

ASX Announcement

Wednesday, 18th November, 2015

Global Eco Asia-Pacific Tourism Conference Presentation

Please find attached presentation to be delivered today at the 23rd annual Global Eco Asia-Pacific Tourism Conference. The presentation will be delivered by Greg Allen, Carnegie's Chief Operating Officer at the conference being held today, on Rottnest Island, Western Australia.

The Global Eco Asia-Pacific Tourism Conference is the longest running ecotourism conference in the world, and brings the world's leading speakers on ecotourism, sustainability and responsible tourism.

For more information:

Dr Michael Ottaviano

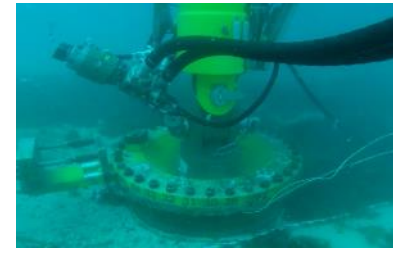
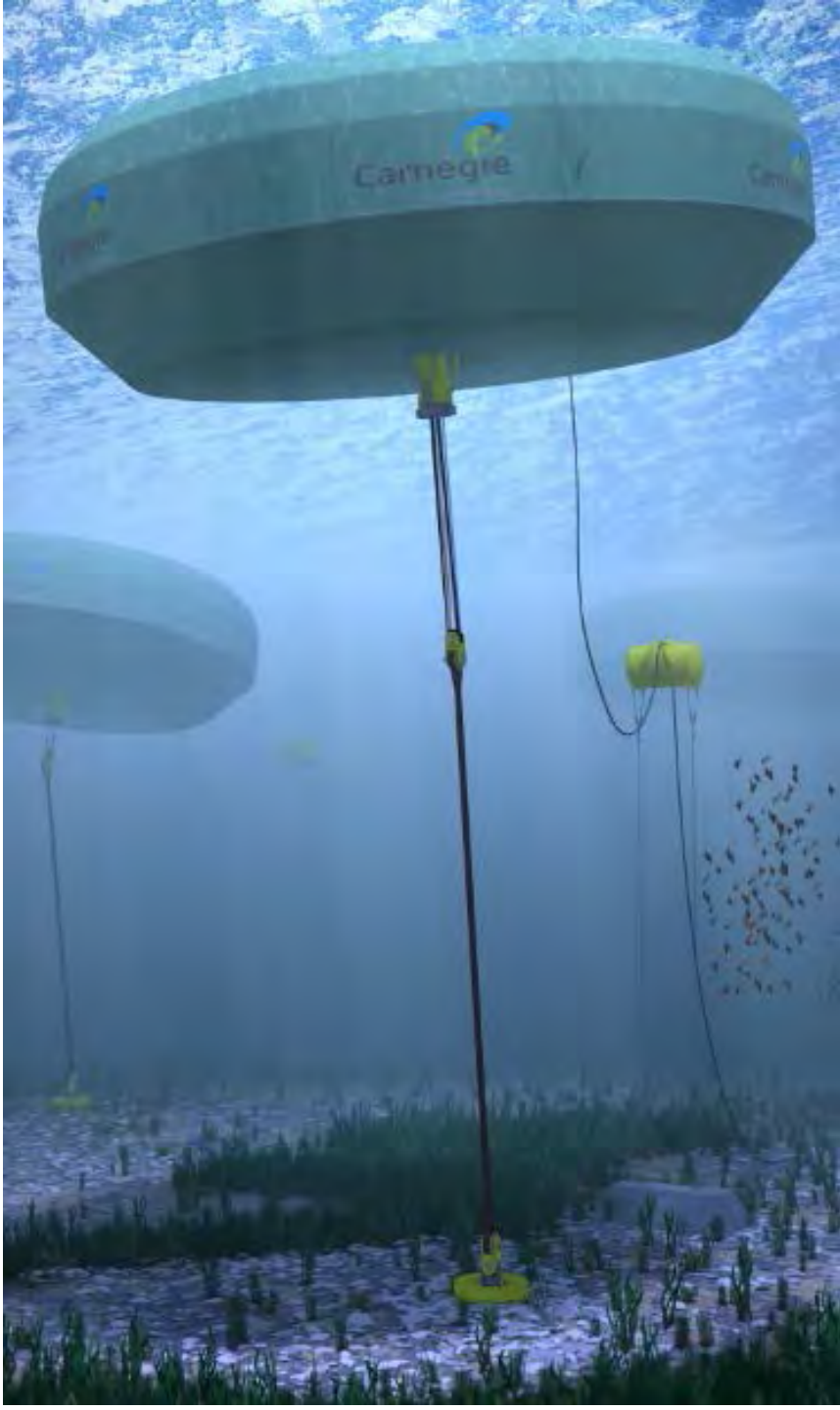
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Global Eco Asia-Pacific Tourism Conference
Wave Integrated Microgrids
18th November, 2015

