UCLA Institute of the Environment & Sustainability

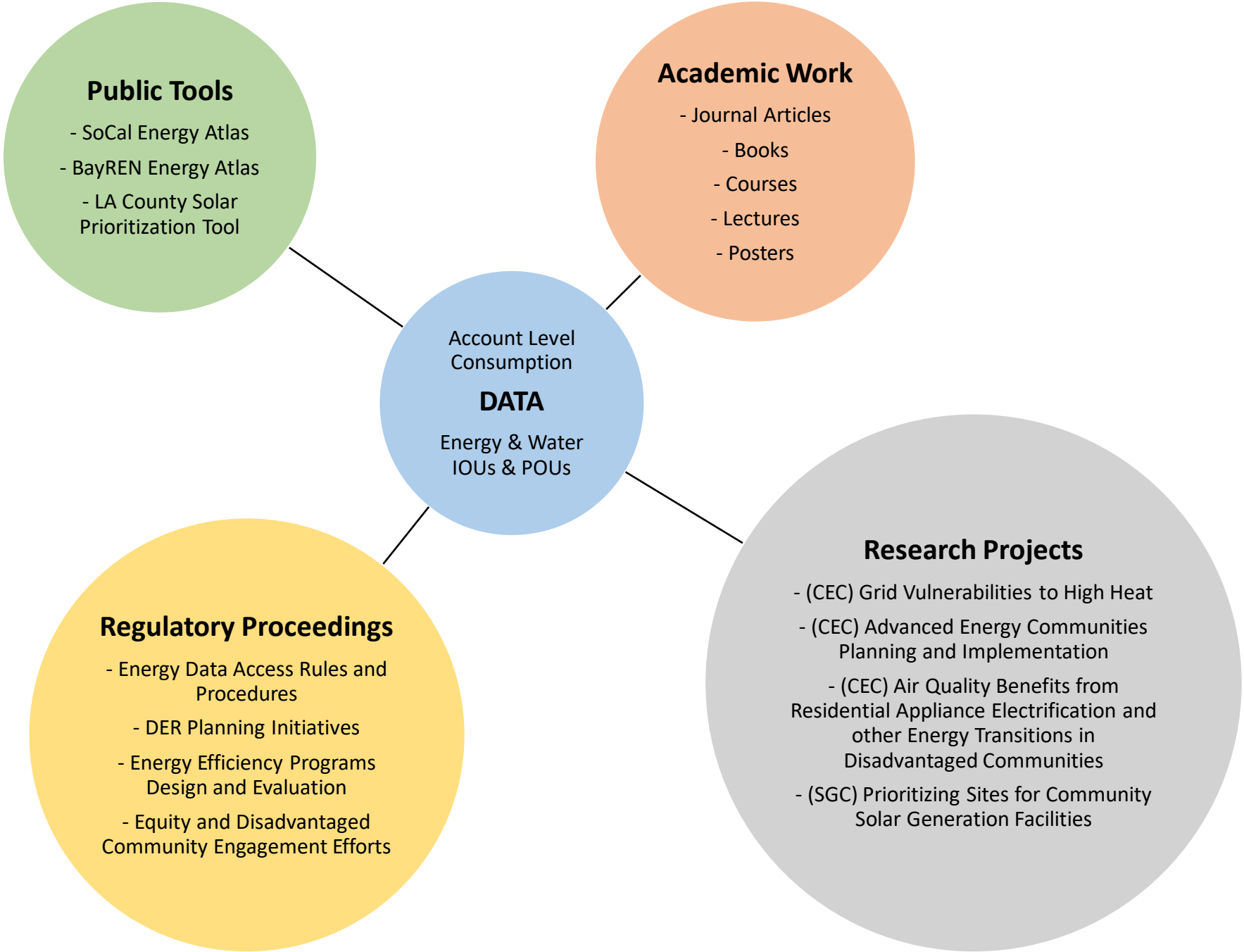
Energy, Equity, and Health in California

BayREN Quarterly Forum
November 19, 2020

Eric Daniel Fournier, PhD
Research Director, Assistant Research Scientist
California Center for Sustainable Communities (CCSC)
Institute of the Environment and Sustainability (IoES)
University of California Los Angeles (UCLA)

CCSC at UCLA

CCSC's Approach to Studying These Issues



UCLA

menu

Public Tools

UCLA Energy Atlas

This project is developed by the **UCLA California Center for Sustainable Communities (CCSC)** at UCLA, in the Institute of the Environment and Sustainability (IOES).

