

NFPA 70-2017 (NEC)	NFPA 70-2020 (NEC)	NFPA 70-2023 (NEC)
<p>2018 WSBC, 2nd Print:</p> <p>504.4.1 Stair enclosure pressurization increase. For Group R-1, R-2, and I-1 Condition 2 Assisted living facilities licensed under chapter 388-78A WAC and residential treatment facilities as licensed by Washington state under chapter 246-337 WAC located in buildings of Type VA construction equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the maximum number of stories permitted in Section 504.4 may be increased by one provided the interior exit stairways and ramps are pressurized in accordance with Sections 909.6.3 and 909.20. Legally required standby power shall be provided in accordance with Sections 909.11 and 2702.2.16 for buildings constructed in compliance with this section and be connected to stairway shaft pressurization equipment, elevators and lifts used for accessible means of egress (if provided), elevator hoistway pressurization equipment (if provided) and other life safety equipment as determined by the authority having jurisdiction. For the purposes of this section, legally required standby power shall comply with 2017 NEC Section 701.12, options (A), (B), (C), (D), (F), or (G) or subsequent revised section number(s).</p> <p>Note: 2015 WSBC was the first Washington State code edition to include the amendment that references NFPA 70-2014 (NEC).</p>	<p>2018 WSBC, 4th Printing:</p> <p>504.4.1 Stair enclosure pressurization increase. For Group R-1, R-2, and I-1 Condition 2 Assisted living facilities licensed under chapter 388-78A WAC and residential treatment facilities as licensed by Washington state under chapter 246-337 WAC located in buildings of Type VA construction equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the maximum number of stories permitted in Section 504.4 may be increased by one provided the interior exit stairways and ramps are pressurized in accordance with Sections 909.6.3 and 909.20. Legally required standby power shall be provided in accordance with Sections 909.11 and 2702.17 for buildings constructed in compliance with this section and be connected to stairway shaft pressurization equipment, elevators and lifts used for accessible means of egress (if provided), elevator hoistway pressurization equipment (if provided) and other life safety equipment as determined by the authority having jurisdiction. For the purposes of this section, legally required standby power shall comply with 2020 NEC Section 701.12, options (C), (D), (E), (F), (H) or (J) or subsequent revised section number(s).</p> <p>2021 WSBC</p> <p>504.4.1 Stair enclosure pressurization increase. For Group R-1, R-2, and I-1 Condition 2 Assisted living facilities licensed under chapter 388-78A WAC and residential treatment facilities as licensed by Washington state under chapter 246-337 WAC located in buildings of Type VA construction equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, the maximum number of stories permitted in Section 504.4 may be increased by one provided the interior exit stairways and ramps are pressurized in accordance with Sections 909.6.3 and 909.20. Legally required standby power shall be provided in accordance with Sections 909.11 and 2702.17 for buildings constructed in compliance with this section and be connected to stairway shaft pressurization equipment, elevators and lifts used for accessible means of egress (if provided), elevator hoistway pressurization equipment (if provided) and other life safety equipment as determined by the authority having jurisdiction. For the purposes of this section, legally required standby power shall comply with 2020 NEC Section 701.12, options (C), (D), (E), (F), (H) or (J) or subsequent revised section number(s).</p>	<p>2021 WSBC: 2023 NEC went into effect for Washington State on April 1, 2023.</p> <p>2024 WSBC See code proposals for proposed language</p>
<p>Part III. Sources of Power</p> <p>701.12 General Requirements. Current supply shall be such that, in the event of failure of the normal supply to, or within, the building or group of buildings concerned, legally required standby power will be available within the time required for the application but not to exceed 60 seconds. The supply system for legally required standby purposes, in addition to the normal services to the building, shall be permitted to comprise one or more of the types of systems described in 701.12(A) through (F). Unit equipment in accordance with 701.12(G) shall satisfy the applicable requirements of this article.</p>	<p>Part III. Sources of Power</p> <p>701.12 General Requirements. Current supply shall be such that, in the event of failure of the normal supply to, or within, the building or group of buildings concerned, legally required standby power will be available within the time required for the application but not to exceed 60 seconds. The supply system for legally required standby purposes, in addition to the normal services to the building, shall be permitted to comprise one or more of the types of systems described in 701.12(A) through (I). Unit equipment in accordance with 701.12(J) shall satisfy the applicable requirements of this article.</p>	<p>Part III. Sources of Power</p> <p>701.12 General Requirements. Current supply shall be such that, in the event of failure of the normal supply to, or within, the building or group of buildings concerned, legally required standby power will be available within the time required for the application but not to exceed 60 seconds. The supply system for legally required standby purposes, in addition to the normal services to the building, shall be permitted to comprise one or more of the types of systems described in 701.12(A) through (I). Unit equipment in accordance with 701.12(I) shall satisfy the applicable requirements of this article.</p>
<p>In selecting a legally required standby source of power, consideration shall be given to the type of service to be rendered, whether of short-time duration or long duration.</p>	<p>(A) Power Source Considerations. In selecting a legally required standby source of power, consideration shall be given to the type of service to be rendered, whether of short-time duration or long duration.</p>	<p>(A) Power Source Considerations. In selecting a legally required standby source of power, consideration shall be given to the type of service to be rendered, whether of short-time duration or long duration.</p>
<p>Consideration shall be given to the location or design, or both, of all equipment to minimize the hazards that might cause complete failure due to floods, fires, icing, and vandalism.</p> <p>Informational Note: For further information, see ANSI/IEEE 493-2007, <i>Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems</i>.</p>	<p>(B) Equipment Design and Location. Consideration shall be given to the location or design, or both, of all equipment to minimize the hazards that might cause complete failure due to floods, fires, icing, and vandalism.</p> <p>Informational Note: For further information, see ANSI/IEEE 493-2007, <i>Recommended Practice for the Design of Reliable Industrial and Commercial Power Systems</i>.</p>	<p>(B) Equipment Design and Location. Consideration shall be given to the location or design, or both, of all equipment to minimize the hazards that might cause complete failure due to floods, fires, icing, and vandalism.</p>

