

NEW ZEALAND A Marine Energy Perspective

2 February 2009

**Dr. John Huckerby
Executive Officer**





New Zealand Energy Strategy

Strategy Development

- Enacted in October 2007; favours renewables over fossil fuels, except where necessary
- Established target of 90% renewables by 2025
- New Government repealed thermal moratorium; reviewing ETS

Marine Energy Initiatives

1. Marine Energy Deployment Fund (\$8 million over 4 years)
2. Marine energy atlas by end-2009
3. Marine energy converter standards by end-2010
4. Ongoing funding for AWATEA



Capital Grants

Marine Energy Deployment Fund

Government funding for prototype deployments

- NZ\$ 8 mm (€ 4.56 million) over 4 years
- Not for 'desktop studies', R & D or consent applications
- Must connect to a 'useful load'; funds only up to 40% of costs
- First award NZ\$ 1.85 million to Crest Energy on 29 May 2008
- Second round awards to be announced @ AWATEA conference – 28 May 2009

- UK:** MRDF scheme - GBP 42 million in Feb 2006
2 applications; no awards; criteria still too harsh
- US:** US\$10 million offered in 2008; \$3 million in 2009
- Canada:** No Federal or Provincial grant support
- Australia:** No specific capital grants for ME deployments



AWATEA

Industry Association

- **Membership**

- Steady at 50 members
- Utilities, R & D organizations, large & small consultancies, non-profit organizations, individual members, overseas members

- **Strategic Activities in 2008**

- Contributed to international activities – IEA:OES and IEC
- Submission on proposed Marine Mammals Sanctuaries
- Submission on NPS for Renewable Electricity Generation
- Workshop on ME Resource Consenting (4 Dec 2008)

- **Strategic Activities in 2009**

- Will be witness at Crest Energy consent hearings
- Public perception is supportive of marine energy developments

AWATEA Activities

- **2nd Annual Conference**

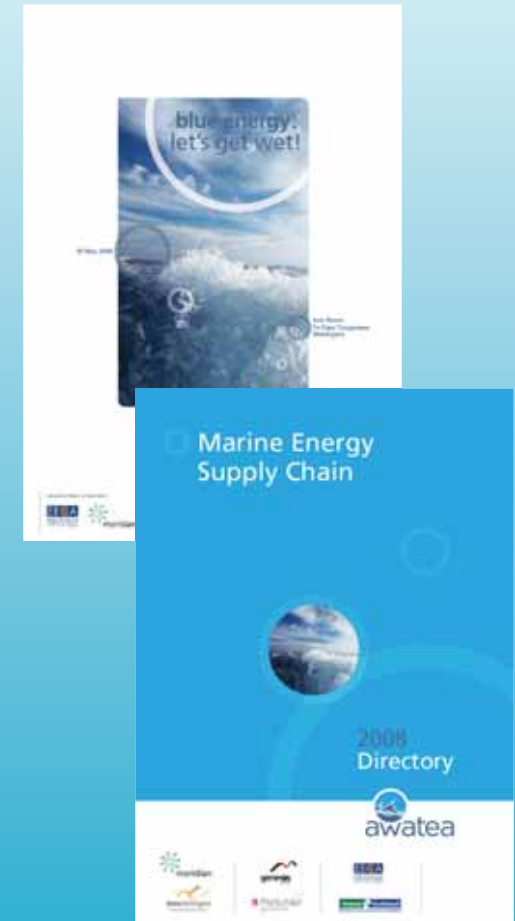
- 115 attendees; 14 presentations, 2 overseas
- Hon. David Parker announced MEDF award and 2nd round

- **Supply Chain Directory**

- Supply chain directory distributed at conference
- ~100 copies distributed internationally (UK, Germany, US and Australia)

- **Submissions & consultation**

- Submission on proposed marine mammal sanctuaries
- Submission on proposed NPS for renewables
- Consultation on proposed NPS and EEZ legislation



