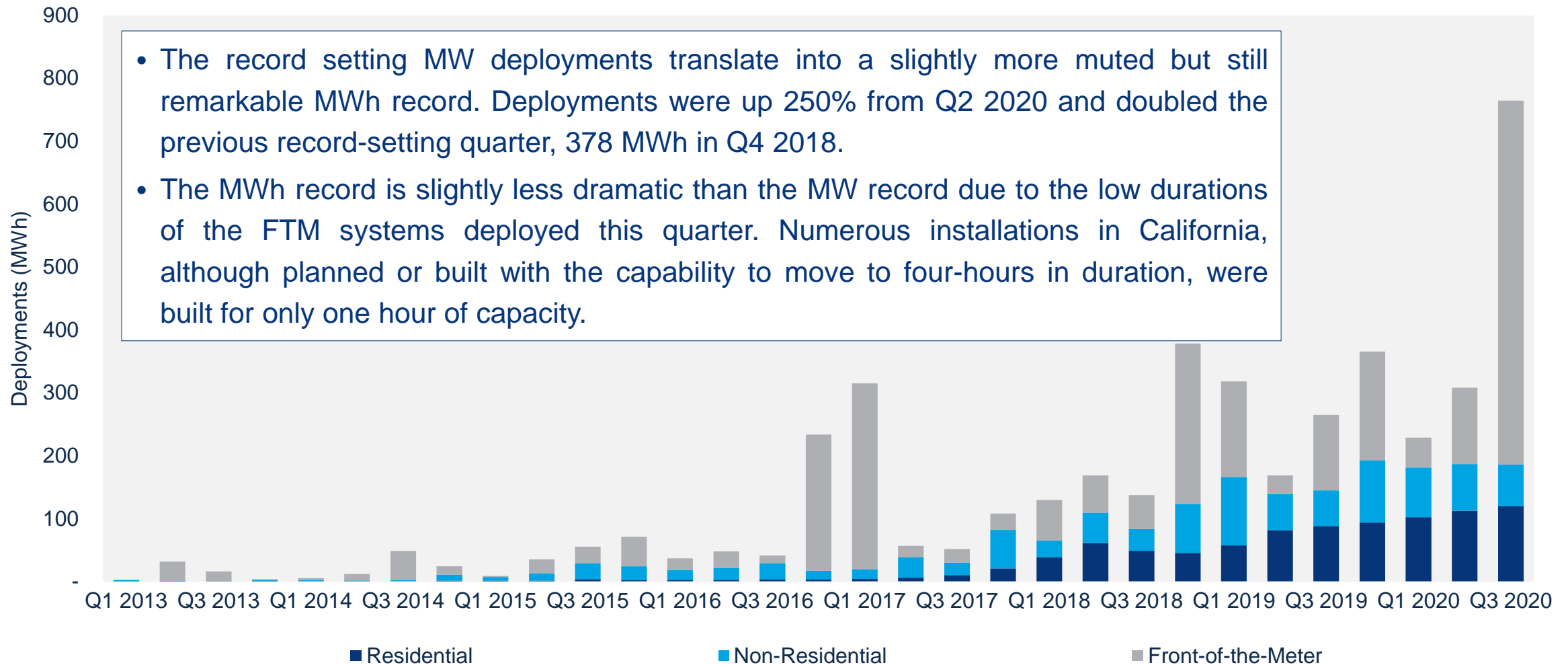
# U.S. Q3 2020 deployments reached a staggering 476 MW

Record-shattering deployments in California redefined the market's scale - and required big edits to our Y-axis

