Considerations for Social Vulnerability and Environmental Justice

Long-Term Planning

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EPRI Definitions

Equity

- Fair treatment in how benefits and burdens are distributed throughout society and meaningful involvement regardless of ability, race, or socioeconomic status

Energy equity

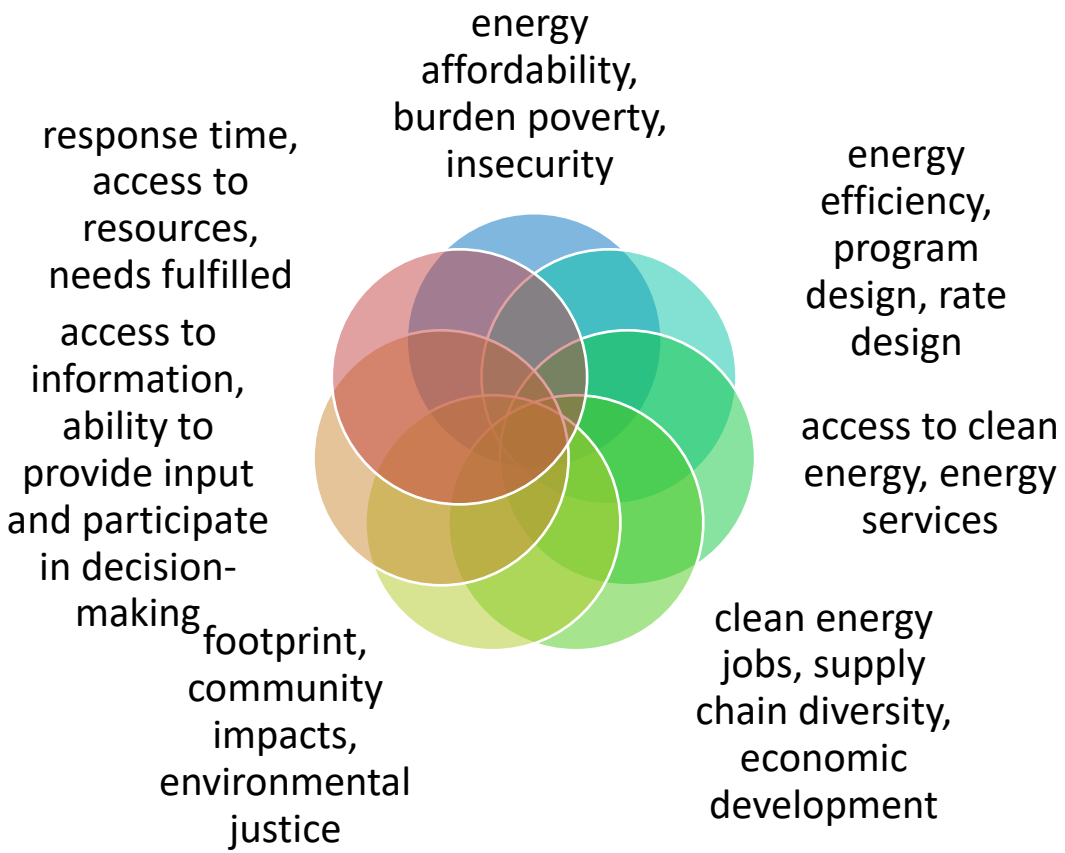
- Affordable and fair access to energy services and benefits and involvement in related decision-making

Environmental Justice

- Fair treatment and meaningful involvement regarding environmental impacts and access to environmental benefits

Equitable Decarbonization Interest Group weighed in on these words

Measuring Equity



"Traditional" Electric System Metrics

- Outages (eg CAIDI, CAIFI) affecting FL-LI-BIPOC
- Weighted VoLL
- Unserved load for critical services (expanded or new definitions)