Click on one of the tiles to see the map visualization—or read more about the project here.

Residential Income

Building Vintage

Building Type

Building Size

BAYREN

menu

Public Tools

Bay Area Energy Atlas

This project is funded by the **Bay Area Regional Energy Network (BayREN)**, a collaboration of the nine counties that make up the San Francisco Bay Area, in partnership with the California Center for Sustainable Communities at UCLA.

Click on one of the tiles to see the map visualization—or read more about the project here.

Residential Income

Building Vintage

Building Type

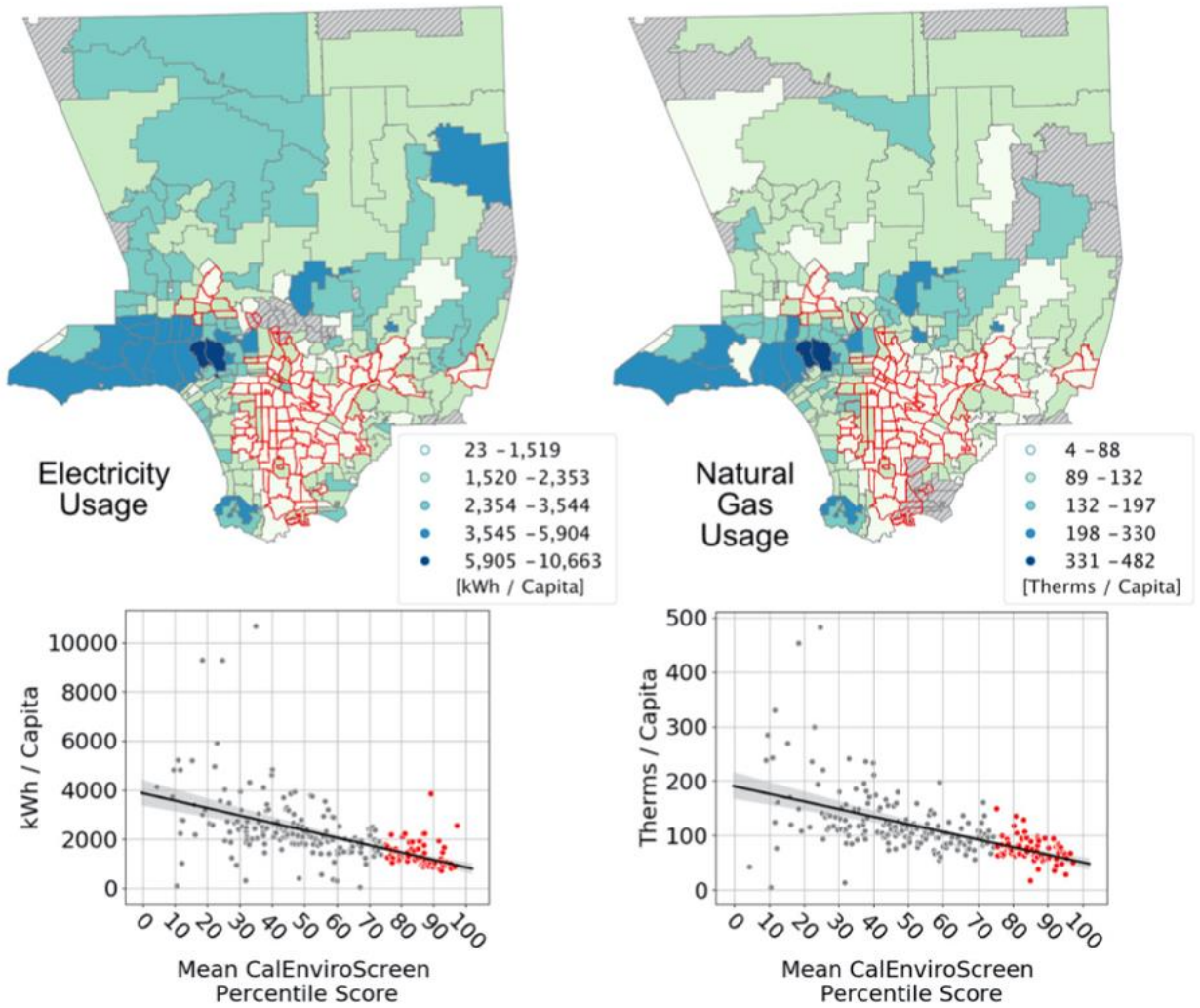
Building Size

Elementa: Science of the Anthropocene

Academic Work

On energy sufficiency and the need for new policies to combat growing inequities in the residential energy sector

When looking at ongoing energy transitions within the residential sector we noticed clear correlations between disadvantaged community status and per-capita electricity and gas consumption.



