Engaging All Voices

Behavior, Energy & Climate (BECC) Conference
November 9 and 13-16, 2022

#BECC2022

Convened by:

Stanford Environmental and Energy Policy Analysis Center | ciee California Institute for Energy and Environment | CITRIS Banatao Institute | ACEEE

becc

Intersections of Disadvantaged Communities and Renewable Energy Potential:

Data Set and Analysis to Inform Equitable Investment Prioritization in the United States

November 15, 2022

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Sustainable Communities Catalyzer

An effort by the **Joint Institute for Strategic Energy Analysis** (**JISEA**) at the **National Renewable Energy Laboratory** (**NREL**) to develop **equitable community energy planning capabilities** at NREL

- **Journal article**
- **Data Set**
- **Research Highlights**
- **Trainings**
- **External Speakers**
- **Webpage**

JISEA Joint Institute for Strategic Energy Analysis

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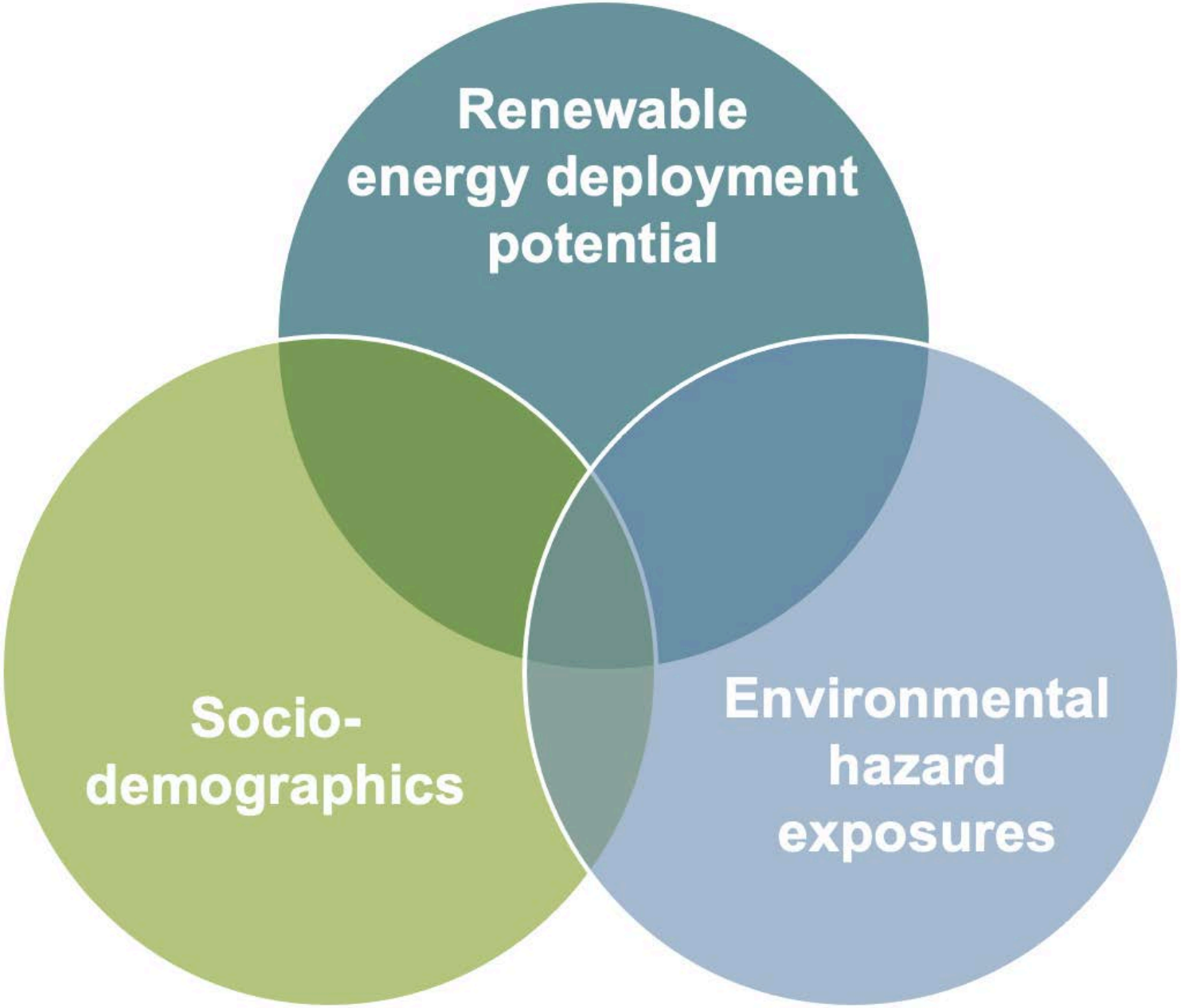
Justice40 Initiative

"Directs 40% of the overall benefits of certain Federal investments to flow to disadvantaged communities," including investments in clean energy. (DOE, 2022)

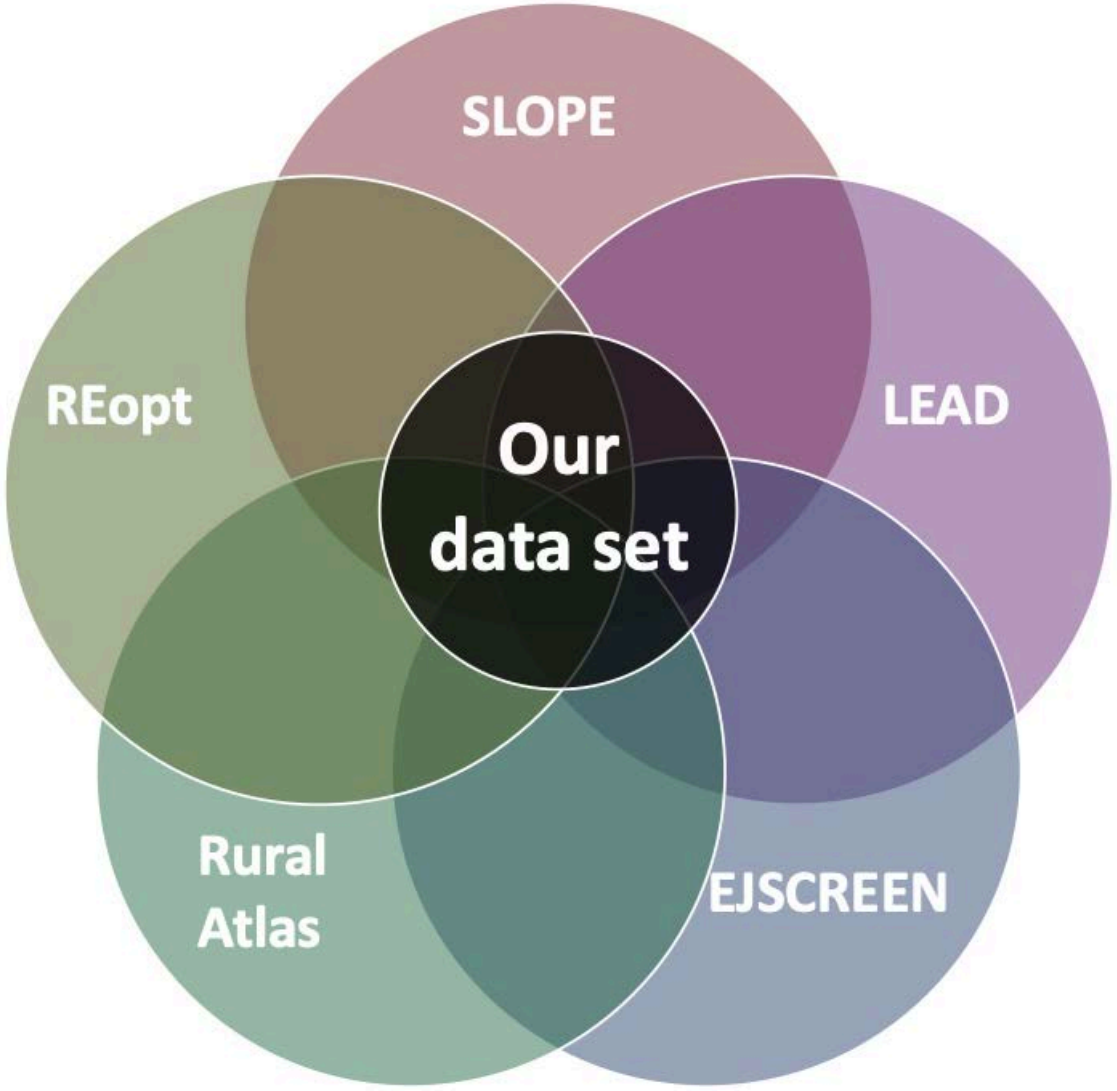
Our goal: Where might renewable energy investments deliver the greatest benefits to disadvantaged communities?

