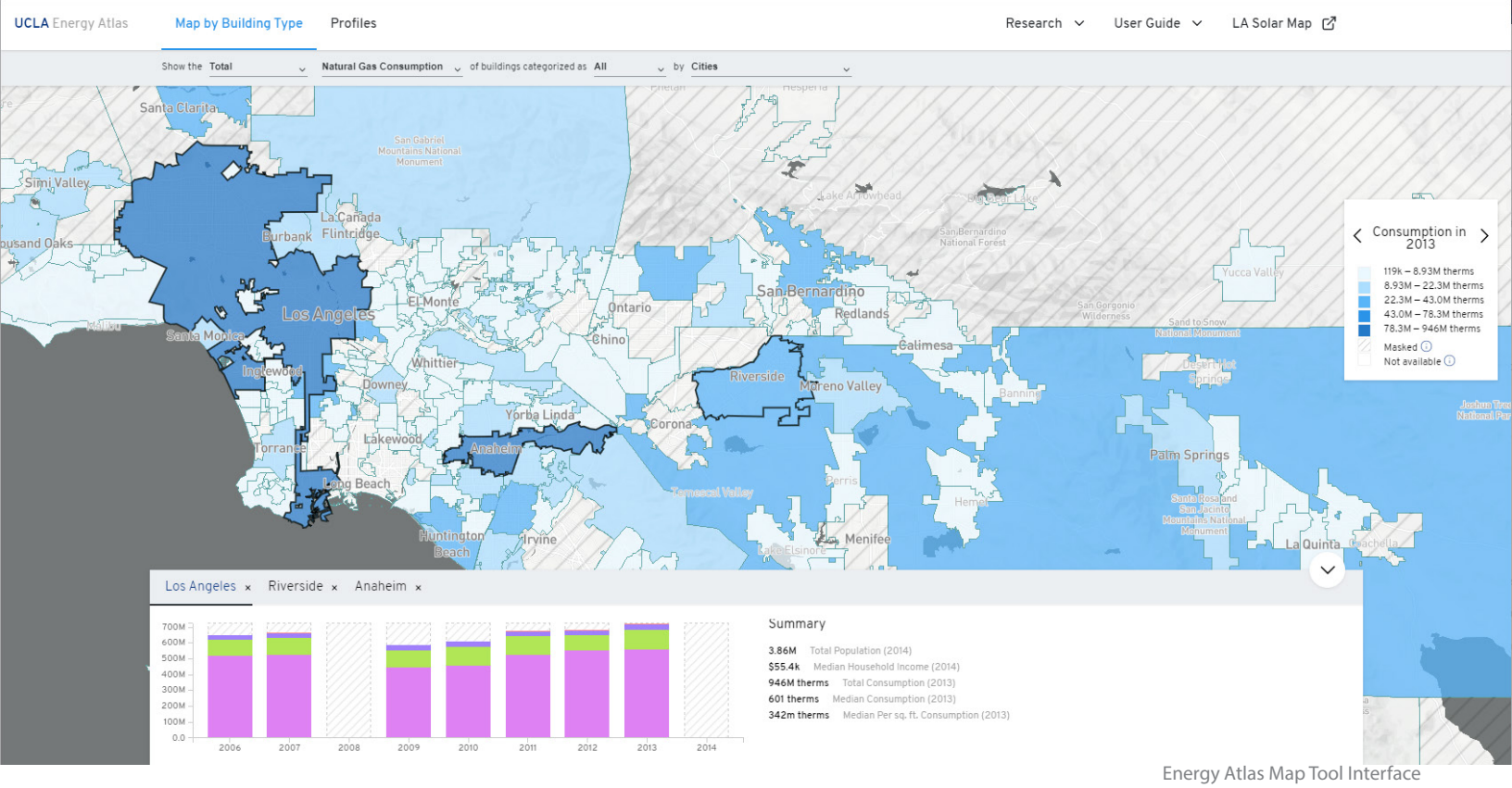


Energy Atlas Map Tool Interface

UCLA Energy Atlas

Overview

The UCLA Energy Atlas (www.energyatlas.ucla.edu) provides Californians the opportunity to interact with one of the largest sets of disaggregated building energy data in the nation. The interactive website is used by a wide variety of stakeholder groups to inform energy planning and research in Los Angeles and throughout California.

