GreenTown Climate Crisis: Equitable, 100% Renewable, Carbon Neutral Cities

Matt Cox, PhD

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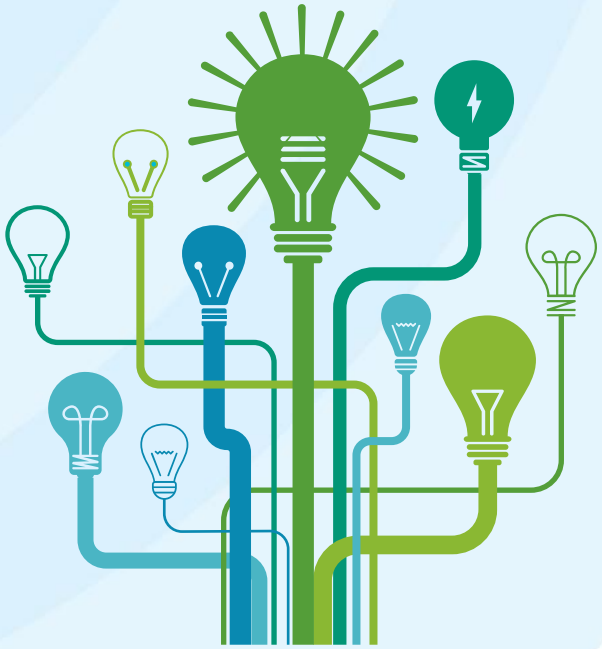
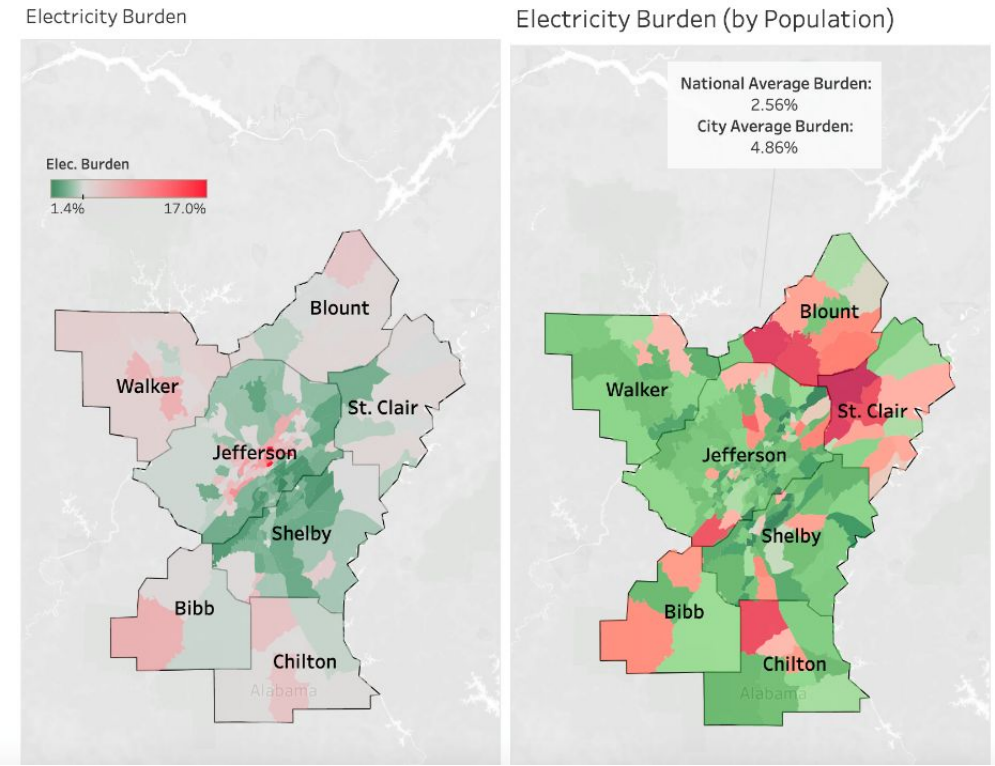
- A clean energy research and advisory organization based in Atlanta, Georgia
- Led by Ph.D economists, engineers, and policy experts.
- Over 20 years combined experience in energy and climate policy
- Over 125 publications on the subjects of energy, climate, and city sustainability
- Industry-leading data tools and analytics
- Active as advisors and data providers in 75 cities, about 20 states, and the national labs



