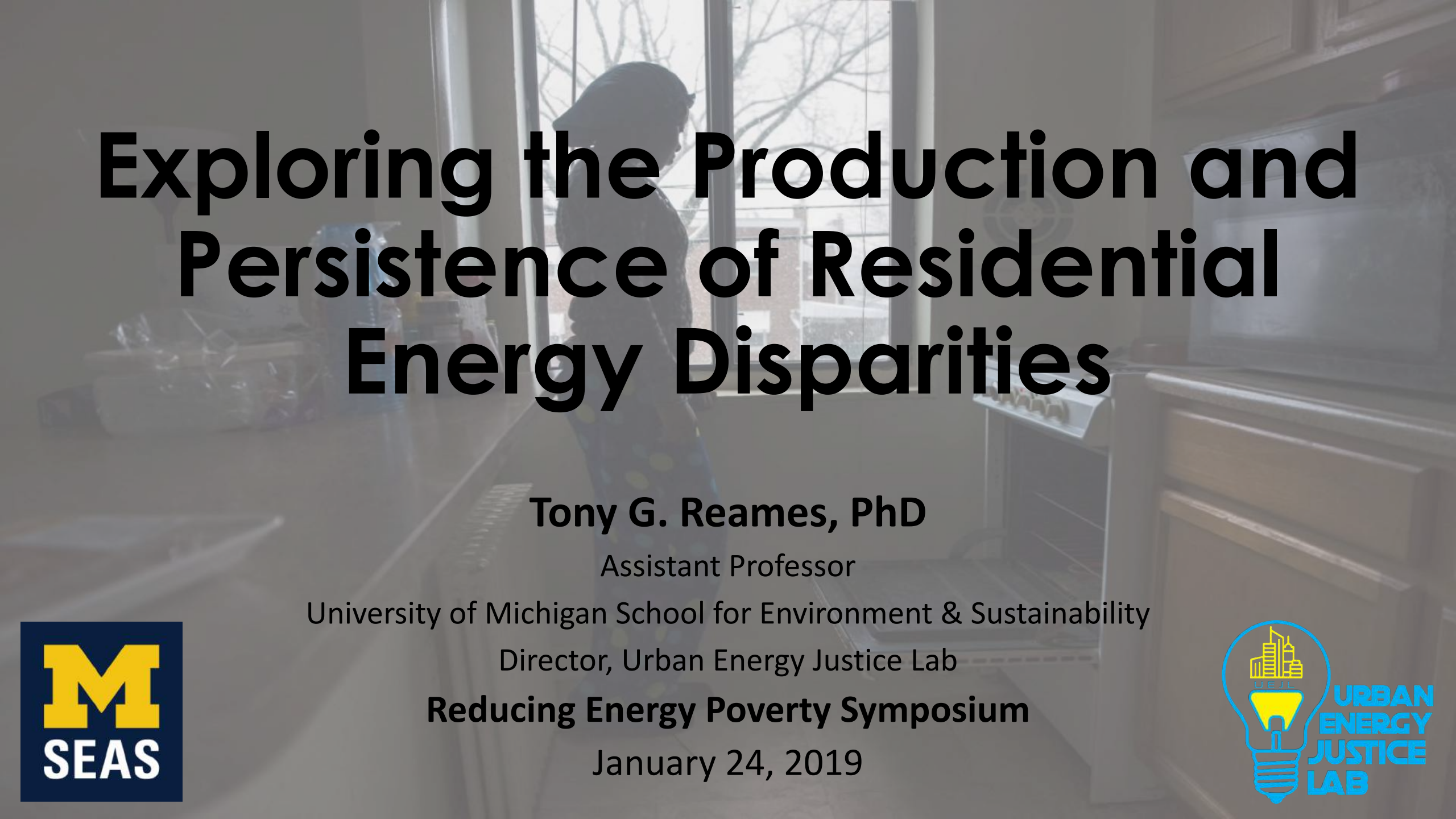


Exploring the Production and Persistence of Residential Energy Disparities

Tony G. Reames, PhD

Assistant Professor

University of Michigan School for Environment & Sustainability

