

# Hydroelectric Projects in the Black River Basin

The process and opportunities for  
relicensing

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# Hydroelectric Power in the U.S.

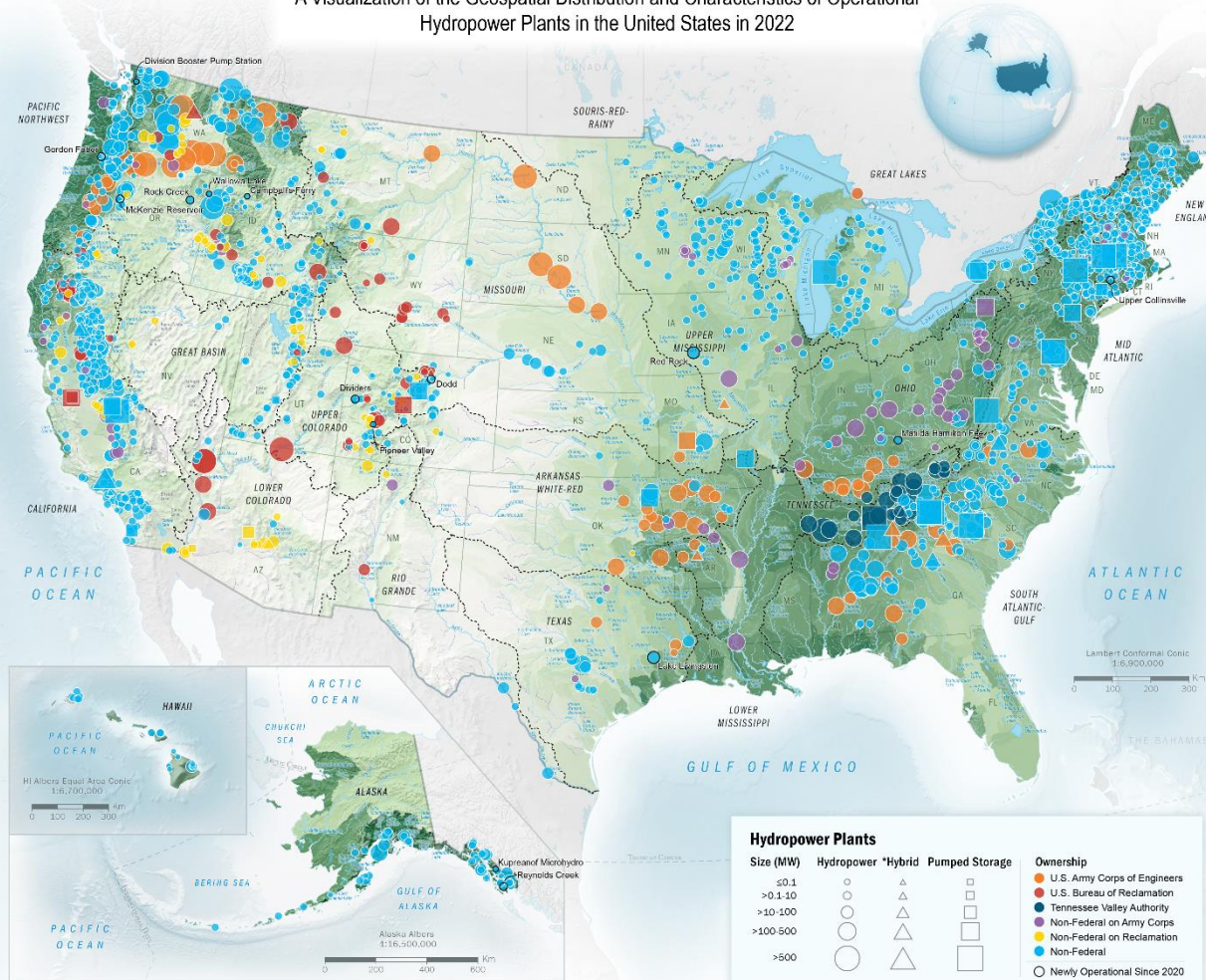


## The 2022 National Hydropower Map



Office of  
ENERGY EFFICIENCY &  
RENEWABLE ENERGY

A Visualization of the Geospatial Distribution and Characteristics of Operational  
Hydropower Plants in the United States in 2022



**Hydropower Plants**

Size (MW)	Hydropower *	Hybrid	Pumped Storage	Ownership
≤0.1	○	△	□	● U.S. Army Corps of Engineers
>0.1-10	○	△	□	● U.S. Bureau of Reclamation
>10-100	○	△	□	● Tennessee Valley Authority
>100-500	○	△	□	● Non-Federal on Army Corps
>500	○	△	□	● Non-Federal on Reclamation
	○	△	□	● Non-Federal
	○	△	□	○ Newly Operational Since 2020

**Hydrography**

Average Annual Runoff (mm/yr)

Runoff Range	Symbol
0	□
241	■
3,985	■

— Major Perennial Rivers    ■ Major Lakes & Reservoirs  
 - - - Intermittent Streams    ■ Desert Playas

**Data Citation:** Megan M. Johnson, Shih-Chieh Kao, and Rocío Uña-Martínez. 2022. Existing Hydropower Assets, 2022. HydroSource. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. [https://doi.org/10.21951/EHA\\_FY2022/1865282](https://doi.org/10.21951/EHA_FY2022/1865282)

