



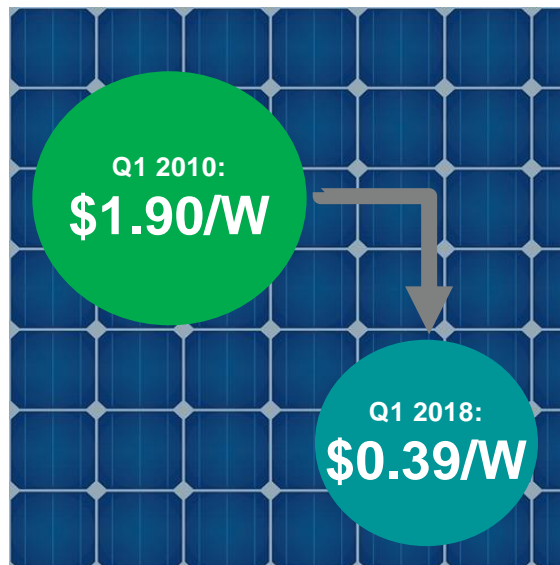
Energy Storage Service

Clean Technology & Renewables

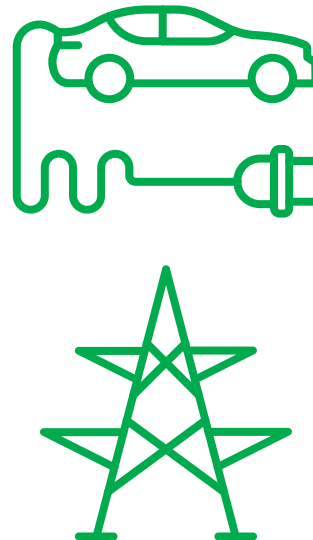
Julian Jansen, Research Manager, julian.jansen@ihsmarkit.com

Why energy storage? Transitioning the energy system towards being more intelligent, robust, efficient, clean and customer driven network

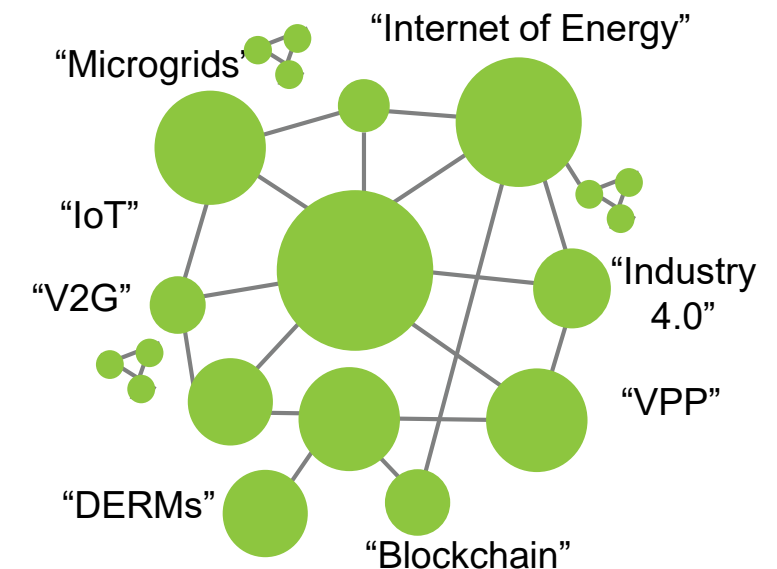
Low cost and scalable renewable energy



Electrification of heat and transport



Digitalisation of the electricity network



The need for flexibility on both the supply and demand side will become much more significant. Energy storage is at the heart of this transition enabling sector-coupling.

The Energy Storage Service value proposition

The IHS Markit Energy Storage Service is a premium service, which provides clients with a **deep and comprehensive understanding of the global energy storage industry**. The service provides clients with **frequently updated and very granular data** and analysis. IHS Markit has been providing deep expertise on the energy storage industry **since 2013** and has the **largest team of dedicated analysts** covering global markets and technology development. Leveraging this unique position in the energy storage industry, IHS Markit will help clients **maximise opportunities and anticipate future trends** in this rapidly growing market.

