ET Summit 2024

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Strategic Decarbonization with the Building Inventory Geospatial (BIG) Database:

A Geospatial Approach

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Agenda

- Project Overview
- BIG Database Highlights

Types of Questions this Project was Seeking to Answer

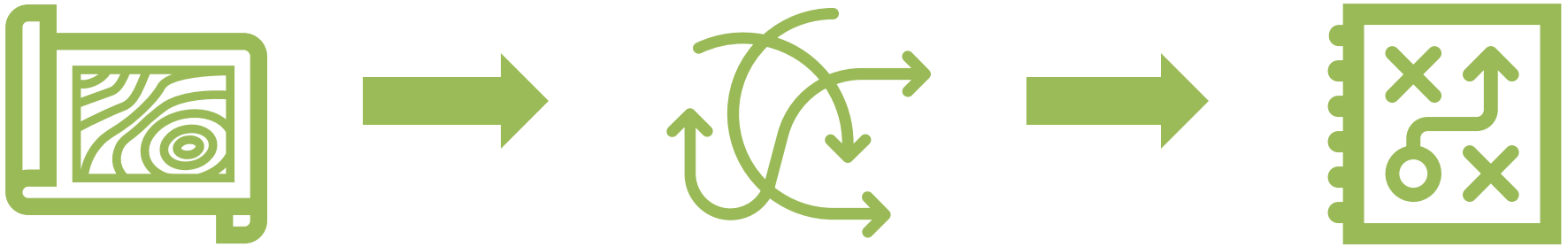
Where will electrification occur and when? And who will benefit?

- What are the most prominent electrification barriers in a geographical area and who occupies the buildings?
- Which measures are most likely to be adopted based on customer propensity and barriers?
- How does anticipated measure adoption correlate with where the most vulnerable customers reside? Will these measures lead to bill savings?
- Which circuits do not have sufficient capacity and where do load management measures need to be installed to turn a building from a grid risk to a grid asset?