Major Areas of Concern: Climate Change and Equitable Development

Energy Burden as an Intersectional Issue

- Utility burden
  - % of household income spent on utilities – electricity, gas, water
  - Data access and resolution are key challenges



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General Approaches and Tools

- **Collaborative, Community-Focused Data Analysis**
  - Understand the baseline
  - Discuss and embed values into policy
  - Assess potential opportunities and projected results
  - Implement, Deliver, and Evaluate
- **Tools**
  - GEM and GEM Process Guide
  - ACES
  - Clean Energy Policy Toolkit

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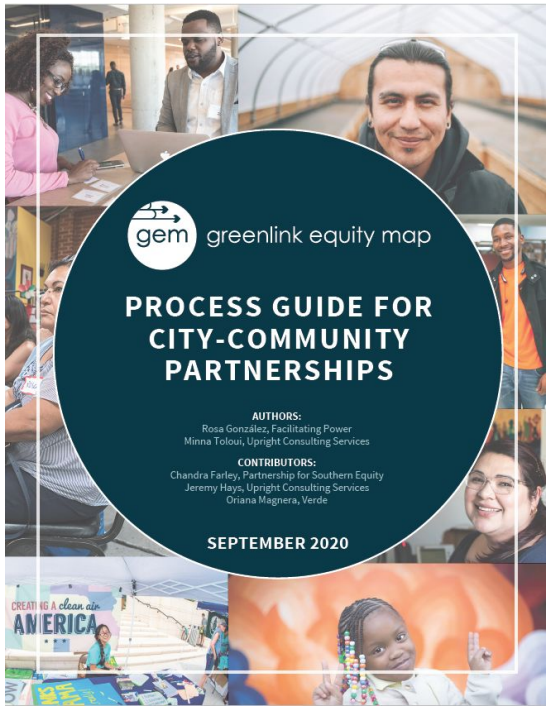
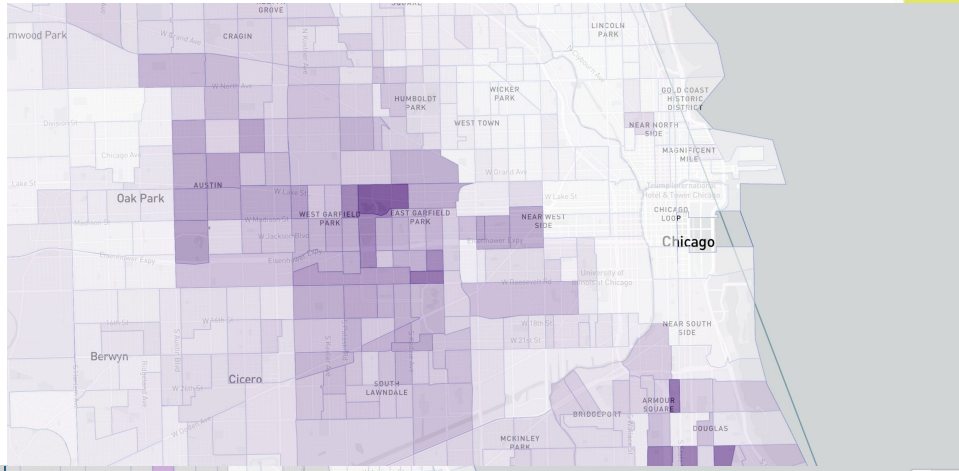
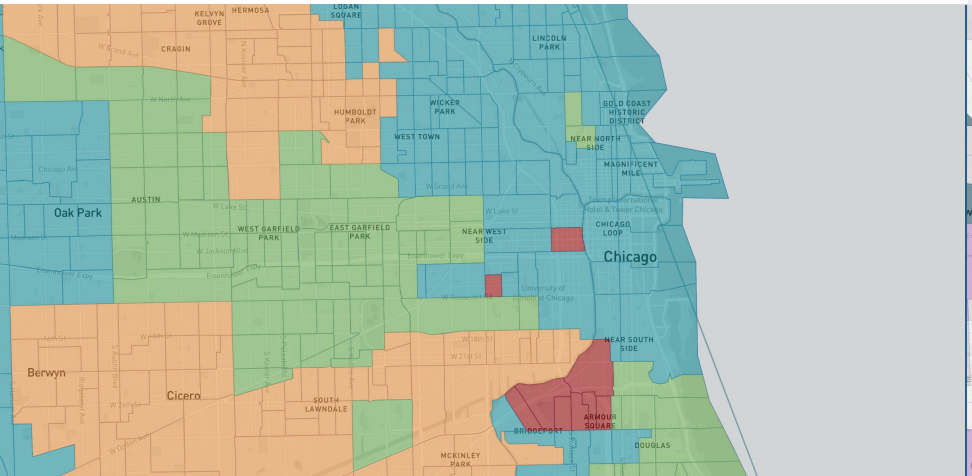
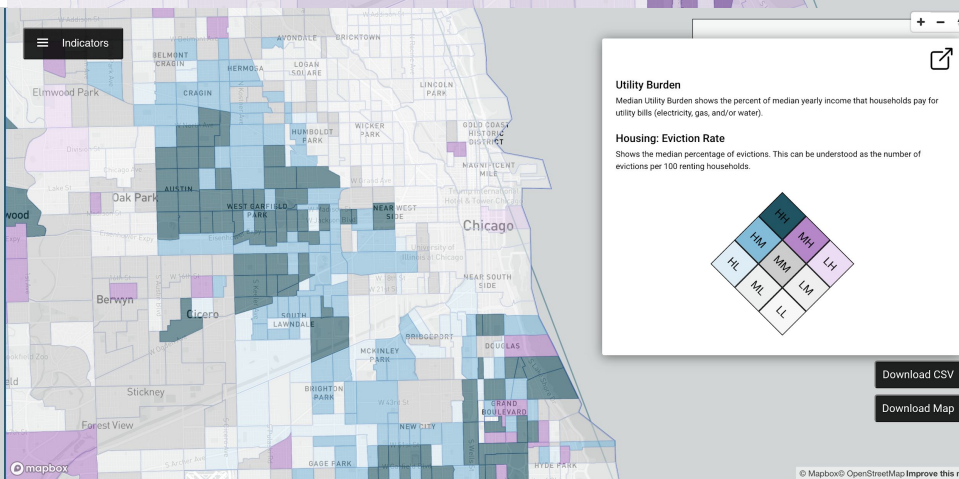
Where are we? What should we do?









