

DOCKETED

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Energy Equity Indicators

Martín Flores, CEC Energy Assessments Division
November DACAG Meeting
November 21, 2025



History of Energy Equity Indicators

Developed to identify opportunities and track progress of SB 350 recommendations

1. Improve access to clean energy technologies for low-income customers and disadvantaged communities (DACs)
2. Increase clean energy investments in DACs
3. Improve community resilience to grid outages and extreme events

2018 Equity Indicators		
Access	Investments	Resilience



Do We Need Another Tool?

	Energy	Environmental	Health	Socio-economic	DACs + Tribes
2018 Energy Equity Indicators	X				
CalEnviroScreen 4.0		X	X	X	X
Integrated Climate Adaptation and Resiliency Program (ICARP)			X	X	Excludes Tribes
CA Building Resilience Against Climate Effects Project (CalBRACE)				X	Excludes Tribes

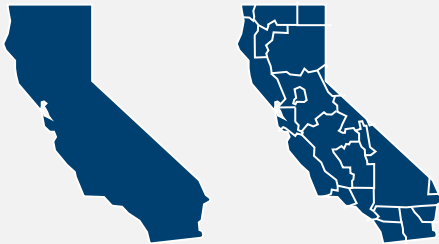


Vision for a New Tool

1. Data Visualization and Mapping



Database of Equity Data

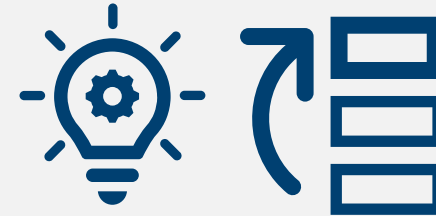


Geographic Data
Layers

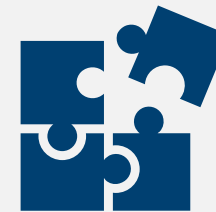


Data Access
and Analysis

2. Insights to Help Prioritize CEC Efforts and Investments



3. Complements CalEnviroScreen 4.0





Energy Equity Landscape

Natural Landscape



Energy Equity Landscape





Energy Equity Indicators Application Diagram



Energy Metrics

Access



Reliability



Efficiency



Affordability



Programs



Clean Energy
Adoption



Supplementary Metrics



Community



Health



Safety



Socioeconomics



Public Engagement Briefings

- Long-term Planning Committee, Disadvantaged Community Advisory Group (DACAG)
- California Environmental Justice Alliance (CEJA)
- Comite Civico
- San Diego State University
- University of Southern California
- Quarterly TECH Low-Income Ambassador Meeting
- Electric Program Investment Charge (EPIC)
- Pacoima Beautiful
- Several internal CEC teams



Public Engagement Briefing Takeaways

- Internal and external partners are dissatisfied by lack of diversity in current screening tools and energy data
 - Existing mismatch between funding source and energy equity challenge
- Urgency and enthusiasm, internally and externally
- Concerns around barriers to use/understanding EEI
- Interval meter data is vital for highly-granular and accurate metrics
- Future Phases



Energy Affordability Application Metrics

- Two established affordability metrics
 - **Energy Burden** – percent of income spent on energy annually
 - **Energy Affordability Gap** – amount of welfare needed to bring an energy burden to an ideal level
- **CEC's Energy Affordability Index** – comparative index identifying communities at-risk of not meeting energy needs
- Several socioeconomic and community characteristic metrics
 - Income
 - Demographics
 - SB 535 Disadvantaged Community designations
 - JAEDI-based Justice Community designations



Negligence of Living Cost Corrections in Established Affordability Metrics



Case 1

- Single man
- \$100k annual income
- \$10k annual energy costs



Case 2

- Four-person family
- \$100k annual income
- \$10k annual energy costs

$$\frac{\$10,000 \text{ in energy costs}}{\$100,000 \text{ income}} = 10\%$$

But the two households are **not** alike



Incomplete Energy Cost Accounting in Established Affordability Metrics

Transportation fuel expenses are **NOT** normally included in the energy burden and energy affordability gap calculation

“ ...average annual household spending on gasoline totaled **\$2,148** — slightly **more** than **electricity, natural gas, and fuel oil combined** ”

