

Emergency Lighting with a Limelight by Lutron System

Emergency lighting is an important aspect of designing a lighting system for commercial spaces. The system requirements are defined by several codes and standards. These requirements can be fulfilled by using a variety of equipment and methods.

The purpose of this application note is to provide an understanding of how the basic emergency system can work with Limelight by Lutron products and to show how to wire emergency load control devices to Limelight by Lutron system devices. It is not intended to provide a design guide for emergency systems. This guide focuses on installations in the United States. Consult local and national codes for emergency lighting requirements in other countries.

For more detailed overview and background on emergency lighting and related codes and standards, see Lutron Application Note 106 at <http://www.lutron.com/TechnicalDocumentLibrary/ApNote106.pdf>.

Applications of Emergency Lighting with a Limelight by Lutron System

In this section, the text and wiring diagrams explain how Limelight by Lutron devices work with emergency lighting applications and other third-party equipment. All information presented here is for reference only. Always check the appropriate codes and standards, the Authority Having Jurisdiction (AHJ), and the installation instructions for the requirements of all equipment included in the design of an emergency lighting system.

Limelight by Lutron Devices

Limelight by Lutron devices listed in this application note are intended for use in emergency power systems that provide a period of power interruption when transferring to the emergency power source (i.e. diesel generators). **Power interruption during transfer time must be greater than one second for the Limelight Radio Modules to enter emergency mode.** A list of these devices is provided below:

- LL-INTMOUNT: Limelight by Lutron Radio Module PCB Assembly (OEM installation)
- LL-EXTMOUNT-L: Retrofit Limelight by Lutron UL Listed Field-installable Radio Sensor Module (RSM) – for 8 to 15 ft (2.4 to 4.6 m) mounting height
- LL-EXTMOUNT-M: Retrofit Limelight by Lutron UL Listed Field-installable Radio Sensor Module (RSM) – for >15 to 30 ft (>4.6 to 9.1 m) mounting height
- LL-EXTMOUNT-H: Retrofit Limelight by Lutron UL Listed Field-installable Radio Sensor Module (RSM) – for >30 to 40 ft (>9.1 to 12.2 m) mounting height

Gateways play a necessary role in the operation of a Limelight by Lutron system. These gateways are:

- LL-CELLGATE: Limelight by Lutron Gateway with cellular modem connection
- LL-ETHGATE: Limelight by Lutron Gateway with Ethernet connection

This application note covers three scenarios:

1. Using a Limelight by Lutron system with a Generator
2. Using a Limelight by Lutron system with an Uninterruptable Power Supply (UPS)
3. Using a Limelight by Lutron system with a Contact Closure Input

Additional Note

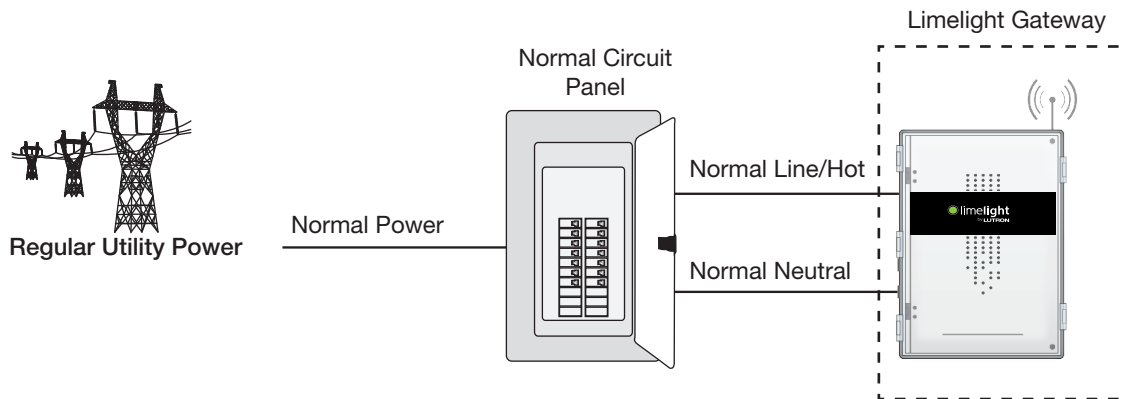
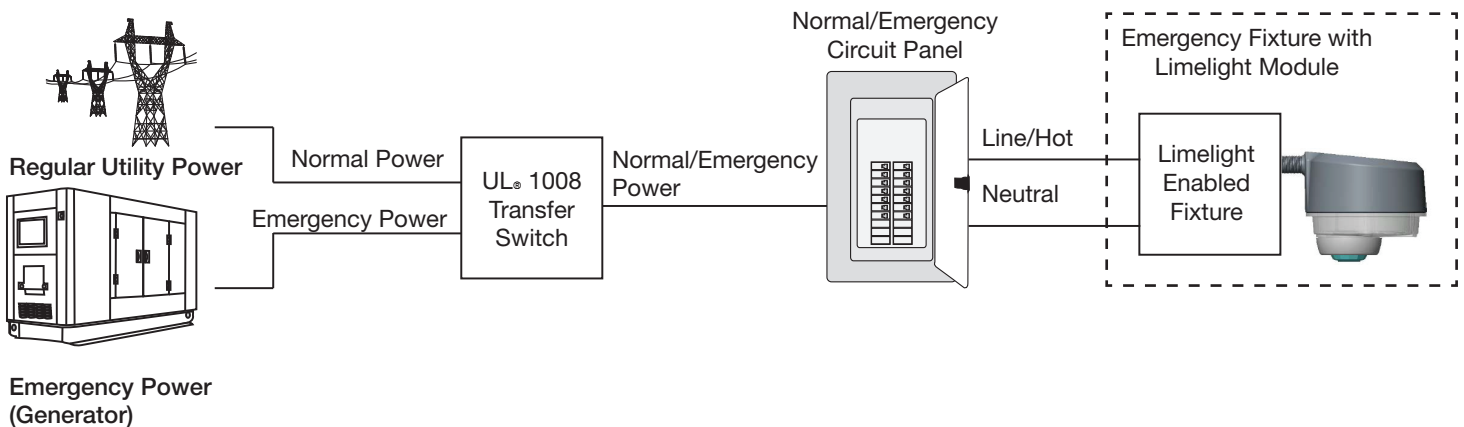
- Fire alarm (contact closure) integration is not available directly with Limelight by Lutron devices. For fire alarm integration in a Limelight system, refer to all other emergency devices referenced within this document.

