

## Impact of National Electrical Code 2017 on Emergency Systems & Legally Required Standby Systems

*When your state adopts NEC 2017, you will see the code requirement driven opportunity to supply; generator docking stations, connection boxes, 3 positions switches, remote annunciators and transfer switches with quick connectors. After that, generator service providers will see a dramatic increase in deploying mobile generators, when site generators are offline for repairs or maintenance.*

National Electrical Code 2017 has been adopted by many states. Please check with the [NFPA](#) to find out if your state has adopted it. We see Provision 700.10(D)(3) Generator Control Wiring & 700.3(F) Temporary Source of Power for Maintenance or Repair of the Alternative Source of Power) as having the biggest impact on the power generation market.

### **700.3(F) Temporary Source of Power for Maintenance or Repair of the Alternative Source of Power**

Simply put, Provision 700.3(F) means a permanent point of connection for a mobile generator needs to be installed and a mobile generator needs to be deployed for automatic operation, when the generator (defined as an emergency system or legally required standby system) is offline for maintenance and repairs. Additionally, a remote annunciator or alarm panel is required to give an audible and visual annunciation that the permanent emergency source is disconnected from the emergency system. The affected end users would be healthcare facilities and any place where the public's safety would be impacted by the interruption of emergency power. There are some Exceptions and Conditions that apply to 700.3(F).

#### **Conditions:**

- Connection to the portable or temporary alternate source of power shall not require modification of the permanent system wiring.
- Transfer of power between the normal power source and the emergency power source shall be in accordance with 700.12 (*10 seconds or less to supply emergency power*).
- The connection point for the portable or temporary alternate source shall be marked with the phase rotation and system bonding requirements.
- Mechanical or electrical interlocking shall prevent inadvertent interconnection of power sources.
- The switching means shall include a contact point that shall annunciate at a location remote from the generator or at another facility monitoring system to indicate that the permanent emergency source is disconnected from the emergency system.

## **Exceptions:**

- All processes that require an Emergency System or Legally Required Standby System are capable of being disabled during maintenance or repair of same.
- The building is unoccupied and the fire suppression system doesn't require an emergency system or LRSS.
- Other temporary means can be substituted for the emergency system or LRSS.
- A second Emergency System or LRSS capable of supporting the emergency systems exists onsite.

## **Examples of an Emergency System (NEC Article 700)**

- Hospitals and associated support facilities
- Police & Fire Stations
- Air traffic control centers
- Chemical, petrochemical & hazardous material (including biohazard) handling facilities
- Communications centers, telephone exchanges & cellular tower sites
- 911 call centers
- Central station service facilities (fire and security system monitoring)
- Financial, banking & business data processing facilities
- Police, fire & civil defense radio repeater operations
- Emergency evacuation centers
- Transportation infrastructure – airports, rail stations & seaports
- Municipal infrastructure – water & sewer treatment facilities
- Fuel supply pumping stations (i.e. natural gas distribution & delivery infrastructure)
- Offices & facilities deemed critical to continuity of government
- Prisons & jails
- Radio & television stations (transmitters)

## **Examples of a Legally Required Standby System (NEC Article 701)**

- Public schools, universities & colleges
- Shopping centers & large stores
- Movie theaters & performing arts buildings
- Indoor or covered sporting centers
- Public meeting halls & places of assembly
- Large buildings and those over 75 feet
- High performance buildings
- Data centers
- Call centers
- Buildings with electrically operated doors or rated ceiling openings
- Buildings with electrically driven fire safety, smoke control, fire suppression systems or air compressor for dry pipe sprinkler systems
- Buildings with legally required power room-cooling systems & controls
- Large factories & occupied warehouses

### **NEC 2017 Provision 700.10(D)(3) Generator Control Wiring**

700.10(D)(3) requires control conductors installed between the transfer equipment and the emergency generator shall be kept entirely independent of all other wiring and shall meet the conditions of 700.10(D)(1). The integrity of the generator remote start circuit shall be monitored for broken, disconnected or shorted wires. Loss of integrity ~~of the remote start circuit (s) shall initiate visual and audible annunciation of generator malfunction at the generator local and remote annunciator(s) and start~~ the generator(s).

The red stricken text above and below was removed from 700.10(D)(3) by a Tentative Interim Amendment (TIA).

There are ~~three~~ two basic elements to this Provision.

1. Continuous monitoring of generator signaling circuits.
- ~~2. Visual and audible annunciation of changes in state.~~
3. Automatic transmission of an engine start signal and alarm when a problem is detected.

**700.10(D) Fire Protection** referenced above says Emergency Systems shall meet the additional requirements in (D)(1) through (D)(3) in the following occupancies:

- Assembly occupancies for not less than 1000 persons
- Building above 75 feet or 23 meters in height
- Healthcare occupancies where occupants are not capable of self-preservation
- Educational occupancies with more than 300 persons

*We provide this information to serve our customers and their interests. We endeavor to provide the most accurate information possible and with all code related information, it is subject to change or revision. Please use this document as a reference or a learning tool to acquaint yourself with NEC 2017 as it relates to Provision 700.3(f) Temporary Source of Power for Maintenance or Repair of the Alternative Source of Power and Provision 700.10(D)(3) Generator Control Wiring. If you discover an error or a critical omission, please contact us and we will update our data accordingly.*

*Davidson Sales Company*