



# CLEAN HORIZON

The Energy Storage Experts



## Clean Horizon Compass

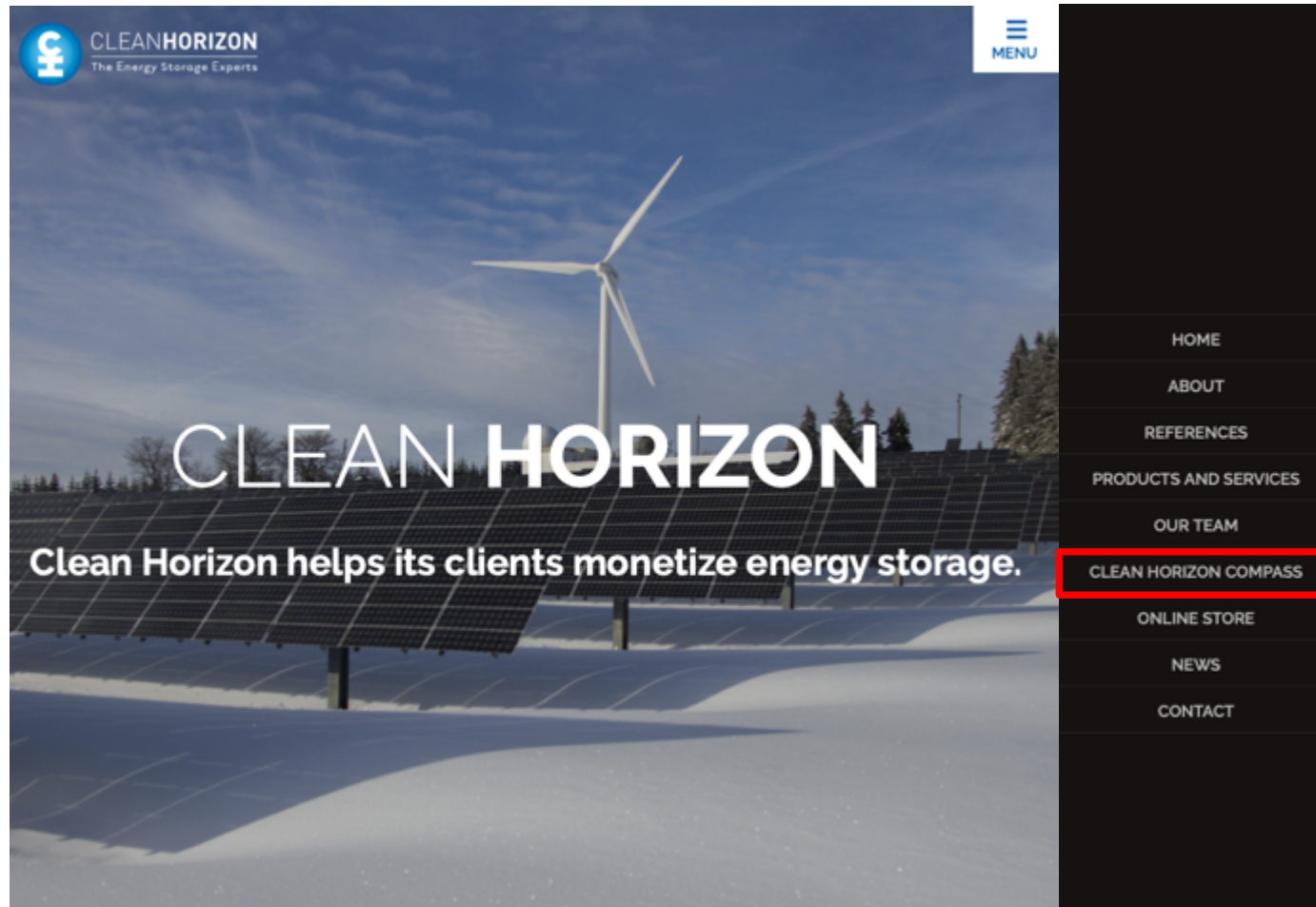
*A unique platform for your storage market intelligence*





