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


VOLT
HENNA

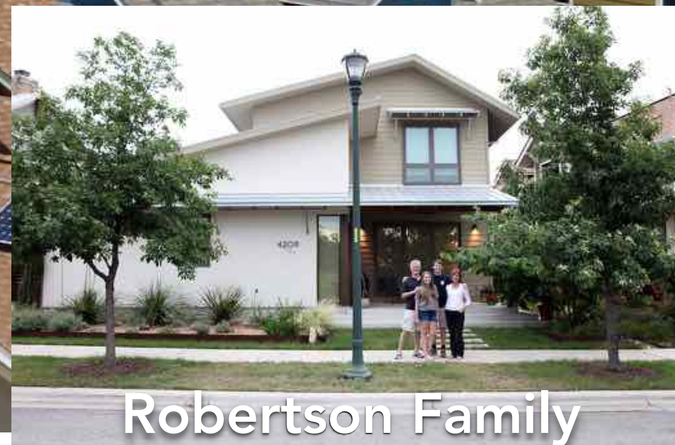

Brummett Family


McCann Family

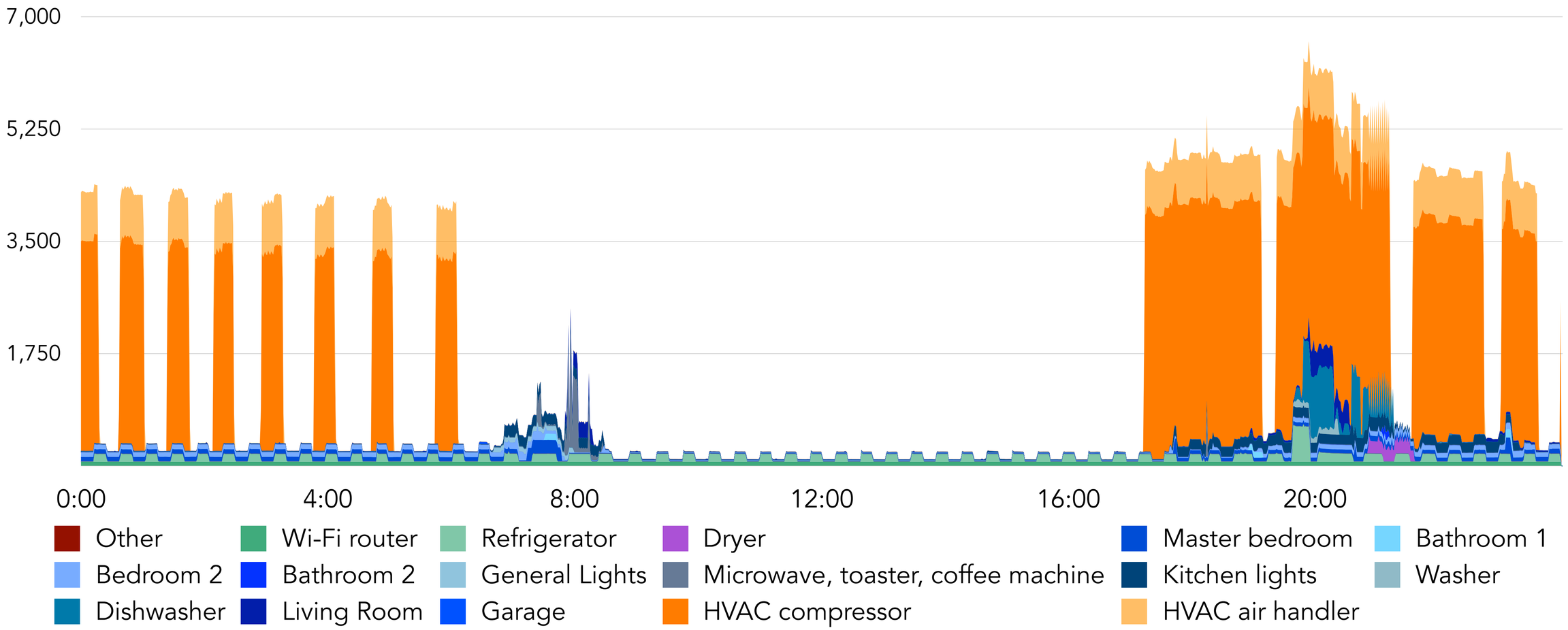

