

TERM	DEFINITION
Action Plan	Activities associated with implementing decisions related to future supply-side and/or demand-side resources.
Battery Energy Storage System	Large batteries used to store generated energy; the energy can be released as needed to meet customer demand.
Biomass	Renewable organic material from plants, often in the form of wood and wood waste (i.e. wood chips, saw mill residue, timber, etc.)
Bond Rate	Interest rate associated with municipal bonds issued to finance capital investments, such as new power plants.
British Thermal Unit (BTU)	Measure of the heat content of a fuel or energy source. Often specified in millions of BTUs, or MMBTUs.
Capacity	The maximum output that power generating equipment can supply to system load, adjusted for ambient conditions such as temperature, humidity, and elevation and is commonly expressed in megawatts (MW).
Capital Costs	The cost to construct/install a new generating resource.
Carbon Dioxide (CO₂)	A colorless, odorless, non-poisonous gas that is a normal part of Earth's atmosphere. Carbon dioxide is a product of fossil-fuel combustion as well as other processes.
Combined Cycle	A power plant composed of one or more combustion turbines (CTs), heat recovery steam generators (HRSGs), and steam turbines (STs). The waste heat from the CT is captured by the HRSG and then used to generate power through the ST. Combined-cycle power plants generally produce more power per unit of fuel than simple-cycle CTs and are therefore more efficient than simple-cycle CTs.
Combustion Turbine	A type of power plant that converts natural gas or other fuels to energy for power generation.
Commitment Time	Time interval between the decision to start a unit and when it achieves full load. This period will vary by type and size of unit and will also depend on how long the unit was offline before being started.
Demand-Side Resource / Demand-Side Management (DSM) / Energy Efficiency (EE) / Conservation	Activities that customers can undertake to reduce their demand for power. These include improvements to the efficiency of appliances, machinery, lighting, insulation, etc. Electric utilities sometimes promote and offer incentives for customers to participate in programs related to demand-side management and energy efficiency.
Discount Rate	The interest rate used to discount the future value of money to current dollars.
Distributed Generation	A generating unit located close to the location of the demand it is intended to serve. For example, a solar photovoltaic system located at a home/business that provides electricity to the home/business.
Electric Vehicle (EV) / Plug-In Electric Vehicle (PEV)	A general term for any on-road licensed vehicle that can plug into an electric power source and uses electric power to move. EVs plug into a source of electricity and store power in a battery pack for all or part of their power needs. This includes Battery Electric Vehicles (BEVs) and Plug-in Hybrid Vehicles (PHEVs), which can also be referred to as Plug-in Electric Vehicles (PEV).
Electrification	A general term used to describe the process of replacing equipment and appliances that operate on fossil fuels (i.e. natural gas, coal, oil) with technologies that utilize electrical energy.

Energy	The capacity or power to do work, such as the capacity to move an object (of a given mass) by the application of force. Energy can exist in a variety of forms, such as electrical, mechanical, chemical, thermal, or nuclear, and can be transformed from one form to another. Electrical energy is usually measured in kilowatt-hours, while heat energy is usually measured in British thermal units (Btu).
Firm / Dependable Capacity	Power that is intended to be available at all times, even under adverse conditions.
Fixed O&M	Operating and maintenance costs that do not vary based on how the power plant is utilized. Examples of Fixed O&M include staffing, contractual service agreements, insurance, and administrative costs.
Fossil Fuel	An energy source formed in the Earth's crust from decayed organic material. The common fossil fuels are petroleum, coal, and natural gas.
Gigawatt-Hours (GWh)	Standard measure of electrical energy. Equal to 1,000 MWh.
Greenhouse Gas	Heat-trapping gases in the Earth's atmosphere.
Heat Rate	A measure of how efficiently an electrical power plant turns fuel into electricity. The heat rate is the amount of energy used by an electrical power plant to generate one kilowatt-hour (kWh) of electricity (commonly stated as Btu per kilowatt-hour). Heat rates can be expressed as either gross or net heat rates, depending on whether the electricity output is gross or net generation. Heat rates are typically expressed as net heat rates.
Import Capability	The capability of the electrical transmission system to move power into the territory served by the utility.
Integrated Resource Plan (IRP)	A long-term (i.e. 25-year) study to evaluate potential future supply-side resources and demand-side considerations that allow GRU to reliably serve the electrical energy needs of its customers while balancing costs and environmental responsibility.
Interest During Construction	The amount of interest (i.e. dollars) incurred for funds that are borrowed during construction of a power plant.
Intermittent/Variable Resource	A source of energy whose availability varies based on the time of the year and the time of the day. Solar power is intermittent because it generally is only available during daylight hours and the amount of energy varies throughout the day, based on sunlight and meteorological conditions.
IRP Variables	Quantifiable factors such as the interest rates, load forecast, fuel prices, environmental regulations, renewable energy targets, demand-side considerations and costs for new supply-side resources that are considered in the IRP.
Kilowatts (kW)	Standard measure of Peak Demand.
Kilowatt-Hours (kWh)	Standard measure of Energy. Equivalent to 1,000 watts for 1 hour.
Lead Time	The amount of time it takes between making a decision and when the decision is finally implemented. For example, the amount of time it takes between ordering equipment for a new power plant and when the equipment is delivered, subsequently installed and fully operational.
Load Forecast	Future projections of peak demand and net energy for load requirements. Factors influencing the load forecast may include projected number of customers, usage per customer, types of customers, electrification, electric vehicles, and DSM/EE/ Conservation, among other potential factors.
Megawatt (MW)	Standard measure of Peak Demand. Equal to 1,000 kW.