Application #1: Normal/Emergency Power with a Generator

In an application where lights must turn on when normal power is lost, and the emergency lighting is powered from a generator, the Limelight-enabled fixtures should be fed from normal/emergency power, and the Limelight Gateway should be fed from normal power.

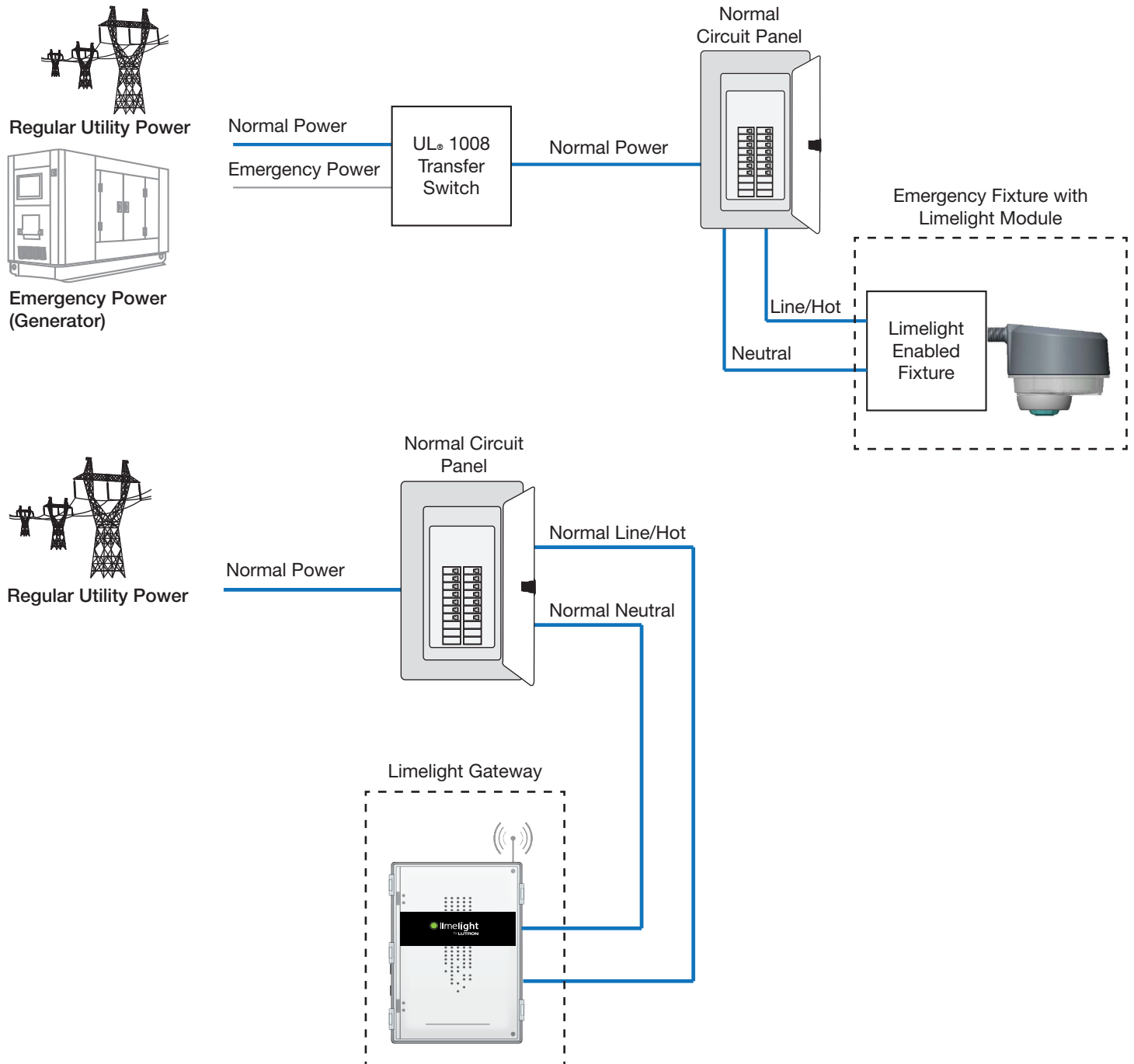
Upon power loss, there is an intrinsic multi-second delay between a loss of normal power and application of emergency power as the generator starts. During this delay, the Limelight fixture module and Limelight gateway will turn off. Once emergency power comes online, the Limelight-enabled fixtures will go to full-on by default. **This power delay must last for at least one second in order for the module to go to high-end.** They will remain in this state until hearing from the Gateway AND a change in state occurs (such as a timeclock event, or the fixture going occupied then unoccupied). Since the Gateway is only powered via normal power, and is turned off under emergency power, the Gateway will not send this message until normal power is restored.

