

Policy Position on Building Electrification

Building electrification is poised to reshape energy efficiency programs, policy, and the built environment, and the energy efficiency (EE) industry will be the one completing this vital work. At its most basic, building electrification means replacing existing cooking and heating equipment, such as stovetops, water heaters, furnaces, boilers, chillers, etc. — whether powered by natural gas, propane, fuel-oil, or another on-site-combusting fossil fuel source — with equipment powered by electricity. This issue is germane to the industrial, residential, and commercial sectors.¹

The breakdown of energy consumption in U.S. Households is split, one third electricity and two thirds combustible fuels.² This is mirrored the Mid-Atlantic region, consisting of Pennsylvania, New Jersey and New York, where home fuel consumption of combustibles accounts for 69% of total energy use. In the mid-Atlantic region, there is somewhat higher use of natural gas than in the nation overall. At both a national and regional level there is ample opportunity for residential building electrification.

US HOUSEHOLD FUEL CONSUMPTION

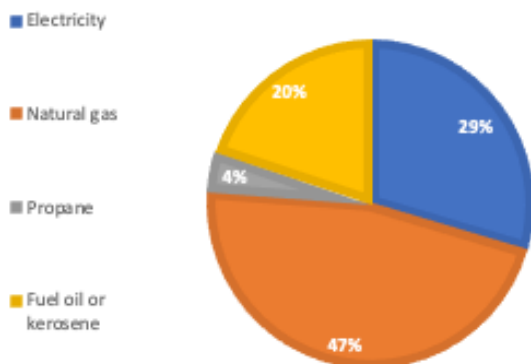


Figure 1: U.S. household energy consumption by fuel in 2015.³

MID-ATLANTIC (PA, NJ, & NY) HOUSEHOLD FUEL CONSUMPTION

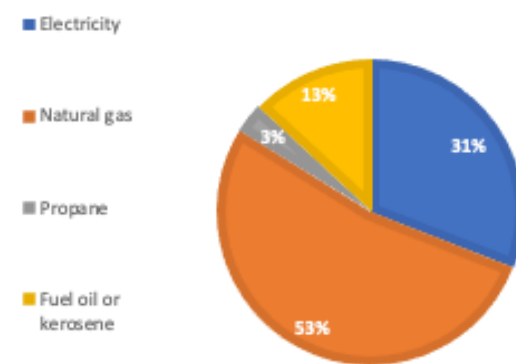


Figure 2: Mid-Atlantic household energy consumption by fuel in 2015⁴

Over a third of commercial building energy use comes from direct combustion of fossil fuels.⁵ This too presents a major market opportunity for electrification, energy efficiency, and carbon reduction.

¹ <https://www.aceee.org/blog-post/2020/02/electrification-opportunities-many-not-all-applications>

² <https://www.eia.gov/consumption/residential/data/2015/c&e/pdf/ce2.2.pdf>

³ [Id.](#)

⁴ [Id.](#)

⁵ <https://www.eia.gov/consumption/commercial/data/2018/ce/xls/c1.xlsx>

The Keystone Energy Efficiency Alliance (KEEA) and the Energy Efficiency Alliance of New Jersey (EEA-NJ) support Building Electrification when approached in these three, combined manners:

1. When paired appropriately and holistically with energy efficiency measures.
2. When deployed as a tool to advance energy efficiency, reduce carbon emissions, save consumers money, and promote building occupant health and quality of life.
3. Where it ensures equity and creates no negative impact on Low and Moderate Income (LMI) and Environmental Justice (EJ) communities in its deployment.

Beneficial Electrification

In addition, KEEA and EEA-NJ uses the following expanded parameters to define⁶ beneficial electrification (BE). To meet the definition of *beneficial* electrification, actions must accomplish one or more of the following benefits without diminishing any of the others:

1. lower energy costs over the long run,⁷
2. improve grid management,
3. reduce environmental harm,⁸

With the goal of equitable decarbonization.

Policy in Action:

We recommend the following action steps in policy measures.

Electrification Readiness

KEEA and EEA-NJ promote energy efficiency measures addressing building envelopes to ensure homes are efficient prior to electrification. The Low Income Usage Reduction Program (LIURP) and Weatherization Assistance Program (WAP) are prime examples of programs that address building envelopes through EE measures. By using braided funding opportunities, it is possible to expand these programs toward WAP/LIURP-plus electrification readiness. With the passage of the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA), the federal government has now made historic investments in the clean energy future and created opportunities to rapidly increase Electrification Readiness across the country. Specific funding is dedicated to LMI households for electrification measures, including electrical service box upgrades and conversion from older “knob and tube” style wiring to meet today’s building code compliant wiring.

Programs may even want to consider levels of wiring upgrades needed for future electric vehicle ownership or two-way charging.

⁶<https://www.raonline.org/knowledge-center/beneficial-electrification-ensuring-electrification-public-interest/>.

⁷ EEA may wish to further define this timeframe for ROI regarding consumer costs, as well as better quantify each of these other criteria.

⁸ EEA provides further discussion of the important role of fuel sources in ensuring electrification reduces environmental harm (including air pollution and greenhouse gas emissions) in a full-length internal research paper on electrification.

Incorporating electrical panel upgrades in programs like Whole-Home Repairs (in PA) and the Whole House Pilot Program (in NJ) along with WAP and LIURP is a critical tenet of electrification readiness. Preparing LMI households for electrification through these programs will be a critical component of an equitable transition away from residential fossil fuel usage.

Lastly, incorporating electrification readiness into ratepayer-funded utility programs combined with a focus on advancing and expanding pilot programs will demonstrate the viability of beneficial electrification and raise the profile of related measures. These efforts will not only make homes ready for additional pilot opportunities, but will also help drive greater market development around beneficial electrification.

Cost Tests, and Measurement Approaches

Cost-effectiveness testing is critical for advancing beneficial electrification. Through a collaborative approach with other stakeholders, EEA encourages cost-effectiveness tests that accurately value beneficial electrification.

Beneficial electrification programs should be focused where they are most cost-effective, with both dollar savings and non-energy/non-monetary benefits taken into account. It will be essential to establish program metrics and evaluation methodologies that reflect the full heating *and* cooling benefits associated with electrification.

Calculation of monetary return on investment should include factors such as the anticipated lifespan of the electrification investment, the age of the building undergoing electrification, the local climate and weather patterns, and the applicable local, state, and federal incentives. Non-monetary benefits should capture direct benefits to occupant health and quality of life, such as improved air quality and comfort, as well as climate and equity benefits.

Homes dependent upon the most polluting and expensive delivered fuels, like propane and oil, create terrific opportunities to implement beneficial electrification. Programs should focus on enabling customers dependent on these fuels to make the necessary electrical upgrades and defray other costs associated with fuel switching. This is especially impactful for low- and moderate-income customers who would otherwise be unable to switch. Helping these households electrify would not only improve occupant health but will also reduce their energy burden – i.e. the percentage of total household income spent on energy bills.