

PECAN STREET

Catalyzing Austin's Energy Leadership to Accelerate Innovations for the Residential Sector

Presentation to the Austin Energy Utility Oversight Committee

March 27, 2019

Suzanne Russo
CEO



PECAN STREET

- 501(c)3 Not-for-profit company founded in 2009 with seed funding from The University of Texas
- Bridge industry and academia to accelerate innovation in clean energy and water conservation
- Leverage our unique community research networks for testbed-based R&D
- Manage the world's largest residential energy and water research database





Brummett Family



McCann Family



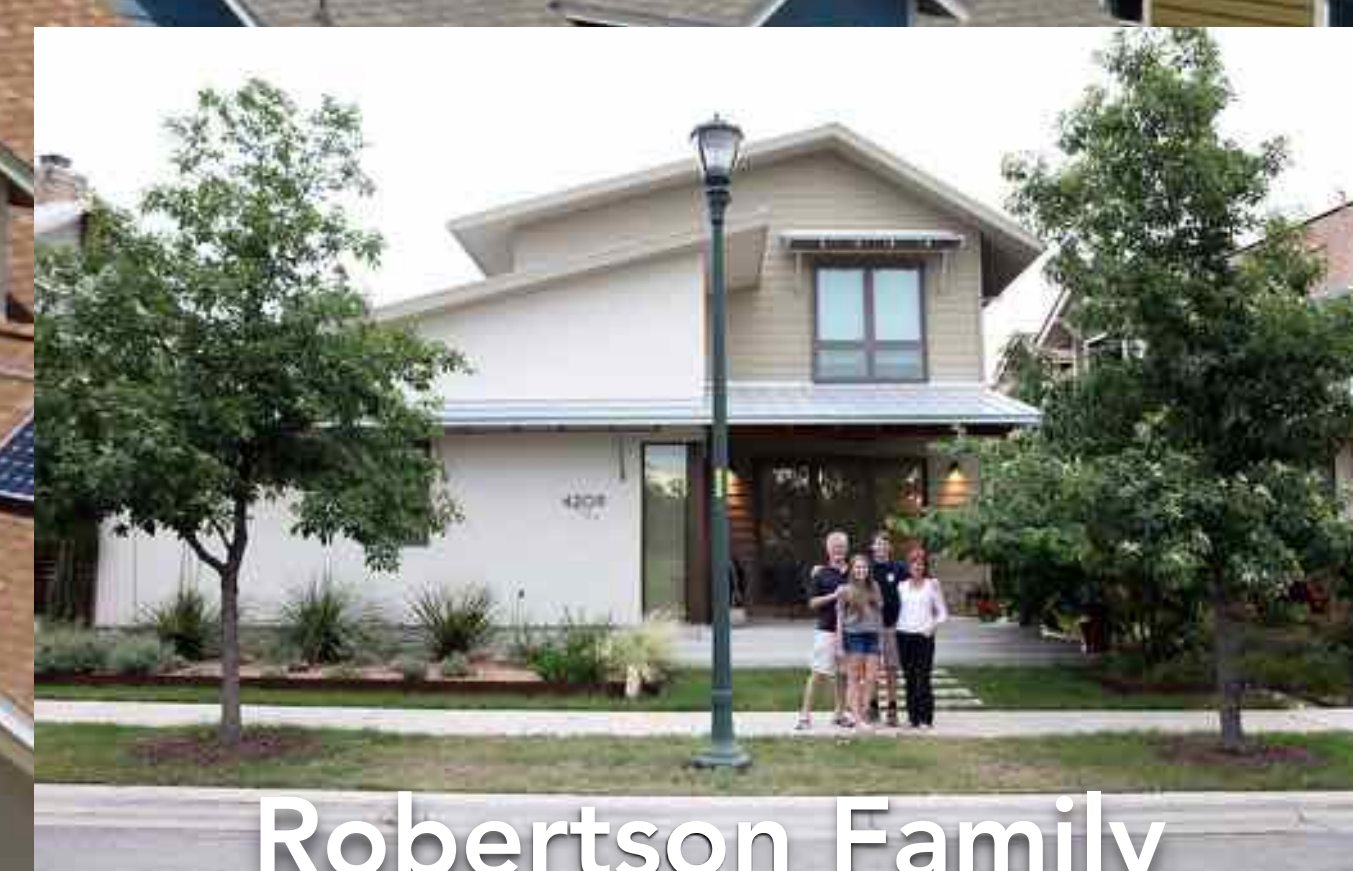
Sandy & Bill Fivecoat



The McAtees

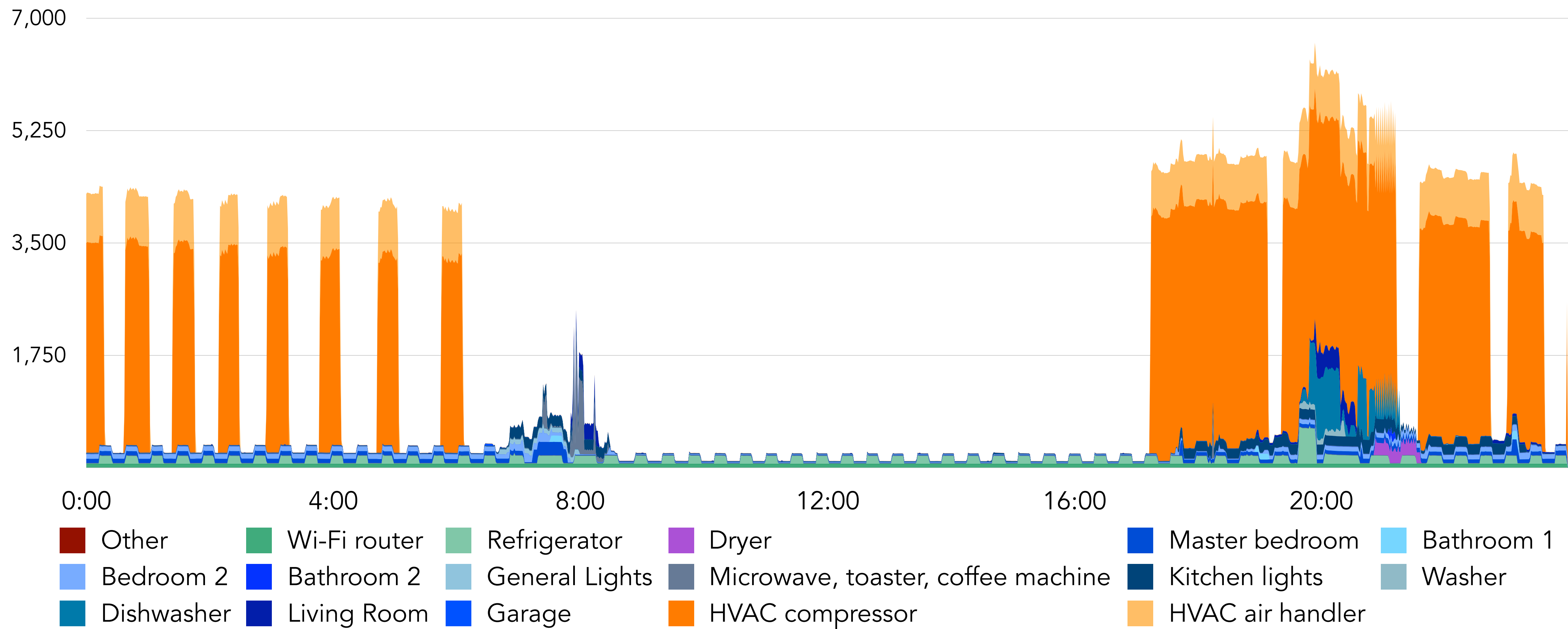


Barrerra Family



Robertson Family

Household Energy Profile



Dataport

INNOVATION IN THE CLOUD — A WORLD OF ENERGY DATA



750 MILLION
RECORDS DAILY



2,000
UNIVERSITY-SPONSORED
RESEARCHERS



60
COUNTRIES

Pecan Street developed, hosts and maintains the largest database of consumer electricity and water use in the world.

