ANNEX B TO THE LONG-TERM POWER OUTAGE PLAN
BLACK START OPERATIONS

I. DEFINITIONS

A. Black start is the ability of a power generating utility to restart parts of the power system to recover from a black sky event. This entails isolated power stations being started individually and gradually reconnected to one another to form an interconnected system again.

B. A black sky event is a catastrophic event or events compromising electric reliability and the country's collective effort to respond and restore service.

II. SITUATION

A. In a black sky event, South Carolina will need to restart portions of the electrical grid from black start.

1. Black start generating facilities must have the ability to start operations without electricity provided by the power grid; for instance, hydroelectric plants.

2. While large electric utilities can utilize black start to restore the power grid, smaller co-ops rely on purchasing power from the larger utilities.

B. Localized outages do not require black start to re-energize the part of the system affected by an outage.

C. Additional considerations need to be taken during black start operations as opposed to a normal LTPO where the state can rely on the external electric power transmission network.

D. A black start operation would most commonly occur as a regional power outage area spanning outside of South Carolina. For example, the Northeast Blackout of 2003 spanned 7 states and portions of Canada.

III. BLACK START OPERATIONS

A. Once a black start generating facility is restored, power is provided to other plants so they can begin the start-up process and form areas with service. The entire black start process can take 7-10 days or more.

B. Due to the complicated nature of black start power restoration, decisions on priorities of generation restoration are made by the electric utility and based on the balancing of loads within the power grid. The SERT cannot prioritize locations for generation restoration.

C. As more areas are brought online, they are progressively synchronized to form electrical sub-systems. Tie lines are closed, and utilities can begin restoring the remainder of the customer load.

D. The timing of establishment of service in areas will be highly variable and unpredictable based on the situation. Collapses during restoration could occur.

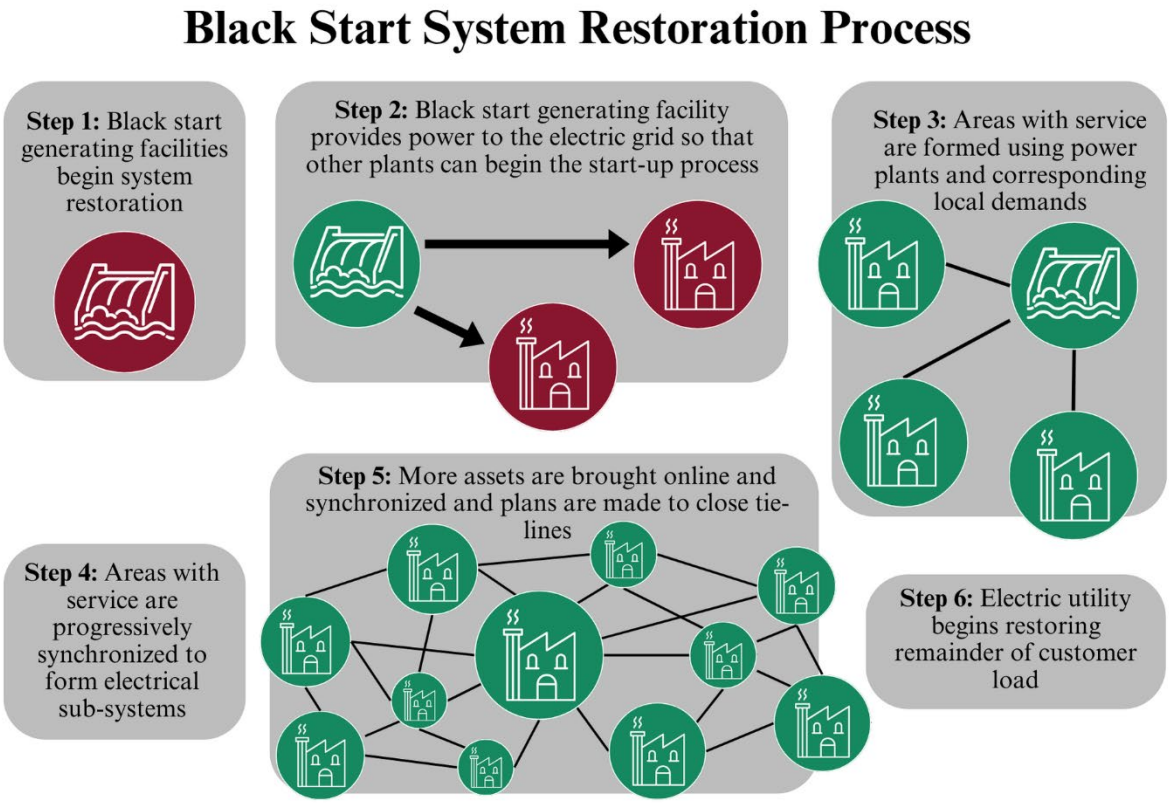

Figure 1. Black Start Restoration Process

IV. PLAN DEVELOPMENT AND MAINTENANCE

This annex complies with plan development and maintenance elements of the LTPO Base Plan.