ASX ANNOUNCEMENT

31 March 2017

Carnegie Clean Energy Investor Presentation

Please find attached an investor presentation delivered today to existing and potential future Shareholders by Carnegie's CEO Dr. Michael Ottaviano, at KPMG's office in Adelaide. This presentation will also be delivered in Sydney, Melbourne and Perth in the coming week. The presentation outlines Carnegie's latest projects as the largest Australian designer and integrator of utility scale battery storage, solar energy and wave energy solutions.

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Carnegie Clean Energy Limited

INVESTOR PRESENTATION

Dr Michael Ottaviano
Chief Executive Officer

Carnegie
CLEAN ENERGY

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CARNEGIE COMPETITIVE ADVANTAGE

Corporate power

- Carnegie is an ASX-listed developer of utility scale renewable energy projects. It a global leader in the delivery of solar, battery, wave and hybrid energy solutions.
- $150M+ market capitalisation, $8m cash and $6m equity capital raise in progress, $49m undrawn grants
- Business model across the full value chain of design, development, finance, construction, operation and maintenance
- Established partnerships to deliver national and international delivery capability and enable larger scale projects with Lendlease Services (Australia), Infratec (NZ and South Pacific) and Eastern Guruma (Kimberly, WA)

lendlease

INFRATEC

EASTERN GURUMA

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CARNEGIE COMPETITIVE ADVANTAGE

Solar and battery power

- Diversified into solar and battery systems through the 100% acquisition of Energy Made Clean, a leading Australian renewable energy company focused on solar, battery and hybrid engineering, construction and maintenance.
- Global microgrid market is experiencing transformational growth with market estimated at US$40 billion per annum by 2020.*
- Only ASX-listed company with in-house design, construction, operation, maintenance and power generation and supply of hybrid systems (solar/battery and/or diesel) for off grid and fringe of grid applications.
- Identified EPC pipeline in Western Australia alone ca. AU$500m through to 2020.
- EMC has industry leading track record in the design and delivery of complex, hybrid microgrids and utility scale battery storage.

