

Climate Change Resilience Planning at the Department of Energy's Savannah River Site

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The Savannah River National Laboratory (SRNL) is developing a sustainability plan for the Department of Energy's Savannah River Site (SRS) in SC in accordance with Executive Order 13693, which charges each governmental agency with "identifying and addressing projected impacts of climate change" and "calculating the potential cost and risk to mission associated with agency operations." We make use of the Vulnerability Assessment Scoring Tool, an Excel-based program designed to accept as input various climate scenarios ('exposure'), the susceptibility of site 'assets' to climate change ('sensitivity'), and the ability of these assets to cope with climate change ('adaptive capacity'). These are combined to produce a series of scores that highlight vulnerabilities. We quantify the vulnerability of two assets in particular: 1) energy requirements for mission critical infrastructure and 2) the health, safety and productivity of the outdoor workforce.

To estimate exposure, climate change projections for SRS were obtained from 1) an online repository of statistically-downscaled global climate model (GCM) simulations and 2) statistically-downscaled GCM simulations produced at SRNL. Working with site managers, we have selected the most important assets and estimated their sensitivities to climate change and their abilities to adapt. Larger buildings that rely on aging cooling facilities were found to be most vulnerable to the predicted increase in the number of hot days, while radiological workers utilizing multiple sets of protective clothing for outdoor activity would see greater restrictions placed on their work (decreasing their productivity) as a result of greater heat and humidity. Results of this study will aid in driving future management decisions and promoting sustainable practices at SRS.