

Energy Transition Spotlight April 2022

This document draws on work from across our monthly assessments. To find out more about our products and services scan the QR code



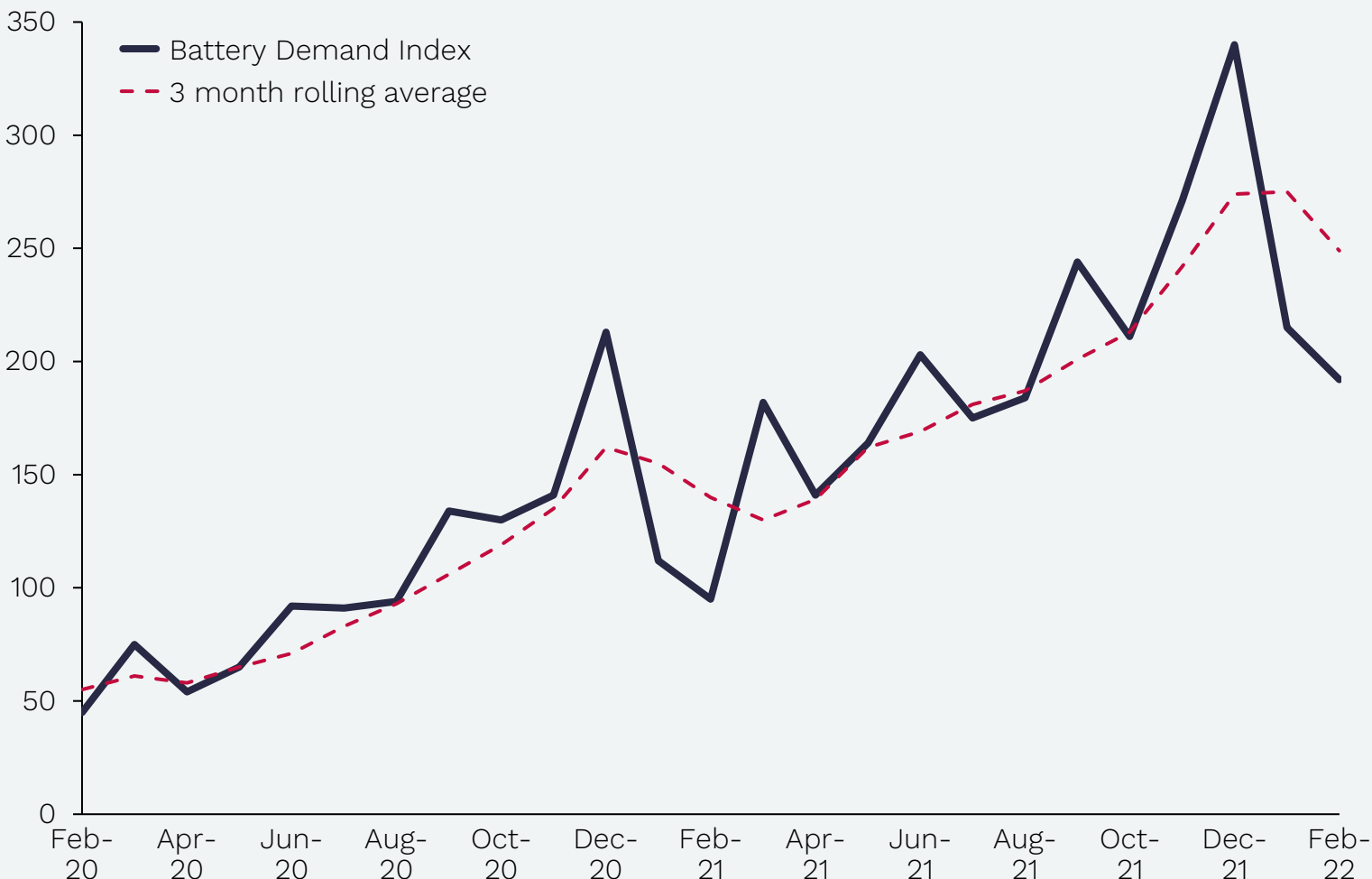
Overall, BEV & PHEV sales decreased by 10% m-o-m in February 2022, to 555,000 units sold across all vehicle classes. Global battery demand for all vehicle classes decreased by 10% m o m in February 2022 to 25GWh. The sales weighted average pack size increased slightly to 45kWh, due to stronger sales in the US and relatively weaker sales in China. Below is our latest EV Battery Demand Index, which draws on work from our [EV Battery Chemistry Monthly Assessment](#).

