NPGA
NATIONAL PROPANE GAS ASSOCIATION

Full Fuel Cycle Fact Sheet

Full Fuel Cycle (FFC) analysis is the most accurate way to calculate energy use and environmental emissions. FFC accounts for:

- Energy consumed in the extraction, processing and transport of primary fuels;
- Energy losses in electric power-generation or gas processing plants;
- Energy losses associated with transmission and distribution of fuel to the end user;
- Greenhouse gas (GHG) emissions associated with each step within this process.

An FFC analysis differs from a *Site Energy* analysis because measurements based on site, or point of use, do not account for all the upstream energy use and emissions associated with delivering the fuel to its point of use. Therefore, it fails to provide a complete energy consumption and greenhouse gas profile.

An example of how pronounced this effect can be is a comparison that shows an overall efficiency of 24 percent for an electric water heater versus 62 percent for a propane water heater. This is due to electricity losing nearly 75 percent of its energy in transmission and distribution losses compared to about 12 percent energy loss for propane. Electric water heaters also emit 2.08 times more GHGs than propane.

The U.S. Department of Energy (DOE) announced on August 18, 2011 that it would adopt the recommendations of a study performed by the National Academy of Sciences, which concluded: "*DOE should consider moving over time to use of a full-fuel cycle measure of energy consumption for assessment of national and environmental impacts, especially levels of greenhouse gas emissions, and to providing more comprehensive information to the public through labels and other means, such as an enhanced website*".

FFC measurement enables a more comprehensive analysis of the total energy use and environmental impacts and should be included in any energy efficiency rating, building energy consumption, energy use, and energy savings test. It can be applied to everything from appliances to motor vehicles to small or large buildings.

List of organizations that have supported or endorsed FFC:

- U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA)
- American Council for an Energy Efficiency Economy (ACEEE)
- U.S. Green Building Code Council and International Code Council
- American Gas Association and American Public Gas Association

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