awatea

# blue energy

New Zealand's Place in the World

**Monday & Tuesday**
**19–20 April 2010**
**08:30–18:30**
Oceania Room,
Te Papa Tongarewa,
Wellington

# State of Marine Energy in New Zealand

## 19 April 2010

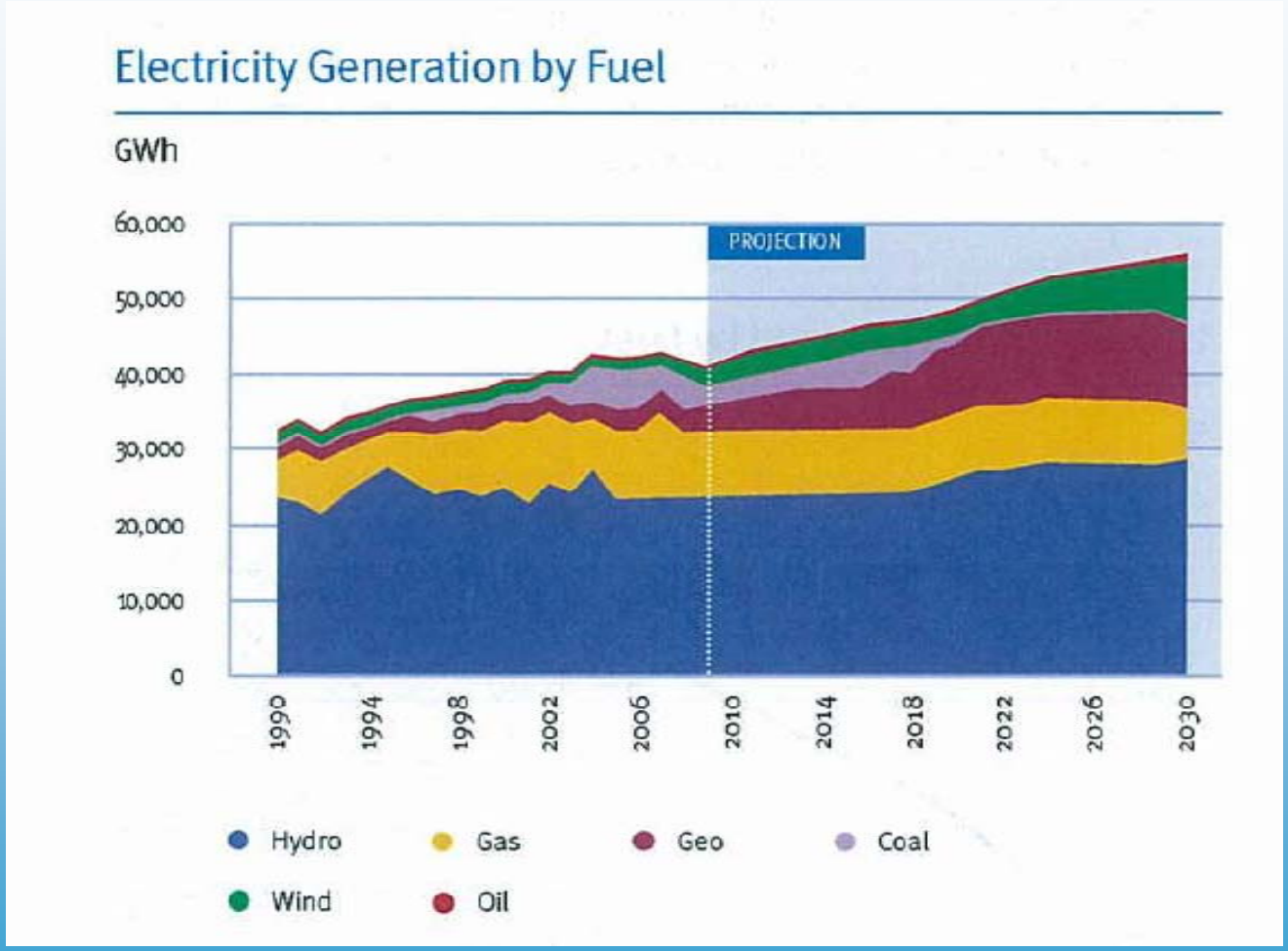
**Nick Eldred**

**Chairman, AWATEA**

# New Zealand Strategic Environment

# The Issue and Opportunity

## Where is marine energy?




Ministry of Economic Development
2009 Outlook

- Electricity demand expected to grow at 1.5% per annum compared to 1.8% historical growth
- Growth generally linked to GDP
- Reduction in rate reflects recession in the short term and higher prices/energy efficiency in long term
- Note assumed coal phase out and role of gas

# Where does Marine Energy Fit?

- MED assumption is that average cost (long run marginal cost (LRMC)) of electricity will rise with time as “low hanging fruit” are developed (including high temp. easy accss geothermal, higher speed wind sites and some hydro)
- Meanwhile, cost of developing technologies will come down including low temperature geothermal, low speed wind/offshore wind, photo voltaic and marine energy
- In simple terms as LRMC approaches unit cost of technology it will be increasingly developed and become part of the energy mix – wind energy is the most recent example of this
- Marine energy challenge: New Zealand has a wealth of renewable energy opportunities
- Part of AWATEA’s role: to promote the industry; to make sure marine is on the radar; and to foster early deployment
- Early deployment is likely to be in remote sites with high current electricity prices – Chatham Islands and other remote communities

# New Zealand Energy Strategy

## Strategy Development

- NZ Energy Strategy enacted in October 2007
- Prior Govt. scenarios forecast uptake of marine energy (up to 200 MW of wave power by 2030)
- Current Government retained NZES – still under review – revised version expected this year
- Renewable energy target likely to remain– 90% electricity by 2025
- Marine Energy Deployment Fund in its 3rd year (2008 to 2011)

# NZ Marine Energy Deployment Fund Update

**Government funding for prototype deployments**

- NZ$ 8 mm (€ 4.56 million) over 4 years
- 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, subject to resource consent and external funding
- Second award NZ$ 0.76 million to Power Projects & WET-NZ
- Third round in progress; closes 23 November 2009 – result anticipated shortly