Sandy & Bill Fivecoat


The McAtees

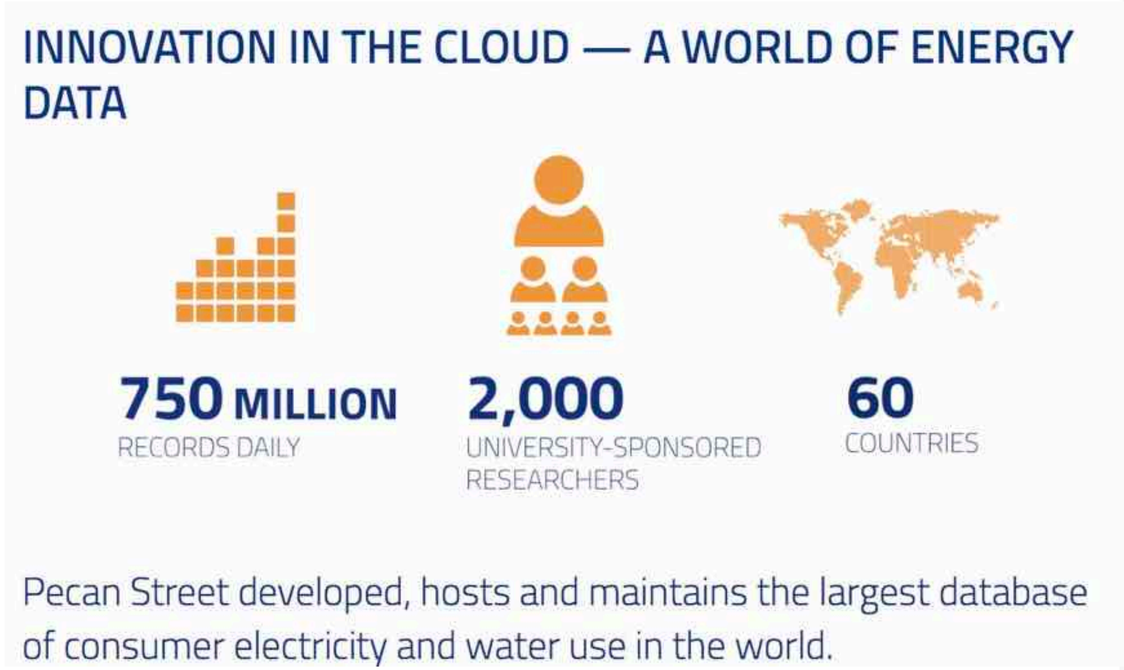

Barrerra Family

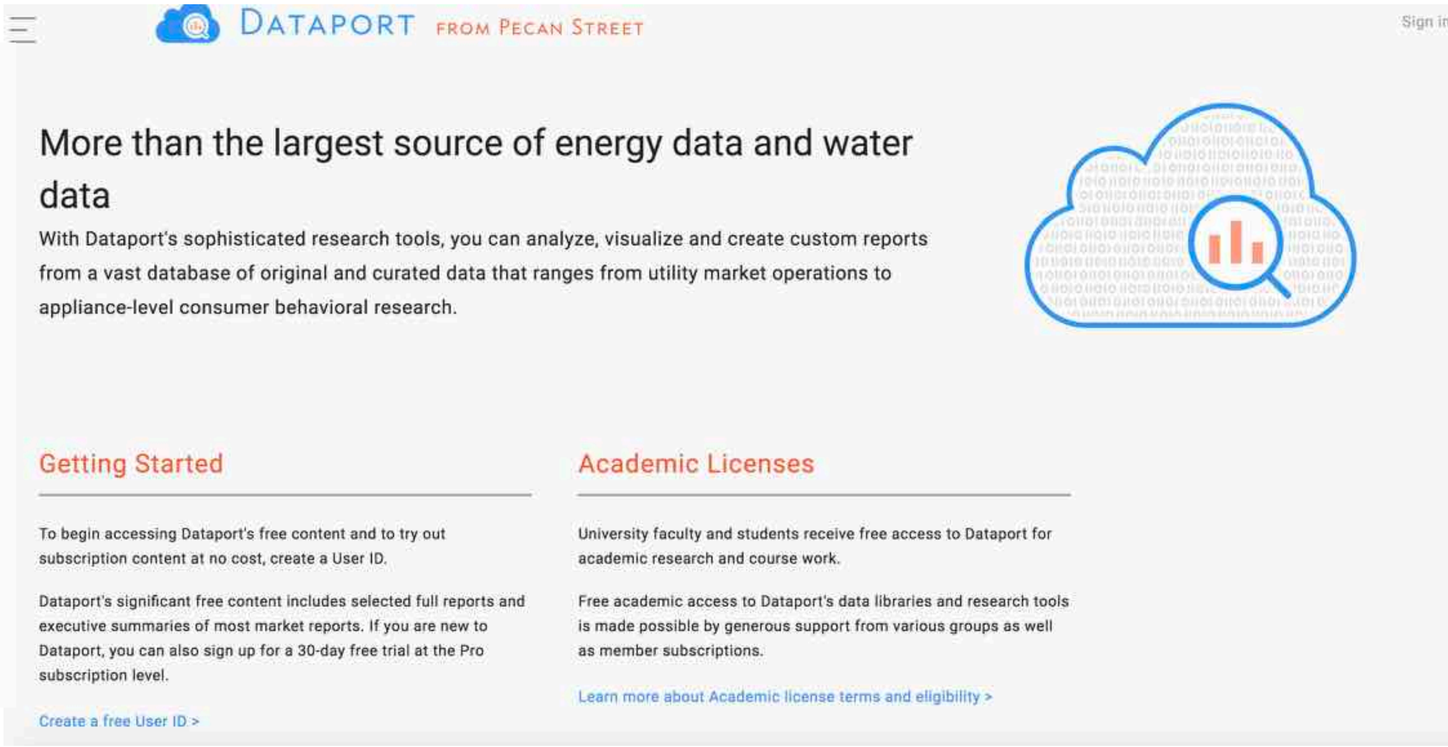

Robertson Family

Household Energy Profile



