

Discovering Energy Efficiency Opportunities in Asheville's Craft Brewing Industry

Asheville-Buncombe Air Quality Agency
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WHY DO THIS RESEARCH?











WHO DID THE RESEARCH?



WHAT DID WE DO?



Treasure Map FOR MICROBREWERIES

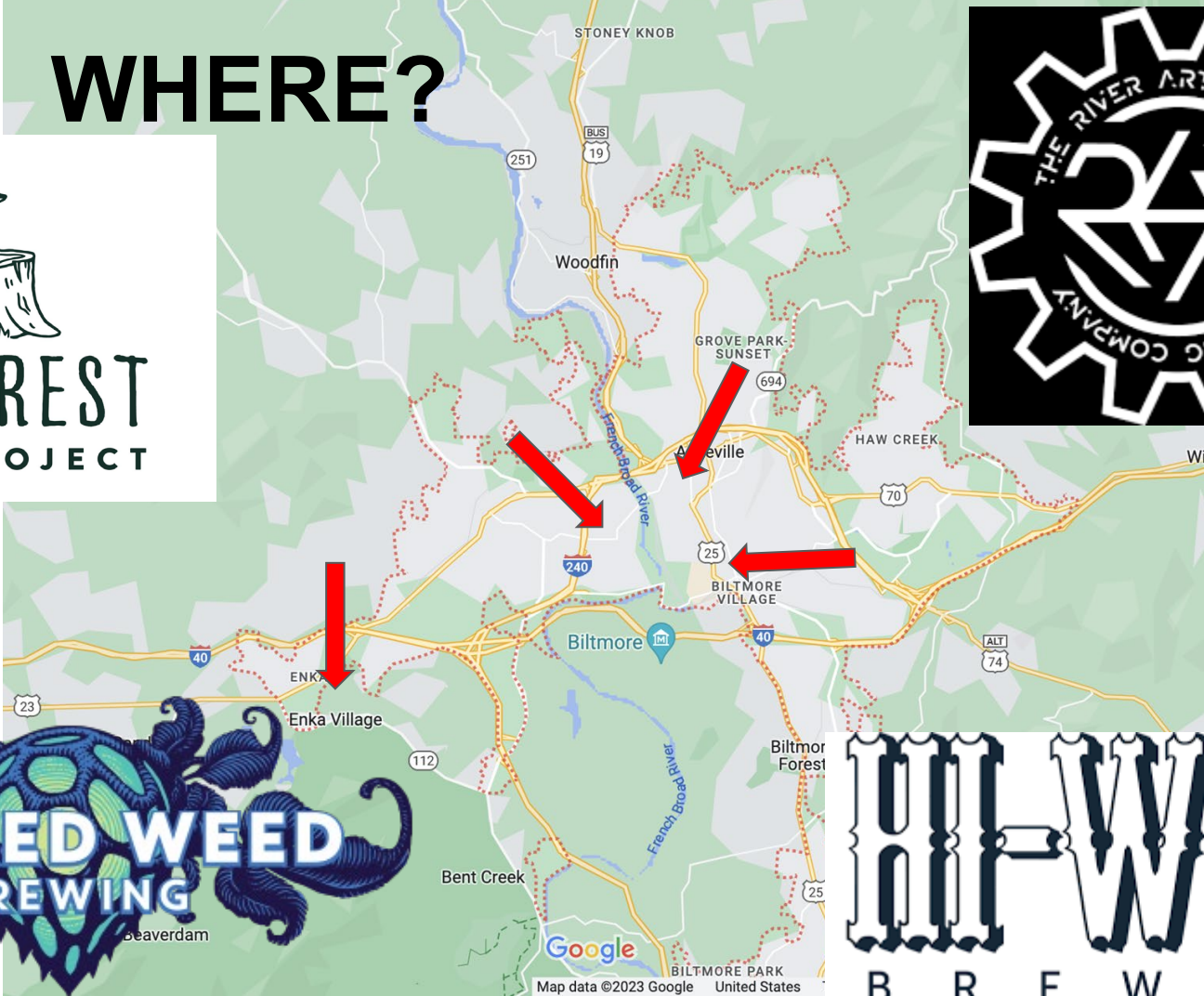
-  **FACILITY MANAGEMENT**
-  **BREWING/PRODUCTION EQUIPMENT**
-  **HOT WATER AND STEAM SYSTEMS**
-  **CHILLERS**
-  **REFRIGERATION**
-  **PUMPS AND PIPING SYSTEMS**
-  **COMPRESSED AIR**
-  **LIGHTING**