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		<p>(C) Supply Duration. The alternate power source shall be of suitable rating and capacity to supply and maintain the total load for the duration determined by the system design. In no case shall the duration be less than 2 hours of system operation. Additionally, the power source shall comply with 701.12(C)(1) through (C)(5) as applicable.</p> <p>Informational Note: See NFPA 110-2022, <i>Standard for Emergency and Standby Power Systems</i>, for information on classification of emergency power supply systems (EPSS).</p> <p>(1) On-Site Fuel Supply. An on-site fuel supply shall be provided, sufficient for not less than 2 hours operation of the system.</p> <p>(2) Fuel Transfer Pumps. Where power is needed for the operation of the fuel transfer pumps to deliver fuel to the source, these pumps shall be connected to the legally required standby power system.</p> <p>(3) Public Gas System, Municipal Water Supply. Sources shall not be solely dependent on a public utility gas system for their fuel supply or on a municipal water supply for their cooling systems.</p> <p><i>Exception: Where approved by the authority having jurisdiction, the use of other than on-site fuels shall be permitted where there is a low probability of a simultaneous failure of both the off-site fuel delivery system and power from the outside electrical utility company. Where a public gas system is approved, the requirements of 701.12(C)(1) shall not apply.</i></p> <p>(4) Storage Batteries and UPS. Storage batteries and UPS used to supply standby illumination shall be of suitable rating and capacity to supply and maintain the total load for a minimum period of 1½ hours, without the voltage applied to the load falling below 87½ percent of nominal voltage. Automotive-type batteries shall not be used. An automatic battery charging means shall be provided.</p> <p>(5) Automatic Fuel Source Transfer. Where dual fuel sources are used, means shall be provided for automatically transferring from one fuel source to another.</p>
<p>(A) Storage Battery. Storage batteries shall be of suitable rating and capacity to supply and maintain the total load for a minimum period of 1½ hours without the voltage applied to the load falling below 87½ percent of normal. Automotive-type batteries shall not be used.</p> <p>An automatic battery charging means shall be provided.</p>	<p>(C) Storage Battery. Storage batteries shall be of suitable rating and capacity to supply and maintain the total load for a minimum period of 1½ hours without the voltage applied to the load falling below 87½ percent of normal. Automotive-type batteries shall not be used.</p> <p>An automatic battery charging means shall be provided.</p>	