This service provides frequent and in-depth analysis of:

- Global deployment figures, long-term trends and **5-year short-term granular forecasts** (across a wide selection of end-market segments and applications)
- Policy and regulatory developments
- **Business models and applications** driving deployment
- The largest dedicated **energy storage database** globally with individual project level data for more than 3,500 projects.
- **Supply chain, component pricing and technology analysis**
- **Direct access to the analyst for insights and support**
- **Bi-annual client briefings**

Key questions answered:

- Understand where the short to medium term opportunities for market growth lie – across all segments (utility / C&I / residential)
- How policy and regulatory changes will impact market growth and business models.
- What business models and applications are driving deployment, how will the financial feasibility change over time?
- Information on projects across the world, with detailed insight into the competitive environment, applications and technology.
- Component level pricing and outlook for different energy storage technologies.
- Outlook on alternative technologies and duration needs across energy storage markets.

Fires, regulatory changes, and project delays have led to a decrease in deployment in the second half of 2019

Key trends and market developments in the second half of 2019



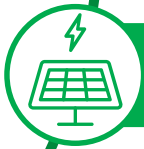
The market in South Korea, once the largest market for energy storage, has been subdued by two fire investigations and regulatory uncertainty in 2019



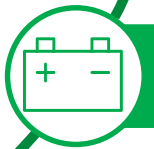
The exclusion of energy storage from grid transmission tariff calculations in mainland China has delayed the significant stand-alone front-of-the-meter project pipeline



Utilizing energy storage as a non-wires alternative to traditional network upgrade is establishing itself as a clear use case across the globe



More common planned power outages, as well as the increasing frequency and severity of natural disasters drive energy storage uptake as a back-up power resource in the BTM market



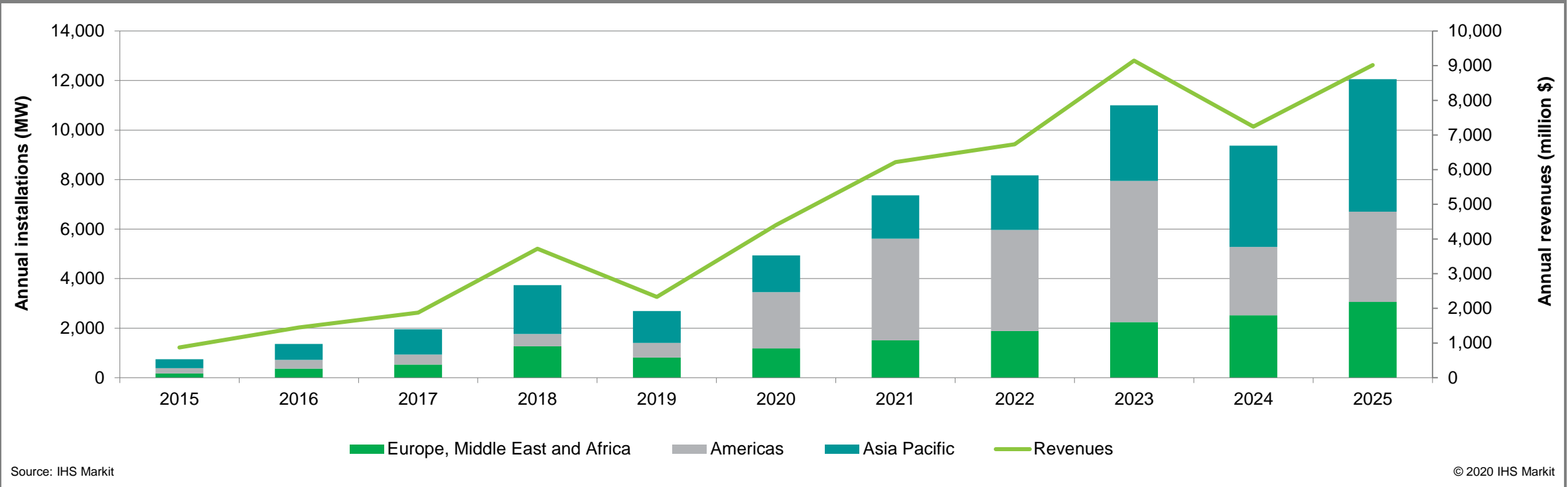
Supply overcapacities for Li-ion batteries drive prices down, but the automotive industry's preference for NMC batteries increase LFP availability in the stationary sector

Source: IHS Markit

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The grid-connected energy storage market is projected to grow from annual revenues of \$2.3 billion in 2019 to \$9.0 billion in 2025