– EIA, 2024



Energy Affordability Index Method

Inputs

Term 1

Estimates of Financial burden placed on households

1. Household Income
2. Household Size
3. Cost of Living
4. Energy Costs

Term 2

Households' ability to react to energy prices

Aggregation

Term 1
Percentile



Term 2
Percentile



Energy Affordability
Index Score



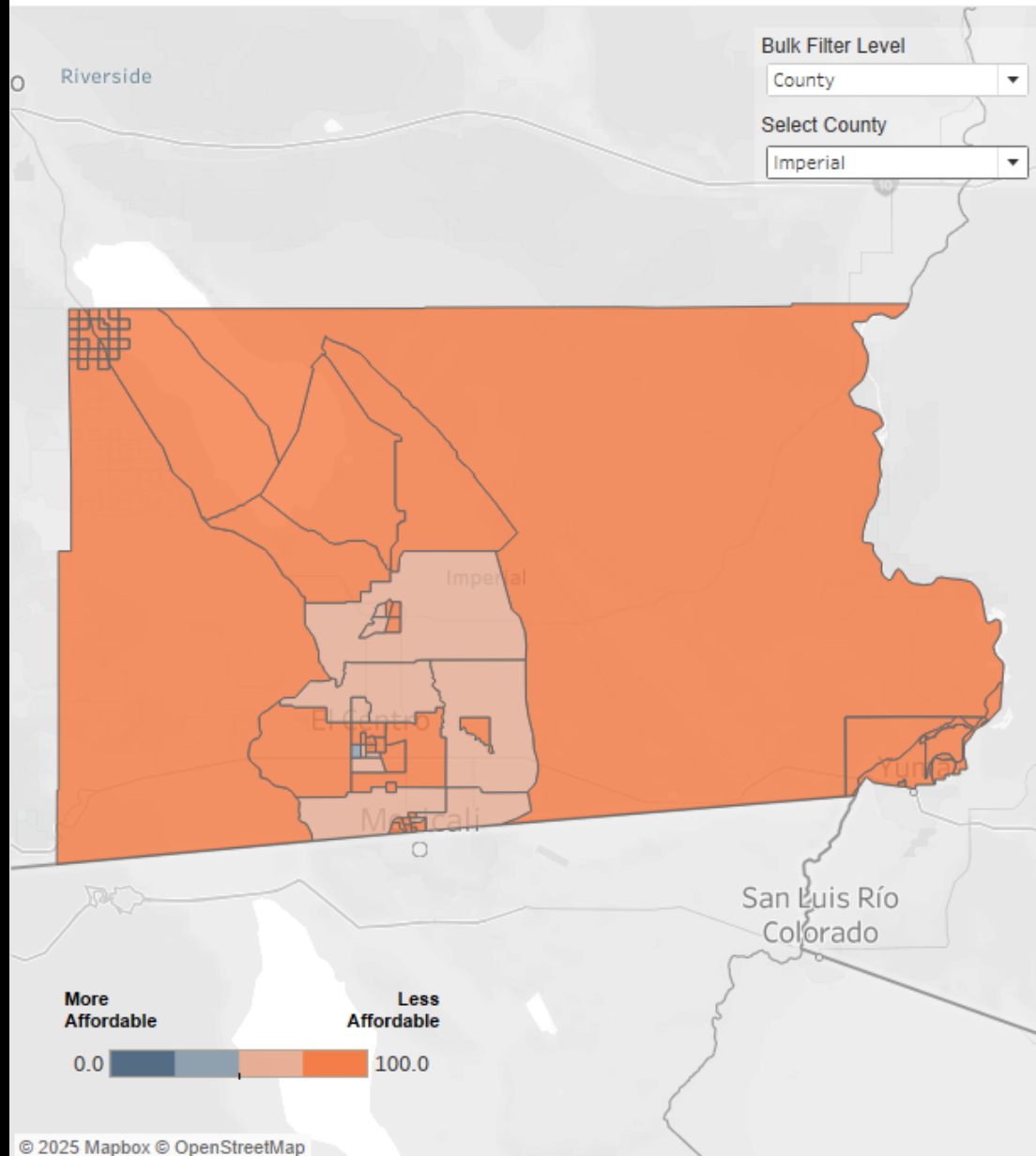
EEI Case Studies Background

	County of Imperial	City of Oxnard
Population	179,000	197,000
Demographics	86% People of Color	85% People of Color
Median Household Income	\$56,393	\$93,373
Justice Community Census Tracts	83%	16%
Average CalEnviroScreen 4.0	73	57
Average Energy Burden	3.7%	1.7%
Energy Equity Challenges	• Dangerously high temps • Severe pollution burden	• Toxic dumping ground • Home to 3 gas power plants