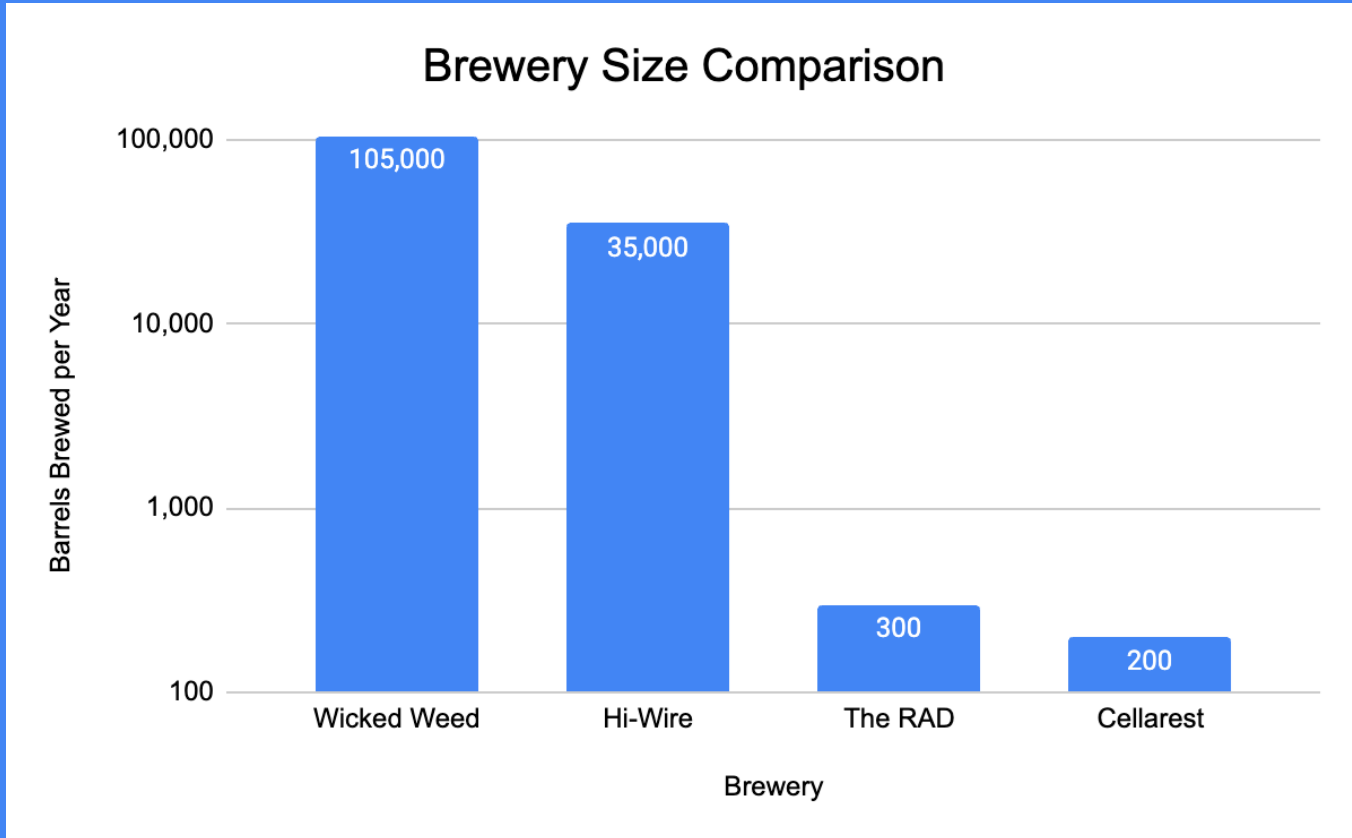
WHERE?