Wiring Schematics



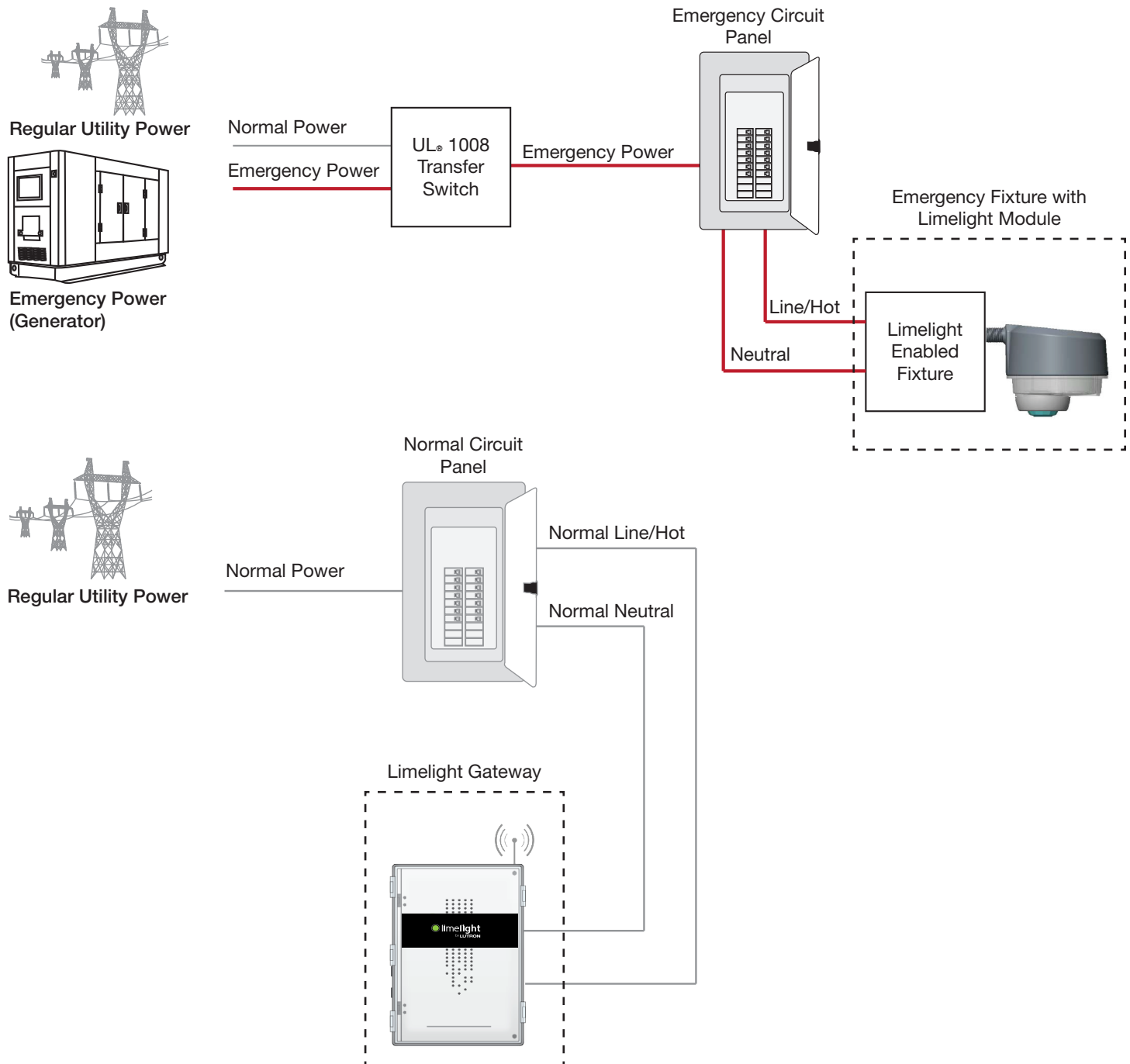
Application #1: Normal/Emergency Power with a Generator (continued)

Regular Operation



Application #1: Normal/Emergency Power with a Generator (continued)

