ASX Announcement

2 December 2016

Carnegie Shareholders Vote Overwhelmingly for EMC Acquisition

Carnegie Wave Energy Limited (ASX: CWE) is pleased to announce that its shareholders today voted overwhelmingly in favor of acquiring the remaining 65% of leading solar and battery microgrid developer, Energy Made Clean (EMC). This successfully completes the final condition precedent to Carnegie's 100% acquisition of EMC. The transaction will be executed next week on Tuesday the 6th December 2016.

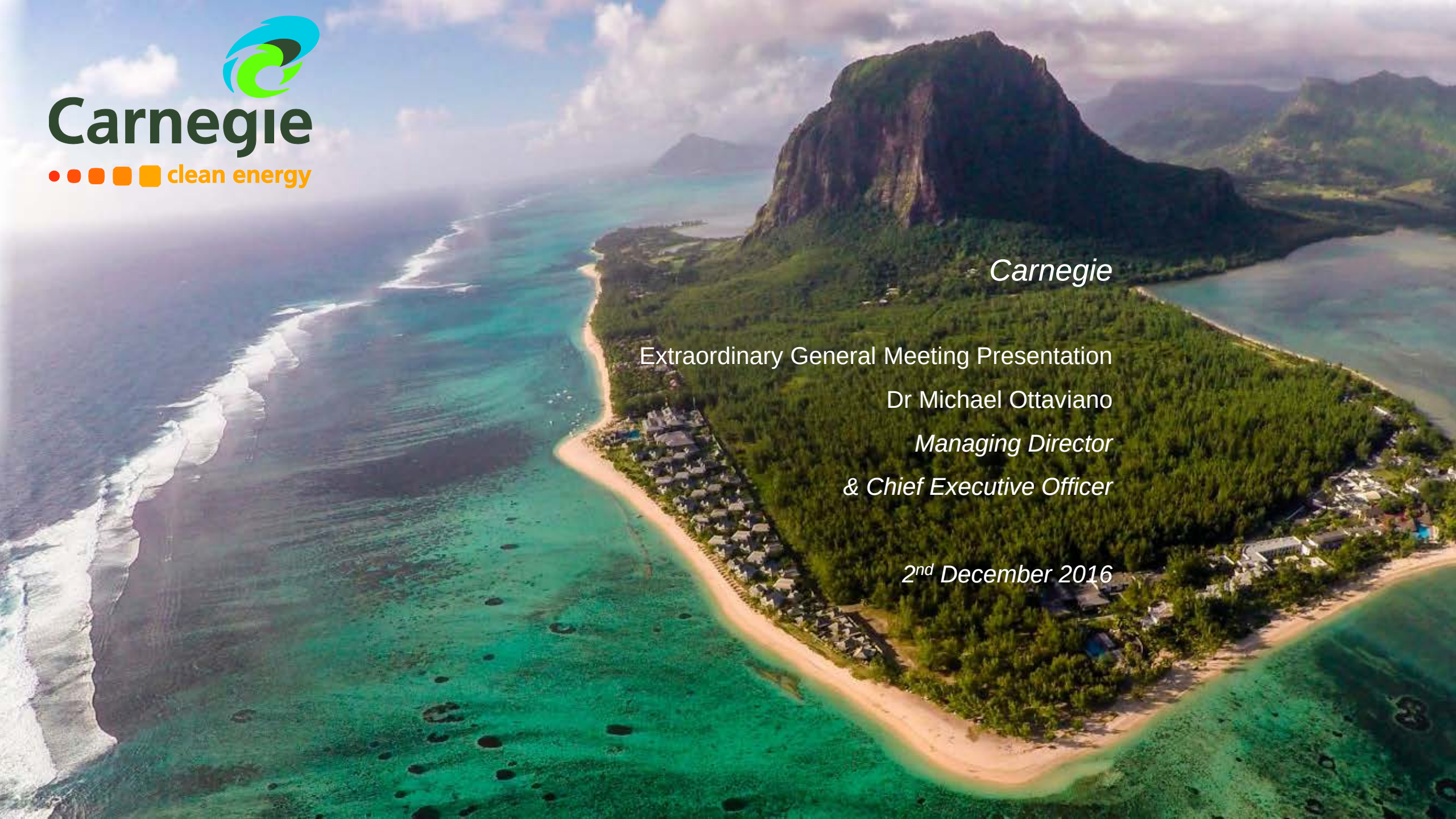
Carnegie shareholders also voted overwhelmingly in favor of changing the Company name to Carnegie Clean Energy Limited (ASX: CCE) in recognition of Carnegie's broadening focus on clean energy.

Please find attached the presentation delivered today by Carnegie's Chief Executive Officer, Dr Michael Ottaviano at the Company's EGM where the resolutions were passed.

For more information:
Dr Michael Ottaviano
Managing Director
Carnegie Wave Energy Limited
(08) 9335 3993
enquiries@carnegiewave.com
Website: www.carnegiewave.com

Proxy Vote Analysis – Extraordinary General Meeting, 2nd December, 2016

	For	Against	Discretionary	Chairman	Abstain
Resolution	Votes	Votes	Votes	Votes *(in favour)*	Votes
1. EMC Acquisition Issue of Shares	501,048,663	2,569,798	107,000	22,374,951	1,930,007
2. Change of Name to Carnegie Clean Energy Limited (ASX: CCE)	498,561,078	6,198,469	107,000	22,386,381	777,491



Carnegie

Extraordinary General Meeting Presentation

Dr Michael Ottaviano

Managing Director

& Chief Executive Officer

2nd December 2016

Disclaimer

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Mission Statement

"We are determined to transform the global renewable energy market through our solutions that harness the combination of wave, solar and battery storage to deliver reliable, cost competitive, clean power."

– Carnegie Clean Energy Limited.

Strategy

*Leverage our unique microgrid IP to accelerate **revenue growth** and convert to **earnings** via:*

- *the delivery of profitable projects delivered through a mix of develop, BOO, EPC and O&M.*
- *establishing relationships with credible partners to extend our capability (e.g. larger projects), our market reach (e.g. national and international markets) and our project scale (third party infrastructure investment).*

*Continue to **grow the value** of our unique wave energy IP via:*

- *further innovation to ensure we remain world's best wave technology with development funding >2/3rds off balance sheet*
- *realise the value of our wave energy IP through mix of licensing, equipment supply, development and wave energy microgrid BOO.*

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 est. $30 million left of which ~2/3^{rds} funded off balance sheet
- 15MW CETO wave project at Wave Hub in Cornwall, UK with £9.6m EU grant for stage 1
- The CETO IP independently valued in 2016 by a Big 4 accounting firm at AU$85 million

Microgrid power

- **Diversified** into microgrids through the 100% acquisition of Energy Made Clean, a leading Australian engineering company focused on clean energy microgrid EPC and O&M.
- Only ASX-listed company with in-house design, construction, operation and maintenance of solar hybrid (solar/battery and/or diesel) systems for off grid and fringe of grid applications
- Identified EPC pipeline in Western Australia alone ca. AU$500m through to 2020.

Corporate power

- ASX-listed, well **capitalised**: $10 million cash, $31 million in undrawn Govt grants, $3.69 million debt and $21m standby debt.
- Combined team of 90 focused on profitable project development, financing, delivery and O&M.
- Estimated CCE **revenues** of ~AU$22m in FY17 (FY16 revenues of AU$2m) => inflection point in Carnegie's evolution.

