How do we measure equity in energy efficiency?

International thinking

World Energy Council Energy Trilemma Index - WEC publishes an annually-updated analysis, the Energy Trilemma Index, which assesses performance of countries around the world in balancing energy security, energy equity and environmental sustainability, and ranks them. With U.S. energy affordability (USD per kWh) = 0.12, and U.S. population access to electricity at 100%, the U.S. ranks #1 globally for energy equity.

- **Indicators:** Affordability, Access

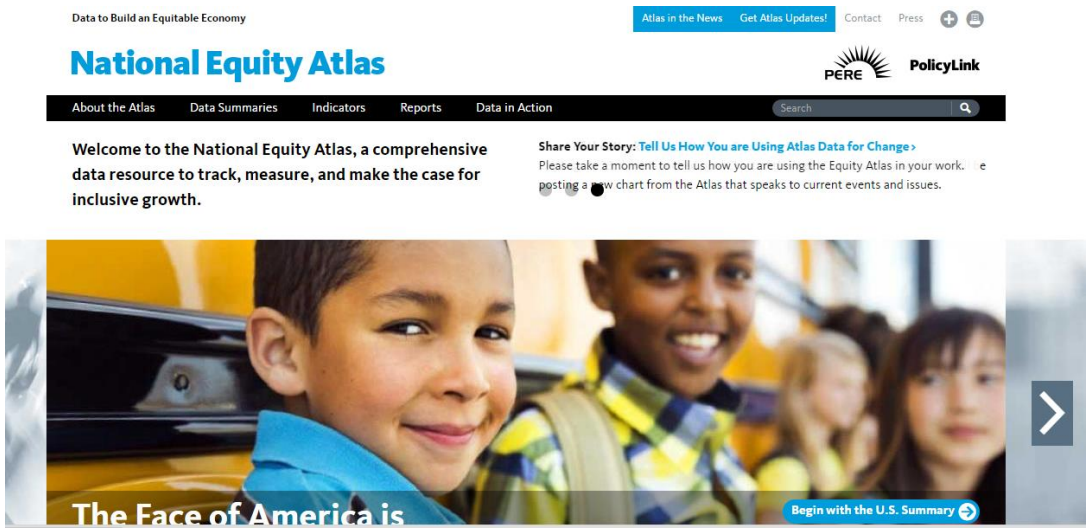
International Atomic Energy Agency's Energy Indicators for Sustainable Development - IAEA's 2007 EISD report lays out a number of indicators used to assess sustainable development, including those that speak to energy equity:

- Accessibility (SOC1) - Share of households (or population) without electricity or commercial energy,or heavily dependent on non-commercial energy
- Affordability (SOC2) - Share of household income spent on fuel and electricity
- Disparities (SOC3) - Household energy use for each income group and corresponding fuel mix.
- Health Safety (SOC4) - Accident fatalities per energy produced by fuel chain, and exposure to poor air quality do to proximity to power generation facilities.

PolicyLink's National Equity Atlas

PolicyLink is a national resource for thought leadership and tools to advance an equity agenda, hosting a rich library of reports, webinars and videos.

Among their most relevant resources is the National Equity Atlas. Their Equity Indicators Framework includes demographics (trends), with equity indicators broken out into three categories, available for **SE cities**:



- ***Economic vitality***: GDP and job growth, unemployment, wages, inequality, and income growth
- ***Readiness***: educational attainment in relation to job skills requirements in 2020, disconnected youth, and overweight/obesity
- ***Connectedness***: housing burden, vehicle access, and neighborhood poverty

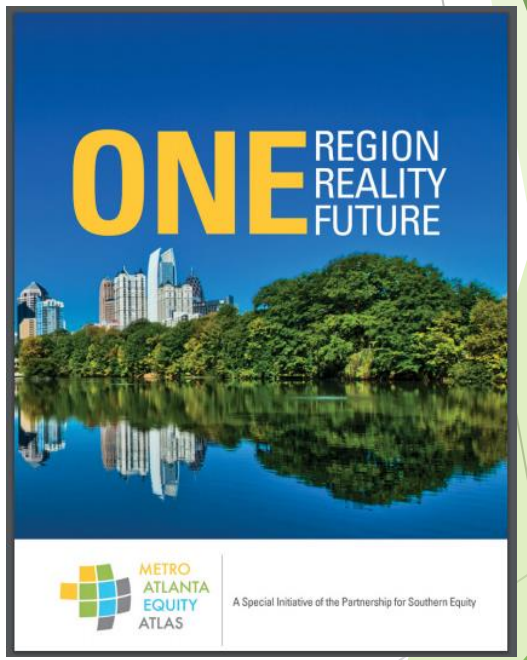
Webinar on Ways to Create Custom Equity Profiles for your City

Metro Atlanta Equity Atlas (MAEA)

Created by the Partnership for Southern Equity (PSE) in 2013, to provide decision-makers and Atlanta region stakeholders with easy access to data visualization across 8 "well-being" categories: **demographics, economic development, education, environment, health, housing, public safety and transportation.**

MAEA contributors and partners include:

- Annie E. Casey Atlanta Civic Site
- Atlanta Regional Commission
- Centers for Disease Control and Prevention
- DeKalb County Board of Health
- Emory University
- Enterprise Community Partners
- Federal Reserve Bank
- Georgia Department of Public Health
- Georgia Tech Community Affairs Office
- Georgia Stand-Up
- GSTAND
- Latin American Association
- Mercer University
- Morehouse School of Medicine
- Neighborhood Nexus
- Nexus Research Group
- The Center for Working Families, Inc.



