1. Codes and Standards

National Electrical Code-

The national electrical code states standards for safe installation of electrical wiring and equipment. This is a standard for public and private structures.

IEEE 1526-2020-

This standard is for testing the performance of a stand-alone photovoltaic system. Provide in this standard are methods for conducting performance testing of individual components and complete systems. The standard performance method includes testing for both indoor and outdoor conditions.

UL 1642-

This standard is for safety with lithium batteries as a power source. It cover lithium batteries intended for use in technician-replaceable or user-replacable.

IEEE 802.7-

Recommended Practices for Broadband Local Area Networks. This standard specifies the design, installation, and test parameters for a broadband cable medium.

IEEE 307-1969 -

IEEE Standard Definitions of Terms For Solar Cells : This standard provides uniform and acceptable terms for use in the application of solar cells to power systems.

IEEE 802.15.4-

This extended to be more robust in the presence of interference and achieve higher link budgets for applications in low power wide area networks.

UL Standard 1703-

This is a standard for safety testing and certification of photovoltaic (PV) modules and panels. If the solar umbrella includes PV panels, it may need to comply with UL 1703.

International Building Code (IBC)-

The IBC is a model building code that provides minimum standards for the design and construction of buildings and structures. If the solar umbrella is intended for use in a public space or commercial building, it may need to comply with the IBC.

Environmental Protection Agency (EPA) regulations-

The EPA regulates the disposal of hazardous waste, including electronic components such as batteries and PV panels. If the solar umbrella includes these components, it may need to comply with EPA regulations.

2. Public health, safety, and other factors

Our project, the Digital Wifi Canopy, is already geared towards improving the quality of life of the local underdeveloped Tallahassee community. Due to a lack of internet access in homes, our project was given a direction. Our project considers the public health, safety, and welfare through its entire concept. The top three targets for the design are for it to be durable, provide power, and to provide internet access. These will allow for the public to have shelter under the umbrella and the communication devices of the public to stay charged and fully functional. Being able to call, text, and search the web can be crucial in times of emergency. With potential upgrades, such as adding LED screens, our design could have graeter impact by informing on bus times, the local news, and etc.

The global, cultural, social, environmental, and economic factors were considered in the design as well, which stem from the motivation of the project of wanting to help the community, as mentioned previously. There are plenty of communities around the world that lack power and internet access, opening a broad market to us. With this design, we could help people internationally improve quality of life, potentially impacting culture and social factors as an secondary effect. Placing the canopy in these lacking areas can change daily life by simply being a point of internet access. Economically, the design wouldn’t be very expensive as our budget is only $2000 with some to spare. In addition, the design is made to be weather resistant as Tallahassee can experience extreme heat, heavy rainfall, and drought.