Emergency Operation



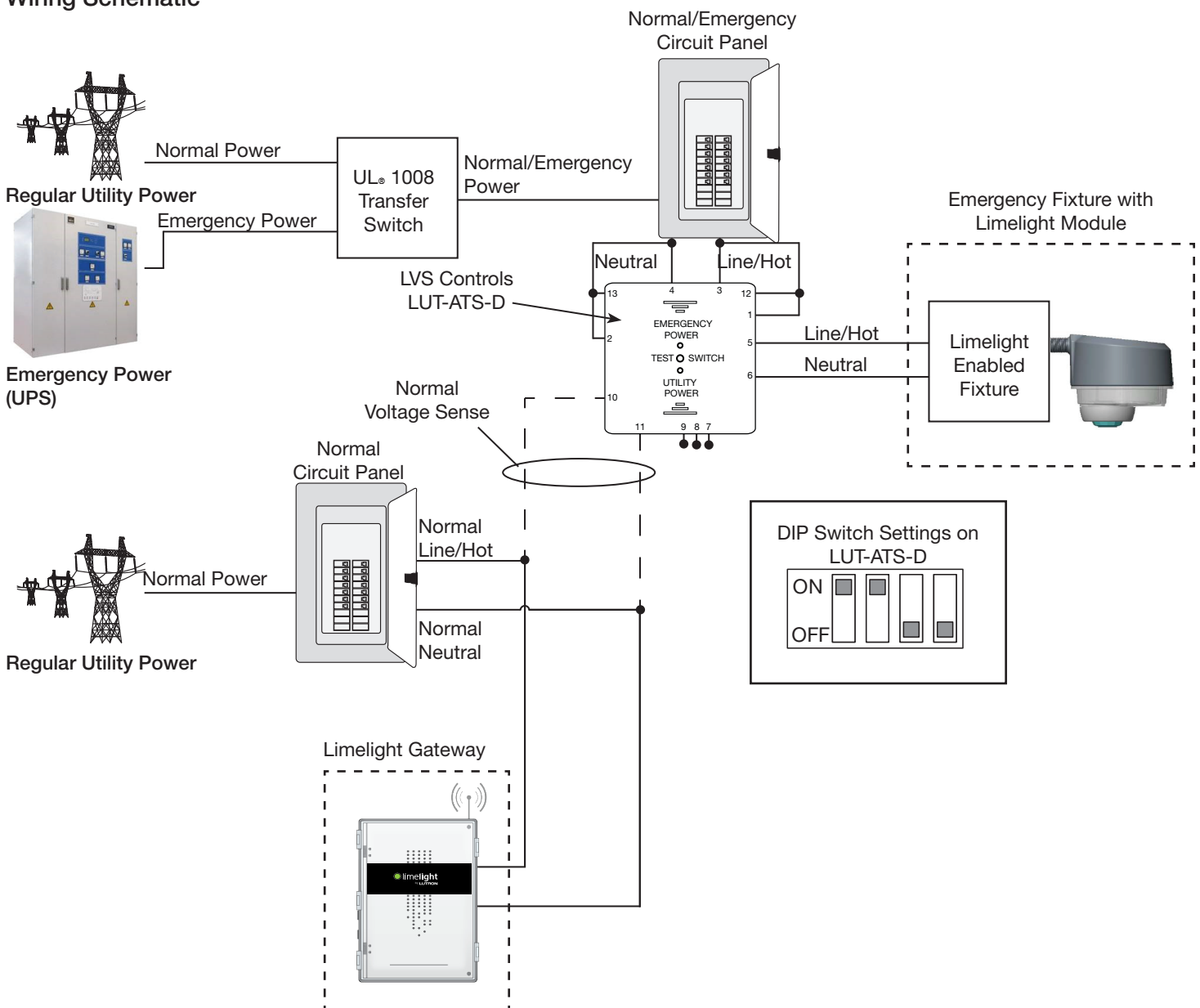
Application #2: Normal/Emergency Power with UPS

In this application, designated emergency lights are expected to turn on during a loss of normal power. However, since a UPS is being used rather than a generator, there is no loss of power to the Limelight-enabled fixtures. This means they will not turn on to high-end by default, as they would during a typical loss of power.

To force the Limelight-enabled fixtures to detect a loss of power and go to high-end, a LUT-ATS-D is placed on the normal/emergency power feed to the fixtures, and the Gateway is powered with normal power. The LUT-ATS-D is configured using DIP switches to create a 2.5 second drop in power to the fixtures when a loss of normal power is detected. After the three second dropout, emergency power is provided to the fixtures, which turn on to high-end by default. They will remain in this state until hearing from the Gateway AND a change in state occurs (such as a timeclock event, or the fixture going occupied then unoccupied). Since the Gateway is fed by normal power, it will remain off until normal power is restored.