NFPA 70-2017 (NEC)**(B) Generator Set.**

(1) Prime Mover-Driven. For a generator set driven by a prime mover acceptable to the authority having jurisdiction and sized in accordance with 701.4, means shall be provided for automatically starting the prime mover upon failure of the normal service and for automatic transfer and operation of all required electrical circuits. A time-delay feature permitting a 15-minute setting shall be provided to avoid retransfer in case of short-time re-establishment of the normal source.

(2) Internal Combustion Engines as Prime Mover. Where internal combustion engines are used as the prime mover, an on-site fuel supply shall be provided with an on-premises fuel supply sufficient for not less than 2 hours of full-demand operation of the system. Where power is needed for the operation of the fuel transfer pumps to deliver fuel to a generator set day tank, the pumps shall be connected to the legally required standby power system.

(3) Dual Supplies. Prime movers shall not be solely dependent on a public utility gas system for their fuel supply or on a municipal water supply for their cooling systems. Means shall be provided for automatically transferring one fuel supply to another where dual fuel supplies are used.

Exception: Where acceptable to the authority having jurisdiction, the use of other than on-site fuels shall be permitted where there is a low probability of a simultaneous failure of both the off-site fuel delivery system and power from the outside electrical utility company.

(4) Battery Power. Where a storage battery is used for control or signal power or as the means of starting the prime mover, it shall be suitable for the purpose and shall be equipped with an automatic charging means independent of the generator set.

(5) Outdoor Generator Sets. Where an outdoor housed generator set is equipped with a readily accessible disconnecting means in accordance with 445.18, and the disconnecting means is located within sight of the building or structure supplied, an additional disconnecting means shall not be required where ungrounded conductors serve or pass through the building or structure. Where the generator supply conductors terminate at a disconnecting means in or on a building or structure, the disconnecting means shall meet the requirements of 225.36.

NFPA 70-2020 (NEC)**(D) Generator Set.**

(1) Prime Mover-Driven. For a generator set driven by a prime mover approved by the authority having jurisdiction and sized in accordance with 701.4, means shall be provided for automatically starting the prime mover upon failure of the normal service and for automatic transfer and operation of all required electrical circuits. A time-delay feature permitting a 15-minute setting shall be provided to avoid retransfer in case of short-time re-establishment of the normal source.

(2) Internal Combustion Engines as Prime Mover. Where internal combustion engines are used as the prime mover, an on-site fuel supply shall be provided with an on-premises fuel supply sufficient for not less than 2 hours of full-demand operation of the system. Where power is needed for the operation of the fuel transfer pumps to deliver fuel to a generator set day tank, the pumps shall be connected to the legally required standby power system.

(3) Public Gas System, Municipal Water Supply. Prime movers shall not be solely dependent on a public utility gas system for their fuel supply or on a municipal water supply for their cooling systems. Means shall be provided for automatically transferring one fuel supply to another where dual fuel supplies are used.

Exception: Where approved by the authority having jurisdiction, the use of other than on-site fuels shall be permitted where there is a low probability of a simultaneous failure of both the off-site fuel delivery system and power from the outside electrical utility company.

