

1. The South Carolina Drought Response Process

Overview

South Carolina has a long history of state-level drought response and management, with early efforts initiated in the 1980s. The **South Carolina Drought Response Act** (enacted in 1985, amended in 2000) and the supporting **Regulations** establish the procedures through which the State monitors and responds at the incipient, moderate, severe, and extreme drought alert phases. The **South Carolina Drought Response Plan**, located in Appendix 10 of the State's Emergency Operations Plan, describes actions when conditions have reached a severity level beyond the scope of local communities.

Formal plans and procedures can help water managers and users monitor, conserve, and manage the State's water resources in the best interest of all South Carolinians.

The South Carolina Drought Response Committee (DRC)

The DRC is the major drought decision-making entity in the State. Key responsibilities include:

- Evaluating drought indicators and determining county level drought status as defined by the Drought Response Act
- Consulting with stakeholders about drought conditions and impacts
- Determining when drought conditions warrant measures beyond the scope of local actions, including mandatory reductions, curtailment of non-essential water use, or activation of the South Carolina Drought Response Plan

The DRC is composed of statewide and local members. It is chaired and supported by the South Carolina Department of Natural Resources (SCDNR) and the State Climatology Office (SCO). Local members are organized according to four Drought Management Areas (DMAs). Other organizations, such as the National Weather Service and U.S. Army Corps of Engineers, are often invited to DRC meetings to report on drought conditions and impacts, depending on their areas of expertise and which areas of the State are affected.

Drought Response Committee members vote county by county to determine drought level.

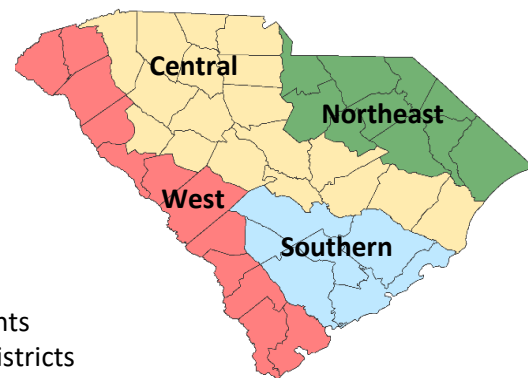
Statewide members

Department of Agriculture
Department of Health and Environmental Control
Department of Natural Resources
Emergency Management Division
Forestry Commission

Local members

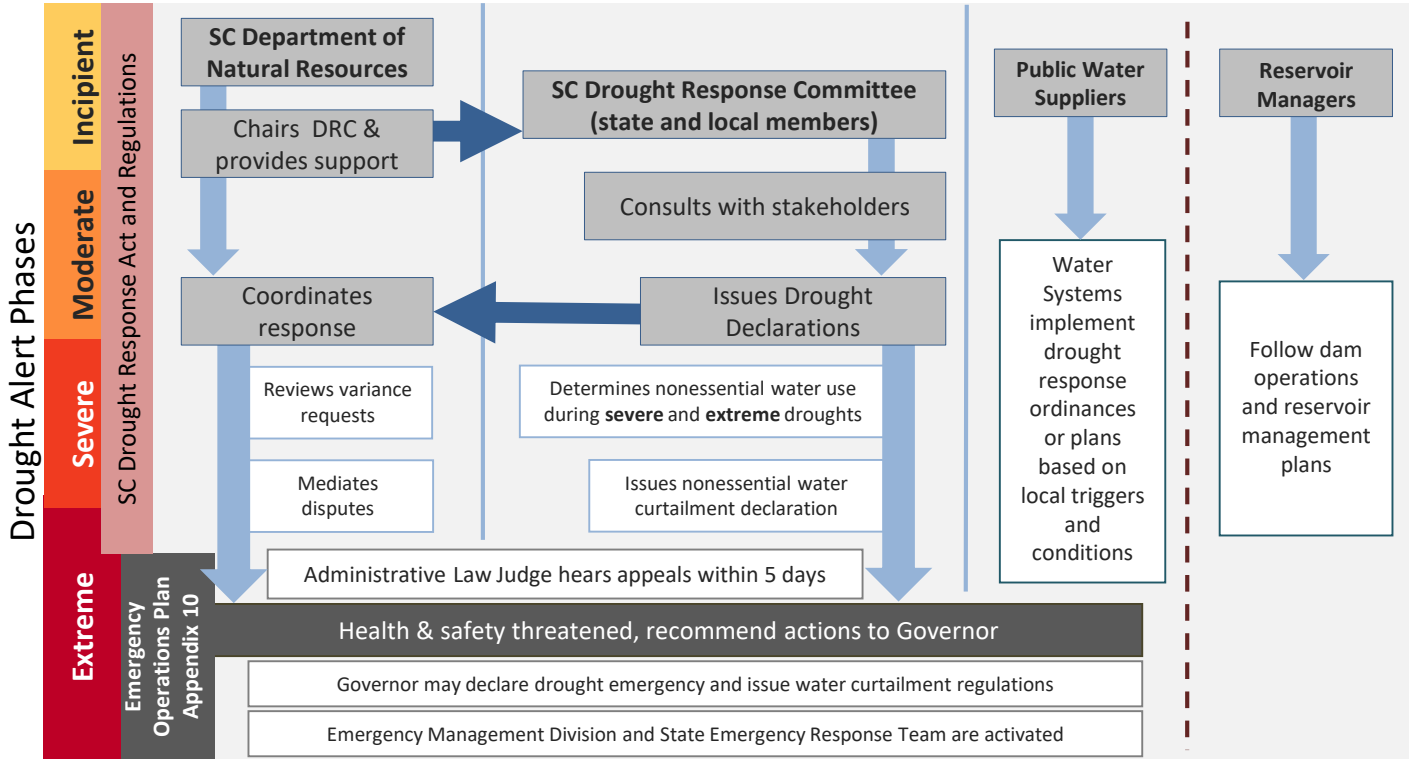
Agriculture
Commission of Public Works
Counties
Domestic User
Industry
Municipalities
Power Generation Facilities
Private Water Supplier
Public Service District
Regional Council of Governments
Soil and Water Conservation Districts
Special Purpose District