Dataport



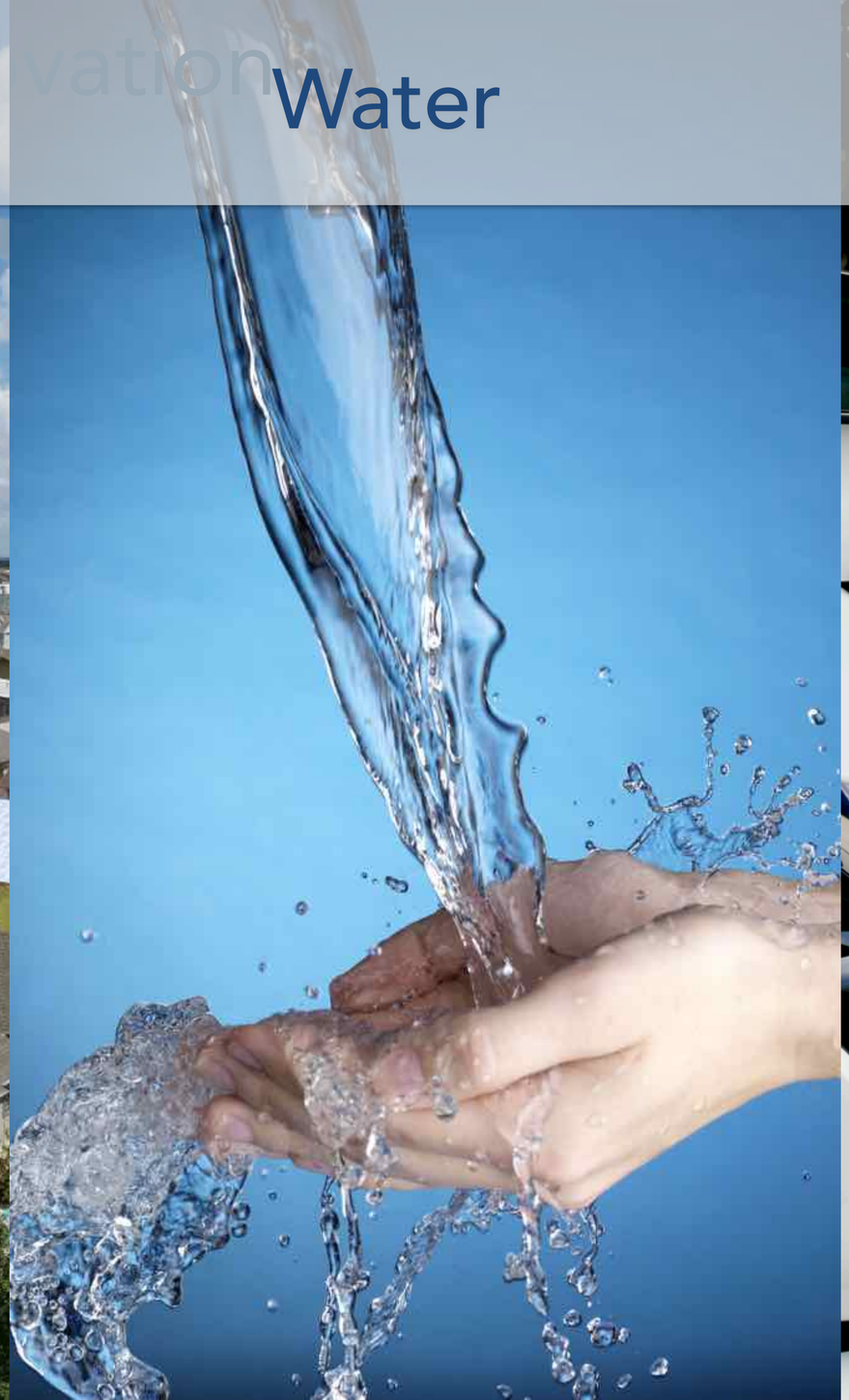


All available for free to university researchers at

www.dataport.com

Energy

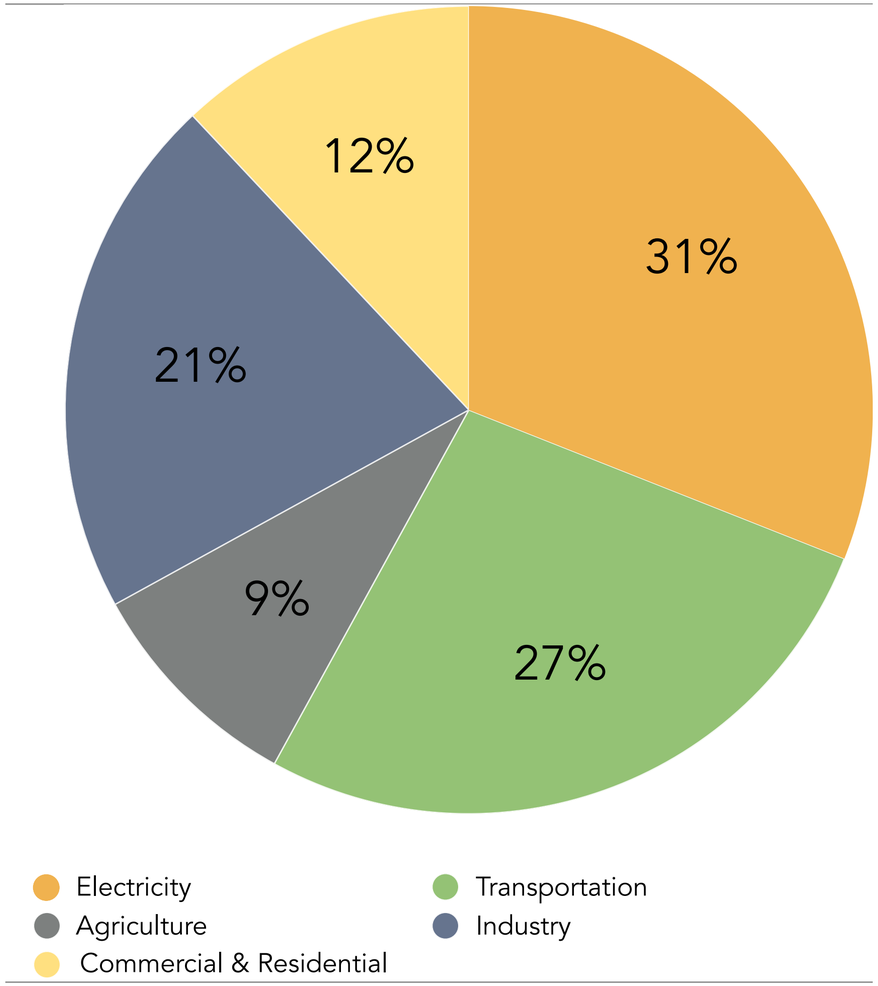
Water