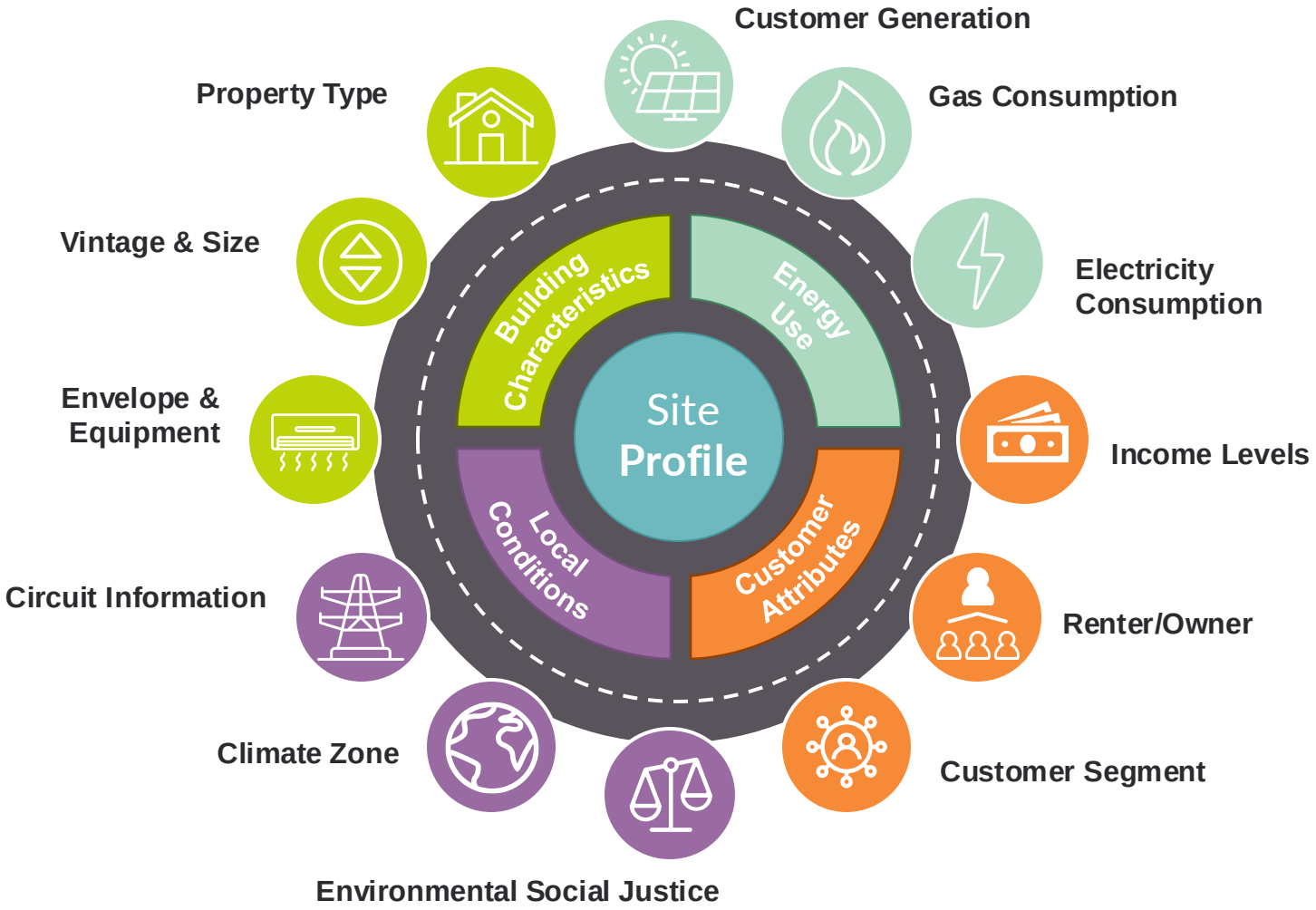
SCE Overarching Project Objectives

SCE C&S Planning and Coordination set out to develop a robust database of building characteristics, customer attributes, and local conditions to:

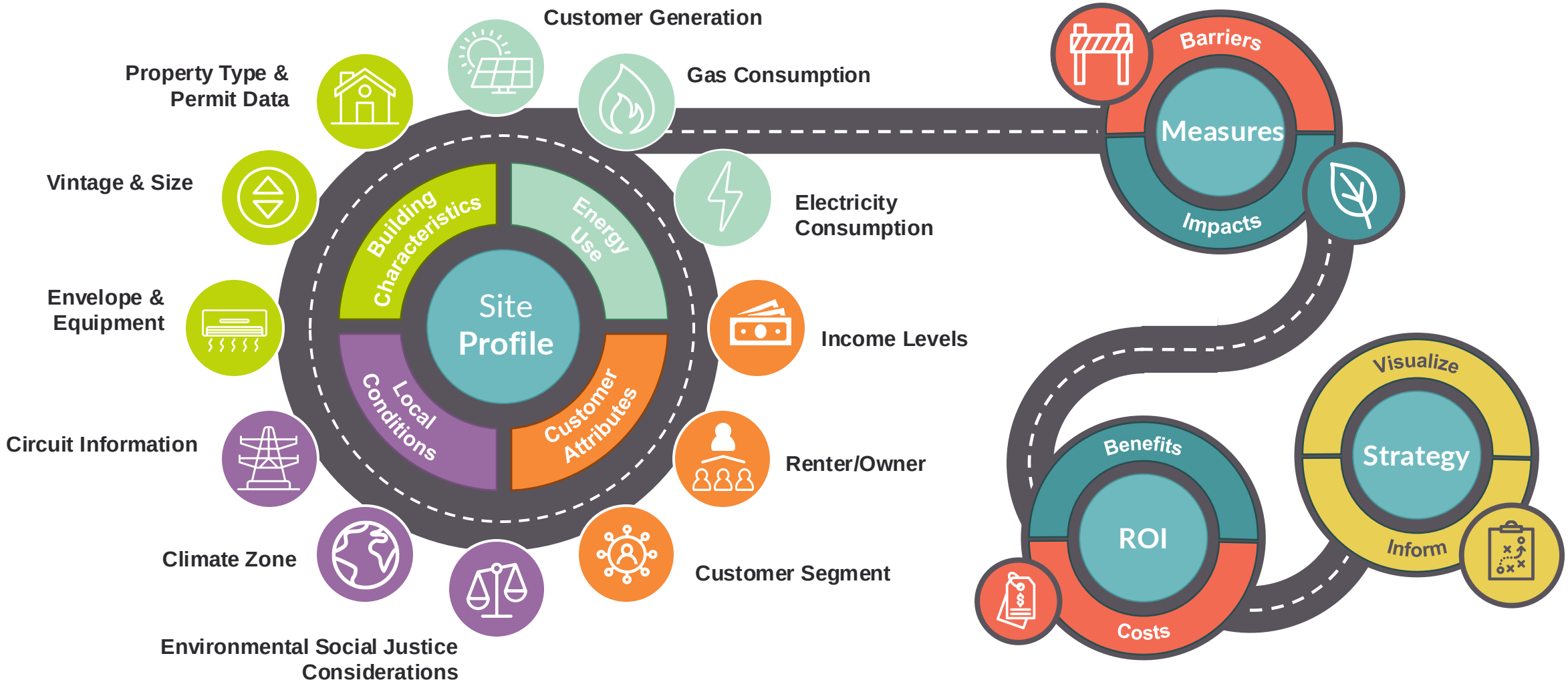
1) Generate visualizations of the data
2) Understand relationships between the different variables
3) Inform energy efficient building electrification strategy