How far can we go?

ABOUT THIS TOOL	This tool allows you to design 100% renewable energy pathways in the City of Orlando. It covers all sectors of the Orlando economy, including the residential, commercial, transportation and power utility sectors. The tool is powered by The Greenlink Group's ATHENIA model, which is translating clean energy actions into energy, carbon, economic, and social impacts for Orlando.
USERS' GUIDE	You can create your own low-carbon vision for Orlando by inputting the values in the ACTION cells. After entering your target values, your report card will give a deeper breakdown of the impacts.

Actions and Impacts

ENERGY EFFICIENCY

Residential Energy Efficiency		Commercial Energy Efficiency	
	ACTION		ACTION
Residential Potential Achieved	100%	Commercial Potential Achieved	100%
	IMPACT		IMPACT
# of homes cutting electricity by half	162,859	kWh-saved per sqft	23.1

SOLAR POWER

Residential Solar Power		Commercial Solar Power	
	ACTION		ACTION
Residential Solar Potential Achieved	100%	Commercial Solar Potential Achieved	100%
	IMPACT		IMPACT
Homes adding solar	18,600	Buildings adding solar	35,521

Utility Scale PV	
	ACTION
Utility Scale PV Potential	100%
	IMPACT
Number of homes powered by greenspace solar	122,800

Electric Vehicles Adoption

Electric Vehicle	
	ACTION
EV Potential Achived	100%
	IMPACT
# of Electric Vehicles in Orlando	442,373

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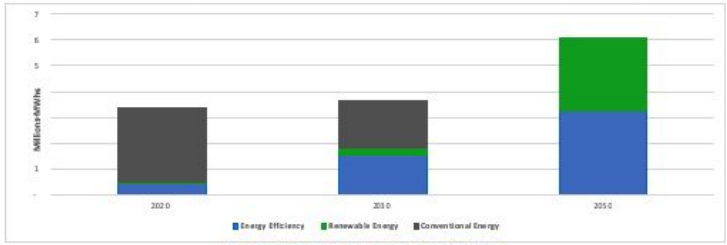
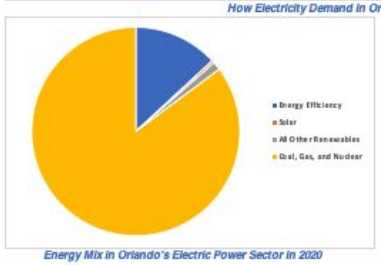
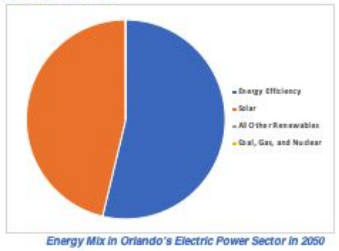
ORLANDO'S ENERGY USE AND CARBON EMISSIONS UNDER THE LOW CARBON PATHWAY



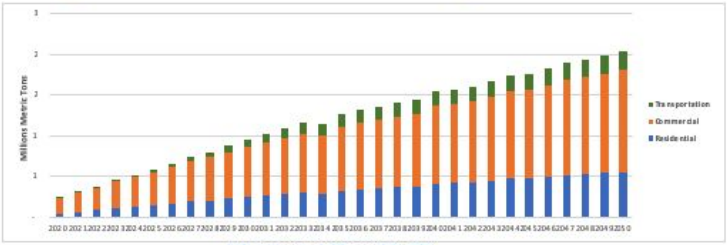
How Electricity Demand in Orlando is Met Over Time