* Navigant Research 2013 Report *Market Data: Microgrids*

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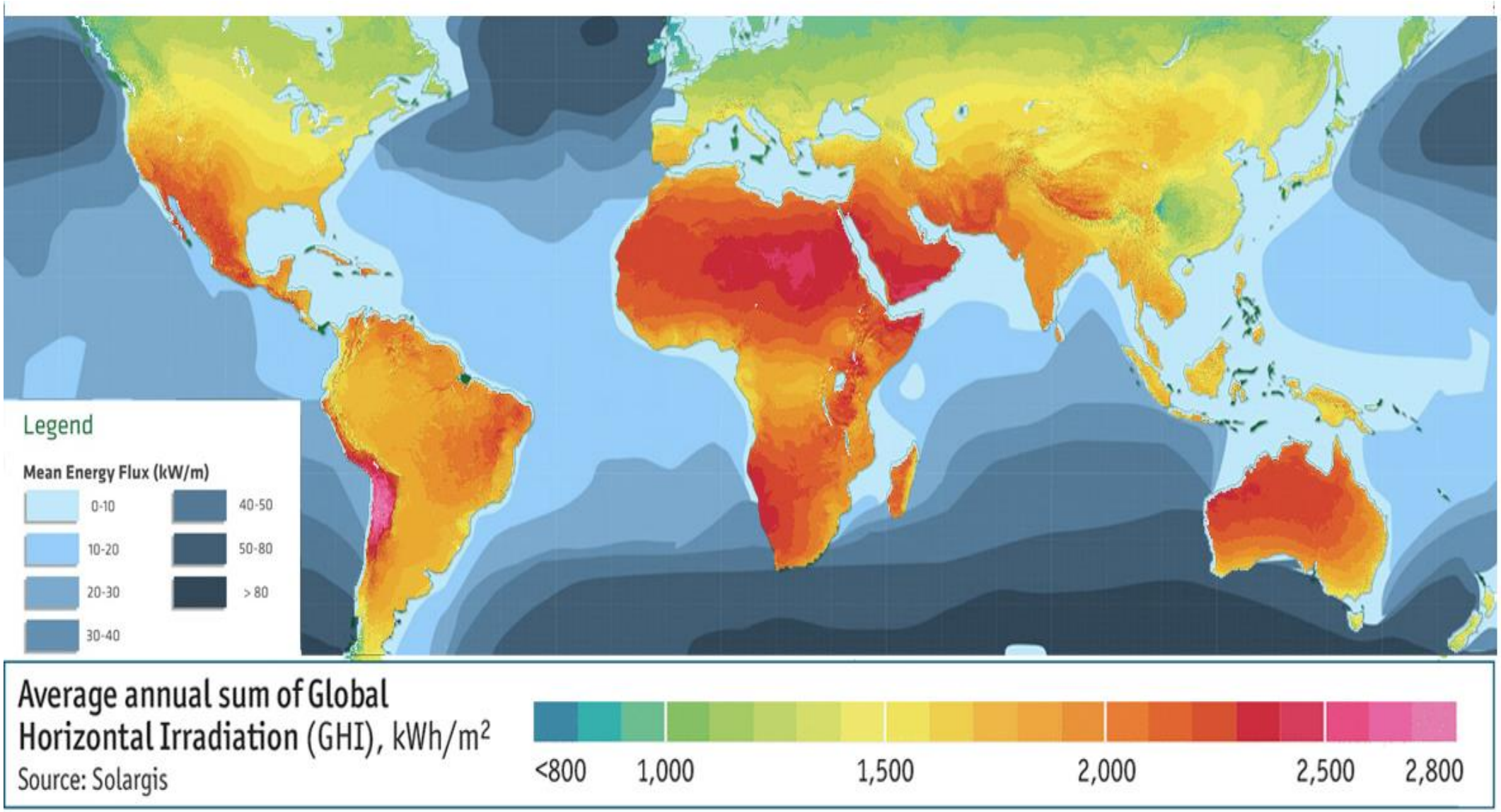
CARNEGIE COMPETITIVE ADVANTAGE

Wave power

- Undisputed **leader** in wave energy technology - **only company** to have operated a grid-connected wave energy project over four seasons, with thousands of in-ocean operating hours.
- >$130 million invested to date over six prototype cycles with final commercial product (CETO 6) under development
- Three deployment sites for CETO 6 currently under development:
  - Garden Island, Western Australia supported by $13m ARENA grant
  - Wave Hub in Cornwall, UK with £9.6m EU grant
  - Albany, Western Australia supported by $19.5m WA State Government grant

CARNEGIE'S MARKET - Global Resource and Reach: Wave + Solar + Battery



WORLD LEADER IN CLEAN ENERGY

FINANCIAL REVIEW

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Oct 26 2016 at 12:15 AM | Updated 26 mins ago

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Carnegie Wave Energy in $13m acquisition of microgrid developer Energy Made Clean

Carnegie Wave Energy managing director Michael Ottaviano, director and shareholder Michael Fitzpatric EMC managing director John Davidson. **Supplied**

by Tess Ingram

Carnegie Wave Energy is poised to become the only ASX-list company with the capability to deliver renewable energy microgrids after inking a $13 million deal to acquire private developer Energy Made Clean.

The deal, to be announced on Wednesday, will see Carnegie invest $2.6 million in cash and $10.4 million in stock to acquire the

The Economist

BloombergView

theguardian

THE AUSTRALIAN

Battery boost planned for West Australian solar power station

BUSINESS INSIDER AUSTRALIA | Tech Insider | Money & Markets

TECH INSIDER

Now Carnegie Clean Energy is in battery talks with South Australia

CHRIS PASH

MAR 13, 2017, 3:49 PM

The New York Times

ENERGY & ENVIRONMENT

Catching Waves and Turning Them Into Electricity

By AMY YEE APRIL 22, 2015

MELBOURNE, Australia — Off the coast of Western Australia, three big buoys floating beneath the ocean's surface look like giant jellyfish tethered to the seafloor. The steel machines, 26 feet wide, are buffeted by

WIRED

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nt. Designed by Australian company Carnegie Wave structures are tethered to the ocean floor just off Perth, they convert wave power into emission-free electricity. Together, they generate 720kW annually, powering part of a nearby naval base. And now Carnegie Wave Energy wants to go global with these units. "You can link together as many of them as you need," says Michael Ottaviano, the company's managing director. "That's where we see this going – large-scale wave farms."