Created an initial site profile based on building and customer data inputs



Created Data Visualizations to Inform Electrification Strategies



LA and Orange County Report – Key Findings

Building vintage is the most influential variable impacting measure adoption barriers.

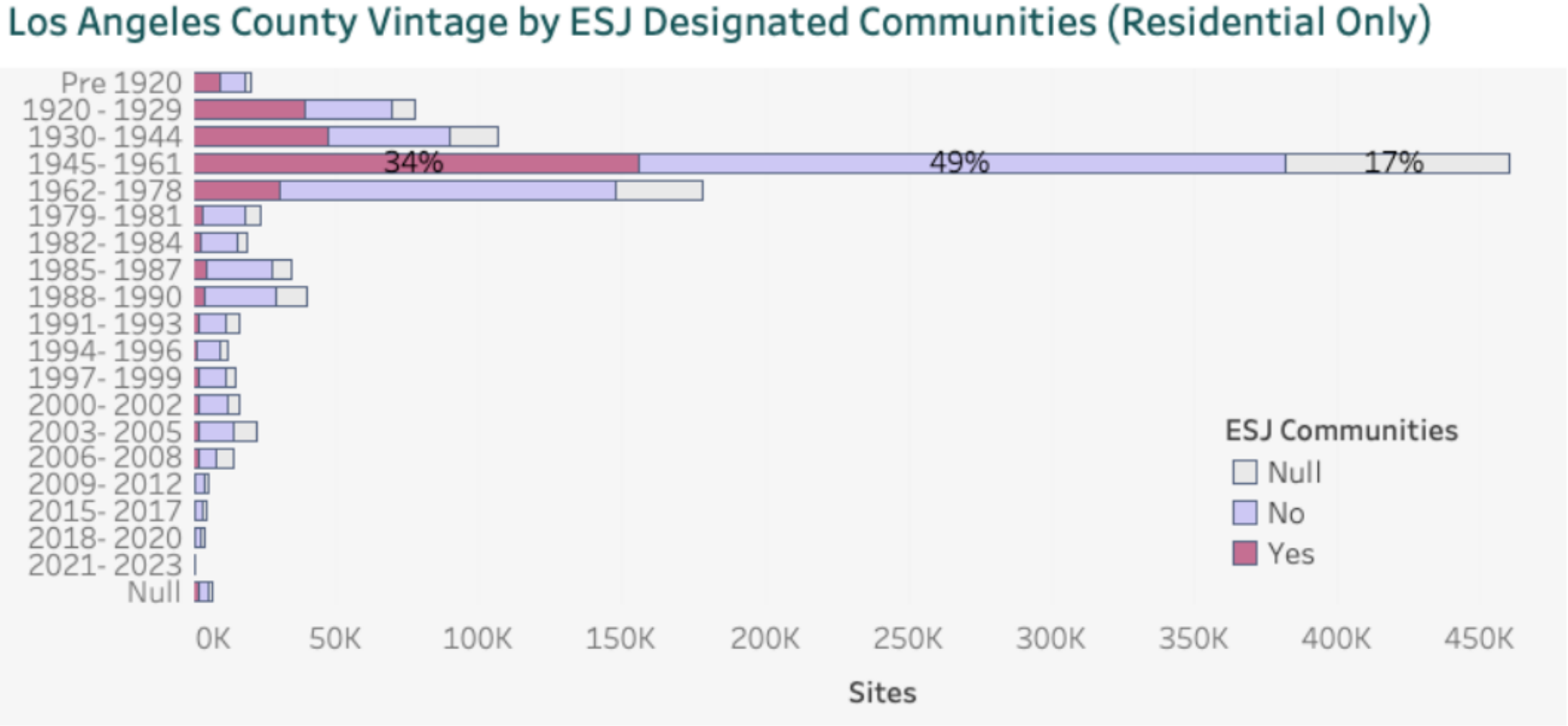
Residential

- Barriers: The most prominent barriers were related to the high prevalence of **renters** and **outdated electrical panels**.
- Measures: **EV chargers** and **heat pump space and water heaters** were found to have the highest potential for GHG emissions reductions and electrification potential. The measure with the greatest potential for **demand savings** is **solar PV systems**.

