The design of the board is a simple circular design to fit the PCB design. The lid is fully laser cut, to let in the maximum amount of light. Doing this instead of a small acrylic insert over the light sensor also reduces the points where leakage can happen and reduces cost. The bottom of the enclosure has a groove to insert a rubber O-ring. There is also a hole in the bottom of the enclosure that will be covered with a rubber plug in the field. This allows easy access to the debugger pin to debug the board or collect data from it. Both the rubber inserts and gaskets are suggested by the NEMA guidelines for a NEMA rating of 3. This rating is desired because it is protective against rain, snow, sleet, ice, and dust. NEMA rating 4 is unnecessary, as our product will not be in an area that is directly sprayed at with a hose.

The board can come from OSHPark for prototyping, but in ordering large quantities for testing or deployment where it is a better idea to the assembly and soldering of the board, Macrofab is a better choice. Without access to facilities with reflow ovens, attaching smaller surface mount parts is hard to do without burning or otherwise harming the components. Unfortunately, Macrofab does not seem to accept the KiCAD files from our team, so the pricing can not be determined. The files are of the right KiCAD version and pass the Design Rules Check.

Shapeways is a 3D printing company and Sculpteo does both laser-cutting and 3D printing. Most of the cost of the enclosure is from the base, because the laser-cut lid is relatively cheap from Sculpteo as seen in Table 2. Comparing the pricing for printing from Sculpteo and Shapeways, Shapeways becomes much cheaper in high quantities. Both quotes were gotten with the material being SLS Nylon 11 from Sculpteo or 12 from Shapeways. This plastic well for prototyping, though it might be better to get another type of more durable plastic for the actual product. Sculpteo does not give an option for material, while Shapeways does. The pricing from both companies can be seen in Tables 2 and 4 below.

# Ordered	Pricing Total for Base
5	211.50
20	811.20
50	2028.00
100	4056.00

Table 2 – Sculpteo 3D Printing Prices for Base

# Ordered	Pricing Total for Lid
5	16.50
20	48.20
50	112.50
100	220.00

Table 3 – Sculpteo Laser-Cutting Prices for Lid

# Ordered	Pricing Total for Base
5	182.59
20	700.39
50	1,735.99
100	3,571.99

Table 4 – Shapeways 3D Printing Prices for Base

It is recommended for the prototype that Shapeways provides the 3D printed base over Shapeways, and that 20 boards and enclosures are ordered for prototyping. This gives enough boards to test and deploy even if some fail or are assembled incorrectly. Any order above 20 from Shapeways would be less cost effective than buying a nice 3D printer, so if more than 20 enclosures were needed it would be wiser to purchase the machine and 3D print in house.