(4) Battery Power. Where a storage battery is used for control or signal power or as the means of starting the prime mover, it shall be suitable for the purpose and shall be equipped with an automatic charging means independent of the generator set.

(5) Outdoor Generator Sets. Where an outdoor-housed generator set is equipped with a readily accessible disconnecting means in accordance with 445.18, and the disconnecting means is located within sight of the building or structure supplied, an additional disconnecting means shall not be required where ungrounded conductors serve or pass through the building or structure. Where the generator supply conductors terminate at a disconnecting means in or on a building or structure, the disconnecting means shall meet the requirements of 225.36.

NPFA 70-2023 (NEC)**(D) Generator Set.**

(1) Prime Mover-Driven. For a generator set driven by a prime mover approved by the authority having jurisdiction and sized in accordance with 701.4, means shall be provided for automatically starting the prime mover upon failure of the normal power source and for automatic transfer and operation of all required electrical circuits. A time-delay feature permitting a 15-minute setting shall be provided to avoid retransfer in case of short-time reestablishment of the normal source.

(2) Battery Power. Where a storage battery is used for control or signal power or as the means of starting the prime mover, it shall be suitable for the purpose and shall be equipped with an automatic charging means independent of the generator set.

(3) Outdoor Generator Sets. If an outdoor-housed generator set is equipped with a readily accessible disconnecting means in accordance with 445.18, and the disconnecting means is located within sight of the building or structure supplied, an additional disconnecting means shall not be required where ungrounded conductors serve or pass through the building or structure. Where the generator supply conductors terminate at a disconnecting means in or on a building or structure, the disconnecting means shall meet the requirements of 225.36.

NFPA 70-2017 (NEC)	NFPA 70-2020 (NEC)	NFPA 70-2023 (NEC)
<p>(C) Uninterruptible Power Supplies. Uninterruptible power supplies used to provide power for legally required standby systems shall comply with the applicable provisions of 701.12(A) and (B).</p>	<p>(E) Uninterruptible Power Supplies. Uninterruptible power supplies used to provide power for legally required standby systems shall comply with 701.12(B) and (C).</p>	<p>(E) Stored-Energy Power Supply Systems (SEPSS). Stored energy power supply systems shall comply with 701.12(E)(1) and (E)(2).</p> <p>(1) Types. Systems shall consist of one or more of the following system types:</p> <ul style="list-style-type: none"> a. Uninterruptible power supply (UPS) <p>Informational Note: See UL 1778, <i>Uninterruptible Power Systems</i>, and UL 924, <i>Emergency Lighting and Power Equipment</i>, for further information.</p> <ul style="list-style-type: none"> b. Fuel cell system c. Energy storage system (ESS) d. Storage battery e. Other approved equivalent stored energy sources that comply with 701.12 <p>(2) Fire Protection, Suppression, Ventilation, and Separation. The systems in 701.12(E)(1) shall be installed with the fire protection, suppression, ventilation, and separation requirements specified in the manufacturer's instructions or equipment listing.</p> <p>Informational Note: See NFPA 853-2020, <i>Standard for the Installation of Stationary Fuel Cell Power Systems</i>, and NFPA 855-2020, <i>Standard for the Installation of Stationary Energy Storage Systems</i>, for additional information on fire protection installation requirements.</p>
<p>(D) Separate Service. Where approved, a separate service shall be permitted as a legally required source of standby power. This service shall be in accordance with the applicable provisions of Article 230, with a separate service drop or lateral or a separate set of overhead or underground service conductors sufficiently remote electrically and physically from any other service to minimize the possibility of simultaneous interruption of supply from an occurrence in another service.</p>	<p>(F) Separate Service. Where approved, a separate service shall be permitted as a legally required source of standby power. This service shall be in accordance with Article 230, with a separate service drop or lateral or a separate set of overhead or underground service conductors sufficiently remote electrically and physically from any other service to minimize the possibility of simultaneous interruption of supply from an occurrence in another service.</p>	<p>(F) Separate Service. Where approved, by the authority having jurisdiction as suitable for use as a legally required source of power, an additional service shall be permitted. This service shall be in accordance with Article 230 and the following additional requirements:</p> <ul style="list-style-type: none"> (1) Separate overhead service conductors, service drops, underground service conductors, or service laterals shall be installed. (2) The service conductors for the separate service shall be installed sufficiently remote electrically and physically from any other service conductors to minimize the possibility of simultaneous interruption of supply.

