



# Stationary Energy Storage India

**Theme: Defining roadmap and outlook for stationary energy storage in India**

**APRIL 8, 2021, CONFERENCE & VIRTUAL EXPO**



The government of India has come up with an ambitious plan to deliver 450 GW of renewables by 2030, committing to generate 40% power from clean energy sources by 2032. In Union budget 2020, government announced its plan to retire old thermal plants that are not able to meet environmental regulations. Recent results from SECI tender for RE+ storage have shown that hybrid RE projects can compete with thermal plants for providing reliable peak power. In addition, government is also working on 24\*7 Power for all and there is a growing realization of need for microgrids in achieving this goal in a cost effective and timely manner. High deployment of renewable energy and its use requires technical as well as commercial solutions and a variety of policy decisions around minimizing the impact of intermittency and enabling grid integration of renewable energy.

IESA estimates the energy storage market in India to be US \$2.1 billion in 2019 and forecasts a CAGR of 8% by 2027. In 2019, the market size shrunk to 21 GWh from 24 GWh last year, primarily due to lower sales in the larger markets such as telecom and inverter batteries in 2018.

In next 7 years, the top growing markets for ESS are renewable integration into the grid, diesel optimization, solar rooftop, and distribution utility scales storage. Renewable integration into the grid is slated to grow at CAGR of 32% by 2027 due to the focus on solar-wind hybrid tenders by Solar Energy Corporation of India (SECI) and other government agencies, due to high renewable target of 450 GW by 2030. Diesel optimization is a key sector for diesel genset usage for more than 3-4 hours a day and is slated to grow at CAGR of 59% in short term till 2023, with a slower growth in long term at 30% till 2030 accounting for a more reliable national grid which may leave less scope for growth of backup application market. For rooftop solar market, a dip in GST from 28% to 5% has been a driver for the market, with analyses additionally showing that for solar resource-rich states like Maharashtra, Tamil Nadu, Karnataka, West Bengal, Assam, cost of rooftop solar with 50% storage system could meet grid parity by end of 2023. COVID-19 slowed down the growth of the market, but towards 2027 the market is likely to be a strong supporter of energy storage technologies. Another top market for energy storage is Distribution Utility market, with top private DISCOMs such as BSES and TPDDL in Delhi already in different stages of Battery Energy Storage System (BESS) installations. The strain on DISCOM's due to a higher penetration of solar rooftop, EV charging stations, and ever-increasing C&I loads can be supported by energy storage technologies. This fact is likely to become more apparent in the long term with the market size potentially increasing to about 6 GWh in 2027.

The most popular battery technologies used for energy storage are flooded lead-acid batteries, valve regulated lead acid batteries (VRLA), lithium-ion batteries and other technologies such as flow batteries, sodium & zinc based batteries, thermal batteries etc. Our analyses show that the contribution of lead-acid batteries will reduce over the forecasted period and other technologies will take major portion of the new implementation.

Currently, the forecasting, scheduling and DSM are the only drivers for wind integration application. Central Electricity Regulatory Commission (CERC) plans to introduce market mechanism for ancillary services market. IESA suggested the Commission to introduce ESS for secondary and fast tertiary regulation ancillary services as it provides faster response and more regulation per MW. In 2019, the first large grid-scale ESS project was commissioned at Tata Power Delhi Distribution Ltd (TPDDL), Rohini Substation in New Delhi for 10 MW – 10 MWh for application such as peak load management, frequency regulation and Energy shifting. In 2020, NLC and L&T also commissioned another project at Andaman Nicobar with a capacity of 16 MW-8 MWh for solar integration.

Rooftop PV policy subsidies, falling battery prices, increase in the electricity tariffs, energy storage with rooftop solar all are expected to pick up in the short term. The rural electrification sector majorly constitutes the solar home lighting systems under Saubhagya scheme, solar streetlights under AJAY scheme, and microgrids. In 2018-19, market was driven by Saubhagya SHLS deployment; however, the sector looks unattractive due to lack of policies existing in the market to drive it beyond 2021.

