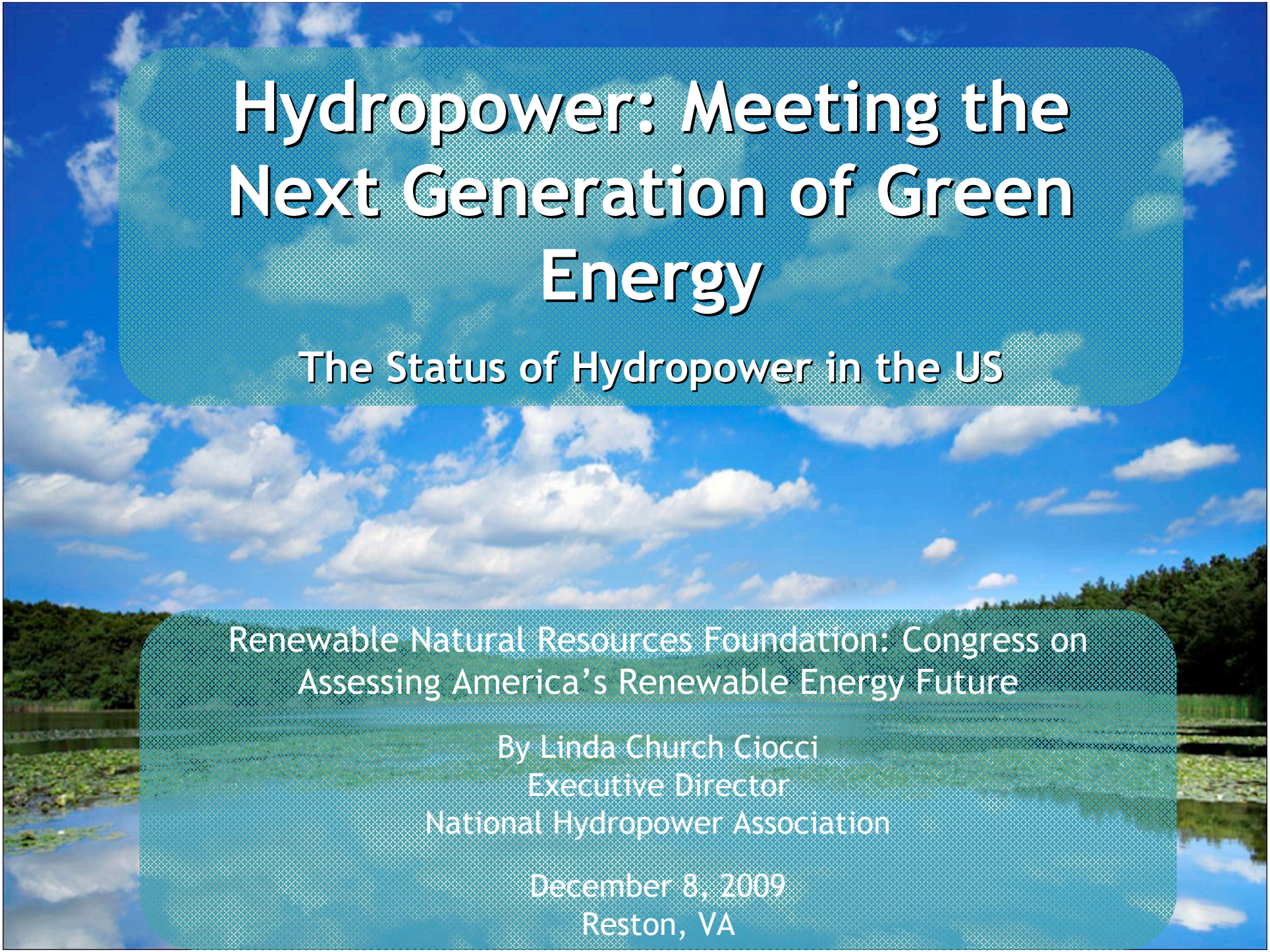


Hydropower: Meeting the Next Generation of Green Energy

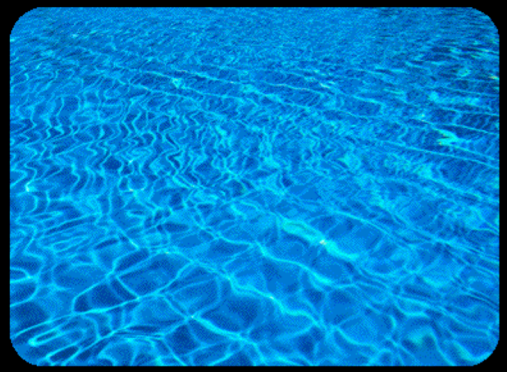
The Status of Hydropower in the US

Renewable Natural Resources Foundation: Congress on Assessing America's Renewable Energy Future

By Linda Church Ciocci
Executive Director
National Hydropower Association

December 8, 2009
Reston, VA

NHA Overview



MISSION:

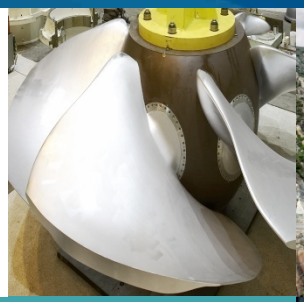
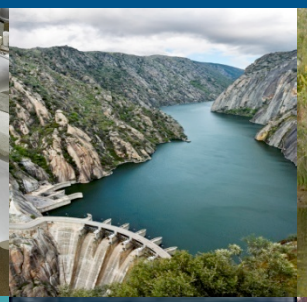
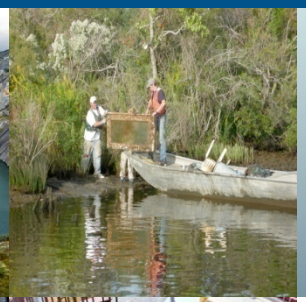
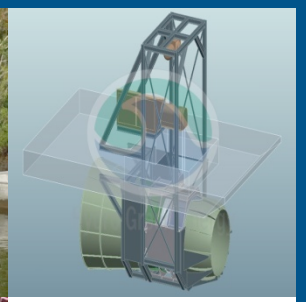
Secure hydro's role in national policy objectives

FUNCTION:

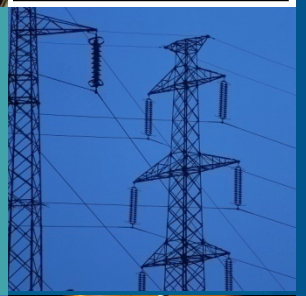
Advance member interests, advocate for industry

MEMBERS:

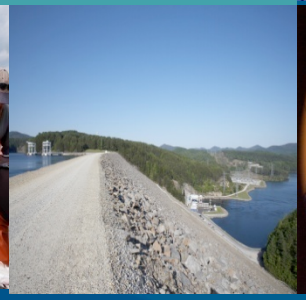
Exchange info, develop, & unite industry








Members

- 170 companies
- Over 60 percent of domestic, non-federal hydro
- Conventional, instream, ocean, tidal
- Utilities, generators, developers, manufacturers…

NHA's Goal

Simple:

To Create a Robust Business Environment for All Waterpower Technologies-

Conventional and New

NHA's Vision

Hydro can double

FERC Sees It, too

Nearly 65,000 MW of hydro before FERC as of August 2009

Hydrokinetic Permits

- 9,039 MW issued
- 6,875 MW pending

Pumped Storage Permits

- 28,323 MW issued
- 7,000 MW pending

Conventional Hydro Permits

- 7,768 MW issued
- 3,625 MW pending

FERC Seeing Record Interest

Current FERC Preliminary Permits

(by Numbers of Projects)