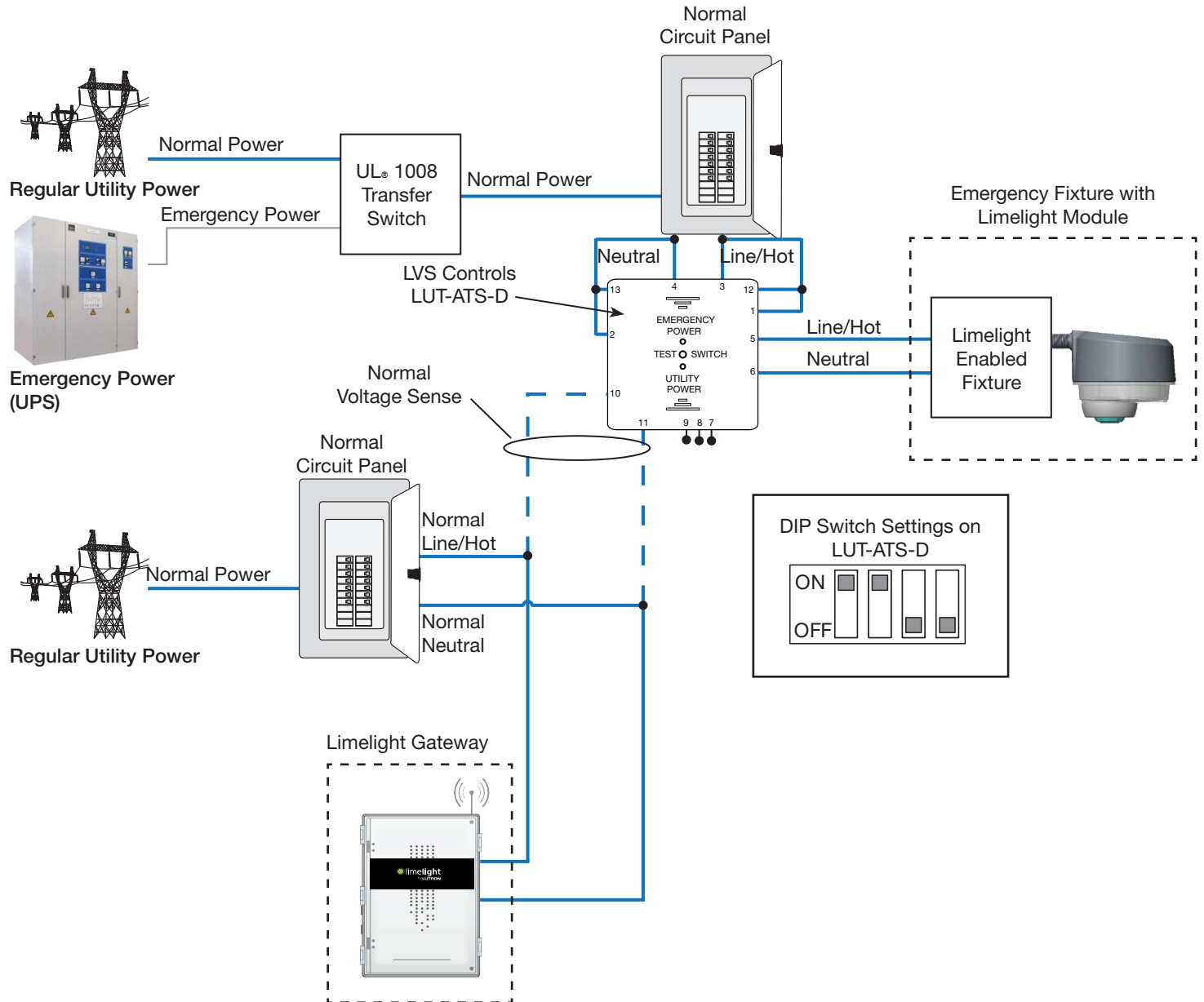
Note that this application could also be used in the case where the emergency power comes from a generator and not a UPS, or the case where the transfer to emergency power is less than one second.

