

# Energy Storage in Federal Buildings:

## Final Report to GBAC

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GSA Green Building Advisory Committee  
Building Energy Storage Task Group  
November 16, 2021



# Task Group Members & Observers

## Committee Members & Designees

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- Projjal Dutta, NY MTA (Co-chair)
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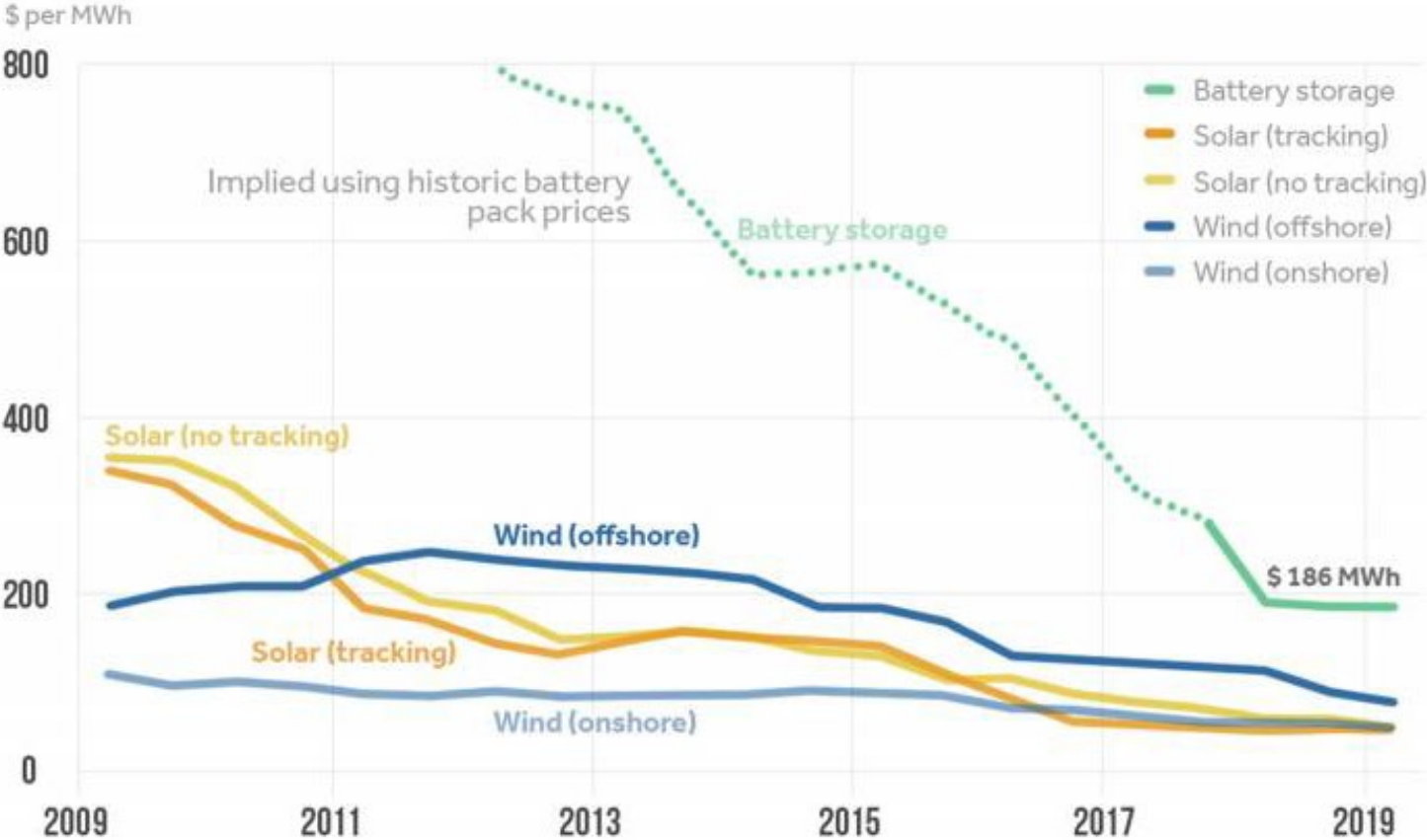
# Task Group Mission

