

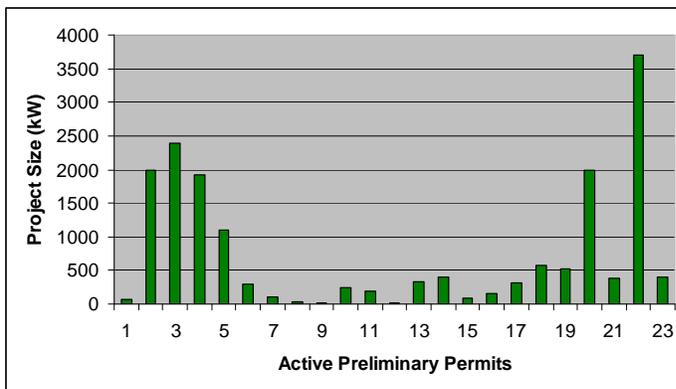
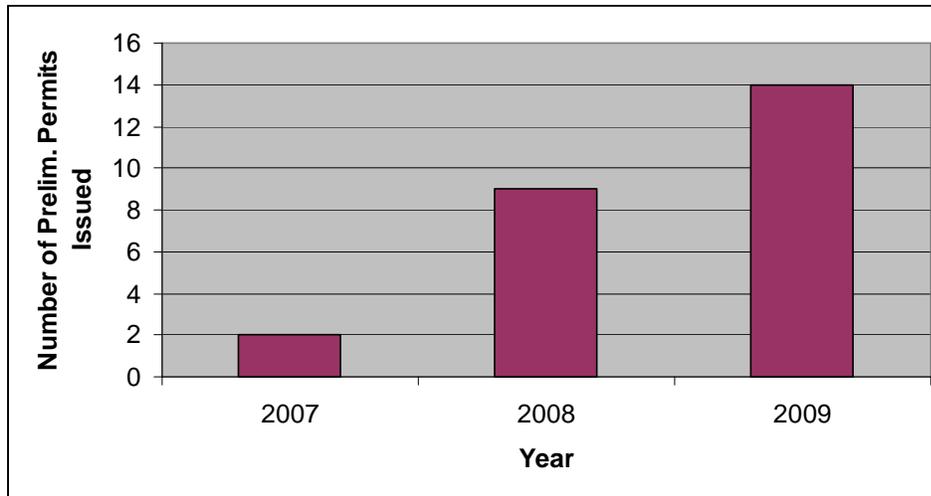
## CONVENTIONAL HYDROPOWER IN NEW ENGLAND

### Current Status

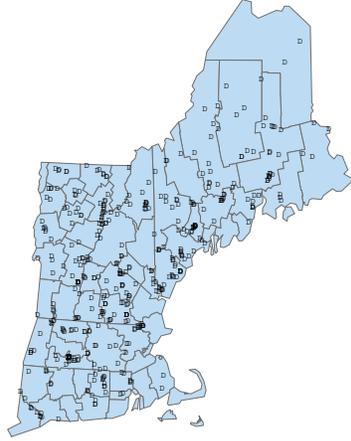
	State						
Permit Type	CT	MA	ME	NH	RI	VT	Grand Total
Exemption	8	29	24	42	2	18	123
License	14	29	71	41	5	46	206
Prelim. Permits	3	7	1	11	1	2	25
<b>Grand Total</b>	<b>25</b>	<b>65</b>	<b>96</b>	<b>94</b>	<b>8</b>	<b>66</b>	<b>354</b>

- Roughly 2/3 of FERC projects in New England are <5 MW
- 40 New projects proposed in FY 2009 (conventional & hydrokinetic)

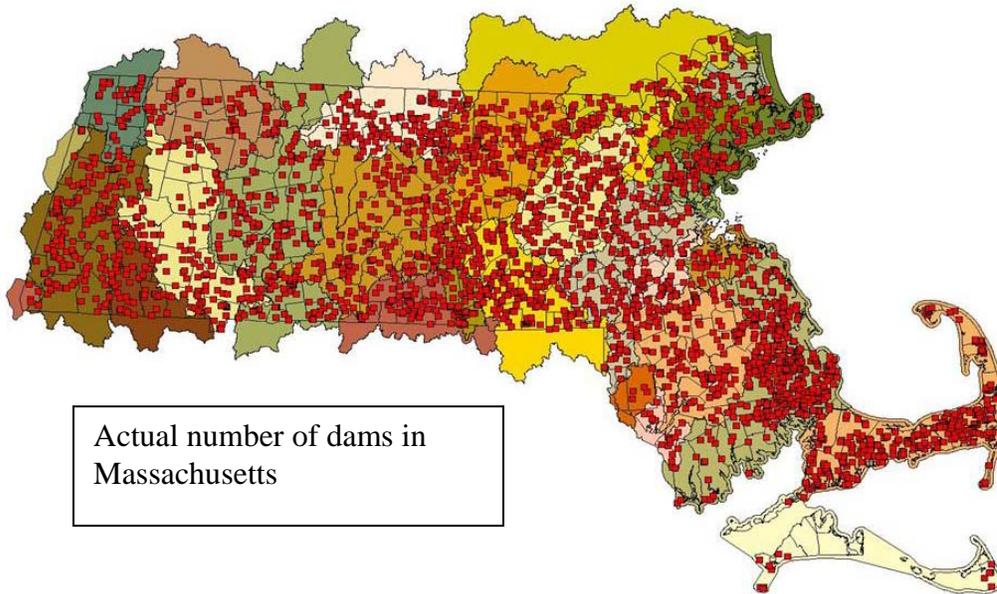
### Recent Hydropower Trends in New England