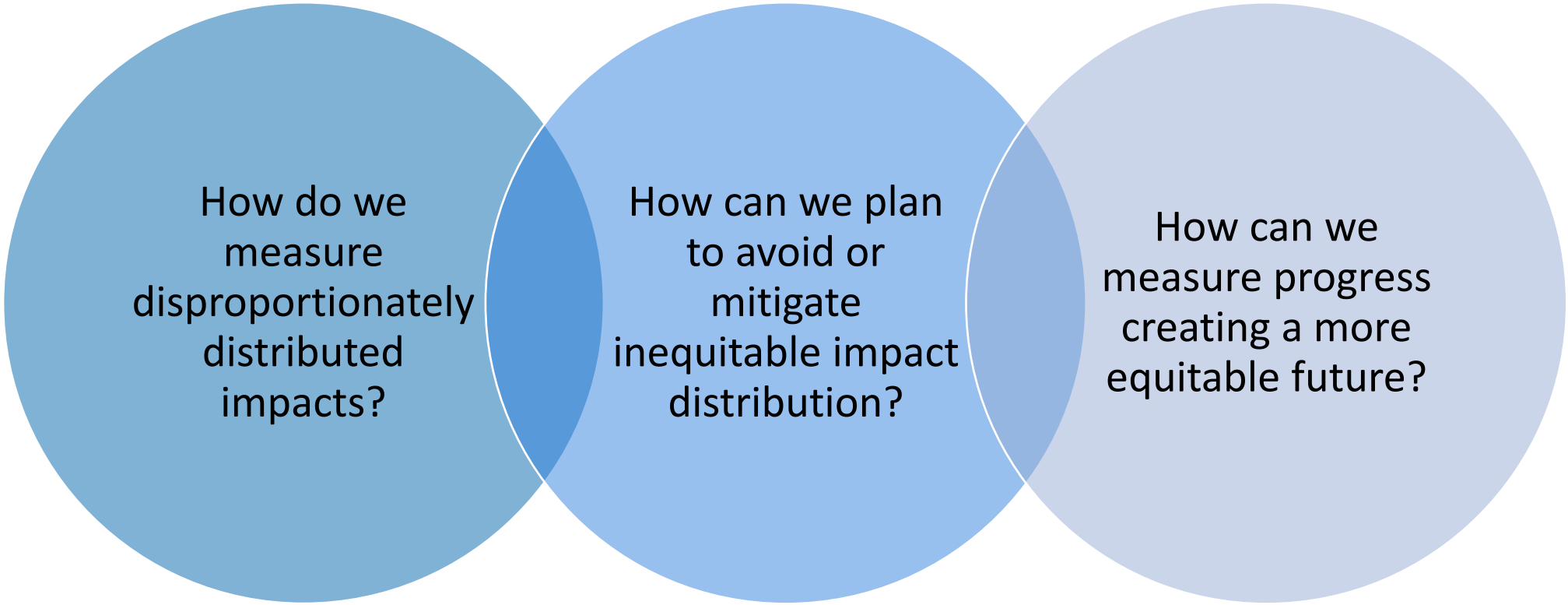
For Equity

- Divide these by socio-economic classes
  - Number and duration of outages per class
  - Investment ($/capita FL-LI-BIPOC; $ per DAC/total community cost)

Measuring equity can involve quantitative, qualitative, and procedural elements; and the metrics associated with these vary widely as to data availability, alignment, and impact

Measuring Equity and Environmental Justice

Metrics for **planning/modeling**, operations, and performance evaluation and reporting



Mind the Gap

Equity Metrics (abridged)

Affordability

- Energy burden (bills/income – % spent on energy)
- Energy Poverty (usage/typical)
- Late Payment index (ratio of late bill payment rates for a given customer group to late bill payment rates for all customers)

Reliability and Resilience

- Energy efficiency (lacking weatherization)
- Program Uptake (participants/eligible)
- Access to technologies (clean energy, DERs, micro-grids, tie switches)
- Relative outage frequency and duration for DACs
- Households heavily dependent on non-commercial energy

Environmental Justice

- Disparate exposure to pollution
- Disproportionate proximity to incompatible land uses
- Underrepresentation in participation and decision making

Mapping Tools

CDC

- Social Vulnerability Index determines the social vulnerability to help identify, map, and plan for communities that will most likely need support before, during, and after a public health emergency.

CEQ

- Climate and Economic Justice Screening Tool maps climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development indicators to identify overburdened and underserved communities.

