A REGULATORY PERSPECTIVE ON THE ANNEX IV DATABASE

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Federal Energy Regulatory Commission

DOE Marine & Hydrokinetic Webinar Series
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FERC Functions and Funding

Topics Addressed by FERC:

- private, municipal, and state hydroelectric projects
- siting and abandonment of interstate natural gas pipelines and storage facilities
- safe operation and reliability of proposed and operating LNG terminals
- electric transmission projects under limited circumstances
- transmission and wholesale sales of electricity in interstate commerce;
- transmission and sale of natural gas for resale in interstate commerce
- transportation of oil by pipeline in interstate commerce
- reliability of the high voltage interstate transmission system
- certain mergers and acquisitions and corporate transactions by electricity companies
- accounting and financial reporting and conduct of regulated companies

Funding (Hydro):

Annual charges assessed to licensees based on generation to cover cost of regulatory program.

FERC Hydropower Jurisdiction

Commission authorization is required for Non-federal hydropower projects that:

- are located on navigable waters;
- are located on non-navigable waters over which Congress has Commerce Clause jurisdiction, were constructed after 1935, and affect the interests of interstate or foreign commerce (e.g., are connected to the interstate grid);
- are located on public lands of the United States; or
- use surplus water from a federal dam.

Includes marine and hydrokinetic (MHK) projects

Hydropower Licensing Standard

- Federal Power Act – FERC licenses must:
  - Give equal consideration to power and environmental uses within waters of the U.S.
  - Authorize projects that best serve the public interest




Regulatory Approach to Marine and Hydrokinetic (MHK) Energy

- The Commission:
  - Supports reasonable development of hydrokinetic projects, while protecting the environment and other public interests, to gain knowledge of the technology's potential and effects.
  - Recognizes the conundrum of need for in-water testing of technology, yet limited information is currently available to prepare application.
- Tailored existing program to meet the needs of new technologies
  - Measures to prevent "site-banking"
  - Device testing (no electrical grid connection)
  - Pilot project license (with electrical grid connection)

FERC Staff Role in Annex IV

Supporting U.S. DOE, in partnership with the U.S. Department of the Interior's Bureau of Ocean Energy Management, and the U.S. Department of Commerce's National Oceanic and Atmospheric Administration

- Special project
- Perceive our staff and

stakeholders as beneficiaries

of the project

- Provide information from established public record

Pioneering Marine & Hydrokinetic Projects Regulated by FERC

(as of March 2012)

- Amendment issued:
  - P-4306 Hastings (Minnesota) Commercial In-River 0.07 MW (One unit operated for ~8 months, until March 2010)
- Licenses issued for pilot projects:
  - P-12611 Roosevelt Island (New York) Tidal Pilot 1.05 MW
  - P-12711 Cobscook Bay (Maine) Tidal Pilot 0.3 MW
- Project in post-filing for license:
  - P-12713 Reedsport OPT Wave Park (Oregon) Wave Commercial 1.5 MW
- Project granted waivers for pilot project processing:
  - P-12690 Admiralty Inlet (Washington) Tidal Pilot 1.0 MW
- Project authorized but never built (license surrendered):
  - P-12751 Makah Bay (Washington) Wave "Pilot" 1.0 MW

Hastings (P-4306, Minnesota)

Amendment of license:
December 13, 2008

Post-License Fish and Wildlife Monitoring Plans

- Fish Entrainment and Survival Plan
- Zebra Mussel Control and Monitoring Plan
- Bird Monitoring Plan

Photo : Courtesy of Hydro Green Energy, LLC

RITE Project (P-12611, New York)

License order for 10 year pilot project:
January 23, 2012

Safeguard Plans
- Public Safety and Emergency Shutdown Plan
- Navigation and Safety Plan
- Project Removal and Site Restoration Plan

Aquatic Environment
- Record water velocities and water surface level data
- Underwater noise monitoring and evaluation plan

Aquatic/RTE Species
- Hydroacoustics Monitoring Plan
- DIDSON Monitoring Plan
- Species Characterization – Netting Plan
- Tagged Species Detection plan
- Rare, Threatened, and Endangered species monitoring

Birds
- Bird Observation Monitoring Plan

Recreation
- Recreation use monitoring
- Install public informational displays

Aesthetics
- Design specifications to minimize aesthetic impact

Cultural Resources
- Consultation regarding unanticipated discoveries of cultural resources

Cobscook Bay Project (P-12711, Maine)

License order for 8 year pilot project:

February 27, 2012

Safeguard Plans

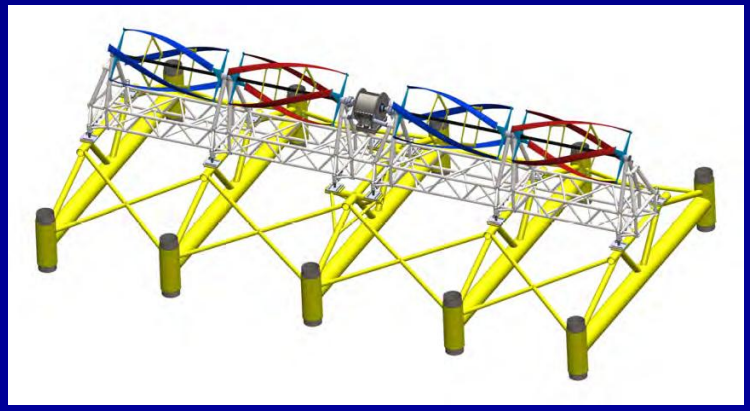
- Project Operations and Monitoring Plan
- Project Inspection and Maintenance Plan
- Project and Public Safety Plan
- Navigation Safety Plan
- Emergency Shutdown Plan
- Project Removal and Site Restoration Plan

Aquatic Environment

- Hydraulic Monitoring Plan
- No pile driving activities between April 10 and November 7 of any year
- Acoustic Monitoring Plan
- Benthic and Biofouling Monitoring Plan
- Fisheries and Marine Life Interaction Plan
- Marine Mammal Monitoring Plan

Cobscook Bay Project (P-12711, Maine)

- Birds
  - Bird Monitoring Plan
  - U.S. Fish and Wildlife Service's *Bald Eagle Management Guidelines*
- Recreation
  - Install public informational displays
- Aesthetics
  - Design specifications to minimize aesthetic impact
- Cultural Resources
  - Consultation regarding unanticipated discoveries of cultural resources
- Adaptive Management
  - Adaptive Management Plan



Proposed Reedsport OPT Wave Park Project (P-12713, Oregon)

Diversity of Information Sources:

- Mining of existing data (nearby dredge spoil disposal studies)
- Recounting previous analysis (FERC- Makah Bay, Navy- Kaneohe Bay, Hawaii)
- Previous experience (New Jersey/Hawaii)
- Field baseline measurements (substrate)
- Modeling (wave height at beach)
- Analogues (piling driving for wind farms in Europe, whale watching, aquaculture)
- User info (crabbing grounds)
- Adaptive management (pinniped haul out)
- Proposed field monitoring (noise)
- Proposed Beyond Before-After Controlled Impact (habitat alteration effects)

U.S. Efforts Outside of FERC Jurisdiction

- Earlier Roosevelt Island (Verdant Power Test Deployment)
- Ocean Power Technologies (New Jersey and Hawaii)
- Columbia Power Wave Buoy (Washington)
- Florida Atlantic University lease application to U.S. Bureau of Ocean Energy Management (Florida)
- Free Flow Power Mississippi (In-River Barge Deployments)

Free Flow Power

Support technical analysis

- Provide information for application review & environmental analysis
- Improve our ability to evaluate need, extent, and value of studies
- Inform our recommendations or requirements for study improvements
- Access to existing studies:
  - May provide appropriate baseline information
  - Provides tested, accepted methods to aid design of site-specific investigations

Support an emerging industry

- Enable developers to provide information for environmental analysis from pioneer projects where appropriate:
  - Avoid repeating study designs ("reinventing the wheel")
  - Avoid unnecessary studies (of issues shown to be of little concern)
  - Avoid past mistakes (data interpretation difficulties)
- Find solutions to new and recurring issues
  - Provide examples of adaptive management (AM) strategies and information to form the basis of AM starting points
  - Aid in developing generalized approaches over time
    - Conventional hydropower – Entrainment and Instream Flow
    - Potential hydrokinetic topics – Entrainment, Acoustics, Electromagnetic Fields (EMF)

Support communication

- Descriptions of functioning projects deployed in environments with real world issues may help stakeholders:
  - Envision similar devices in the environment of their concern,
  - Identify issues and frame questions, and
  - Focus concerns on specific issues rather than the general “unknown.”

Caveats and Conclusion

- We have to be careful making inferences from site to site
  - We've seen extreme differences in physical conditions and performance from site to site
  - Cultural, historical, legal, and policy differences are a factor (even among U.S. States)
  - There are differing attitudes about protecting information

- Still, at the stage where we know little and have much to learn, a successful Annex IV database can provide a great value at a modest cost

Questions?

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