Greg Allen
Chief Operating Officer

Disclaimer

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Investment Highlights

- Owner and developer of world leading “CETO” wave energy technology
- Tens of thousands of in-ocean operating hours.
- \$118m spent to date on CETO over 6 prototype cycles
- Team of 40+ focused on wave technology and project development
- Dual market focus
 1. Europe/UK:
 - Dedicated wave sites, grants, tariffs, wave resource, EDF licence and supply chain
 2. Islands:
 - High diesel tariffs, lack of energy security, wave resource, funding support





L-R: Kieran O'Brien (ex ESB), Mike Fitzpatrick (ex Hastings), John Leggate (ex BP), Jeffrey Harding (Chairman, ex Pacific Hydro), Michael Ottaviano (MD & CEO), Grant Mooney (NED, Joint Company Secretary)

Increasing Industry Recognition



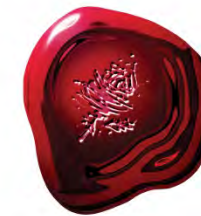
Innovation Excellence Winner,
2014



Top 100 Global Sustainable
Solutions, 2015



Top 50 Most Innovative
Companies in Australia, 2015



BANKSIA
SUSTAINABILITY
AWARDS 2015

Banksia Sustainability Awards,
Innovator of the Year, 2015



Program Innovation Winner,
2014



Clean Energy Council

Innovation Award Winner, 2015



The Australian Innovation Challenge, Finalist,
Minerals & Energy, 2015

Recent Media Recognition – global awareness just starting to build

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, 36 feet wide, are buffeted by the powerful waves, and the buoys, in turn, push and pull the waves, in a nearby mili-

BloombergView

ENVIRONMENT

Sea Power Can Eclipse Solar



THESE SUBMARINE TOWERS REPRESENT THE WORLD'S FIRST FULLY operational wave plant. Designed by Australian company Carnegie Wave Energy, three of these structures are anchored to the ocean floor just off Perth, where they connect to a network of cables that carry free electricity. Together, they form a wave farm. "You can link these units," says Ottaviano, the company's chief executive. "You can link them together, and you can link them to the grid." CETO 5, an 11-metre-wide platform that makes waves 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 turns 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 can produce 1mW of energy; by 2017 Carnegie wants to tether three units off Perth. Compared to wind and solar power, wave energy is denser: by area, Carnegie's wave farms can generate four times more energy than solar farms, Ottaviano says. Next, Carnegie plans to bring its innovation to WaveHub, a wave-energy testing site in Cornwall, where it wants to roll out ten CETO 6 units that will generate 10mW of power. Emma Bryce carnegiwave.com

Surf's up

These wave farms help to power an Austral naval base – and they're coming to Cornwall



The Economist



Renewable energy Looks swell

MELBOURNE

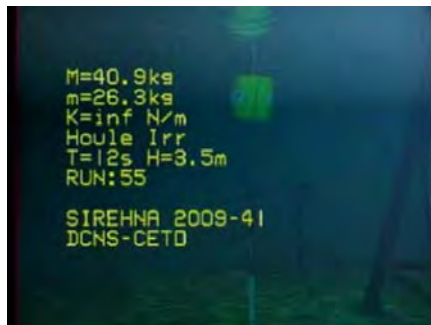
A new project off the coast of Australia may make wave power a reality

NO LAND stands between Antarctica and Australia's west coast—just a vast ocean, rippled and rocked by the Roaring Forties. For centuries these westerlies, which blow between latitudes 40° S and 60° S, powered chime sailing from Europe to

proaching wave, to avoid getting smashed. The same applies to buoys.