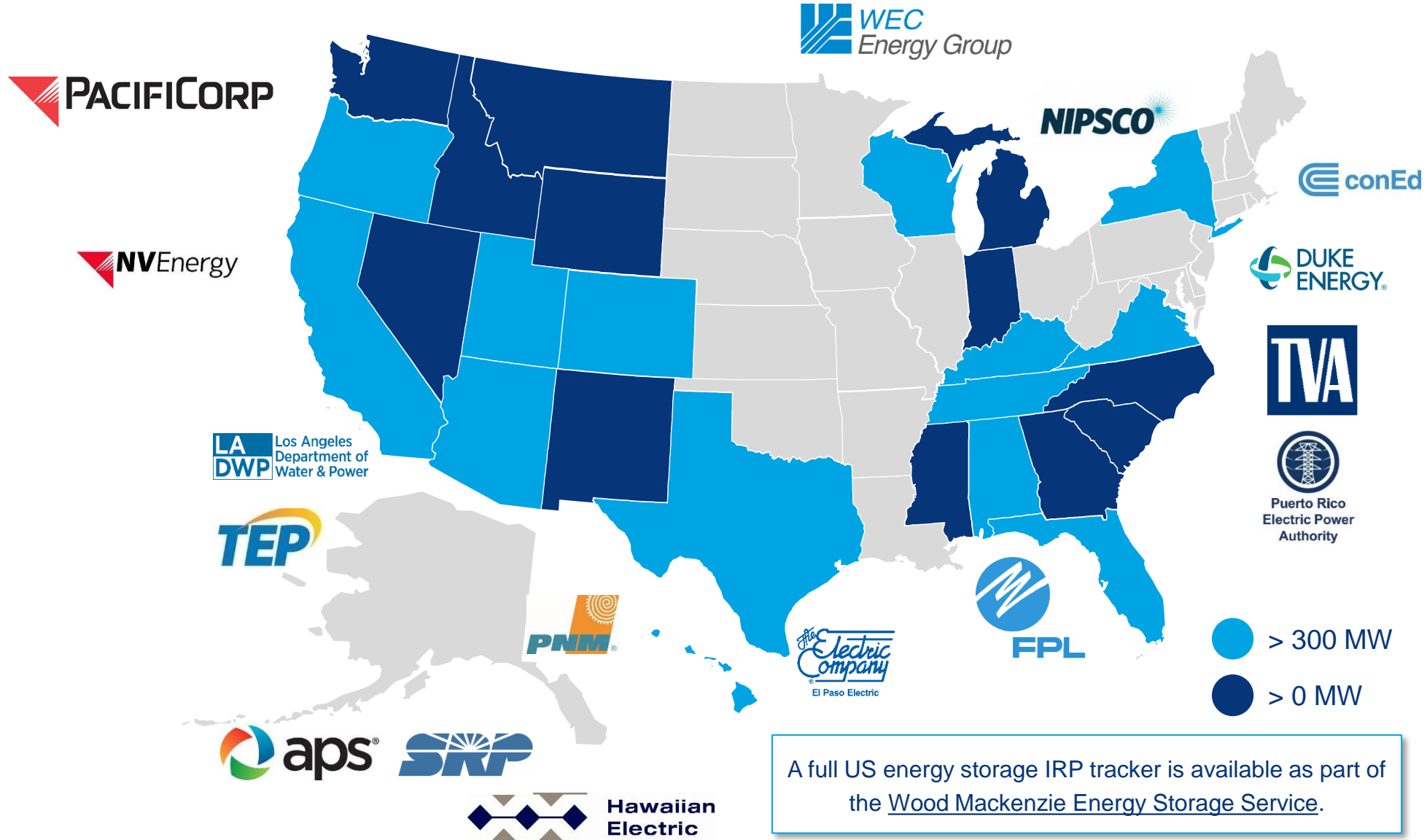


# U.S. market deployed 764 MWh in Q3 2020

Effects on the MWh side, while still massive, were slightly muted by preponderance of 1-hour systems