Starting to Gain Global Awareness

Carnegie 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, dir
EMC managing director John Davidson. **Supplied**

by Tess Ingram

Carnegie Wave Energy is p
company with the capabil
microgrids after inking a $
developer Energy Made Cl

The deal, to be announced
$2.6 million in cash and $1
remaining 65 per cent of EMC it does not alrea

Renewable energy

Looks swell

theguardian

Wave energy: Carnegie launches world-leading hub in Cornwall

The Australian wave energy company's new hub is the world's largest and most advanced for developing offshore renewable energy technology

Myles Gough

Tuesday 15 November 2016 09.40 AEDT

ve Energy's offshore
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The Economist

FT FINANCIAL TIMES

Brussels backs £60m Cornish wave energy project

An artist's impression of the proposed new Wave Hub off Hayle, Cornwall © PA

An Australian company has won EU backing for a £60m project to build the first commercial wave energy project connected to the electricity grid in England.

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

WIRED

HESE SUBMARINE TOWERS REPRESENT THE WORLD'S FIRST FULLY operational wave plant. Designed by Australian company Carnegie Wave Energy, three of these structures are tethered to the ocean floor just off Perth, where they convert wave power into emission-free electricity. Together, they generate 720kW annually, powering part of a nearby naval base. And now Carnegie wants to go global with these units. "You can link as many as you need," says Michael Ottaviano, the company's CEO. "That's where we see this going – large-scale wave farms." Each CETO 5, an 11-metre-wide platform that makes use of passing 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 of the water turbines. The pumping action can also be used to drive desalination plants and make fresh, drinkable water. Now Carnegie is upgrading to CETO 6, which will produce power completely offshore by using the pumping action to drive a generator within the buoy, making electricity on site. Subsea cables will then wire the power back to land. With its 20-metre diameter, CETO 6

