

Can Smart Cities Exacerbate Inequality?

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- Progressive goals for urban sustainability
 - Reduce water imports and promote water conservation
 - Expand public transit
 - Reduce energy use: state and local policies
 - Improve habitats and reducing pollution
 - Open access to data
- Not aligned to efficient use of data
 - Fragmented and stoic institutions
 - Lack of technical capacity
 - Disparities in access

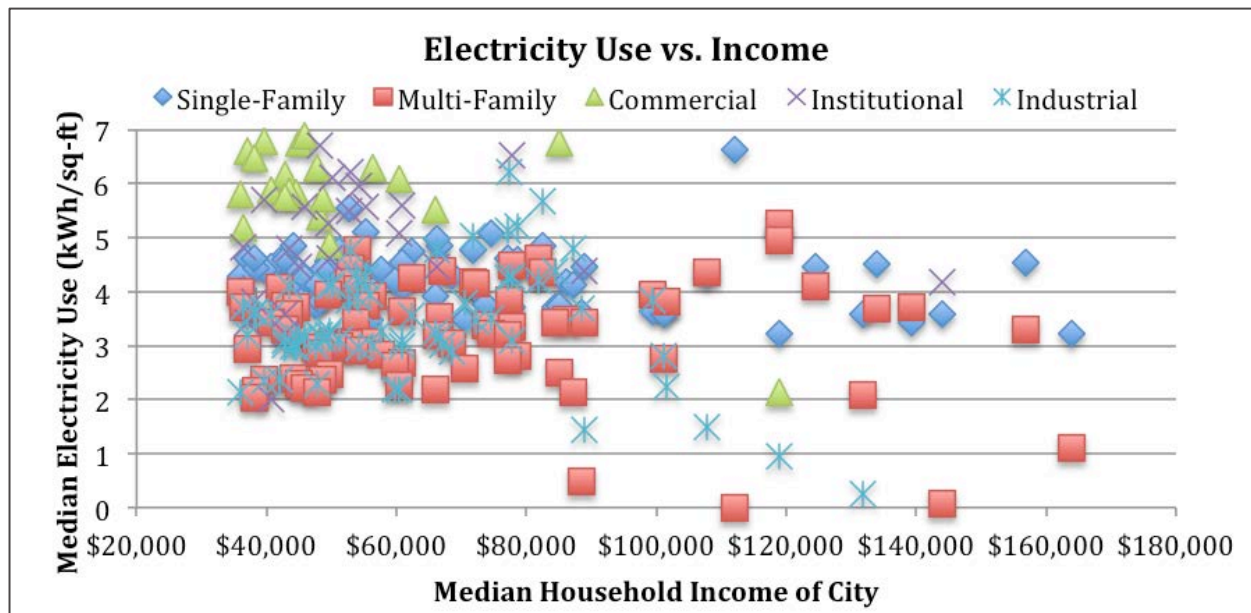
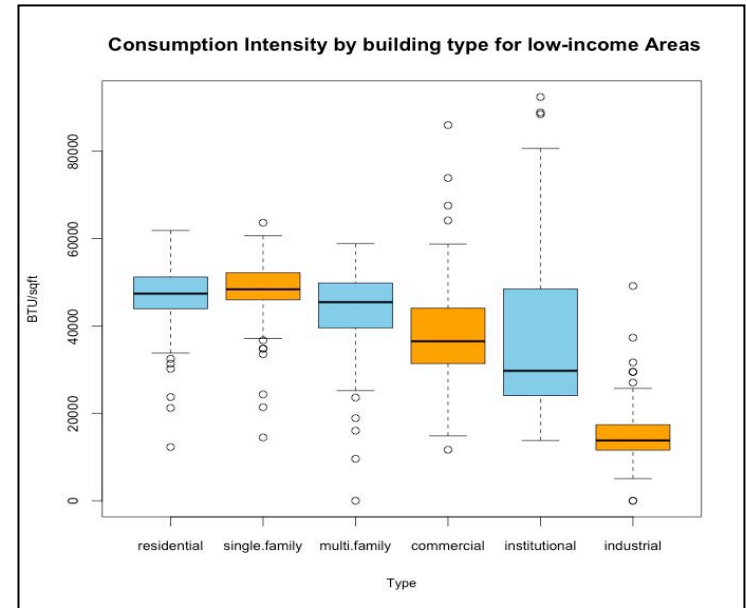
Energy in L.A.