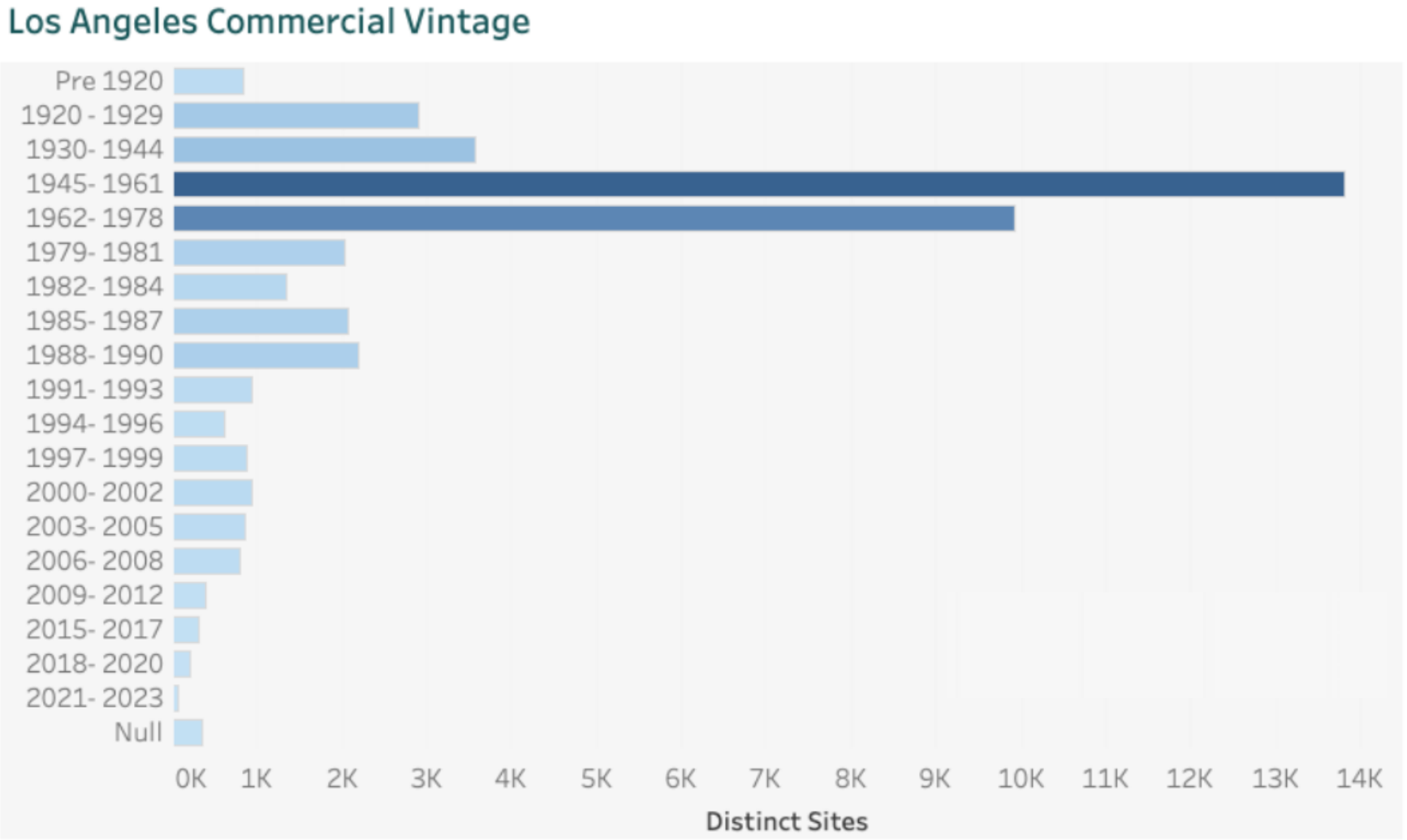
Commercial

- Barriers: Additional analysis is needed to determine the most prominent barriers.
- Measures: The measure with the greatest GHG savings was found to be **HPWH**. Measures with the greatest potential for **demand savings** were related to envelope measures, specifically **windows and insulation**.