*Preliminary values, published results may vary

A Deep Dive into Energy Affordability

Energy Affordability Index by Census Tract



Pearson Correlation Tool

Independent Variable:

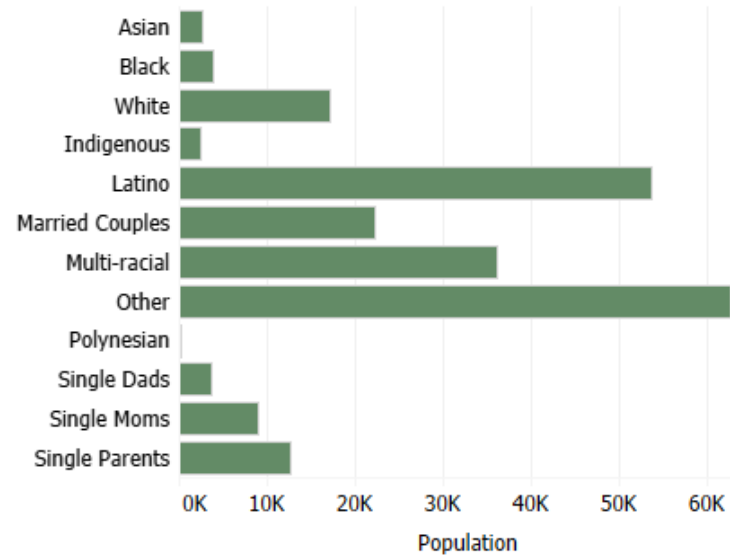
Energy Affordability Index

Vulnerability Variable:

Energy Affordability Index

$r = 1.00$

Community Characteristics



Population Selected **178,682**

Average Household Size **3.7**

Average Energy Affordability Index **81.63**

Average Energy Burden **3.7%**

Total Energy Affordability Gap **85.0M**

Filters

Geographic Level:

- ☒ Census Tract
- ☐ ZIP Code
- ☐ City
- ☐ County
- ☐ State Assembly District
- ☐ State Senate District
- ☐ Natural Gas Provider
- ☐ Electric Power Provider

Metric:

- ☒ Energy Affordability Index
- ☐ Energy Affordability Gap
- ☐ Energy Burden

Home Ownership Type:

- ☒ Combined
- ☐ Owners
- ☐ Renters

Energy Affordability Index:

- ☒ Show All
- ☐ Filter Top 25%

SB 535 DACs Filter:

