

Duke Energy Residential Winter Demand Response

Electric Heat Strips

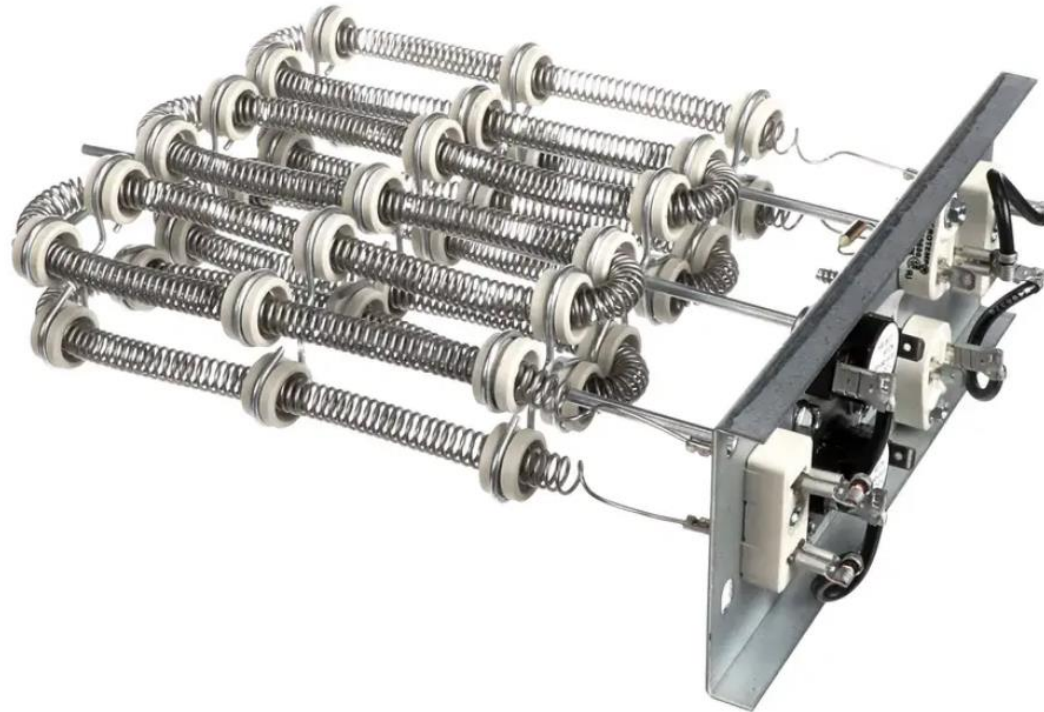
MAY 10, 2023



BUILDING A SMARTER ENERGY FUTURE®

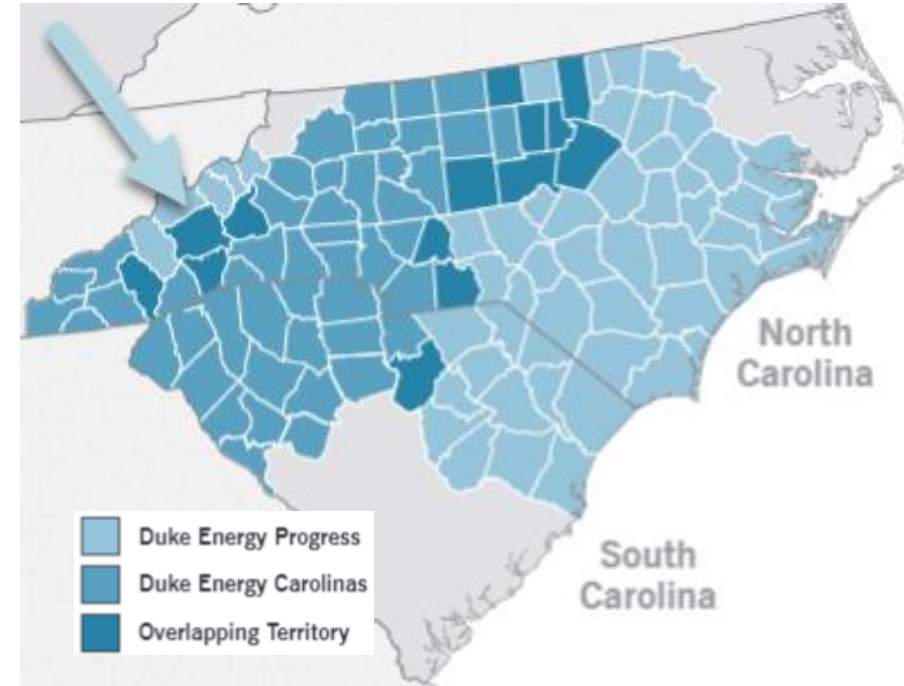
Heat Strips

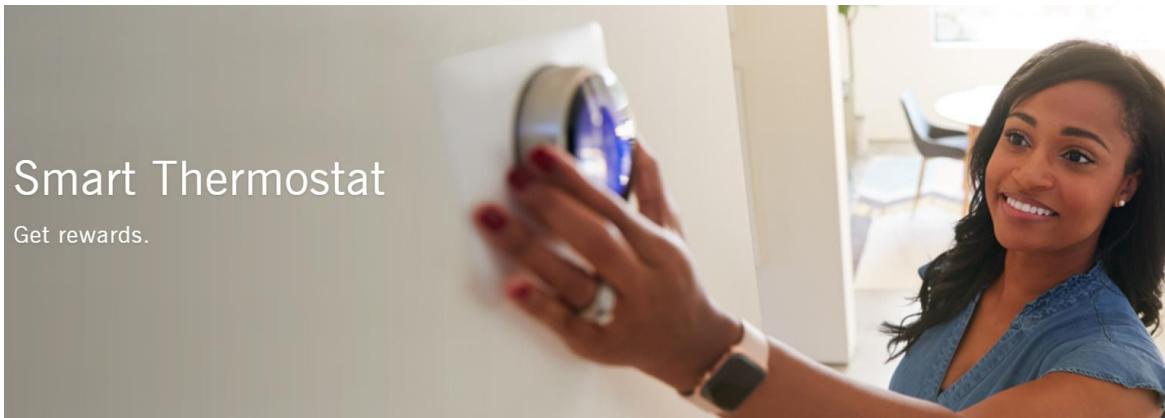
- What's in a name?
 - Auxiliary heat
 - Back-up heat
 - Emergency heat
 - Strip heat
 - All of the above!



A History on Heat Strips

- First offered in 2009, in the Duke Energy Progress west region
 - Mountainous area of NC
 - Includes the highest point in eastern USA
 - This area is physically separated from the eastern portion of the DEP area.
 - Asheville is the largest city in this area
 - 6,800+ Heat Strip participants
- Duke Energy Carolinas
 - Received commission approval in NC in late 2022
 - Received SC commission approval in early 2023
 - 200+ participants
- DEC and DEP have become winter peaking utilities.
 - And thus, we must grow our winter load reduction capabilities.





Smart Thermostat

Get rewards.

- BYOT option began in late 2019 as a summer only program.
- We worked with EnergyHub to develop their first winter/heating option.
- In late 2020, BYOT was approved as a winter-focused option and was available only to customers with qualifying electric heat.
- BYOT Participants:
 - 32,000 summer only customers (a declining number)
 - 16,600 (and growing) winter-focused customers
 - Available for 45 hours of winter control and 15 hours the rest of the year