More than the largest source of energy data and water data

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Energy



Water

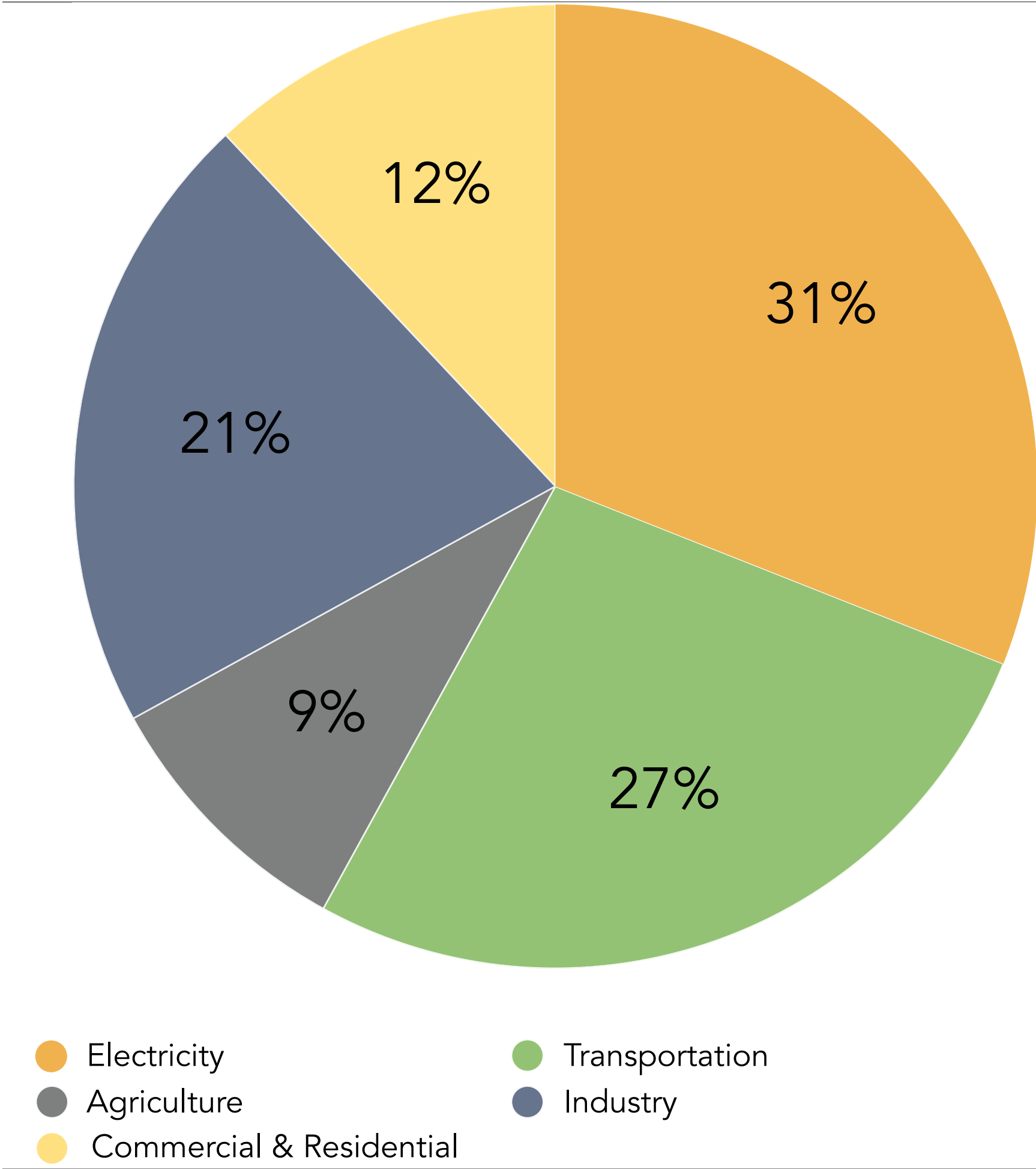


