

Storage Business Models & Economics

Part of the *Advancing Energy Storage at Scale Series*

July 29 - 30, 2020 | 8:45 AM - 2:15 PM (PDT) | Digital Access

July 29, 2020

8:45-9:00 am

Introduction & Opening Remarks

9:00-10:05 am

Session 1: **State of the Energy Storage Industry—Getting Ready for the Scale-up**

Storage is now rapidly expanding, though with some disruptions as well as complexity across the many possible business models and storage applications. This session will discuss the growth trends and the role of maturing technology and engineering to get ready for the scale-up.

- The seminal projects getting us to today
- Size and scale of the latest projects—large systems by utilities & IPP's
- Needs and options for long duration storage
- State of the market—latest market forecasts
 - In front of and behind the meter market penetration
 - Growth of CAISO and ERCOT interconnection queues
 - Historic ISO/RTO penetration levels
- Will Trump's Executive Order limiting the installation of bulk power equipment from foreign adversaries have a chilling effect on storage?
- Potential impacts of FERC's NOPR on net metering on BTM projects
- Understanding COVID-19 impacts on storage business models
- Implications of the US DOE Energy Storage Grand Challenge
- Congressional actions on storage

Alex Eller, *Energy Technologies Expert & Managing Consultant*, GUIDEHOUSE
Dr. Imre Gyuk, *Director of Energy Storage Research, Office of Electricity*, US DEPARTMENT OF ENERGY
Elliot Hinds, *Partner*, SHEPPARD MULLIN
Russ Weed, *President*, CLEANTECH STRATEGIES

10:05-10:20 am

Live Q&A

10:20-10:30 am

Break

10:30-11:15 am

Session 2: **Latest Business Models for Deploying Storage at Scale**

Many business models are being used to deploy storage at scale, including utility procurements, developer projects, and community aggregations. This session will discuss employing various strategies to advance deployment of storage at scale, including assessing the use cases

and revenue opportunities for storage in the context of actual projects, and communicating storage's value to various types of customers.

- *IPP business models*
 - *Solar + storage*
 - *Wind + storage*
 - *Hybrid fossil generation and storage*
- *Utilities as customers:*
 - *Utility procurement*
 - *Getting involved in IRP process to include storage*
- *Going after CCAs: community storage*
- *Microgrids*
- *Managing EV charging*

Michael P. Dunnigan, PMP, Senior Project Manager, POTELCO, INC., A QUANTA SERVICES COMPANY

Russ Weed, President, CLEANTECH STRATEGIES

11:15-11:30 am *Live Q&A*

11:30 am- 12:20 pm *Lunch*

12:20 - 1:20 pm **Session 3: Policy and Regulatory Driver Impacts on Storage Business Models**

Unlike most energy technologies, storage can serve as a productive asset in generation, distribution and transmission. However, the revenue potential from these applications varies widely across markets and regions. This session will discuss where and how federal policy, market rules and state goals impact revenue potential and project viability.

- Federal storage policy as drivers for storage deployment
 - FERC Order 841 and integration of storage into wholesale energy markets
 - Update on FERC's July 23, 2020 Technical Conference on Hybrid (Generation + Storage) Resources
 - FERC order 845--EPC opportunities to work with developers on substations and other balance of plant
- State and local policy drivers
 - States with vertically integrated IOUs versus wires-only utilities
 - Over-the-fence rule
 - Non-economic state mandates and policies
 - State regulatory issues that exist almost everywhere
 - Unique areas: Southeast, Texas, Hawaii
 - Role of rate basing and utility grid modernization proceedings

Bill Rappolt, Partner, SHEPPARD MULLIN

Russ Weed, President, CLEANTECH STRATEGIES

1:20 – 1:35 pm *Live Q&A/Day 1 Wrap Up*

July 30, 2020

9:00-9:30 am

Session 4: Cost Structures for Storage Projects and How They Can Be Expected to Change

The cost of lithium ion battery cells and modules has rapidly decreased over the past few years, mainly riding the coattails of production scale up to meet the demands of the EV market. However, that is only part of the overall cost structure for storage projects, and Covid-19 could have short- and long-term implications. This session will discuss the overall drivers of storage project costs, including:

- Battery and rack sale cost trends
- Balance of plant including inverters and the cost of construction
 - Timeline and resource specific
 - Capital cost breakdown
 - Operating cost breakdown
- Net impacts from COVID19, with implications for scale-up in progress
 - Battery supply and demand for stationary applications vs EVs
 - Increased costs from force majeure for present projects
 - Energy storage as the “back up market” with EV demand crunch
- Other drivers of cash flow

Russ Weed, *President*, CLEANTECH STRATEGIES

Ned West, P.E., *Consulting Engineer, Energy Services Development*, SOUTHERN COMPANY SERVICES

9:30-9:45 am

Live Q&A

9:45-9:55 am

Break

9:55-10:30 am

Session 5: Using Analytical Tools to Determine Storage Benefit-Cost Ratios and Returns

This session will discuss publicly available tools from industry and labs that are available, and how they can be used in analyzing the economics of storage projects.

- Capabilities, strengths, and weaknesses of tools from PNNL, SNL, EPRI

Patrick Balducci, *Chief Economist*, PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL)

Russ Weed, *President*, CLEANTECH STRATEGIES

10:30 -10:45 am

Live Q&A

10:45-10:55 am

Break

10:55 -11:40 am

Session 6: Structuring and Negotiating Revenue Contracts for Storage Projects

This session will discuss not only procurement contracts specifically for storage, but also how those fit into the broader context of renewable procurement and contracts for the growing number of hybrid solar + storage, wind + storage projects.

- Storage Contracts
 - Build-Transfer Agreements
 - PPAs and product definition
- Compensation for capacity
- Compensation for maintenance
- Control over the project—the range of choices
- Handling “stacked” services
- Ownership arrangements

Elliot Hinds, *Partner*, SHEPPARD MULLIN

Paul J. Kaufman, *Partner*, SHEPPARD MULLIN

Russ Weed, *President*, CLEANTECH STRATEGIES

11:40-11:55 am *Live Q&A*

11:55 am-12:40 pm *Lunch*

12:40-1:45 pm **Session 7: Best Practices for Managing Storage Project Development, Construction and Operational Risks**

This session will provide a brief overview of the timelines for moving a storage project from concept to operation, and how to manage and mitigate risks in the 3 stages: development, construction and operation.

- Contracting, actors and responsibilities
- Hybrid vs. stand-alone storage project timelines and risks
- Construction and Operational Risks
 - Safety, health and environmental aspects
 - Design risks
 - Warranty terms
 - Non-warranty operational risks
 - Applicable standards

Elliot Hinds, *Partner*, SHEPPARD MULLIN

Paul J. Kaufman, *Partner*, SHEPPARD MULLIN

Russ Weed, *President*, CLEANTECH STRATEGIES

1:45-2:15 pm *Live Q&A/Day 2 Wrap Up & Closing Remarks*