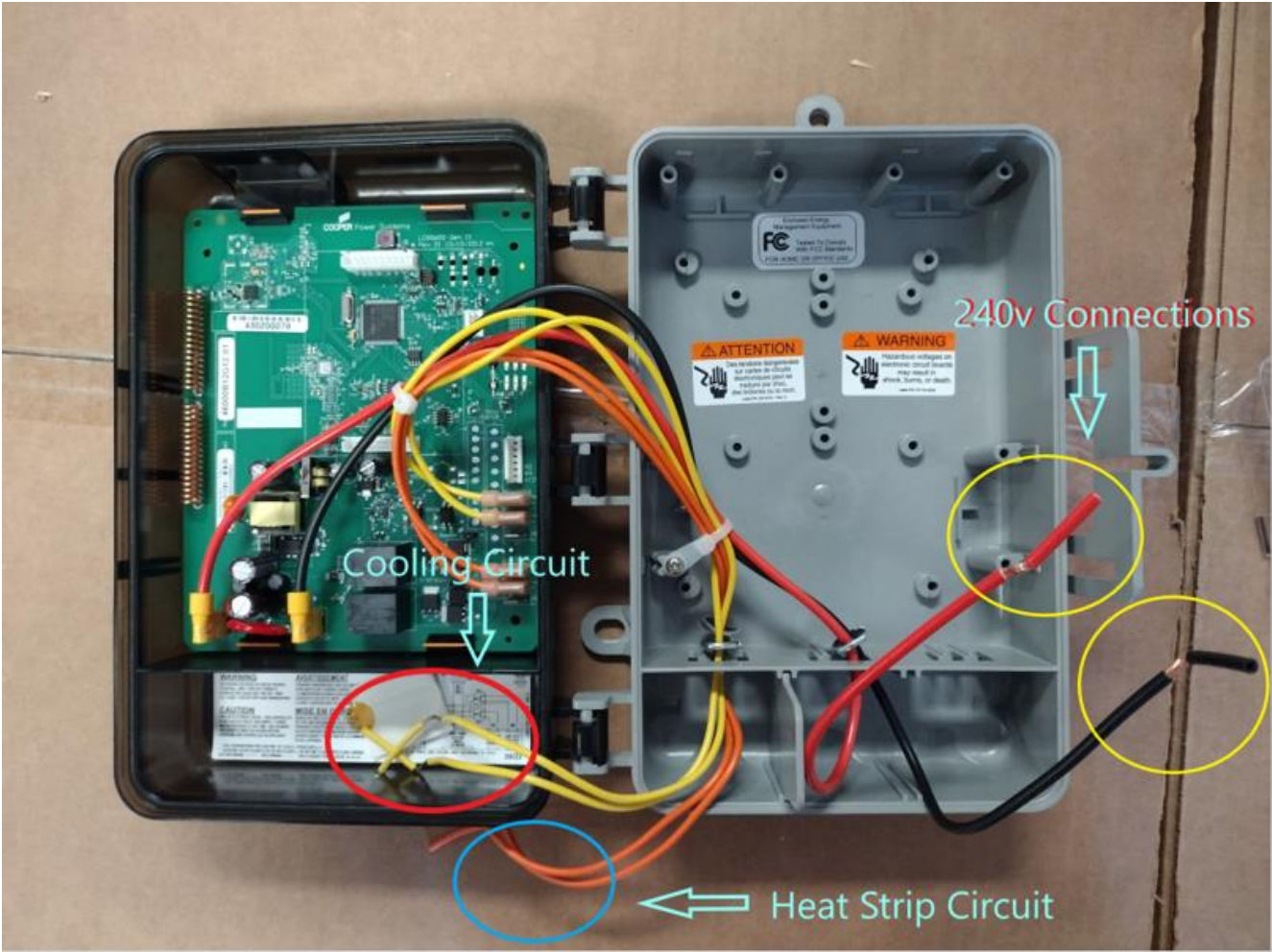
Heat Strip Program

- Provides an alternative for customers without a qualifying smart thermostat
- Available to customers with ducted electric resistance heat
 - Heat pumps
 - Electric furnace – with explanation from Franklin Energy technician before installation
- Heating control parameters
 - Control months December through March
 - Up to four hours control per day
 - Limited to a total of 60 hours during the winter control season
 - May call events outside of these parameters if continuity of service is threatened
- Participants receive \$6 bill credits on their January – April bills
- Initially plan on a full-shed for one-to-two-hour duration during morning peak
 - Defrost cycle won't be affected
- Possible future cycling options, similar to summer control, as we gain more customers