The current model is the CETO 5, an 11-metre-wide platform that makes electricity by using waves to push a pump at its base. The pump sends a stream of pressurised water shooting through pipes that run along the ocean floor. Those generate electricity at a land-based hydroelectric plant, where the force

THE AUSTRALIAN

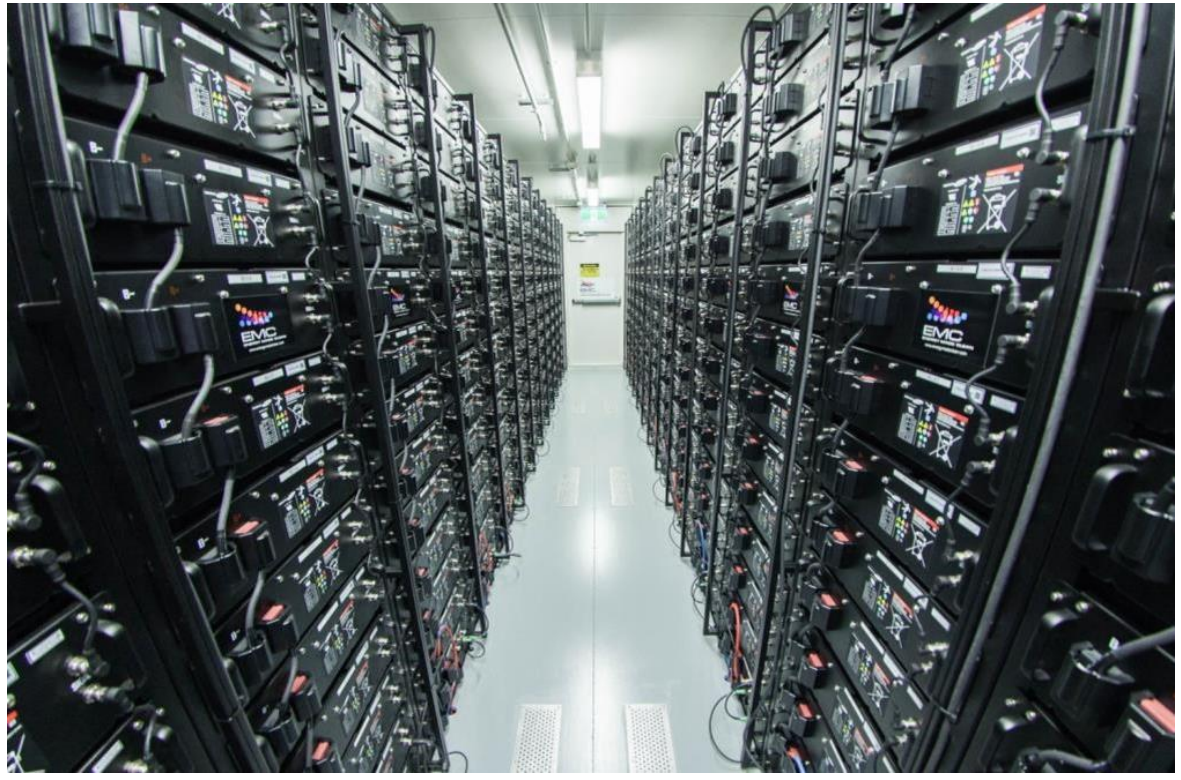
Lend Lease, Carnegie unit in green energy venture

FT FINANCIAL TIMES

Brussels backs £60m Cornish wave energy project

Carnegie, Lendlease, Samsung - Utility Battery Consortium

- Carnegie consortium responded to South Government EOI March 31st 2017
- Lendlease – ASX-listed property and engineering, team of 3000 across Australia. Delivery partner via EMC/Lendlease EPC JV
- Samsung SDI - world's largest supplier of utility batteries (1300 MWh) and supplier of largest battery in world (120 MWh)
- Carnegie proposed solution is for multiple modular battery blocks at a number of strategic locations on the South Australia grid that will improve network stability rapidly
- Local proposal will create a jobs and industry to service South Australia, Australia and the Asia-Pac region.