Director, Urban Energy Justice Lab

Reducing Energy Poverty Symposium

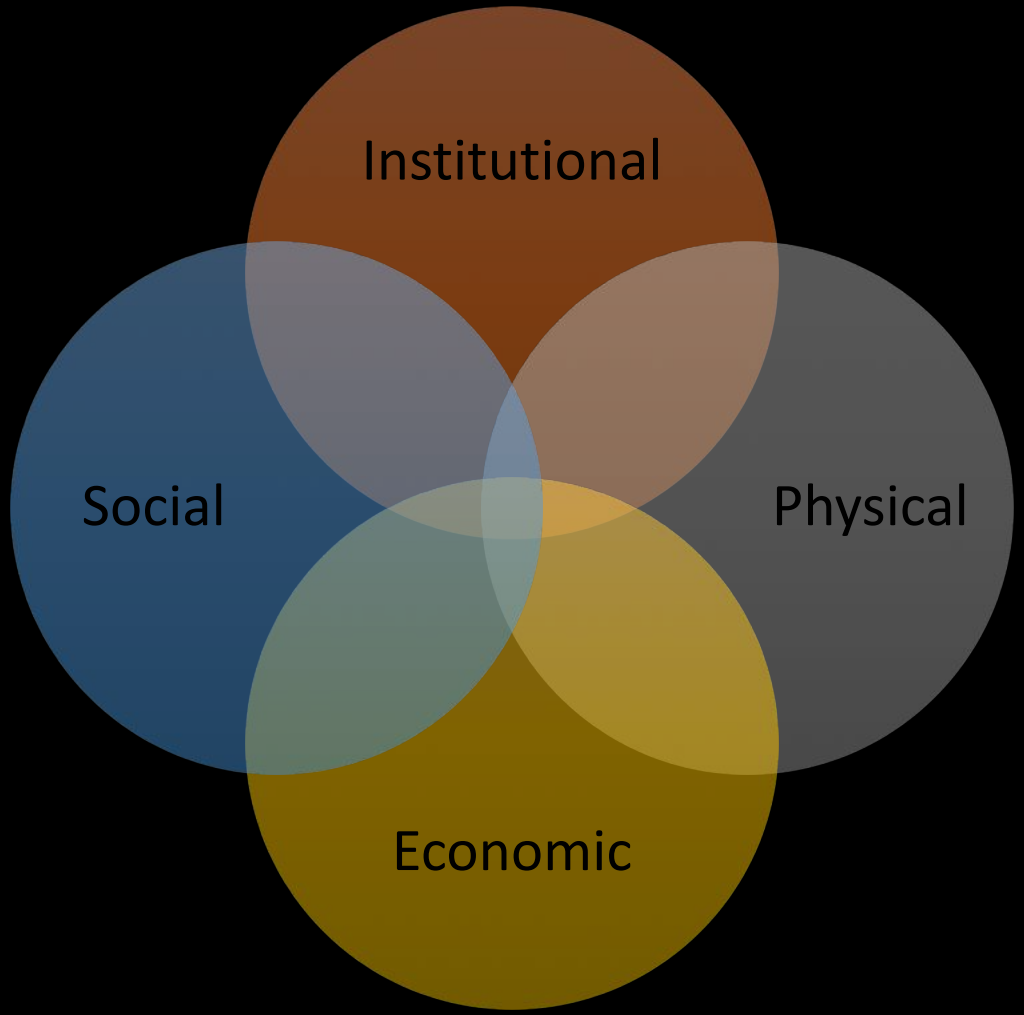
January 24, 2019

SEAS

URBAN ENERGY JUSTICE LAB


UEJL
URBAN
ENERGY
JUSTICE
LAB

“Research at the Intersection of Energy & Equity”



