NEWFOUNDLAND AND LABRADOR HYDRO

Glossary of Terms

newfoundland labrador hydro
a nalcor energy company

AC – See Alternating Current

Alternating Current (AC) – A continuous electric current that regularly reverses direction, usually sinusoidally. Alternating current is used in power systems because it can be transmitted and distributed at various voltages by transformers more economically than direct current.

Alternator – an electromechanical device that converts mechanical energy to electrical energy in the form of alternating current.

Asset Management – the comprehensive management of asset requirements, planning, procurement, operations, maintenance, and evaluation in terms of life extension or rehabilitation, replacement or retirement to achieve maximum value for the stakeholders based on the required standard of service to current and future generations.

BCC – Backup Control Centre

BCC DRP – Backup Control Centre Disaster Recovery Plan

BDE - Bay d'Espoir Hydroelectric Generating Facility

Black Start – The process of restoring a power station to operation without relying on the power transmission system.

BOD – Board of Directors

Bus – A series of conductors, usually three, supported by metal structures inside a terminal station that connects various parts of a switchyard such as Transmission Lines, Breakers and Transformers.

Bus Lockout – A protection device used to electrically isolate a section of a utility switchyard when an electrical fault is sensed. The Bus Lockout is used to open the Breakers and Disconnects to stop more electricity from entering the problem area when a fault is detected.

Capacity - The highest level of electricity that can be supplied at any one time. For residential customers, capacity is measured in kilowatts (kW), on the electricity system it is measured in megawatts (MW).

CBC – Come-by-Chance

CBC TS – Come By Chance Terminal Station

CBPP – Corner Brook Pulp and Paper

CCCT – Combined Cycle Combustion Turbine

CCG – Canadian Coast Guard

CDM – See Conservation Demand Management

CEA – Canadian Electricity Association

CEO – Chief Executive Officer

CEOC – Corporate Emergency Operations Centre

CERP – Corporate Emergency Response Plan

Circuit Breaker – An automatic electrical switch designed to open/break a circuit in order to protect electrical equipment, such as transformers, from damage caused by overload or short circuit.

CM – See Corrective Maintenance

Cold Load Pickup – Phenomenon that usually occurs in cold weather which takes place following an extended outage in which the overall demand on a distribution feeder, following its restoration, is greater than what would be expected in normal circumstances. In many cases, for a period of time once the circuit is restored, the level of demand is greater than the level experienced before the outage.

Conductor – A type of material which permits the flow of electric charge in one or more directions. Usually made of aluminum or copper.

Conservation Demand Management (CDM) – Refers to programs and activities that are designed to reduce electricity consumption or peak electricity demand behind customers' meters. These can include providing incentives and rebates, load control programs and others. Hydro's programs have focused on the conservation of electricity consumption.

Corrective Maintenance (CM) – a maintenance task performed to identify, isolate and rectify a fault so that the failed equipment, machine, or system can be restored to operational condition.

CPW – See Cumulative Present Worth

Critical Spare - A part which could cause significant downtime in production if failure occurs. Generally these are parts that have a high cost and relatively low probability of failure. Replacements of these assets are not available on demand from a nearby source and require long delivery times.

CT – Combustion Turbine

Cumulative Present Worth (CPW) – The present value of all incremental utility capital and operating cost incurred by Hydro to reliably meet a specific load forecast given a prescribed set of reliability criteria.

Current – a flow of electric charge through a medium

DAFOR – See De-rated Adjusted Forced Outage Rate

Demand Losses – The electrical losses on the transmission lines and transformers, measured as the differences between generation source and delivery point.

De-rated Adjusted Forced Outage Rate (DAFOR) - a reliability key performance indicator for generation assets. DAFOR measures the percentage of time that a unit or group of units is unable to generate at its Maximum Continuous Rating (MCR) due to forced outages.

Distribution – The final stage in the delivery of electricity to customers. The distribution system carries electricity from the terminal station, where the transmission system terminates and delivers it to consumers.

Distribution Feeder - A supply line at lower voltages that originates at the power supply source, usually a terminal that supplies power to the customer.

Distribution Station – Transfers power from the transmission system to the distribution system of an area. Distribution stations transform voltages to a level suitable for distribution out from the terminal station for delivery to out customers.

DLP – Deer Lake Power

DRP – Disaster Recovery Plan

ECC – See Energy Control Center

EERP - Environmental Emergency Response Plan

EFOR – Equivalent Forced Outage Rate

EMS – See Energy Management System

EOC – Executive on Call

ERT – Emergency Response Team

Energy (or consumption) - The total amount of electricity that can be supplied throughout the year. In the home, the amount of energy used is measured in kilowatt-hours (kWh). The quantity of power produced by a generating station over a period of time is measured in megawatt-hours (MWh).

Energy Control Center (ECC) – The flow of electricity through Newfoundland and Labrador's power grid is controlled and monitored from the ECC. Using a modern management system, the ECC monitors and controls the flow of electricity from Hydro's various sources across the transmission system power grid throughout Newfoundland and Labrador.