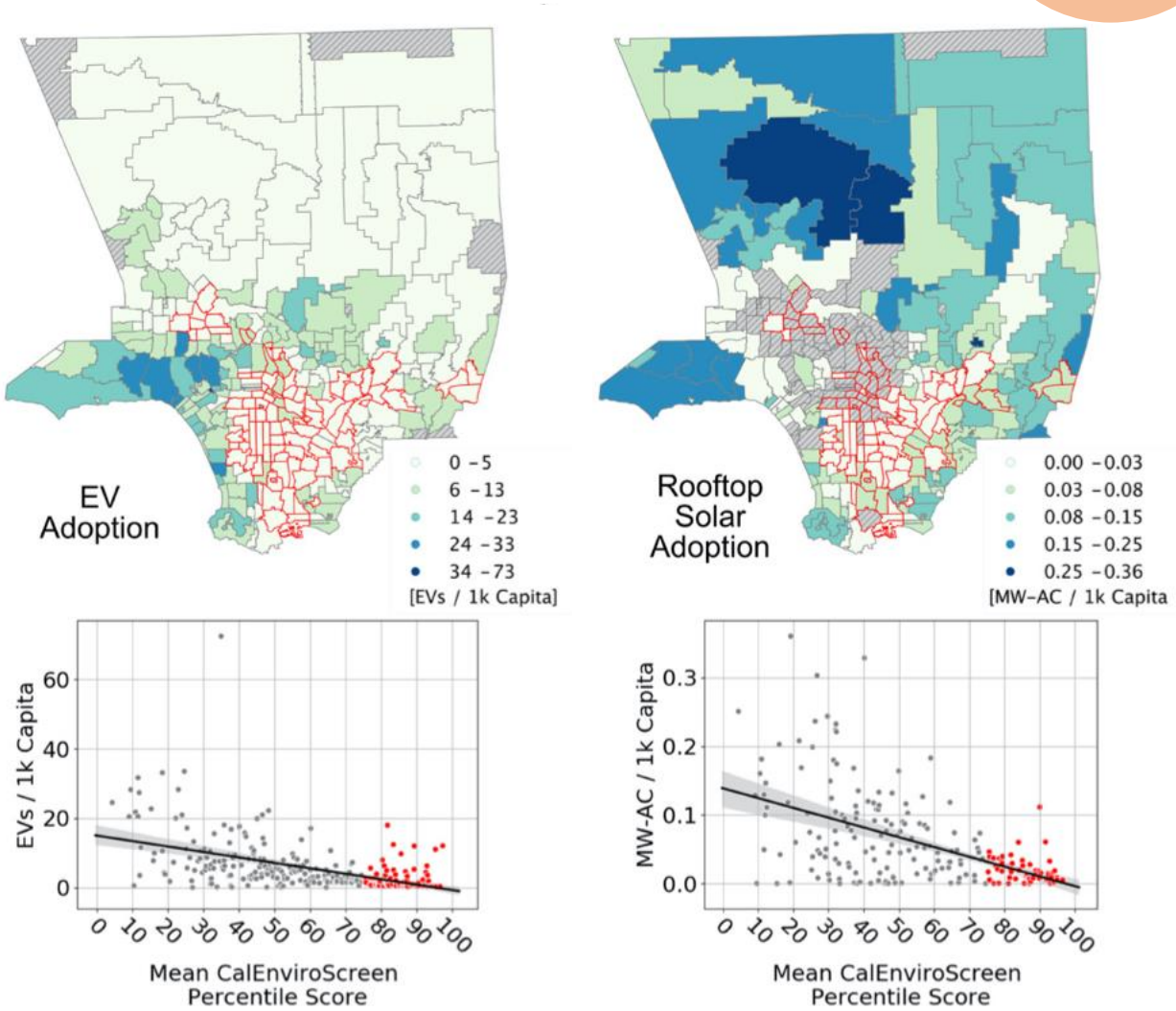
Elementa: Science of the Anthropocene

Academic Work

On energy sufficiency and the need for new policies to combat growing inequities in the residential energy sector

When looking at ongoing energy transitions within the residential sector we noticed clear correlations between disadvantaged community status and per-capita electricity and gas consumption.

This was also true for rates of adoption of distributed rooftop solar PV systems and electric vehicles.