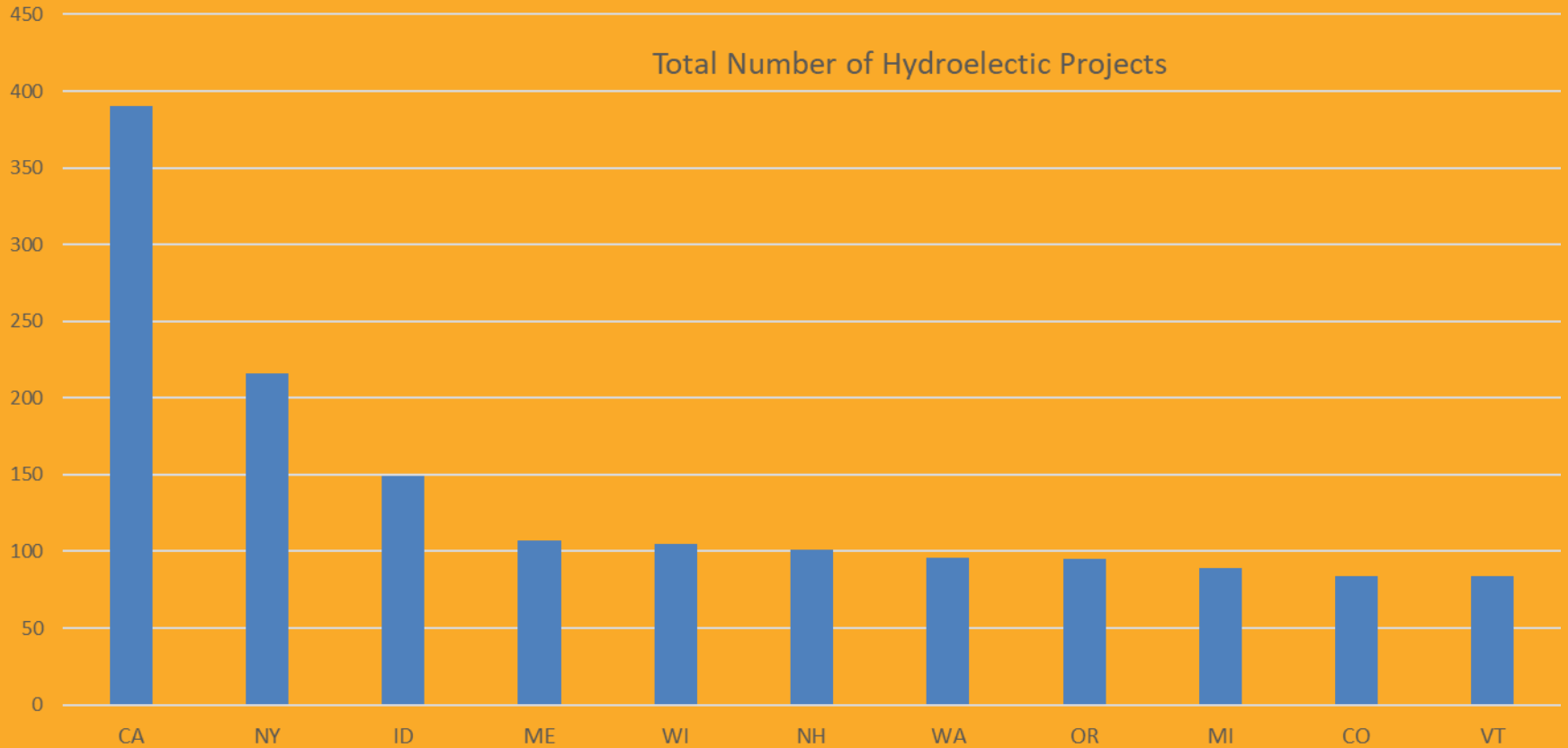
**Map Citation:** Erik H. Schmidt, Megan M. Johnson, Debjani Singh, and Shih-Chieh Kao. 2022. The 2022 National Hydropower Map. HydroSource. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. DOI: 10.21951/NationalHydropowerMap\_FY22/1877924

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**Acknowledgement:** Nicole Samu, cartography.

\*Denotes plants equipped with both hydropower and hydropower; pumped storage; turbine-generator units.

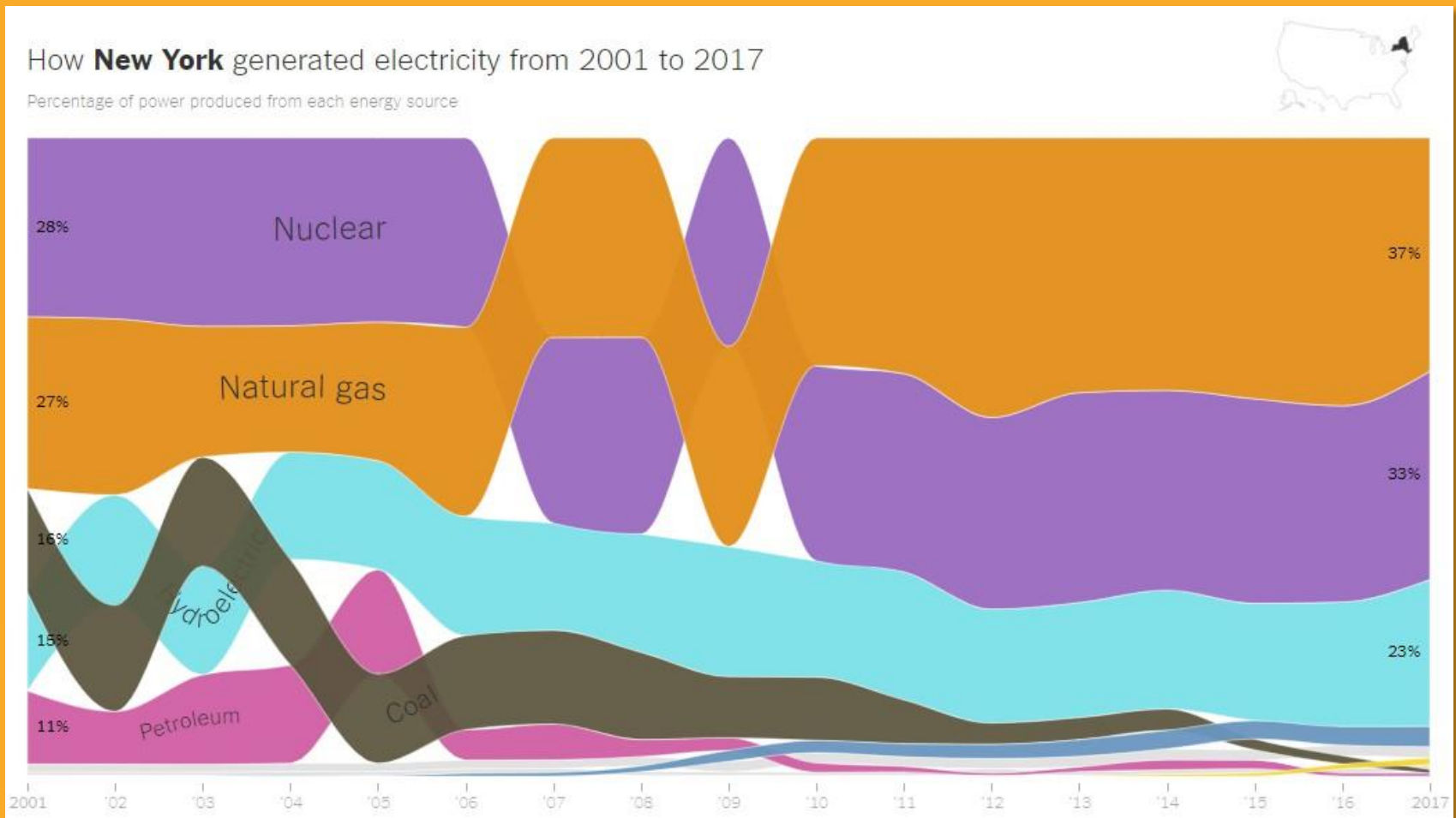
# Hydroelectric Power in the U.S.