Energy Management System (EMS) – a modern system used by the ECC to optimize system performance and reliability. This system allows operators to monitor the condition and the status of all interconnected equipment on the main power grid.

EPRI – Electric Power Research Institute

Fault – A general term to describe an electrical equipment failure, generally leading to an outage.

FD – See Forced Draft Fan

Forced Draft (FD) Fan– Supply the air necessary to support fuel combustion in thermal power plants.

Frazil Ice – Soft ice formed by the accumulation of ice crystals in water. It resembles slush and has the appearance of being slightly shinny when seen on the surface of water. The formation of frazil ice can restrict intake flows thereby reducing hydroelectric generation.

GDP – See Gross Domestic Product

Generator – a machine that converts one form of energy into another. In electricity generation, a generator is used to convert mechanical energy into electrical energy.

Generating Plant – an industrial facility for the generation of electric power.

Gigawatt Hour (GW h) - One billion watt hours or one million kilowatt-hours. A measure of electricity usage by homes and businesses. The energy supplied to all customers is measured in gigawatt-hours.

Gross Domestic Product (GDP) – The total value of goods and services produced in Canada. GDP measured in constant dollars is defined as Real GDP.

GS – Generating Station

GT – Gas Turbine

GWh – See Gigawatt Hour

HP – Hydro Place

HND TS – Hardwoods Terminal Station

HRD/HTGS – Holyrood Thermal Generating Station

HVdc – High Voltage Direct Current

Hydroelectric Generation - Production of electricity through the use of turbines propelled by falling water which is connected to a generator.

IT – Information Technology

IVR – Interactive Voice Response

Island Interconnected System – A series of transmission lines interconnecting various generating sources on the island portion of the province. There are an estimated 264,000 customers connected to this electricity system. Power is supplied through a combination of hydroelectric, thermal, Wind and diesel generation.

Isolated Diesel Communities – Communities that are not interconnected to the Provincial Generation and Transmission grid, which have their power generated and supplied by diesel generation. Approximately 4500 customers living in rural isolated communities within the province are provided electricity through the use of diesel generation.

Jacking Oil Pump – Pump used to supply high pressure oil for the lubrication of a turbine generator.

JDE – JD Edwards

Kilovolt (kV) - One thousand volts.

Kilowatt (kW) - One thousand watts; the commercial unit of measurement of electric power. A kilowatt is the flow of electricity required to light ten 100-watt light bulbs.

Kilowatt Hour (kWh) - One thousand watts used for a period of one hour; the basic unit of measurement of electric energy. The average electrically-heated home on the island of Newfoundland consumes about 18,200 kWh per year.

KV – See Kilovolt

KW- See Kilowatt

KWh – See Kilowatt Hour

Labrador Interconnected System – A series of transmission lines interconnecting various generating sources on the Labrador portion of the province. Approximately 10,500 customers in this area benefit from hydroelectricity as their source of power generation.

Lightning Arrestor – Device used on electrical power systems to protect the insulation and conductors of the system from the damaging effects of lightning. It will absorb and dissipate the energy from a lightening strike so as not to interrupt the normal operation of the system.

Load -The amount of electricity required to meet customer demand at any moment. The load profile fluctuations depend on electricity use throughout any given day.

Load Forecast - The expected load requirements that an electricity system will have to meet in future years.

LOLH – See Loss of Load Hours

LOLP – See Loss of Load Probability

Loss of Load Hours (LOLH) – A probabilistic assessment of the level of unserved load at time of peak, due to insufficient generation.

Loss of Load Probability (LOLP) – A measure of the probability that a system demand will exceed capacity during a given period, often expressed as the estimated number of days over a long period, frequently 10 years or the life of the system

Manitoba Hydro International Inc. (MHI) – Wholly owned subsidiary of Manitoba Hydro, one of the largest and longest-standing electric power and gas utilities in Canada.

Maximum Continuous Rating (MCR) – The gross maximum electrical output, measured in megawatts, for which a generating unit has been designed and/or has been shown capable of producing continuously.

MCR – See Maximum Continuous Rating

Megawatt (MW) - One million watts; one thousand kilowatts. A unit commonly used to measure both the capacity of generating stations and the rate at which energy can be delivered.

MHI – See Manitoba Hydro International Inc.

MW – See Megawatt

n-1 Criteria – Management criteria such that generation assets are managed so that they are able to continue to operate normally in the event of the unplanned availability of the largest available generating unit in the company's operations.

Newfoundland and Labrador Hydro (NLH) – Provincial Crown Corporation that is the primary supplier of electricity in the province of Newfoundland and Labrador.

Newfoundland Power (NP) – Primary retailer of electric power in Newfoundland and Labrador.

NLH – See Newfoundland and Labrador Hydro

NP – See Newfoundland Power

O&M – Operation and Maintenance

Operating costs - includes fixed and variable operating and maintenance costs, excludes capital cost.