DOE

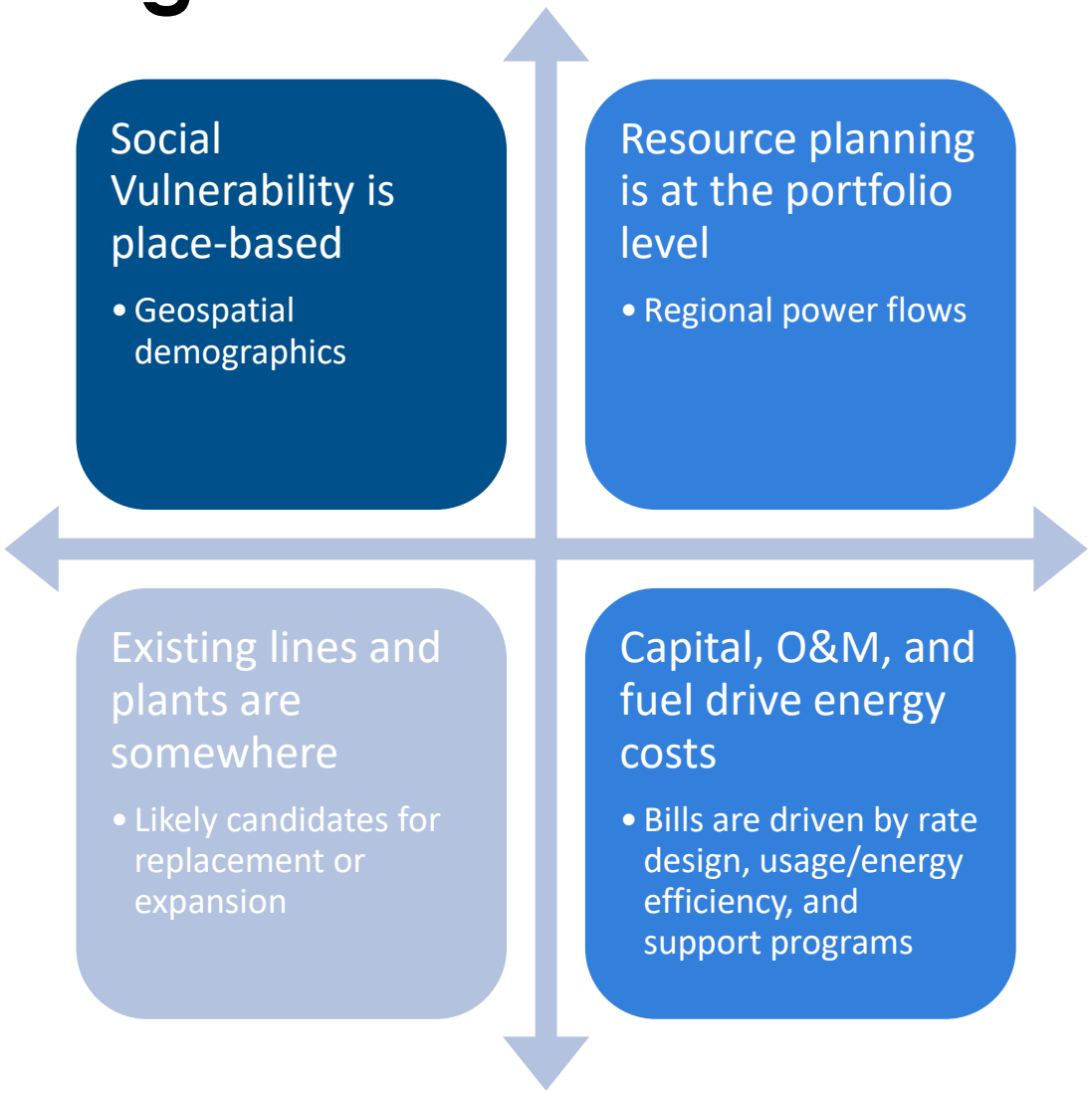
- Disadvantaged Communities Reporter reports on census tracts categorized as disadvantaged based on cumulative burden using thirty-six indicators that reflect fossil dependence, energy burden, environmental and climate hazards, and socio-economic vulnerabilities.

EPA

- EJScreen displays environmental and demographic socioeconomic indicators and combines environmental and demographic indicators into EJ indexes.

Minimum census block size ~<acre; census tract ~4000 people

Long-Term Planning



The Challenge

Appendix A
Equity metrics identified in 2023 literature review

How to do an Equity/EJ Analysis

- Collect demographic data to identify disadvantaged communities using screening tools, utility customer data, and ground truthing
- Identify disproportionately high and adverse impacts experienced by these populations
- Involve the affected communities in program design and decision-making
- Document the views of the impacted populations on the project/program and proposed mitigation

- Meaningful involvement entails consequential consideration making a difference in the outcome
- Consider social, economic, and environmental effects of avoiding or mitigating the adverse effects
- Discern if any mitigation or alternatives would reduce these impacts