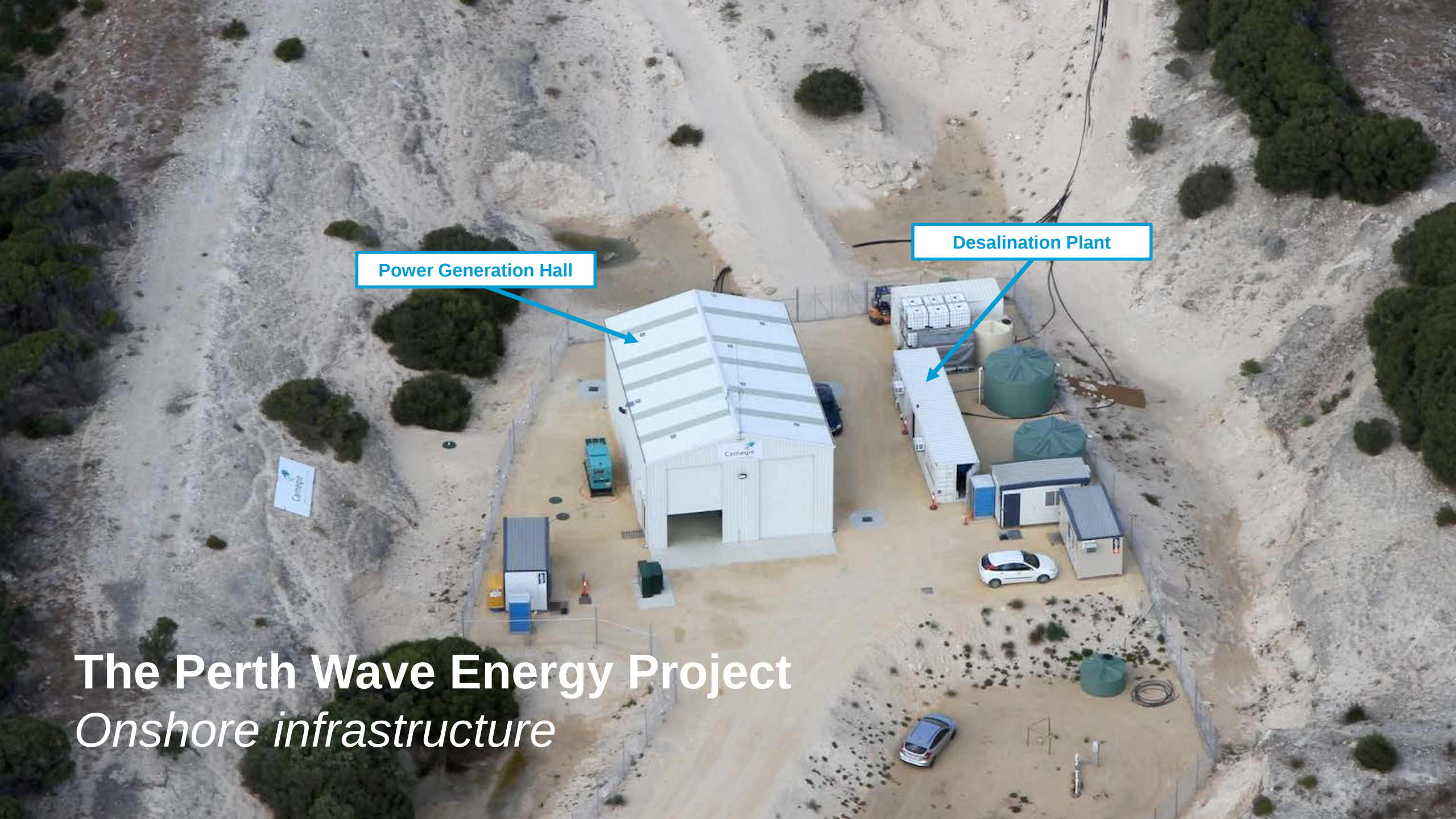
Even below the surface, though, the swell is enough to generate power. Each buoy's rising and falling drives, as the diagram shows, a pump attached to the sea-

Track Record - 10,000s hours of ocean testing & years of technology development



An aerial photograph showing three offshore wave energy converters (CETO units) in the ocean. Each unit consists of a large, circular, greenish-yellow floating platform with a small structure on top. The units are spaced out in a triangular pattern across the choppy blue water. The text "The Perth Wave Energy Project" is written in a large, bold, white sans-serif font, and "Offshore CETO units" is written below it in a smaller, italicized white sans-serif font.