LA County – Key Findings

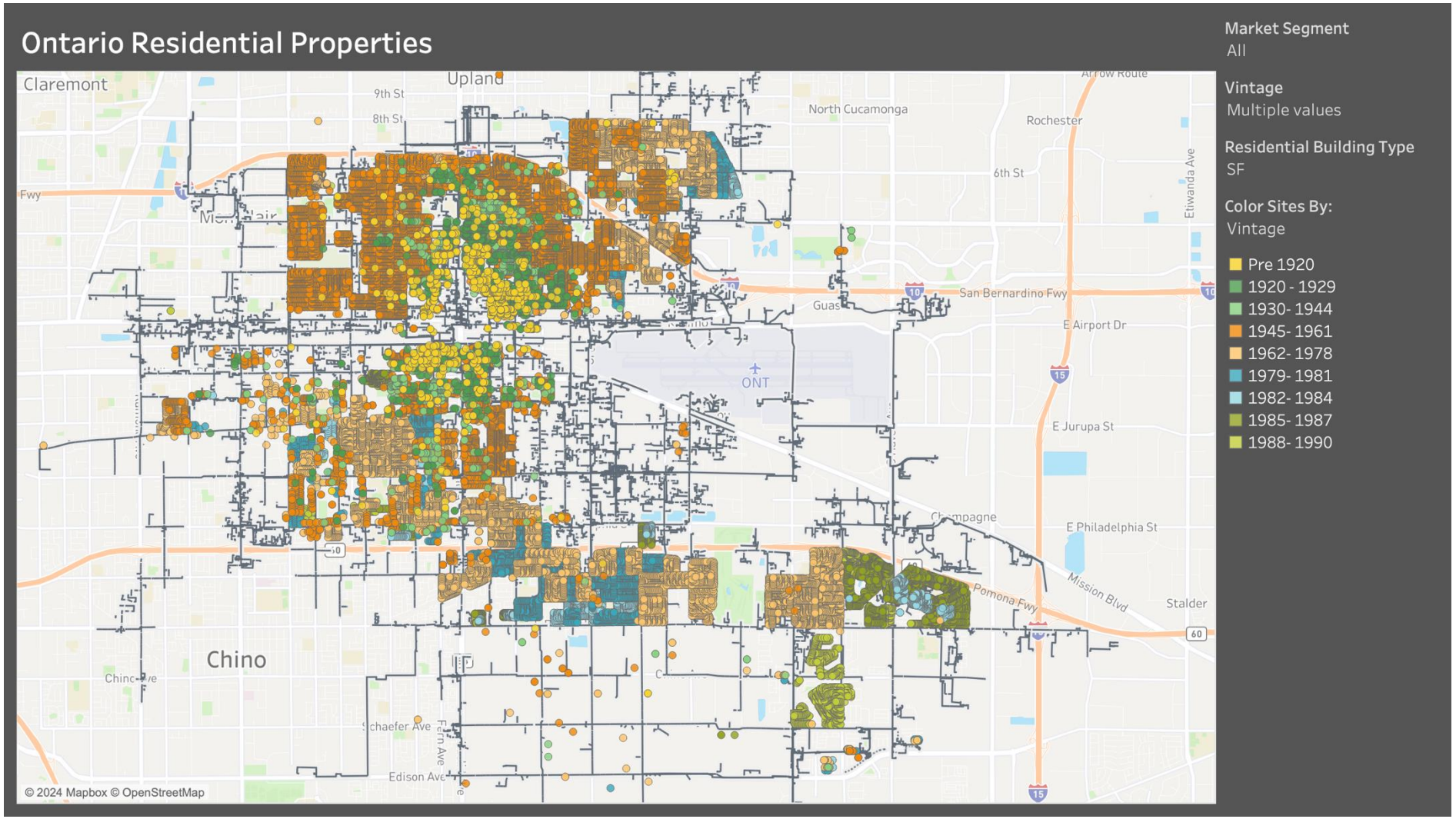


LA County – Key Findings



Visualization Insights

Where are older homes located, and what is their approximate age?