Energy Mix in Orlando's Electric Power Sector in 2020



Energy Mix in Orlando's Electric Power Sector in 2050



CO_2 Reduction in Orlando, 2020 - 2050

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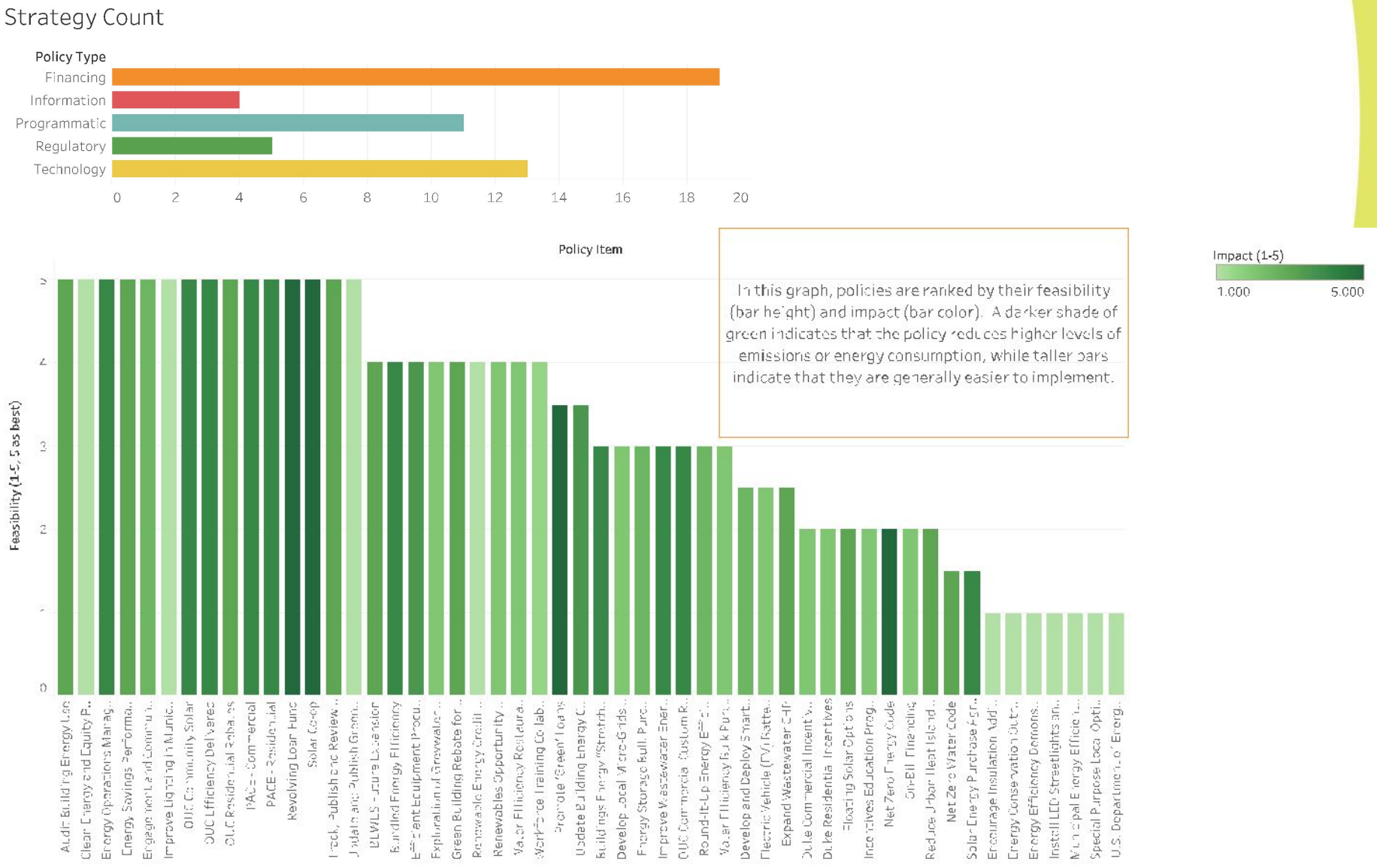
How do we get there?



