THE WAR *Over* WATER

Balancing the Demands of a Limited Resource

Eventually, all things merge into one, and a river runs through it.
NORMAN MACLEAN

During the 1980s, two separate drought periods in the Southeast resulted in reduced power generation at the US Army Corps of Engineers' dams. Those droughts, while severe, highlighted an issue that emerged in subsequent and more devastating droughts between 1990 and 2010. Hydropower is not the only product demanded of Corps projects. Water supply, flood control and navigation also vie for a certain percentage of each project. In addition, the lakes have become popular destinations for recreational activities, such as boating, fishing, hiking, swimming, secondary homes and resorts.[1] These "competing uses" of a single natural resource represent one of the great challenges faced by SEPA during the last two decades.

For federal hydropower production in the Southeast, SEPA must insure its contractual obligations to customers. Drought conditions limit the inflow into the reservoirs, increase the amount of evaporation, and can have a detrimental effect on the ability to produce hydroelectricity at peaking hours when it is needed most. When that happens, SEPA must purchase replacement power, the added costs of which are rolled into the customers' electrical rates. All Corps-managed reservoir projects have varying authorized uses and have been subjected to increasing demands resulting from population growth and environmental issues not fully understood when the projects were constructed during the mid-twentieth century. Populations require water for consumption, and recreational users desire full lake levels for docks and other activities. When droughts occur and lake levels drop, controversies often erupt over the prioritization of each use. Discharges for hydropower, or even for downstream water quality or habitat requirements, are often seen as wasteful releases. The most illustrative example of competing uses is that of the so-called "Water Wars" between the states of Georgia, Alabama, and Florida. Because of the complexity of issues involved, the water wars are at once a fascinating and troubling study of balancing the demands of limited resource.

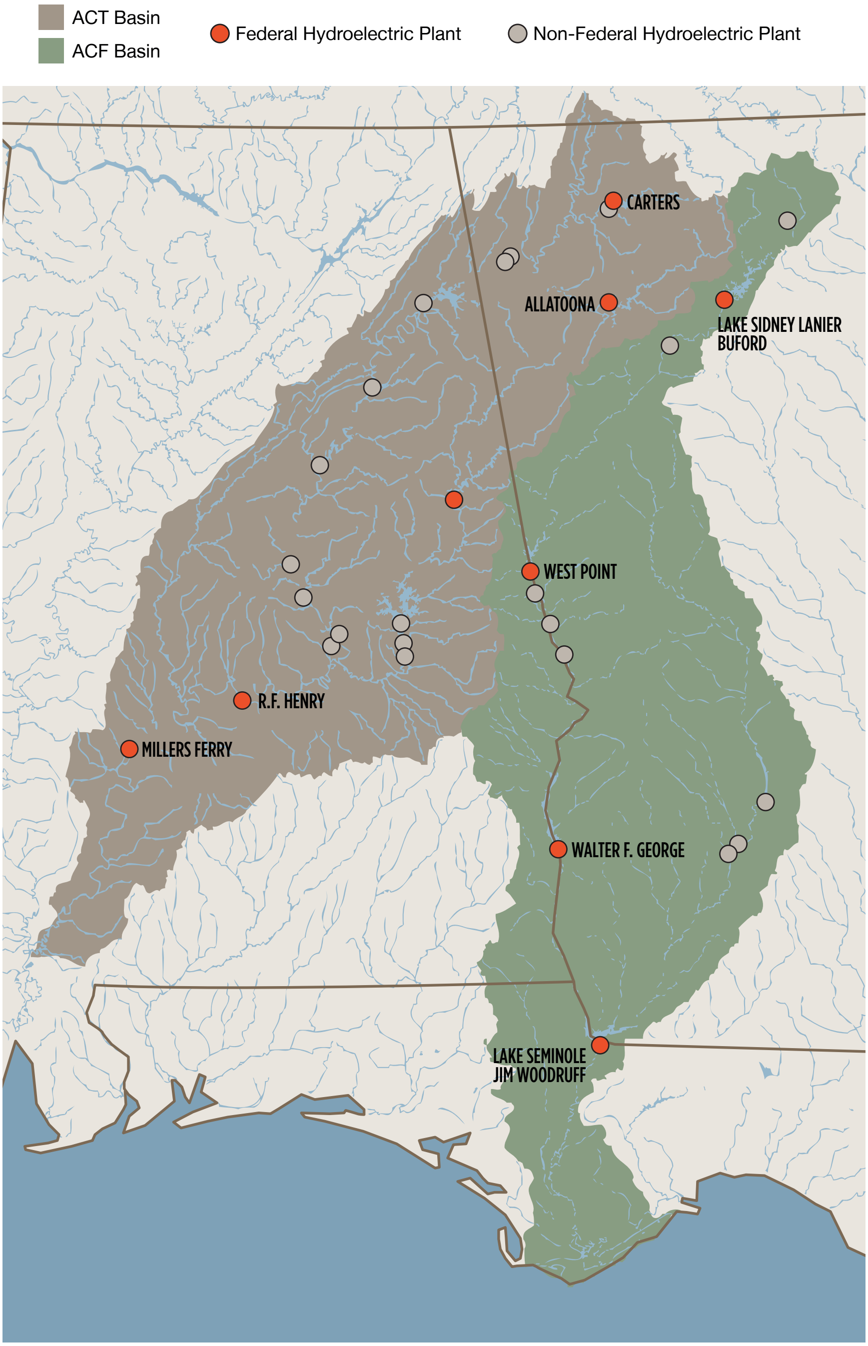
Left: A young trout angler tries his luck downstream of Hartwell. SEPA customers depend on Corps lakes for energy storage, but are in competition with various other competing uses. As the population grows, the war over water will likely continue (Corps photo).

THE ACT-ACF BASINS: DIVERSITY AND DEMAND

To understand the water wars controversy, it is necessary to understand those river systems that have been captured in this social, political, and ecological tug of war for over twenty years.[2] First, the Apalachicola, Chattahoochee, and Flint rivers form what is called the ACF basin. Each river has a very distinct watershed and each is represented by different urban, agricultural and ecological constituents. The Chattahoochee River stems from the Appalachian Mountains and ultimately deposits into Lake Seminole at the junction of Georgia, Florida and Alabama. On its journey, the river traverses metropolitan Atlanta, home to nearly five million residents, and serves as the geographical boundary between Georgia and Alabama. The majority of the river is impounded, with thirteen reservoirs in all, three of which support hydropower projects owned by the Corps of Engineers and, thus, provide power to SEPA preference customers. These projects include Buford, West Point, and Walter F. George.

The Flint River originates south of Atlanta, near Hartsfield-Jackson International Airport, and flows through and supports the prime agricultural land in southwest Georgia. It is fed by two creeks, Kinchafoonee and Ichawaynochaway, as well as a system of underground aquifers. Unlike the Chattahoochee, the Flint runs largely unimpeded, with only Lake Blackshear between the headwaters and its terminus at Lake Seminole.[3]

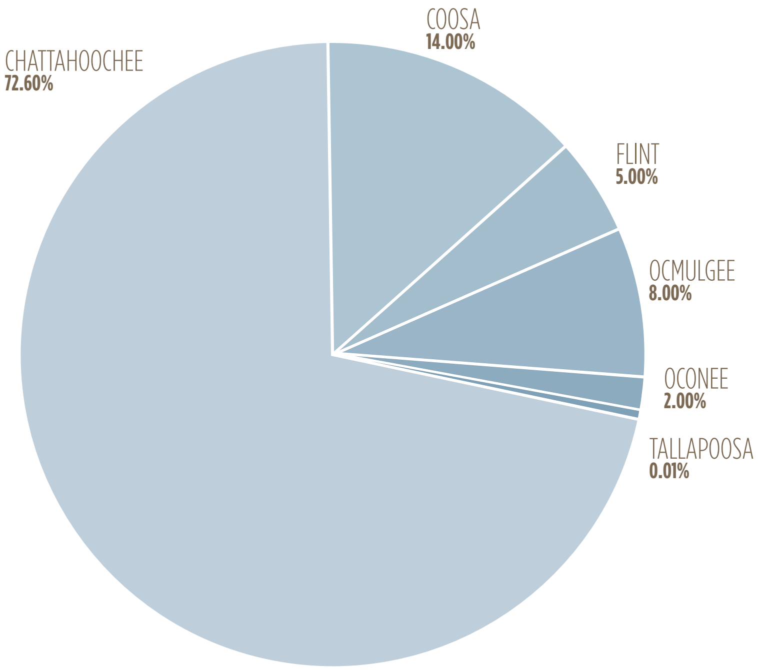
During periods of drought, battle lines are often drawn over competing uses of water at the multi-purpose Corps projects (Corps photo).



For over two decades, the ACT/ACF basins have been the central focus of the Tri-State Water Wars.

Formed by the Flint and Chattahoochee rivers at Lake Seminole, the Apalachicola River and its estuary are home to one of the most delicate and biologically diverse ecosystems in the United States. Although altered by Corps dredging to retain navigational channels, the Apalachicola River is largely protected by conservation and low population density. More than ten percent of the nation's oysters originate in Apalachicola Bay, and it serves as the habitat for numerous endangered species. This habitat requires a delicate balance between the river's freshwater origins and the saltwater of the Gulf of Mexico. At the lower end of Lake Seminole, the Corps operates the Jim Woodruff hydroelectric project.

The second river system at the heart of the water wars is the Alabama-Coosa-Tallapoosa, or ACT, basin.[4] The ACT basin drains approximately 22,820 square miles in portions of Tennessee, northwest Georgia, and Alabama. The Coosa and Tallapoosa rivers form in northwest Georgia and include two major tributaries, the Coosawattee River and the Etowah River. The Coosa and Tallapoosa merge near Montgomery, Alabama to form the Alabama River, which deposits into the Gulf of Mexico near Mobile. There are 18 dams in the basin, 6 federal and 12 non-federal. The reservoirs impounded by those dams serve a variety of purposes, including navigation, hydropower, flood control, water supply, and recreation. Four of the federal dams



The Chattahoochee River supplies the majority of water for the Metro Atlanta District (adapted from Atlanta Regional Commission findings).

support the production of hydroelectricity that is marketed by SEPA. These include Carters on the Coosawattee River and Allatoona on the Etowah River in Georgia, and Millers Ferry and R. F. Henry on the Alabama River between Montgomery and Mobile. Like the ACF basin, the headwaters of the ACT, including Carters Lake and Lake Allatoona, provides part of the the water supply for the metropolitan areas northwest of Atlanta. Downstream, the Alabama River supports a substantial agricultural economy, navigation, industry, and a delicate ecosystem.[5]

Since 1950, the city of Atlanta grew to become the economic and population center of the South. With nearly five million metropolitan residents today, the city's water demands have outstripped the available supply. Originating as a railroad hub, Atlanta is one of the few major cities in the United States without the benefit of a large body of flowing water or an aquifer to support its needs. Part of the city's problem is simple geography. Situated along a ridgeline at the foothills of the Appalachian Mountains, Atlanta is located near the headwaters of two watersheds. Water west of the city flows towards the Gulf of Mexico and water east of the city deposits into the Atlantic Ocean. Thus, the Chattahoochee River, with its relatively small drainage basin, is the only substantial water source near Atlanta. At present, the river meets three-fourths of the city's water-supply demands and is also the recipient of sewage discharges and storm water runoff. This puts a tremendous strain on the river system and affects all downstream users.[6]

Officials gather for ground-breaking ceremonies of Buford Dam on March 1, 1950. Because of its relatively small drainage basin and demands of downstream water consumers, Lake Lanier has been at the forefront of the Tri-State Water Wars (Corps photo).