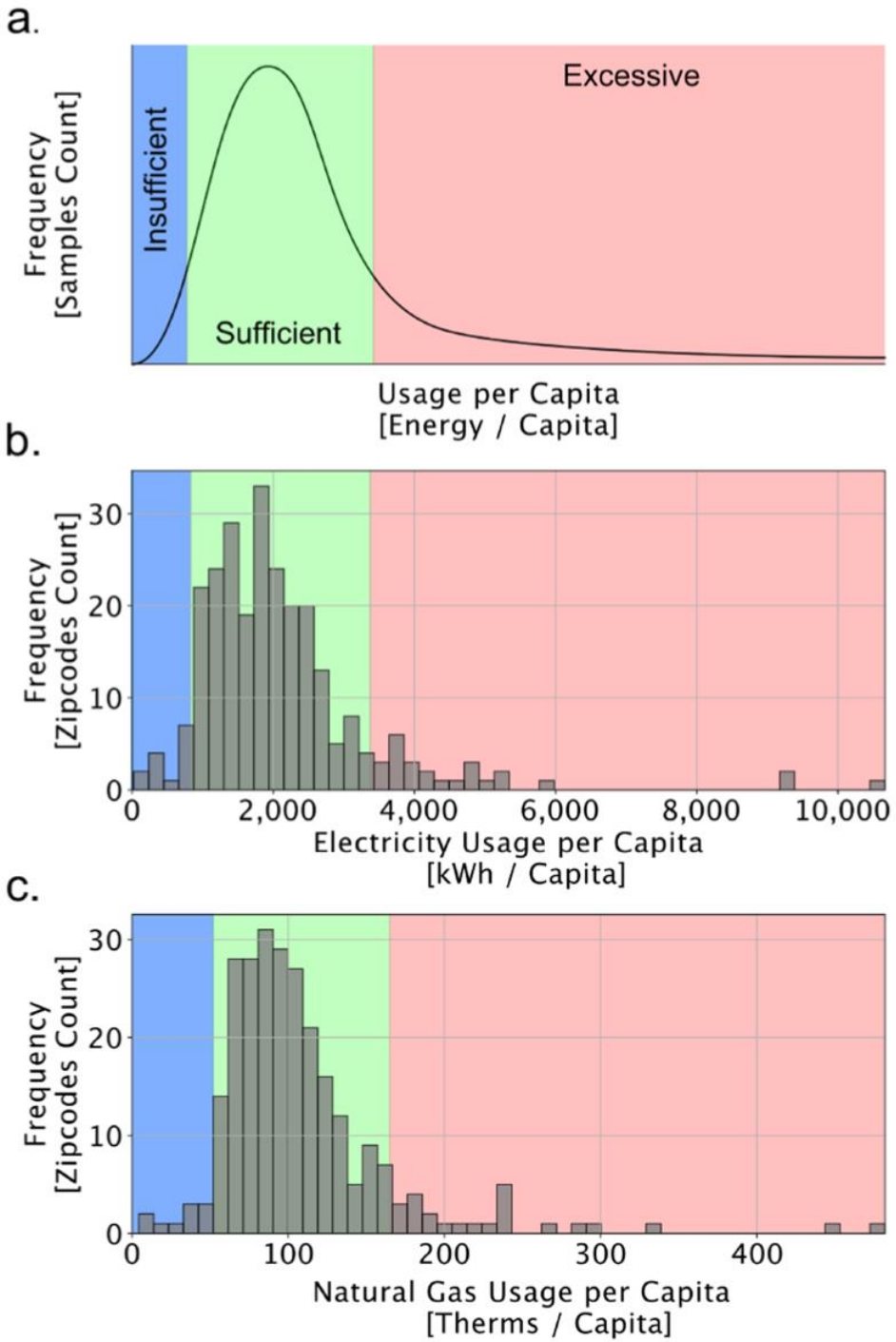
Elementa: Science of the Anthropocene

On energy sufficiency and the need for new policies to combat growing inequities in the residential energy sector

When looking at ongoing energy transitions within the residential sector we noticed clear correlations between disadvantaged community status and per-capita electricity and gas consumption.

This was also true for rates of adoption of distributed rooftop solar PV systems and electric vehicles.