Source: www.partnershipforsouthernequity.org

Race + Economic Metric Tool (REEM)

- Energy Democracy NY advocates for use of a Race and Economic Equity Metric (REEM) tool to **assess cumulative impacts to communities that are socially and economically vulnerable in proximity to indoor and outdoor air, water, and other pollutants and health hazards**.
- California's Environmental Justice Screening Methodology (EJSM) and similar screening tool CalEnviroScreen, are used to identify disadvantaged communities in California under SB5357 for the purpose of redistributing funds generated from the State's greenhouse gas reduction and permits program. **They aggregate data from over thirty metrics that track health risk and exposure to environmental hazards and pollution, land use, and biological and social vulnerability.**
- Using the EJSM, California's grassroots groups successfully succeeded in these bills requiring 25% of funds and projects be directed toward communities identified by the CalEnviroScreen, with 15% to be locally owned.

Source: Prioritizing Equity in Our Clean Energy Future

REEM Equity Indicators for Consideration

- Poverty rate is 1.5 times or more than that of the metropolitan statistical area (MSA), county, region, or state.
- Median household income is half or less than that of the MSA, county, region, or state median.
- Unemployment or underemployment rate is 1.5 times or more than that of the MSA, county, region, or state average.
- % of jobs that are fossil fuel and nuclear dependent are higher than 10% of the MSA, county, region, or state average.
- % of residents that are African American, Latino, Asian, Native American or Hawaiian/Pacific Islander exceeds the average for the MSA, county, region, or state.
- % of Li-Heap recipients is 1.5 times or more that of the MSA, county, region, or state.
- % of homes built before 1960 is 1.5 times or more than that of the MSA, county, region, or state.
- % of homes that have presence of lead, leaky roofs, and rely on oil furnaces that are 1.5 times more than the county, region, or state.
- % of mobile homes manufactured before 1976 is 1.5 times or more than that of the county, region, or state.
- % of energy shutoffs without reconnection of service for more than 30 days is higher than the MSA or county rate
- Energy Efficiency and Renewable Energy program participation (and denial) numbers per census tract.
- Air particulate matter is higher than the local average.
- Child asthma rate is higher than the local average.
- Blood levels of lead is higher than the local average.
- Level of cancer caused by environmental factors is higher than the local average.
- There are more brownfields, toxic release sites, and remediation sites in a neighborhood than the local average.
- Broadband adoption rates are lower than the MSA, county, region, or state average

Source: Prioritizing Equity in our Clean Energy Future

Energy burden as equity indicator

What is the threshold for “high burden” or unaffordable?

- **6% of gross household income**
  Based on the idea that a household can afford to spend about 30% of income on shelter costs and that about 20% of shelter costs are used for energy bills (Fisher Sheehan & Colton 2015)
- **11% of a household’s annual gross income**
  Applied Public Policy Research Institute for Study and Evaluation (APPRISE) uses a model that identifies a severe shelter burden as 50% or more of income, and energy costs as about 22% of shelter costs, resulting in 11% of income as an indicator of high energy burden (APPRISE 2007).
- **No higher than median % of household income**
  Nevada program indicates that low-income home energy burden should be no higher than that of a median income household (Nevada 2013). Others suggest that high energy burden should be defined as twice the median (Liddell et al. 2012; Moor 2012).

Source: Lifting the High Energy Burden in America’s Largest Cities

Cost-Effectiveness Testing Metrics

Low Income Cost Effectiveness Working Group has proposed the following as indicators to be evaluated:

- Eliminates combustion-related safety threat
- Eliminates fire safety threat/improves home security (crime prevention) and building integrity
- Reduces or eliminates extreme temperatures and temperature variations inside the home/improves customers' ability to manage in-home temperatures
- Improves air quality, ventilation, and/or air flow

Source: Multiple Benefits of Multifamily Energy Efficiency for Cost-Effectiveness Screening

Inclusiveness Index

The Haas Institute's Inclusiveness Index aims to measure the degree of inclusivity and marginality experienced by different groups across societal settings and social cleavages, such as gender, race/ethnicity, religion, and sexual orientation.

Equity indices paint a more vivid portrait of underlying structural conditions than single indicator approaches such as poverty or per capita GDP. Single indicator metrics fail to capture the myriad of inputs that shape individual and group life chances.

Multifamily EE program indicators to consider

- Tenant satisfaction (survey) and reduced turnover
- Tenant comfort (survey)
- Maintenance costs
- Energy/square foot
- Appliance/equipment performance and lifespan
- Debt collection losses
- Customer calls/tenant complaints
- Shutoffs and reconnects
- Carrying cost on arrearages

Source: Multiple Benefits of Multifamily Energy Efficiency for Cost-Effectiveness Screening