"THERE ARE NO EASY SOLUTIONS, ONLY TOUGH DECISIONS"

Water flows pay no attention to political boundaries, but the rights to those flows become politically contentious and the sources of litigation. When it was authorized and constructed, the Buford Dam impoundment (named Lake Lanier) was not anticipated to be a source for water-supply withdrawals, except for the cities of Gainesville and Buford. While the idea of using the reservoir for Atlanta's water-supply needs was bandied about at the time Mayor William B. Hartsfield scoffed at the idea of contributing to the project's construction costs. "In view of other possible sources of Atlanta's future water," he wrote, "we should not be asked to contribute to a dam which the Army Engineers have said is vitally necessary for navigation and flood control on the balance of the river." Ultimately, with the lack of participation from Atlanta, Buford Dam's primary authorized purposes were hydroelectric power, navigation, and flood control. As the city of Atlanta continued to grow over the next few decades, however, the Corps began to negotiate temporary contracts to allow water-supply withdrawals from metropolitan communities, particularly in times of drought.[7]

In the early 1970s, the Corps initiated a study of Atlanta's water resources. Published in 1981, the Metropolitan Atlanta Area Water Resources Management Study (MAAWRMS) evaluated three long-range water supply alternatives, including the construction of a re-regulation dam six miles below Buford Dam, the reallocation of the storage supply at Lake Lanier, or dredging the downstream Bull Sluice Lake at Georgia Power's Morgan Falls Dam. At the time of the study's publication, Lake Lanier provided more than 90 percent of metropolitan Atlanta's water supply, a drastic departure from the original authorized uses. Of particular note, the City of Atlanta had not contributed to the original project costs. That burden lay with federal hydropower customers, who through their purchases of electricity, bore "the lion's share of the costs," more than $44 million by 1981.

The study was published just as the ACF basin was experiencing a severe drought. Lake levels dropped and limited the amount of water available for all users, including hydropower. SEPA purchased replacement power for its customers and metropolitan communities began requesting temporary water-supply arrangements with the Corps. These competing uses strained the available supply at Lake Lanier and, as a result, Congress and the Corps considered the MAAWRMS re-regulation dam option. As planned, the downstream re-regulation dam would capture peak hydroelectric power discharges from Buford Dam on the weekends and then release them uniformly during the week. Congress authorized the study and construction of the dam in the 1986 Water Resources Development Act (WRDA). In 1988, however, the Corps abruptly abandoned the new re-regulation dam in favor of studying the reallocation of water storage. The Corps determined that a re-regulation dam was not economically feasible and that reallocating 20 percent of the water stored for hydropower (300,000 cubic feet) to a water-supply role would adequately supply the region's needs for the next twenty years.[8]

This decision came at a critical moment for SEPA customers, who throughout the droughts of 1981 and 1986 had to absorb the cost of replacement power supply. The customers were concerned that their authorized purposes were being consistently and unjustly usurped by unauthorized purposes. For example, in late 1987, when studies anticipated a prolonged drought the following year, the Corps began preemptively withholding discharges. One group of preference customers affected, represented by the Southeastern Power Resources Committee, expressed its concerns to SEPA:

> *It is from our efforts that these projects were built in the first place. Because of our hard fought efforts, multi-purpose projects have been constructed providing water and producing much needed hydroelectricity. Over the years, we have been paying the majority of the costs associated with the ownership, operation and maintenance costs of these multi-purpose projects.*[9]

The Corps' position was that contractual obligations were an important component of the water allocation equation, but it was not the only demand being brought upon the dwindling water supply of the late 1980s. Water supply, water quality, fish and wildlife and recreation were putting increased pressure on the systems and the Corps recognized the importance of other uses. In testimony before Congress in 1988, the Corps' South Atlantic Division admitted, "We believe, as good stewards, we are obligated to protect all users as much as possible. During such [droughts], we must weigh and balance the public interest among these multiple purposes. There are no easy solutions, only tough decisions."[10]

COST ALLOCATION BY PROJECT FUNCTIONS AS OF SEPTEMBER 30, 1988[11]

Project	Total	Power	Navigation	Flood Control	Fish and Wildlife	Recreation	Other
Allatoona	$48,002,055	62.53%		18.40%		18.58%	0.48%
Buford	$67,318,112	72.02%	3.17%	7.06%		17.75%	
Carters	$129,974,401	84.25%		10.42%		5.33%	
J. S. Thurmond	$953,636,908	83.15%	4.73%	4.36%		7.75%	
W. F. George	$128,627,191	53.83%	40.35%		27.00%	5.55%	
Hartwell	$132,021,596	89.29%	2.42%	3.06%		5.22%	
R. F. Henry	$89,552,289	26.36%		13.07%			
Millers Ferry	$73,482,027	53.26%	41.28%		5.36%		
West Point	$150,471,623	38.69%	1.74%	13.24%	10.76%	35.57%	
R. B. Russell	$536,741,719	97.31%		30.00%		2.39%	
Total	**$1,451,827,931**	**77.73%**	**8.15%**	**3.92%**	**1.14%**	**9.04%**	**2.00%**

There is a finite quantity of water. When you have good water years there is no problem, but when you have droughts, there are certain priorities.

Jim Lloyd, SEPA Power Resources

The 1988 decision to reallocate a full 20 percent of water-storage for non-authorized purposes, cast in the middle of yet another severe drought, alarmed federal power customers who were already paying additional costs for replacement power. Between January and May 1988, the ten projects in the Georgia-Alabama-South Carolina System generated approximately 60 percent less power than what would have been produced in an average water year for those same months. For calendar year 1988, SEPA estimated the purchase of between approximately $14 and $16 million in replacement power costs.[12] In 1989, the Atlanta Regional Commission negotiated with SEPA to compensate federal power customers for lost revenues that would result from the Lake Lanier reallocation proposal.

THE WAR GOES TO COURT: TRI-STATE WATER RIGHTS LITIGATION

As the struggle over the ACT/ACF water storage began, SEPA and the Corps' South Atlantic Division developed an important framework for their partnership. When he arrived at SEPA in 1989, Administrator John McAllister recognized the broken dynamic between the agency, the Corps and the preference customers. As discussed in Chapter 2, McAllister established a goal of improving those relationships. Beginning in 1990, he began fostering an improved partnership through the Southeastern Federal Power Alliance. Through that new partnership, the three entities developed an MOU, signed on June 20, 1991, that clarified the agencies' respective roles in the management of water resources for hydropower. SAD Commander Major General John Sobke remarked, "Recent droughts have highlighted conflicts among the projects' purposes and caused strain among the various users. We're hopeful this agreement will ease those strains when we face such tough times in the future."[13]

SEPA customers praised the framework as a positive step. One wrote, "We congratulate you on the successful negotiation of this document which we believe will provide a sound basis of understanding between the parties and will be beneficial to us as preference customers of SEPA. The hard work you and others have put forth in addressing relationships…is much appreciated." The refreshed partnership between the agencies was crucial to participation in later summit meetings with the ACT/ACF stakeholders to discuss the water allocation options development by the various states. As Harold Jones recalled, "some of those meetings were pretty lively."[14]

The so-called "Water Wars" began in earnest in 1989. Just days after the Georgia Department of Natural Resources and the West Georgia Regional Water Authority proposed a new reservoir on the Tallapoosa River near the Alabama state line, the state of Alabama filed suit against the Corps to prevent Atlanta from withdrawing additional water from the Chattahoochee River. Because of the delicate ecology of the downstream Apalachicola River, Florida joined the suit with Alabama. Georgia sided with the Corps, believing that it had a sovereign right to manage those portions of the river systems that lay within its borders. In 1991, Alabama agreed to allow additional withdrawals from Carters Lake and Lake Allatoona if Georgia would not pursue its proposed reservoir on the Tallapoosa River. During the following year, 1992, the three states developed an MOA stipulating a Joint Comprehensive Study of the two river basins. The agreement was designed as a truce until compact agreements, including a reallocation formula, could be developed for the ACT and ACF basins.[15]

Because water reallocation constituted a major operational change, the Corps was required to conduct detailed analyses under NEPA. As the lead federal agency, the Corps' Mobile District initiated Environmental Impact Statements (EIS) for water allocation alternatives for both the ACT and ACF. The purpose of the EIS was to assist the Corps in their future decision making for the basins' water allocation and also to assist the numerous federal agencies involved with their own specific management programs within the basins. For the ACT/ACF Water Allocation EISs, SEPA was one of ten federal agencies participating in the process.[16] In reviewing the EIS documents, SEPA was responsible for focusing on water quantity available for hydropower under the document's various management scenarios, including high, moderate, and low flow conditions. The reports detailed average annual

During the drought of the late 1990s, lake levels throughout the Southeast receded again. This image of J. Strom Thurmond Lake in the Savannah River Basin poignantly illustrates the water as a finite resource (Corps photo).

energy production, energy loss and direct financial impacts under each of the three flow conditions. In consideration of possible reductions in federal power supply, SEPA also proactively opened negotiations with private utility operators, including Southern Company, to establish contract provisions for its customers associated with the Georgia-Alabama-South Carolina system of projects.[17]

Ultimately, the compact negotiations, originally to be resolved by 1998, stymied between the three states, and deadlines were extended more than a dozen times. By 2000, Georgia and Alabama agreed to a water sharing formula for the ACT basin that would allow for eventual construction of the proposed West Georgia Regional Reservoir. In the ACF basin compact, though, Florida refused to accept the proposed minimum flows, and Georgia balked at Florida's proposed limitations for irrigation by Georgia agricultural interests. On August 31, 2003, the compact expired and the impasse resulted in a web of lawsuits.

Between 1998 and 2002, as compact negotiations reached a critical stage, parts of Georgia experienced four more years of drought, including extreme low flows on the Flint River. As during the 1980s, Georgia petitioned the Corps to allow additional releases for water supply from Lake Lanier, which had fallen to record lows. A group of federal power customers, Southeastern Federal Power Customers, Inc. (SeFPC) responded with a 2000 lawsuit in the District of Columbia charging that because the Corps was improperly allocating water to unauthorized uses, federal power customers were paying disproportionately more for their share of the overall project costs. When the Corps denied Georgia's initial reallocation request in 2001, Georgia filed suit against the Corps and, ultimately, additional lawsuits and appeals were filed. In January 2003, the SeFPC, the Corps, and the Georgia water supply parties negotiated a temporary water allocation settlement. The settlement allocated 240,858 acre-feet (estimated as 22 percent of conservation storage) to water supply and allowed for once-renewable 10-year interim contracts. If approved by Congress, the water supply contracts could be converted into permanent storage. To satisfy the power customers, Georgia agreed to higher rates for water withdrawals, with the income applied as a "credit" against the hydropower rates. According to the agreement, SEPA, not the Corps, "would be responsible for determining the amount of credit" reflected in the hydropower rates and that "the Army [would] defer to SEPA's determination of credits."[18]

Alabama and Florida immediately filed an injunction to prevent implementation of the agreement, which was followed by subsequent appeals. In 2008, the D.C. Court of Appeals reversed a lower court's decision, and invalidated the agreement on the basis that under the Water Supply Act, the Corps cannot make operational changes to its projects without prior study and Congressional approval. According to the Court, reallocating Lake Lanier's storage capacity represented a major operational change.

Another set of lawsuits resulted from the Corps' 2006 Interim Operations Plan (IOP) that used a "sliding scale" for its water releases, which were designed to protect endangered species in the Apalachicola River. Faced with another drought in 2006, Georgia responded that the IOP failed to consider extreme drought situations. Florida, also disappointed with the IOP, sought an injunction based on the contention that implementation of the IOP's decreased flow would threaten endangered species. Eventually, in March 2007, the Judicial Panel on Multidistrict Litigation transferred all of the ACF cases to the Middle District of Florida for final adjudication.[19]

The Tri-State Water Rights Litigation was assigned to Judge Paul A. Magnuson of Minnesota, who had served as the presiding judge in cases involving water rights along the Missouri River. Judge Magnuson determined that the central question of the suits was whether Atlanta had a right to depend on Lake Lanier for its water supply. In July 2009, the Court ruled that water supply was not an authorized use of the reservoir. The Court also established a three-year time limit for the Corps to return its operation to "baseline operations" of the mid-1970s, specifically 600 cubic feet per second (cfs) for off-peak flow.[20]

In June 2011, however, the 11th Circuit Court of Appeals reversed the Magnuson ruling, and declared that water supply was indeed an authorized use of Lake Lanier. The 11th Circuit Court remanded the case back to district court and vacated the three-year deadline. Specifically, the ruling allowed the Corps to "accommodate net withdrawals of 190 million gallons per day annually from Lake Lanier, and to ensure flows of at least 1381cfs downstream at Atlanta." In a June 2012 legal opinion, US Army Corps of Engineers Chief Counsel Earl H. Stockdale determined while the courts have established legal authority for allowing downstream water withdrawals, "it does not in any manner indicate the Corps must, should, or will exercise [that] discretion to…meet that request." Similarly, any credit "that might be afforded to the hydropower purpose for the projects would be a function of operations that the Corps may choose to adopt, and electricity rates that [SEPA] in its discretion may establish."

