

**Rate Schedule 5. Appendix I**  
**Testing Criteria for Black Start Capability Tests Pursuant to Section 15.5.4.1 of**  
**Rate Schedule 5**

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**~~Rate Schedule 5. Appendix II~~**  
**~~Testing Criteria for Black Start Capability Tests~~**  
**~~Pursuant to Section 15.5.4.2 of Rate Schedule 5~~**

**I. General**

1. A Generator shall perform a Black Start Capability Test annually for each of its units providing Restoration Services in accordance with the test protocols described below.
2. A Black Start Capability Test will be considered successful if it is completed in accordance with the test protocols described below.

**II. Scheduling a Test**

1. A Generator shall perform the annual Black Start Capability Test for its unit(s) between May 1<sup>st</sup> to April 30<sup>th</sup>, as may be reasonably extended by mutual agreement among the Generator, Consolidated Edison and the ISO, without financial penalty; *provided, however*, that the Generator shall not perform a Black Start Capability Test in June, July, or August.
2. The test date must be agreed upon by Consolidated Edison, the Generator and the ISO. The agreed upon test date shall be deemed firm as of 48 hours prior to the scheduled beginning of the test. A firm test may not be called off or deferred except by the ISO for system or local reliability reasons. As is the case for any ISO-approved outage, the Generator shall not offer the unit into the Day-Ahead Market for operation during the Black Start Capability Test that day, and such

non-offering into the market shall be deemed not to diminish the unit's availability.

3. An annual Black Start Capability Test may be performed prior to a maintenance outage only if there is no other scheduling option within the test period.
4. If the annual Black Start Capability Test is unable to be completed during the test period due to a forced outage or force majeure event, Consolidated Edison and the Generator will conduct the test outside the test period without a *pro rata* reduction in annual payments.
5. If a Black Start Capability Test is not successful, the Generator will have a reasonable opportunity to reschedule and conduct a subsequent test.
6. Consolidated Edison and the ISO may have representatives present to witness the annual Black Start Capability Test. However, witnesses are not required for the Generator to perform the test.

### **III. Gas Turbine Unit Testing Requirements**

A Generator shall perform the following test for a gas turbine unit that is designated by Consolidated Edison to participate in the Consolidated Edison Plan as a gas turbine unit and not as part of a combined cycle facility.

#### **A. Test of Gas Turbine Unit That Is a Sole Black Start Unit**

1. A Generator shall perform the following Black Start Capability Test each year for its gas turbine unit that is a Sole Black Start Unit.
2. A qualifying Black Start Capability Test of the gas turbine unit must be conducted when the unit is in a cold condition, *i.e.*, the unit will be off line and will be brought on line specifically to conduct the test.

3. The gas turbine unit to be tested will be off line at the start of the Black Start Capability Test and will be isolated from all external Consolidated Edison light and power sources.
4. The Black Start Capability Test must demonstrate that the designated gas turbine unit can be started and can energize the isolated light and power bus.
5. Once isolated from Consolidated Edison's light and power bus, the Generator will have 80 minutes to ready the gas turbine unit and to request permission to synchronize the unit to a live bus on the Consolidated Edison transmission system. When authorized by the Consolidated Edison System Operator, the Generator will be asked to close the breaker for the gas turbine unit. Once the gas turbine unit has synchronized and its breaker has closed onto the transmission bus, the test will be considered successful.

**B. Test of Gas Turbine Units that Are Part of a Black Start Unit Group**

1. A Generator shall perform the following Black Start Capability Test each year for one of the units of a Black Start Unit Group. Once the Generator has successfully completed an annual Black Start Capability Test of one of the units of the Black Start Unit Group, it should perform in subsequent years an annual test of the remaining units of the Black Start Unit Group.
2. A qualifying Black Start Capability Test of a gas turbine unit must be conducted when the unit is in a cold condition, *i.e.*, the unit will be off line and will be brought on line specifically to conduct the test.
3. The gas turbine unit to be tested will be off line at the start of the Black Start Capability Test and will be isolated from all external Consolidated Edison light and power sources.

4. The Black Start Capability Test must demonstrate that (i) an isolated gas turbine unit can be started and can energize the isolated light and power bus; and (ii) that the light and power source is adequate for the purpose of bringing the other units on line. Part (ii) must be demonstrated by starting up an additional gas turbine unit from the light and power bus that has been energized through Part (i) of the test.
5. Once isolated from Consolidated Edison's light and power bus, the Generator will have 90 minutes to ready the equipment and to request permission to synchronize the additional generating unit to a live bus on the Consolidated Edison transmission system. When authorized by the Consolidated Edison System Operator, the Generator will be asked to close the breaker for the additional gas turbine unit. Once the additional gas turbine unit has synchronized and its breaker has closed onto the transmission bus, the test will be considered successful.

