

Governor Declares Drought in California



David McNew/Getty Images

With water being diverted upstream, the Kern River in Bakersfield, Calif., is expected to remain dry. Reserve wells were opened this week in Kern County.

By JENNIFER STEINHAUER

Published: June 5, 2008

[SIGN UP TO E-MAIL](#)

David Montgomery Moore

December 3, 2008

National Hydropower Association Southeast Regional Meeting



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Outline

- Impacts of Drought on Hydro
- FERC Policy on Drought
- Forward Planning

Southeast Electric Market: Drought Conditions

Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

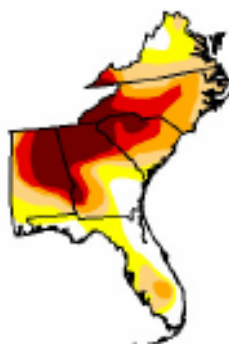
Monthly Southeastern Drought Conditions

Drought Conditions (Percent Area)

	None	D0/D1	D2/D3	D4/D5	D6/D7	D8
Current	14.8	66.3	66.7	48.3	31.3	18.5
Last Week (10/26/08 map)	13.6	66.4	73.6	64.3	50.0	31.4
3 Months Ago (08/01/08 map)	2.4	97.8	78.1	42.9	26.4	14.1
Start of Calendar Year (01/01/08 map)	52.2	47.8	13.2	1.5	0.0	0.0
Start of Water Year (09/01/07 map)	16.1	69.9	77.9	63.8	45.2	24.0
One Year Ago (09/01/07 map)	48.1	61.9	21.8	9.0	0.0	0.0

Intensity:

D0 Abnormally Dry
 D1 Drought - Moderate
 D2 Drought - Severe
 D3 Drought - Extreme
 D4 Drought - Exceptional



September 23, 2008

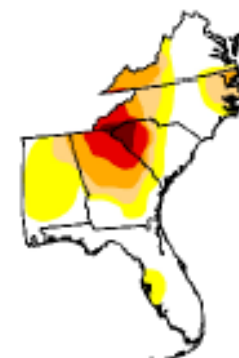
November 4, 2008

Drought Conditions (Percent Area)

	None	D0/D1	D2/D3	D4/D5	D6/D7	D8
Current	47.3	52.7	30.0	19.1	8.8	2.0
Last Week (10/26/08 map)	48.6	51.2	30.0	19.1	8.8	1.3
3 Months Ago (08/01/08 map)	18.4	81.6	62.7	38.8	15.4	6.3
Start of Calendar Year (01/01/08 map)	0.6	90.4	74.3	58.5	41.0	22.0
Start of Water Year (09/01/07 map)	35.3	64.8	41.8	20.8	9.4	1.9
One Year Ago (09/01/07 map)	13.8	86.2	67.7	48.6	32.7	26.4

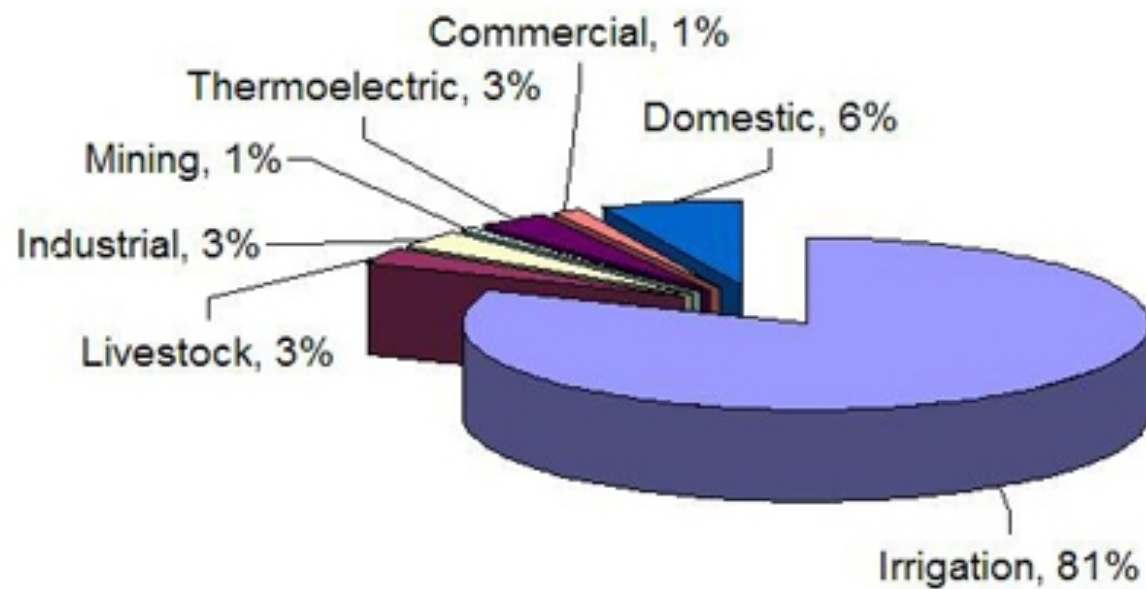
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U.S. Freshwater Consumption (1995)



