Glossary

Automated Demand Reduction	Automated controls that receive signals from utilities to energy-using devices and turn off or ramp down certain equipment during high demand periods.
Automated Fault Detection	Also known as automated fault detection and diagnostics (AFDD). Software designed to identify the presence of a fault in equipment before it manifests into a physical breakdown of the system.
Air Sourced Heat Pump (ASHP)	A heat pump that moves heat from one air source in one location to an air load in another location.
Battery Energy Storage Systems (BESS)	A system of devices that can be charged with energy and stored for later use.
Building Management and Control System (BCMS)	A comprehensive system that integrates several systems (like HVAC, lighting, and security) into a single interface, allowing for more efficient and centralized management of a building's functions.
Carbon Emissions	Release of carbon dioxide (a greenhouse gas) into the atmosphere from human activities, primarily burning fossil fuels for transportation, electricity production, industry, commercial and residential heating, etc. Carbon dioxide is the primary greenhouse gas emitted through human activities.
Building Performance Standards	Outcome-based policies and laws aimed at reducing the carbon impact of the built environment by requiring existing buildings to meet energy and/or greenhouse gas emissions-based performance targets.
Combined Heat & Power (CHP)	Also known as cogeneration. The concurrent production of electricity or mechanical power and useful thermal energy (heating and/or cooling) from a single source of

	energy. It is a type of distributed generation, which, unlike central station generation, is located at or near the point of consumption.
Coefficient of Performance (COP)	A ratio of useful heating or cooling (energy output) to energy required (power input). Often used to indicate efficiency of a heat pump system. The higher the COP number, the more efficient the system.
Decarbonization	The process of significantly reducing greenhouse gas emissions by minimizing fossil fuel combustion as well as capturing and storing carbon from the atmosphere.
Demand Response	A utility strategy used to balance the demand on the power grid by encouraging customers (usually via monetary incentives) to reduce electricity consumption during times of peak use, or to shift use to times when electricity is more plentiful or other demand is lower.
Distributed Energy Resources (DER or DERS)	Also known as distributed energy. Technologies which generate electricity at or near the site where it will be utilized. Examples of distributed power systems include solar photovoltaic and wind turbines.
Domestic Water Heating	A heat transfer process that uses an energy source to heat water above its initial temperature for activities requiring domestic hot water (DHW), such as hand washing.
Ducted Split Systems	Heat pump systems that have an outdoor unit and an indoor unit with refrigerant lines connecting the two and that deliver conditioned air via ductwork. They can be used as a retrofit in buildings to replace air conditioning and/or gas furnace heating with existing ductwork.
Ductless Mini-split	A heat pump system that utilizes an outdoor unit with refrigerant lines connecting it to one or more indoor units that directly condition zones with no ductwork.

EER (Energy Efficiency Ratio)	A measure of the instantaneous energy efficiency of cooling equipment. It is calculated by taking the cooling energy output (in BTU per hour or BTUh) divided by energy input (watts).
Electric Boiler	A water heating boiler that uses electricity as the energy source, most often used for small hydronic systems, swimming pools and domestic hot water.
Electric Resistance Heating	Electric resistance devices create heat by running electricity through a material. 100% of the energy used is converted to heat, which equates to a COP of 1.0. This is typically much less efficient and thus more expensive to operate than heat pumps, which are another electrification technology available for space heating.
Electrification	Replacing fossil-fueled technologies with technologies that use electricity as their energy source.
Energy Efficiency (EE)	The use of less energy to perform the same task or produce the same result.
Energy Grid	An interconnected network of power transmission equipment for delivering power from producers to consumers.
Energy Policy	A collection of regulations and guidelines issued by federal, state, and or local governments to address energy generation, distribution and consumption.
Energy Recovery Ventilator (ERV)	A device that integrates a ventilation system with an air to-air heat exchanger to recycle heat energy in a building.
Energy Storage	The capture and storage of energy for use at a later time.

Energy/Heat Recovery	Energy/Heat Recovery Units transfer heat that would normally be rejected to the atmosphere (e.g., by cooling towers or venting air to the outside) to heat load needs within the building, significantly reducing energy costs.
Fuel Switching	The practice of replacing a heating or cooling technology or appliance with one driven by a different energy source, e.g., replacing a gas furnace with an electric air source heat pump.
Global Warming Potential	A scale that compares the global warming effects of different gases, using CO2 as a reference. GWP is often used to compare gases used as refrigerants, since refrigerant leaks contribute to global warming. CO2 (which when used as a refrigerant is referred to as R-744) has a GWP of 1, while some other refrigerants have a GWP of 1400 or more.
Greenhouse Gases (GHG)	Gases including CO2, methane, nitrous oxide, and fluorinated gases which are heat trapping gases that remain in the atmosphere for hundreds of years, driving global warming and, in turn, climate change.
Greenhouse Gas (GHG) Emissions	The release of greenhouse gases into the atmosphere by human activities, primarily burning fossil fuels but also industrial and agricultural processes and refrigerant leaks.
Grid-interactive Efficient Buildings (GEB)	Buildings that can provide the load flexibility that the modern electrical grid requires for reliable operation. Key characteristics for GEB are that they are efficient, connected, smart, and flexible.
Ground Sourced Heat Pump	Also known as geothermal heat pumps. Heat pumps that utilize the ground around the facility as a source of heat energy, with a water or refrigerant loop dug into the ground.