# Clean Horizon Compass is a platform accessible on our website where our users can find to-the-point guidance into world of energy storage

From our home page: [www.cleanhorizon.com](http://www.cleanhorizon.com)





# Clean Horizon Compass offers 4 services

Welcome to Clean Horizon Compass!  
Guiding you through the world of energy storage



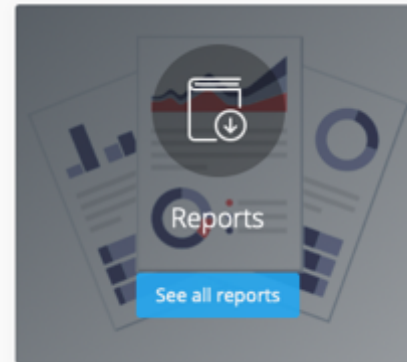
## 1. Clean Horizon Energy Storage Source (CHESS)

A worldwide database of all storage projects larger than 500kW can be tracked with this tool



## 2. Update From The Field (UFTF)

- Our monthly analysis note on the energy storage market
- **Latest calls for tenders** (and history of tenders flagged by Clean Horizon)



## 3. Other reports

All our on-the-shelf report are available here



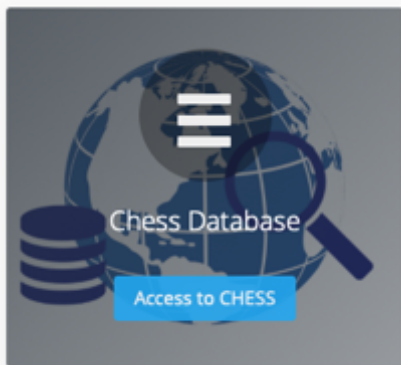
## 4. News

**All** our TOP 5 weekly news can be tracked here



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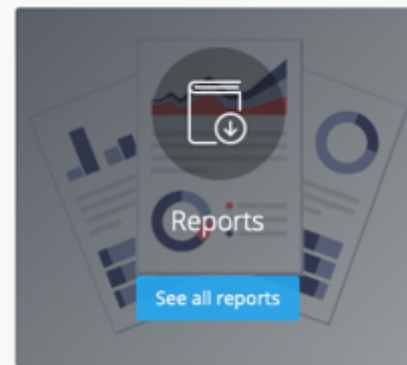
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# CHESS: Worldwide database of MW-scale energy storage projects

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## Search and analyze projects by:

- Revenue models
- Applications
- Stakeholders, from manufacturers to off-takers

## Database key features:

- Updated and curated by our experts
- Advanced and basic searches with modifiable display results
- Projects across 7 continents



# CHESS: One search module to find efficiently any information regarding storage projects worldwide



Clean Horizon Energy Storage Source

Easy overview of your search results



Operational  
695 MW



Under Construction  
40 MW



Announced  
1 813 MW

Export all CHESS projects

## Filter and Search

Country

Keywords

Technology

Display

Application

Clear

Show all

Search

Status

Search by date

Search by country / manufacturer or application, date

Export search results

Actions	Project Name	Technology	Rated Power (MW)	Energy Capacity (MWh)	Country	Status	Main application
Show	RWE Tilbury Energy Centre Battery	Lithium-ion Battery	100	100 ▲	United Kingdom	Announced	
Show	AES Energy Storage - Northern Ireland Kilroot Exten	Lithium-ion Battery	90	90 ▲	United Kingdom	Announced	Frequency Control
Show	Project "I"	Lithium-ion Battery	80	80 ▲	United Kingdom	Announced	
Show	Langley Storage - Statera Energy	Lithium-ion Battery	50	200	United Kingdom	Announced	Capacity Mechanism
Show	Melksham East Storage - Statera Energy	Lithium-ion Battery ▲	50	100	United Kingdom	Announced	Capacity Mechanism
Show	Dollymans Storage - Statera Energy	Lithium-ion Battery ▲	50	50	United Kingdom	Announced	Capacity Mechanism
Show	Abham Storage - Statera Energy	Lithium-ion Battery ▲	50	200	United Kingdom	Announced	Capacity Mechanism
Show	Norton Storage - Statera Energy	Lithium-ion Battery	50	50 ▲	United Kingdom	Announced	Capacity Mechanism