One idea which we believe is crucially important when considering issues of equity in these transitions is that of “Sufficiency.” How much energy and material resource consumption is enough to live a decent and productive life. Are there levels can such consumption which should considered as excessive? How should these be addressed through policy?



Academic Work

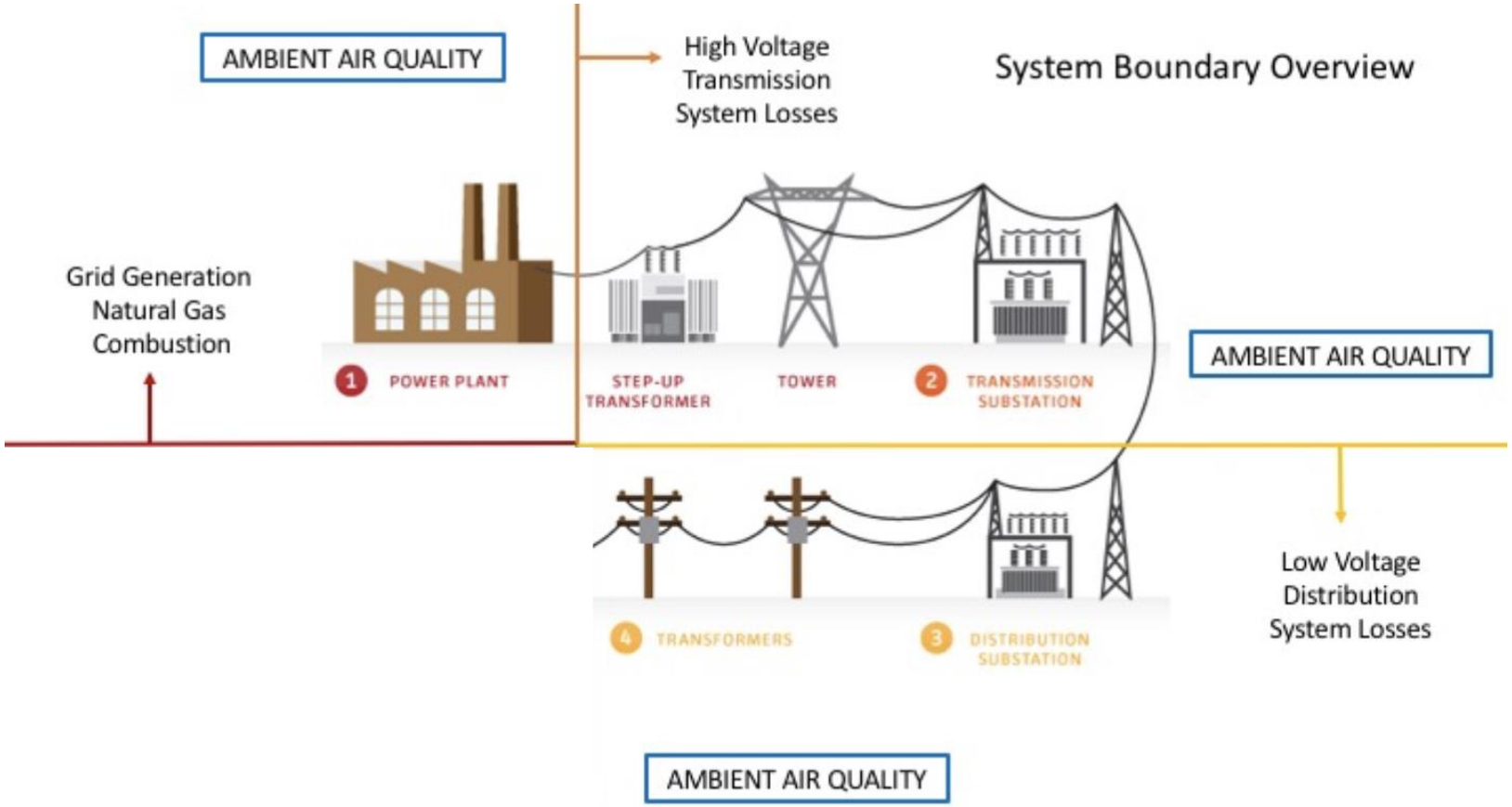
California Energy Commission Project Grant Number EPC-17-050

