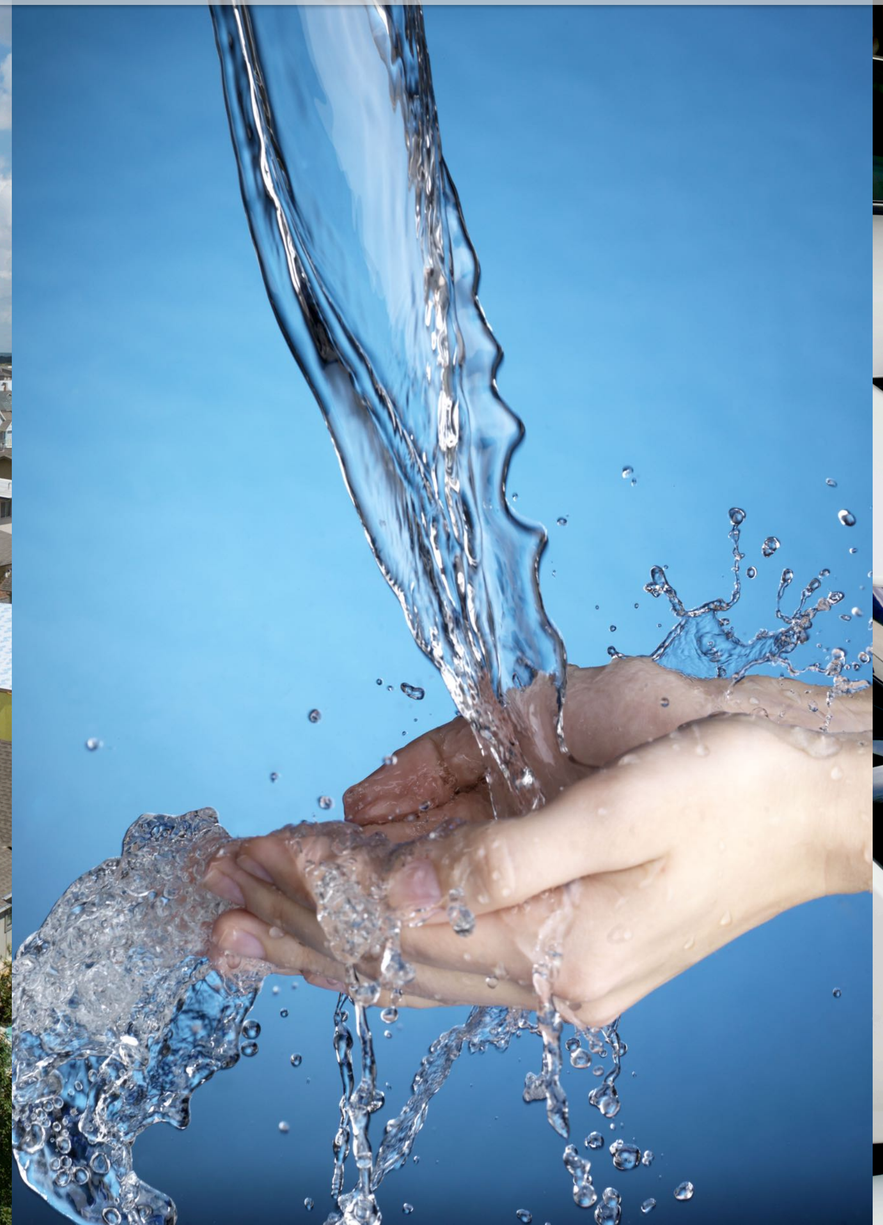
PECAN STREET

Research • Data • Climate • Conservation

Electricity

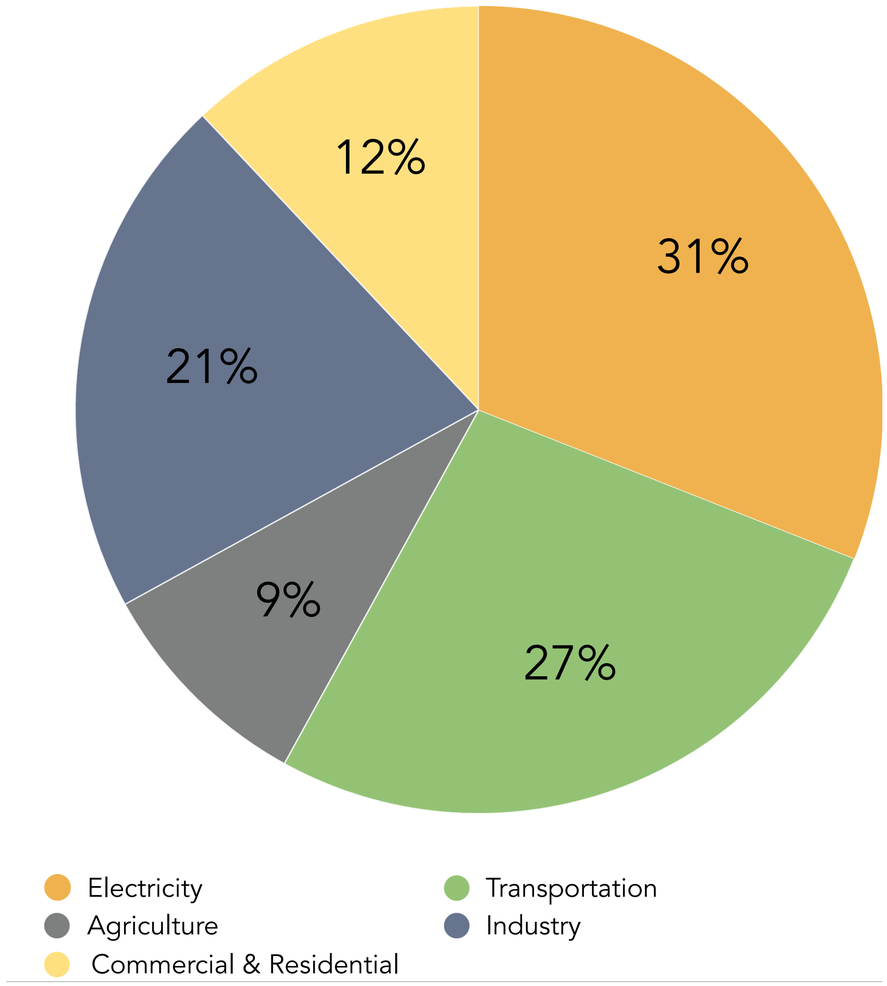
Water



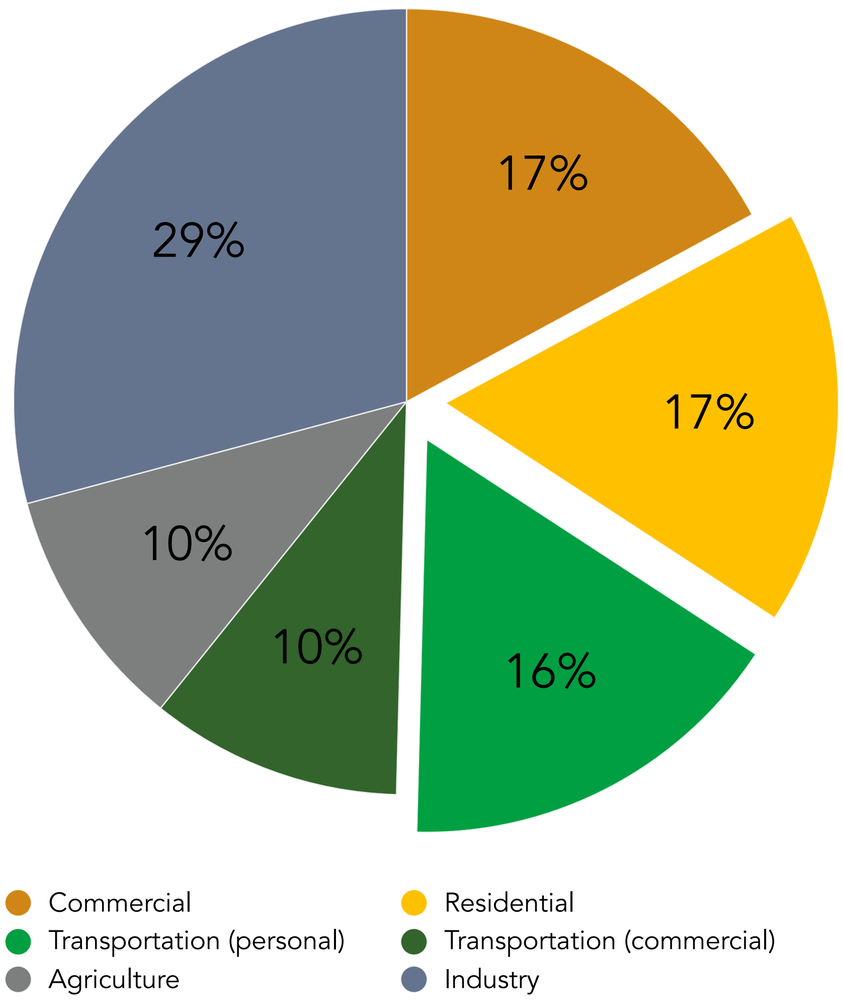
Transportation

Pecan Street's Focus

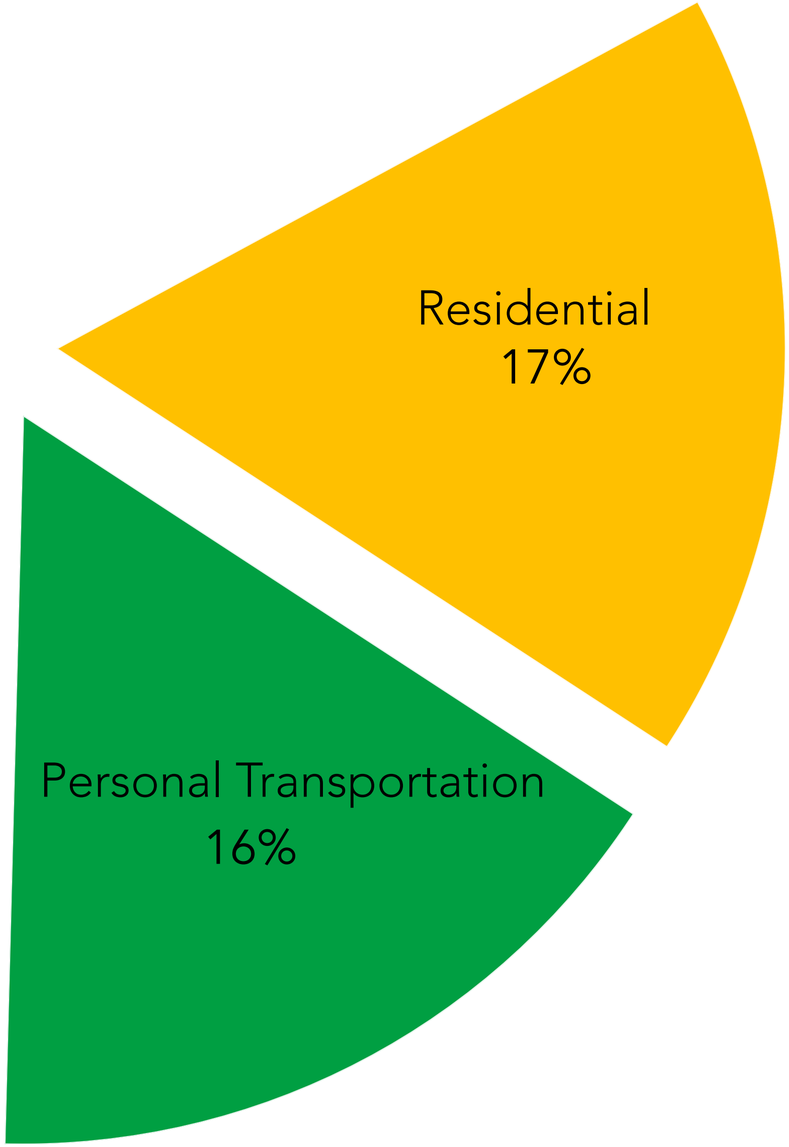
United States Carbon Emissions By Economic Sector



By End-Use Sector



Individuals can impact U.S. emissions



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.

Our Approach

- 1,000 homes
- Real-time, unique data
- Expanding into CA & NY: 100 homes in each state

- The world's largest residential energy research database.
- Innovative data privacy & security processes
- All available for free to academic researchers

- Affordable concept and prototype testing center for smart residential energy solutions
- Allows for rapid product and market verification testings
- Texas' first grid-connected V2G testing center

"…..by far the most aggressive data collection project that I know of."