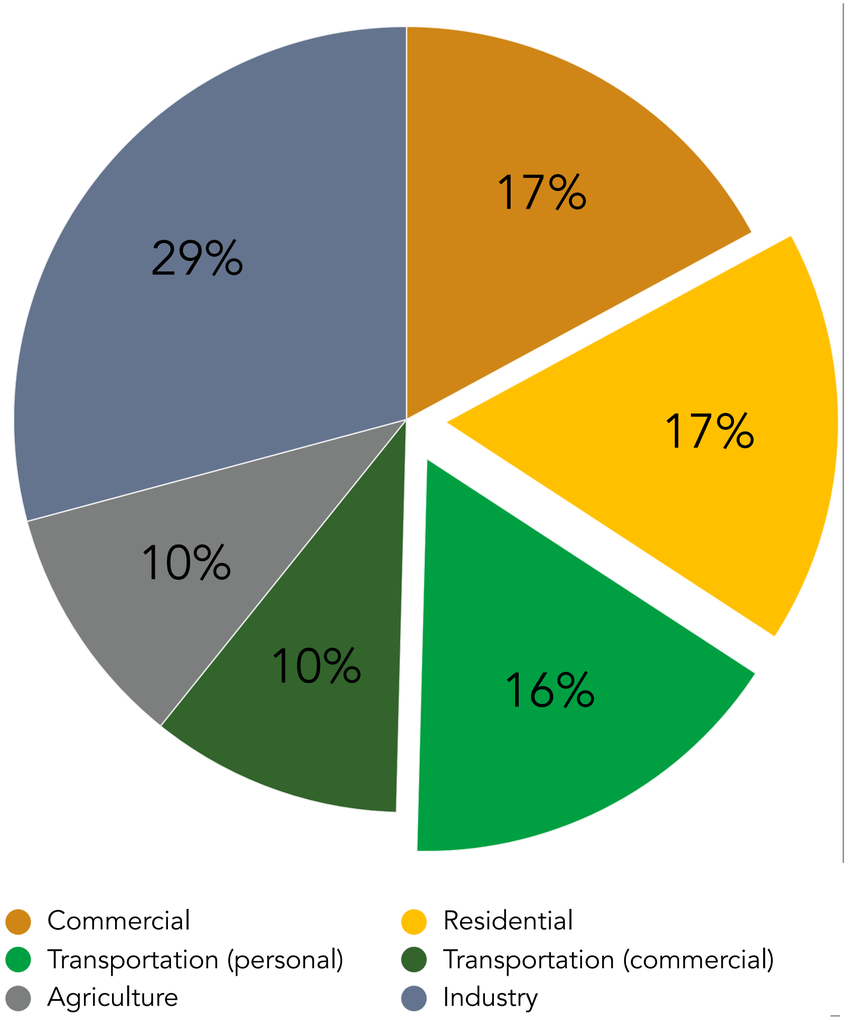
Transportation

Our Energy Focus

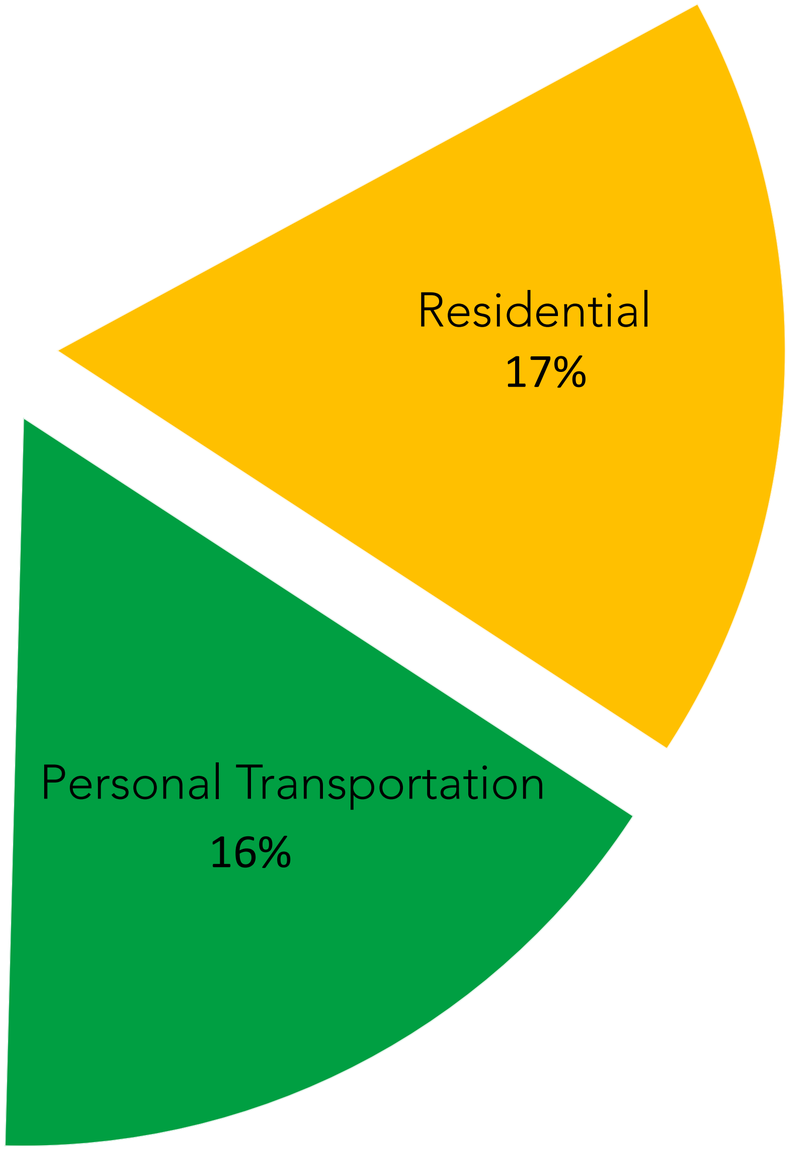
United States Carbon Emissions By Economic Sector