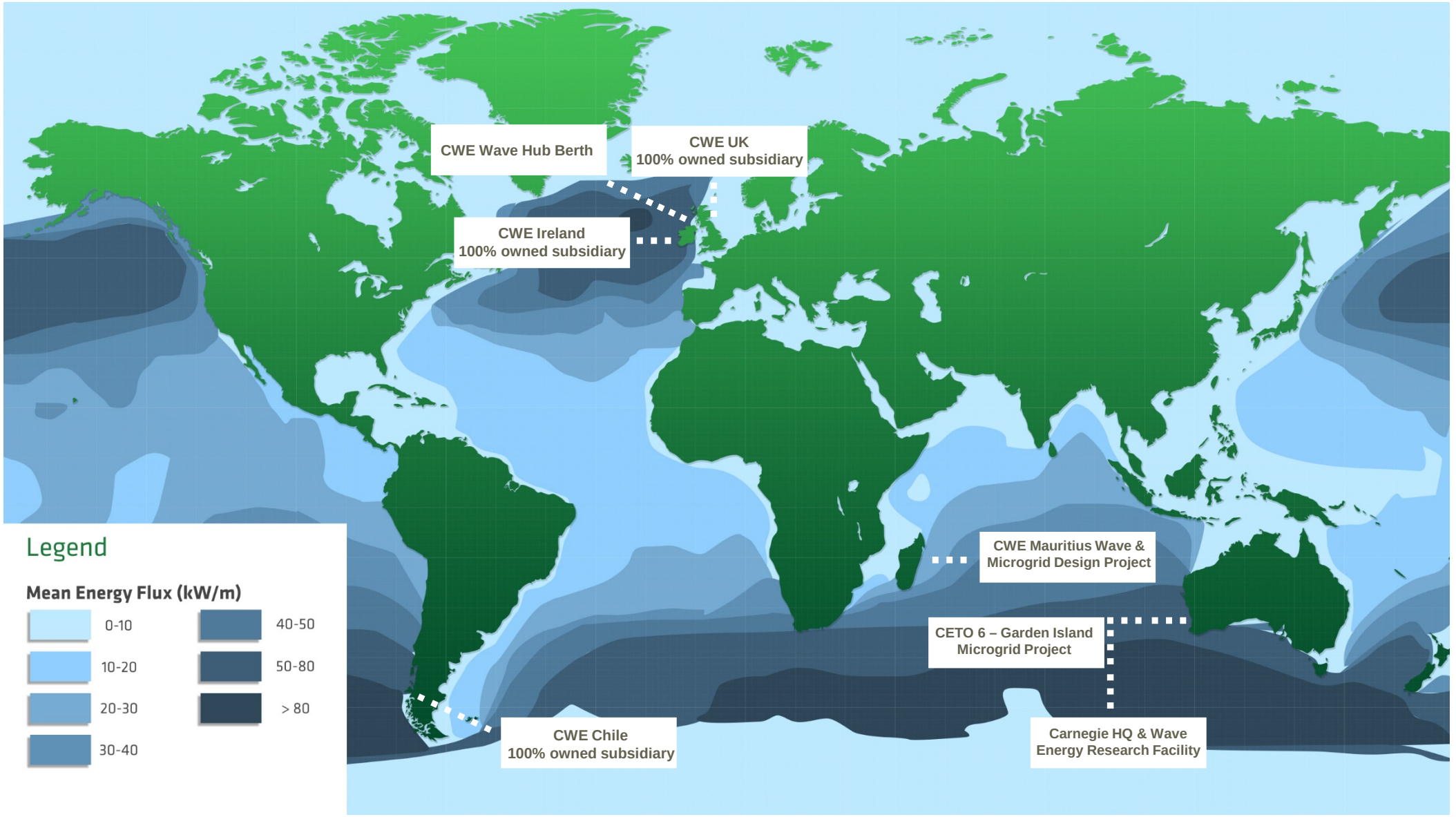
Surf's up

BloombergView

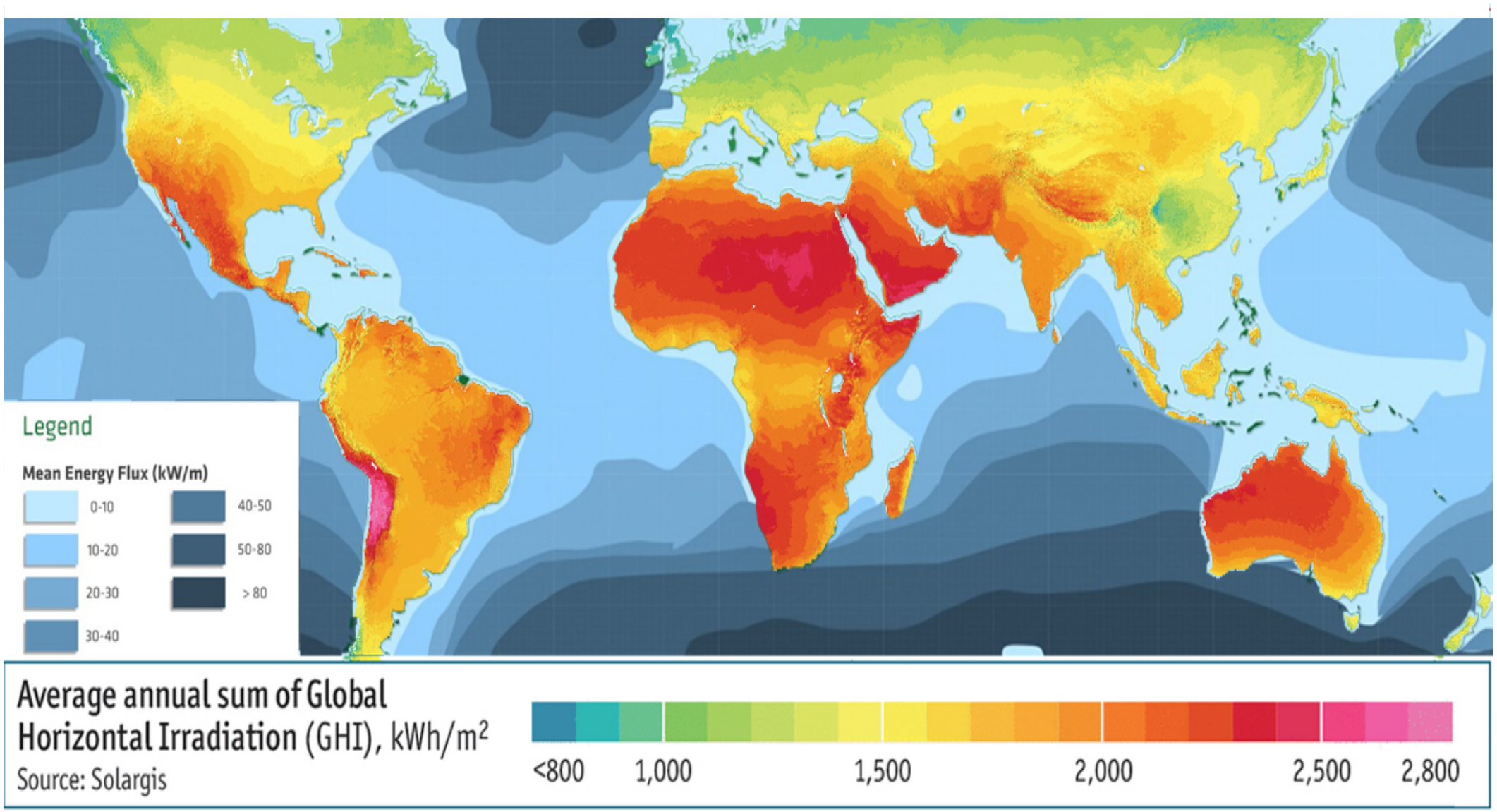
ENVIRONMENT

Sea Power Can Eclipse Solar

Previously Carnegie's Market - Wave Global Resource and Reach



Now Carnegie's Market - Global Resource and Reach: Wave + Solar



Energy Made Clean Acquisition – approved at EGM December 2nd 2016

- Game-changing move by acquiring 100% of leading Australian solar/battery microgrid developer Energy Made Clean (EMC).
- AU$10.4m scrip and AU$1.6m cash upfront. AU$1m cash to be paid in 2 tranches tied to FY17 and FY18 revenue targets of AU$20m and AU$30m respectively.
- Benefits:
  - delivers Carnegie an immediate revenue stream (FY16 revenue AU$16m)
  - supports the commercialisation of Carnegie's CETO technology
  - creates only ASX-listed company with dedicated renewable microgrid capability.
  - in-house ability to design, develop, finance, construct, operate and maintain microgrids.
- Acquisition includes:
  - 50 staff and offices, workshop, warehouse, test facility and equipment fleet based in Perth.
  - Licensed Electricity Retailer (SWIS)
  - 50MW solar project development pipeline in Western Australia
- Partnerships with:
  - NZ utility Infratec to expand state-of-the-art Solar/Battery/Diesel Solutions to NZ and the Pacific Islands
  - North Western Australian Indigenous Engineering Services provider Eastern Guruma

Remote monitored and controlled 100 kW PV /110 kVA Diesel/ 64 kWh battery project in outback Australia


1.1MWh Battery Energy Storage System for Synergy Alkimos Project

Carnegie: A Global Leader in Wave Energy Technology

"Of the eight leading wave companies four have gone bankrupt, one was folded by its owner, one has scaled back its activities drastically, one has had serious setbacks and **one (Carnegie Wave Energy) has made considerable progress with its technology**."

-

Bloomberg New Energy Finance, 2016

- First proven demonstration of a complete grid-connected CETO system anywhere in the world.
- Only wave project to project to produce both power and freshwater.
- Operated across 14,000 cumulative hours spanning four seasons.

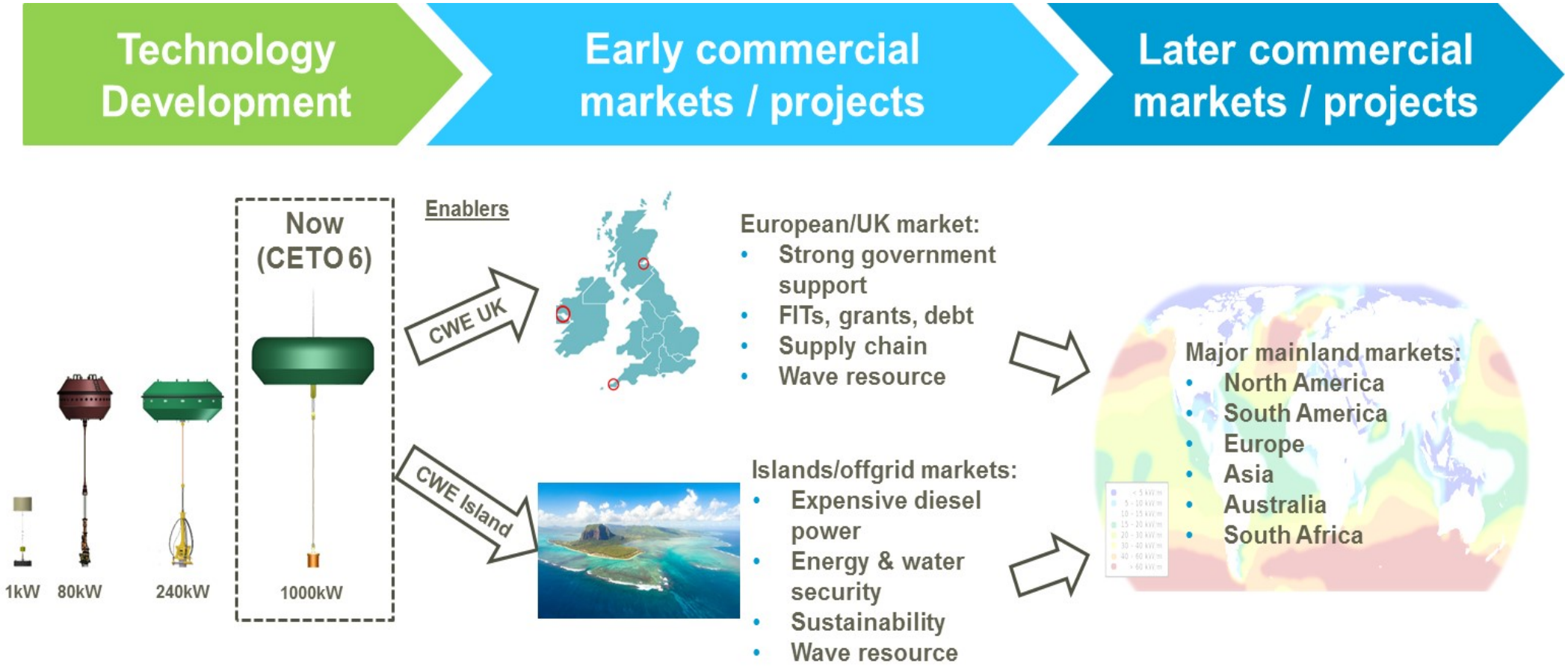
Our Proven Capability

CETO 5 - The Perth Wave Energy Project

The Next Generation

CETO 6 – The commercialisation game-changer

Commercialisation of CETO – UK/EU and Islands



Commercialisation via two key initial markets:

- UK/EU: taking advantage of sites, funding, tariffs and supply chain.
- Islands: taking advantage of high power tariffs, competitive advantage of wave (consistency and footprint).

Initial International Market – UK/EU

- Multiple, dedicated wave energy sites across UK/EU either in operation or in development with a total potential capacity approaching 100MW.
- Dedicated wave energy tariff support, grants, debt facilities available.
- Experienced supply chain for manufacturing, assembly, installation and maintenance.
- First international deployment of CETO 6 will be in UK and as part of a 15MW project at Wave Hub.