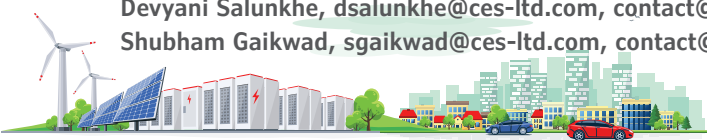
Presently, India has already installed 25+ MWh of large-scale storage for grid and renewable integration though pilot and demonstration projects at different locations. Apart from these commissioned projects, 100+ MWh of energy storage projects in India are on the verge of tender allocation or at construction stage. IESA is hopeful, that this time the government will prioritize energy storage projects and see them through to implementation. We are also seeing strong leadership from private commercial and industrial consumer to develop storage projects for behind the meter applications for different commercial and industrial hubs to create private projects.

With the same intent, we are delighted to announce the **Stationary Energy Storage in India (SESI) Conference & Virtual Expo on 8 April 2021** focused on the roadmap and outlook for stationary energy storage. This is a unique platform to interact, network and learn about market landscape, government policies, new projects & tender updates, Insights from national and international storage projects, current and future technology outlook for stationary storage.

## For Delegate Registration:

Devyani Salunkhe, [dsalunkhe@ces-ltd.com](mailto:dsalunkhe@ces-ltd.com), [contact@indiaesa.info](mailto:contact@indiaesa.info), M: + 91-9975710139

Shubham Gaikwad, [sgaikwad@ces-ltd.com](mailto:sgaikwad@ces-ltd.com), [contact@indiaesa.info](mailto:contact@indiaesa.info), M: + 91-8379037205



# AGENDA

## Inauguration & Keynote Address

**Session  
1**

### **Stationary Energy Storage Policies for India**

- Draft National Wind-Solar Hybrid policy
- State level policies on wind-solar hybrid with Storage policy
- Role of CEA, CERC, Load Dispatch Centre for Storage Integration
- Renewable Energy – Round the Clock dispatch
- Draft Unified Guidelines on Standalone Energy Storage Systems procurement
- Policy requirement for Ancillary market

## India Stationary Storage Market Overview (*Special Presentation*)

**Session  
2**

### **Grid scale Energy Storage Integration**

- (For Grid Scale Solar PV / Wind Applications and DISCOM Use cases)
- Need of Energy Storage for large scale PV / Wind / Hybrids Plants
  - RE Shifting, RE firming, RE Smoothing and Ramp Control requirement
  - Analysis using COMETS (NPV, IRR, Payback calculation for the projects)
  - Energy Storage for Utilities for Peak load management, Grid Stability, Transmission & distribution deferral, and DSM

**Session  
3**

### **Energy Storage Financing**

- Overview of project financing options for energy storage projects
- Risk management and role of insurance
- Role of aggregators / ESCO companies
- New business models

**Session  
4**

### **Energy Storage for Behind the Meter Application**

- (Rooftop Solar & Microgrid, Inverter, UPS Back UP, Telecom Tower)
- Role of Net metering
  - C&I application including DG optimization.
  - Telecom tower, Inverter, UPS Back Up
  - Power Quality & reliability for C&I consumers
  - Micro-grid scenario in India & opportunities in campus & rural micro-grids

## India Stationary Storage Tender/ Project Update (*Special Presentation*)

**Session  
5**

### **Learning from India & global projects and Insights for National and International Experience**

- Global Stationary storage ecosystem and success stories
- Project Monitoring
- Learning and key take-away's from global projects
- Success stories from Stationary energy storage projects in India

**Session  
6**

### **Current and Upcoming Technologies for Stationary Energy Storage System**

- Technology evaluation and outlook for 2020-25
- Second life batteries for stationary applications
- Beyond batteries (thermal storage, mechanical storage, gravity storage)

## Registration Fee:

### Early Bird Price (Before 20 March 2021)

- Non IESA Member: INR 10,000/-
- IESA Member: Free

### Regular Price (After 20 March 2021)

- Non IESA Member: INR 15,000/-
- IESA Member: Free

### **For Delegate Registration:**

Tushar Kakade, tushar.kakade@ces-ltd.com, M: +91-9404999270  
Shubham Gaikwad, sgaikwad@ces-ltd.com, M: +91-8379037205

### **For Exhibition:**

Devyani Salunkhe, dsalunkhe@ces-ltd.com, M: +91-9975710139

### **For Sponsorship:**

Ashok Thakur, contact@indiaesa.info, M: +91-9819944543

### **For Speaking Opportunity:**

Debi Prasad Dash, contact@indiaesa.info, M: +91-9699719818



### Registration Link:

<https://www.indiaesa.info/events/2nd-stationary-energy-storage-in-india-sesi>