Our Goal

Is there overlap?

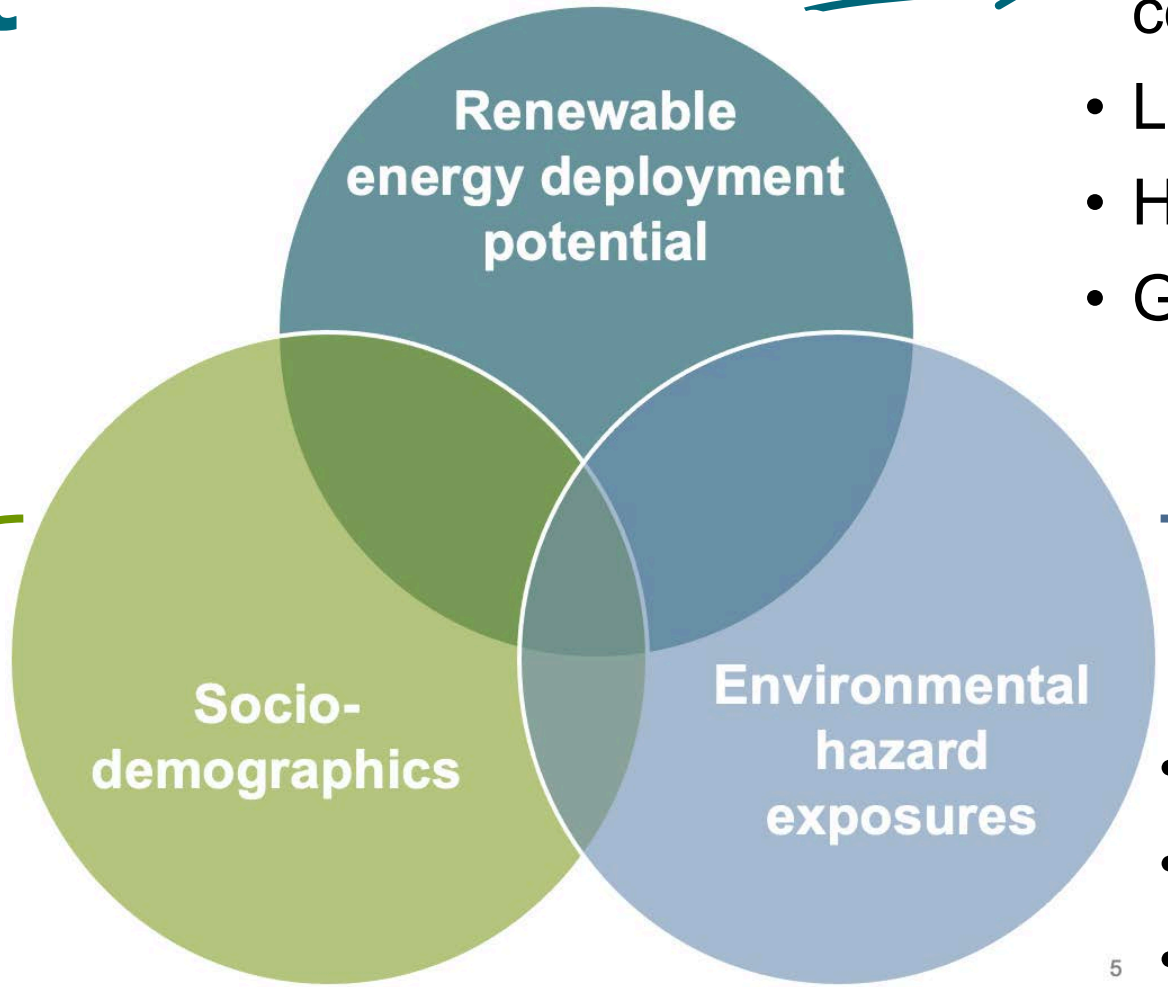


Data Set



- **SLOPE:** State and Local Planning for Energy platform (NREL)
- **LEAD**: Low-Income Energy Affordability Data tool (DOE)
- **REopt®**: Renewable Energy Integration and Optimization model (NREL)
- **EJScreen**: Environmental Justice Screening and Mapping tool (EPA)
- **Rural Atlas**: Atlas of Rural and Small Town American (USDA)

Data Set



- Utility, residential, and commercial solar
- Land-based wind
- Hydropower
- Geothermal