ISSUED

- 106 Conventional
- 36 Pumped Storage
- 155 Tidal & Hydrokinetic

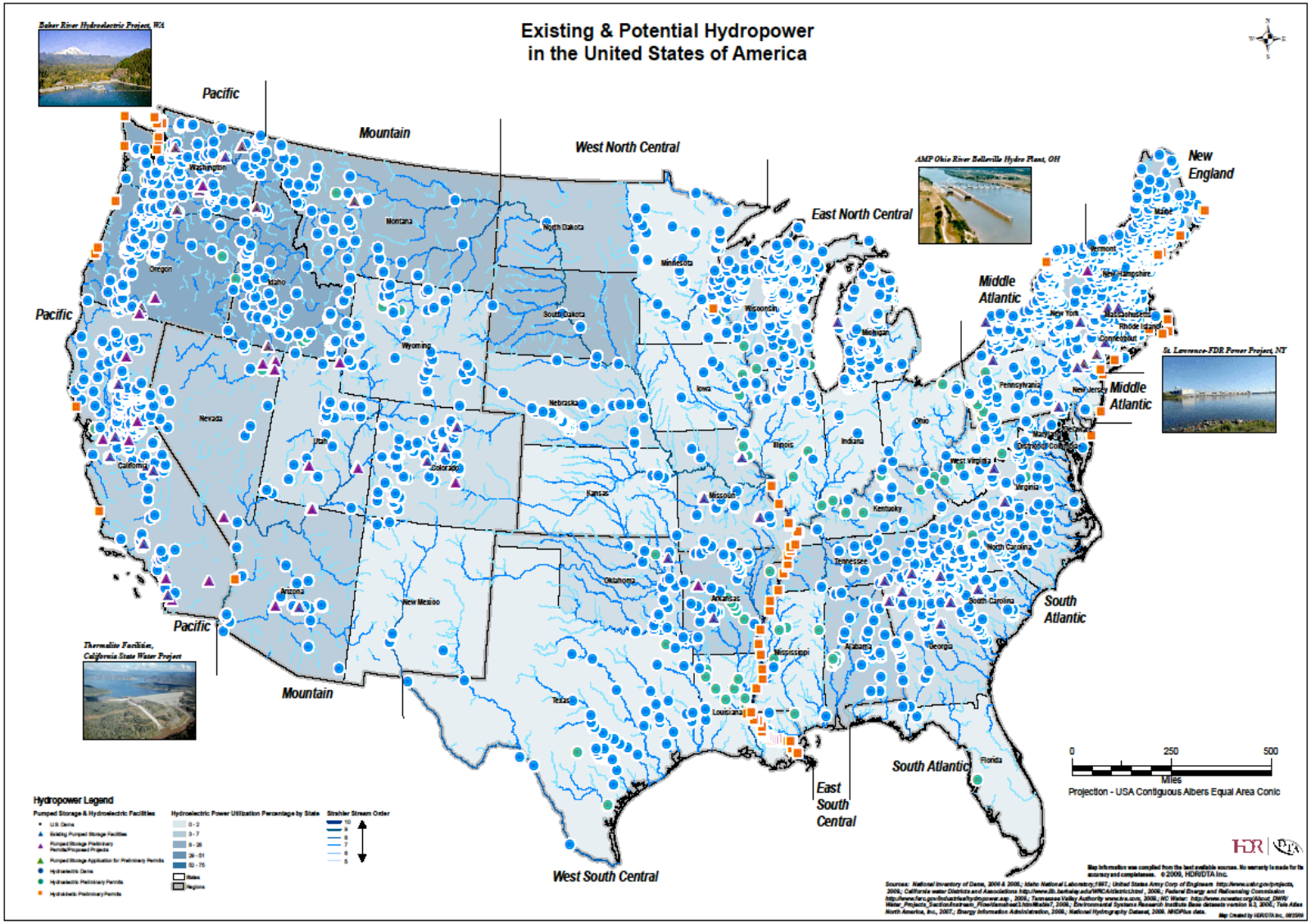
PENDING

