More than ever, the public and private sectors rely on electricity to power essential systems, protect human life, and prevent economic loss. The continuous availability of electricity has become a necessity. When primary power fails, emergency and standby generators that automatically supply electricity are the solutions to ensuring public safety and the ability to maintain critical services and business operations. And today, homeland security concerns further increase the need for reliable standby power. Because of their performance and engineered characteristics, diesel-fueled compression-ignition engines are the best solution to satisfy the country's growing need for safe, reliable and cost-effective standby power.

**SAFETY AND PROTECTION — THE NEED FOR DEPENDABLE STANDBY POWER GENERATION**

Failures in critical functions at facilities such as hospitals, police and fire departments, flood control pumping stations, military defense facilities, and safety systems for nuclear power plants can result in catastrophic damage and the loss of human life. Therefore, public safety must be the first priority when selecting a dependable, reliable standby power solution.

**REGULATORY APPROACH**

When considering air quality regulations for emergency standby power, states should:

- Establish appropriate regulatory exemptions for emergency standby engines
- Adopt emission standards and implementation dates that are consistent with US EPA Tier 2 and Tier 3 standards for non-road diesel engines
- Allow at least 100 hours of annual operation to assure proper maintenance, testing and exercising
- Impose no restrictions on hours of operation during emergency conditions
- Establish appropriate regulatory exemptions for emergency standby engines

**RELIABILITY, AVAILABILITY, SAFETY, COST-EFFECTIVENESS AND HIGH PERFORMANCE**

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Standby and emergency power generators are required to meet very high performance and dependability standards. When an outage occurs, emergency generators must meet the following requirements:

**Extremely Quick Start-Up** - Standards for the restoration of power require the emergency standby power supply to assume full load within ten seconds. This means that any generator set must actually start from cold conditions within 5 or 6 seconds to allow time for switching and load transfers.

**Load-Following Ability** - Besides being able to come up to power quickly, generators must be able to respond to changes in load instantaneously as power demands fluctuate. Engines must be able to follow loads with little or no loss in efficiency or reliability.

**Independent Fuel Source** - Standards and common sense require that emergency generators have access to fuel sources that cannot fail or be interrupted during an emergency situation. Since continuous access to off-site fuel sources is vulnerable to power failures, earthquakes, fires, or terrorist acts outside the control of the facility's management, the best option is to have emergency power sources independently fueled from an on-site fuel storage tank.

Reliability and Durability - Generally, only one emergency standby electric supply is required by codes and standards. Since this emergency source must operate in case of a power outage, the source of power must be extremely reliable and durable; a failure of the standby system when it is most needed could directly cause loss of life.

**Portability** - In some instances, for example emergency flood pumps, lighting generators, or temporary triage centers, a portable supply of electricity is needed to run essential services. Generators must be able to supply power where it is needed.

**Safety** - Emergency equipment must operate under a variety of conditions including fire, physical and mechanical stress, and harsh environments. Equipment and fuel must be appropriate and safe for these varied and extreme conditions.

*Environmental Performance — Dispelling the Myth*

As with any fuel combustion process, diesel-fueled engines emit emissions as a consequence of converting fuel to energy. The concern that using diesel engines for emergency standby power could cause air quality problems is simply not true.

Some groups contend that emissions from emergency generators could potentially impact air quality or raise public health issues. A review of the facts reveals that these concerns are unfounded.

First, the US EPA regulates emissions from engines in numerous applications, and engines will continue to become cleaner as manufacturers and EPA work together to reduce emission levels even further (see chart). EPA-certified nonroad engines are commonly used in stationary emergency standby applications. Thus, it is simply untrue to say that diesel standby generators are uncontrolled.

Second, emergency standby generators generally operate very few hours per year. Such limited operation cannot and does not create air quality burdens.

Third, California has estimated the annual total emissions from all diesel standby generators assuming they operated 50 hours per year. The resultant nitrogen oxides (NOx) emissions represent only 0.2% of total statewide NOx emissions, and particulate matter (PM) emissions were just 0.02% of total PM emissions. Standby diesel generators contribute an insignificant portion to the state's emissions inventory (see chart).