MR Access Point power supplies and cost calculations

There are different methods available for providing power to Meraki Access Points. This knowledge base article will discuss the three options for powering a device, and list the different voltage and plug options for different regions. It will also include tips on how to calculate costs associated with power consumption.

- **PoE (Power Over Ethernet)**
- **PoE Injectors**
- **AC Adapters**
- **Power Costs**

**PoE**

All Meraki Access Points support the PoE standard 802.3af and 802.3at. PoE is a standardized by the IEEE, therefore any certified Category 5 Ethernet cable or higher can be used to provide power. PoE allows the cable to supply both power and data to a device. A PoE capable switch is necessary to supply the power, and the ethernet cable must not exceed 100 meters from the source switch.

The MR11, MR12, MR14, MR16 & MR24 support gigabit communication over Ethernet. In order to utilize the full speed of the Ethernet interface, you will need to make sure your 802.3 power supply is compatible with gigabit operation.

**PoE Injectors**

PoE injectors can be used to supply power and data over an ethernet cable, which is useful when a PoE capable switch is not available.
The PoE injector is available for order with 4 different plug types. The 4 available plug types are listed below along with their major regions.

1. Type B plug. North and Central America, Japan.

2. Type C plug. Europe with exceptions of UK, Ireland, Cyprus, and Malta
3. Type G plug. UK, Ireland, Cyprus, Malta, Malaysia, Singapore, Hong Kong

4. Type I plug. Australia, New Zealand, Papua New Guinea, Argentina

Plug types referenced from: http://www.worldstandards.eu/electricity/plugs-and-sockets/

**AC/DC Adapters**

AC/DC adapters can be used for direct connection from a MR Access Point to a conventional power source. The power specifications are listed below.

1. Input: 100-240V ~50-60GHz 0.4A

2. Output: 12V;1.5A 18W Max
The AC adapter straight barrel dimensions are as follows:

5.5 x 2.1 x 9.5mm

The MR12, MR16, and MR24, all require a plastic housing diameter nearest the barrel to be less than 8.5mm. The corresponding dimension in the drawing attached is 7.6mm.

As with the PoE injectors, the AC/DC adapters are available with the same 4 plug types. All of the Cisco Meraki indoor MR Access Points are capable of working with either an AC power adapter or an IEEE 802.3af (PoE) compliant power source. This includes the MR12, MR16, and MR24.

Our outdoor access points, including the MR58, MR62, and MR66, require an IEEE 802.3af (PoE) compliant power injector, or a PoE capable switch.

*Power Costs*
To calculate how much it will cost to provide power to an access point, there are several factors to consider:

1. Power that the AP uses
   1. Taking a Meraki OD2 as an example, the OD2 uses 3 watts of power. 3 watts = 0.003 kilowatts.

2. Number of hours
   1. 24 hours x 365 days = 8760 hours.

2. Cost per kilowatt hour
   1. Assume the cost is $0.10 per kWh.

Using these assumptions:

0.003 kW x 8760 h = 26.28 kWh

26.28 kWh x $0.10/kWh = $2.628 per year

This formula will help to calculate costs in the overall budget when planning to deploy access points.