Highlights from this month's assessment include:

- Automotive OEMs are under pressure due to severe disruptions in the battery value chain, consequently, most EV-focused OEMs, including BYD, Xpeng, Li Auto, Tesla, SAIC, GAC, GWM, are revising xEV prices upwards by 2-15%.
- CATL teased its generation 3.0 cell-to-pack technology, to include NCM-based cells characterised by energies >450 Wh/L, 250 Wh/kg at the pack level.
- The reduction in sales is largely a result of the Chinese New Year affecting its total vehicle market, with sales in most other major markets increasing in February. 2022 YTD battery deployment is 90% above 2021 levels.

Rho Motion EV Battery Demand Index

Average 2020 = 100



Rho Motion's EV Battery Demand Index is an assessment of aggregated monthly kWh battery demand for all vehicle classes. Based on monthly vehicle sales and our model-by-model analysis of EV pack sizes and chemistry. Indexed monthly average 2020 = 100.



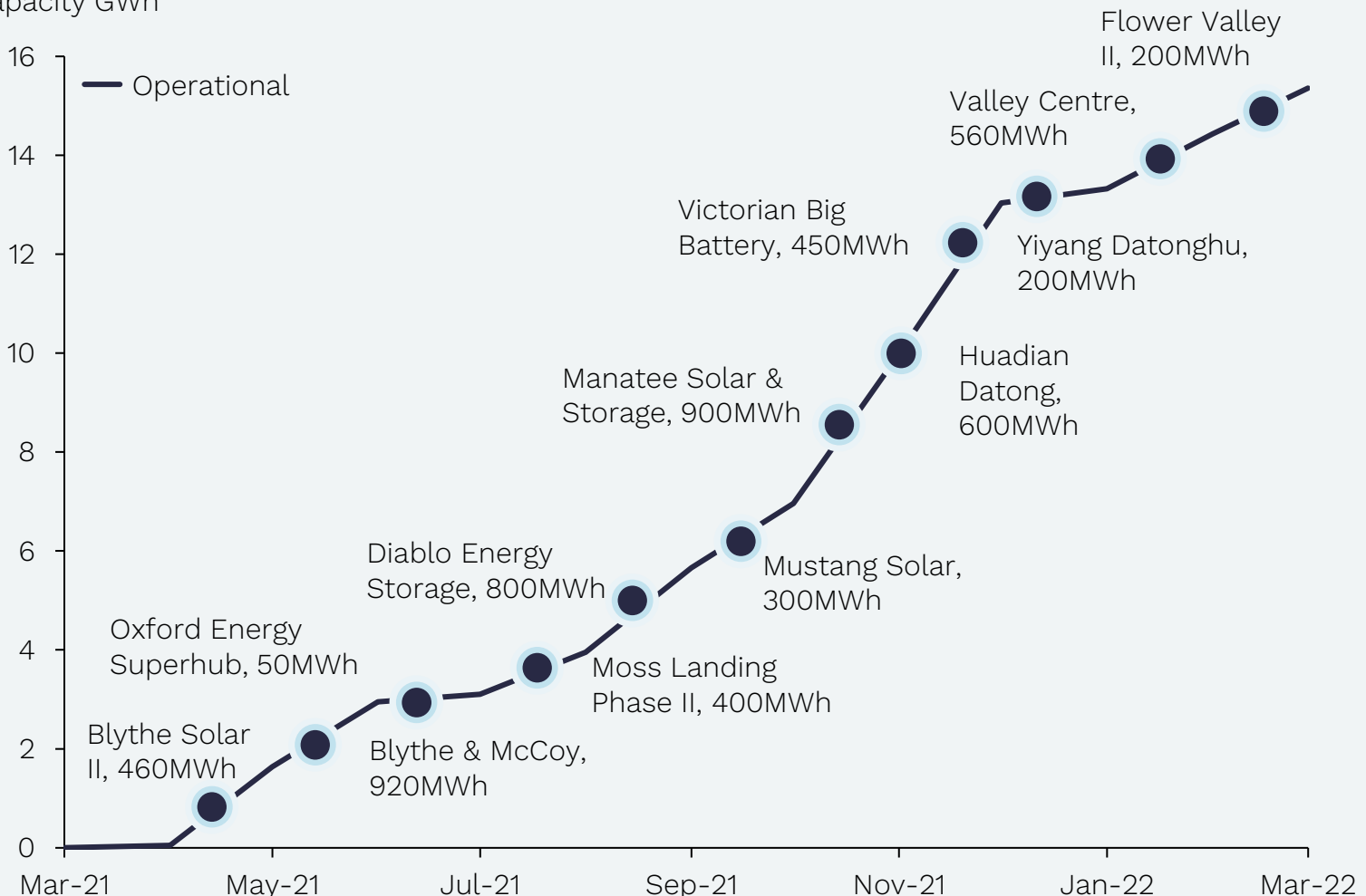
March saw just under 1GWh of new BESS capacity enter operation, across ten locations. YTD installed BESS grid capacity has now reached 2.3GWh. Planned capacity for 2022 now exceeds 50GWh, it is however likely we will see some of these projects falling into 2023. In terms of new announcement, 11.6GWh of new capacity was announced or proposed in March, across 84 locations. Two new projects over 1GWh had updates, the announcement of the Jiangmen Taishanxian Nuclear + Storage Project and technology announcement for Gemini Solar. Below is our BESS Capacity Tracker, this draws on data from our [BESS Monthly Assessment](#).