- Secretary of Energy Ernest Moniz

McCann Family

4209
Robertson Family

4448
McAtee Family

Barrerra Family

2324
Fivecoat Family

Brummett Family

Partners

Landis+Gyr
manage energy better

LG

ercot

TEPRI
Texas Energy Poverty Research Institute

Stanford University

Austin Water
Clearly Reliable

Austin Energy

METRO

EDF
ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

ati
a division of IC²

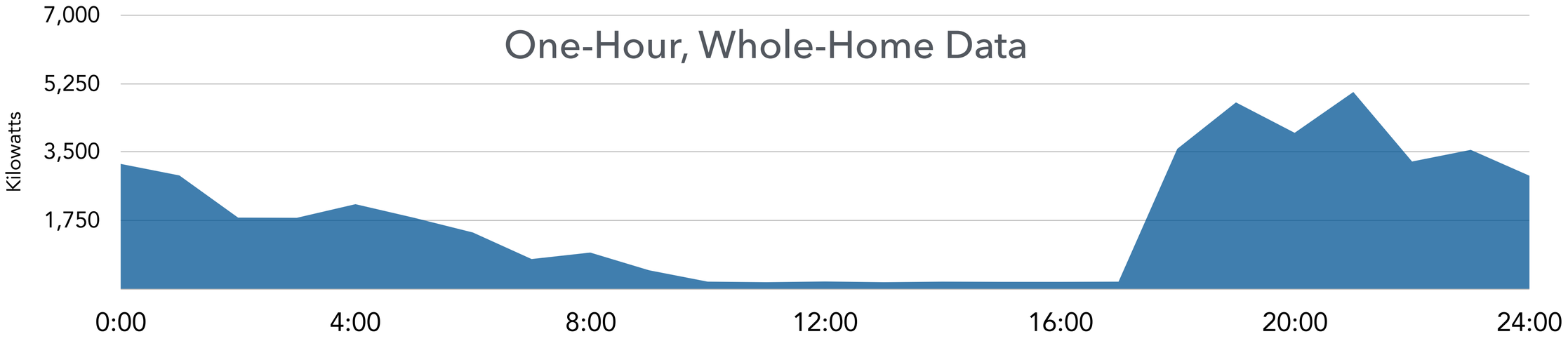
City of Austin
Founded 1839

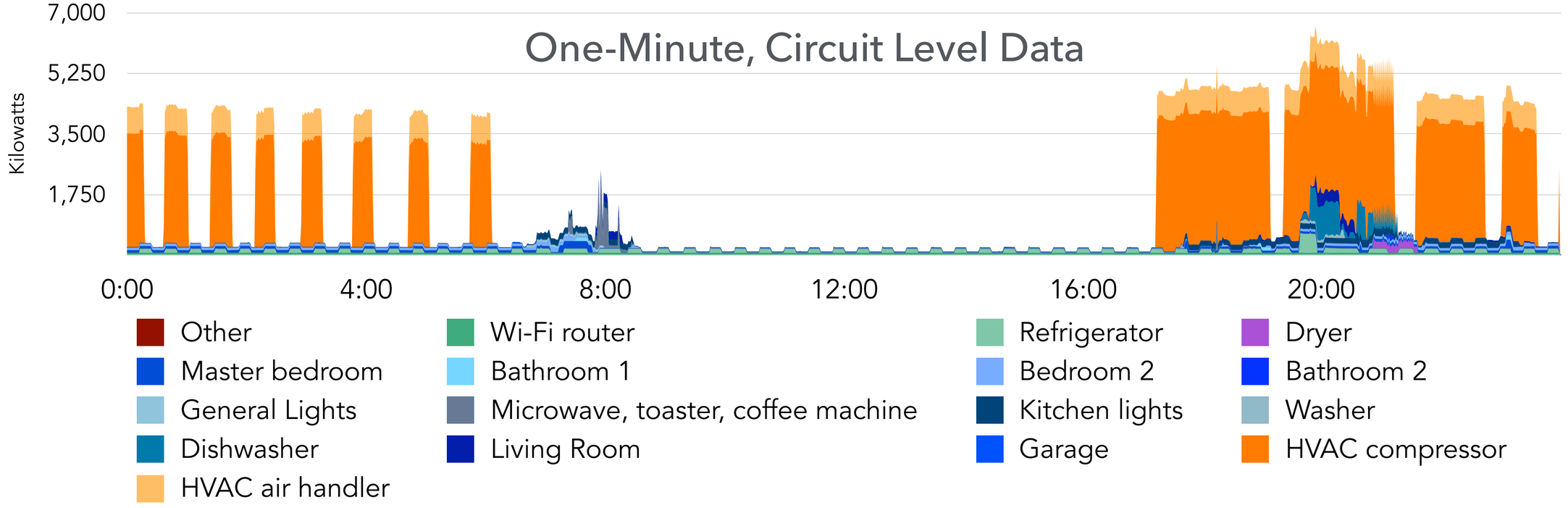
The University of Texas at Austin
Cockrell School of Engineering