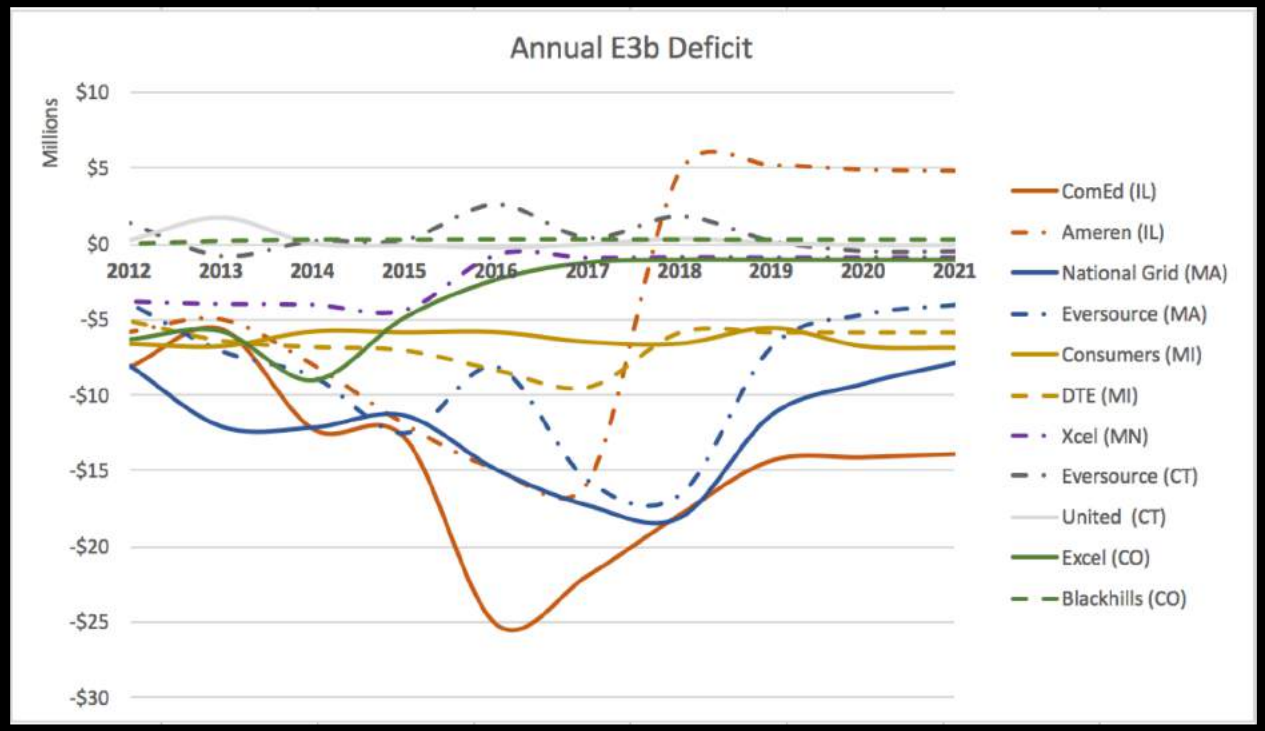
Equity in Energy Efficiency Policy: A Multi-State Study of Residential Program Investment Trends

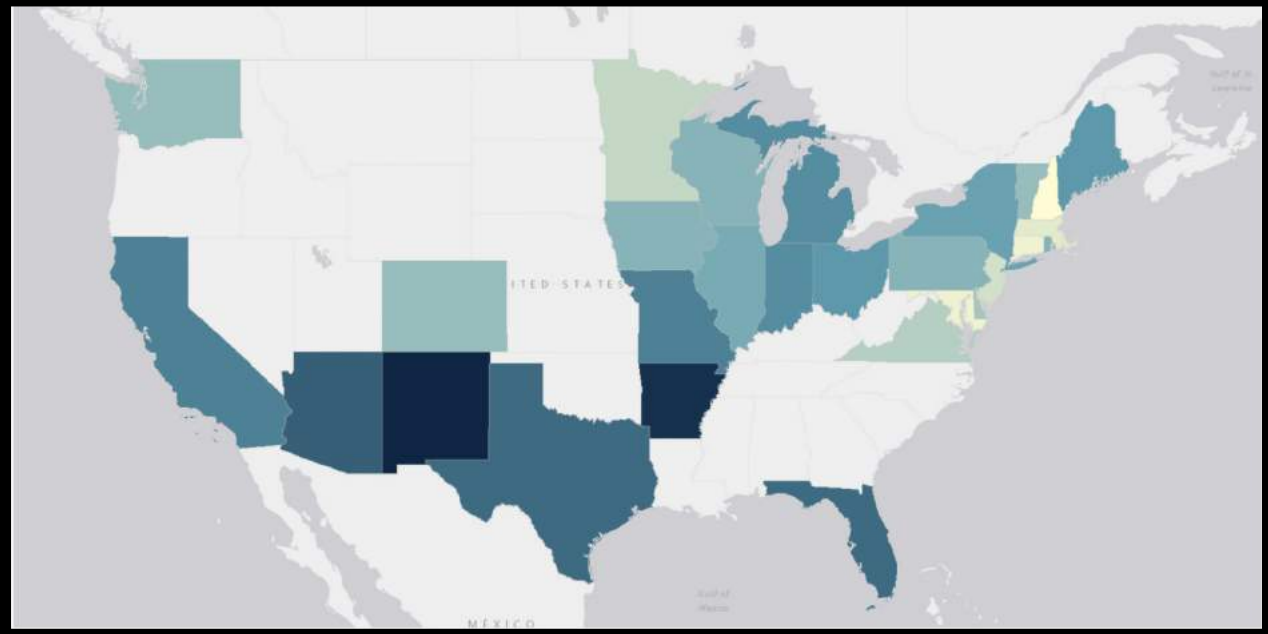
$20K Poverty Solutions Faculty Small Grant

