Legally required standby systems take second priority to emergency systems if they are involved in sharing an alternate supply and/or load shedding or peak shaving schemes.

N **701.2 Reconditioned Equipment.** Reconditioned transfer switches shall not be permitted.

701.3 Commissioning and Maintenance.

(A) Commissioning Witness Test. The authority having jurisdiction shall conduct or witness the commissioning of the complete system upon installation.

(B) Tested Periodically. Systems shall be tested periodically on a schedule and in a manner approved by the authority having jurisdiction to ensure the systems are maintained in proper operating condition.

(C) Maintenance. Legally required standby system equipment shall be maintained in accordance with manufacturer instructions and industry standards.

(D) Written Record. A written record shall be kept on such tests and maintenance.

(E) Testing Under Load. Means for testing legally required standby systems under load shall be provided.

Informational Note: See NFPA 110-2019, *Standard for Emergency and Standby Power Systems*, for information on testing and maintenance of emergency power supply systems (EPSSs).

701.4 Capacity and Rating.

(A) Rating. Legally required standby system equipment shall be suitable for the available fault current at its terminals.

(B) Capacity. A legally required standby system shall have adequate capacity in accordance with Parts I through IV of Article 220 or by another approved method. The system capacity shall be sufficient for the rapid load changes and transient power and energy requirements associated with any expected loads.

(C) Load Management. The alternate power source shall be permitted to supply legally required standby and optional standby system loads where the alternate source has adequate capacity or where load management (that includes automatic selective load pickup and load shedding) is provided that will ensure adequate power to the legally required standby circuits.

N **(D) Parallel Operation.** Parallel operation shall comply with Part I or Part II of Article 705 where the legally required source capacity required to supply the legally required load is maintained at all times. Parallel operation of the legally required source(s) shall consist of the sources specified in 701.4(D)(1) and (D)(2).

N **(1) Normal Source.** The alternate power source shall be permitted to operate in parallel with the normal source in compliance with Part I or Part II of Article 705 where the capacity required to supply the legally required standby load is maintained at all times. Any operating condition that results in less than the required source capacity shall initiate a legally required standby source malfunction signal in 701.6(A).

Parallel operation shall be permitted for satisfying the test requirements of 701.3(B), provided all other conditions of 701.3 are met.

Informational Note: Peak load shaving is one application for parallel source operation.

N **(2) Alternate Source.** Legally required standby sources shall be permitted to operate in parallel where the necessary equipment to establish and maintain a synchronous condition is provided.

701.5 Transfer Equipment.

Δ **(A) General.** Transfer equipment shall be automatic, listed, and marked for emergency system or legally required standby use. Transfer equipment shall be designed and installed to prevent the inadvertent interconnection of normal and alternate sources of supply in any operation of the transfer equipment. Transfer equipment and electric power production systems installed to permit operation in parallel with the normal source shall meet the requirements of Article 705. Meter-mounted transfer switches shall not be permitted for legally required system use.

Not all automatic transfer switches (ATS) permit parallel operation of generation equipment and the normal source; therefore, those transfer switches do not need to comply with Article 705. Some ATS equipment is designed to briefly allow (for a few cycles) parallel operation of the generation equipment with the normal source upon load transfer. This load transfer can occur with minimal disturbance or effect on the load. Transfer switches that employ paralleling must comply with Article 705.

(B) Bypass Isolation Switches. Means to bypass and isolate the transfer switch equipment shall be permitted. Where bypass isolation switches are used, inadvertent parallel operation shall be avoided.

Δ **(C) Automatic Transfer Switches.** Automatic transfer switches shall be electrically operated and mechanically held.

This requirement correlates with NFPA 110, *Standard for Emergency and Standby Power Systems*, and requires the relay contacts to be mechanically held in the event of coil failure.

When standby systems are tested, both the normal system and the standby system are energized. If the two sources are not synchronized, as much as twice the rated voltage could exist across the transfer switch contacts. Some listed transfer switches are designed and tested to be suitable for switching between out-of-phase power sources. Other protection methods can be employed, such as a mechanical interlock that prevents inadvertent interconnection or an electronic method that prevents both systems from being interconnected.

(D) Documentation. The short-circuit current rating of the transfer equipment, based on the specific overcurrent protective