During the drought of 2006–2008, the shoreline of Lake Lanier receded to record levels (Corps photo).

Once again, in 2012, the Corps began the process of updating its water operating manual based on the affirmed allocation allowances.[21]

SEPA will continue to provide voice to the customers' concerns over allocations that have the potential to effect contractual obligations of power. The Magnuson ruling, while reversed on legal grounds, highlighted critical water management issues that will continue to loom over the region. He also criticized local governments for allowing unchecked growth and local citizens with poor resource conservation. "The problems faced in the ACF basin," he wrote, "will continue to be repeated throughout this country, as the population grows more and undeveloped land is developed. Only by cooperating, planning and conserving can we avoid the situations that gave rise to this litigation."[22]

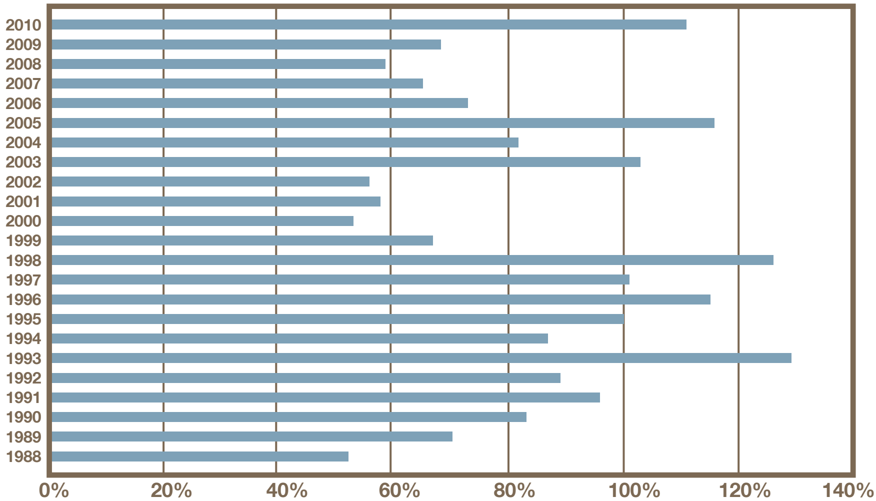
DROUGHT AND THE IMPACT ON SEPA

As the compact negotiations continued, Corps projects in the Southeast faced droughts as severe as those in the 1980s. Rainfall for the region fell below normal in the spring of 1998 and dry conditions continued through 2002. SEPA began purchasing replacement power for its systems in May 1999. The Georgia-Alabama-South Carolina system was the hardest hit. Generation in FY 1999 represented 67 percent of average annual generation and SEPA purchased 28,989 MWh of replacement energy to meet contractual obligations. This was a dramatic departure from FY 1998, when power production in the same system was above average and no replacement power was purchased. In FY 2000, the same system's generation was 53 percent of average (195,705 MWh purchased replacement energy); in FY 2001, 58 percent of average generation (309,434 MWh purchased); and in FY 2002, 56 percent of average generation (400,860 MWh purchased). Low flow conditions during this drought period also reduced generation in the Cumberland and Jim Woodruff systems, although Jim Woodruff experienced compounding reductions due to major rehabilitation projects.[23]

From 2006 to 2008, the Southeast experienced another prolonged period of unprecedented dry conditions. According to the US Department of Agriculture (USDA) Drought Monitor, during 2007-2008, significant portions of Georgia, Alabama, South Carolina and North Carolina were in "exceptional drought" conditions. Lake levels fell dangerously low for power generation and water-supply withdrawals. For example, the two main generating units at Buford Dam can operate with a pool level minimum of 1035 feet. In November 2007, the water pool level at Lake Lanier dropped to 1055 feet. At Walter F. George, the situation was even more precarious. There, the units can operate at a pool level of 184 feet and by November 2007 the lake had dropped to 185.25 feet.[24]

In 2007, with no anticipation of significant rainfall, the Corps' Mobile District issued a statement that "these lakes must meet a lot of needs and, under the current drought conditions it will not be possible to meet all of them completely. It now becomes a balancing act." SEPA worked with Mobile District, Savannah District, and other Corps partners to reduce demands for hydropower "while the drought persists." In the ACT/ACF basin, because the Corps operates several dams, the "temptation to blame [the

GENERATION AS PERCENTAGE OF AVERAGE, GA-AL-SC SYSTEM, 1988-2010
(Numbers include reduced generation from drought as well as unit outages; numbers also include generation from pump units at Carters and Russell).

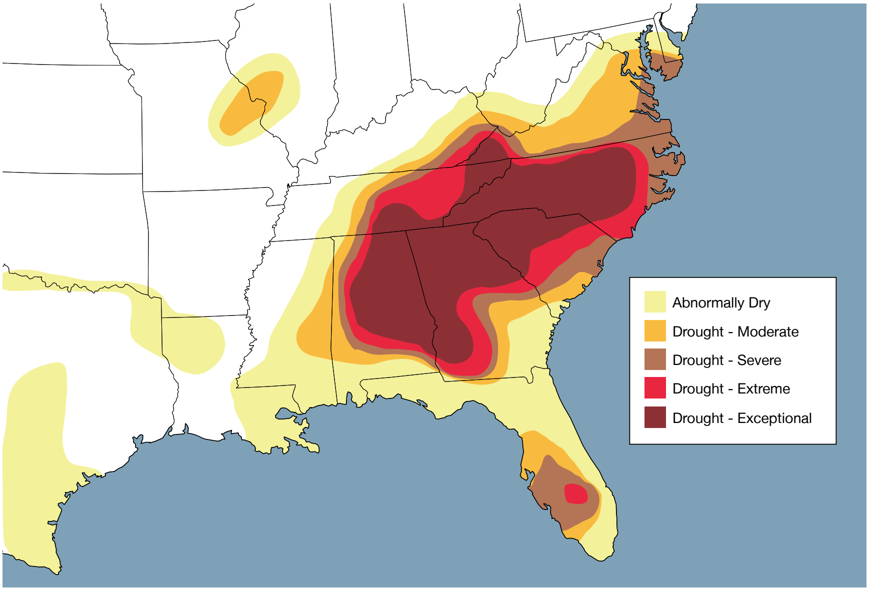


agency] is strong." As the lake pool levels in the ACT/ACF basin dropped in 2007 and 2008, water releases at Corps dams, even if required for downstream ecological support, made news headlines of "man versus mussels." At Lake Hartwell in 2008, a portion of the old paved US Highway 29, submerged when the Corps impounded the area during the 1950s, was exposed in the dry lakebed. Opponents to discharges during the drought conditions suggested a gradual release of the water over a longer period, but gradual releases do not meet federal power customer requirements for peak electrical loads. Electricity, unlike water, cannot be stored for later use.[25]

During the 2006-2008 drought, power generation for the Georgia-Alabama-South Carolina system was well below average. The system operated at 73 percent of the average in FY 2006, 65 percent in 2007, and 59 percent in 2008. Generation rebounded to 68 percent by FY 2009. While some projects, such as Walter F. George, were also undergoing major rehabilitation work during this period and would have operated below average even in a normal water year, the numbers generally reflect the extreme drought conditions. Because of the lowered generation during 2006-2008, SEPA activated its continuing (emergency) fund to purchase replacement power. SEPA recovers continuing (emergency) fund purchases by passing costs through to the customers in the month immediately following the purchase, which improves cash flow to the Federal Treasury. In FY 2006, SEPA used its continuing (emergency) fund to finance $9.9 million in drought-related power purchases. In FY 2008, SEPA purchased drought-related replacement power in the amount of $44 million to meet contractual obligations.[26]

Despite the fact that these droughts occurred amidst the water wars controversy, SEPA and its customers benefited from the open relationships forged during the early 1990s. In their regular meetings, SEPA, the Corps and the customers engaged in open and frank discussions related to water quantity, power generation, and the integration of the hydro projects. Former SEPA Administrator Jon Worthington explained, "We operate the river *system* and on the river there are multiple dams and you cannot just operate one of those dams in the middle of the system independently of the rest of the system." During drought years, he noted, it is important that SEPA and the Corps speak as one voice in regard to operating the system and the contractual obligations for hydropower. In recent years, if below normal rainfall is anticipated for the upcoming year, proactive agreements have been reached to purchase power on the open market earlier in the year when rates are lower. This helps to conserve the lake levels and store the water for power production later in the summer when peak power is more expensive.[27]

At present, the Corps is preparing an updated water control manual for the ACT and ACF basins. As with earlier studies, each is evaluated through the NEPA process for detailed environmental analysis, with input from many stakeholders, including SEPA and the federal power customers. SEPA's position remains the same, that any operational changes negatively affecting the production of hydropower should be accompanied by fair and proportionate compensation to the federal power customer. The hydropower costs account for a high percentage of the total project costs, which must be repaid to the US Treasury. As for the customers, the power generated at federal dams represents a small, yet important component of their electrical supply. Further, peaking power is expensive to procure on the open market. SEPA's customers are acutely aware that the needs of the basin have to be balanced and they are willing to consider changes as long as those changes do not negate the originally authorized project purposes and that they are compensated for their losses.[28]



In 2007, portions of the Southeast suffered from "exceptional drought" (map based on USDA data).

ENDNOTES

[1] As noted in Chapter 1, the Clarks Hill project, constructed between 1946 and 1954, was the first Corps project in the Southeast authorized for recreation. For more information on the increasing role of recreation in authorized projects, see Barber and Gann, *Savannah District*, 428-430; Jeane and Harvey, *Mobile District*, 157-158; also, interview with Harold Jones (SEPA-Retired) by Patricia Stallings, March 4, 2010.

[2] For summary information on the water wars and the respective basins involved, see Jonathan Watts Hull, "The War over Water," Prepared for the Council of State Governments, Southern Legislative Conference (October 2000); J. B. Ruhl, "Water Wars, Eastern Style: Divvying up the Apalachicola-Chattahoochee-Flint River Basin." Paper presented at the Universities Council on Water Resources Conference, July 2004. For more detailed information on each basin, see US Army Corps of Engineers, *Draft Environmental Impact Statement: Water Allocation for the Alabama-Coosa-Tallapoosa (ACT) River Basin, Alabama and Georgia, Main Report*. Prepared by the US Army Corps of Engineers, Mobile District, September 1998. Available online at http://www.sam.usace.army.mil/pd/actacfeis/actmain.pdf (hereafter cited as USACE, *Draft EIS: ACT*); US Army Corps of Engineers, *Draft Environmental Impact Statement: Water Allocation for the Apalachicola-Chattahoochee-Flint (ACF) River Basin, Alabama and Georgia, Main Report*. Prepared by the US Army Corps of Engineers, Mobile District, September 1998. Available online at http://www.sam.usace.army.mil/pd/acftacfeis/acfmain.pdf (hereafter cited as USACE, *Draft EIS: ACF*).

[3] Completed in 1930, the Lake Blackshear project was designed to provide hydropower for the citizens of Crisp County, Georgia. It remains one of the very few county-owned hydroelectric facilities in the United States.

[4] The ACT discussion is adapted from USACE, *Draft EIS: ACT*.

[5] Hull, "The War over Water," 2.

[6] Alyssa S. Lathrop, "A Tale of Three States: Equitable Apportionment of the Apalachicola-Chattahoochee-Flint River Basin," 36 *Florida State University Law Review* (2009): 865-902.

[7] This historical discussion on allocated costs and project authorization is largely derived from the 2009 US District Court (Middle District of Florida) decision of Judge Paul A. Magnuson, *Memorandum and Order, Tri-State Water Rights Litigation*, No. 3:07-MD-1-PAM (M.D. Fla. 2009). For Hartsfield quote, see *Memorandum and Order, Tri-State Water Rights Litigation,* 13. For a general history of the construction of Buford Dam, see Lori I. Coleman, "Our Whole Future is Bound up in this Project: The Making of Buford Dam," (Georgia State University, Master's Thesis, 2008). Available online at http://digitalarchive.gsu.edu/history_theses/30.