2019. U.S. Energy Information Administration.



# Hydroelectric Power in New York



2018. Popovich. *New York Times*.

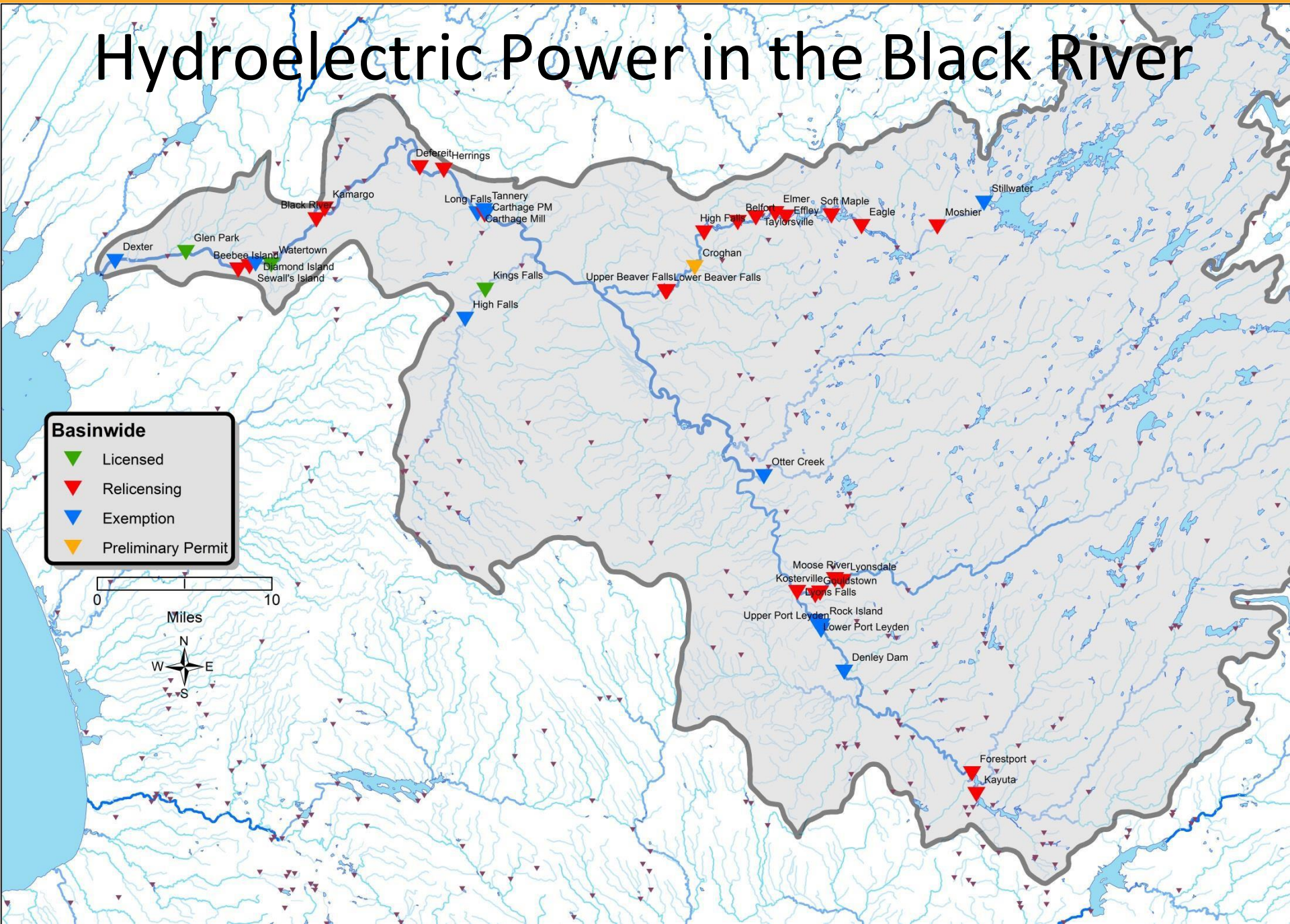
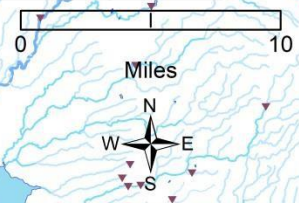
# Black River Hydroelectric Projects