- Energy burden
- Low-income
- Mining, quarrying, and oil & gas employment

- Air toxics cancer risk
- Particulate matter
- Proximity to toxic sites

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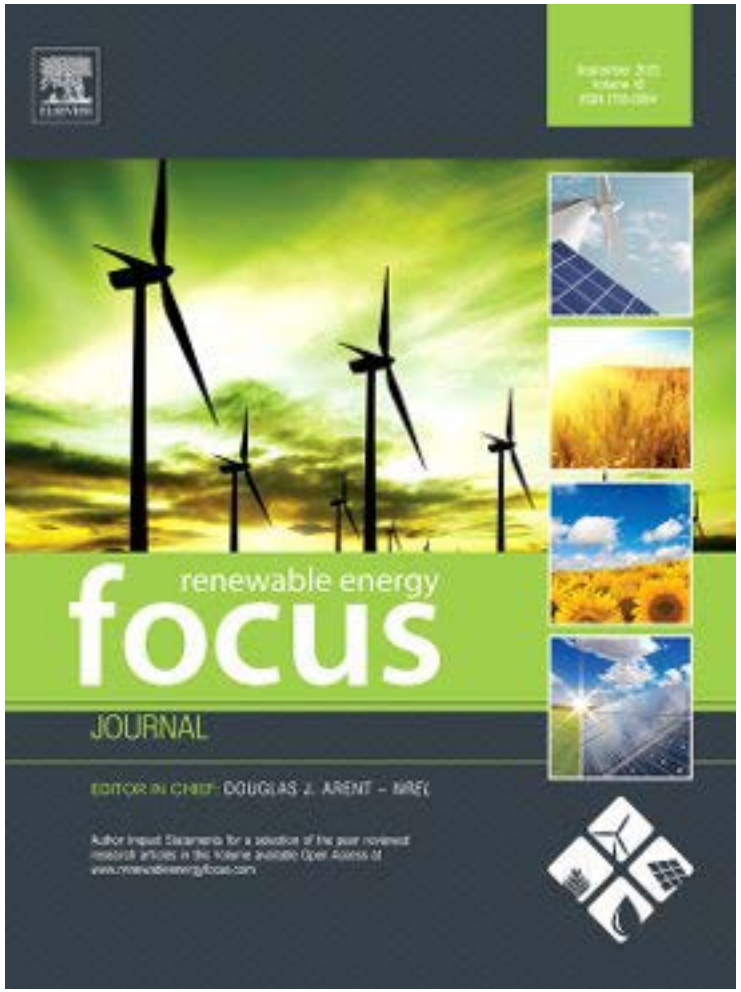
Journal Article



- **Top-down** applications
  - Identify national-level trends in overlap between renewable energy deployment potential and disadvantaged community indicators
- **Bottom-up** applications
  - Investigate county-level needs and opportunities for renewable energy development

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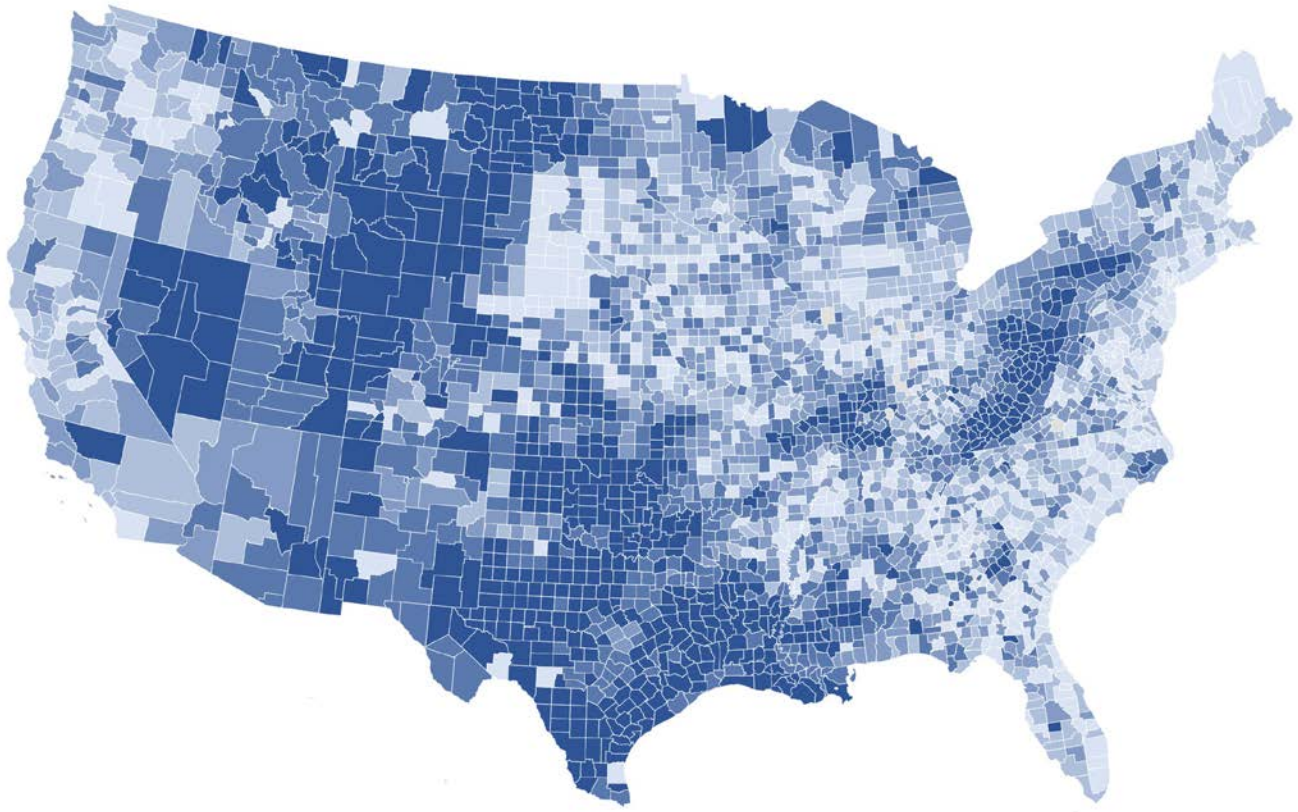
Opportunities for Transitioning Workers: Utility Solar

Mining, quarrying, and oil & gas employment



Fewer jobs

More jobs

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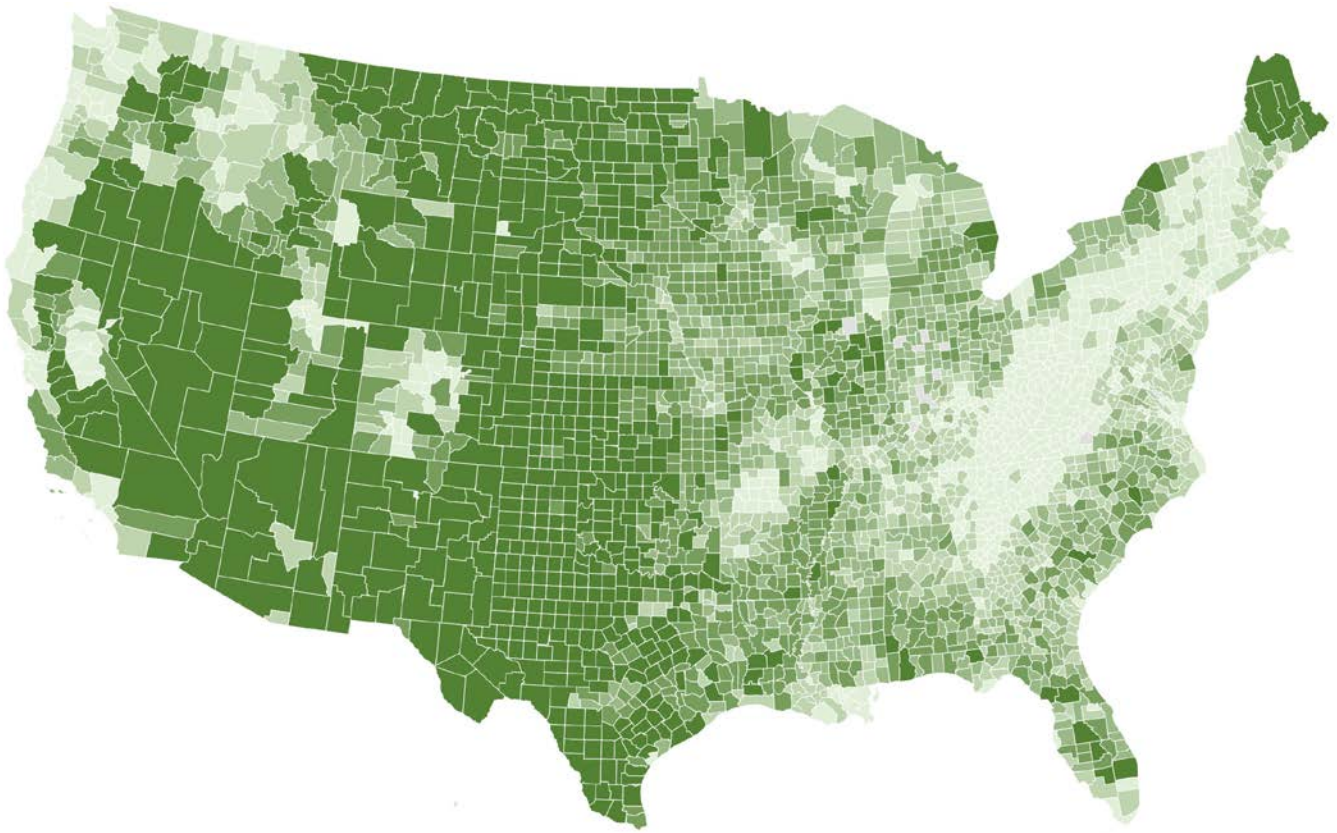
Opportunities for Transitioning Workers: Utility Solar