Research Projects

Using Big Data to Holistically Assess Benefits from Building Energy System Transition Pathways in Disadvantaged Communities

We know that natural gas combustion generates both criteria air pollutants (SO_x, NO_x, CO, PM-x) as well as GHGs.

These emissions are released into the ambient air by grid generator stations during the production and distribution of electricity.



California Energy Commission Project Grant Number EPC-17-050

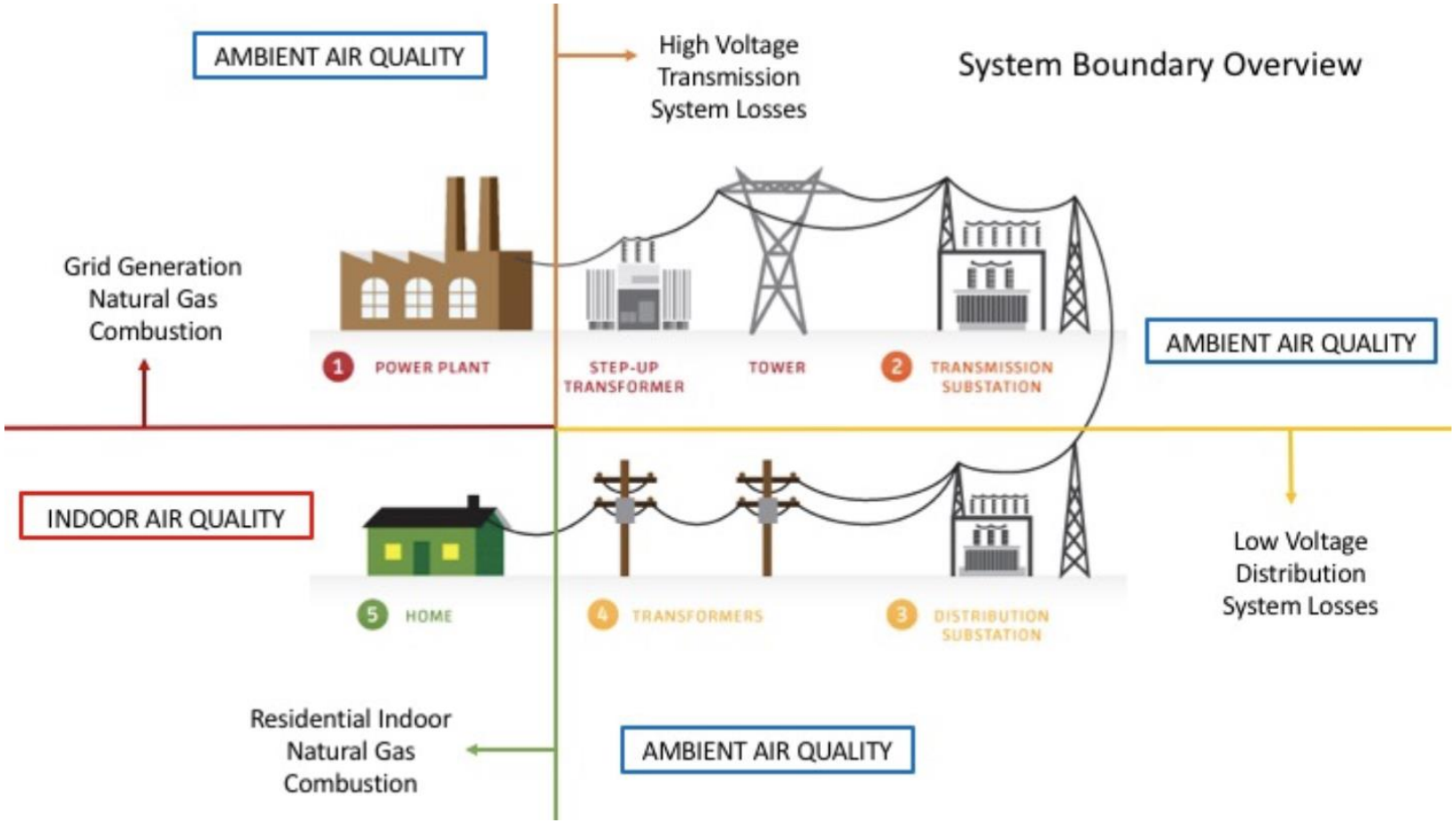
Research Projects

Using Big Data to Holistically Assess Benefits from Building Energy System Transition Pathways in Disadvantaged Communities

We know that natural gas combustion generates both criteria air pollutants (SO_x, NO_x, CO, PM-x) as well as GHGs.

These emissions are released into the ambient air by grid generator stations during the production and distribution of electricity.

However, gas combustion emissions can also be released into indoor environments by appliances which are not completely ventilated to the outdoors.