SC Drought Management Areas



Components of South Carolina's Drought Response Process

Legislation, regulations, and plans establish recommended and required response actions at different levels of drought. SCDNR and SCO constantly monitor drought conditions across the state, and as impacts become more severe, activities increase accordingly.



Alert Phase	Actions and Responses
Incipient	SCDNR notifies the DRC, increases monitoring activities, and begins to disseminate information to the public. Water utilities review local drought plans and ordinances. Response actions increase accordingly as conditions warrant.
Moderate	The DRC meets as needed and evaluates conditions to determine the need for action beyond the scope of local government; including recommendations for voluntary or mandatory water use reductions and more involvement by State agencies in monitoring drought conditions and impacts.
Severe	These actions may happen at severe and extreme levels: <ul style="list-style-type: none"> The DRC may require mandatory reduction or curtailment of non-essential water use. SCDNR is responsible for disseminating a curtailment declaration, reviewing variance requests, and mediating disputes from competing demands for water.
Extreme	<ul style="list-style-type: none"> Upon determining that state-level response is needed, the DRC recommends activation of the Drought Response Plan (EOP, Appendix 10) to SCEMD and the Governor. Governor may assist with managing impacts, including requesting disaster declarations by the US Dept. of Agriculture and activating the National Guard to assist with wildfire suppression.

References

South Carolina Drought Response Act. Code of Laws of South Carolina. 1976. § 49-23-10 et seq., as amended.
 South Carolina Drought Response Regulations 121-11.1 - 121-11.12, for §49-23-10 et seq., S.C. Code of Laws.
 South Carolina Drought Response Plan, Appendix 10 of the South Carolina Emergency Operations Plan.

2. Monitoring and Measuring Drought Indicators and Indices

Overview

Measuring drought is difficult because drought can span large regions, vary in severity and duration, and affect different water uses and sectors at differing time scales. Because South Carolina normally experiences considerable variability in annual rainfall, it can be difficult to know exactly when a drought is beginning, worsening, or ending.

In contrast to other extreme weather events, droughts develop slowly over a period of weeks, months, or years. Droughts are often associated with or exacerbated by, heat waves. For example, the multi-year drought that began in 2007 was accompanied by high summer temperatures and affected the entire Southeast region.

The South Carolina Drought Response Act defines drought as
“a period of diminished precipitation which results in negative impacts upon the hydrology, agriculture, biota, energy, and economy of the State.”



Indicators and Indices

South Carolina uses multiple indicators and indices to determine drought severity

- **Indicators** are values used to describe drought conditions, using precipitation, stream flow, groundwater and reservoir levels, or soil moisture information.
- **Indices** are computed numerical representations of drought severity, using climatic or hydrological data as inputs. For example, South Carolina uses the Palmer Drought Severity Index (PDSI), Crop Moisture Index (CMI), and Keetch-Byram Drought Index (KBDI).

Drought severity is best evaluated using multiple indicators; a single indicator typically cannot capture the complexities associated with water availability for any given sector or region.





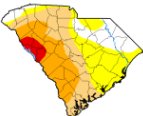


For example, some indicators depict **meteorological drought** – an extended period of departure from average rainfall for a specific location or region. Others depict **agricultural drought**, when plants lack adequate moisture to grow and develop, or **hydrological drought**, indicated by declines in streamflow, reservoir, lake, and groundwater levels.

Evaluating drought conditions is one of the primary responsibilities of the State Climatology Office (SCO) and Drought Response Committee (DRC). The SCO routinely monitors climatic conditions and regularly updates drought information at <http://scdrought.com/current.html>.



South Carolina's Indicators and Indices

These are the primary indicators and indices used by the South Carolina SCO and DRC to determine drought status in the State. However, other indicators and monitoring tools may also be used. See <http://scdrought.com/current.html#> for links and examples.