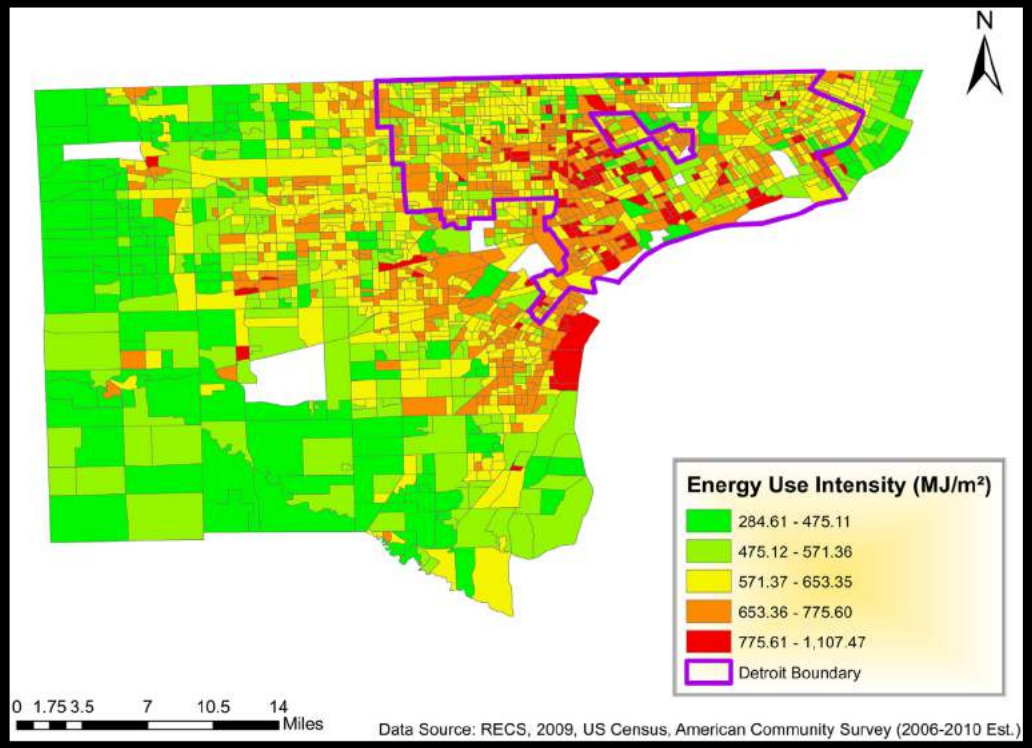
The study encompasses over $5.5 billion of spending by eleven Investor-Owned-Utilities (IOU's) from 2012-2021, in six states: Connecticut, Colorado, Illinois, Massachusetts, Michigan and Minnesota.

Developed a measure to compare utilities; Energy Efficiency Equity baseline (E3b)

Developing an online tool to display investments and E3b







Category	Description	Correlation	
		Heating Consumption	Heating Inefficiency
Economic Status	Median HH income	↑	↓
	% HHs below poverty	↓	↑
Education	% Less HS diploma	↓	↑
Race/Ethnicity	% White HHs		↓
	% African Americans HHs		↑
	% Hispanic HHs		↑
Housing Tenure	% Owner-occupied	↑	↓

Modeling and Mapping Disparities in Residential Consumption and Efficiency

Using publicly available data (RECS & Census)

Mapping median consumption and energy use intensity at various spatial levels

Developing national map

Exploring relationships with race, class and other demographic and socioeconomic characteristics