Transportation

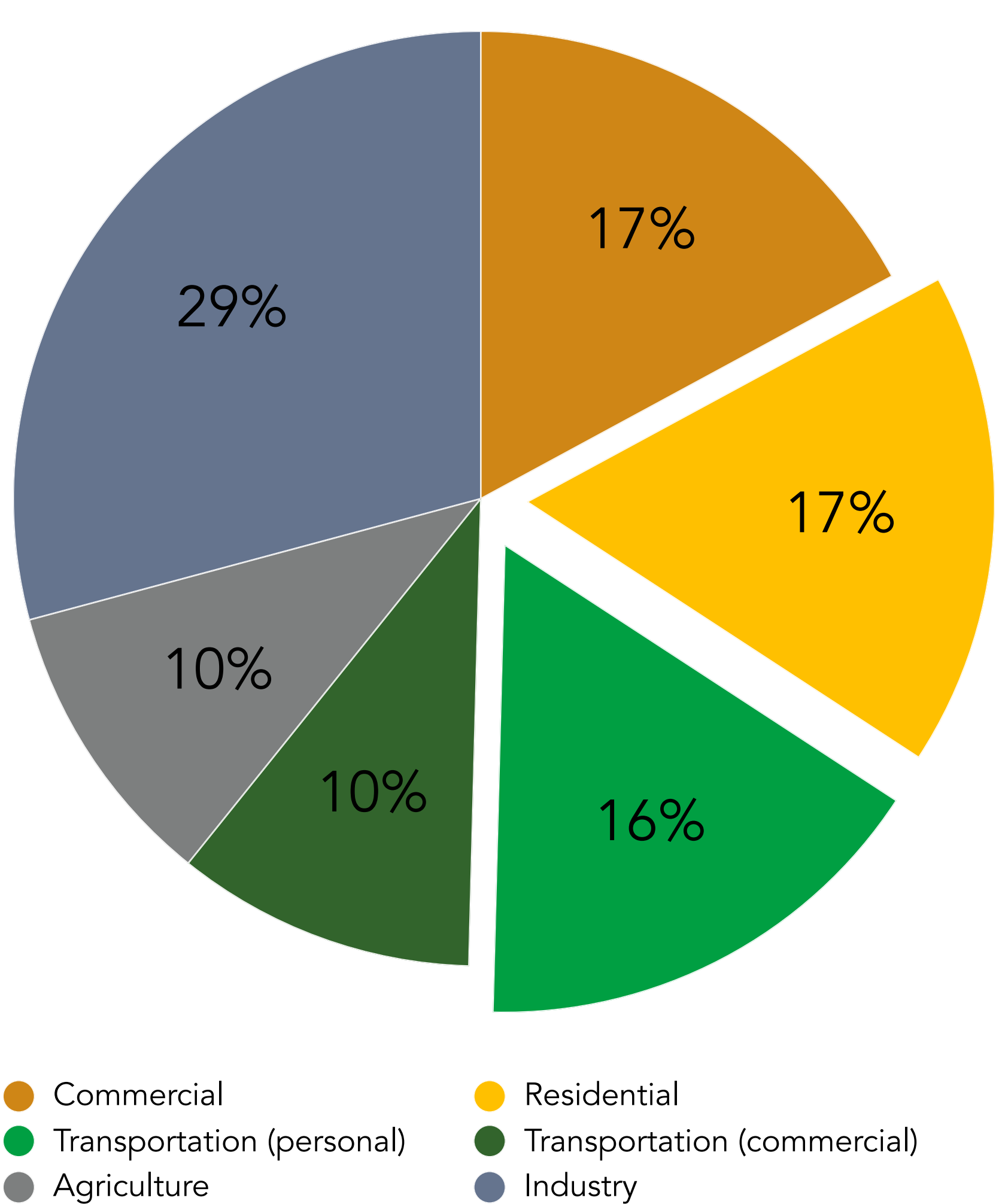


Our Energy Focus

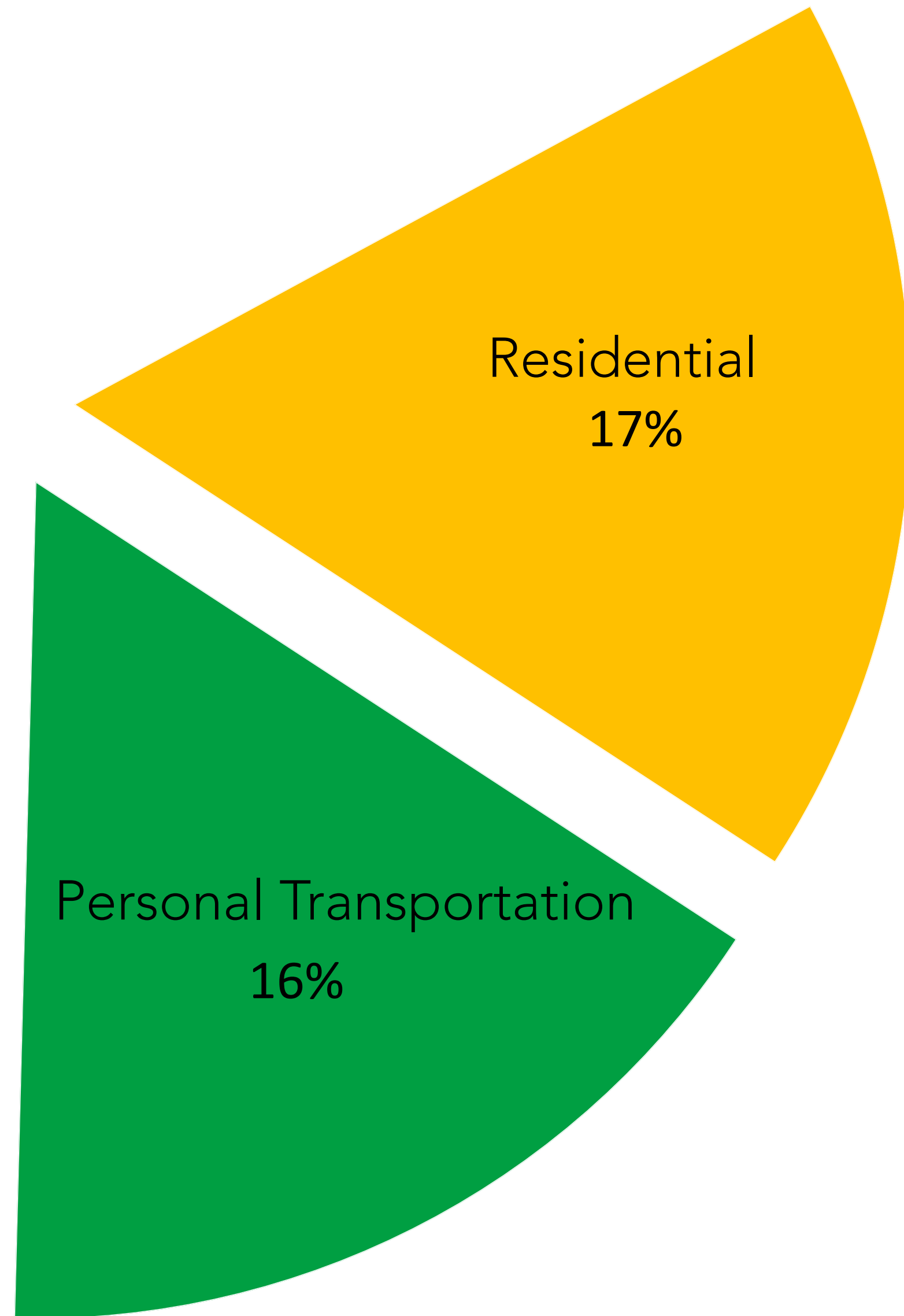
United States Carbon Emissions By Economic Sector