- ☒ Show All
- ☐ DACs

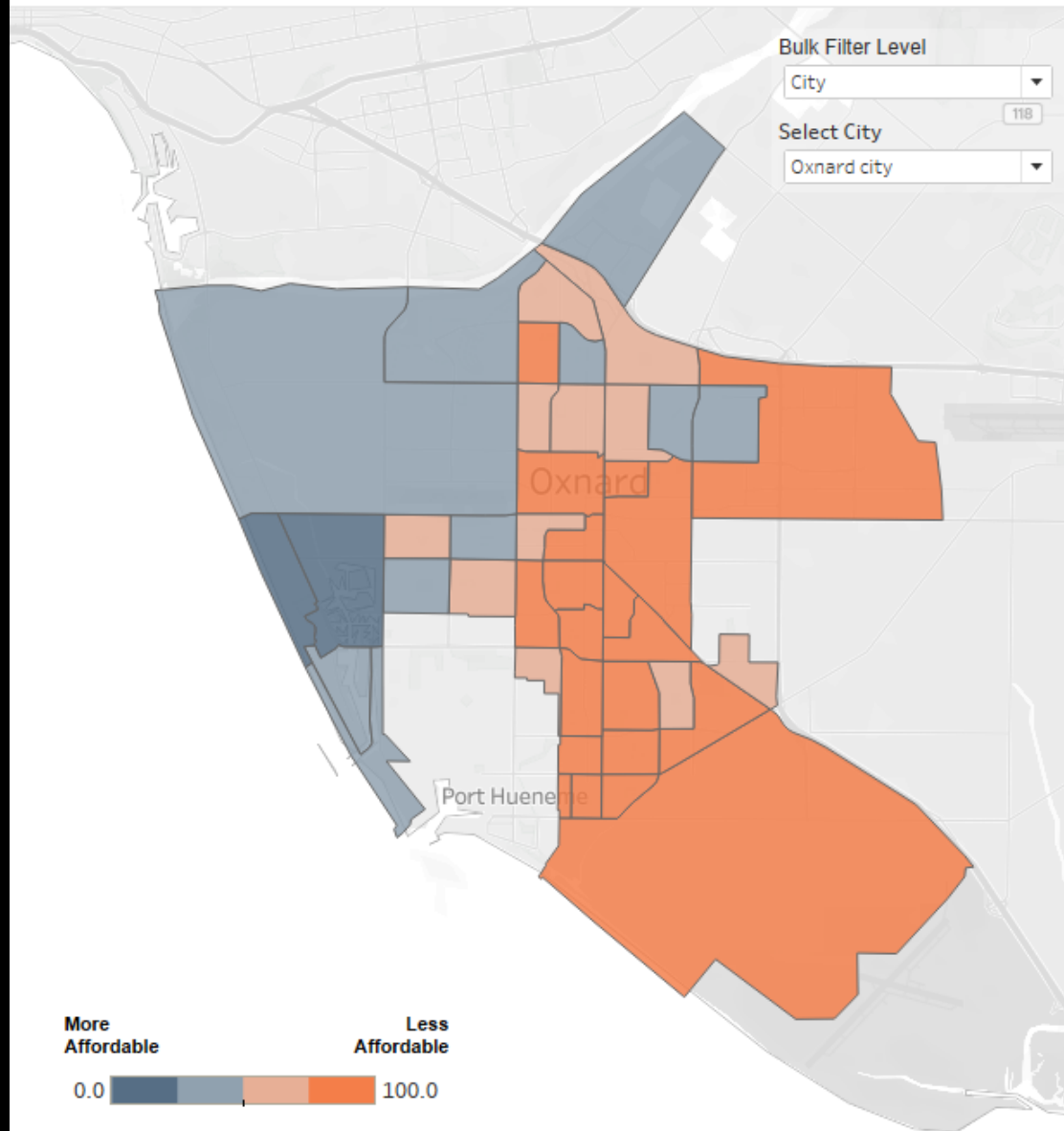
Justice Census Tract Filter

- ☒ Show All
- ☐ Justice Census Tracts



A Deep Dive into Energy Affordability

Energy Affordability Index by Census Tract



Pearson Correlation Tool

Independent Variable:

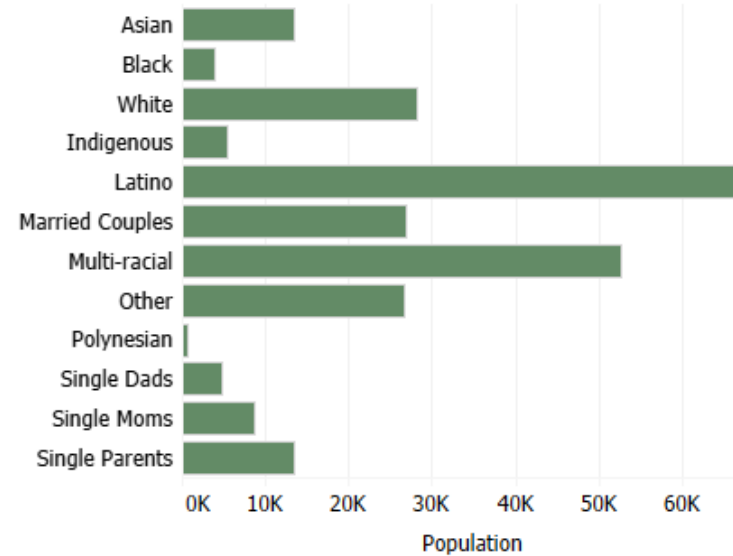
Energy Affordability Index

Vulnerability Variable:

Energy Affordability Index

$r = 1.00$

Community Characteristics



Population Selected **197,316**

Average Household Size **4.0**

Average Energy Affordability Index **67.25**

Average Energy Burden **1.7%**

Total Energy Affordability Gap **261.1M**

Filters

Geographic Level:

- ☒ Census Tract
- ☐ ZIP Code
- ☐ City
- ☐ County
- ☐ State Assembly District
- ☐ State Senate District
- ☐ Natural Gas Provider
- ☐ Electric Power Provider

Metric:

- ☒ Energy Affordability Index
- ☐ Energy Affordability Gap
- ☐ Energy Burden

Home Ownership Type:

- ☒ Combined
- ☐ Owners
- ☐ Renters

Energy Affordability Index:

- ☒ Show All
- ☐ Filter Top 25%

SB 535 DACs Filter:

- ☒ Show All
- ☐ DACs

Justice Census Tract Filter

- ☒ Show All
- ☐ Justice Census Tracts



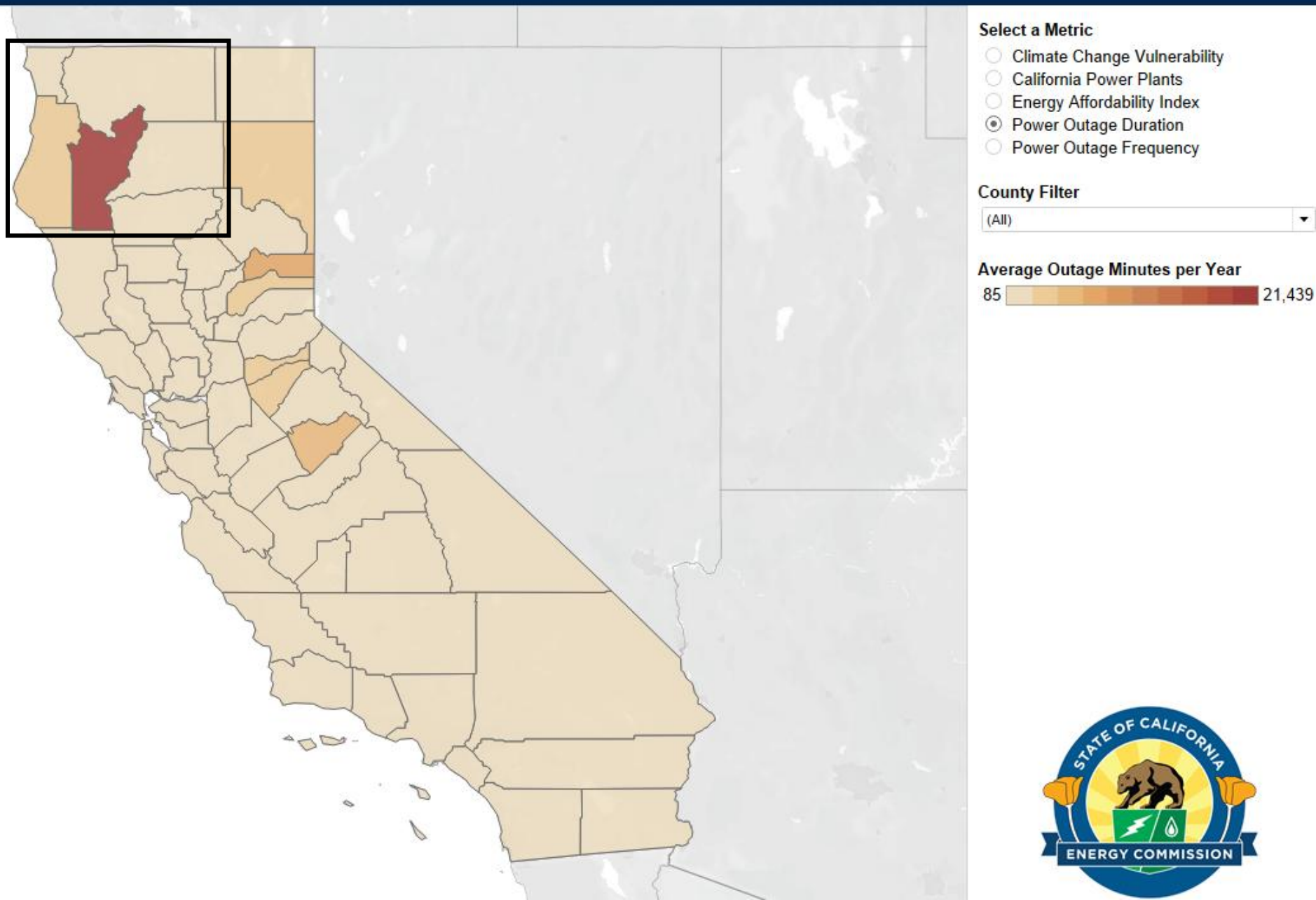


EEI Case Study Results at a Glance