Download the database/ your results in Excel



# CHESS: Clicking on a specific project provides a detailed ID card reviewed by Clean Horizon's team



## Langley Storage – Statera Energy

### Description

This project aims to procure a Capacity Market contract for 15 years with National Grid T-4 for delivery in 2022/23. CMU: SEL046

### Location

**Island / Mainland:** Island

**Continent:** Europe

**Country:** United Kingdom

**State / Region:** England

**City:** Wolverhampton

**Connection Point:** T&D

### Storage Technology

**Technology Category:** Electrochemical

**Technology:** Lithium-ion Battery

### Status

**Status:** Announced

**Announcement Date:** 2016-12-08

**Commissioning Date:** 2020-11-01

### Size

**Nominal Power (MW):** 50

**Energy Capacity (MWh):** 200

**Duration Discharge (h):** 4

### Revenue(s)

Great Britain Capacity Market

### Application(s)

Capacity Mechanism

### Additional information

**Paired Grid Resource:** Unknown

### Actors

**System Integrator:** Unknown

**Developer:** Statera Energy

**Owner:** Infrared Capital Partners

**Off-taker:** National Grid (UK)

### References

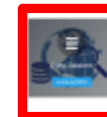
**Hyperlink 1:** [Link](#)

**Hyperlink 2:** [Link](#)

**Last Updated:** 2019-08-01 22:00:00



# CHES: Revenues associated with applications to understand storage business models around the world



Application	Revenue Name	Country (Specific)
Frequency Control	Frequency Control Ancillary Service (FCAS)	Australia
	Enhanced Frequency Response	United Kingdom
	Firm Frequency Response	United Kingdom
	PJM Frequency Regulation	United States
	Frequency Containment Reserve	Europe
	KEPCO Frequency Control	South Korea
	IESO Frequency Control	Canada (Ontario)
	ERCOT Reserve Response Service	United States (Texas)
	Fast Frequency Response	Ireland
	Load Shedding Avoidance	-
	Optimization of Conventional Generation	-
	Long-term Contract with Utility	-
Capacity Mechanism	Great Britain Capacity Market	United Kingdom
	U.S.A. Resource Adequacy (IOU)	United States
Electricity Bill Reduction	California Demand Charge Management	United States (California)
	Ontario Global Adjustment	Canada (Ontario)
Load Shifting	Long-Term IOU Contract (AB2514)	United States (California)
	Long-Term Contract (IESO)	Canada (Ontario)
Energy Market	CAISO Energy Market	United States (California)
Renewable Energy Integration	Hokkaido PV + storage Feed-in-Tariff	Japan
	French Island E13 Tariff	France
	PV + storage PPA	-
	PV + storage PPA (Hawaii)	United States (Hawaii)
	French Island RFP (2011- 2015 - 2016)	France
Demand Response	California Demand Response Auction Mechanism	United States (California)
Off-grid	Off-grid Generation Optimization	-
Grid Congestion Management	Grid Investment Deferral	-
	T&D Long-Term Contract	-

- Clean Horizon has accurately categorized storage projects applications and revenue streams for each project
- Filtering projects by revenues and applications enables to track business models by geographies