Source: United States Geological Survey.
Estimated Use of Water in the United States in 1995.



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Table 1 - Thermoelectric Water Impacts, National Results

		Freshwater withdrawal or consumption (BGD)					
		2005	2010	2015	2020	2025	2030
Case 1	Withdrawal	149.2	152.7	145.6	147.6	148.8	148.4
	Consumption	6.2	6.6	6.8	7.3	7.6	7.9
Case 2	Withdrawal	149.2	149.4	141.0	138.6	138.0	136.3
	Consumption	6.2	6.7	6.9	7.5	7.9	8.2
Case 3	Withdrawal	149.2	149.4	140.9	138.5	137.9	136.1
	Consumption	6.2	6.6	6.9	7.4	7.8	8.1
Case 4	Withdrawal	149.2	149.3	140.8	138.3	134.6	135.4
	Consumption	6.2	6.6	6.8	7.3	7.4	7.5
Case 5	Withdrawal	149.2	137.7	122.7	114.2	109.4	103.7
	Consumption	6.2	6.9	7.4	8.2	8.7	9.2

Net Use ↓
Consumption slightly up

Department of Energy/National Energy Technology Laboratory's Power Plant-Water R&D Program



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Generation Impact

News

TVA's hydro output down by half, but rates to ease

25 November 2008

Tennessee Valley Authority (TVA) reports hydro power output is down by more than half due to drought but the utility said its electricity would still come down in January.

Sustained weak hydrology has cut back TVA's hydro power generation in a major way but recent drops in some power and thermal fuel costs have enabled the Fuel Cost Adjustment (FCA) to be decreased.

TVA said it is benefiting from the reductions in purchase

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Generation Impact

Archive for [Thursday, November 20, 2008](#)

WAPA buying wind power from Basin

By [Blake Nicholson](#)
[November 20, 2008](#)

BISMARCK, N.D. - The agency that distributes hydroelectric power generated by Missouri River dams is planning to buy wind power for the first time.

The Western Area Power Administration says its deal to buy up to 50 megawatts of wind power per year from Bismarck-based Basin Electric Power Cooperative for three years is a "precedent setting" way to meet its power demands and support renewable energy.

Financial details were not released Wednesday. WAPA says it will buy the power from 2010 through 2012.

Drought has plagued the Missouri River Basin for eight straight years, lowering electricity production. The six power plants on the river generated a record low amount of electricity in July, the U.S. Army Corps of Engineers says. Total energy production this year is expected to be half the normal amount, down to 5 billion kilowatt hours.

Market and
assessment for 2008.



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Generation Impact

By GARY GRAY

Reporter / Bristol Herald Courier

Published: November 26, 2008

On the Web:

<http://www.tva.gov>

But rainfall deficits in the region over the past two years have left lake levels low, and TVA opted to shell out about \$1.2 billion on other energy sources to replace that loss. To pass that cost along to customers, the TVA board in August approved an average 20 percent electric rate increase – mostly attributed to higher power production costs. The rate increase was its largest in 30 years.



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Generation Impact

[Home](#) › [News](#) › [Local News](#)

REU wants hefty rate hike

By [Scott Mobley](#) ([Contact](#))
Friday, November 14, 2008

"Hydro is the biggest driver," Hauser said. "Anybody who has been out to Lake Shasta recognizes that."

REU gets roughly 22 percent of its electricity from Shasta Dam and other federal hydroelectric projects in average rainfall years. At less than 3 cents per kilowatt hour, hydropower is by far Redding's least-expensive electricity source.

But no one can predict how much rain will fall each year, Hauser said. That's one reason why REU keeps a cash reserve, currently at \$42 million. The utility would be seeking a much higher rate increase were that reserve not there, he said.

