Hydrokinetic Overview

Michael Murphy
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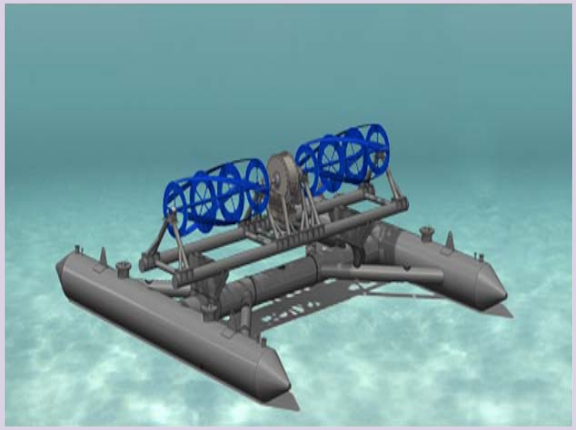
NHA Hydropower Finance Summit
June 3, 2013

New Technologies - Hydrokinetic

- Tidal
- Wave
- Instream



Hydrokinetic

Excitement on Many Fronts

- Activity…United Kingdom, Ireland, United States, Australia, Canada, Portugal, Spain, China, and Others
- Island States
- Demonstration Projects In U.S., UK, Canada and others
- Technologies Continue to be Refined