Cornell University
Founded A.D. 1865

American Sentinel University • Appalachian State University • Arizona State University • Bahria University • Bellarmine College Preparatory • Caltech • Carnegie Mellon University • Clemson University • Colorado State University • Columbia University • Copenhagen Business School • Cornell University • Dartmouth • Delhi University • Duke University • Georgia State University • Grand Valley State University • Illinois Institute of Technology • Indian Institute of Technology Madras • Institute for Advanced Studies in Basic Sciences • International Institute of Information Technology - Bangalore • KTH - The Royal Institute of Technology • Lancaster University • Masdar Institute of Science and Technology • MIT • Monash University • Monterey Institute of International Studies • Morgan State University • Mumbai University • National Chiayi University • National Taiwan University • National University of Ireland Galway • New Mexico State University • Northeastern University • Oregon State University • PEC University of Technology • Prairie View A&M University • Rock Valley College • San Antonio College • Shivaji University • Southern Methodist University • Stanford University • Syracuse University • Texas A&M University • Texas Tech University • Towson University • Umea University - Sweden • Universidad del Valle - Colombia • Universidad Politécnica de Madrid • Universitatea Politehnica Bucuresti • University College Cork, Ireland • University of Alberta • University of Calgary • University of California San Diego • University of California-Berkeley • University of California- Davis • University of Colorado - Boulder • University of Cyprus • University of Delaware • University of Dundee • University of Florida • University of Georgia • University of Madeira • University of Michigan • University of Minnesota - Minneapolis • University of Southampton • University of Southern Queensland • University of Tasmania • University of Texas at Arlington • University of Texas at Austin • University of Texas at San Antonio • University of Twente and TU Delft • University of Vermont • Virginia Tech • Virginia Tech Advanced Research Institute • Warwick University • Wayne State University • Yale University