United States Carbon Emission By End-Use Sector



The Impact of Households



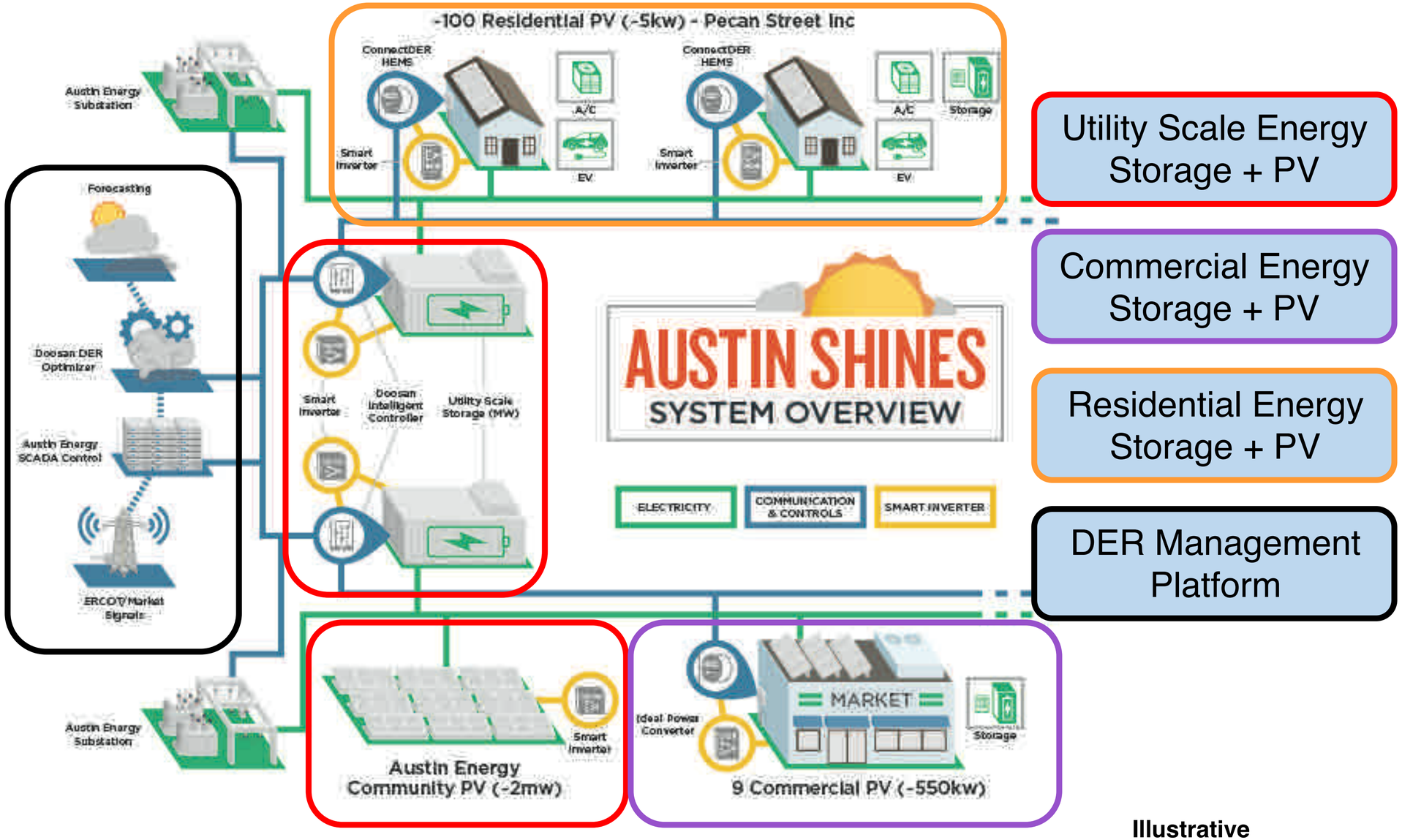
33% of US emissions come from personal transportation and energy used in homes.