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<p>(E) Connection Ahead of Service Disconnecting Means. Where acceptable to the authority having jurisdiction, connections located ahead of and not within the same cabinet, enclosure, vertical switchgear section, or vertical switchboard section as the service disconnecting means shall be permitted. The legally required standby service shall be sufficiently separated from the normal main service disconnecting means to minimize simultaneous interruption of supply through an occurrence within the building or groups of buildings served.</p> <p>Informational Note: See 230.82 for equipment permitted on the supply side of a service disconnecting means.</p> <p>This option is not allowed by WSBC</p>	<p>(G) Connection Ahead of Service Disconnecting Means. Where approved by the authority having jurisdiction, connections located ahead of and not within the same cabinet, enclosure, vertical switchgear section, or vertical switchboard section as the service disconnecting means shall be permitted. The legally required standby service shall be sufficiently separated from the normal main service disconnecting means to minimize simultaneous interruption of supply through an occurrence within the building or groups of buildings served.</p> <p>Informational Note: See 230.82 for equipment permitted on the supply side of a service disconnecting means.</p> <p>This option is not allowed by WSBC</p>	<p>(G) Connection Ahead of Service Disconnecting Means. Where approved by the authority having jurisdiction, connections located ahead of and not within the same cabinet, enclosure, vertical switchgear section, or vertical switchboard section as the service disconnecting means shall be permitted. The legally required standby service shall be sufficiently separated from the normal main service disconnecting means to minimize simultaneous interruption of supply through an occurrence within the building or groups of buildings served.</p> <p>Informational Note: See 230.82 for equipment permitted on the supply side of a service disconnecting means.</p> <p>This option is not allowed by WSBC</p>
<p>(F) Fuel Cell System. Fuel cell systems used as a source of power for legally required standby systems shall be of suitable rating and capacity to supply and maintain the total load for not less than 2 hours of full-demand operation.</p> <p>Installation of a fuel cell system shall meet the requirements of Parts II through VIII of Article 692.</p> <p>Where a single fuel cell system serves as the normal supply for the building or group of buildings concerned, it shall not serve as the sole source of power for the legally required standby system.</p>	<p>(H) Fuel Cell System. Fuel cell systems used as a source of power for legally required standby systems shall be of suitable rating and capacity to supply and maintain the total load for not less than 2 hours of full-demand operation.</p> <p>Installation of a fuel cell system shall meet the requirements of Parts II through VIII of Article 692.</p> <p>Where a single fuel cell system serves as the normal supply for the building or group of buildings concerned, it shall not serve as the sole source of power for the legally required standby system.</p>	
	<p>(I) DC Microgrid Systems. Sources connected to a dc microgrid system shall be permitted where the system is capable of being isolated from all nonlegally required sources.</p> <p>A dc microgrid system used as a source of power for legally required systems shall be of suitable rating and capacity to supply and maintain the total legally required load for not less than 2 hours of full-demand operation.</p> <p>Where a dc microgrid system source serves as the normal supply for the building or group of buildings concerned, it shall not serve as the sole source of power for the legally required standby system.</p> <p>This option that is referenced by WSBC</p>	<p>(H) Microgrid Systems. On-site sources, designated as legally required standby sources, shall be permitted to be connected to a microgrid system.</p> <p>The system shall isolate the legally required standby system from all nonlegally required loads when the normal electric supply is interrupted or shall meet the requirements of 701.4(C). Interruption or partial or complete failure of the normal source(s) shall not impact the availability, capacity, and duration provided by the designated legally required standby sources.</p> <p>The designated stored-energy legally required standby power source(s) of a microgrid system shall be permitted to remain interconnected to any available power production source during operation of the legally required standby source(s) where the lack of, or failure of, the interconnected power production source(s), or related controls, does not impact system operation. Interconnected power production sources, other than the designated SEPSS, shall not be required to meet the requirements of this article.</p>