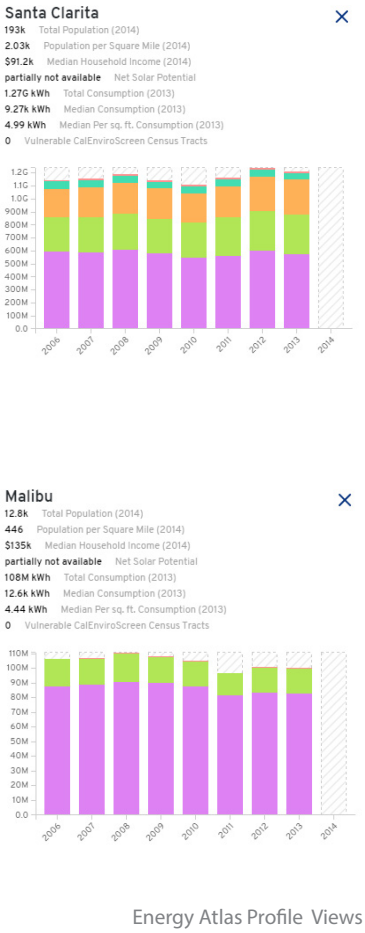
This service is becoming increasingly important as the State works to achieve its ambitious energy goals and local regions work to create energy sustainability. Energy Atlas data is the basis for a wide range of research including utility grid vulnerabilities, energy efficiency, and renewable energy transitions for Los Angeles County communities.

Data Types and Uses

Over 27 million electricity and natural gas accounts are linked to building characteristics and demographic information to create a robust database for building energy analysis. Users can:

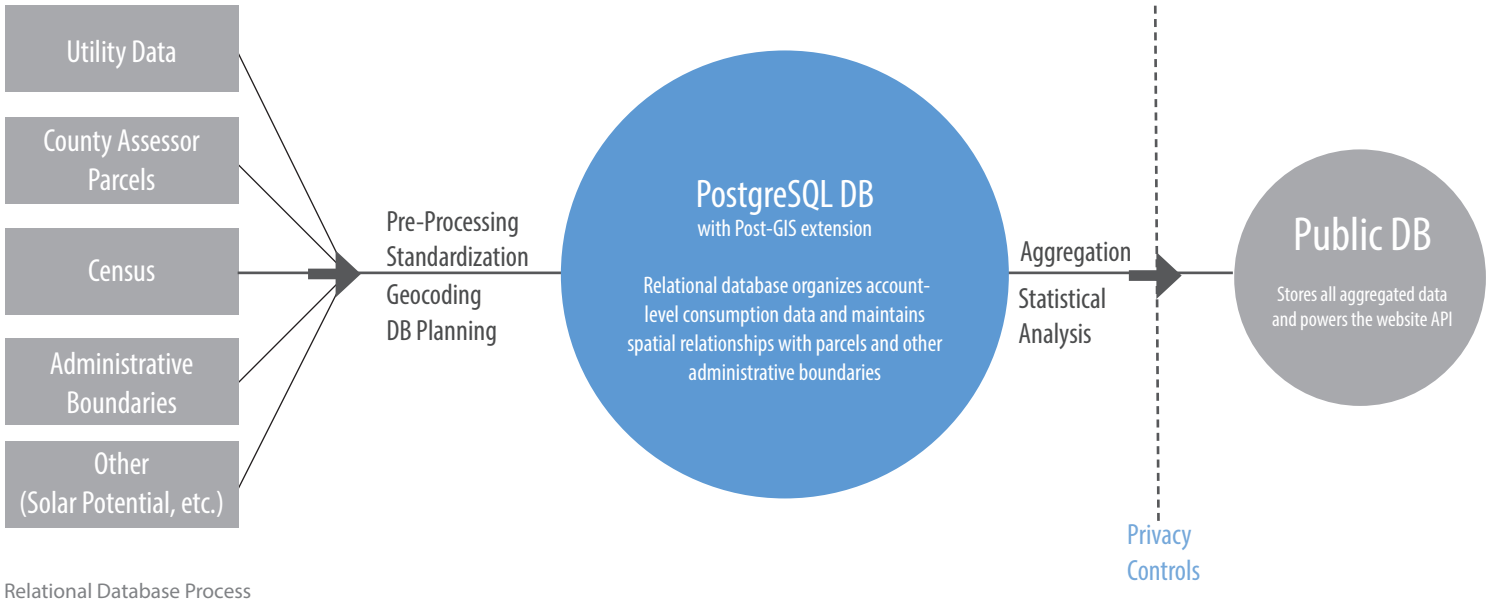
- View energy consumption in relation to building characteristics such as building vintage, use type, and square-footage.
- View energy consumption in context of socio-demographic information such as consumption per capita, by income quintile, percent renter vs. owner, etc.
- Select data in four main units: electricity (kWh), natural gas (therms), combined consumption (BTU), and greenhouse gas emissions ($MTCO_2$).
- Explore comparison tables, unique geographic profiles, and analysis.