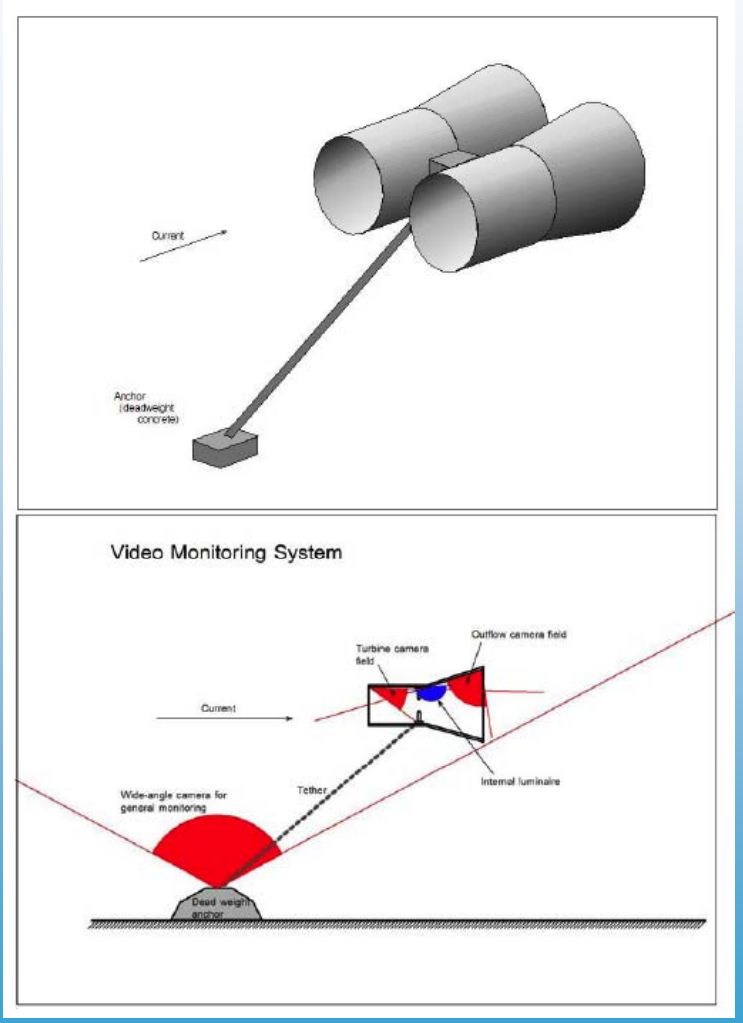
**Looking ahead……**

- Part of AWATEA’s role is to work with Govt. agencies towards strategic route map for marine energy in NZ, including position of further MEDF funding – critical to maintain momentum

# New Zealand Projects

# 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
  - Neptune has proposal to develop 900 MW commercial project (at an adjacent site)
  - Will design and build their own; concepts in progress
  - Deployment/retrieval system designed
  - Publications available to potential investors subject to NDA

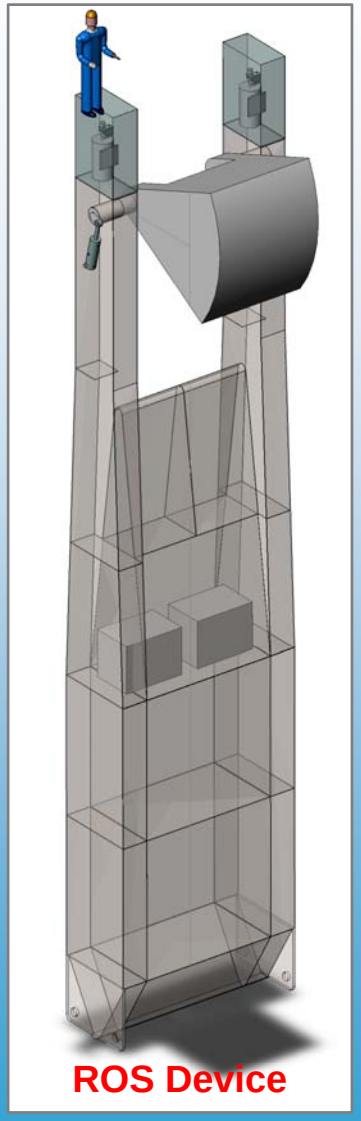


# Crest Energy

- **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
  - Environment Court hearings finished on 18 June 2009
  - Parties working to agree on a monitoring programme

# Wave Energy Technology - NZ

- **Wave Energy Technology - New Zealand**
  - Government-fund consortium R & D project to develop a wave energy converter from July 2004
  - Deployed in Wellington Harbour for mooring trials in June 2008
  - First device disassembled for forensic examination
  - Project received 6 more years' funding in Oct 2008
  - Project also awarded 2nd Round MEDF funds
  - Second 2 kW research device deployed in Christchurch in November 2009
  - 20 - 100 kW research ocean-scale (ROS) device under design and development
  - Resource consent application in process



ROS Device

# Energy Pacifica

- **Energy Pacifica**
  - Tidal stream project located in Tory Channel
  - Consent application in preparartion
  - Consultation ongoing with stakeholders
  - Resource Consent application anticipated soon


Energy Pacifica's proposed site in Tory Channel

# Other New Zealand-based Projects

- **Tidal Power Seamills**
  - Large seabed-mounted vertical axis tidal turbine
  - Small-scale prototype under construction
- **Tidal Energy NZ**
  - Small-scale prototype under construction
- **25 projects in total**
  - 19 are device/deployment projects (including 6 listed above) – some projects have become inactive