Executive Officer Activities

- **Supply Chain Study**

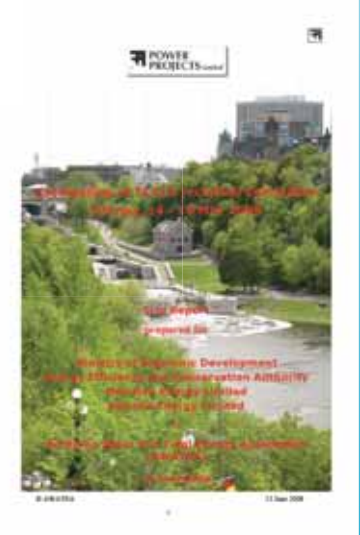
- SC study completed
- Gap Analysis work still in progress

- **Membership of IEA:OES and TC114**

- Attended 2 meetings; elected Vice-Chair
- Attended inaugural TC114 meeting

- **Articles & presentations**

- 11 press briefings in Oct/Nov 2007
- Articles for AFR, NBR, Independent, Press et al.
- IEA:OES annual report, newsletter & presentations
- Presentation at Global Marine Renewables Conference (New York), Carbon-Sustainable Southland, Australia (Victorian and Federal Gov'ts)



IEA: Ocean Energy Systems

● **NZ Membership**

- AWATEA put together joint industry/government funding
- Minister of Energy approved NZ membership and NZ joined on 11 April 2008
- AWATEA nominated representative
- EO elected as Chairman for 2009 - 2010

● **Meetings**

- New York (14 - 17 April 2008), including GMR Conference presentation
- Brest, France (14-15 October 2008), including ICOE conference presentation
- Next meeting in Bilbao, Spain (30 – 31 March 2009)

● **Annex III: Grid Connection**

- Work programme to establish standards/protocols for MECs

● **Outputs**

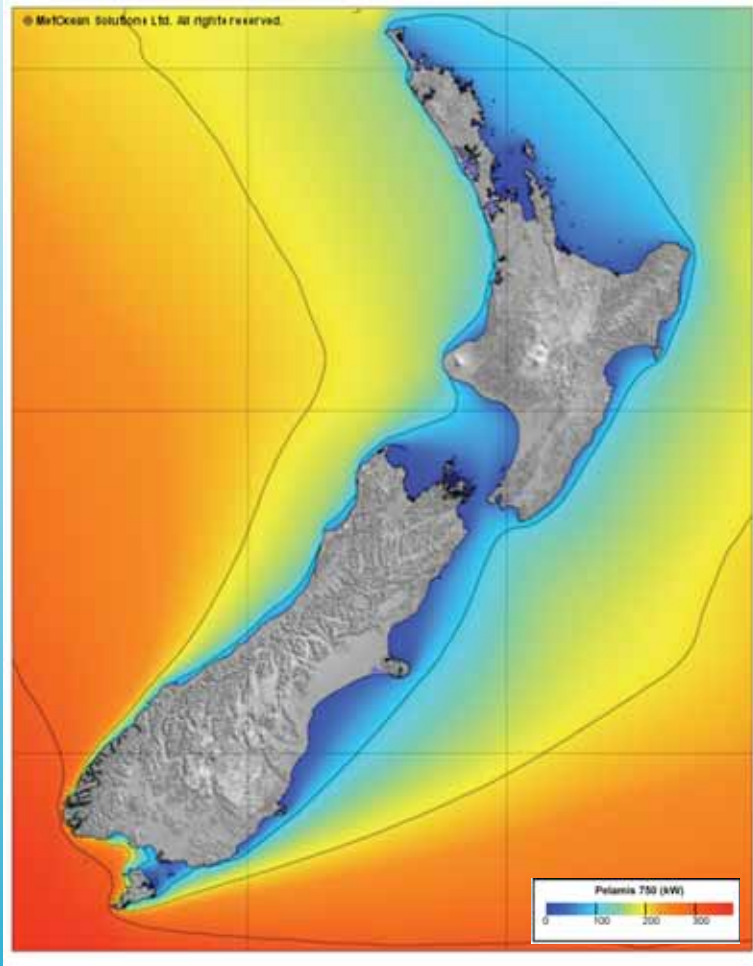
- Presentations and contributions to IEA:OES documents
- Trip reports on members' page on AWATEA website
- Terms of Reference for Secretariat and Annex I Operating Agent



