Energy Savings and Impacts Scenario Tool (ESIST)

A tool for analyzing the energy savings and costs from customer-funded energy efficiency programs and their impacts on emissions, public health, and energy burden.

What is ESIST?

ESIST is an Excel-based planning tool that can be used to:

- Inform energy efficiency (EE) planning and decision-making by generating **scenarios based on an individual state, type of utility, customer class, or individual utility service territory** spanning 2010–2045.
- Support novice and advanced users in their efforts **to design EE policy goals** and increase investments in EE programs.
- Estimate **multiple benefits** from EE, including avoided emissions, public health benefits, and energy burden impacts.

Steps to Using ESIST

Why use ESIST?

ESIST contains the latest data on historical and projected sales, EE savings, and cost data from EIA, LBNL, and DOE. ESIST gathers this data into easy-to-follow calculations. With just a few selections, users can conduct an analysis covering a specific geography, including individual **states, utilities, types of utilities, customer classes** (residential, commercial, industrial), or any combination of the above.

ESIST makes **customizable** scenario analysis of EE plans fast and easy. Users can rely on EPA's default data on electricity sales, costs, and savings for their area of interest, or enter their own data and use ESIST's methodology to do the rest. ESIST features **three approaches** (annual savings, annual budget, and cumulative savings) that can be used to create scenarios based on different policy goals or questions.

ESIST estimates a **variety of outputs** related to costs, savings, emissions, public health, peak demand, and energy burden, allowing users to quickly understand the varying impacts from modeled scenarios.

Who should use ESIST?

- **State agency officials** and **public utility commission staff** examining policy implications of changes to efficiency investments.
- **Air quality planners** and **public health officials** seeking to quantify the emissions and public health benefits of EE programs.
- **Utilities** reviewing demographic data on households in the utility service territory they want to reach with EE programs.

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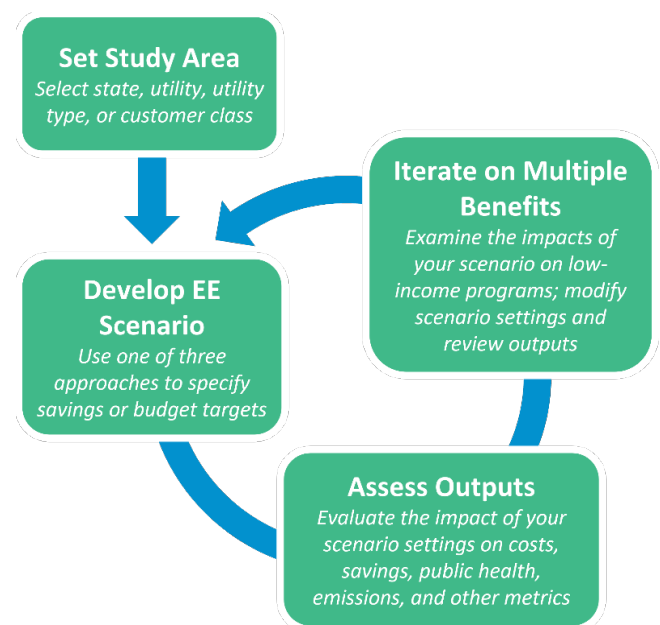
ESIST and energy burden

One of ESIST's core functions is to assess how efficiency programs can reduce disparities in energy burden, which is the share of total household income spent on energy expenditures. Specifically, the tool focuses on electricity and offers users a methodology to understanding and mitigating electricity burden.

With ESIST, users can use the latest data from EIA, DOE, and the U.S. Census to easily compile information on customer energy costs and energy burden for their chosen state, utility type, or individual utility.

In most areas of the United States, low-income households (defined in ESIST as those households with incomes less than 200 percent of federal poverty level) spend a **disproportionate amount** of their monthly income on energy, compared to their non-low-income neighbors. In ESIST, users can:

- **Review census data that contextualize low-income customers.** ESIST compiles household data from the U.S. Census, specific to the counties chosen by the user. ESIST provides information relevant to users considering how best to reach low-income customers, including information on the number of low-income and non-low-income households according to owner vs. renter status, race and ethnicity, multi-family and single-family occupancy, heating fuel use, and other metrics.

- **Review historical data related to energy burden.** Using data from DOE's LEAD tool, ESIST estimates the household income, energy expenditures, and resultant energy burdens for low-income and non-low-income customers.

- **Develop a scenario focused on reducing energy burden disparities.** Users can specify parameters for an EE program that will lead to reduced energy burden disparities. For example, users can set inputs related to an energy burden goal (e.g., a future where all customers have an equal energy burden), a participation rate (e.g., the number of low-income households reached), a utility program cost (i.e., how much EE programs cost among customer classes), and whether there are monetary assistance programs that further defray energy costs (i.e., rate discounts or LIHEAP assistance).

Using ESIST's energy burden module

There are two ways to use the energy burden module:

- **EE scenario focused.** Users more focused on the impacts of an EE plan that stretches across multiple sectors or a variety of customer types can define and explore a "big picture" approach to EE first, then dive into the energy burden module to understand how a **low-income initiative** within their larger program may have impacts, including impacts on energy burden.

- **Energy burden focused.** Users principally focused on energy burden can populate ESIST with the most relevant geographic data, then jump to the energy burden module to perform a **deep dive into energy burden issues**. They may then wish to return to the rest of the tool to contextualize their energy burden analysis within the wider economy.

For more information

- Download ESIST and view webinars at www.epa.gov/statelocalenergy/energy-savings-and-impacts-scenario-tool-esist
- Contact us at esist@epa.gov

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