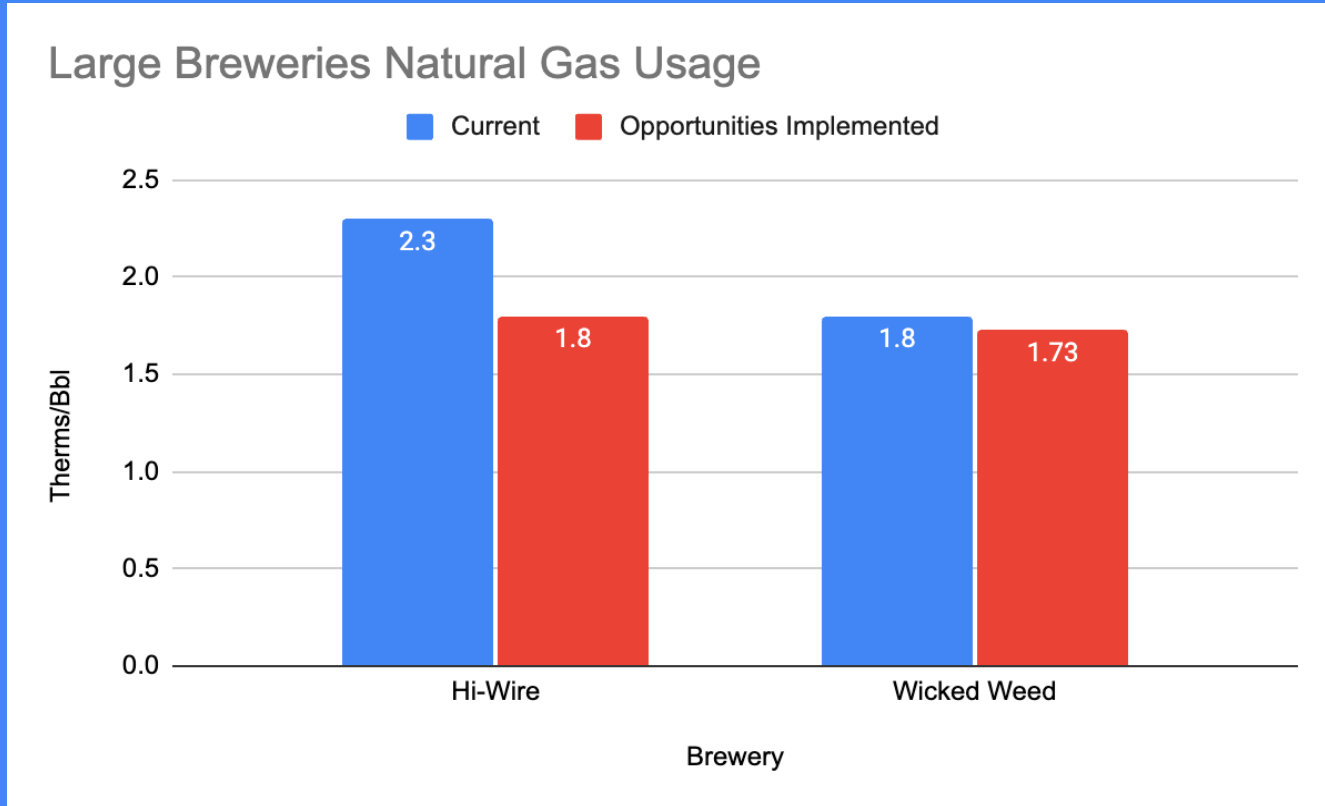
CELLAREST
BEER PROJECT



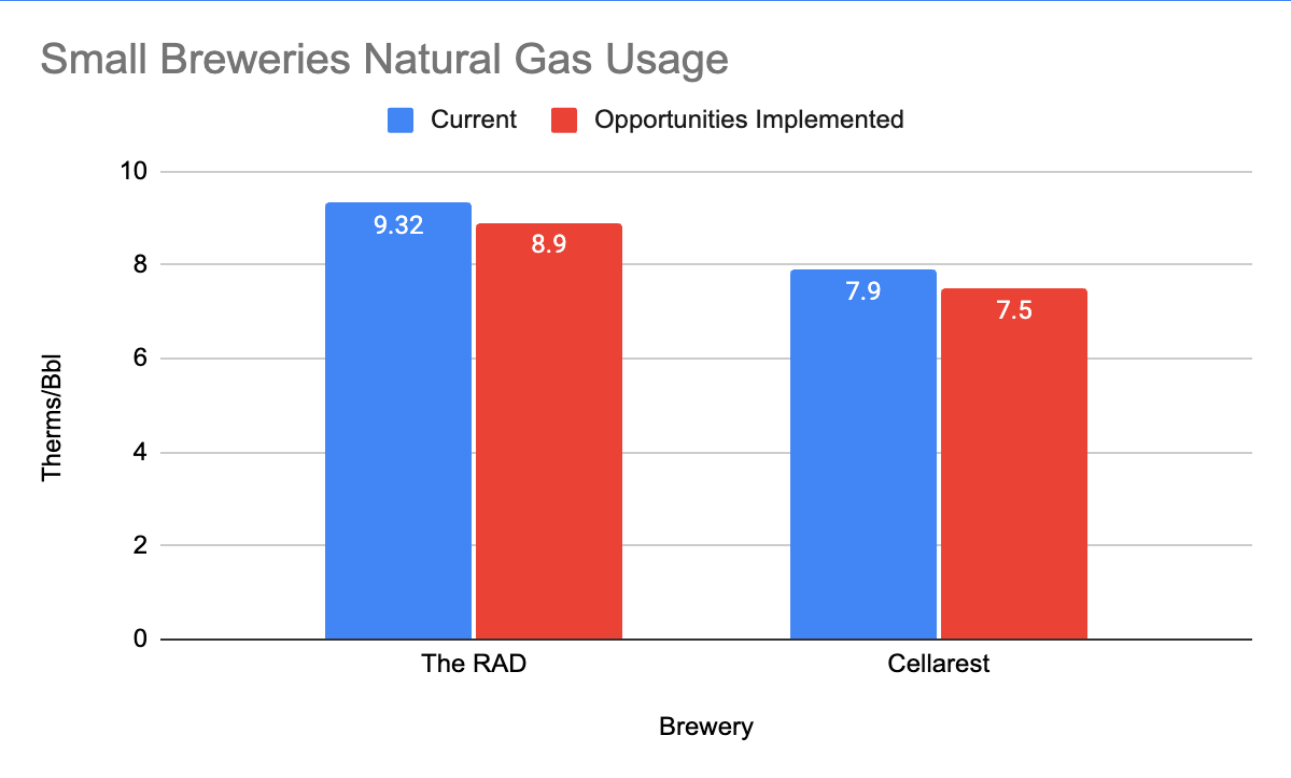
The four breweries are various sizes