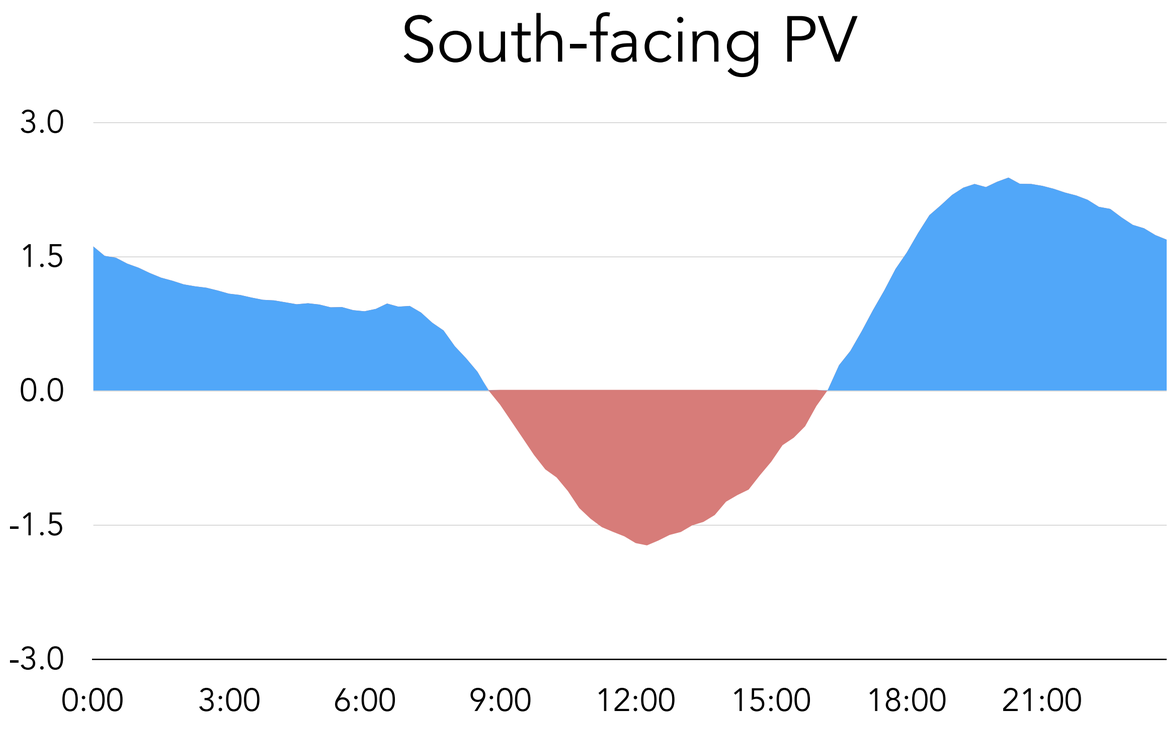
High resolution, disaggregated data

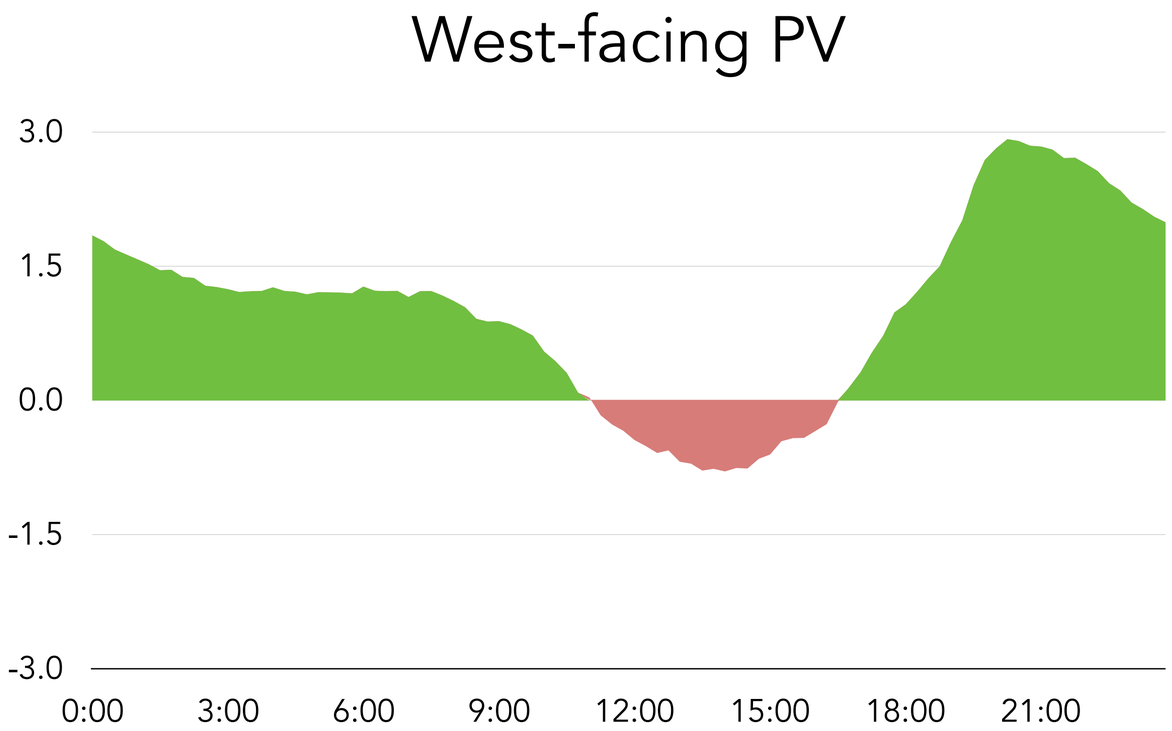




Net grid impact of rooftop solar PV

(June 1-Aug. 31, 2013, Austin, TX)