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lendlease

SAMSUNG

Northam Solar Power Station

- 10 MW solar power station in Northam, Western Australia (Located 100 km east of Perth)
- Build Own Operate project – 100% privately funded project, Carnegie will own and operate for 25 years
- Merchant and contracted power models under consideration. Capex of between $15-20m
- First large scale solar project to be delivered as part of the Energy Made Clean Lendlease joint venture
- 34,000 solar panels will be constructed on 25 hectares of land
- Planned for the addition of utility scale battery storage in future
- Deliver approximately 24,000,000 kWh of electricity per annum, enough to power approximately 4,000 households for 25 years
- Effectively displace 17,000 tonnes per year of greenhouse gas emissions, which is the equivalent of taking 3,500 cars off the road
- Expected financial close June 2017 and to commence operation by the end of 2017

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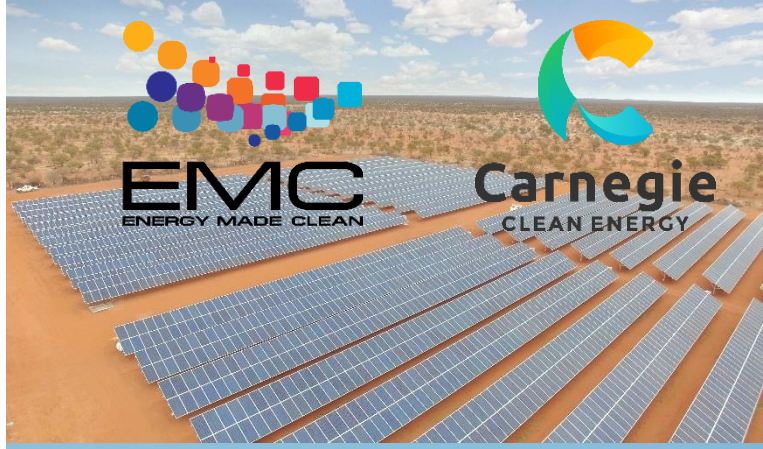
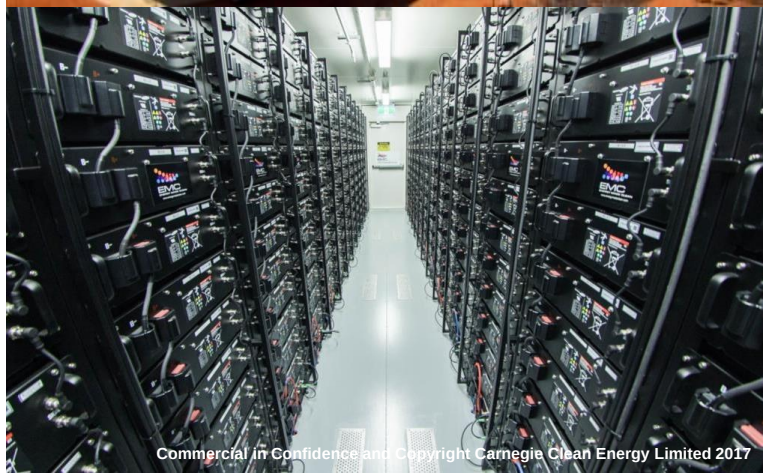
CSIRO Square Kilometre Array - Off-Grid Hybrid System