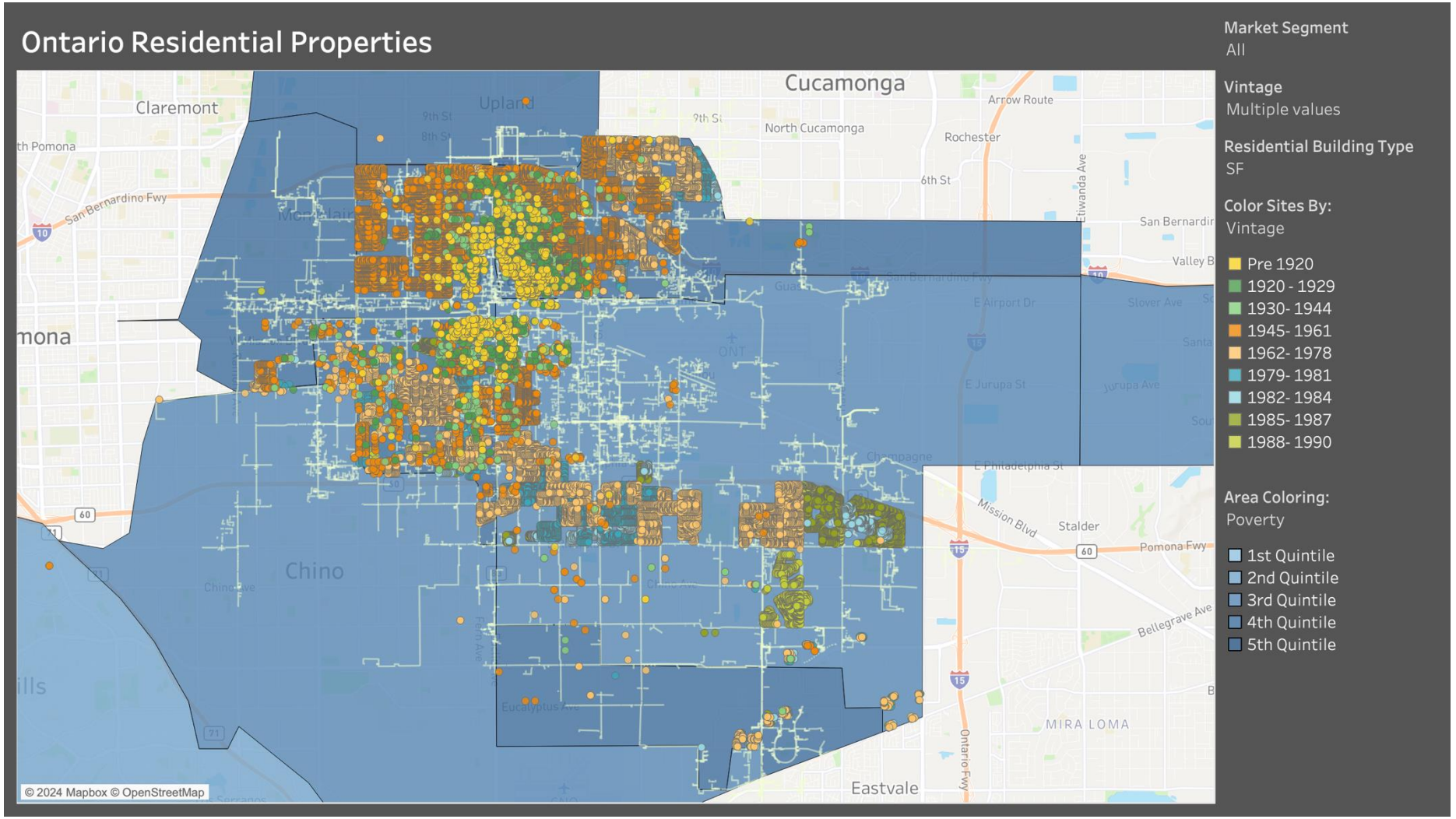


Map view of Ontario single family properties built prior to 1990

Visualization Insights

Where should we target electrification in ESJ designated areas (low income and/or bad air quality)?