Source: Pecan Street

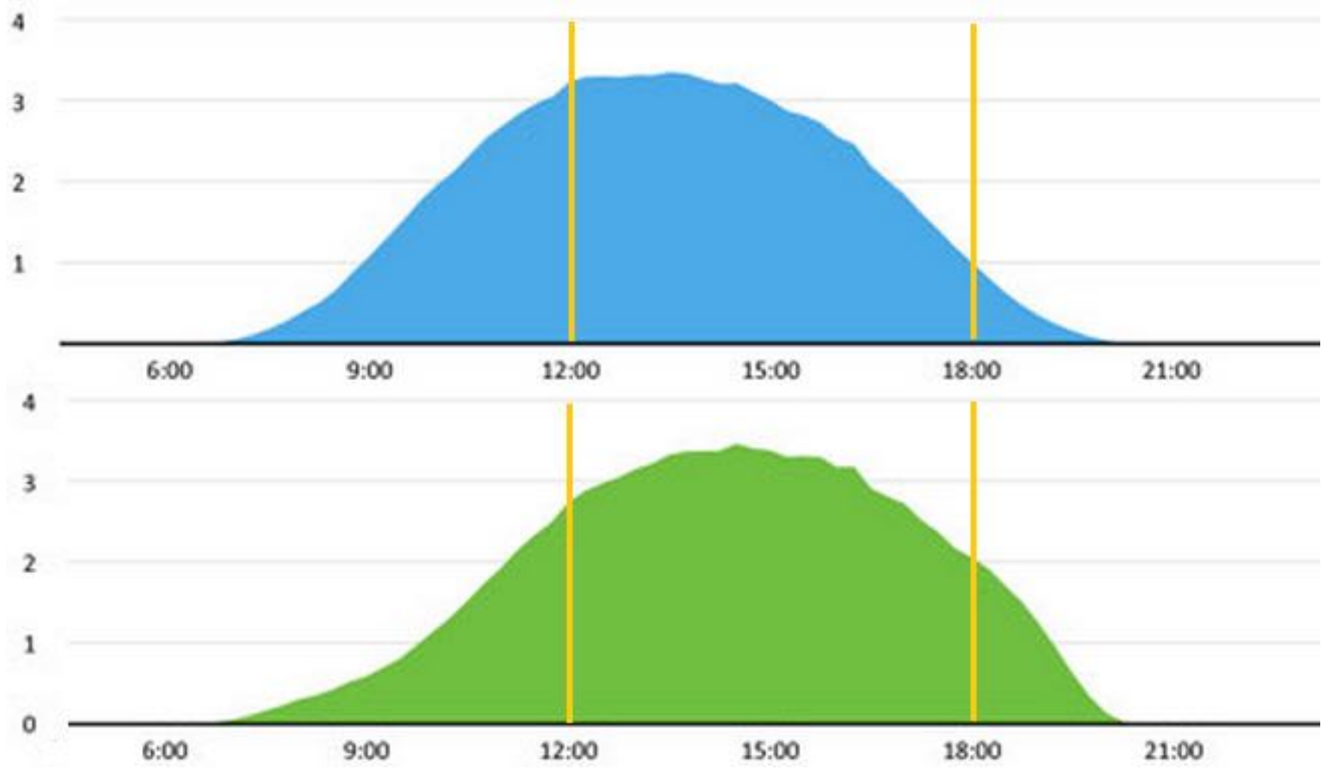
Peak Grid Relief

South-facing	↓ 56%
West + South	↓ 64%
West-facing	↓ 70%

Pecan Street Demonstrates Solar Impact on Peak Demand

South
54%

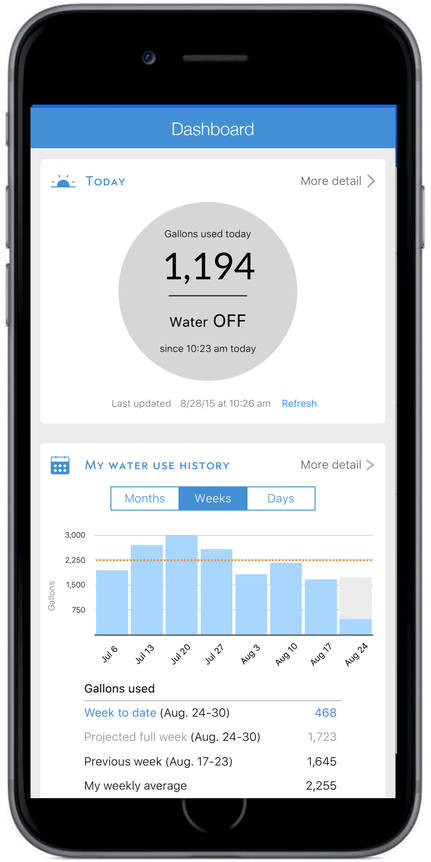
West
65%



One Year Later, CA Energy Commission Approves New Incentive for West Facing Solar

