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Submitted via electronic mail to Bennett Bearden, Chair, Alabama Water Agencies Working Group at BBearden@gsa.state.al.us.

RE: Comments to the Alabama Water Agencies on the Water Management Plan from Southern Alliance for Clean Energy, Union of Concerned Scientists, and Alabama Environmental Council

Commissioner McMillan, Commissioner Guy, Dr. Tew, Director Lefleur, and Director Atkins,

Our *three* organizations are pleased to have the opportunity to submit comments for consideration in development of the Alabama Water Agencies Working Group's (AWAWG) issue paper, *Water Management Issues in Alabama*. Our comments and concerns are largely captured in the attached new report from the Energy and Water in a Warming World initiative (EW3), a collaborative effort between the Union of Concerned Scientists (UCS) and a team of independent experts to build and synthesize policy-relevant research on the water demands of energy production in the context of climate variability and change.

The new report, *Water-Smart Power: Strengthening the U.S. Electricity System in a Warming World - A Report of the Energy and Water in a Warming World Initiative*, is based on comprehensive new research about the water implications of electricity choices in the United States under a range of pathways, at a range of geographic scales. The EW3 research focused on the Alabama-Coosa-Tallapoosa (ACT) and the Apalachicola-Chattahoochee-Flint (ACF) basins in particular.

Water-Smart Power aims to provide critical information to inform and shape decisions about power plants and electricity supply, such that those choices safeguard water resources, reduce power sector carbon emissions, and provide reliable electricity at a reasonable price, even in the context of a changing climate and other water resource pressures. Likewise, we believe, for considering water management issues in Alabama and developing a sustainable plan, that *Water-Smart Power* offers critical information to understand the implications of the energy sector on our already over-taxed water resources and provides an opportunity to more fully integrate energy issues into comprehensive water planning.

Because of the cooling water needs of thermoelectric power plants, power generation accounts for 86 percent of Alabama's freshwater withdrawals and more than 40 percent of the nation's withdrawals. As the region's population grows, demand for electricity increases, and the effects of climate change mount, these factors combined will contribute to greater strain on our finite water supplies. The electricity sector is already competing with many other important uses – for drinking water, agriculture, industry, municipal needs and recreation. Developing a state water management plan that includes the electricity sector and studies and addresses its current and projected needs and impacts, is critical if Alabama wants to ensure a sustainable water future.

The competing demands for energy and water are colliding, putting both at risk. Alabama has already experienced impacts on its electricity production; the Browns Ferry nuclear plant curtailed power production multiple times during the past several years because of high river temperatures and the plant's cooling water needs. Such incidents have led to increased costs for TVA customers along with significant investments in upgrading the facility's cooling system.

In the *Water-Smart Power* analysis, experts studied various potential future electricity mixes, and their water implications. Under the utility industry's current -- or business-as-usual -- path, with a continued heavy reliance on water-dependent power plants, power plant water consumption nationwide would stay flat between now and 2030, prolonging the sector's stress on our water resources will be prolonged throughout this time. In Alabama, power plant water consumption would be expected to *increase* appreciably by 2030 under a business-as-usual scenario.

On the business-as-usual pathway, the harmful effects of power plants on water temperatures in lakes and rivers might continue unabated, or even worsen. On the Coosa River above Weiss Lake on the Alabama-Georgia border, for example, the EW3 study found that water temperatures in 2040-2049 would exceed the ecologically important threshold of 90° F for 18 days per year on average, three times what the study projects would happen in 2010-2019 because of increasing temperatures and lower water availability due to climate change, and continued pressures from water-dependent power plants. Such high water temperatures severely stress and damage aquatic ecosystems, and affect the ability of the power plants to operate efficiently. They can also affect the amount of water flowing in rivers during crucial low-flow periods.

More water-smart electricity choices, by contrast, would lead to rapid and significant declines in power plant water withdrawals and consumption, nationally and in Alabama. Electricity pathways involving greater use of renewable energy and energy efficiency would also reduce the risks of temperature- or quantity-related impacts. The EW3 research found, for example, that under the renewables-and-efficiency scenario the Coosa River above Alabama's Weiss Lake would be 3° F to 13° F cooler in mid-summer in the decade from 2030 to 2039 than under business-as-usual as water-dependent power plants were phased out. And temperatures might stay below the 90° F threshold from 2040 to 2049, versus the 18 days per year they would exceed that threshold under business-as-usual. Likewise, under the renewables-and-efficiency scenario, the stretch of the Chattahoochee River upstream of the Alabama-Georgia border (below Georgia's Plant Wansley) would have 5 to 10 percent higher flows in summer and autumn by 2025 compared with business-as-usual.

The scale of power plant water use, numerous examples of the challenges presented by power plants' water dependencies, and analyses of future power sector water use all point to the importance of fully considering that component in assessing Alabama's water future. We urge you to consider the full implications of the power sector's impact on Alabama waterways as you prepare the comprehensive water management plan. It may even be wise to consider additional discussions with Alabama Power Company to more fully integrate their decision-making processes around resource allocation with state water expert planning exercises such as this. The impact of the power sector on our water resources is too great – both now and in the future as we expect to see significant changes in our climate – to let any conversations be independent of each other.

More information on the EW3 report is available at <http://www.ucsusa.org/watersmartpower>. We would be happy to facilitate a connection with report authors, as well, should that be useful to you in your research and preparation of the Alabama Water Management Plan.

Sincerely,

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