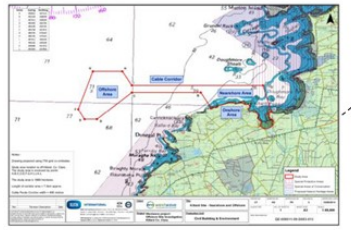
CWE UK

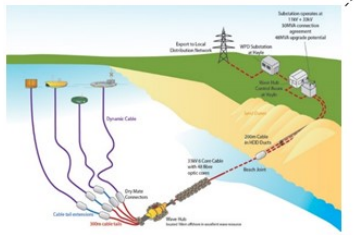
Wave Hub

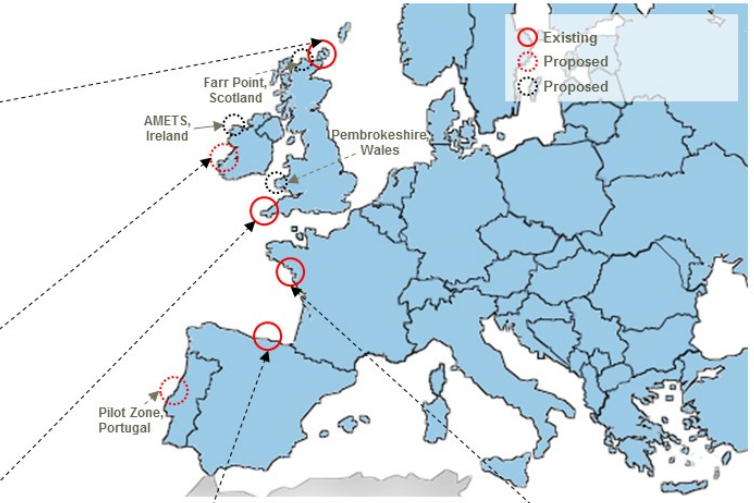
- CWE has been also selected for Irish utility ESB's planning phase of its 5MW West Wave project which has received €23m EU funding and is planned for 2020/2021