Technical potential

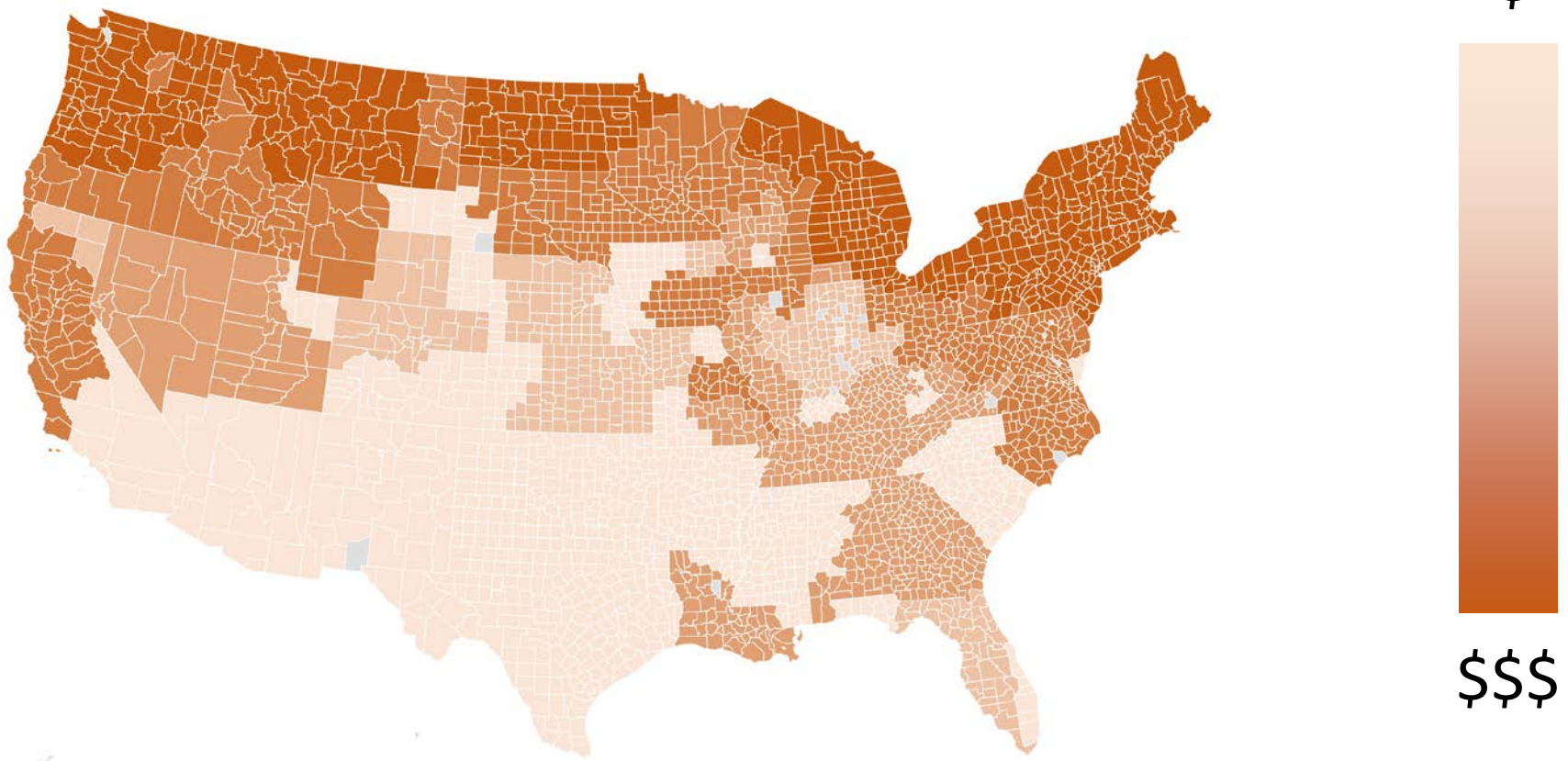


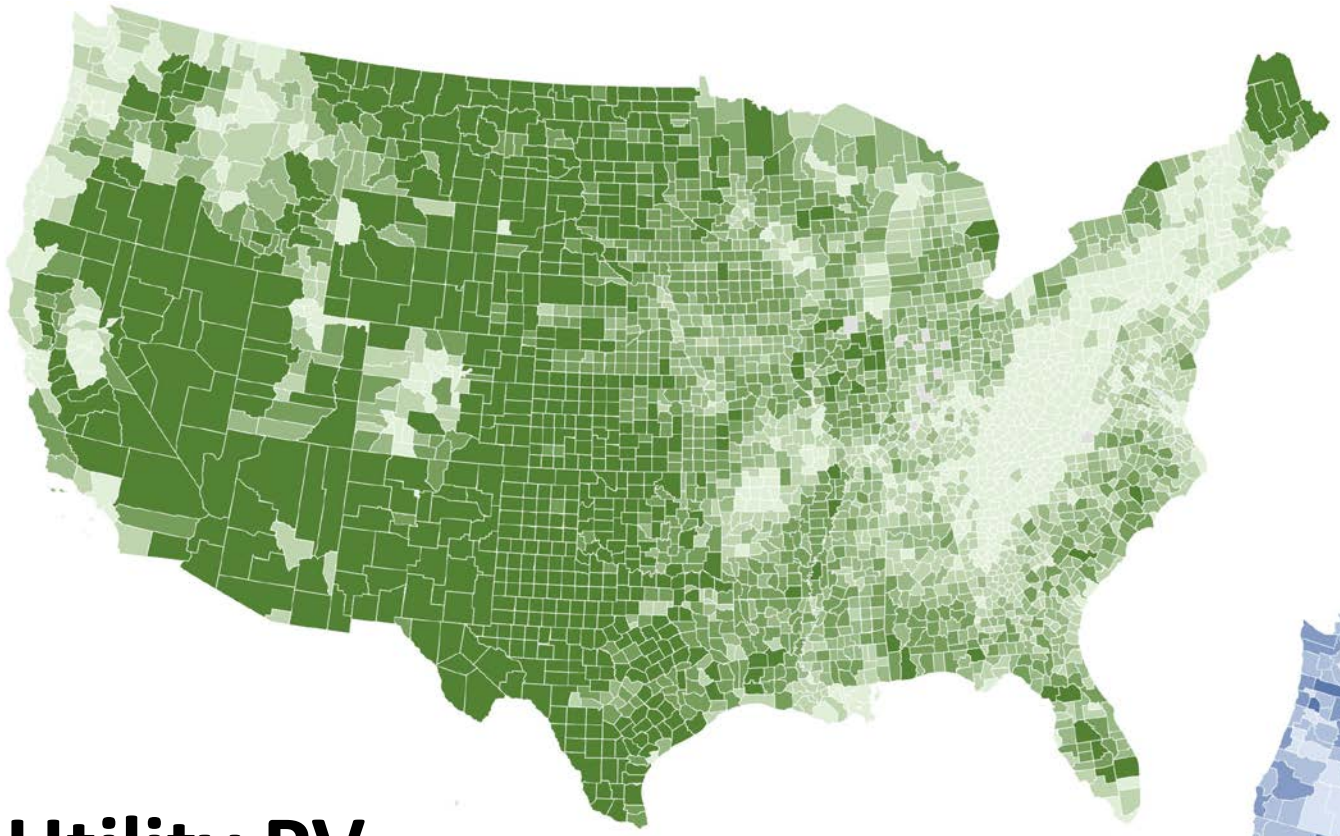
Less potential

More potential

Opportunities for Transitioning Workers: Utility Solar

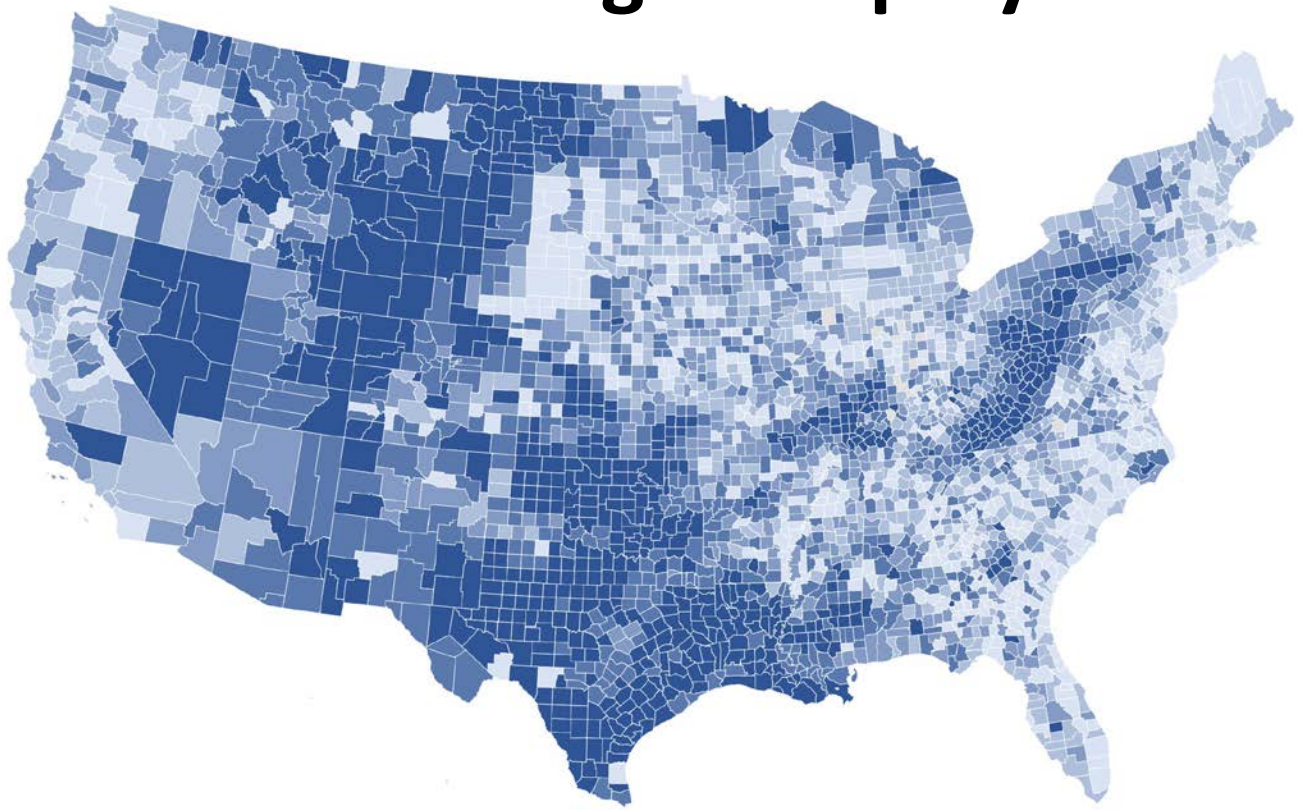
Levelized cost of energy