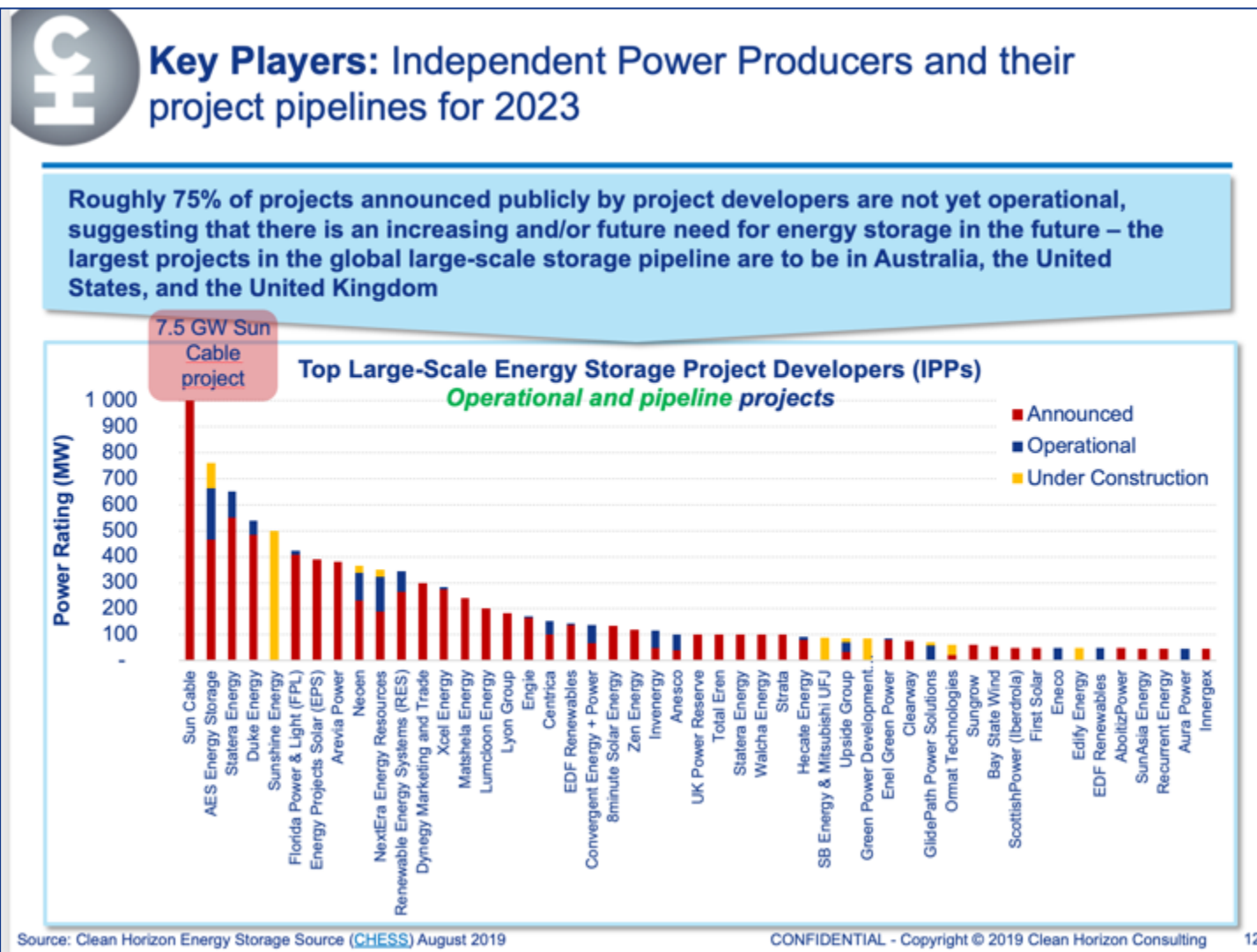
# CHES: Download the whole database, or selected excerpts in Excel format



All the data estimated by Clean Horizon as opposed to verified is highlighted **in red** for easier sorting