United States Carbon Emission By End-Use Sector



The Impact of Households



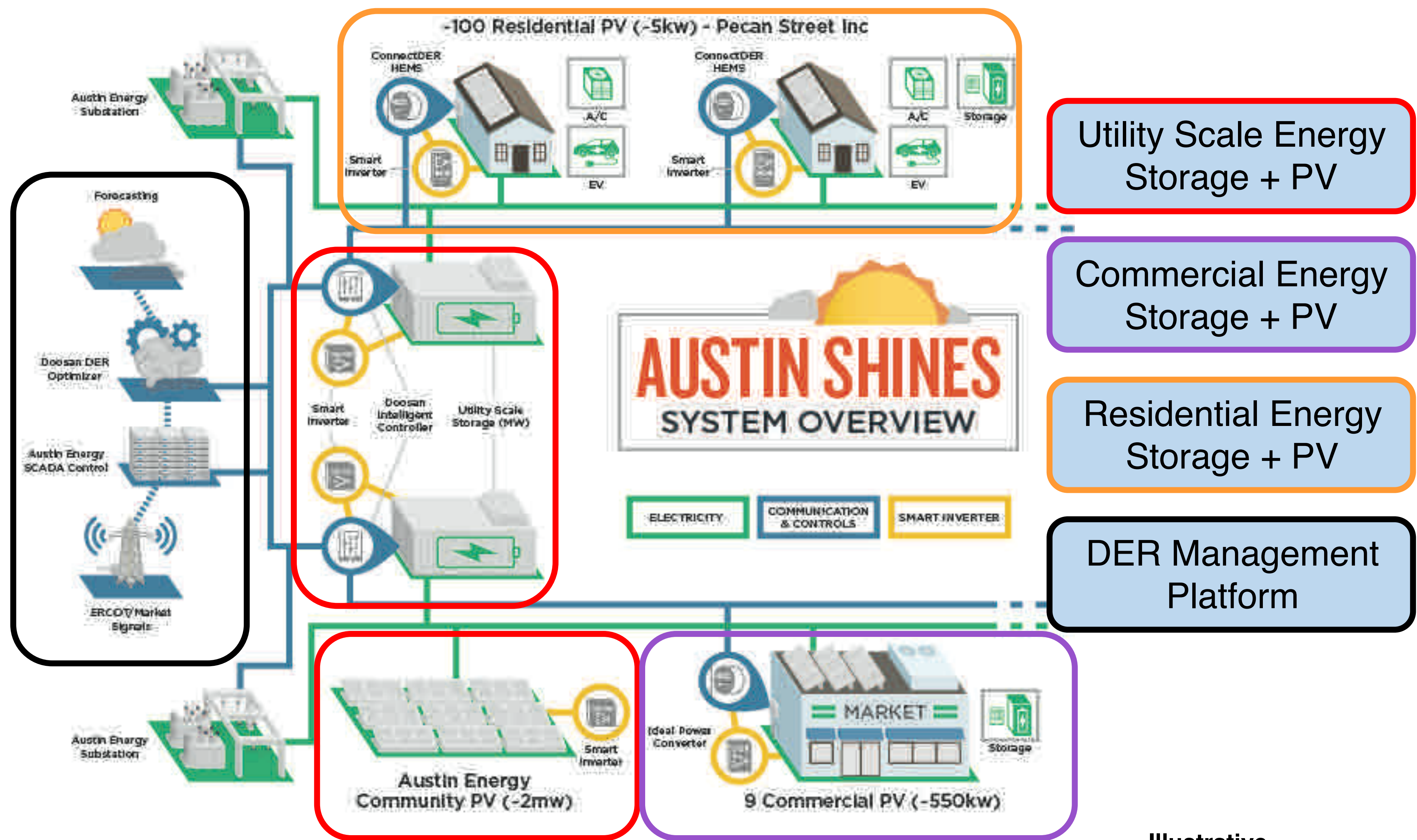
33% of US emissions come from personal transportation and energy used in homes.

Action at scale needs to be coordinated

Catalyzing quick action is a key challenge.