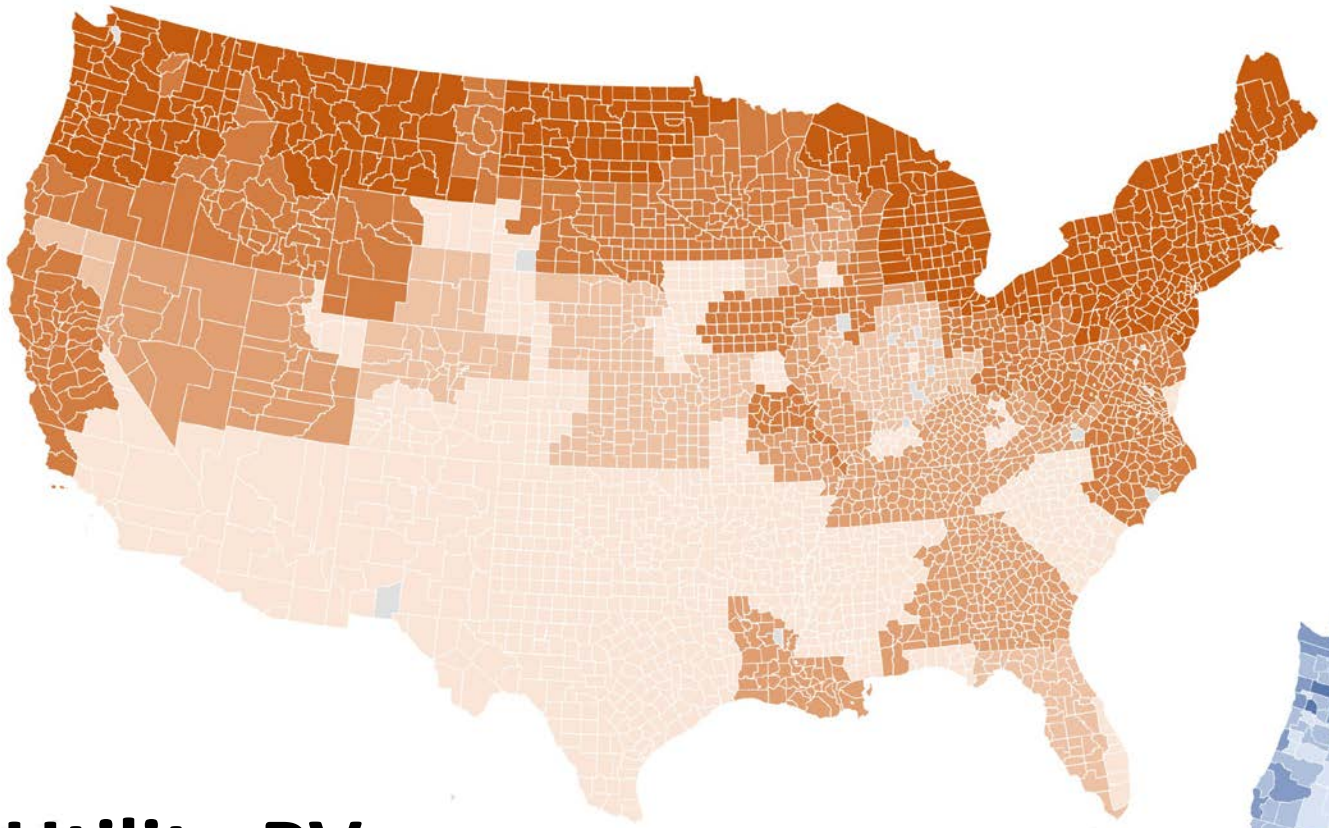
Correlation = .29

Mining, quarrying, and oil & gas employment



Utility PV technical potential

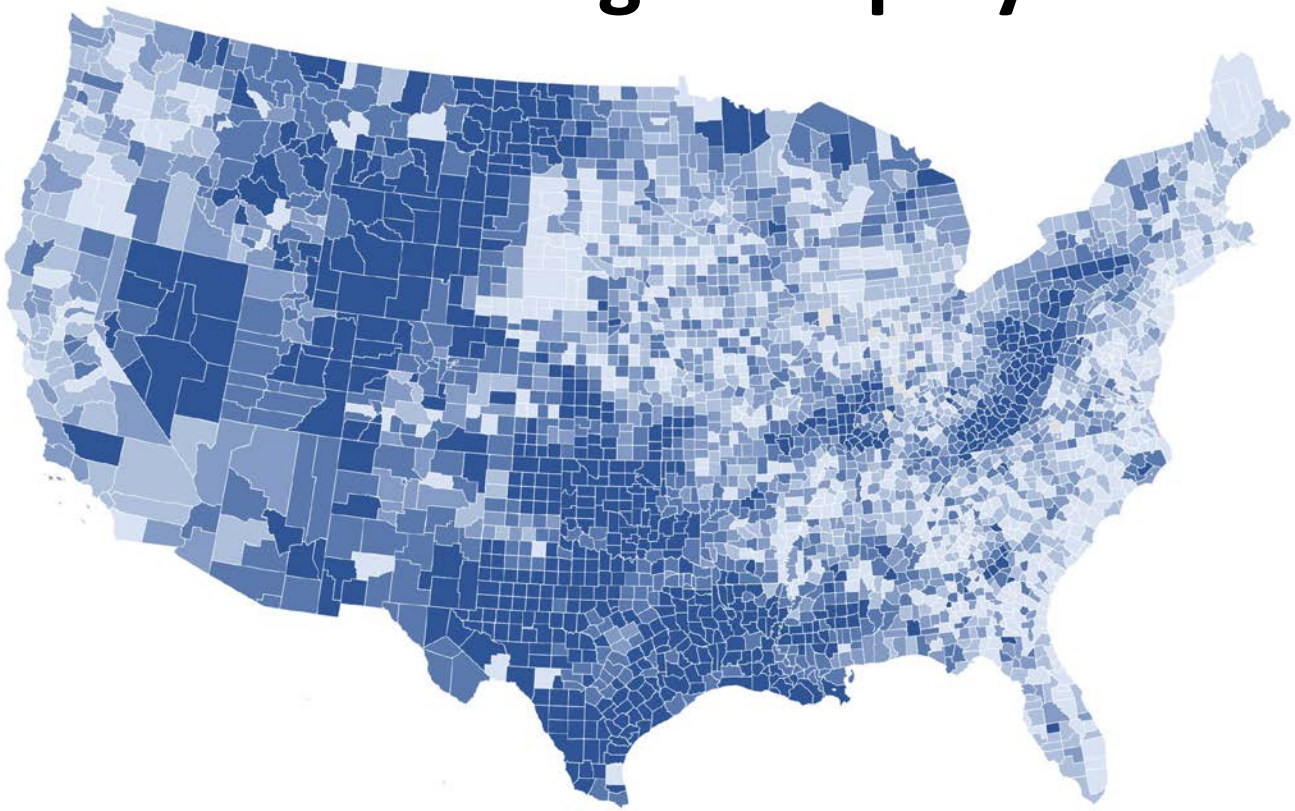
Source: NREL's SLOPE Platform



Correlation = -.25

Utility PV levelized cost