Adapted from https://www.codot.gov/business/civilrights/titlevi/ej

Bring your regulators along and document how, what, and why

Affordability Metrics

Metric	Unit
late payment index: ratio of late bill payment rates for a given customer group to late bill payment rates for all customers outside of this group	Number
program participation by demographic	Number
Percentage of households participating in electricity programs (installations, rate programs, demand response, etc)	Percent
median energy bill	Number
annual decrease in energy burden, across customer groups	Percent
burden index: proportion of customers in a given segment with energy burdens above a given threshold, divided by this segment's proportion of the total population (example: proportion of BIPOC households with heavy energy burdens divided by the total proportion of BIPOC households)	Percent
Percentage of income spent on energy bill	Percent
energy assistance need: total dollar amount of all energy bills exceeding a given energy burden threshold (i.e. if you were to write a check to bring all household energy burdens below 5percentage, how big would that check be?)	Number
increase underserved participation in --- program by ---- percent	Percent
annual energy savings (in MWh or $) [evaluating energy efficiency improvements]	Number
percentage of incentives accessed by census tract	Percent
amount ($) and/or percent of financing, rebates, or other incentives accessed across all customer groups	Number
increase number of renter units serviced in attached low-rise buildings	Number
increase the number of heating systems replaced in DACs	Number
energy efficiency equity baseline (percentage of population that is low income * total residential efficiency investments)	Number
number of customers who cannot afford life-sustaining energy services	Number
number of customers who cannot afford basic energy services	Number
percentage of transmission cost allocation that is applied to rate base, percentage increase in household energy burden as a result of transmission cost allocation	Percent

Energy Reliability and Resilience

Metric	Unit
reduction in urban heat island effect in DACs	Number
energy equity gap (difference between highest and lowest inflection temperatures [external temperature where a household begins using their cooling system])	Number
difference between the highest and lowest median inflection temperature, looks at how people shed load to save money/consume other goods	Number
System Average Interruption Frequency Index (SAIFI) in DACs vs non-DACs	Percent
System Average Interruption Duration Index, duration of interruptions in DACs vs non-DACs.	Percent
implementation cost share: cost per community for a project / total cost to all communities	Number
frequency at which disconnections occur in DACs	Number
percentage of DAC load served by primary lines (vs secondary or tertiary lines)	Percent
duration and/or magnitude of load shed in DACs	Number
percentage of population living a reasonable distance from a heat island mitigation center, or other essential load center	Percent
percentage of households heavily dependent on non-commercial energy	Percent
percentage of demand response program participants who are renters	Percent
number of disconnections/shutoffs per territory	Number
loss of load frequency (number of interruptions/number of customers)	Percent
weighted value of lost load: system value of lost load as a portion of a household's income	Percent
black start DER capacity in disadvantaged communities	Number

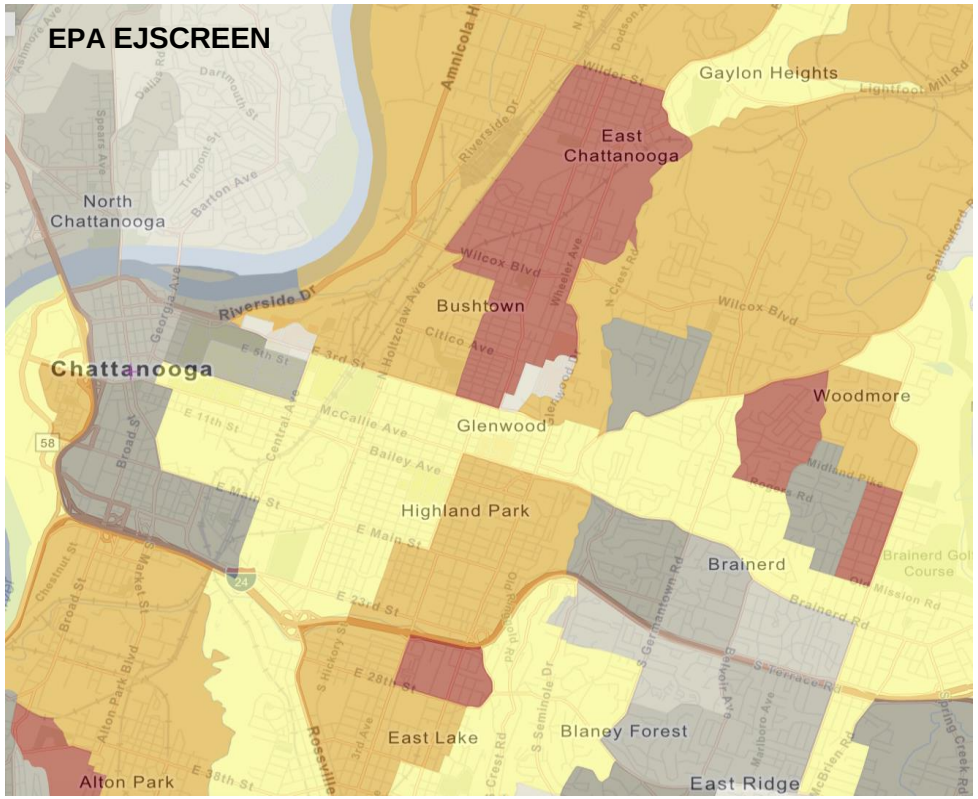
Workforce Development

Metric	Unit
Percentage of clean energy jobs (BIPOC/Frontline)	Percent
Increase diversity hiring to ---	Number
Number of people who complete the training	Number
Percentage of BIPOC people who complete the training	Percent
Dollars spent and/or number of participants from DACs in job training programs	Number
Number of hires from DACs resulting from DOE job training programs	Number
Jobs created by income bracket	Number
Number of new jobs associated with project	Number
Percent of employees retained following retirement of a power plant	Percentage
Increase number of moderate-income weatherization jobs	Number