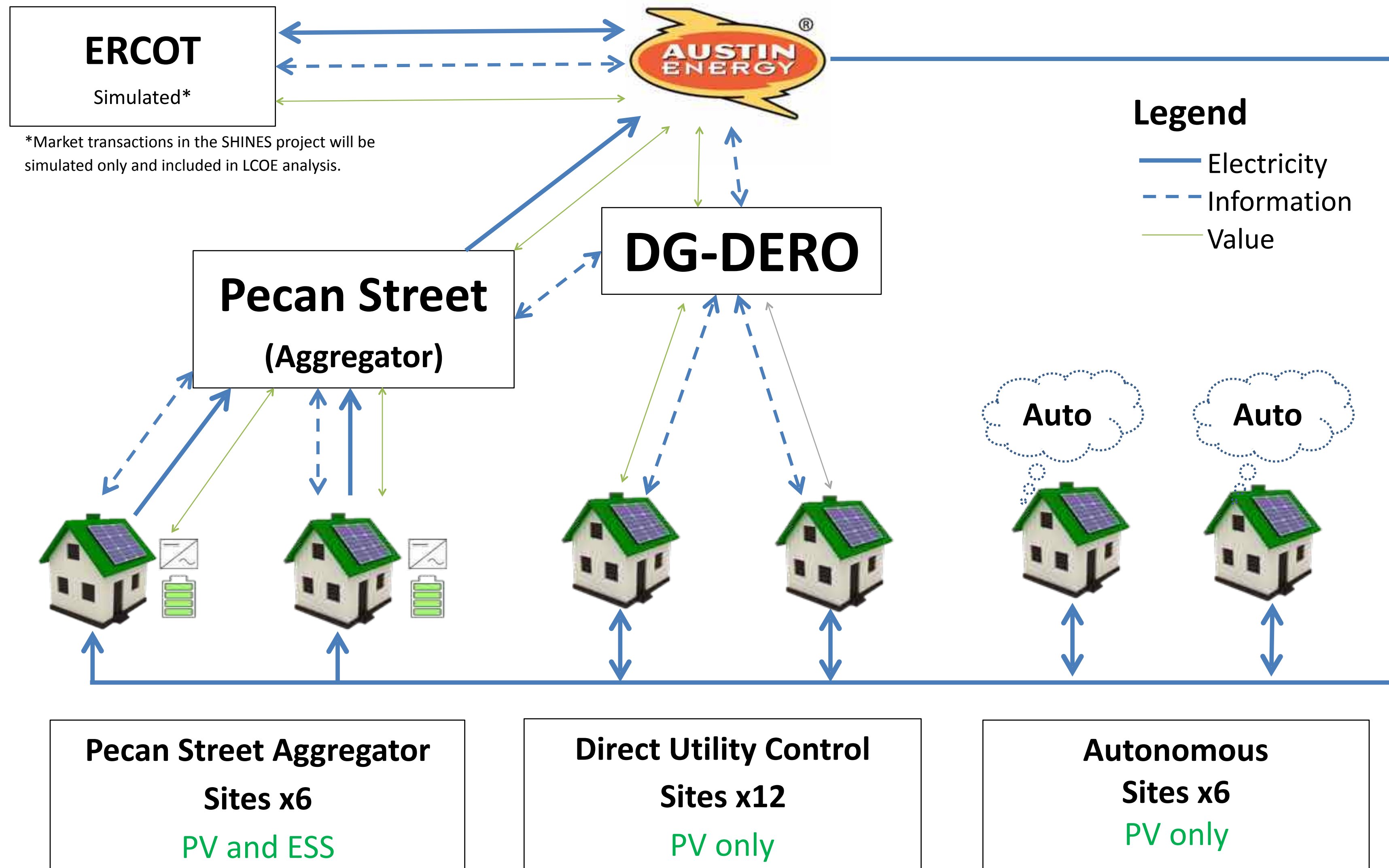
Current R&D Highlights

Project Highlight: Austin SHINES



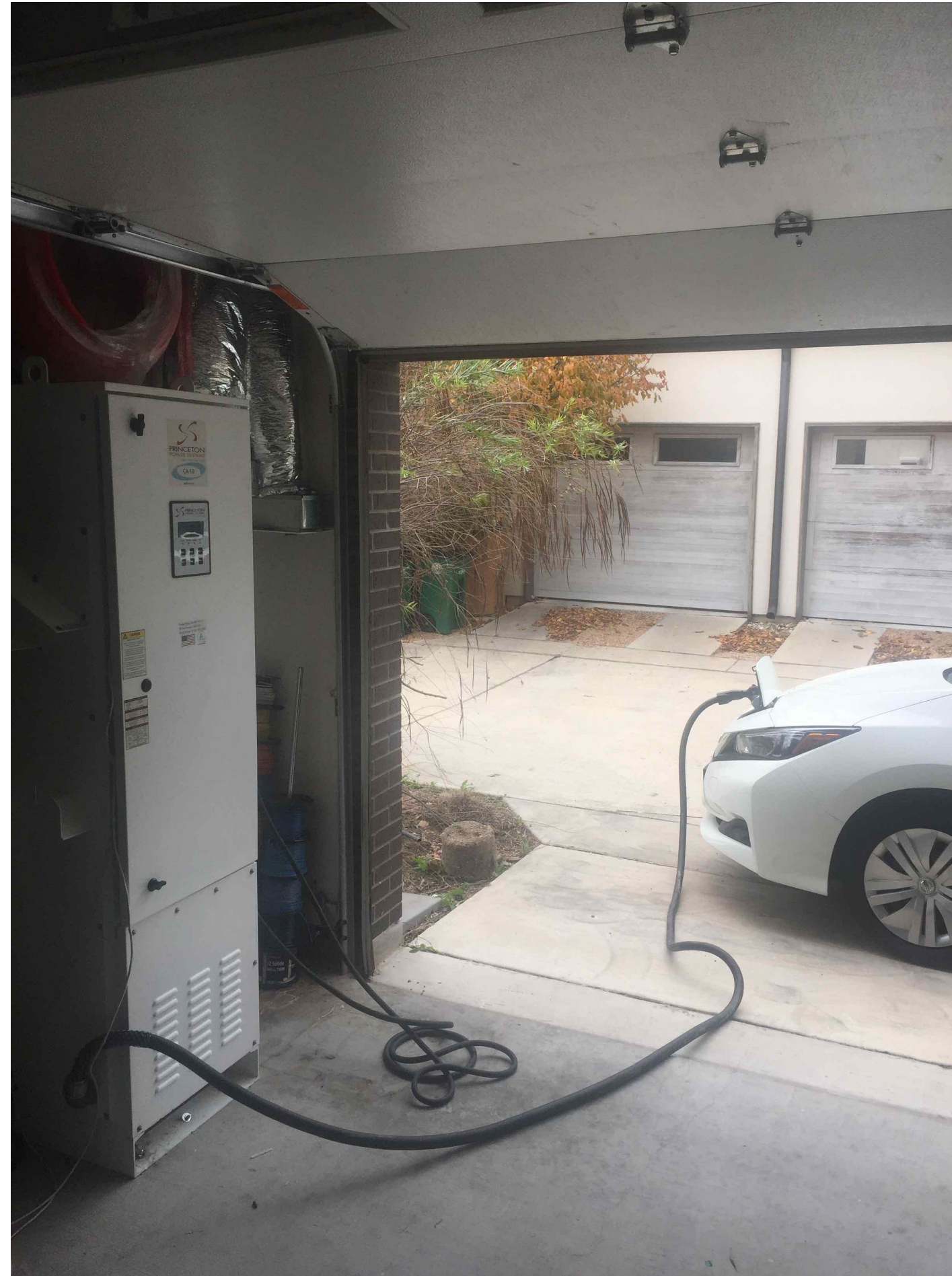
Illustrative

Residential Components



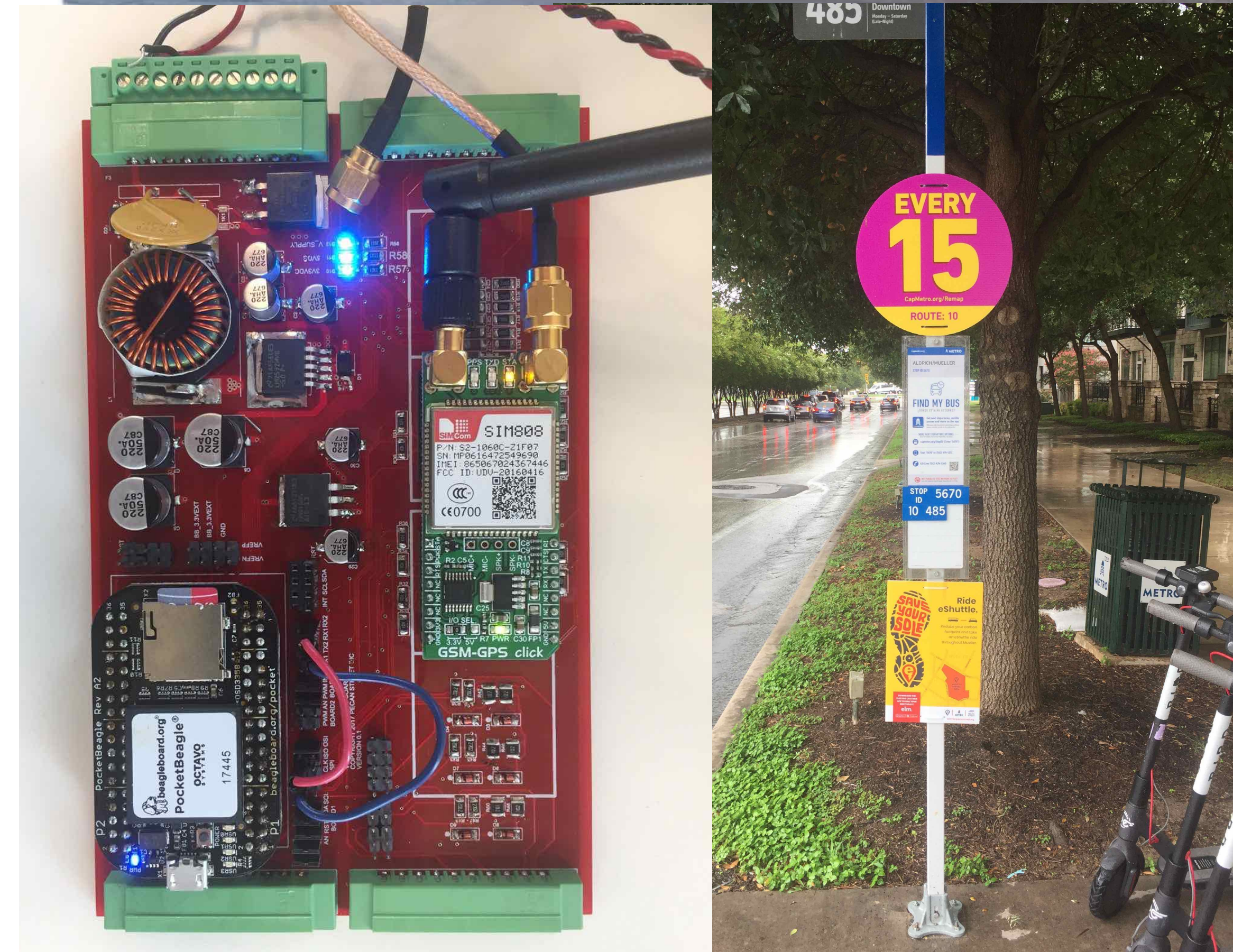
Austin SHINES: Vehicle-to-Grid integration

- Texas first grid-tied V2G testing center
- Part of Austin Energy's award-winning Austin SHINES project
- Goal is to evaluate how a utility can leverage electric cars to supply power to the grid through a resource aggregator



