

# Seattle Permits

— part of a multi-departmental City of Seattle series on getting a permit

## Emergency and Standby Power Systems

December 22, 2008

The Seattle Building, Fire and Electrical codes each contain requirements for emergency, legally required standby and optional power systems. The Building and Fire codes specify which building systems require emergency or legally required standby power; the Electrical Code specifies how the power system is to be installed. This Client Assistance Memo explains the basic code provisions regarding emergency and legally required standby power and how they are coordinated in the codes.

### Emergency Systems

Emergency systems are those systems designated as emergency systems by the Seattle Building or Fire Code. The table below lists the types of equipment that are designated as emergency systems in Seattle. These systems are intended to automatically supply illumination, power or both to designated areas and equipment in the event of failure of the normal supply or in the event of accident to elements of a system intended for safety to human life.

### Legally Required Standby Systems

Legally required standby systems are those systems designated as standby systems by the Seattle Building or Fire Code. The table below lists the types of equipment that are designated as legally required standby systems in Seattle. They are intended to automatically maintain power to selected loads (other than those classed as emergency systems) in the event of failure of the normal source.

### Optional Standby Systems

Optional standby systems are systems designated by the building owner or occupant to supply power to

facilities or property where life safety does not depend on the performance of the system, but business or operational needs require a continual supply of power in the event of failure of the normal source. Optional standby systems are typically installed to provide an alternate source of electric power to serve loads such as heating and refrigeration systems, data processing and communications systems, and industrial processes that, when stopped during any power outage, could cause discomfort, serious interruption of the process, or damage to a product or process.

### Building and Fire Code Provisions

In the Seattle codes, in general, emergency power sources are required for:

- exit signs, exit lighting and means of egress illumination
- emergency voice/alarm communications systems
- fire detection and alarms systems
- smoke control systems
- equipment in smokeproof enclosures
- power and lighting for fire command center
- lighting for mechanical rooms
- elevator car lights
- elevator operation for high-rise and underground buildings
- fire pumps in high-rise and underground buildings

**Legally required standby power sources** are required for:

- pressurization systems in low-rise buildings
- fire pumps in low-rise buildings
- stretcher-sized elevator cars
- horizontal sliding doors



- elevators or lifts used as accessible means of egress in low-rise buildings

It is important to note that two-hour fire-resistance-rated protection is required for generator rooms inside high-rise buildings and for fire pump conductors. See Seattle Fire Code Section 604.2.15.1 and Electrical Code Section 695.6(B).

### Electrical Code Provisions

For emergency systems, power is required to be supplied to the equipment within 10 seconds. Additional time may be allowed to energize the loads after power becomes available. The table below specifies the time allowed. Only loads that are required by the Building or Fire Code to have emergency power may be installed on the emergency system unless the emergency source is of sufficient size to serve all emergency, legally required standby and optional loads. Separate transfer switches must be provided for each of the emergency, legally required standby and optional systems. Automatic load-shedding may be needed. The emergency power system wiring must be kept separate from legally required and optional power systems. See NEC 700.9(B).

For legally-required standby systems, power is required to be supplied within 60 seconds except for horizontal sliding doors used as a means of egress component which must activate within 10 seconds. Wiring for these systems may be run with other wiring as provided in Section 701.10 except when specifically excluded as in Section 695.6(B) of the Seattle Electrical Code.

## Access to Information

Links to electronic versions of DPD **Client Assistance Memos (CAMs)** and **commonly used forms** are available on the "Publications" page of our website at [www.seattle.gov/dpd/publications](http://www.seattle.gov/dpd/publications). Paper copies of these documents, as well as additional regulations mentioned in this CAM, are available from our Public Resource Center, located on the 20th floor of Seattle Municipal Tower at 700 Fifth Ave. in downtown Seattle, (206) 684-8467.