California Energy Commission Project Grant Number EPC-17-050

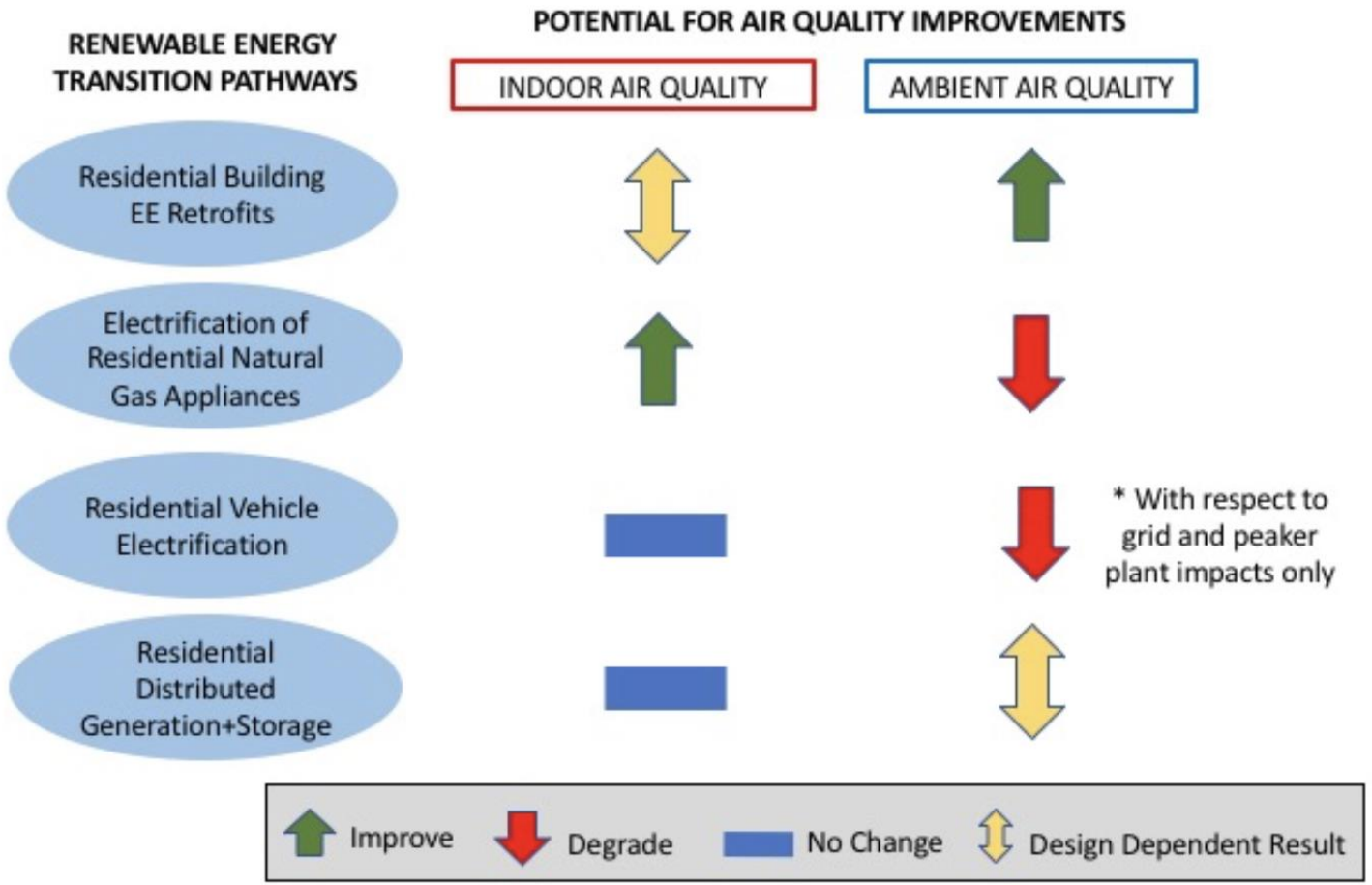
Research Projects

Using Big Data to Holistically Assess Benefits from Building Energy System Transition Pathways in Disadvantaged Communities

The quantity of air pollutant emissions which are released from the grid's generation fleet depends strongly upon the timing of electricity consumption.

This is because of the variable contribution of zero emissions renewable generator outputs to the grid's supply portfolio.

These complexities create uncertainty about the net air quality impacts associated with electrification and other types of energy transitions.



CPUC Decision 14-05-016

Energy Data Access Committee (EDAC)

Regulatory Proceedings

We have previously participated in CPUC rulemaking proceedings around the development of energy data access and privacy preserving consumption data aggregation procedures.

The decisions which have been taken as a result of these of proceedings have profound implications for our ability to first, become aware that certain energy inequities exist and then later, to attempt to remedy them through the development of new policies and programs.

"DECISION ADOPTING RULES TO PROVIDE ACCESS TO ENERGY USAGE AND USAGE-RELATED DATA WHILE PROTECTING PRIVACY OF PERSONAL DATA –

Order Instituting Rulemaking to Consider Smart Grid Technologies Pursuant to Federal Legislation and on the Commission's own Motion to Actively Guide Policy in California's Development of a Smart Grid System."

California Energy Commission Docket Number 19-MISC-01

Regulatory Proceedings

Distributed Energy Resource (DER) Roadmap Public Comments

More recently we have submitted comments on the CEC's proposed Distributed Energy Resource (DER) Roadmap.

This roadmap will help to determine funding priorities and opportunities for DER related research within the state.

We view DER as a critical leverage point for improving energy equity and public health outcomes throughout the state's disadvantaged communities.

Sustainability

The operation of the power system in a manner that contributes to the reduction of pollutants, considering environmental, social and economic factors.

Affordability

The ability of the system to provide electric service at a cost that does not exceed customers' willingness and ability to pay for those services.

Reliability

Uninterrupted delivery of electricity with acceptable power quality in the face of routine uncertainty in operation conditions.

Resiliency

The ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions, including deliberate attacks, accidents, or natural disasters.

Flexibility

Ability of the grid to respond to future uncertainties that stress the system in the short term and may require adaptation in the long run.

Security

The ability to resist external disruptions to the energy supply infrastructure caused by intentional physical or cyber attacks or by limitation of access to critical materials.

UCLA Institute of the Environment & Sustainability

Thank You!

Eric Daniel Fournier, PhD

Research Director, Assistant Research Scientist

California Center for Sustainable Communities (CCSC)

Institute of the Environment and Sustainability (IoES)

University of California Los Angeles (UCLA)

CCSC at UCLA