Indicators and Indices	Explanation
 <p data-bbox="255 330 386 432">Percent of Normal Rainfall</p>	<p data-bbox="434 287 1293 320"><i>Depicts cumulative dryness or wetness compared to long-term averages</i></p> <p data-bbox="434 336 1293 469">A deficit is determined using the normal amount of rainfall that would be expected for a specific location or region, over a given time period. The National Weather Service provides this information for a variety of time scales (7-, 14-, 30-, 60-, 90-, 180-, and 365-day time periods).</p>
 <p data-bbox="255 513 396 616">Crop Moisture Index (CMI)</p>	<p data-bbox="434 488 1203 521"><i>Depicts short-term (up to 4 weeks) abnormal dryness or wetness</i></p> <p data-bbox="434 537 1315 639">The index is calculated using weekly precipitation, weekly mean temperature, and previous week's CMI value. It is used to monitor agricultural conditions and impacts, particularly during the growing season.</p>
 <p data-bbox="255 697 404 832">Palmer Drought Severity Index (PDSI)</p>	<p data-bbox="434 654 1203 687"><i>Depicts prolonged (months, years) abnormal dryness or wetness</i></p> <p data-bbox="434 703 1310 871">This index is calculated using monthly temperature, precipitation, and soil moisture values. It was developed to identify and monitor droughts affecting agriculture but has been used for a variety of applications. Due to how it is calculated, the PDSI values may lag situations where drought is rapidly emerging.</p>
 <p data-bbox="255 894 408 1029">Keetch-Byram Drought Index (KBDI)</p>	<p data-bbox="434 890 1196 923"><i>Depicts daily moisture deficiencies in the upper layers of the soil</i></p> <p data-bbox="434 938 1310 1041">This index is calculated using daily maximum temperature and daily precipitation values. It is used to monitor fire danger and also indicates the amount of rainfall needed to saturate the soil and reduce drought stress.</p>
 <p data-bbox="255 1093 412 1195">U.S. Drought Monitor (USDM)</p>	<p data-bbox="434 1052 1265 1085"><i>Provides a weekly, national-scale view of drought extent and severity</i></p> <p data-bbox="434 1101 1318 1242">USDM authors synthesize a variety of drought indicators, indices, and other products, available from multiple sources, to create the map. They may consider dozens of indicators as well as drought impact information. The USDM uses a scale of five severity levels (D0-D4).</p>
 <p data-bbox="255 1335 396 1437">Average daily streamflow</p>	<p data-bbox="434 1253 1305 1319"><i>Considers average streamflow over two consecutive weeks, as compared to historic minimum flows for those same weeks</i></p> <p data-bbox="434 1335 1322 1508">SC DNR (Hydrology Section) uses data from the U.S. Geological Survey (USGS) to calculate 14-day average streamflow values. Statewide maps, and hydrographs for affected stations, are typically shown at DRC meetings. SC DNR also provides information about lake level deficits/surpluses for 10 major reservoirs in the State.</p>
 <p data-bbox="255 1551 415 1686">Ground Water, static water level in an aquifer</p>	<p data-bbox="434 1524 1310 1590"><i>Considers groundwater levels over two consecutive months, as compared to historic levels for those same months</i></p> <p data-bbox="434 1605 1315 1707">Data comes from the SC Groundwater Drought Monitoring Network, which is maintained by SC DNR. Statewide maps, and hydrographs for affected stations, are typically shown at DRC meetings.</p>

References

South Carolina Drought Response Act. Code of Laws of South Carolina. 1976. § 49-23-10 et seq., as amended.
 South Carolina Drought Response Regulations 121-11.1 - 121-11.12, for §49-23-10 et seq., S.C. Code of Laws.
 World Meteorological Organization (WMO) and Global Water Partnership (GWP). 2016. *Handbook of Drought Indicators and Indices*.

3. Monitoring and Measuring Drought Alert Phases and Impacts

Drought Alert Phases and Severity Levels

The South Carolina Drought Response Act and Regulations establish four drought severity levels: incipient, moderate, severe, and extreme. Incipient drought means that the drought indices demonstrate a threat of drought. The moderate, severe, and extreme drought phases represent increasingly severe conditions. Each phase also triggers a range of responses that increase accordingly.

South Carolina uses multiple indicators and information sources to evaluate and determine the State's drought status.

Indicator values and trigger levels for South Carolina's four drought alert phases

For each drought indicator, the Regulations specify the quantitative measures that correspond to each drought phase. Individual indicators are anticipated to show different levels of severity at a given point in time. For example, indicators representing hydrological conditions may lag indices that express soil moisture conditions.

The Regulations state that a given drought phase (incipient, moderate, severe, extreme) may be declared if any of the indices indicate that severity level; however, indication by one index alone does not mandate a declaration.

The Regulations also allow DNR and the DRC to consider other relevant information such as water supply and demand, agricultural and forestry conditions, rainfall records, general historical climatological data, and forecasts and outlooks to verify the drought phase.