- To explore the use of energy storage at federal facilities
- Determine if energy storage should be considered for use at federal facilities
  - Look at building-level storage systems (primarily behind-the-meter) rather than grid level storage
  - Determine the types of storage to be considered.
- Study potential benefits of building energy storage
- Determine procurement/ financing options
- Study barriers to deployment
- Develop recommendations

# Batteries: cost curve

## Solar, Wind and Battery Prices Falling

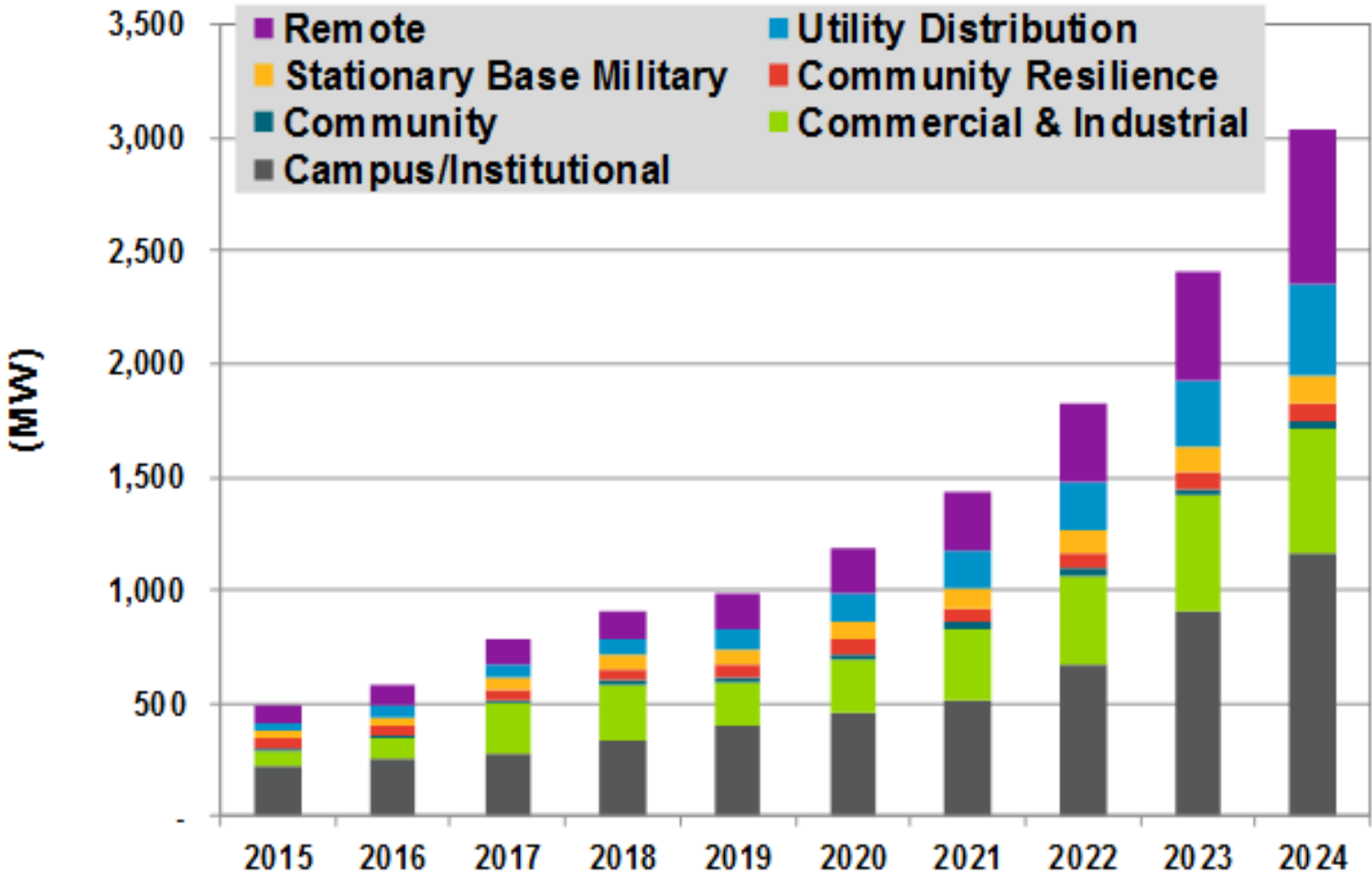
BloombergNEF Levelized Cost of Energy 2009-2019



Source: BloombergNEF Note: The global benchmark is a country weighted-average using the latest annual capacity additions. The storage LCOE is reflective of a utility-scale Li-ion battery storage system with four-hour duration running at a daily cycle and includes charging costs assumed to be 60% of wholesale average power price. Data as of October 22, 2019.