The hydropower supply looked decent when REU last looked at rates in February, after a couple of months of healthy rain and snowfall, Hauser said.

But this past spring was the driest on record in Northern California. REU has had to spend \$8 million more than expected buying more expensive electricity to replace the lost hydropower.



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Generation Impact

Overall non-coincident peak demand this summer, assuming normal weather and 50% load forecast probability, is forecasted to be 1.3% higher than the actual demands of last summer with some regions showing an increase in demand while others a reduction. While the capacity margins to supply this increased demand are forecasted to be sufficient, there are concerns for supply reliability due to deliverability of reserves. In particular, these concerns manifest themselves in Southern California due to constraints on imports from the north and outside California, and in the Southeast should the drought conditions persist, coupled with any major transmission and/or generation outages.

FERC, Summer Market and
Reliability Assessment for 2008.

Generation Impact

Southeast Electric Market: Overview and Focal Points

Page 4 of 14

Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

Drought Affects Hydro: A continued drought in the Southeast has left hydroelectric facilities with significantly lower water levels going into this summer than in previous years. For example, Southern Company expects its hydroelectric facilities to have decreased capacity of almost 1,600 MW, down almost 70% from its normal hydro capacity.

FERC, Summer Market and
Reliability Assessment for 2006.



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Licensing and Compliance

License Temporary Modification Provisions

125 FERC ¶ 62,191
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Crisp County Power Commission

Project No. 659-014

ORDER ISSUING NEW LICENSE
(November 28, 2008)

These flow conditions may be temporarily modified if required by operating emergencies beyond the control of the licensee, and for short periods upon agreement among the licensee, the Georgia Department of Natural Resources—Wildlife Resources Division, and the U.S. Fish and Wildlife Service. If any flow is so modified, the licensee shall (a) notify the Commission as soon as possible, but no later than 10 days after each such incident, and (b) include an incident report as described in Article 406.

Project operation may be temporarily modified, if required by operating emergencies beyond the control of the licensee, and for short periods, upon agreement among the licensee, Georgia Department of Natural Resources—Wildlife Resources Division, and the U.S. Fish and Wildlife Service. If the operation is so modified, the licensee shall (a) notify the Commission as soon as possible, but no later than 10 days after each such incident, and (b) include an incident report as described in Article 406.



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Compliance

we energies



800 Industrial Park Drive
Iron Mountain, MI 49801

tel 906.779.2400
www.we-energies.com

November 26, 2008

Ms. Kimberly Bose
Federal Energy Regulatory Commission
Division of Licensing and Compliance
888 First Street NE
Washington, DC 20426

Dear Ms. Bose:

**WAY DAM HYDROELECTRIC PROJECT (FERC No. 1759)
TEMPORARY CHANGE TO MINIMUM RESERVOIR ELEVATION**

Wisconsin Electric Power Company, doing business as We Energies, is hereby notifying you that the Way Dam project will be operated below the normal license minimum reservoir elevation beginning some time after December 1, 2008, and continuing through January 14, 2009.

Due to continuing drought conditions in the project area the project reservoir elevation is near the minimum allowable license limit and is releasing just over the required minimum flow. The normal fall rains did not occur this year and it appears that drought conditions are likely to continue throughout the winter season.



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we energies



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Iron Mountain, MI 49801

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www.we-energies.com

November 11, 2008

Ms. Kimberly Bose
Federal Energy Regulatory Commission
Division of Licensing and Compliance
888 First Street NE
Washington, DC 20426

Dear Ms. Bose:

**SUBJECT: LOWER PAINT HYDROELECTRIC PROJECT (FERC No. 2072)
TEMPORARY REDUCTION OF MINIMUM FLOW ON NOVEMBER 4, 2008**

Wisconsin Electric Power Company, doing business as We Energies (WE), is sending this letter as the required notification to the FERC regarding a temporary reduction in minimum flow at our Lower Paint Hydroelectric Project (FERC No. 2072). Notification to the agencies and commission is required within 10 days of any minimum flow reduction. The Lower Paint project is a diversion dam that has a minimum flow requirement to the natural river that varies by season. The minimum flow is met by passing 90 cfs through a small generator and the remainder through one of the two Tainter gates. The required minimum flow during this time of the year is normally 250 cfs; however, we are currently operating under an agency approved run-of-river adverse flow plan that was enacted on September 22, 2008, due to drought conditions in the area.