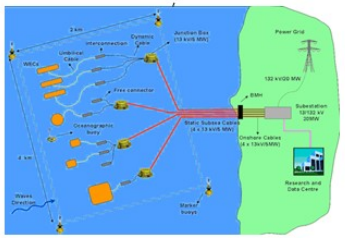
ESB

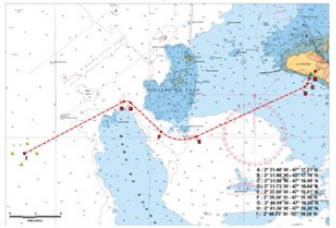
EMEC, Scotland


Westwave, Ireland

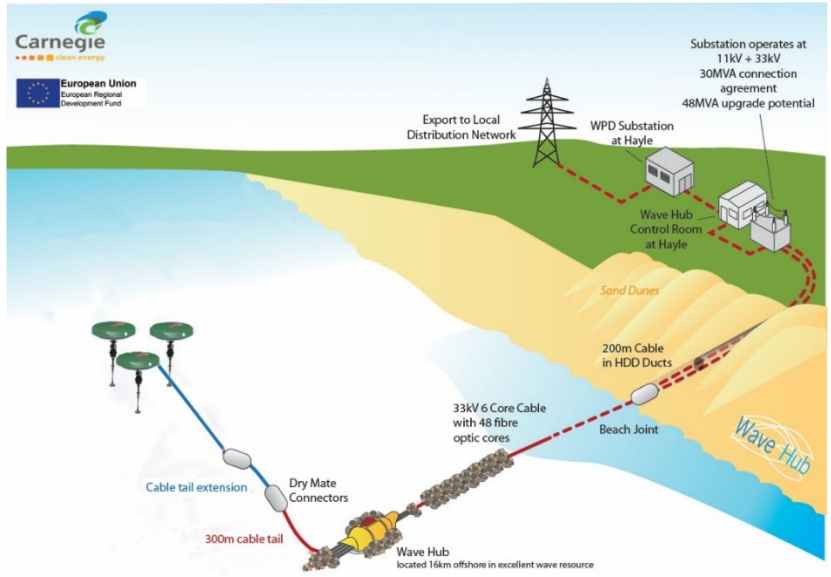

Wave Hub, Cornwall, UK




BiMEP, Spain


SEM-REV, France

CETO 6 – Wave Hub Project, United Kingdom

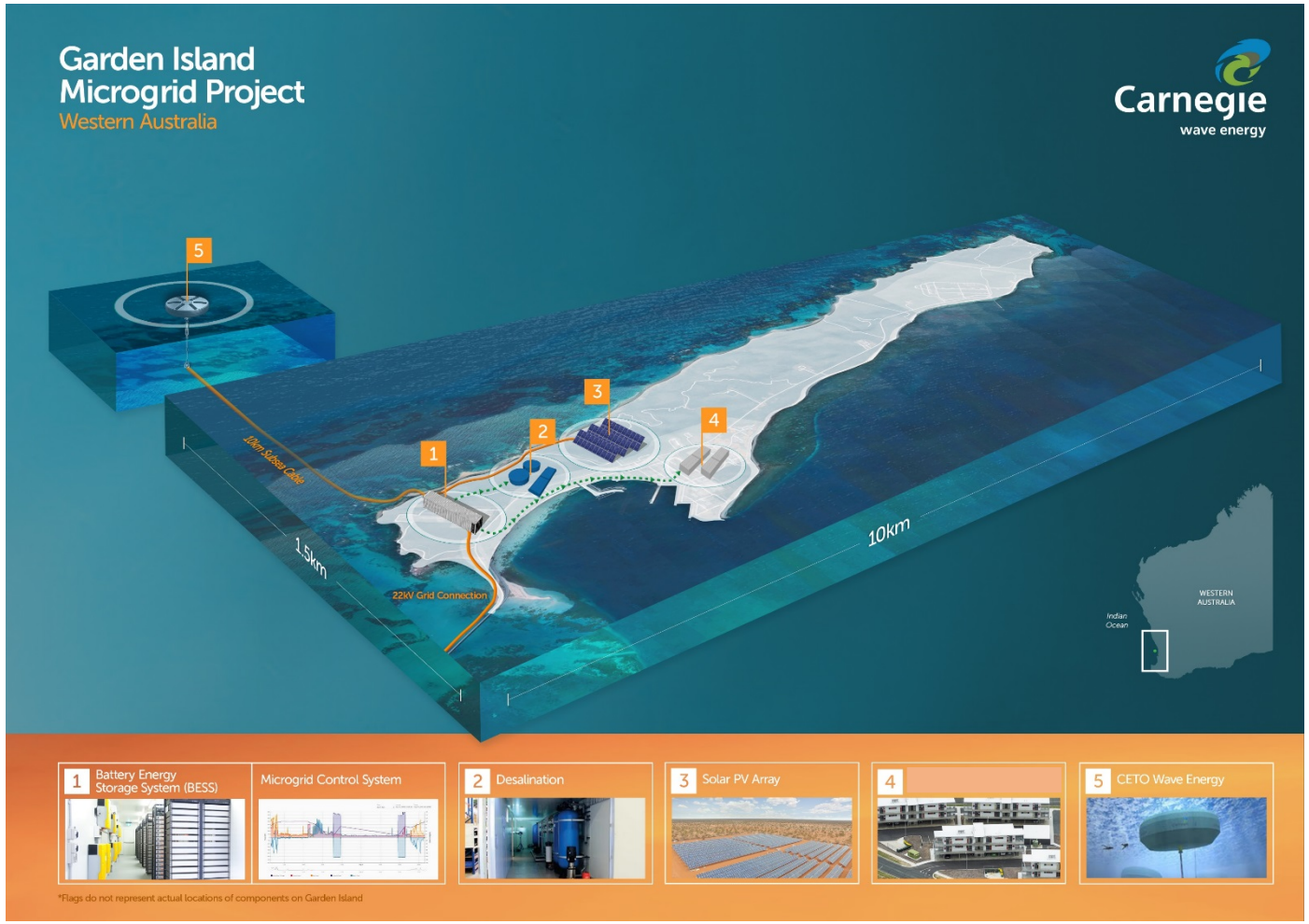


CETO 6 at Wave Hub, Cornwall, UK

Wave Hub, Cornwall, UK

- Wave Hub site in Cornwall, UK. Purpose built 30MW capacity upgradeable to 48MW. Pre-consented site with offshore cable and subsea pod with cable tails ready for connection, grid connection on shore.
- Project developed by fully owned subsidiary CETO Wave Energy UK (CWE UK)
- 2 Stage Project:
  - **Stage 1**- single 1MW CETO 6 unit at Wave Hub in 2018
  - **Stage 2**- build out to 15MW project at the same site in 2021
- Stage 1: £14.7m for the design, development, manufacture and operation of single 1MW CETO 6 unit at the 15MW Stage 2 location. Commissioning in 2018. £9.6m grant funding from EU.
- Stage 2: estimated £60m capex and delivers a return on investment and is financed through a combination of grant, equity, debt and revenue (CFD) support. Commissioning in 2021.

CETO 6 - Garden Island Microgrid Project



- Garden Island Microgrid (GIMG) will be the **world's first** wave integrated renewable microgrid project.
- GIMG will integrate:
  - Planned CETO 6 Project.
  - Existing infrastructure.
  - Large scale solar PV farm.
  - Battery storage and control systems.
- Partnering 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 CWE equity
- CETO 6 funded by $11m ARENA grant, $20m debt finance and $10m CWE equity
- Design complete, long lead items ordered, construction to start in late 2016.

ARENA
Australian Government
Australian Renewable Energy Agency

westernpower

GOVERNMENT OF WESTERN AUSTRALIA

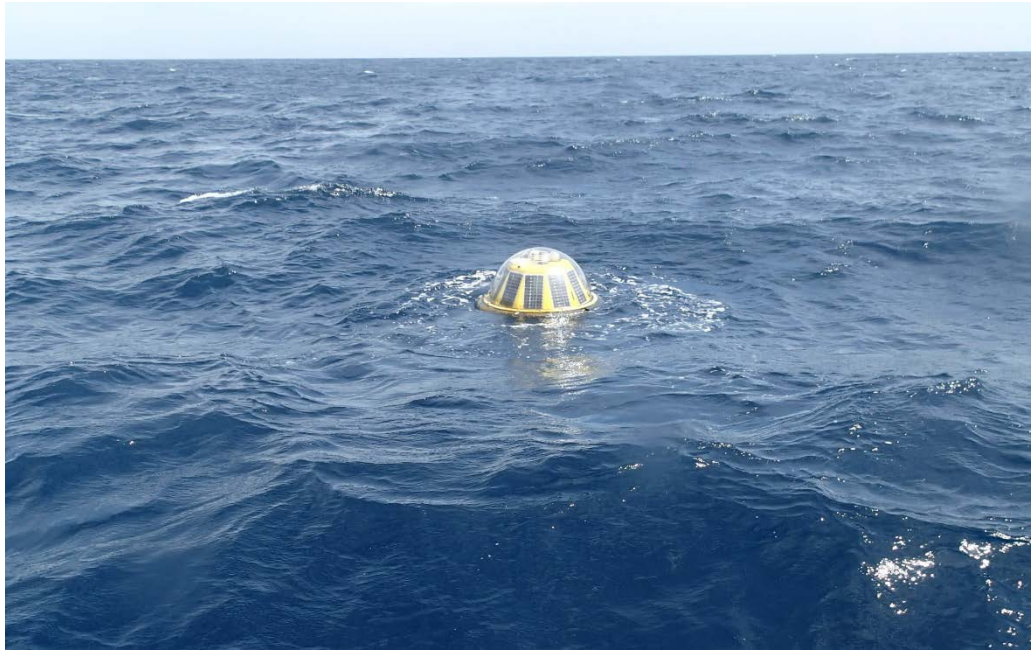
Island Microgrid Project #2 - Mauritius & Rodrigues

- Isolated grid system with peak load of 378MW supplied by multiple generation sources (diesel, biomass, hydro, PV, wind,..)
- Currently 22% RE with near term target of 35% and longer term target of >50%
- Will need grid integration technologies and distributed generation in the form of microgrids (importing/exporting) to ensure power quality and reliability can be maintained.

Signing of MoU with Mauritian Government

CWE currently contracted to deliver:

1. A high penetration renewable energy roadmap for Mauritius.
2. Assessment of the wave energy resource, site conditions and priority sites for commercial CETO wave energy devices.
3. Design of a decentralised micro-grid for the Island of Rodrigues, offering battery storage and control systems



Wave Measuring Buoy Deployed off Mauritius in June 2016

Planned next stage

- Carnegie take its design and, against a PPA, deliver the financing, EPC and O&M of a solar, battery microgrid project.
- Existing project delivers a roadmap, at a detailed level, to subsequently deliver a wave power solution as required.

Why the Island Power Market?

- Island and off-grid markets typically reliant on a high proportion of electricity generated using imported fossil fuel, which is expensive, with high emissions, non-secure, with environmental spill risk etc.
- Many islands dependent on tourism market, which is energy intensive, further exacerbating energy issues.
- All island **states spend more than USD$42 million each day** on more than 900,000 barrels of oil, assuming a price of USD47 per barrel (Garcia and Meisen).
- Therefore looking to move to high penetration renewables (clean, secure, sustainable) to exploit RE resources.
- Climate change / emissions considerations – many islands and remote communities on the front line of climate change.
- Increasing government and political support from UN, ADB, EU, DFAT, regional development funds, and nation state appetite for increasing renewable energy penetration.
- The pathway to high penetration renewable energy on small islands electrical networks is through mixed renewables microgrids.
- 47 members of the “Climate Vulnerable Forum” have signed up to achieve 100% RE by 2050 including islands nations such as: Barbados, Fiji, Haiti, Honduras, Kiribati, Madagascar, Maldives, PNG, Philippines, Tuvalu, and Vanuatu

In Good Company...

Tesla unveils solar island, in first bite at global microgrid market

By **Sophie Vorrath** on November 30, 2016

On top of releasing a new line on residential and commercial battery storage, unveiling a range of integrated solar roofing tiles, and pulling off a a $2.6 billion merger, Tesla and Solar City have also been busy tapping into the potentially huge global renewable energy microgrid market.

The newly united companies announced the completion of a solar plus battery storage project on the island of Ta'u in American Samoa in a tweet – of course – last Tuesday, along with a video (see below).

The Ta'u microgrid combines 1.4MW of solar PV and a 6MWh energy storage system made up of 60 of Tesla's lithium-ion Powerpacks; which Tesla claims can keep the island powered for three full days without sun, with the battery storage able to fully recharge in just 7 hours of sunlight.

As we reported here last month, Australia's own Carnegie Wave Energy recently trebled its bet on what it sees as a booming micro-grid market in Australia and overseas, by moving to take full ownership of the solar, battery storage and micro-grid business Energy Made Clean.

