**Data Type**: Temperature  
**Data Source**: BEVO Beacon – SH31D Sensor  
**How is the data received by the dashboard**: Local storage on the Beacon and pushed to an accessible cloud storage when connected to WiFi

**What type of preprocessing will be necessary:** Ensuring temperatures are within a certain range i.e. we should not be seeing indoor temperatures below 10C indoors or above 35C. These values should be removed.  
**What measures can be calculated**: How often/long the AC is running, approximate temperature set point, approximate energy consumption when paired with the indoor RH and using outdoor temperature conditions  
**What information should be stored in the database (including time stamp)**: Temperature value , whether or not the AC is on or off   
**Example of how the data might be used in a query**: A user might want to know how often their AC system is running during the day or the week. They might also want to know how accurate their system is at setting the correct set point.

**Data Type**: Relative Humidity  
**Data Source**: BEVO Beacon – SH31D Sensor  
**How is the data received by the dashboard**: Local storage on the Beacon and pushed to an accessible cloud storage when connected to WiFi

**What type of preprocessing will be necessary:** Ensuring proper limits on the values i.e. the relative humidity should never be below 5/10% or above 90/95%  
**What measures can be calculated**: approximate energy consumption when paired with the indoor Temperature and using outdoor temperature conditions  
**What information should be stored in the database (including timestamp)**: Relative humidity percentage  
**Example of how the data might be used in a query**: A user might want to know the relative humidity in their home during a certain time of day or how the relative humidity changes over time

**Data Type**: Total Volatile Organic Compound (TVOC) and Equivalent Carbon Dioxide (eCO2) Concentrations  
**Data Source**: BEVO Beacon – SGP30 Sensor  
**How is the data received by the dashboard**: Local storage on the Beacon and pushed to an accessible cloud storage when connected to WiFi

**What type of preprocessing will be necessary:** Ensuring the concentration TVOC values are not less than zero – these values can be corrected to just zero. Ensuring the eCO2 concentrations are not less than 400 ppm – these values can be corrected to 400 ppm.   
**What measures can be calculated**: The potential for hazardous health implications, equivalent CO2 (already done for us), the need for increased ventilation  
**What information should be stored in the database (including timestamp)**: TVOC and eCO2 concentrations and quantitative value for the need for increased ventilation  
**Example of how the data might be used in a query**: A user might want to know if they have sufficient ventilation in their home. They can query the database for if their need to ventilate was ever “high” (which we would relate to a certain eCO2/TVOC concentration).

**Data Type**: Particulate Matter Count Concentration  
**Data Source**: BEVO Beacon – PMS5003  
**How is the data received by the dashboard**: Local storage on the Beacon and pushed to an accessible cloud storage when connected to WiFi

**What type of preprocessing will be necessary:** Values less than zero should be corrected to zero and some sort of smoothing algorithm (moving average/median filter) could be applied to correct for erroneous ‘spikes’.   
**What measures can be calculated**: The potential for hazardous health implications, how ‘clean’/’dirty’ a home is  
**What information should be stored in the database (including timestamp)**: PM1 or ultrafine, PM2.5 or fine, and PM10 or coarse count concentrations (#/m3)  
**Example of how the data might be used in a query**: A user might want to know whether or not the portable air purifier they purchased reduced the number of ultrafine particles in their home. The user could query over a certain time interval and check to see if there was any check in the PM1 count concentration.

**Data Type**: Particulate Matter Mass Concentrations  
**Data Source**: BEVO Beacon – PMS5003  
**How is the data received by the dashboard**: Local storage on the Beacon and pushed to an accessible cloud storage when connected to WiFi

**What type of preprocessing will be necessary:** Values less than zero should be corrected to zero and some sort of smoothing algorithm (moving average/median filter) could be applied to correct for erroneous ‘spikes’.  
**What measures can be calculated**: The potential for hazardous health implications, how ‘clean’/’dirty’ a home is

**What information should be stored in the database (including timestamp)**: PM1, PM2.5, and PM10 mass concentrations  
**Example of how the data might be used in a query**: A user might want to know if the average PM2.5 concentration is greater or less than the recommended levels and by how much. The user would query over a certain time interval and the average PM2.5 concentration would be compared against recommendations by the EPA, WHO, etc. and perhaps provide strategies to improve their air quality.

**Data Type**: WiFi Connections  
**Data Source**: BEVO Beacon  
**How is the data received by the dashboard**: The number of WiFi-enabled devices is detected using a the Ralink 5370 Chipset that is capable of operating in Monitor Mode. That data is stored locally and then sent to database when device is online again.

**What type of preprocessing will be necessary:** In order to protect privacy, all WiFi devices detected have their identifier (MAC Address) hashed.  
**What measures can be calculated**: Occupancy level in the residence  
**What information should be stored in the database (including timestamp)**: Number of WiFi devices detected, repetition of any particular devices based on the frequency of the detection of their MAC address, and possible the duration of stay of a particular device.   
**Example of how the data might be used in a query**: The data can either enable researchers to identify, study, and learn about a occupant’s behavior as identified by their hashed MAC address. Alternatively, a specific MAC address can be the subject of study. A user may be interested in knowing how the number of WiFi devices, and therefore occupancy, impact other environmental factors.

**Data Type**: Bluetooth Connections  
**Data Source**: BEVO Beacons  
**How is the data received by the dashboard**: The number of Bluetooth-enabled devices is detected using the onboard Bluetooth adapter on the RaspberryPi 3 model B+. That data is hashed, saved locally, and then transmitted to the database when connected to WiFi.

**What type of preprocessing will be necessary:** Similar to the WiFi detection system, the Bluetooth-based occupancy detection system requires hashing of the MAC address to protect privacy.  
**What measures can be calculated**: Occupancy level in the residence  
**What information should be stored in the database (including timestamp)**: Hashed identifier, timestamp, number of Bluetooth devices, possible the RSS strength of a Bluetooth signal to potentially estimate range away (in the room or outside)  
**Example of how the data might be used in a query**: The data can either enable researchers to identify, study, and learn about a occupant’s behavior as identified by their hashed MAC address. Alternatively, a specific MAC address can be the subject of study. A user may be interested in knowing how the number of Bluetooth devices, and therefore occupancy, impact other environmental factors.