

Energy

THE IMPORTANCE OF ENERGY

The majority of energy consumed on this planet comes from non-renewable fossil fuels such as coal, oil, and gas which produce greenhouse gas emissions, known to cause global warming. It is widely acknowledged that as a result of greenhouse gas emissions our planet is already experiencing climate changes and extreme weather events, which are permanently damaging the ecosystem. To curb climate change and its detrimental effects, people must reduce their overall energy consumption and switch to renewable “carbon-free” sources of energy that do not create greenhouse gas emissions..

THE AREA TODAY

ENERGY USE

Many federal buildings in the study area today are very inefficient because: they have thin walls and windows; are oriented north/south which maximizes heat gain; have little natural light because of large interior hallways and extremely large footprints; and have antiquated mechanical systems. When possible, the U.S. General Services Administration (GSA) has made energy efficient improvements to some federal buildings in the area but their overall design and layout continues to prevent significant improvements in energy efficiency. An existing federally-owned central utility plant provides heating and cooling to the federal buildings within the area, but is not authorized to provide service to non-federal users. The private buildings are more energy-efficient because property owners have made investments; however, none of them use renewable energy or are part of a larger more efficient district-energy system such as the central utility plant because it is not available for use by private property owners

ENERGY SOURCE

Today, the majority of the energy used in the area comes from coal-fired electricity plants. Coal is highly inefficient and one of the most polluting energy sources on earth. Burning coal is a significant contributor to global warming and releases toxic pollution into the air and water. Approximately 76 percent of the energy used within the Ecodistrict is provided by Pepco and comes from burning coal. Natural gas, a cleaner and more efficient form of energy, produces 26 percent of the Ecodistrict’s energy supply and is provided by

Washington Gas. While natural gas is a cleaner alternative to coal-fired electricity, it is also a non-renewable source of energy and produces carbon dioxide and other greenhouse gas emissions. Less than one percent of the Ecodistrict’s overall energy use today is generated from renewable resources within the Ecodistrict.

THE TARGETS

The target for the Study Area is to create a zero net energy district, as measured in carbon. This means that in addition to producing all of the energy it consumes on-site, the Ecodistrict must not produce any carbon emissions or pay for offsetting carbon credits. There are several greenhouse gas emissions, but carbon emissions are considered one of the primary contributors to global warming. This target is derived from EO 13514, which requires all new federal building projects that begin the planning process in 2020 to be zero net energy buildings by 2030.

Buildings in warm climates on large sites have the opportunity to harness a significant amount of renewable energy from the sun. If the buildings are also energy efficient, it is possible that they will be able to operate on the solar energy that the site generates (thus becoming a zero net energy building). Achieving this target on a site-by-site basis in a dense urban environment, where solar exposure is usually limited to small rooftop areas, is more difficult. Dense urban areas such as the SW Ecodistrict can, however, move closer to achieving this target by taking advantage of energy planning at the block and district-scale.



ZERO NET CARBON BY THE YEAR 2030