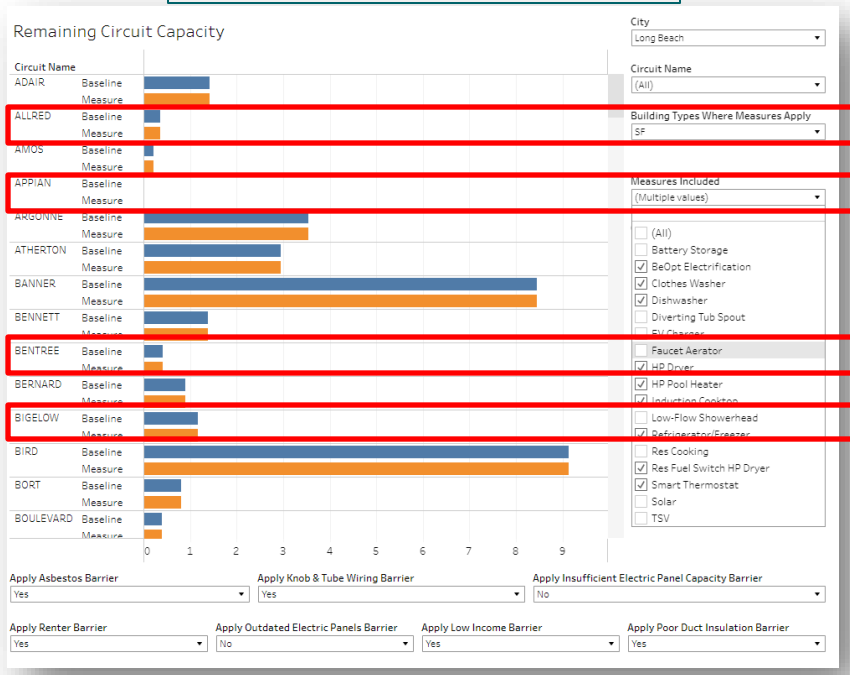
The blue coloring shows poverty levels and properties should be targeted that fall in the shaded regions.



Visualization Insights

What would happen to Remaining Circuit Capacity if all SFH had All-Electric Retrofits?

Single Family Homes
- All Electric Appliances
- No Solar, Batteries, EV Level 2 Charger



Single Family Homes
- All Electric Appliances, Solar, Batteries
- No EV Level 2 Charger

- Retrofitting all existing single-family homes with all-electric appliances only (excluding EV Level 2 chargers) does not impact circuit capacity
  - Adding solar and batteries (excluding EV Level 2 chargers) *modestly increases capacity* for certain circuits

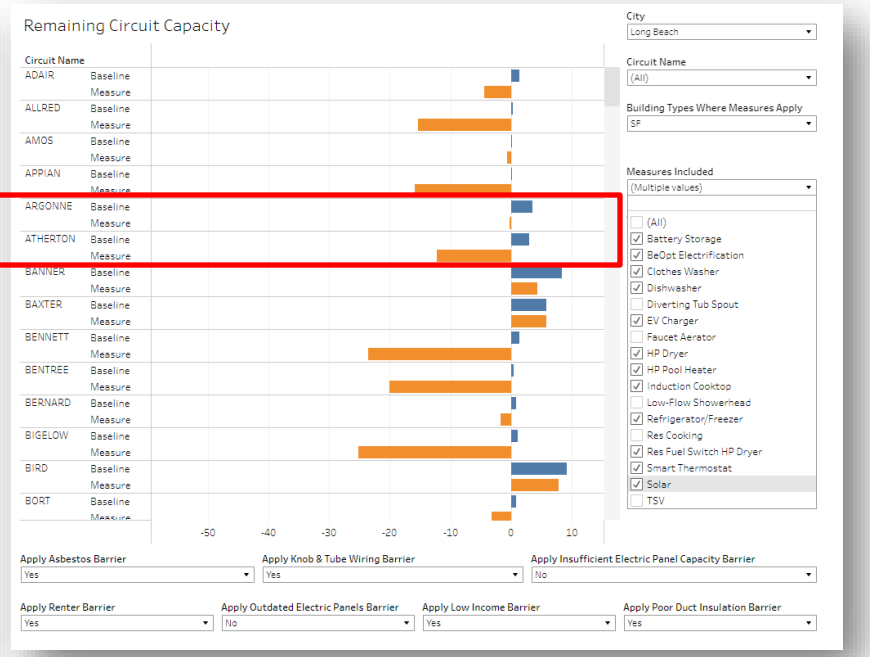
No coincidence peak demand nor load management controls

Visualization Insights

What would happen to Remaining Circuit Capacity if all SFH went All-Electric With Level 2 EV Charging?