Indicator	Drought Alert Phase			
	Incipient	Moderate	Severe	Extreme
Crop Moisture Index (CMI)	0.00 to -1.49	-1.50 to -2.99	-3.00 to -3.99	≤ -4.00
Palmer Drought Severity Index (PDSI)	-0.50 to -1.49	-1.50 to -2.99	-3.00 to -3.99	≤ -4.00
Keetch-Byram Drought Index (KBDI)	300 to 399	400 to 499	500 to 699	≥ 700
U.S. Drought Monitor (USDM)	D0	D1	D2	≥ D3
Average daily streamflow (CW = consecutive weeks)	111-120% of the minimum flow for 2 CW	101-110% of the minimum flow for 2 CW	Between the minimum flow and 90% of the minimum for 2 CW	≤90% of the minimum flow for 2 CW
Ground Water, static level in an aquifer (CM = consecutive months)	Between 11-20 feet above trigger level for 2 CM	Between 1-10 feet above trigger level for 2 CM	Between the trigger level and 10 feet below for 2 CM	>10 feet below the trigger level for 2 CM





Impacts – What to Expect During Drought




An **impact** is an observable loss or change at a specific time due to drought. Unlike the indicators and indices that represent the physical manifestations of drought, impacts information can tell us how prolonged dry conditions and lack of water affect people, the environment, and the economy.






The adverse effects of drought may be **direct**, such as crop loss or damage – or **indirect**, such as loss of recreation opportunities and revenue when boat ramps are closed due to low lake levels.

Behaviors may also change due to drought. For example, water demand and irrigation use increase during the incipient phase of drought. In later phases, voluntary and mandatory water use restrictions may be implemented in order to conserve water, and burning restrictions may be enacted due to higher fire risks.

Agriculture	
 Soil	Dry soil; hard, cracked ground; little subsoil moisture; dust storms, topsoil removal
 Crops	Stressed plants; delayed planting, germination, growth; damaged crops, low yields; fields left fallow; widespread crop losses at later stages; counties receive USDA Disaster Designations
 Pasture	Poor pasture conditions, cattle forage limited; reduced hay production and yields, high prices; hay and water imported for livestock
 Livestock	Low levels in water sources, supplemental protein fed to livestock; dairy operations close; high, increasing numbers of cattle sales
 Irrigation	Increased irrigation; agriculture ponds and wells dry up; water quality very low; no water left for irrigation; farmers haul water for cattle

Water Resources	
 Water demand	High water demand and use at early stages; low water pressure; alternative water sources used in later stages
 Water levels	Water levels in reservoirs, lakes, and streams trend below normal; reservoir levels near intakes; well levels decline, run dry; well owners lower pumps, dig deeper or new wells
 Water quality	Water quality changes and declines, drought progresses; algae and fungus growth increases; water temperatures rise; saltwater intrusion in coastal areas
 Conservation	Utilities enact voluntary and mandatory water restrictions ; lawns brown, gardens wilt as irrigation is curtailed; water prices increase; extreme measures taken to conserve water, violators fined

Fire	
 Wildfires	Elevated fire danger, fuel loads increase; fires spread easily, difficult to extinguish; fire season begins early, lasts longer; fire activity increases, intensifies; extended fire season is destructive and costly
 Fire Management	Fuel mitigation practices are in effect; alerts and burn bans are issued; restrictions on campfires and fireworks; state forests closed to recreational use
 Fire crews	Fire crews mobilize earlier than normal, more crews on staff; not enough water to fight fires; rural and volunteer fire departments' resources are stressed; firefighting funds running out

Society and Environment	
 Power generation	Energy utilities monitor water quality and levels; hydropower production is limited or restricted; alternate sources of energy used; energy conservation requested
 Recreation	Dry hiking trails , soil erosion; swimming and fishing areas, boat ramps, close; tubing, rafting season shortened
 Business	In early phases, good conditions for construction, golf season; in later phases, landscaping businesses affected; agriculture, forestry, tourism, recreation sectors report financial losses; business increases for well drillers , water haulers
 Health and Safety	Seasonal allergies worse than normal; exposed artifacts, obstacles in water bodies; toxic algae blooms increase; wildfires raise air quality concerns
 Habitat and wildlife	Habitat, water, and food availability for wildlife is affected; wetlands dry up; wildlife seek food and water, encroach into residential areas; plant, wildlife losses; fish kills; higher susceptibility to pests, diseases

Reference: National Drought Mitigation Center, [Drought Impact Reporter](#)

Find information about the major droughts and impacts that have affected South Carolina at <http://scdrought.com/impacts.html>.