Mining, quarrying, and oil & gas employment



Source: NREL's SLOPE Platform

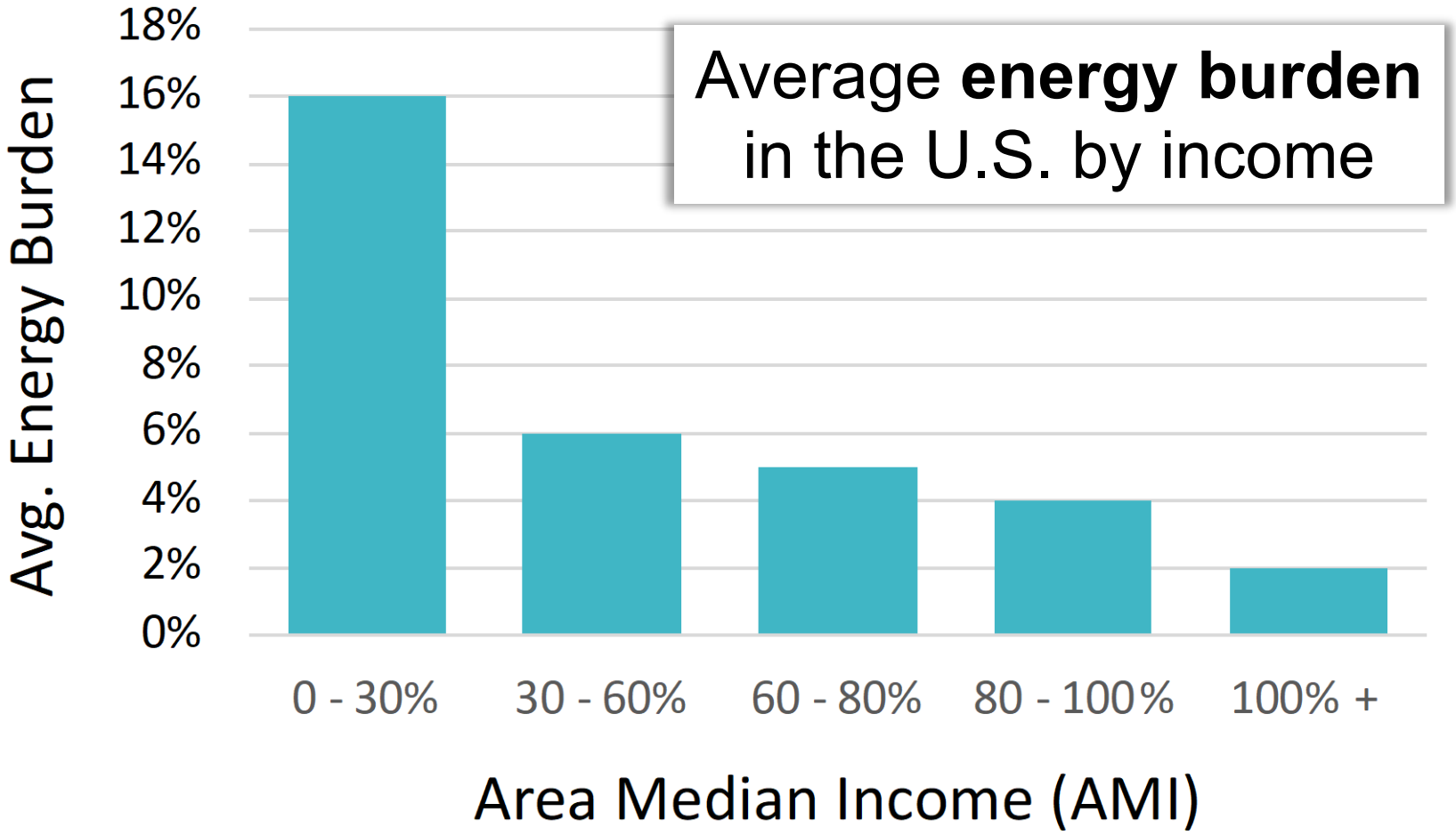
County Profile

Costilla County, CO

- **Indicators of high need**
  - Rural & farming-dependent
  - High unemployment