- Significant geographic variation in energy consumption
- Not effectively using widely collected energy use and billing data for smarter planning
- Data controlled by utilities with restrictions on reporting
- Need metropolitan-scale analysis with geography, income, climate, and time-of-use

Energy & Income

Linking Data Sets:

- Energy Use Data
- Land use and building data
- Tax assessment data
- Demographic and Income factors



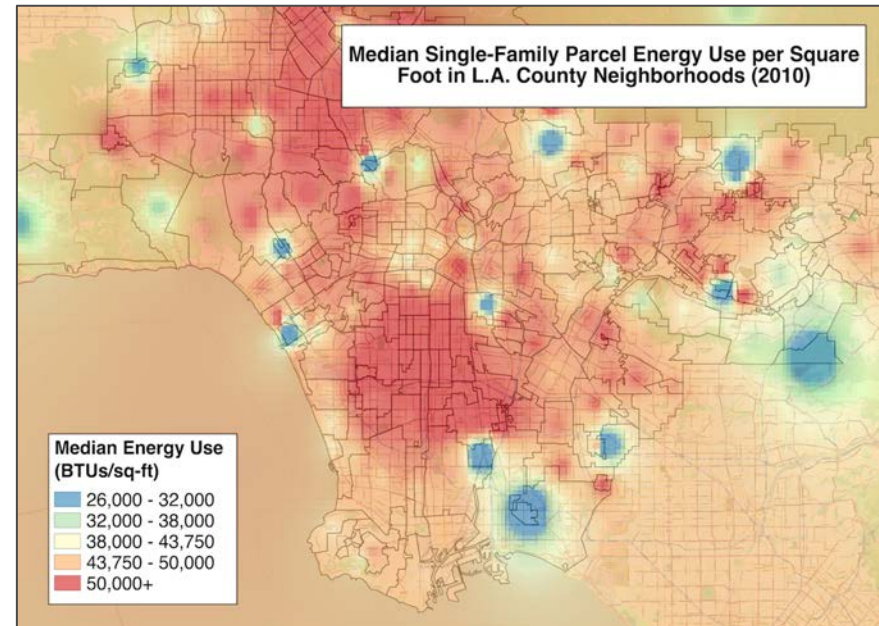
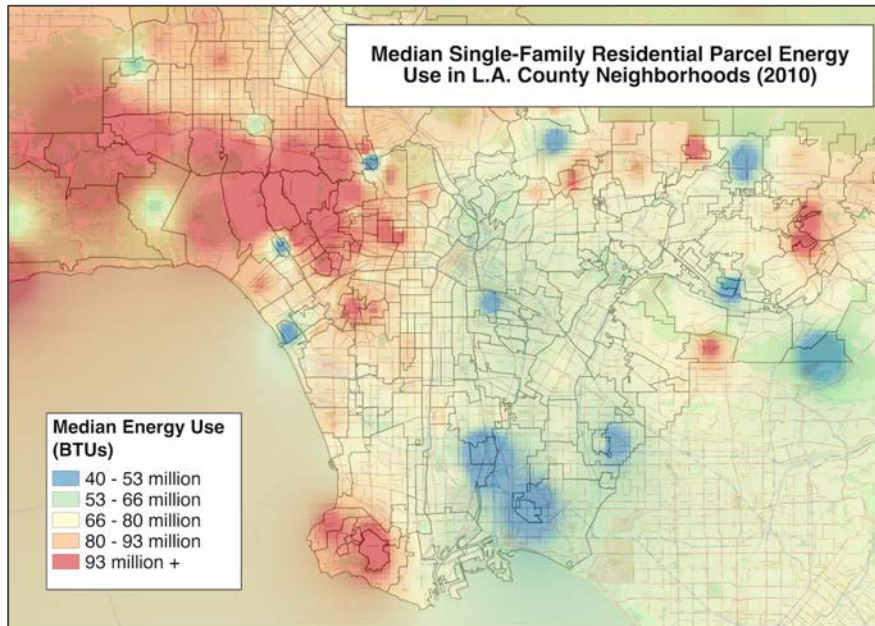
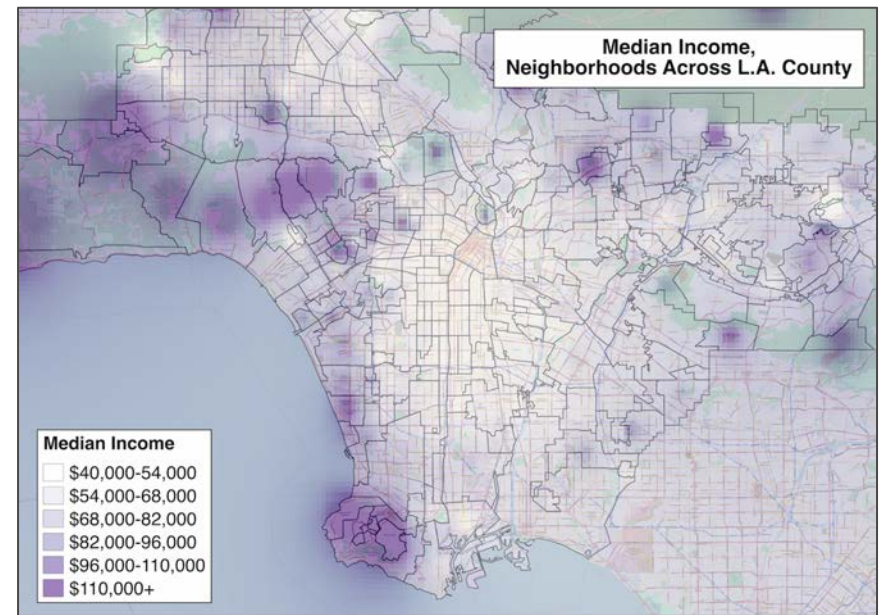
Source: energyatlas.ucla.edu