4. South Carolina Drought Response Managing Water Use and Shortages during Drought

Local Drought Response

SC DNR provides a **Model Drought Management Plan and Response Ordinance** to help water systems meet Drought Response Act requirements. Elements include:

- Description of the water system, pre-drought planning efforts, and alternate supply sources
- System-specific indicators and triggers for monitoring water shortages and the system's ability to meet demand during drought
- Water use reduction plan
- Communications and education actions
- Implementation plan and ordinance

Local entities have primary responsibility for drought response and management, to the extent possible and practical. The Drought Response Act requires all municipalities, counties, public service districts, special purpose districts, and commissions of public works engaged in the activity of supplying water for any purpose to develop and implement drought response plans and ordinances. Such documents establish the procedures for managing water supply and demand, before and during drought, with the goals of alleviating impacts, achieving the greatest public benefit from water use (domestic use, sanitation, fire protection), and allocating water for other purposes in an equitable manner.

Recommended and Example Local Actions, from the South Carolina Model Drought Response Ordinance

All Drought Alert Phases | Review and implement local plans and ordinances

Communications: notify local media, water customers, and SCDNR about the status of drought conditions and the measures that customers are requested to follow

Education: encourage and educate customers to comply with water conservation; during later phases, expand efforts, emphasize fees and penalties associated with violating mandatory restrictions

Water leaks: intensify efforts to identify and correct leaks in the distribution system

Irrigation taps: cease to install new irrigation taps on the water system

Moderate Drought | Voluntary conservation measures

Water reduction goals: overall-15%; residential use-20%; commercial, industrial, institutional, irrigation-15%

Residential water use: 65 gallons/person/day; maximum of 250 gallons/household/day

Non-essential use: eliminate washing of hard surfaced areas, buildings, gutters; domestic washing of vehicles; fountains, aesthetic use

Outdoor use: reduce watering of lawns, plants, trees, gardens, shrubs; encourage watering in off-peak hours

Fire hydrant use: reduce water used for purposes other than firefighting or flushing to maintain water quality

Limit commercial/individual use: limit serving of water in restaurants; maintain minimum water levels in scenic and recreational lakes, only to support aquatic life; cease water service to customers who fail to repair leaks

Severe Drought | Mandatory restrictions on non-essential usage and voluntary for all other purposes

Water reduction goals: overall-20%; residential use-25%; commercial, industrial, institutional, irrigation-20%

Residential water use: 55 gallons/person/day; maximum of 200 gallons/household/day

Non-essential use: same as Moderate Drought; eliminate filling public, private swimming pools

Outdoor use: control landscape irrigation by customers by staggering watering times

Fire hydrant use: eliminate water use for purposes other than firefighting or flushing to maintain water quality

Commercial/individual use: stop serving water in restaurants; stop maintaining water levels in scenic and recreational lakes, except to support aquatic life; cease water service to customers who fail to repair leaks; limit golf course irrigation; limit expanding commercial nurseries, placing new irrigated agricultural land in production, planting or landscaping when required by site design review process

Extreme Drought | Mandatory restrictions for all purposes and on the times when certain usage is allowed

Water reduction goals: overall-25%; residential use-30%; commercial, industrial, institutional, irrigation-25%

Residential water use: 45 gallons/person/day; maximum of 150 gallons/household/day

Non-essential/fire hydrant/commercial/individual use: same as Severe Drought

Outdoor use: eliminate landscape irrigation by customers

Other measures (examples): place a moratorium on issuance on new water service connections and contracts for new water main extensions; reduce water system pressure; implement excessive water use rate schedule; impose a drought surcharge; enforce restrictions with violations and fines

Curtailment of Water Use During Droughts

Procedures and Responsibilities

- 1) The Drought Response Committee (DRC) evaluates drought conditions and effectiveness of local actions to determine if mandatory reductions or curtailment of nonessential water use is considered necessary to ensure adequate supplies of water.
- 2) Upon such determination, the DRC reviews and determines which nonessential water uses should be curtailed. The curtailment of water use may involve adjusting the quality of water to meet the water use, adjusting the time of water use, and/or utilizing different sources of water.
- 3) SCDNR issues and disseminates a curtailment declaration to water systems and the news media. The declaration specifies the drought management areas affected and the nonessential water use to be reduced or curtailed.

During severe or extreme drought conditions, the Department of Natural Resources may require mandatory reduction or curtailment of non-essential water use in affected drought management areas if recommended by the Drought Response Committee.

- Any person adversely affected by a mandatory curtailment may seek a variance. SCDNR reviews and makes determinations regarding variance requests.
- During any drought alert phase, SCDNR shall offer its services to and mediates disputes arising from competing demands for water.
- Any entity affected by a DRC declaration has the right to appeal to the Administrative Law Court, within five days of the declaration. The Court must hear appeals within five days of the filing.

The DRC determines which categories of non-essential water use to reduce or curtail by the following standards:

- Purpose of the use
- Suitability of the use to the watercourse, lake, or aquifer
- Economic value of the use
- Social value of the use
- Extent and amount of the harm it causes
- Practicality of avoiding the harm by adjusting the use or method of use
- Practicality of adjusting the quantity of use
- Protection of existing values of water uses, land, investments, and enterprises
- Consumptive or non-consumptive nature of the use
- Impacts on essential water use

Essential Water Use Categories

* Highest Priority Water Uses



Firefighting purposes



Health and medical purposes



Agricultural operations for food production



Minimum streamflow requirements



*Water levels in the potable drinking water supplies above and below groundwater tables



*Use of water to satisfy federal, state, or local public health and safety requirements

Nonessential Water Use Categories

Agricultural operations for nonfood production, and nonessential water users that may suffer a critical economic loss as a result of mandatory curtailment, have priority over other nonessential water users. Such users must certify to the Drought Response Committee the nature of the loss in order to qualify for the higher priority nonessential use.