- 106 Conventional
- 2 Pumped Storage
- 48 Hydrokinetic

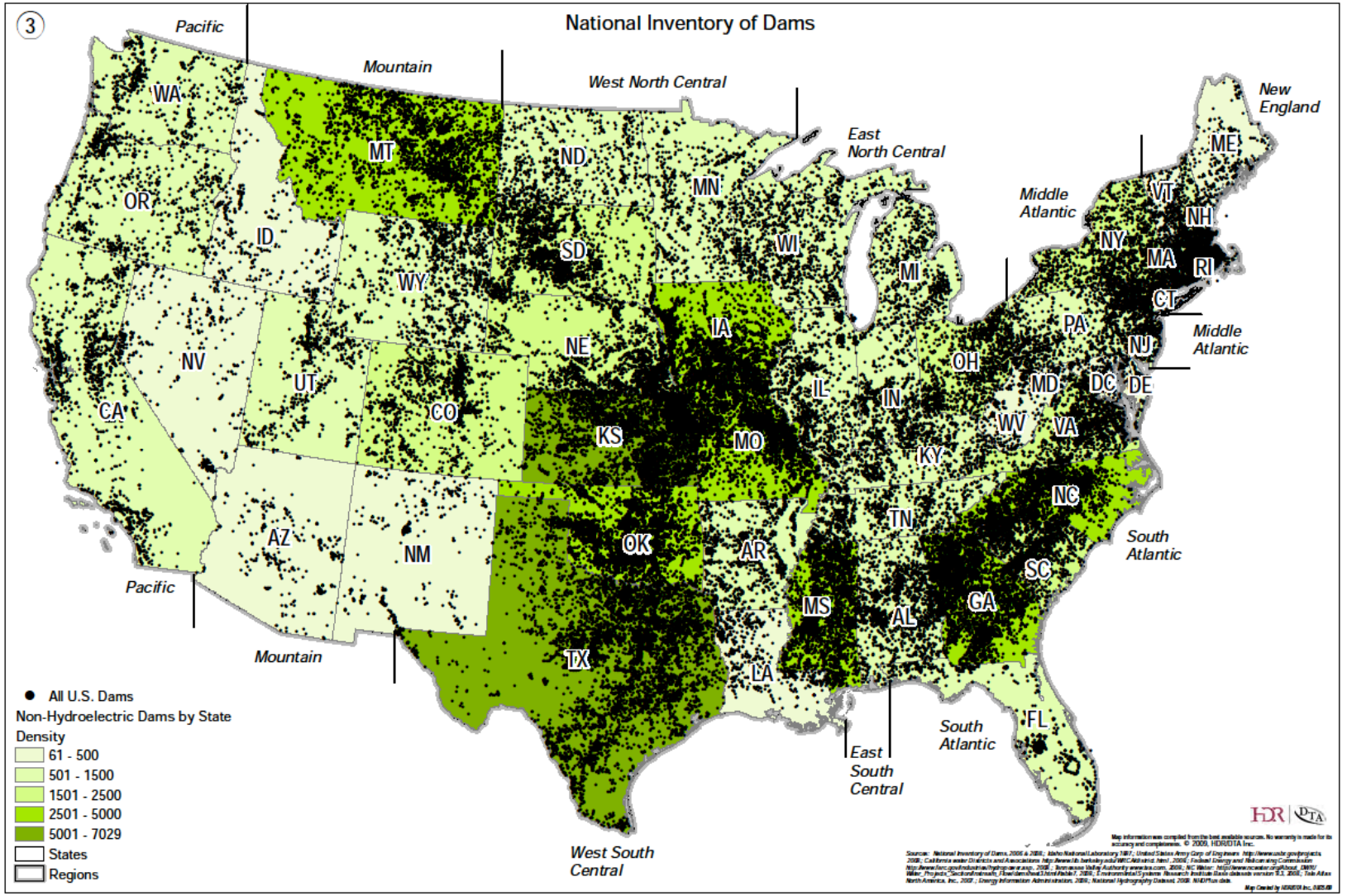
Where will Growth Occur?