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Geography

Total Energy Use vs. Energy Use per Square Foot



Source: energyatlas.ucla.edu

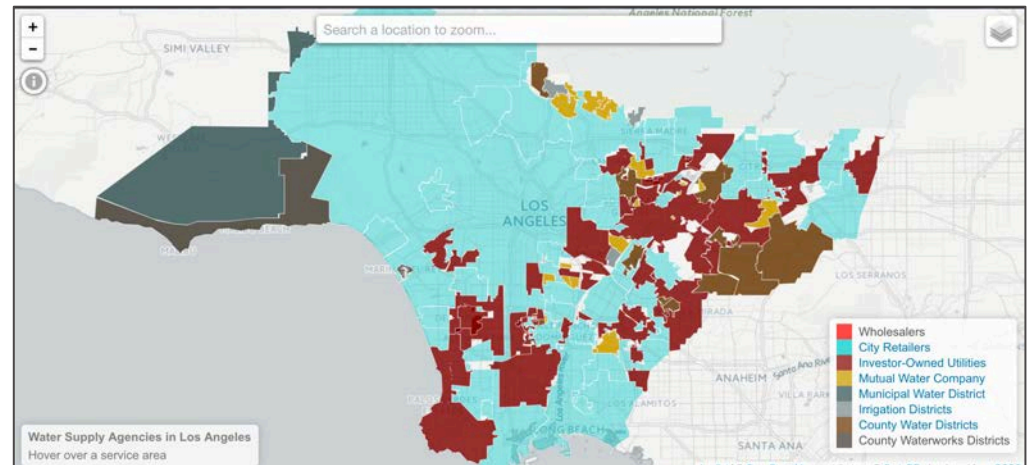
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Policies	Barriers
<ul style="list-style-type: none">• Enable localities access to energy use data• Link data sets for energy consumption, land use type, building characteristics, and climate• Use energy consumption data to inform energy efficiency and climate change planning• Thinking beyond technologies: institutions• Establish reasonable privacy regulations	<ul style="list-style-type: none">• Court rulings, utility policies restricting access• Fragmented data sets, inaccurate tax assessor's data, lack of funds• Lack of available data on energy efficiency programs, data resolution, technical capacity• Risk-averse utilities and policies institutionalized in current systems• Limited understanding of risks

Water in L.A.