Agricultural operations for non-food production

- Irrigation



Industrial use

- Industrial domestic use
- Once through cooling
- Industrial process use



Commercial use

- Commercial domestic use
- Commercial process use



Institutional use



Domestic use

- Inside use
- Outside use



Recreational use



Electric Power Generation

References

South Carolina Drought Response Act. Code of Laws of South Carolina. 1976. § 49-23-10 et seq., as amended.
 South Carolina Drought Response Regulations 121-11.1 - 121-11.12, for §49-23-10 et seq., S.C. Code of Laws.
 SC Model Drought Management Plan and Response Ordinance (2001).

Prepared by:



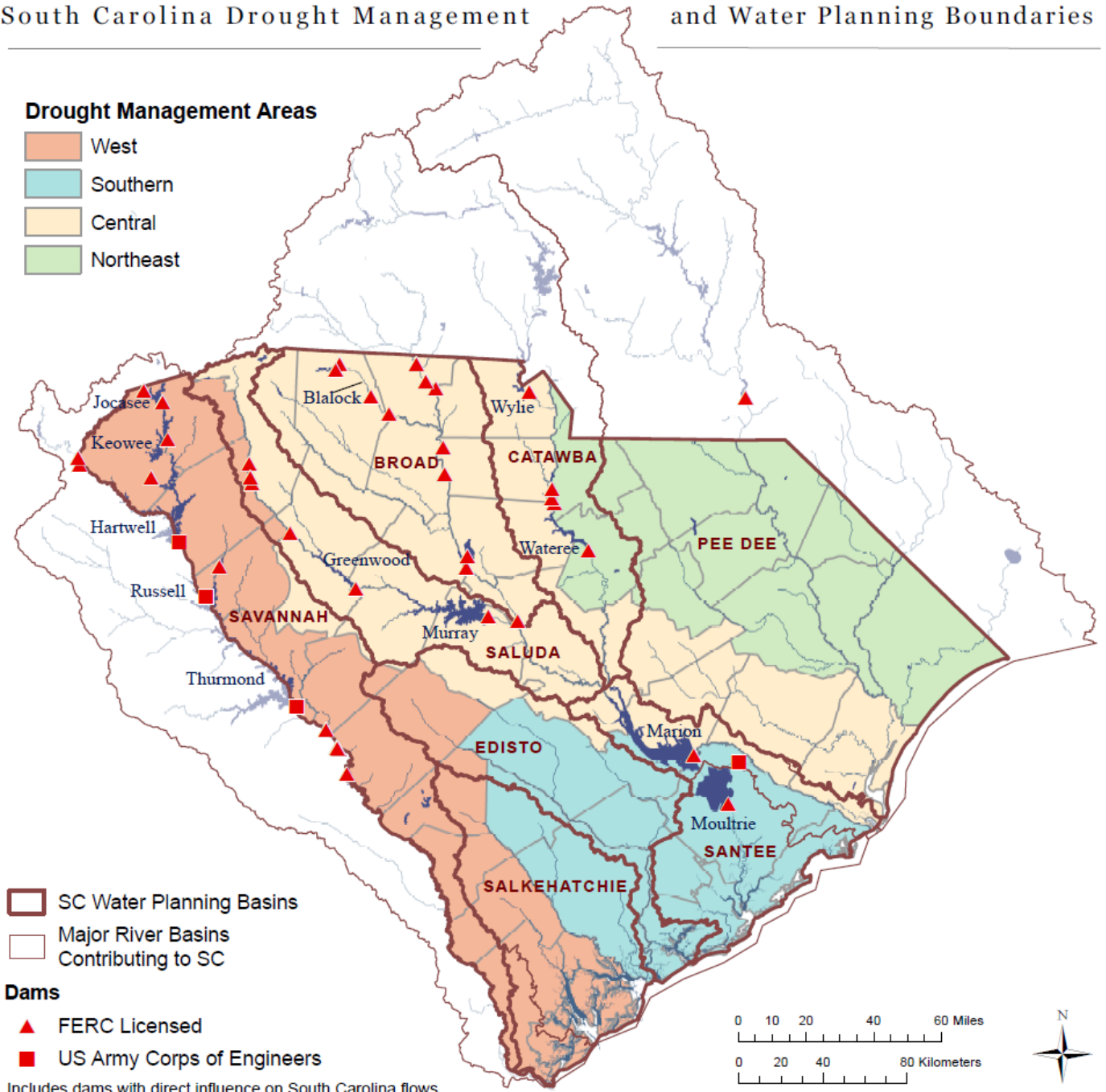
5. Drought Management and Basin-Level Plans

Overview: This map shows the overlaps and intersections between South Carolina's Drought Management Areas and the eight river basins used in South Carolina's water planning process. In many basins, dam and reservoir projects support power production, drinking water supply, recreation, wildlife habitat, and other uses. Reservoir levels and water releases can vary considerably, depending on a project's location, the uses it supports, plans and operational requirements, and weather and climate events. Drought management plans and Low Inflow Protocols (LIPs) provide guidelines for hydro operations and reservoir releases during drought; this information is typically provided at Drought Response Committee meetings.