Hi-Wire's opportunity to lower natural gas usage is significant



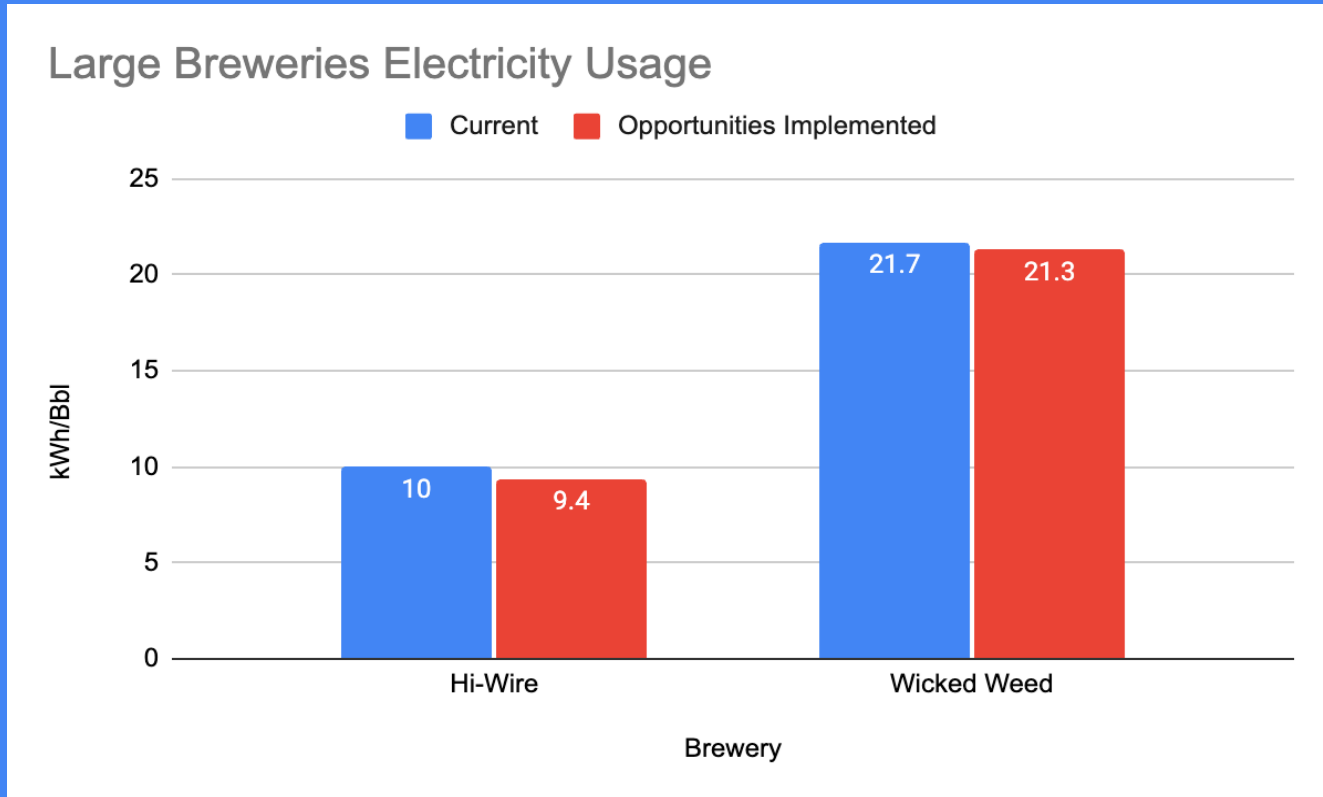
Small breweries have slight opportunity to reduce natural gas usage