The Perth Wave Energy Project
Offshore CETO units



Power Generation Hall

Desalination Plant

The Perth Wave Energy Project
Onshore infrastructure

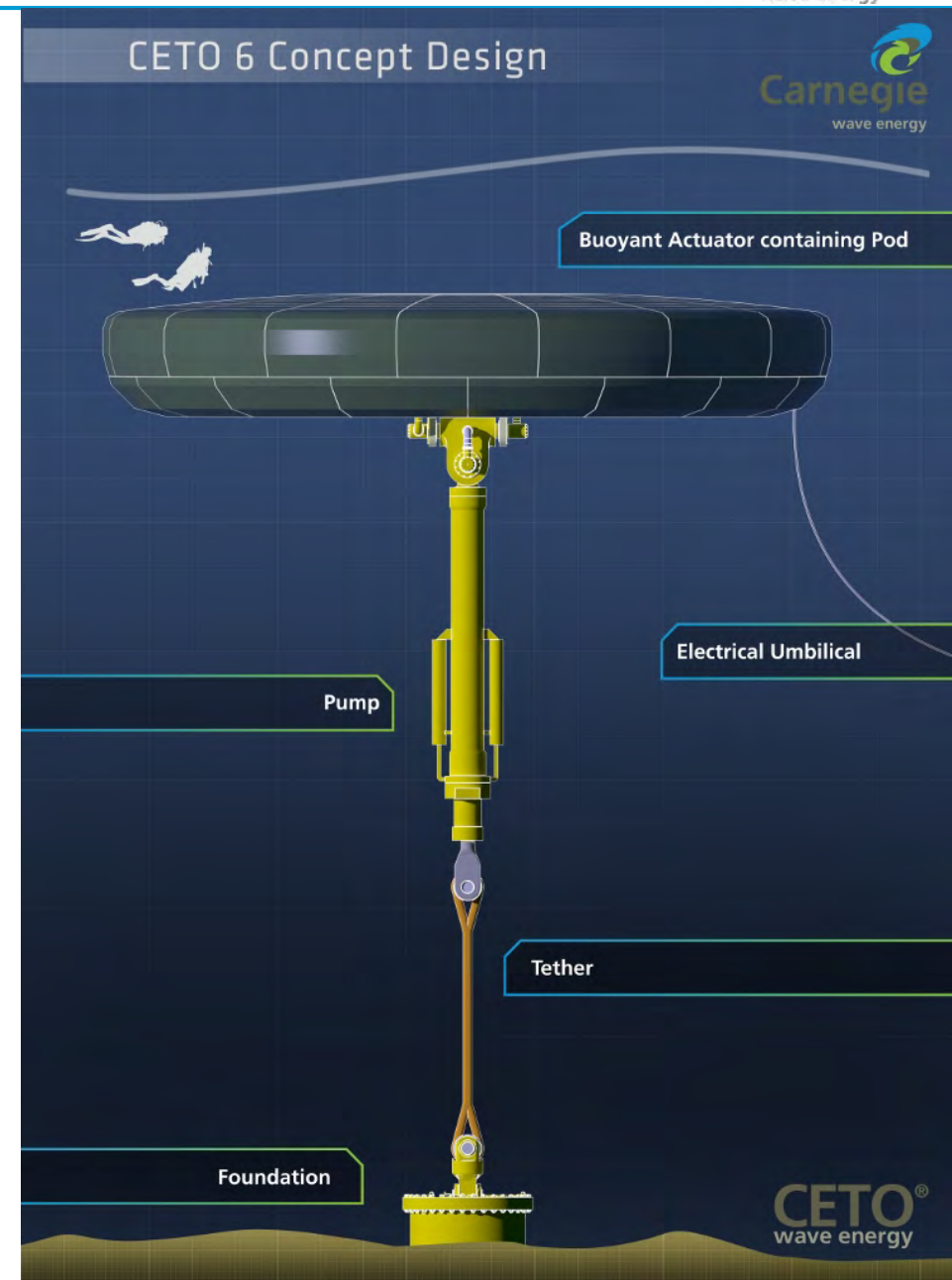
Perth Wave Energy Project

- Garden Island, Western Australia
- 3 x 240kW CETO units
- 150 ML/day wave and grid powered RO desalination plant
- \$22m in Federal and State Government funding
- Department of Defence is power and water purchaser