- Customer: CSIRO - world's most sophisticated antenna system to have the most sophisticated solar/storage/diesel power system in the world.
- Location: Off-grid, 645 km northeast of Perth, Western Australia
- Scope: EMC engaged to design, construct and install 1.6MWp solar facility in combination with 2.6 MWh battery energy storage system capable of diesel off functionality.
- Features:
  - 1.25 MVA microgrid-connected at 6.6 kV, ABB PCS100 Inverter 1.25 MVA
  - 2.6 MWh Samsung SDI Lithium batteries
  - PV central inverters delivered in EMI shielded containers manufactured by EMC in Perth
  - Containerised installation, Fire Suppression / Fire Rated, Centralised HVAC
  - EMC control system (National Instruments)





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Alkimos Project - Utility Scale Energy Storage

- Customer: Synergy (WA Government Generator and Retailer)
- Location: Alkimos suburb of Perth, Western Australia
- Scope: EMC engaged to design and construct on-grid battery for new residential sub-division
- Features:
  - 1.1MWh energy storage system
  - Offers residents: Virtual energy storage rebates for solar PV
  - Supported by ARENA (Australian Government) $3.3m grant

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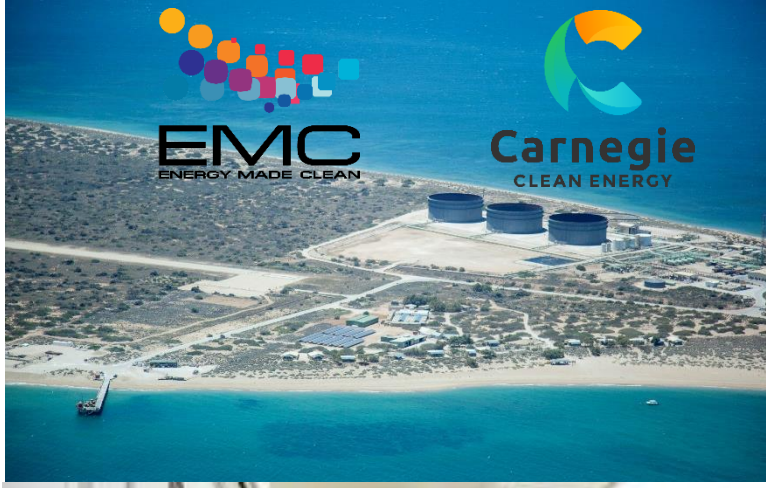
Thevenard Island Project - Island Microgrid

- Customer: Mackerel Islands Corporation
- Location: Thevenard Island, offshore from Onslow, 1300 km North of Perth, Western Australia
- Scope: EMC engaged to design and construct solar/battery/diesel microgrid to enable provide fuel independence and energy savings
- Features:
  - 324 kW Solar PV (ground mount screwpile)
  - 614 kWh Sony Lithium Iron Phosphate (2 x 40ft containers)
  - 440 kVA Diesel Generation (4 x 110kVA)
  - Corrosive location and high wind (CAT-D) region
  - EMC fully remote monitored and controls