[8] For a discussion on the re-regulation dam, see *Memorandum and Order, Tri-State Water Rights Litigation*, p. 41-45; also,

[9] Letter from F. F. Stacy, President of the Southeastern Power Resources Committee to SEPA Administrator Harry C. Geisinger, December 1987 (Program Coordination and Evaluation: Drought Management, 1986-1988, RG 5020, SEPA Archives).

[10] Testimony of US Army Corps, South Atlantic Division, Division Engineer Major General C. Earnest Edgar, March 2, 1988, (Program Coordination and Evaluation: Drought Management, 1986-1988, RG 5020, SEPA Archives).

[11] From SEPA, *Annual Report*, 1988.

[12] Memorandum from SEPA Administrator Harry C. Geisinger, June 13, 1988 (Program Coordination and Evaluation: Drought Management, 1986-1988, RG 5020, SEPA Archives).

[13] Memorandum of Understanding Between the US Army Corps of Engineers, South Atlantic Division and the Southeastern Power Administration, June 20, 1991 (on file, SEPA archives).

[14] SEPA, *Powerline Newsletter*, Spring 1992; Letter from Talquin Electric Cooperative, Inc. to John A. McAllister, July 30, 1991; Harold Jones interview.

[15] For legal studies of the tri-state water wars, see Joseph W. Dellapenna, "Interstate Struggles over Rivers: The Southeastern States and the Struggle over the 'Hooch," *New York University Environmental Law Journal* 12 (2005): 828-900; Douglas L. Grant, "Interstate Allocation of Rivers Before the United States Supreme Court: The Apalachicola-Chattahoochee-Flint River System," 21 *Georgia State Law Review* (2004):401-427; Charles T. DuMars and David Seeley, "The Failure of the Apalachicola-Chattahoochee-Flint River Basin and the Alabama-Coosa-Tallapoosa River Basin Compacts and a Guide to the Successful Establishment of Interstate Water Compacts," 21 *Georgia State University Law Review* (2004): 373-400; Alyssa S. Lathrop, "A Tale of Three States: Equitable Apportionment of the Apalachicola-Chattahoochee-Flint River Basin," 36 *Florida State University Law Review* (2009): 865-902.

Additional information on the Water Wars was gleaned through interviews with SEPA's Chief Counsel, Denver L. Rampey, February 25, 2010; Jim Lloyd, March 4, 2010; Herb Nadler, March 4, 2010; Neil Purcell (SAD, prepared parallel to this SEPA history); also Jones interview.

[16] For the ACT and ACF water allocation EIS documents, Mobile District served as the lead Federal agency. Cooperating agencies included the Environmental Protection Agency, Fish and Wildlife Service, Maritime Administration, National Marine Fisheries Service, National Ocean Service, National Park Service, Natural Resources Conservation Service, Southeastern Power Administration, and the US Geological Survey.

[17] Letter from SEPA Administrator John A. McAllister, Jr. to Senator Sam Nunn of Georgia (Management and Administration, McAllister Correspondence, Record Group 1015, SEPA Archives), November 21, 1994. SEPA's role in the NEPA process had been clarified by DOE compliance guidelines, "Compliance With the National Environmental Policy Act," effective May 26, 1992. In August 1992, SEPA held a five-day workshop for its employees in applying the NEPA process and writing NEPA documents. See SEPA, *Powerline Newsletter*, Fall 1992.

[18] *Memorandum and Order, Tri-State Water Rights Litigation* (2009)*;* Department of the Army, US Army Corps of Engineers, Office of the Chief Counsel, Memorandum for the Chief of Engineers: "*Authority to Provide for Municipal and Industrial Water Supply from the Buford Dam/Lake Lanier Project, Georgia,*" June 25, 2012.

[19] Lathrop, *A Tale of Three States*. All cases involving the ACT basin were temporarily suspended, pending the outcome of the ACF litigation.

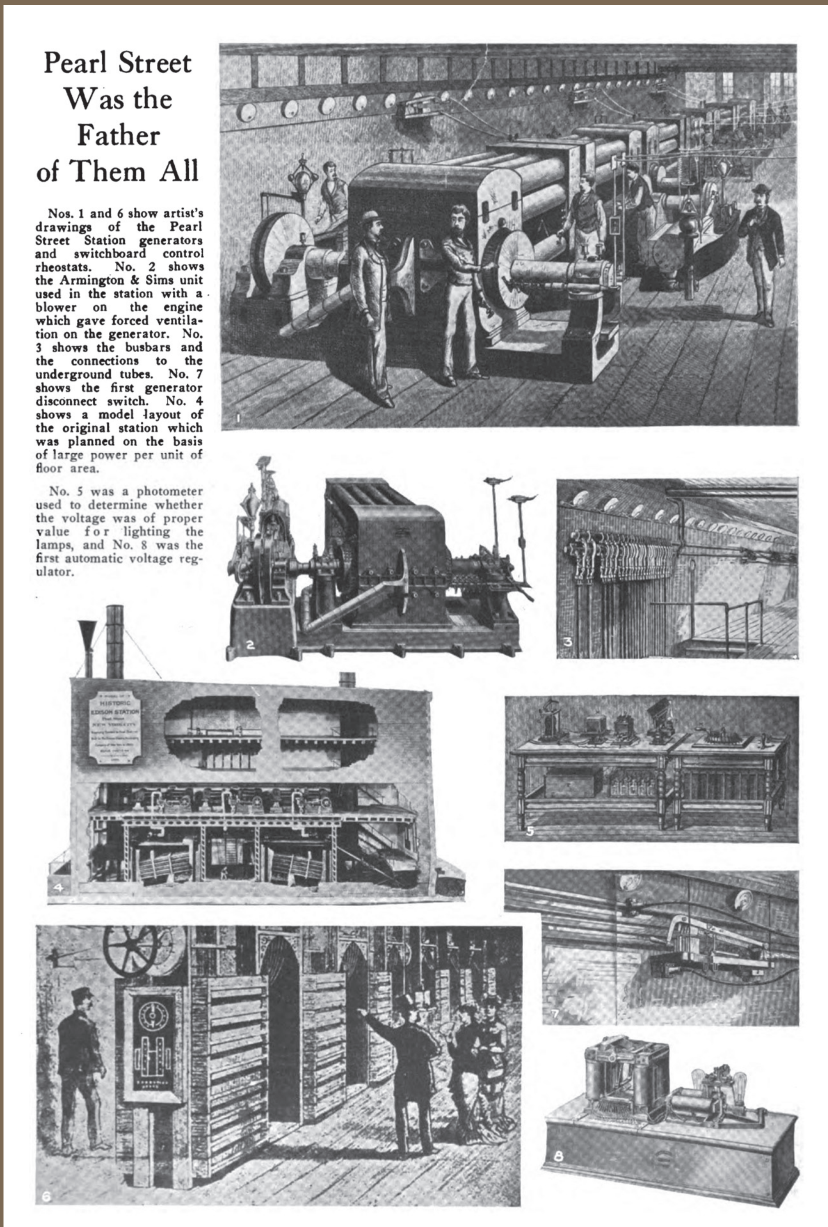
[20] *Memorandum and Order, Tri-State Water Rights Litigation* (2009). Original baseline operations also allowed for the cities of Buford and Gainesville to withdraw water from Lake Lanier for water supply. Magnuson wrote, "The Court recognizes this is a draconian result. It is, however, the only result that recognizes how far the operation of the Buford project has strayed from the original authorization."

[21] See Office of the Chief of Counsel, "*Authority to Provide*," June 25, 2012; also, US Army Corps of Engineers, Mobile District, News Release, "USACE Issues Legal Opinion to the 11th Circuit Court of Appeals," June 26, 2012.

[22] See *Memorandum and Order, Tri-State Water Rights Litigation* (2009). One of the more humorous suggestions concurrent to the drought was a proposal to revise the Georgia-Tennessee state line. According to Georgia State Senator David J. Shafer, surveyors incorrectly established the boundary marker one mile south of the 35th parallel, the Congressionally approved border. Therefore, a correct border would allow Georgia to tap into the Tennessee River. Schafer's resolution passed the Georgia Assembly, but was eventually dismissed. See Shaila Dewan, "Georgia Claims a Sliver of the Tennessee River," *The New York Times*, February 22, 2008.

[23] Data extracted from SEPA, *Annual Reports*, 1998-2002. It should also be noted that droughts are not the only weather extreme that can negatively impact power generation at the projects. For instance, because authorization for the multi-purpose projects always includes "water management," the Corps may be required at head developments to use the reservoirs to store heavy water inflows, or even restrict normal outflows to prevent downstream flooding. At run-of-the-river facilities, heavy inflows will, at a certain volume, naturally restrict the generating capacity. In both cases, SEPA may have to purchase replacement power on behalf of the preference customers. However, drought tends to draw the most public scrutiny because of visually diminishing shorelines; Kenneth Legg, interview by Patricia Stallings, Elberton, GA, February 25, 2010.

[24] Congressional Research Service, *Apalachicola-Chattahoochee-Flint (ACF) Drought: Federal Reservoir and Species Management*, November 14, 2007, p. 13.
[25] "Corps of Engineers Prepared for Possible Long Drought." US Army Corps of Engineers Mobile District, News Release 4 June 2007; Shaila Dewan and Brenda Goodman, "New to Being Dry, the South Struggles to Adapt." *New York Times*, October 23, 2007; Peter Whoriskey, "Three States Compete for Water From Shrinking Lake." *The Washington Post*, October 27, 2007; *Associated Press*, "Forgotten Lake Shows South's Tough Drought," December 20, 2008.
[26] Data derived from SEPA, *Annual Reports*, 2006-2009; also Statement of "Jon C. Worthington Before the Subcommittee on Water and Power, Committee on Natural Resources, United States House of Representatives, Oversight Hearing on the Proposed Fiscal Year 2008 Budget," March 8, 2007.
[27] Worthington interview; Prince interview.
[28] Southeastern Federal Power Customers, Inc. to US Army Corps of Engineers Mobile District, October 20, 2008, *Alabama-Coosa-Tallapoosa Water Control Manual Update and Environmental Impact Statement, Final Scoping Report: Appendix L*. Prepared by US Army Corps of Engineers, Mobile District, January 2009. Internet online at http://www.sam.usace.army.mil//pa/act-wcm/docs.htm.



Pearl Street Was the Father of Them All

Nos. 1 and 6 show artist's drawings of the Pearl Street Station generators and switchboard control rheostats. No. 2 shows the Armington & Sims unit used in the station with a blower on the engine which gave forced ventilation on the generator. No. 3 shows the busbars and the connections to the underground tubes. No. 7 shows the first generator disconnect switch. No. 4 shows a model layout of the original station which was planned on the basis of large power per unit of floor area.

No. 5 was a photometer used to determine whether the voltage was of proper value for lighting the lamps, and No. 8 was the first automatic voltage regulator.

In 1882, Thomas Edison's Pearl Street generating system was a landmark effort in the electrical industry. The station provided power for the financial district in Manhattan, New York (from Electrical World, *July 1, 1922).*

DEREGULATION

A New Era of Reliability and Standards

Electricity is a cornerstone on which the economy and the daily lives of our nation's citizens depend. This essential commodity has no substitute. Unlike most commodities, electricity cannot be easily stored, so it must be produced at the same instant it is consumed. The electricity delivery system must be flexible enough, every second of the day and every day of the year, to accommodate the nation's ever changing demand for electricity.