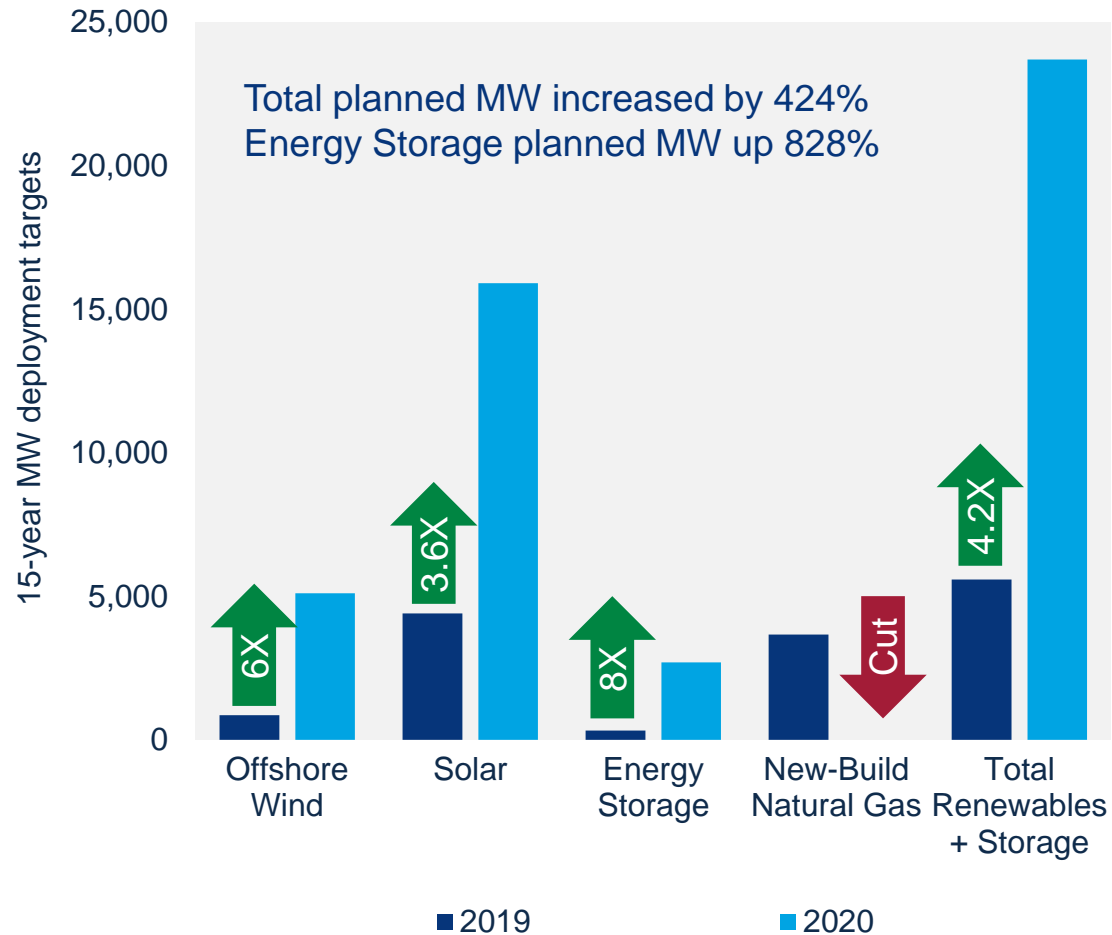
# U.S. FTM snapshot: Energy storage in integrated resource plans