Wiring Schematic



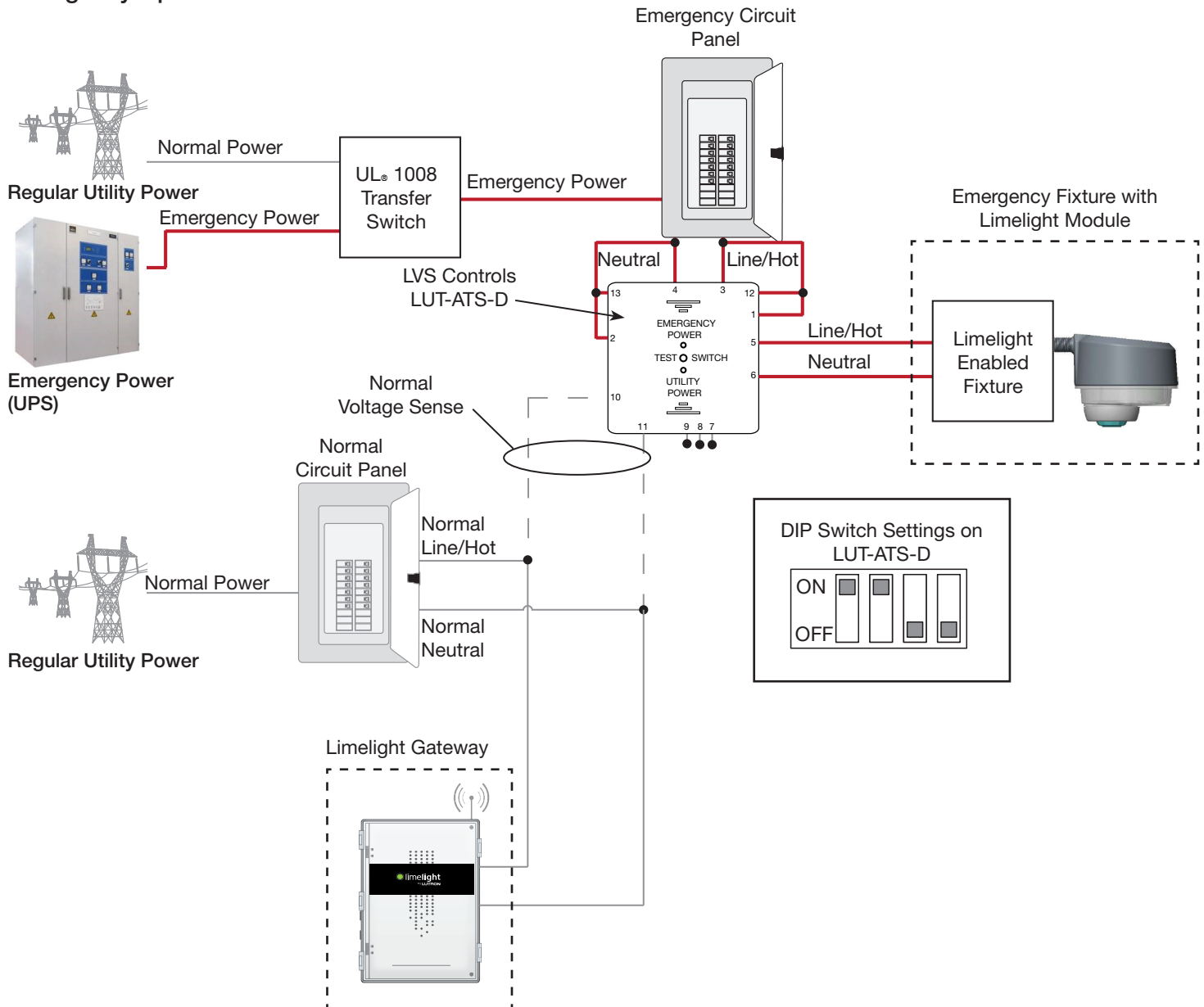
Application #2: Normal/Emergency Power with UPS (continued)

Regular Operation



Application #2: Normal/Emergency Power with UPS (continued)

Emergency Operation



Application #3: Override from Contact Closure Input (Fire Alarm Control Panel, etc.)

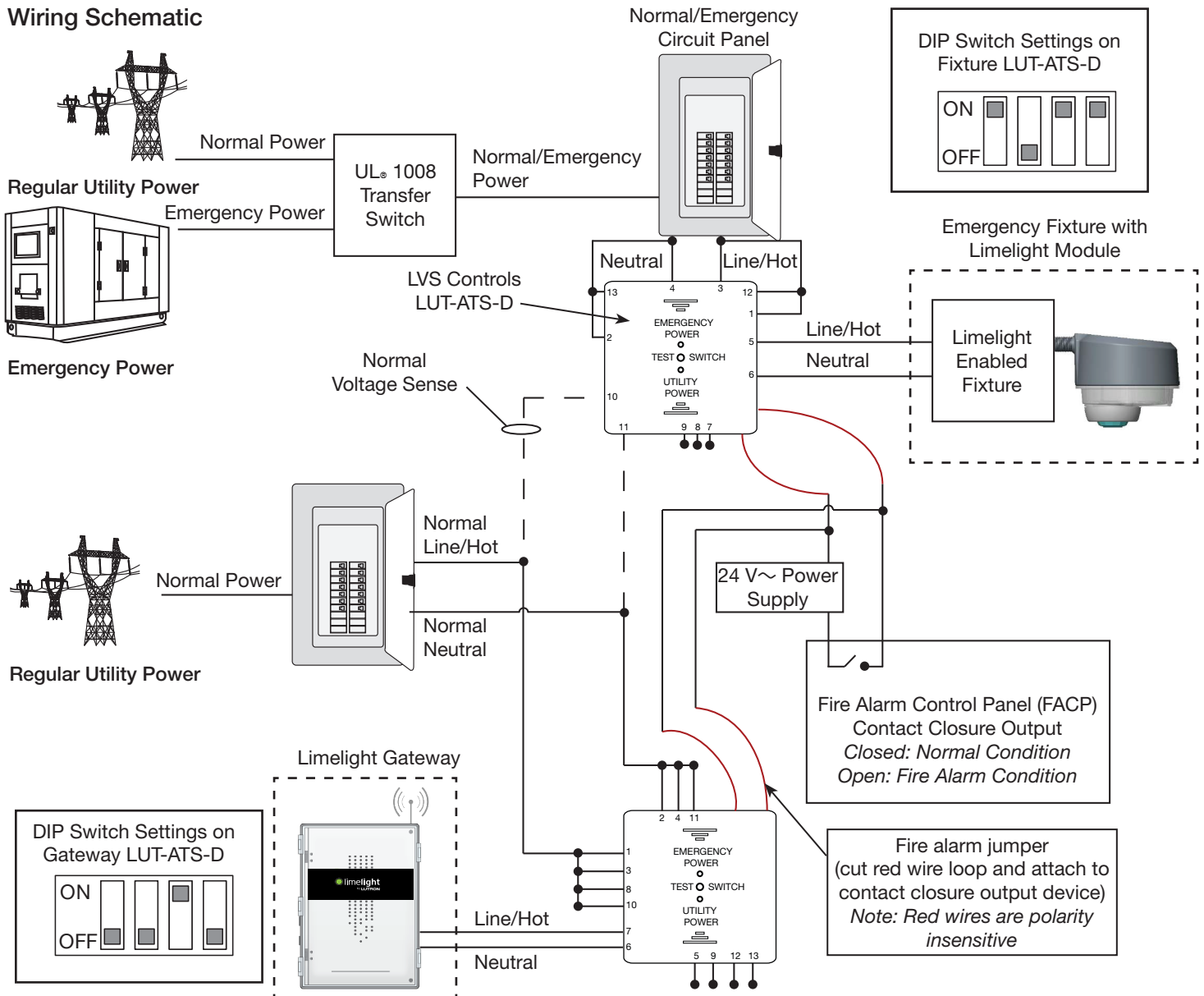
The Limelight by Lutron fixtures can be turned on to full upon receipt of a contact closure signal from an external device, such as a Fire Alarm Control Panel (FACP). This is useful if you want an external event, such as the activation of the fire alarm, to turn the lights on to full, even if normal power is still present.