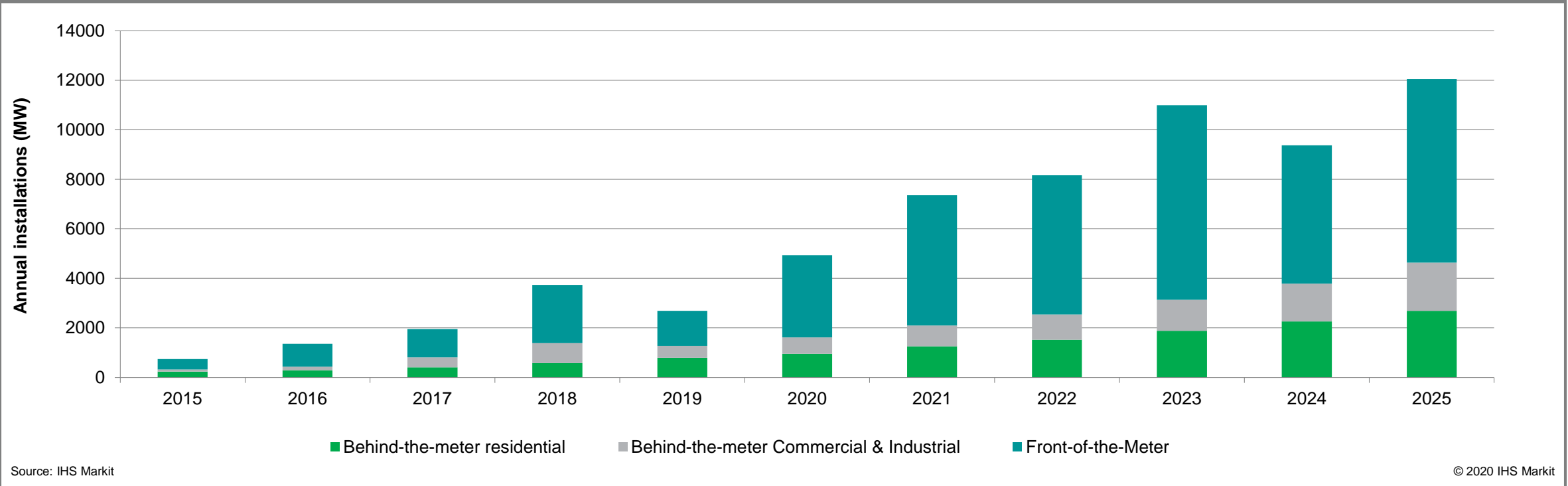
Global annual grid-connected energy storage installations by region and total revenue



Revenues dropped in 2019 for the first time for the energy storage market. This was due to project delays and regulatory changes. Despite this, strong growth is expected until 2025 with the United States becoming the largest single market globally from 2020 through 2023 owing to strong uptake in utility-scale solar plus storage driven by the ITC.

