



U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy

# IEA-OES Annex IV

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Annex IV Experts' Workshop

September 27<sup>th</sup> – 28<sup>th</sup> 2010

Dublin Ireland



**Pacific Northwest**  
NATIONAL LABORATORY

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Slide 1

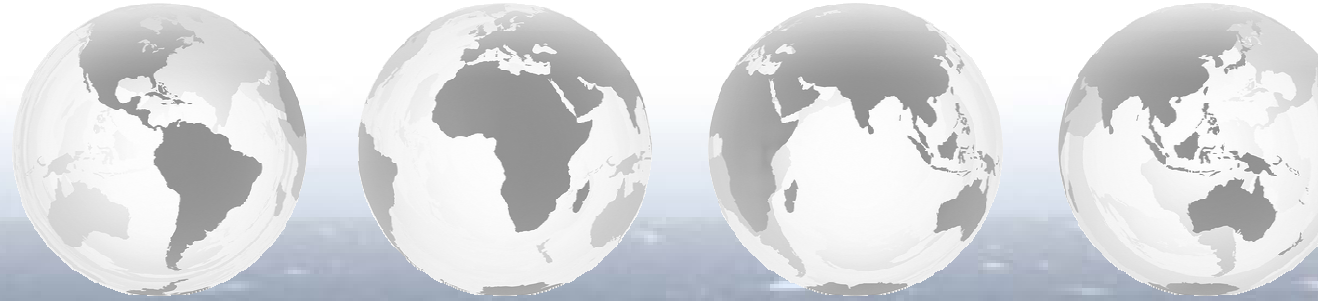
<http://www.eere.energy.gov/>



## Annex IV process

At the request of U.S. Dept of Energy:

- PNNL developing searchable database
- Small adjustments to original Annex IV scope of work:
  - PNNL develop database
  - Experts' workshop at start of process
- Hire contractors to assist with data collection and analysis, workshops
- Wave Energy Center and University of Plymouth (WC/UP) join Annex IV team
- Irish Marine Institute organizing experts' workshop, in conjunction with fall IEA-OES meeting



## Annex IV process

- PNNL develops Annex IV database, works with WC/UP on modifications
- WC/UP gather environmental effects data, analogues, carry out analyses
- PNNL adds data to database, creates data products for analysis
- Possibly second experts' workshop in 2012 to review results
  
- Member nations fund Annex with annual fees



## Annex IV Tasks

### Wave Center/University of Plymouth

1. Data gathering
2. Adding data to data base
3. Analysis and data product development



**WaveEnergy**  
Centre

**Marine Institute**  
UNIVERSITY OF PLYMOUTH





## Task 1 – Gather Data to Build Master List of Environmental Impacts, Monitoring Methods & Mitigation Strategies

Wave Center/University of Plymouth will:

- **Review literature** for information on environmental effects, monitoring methods, and mitigation strategies.
- **Assemble master list** of potential environmental effects, related monitoring methods, and mitigation strategies.
- **Summarize gaps** to evaluate environmental effects, monitoring methods, and mitigation strategies. Identify most important gaps.
- **Identify analogues**, including, wind, aquaculture, ocean thermal energy conversion, in-river hydrokinetic energy, and electrical or telecommunication sub-sea cables.



## Task 2 - Obtain and Enter Data into the Database

- **Assist in acquiring case study data.** Member nations provide initial cases.
- **Organize case study data.** Make recommendations for alterations or additions to PNNL database.
- **Gather analogue data** identified to fill gaps in task 1.
- **Enter the case study and analogue data** and associated materials into the database.
- PNNL works with WC/UP to tailor database as needed.
- PNNL will be responsible for QA/QC of database



## Task 3 - Analysis and Report Development

- **Analyze synthesis data**, case study data, and analogue information to characterize environmental effects
- Prepare a **preliminary report** of the analyses, including BMPs for monitoring and mitigation
- **Incorporate comments** into draft report for distribution to member nations
- **Incorporate written review** into final report.
  
- PNNL will assist WC/UP with data retrieval from database for analysis
- PNNL will arrange review of the preliminary and draft reports



## Experts' Workshop

Timed to coincide with 2010 IEA-OES fall meeting

### PURPOSE

- Bring together experts to characterize environmental effects, provide input to case studies and process
- Member nations identify experts for workshop.
- Second workshop may be held in year 3, to review draft report







## In a little more detail: Purpose of the Experts' Workshop

- **Refine and prioritise** the list of environmental issues of concern
- **Identify MHK projects** or other research where specific environmental impacts of concern are being monitored and data
- **Identify gaps** where information on environmental impacts of concern is lacking or will be difficult to collect in the near future
- **Identify analogous sources of data** from other industries that operate in the ocean environment
- **Identify case studies** for further analysis where extensive monitoring or mitigation of impacts was successful
- **Review the database** which will house all information collected on environmental monitoring and impacts with suggestions for improvements
- **Propose methods for data collection** and submission to database and identify responsible parties for data collection



# Workshop Agenda – Monday September 27<sup>th</sup>

8-9am – Registration

9am - Welcome - Yvonne Shields, Irish Marine Institute

Background on Annex IV - Hoyt Battey, DOE

9:30am - Purpose of the Workshop – Andrea Copping, PNNL

10:00am - Environmental Effects of MHK Devices

Teresa Simas, Andre Moura, Wave Energy Center & Daniel Conley, Univ Plymouth

11:00am – BREAK

11:30am – Presentation

The Reality of Environmental Compliance – a Tidal Energy Perspective – Sue Barr

12:30pm – LUNCH

1:30pm - Knowledge Management System Database – Scott Butner, PNNL

2:45 – BREAK

3:15pm - Monitoring and Mitigation Strategies – Breakout Session #1

4:45pm – Presentation

Wave Energy Development: Aquamarine – Marc Murray

5:45pm - ADJOURN FOR THE DAY



# Workshop Agenda – Tuesday September 28<sup>th</sup>

9am - Case Study Projects - Breakout Session #2

10:30am – BREAK

11am – Presentation

The Environmental Work within the Vattenfall Ocean Energy Programme – Kristin Anderson

12:00pm - Data Collection – Breakout Session #3

*12:30pm* – LUNCH

*1:30pm* - Data Collection – Breakout Session #3 (cont'd)

2:30pm – Presentation

SeaGen: An Exercise in Adaptive Management – David Ainsworth

3:30pm – BREAK

4:00pm - Next Steps in Annex IV

5:00pm - ADJOURN



## Some housekeeping

### BREAKOUT GROUPS:

#1 Monday 3:15pm: Monitoring and Mitigation

#2 Tuesday 9-10:30am: Case Studies

#3 Tuesday 12-12:30 and 1:30 to 2:30: Data Collection



- Meals and breaks
- Amenities
- Dinner tonight