- 5 Waterways
  - Black River
  - Beaver River
  - Moose River
  - Deer River
  - Otter Creek
- Total of 182 MW of installed capacity
- 27 Licensed Projects with 40 Developments (154.4 MW)
  - Three larger multiple development projects
    - Beaver River – 8 developments (44.8 MW)
    - Black River – 5 developments (29.6 MW)
    - Lyons Falls – 3 developments (8.6 MW)
- 12 Exemptions (27.7 MW)

# Hydroelectric Power in the Black River

**Basinwide**

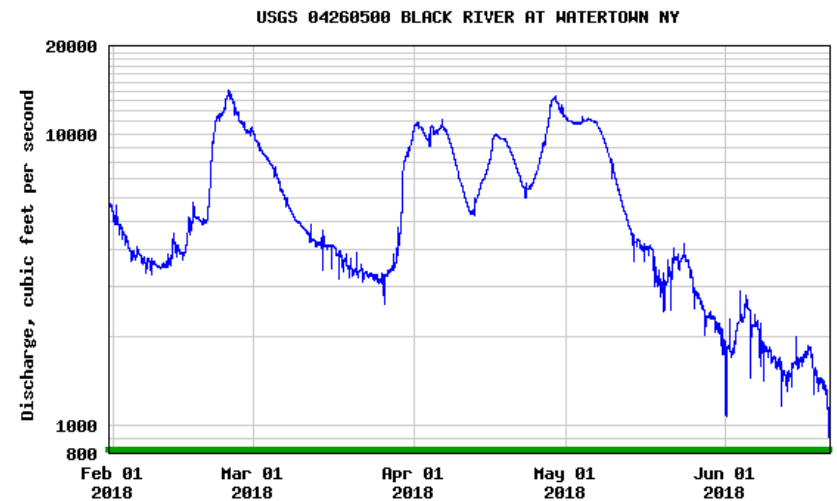
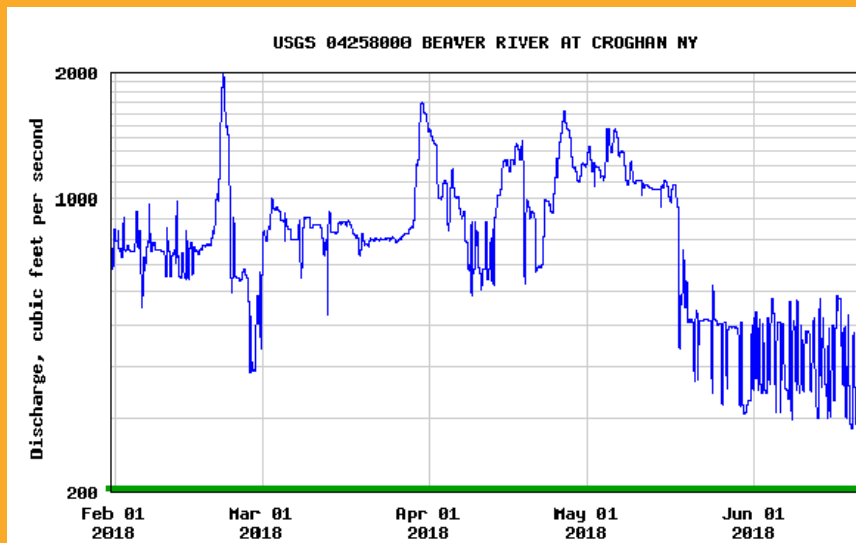
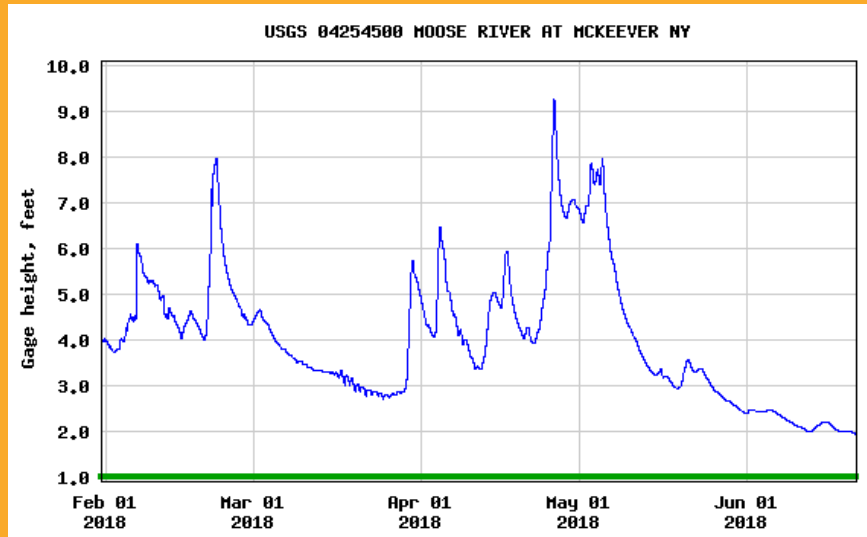
- Licensed
- Relicensing
- Exemption
- Preliminary Permit





# Hydroelectric Project Operation

- Run-of-River
- Store and Release
- Peaking or Pulsing



# Hydroelectric Project Impacts

- Flows
  - Decreased or lacking bypassed reach flows
  - Alterations and fluctuations in downstream flows
- Water Quality
  - Low dissolved oxygen
  - Higher or lower temperatures
- Aquatic Habitat
  - Impoundment fluctuations/shoreline habitat
  - Downstream fluctuations/shoreline habitat
  - Increased sedimentation and decreased sediment transport
  - Impacts to wetlands
- Aquatic Species
  - Reduced fish spawning and rearing
  - Fish entrainment and mortality
  - Reduced fish movement
  - Impacts to freshwater mussels
  - Impacts to macroinvertebrates
- Recreation
  - Lack of access to project lands
  - Lack of portage routes
  - Reduced variability in flows for flow dependent boating