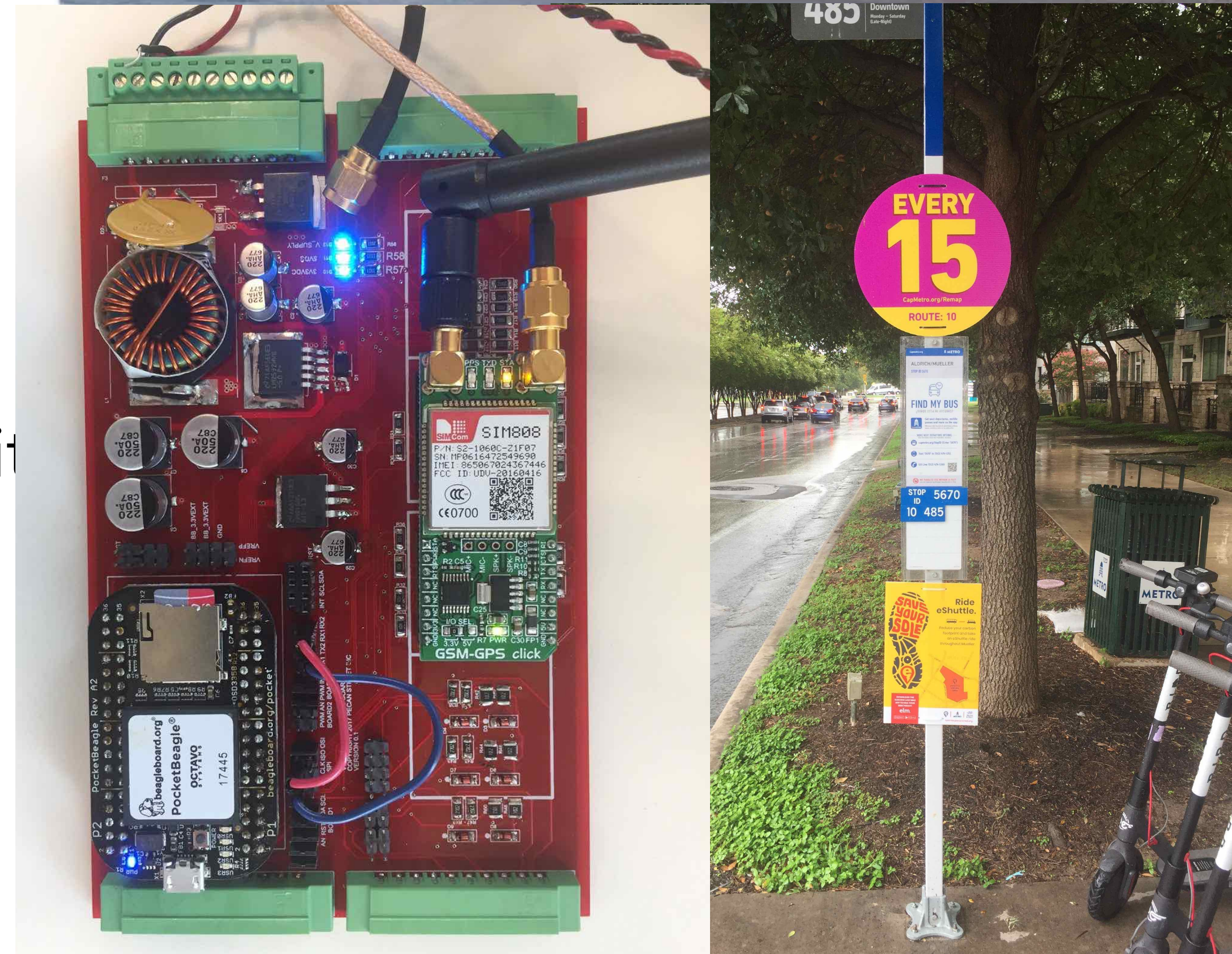
Project Highlight: Electric Last Mile

- Launched in November 2017 in partnership with Capital Metro
- 6 months, 3 pilot routes around Austin: Mueller, Domain, Downtown
- Testing sustainable models for first- and last-mile transit solutions with electric, neighborhood-friendly shuttles
- Technological, economic, and behavioral research trial



Electric Last Mile Initial Results

- Capacity rates / shuttle utilization rates and purpose
- Replaced mode of transit (traffic impact analysis)
- Emissions impact analysis
- Factors that affected ridership
- Shuttle was moderately successful at connecting individuals to Cap Metro's transit system and was highly successful as a neighborhood circulator, displacing personal vehicles.



Partner Research



Transportation Research Part C: Emerging Technologies

Volume 92, July 2018, Pages 392-411



User-centric interdependent urban systems: Using time-of-day electricity usage data to predict morning roadway congestion

Pinchao Zhang ^a, Zhen (Sean) Qian ^{a, b}

Carnegie-Mellon researchers created a model that mined data on electricity consumption from 322 homes in Pecan Street’s dataset and used artificial intelligence to predict what traffic would look like the next morning.



DESIGN / TRANSPORTATION / ENVIRONMENT / EQUITY / LIFE



One researcher thinks we can mine data from utilities to predict traffic jams hours in advance. // Joshua Roberts/Reuters