Project Name	Technology	Technology Category	Rated Power (MW)	Energy Capacity (MWh)	Discharge Duration (hours)	Island/Mainland	City	State/Region
1 Sun Cable Tennant Creek facility	Lithium-ion Battery	Electrochemical	7500	30000	4	Mainland	Tennant Creek	Northern Territory
2 Advanced Clean Energy Storage project	Compressed Air Energy Storage	Mechanical	1000	2000	2	Mainland	Delta	Utah
3 Goyder South project	Lithium-ion Battery	Electrochemical	900	1800	2	Mainland	Burra	South Australia
4 Sunshine Energy project	Lithium-ion Battery	Electrochemical	500	500	1	Mainland	Harlin	Queensland
5 Manatee Energy Storage Center	Lithium-ion Battery	Electrochemical	409	900	2.2	Mainland	Parrish	Florida
6 Gemini Solar Project	Lithium-ion Battery	Electrochemical	380	1900	5	Mainland	Clark County	Nevada
7 Ravenswood Generating Station battery	Lithium-ion Battery	Electrochemical	316	632	2	Mainland	Long Island	New York
8 PG&E Vista Moss Landing Energy Storage	Lithium-ion Battery	Electrochemical	300	1200	4	Mainland	Moss Landing	California
9 Eland Solar & Storage Center	Lithium-ion Battery	Electrochemical	300	1200	4	Mainland	California City	California
10 Xcel Colorado Energy Plan	Lithium-ion Battery	Electrochemical	275	1100	4	Mainland		Colorado
11 Robertstown solar project battery	Lithium-ion Battery	Electrochemical	250	1000	4	Mainland	Robertstown	South Australia
12 Grid Reinforcement Pilot Project for Wind Turbines	Lithium-ion Battery	Electrochemical	240	720	3	Mainland	Toyotomi	Hokkaido Prefecture
13 Matshela Energy Gwanda solar plus storage	Lithium-ion Battery	Electrochemical	240	240	1	Mainland	Gwanda	Matabeleland
14 HECO storage RFP - Oahu	Lithium-ion Battery	Electrochemical	200	800	4	Island	Oahu	Hawaii
15 UET/Kongke Power 800 MWh project	Vanadium Redox Flow Battery	Electrochemical	200	800	4	Mainland	Dalian	Liaoning Province
16 Eskom Distributed Battery Storage Program (Phase I)	Lithium-ion Battery	Electrochemical	200	800	4	Mainland	90 sites	
17 Skeleton Creek project	Lithium-ion Battery	Electrochemical	200	800	4	Mainland	Garfield, Alfalfa, and Major	Oklahoma
18 Tesla Moss Landing Battery Energy Storage Project (Elkhorn)	Lithium-ion Battery	Electrochemical	182.5	730	4	Mainland	Moss Landing	California
19 Gansu Provincial Development & Reform Commission battery	Lithium-ion Battery	Electrochemical	180	720	4	Mainland		Gansu Province
20 Eskom Distributed Battery Storage Program (Phase II)	Lithium-ion Battery	Electrochemical	160	640	4	Mainland	90 sites	
21 Hyundai Electric & Energy Systems and Korea Zinc	Lithium-ion Battery	Electrochemical	150	150	1	Mainland	Ulsan	Yeongnam
22 Bungama project	Lithium-ion Battery	Electrochemical	140	560	4	Mainland	Bungama	South Australia
23 Southern Bighorn Solar & Storage Center	Lithium-ion Battery	Electrochemical	135	540	4	Mainland	Moapa	Nevada
24 Jiangsu Electric Power Design Institute battery	Lithium-ion Battery	Electrochemical	130.88	268.6	2.05	Mainland	Nanjing	Jiangsu Province
25 Neoen Crystal Brook Energy Park	Lithium-ion Battery	Electrochemical	130	400	3.08	Mainland	Crystal Brook	South Australia
26 Abu Dhabi Water & Electricity Authority (ADWEA) NaS BESS	Sodium Sulfur Battery	Electrochemical	108	648	6	Mainland	Abu Dhabi	Abu Dhabi
27 Henan Power Grid Project	Lithium-ion Battery	Electrochemical	100.8	125.8	1.25	Mainland	16 substations	9 regions
28 Playford Utility Battery Storage Facility	Lithium-ion Battery	Electrochemical	100	100	1	Mainland	Port Paterson	South Australia
29 AES Energy Storage Alamosos Storage Array	Lithium-ion Battery	Electrochemical	100	400	4	Mainland	Long Beach	California
30 Electric Power Supply and Load Management Resources	Lithium-ion Battery	Electrochemical	100	400	4	Mainland		Texas
31 Walcha Energy Project battery	Lithium-ion Battery	Electrochemical	100	150	1.5	Mainland	Uralla	New South Wales
32 RWE Tilbury Energy Centre Battery	Lithium-ion Battery	Electrochemical	100	100	1	Mainland	Thurrock	Essex
33 Lumcloon energy storage II	Lithium-ion Battery	Electrochemical	100	100	1	Mainland	Shannonbridge	Offaly
34 Kaban Green Power Hub	Lithium-ion Battery	Electrochemical	100	200	2	Mainland	Ravenshoe	Queensland
35 Centrica and Greener Ideas IDA Park Kilkenny Battery	Lithium-ion Battery	Electrochemical	100	33	0.33	Mainland	Purcellsinch	Kilkenny