Megawatt-Hours (MWh)	Standard measure of Energy. Equal to 1,000 kWh.
Net Energy for Load	A utility system's overall energy requirements, including the amount of energy required to provide electricity to its customers, external sales of electricity, imports of electricity, consideration of auxiliary loads and other utility uses and losses.
Net Zero	Eliminating 100 percent of emissions of CO ₂ , potentially through a combination of utilizing generating resources that do not emit CO ₂ and offsetting any CO ₂ emissions by selling credits for non-emitting energy.
Net Present Value (NPV)	The total cost (fuel cost, fixed and variable O&M, capital costs, costs for PPAs, etc.) of serving customers' energy requirements over all the years of the IRP study period, discounted back to present day (current) dollars (see "Discount Rate"). NPV can be used for economic comparisons between various options evaluated in the IRP.
NPVRR	Net Present Value or Revenue Requirements. See NPV.
NYMEX	New York Mercantile Exchange, a commodity exchange that allows for buying and selling of natural gas contracts.
Optimization	Using computer models to identify the lowest-cost portfolio of resources that meet specified criteria such as reliability and potential renewable energy targets.
Overnight Capital Cost	The cost to install a new generating resource, expressed in current year dollars.
Peak Demand	The time of the day when demand for electricity is highest.
Portfolio	In the context of an Integrated Resource Plan (IRP), Portfolio represents a combination of supply- and demand-side resources utilized to meet peak demand and net energy for load requirements as well as any other goals or requirements being considered.
Production Cost Modeling	The use of computer-based models to simulate the costs to meet peak demand and net energy for load requirements. Production costs include fixed and variable costs such as Capital Costs for new generating units, Fixed O&M, Variable O&M, fuel costs, costs for emissions, and other operating costs.
Present Worth Discount Rate	See definition of "Discount Rate"
Purchased Power Agreement (PPA)	An agreement to purchase power for a particular period for an agreed-upon price. A PPA may serve as an alternative to a utility owning a generating resource.
Reciprocating Internal Combustion Engine (RICE)	A type of internal combustion engine that is used to produce power and is typically smaller in scale than Combustion Turbines, offering increased operating flexibility and efficiency.
Renewable Resource	Energy resources that are virtually inexhaustible in duration but may be limited in the amount of energy that is available per unit of time. Renewable energy resources include biomass and solar, among others.
Reserve Margin	An amount added to the Peak Demand to account for uncertainties in forecast peak demand and/or availability of Firm Capacity at the time of the Peak Demand due to unexpected unit outages or reductions in the amount of power that can be produced. The State of Florida specifies a 15 percent Reserve Margin for municipal utilities, such as GRU.
Resource Plan	See definition of "Portfolio"
Scenario	Consideration of changes to multiple IRP Variables simultaneously to analyze a potential future.

Sensitivity	Consideration of changes to one of the IRP Variables at a time within a given potential future.
Simple Cycle	A power plant consisting only of a combustion turbine (or variation thereof) without the heat recovery steam generator (HRSG) or steam turbine (ST) components utilized in a combined cycle power plant.
Small Modular Reactor (SMR)	A type of nuclear power plant that is smaller in size than traditional utility-scale nuclear power plants and allows for multiple "modules" to be constructed and added to a shared control center, providing a range of capacity of nuclear power at various costs per unit of capacity, depending on how many modules are installed. The modular nature also provides for flexibility in operating the units as compared to traditional utility-scale nuclear power plants.
Solar PPA	A PPA involving the purchase of solar power.
Solar Photovoltaic (PV)	The process of converting sunlight into electrical energy.
Supply-Side Resource	New generating options considered as resources to be added to a Portfolio. These would include both Renewable Resources and Thermal Resources.
Thermal Resource	Supply-side resources that operate through the use of fossil fuels, such as natural gas, coal, and oil.
Variable O&M	Operating and maintenance costs that vary based on how the power plant is utilized. Examples of Variable O&M include costs for chemicals and lubricants and costs that vary based on the number of times a generating unit is started and/or the number of hours the generating unit is operated.

Note: Definitions developed either independently for the Gainesville Regional Utilities 2023 Integrated Resource Plan or using information from various sources, including:

- <https://www.nationalgrid.com/stories/energy-explained/what-is-battery-storage#:~:text=Battery%20storage%2C%20or%20battery%20energy,when%20customers%20need%20power%20most>
- <https://www.eia.gov/energyexplained/biomass/>
- <https://www.eia.gov/tools/glossary/index.php?id=C>
- <https://www.eia.gov/tools/glossary/index.php?id=D>
- <https://www.eia.gov/tools/glossary/index.php?id=E>
- <https://www.eia.gov/tools/glossary/index.php?id=F>
- <https://www.eia.gov/energyexplained/units-and-calculators/british-thermal-units.php>
- <https://www.eia.gov/tools/glossary/index.php?id=G>
- <https://www.eia.gov/tools/glossary/index.php?id=H>
- <https://www.eia.gov/tools/glossary/index.php?id=R>
- <https://www.eia.gov/energyexplained/what-is-energy/#:~:text=Energy%20is%20the%20ability%20to,use%20it%20to%20do%20work>