CETO 6 Design – commercial product platform

- Development based on:
 - CETO 5 in-ocean operational hours and data analysis
 - Internal modelling and design development
 - CETO 6 wave tank testing at FloWave, Edinburgh
 - Engagement with UK/EU and Australian supply chain
- Approximately 4 times the rated capacity of CETO 5 generation (nominal 1MW)
- Power generation inside the buoyant actuator allows more advanced control capability
- Rapid installation and retrieval (no offshore heavy lifts)
- Electrical export cable delivers power onshore avoids hydraulic transmission losses
- Tidal range compensation

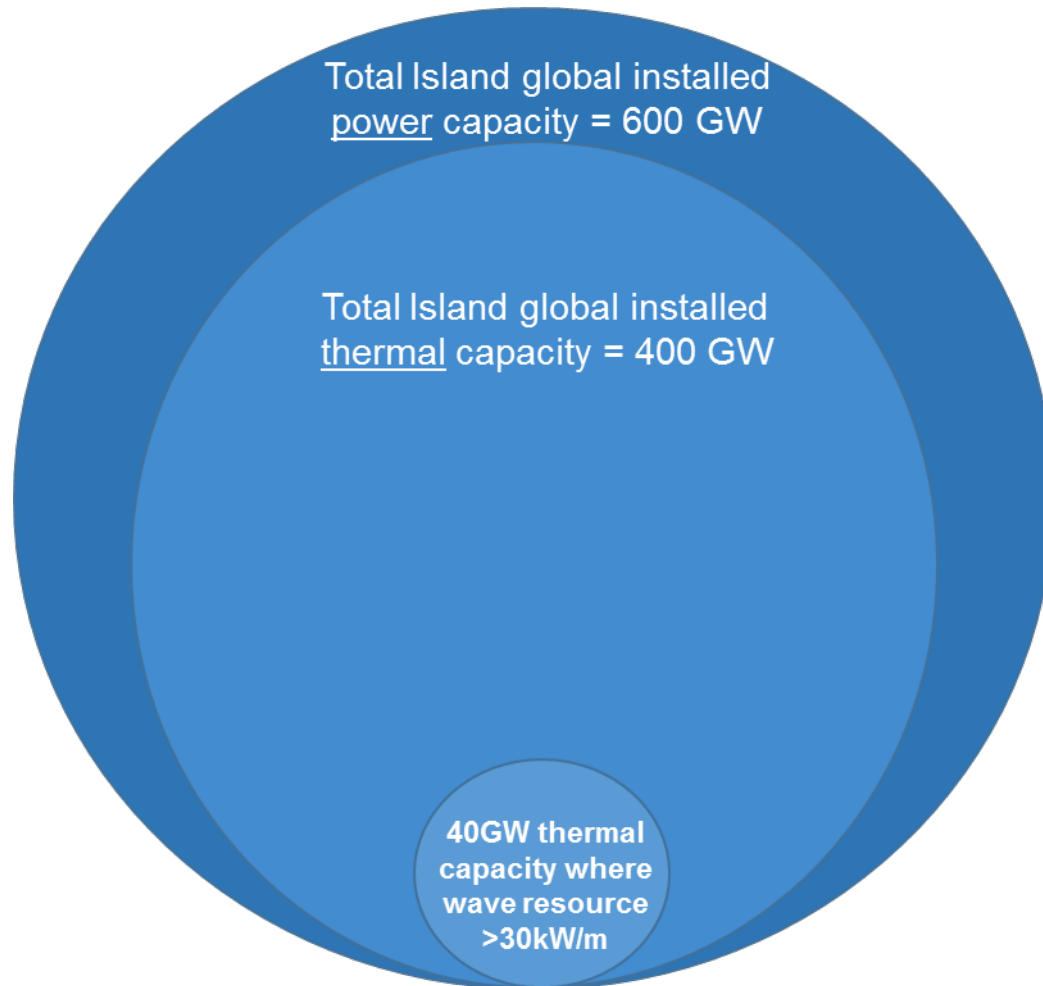


Carnegie's Island Market Focus



- Island and off-grid markets reliant on electricity generated using imported fossil fuel, which is expensive, with high emissions, non-secure, with environmental spill risk etc.
- Climate change / emissions considerations – many islands and remote communities on the front line of climate change and introducing aggressive renewable energy targets
- Increasing government and political support from EU, DFATS, regional development funds, and nation state appetite for increasing renewable energy penetration