DOE, NATIONAL GRID STUDY, 2002

UNTANGLING A CENTURY-OLD WEB: DEREGULATING THE ELECTRIC POWER INDUSTRY

By the late eighteenth century, the scientific community understood the concept of electricity. In 1808, Sir Humphrey Davy had invented the arc lamp, and within the next few decades, other international electrical pioneers had developed battery powered motors. These inventions, however, remained little more than "laboratory curiosities" until the late nineteenth century when a trio of European scientists, Zenobe Gramme, Antonio Pacinotti, and William Siemans, developed solutions to transmission in the form of dynamos that converted mechanical power into electricity. Concurrently, other scientists, including Charles Brush and Thomas Edison, developed arc and incandescent lighting. Edison's Pearl Street electrical generating system went online September 4, 1882, and proved to be the most influential development for the industry. It demonstrated the holistic viability of generation, distribution, an end use (incandescent lighting for Manhattan's financial district), in addition to competitive rates.[1]

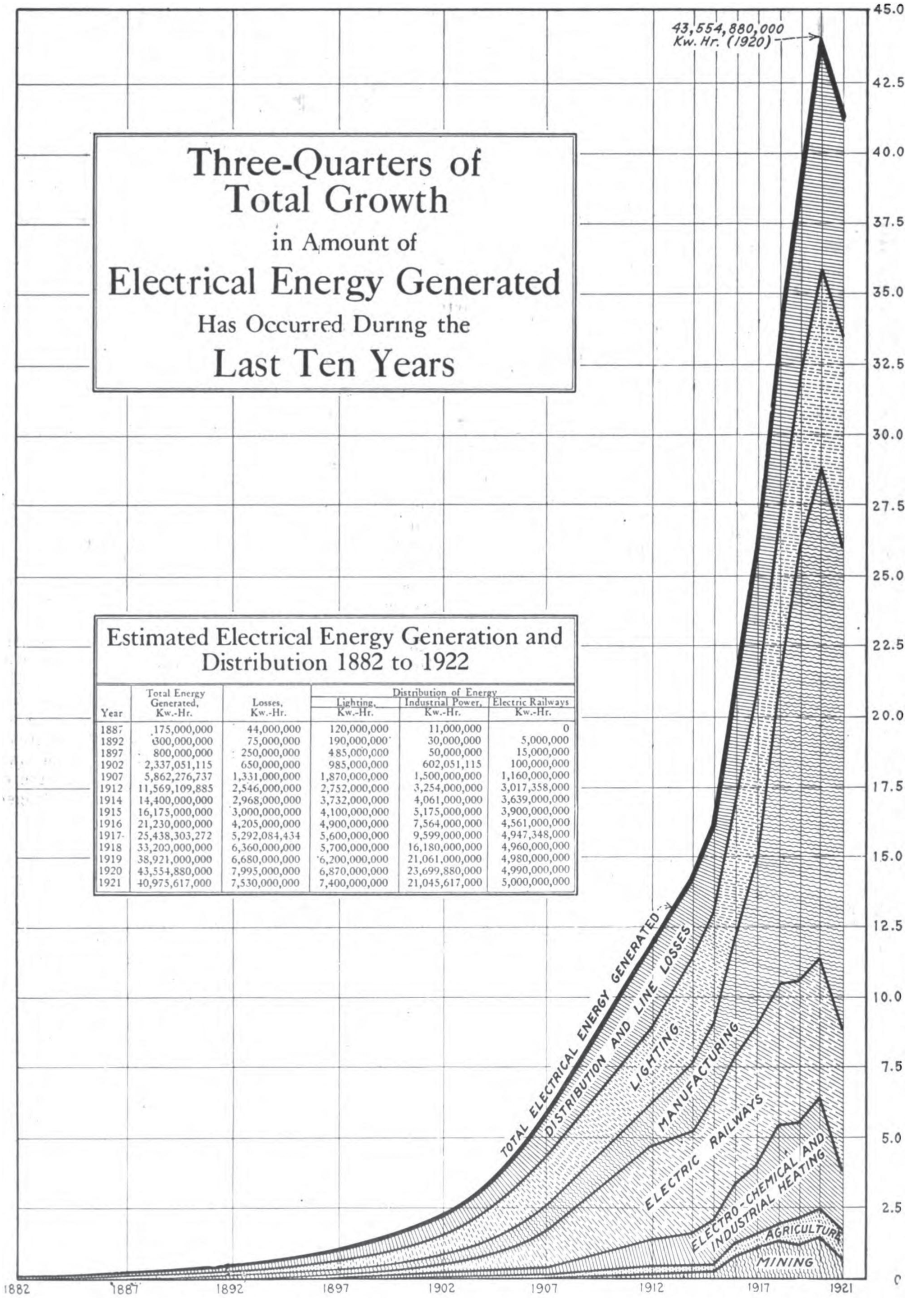
From its beginning, the electric power industry evolved at the most local level. Long distance transmission remained the biggest hindrance to industry expansion, because arc and incandescent lighting operations were limited by the typically high line losses associated with low voltage direct current. The Westinghouse Electric Company, formed in 1886 by George Westinghouse, overcame this limitation with the refinement of high-voltage alternating current systems and transformers. Westinghouse's new system proved itself when matched with the Niagara Falls hydroelectric development, whose 180-foot head would produce more energy than could be consumed locally. Detractors maintained that alternating current was inherently unsafe and there was no effective way to market and distribute the excess generation sites such as Niagara. In response, Westinghouse devised a "universal" distribution system of transmission lines and transformers that could match Niagara's output with the individual voltage needs of distant consumers. In August 1895, generators went online at Niagara Falls, the largest hydroelectric plant in the world at the time and transmitted power twenty miles away to Buffalo, New York.[2]

Once Westinghouse demonstrated long-distance transmission, the electric utility industry advanced quickly into the early twentieth century. Many of the early private utilities evolved out of the electrical demands of the day, namely street lighting and trolley systems. Also of note, these emerging independent utilities typically owned all facilities related to the electric industry: generation, transmission, as well as distribution. These "vertically-integrated" utilities were, by their very nature, monopolies. The Sherman Antitrust Act of 1890 outlawed monopolies, however, and the private utilities were subject to state regulation. By 1907, three states (Georgia, New York, and Wisconsin) had developed public utility commissions; within just a few decades, twenty other states followed suit. The emerging private utilities generally operated in franchised areas or "service territories." The early limitations of electrical engineering combined with the typical local consumption demands of the industry resulted in an electric power grid that evolved from small municipal or commercial clusters.[3]

While most of the early electrical systems were powered with hydro mechanical energy, private utilities began looking beyond water power to steam turbines for generation of additional power. Because of advancements in the industry, coupled with competition from numerous smaller, localized utilities, nominal electrical rates remained relatively low during the first three decades of the twentieth century. As demand increased, it also became necessary to interconnect multiple service areas with high-voltage transmission lines. Ultimately, many of the smaller utilities were purchased or consolidated into larger holding companies. At one point, during the late 1920s, 75 percent of total electrical generation in the United States was controlled by only sixteen holding companies.[4]

TRANSMISSION NEGOTIATIONS IN THE SOUTHEAST

As discussed in Chapter 1, the era of federal involvement in the electric industry began as early as 1906, when the Bureau of Reclamation was authorized by Congress to sell excess power from its irrigation projects in the US west to local municipalities. Against a headwind of private utility development, consolidation, and political influence, the federal government slowly stamped its power onto the electrical industry. The 1920 Federal Power Act (FPA) codified the role of the United States' in the development of hydroelectric power at beneficial sites. By the 1930s, passage of the Tennessee Valley



Estimated Electrical Energy Generation and Distribution 1882 to 1922

Year	Total Energy Generated, Kw.-Hr.	Losses, Kw.-Hr.	Distribution of Energy		
			Lighting, Kw.-Hr.	Industrial Power, Kw.-Hr.	Electric Railways Kw.-Hr.
1887	175,000,000	44,000,000	120,000,000	11,000,000	0
1892	300,000,000	75,000,000	190,000,000	30,000,000	5,000,000
1897	800,000,000	250,000,000	485,000,000	50,000,000	15,000,000
1902	2,337,051,115	650,000,000	985,000,000	602,051,115	100,000,000
1907	5,862,276,737	1,331,000,000	1,870,000,000	1,500,000,000	1,160,000,000
1912	11,569,109,885	2,546,000,000	2,752,000,000	3,254,000,000	3,017,358,000
1914	14,400,000,000	2,968,000,000	3,732,000,000	4,061,000,000	3,639,000,000
1915	16,175,000,000	3,000,000,000	4,100,000,000	5,175,000,000	3,900,000,000
1916	21,230,000,000	4,205,000,000	4,900,000,000	7,564,000,000	4,561,000,000
1917	25,438,303,272	5,292,084,434	5,600,000,000	9,599,000,000	4,947,348,000
1918	33,200,000,000	6,360,000,000	5,700,000,000	16,180,000,000	4,960,000,000
1919	38,921,000,000	6,680,000,000	6,200,000,000	21,061,000,000	4,980,000,000
1920	43,554,880,000	7,995,000,000	6,870,000,000	23,699,880,000	4,990,000,000
1921	40,975,617,000	7,530,000,000	7,400,000,000	21,045,617,000	5,000,000,000

Demand for electricity spiked in the first two decades of the twentieth century, and power companies responded with increased generation and the development of independent transmission systems (from Electrical World, *July 1, 1922).*

Authority Act and the Bonneville Power Act further integrated federal involvement in the generation, transmission, and sale of electricity. The Public Utility Holding Company Act of 1935, the first major legislative milestone in deregulating the electric industry, authorized the Securities and Exchange Commission to regulate utility (gas and electric) holding companies.

The national electrical grid began to take its modern-day shape by World War II, through the gradual, albeit limited, interconnection of independent systems over high-voltage transmission lines. The interconnections were necessary to, first, supply excess generation to different service areas that may have a supply-demand imbalance, as well as to integrate the developing federal power system and the subsidized rural electric cooperatives.[5] In 1935, federal legislators proposed that the FPA include provisions to order mandatory transmission if the Federal Power Commission deemed it "necessary or desirable in the public interest." In a move almost surprising given the rash of legislation regulating private industry during the New Deal, Congress rejected the provisions in favor of allowing investor-owned utilities (IOUs) to voluntarily determine the best usage of their interstate transmission lines.[6] The FPA of 1935 did codify the regulation of interstate wholesale transmission of electrical power, and delegated that to the Federal Power Commission. It would take another sixty years for Congress to adopt the principles of 'mandatory wheeling' for wholesale transmission.

As the federal government began generating electricity from its hydropower projects, it constructed transmission lines to serve the new federal power customers. Construction of federal transmission lines by the BPA, TVA, and the Bureau of Reclamation in the West, continued from the New Deal through the World War II period. Faced with renewed opposition of public power by private utilities (and public sentiment) during the post-War period, the newly created Southwestern Power Administration and the Southeastern Power Administration were left with either a stunted or non-existent transmission system.

During the early 1950s, in the Southeast, where a sufficient network of high and low voltage transmission lines already existed, regional investor-owned utilities convinced Congress that the construction of new federal transmission lines was an excess expense and that electricity customers would, essentially, pay twice for transmission service. The controversy stemmed first from the initial construction of a transmission line connecting the Clarks Hill development and the town of Greenwood, South Carolina, and secondly from a Department of the Interior proposal to construct approximately 375 miles of 230kV transmission lines interconnecting and relaying power from the Corps' Savannah River projects. In 1952, Duke Power Company and the South Carolina Electric and Gas Company filed suit in the US District Court for the Middle District of Florida arguing that construction of the Greenwood line was illegal. In January 1953, the Court ruled in the utilities' favor and, ultimately, the Interior Department Appropriation Act of 1953 authorized the Secretary of the Interior to sell the transmission line, which it did on August 4, 1953 to the Greenwood County Electric Power Commission.[7]

Public Power Transmission Lines Held Up

$6.7 Millions Sought By Southeast Authority Cut From Truman Budget

By A Special Correspondent

WASHINGTON, March 24—Southeastern Power Administration's plans for construction of a giant network of transmission lines interconnecting federal hydroelectric plants in the Southeast have become a casualty of the new administration.

Interior Secretary Douglas McKay, in the course of trimming down by $50 million the budget proposed by former President Truman for the Interior Department during fiscal 1954, wiped out all the $6.7 million sought by SEPA for construction during the year.

The fact that all proposed SEPA construction funds have been eliminated from the proposed new budget was revealed by the House Appropriations Committee today as it released transcripts of testimony before its interior subcommittee earlier this month.

The Greenwood Transmission Line became a source of contention between private utilities and public power advocates in the Southeast. Ultimately, private interests won, leaving SEPA to contract transmission services for the preference customers (from Charleston News and Courier, March 25, 1953).