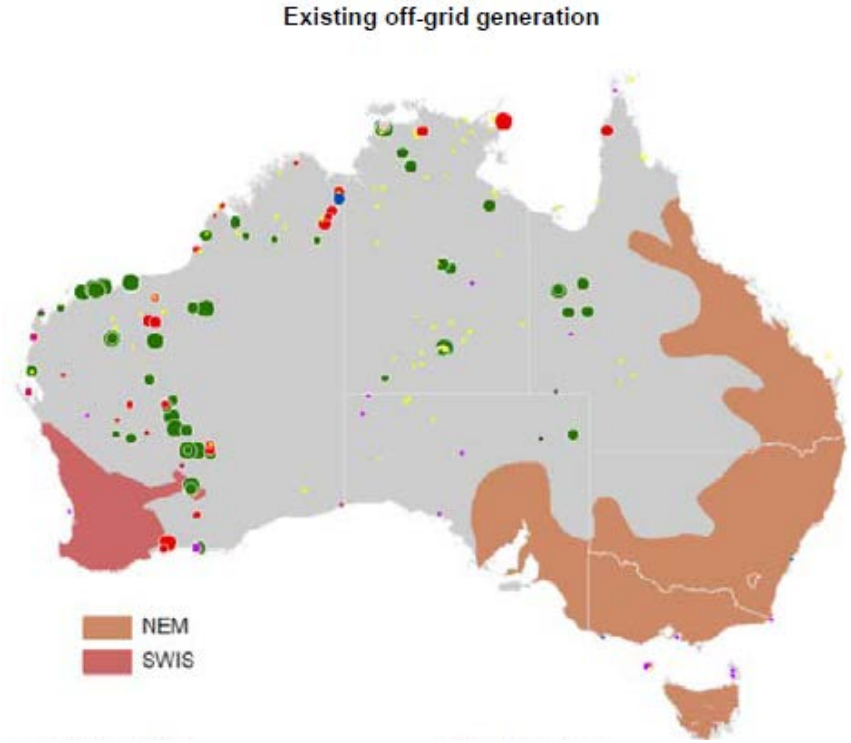
Last year, the Perth-based company's plans to use its world-leading CETO wave energy technology to develop a renewable energy microgrid for Mauritius won $800,000 in funding from the Australian government.

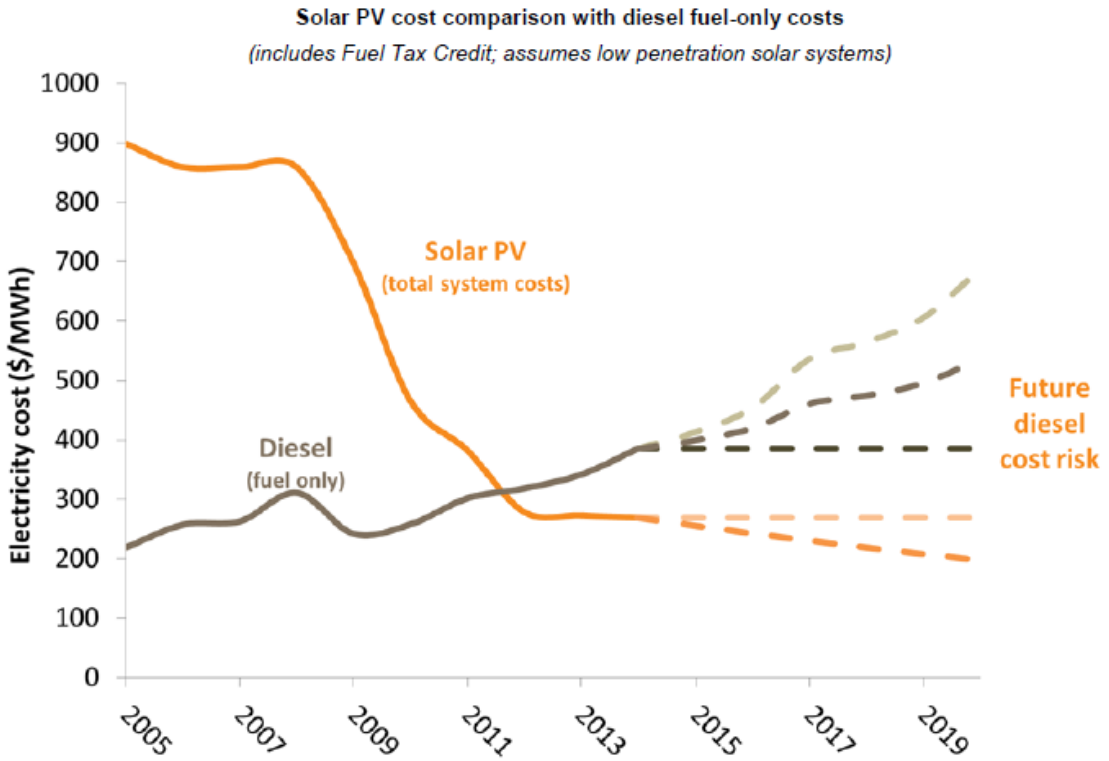
ONE STEP OFF THE GRID

Global Microgrid Opportunity – what is it worth?

- Navigant research suggests global deployment in microgrids had generated an estimated US$4.3bn per annum in 2013, expected to grow to **US$40bn per annum by 2020**.
- EY study based on just 20 countries identified microgrids could provide anywhere between US$64bn and US$171bn in electricity cost savings for commercial companies by 2020.
- Example: **Africa**
  - **600 million** people in Africa do not have access to electricity, and approximately 730 million people rely on traditional uses of biomass (IEA, 2014a).
  - With rising standards of living in Africa, **electricity demand** is expected to **triple** by 2030.
  - The investment in electricity infrastructure to connect them all to an electricity grid would have to rise to about $55bn a year from the current $8bn. On current trends it would take until 2080 to link all Africans to the grid (The Economist, Oct 16)
  - Large renewable energy potential to meet this off-grid demand. In particular solar resource is abundant across the whole continent.
- Through the acquisition of Energy Made Clean, Carnegie Wave Energy will be the only company globally able to offer the full option of design, development, finance, construction, operation and maintenance of combinations of wave, solar, battery and desalination microgrids. .

Microgrids in Australia - cheaper than diesel / poles and wires



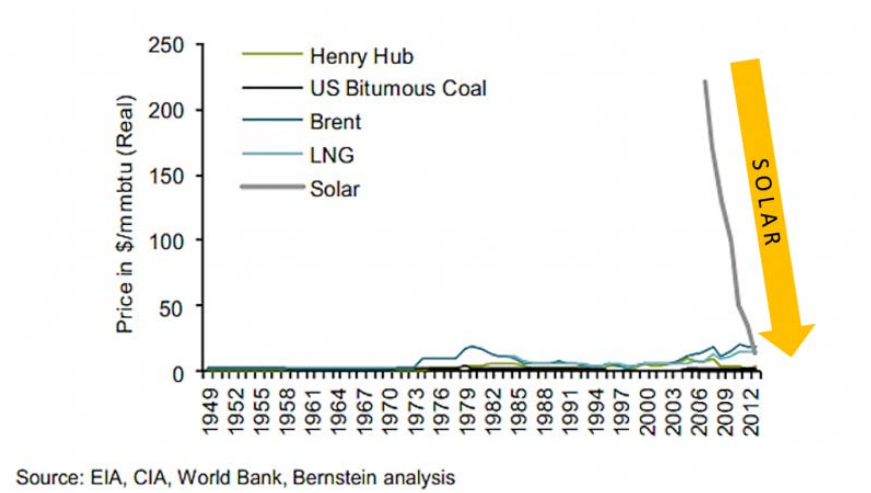


- >1.2GW of diesel generation installed in off-grid Australia at a cost of **$240-450/MWh in fuel only** (excluding capital costs).
- These costs likely to rise over time and are vulnerable to price shock events or supply chain interruptions in international markets
- Solar PV hybrid systems are already more competitive than the cost of diesel being offset by such a system at **$226/MWh** (AECOM, 2013)
- Separately, at the “fringe-of-grid” where where the power lines have poor reliability and often have large distribution line losses. A typical cost to install a 20kW solar/battery unit in regional Australia is $150,000 which is less than the cost of replacing 4 power poles