  - Low-income, persistent poverty, & energy burdened
- **Indicators of high potential**

Energy Burden

Proportion of income spent on household energy costs



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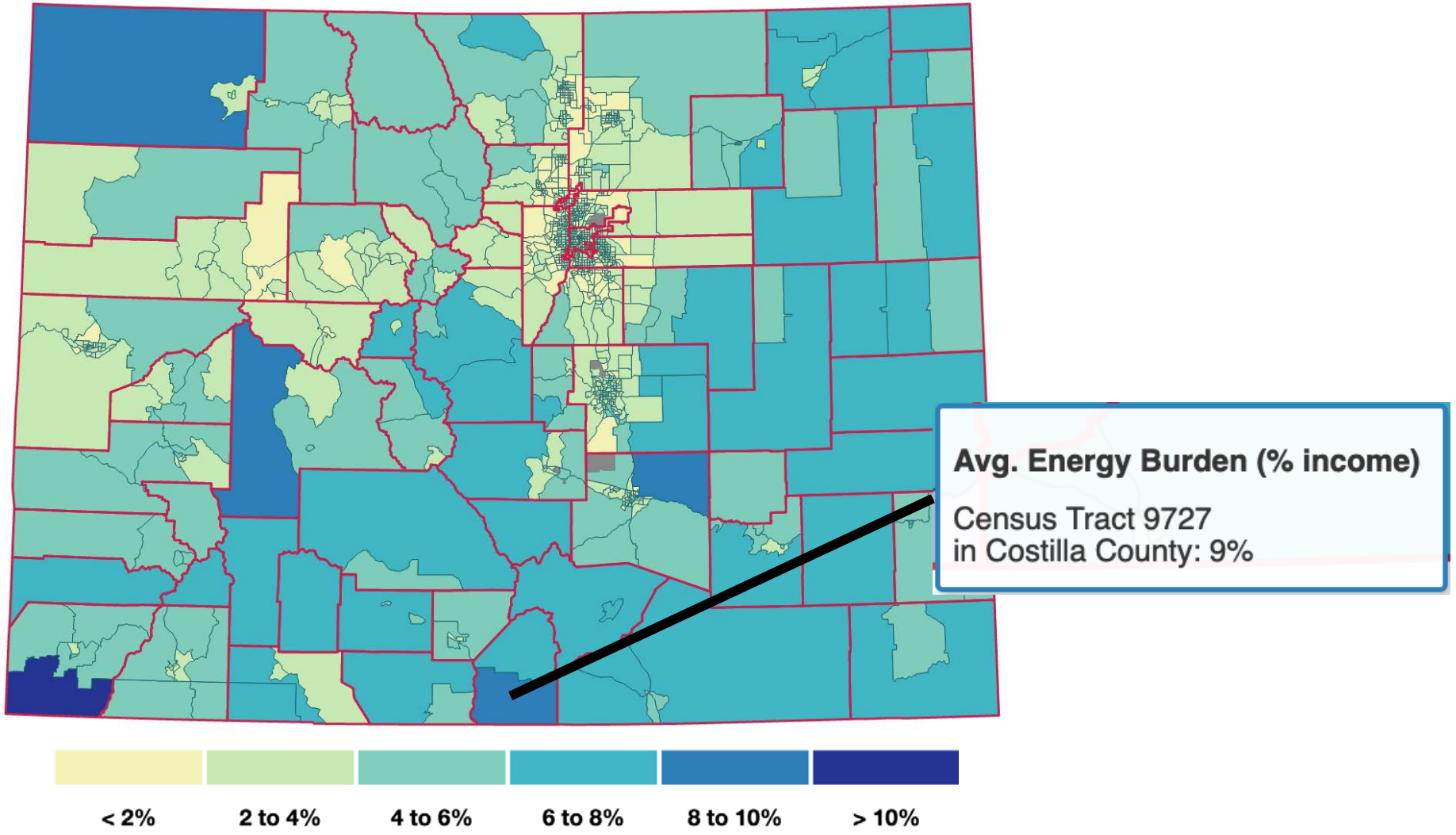
County Profile