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FERC Policy on Flow Modifications

Niagara Mohawk Power Corporation and Northern Electric Power Company, LP

Project No. 5276-034

FEDERAL ENERGY REGULATORY COMMISSION - COMMISSION

75 F.E.R.C. P61,001; 1996 FERC LEXIS 2483

Order on Rehearing

April 1, 1996

by it, G.E., and the Commission. It therefore asked the Commission to exercise its authority under Article 404 to permit the temporary suspension of minimum flows, subject to day-to-day control by on-site New York DEC staff, while the sites of suspected entry of PCBs into the river could be inspected, and a remediation plan could be developed and implemented. During such a suspension, Niagara Mohawk would divert the bypass flow through the project's intake canal, turbines, and/or other auxiliary release works. New York DEC said it did not know how long the suspension would be necessary, possibly for as short as one year, perhaps five to ten years. It requested that it be delegated authority to direct



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License Amendments for Flow Modifications?

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D.C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 9690 -- New York
Rio Project
Project No. 10481 -- New York
Mongaup Falls Project
Project No. 10482 -- New York
Swinging Bridge Project
AER NY-GEN, LLC

Mr. Greg Sharland
Plant Manager

August 14, 2007

reporting requirements.” Any proposals that may affect your compliance with these or other resource protection requirements need to be discussed with us and the resource agencies, including the U.S. Fish and Wildlife Service, as far ahead of time as possible, so that any necessary mitigation can be discussed, and the need to file temporary amendment requests can be determined. **Actions that could affect compliance with license requirements for more than very short periods of time require the filing of amendment requests for Commission approval.**



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Compliance – Reservoir Elevation

FEDERAL ENERGY REGULATORY COMMISSION
Washington, D. C. 20426

OFFICE OF ENERGY PROJECTS

Project No. 10855-137--Michigan
Dead River Hydroelectric Project
Upper Peninsula Power Company

Mr. Terry P. Jensky
Vice President – Energy Supply Operations
for Wisconsin Public Service Corporation
700 North Adams Street
Green Bay, WI 54307-9001

NOV 13 2008

Reference: Article 402 Minimum Elevation Deviations

Dear Mr. Jensky:

V
reservoir

Conclusion

Based upon our review of the available information, we have determined that the minimum reservoir elevation deviation which occurred does not constitute a violation of Article 402 of your license. The deviation was the result of low inflow attributed to a lack of precipitation and the direction from the MDNR and the MDEQ to increase outflow which impacted the rate of reservoir elevation decline.



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FERC Letter Order Approval of Flow Reduction/Whitewater Release

Your notification of the cancellation of whitewater flow releases scheduled for November 1-2, 8-9, and 15-16, 2008, and the fall and winter drawdown of Lake Burton, at the North Georgia Project, satisfies the requirements of the above June 1997 order. You are to continue to monitor river flows and weather conditions for indications that the scheduled whitewater flow releases and Lake Burton drawdown could be reinstated; however we understand that appears unlikely. If you have any questions concerning this matter, please contact me at 678-245-3084.



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Licensing



ORIGINAL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

November 3, 2008

SECRET
COM

2008 NOV 1

FEDERAL

Kimberly I
Federal En
888 First P
Washington

Subject:

Dear Ms. E

The
Impact Sta
- FERC Pr
FERC Proj
comments

maximum snow melt and higher water levels; vulnerability to fire due to evaporative stress (drying) from more hot days; changing precipitation patterns with more rain and less snow in winter causing winter streamflows to increase; decreased snowpacks and altered timing of spring runoff; larger and more severe storms and lightning causing more forest fires and drier conditions feeding larger, more intense wildland fires; warming temperatures and more severe drought with increased risk of insects and diseases to trees; possible increases in invasive species, and warmer stream temperatures negatively affecting aquatic organisms and fish species that thrive in cold water.

Recommendation:

We recommend the FEIS include a discussion of climate change and its potential effects on the proposed action and on the action's impacts. We recommend this discussion include a short summary of any applicable climate change studies, including their findings on potential environmental and water supply effects and their recommendations for addressing these effects.