Movement Towards Commercialization Globally

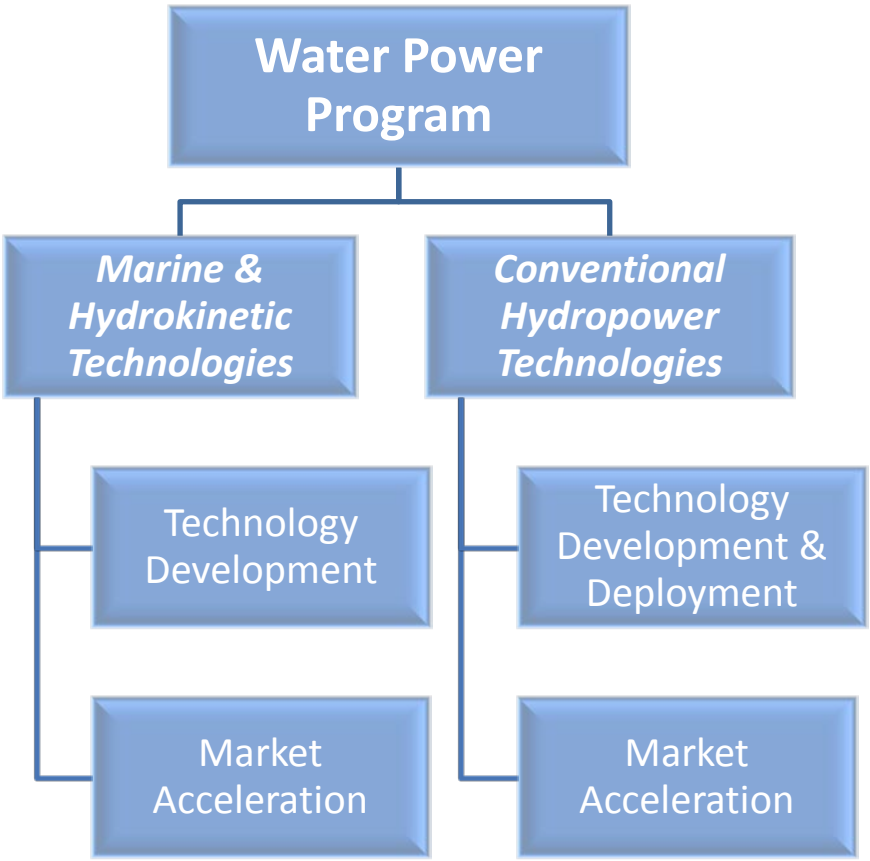
The DOE Water Power Program

Water Team Mission

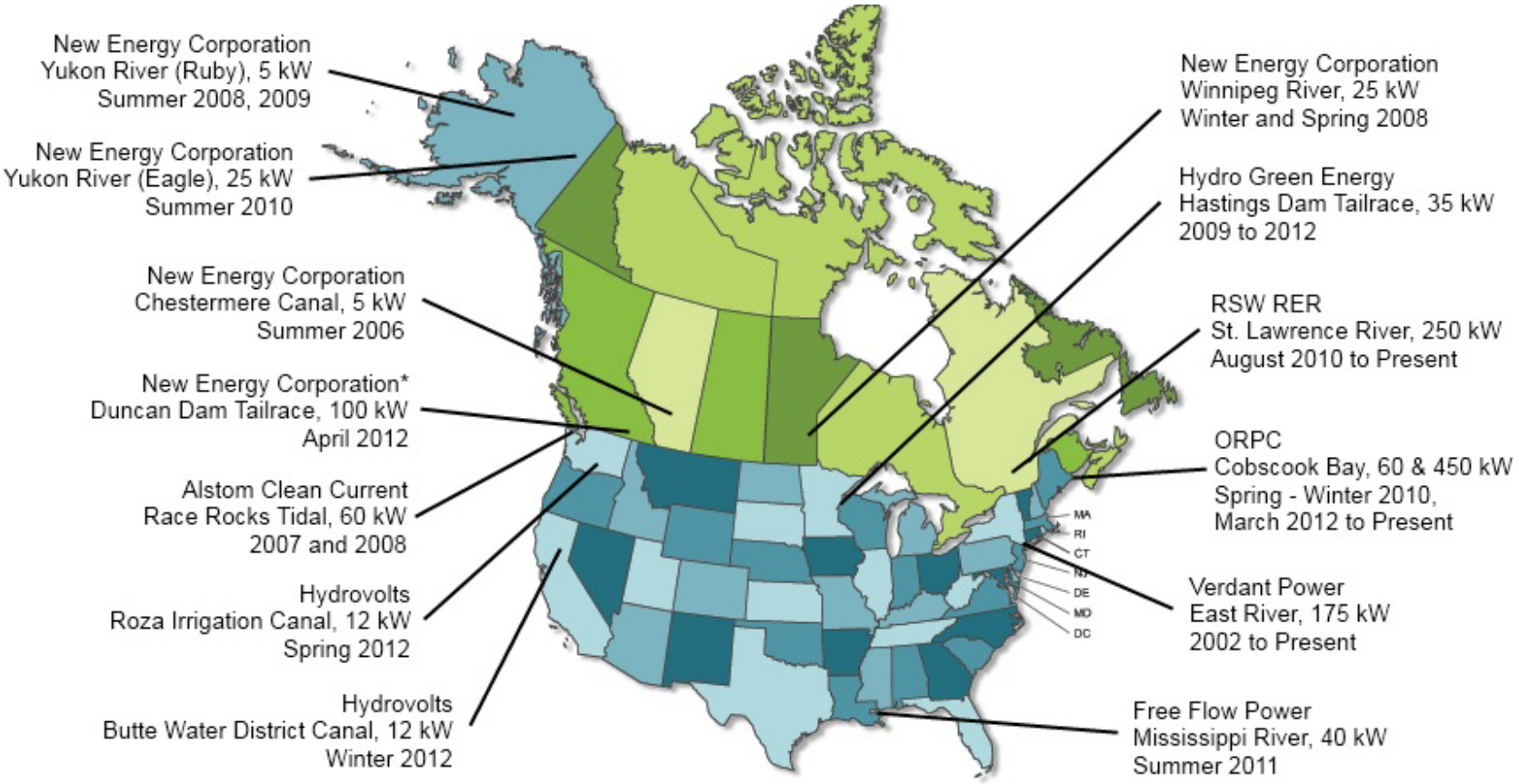
Develop and deploy novel technologies, improved operational procedures, and rigorous analysis to:

1) assess the potential extractable energy from domestic rivers, estuaries and coastal waters; and