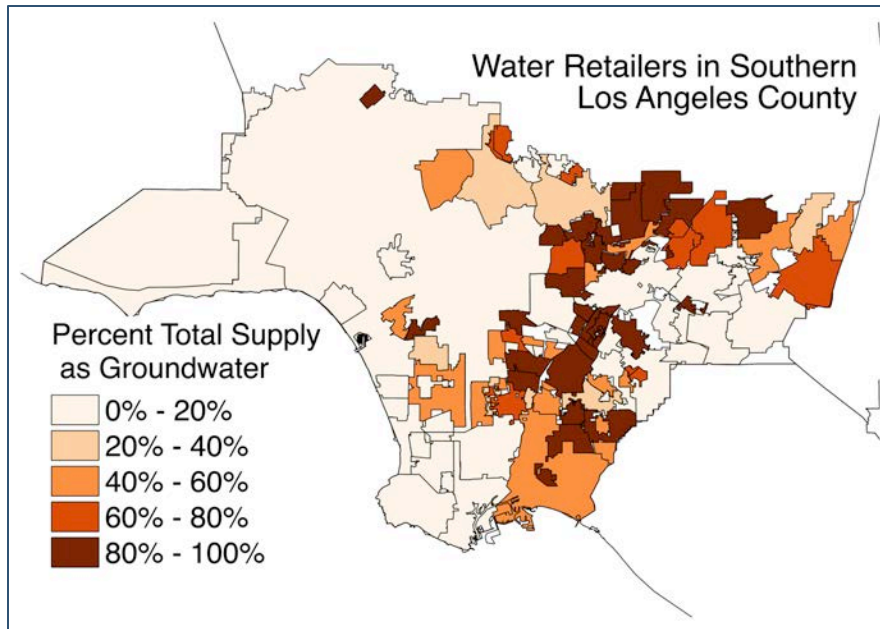
- Highly complex, fragmented system
- Lack of analysis at broad geographic scales in context of sustainability
- Disconnect between water supply management and biophysical processes
- Uneven capacities to address crises
- Unequal data reporting