- Existing Hydro Facilities (Incremental)
- Non-powered Dams (97% are non-powered)
- Hydrokinetics
- Conduit/irrigation/municipal water systems
- Tidal, wave, and ocean
- Pumped storage
- Small development (more than half of growth)

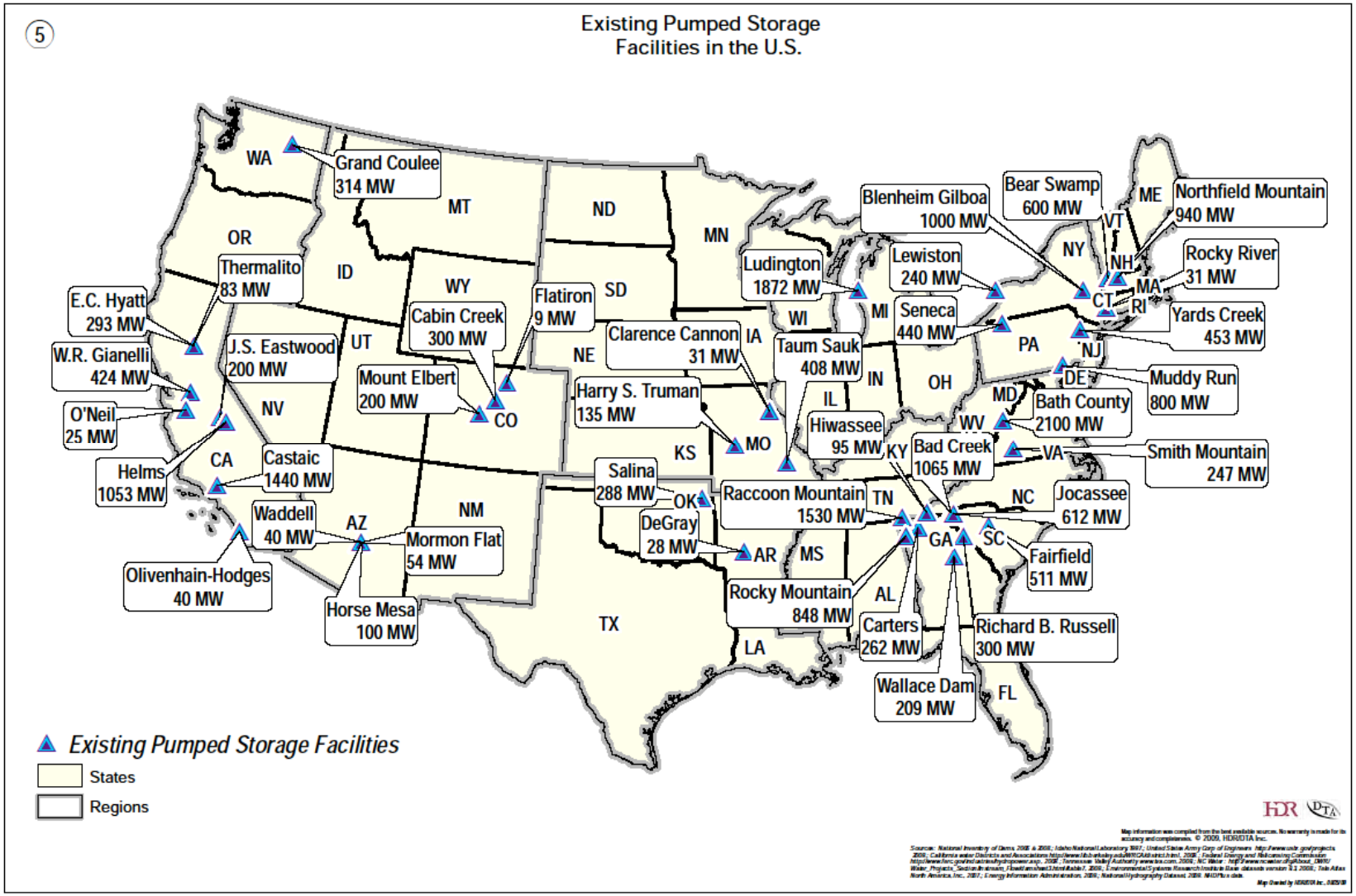
Existing & Potential Hydro in the US



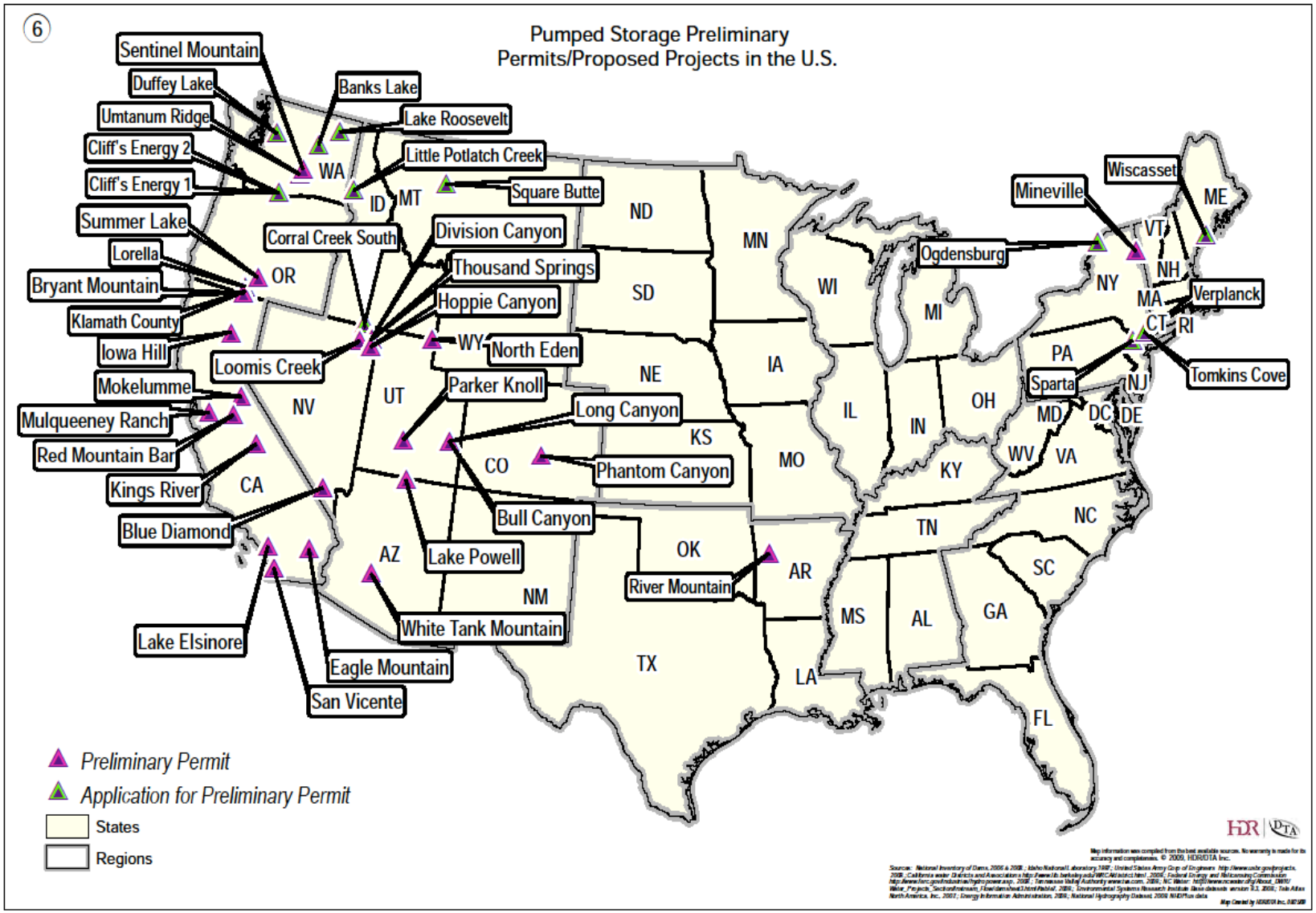
National Inventory of Dams