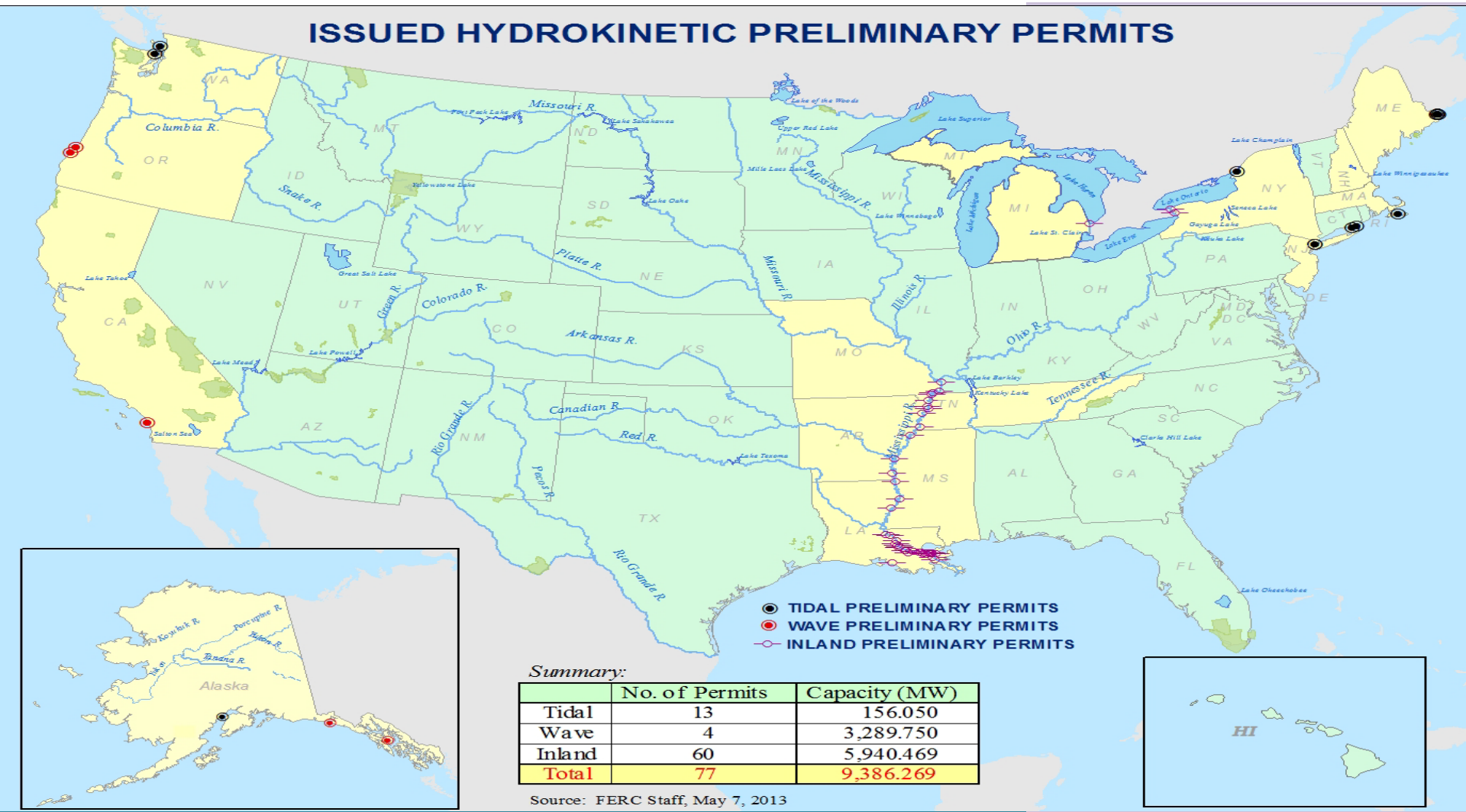
2) support industry to harness this renewable, emissions-free resource through environmentally sustainable and cost-effective electric generation.



In-Stream Hydrokinetic Deployments



Hydrokinetic Preliminary Permits



Summary:

	No. of Permits	Capacity (MW)
Tidal	13	156.050
Wave	4	3,289.750
Inland	60	5,940.469
Total	77	9,386.269

Source: FERC Staff, May 7, 2013

Marine and Instream Hydrokinetic Projects

Marine & Hydrokinetic Projects

(as of May 7, 2013)

Issued preliminary permits: 77 (9,386 MW)
- 13 tidal, 4 wave, 60 inland

Pending preliminary permits: 4 (242 MW)
- 0 tidal, 1 wave, 3 inland

Projects in pre-filing for license: 60 (6,026 MW)
- P-12743 Douglas County (OR) Wave Commercial 3.0 MW
- P-12749 Coos Bay (OR) Wave Commercial 100 MW
- P-12665 New York East River (NY) Tidal Pilot 0.2 MW
- P-12829 et al. Mississippi R. Projects In-River Commercial (56) 5,918 MW
- P-13015 Muskeget Channel (MA) Tidal Pilot 4.9 MW

Projects in post-filing for license: 1 (1.0 MW)
- P-12690 Admiralty Inlet (WA) Tidal Pilot 1.0 MW

License issued: P-12713 Reedsport OPT Wave Park (OR) Wave Commercial 1.5 MW

Licenses issued for pilot projects: 3 (1.5 MW)
- P-12611 Roosevelt Island (NY) Tidal Pilot 1.05 MW
- P-12711 Cobscook Bay (ME) Tidal Pilot 0.3 MW
- P-13305 Whitestone Poncelet (AK) In-River Pilot 0.1 MW

FERC Process Overview

- Preliminary permit – Gives priority to application while studying project (3 yrs)
- Device testing – To test technology and gain site specific experience and data without grid connection (short term)
- Pilot project license - To test technology and gain site specific experience and data with grid connection (approx 5 years or greater)
- Commercial license – To construct and operate a project (up to 50 years)

ORPC Tide Gen Turbine

Regulatory Overview

- Under the Federal Power Act, FERC has exclusive authority to license non-federal water power projects on navigable waterways and federal lands.
- FERC issues licenses for up to 50 years.
- It's not just FERC – Process Includes other Federal, State stakeholders
- FERC has made some changes to reflect changing times….

FERC's Licensing Process

- Traditional Licensing Process (TLP)
  - Linear FERC Licensing and NEPA Environmental Review Process
  - FERC Involvement Limited to Post Application Filing
- Alternative Licensing Process (ALP)
  - Parallel Licensing and Environmental Review Process
  - Comprehensive Collaborative Process
- Integrated Licensing Process (ILP)
  - Default Licensing Process
  - Well Defined Timeframes
  - Parallel Licensing and Environmental Review Process
  - FERC Participation Throughout Process
- Pilot License - Hydrokinetics