Highlights from this month’s assessment:

- SVOLT has joined a growing list of vertically integrated BESS manufacturers by announcing it will begin producing a line of LFP based energy storage systems
- The Indian Central Electricity Authority set out a report identifying the level of required pumped hydro and battery storage, projecting 108GWh/27GW installed battery capacity in 2029-2030.
- Project spotlights include Kosovo’s first BESS project and the Gemini Solar + Storage Project.

Rho Motion’s BESS Capacity Tracker

Capacity GWh



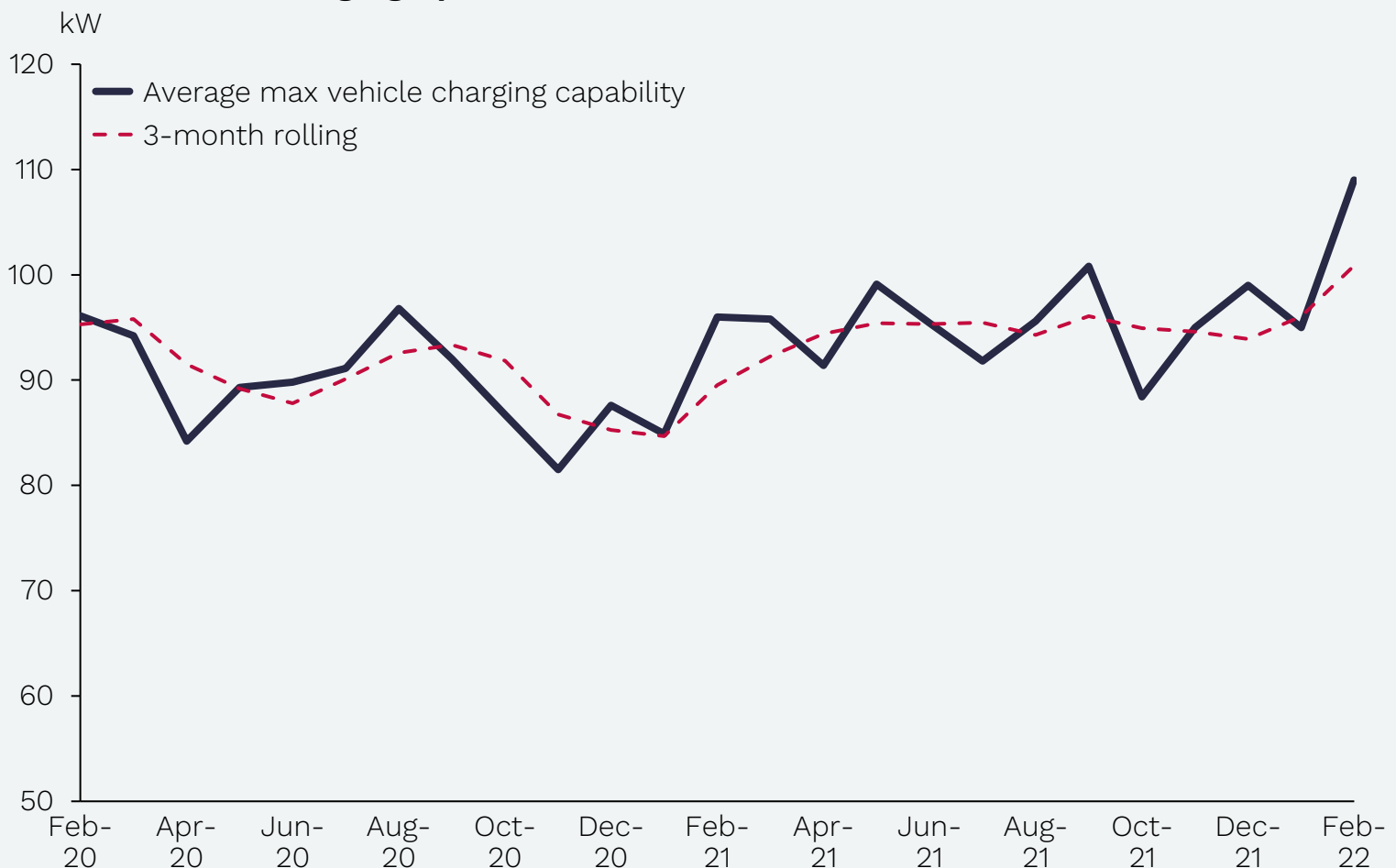
Rho Motion’s BESS Capacity Tracker is an assessment of the grid scale BESS deployed over the last 12 months, based on work from our Battery Energy Stationary Storage Monthly Assessment, tracking project announcements by status.