	County of Imperial	City of Oxnard	Statewide
Average Energy Affordability Index	82	67 (West=37, East=76)	-
Average In-Home Energy Costs	\$2,358	\$1,800	\$2,389
Average Transportation Energy Costs	30% LOWER than state average	40% HIGHER than state average	-
Average Household Size	3.7	4.0	3
Median Household Income	\$56,393	\$93,373	\$96,334
Self-Sufficiency Standard (For a 4-Person Family)	\$53,839	\$71,086	\$65,464

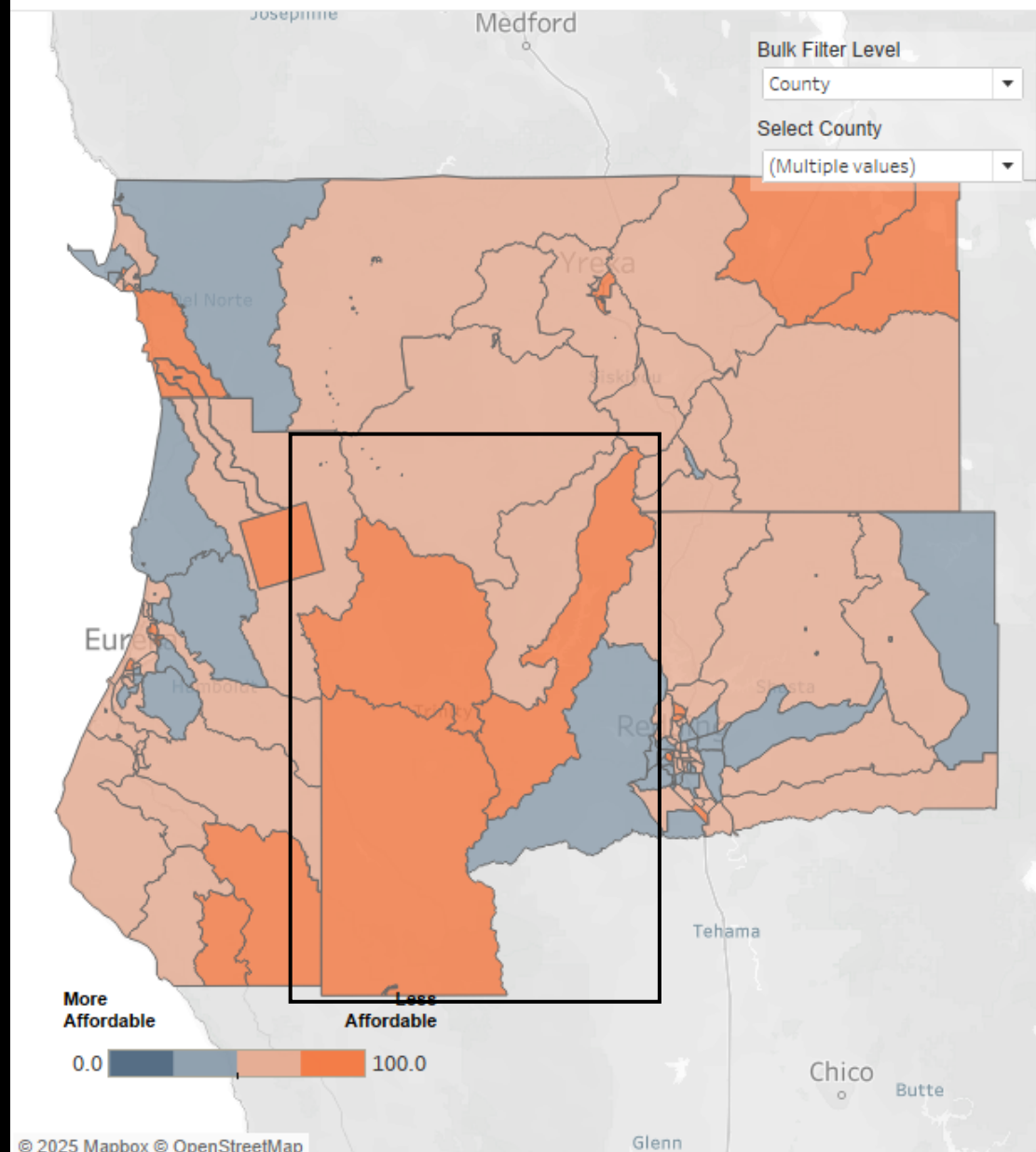
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High-Level Energy Equity Landscape of California