Action at scale needs to be coordinated

Catalyzing <u>quick</u> action is a key challenge.

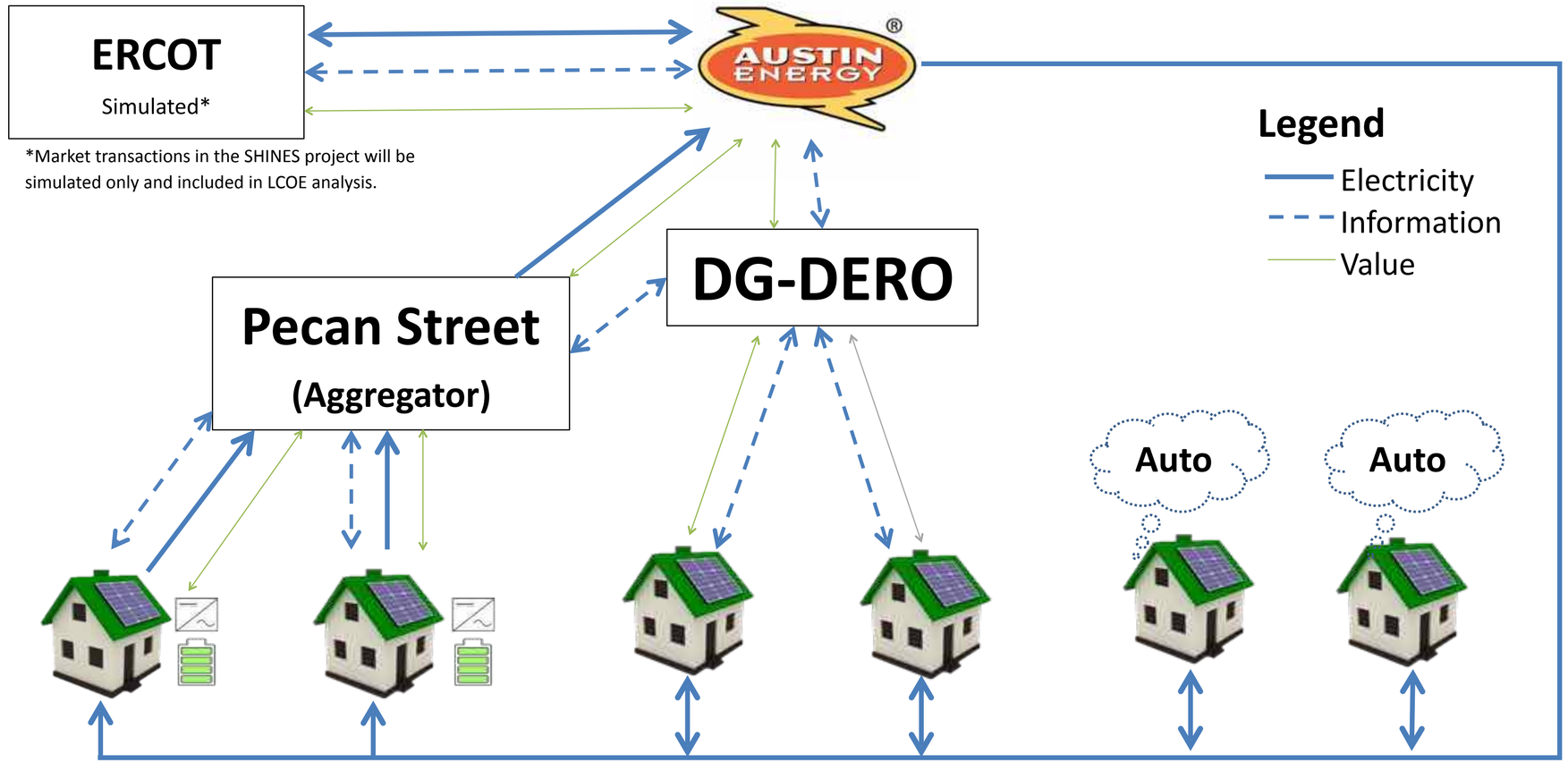
Current R&D Highlights

Project Highlight: Austin SHINES



Illustrative

Residential Components



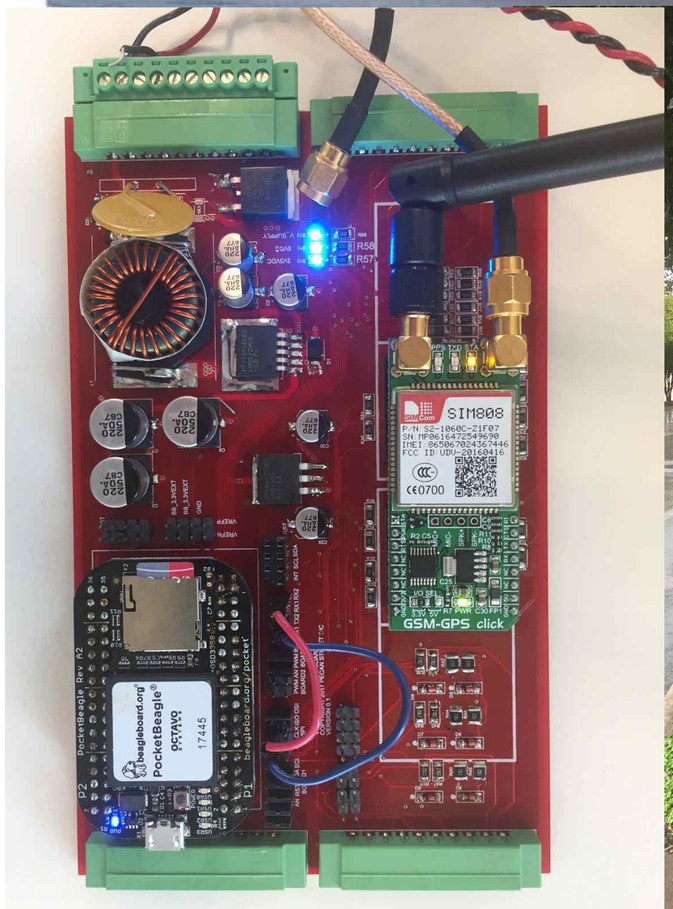
Pecan Street Aggregator	Direct Utility Control	Autonomous
