Federal Energy Regulatory Commission

Environmental Studies in the FERC Licensing Process

August 19, 2010

Federal Energy Regulatory Commission

- Independent Regulatory Agency
- 5-Member Commission

Chairman Jon Wellinghoff
Commissioner Philip D. Moeller **Commissioner** Marc Spitzer
Commissioner John R. Norris **Commissioner** Cheryl A. LaFleur

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.

Hydropower Program

Types of Issuances

- Preliminary permits
  - Maintains priority of application for three years
  - Conduct feasibility studies and prefiling activities
  - Does not authorize construction
- Licenses
  - Authorizes construction and operation
- Exemptions
  - 5 MW
  - Conduit

Environmental Review

Commercial License (ILP)

- PAD – available baseline information, proposed studies
- Scoping of issues
- Study plan development – specific criteria for study requests and plans, FERC approved study plan
- Studies conducted and license application prepared
- Environmental Assessment or Environmental Impact Statement
- Licensing Decision

ILP Study Criteria

1. Goals and objectives
2. Relevant resource management goals
3. Relevant public interest considerations
4. Existing information and why more is needed
5. Nexus between project operations and effects and how results inform licensing requirements
6. Methodologies consistent with accepted scientific practice
7. Level of effort and cost and why proposed alternative studies not adequate

Environmental Review

Pilot License (Modified ILP)

- Draft License Application – baseline information (studies may be necessary), proposed post-license monitoring and safeguard plans
- Technical meeting on proposal
- Final License Application – baseline information, draft biological assessment, revised monitoring and safeguard plans
- Environmental Assessment
- Licensing Decision

Environmental Requirements

U.S. Fish & Wildlife Service

-Endangered Species Act
-Migratory Bird Treaty Act

NOAA

-Essential Fish Habitat
-Marine Mammal Protection Act
-Endangered Species Act

State Review

-Coastal Zone Management Act
-Clean Water Act
-National Historic Preservation Act

U.S. Coast Guard

-Ports and Waterways Safety Act

Hydropower Licensing Standard

- Federal Power Act – FERC licenses must:
  - Give equal consideration to power and environmental uses of a waterway
  - Authorize project that best serves the public interest




Pilot Project License Status

- Six applicants have filed draft applications and are developing final applications (13 MW)
  - ORPC Alaska, Cook Inlet Tidal Energy Project (P-12679)
  - Public Utility District No. 1 of Snohomish County, Admiralty Inlet Pilot Tidal Project (P-12690)
  - Pacific Gas & Electric Co, Humboldt WaveConnect™ Project (P-12779)
  - ORPC Maine, ORPC Eastport Tidal Energy Project (P-12680)
  - Verdant Power, Roosevelt Island Tidal Energy Project (P-12611)
  - New York Tidal Energy Company, East River Tidal Energy Pilot Project (P-12665)
- Waivers issued for Roosevelt Island Tidal Energy Project (May 2009)
- No final pilot project license application filed as of July 2010

Commercial Project Status

- Three applicants are doing prefiling (6,300 MW)
  - Ocean Power Technology, Coos Bay Wave Project (P-12749)
  - Douglas County, Douglas County Wave Project, (P-12743)
  - Free Flow Power, Mississippi River Projects (46 projects)
- Two applicants have filed applications
  - Ocean Power Technology, Reedsport Wave Park Project (P-12713)
  - Tideworks Tidal 5-MW Exemption (P-13656)
- One operating inland hydrokinetic project
  - City of Hastings, Mississippi Lock and Dam No. 2 (P-4306)

Project-specific Environmental Baseline Studies

- Water velocity – Characterization of site (Acoustic Doppler Current Profiler)
- Geophysical – Characterization of seafloor (side-scan SONAR, acoustic remote sensing)
- Underwater noise – Measurement of ambient noise level (hydrophone)
- Marine Mammals – Occurrence and site use (literature review, direct observation)
- Fish – Occurrence and site use (literature review, hydroacoustic surveys, netting, tagging)
- Birds – Occurrence and site use (literature review, direct observation)

Project-specific Environmental Effects Studies

- Geophysical – Effects on sediment transport (sediment profile imagery, computer modeling)
- Underwater noise – Measurement of near- and far-field post-deployment noise levels (hydrophone)
- Marine Mammals – Presence and behavioral effects (multibeam acoustic camera and video, hydrophone)
- Fish – Presence and behavioral effects (DIDSON, radio tagging, netting); entrainment studies (balloon tagging, desktop analysis); controlled entrainment in lab
- Birds – Presence and behavioral effects (direct observation)

City of Hastings Project

- The hydrokinetic units use flow released out of the existing conventional powerhouse
- Units will produce an average annual generation of 364-megawatt-hours
- One turbine in the water, operating, and generating

Photo : Courtesy of Hydro Green Energy, LLC

City of Hastings Project
Required Plans

- Monitoring – migratory and diving birds, fish entrainment and survival, water quality, and zebra mussel control
- Mussel survey and relocation, including for the Higgins' eye pearlymussel
- Safety, hydrokinetic removal plans
- Emergency shutdown and removal provision, if necessary

City of Hastings Project
Fish Entrainment and Survival Study

- Survival – mark and recapture using balloon and radio tags (smaller species = 155-235 mm, larger species = 388-710 mm)
- Entrainment – desktop analysis based on population variability, using data collected in the 1990-1991 entrainment study, the Long Term Resource Monitoring Program (LTRMP) database, and results of the survival study
- Predation – directly observed or indirectly assumed by the behavior exhibited by radio tagged fish

City of Hastings Project
Environmental Results

Fish Entrainment and Survival Study

- Results accepted and approved (March 3, 2010)
- Hydrokinetic unit has little, if any, considerable impact on the fish population in the vicinity of the project
- Survival estimates for both small and large species was 99 percent; no turbine blade passage injuries were observed
- Predation activity was not directly observed or indirectly assumed based on behavior patterns of radio tagged fish

Questions?