Source: AECOM, Australia’s Off-grid Clean Energy Market, 2014

The Incredible Disruption of Solar PV

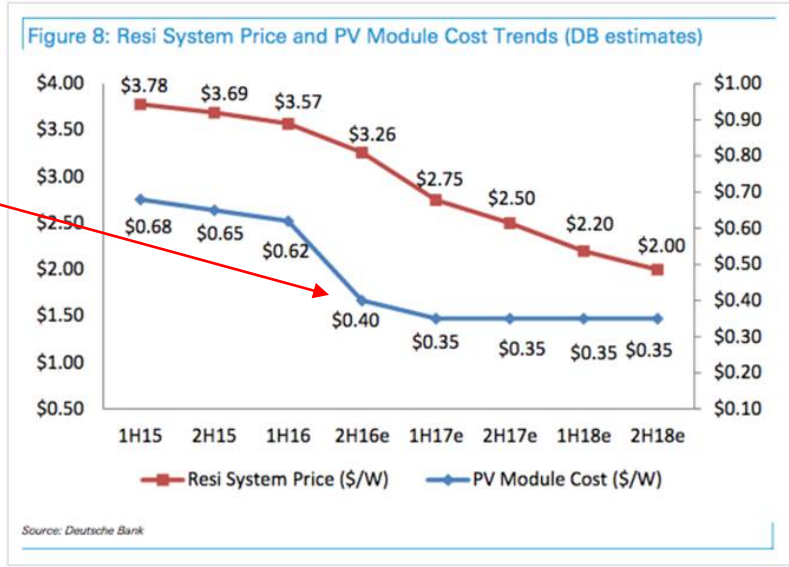
The reduction in the cost of solar PV is without historical precedent



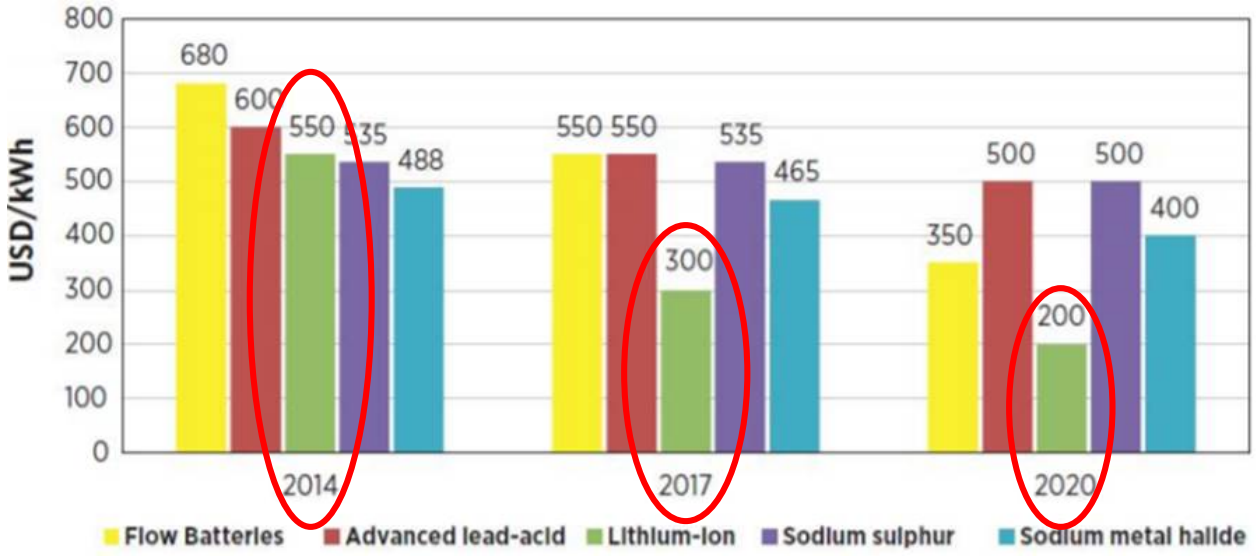
Source: EIA, CIA, World Bank, Bernstein analysis

…and declined 80% between 2009 and 2014…

…and is reduction is forecast to continue…



And Now Battery Costs Are Plummeting As Well



- Battery costs are forecast to drop by a further 70%
- Value of storage lies increasingly in being cost effective but also…
  - Power reliability and power quality
  - Deferral/avoidance of grid investment
  - Pricing arbitrage opportunities

World Energy Council Report January 2016

MICROGRID CUSTOMERS

Microgrids can bring remote operations safe, reliable, and cost effective power across all applications and industries.

- Defence Bases
- Agricultural Sector
- Remote Communities
- Remote Islands
- Mining Sector
- Astronomy
- Cattle Stations
- Eco-Tourism
- Roadhouses
- Water Pumping
- Utilities

OUR PRODUCTS

Off-grid

- Grid Utilities
- Remote Utilities
- Grid Defection
- Remote Power

Solar Pumping

- Water Corp
- De-watering
- Pivots
- Agriculture

Commercial PV

- PPA
- EPC
- Nationwide
- 30kW-1MW

Utility Scale

- BOO
- EPC
- BESS
- MW PV

O&M

- On-going
- Monitoring
- Availability
- Utility Grade

Carnegie and Energy Made Clean – off-grid power

STANDARDISED PACKAGE

- Power On Demand (POD) range
- 5ft, 10ft, 20ft, 40ft
- Pre-commissioned stand-alone power systems
- Configurable power/energy ratio
- Plug and play installation
- Fully remote monitored and managed.

EMC Case Study 1: Meta Maya Project (Grid Defection)

EMC 20 ft. POD unit

- Pilbara Meta Maya Aboriginal Corporation in Pilbara, Western Australia
- Train local Aboriginal communities to O&M the hybrid system and roll out to the remote towns currently running on diesel
- Peak Load @ 70kW, night time load approx. 7kW
- 100 kW Solar PV (carport mounted partly CAT-D wind region)
- 110 kVA Diesel Generator
- Pre-assembled and pre-commissioned 20ft POD, 64 kWh Sony Lithium Iron Phosphate
- Fully remote monitored and controlled (National Instruments control architecture)
- >35kAUD savings / year with a potential 7 year payback since 2015 operations.

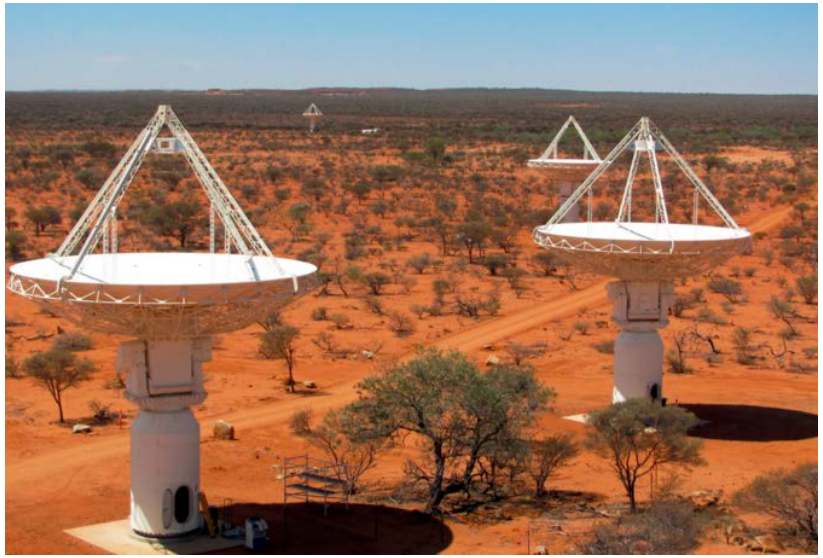
EMC Solar Panels

EMC Case Study 2: Thevenard Island Project (Tourism)