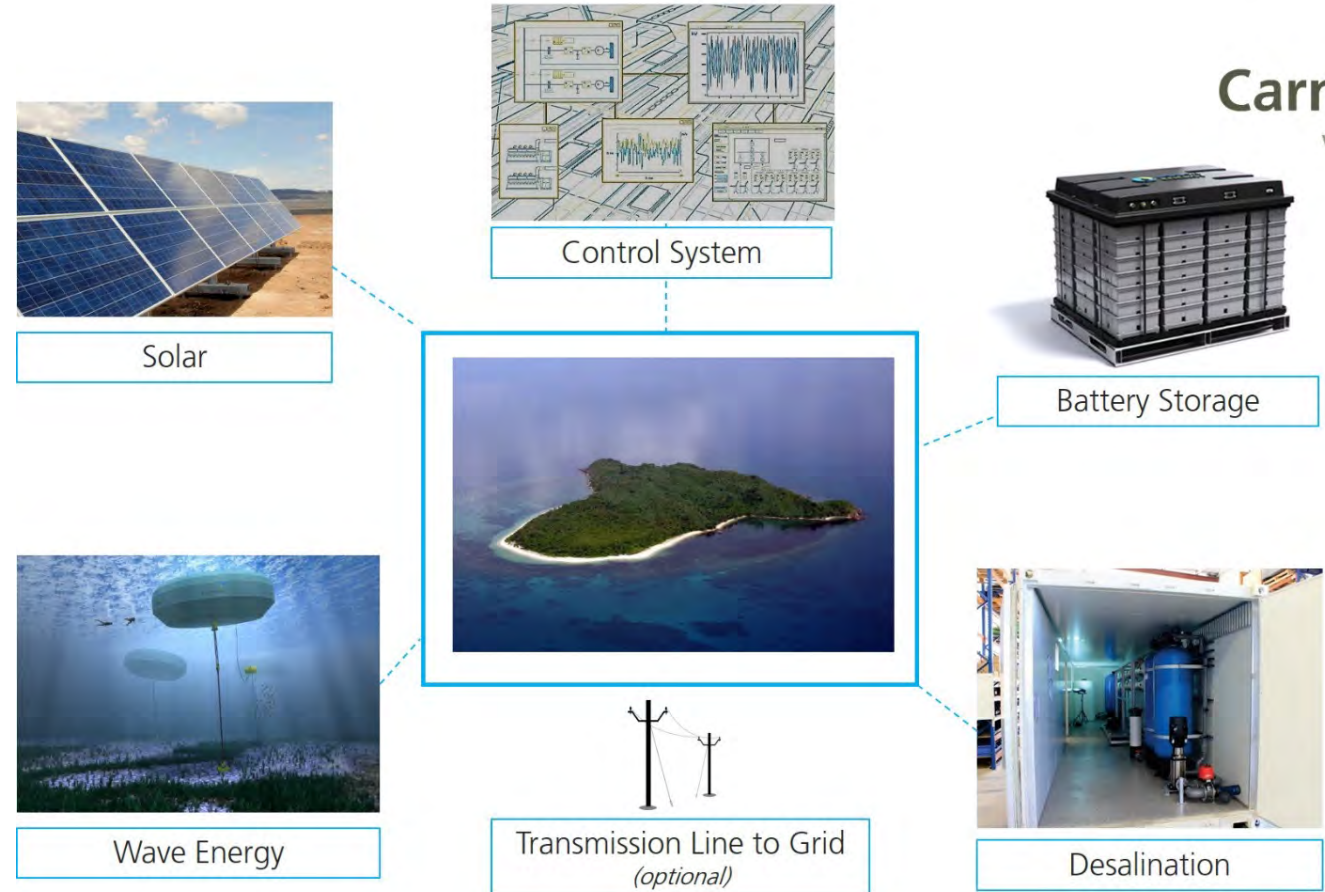
Size of the Addressable Island Market



1. At least **400,000 MW** of existing thermal installed capacity that could be replaced with renewable energy. And with energy consumption growing in developing nations growing at ~ 8% p.a.
2. About 10% of this or **40,000 MW** has a wave resource in excess of **30kW/m**.
3. These islands are not yet ready for a wave system – require an *integrated & demonstrated* RE solution.
4. Microgrid solutions can be delivered now and made “CETO compatible” so CETO can be “retrofitted” once ready into the 40,000 MW market place.
5. And an effective non-wave, microgrid solution would open up the remaining **360,000 MW** (non-wave) market not currently available to CWE
6. Many islands, e.g. Mauritius and Seychelles, have RE targets ranging from 15% to 100% and need technical and commercial solutions to now deliver on targets.