In this scenario, a LUT-ATS-D is wired to the fixtures, and a separate LUT-ATS-D is wired to the Gateway. The contact-closure output from an external source, such as an FACP, is tied to the input of each device. The LUT-ATS-D on the Limelight-enabled fixtures causes a 2.5 second drop-out of power to the fixtures when a contact closure signal is received. However, the LUT-ATS-D wired to the Gateway is configured to remove power from the Gateway when the contact closure signal is received. This requires different DIP switch settings to be set on each LUT-ATS-D, as shown in the diagram below.

Upon restoration of power after the three-second delay, the Limelight-enabled fixtures will turn on to high-end by default. They will remain in this state until hearing from the Gateway AND a change in state (such as a timeclock event, or the fixture going occupied then unoccupied). The Gateway will remain off until the contact closure is closed.

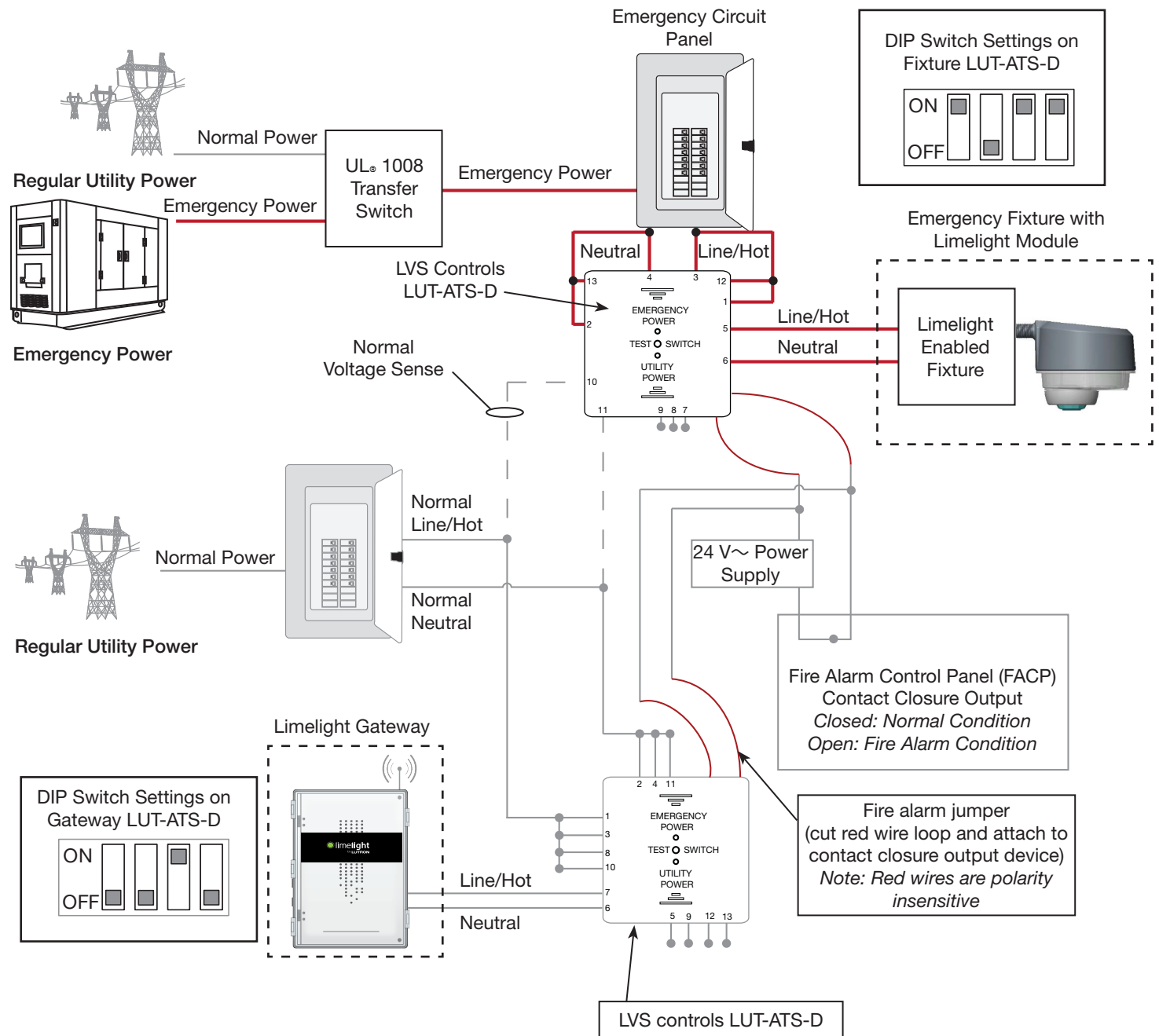
This solution will also ensure the lights turn on in the event that normal power is lost, whether a generator or UPS is used as the power source, and may also be used in the case that the Gateway is fed by normal/emergency power.