Energy Burden: Colorado



Source: DOE's LEAD Tool

County Profile

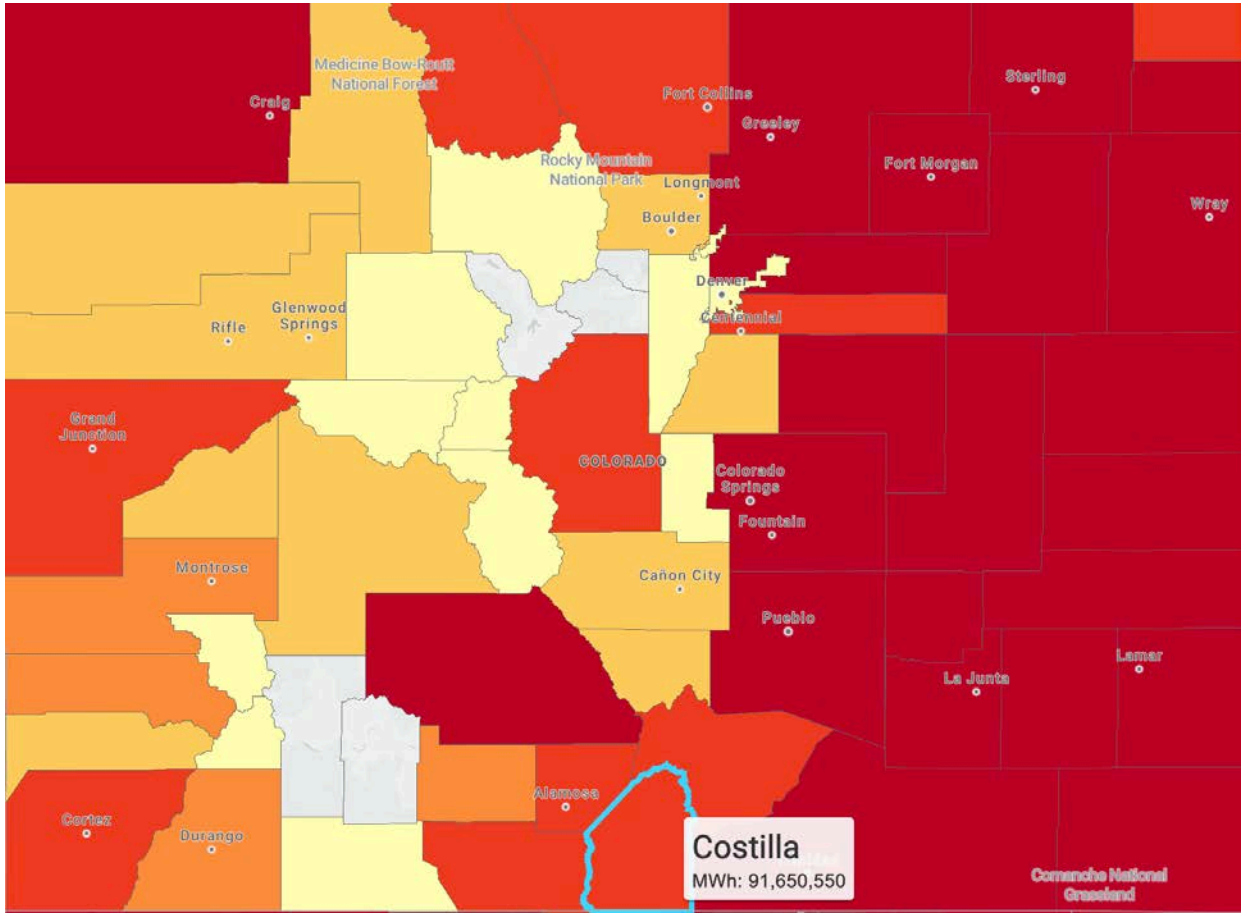
Costilla County, CO

- **Indicators of high need**
  - Rural & farming-dependent
  - High unemployment
  - Low-income, persistent poverty, & energy burdened

- **Indicators of high potential**
  - Land-based wind & utility PV
    - High technical potential
    - Low cost

County Profile

Technical Potential: Utility Solar



93,320,770+ MWh

55,310,910 - 93,320,770 MWh

33,638,270 - 55,310,910 MWh

12,432,820 - 33,638,270 MWh

0 - 12,432,820 MWh

Source: NREL's SLOPE Platform

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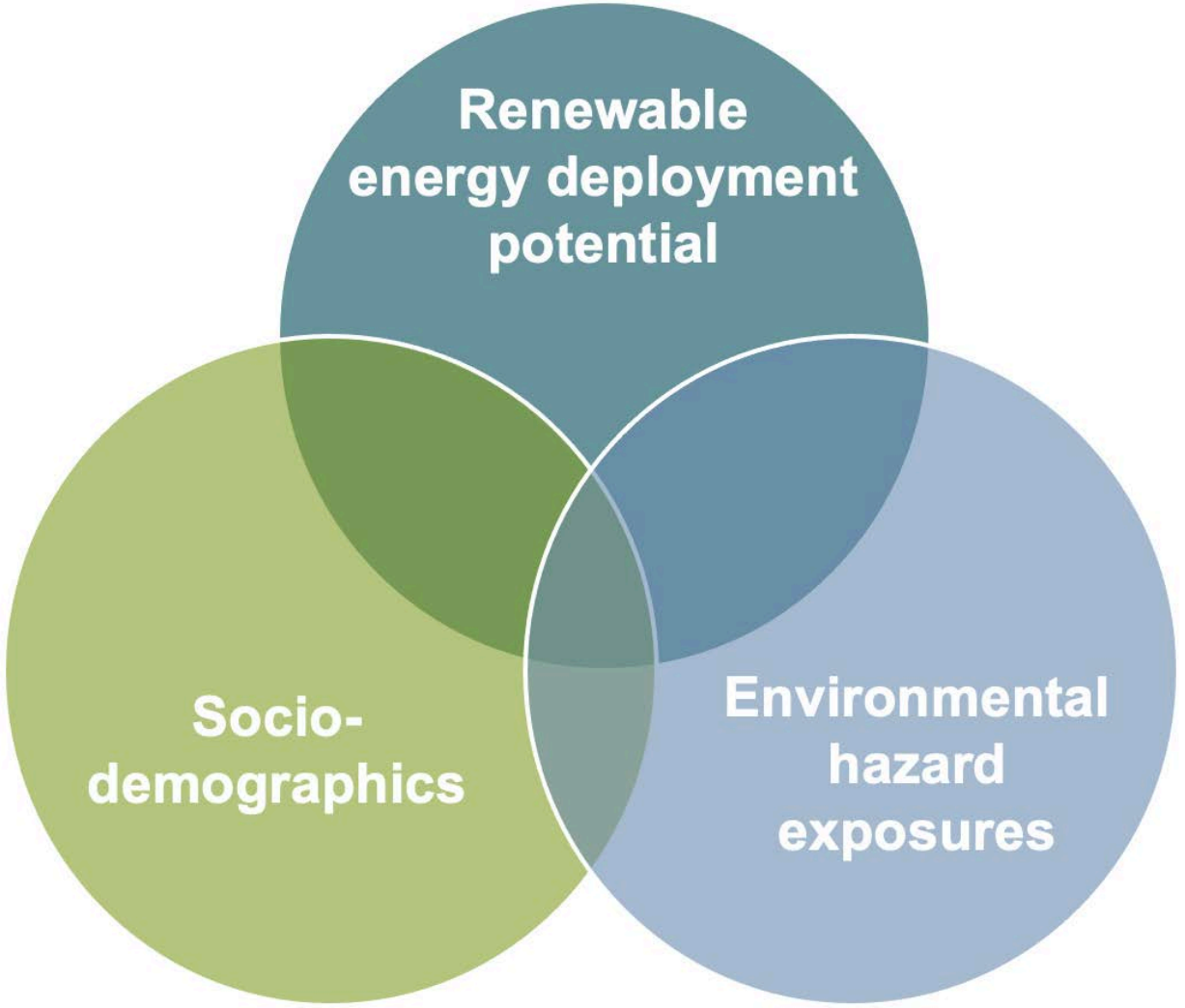
Prioritizing Communities in Need

- Analyses and data set can help with **equity-focused** renewable energy and community-led **siting decisions**
- Data is **publicly accessible**
- **How to do this in your area? Let's chat!**



Thank you!

I'd love to hear from you! Liz.Ross@nrel.gov

All published resources are **publicly accessible**:

NREL Data Catalog publication:
https://data.nrel.gov/submissions/175

Renewable Energy Focus journal publication:
https://doi.org/10.1016/j.ref.2022.02.002

NREL/PR-6A50-84398

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