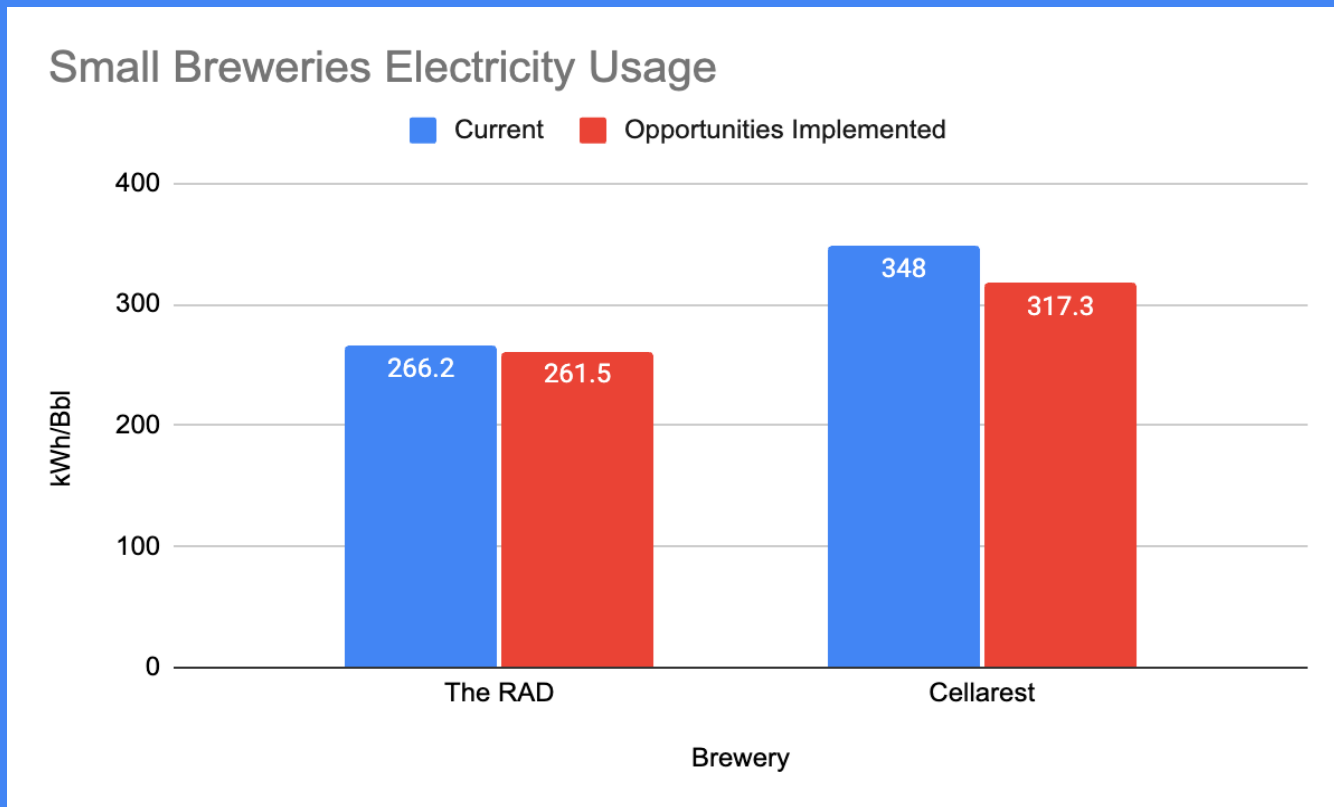
All four breweries' natural gas opportunities

