Charlie and Paula Johnson were thinking about installing solar to address high energy bills when they met Allen Energy at a local home show. “Originally we wanted to do solar only. Our electric bills were really high and we wanted to lower our overhead since we are both retired,” said Paula. However, after meeting with Allen Energy they became interested in not just an efficient home but also a healthy and comfortable one. “We did a 180 degree switch after having a home energy assessment. Our daughter and granddaughter live with us. We had to make our house healthier before we could worry about reducing our electricity bill with solar. Having the assessment made us realize that by making energy efficiency upgrades first we could address issues like dust, poor air quality and improve our comfort,” said Charlie.

A common issue in a lot of local homes, the Johnson’s insulation had almost completely disintegrated and their furnace was extremely old. They added R38 insulation to the attic and combined that with air sealing to seal up air leaks and maximize the effectiveness of the insulation. They also replaced their inefficient furnace with one that was 96% efficient. After reducing their energy use with these upgrades, the Johnsons decided to produce their own energy by adding a 5kW solar electric system. Since the upgrade, the Johnsons are experiencing a multitude of benefits. “Don’t wait. Make these upgrades sooner rather than later. Now that we’ve upgraded, our energy bill for the entire year is the same as what our monthly bill was before the improvements,” said Paula.
The following steps were taken for the Johnson Family's home upgrade. By taking these steps in order, they saved money and resources.

1. **Home Energy Assessment**
   The Johnsons worked with Allen Energy to conduct a “whole-house” home energy assessment. This type of assessment uses diagnostic tools to help pinpoint areas for energy improvement and identify health and safety issues. As a result of the assessment, the Johnsons decided to make energy efficiency upgrades first to address health, comfort and indoor air quality issues before adding solar.

2. **Air Sealing**
   Did you know that if you added up all the little cracks and crevices in your house it likely adds up to a hole the size of a hula-hoop? It’s no wonder that a typical homeowner could save 20% on their heating and cooling costs just by air sealing their home. Sealing is one of the least expensive upgrades that you can make to improve comfort and efficiency. The Johnsons also noticed their home was no longer as dusty.

3. **Insulation**
   Insulation levels are specified by R-Value. R-Value is a measure of insulation’s ability to resist heat traveling through it. The higher the R-Value, the better the thermal performance of the insulation, which the Johnsons have now experience firsthand. They installed blown cellulose insulation with an R-Value of 38.

4. **High Efficiency Furnace and Duct Insulation**
   The efficiency of a furnace is measured by “annual fuel utilization efficiency” (AFUE). Furnaces with an AFUE of 92% or higher are considered the most energy efficient. The Johnsons replaced their old furnace with one that has an AFUE of 96%. The new furnace was also more compact, allowing them to move it to the attic and gain valuable storage space.

5. **Solar Electric System (5 kW)**
   The Johnsons were smart. They completed energy efficiency upgrades like insulation and air sealing before they began generating their own energy through a solar electric system. This reduced the size of the system they needed and therefore their overall costs.