# The Federal Power Act



- Federal Energy Regulatory Commission (FERC)
  - The Commission, in addition to the power and development purposes for which licenses are issued, shall give equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife (including related spawning grounds and habitat), the protection of recreational opportunities, and the preservation of other aspects of environmental quality.
- Licensees are required to consult with USFWS, States, Tribes, and stakeholders
  - Fishways
  - Clean Water Act (401 WQ Cert)
  - FWCA
  - ESA, NEPA, NHPA



# Hydroelectric Project Protection Enhancement and Mitigation Measures

- Flows
  - Minimum or seasonal flows in the bypassed reaches
  - Minimum downstream base flows
  - Stream gauging
- Water Quality
  - Water quality monitoring
  - Intake depth modification
  - Increased flow quantity
- Aquatic Habitat
  - Seasonal and maximum impoundment fluctuation limits
  - Downstream fluctuations/shoreline habitat
  - Sediment management plans
  - Habitat improvement projects
- Aquatic Species
  - Habitat improvement projects
  - Fish protection and exclusion structures
  - Upstream and downstream fish passage facilities
  - Drawdown limitations
  - Mussel translocation
  - Flows for macroinvertebrate habitat
- Recreation
  - Construction of recreation facilities (beach, campground, public access, trails, etc.)
  - Development and maintenance of portage routes
  - Whitewater flow releases
  - Aesthetic flows
- Funds
  - BRACs and Watertown Fund

# Relicensing Processes

- Three Options

- Integrated Licensing Process (ILP)

- default, expensive, larger/controversial projects

- Traditional Licensing Process (TLP)

- optional, cheaper, smaller/non-controversial projects

- Alternative Licensing Process (ALP)

- less common, collaborative/flexible, used for complex or novel proceedings



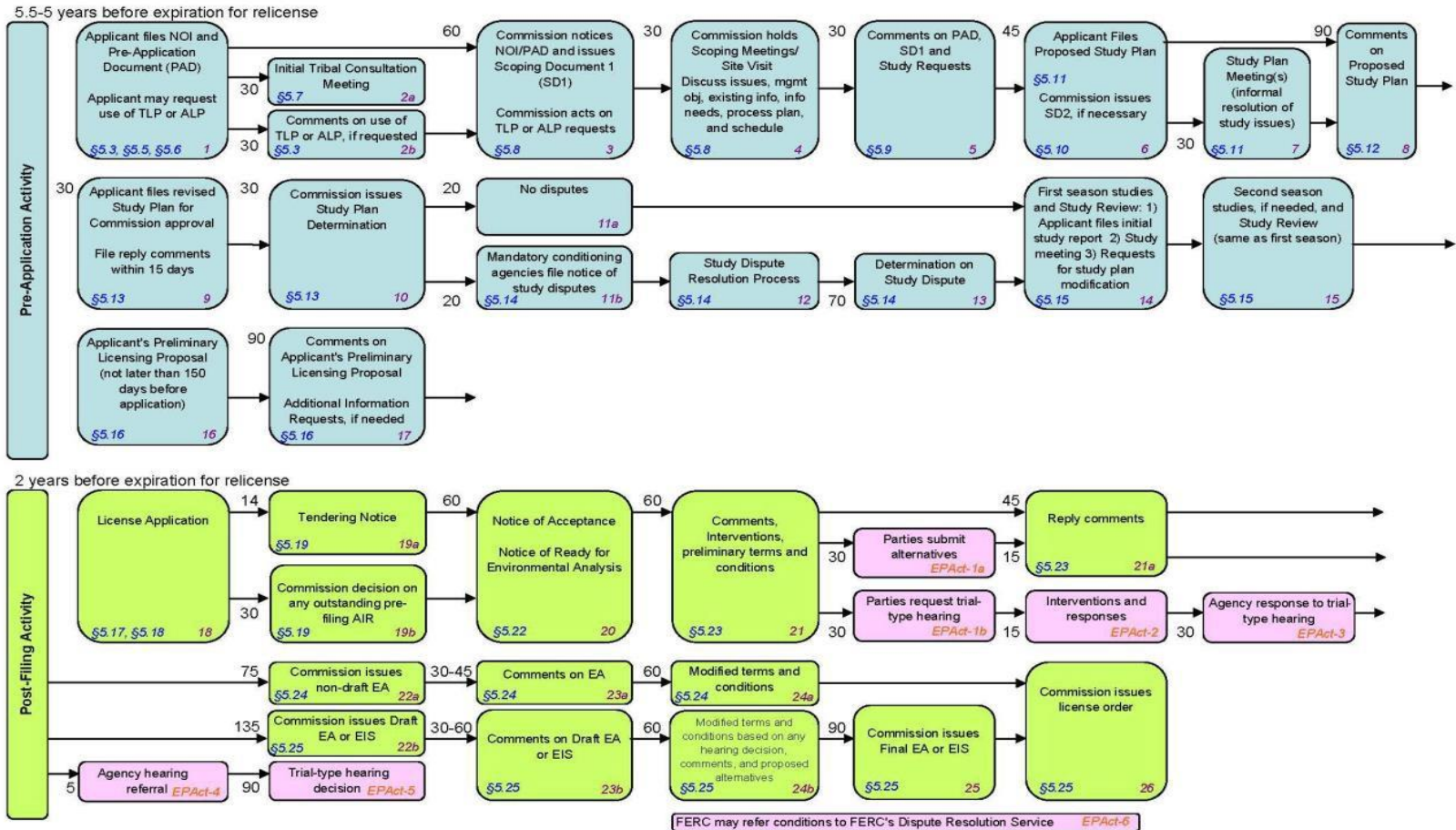
# Typical Timeline

- NOI/PAD – 5 years prior
  - Study Plan – 4-5 years prior
  - Studies – 3-4 years prior
  - Final License Application Due – 2 years prior
  - License Expiration
- 
- “Relicensing, then, is more akin to an irreversible and irretrievable commitment of a public resource than a mere continuation of the status quo. Simply because the same resource had been committed in the past does not make relicensing a phase in a continuous activity.”