Brewery	Current Natural Gas Usage (Therms)	Natural Gas Usage if Opportunities Implemented (Therms)	Natural Gas Saved (Therms)	CO₂ Avoided (lb)
Wicked Weed	183,795	181,222	2,573	30,076
Hi-Wire	80,977	62,757	18,220	212,974
Cellarest	1,581	1,510	71	830
The RAD	2,796	2,670	126	1,473

Large breweries have slight opportunity to reduce electricity usage



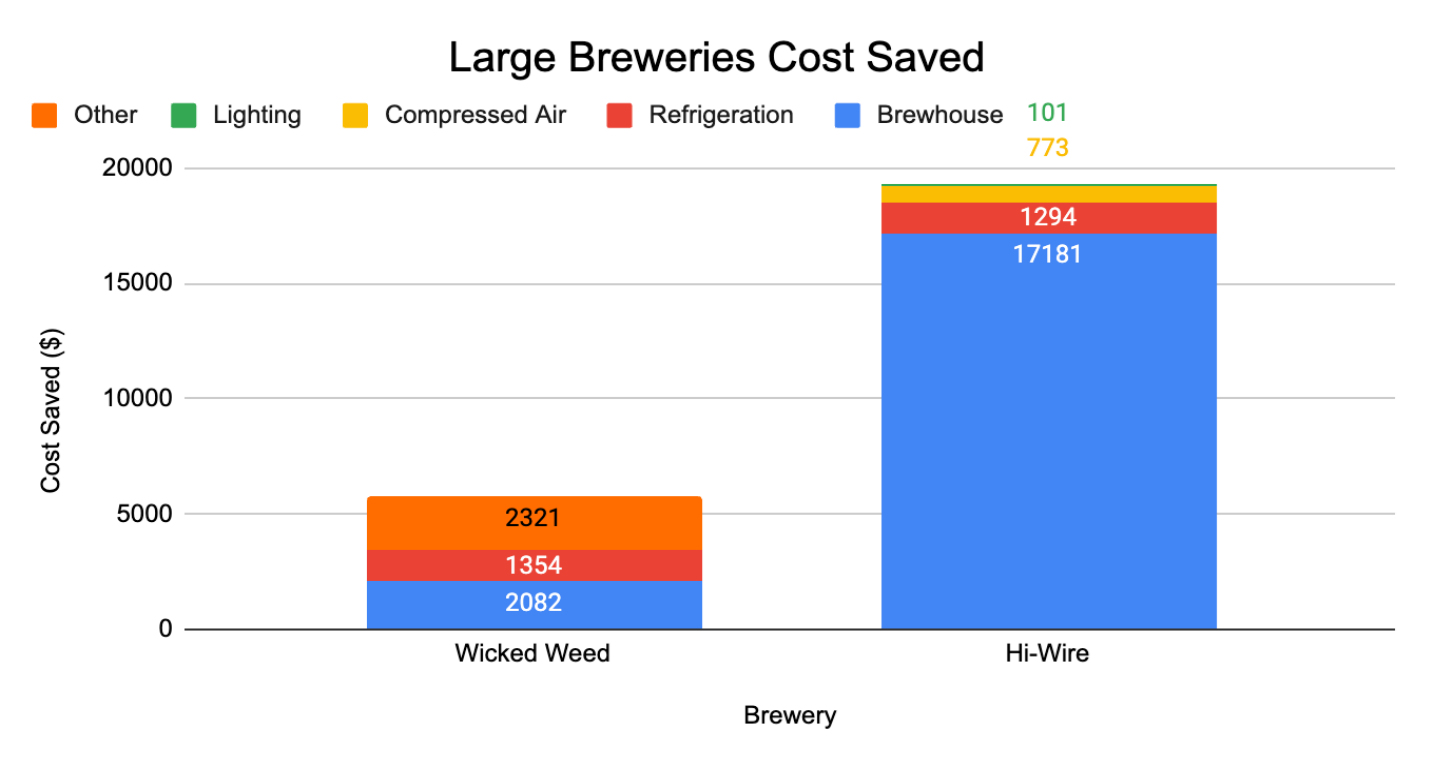
Small breweries have significant opportunity to reduce electricity usage