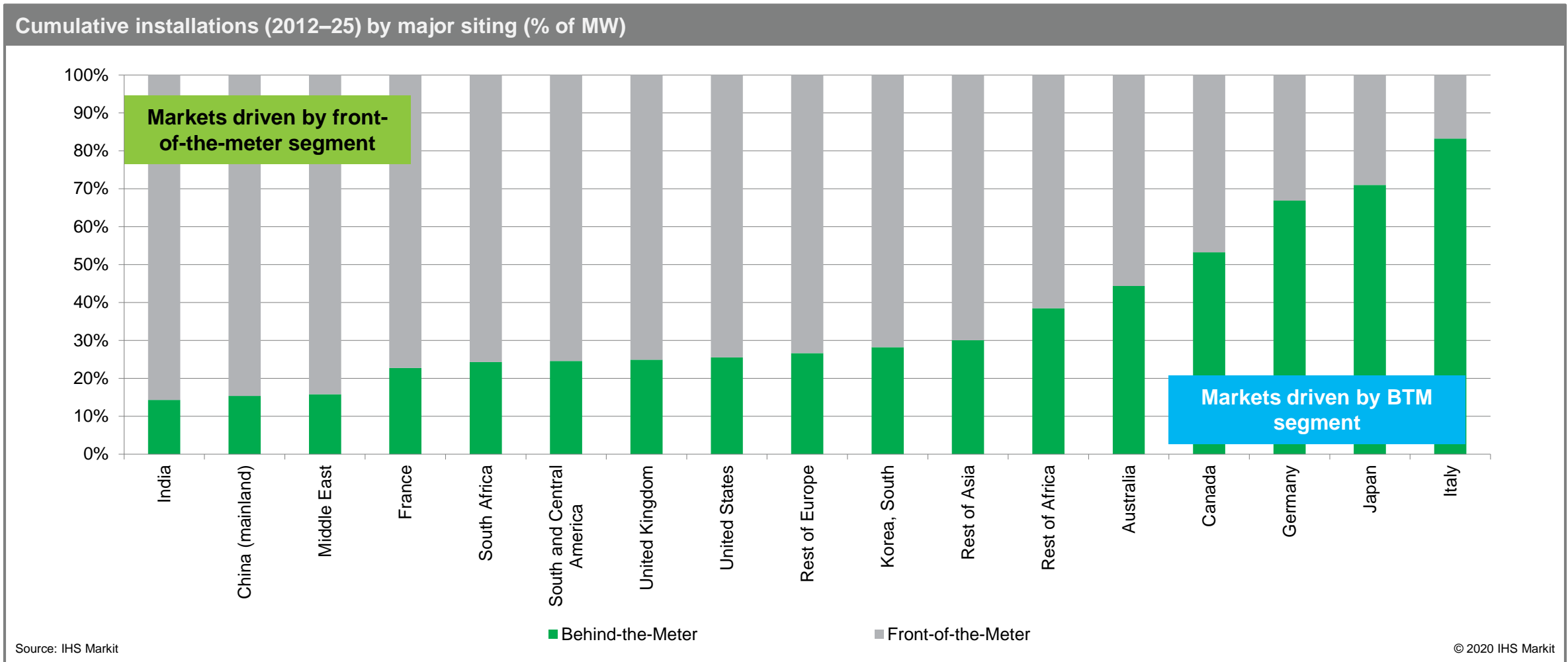
The market declined in 2019, due to major project delays and regulatory changes in South Korea, mainland China, and the United States

Global annual grid-connected energy storage installations by segment (MW)



Deployment in 2019 was subdued, with the residential segment the only market growing in 2019. The front-of-the-meter segment will account for 65% of total installations through 2025, with greater renewable colocation, competitiveness as a capacity resource with conventional generation, and transmission and distribution (T&D) projects driving long-term growth.

IHS Markit predicts that front-of-the-meter installations will account for 65% of total installations during 2020–25, although the trend varies by country



Research Content

What are the specific benefits of IHS Markit's Energy Storage Service

Energy Storage Service benefits

Scheduled deliverables

- Quantitative outlooks and associated reports that reflect IHS Markit's latest short-term and long-term market views.
- Delivery schedules designed to align with client workflows.
- Accessible content, visualization, and analysis.

Insight and Strategic Reports

- Short reports on important developments and their implications.
- In-depth research reports on critical issues and trends.
- Reports typically cover in-depth market data, regulatory and policy issues, business models and applications, competitive analysis, as well as technology and pricing trends.
- Research and analytic results inform outlooks in scheduled deliverables on a continuous basis.

Access to experts

- Bi-annual Online Briefings
- Webinars: two established webinar series per year.
- Direct access to analysts and thought leaders for discussion and further insights.