Put in Action: Atlanta and Honolulu

Priorities

100% of Atlantans have a right to 100% clean energy

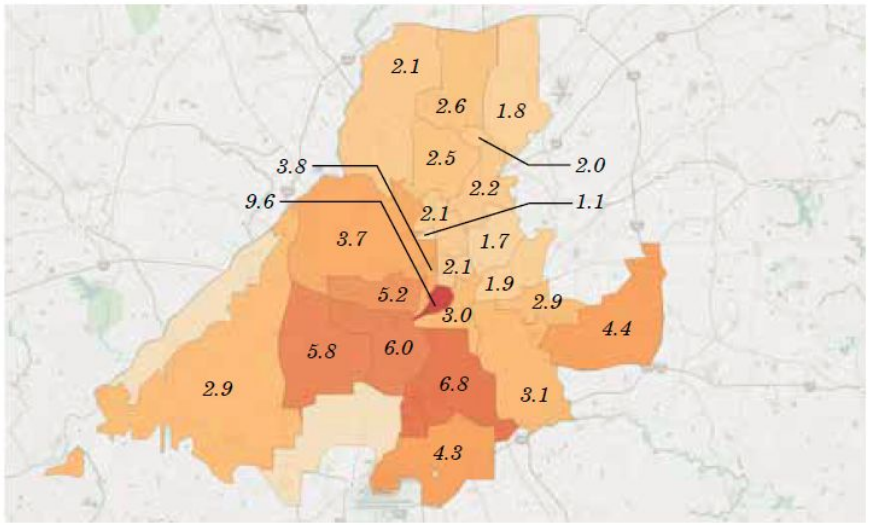
01 Energy equity must be a priority

02 Investments in energy efficiency must be increased

03 Local investments in renewable energy must be prioritized over investments outside of the Atlanta Metro

30310, 30311, 30314 Structure Age and Occupancy

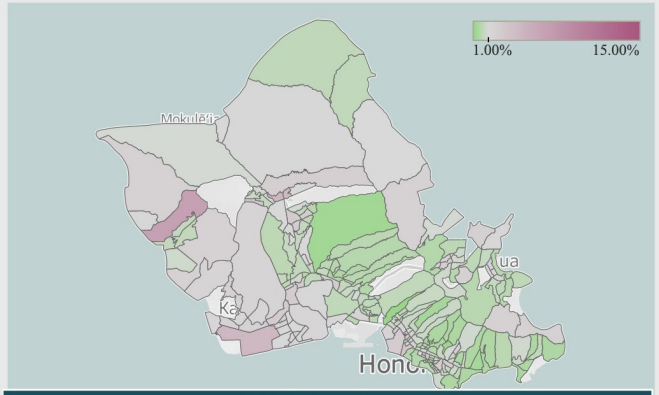
Date of Construction	# Owned	# Rented	Total Units	%	
not available	10	25	35	0%	
1840 - 1939	2,119	2,984	5,103	24% *	
1940 -1949	1,816	2,068	3,884	18% *	70%
1950 - 1959	3,378	2,663	6,041	28% *	
1960 - 1969	1,652	832	2,484	12%	
1970 -1979	662	326	988	5%	
1980 - 1989	354	225	579	3%	
1990 -1999	497	176	673	3%	
2000 - 2009	772	930	1,702	8%	
Total	**11,260**	**10,229**	**21,489**	**100%**	



Atlanta Residential Electricity Burden By ZIP Code

1.1% 9.6%

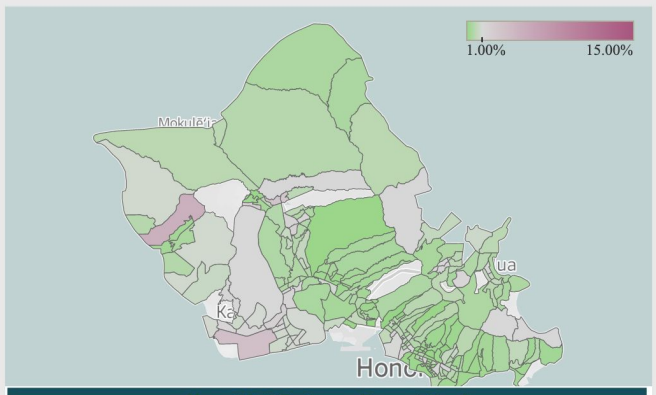
Median Energy Burden for Each Census Tract (BAU 2030)



Your 2030 Pathway Report Card

Cost Overview		2030 Clean Energy Summary	
Total Investment	$0	Energy Demand Met by Efficiency	0%
Total Benefit	$0	Residential Solar Capacity Installed (MW)	0
Net Benefits ($M)	$0	Commercial Solar Capacity Installed (MW)	0
Benefit-Cost Ratio	0.0	Avoided Climate Damages ($)	$0
Net Jobs Created	0	Metric Tons CO2 Avoided Through 2030	0

Median Energy Burden for Each Census Tract (Scenario Impact 2030)



Your 2030 Pathway Report Card

Cost Overview		2030 Clean Energy Summary	
Total Investment	$1,276,000,000	Energy Demand Met by Efficiency	28%
Total Benefits	$1,546,000,000	Residential Solar Capacity Installed (MW)	3
Net Benefits	$270,000,000	Commercial Solar Capacity Installed (MW)	100
Benefit-Cost Ratio	1.2	Avoided Climate Damages ($)	$308,000,000
Net Jobs Created	10,000	Metric Tons CO2 Avoided	5,174,000

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Thank You!

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- @GreenlinkGroup