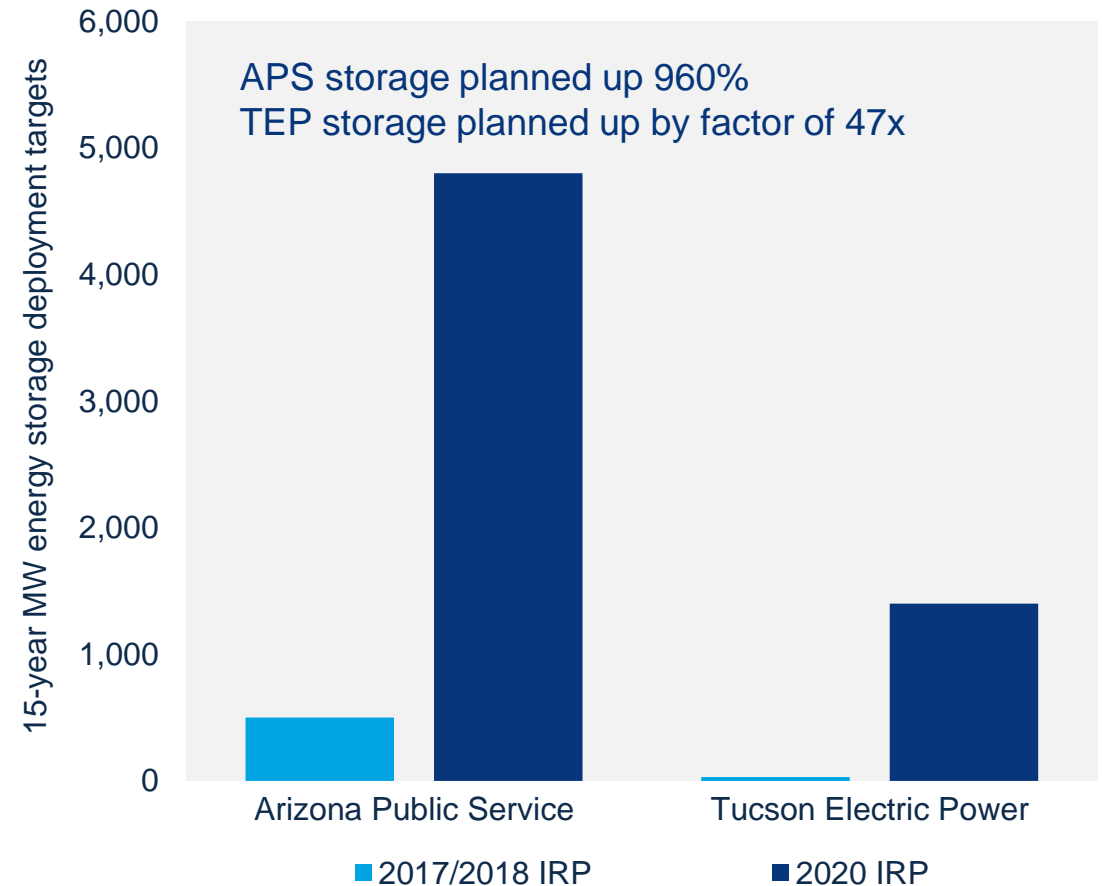
# Turning point – utility resource planning meets the era of storage