Sites x6	Sites x12	Sites x6
PV and ESS	PV only	PV only

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

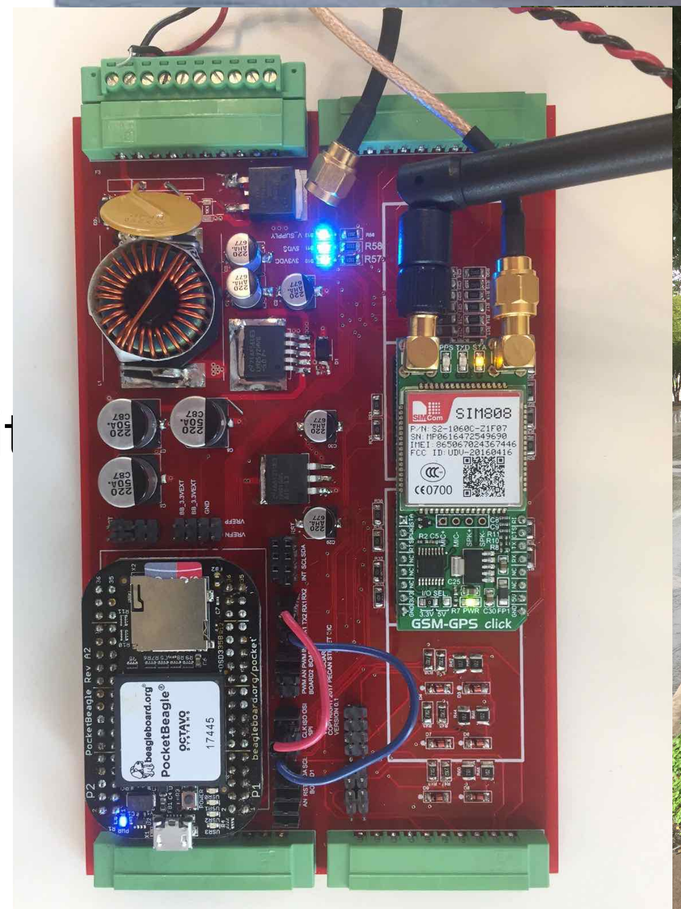
Project Highlight: Electric Last Mile

- 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

ELSEVIER

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.