# Batteries: market growth

Total Microgrid Power Capacity Market Share by Segment, North America



Source: Navigant Research

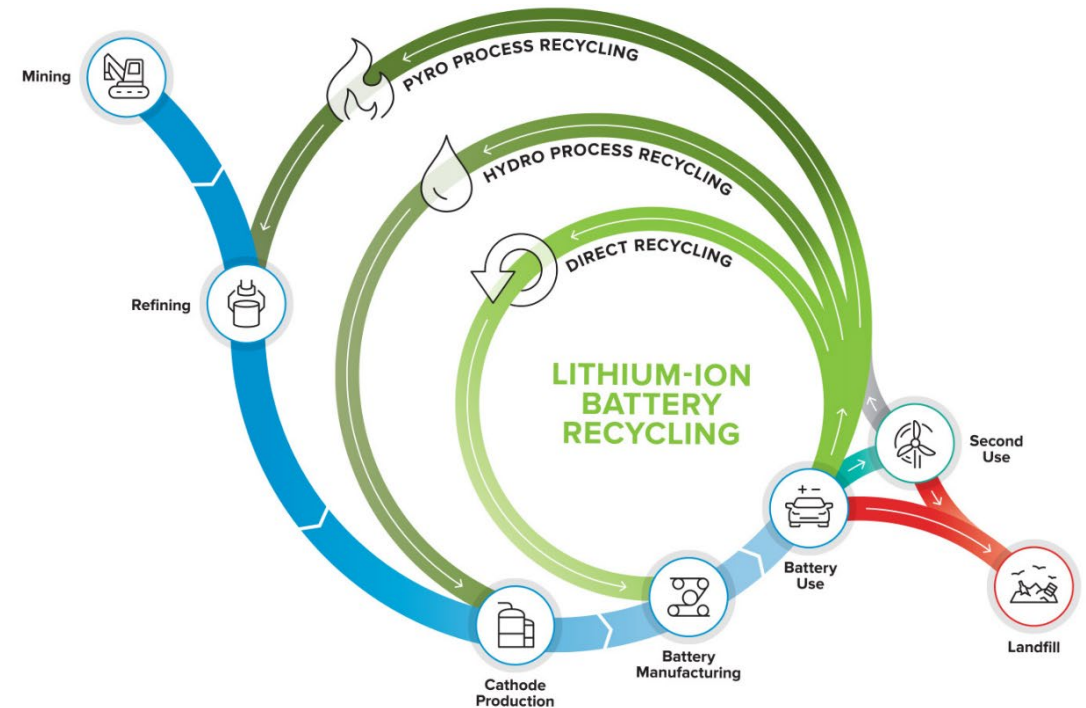
# Findings :

- Dominant technologies are:
  - Lithium ion batteries
  - Chilled water storage
  - Hot water storage
- Benefits
  - Reduce electricity costs
  - Grid support
  - Reduce carbon emissions
  - Protect the value of renewables
  - Resilience
  - Leadership



# Findings :

- Policies/ incentives are not consistent nationally
- There are several procurement options
- Challenges
  - Not common practice
  - Cybersecurity
  - Fire safety (lithium ion batteries)
  - Raw material sourcing (lithium ion batteries)
  - Recycling (lithium ion batteries)
- New technology so not in the normal planning process



# Recommendations:

- Consider the use of energy storage on all projects going forward
- Develop a “roadmap” to assist GSA staff to make decisions on deploying energy storage in buildings
- Conduct further research non-financial benefits to stakeholders
- Develop case studies of successful projects
- Support the nascent lithium ion battery recycling industry
- Continue to track battery technology evolution





# Case Studies:

- Department of Defense: US Army Base, Fort Carson, Colorado Springs, CO – completed 2019
- GSA and FDA: White Oak campus, Silver Spring, MD – completed 2013
- U.S. Marine Corps facility, Miramar, San Diego, CA – completed 2019
- Schwartz Federal Building and Courthouse, San Diego, CA – completed 2018



GSA and FDA: White Oak campus, Silver Spring, MD

# Discussion



- Questions?



- Vote to recommend?