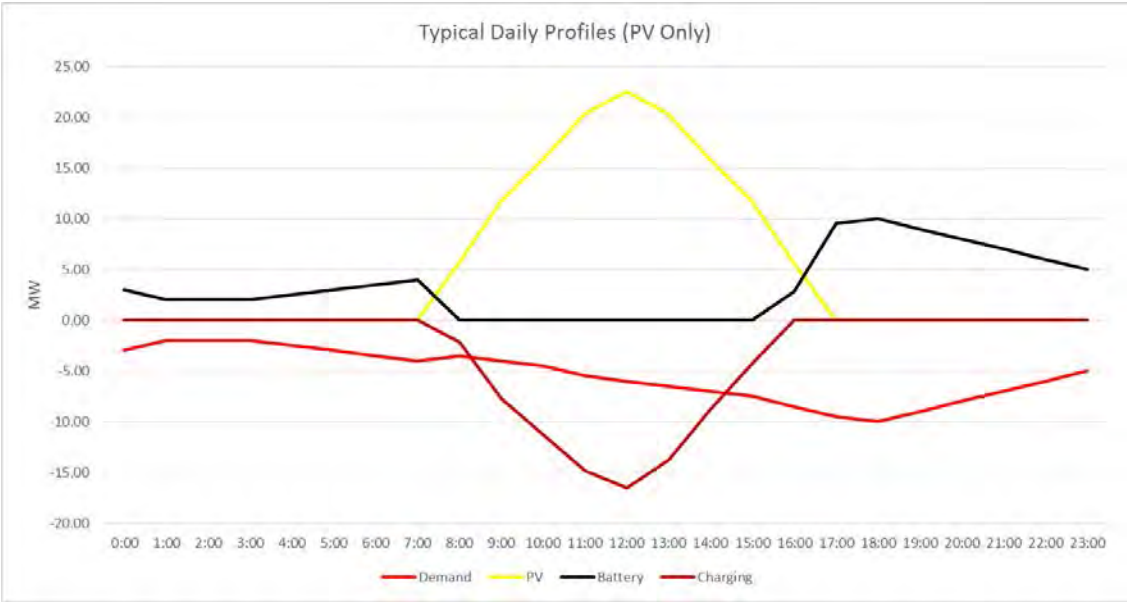
Wave-Integrated Microgrids

- Combine multiple energy generation sources with sophisticated control systems and energy storage to allow high penetration of renewable energy often into small capacity or islanded systems
- A mix of renewable generation technologies e.g. solar, wind and wave, takes advantage of different time of day or seasonal variation, reducing the amount of energy storage and diesel generation required
- Desalination increases the options to integrate higher levels of renewables by using water as a form of energy storage