As the battle with regional investor-owned utilities was waged in the halls of Congress and in the courtroom, SEPA was obligated by law to transmit power to the preference customers. With Georgia Power Company already buying the output from Allatoona Dam, the utility also proposed purchasing the electricity generated from Clarks Hill, Jim Woodruff, Buford and others, and then re-sell it to the preference customers with a transmission charge. SEPA declined the offer, and as more projects went online in the early 1950s, began contracting power purchase agreements with area preference customers, contingent upon service delivery. The two entities remained at a standoff until 1955, when the US Attorney General, Herbert Brownell, Jr., issued an opinion that defined the relationship between the federal government and the preference customer. Brownell noted that the preference clause of the 1944 Flood Control Act is obligated to sell power to the preference customer so long as the customer has the "means to take and distribute the power" either through its own transmission system or contracts with third-party transmission providers. The government could not delegate a private entity to re-sell power to the preference customer.[8]

OPENING THE DOOR FOR TRANSMISSION ACCESS

In 1973, the Organization of Petroleum Exporting Countries (OPEC) banned oil exports to the United States, resulting in a decade of heightened awareness of energy issues and action in Congress to pass industry reforms. These reforms included the creation of a national Department of Energy in 1977 and the passage of the National Energy Act of 1978. Signed by President Jimmy Carter, the Act consisted of five separate statutes, including the Public Utility Regulatory Policies Act (PURPA), generally heralded as the most significant of the laws. An integral component of PURPA, designed to spur energy independence and a competitive wholesale marketplace, was the creation of a new class of "non-utility" generators. Section 210 of PURPA required utilities to interconnect and buy capacity (at rates not exceeding their own costs) from non-utility qualifying facilities.[9] PURPA was intended to provide a guaranteed marketplace for non-utilities generating wholesale power.

An additional provision in PURPA allowed for utilities to obtain an order from FERC requiring another utility to transmit power. The criteria for justifying such an order were relatively limited and had little impact on transmission access. In fact, one of the first transmission requests requiring a FERC decision involved SEPA and the Kentucky Utilities Company (KU) in 1984. SEPA had requested that KU transmit power to eight of the federal preference customers, but FERC found that the transmission order would displace nearly twenty percent of power that KU was already selling to those eight customers on independent contracts with the private utility. FERC determined that the transmission request by SEPA did not meet one of the criteria, that of "reasonably preserving existing competitive relationship."[10]

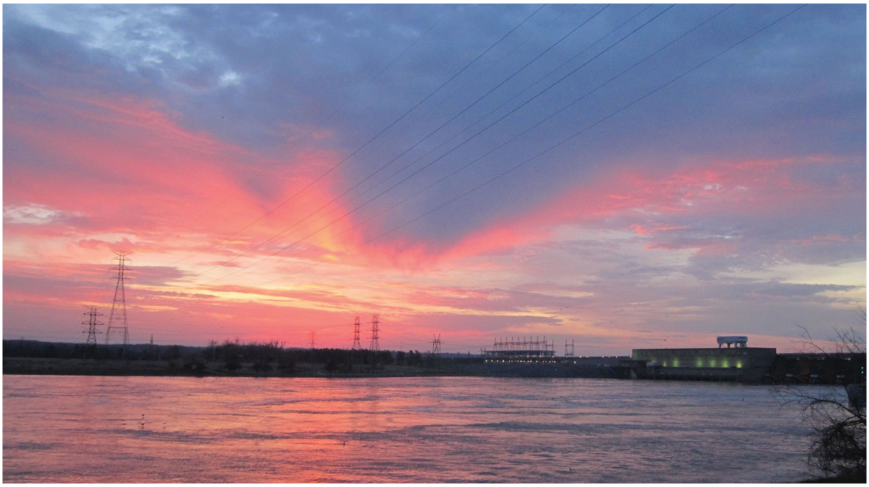
Energy Policy Act, 1992

An order under section 211 shall require the transmitting utility subject to the order to provide wholesale transmission services at rates, charges, terms, and conditions which permit the recovery by such utility of all the costs incurred in connection with the transmission services and necessary associated services, including, but not limited to, an appropriate share, if any, of legitimate, verifiable and economic costs, including taking into account any benefits to the transmission system of providing the transmission service, and the costs of any enlargement of transmission facilities. Such rates, charges, terms, and conditions shall promote the economically efficient transmission and generation of electricity and shall be just and reasonable, and not unduly discriminatory or preferential.

ENERGY POLICY ACT OF 1992 (EPACT): FACILITATING NON-DISCRIMINATORY TRANSMISSION ACCESS

While PURPA provided a framework for deregulation, it was not until the passage of the Energy Policy Act (EPACT) of 1992 that the deregulation process accelerated. EPACT 1992 had the effect of "functionally unbundling" utilities. Traditionally, most utilities were "vertically-integrated." In other words, the utility owned all assets related to the three primary legs of the electric industry: generation, transmission, and distribution. EPACT 1992, and its orders implemented by FERC, opened the wholesale transmission marketplace by requiring utilities to make spare transmission capacity available to power sellers, buyers or traders.[11]

As private corporations, many IOUs were still reluctant to make spare capacity available. Vertically-integrated utilities relied heavily on their own generation capacity or contracts with neighboring utilities to make decisions regarding electricity production. By controlling their own transmission capacity, the companies could control costs and rates in transmission contracts and restrict competition in their service area. Wholesale transmission was a relatively closed market. In 1996, to implement wholesale access, FERC issued Order Number 888, which represented a fundamental policy shift for the electric utility industry. Order 888 mandated all public utilities that owned, controlled, or operated transmission lines to pre-file an open access non-discriminatory transmission tariff. The Open Access Transmission Tariff (OATT) would, first, provide for a consistent wholesale rate and, second, identify the terms under which the utility's transmission system would be used. With the introduction of non-discriminatory rate setting, OATT allowed all transmission customers the opportunity to use an IOU's transmission facilities based on spare capacity.



SEPA has no transmission assets. The Corps owns the switchyards and ancillary equipment at the hydro projects, and the external transmission lines are owned by private utilities (Corps photo).

Historically, SEPA was able to successfully negotiate transmission service with independent transmission providers, but no law existed to compel area utilities (TVA, IOUs, or even the cooperatives) to provide transmission service. Under OATT, SEPA can now request transmission service simply by filing with FERC, which enables the agency to better estimate transmission costs and build the non-discriminatory service more accurately into the customers' rate schedule. As the regional IOUs began filing transmission tariffs with FERC during the late 1990s, SEPA entered contract negotiations to ensure that the federal power customers were receiving the competitive transmission rates. In 1997, SEPA signed a new contract with Duke Energy, Tennessee Valley Authority, and the Tennessee Valley Public Power Association. The contract was amended in 1999 to provide service for the Cumberland System customers outside the TVA service area. In the Kerr-Philpott service area, SEPA signed a new contract with Dominion Virginia Power (Dominion) in 1998. In addition to providing consistent rates for firm power loads, the tariffs also benefit the preference customers when SEPA purchases replacement power.[12]

OATT also resulted in responsibility shifts for SEPA power operators. First, under OATT, SEPA provides less overall transmission support for the preference customers. Because the IOUs pre-file tariffs with FERC, customers can independently request transmission service from independent providers and do not need SEPA to negotiate the rates or tariffs under a general contract. However, smaller customers still require SEPA's assistance. Under OATT, a customer cannot request a firm load less than 1 MW. To obtain the cost benefits of the pre-filed tariffs, many of the smaller customers choose to operate collectively with SEPA providing assistance for centralized coordination and contracting efforts.[13]

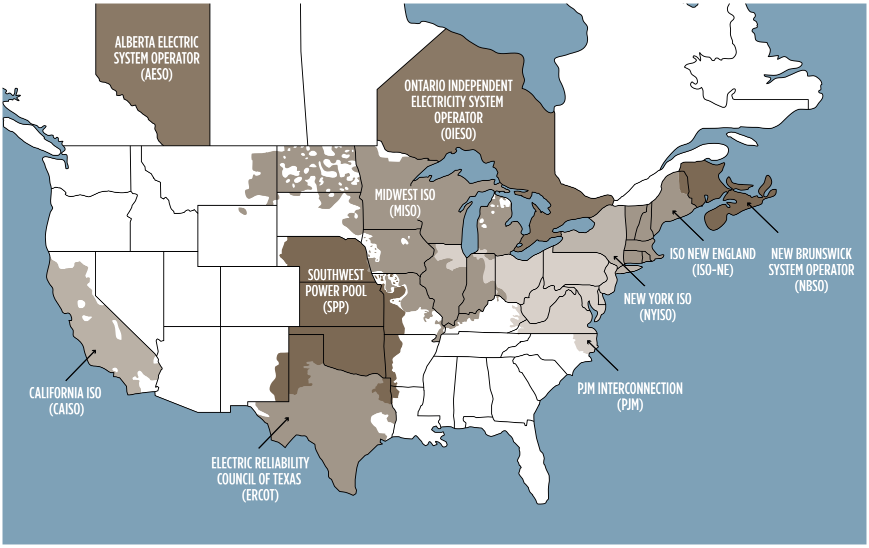
The second major impact from OATT for SEPA was the introduction of the Open Access Same Time Information System (OASIS), an electronic system designed to make a transmission system's capacity and availability transparent to potential buyers. The North American Electric Reliability Corporation (NERC) improved on the system and introduced an electronic tagging system that allowed for the incorporation of additional data. The e-tagging system uses nodes or "tags" as a means of identifying all the power schedules on the grid for firm or non-firm loads across multiple power systems. The schedules include data to identify the source of power, the balancing area, and the transaction's priority level. With the transmission grid now openly available, the transmission system operators need to be able to account for each of the individual power transactions. This helps operators identify firm and non-firm power loads, and gauge the available capacity of the lines to prevent congestion issues and ensure reliability. Essentially, the tags are point-to-point identifiers for individual loads of purchased power. SEPA participated in tag modeling for NERC and its delegated regional partner, the Southeastern Electric Reliability Council (SERC).[14]

The tagging system, introduced by NERC in 1999, resulted in an increased workload for SEPA operators. While the process is conducted entirely through an electronic inter-face, SEPA operators have to tag the nodes in each customer's weekly schedule, and as of 2010, SEPA had 37 scheduling entities. On the national level, the tagging system also exposed flaws in the power grid, originally designed and constructed by a number of individual companies over the course of the twentieth century. Tagging illustrated the difficulty in purchasing power at areas from afar, the lack of voltage support, and the need to develop a national smart-grid. While lines may still become overloaded, the system allows reliability coordinators to take corrective action on areas of potential concern.[15]

REGIONAL TRANSMISSION ORGANIZATIONS

To further facilitate competitive wholesale transmission costs and improve reliability of the national electric grid, FERC issued Order Number 2000 in December 1999. Order No. 2000 called for the voluntary formation of Regional Transmission Organizations (RTOs), or the concept of organizing operation, control and possible ownership of the transmission grid across wide geographical regions. The Order was based on the premise that regionalizing the grid with independent organizations would eliminate any remaining discriminatory transmission rates as well as help balance the demands of the grid rather than relying on IOUs to independently coordinate across multiple service areas.

Being completely voluntary organizations, RTOs have been slow to develop at the national level. Since first recommended in 1999, ten RTOs/ISOs have been recognized: Alberta Electric System Operator (AESO); California ISO; Midwest Independent Transmission System Operator (MISO); New Brunswick System Operator (NBSO); Pennsylvania, New Jersey, Maryland (PJM) Interconnection; ISO New England; New York ISO; Ontario Independent Electricity System Operator; Electric Reliability



There are 10 Regional Transmission Organizations in North America.

Council of Texas (ERCOT) ISO and the Southwest Power Pool. Inherently complex, RTOs require transmission providers to transfer control, but not ownership, of the transmission corridors. Consequently, IOUs or independent transmission providers bear the financial burden of siting and construction of the corridors and must be made economically whole from the capital investment.[16]

In April 2001, SEPA and the Corps' South Atlantic Division developed an amendment to their June 1991 MOU. This amendment established policies pertaining to including Corps-owned transmission assets (switchyards) into an RTO and coordinated operation of the Corps hydroelectric plants with the RTO. This amendment applied specifically to the federal power projects located within Georgia-Alabama-South Carolina, Jim Woodruff, and Kerr-Philpott systems.

Even though it is a transmission-dependent utility, SEPA has participated as a stakeholder in discussions surrounding formation of several RTOs penetrating its service area, but is currently in coordination with only one regional group, the PJM Interconnection. PJM was the nation's first power pool when it joined the transmission system of three utilities, Philadelphia Electric, Public Service Electric and Gas of New Jersey, and Pennsylvania Power and Light in 1927.[17] Following the FERC orders of the 1990s, PJM became the nation's first ISO in 1997 and the first functioning RTO in 2001.