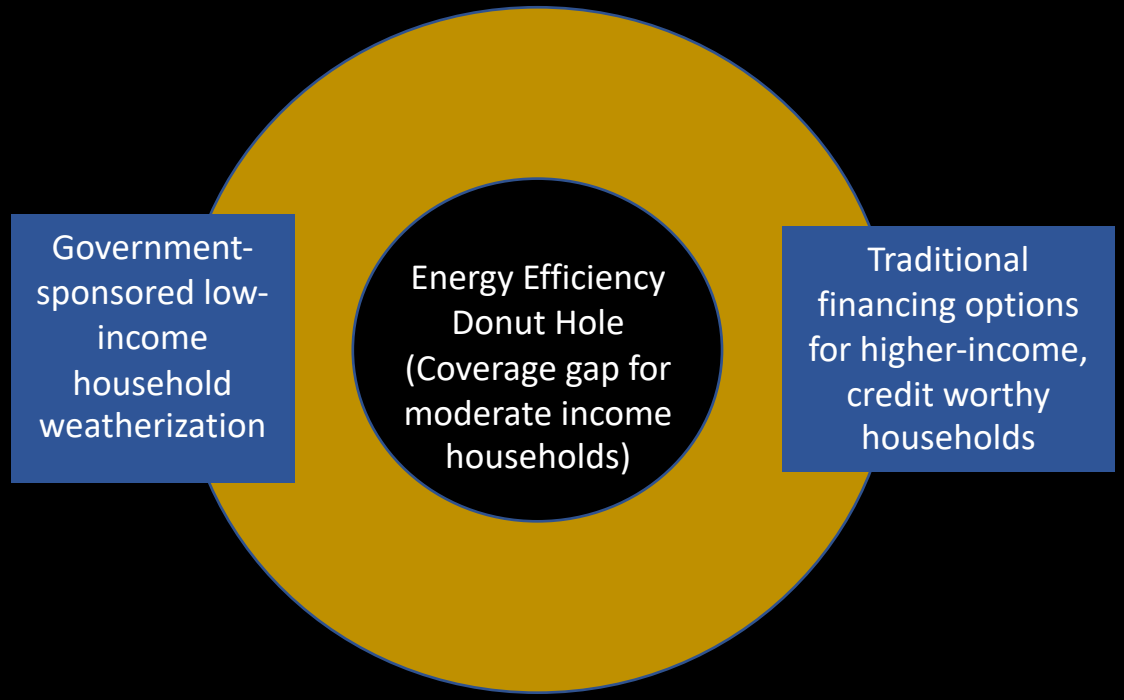
The intersection of energy and justice: Modeling the spatial, racial/ethnic and socioeconomic patterns of urban residential heating consumption and efficiency in Detroit, Michigan Bednar, D.J., Reames, T.G. and Keoleian, G.A., 2017. *Energy and Buildings*, 143, pp.25-34.

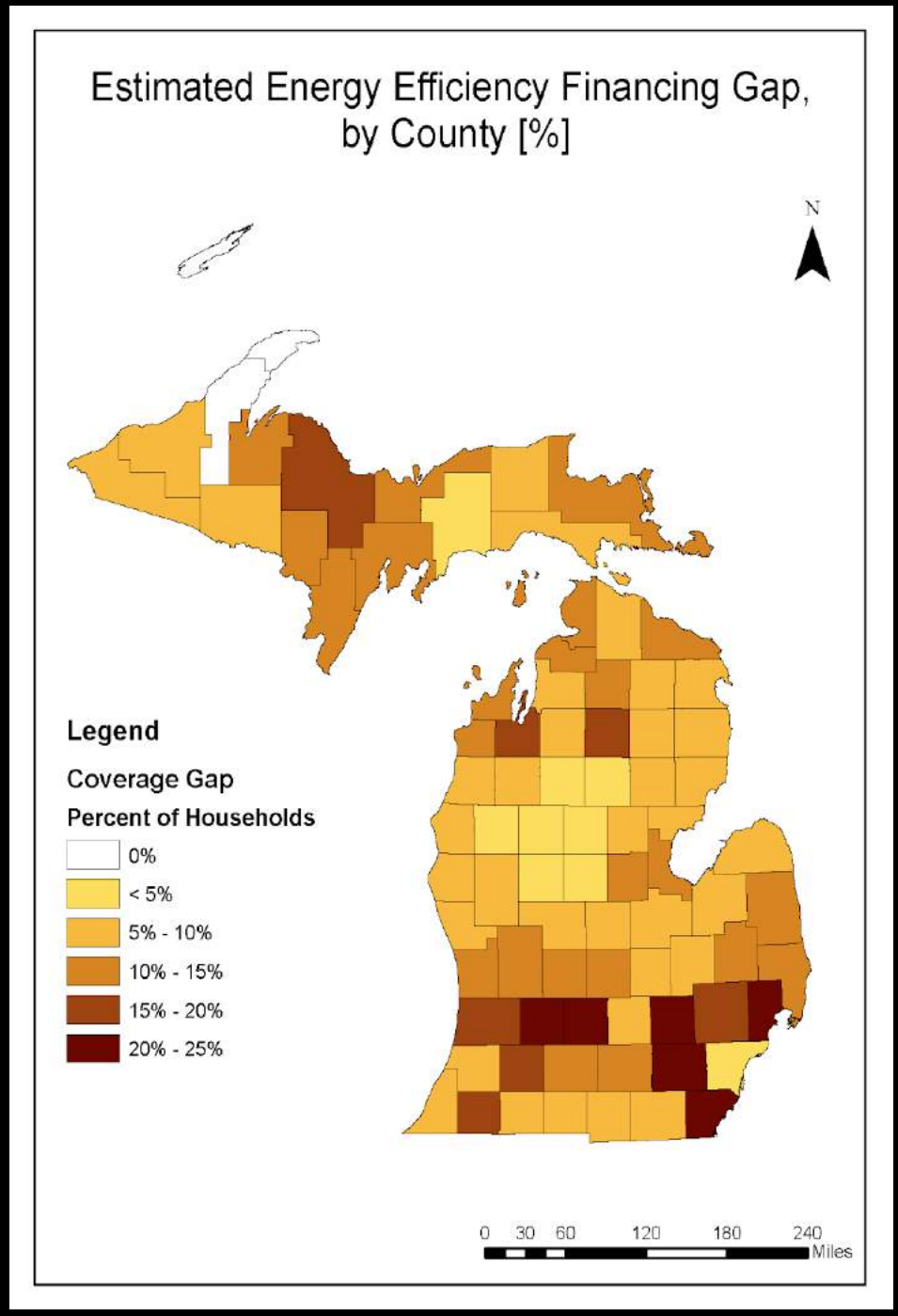
Estimating the energy efficiency donut hole