#### **IV. Combined Cycle Unit Testing Requirements**

1. A Generator shall perform each year a Black Start Capability Test for its gas turbine and steam turbine units that are designated by Consolidated Edison to participate in the Consolidated Edison Plan as part of a combined cycle facility.
2. A qualifying Black Start Capability Test must be conducted when the combined cycle unit is isolated from the transmission system. The combined cycle unit must demonstrate that the designated gas turbine(s) unit can be started and can energize the isolated light and power bus; and that the light and power source is adequate for the purpose of bringing the steam turbine(s) on line. For a successful

Black Start Capability Test, the steam turbine(s) must synchronize to the transmission system within 6 hours of the start of the Black Start Capability Test.

## **V. Steam Turbine Unit Testing Requirements**

A Generator shall perform the following test for a steam turbine unit that is designated by Consolidated Edison to participate in the Consolidated Edison Plan as a steam turbine unit and not as part of a combined cycle facility.

### **A. Comprehensive Black Start Capability Test**

1. A Generator shall perform a "Comprehensive Black Start Capability Test" at least once every three years for its steam turbine unit(s) providing Restoration Services.
2. A qualifying Comprehensive Black Start Capability Test of a steam turbine unit may be conducted while the unit is in a cold condition or in a hot condition. If the steam turbine unit is in a cold condition its internal light and power bus may remain connected to the transmission system until it reaches a hot condition at which point it will separate from the transmission system and commence its test.
3. The steam turbine unit must be isolated from the transmission system and an isolated cranking path between it and a black start gas turbine unit must be established. The steam turbine unit is required to start up using energy and voltage control from the gas turbine unit to energize its internal light and power bus, and be ready to synchronize to an energized transmission system when directed by the Consolidated Edison System Operator.
4. A Comprehensive Black Start Capability Test shall be considered successful if, after isolation from the Consolidated Edison transmission system, the hot steam unit is synchronized to the transmission system, and is firm to the system and

operating at minimum load in no more than 8 hours after the completion of the isolation.

5. Upon successful completion of the Comprehensive Black Start Capability Test, Consolidated Edison shall SRE the unit until midnight of the test day or until the unit's reference minimum run time has elapsed, whichever is earlier.

**B. Intervening Years Black Start Capability Test**

1. To meet its annual steam turbine unit test obligation, a Generator may perform an "Intervening Years Black Start Capability Test" for its steam turbine unit(s) providing Restoration Services if it has successfully completed a Comprehensive Black Start Capability Test of that unit within the prior two years.
2. The steam turbine unit must be isolated from the transmission system and a cranking path between it and a black start gas turbine unit must be established. The steam turbine unit is required to use energy and voltage control from the gas turbine unit to energize the internal light and power bus. The steam turbine unit is then required to add the auxiliary load that is required to introduce fire into its boiler, *e.g.*, boiler feed pump, fans, etc, except that no fire is required to be introduced into the boiler.
3. An Intervening Years Black Start Capability Test shall be considered successful if the gas turbine unit demonstrates ten minutes of steady operation supplying its load at the internal light and power bus within four hours after the completion of the isolation.

## **VI. Reporting and Additional Testing Requirements**

1. If an ISO representative is not onsite, a representative from the Generator will initiate calls to ISO operations personnel to signal the start time, completion time and outcome of the Black Start Capability Test.
2. Following its performance of a Black Start Capability Test for its unit, the Generator shall submit a certification form to the ISO – in the form provided in Appendix ~~III~~II to this Rate Schedule – indicating whether its unit successfully completed its annual Black Start Capability Test. Consolidated Edison shall acknowledge to the ISO its acceptance of a Generator’s successful completion of the Black Start Capability Test.
3. A Generator will perform tests of its unit’s critical Restoration Services equipment, including monthly tests of standby diesel generators, black start gas turbines and UPS/battery back up systems. As part of its annual certification to the ISO, the Generator shall certify – in the form provided in Appendix ~~III~~II to this Rate Schedule – that it maintains and tests its unit’s critical Restoration Services equipment in accordance with good utility practice. If any of these critical systems are found to be non-operational or otherwise unavailable, the Generator will notify Consolidated Edison and the ISO within 36 hours and provide a schedule for their repair and return to service.