The Energy Atlas currently displays annual building energy consumption in Los Angeles County, aggregated by neighborhood, city, council of government, and county levels from 2006-2010. In 2018, the Energy Atlas will expand to include energy data from most of Southern California between 2011-2016.



Energy Atlas Profile Views

CCSC at UCLA



Relational Database Process

Energy Atlas Database is a Resource for Policy and Research

The Energy Atlas consists of two separate data products. On the back-end is a privately networked, spatially enabled, PostgreSQL database which contains a historical time series of monthly energy and water billing data for over 27 million utility accounts. Consumption data has been related to parcel building data, U.S. Census Bureau socio-demographic data, and other data layers – to facilitate enhanced energy system and policy analysis. On the front-end is the publicly facing energy atlas website which is built upon a set of aggregated consumption statistics that have been precomputed for a set of cities and counties using the account level information stored in the backend system.

Research and Policy Contributions

Energy Atlas data is the basis for a wide range of research including utility grid vulnerabilities, energy efficiency, and renewable energy transitions for Los Angeles County communities. The unprecedented access to highly disaggregated energy data makes the Energy Atlas a first-of-its-kind resource for exploring energy questions within the region.

Grid Vulnerability and a Changing Climate

A CA Energy Commission project investigating vulnerabilities to the grid due to high heat events. Data from the Energy Atlas is used to screen for communities that are vulnerable to the effects of urban heat island using geographically specific future temperature predictions, monthly energy consumption, and building vintage data.

Residential Energy Efficiency Program Participation

CCSC researchers are exploring the effectiveness of energy efficiency program participation in residential buildings with one of the largest datasets available. Program participants are linked with their historical consumption data and building characteristics for a deep dive into performance of specific energy efficiency programs.

Advanced Energy Communities

A CEC project focusing on developing advanced energy communities in CalEnviroScreen designated disadvantaged neighborhoods, with a pilot study in East Los Angeles County. This project partners with local policy makers, organizers, and local businesses and residents to achieve greater building energy efficiency and net zero energy electricity capacity for the community.

Energy Consumption in K-12 Public Schools

CCSC researchers analyzed monthly building energy consumption over time in LA County public schools based on size, geography, and school type. Published findings discuss policy implications, particularly relevant to policies promoting energy efficiency through programs such as California's Proposition 39.

Water Efficiency Program Evaluation

CCSC researchers have collected over 10 years of LADWP water consumption data and are developing a methodology to assess efficiency programs, including the effectiveness of turf replacement programs in the City of LA.

Resource for Local Government Climate Action Planning

The Energy Atlas provides local governments with detailed building energy consumption data and related greenhouse gas emissions.

Academic Publications

Read our peer-reviewed article on Energy Atlas findings in *Energy Policy* [DOI: 10.1016/j.enpol.2016.06.002].