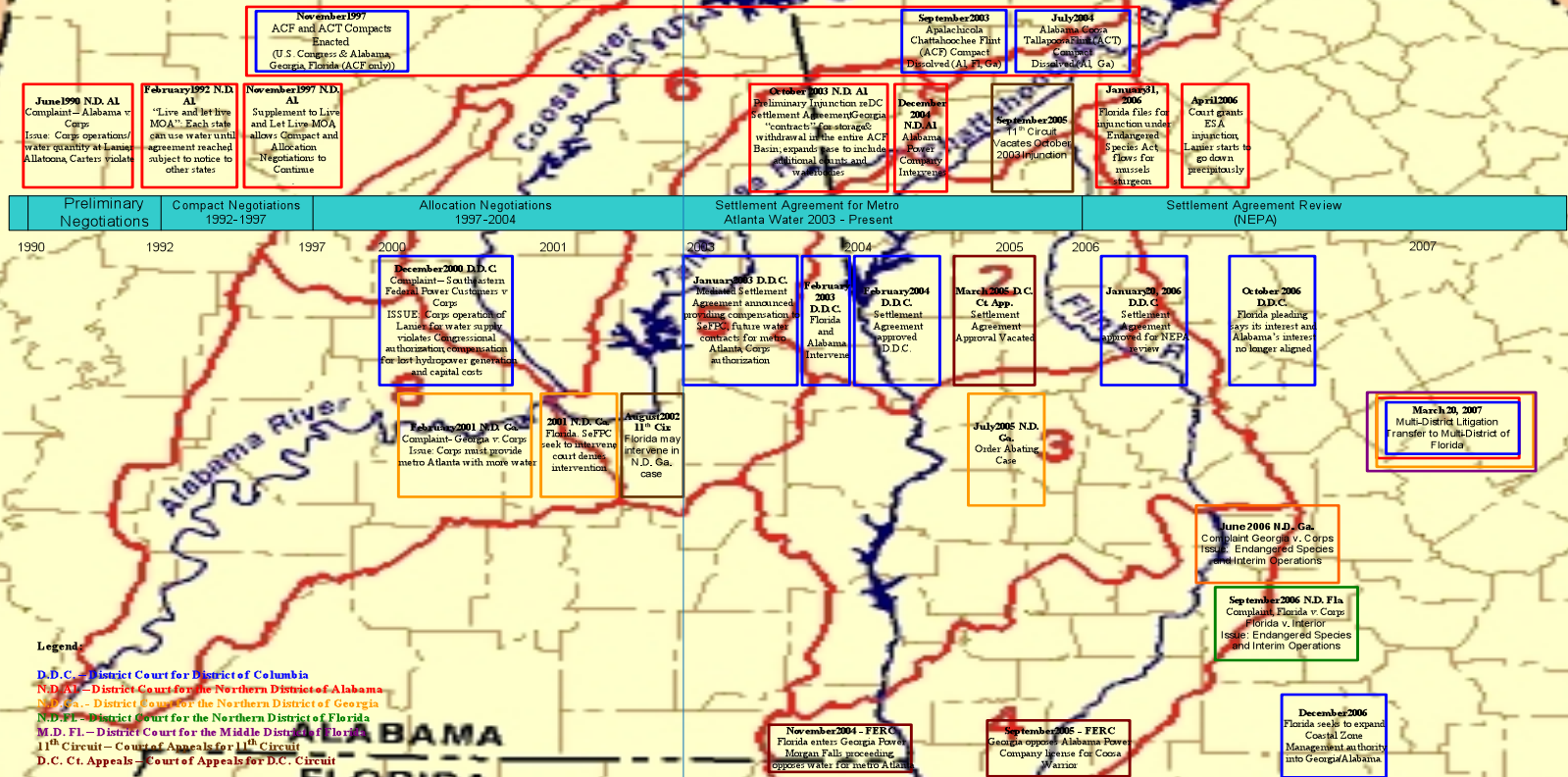


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Compliance During Drought

- 1st: Review License Provisions for Licensee Modification Language/Drought Contingency Plan Triggers
- 2d: Standard Language May Require Letter Order
- Extent of Consultation Dependent Upon Length of Modification, Local Circumstances
- FERC Process Does Provide Some Benefits and Defenses

ALABAMA-GEORGIA-FLORIDA WATER WARS TIMELINE



Water Rights

§ 821. (FPA SECTION 27) State laws and water rights unaffected

Nothing contained in this chapter shall be construed as affecting or intending to affect or in any way to interfere with the laws of the respective States relating to the control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired therein.