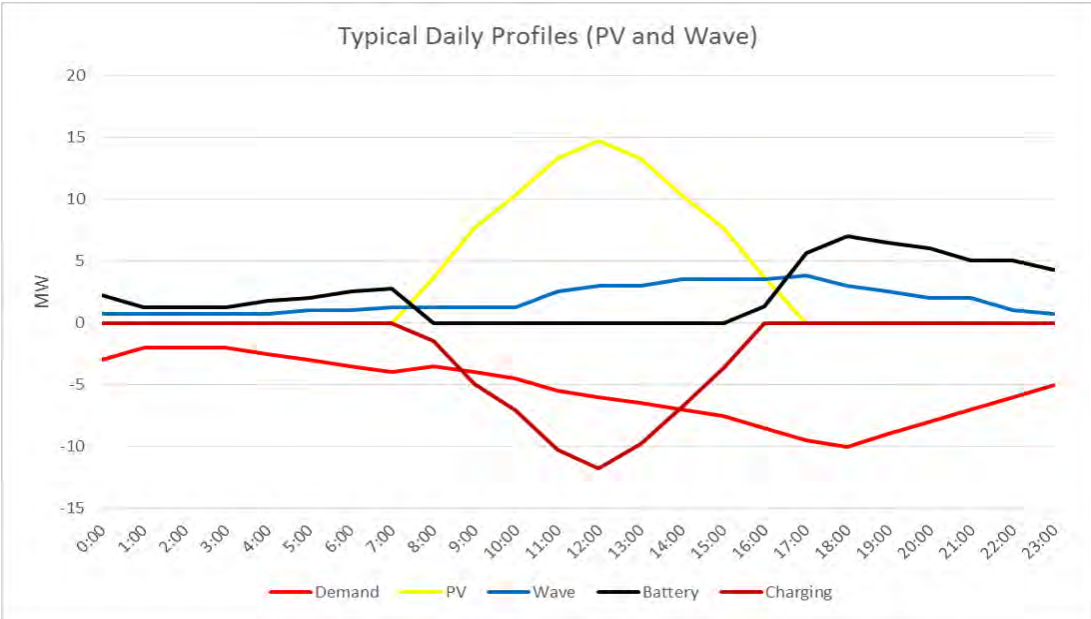


Benefit of Wave Integration

- An example of an island microgrid with and without wave power shows that the amount of solar PV & storage can each be reduced by around a third due to the consistency of the wave resource.



Peak Demand (MW)	10
Daily Demand (MWh)	130
PV Capacity (MW)	23
Wave Capacity (MW)	0
Storage Capacity (MWh)	80



Peak Demand (MW)	10
Daily Demand (MWh)	130
PV Capacity (MW)	15
Wave Capacity (MW)	5
Storage Capacity (MWh)	56

Reduction in PV & Solar
by about 1/3rd each due to
introduction in wave

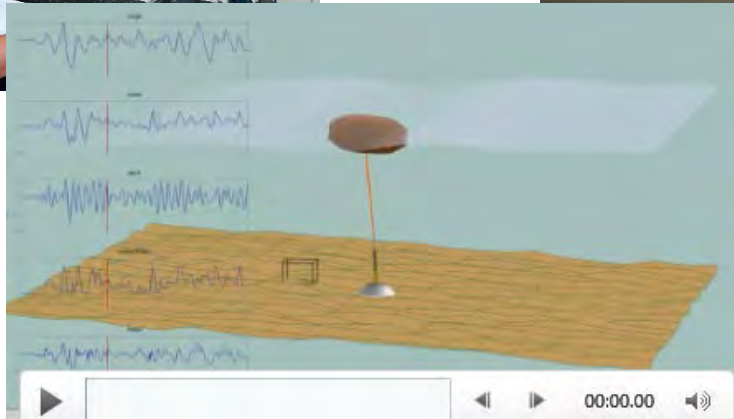
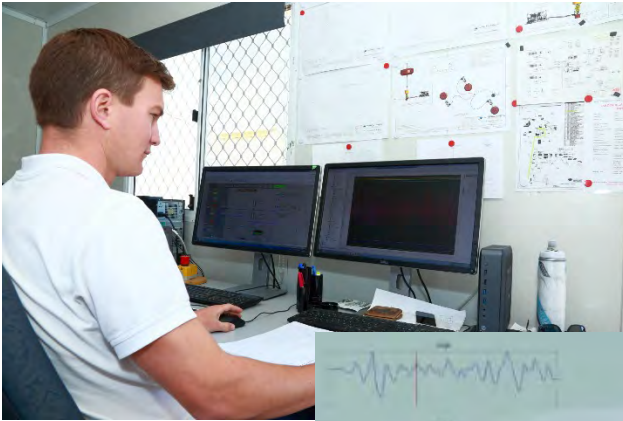
First CETO 6 Microgrid Project - Garden Island



- Garden Island Microgrid (GIMG) will be the world's first wave integrated renewable microgrid project
- CETO 6 project at Garden Island (GI) will integrate:
 - planned CETO 6 units
 - existing infrastructure - CWE desalination plant & DoD infrastructure including diesel generation
 - with a large scale solar PV farm and
 - battery storage and control systems.
- Project partner is Western Australian energy utility, Western Power, who provide grid and network expertise and support.
- Project power and water purchaser is the Australian Department of Defence
- Construction starts in 2016

The Carnegie Island Advantage

- Leverages Carnegie's existing technical capabilities in power & water project design, resource assessment, construction, operation and maintenance, complex control systems, grid connection and protection
- Leverage our existing island relationships – Mauritius, Rodrigues, Seychelles, Bermuda
- Leverages our existing industrial relationships e.g. MAK Water, Western Power



Current and Upcoming Developments

- CETO 6 development - 1MW capacity target
- Garden Island Microgrid Project - solar/battery system in 2016
- First multi-unit CETO 6 arrays @ Garden Island & in UK
- European and Island project pipeline development
- Continued R&D activities in Australia & UK