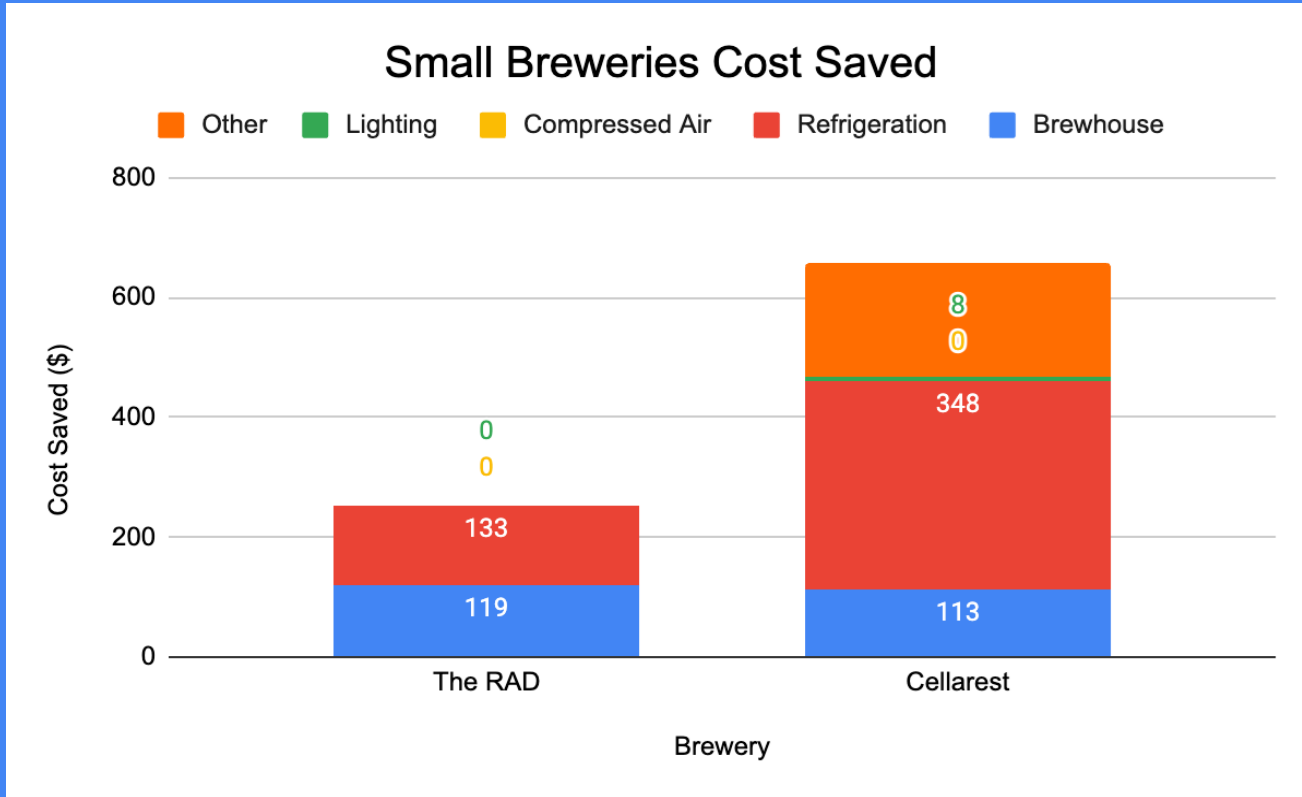
All four breweries' electricity opportunities

Brewery	Current Electricity Usage (kWh)	Electricity Usage if Opportunities Implemented (kWh)	Electricity Saved (kWh)	CO₂ Avoided (lb)
Wicked Weed	2,282,369	2,239,005	43,364	37,616
Hi-Wire	352,914	330,151	22,763	19,746
Cellarest	69,691	63,456	6,235	5,408
The RAD	79,860	78,462	1,398	1,213