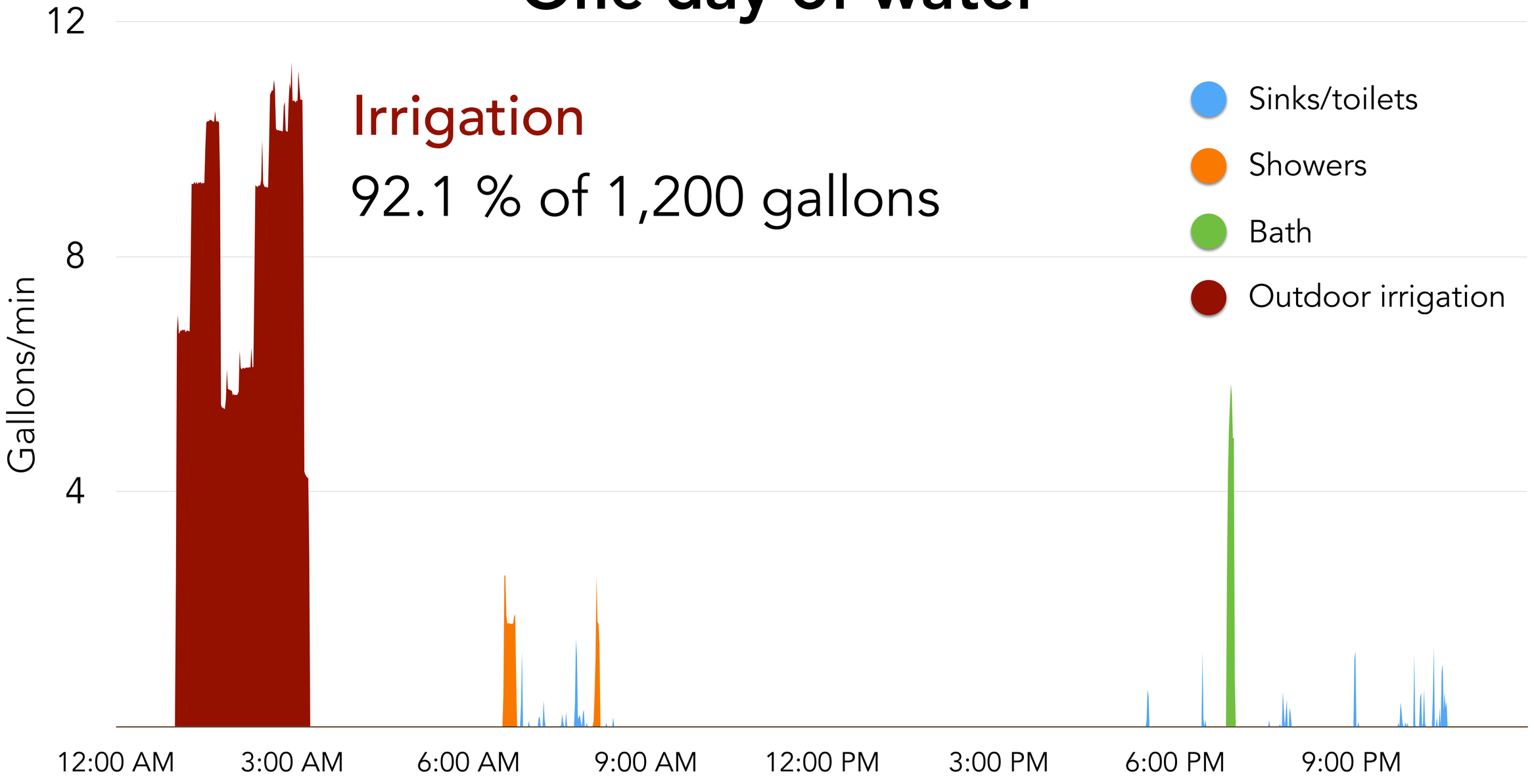
WERNER
WERNER
SUBARU
ELECTRIC START
SUBARU

Pecan Street's Blu Water Technology



BluCube BluBand BluWater

One day of water



Source: Pecan Street

The Next Carbon Frontier: Soil Management Modernization (Digital Dirt)

A 4% increase in the amount of carbon stored in soils worldwide would halt the accumulation of carbon in the atmosphere under current emissions levels.
-Paris 4 per mille

The state of soil nutrient testing remains virtually unchanged over the past 50 years.

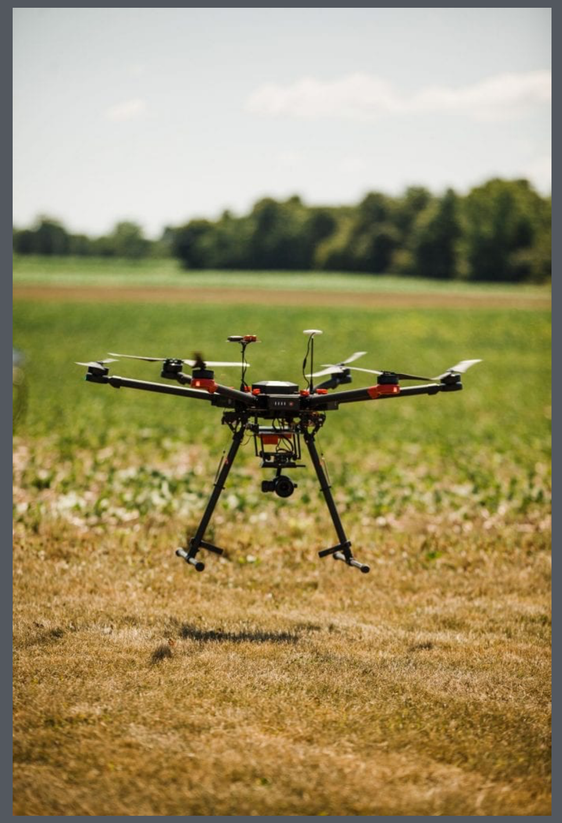
To tap into the potential of croplands for climate change mitigation, soil monitoring needs to be modernized.

Development of soil carbon and nitrogen sensing systems that leverage advances in low-cost sensors and IoT from other fields is needed - and possible.

"The research agenda to develop a soil carbon monitoring system is known. With adequate funding, the timeline can be accelerated from a few decades to a handful of years."

- Cornell Soil Scientist, Dr. Johannes Lehman

The Digital Dirt Initiative: a consortium of university researchers and industry partners modernizing soil management in the agriculture sector



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Questions?