Single Family Homes
- All Electric Appliances, EV Level 2 Charger
- No Solar & Batteries

Single Family Homes
- All Electric Appliances, EV Level 2 Charger
- With Solar & Batteries



- Adding EV Level 2 chargers with no load management controls ADVERSELY impacts circuit capacity
  - Adding solar and batteries *does not significanly mitigate load impact of EV Level 2 chargers*

No coincidence peak demand nor load management controls

Visualization Scenario Planning & Strategic Potential

Examine market adoption scenarios across a host of variables by circuit, zip code, or city, such as:

- Adoption by BE measures
- Adoption by customer segments
- Adoption by building types
- Adoption in ESJ designated areas

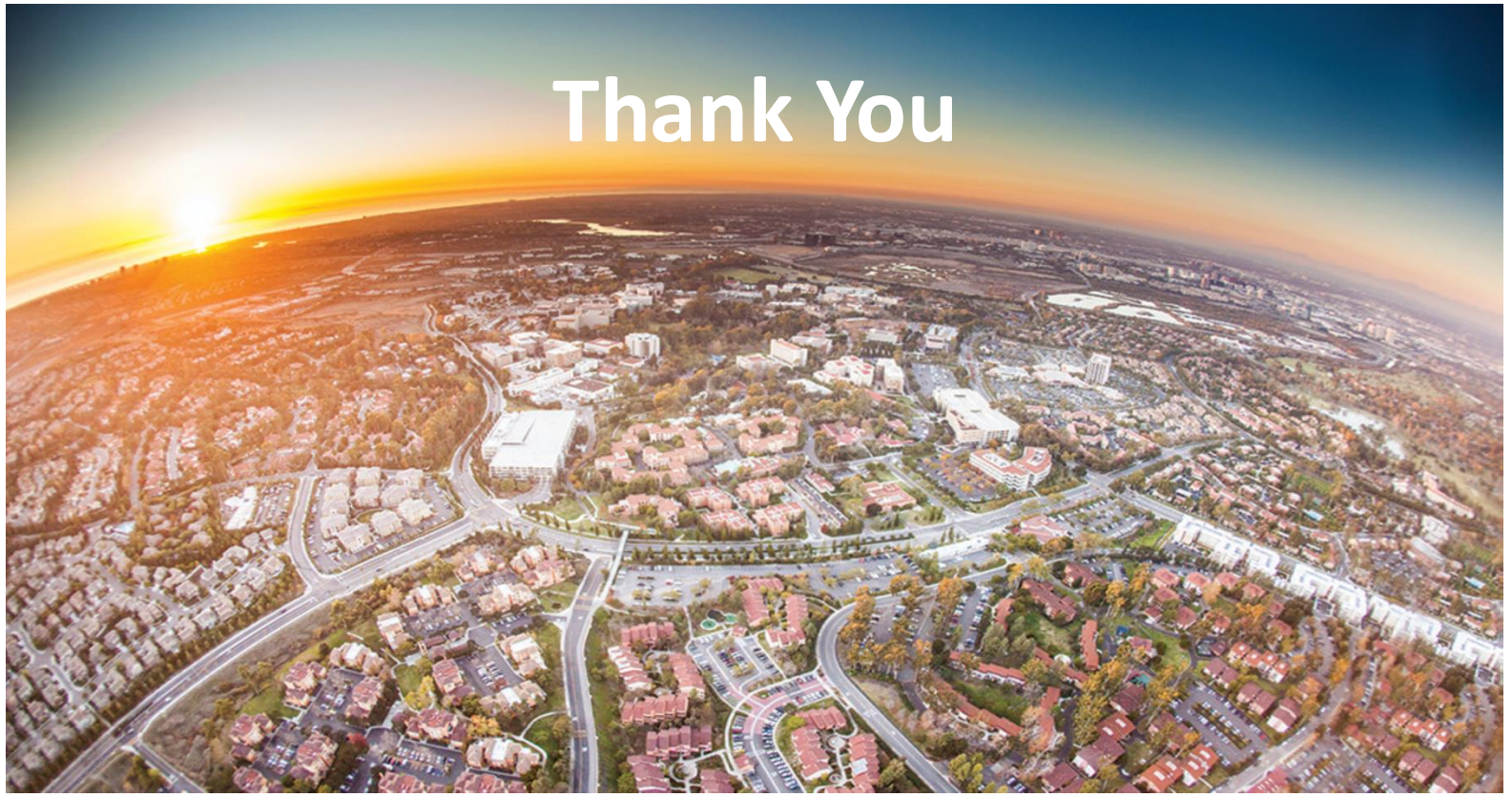
By knowing when, where, and type of building electrification measures will likely be adopted, we can examine the best interventions strategies. For example:

- Reach Code development
- Targeted programs and marketing
- Deployment of demand response programs and DERs
- Infrastructure upgrades

This project was funded by the SCE C&S Planning and Coordination Program

For more information, contact Scott Higa at scott.higa@sce.com.

The project report can be found at https://www.etcc-ca.com/reports/building-inventory-strategic-electrification



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