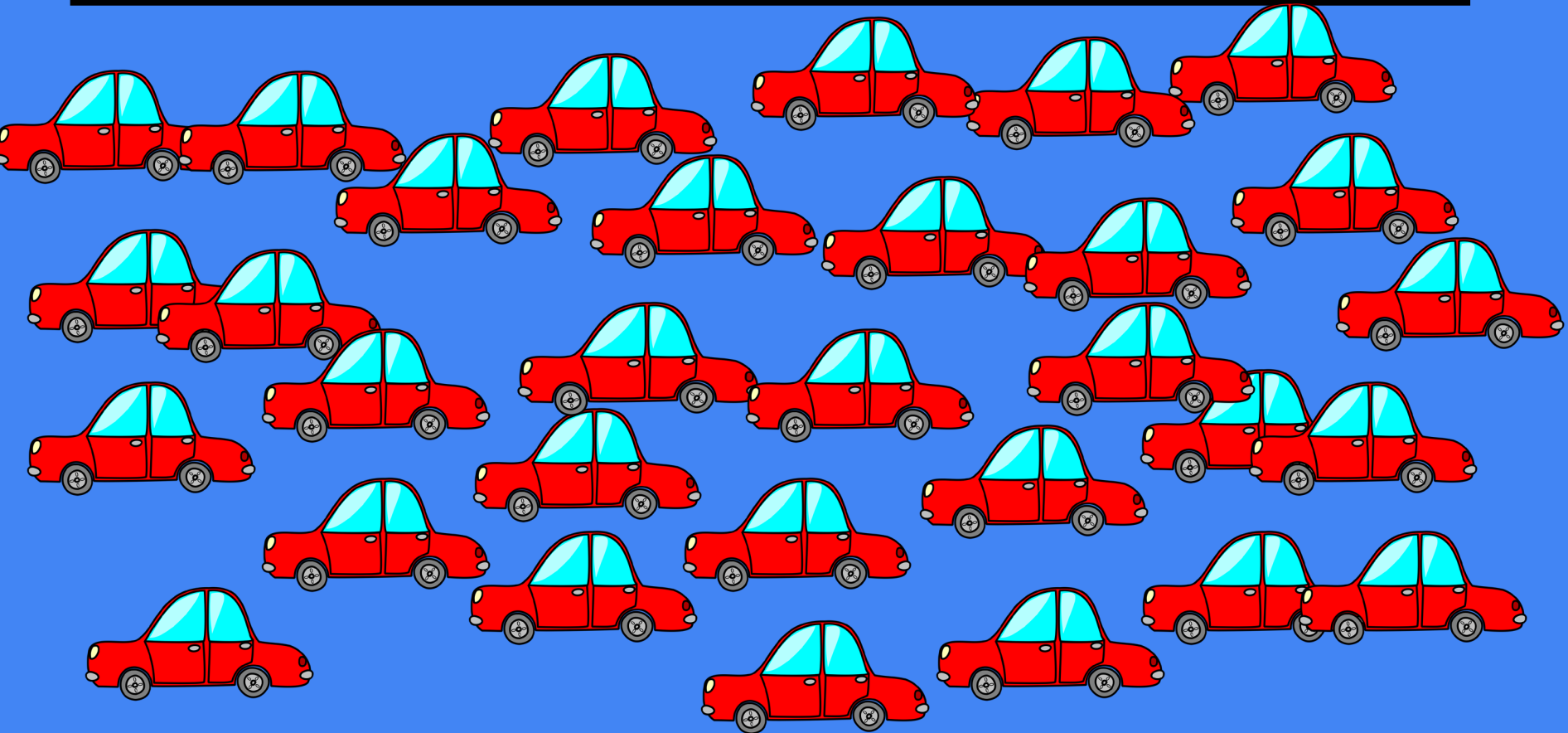
Large breweries will save the most annual cost by implementing opportunities in the brewhouse



Small breweries will save the most annual cost by implementing opportunities in refrigeration areas



Total annual CO2 reduction is equivalent to 31 cars





CONCLUSION



Energy efficiency opportunities were discovered within each brewery



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Total savings discovered: 309,336 lb CO₂ and \$25,827



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Participation in this project indicates that Asheville's craft brewing industry prioritizes sustainability



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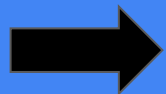
Energy efficiency opportunities were discovered within each brewery



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Implementing energy efficiency into Asheville's craft brewing industry will help mitigate the effects of climate change

THANK YOU