Heat Pump Water Heater (HPWH)	Heat pumps used specifically to heat water. These have been used in Europe and Asia for many years and have become more increasingly widespread in the U.S. as decarbonization/electrification initiatives ramp up, resulting in lower costs due to economies of scale. They can be air, water, or ground sourced.
Heat Pumps	Heat pumps are an energy efficient way to transfer energy to and from a building space for the purpose of heating, cooling and dehumidification and draw their energy from air, water, and the ground.
Heat Recovery Chiller	A heat recovery chiller integrates a chiller that utilizes a heat exchanger to transfer waste heat to a heating load. This can be a very efficient option for buildings that have both a heating and cooling load year-round.
HSPF (Heating Seasonal Performance Factor)	A measure of the overall heating efficiency of a heat pump.
Independent System Operator (ISO)	An entity who monitors grid conditions, forecasts supply and demand requirements, and issues notifications and alerts for demand response situations.
Induction Cooking	Cooking via electricity-based appliances that use magnetic fields to directly heat cookware instead of heating the stovetop, resulting in faster heating times and precise control.
Grid Infrastructure	Infrastructure related to the grid, an interconnected network of power transmission equipment for delivering power from producers to consumers.
Load Shedding	A strategy enacted when demand strains the capacity of a power distribution system that involves interrupting electrical delivery in part of the system in order to prevent an outage of the whole system.

Load Shifting	An electrical load management practice which shifts load demands from peak hours to off-peak hours.
Microgrid	A group of interconnected loads and distributed energy resources that acts as a single controllable entity, which is able to connect or disconnect from the grid (grid-connected or island mode, respectively).
Multifunction Systems	Systems that are designed to serve multiple functions such as space heating/cooling, domestic hot water, and ventilation.
Packaged Terminal Air Conditioner (PTAC)	Through-wall packaged air conditioning units commonly found in hotels and multifamily buildings. They are similar to packaged terminal heat pumps, but less efficient due to using an inefficient electric resistance heat strip.
Packaged Terminal Heat Pump (PTHP)	Self-contained through-wall air-to-air heat pump units, well suited for use in hotels and multifamily buildings as a replacement for PTACs.
Peak Load	The highest amount of energy that is consumed from the grid in a set period of time.
Refrigerant	A working fluid with the ability to absorb and transfer energy, used in the refrigeration cycle of air conditioning systems and heat pumps. Typically, refrigerants in these systems undergo a repeated phase transition from a liquid to a gas and back again.
Renewable Energy	Energy created from sources that are naturally replenished and do not run out, such as wind and solar.
Return on Investment (ROI)	A metric used to understand the profitability of an investment. It is a ratio that compares net profit to its cost.

Reversing Valve	A valve typically found in a heat pump to allow the condenser to become the evaporator and the evaporator to become the condenser. This allows for the heat pump function to "reverse" depending on seasonal conditioning needs.
SEER (Seasonal Energy Efficiency Ratio)	A measure the seasonal cooling efficiency of a heat pump or central air conditioner.
Smart Buildings	A classification of buildings that are equipped with technology-based systems, typically integrated with each other, to deliver a building environment that is safe, efficient, comfortable, high-performing, and sustainable.
Social Equity	The fair treatment and involvement of all people and communities (regardless of race, gender, national origin, or income level) in the development, implementation, and enforcement of laws, regulations, and policies.
Space Heating	Heating of spaces, especially for the purpose of human comfort.
Grid System Operators	Also known as transmission system operators. Entities that balance grid operations by ensuring that the amount of electricity put into the grid matches the amount of electricity used by consumers.
Thermal Energy Storage (TES)	The storage of heat and/or cold to be used later.
Total Cost of Ownership (TCO)	The total costs over the life of a building or asset, including first costs (construction and/or installation), operation and maintenance costs, and disposal costs at end of life.
Transactive Energy	A service that a utility provides to building owners to allow them to be compensated monetarily for the value they bring to the grid of making up the variational energy output from renewable sources.

Variable Refrigerant Flow System (VRF)	Also known as variable refrigerant volume (VRV). A system that distributes heating and cooling throughout a building via refrigerant piping instead of ductwork.
Ventilation Energy Recovery	The process of using a heat exchanger to recycle heat energy from ventilation in a building.
Vertical Terminal Heat Pump (VTAC)	A self-contained through-wall heat pump unit with a short duct run.
Water Sourced Heat Pump	A heat pump that uses water as the source of energy transferred to a load.
Zero Energy Building	A building equipped with smart technologies to achieve high energy efficiency and renewable energy to offset energy used from the grid, resulting in net-zero energy use from the grid. Also known as a net-zero energy building.