International Electrotechnical Commission TC114

- **IEC**
 - International standards setting agency for electrical devices
 - Has established standards for wind turbines
- **Technical Committee 114**
 - Proposed in August 2007 to establish standards for marine energy converters
 - Electrical, environmental and safety standards
- **Standards NZ & AWATEA**
 - Standards NZ is NZ representative to IEC
 - AWATEA is NZ representative to TC114
- **Products**
 - Trip report to inaugural meeting in Ottawa (14-15 May 2008)
 - NZ leading work stream on resource characterization & assessment
 - Next meeting in Korea (6 – 8 May 2009)

New Resources Mapping



Mean Power Output from 750 kW Pelamis

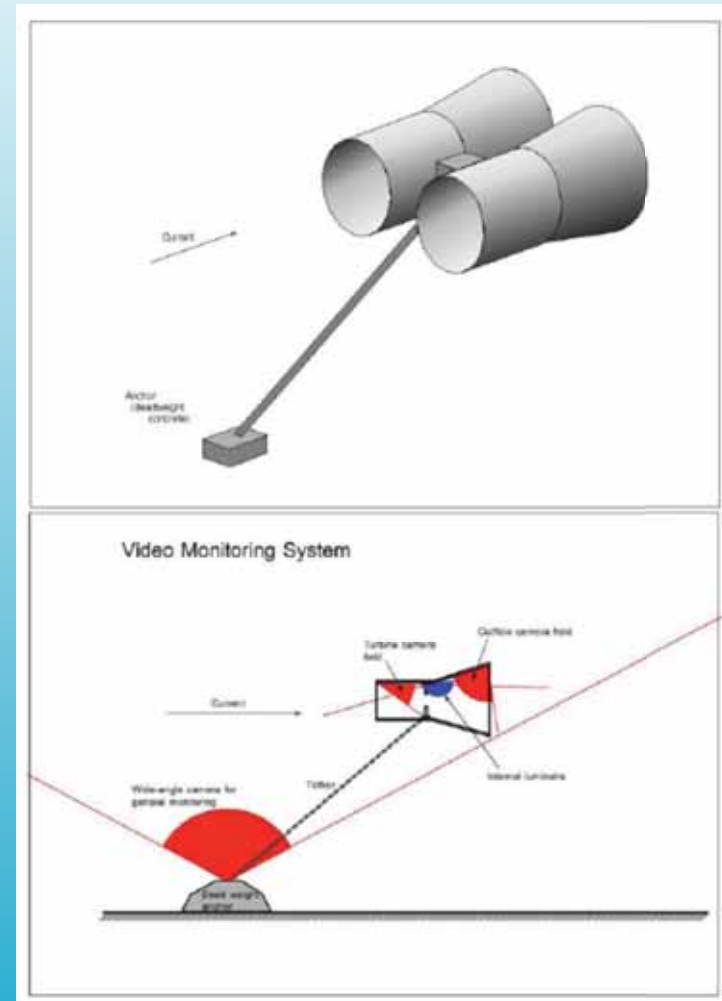


Depth Averaged Tidal Current Speeds for Mean Spring Flows (m/sec)



Neptune Power

- **Neptune Power**
 - Consent application submitted in August 2007 for a single prototype device trial
 - First non-notified consent for single prototype granted on 10 April 2008 for 35 years
 - Device is unnamed UK-developed mid-water tethered and shrouded twin-turbine tidal device
 - Source of finance for project unknown
 - Neptune has proposal to develop 900 MW commercial project (at an adjacent site)