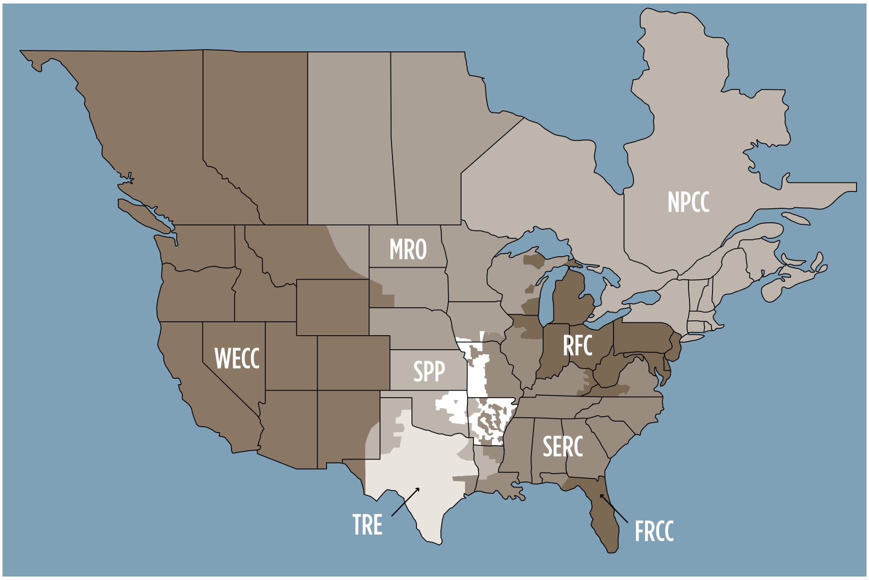
On October 1, 2004 SEPA began negotiations with Dominion to integrate the Philpott and Kerr projects into the PJM Interconnection. Prior to this agreement, SEPA provided Dominion capacity and energy from the Kerr-Philpott system and Dominion delivered firm capacity and energy to the Kerr-Philpott federal power customers. Kerr Project is located immediately upstream from two of Dominion's hydroelectric projects and generation at the three plants is coordinated closely. On May 1, 2005, Dominion and SEPA began operations in the PJM Interconnection. The agreement designated Dominion as the scheduler of the three projects and guaranteed SEPA's customers would receive their contract allocations. When Dominion unbundled its transmission services under OATT and received approval from the Commonwealth of Virginia State Corporation Commission to transfer control of its transmission facilities to PJM in 2005, functionally, SEPA became a PJM customer under a network integration service agreement.[18]

As of 2012, the area marketed by SEPA has only two established RTOs, the PJM Interconnection and MISO. FERC Order 2000, establishing the concept of RTOs, encouraged all investor-owned utilities to join an RTO by late 2001. That year, a number of IOUs in the Southeast, including Southern Company, began planning a proposed SeTrans RTO. Ultimately, the proposal was blocked by several regional public service commissions that expressed concern over potential cost impacts to customers in a region with historically low electric rates.[19] It remains to be seen whether electric utilities in the Southeast will attempt to form another RTO, but should they do so, SEPA will participate as a stakeholder to ensure that the federal power customers are integrated into the system.

IN THE SHADOW OF BLACKOUTS: RELIABILITY STANDARDS

From the end of World War II until the Energy Crisis of the 1970s, the electric utility industry benefitted from an unprecedented level of prosperity. Throughout the 1950s, electrical generation responded to increased demand in new housing and industry. Despite President Dwight Eisenhower's "no new starts" policy, previously authorized federal power projects gradually came online, and by 1957, federal generation reached its historical peak of providing more than 17 percent of total generation. The growth of other public power sources (rural electric cooperatives and municipalities) and the gradually diversifying energy portfolios of investor-owned utilities contributed to nominally low electricity rates. By the late 1960s, though, the industry struggled to keep pace with increased demand, technological advancements, and the increased generation costs brought about, in part, from new environmental regulations.[20]

In 1965, the industry reached a critical juncture. On November 9, most of the Northeast experienced one of the largest blackouts in United States history. The affected area included 80,000 square miles and impacted 30 million people in the United States and Canada. In some areas, including New York City, the blackout lasted for up to 13 hours. The cause was pinpointed to a backup protective relay on one of five 230 kV transmission lines stemming from the Sir Adam Beck No. 2 Hydroelectric Plant on the Niagara River in Ontario. The tripped relay reversed the power flow from north to south, resulting in massive electrical surge in the northeastern United States. The 1965 blackout highlighted the fact that increased electrical demand and pressures on the grid were no longer local or isolated issues, but required a regional



The North American Electric Reliability Corporation was formed in 1968 in response to a massive blackout in the northeastern United States. The organization is an independent group recognized by the federal government for establishing reliability standards.

approach. Consequently, regional councils were formed to coordinate generation and transmission for their members. In 1968, the NERC was established to provide a nation-wide coordination effort.[21]

Over the next three decades, NERC set reliability standards for generation, transmission, and operation. Adherence to these standards, though strongly encouraged, remained a voluntary action. Significant blackouts in the Western United States in 1996 and in the Northeast and Midwest in 2003 resulted in calls to establish mandatory criteria. The Energy Policy Act of 2005 authorized an "electric reliability organization (ERO)" that would set and enforce reliability criteria in the United States. In 2006, FERC certified NERC as the designated ERO, and required that it delegate authority for proposing and enforcing reliability standards to a subset of regional councils. In the southeastern United States, NERC delegated that authority to the SERC and the Florida Reliability Coordinating Council (FRCC), the entities with which SEPA works in close coordination in regard to its Operations Center and Control Areas.

THE FEDERAL OPERATIONS CENTER

During the 1990s, as the electric utility industry was subjected to additional federal regulations and orders, SEPA realized that even as a transmission dependent entity, the organization needed to change its normal operations. During the early 1990s, NERC notified SEPA that the three Savannah River projects were not in what was defined as a load "control area" and

It was obvious to me that we needed [the operations center] for our function to coordinate the operation with our customers and our clients.

John McAllister

that, for purposes of reliability, the projects needed to be interconnected.[22] NERC defines a control area as "An electrical system bounded by interconnection (tie line) metering and telemetry. It controls its generation directly to maintain its interchange schedule with other control areas and contributes to frequency regulation of the Interconnection." In short, the control areas are responsible for the safe and reliable operation of their portion of the electric system and each control area coordinates with neighboring control areas.

In 1995, SEPA established a Federal Operations Center, which would be the focal point and administrative headquarters for a subsequent Control Area. The Operations Center personnel were responsible for declaring, scheduling, and dispatching energy and capacity at the hydroelectric projects in SEPA's marketing area. The development of an Operations Center was a critical decision for SEPA in order for it to adhere to the industry changes. To comply with NERC requirements, SEPA had to establish or arrange for a control area for the Hartwell, Russell, and Thurmond projects. SEPA attempted to negotiate with Southern Company to integrate the three Savannah River projects into an existing regional control area, but as an IOU, Southern Company wanted to be reimbursed for the service, a cost that SEPA would have been required to fund either through an annual appropriations request or a pass-through cost to its customers. Ultimately, SEPA established interim separate control areas for the three projects on July 1, 1995 and the areas were certified by NERC in October of the same year. The Control Area responsibilities were assumed by the Operations Center staff and included dispatching, energy accounting, and other administrative duties related to the three Savannah River projects. Concurrently, in consultation with the Corps and the preference customers, SEPA also began studying the formation of a consolidated Control Area to monitor and regulate the ten projects of the Georgia-Alabama-South Carolina System.[23]

Because SEPA does not own the hydroelectric projects, but is responsible for meeting NERC requirements for dispatching power, establishing the Federal Operations Center required close coordination with the Corps of Engineers. In 1997, to formalize the operational and funding responsibilities, SEPA and the Corps amended the June 1991 MOU. The amendment stipulated that SEPA was responsible for the planning, design, construction, and operation of the Federal Operations Center and that operation of generation within the Federal Control Area rested with the Corps. In November 1998, SEPA had completed the necessary equipment installation, including remote terminal units at each of the plants, in order to consolidate the three Savannah River projects into one Control Area.[24]

A Not-So-Simple Operation

Operations Center employees are responsible for declaring, scheduling, and accounting for energy and capacity generated at the 22 hydroelectric projects in SEPA's 11-state marketing area. With the establishment of the control area for the Georgia-Alabama-South Carolina System, new contractual relationships driven by FERC, orders on Open Access Transmission and open communication between utilities, control area employees are responsible for dispatching energy, transmission tagging, and other administrative duties.

We were in one big room on the ground floor and we had curtains in the glass display windows at the front. There was a picket fence over in the corner of the building and Papa's Pizza was right next door.

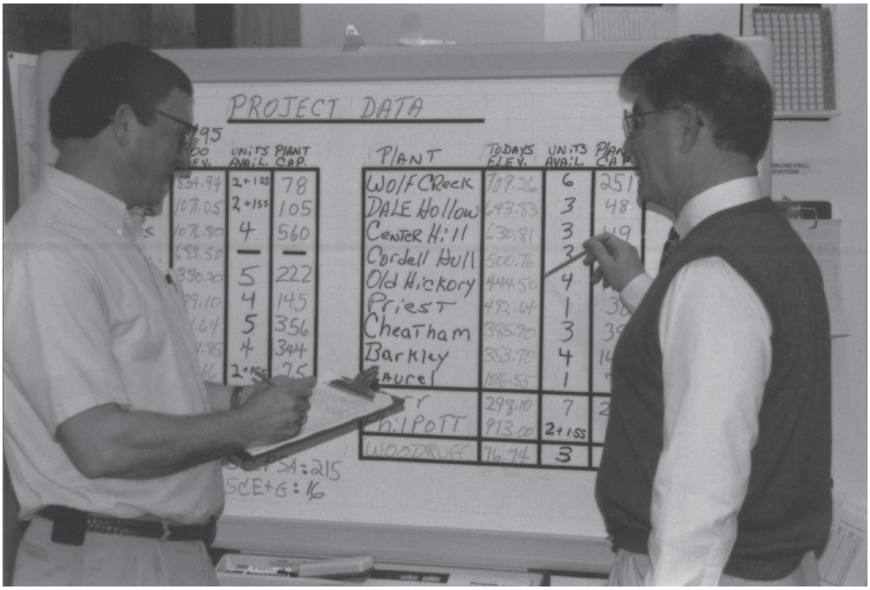
Darlene Heard, on the original Operations Center.

Initially, the Operations Center was established off-site from SEPA's administrative headquarters, at that time located in the old Samuel Elbert Building. The available space was located several hundred feet away from the agency's headquarters in a former Belks Department Store in downtown Elberton. SEPA developed all of the necessary computer software that allowed for real-time project monitoring, control of the project operations to meet load and frequency requirements as well as the emergency management system. In 1997, the Center moved into the Samuel Elbert Building, where it remained until 2001 when SEPA constructed its new headquarters building on Athens Tech Drive. The new headquarters building was designed to accommodate the administrative tasks of the agency as well as the space and technology requirements for a secured Federal Operations Center.

As recently as the 1980s, SEPA did not dispatch the power; that responsibility was delegated to the individual project control areas. For its role, SEPA worked weekly with the Corps on a project-by-project basis and would give the local Corps powerplant operators a power energy declaration (or 'schedule') for the individual customers. SEPA also arranged transmission with the IOUs or other transmission providers to schedule the power around an existing load of peak needs. [25]

Once the control areas were administratively centralized through the new Federal Operations Center, SEPA became responsible for setting the schedule, coordinating that schedule with the Corps operators, and then consolidating the information into a final energy schedule for the week. With SEPA now responsible for dispatching the energy, the paradigm shifted, and required regular and direct communication with the Corps project operators so that the available power at the projects matched the customers' schedule. As Donnie Cordell, one of the original operators remembered,

The original operations center was located off-site from SEPA headquarters in an old Belks Department Store and required interior rehabilitation work before the agency could occupy it in 1995.