To Better Predict Traffic, Look to the Electric Grid

LINDA POON JUL 6, 2018

Trajectory

Covering all three coasts

To Do's

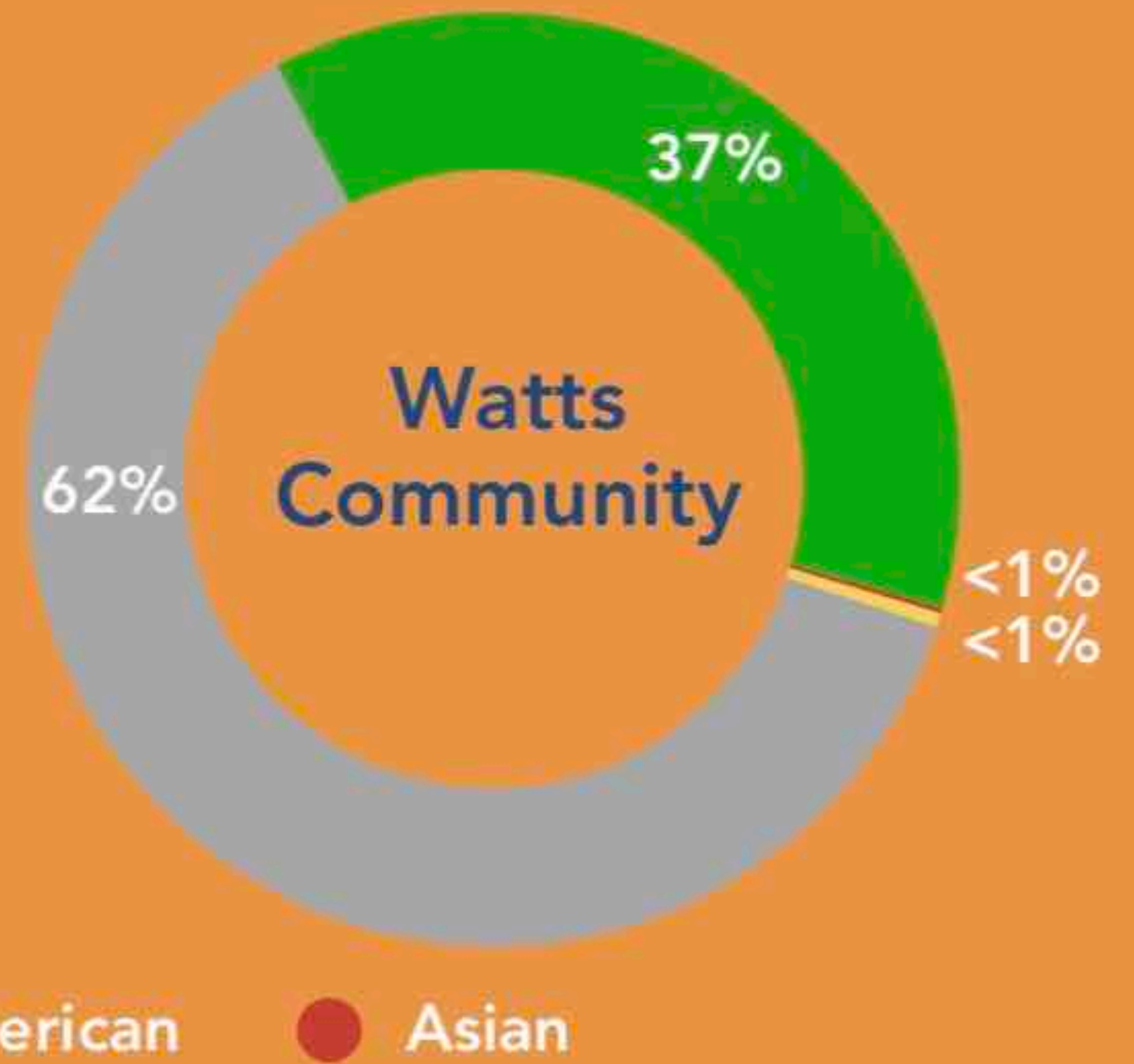
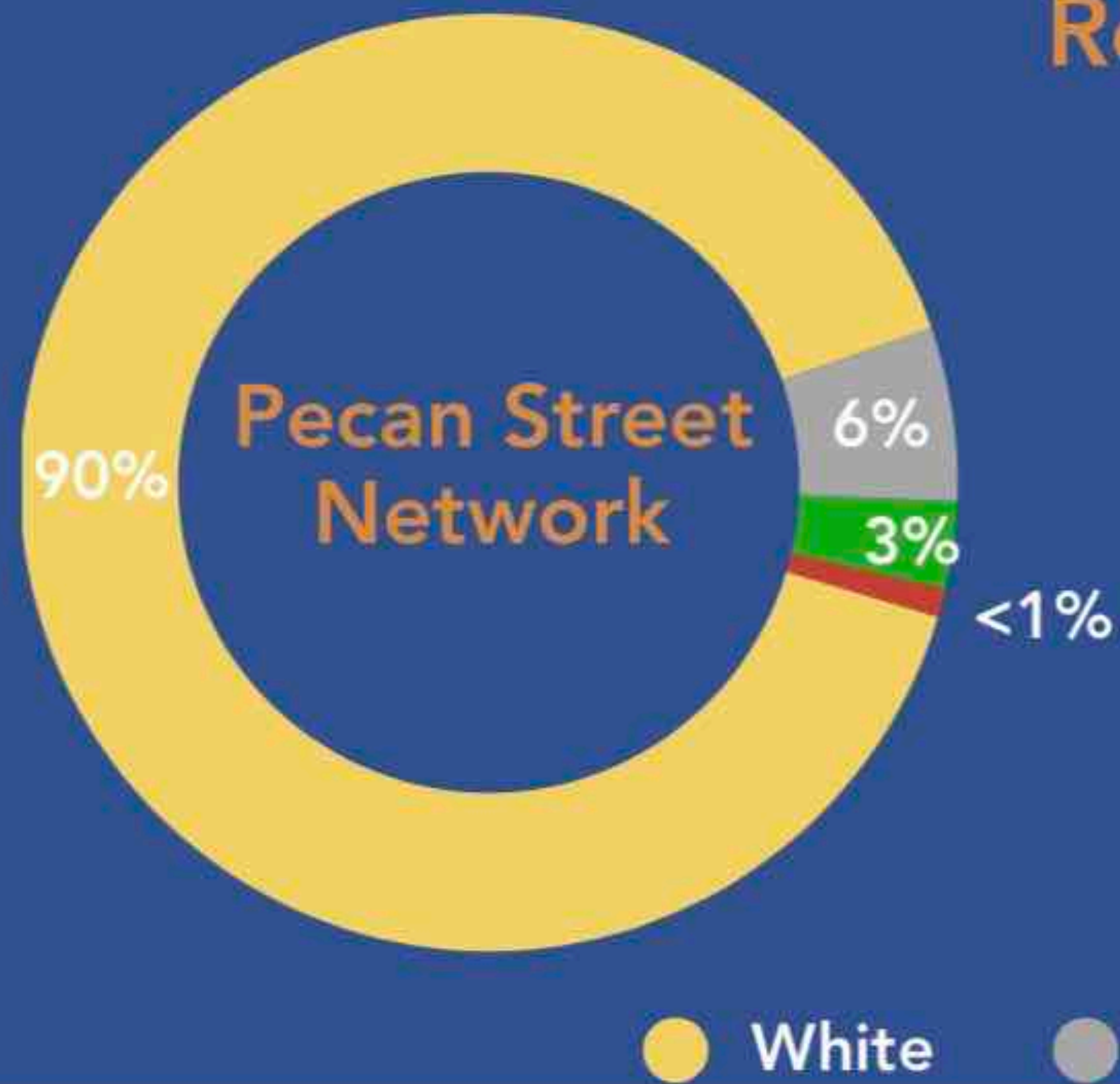
1. ~~Install rooftop solar~~
2. Help Pecan Street, Stanford and UC Berkeley save the world.

One Down. One To Go.

Find out how you can be part of the
world's largest energy research network



Research Divide



Clean energy and water conservation research severely under-represents communities of color and low- and middle-income consumers. Pecan Street hopes to narrow this research divide.

A community already galvanized around climate and clean energy that can yield best practices for the nation.

Thank you

Suzanne Russo

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