Understand market fundamentals, drivers and challenges

Anticipate market and technology turning points

Assess effects of policy and regulatory changes

Support strategic planning and market entry

Track energy storage company strategies and competitive landscape

Track energy storage projects

Source: IHS Markit

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Scheduled Deliverables

Energy Storage Service

Deliverable Name	Content	Frequency, Format
Grid-connected Energy Storage Market Tracker	Comprehensive overview of the current deployments and quantitative future outlook for energy storage deployments (rolling 5 year forecast) for 16 individual countries and 5 distinct regions. Granular and flexible forecast for installations in MW / MWh / \$ Revenue, by Siting Application, Technology, Duration. Detailed report provides summary of major market drivers, as well as policy and regulatory developments	Bi-annual, Excel & Report & Visualisation
Energy Storage Long Term Outlook	A macro-level quantitative outlook of energy storage deployment to 2050 for all major power markets, taking into account (but not published) longer-term power market dynamics including. Outlooks for Asia, Middle-East & Africa, Latin America done annually	Bi-annual, Excel & Report Annual, Excel & Report
Energy Storage Project and Company Database	Publication of the most comprehensive energy storage database available. Providing detailed information for more than 3,500 projects globally. Accompanied by Report outlining Quarter-on-Quarter developments, the technology landscape and key supply chain announcements.	Quarterly, Excel & Report & Visualisation
Monthly Policy Insight	Monthly summary of key policy and regulatory developments, including comprehensive list and additional analysis on the most important developments.	Monthly, Reports
Market Profiles (USA, Europe, Asia)	Individual reports on 3 key regions that summarize the market structure and current market development to date, including: storage uptake, key value drivers, revenue potential of major applications .	Annual, Reports
Commercial & Industrial Energy Storage Report - United States	A comprehensive guide to the development of the Commercial & Industrial energy storage market across North America detailing current developments and future outlook, techno-economic modelling and business model analysis, as well as an evaluation of the competitive environment.	Annual, Reports
IHS Markit Residential Energy Storage Index	Quarter-by-quarter view of the global residential market including summary information on the competitive landscape.	Quarterly, Reports
Energy Storage Inverter (PCS) Report	Authoritative view on the development of the global energy storage inverter landscape based on primary data surveys, including: shipment information by size segment, comprehensive pricing analysis, detailed market share analysis.	Annual, Excel & Reports

Overview of in-depth strategic reports: Answering the big questions facing the global energy storage markets.

RECENT RESEARCH REPORTS

- Commercial & Industrial Energy Storage Report – USA – 2019 (repeated annually)
- China Energy Storage Report
- 2nd Life Battery Report
- United States Solar plus Storage Report – 2018
- Energy Storage in Mini-grids Report – Africa – 2019
- Australia Energy Storage Report – 2019
- Middle East Energy Storage Report – 2019
- United States Energy Storage Report – 2019
- Energy Storage Report – Central and South America 2018
- Energy Storage Inverter (PCS) Report – 2019
- Battery Safety Report

BIG QUESTIONS

- What are the major policy advances or challenges impacting energy storage markets?
- How and when will new energy storage markets emerge?
- What are the applications and business models driving energy storage deployment in different markets?
- How are different revenue streams developing?
- How will battery technology and associated challenges impact the stationary energy storage market?
- How will different components impact the future pricing of energy storage projects?
- Will second life batteries play an important role in the development of the stationary energy storage industry?

Overview of upcoming in-depth strategic reports: Answering the big questions facing the global energy storage markets.

PLANNED RESEARCH REPORTS

- Energy Storage System Cost Report – 2019
- UK Energy Storage Report
- European Energy Storage Report
- Energy Storage Alternative Technology Report
- Residential Energy Storage Report – USA – 2020
- Residential Energy Storage Report – Europe

BIG QUESTIONS

- What are the economics for C&I energy storage across different customer segments?
- What are the major policy advances or challenges impacting energy storage markets?
- How and when will new energy storage markets emerge?
- What are the applications and business models driving energy storage deployment in different markets?
- How are different revenue streams developing?
- What is the future outlook for energy storage system and component costs?
- How can energy storage compete with other resources for specific applications (e.g. resource adequacy)?

Regional Coverage

Energy Storage Service

Country / Region	Scheduled deliverables	Recent or planned strategic reports
United States	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) Energy Storage in the United States Report (annual) C&I Energy Storage Report – North America (annual) 	<ul style="list-style-type: none"> Residential Energy Storage Report – North America
Canada	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) C&I Energy Storage Report – North America (annual) 	
South & Central America	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> South & Central America Energy Storage Report
Austria	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	
Czech Republic	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	
France	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> C&I Energy Storage Report – Europe
Germany	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> C&I Energy Storage Report – Europe
Italy	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> C&I Energy Storage Report – Europe
Ireland	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	
Switzerland	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	
United Kingdom	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> C&I Energy Storage Report – Europe Energy Storage Report – UK
Rest of Europe	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> C&I Energy Storage Report – Europe
Middle East	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> Energy Storage Report – Middle East
South Africa	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> Energy Storage in Mini-grids
Rest of Africa	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> Energy Storage in Mini-grids
Australia	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> Energy Storage Report – Australia
China	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	<ul style="list-style-type: none"> Energy Storage Report – China
India	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	
Japan	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	
South Korea	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	
Rest of APAC	<ul style="list-style-type: none"> Grid-connected energy storage market tracker – Country Profile (bi-annual) 	

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