Wiring Schematic



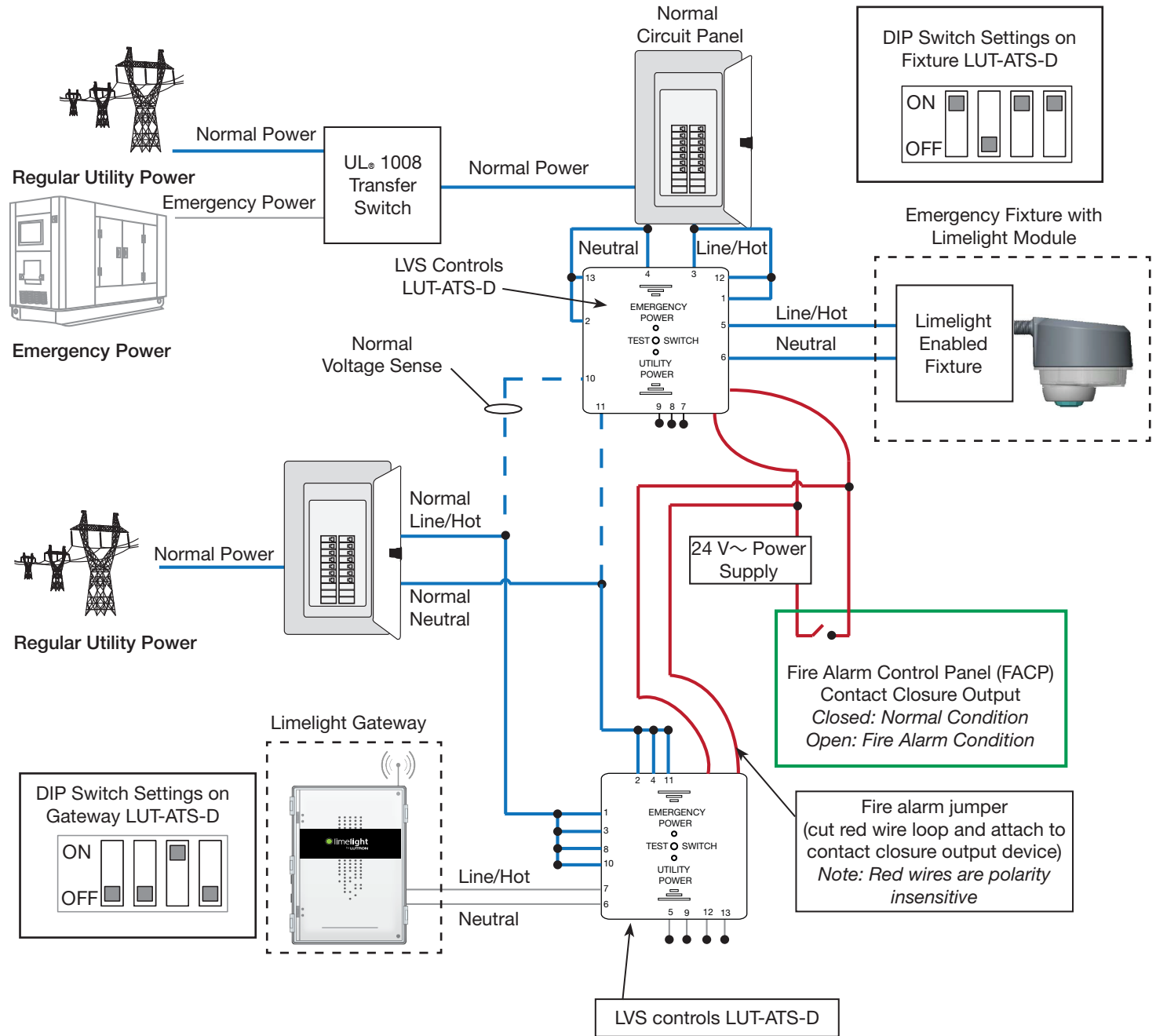
Application #3: Override from Contact Closure Input (Fire Alarm Control Panel, etc.) (continued)

Emergency Operation



Application #3: Override from Contact Closure Input (Fire Alarm Control Panel, etc.) (continued)

Contact Closure Operation



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