The sales weighted average maximum BEV charging capability increased from 95kW in January to 109kW in February. 166,000 BEVs sold were capable of charging at over 100kW, compared to 151,000 units in January. Our latest Electric Charging Speed Tracker below, draws on data from The [EV Charging Monthly Assessment](#)

Highlights from this month’s assessment:

- bp announced its plan to invest USD1.3 billion (£1 billion) in EV charging expansions in the UK over the next decade. The investment is expected to primarily increase superfast charging points with 150kW or 300kW charging output from the current 8,000 to 16,000.
- BYD entered a partnership with Shell to expand EV charging infrastructure in China and Europe; in China, BYD and Shell plan to form a joint venture to operate over 10,000 EV charging terminals in Shenzhen and expand to other cities later on. In Europe, the two companies will form a European Mobility Service Provider partnership offering BYD BEV and PHEV customers access to 275,000 charging points via Shell’s charging roaming network.
- South Korean energy company SK E&S entered the US EV charging market by acquiring California-based EV charging solution provider, EverCharge. Founded in 2014, EverCharge mainly produces Level 2 EV chargers and currently operates 4,600 EV chargers in the US and Canada.

Rho Motion EV Charging Speed Tracker



Rho Motion’s EV Charging Speed Tracker is an assessment of the sales weighted average maximum charging capabilities for PC & LDV BEVs based on monthly vehicle sales and our model-by-model analysis of vehicle charging capability

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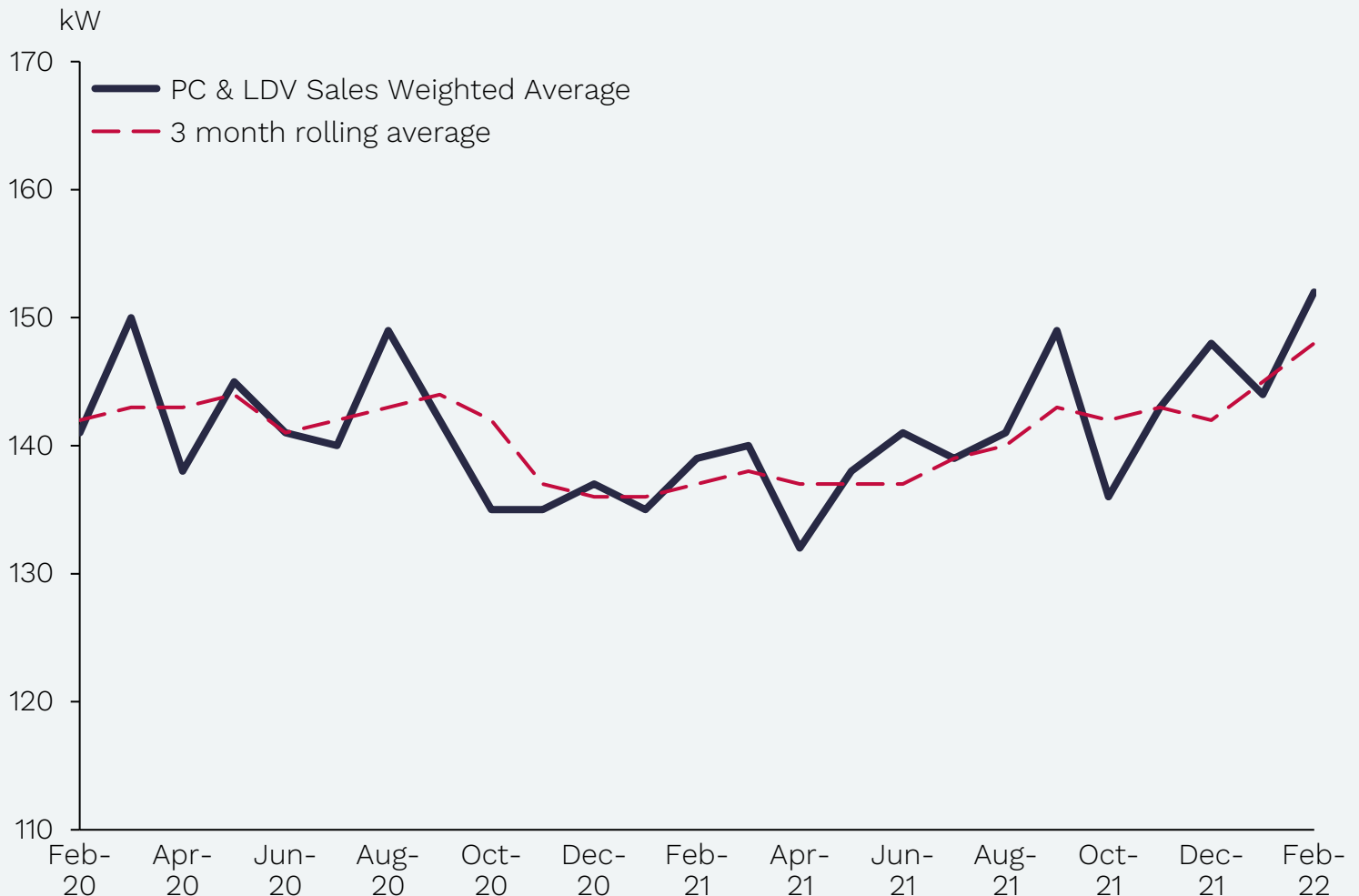
This month we saw average power climb to 152kW, its highest level since September 2019. The proportion of sales which were Tesla model 3 and Y was over 14.5%, higher than in 2021. Many small cars in China also saw a slight fall in market share this month while powerful plug-in hybrids like the Song Pro DM from BYD had an especially strong month. The Song has two 120kW motors producing 240kW of electric power, far higher than the PHEV average value.