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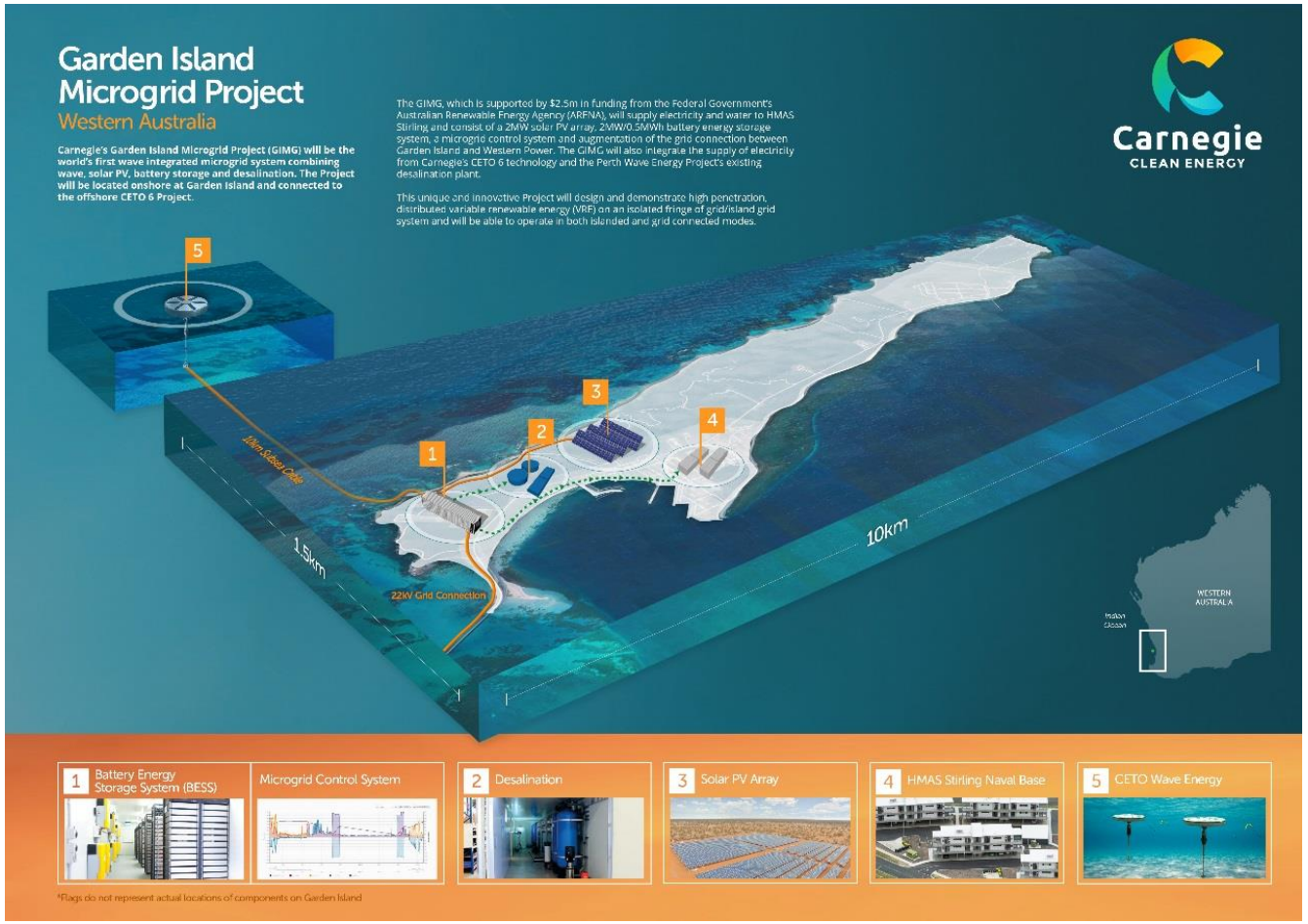
Garden Island Microgrid Project

- Garden Island Microgrid (GIMG) will be the world's first wave integrated renewable microgrid project.
- GIMG will integrate:
  - Existing diesel generation and grid infrastructure.
  - Large scale 2MW solar PV farm.
  - 2MW battery storage and control systems.
  - Planned CETO 6 Project.
- Partnering with Western Power, who provide grid and network expertise and support.
- Solar/battery funded by AU$2.5m from ARENA, $3.7m debt financing agreement and $1.3m CCE equity
- CETO 6 funded by $13m ARENA grant, debt finance and CCE equity
- Design complete, long lead items ordered, construction awaiting finalisation of power supply agreement and expected to start Q2 2017.