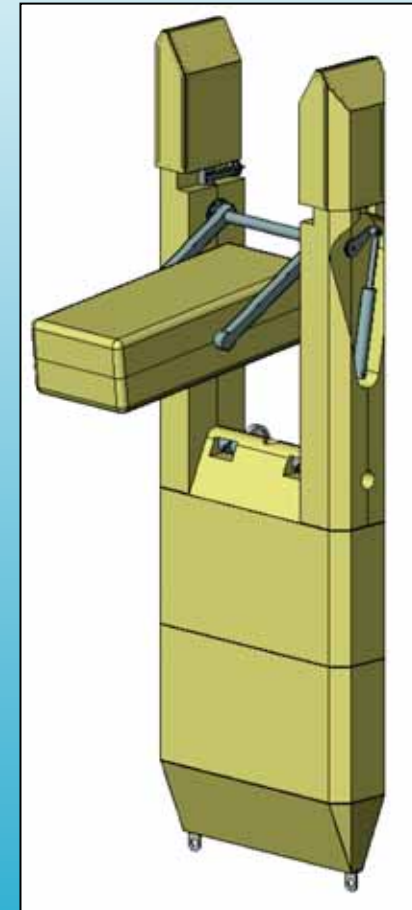
Crest Energy Kaipara Limited

- **Crest Energy**
 - Resource consent applications submitted for Kaipara Harbour tidal project, using OpenHydro device
 - Project was granted NZ\$ 1.85 million from MEDF for deployment of first 3 turbines
 - 11 consents recommended on 22 August 2008, with recommendation for 2 further consents to be granted
 - Incremental development to 200 MW with 'adaptive management' of environmental effects
 - Consent hearings set for June 2009



Wave Energy Technology - NZ

- **Wave Energy Technology - New Zealand**
 - Government-funded consortium R & D project to develop a wave device
 - First deployment of ¼-scale experimental device (2 kW) in December 2006
 - Deployed offshore since Dec 2006
 - Recent deployment in Wellington Harbour for mooring trials
 - Second 2 kW device being commissioned now
 - 100 kW research ocean-scale (ROS) device under design and development
 - Project has received 6 more years' funding





New Zealand-based Projects

- **Energy Pacifica**
 - Resource consent applications for Tory Channel in preparation
 - Energy Pacifica is a UK/NZ company
- **Power Generation Projects**
 - Proposal to import Pelamis and use it at Taharoa
 - RFI to potential fabricators in New Zealand
- **Tidal Power Seamills**
 - Large seabed-mounted vertical axis tidal turbine
 - Small-scale prototype deployed in 2009?
- **25 projects in total**
 - 19 are device/deployment projects (including 6 listed above)



Energy Pacifica's site in Tory Channel



Future Plans

- **Activities**

- Presentation to NPS Board of Inquiry
- Witness to Crest Energy consent hearings
- 3rd Annual AWATEA conference (28 May 2009)
- AGM in August & Workshop in November/December

- **IEA:OES & TC114**

- Attendance at next IEA:OES meeting in Bilbao (30 – 31 March)
- Attendance at next IEC meeting in Korea (6 – 8 May)
- Working on potential work programme for IEC on wave and tidal resource characterization and assessment
- 4th Annual AWATEA conference (March 2010) will be associated with IEA:OES meeting in New Zealand

- **Presentations**

- Presentation at Electrical Engineers Association conference in June
- Presentation at EWTEC 2009 in September



Thanks to Sponsors

- **Conference Sponsorship**



- **Supply Chain Study Sponsorship**



- **IEA-OES and TC114 Membership and Travel Costs**

- EECA, Meridian Energy, Genesis Energy
- Ministry of Economic Development & Electricity Commission



AWATEA
2nd Annual General
Meeting

4 September 2008

Dr. John Huckerby
Executive Officer