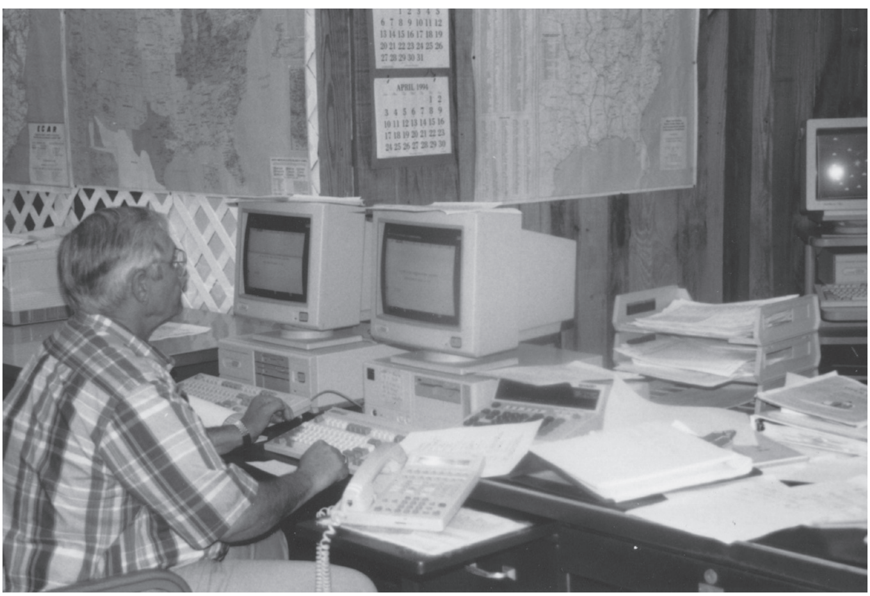


Before computers, the day's project data was hand-written on a dry erase board (pictured: Sonny Knighton and Jim Lloyd).

“It took time to get the software working consistently.” It was also a culture change for the customers that historically were able to ‘block’ or reserve a set power amount at the units, some of which would go unused. Under the new coordinated system, the power schedules allowed for the available capacity to be used more efficiently.[26]

STAFFING THE OPERATIONS CENTER

With federal government reductions of the 1990s, SEPA was limited in the number of full-time employees (FTEs) it could have, but the agency managed to staff its new Operations Center without hiring additional personnel. SEPA’s senior leadership, including Jim Lloyd, the Assistant Administrator for Power Resources at the time, made the decision to transition several administrative assistants into Power Resources. This was made possible in part from the technological advancements such as voice mail, e-mail, and computer systems that gradually relieved much of the administrative and accounting workload. “We were [also] fortunate at SEPA to have some outstanding employees who were adept at mathematics,” recalled Administrator Charles Borchardt, and those individuals transitioned easily to the needs of the Operations Center. When the Operations Center went online in 1995, there were six designated operators. Because there was such a substantial change in the technology and coordination efforts, even the older personnel had to overcome a learning curve of running the Center. At the time it opened, the Center did not operate on a twenty-four hour schedule, but did keep operators on-call for overnight hours. Beginning in 1996, SEPA staffed the center twenty-four hours a day.[27]



Alvin Christian working at one of the computer terminals in the original Operations Center.

The new operations center, integrated within the current headquarters building, is fully automated and manned 24 hours a day.

Computer terminals in the new operations center.

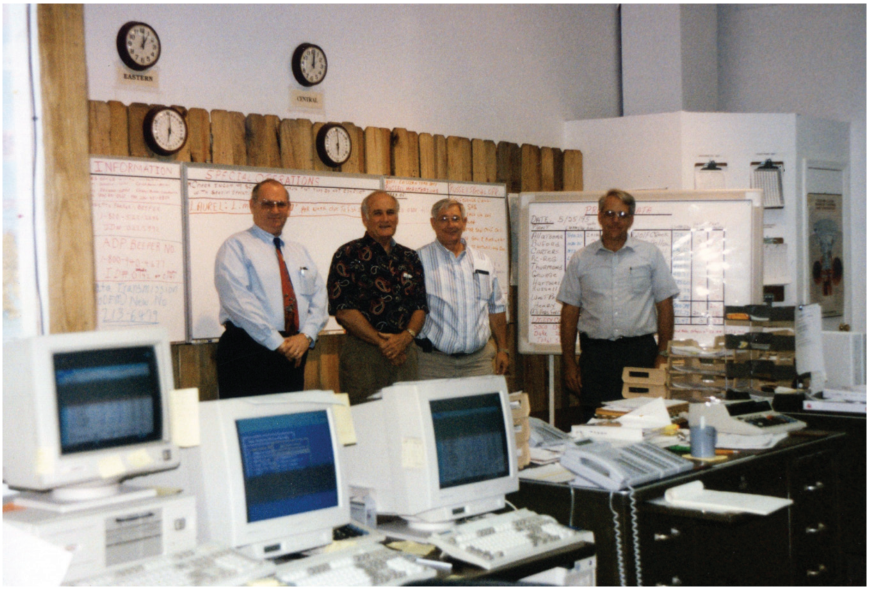
SEPA's Original Operators

- Donnie Cordell
- Darlene Heard
- Sonny Knighton
- Brenda Langston
- Connie Dixon
- Alvin Christian
- Herb Nadler

As part of the formalization of reliability standards, NERC requires bulk power system owners, operators, and users to register in its Compliance Registry. Registered groups are subject to adhere to NERC approved reliability standards. NERC determines the criteria under which the registrants must comply. In April 2007, NERC notified SEPA that it was being registered as Balancing Authority, Purchasing-Selling Entity, Resource Planner, Transmission Operator, and as a Transmission Service Provider for ten of the hydroelectric projects that fall within the Corps' South Atlantic Division boundaries. SEPA requested that it be removed as Resource Planner, Transmission Operator, and Transmission Service Provider because the organization has no jurisdictional control over the transmission facilities, which are owned by the Corps of Engineers.[28]

After a thorough review of SEPA's roles and responsibilities for the ten projects, NERC agreed that it did not meet the criteria for being defined as Resource Planner or Transmission Service Provider. NERC also determined that because SEPA "coordinates outages with interconnected utilities as requested by the Corps, grants permission to the Corps to conduct outages, and requests that the Corps reschedule outages," that it did meet the requirements for registration as a Transmission Operator.[29] SEPA is currently a NERC-registered Balancing Authority, Purchasing-Selling Entity, and Transmission Operator for the SERC area, and a Purchasing-Selling Entity in the FRCC area. SEPA must maintain compliance with all of the NERC reliability standards for those positions, which includes specific training for its system operators.

Beginning in 1998, all operators working in the SEPA Operations Center were required to become NERC certified. Initial certifications were good for five years, subject to re-testing at regular intervals. As of 2010, the certifications remained valid for three years with no new testing unless the individual operator transitions to a different reliability level (based on the NERC Compliance registration). Operators are required to complete 160 hours of continuing education every three years, through web-based programs and seminars. SEPA operators also attend regional workshops and conferences to discuss lessons learned with other agencies and utilities.[30]



SEPA employees (Bob Goss, Billy Neal, Alvin Christian, and Donnie Cordell) in the newly refurbished operations center, late 1990s.

ENDNOTES

[1] Duncan Hay, *Hydroelectric Development in the United States, 1880-1940 (Washington, DC: Edison Electric Institute, 1991): 5-12.*

[2] Hay, *Hydroelectric Development; also, Thomas P. Hughes, Networks of Power: Electrification in Western Society, 1880-1930 (Baltimore: Johns Hopkins University Press, 1983): 18-46; also Energy Information Administration (EIA), The Changing Structure of the Electric Power Industry, 2000: An Update (Washington, DC: US Department of Energy, 2000); also EIA, The Changing Structure of the Electric Power Industry, 1970-1991 (Washington, DC: US Department of Energy, 1993). Appendix A of the EIA: Changing Structure, Update report includes History of the US Electric Power Industry, 1882-1991, an excellent summary.*

[3] Hay, *Hydroelectric Development; Hughes, Networks of Power; EIA, Changing Structure: Appendix A.*

[4] EIA, *Changing Structure: Appendix A.*

[5] US Department of Energy, *National Transmission Grid Study (2002).*

[6] For more information on legislation effecting the transmission of power, see Joseph T. Kelliher, "Pushing the Envelope: Development of Federal Electrical Transmission Policy" *American University Law Review 2: 42 (1993): 543-606; Megan A. Wallace, "A Negotiated Alternative to Mandatory Wheeling," Energy Law Journal 10:99 (1989): 99-120; also EIA, Changing Structure: Appendix A, "History."*

[7] Norwood, *Gift of the Rivers, 43-54.*

[8] Norwood, *Gift of the Rivers, 43-54.*

[9] PURPA established criteria for what constitutes a "qualifying facility," including ownership, operational and efficiency criteria. See EIA, *Changing Structure, 32. Non-utilities are considered those entities that own electric generating capacity, but are not by law regulated as "utilities," meaning they do not have designed franchised service areas for retail services.*

[10] Wallace, "Negotiated Alternative," 99-120; also, Rampey interview.

[11] Available transmission capacity is calculated by subtracting transmission needed to serve a utility's native load obligation from its total transmission capacity.

[12] J.W. Smith interview; interview with Donnie Cordell (SEPA-Retired), March 10, 2010, Lloyd interview; SEPA, *Annual Reports, 1996-2001.*

[13] J.W. Smith interview.

[14] Cordell interview. Firm power includes rights to a contract amount of power; non-firm includes rights as the system is available.

[15] Cordell interview; interview with Darlene Heard, March 4, 2010. Also, see DOE, *National Transmission Grid Study*. Grid congestion occurs not because of line overloads or delayed power delivery, but to transactions that cannot be scheduled.

[16] DOE, *National Transmission Grid Study*.

[17] For more information on the development of PJM see Hughes, *Networks of Power*, 345-333; Bill Beck, *PP&L: 75 Years of Powering the Future. An Illustrated History of Pennsylvania Power and Light Company (Eden Prairie, MN: Viking Press, Inc., 1995),* 191-198.

[18] SEPA Archives, RG 1262, Regional Associations: PJM Membership.

[19] Todd Edwards, "Regional Transmission Organization Presence and Activities in Southern States," *Regional Resource (January 2004). Internet online at www.slcatlanta.org/Publications/EnergyEnvironment/Rtos.pdf.*

[20] EIA, *Changing Structure, 2000*, Appendix A.

[21] EIA, *Changing Structure, 2000*; EIA, *Changing Structure, 1970-1991.* Immediate to the outages, President Lyndon B. Johnson ordered the Federal Power Commission to investigate the blackout, noting that "Today's failure is a dramatic reminder of the importance of the uninterrupted flow of power to the health, safety and well, being of our citizens and the defense of our country." Federal Power Commission, "Report to the President on the Power Failure in the Northeastern United States and the Province of Canada of Ontario on November 9-10, 1965." December 6, 1965.

[22] McAllister interview, Lloyd interview; Borchardt interview.
[23] Borchardt interview; Lloyd interview.
[24] SEPA Archives, RG6700, "Power Resources: SEPA Control Area." "Amendment #1 to Memorandum of Understanding Between the US Army Corps of Engineers South Atlantic Division and the Southeastern Power Administration," February 3, 1997.
[25] Lloyd interview; Cordell interview; SEPA, *Annual Reports, 1995-1999.*
[26] Lloyd interview; Cordell interview.
[27] Cordell interview Lloyd interview; Heard interview; Borchart interview.
[28] Federal Energy Regulatory Commission, Docket No. RC08-1-000.

NERC defines these five categories as follows: A Balancing Authority "integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time." A Purchase-Selling Entity "purchases or sells, and takes title to, energy, capacity, and Interconnected Operations Services. Purchasing-Selling Entities may be affiliated or unaffiliated merchants and may or may not own generating facilities." A Resource Planner "develops a long-term (generally one year and beyond) plan for the resource adequacy of specific loads (customer demand and energy requirements) within a Planning Authority Area." A Transmission Operator is "responsible for the reliability of its 'local' transmission system, and that operates or directs the operations of the transmission facilities." A Transmission Service Provider "administers the transmission tariff and provides Transmission Service to Transmission Customers under applicable transmission service agreements." Definitions available on the NERC website at *www.**nerc**.com/files/Glossary_12Feb08.pdf.*

The ten projects for which SEPA is listed in the Compliance Registry are Alatoona, Buford, Carters, West Point, W. F. George, Millers Ferry, R. F. Henry, Hartwell, Russell, and Thurmond (collectively called the SEPA-TOP Projects).
[29] Federal Energy Regulatory Commission, Docket No. RC08-1-000.
[30] Heard interview.