NFPA 70-2017 (NEC)	NFPA 70-2020 (NEC)	NFPA 70-2023 (NEC)
<p>(G) Unit Equipment. Individual unit equipment for legally required standby illumination shall consist of the following:</p> <ol style="list-style-type: none"> (1) A rechargeable battery (2) A battery charging means (3) Provisions for one or more lamps mounted on the equipment and shall be permitted to have terminals for remote lamps (4) A relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment <p>The batteries shall be of suitable rating and capacity to supply and maintain the total lamp load associated with the unit for not less than (a) or (b):</p> <ol style="list-style-type: none"> (a) For a period of 1½ hours, without the voltage falling below 87½ percent of normal voltage (b) The unit equipment shall supply and maintain not less than 60 percent of the initial emergency illumination for a period of at least 1½ hours. <p>Unit equipment shall be permanently fixed in place (i.e., not portable) and shall have all wiring to each unit installed in accordance with the requirements of any of the wiring methods in Chapter 3. Flexible cord-and-plug connection shall be permitted, provided that the cord does not exceed 900 mm (3 ft) in length. The branch circuit feeding the unit equipment shall be the same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches. Legally required standby luminaires that obtain power from a unit equipment and are not part of the unit equipment shall be wired to the unit equipment by one of the wiring methods of Chapter 3.</p> <p><i>Exception: In a separate and uninterrupted area supplied by a minimum of three normal lighting circuits, a separate branch circuit for unit equipment shall be permitted if it originates from the same panelboard as that of the normal lighting circuits and is provided with a lock-on feature.</i></p>	<p>(J) Unit Equipment. Individual unit equipment for legally required standby illumination shall consist of the following:</p> <ol style="list-style-type: none"> (1) A rechargeable battery (2) A battery charging means (3) Provisions for one or more lamps mounted on the equipment and shall be permitted to have terminals for remote lamps (4) A relaying device arranged to energize the lamps automatically upon failure of the supply to the unit equipment <p>The batteries shall be of suitable rating and capacity to supply and maintain the total lamp load associated with the unit for not less than the following:</p> <ol style="list-style-type: none"> (1) For a period of 1½ hours, without the voltage falling below 87½ percent of normal voltage (2) The unit equipment shall supply and maintain not less than 60 percent of the initial emergency illumination for a period of at least 1½ hours. <p>Unit equipment shall be permanently fixed in place (i.e., not portable) and shall have all wiring to each unit installed in accordance with the requirements of any of the wiring methods in Chapter 3. Flexible cord-and-plug connection shall be permitted, provided that the cord does not exceed 900 mm (3 ft) in length. The branch circuit feeding the unit equipment shall be the same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches. Legally required standby luminaires that obtain power from a unit equipment and are not part of the unit equipment shall be wired to the unit equipment by one of the wiring methods of Chapter 3.</p> <p><i>Exception: In a separate and uninterrupted area supplied by a minimum of three normal lighting circuits, a separate branch circuit for unit equipment shall be permitted if it originates from the same panelboard as that of the normal lighting circuits and is provided with a lock-on feature.</i></p>	<p>(I) Battery-Equipped Emergency Luminaires, Used for Legally Required Standby Systems. Battery-equipped emergency luminaires used for legally required standby systems shall comply with 701.12(H).</p> <p style="color: red;">This option is not applicable to stairway pressurization systems</p>