# ILP Process

## Integrated Licensing Process (Section 241 of the Energy Policy Act of 2005)



\*Section 241 of the Energy Policy Act of 2005 in pink.

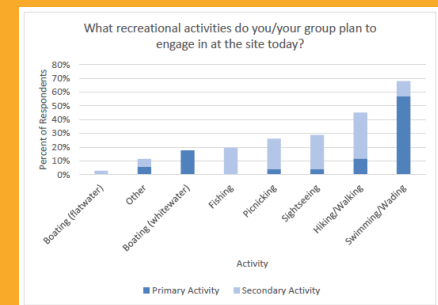
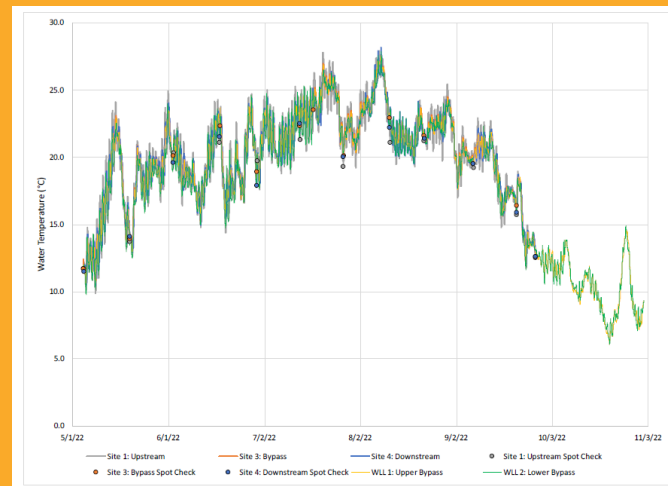
# Studies

- Fish Passage and Protection
- Fish Community
- Mesohabitat
- Bypassed Reach Flows
- Macroinvertebrates
- Freshwater Mussels
- Recreation (portage, launches, trails, whitewater, etc.)
- Aesthetics
- Run-of-River
- Water Quality
- More

Table 4.2.3-1: Sizes of Target Species Excluded from Entrainment by the Project Trashracks.

Common Name	Scaling Factor for Body Width	Minimum Fish Length Excluded (inches)		Notes on Typical Fish Lengths in Moose River Project Area
		2-inch Vertical Racks	1.0-inch Vertical Racks (theoretical)	
Brook Trout	0.122	16.4	8.2	Stocked fish are typically 9-10 inches
Smallmouth Bass	0.128	15.6	7.8	Adult fish are typically 8-15 inches
Rock Bass	0.156	12.8	6.4	Adult fish are typically <8-10 inches
Pumpkinseed	0.148	13.5	6.8	Adult fish are typically <8-10 inches

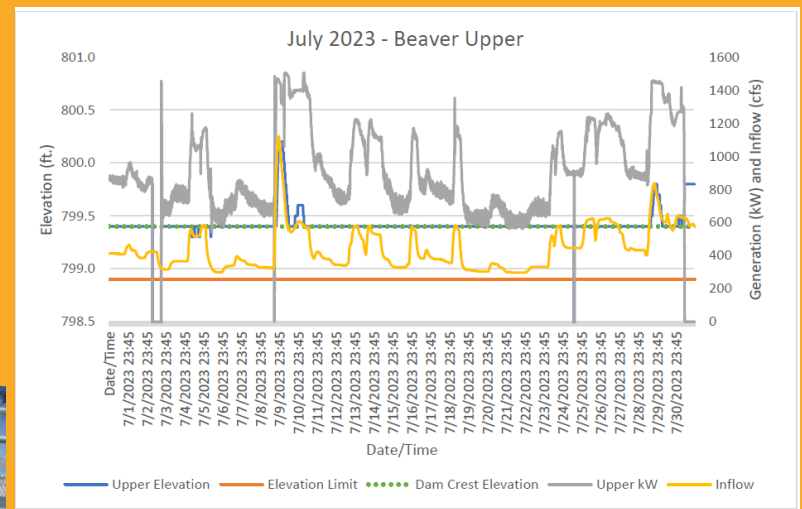
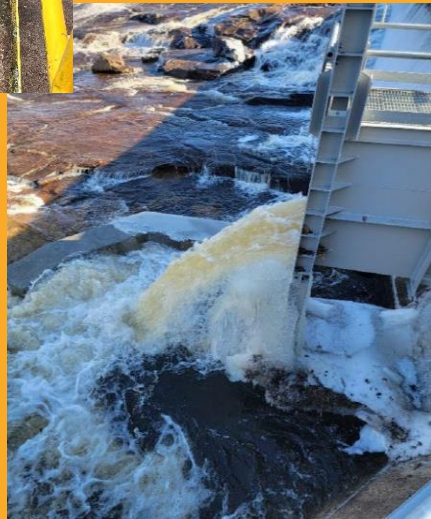
Note: Scaling Factors developed from proportional measurements in Smith (1985)