Expectations and Challenges

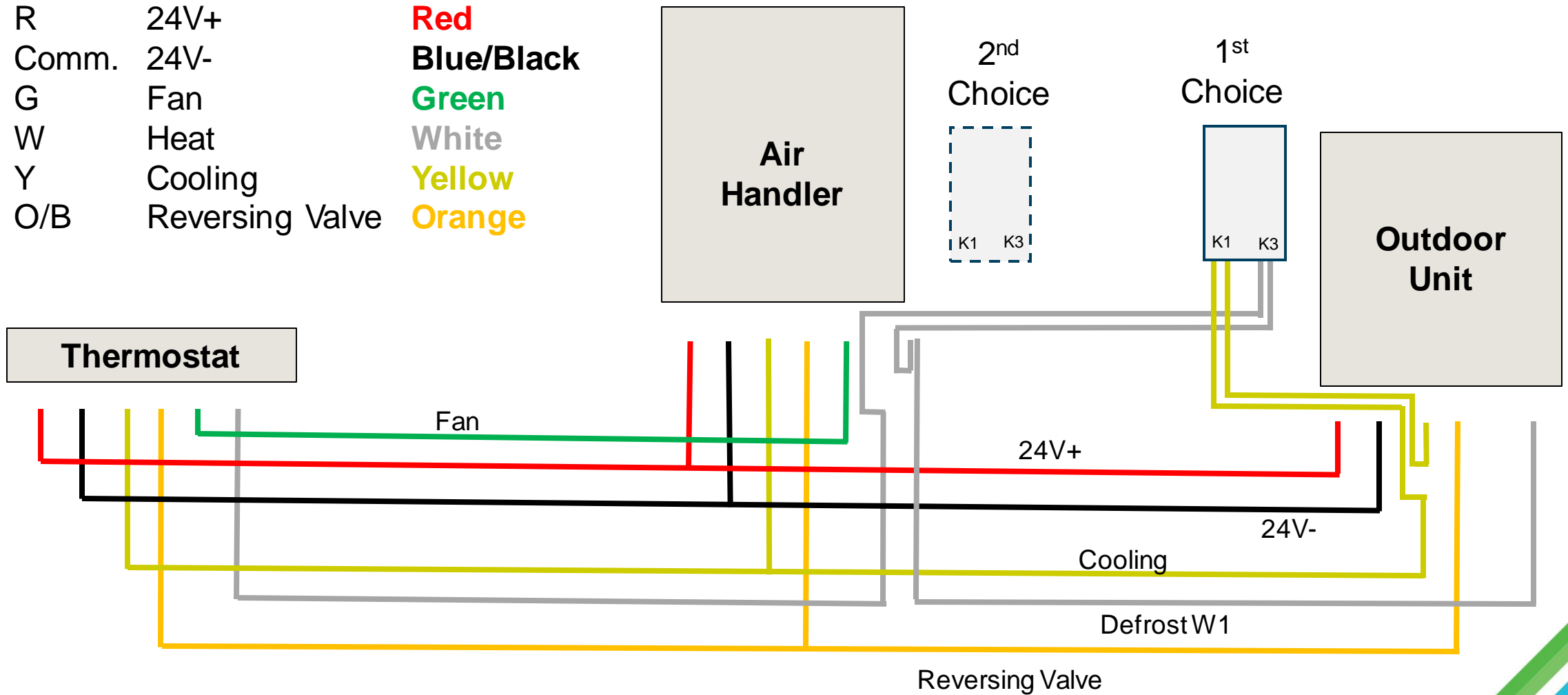
- Load Impacts
 - We'll have official numbers in a few years, after our first EM&V study
 - We did our modeling based on impacts from DEP heat strips – 1.2 KW
- Market potential and eventual goal is to have 80,000+ participants
- Challenges
 - Lower than expected customer acceptance
 - Primary targets are qualified existing AC control customers (email and follow-up telemarketing)
 - Additional enrollments of qualified new AC enrollment customers obtained via telemarketing
 - Website enrollments
 - Customers
 - Don't know what kind of heat they have
 - Change their minds more frequently about heat strip control vs. AC control
 - Franklin Energy reports over 50% of installations are cancelled due to non-qualifying customers or a change of mind
 - We're working on improving
 - Our targeted email lists with more advanced analytics to better determine electric heat
 - Adding an electric heat indicator on our AC telemarketing customer lists

- One 5-amp relay (AC) and one 30-amp relay (HS)