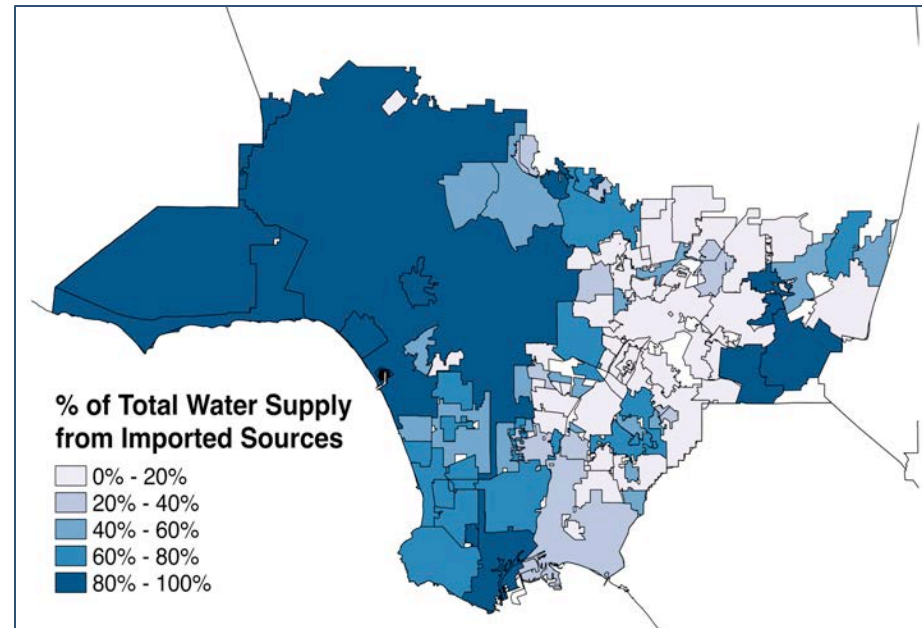
Water Sources

- Diversity of water sources for retailers in LA County

Groundwater



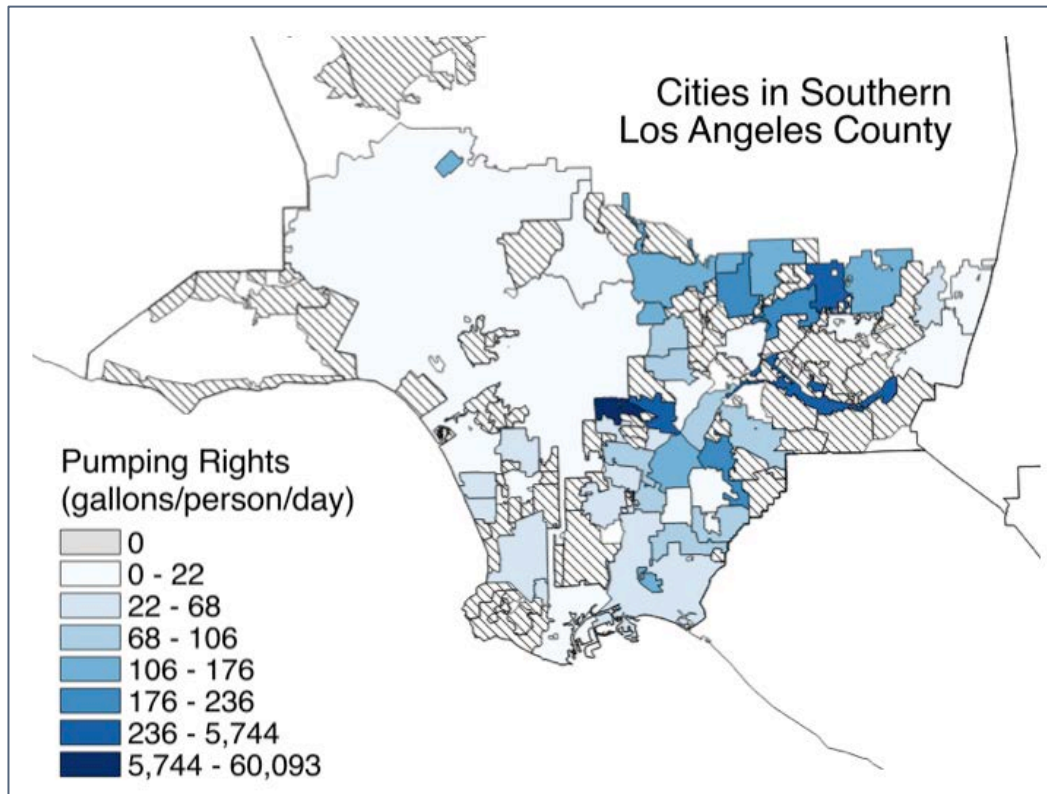
Imported Water



Source: Porse, Glickfeld, Mertan, and Pincetl (2015)

Local Water

- Cities need groundwater rights



LA City Stormwater Capture Master Plan

Source: Porse, Glickfeld, Mertan, and Pincetl (2015)

Smarter

Policies	Barriers
<ul style="list-style-type: none">• Promote data-driven goals for conservation and local water use• Reduce outdoor water use• Automate monitoring of water flows and identify leaks/inefficiencies• Promote better water practices by residents• Publish verifiable data and metrics	<ul style="list-style-type: none">• Lack of high-resolution data across geographic scales to analyze correlations• Unable to (easily) track or meter outdoor water use• Limited capital and agency capacity, especially in smaller water retailing agencies• Established social attitudes, income differences, political processes• Fragmented, locally-driven processes, technical capacity, regulatory shortfalls

Considerations

- **Easy Victories:** Need to better use existing data
- **Political Action:** Collecting better data does not necessarily address social and economic differences
- **Bridges:** Connecting data requires innovative collaborations across sectors- government, utilities, industry, and residents
- **Scales:** Inequality within cities and across cities
- **Life-Cycles:** Widespread deployment of sensors and control systems has environmental consequences (Marvin 1994)
- **Path Dependence:** Inherent assumptions of efficiency-based algorithms could reinforce current systems
- **Access:** User profiles across residents, technical managers, policy-makers

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Thanks to:



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