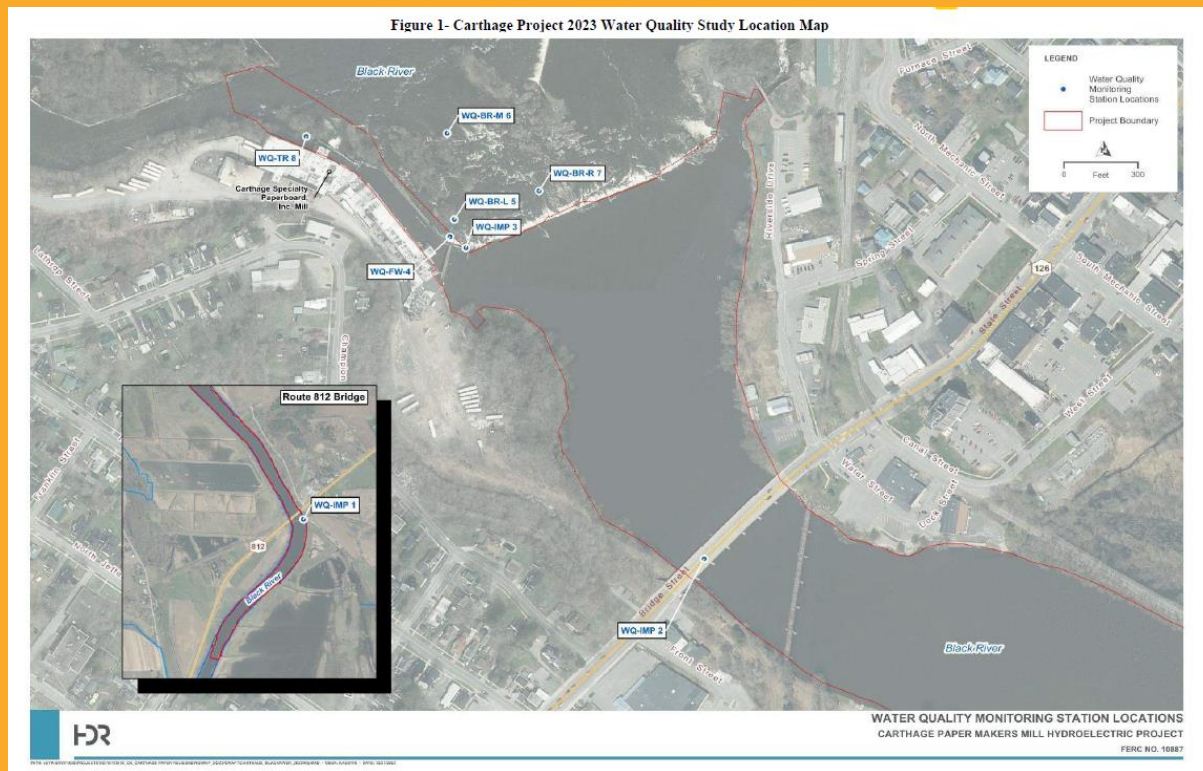
# Relicensing Status

- Upper and Lower Beaver Falls (2) – Post-licensing



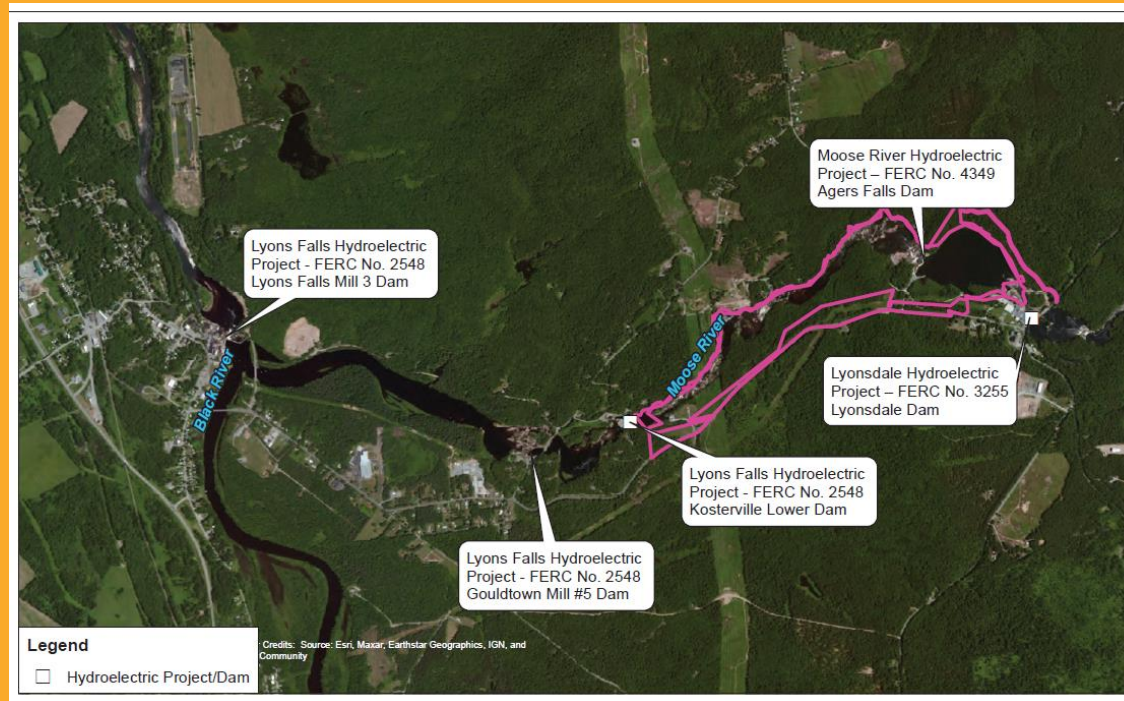
# Relicensing Status

- Carthage Papermakers – TLP FLA Filed
- Studies Conducted
- Outstanding FERC Additional Information Request
- Not Ready for Environmental Analysis