Installation

R	24V+	Red
Comm.	24V-	Blue/Black
G	Fan	Green
W	Heat	White
Y	Cooling	Yellow
O/B	Reversing Valve	Orange

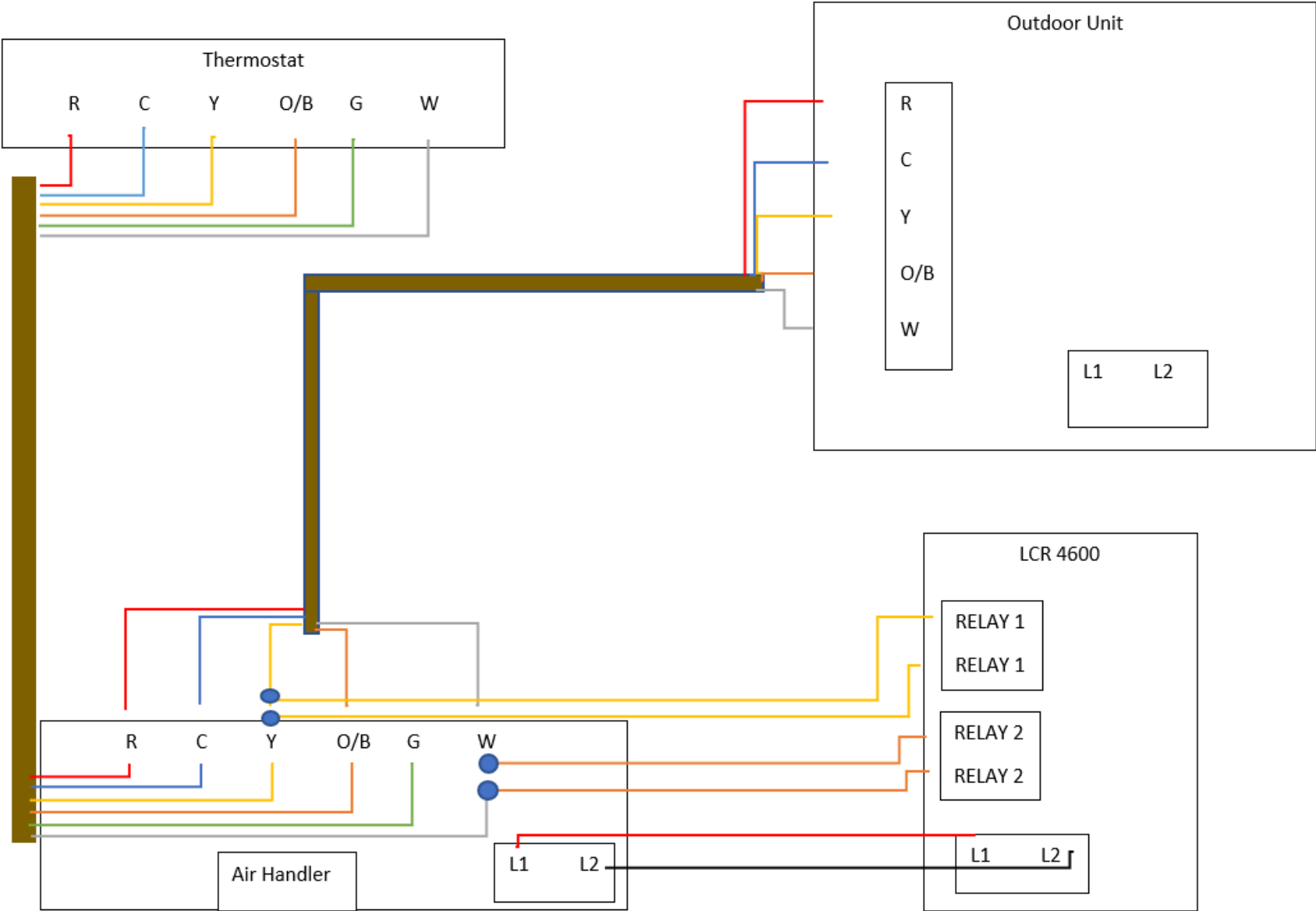


Thank you!



*BUILDING A **SMARTER** ENERGY FUTURE®*

Indoor Installation



Outdoor Installation