South Carolina Drought Management and Water Planning Boundaries

Drought Management Areas

- West
- Southern
- Central
- Northeast



Example Basin-Level Plans and Protocols

About Low Inflow Protocols (LIPs): The Federal Energy Regulatory Commission (FERC) issues 30- to 50-year licenses for nonfederal hydropower projects. Licenses establish the terms and standards for hydropower operations, reservoir levels, and release schedules. Recent relicensing processes for projects in, or affecting, South Carolina have included the development of LIPs. These protocols establish the triggers and actions for the licensees and others to follow during drought conditions, with the goal of balancing needs for, and uses of, water resources.

Upper Savannah River/West DMA

The **Low Inflow Protocol for Duke Energy's Keowee-Toxaway Hydroelectric Project** supports management of the Bad Creek, Jocassee, and Keowee reservoirs. Duke Energy coordinates with the US Army Corps of Engineers (USACE) to ensure that downstream reservoirs receive adequate flows and with members of the **Keowee-Toxaway Drought Management Group** to foster a unified response to drought conditions in the Savannah River Basin. Members include Duke Energy; SCDNR; SCDHEC; US Geological Survey; USACE; owners of large water intakes uses for municipal, industrial, or power plant water supply; and others.

- Information is available at: <https://www.duke-energy.com/community/lakes/drought-management-advisory/keowee-toxaway-dmag>

The **US Army Corps of Engineers, Savannah District**, manages Lakes Hartwell, Russell, and Thurmond as a coordinated system. They were constructed for a variety of purposes, including hydropower, flood control, and navigation; they also serve as important water supply and recreation resources. The **Savannah River Basin Drought Management Plan** has four trigger levels with target releases varying according to the time of year.

- Information about lake levels and drought management is available on the Savannah District Water Management page: <http://water.sas.usace.army.mil/GMAP/>

Yadkin-Pee Dee Basin/Northeast DMA

The **Yadkin-Pee Dee Low Inflow Protocol** establishes guidelines for the operation of several dams and reservoirs in North Carolina, to ensure adequate and certain downstream flows for South Carolina water users during drought. Members of the **Yadkin-Pee Dee Drought Management Advisory Group** include Duke Energy, Cube Yadkin Generation, LLC, NC Division of Water Resources, NC Wildlife Resources Commission, SCDNR, SCDHEC, US Fish and Wildlife Service, High Rock Lake Association, Badin Lake Association, SC Pee Dee River Coalition, a Lake Tillery homeowners' representative, and owners of water intakes that withdraw from one of the projects' reservoirs.

- Information is available on the Duke Energy website: <https://www.duke-energy.com/community/lakes/drought-management-advisory/yadkin-pee-dee-dmag>
- Information is available on the Cube Hydro Carolinas website: <http://cubecarolinas.com/low-inflow-protocol/>

Catawba-Wateree River/Central and Northeast DMAs

The **Catawba-Wateree Low Inflow Protocol** was developed in 2006, during the FERC relicensing process for Duke Energy's hydroelectric projects in that basin. The LIP was first implemented in 2007-2009. It details the actions to be taken by Duke Energy, water utilities, and other major water users during different stages of drought. This includes a progressive reduction of flows release from the dams, reductions to minimum lake levels, progressive water use restrictions, and increased communications customers and between Duke Energy and water utilities. **Catawba-Wateree Drought Management Advisory Group members** include SCDNR, SCDHEC, NC Division of Water Resources, NC Wildlife Resources Commission, US Geological Survey, US Fish and Wildlife Service, and owners of large water intakes. South Carolina water utility members and participants include Catawba River Water Supply Project, Chester Metropolitan District, City of Camden, City of Rock Hill, Lugoff-Elgin Water Authority, Town of Fort Mill, and York County.

- Information is available at: <https://www.duke-energy.com/community/lakes/drought-management-advisory/catawba-wateree-dmag>

6. The South Carolina Drought Response Plan State Emergency Operations Plan, Appendix 10

Activating the South Carolina Drought Response Plan

The South Carolina Drought Response Plan is located in Appendix 10 of the State's Emergency Operations Plan (EOP). The EOP directs state agencies and local responders during natural, technological, or human-made disasters to ensure a coordinated and effective response in the State.

The Drought Response Plan describes actions when drought conditions have reached a level of severity beyond the scope of the Drought Response Committee (DRC) and local communities.