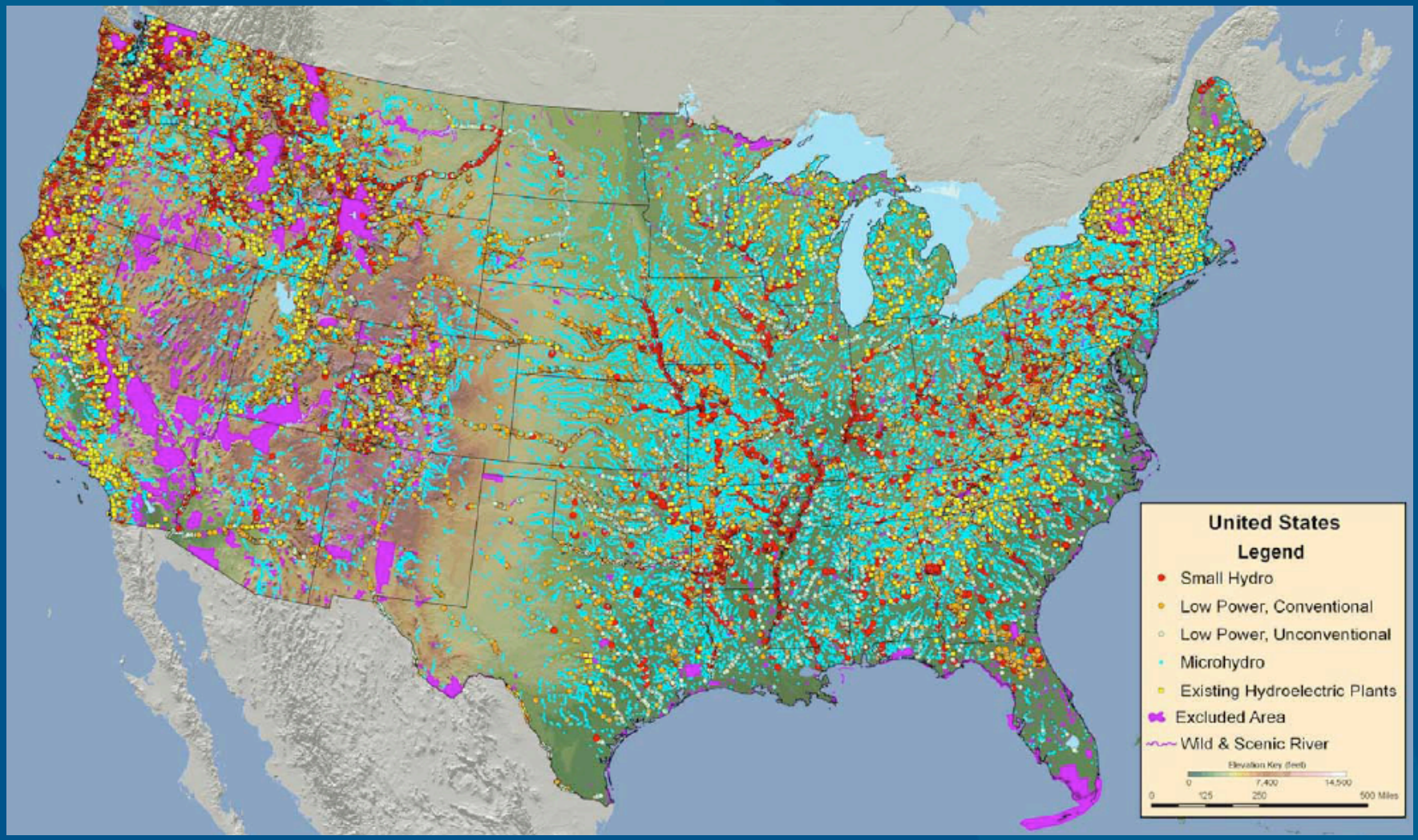
Existing Pumped Storage in the US



Pumped Storage Preliminary Permits and Proposed Projects



What Regions Hold the Largest Markets?