A sea change has occurred in utility modeling over the past 2-3 years

Dominion Energy IRP – 2019 vs. 2020



APS and TEP integrated resource plan changes, 2017 vs. 2020

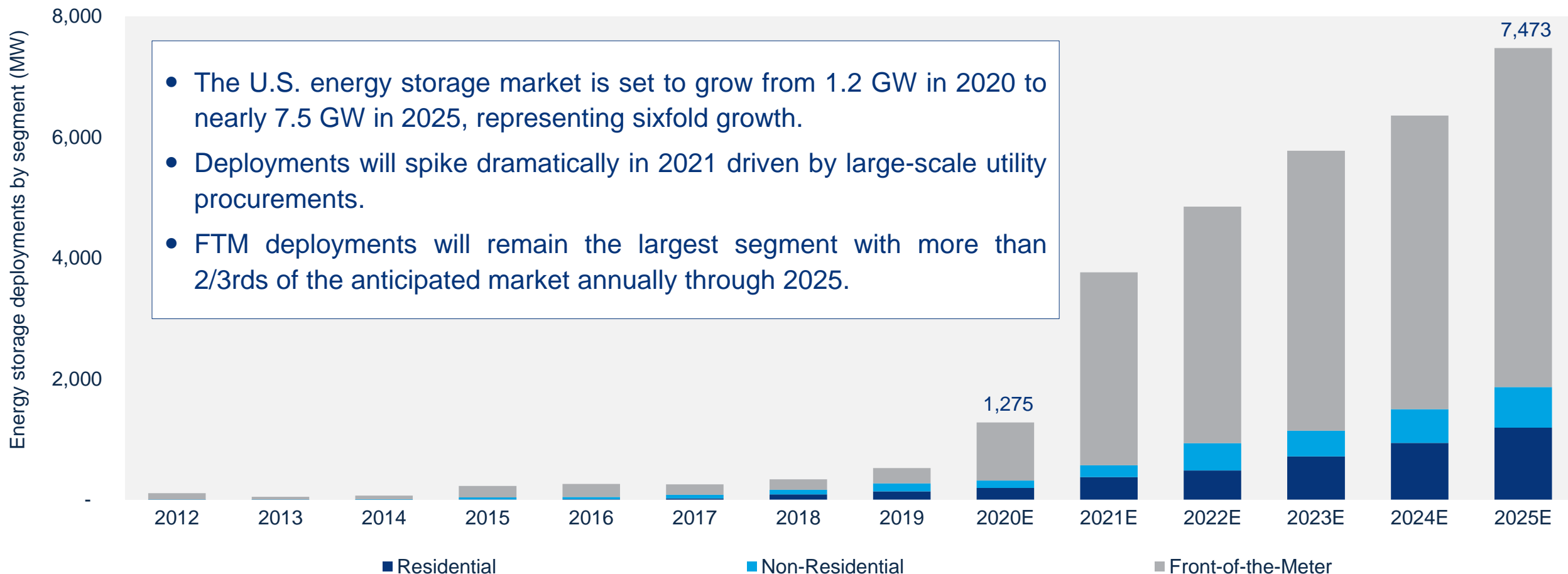


Source: Wood Mackenzie, utility resource plans

# U.S. energy storage deployments will reach almost 7.5 GW annually in 2025

Annual front-of-the-meter deployments are set to quadruple in 2020 versus 2019

U.S. energy storage annual deployment forecast, 2012-2025E (MW)





## Executive action – how a divided government would mesh with an accelerating energy transition

### “Personnel is policy”

- New leadership at DOE, EPA, potential shifts at FERC, and a climate “czar” will set tone for federal action

### Executive actions

- “Day 1” strokes of the pen could bring the US back into the Paris accord, take swift action on fossil-fuel infrastructure

### A grand bargain?

- Compromises have become rarer, but Biden has a track record of forging them between a Republican Senate and a Democratic President

**December 2010** – tax compromise includes extension of renewable tax credit grants during recession

**April 2021** – budget deal funds APRA-E but EPA and Energy Efficiency & Renewable Energy funds slashed

**January 2012** – wind energy Production Tax Credit (PTC) passes as part of the 2012 “fiscal cliff” compromise



# Key state-level initiatives driving storage now and for decades to come

A wide array of approaches are driving key markets

## Short-term

- California's Self Generation Incentive Program – aimed at distributed energy and now refocused on resiliency.
- New York's Bridge Incentive – a cash incentive boost aimed to jump start the market
- Massachusetts's SMART program – storage made a key component of solar initiatives

## Mid-term

- Massachusetts's Clean Peak Standard – a targeted approach to incentivize clean energy during peak periods by creating time-based renewable credits
- State level planning and modeling (multiple) – ensures value recognition and eligibility along with setting up clear road maps as signals to the market

## Long-term

- Clean energy targets (multiple) – 100% clean or renewable mandates effective require storage. Effects of these mandates or goals are seen particularly in utility resource planning.
- Energy storage mandates (multiple) – mandates that come paired with regulations or policies to ease and incentivize storage yield results, otherwise the nascent market lacks direction.





## Post-COVID scenarios – Wood Mac analysis shows that “what’s next” may vary

Subject matter experts across Wood Mackenzie collaborated in May to construct three scenarios for a post-Covid recovery as a framework for discussing the new reality for the energy industry.

### Full recovery

- A “V”-shaped recovery where GDP rapidly returns to pre-pandemic levels, which most closely resembles the base-case used for this report’s forecast.
- States and cities continue to expand renewable efforts after the “new normal” sets in.
- Minor disruption would be anticipated for FTM energy storage deployments while BTM markets recover in 2021.
- **Outlook for storage through 2025 remains relatively unchanged.**