FEDERAL ENERGY REGULATORY COMMISSION

OFFICE OF ENERGY PROJECTS

WASHINGTON, D.C. 20426



LIST OF

COMPREHENSIVE PLANS

NOVEMBER 2008



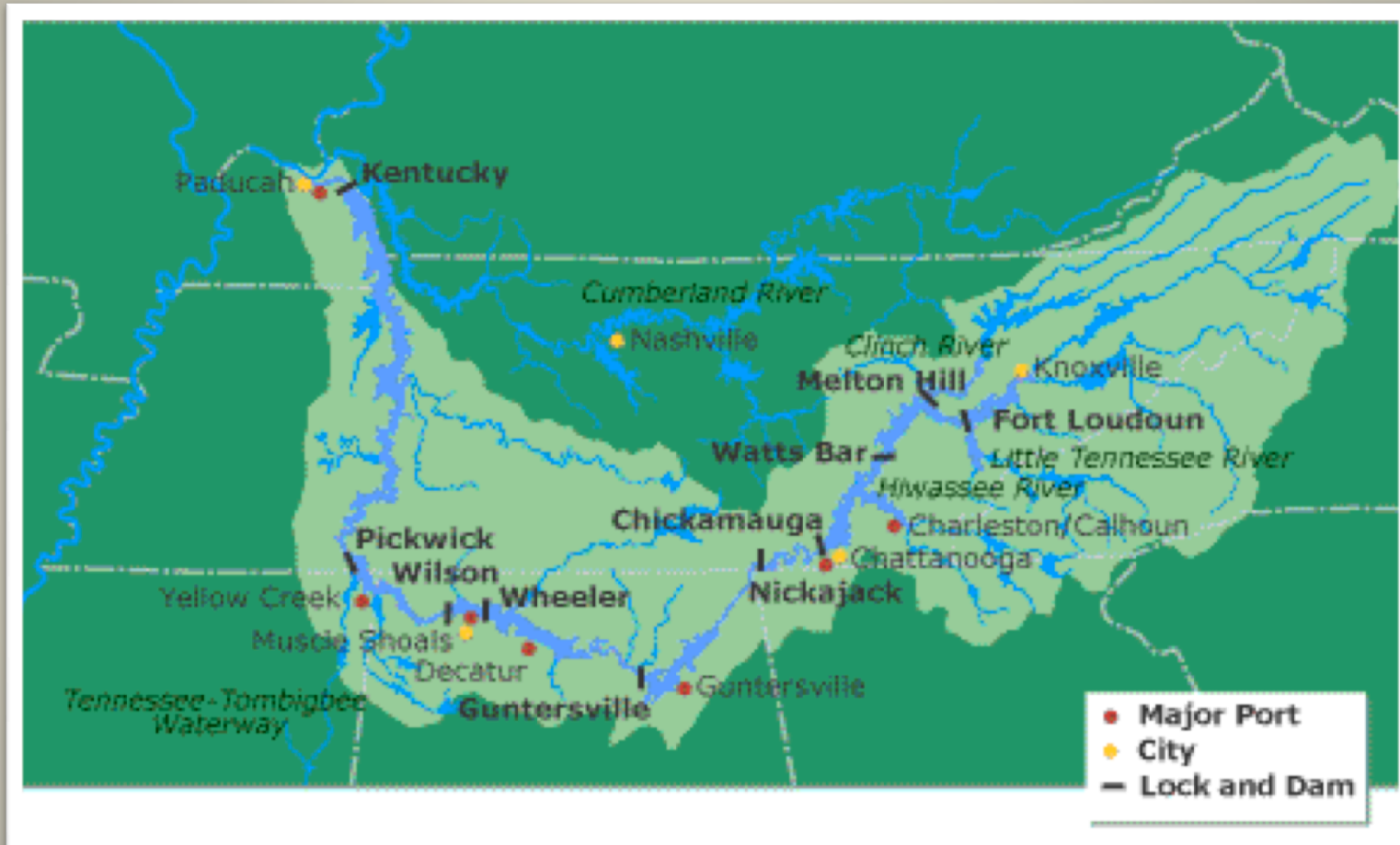
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Catawba-Wateree



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Tennessee River Basin



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Conclusion

- Water Shortage Inevitable: Drought, Population, and Environmental Requirements
- Planning for Drought Begins at Licensing
- Drought Prediction and Advance Notice to FERC: Drought Contingency?