$58,000 Sloan Foundation Grant

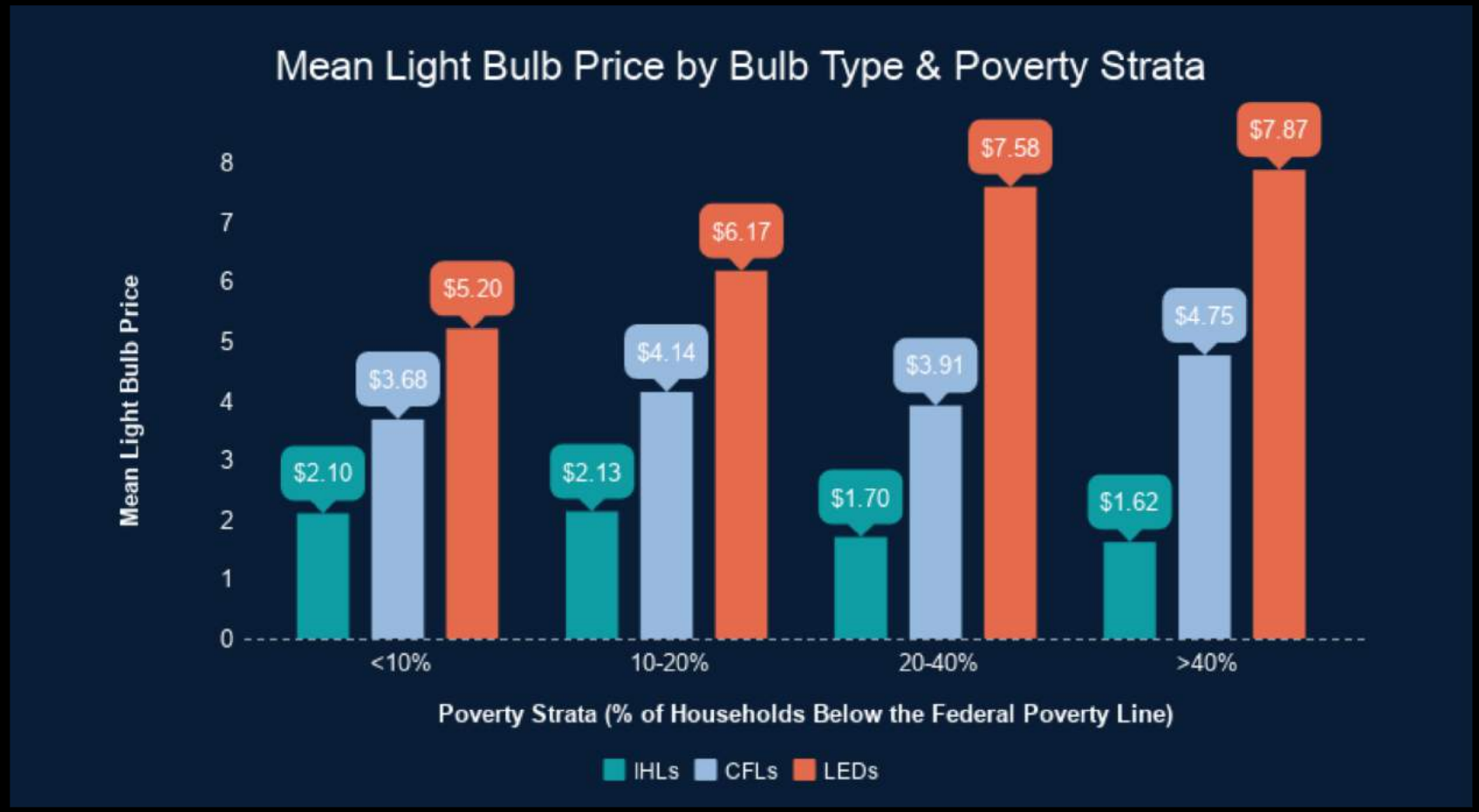
Research Partner: Michigan Saves

Develop a model to estimate and map the market potential of households in the energy efficiency donut hole (or energy efficiency financing coverage gap) - “moderate income households”



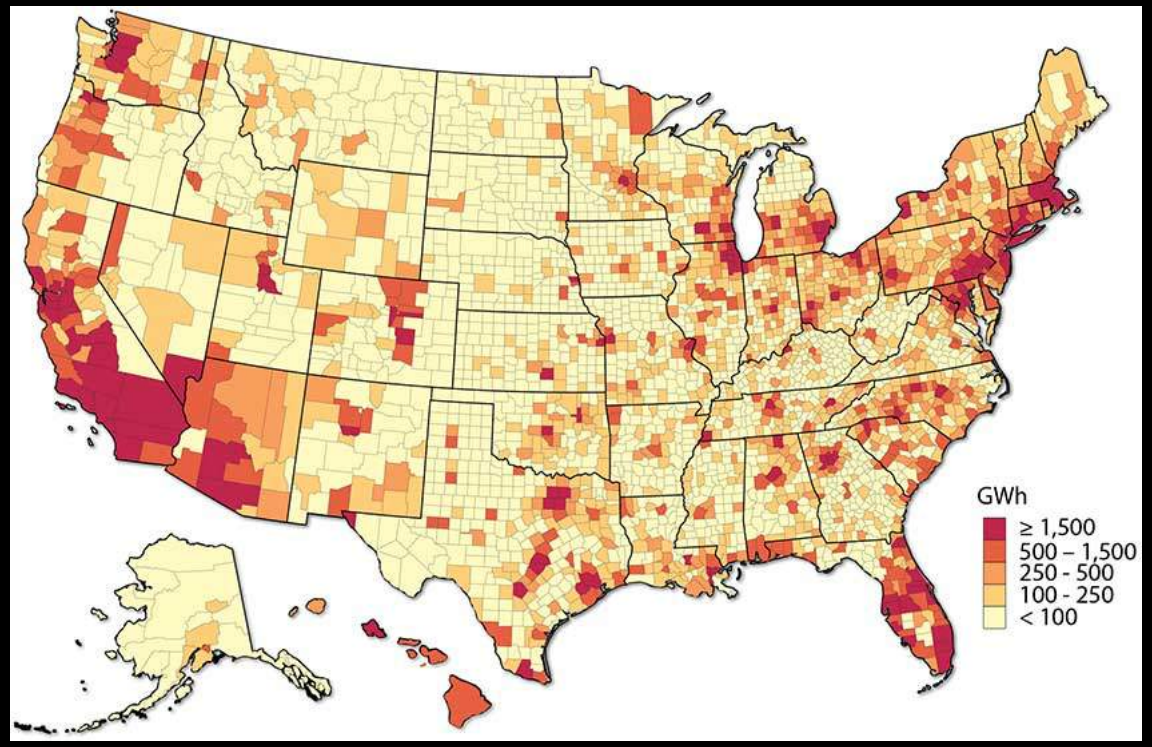


Barriers to Energy Efficient Technology Access



- **$2.67** difference in cost of LED bulbs between poorer and less poor areas
- Cost to upgrade from INC to LED is **2 times** greater in poorer areas than in less poor areas ($6.25 v. $3.10)

An incandescent truth: Disparities in energy-efficient lighting availability and prices in an urban US county
Reames, T. G., Reiner, M. A., & Stacey, M. B. 2018. Applied Energy, 218, 95-103.