Appendix B

More information about mapping and screening tools

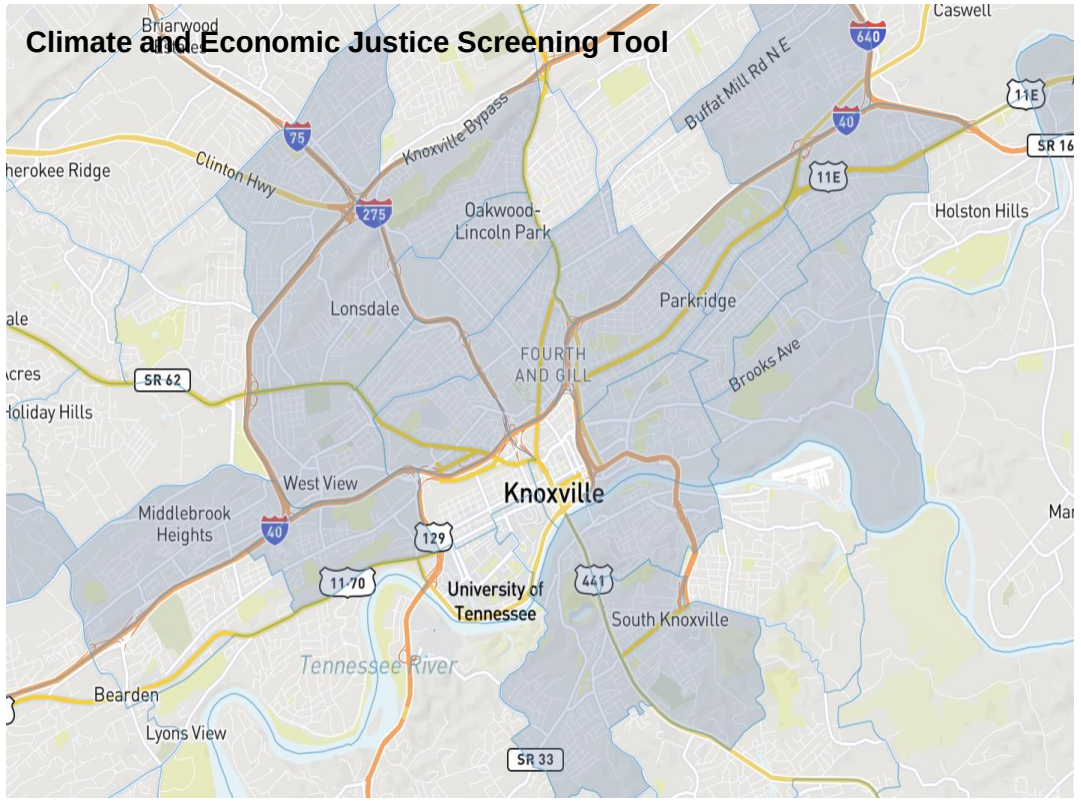
Leading Mapping Tools



Screens for potential disproportionate environmental burdens and susceptibility at the census block-group level.

+ Utilizes nationally-consistent socioeconomic and environmental data.

- Does not cover all EJ issues and the national-level data may obscure small communities.



Identifies disadvantaged communities that will benefit from Justice40 seeking to deliver 40% of the benefits of certain Federal Investments to disadvantaged communities at the census tract level.

+ Considers a wide range of categories of burdens including energy cost, housing cost, and green space.

- Excludes race.

Mapping Tools Links

- Mapping and visualizing EJ data is essential in helping people understand the unequal environmental and health burden in their own and surrounding neighborhoods.
- Each EJ mapping and screening tool uses unique sets of environmental and socioeconomic indicators relevant to EJ both based on the availability of the data and specific concerns relevant for the geographic location.
- These tools are evolving and improve by considering additional relevant variables and incorporating new data.

CEQ Climate and Economic Justice Screening Tool

DOE Energy Justice Mapping Tool - Disadvantaged Communities Reporter

EPA EJSCREEN

CDC Social Vulnerability Index