Our latest Electric Vehicle Power Tracker below, draws on data from The [EV Motors Monthly Assessment](#).

Highlights from this month’s assessment:

- Details of Hyundai’s plans for its next generation of 800V platform and motor/powertrain improvements out to 2030 from the CEO investor day.
- Saitta’s purchase of a ZF motor manufacturing facility will expedite plans for volume production of axial flux technology in the UK.
- This month’s Technology Spotlight, which looks at electrical steel; why its used and the market dynamics surrounding this material as electrification ramps up.

Rho Motion Electric Vehicle Power Tracker



Rho Motion’s EV Power Tracker is an assessment of the sales weighted average maximum motor power for PC & LDV BEVs based on monthly vehicle sales and our model-by-model analysis of vehicle motor capacity

About Rho Motion

- Our core monthly and quarterly assessments and outlook provide ongoing analysis of the development of Electric Vehicle battery pack sizes, energy density, chemistry and costs, as well as the rate of growth of the Electric Vehicle & Battery market by vehicle class. We also track the roll-out of the charging network and associated infrastructure development linked to battery storage.
- Based in London, our team has expertise in battery technology, vehicle markets and economics, the battery supply chain and its raw materials, as well as the impact of government legislation on market development and technology choices.
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Monthly Assessments & Databases

Monthly Electric Vehicle Battery Chemistry Assessment April 2020

Contents: EV battery chemistry developments this month, EV battery chemistry developments by vehicle class, EV market developments, EV market developments, EV market developments, EV market developments, EV market developments.

Monthly Battery Energy Stationary Storage Assessment

Project Spotlights this Month: California Flats, Hickory Park, Fekola Gold Mine, Mililani and Waianai.

Project	Power	Capacity	Duration	Battery	Paired resource	Commission date
California Flats	60MW	240MWh	4 hours	Lithium ion	260MW Solar	Late 2021
Hickory Park	40MW	80MWh	2 hours	Lithium ion	200MW Solar	Nov 2021

Monthly EV Charging Assessment December 2020

Contents: EV charging developments Europe, EV charging developments North America, EV charging developments China, EV charging developments EV market developments, EV market developments, EV market developments, EV market developments.

Monthly EV Motor Assessment

Contents: Global monthly EV motor demand by vehicle class, Average vehicle electric power by vehicle class, Global PC & LDV EV Fleet Assessment by max charging capability, Global PC & LDV EV Fleet Assessment by max charging capability.

Quarterly Outlooks

EV & Battery Quarterly Outlook Q1 2020

Global EV Charging Outlook

Battery Energy Stationary Storage Quarterly Outlook

Focus Reports

E-Micromobility Outlook

Fuel Cell Electric Vehicle Outlook

Electric 2 & 3 Wheeler Outlook