The Drought Response Plan may be activated when:

- drinking water supplies are at risk of being depleted,
- public health, safety, and welfare are threatened,
- local resources and actions are unable to provide for citizens' safety, or
- state-level actions and resources are necessary to provide relief from impacts.

The South Carolina Emergency Management Division (SCEMD) maintains the EOP and leads multi-agency response to hazard events. Upon activation of the EOP, SCEMD and the State Emergency Response Team (SERT) assemble in the South Carolina State Emergency Operations Center (SEOC) to coordinate the State's response.

Roles and Responsibilities

Drought Response Committee

- Upon determining that state-level response is needed, the DRC provides the Governor with a priority list of actions designed to alleviate the effects of drought in the affected Drought Management Areas.
- The DRC will also notify SCEMD that drought conditions have progressed to a level that may require activation of the Drought Response Plan. SCEMD reviews conditions and activates the Plan if appropriate.

Governor

- The Governor may declare a State of Emergency or a Drought Emergency by Executive Order, issue emergency curtailment of water withdrawals and use, or seek a federal disaster declaration.

SERT, SCEMD

- SERT, with the DRC, works with local emergency management directors and water suppliers to develop response and recovery measures.
- ESF 15 (Public Information) initiates a public information campaign to provide updates on drought status, actions being taken, and relief programs available at the State and Federal levels.

State Agencies

- State agencies (including those on the DRC and SERT) coordinate on disseminating information to the public.
- Each State agency develops a list of actions to conserve internal water usage by 10%.
- All State agencies are asked to develop and refine drought response measures that they can implement. These may include developing and recommending changes to current drought legislation, providing relief or assistance to affected sectors and communities, and tracking impacts.

Federal Agencies

- Federal agencies are asked to assist with providing drought relief and informational resources. Agencies include the U. S. Army Corps of Engineers (USACE), the National Oceanic and Atmospheric Administration (NOAA), and the U. S. Department of Agriculture (USDA).



Activating the South Carolina Drought Response Plan – What to Expect

Activation of the plan is based on pre-identified conditions that may affect a community’s ability to provide for the safety of its citizens due to low or lack of water. These conditions include:

- Communities have initiated water restrictions or rationing.
- Community water supplies are continuing to be depleted to the level of exhaustion.
- Local utility companies have begun shutting down power generation.
- Requirements for firefighting resources are beyond the capabilities of the SC Forestry Commission.

The Drought Response Plan identifies the types of assistance and actions that will be necessary to assist local level agencies with addressing water shortage, firefighting, and agricultural emergencies.

Actions	Resource Needs	Agencies
Water for domestic and municipal use		
<ul style="list-style-type: none"> • Ration water • Truck in water • Distribute bottled water • Drill new and deeper wells • Evacuate citizens from affected areas, if other options are not viable 	<ul style="list-style-type: none"> • Critical Transportation • Housing • Mass Care Services • Health and Social Services • Coordination • Public Information and Warning 	<ul style="list-style-type: none"> • SC National Guard: support water hauling operations, evacuations; provide security staff • Department of Transportation • SCDHEC: groundwater monitoring, well drilling permits • US Army Corps of Engineers: emergency well construction, water transport • Health and Human Services agencies: public health, first aid, food assistance • Environmental Protection Agency • American Red Cross
Water for agriculture; water and feed for livestock		
<ul style="list-style-type: none"> • Bring in water, feed • Drill new and deeper wells • Evacuate animals from affected areas, if other options are not viable 	<ul style="list-style-type: none"> • Critical Transportation • Logistics and Supply Chain Management (hay procurement) • Natural and Cultural Resources (soil conservation, erosion control) • Operational Coordination • Economic Recovery 	<ul style="list-style-type: none"> • SC National Guard: support water hauling operations, evacuations; provide security staff • Department of Transportation • SC Department of Agriculture • Clemson Cooperative Extension • USDA: assistance programs • Small Business Administration: post-event assistance, loans
Firefighting		
<ul style="list-style-type: none"> • Control and suppress fires • Protect lives, property, environment • Evacuate affected individuals and communities 	<ul style="list-style-type: none"> • Fire Management and Suppression • Environmental Response, Health and Safety • Housing • Mass Care Services • Natural and Cultural Resources (forest and timber protection) • Public Health, Healthcare and EMS • Operational Coordination • Public Information and Warning 	<ul style="list-style-type: none"> • SC Forestry Commission • SC National Guard: support fire suppression, water hauling operations, evacuations • Department of Transportation • USDA: assistance programs • FEMA: fire suppression grants
Power production		
<ul style="list-style-type: none"> • Monitor water levels in reservoirs • Report loss of capability 	<ul style="list-style-type: none"> • Secondary Power Production • Economic Loss Information 	<ul style="list-style-type: none"> • SC Office of Regulatory Staff: monitor facilities, report capability loss, gather economic information

Reference

South Carolina Drought Response Plan, Appendix 10 of the South Carolina Emergency Operations Plan.