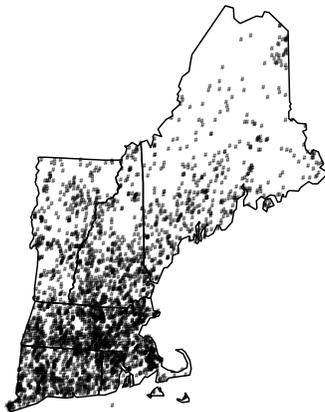
Only 6 of 23 permits are for projects >500 kW



Map showing locations of existing FERC projects in New England



Actual number of dams in Massachusetts



Map showing locations of New England dams listed in the NID

### **Regional Potential**

- National Inventory of Dams lists 3,676 dams in New England; the actual number of dams likely is much higher (e.g., states of CT and MA list over 3,000 dams each).
- Potential to see large increase in number of projects proposed (primarily due to economic incentives being offered)

### **Resource Concerns**

- Impacts on trust resources: inter-jurisdictional (i.e., migratory) fish and T/E species
- Fish passage
- Impingement/entrainment mortality (especially with certain types of units: crossflow)
- Flow diversions
- Habitat impacts (e.g., due to inundation, flow reduction, flow fluctuation, etc.)
- Water quality
- Cumulative impacts

### **Other Issues**

- Workload
  - Ability to participate in preliminary site reviews and/or develop outreach materials for prospective developers regarding Service's role in process and resource concerns
- New/evolving technology (e.g., turbine design): unfamiliar with potential impacts

### **FWS/NEFO's Role in the Pre-Filing Process**

- **Site Selection/Project Design**

## Resource Concern Continuum

Fewer Concerns

More Concerns



- Run of River
- No bypass reach
- No migratory fish
- Kaplan unit or similar
- No increase in pond height
- Rack specs minimize impingement and entrainment
- Project appropriately sized for drainage area/site hydrology
- Intake draws off of epi- or metalimnion

- Store & release
- Bypass reach
- Migratory fish
- Crossflow or pelton unit
- Boards to increase pond height
- Rack specs that allow impingement and/or entrainment
- Project oversized for drainage area
- Intake draws off of hypolimnion

➤ **Stakeholder Involvement**

- Preliminary site visit/meeting with resource agencies recommended
- Close coordination between FWS and State fish & wildlife agency

➤ **Pre-Filing Process**

- If filing for a preliminary permit, FWS/NEFO will provide comments, identifying outstanding resource issues or concerns; may intervene if significant concerns
- If able, will participate in preliminary site visit/meeting
- FWS/NEFO coordinates with other resource agencies and NGOs in reviewing First Stage Consultation Document; provides comments and study requests to applicant
- FWS participates in study plan development and reviews and comments on study reports
- Upon applicant's submittal of Second Stage Consultation (i.e., draft application), FWS/NEFO will provide comments and preliminary recommendations, terms and conditions, or prescriptions
- When FERC notices the application ready for environmental analysis, FWS/NEFO provides comments and final recommendations, terms and conditions, or prescriptions

➤ **Information Needs**

*Ecological*

- Recent fish survey data
- Recent water quality data
- Early consultation re: state and federal T/E species
- Baseline vegetation/wetlands survey (including invasive species)
- Baseline mussel survey
- If there will be a bypass reach, will need to conduct flow study or use an appropriate default method to determine an acceptable conservation flow

*Developmental*

- Specifications for dam, intake, trashrack, turbines
- Length of impoundment
- Proposed mode of operation, level of automation, recording/monitoring system

➤ **New England-specific Issues**

- Many waterways are active migratory fish restoration rivers; therefore, fish passage may be needed either immediately or at some point in future
- Many (sections of) rivers are on 303(d) list of impaired waters due to DO levels – could influence project design with respect to meeting water quality standards and anti-degradation policies
- Given potential number of dams that could be developed for hydropower, concern with cumulative effects of impingement/entrainment on resident riverine fishes
- New turbine types being proposed (vortex, siphon, Archimedes screw) – little or no existing information on their impact to water quality, fish, etc.

➤ **Suggestions for Processing Hydropower Applications**

- Sites should be screened using various criteria to determine complexity/economic viability
- Initiate consultation with FWS and state agencies early to determine presence of T/E species, status of migratory fish restoration efforts, or other significant resource issues within the project area
- By the time Initial Consultation Packages are submitted to FWS for review, proposal should be detailed and specific (e.g., mode of operation, size and type of units, etc.)
- Applicants should review terms and conditions prescribed by NEFO for recently issued exemptions to get idea of what could be required at their project