A Deep Dive into Energy Affordability

Energy Affordability Index by Census Tract



Pearson Correlation Tool

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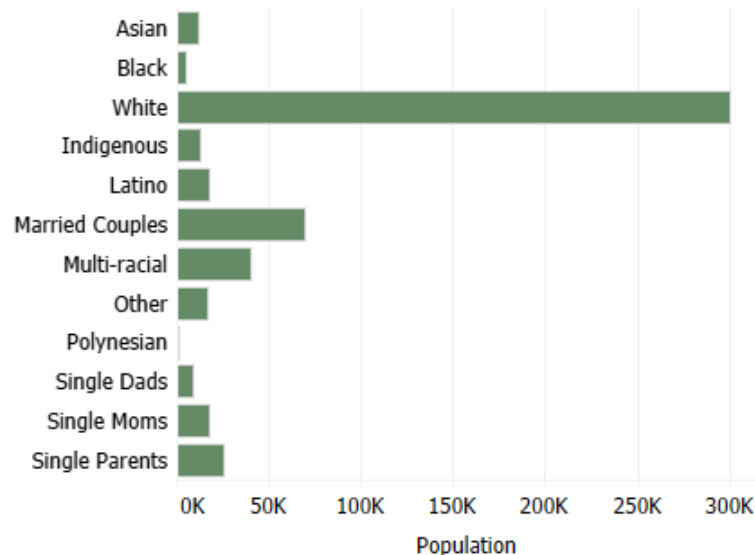
Energy Affordability Index

Vulnerability Variable:

Energy Affordability Index

$r = 1.00$

Community Characteristics



Population Selected
405,384

Average Household Size
2.5

Average Energy Affordability Index
60.09

Average Energy Burden
3.2%

Total Energy Affordability Gap
92.0M

Filters

Geographic Level:

- ☒ Census Tract
- ☐ ZIP Code
- ☐ City
- ☐ County
- ☐ State Assembly District
- ☐ State Senate District
- ☐ Natural Gas Provider
- ☐ Electric Power Provider

Metric:

- ☒ Energy Affordability Index
- ☐ Energy Affordability Gap
- ☐ Energy Burden

Home Ownership Type:

- ☒ Combined
- ☐ Owners
- ☐ Renters

Energy Affordability Index:

- ☒ Show All
- ☐ Filter Top 25%

SB 535 DACs Filter:

- ☒ Show All
- ☐ DACs

Justice Census Tract Filter

- ☒ Show All
- ☐ Justice Census Tracts





Energy Equity Landscape of California's North Coast

Demographics: home to 15 federally-recognized tribal nations

CalEnviroScreen 4.0 Insights:

- Low CalEnviroScreen 4.0 scores
- Low pollution burden scores

➤ Low prioritization

Energy Equity Indicators Insights:

- High number of power outages and total minutes without power
- Low energy affordability per Energy Affordability Index

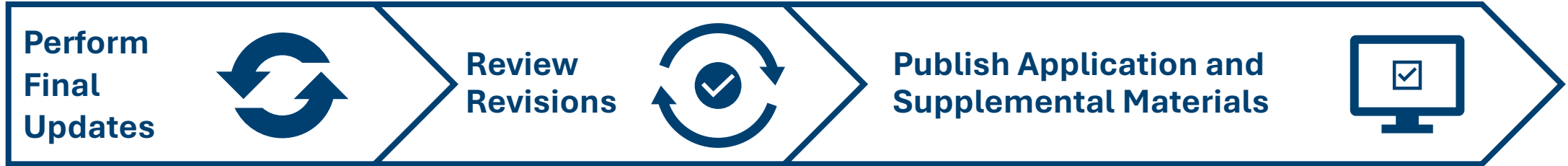
➤ High prioritizations

❖ **Energy Equity Indicators better characterizes energy challenges in areas that are not properly characterized by other tools!**



Future Work

Phase I Timeline



Phase II Timeline



Questions?



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Energy Assessments Division