OEM – Original Equipment Manufacturer

OPD TS – Oxen Pond Terminal Station

OPLF – Medium-Term Planning Forecast

P&C – See Protection and Control Systems

P&P – Pulp and Paper

Peak Demand - The maximum power demand registered by a customer, group of customers or a system in a stated period of time. The value may be the maximum instantaneous load or more, usually the average load over a designated interval of time, such as one hour, and is normally stated in kilowatt or megawatts.

PETS – See Project Execution and Technical Services

PLF – Long Term Planning Forecast

PM – See Preventative Maintenance

PPA – Power Purchase Agreements

Preventative Maintenance (PM) – maintenance activities, including testing, measuring, adjusting and the replacement of parts, performed specifically to prevent faults from occurring.

Project Execution and Technical Services (PETS) – Division of Nalcor that takes a strategic approach to the management and delivery of capital and operating projects, all safely executed within an effective, quality management framework. This high-performance project management and technical services team is dedicated to providing the best level of support possible to Nalcor's operating businesses.

Protection and Control Systems (P&C) - A collection of devices in terminal stations and generating plants that monitor the flow of electricity, operate switchgear and control generators. Protection and Control devices work together to ensure electricity is generated and transmitted safely and reliably.

Protective Relays - Monitor the voltage and current and isolate problem areas when an electrical fault or disturbance is sensed to prevent further damage. These devices can perform a variety of protective functions depending on the nature of disturbance detected.

PUB – See Public Utilities Board

Public Utilities Board (PUB) – Independent, regulatory body responsible for the regulation of electric utilities in the province of Newfoundland and Labrador to ensure rates charged are just and reasonable, and that the service provided is safe and reliable.

Reactor – An electrical component used to oppose rapid changes in current. Generally installed in motor driven equipment to limit starting current and provide protection for the equipment's motor.

Reliability - A measure of the adequacy and security of electric service. Adequacy refers to the existence of sufficient facilities in the system to satisfy the load demand and system operational constraints. Security refers to the system's ability to respond to short-term disturbances in the system.

Remote Terminal Units (RTU) – In SCADA systems, the device is used in remote locations to collect and transmit data. This device is capable of two way communication with a central or master station in order to implement processes.

RFI – Request for Information

RTU – See Remote Terminal Unit

SCADA – See Supervisory Control and Data Acquisition

SOE – Sequence of Events

SSD TS – Sunnyside Terminal Station

Supervisory Control and Data Acquisition (SCADA) – A computer controlled system that monitors and controls industrial processes that exist in the physical world.

Switchgear – Combination of electrical disconnect switches, fuses or circuit breakers used to control, protect and isolate electrical equipment.

Synchronous Condenser –A device used to adjust conditions on the transmission grid. The condenser operates similar to a large electric motor with the shaft of the motor spinning freely. This prevents the condenser from converting power and allows it to adjust the grid's voltage.

T&D – Transmission and Distribution

TapRooT Process – A systematic process, consisting of process flows, software, and training for investigating and determining the root causes of problems.

Terawatt Hours (TW h) - A unit of bulk energy; 1,000,000,000 kilowatt hours.

Terminal Station (TS) – Termination points at the end of a transmission system used to transform the transmission voltages to distribution voltages for distribution to the customer.

TL – See Transmission Line

Transformer – An electromagnetic device for changing the voltage of alternating electricity.

Transmission – The process of transporting electric energy in bulk on high voltage lines from the generating facility to various terminal stations where the voltage can be transformed for distribution to the customer.

Transmission and Rural Operations (TRO) – Division of Newfoundland and Labrador Hydro responsible for the operation and maintenance of all Hydro transmission and distribution systems, three gas turbines, one frequency converter, one mini-hydro plant and 25 diesel plants.

Transmission Line (TL) – A cable or other system of conductors that transfers electricity from one location to another.

Transmission System – A combination of wires, structures and right a ways, that transport electric energy in bulk on high voltage lines from the generating facility to various terminal stations where the voltage can be transformed for distribution to the customer.

TRO – See Transmission and Rural Operations

TS – See Terminal Station

Turbine – a rotary mechanical device that extracts energy from a fluid flow and converts it into useful electricity.

TWh – See Terrawatt Hour

UPS – Uninterrupted Power Supply

Voltage and Volts - The pressure pushing a number of electrons (current) along a transmission or distribution line is called the voltage, which is measured in volts.

Voltage Control – A generic industry term used to describe the equipment added to the electrical system to maintain system voltage levels within an acceptable bandwidth or range.

Voltage Regulator – An electromechanical mechanism or electronic component designed to automatically maintain a constant voltage. In an electric power distribution system voltage regulators may be installed at a substation or along distribution lines so that all customers receive steady voltage independent of how much power is drawn from the line.

Voltage Support – A generic industry term used to describe equipment added to the electrical system to maintain minimum acceptable voltage levels throughout the system.

Watt - A derived unit of power. Watts measure the rate of energy conversion.

WAV TS – Western Avalon Terminal Station

WCF – See Weight Capability Factor

Weighted Capability Factor (WCF) – a reliability key performance indicator for generation assets. The WCF measures the percentage of the time that a unit or a group of units is available to supply power at maximum continuous generating capacity.