# CHESS: Use our database and... make the same presentations we do! (example below)





**As of November 7th 2019, we are tracking 1166  
MW-level energy storage projects globally**

*(and this number changes everyday...)*



## 2. Update From The Field

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Guiding you through the world of energy storage



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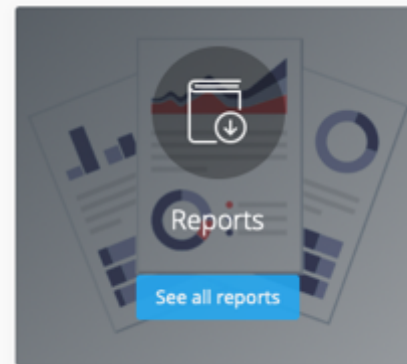
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### 2. Update From The Field (UFTF)

Our monthly analysis note on the energy storage market with:

- New regulations and initiatives for storage worldwide
- Public storage tenders
- Our focus of the month analysing a market trend



### 3. Other reports

All our on-the-shelf report are available here:

- Market Segment Watch
- Tender sizing studies



### 4. News

All our weekly news can be tracked here



# Update From The Field: what is included?



## Included in our service

- 11 monthly analyst reports (the 15<sup>th</sup> of every month except August)
- One presentation summing up the key findings of each report (PowerPoint format)
- One 45 min webinar presented the week following each report delivery
- Up to 4 hours of Q&A every month with our analysts to leverage your relationship with us
- ... And our **energy storage tender tracking service**

## Monthly analyst reports content

1. Analyses of regulatory changes and incentives for storage worldwide
2. Summary of the latest projects announced and commissioned
3. A focus on key trends affecting the energy storage business



# Update from the Field

## Users can access all their past reports, presentations and webinars from their Compass account



### Updates from the field

Title	Image	Date	Files
Update From The Field October 2019: Energy storage as a means for grid investment <a href="#">Read Less</a>		2019-10-15	<div>Report</div> <div>Presentation</div> <div>Webinar</div>
September 2019 - FERC Order 841 and the rise of merchant revenues for energy storage in <a href="#">Read Less</a>		2019-09-15	<div>Report</div> <div>Presentation</div> <div>Webinar</div>
July 2019 - Development Finance Institutions and energy storage: perspectives and <a href="#">Read Less</a>		2019-07-15	<div>Report</div> <div>Presentation</div> <div>Webinar</div>
June 2019 - The potential for battery energy storage systems in South America		2019-06-15	<div>Report</div> <div>Presentation</div>



# Update from the Field

## Our « focus of the month » chapters for the September 2018 / September 2019 period



Year	Month	Focus of the month
2018	September	The secondary reserve market in Germany
	October	The impact of commodity prices on the cost of Li-ion batteries
	November	Energy storage opportunities arising in Mexico
	December	The Nordics, a small market with possible high revenue streams available
2019	January	The Middle-East, an emerging market with limited opportunities
	February	Country forecast for energy storage in 2019
	March	Utility scale, grid-connected PV-plus-Storage
	April	European Aggregators and energy storage monetization
	May	Second-life applications of electric vehicle batteries
	June	The potential for BESS in latin America
	July	Development Finance Institutions and energy storage: perspectives and strategies
	September	Focus of the month: FERC Order 841 and the rise of merchant revenues for energy storage in the USA