ARENA

Australian Government
Australian Renewable Energy Agency

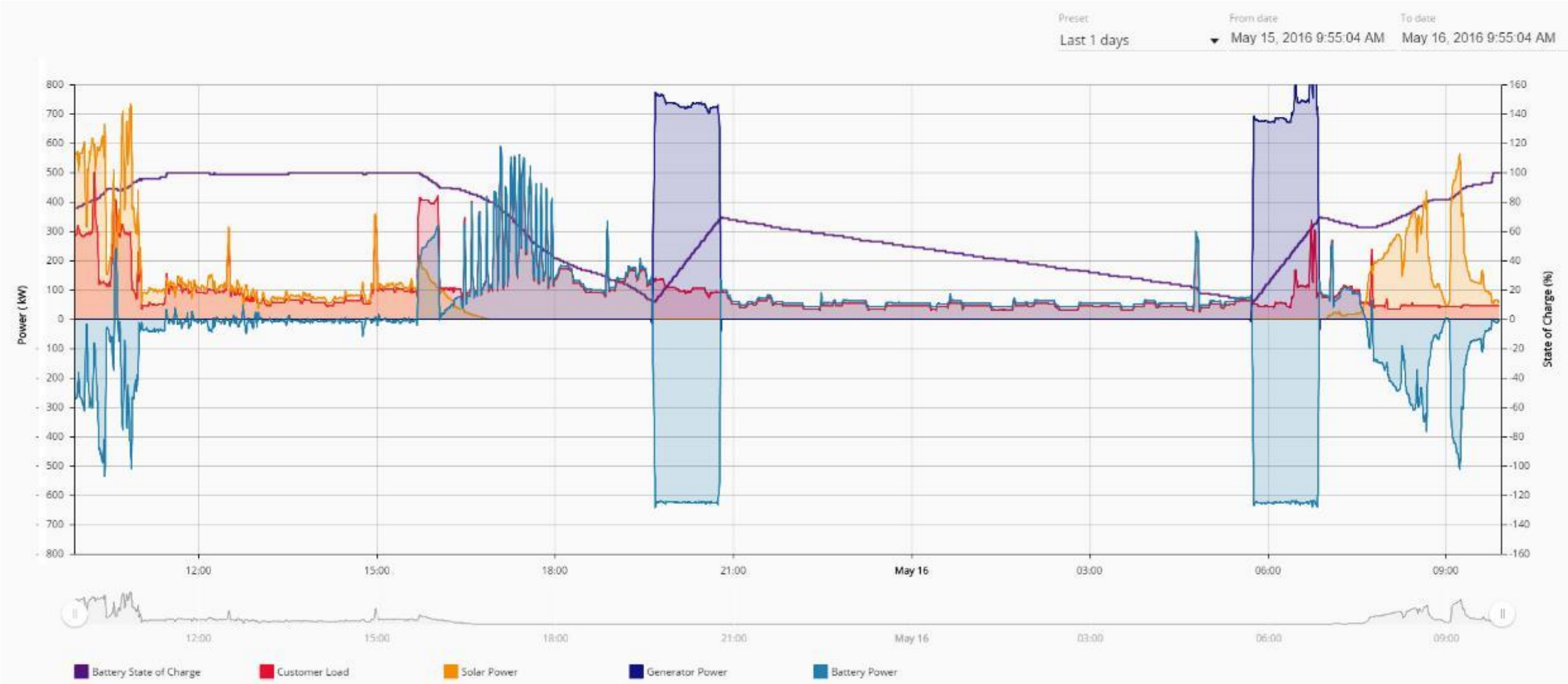
westernpower

GOVERNMENT OF WESTERN AUSTRALIA

Standalone Power Systems - Poles and Wires Replacement

- Customers: Horizon Power and Western Power (WA Government)
- Location: Esperance and Ravensthorpe, ca. 500-700 km south-east of Perth, Western Australia
- Scope: EMC engaged to design and construct cost effective and reliable alternative to replacing poles and wires damaged in bushfires
- Features:
  - Systems between 10-80 kWh Lithium Batteries
  - Systems between 8-20 kW Solar PV ground mounted
  - Fully remote monitored and maintained by EMC
- Opportunity to deliver 100's of these systems in WA alone and the across Australia and region

Remote Monitoring



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UPCOMING MILESTONES

- Northam Solar Power Station financial close. Construction start (mid 2017) and commissioning (end 2017)
- Garden Island Microgrid Stage 1: 2MW Solar and 2MW/0.5MWh Battery System Construction (mid 2017)
- Responding to multiple utility scale battery energy opportunities across Australia
- Continued growth in solar & microgrid Build Own Operate (BOO) project pipeline development
- Strategic partnerships in the microgrid business to expand market and capability
- Over $100 million in project pipeline opportunities through EPC joint venture with Lendlease

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