CITYLAB

DESIGN / TRANSPORTATION / ENVIRONMENT / EQUITY / LIFE

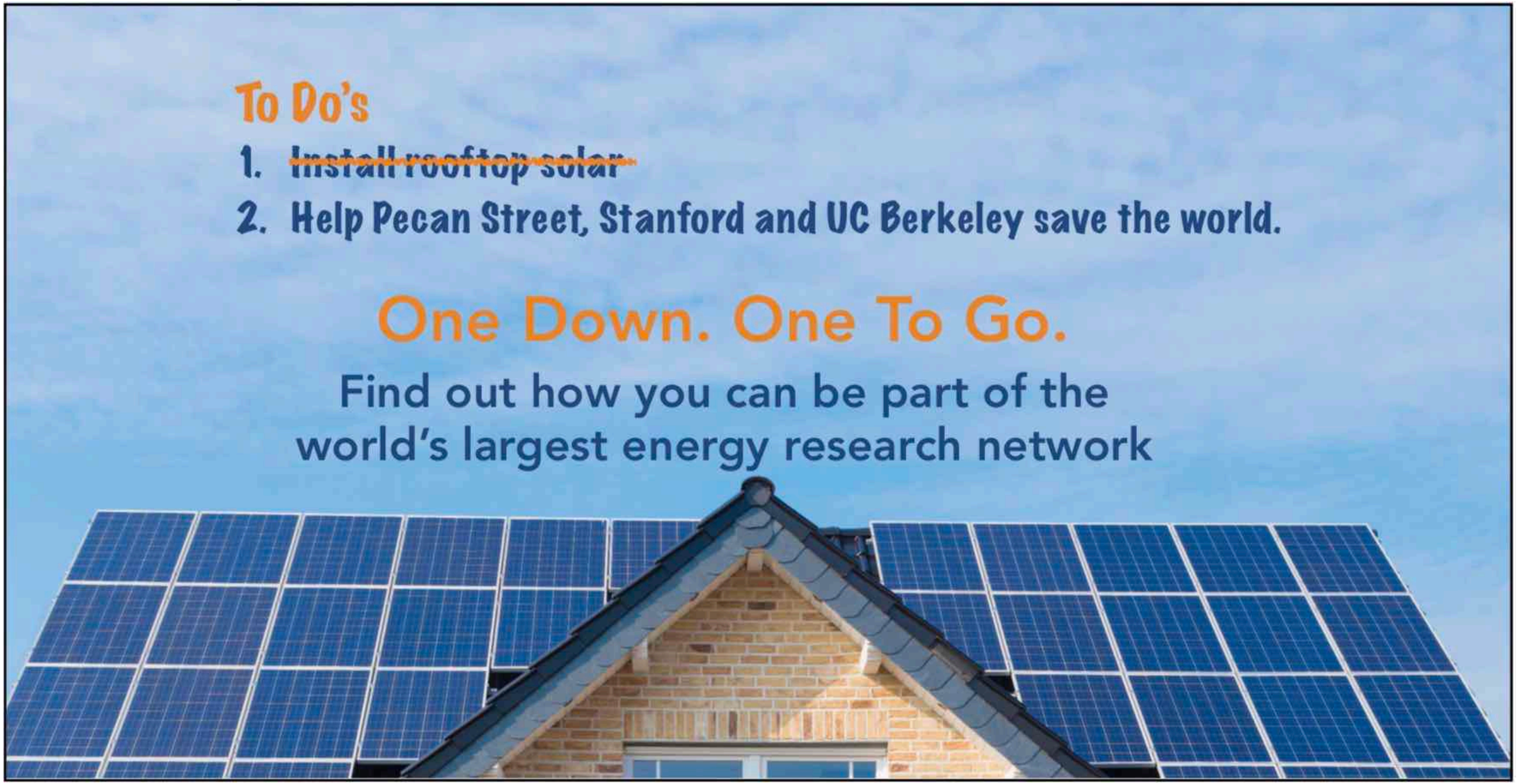
One researcher thinks we can mine data from utilities to predict traffic jams hours in advance. // Joshua Roberts/Reuters

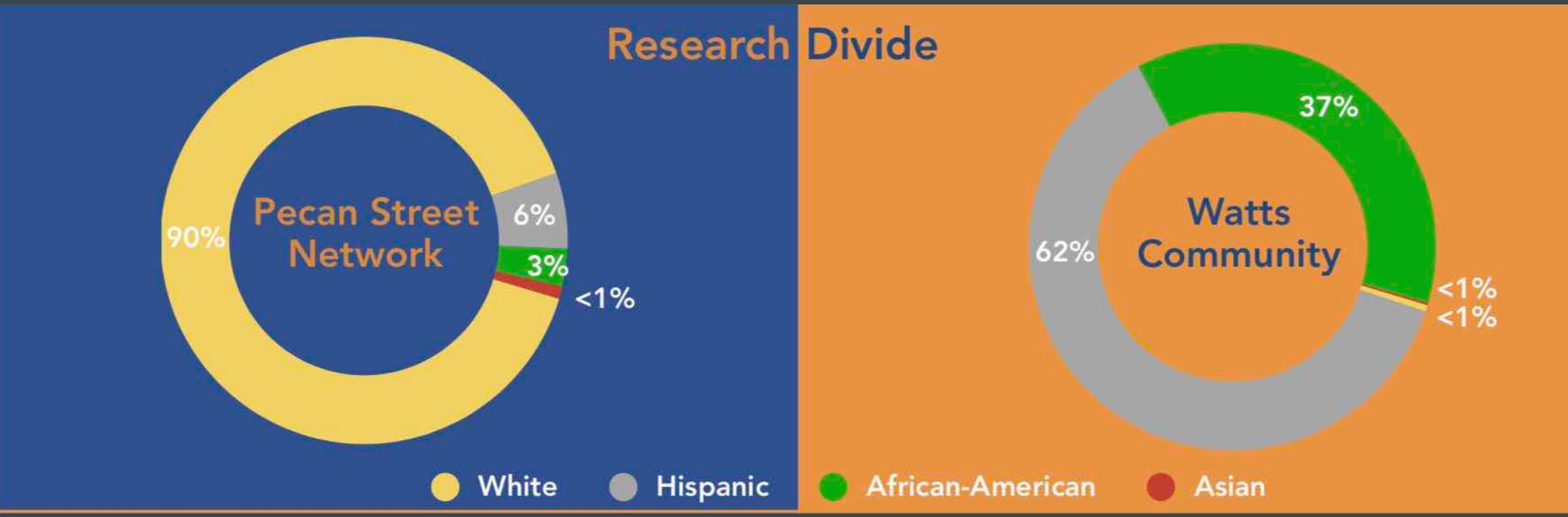
To Better Predict Traffic, Look to the Electric Grid

LINDA POON JUL 6, 2018

Trajectory

Covering all three coasts





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

srusso@pecanstreet.org