EMC CEO John Davidson (left) with Western Australia's Premier Colin Barnett (right) inside a POD Unit

- Project for Mackerel Island Corporation
- Attractive island location, offshore from Onslow, Western Australia
- Project aimed to provide fuel independence and energy savings.
- Corrosive location and high wind (CAT-D) region
- Peak load @ 240kW & annual load usage > 1GWh
- 614 kWh Sony Lithium Iron Phosphate (2 x 40ft containers)
- 324 kW Solar PV (ground mount screwpile)
- 440 kVA Diesel Generation (4 x 110kVA)
- Real time monitoring and control

EMC Case Study 3: Square Kilometre Array (Utility Solar)



- Project for CSIRO, located 350km northeast of Geraldton, Western Australia
- Designed to produce world's most sophisticated antenna system to have the most sophisticated solar/storage/diesel power system in the world.
- 1.6MWp solar facility in combination with an N+1 IGBT based battery system being capable of diesel off functionality.
- EMC tasked to perform structural design for solar installation and fully pre-commissioned containers from Perth.
- 1.25 MVA microgrid-connected at 6.6 kV, ABB PCS100 Inverter 1.25 MVA
- 2.6 MWh Samsung SDI Lithium batteries (68Ah)
- 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)
- Delivery by end 2016

EMC Case Study 4: Alkimos Project (Utility Battery)

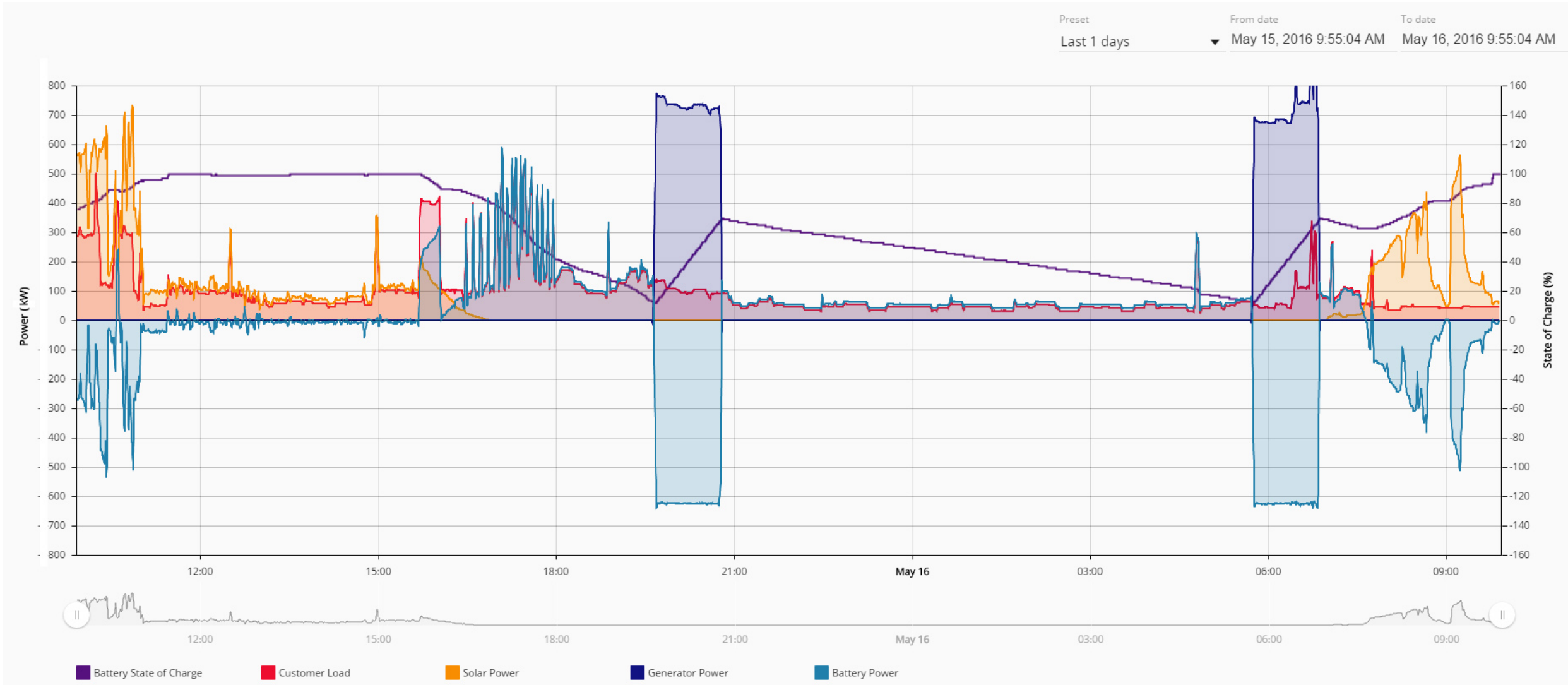
Western Australia's Treasurer and Minister for Energy Dr. Mike Nahan (left) with Australia's former Minister for the Environment Greg Hunt (right) inside a POD Unit at the Alkimos Beach Project

- On-grid Utility-Scale Battery Project
- First of its kind on a community scale in Australia
- Located in Alkimos Beach, Perth, Western Australia
- 1.1MWh energy storage system
- Demonstration project for Synergy (Western Australian Government-owned Gentailer)
- Offers residents:
  - Virtual energy storage rebates for solar PV
  - Solar hot water system and other energy efficient appliances
  - In-home energy display unit monitoring generation and usage
  - Education program to help residents maximise their potential to save money and better manage energy usage
- ARENA (Australian Government) $3.3m grant

EMC Case Study 5: SPS (Replacing Poles and Wires)

- SPS: Standalone Power Systems
- Fringe of Grid Utility Installations for Horizon Power and Western Power
- Power Utilities opting for a more cost effective and reliable alternative to replacing poles and wires damaged in bushfires
- South West of WA (Esperance and Ravensthorpe)
- Systems between 10-80 kWh Lithium Batteries
- Systems between 8-20 kW Solar PV ground mounted
- Fully remote monitored and maintained by EMC

Microgrid Monitoring



CWE Investment Highlights

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 est. $30 million left of which targeting >2/3^{rds} funded off balance sheet
- 15MW CETO wave project at Wave Hub in Cornwall, UK with £9.6m EU grant for stage 1
- The CETO IP independently valued in 2016 by a Big 4 accounting firm at AU$85 million

Microgrid power

- **Diversified** into microgrids through the 100% acquisition of Energy Made Clean, a leading Australian engineering company focused on clean energy microgrid EPC and O&M.
- Only ASX-listed company with in-house design, construction, operation and maintenance of solar hybrid (solar/battery and/or diesel) systems for off grid and fringe of grid applications
- Identified EPC pipeline in Western Australia alone ca. AU$500m through to 2020.

Corporate power

- ASX-listed, well **capitalised**: $10 million cash, $31 million in undrawn Govt grants, $3.69 million debt and $21m standby debt.
- Combined team of 90 focused on profitable project development, financing, delivery and O&M.
- Estimated CCE **revenues** of ~AU$22m in FY17 (FY16 revenues of AU$2m) reflecting significant growth of microgrid business.

Upcoming

- Garden Island Microgrid construction start (Dec 16) and solar/battery commissioning (mid 2017)
- Continued growth in solar/microgrid BOO project pipeline development (now 60MW pipe. Targeting 200MW by mid-2017)
- Strategic partnerships in the microgrid business to expand market and capability and realise value from IP (targeting 2 in place by mid-2017)
- Convert pipeline to orders and to FY17 AU$20m revenue