### Go it Alone

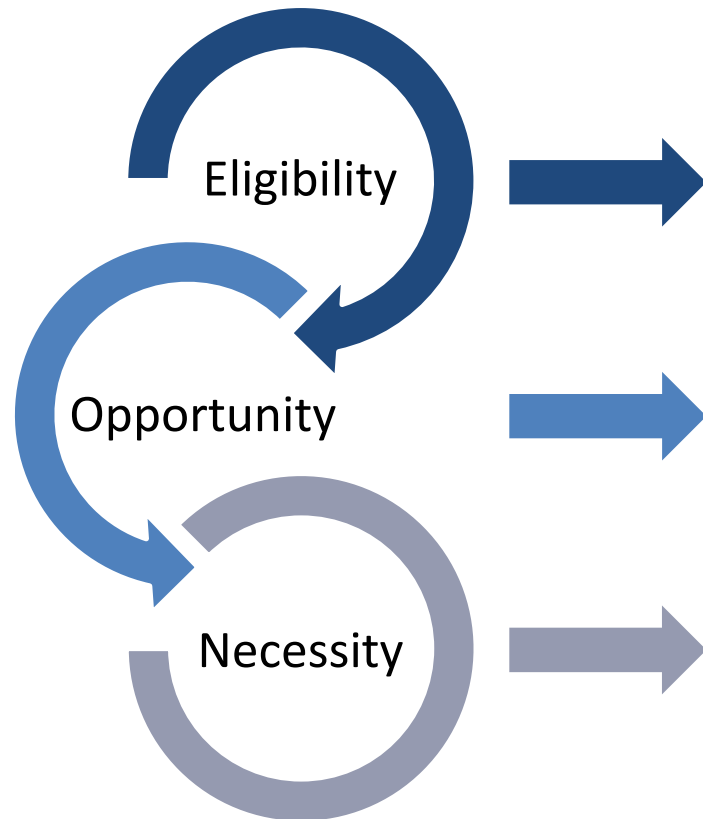
- Further retreat from globalization, supply chains under heavy tariffs, high persistent unemployment.
- Federal policy, rather than encouraging energy storage deployments, potentially becomes hostile to clean energy and international supply chains.
- States pull back on climate policy.
- Interest in project financing shrinks.
- High unemployment and longer recovery particularly affect BTM market interest.
- **Potential significant effects on the storage market through 2022-2023.**

### Greener Growth

- Climate-forward policy at the state and federal level is pursued as an infrastructure and clean-tech based post-pandemic stimulus effort.
- Federal efforts dovetail with state and local plans launched through the 2010s to dramatically accelerate the transition to a green economy.
- Storage friendly policies at the state and federal level drive storage growth to higher levels, including incentives for customer-sited projects.
- **Storage market scales up as incentives come online in 2021-2023.**

# Opportunity and strategy surrounding energy storage shifts dramatically as the market moves from capturing value to the necessity of flexibility

Adaptation -> Transition -> Transformation



## Adapt to new market forces

- Capture early market, establish scale, recognize value
- Diversify or specialize markets and offerings?
- Supply chain uncertainty (de-globalization efforts, Covid)

## Transition technology to new system needs

- Reinvest, acquire, innovate applications, capture value
- Scale solutions to needs, ensure flexibility of offerings
- Mature and de-risk supply chain (commodities, EVs)

## Transform the way electricity is delivered

- Decentralization
- Deep decarbonization
- Disrupt at the grid edge

# This webinar was presented by the DOE-OE Energy Storage Technology Advancement Partnership (ESTAP)

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**ESTAP Website:** <https://cesa.org/projects/energy-storage-technology-advancement-partnership/>

**ESTAP Webinar Archive:** <https://cesa.org/projects/energy-storage-technology-advancement-partnership/webinars/>



# Upcoming Webinars

- Designing Hybrid Combined Heat and Power Systems: An Introduction to New Features in NREL's REopt Lite Tool (3/2)
- Solar+Storage for Puerto Rico Fire Station Resilience (3/3)
- Building Community Resilience Hubs: A Conversation with the Asian Pacific Environmental Network and RYSE Center (3/10)
- ConnectedSolutions: How a New Program Improves the Economics and Social Benefits of Solar+Storage in Massachusetts and Beyond (3/12)
- Collaborating with Community-Based Organizations: An Energy Justice Primer for States (3/23)

**Read more and register at: [www.cesa.org/webinars](http://www.cesa.org/webinars)**

