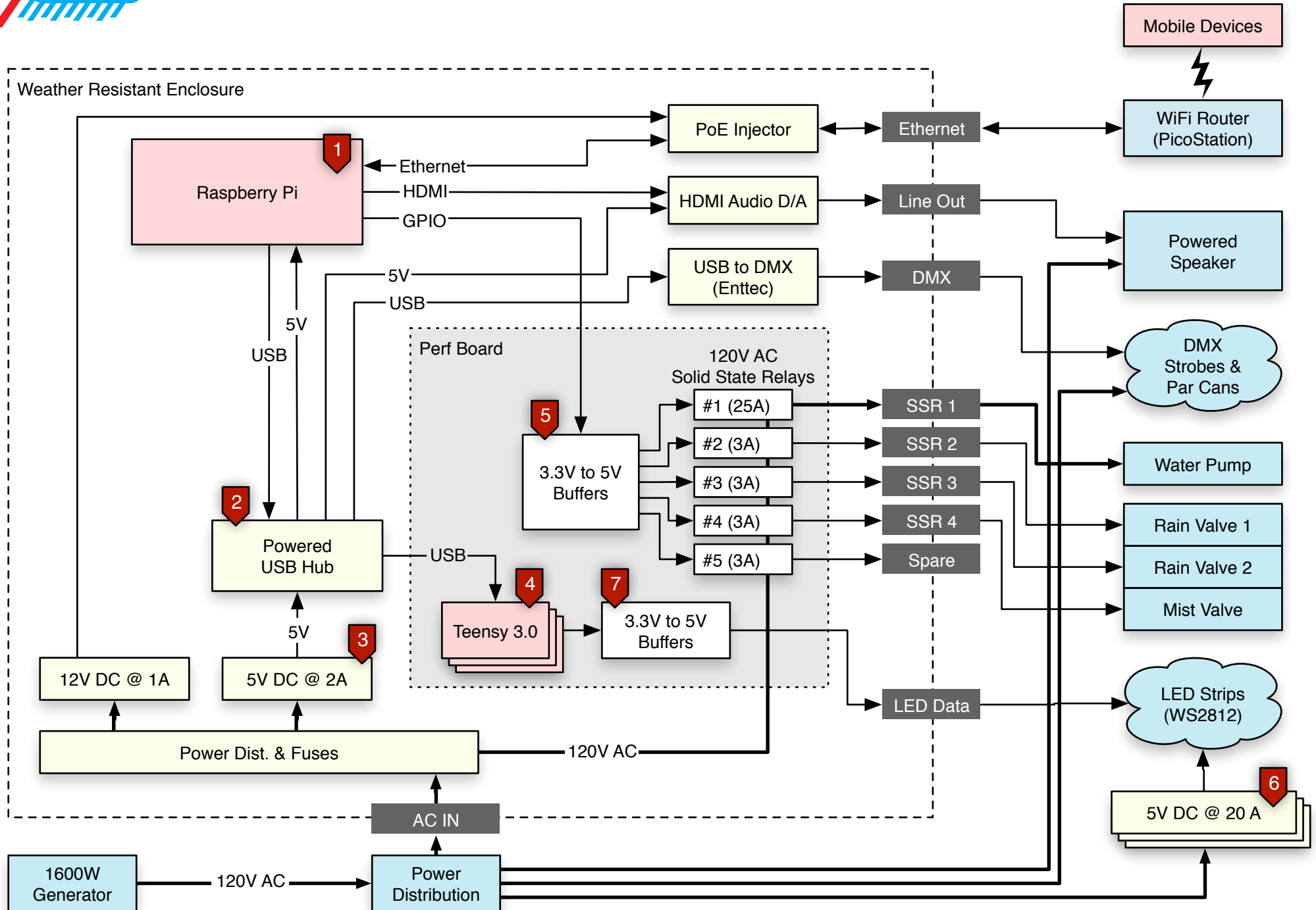




# Cloud Electrical System Overview





# Cloud Electrical System Notes

- 1 The Raspberry Pi single-board computer runs our custom control software, orchestrating light and sound performances.
- 2 The hub is externally powered, so that we can route less power through the Raspberry Pi's 750mA main fuse.
- 3 The low-current 5V power supply only runs the Raspberry Pi, USB devices, Teensy micro-controllers, and the low-voltage side of the Solid State Relay circuit.
- 4 The Teensy 3.0 is a tiny ARM board which can interface with the LED strips, and handle repetitive real-time tasks. Multiple Teensy boards are used, depending on the number of LEDs we have.
- 5 Level-shifting buffers convert the low-current 3.3V signals from the Raspberry Pi's GPIO port into slightly higher current 5V signals suitable for driving the solid state relays. They also provide a layer of protection for the Pi's GPIO port.
- 6 The LED strips are powered by multiple waterproof 100W 5V supplies, according to the number of LEDs we plan to support.
- 7 Level-shifting buffers are used to level-shift the WS2811 serial signals from 3.3V to 5V and to protect Teensy pins. Outputs should have ~100 ohms impedance for driving transmission lines.

## Goals

- Keep it simple
- Use parts we already have on hand
- High quality audio
- High quality and nuanced LED animation
- Fault isolation and safety precautions

## Legend

External part of the Cloud Platform

Computer running our own software

Other off-the-shelf component

Prototype electronics

Panel-mount connector

High-power wiring

Other wiring