# Relicensing Status

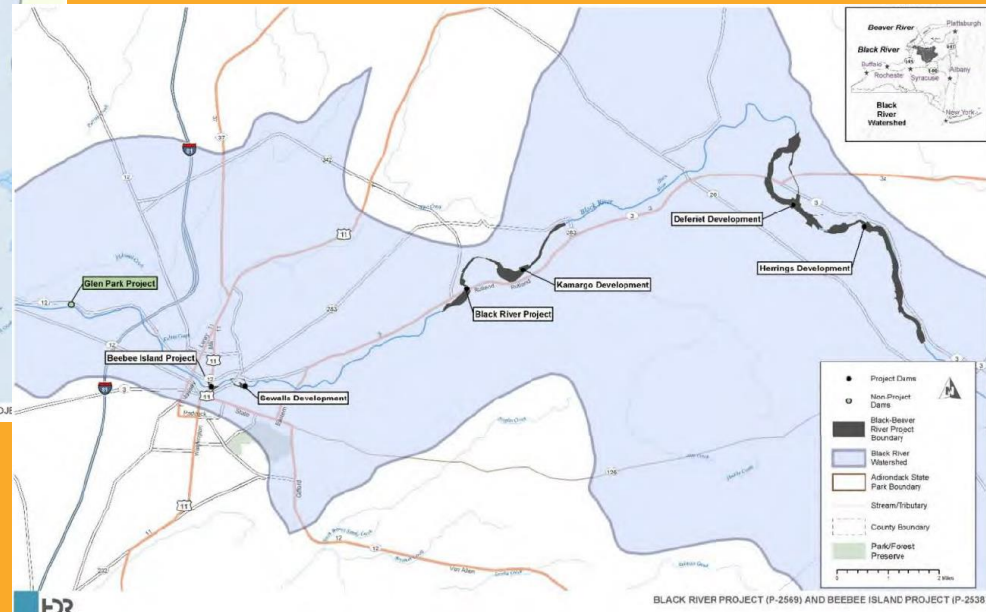
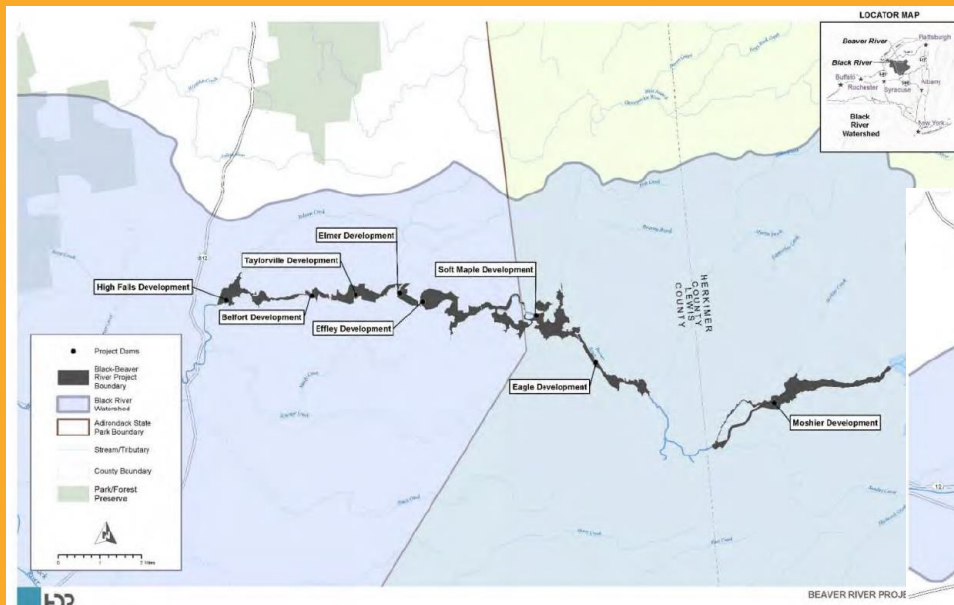
- Moose River, Lyons Falls, Lyonsdale – TLP FLA Filed (or nearly so)
- Studies Completed
- FERC Scoping and Stakeholder Discussions
- Not Ready for Environmental Analysis





# Relicensing Status

- Black River (5), Beebee Island, Beaver River (8) – ILP USR Filed
- Second Year of Studies Completed
- Review of USR – request additional changes to study plan
- FLA to be filed soon



# Relicensing Status

- Kayuta, Forestport
- Study Requests Received
- 2 years of studies



# Keep Informed

- FERC e-Library and e-Subscription

The screenshot shows the FERC (Federal Energy Regulatory Commission) website. At the top left is the FERC logo, a circular seal with an eagle and the text 'DEPARTMENT OF ENERGY' and 'FEDERAL ENERGY REGULATORY COMMISSION'. To the right of the logo is the text 'FERC Federal Energy Regulatory Commission'. Below this is a search bar with the placeholder text 'Enter Search Term(s):'. A dark blue navigation bar contains the following links: ABOUT, MEDIA, DOCUMENTS & FILINGS, INDUSTRIES, LEGAL RESOURCES, MARKET OVERSIGHT, ENFORCEMENT, CAREERS, CONTACT. Below the navigation bar is a left-hand menu with the following items: Decisions & Notices, Notice Formats, FERC Online (highlighted with a red box), eComment, eRegister, eFiling, eSubscription (highlighted with a red box), eService, eLibrary, What is eLibrary?, Key Features, Tips for Searching, Accessibility Tips, and Standards for Descriptions of Documents Submitted to. The main content area is titled 'Documents & Filing >> FERC Online >> eLibrary'. Below the title is a 'TEXT SIZE' selector with buttons for S, M, and L. The main heading is 'eLibrary' and the sub-heading is 'Access documents issued and received by FERC'. Below this is a search tip: 'Can't find what you're looking for in Advanced or General Search Functions? Try Docket or Daily Search functions.' Below the search tip is a 'Search Options' section with the following links: » General Search, » Advanced Search, » Daily Filings/Issuances ("Daily Search"), » Search New Docket Numbers ("New Dockets"), » Docket Search, and » eLibrary Alternate Site.

- |         |                |
|---------|----------------|
| P-2538  | Beebee Island  |
| P-2569  | Black River    |
| P-10887 | Carthage Paper |
| P-2645  | Beaver River   |
| P-2548  | Lyons Falls    |
| P-4349  | Moose River    |
| P-3255  | Lyonsdale      |
| P-4900  | Forestport     |
| P-5000  | Kayuta         |