- All Regions have potential
- Midwest, Northeast, Mid-Atlantic, & parts of the West have the largest potential for small hydro growth/West for all hydro

What's Driving the Market?

- Need for Clean Energy
- Need for Low Emitting Energy Sources
- Attributes meet new energy demand (load following and integration issues)

Policy Can Spur This Growth

Newly Released Navigant Jobs Study
(Commissioned by NHA CEO Council)

Forecasts Potential by 2025

Business as Usual

- **Conventional:** 11,750 MW
- **Pumped Storage:** 10,000 MW
- **Hydrokinetics:** 1,500 MW

- **TOTAL:** 23,300 MW

Accelerate RES

- **Conventional:** 21,900 MW
- **Pumped Storage:** 24,000 MW
- **Hydrokinetics:** 13,750 MW

- **TOTAL:** 59,650 MW

Based on old assessments- new assessments are forthcoming

Growth requires…

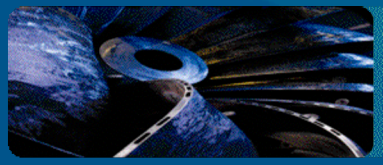
Federal tax incentives, regulatory policy & R&D support

Important Policy Incentives that Make the Difference

Multi-year PTC/ITC extension

CREBs extension

Hydro included in new Section 1603 grants program



More support for R&D

RES inclusion of more hydro

Climate legislation consideration

Tremendous Potential- Significant Challenges

Challenges Vary by Project Type and Application

Policy

Technical/Environmental

Market

Institutional/Attitudinal

Challenges- Policy Support is Uneven

Picks Winners and Losers

- Tax Credits
  - Receive only _ credit
  - Eligibility limits
- Storage not recognized as yet
- Small hydro agreement not reached
- No drivers for facilitated processes on federal structures

Challenges- Research & Development

Dollars for Development

Support for Application Among Regulators

Timing with License Sequence

Challenges- Environmental

Significant, but not impossible

- Reducing the Footprint
- Agreement on Mitigation Strategy
- Cost Effective- Maintaining the Economics
- New Technology Improvements
- Support/Application Acceptance

Challenges- Market Barriers

Market has not yet caught up with technical needs

- Value of Ancillary Services Not Appreciated
  - Pumped Storage
  - Short Term vs. Long Term
- Costs
  - Need for Incentives

Challenges- Attitudinal & Institutional

Attitudinal

- Myth of Being Tapped Out
- Stakeholder Support
- Value Equation

Institutional

- Regulatory Process (length, cost, & incentives)
- Knowledge Base Required
- Turf/Mission Conflicts (Corps of Engineers/ Bureau)

Solutions

- Stakeholder agreement on policy incentives for small hydro and pumped storage
- Federal owner action to reduce process duplications
- Streamline permitting while building on environmental protection (no more than 2 yr process to compete with other sources and attract investment)
- More money for demonstration and R&D
- More funding for agency (federal and state) to participate in permitting process and reduce delays
- More educational support to non-traditional players as they enter the field

The Future

- Hydropower has great potential
- With the right policies in place, it will play a significant role in:
  - Meeting today's energy demand
  - Helping our nation meet new renewable energy standards
  - Reducing emissions
  - Contributing to a new green energy economy

Contact Us

Contact Information:

Linda Church Ciocci

Executive Director
National Hydropower Association
25 Massachusetts Ave., NW
Suite 450
Washington, DC
202-682-1700 ext. 22
Linda@hydro.org