# Update from the Field

## Access latest global storage tenders, sort them by due date and access all available bidding information!



### Calls for tenders

Show 10 entries

Search:

Title	Country	Date Ending	
Sustainable Energy Development Project: Supply and Installation of Solar PV System, Power Station Refurbishment and BESS	Marshall Islands	2019-11-13	<a href="#">Consult</a>
Tender pre-qualification process for Solar PV with Integrated Storage Project (the Project), located in Zimbabwe - BLANKET MINE SOLAR FARM	Zimbabwe	2019-11-08	<a href="#">Consult</a>
Hawaii - Phase 2 Request for Proposals for dispatchable and renewable generation	United States of America	2019-10-31	<a href="#">Consult</a>
Integrated Solar and Energy Storage Project Feasibility Study	Thailand	2019-10-24	<a href="#">Consult</a>
Grants for the development and demonstration of energy storage projects	Denmark	2019-10-22	<a href="#">Consult</a>
Projet Energie Solaire pour le Developpement de l'Electrification Rurale par la methode « REVERSE LINKAGE »	Mali	2019-10-15	<a href="#">Consult</a>
Request for Expressions of Interest (individual consulting services) Project Manager (renewable energy engineer)	South Sudan	2019-09-24	<a href="#">Consult</a>
11 SITES SOLAR PV – DIESEL – STORAGE HYBRID PROJECT	Oman	2019-09-19	<a href="#">Consult</a>
Demonstration and selection of technology for providing energy storage services of up to 500 MW and setting up Energy Storage Manufacturing facility in	India	2019-09-01	<a href="#">Consult</a>



## 3. Other reports

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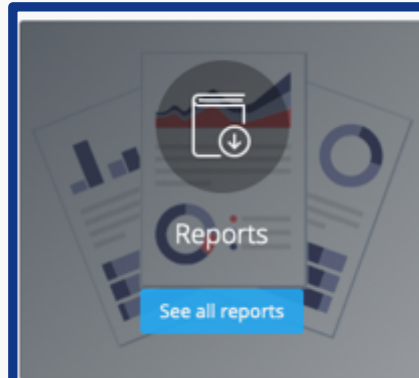
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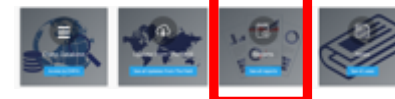
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Purchase any other Clean Horizon reports and add them to your library, making it accessible to all your colleagues registered on Compass




**CLEANHORIZON**  
 The Energy Storage Experts

## Online store

Purchase our off-the-shelf energy storage reports


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### Clean Horizon's Market Segment Watch Energy Storage in the Northeast United States

**Energy Storage Targets and Incentives**

- 200 MWh Massachusetts Mandate
- 1,500 MW New York Incentive

**Main opportunities for energy storage:**

- Frequency Regulation
- Capacity Markets
- Demand Response

**Revenues available for energy storage in:**

- New York (NYISO)
- New England (ISO-NE)

**Recent regulatory evolutions**

2018: Over 50 MW operational  
 2020: 150 MW in the pipeline  
 2025: 2,000 MW incentive

**Report price:**  
 1000 € early bird price until April 15th  
 1500 € standard price (taxes are not included)

Clean Horizon Consulting - Paris, France  
 Clean Horizon Americas - Miami, Florida USA  
 https://www.cleanhorizon.com/online-store/  
 Email: reports@cleanhorizon.com

**MARKET SEGMENT  
WATCH: ENERGY  
STORAGE IN...**


**CLEANHORIZON**  
 Detect, analyse, monetise

### February 2017 Market Segment Watch: France A rising market for energy storage in 2017

➤ 50 MW tendered in the French Islands and more to come

➤ A new market for frequency regulation open to storage

➤ New self-consumption regulations favoring behind-the-meter storage

This report gives keys to address this nascent market:

- Existing and new regulations (DSO flexibility contracts, capacity market, self-consumption with storage, ...)
- In-depth analysis of business cases
- Insider advice on how to enter the market

**Report price:** (taxes are not included)  
 1000 € early bird price until February 20th  
 1500 € after February 20th

**Buy this report along with our CMI 2016 French Island tender report (Jan 2017) for 2000 €**

**Buy the report and download the table of contents at:**  
[www.cleanhorizon.com/fr/reports](https://www.cleanhorizon.com/fr/reports)  
 Email: reports@cleanhorizon.com  
 Phone: +33 (0)2 75 42 80 95

**MARKET SEGMENT  
WATCH FRANCE 2017  
ENGLISH**


**CLEANHORIZON**  
 Detect, analyse, monetise

### Janvier 2017 AO CRE ZNI 50 MW<sub>p</sub> PV + stockage

**Nouveau rapport sur le dimensionnement**

Contenu du rapport:

- Les règles d'opération liées au stockage
- Les stratégies de dimensionnement du stockage et les recommandations de Clean Horizon basées sur les simulations
- Annexe: les acteurs et gagnants des appels d'offres précédents

**Prix (hors taxes):**  
 1500 €

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 Email: reports@cleanhorizon.com  
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**MARKET ENTRY  
REPORT CRE ZNI 2016  
ENGLISH**



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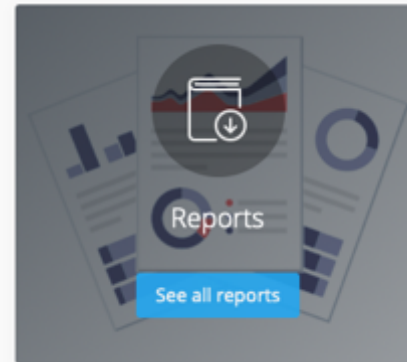
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# Browse our current (and past) weekly Top 5 newsletter, the most compact and information-rich newsletter in the storage industry



<https://www.cleanhorizon.com/news>



## Energy storage news - November 01st, 2019

Posted 04 Nov | Top 5

This week's TOP 5 includes Australia's unveiling of a \$1-billion boost for power grid reliability through new storage, generation and grid infrastructure, go-ahead for a RES project coupling 183 MW of wind with 215 MW of battery storage in South Australia, Singapore's 200 MW energy storage target beyond 2025, the commissioning of three 20-MW battery storage projects in the UK by Fluence and Sembcorp and the resumption of Great Britain's Capacity Market following European Commission's approval.

1. To improve its power grid reliability, the Australian government **unveiled** the \$1 billion Grid Reliability Fund that will go to new generation, storage and grid infrastructure.
2. RES **received** development approval from South Australia's government for a 183 MW wind farm coupled with 215 MW of battery storage.
3. Singapore **targeted** 200 MW of energy storage beyond 2025.
4. Fluence and Sembcorp Energy UK **switched on** 60 MW out of a 120-MW, six-project, battery storage portfolio in the United Kingdom.
5. Following a long suspension, the European Commission **cleared** Great Britain's Capacity Market to resume.



## Contact us for more information regarding pricing

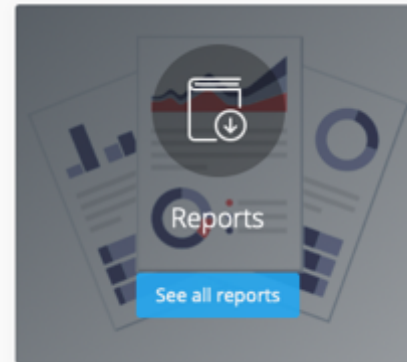
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**1. Clean Horizon  
Energy Storage  
Source (CHESS)**



**2. Update From The  
Field (UFTF)**



**3. Other reports**



**4. News**

Contact us for more information on these products and prices:  
[reports@cleanhorizon.com](mailto:reports@cleanhorizon.com)





**CLEANHORIZON**  
The Energy Storage Experts



**Thank you!**  
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