Type of equipment	Maximum Time to Energize Loads	SBC Section	SFC Section
<b>EMERGENCY POWER SYSTEMS</b>			
<b>Exit signs</b>	10 seconds	1011.5.3 403.11 High rises 405.10 Underground buildings	1011.5.3 Power source 604.2.15 High rises 604.2.16 Underground buildings 2403.12.6.1 Temporary tents, canopies, membrane structures
<b>Exit illumination</b>	10 seconds	1006.3 Means of egress 403.11 High rises 405.10 Underground buildings	1006.3 Means of egress 604.2.15 High rises 604.2.16 Underground buildings
<b>Emergency voice/alarm communication</b>	10 seconds	403.11 High rises 402.13 Covered mall buildings 405.10 Underground buildings 907.2.1.2 Assembly occupancies	604.2.15 High rises 604.2.14 Covered mall buildings 604.2.16 Underground buildings 604.2.1 Assembly occupancies
<b>Fire detection</b>	10 seconds	403.11 High rises 909.20.6.2 Smokeproof enclosures 405.10 Underground buildings	604.2.15 High rises 604.2.16 Underground buildings
<b>Fire alarms</b>	10 seconds	403.11 High rises 405.10 Underground building	604.2.15 High rises 604.2.16 Underground buildings
<b>Smoke alarms in R-1 occupancies</b>	10 seconds	907.2.8.3 R-1 907.2.10.2 No battery back-up required	907.2.8.3 R-1 907.2.10.2 No battery back-up required
<b>Smoke control systems in high-rise buildings, underground buildings &amp; covered mall buildings</b>	60 seconds	909.11 Smoke control 403.11 High rises 404.6 Atriums 405.10 Underground buildings 402.9 Covered mall buildings	909.11 Power systems
<b>Five pumps in high-rise buildings &amp; underground buildings</b>	60 seconds	403.11 High rises 405.10 Underground buildings	604.2.15 High rises 604.2.16 Underground buildings 695.3 Electric power to fire pumps (Electrical Code)
<b>Smoke-proof enclosures</b>	60 seconds for ventilation; 10 seconds for fire detection	909.20.6.2 Pressurization equipment 403.11 High rises	909.20.6.2 Pressurization equipment

Elevator car operation in high-rise buildings & underground buildings	60 seconds	403.11 High rises 405.10 Underground buildings	604.2.15 High rises 604.2.16 Underground buildings
Elevator car and machine room lighting in high-rise buildings & underground buildings	10 seconds	403.11 High rises 405.10 Underground buildings 3016.6 Elevator operations	604.2.15 High rises 604.2.16 Underground buildings
Lights & power for high-rise building fire command center and mechanical equipment rooms	10 seconds	403.11 High rises 3016.6 Elevator operations	604.2.15 High rises
Elevator shunt-trip type circuit breaker	60 seconds	620.51 Electrical Code	
<b>LEGALLY REQUIRED STANDBY<sup>1</sup></b>			
Pressurization equipment for low-rise buildings	60 seconds	707.14.2.4 Power for pressurization	909.20.6.2 412.1.5 Airport traffic control towers
Operation of elevators and lifts used as accessible means of egress in low-rise buildings	60 seconds	1007.4 & .1007.5	1007.4 & .1007.5 412.1.5 Airport traffic control towers
Lights in elevator cars having legally required standby power	60 seconds	1006.3 Egress illumination	
Fire pumps in low-rise buildings	60 seconds	909.21	695.3 Electrical power to fire pumps (Electrical Code)
Stretcher-sized elevator cars	60 seconds	3016.12	
Horizontal sliding doors used in means of egress	10 seconds	1008.1.3.3	
Elevator shunt-trip circuit breaker and machine rooms type	N/A	620.51 & 620.23 Electrical Code	

<sup>1</sup>Connection ahead of the service disconnecting means is an acceptable source of legally required standby power for these systems. Connection ahead of the service disconnecting means, or “tap ahead of the main” is a connection “located ahead of and not within the same cabinet, enclosure, or vertical switchboard section as the service disconnecting means.... The legally required standby service shall be sufficiently separated from the normal main service disconnecting means to prevent simultaneous interruption of supply through an occurrence within the building or groups of buildings served.” See Section 701.11(E) of the Seattle Electrical Code.