Solar Equity

$1.35M Dept. of Energy Grant

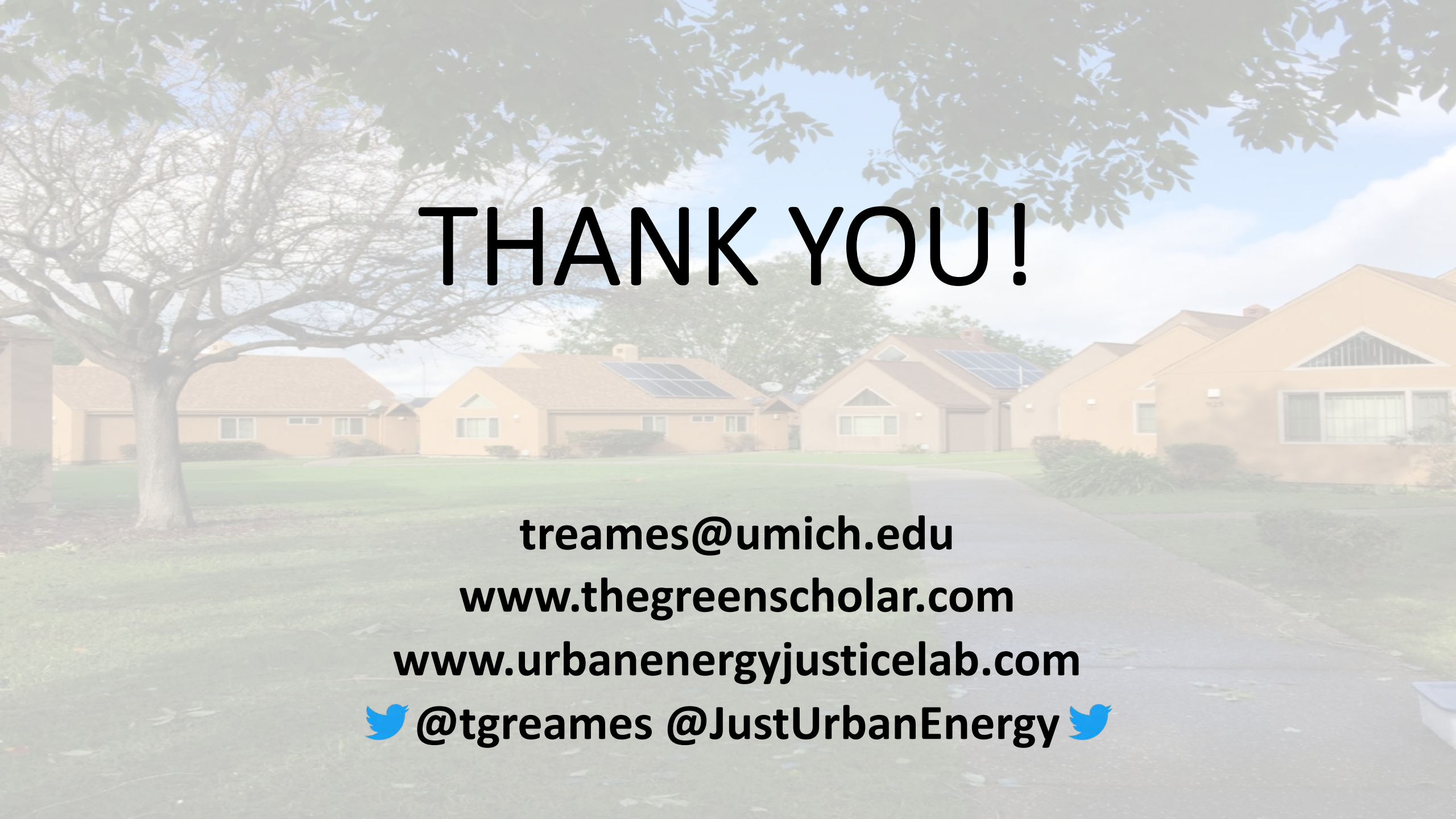
Research Partner: NREL, LBNL, GRID Alternative, U of Chicago

Model and Map national rooftop solar potential at the census tract and county levels

Nathan Cummings Foundation Grant

Research Partners: CESA, Alabama A&M, Southern Partnership for Equity

National grassroots survey exploring barriers and opportunities for solar expansion in under-resourced communities



THANK YOU!

treames@umich.edu

www.thegreenscholar.com

www.urbanenergyjusticelab.com

@tgreames @JustUrbanEnergy