

GLOSSARY

A-Weighted Sound Level. A system of measuring sound which emphasizes sounds in the middle frequencies to which the human ear is most responsive.

Advanced. A technology expected in this report to be commercially available by the year 2000.

Aerodynamic Drag. The force exerted by the air on a vehicle moving through it, opposing the motion of the vehicle.

Air Quality. A measure of the concentration of pollutants in the air.

Air Quality Control Regions (AQCR). A set of 248 regions, each covering an area of relatively homogeneous air quality, defined by the Environmental Protection Agency for planning purposes.

AQCR. Air Quality Control Region.

Armature. The movable part of a motor consisting essentially of coils of wire around an iron core.

Automotive Fuels. Liquids (or sometimes gases) which can be burned in internal combustion engines to provide enough energy to propel an automobile.

Available Capacity. The portion of the average electric power a generating unit is expected to be able to supply (after allowances for scheduled and unscheduled maintenance) which is not in use at a given time.

Baseline. The projected level of activity in the absence of electric and hybrid vehicles.

Base-Load Units. Those generating units of an electric power **system** which are intended to provide power continuously to the "base load" of the system (i.e., the load which is always present, even during the hours of minimum demand).

Battery. A group of cells in which an electrochemical reaction occurs, transferring ions between positive and negative electrodes through an electrolyte to produce an electric current.

Battery Charger. A device which feeds electricity into a battery, for storage in chemical form and later withdrawal as electric energy.

Battery Fraction. The ratio of propulsion battery weight to the test weight of an electric vehicle, indicating the fraction of the vehicle's on-road weight devoted to the battery.

Battery Weight. The weight of the propulsion battery or battery pack in an electric vehicle, including necessary interconnecting wiring between cells or other modules, supporting trays and any associated insulation and container required for battery operation.

Biberonnage. The practice of recharging electric or hybrid vehicle batteries in small amounts over short periods of time in various locations whenever the vehicle is parked away from home base.

Brushes. Electrical conductors made of blocks of carbon that make sliding contact between a stationary and a moving part of a motor.

CAFE. Corporate Average Fuel Economy.

Cartel. A coalition of independent commercial enterprises formed for the purpose of limiting competition, controlling supplies or regulating prices.

Cell. The basic unit of a battery consisting of a positive and a negative electrode connected by an electrolyte.

Chopper. A type of controller which periodically interrupts the flow of electric current to reduce its average value to the desired level.

Clean Air Act. Federal law passed in 1970 mandating air quality standards and limiting the amount of permissible pollutant emissions from various sources.

Commutator. A device which periodically reverses the direction of electric current in a motor as it revolves.

Continuous Duty Rating. The maximum power a motor car output continuously over a specified (extended) time period.

Controller. A device which regulates the amount of power flowing from the battery to the motor in an electric vehicle, thereby regulating the speed and acceleration.

Conventional Vehicles. Vehicles powered by Otto-cycle internal combustion engines using gasoline for fuel, using transmissions, tires, and materials typical of those used or confidently expected in 1980.

Corporate Average Fuel Economy (CAFE). The average miles per gallon attained by all the cars sold by a manufacturer which must meet federally mandated levels.

Curb Weight. The weight of a vehicle without driver, passengers or payload, but otherwise ready for operation.

Decibel. A unit for measuring the relative loudness of sounds; equal approximately to the smallest degree of difference of loudness ordinarily detectable by the human ear, whose range includes about 130 decibels on a scale beginning with one for the faintest audible sound.

Discharge. The withdrawal or depletion of electrical energy stored in a battery.

Dispatching Sequence. The order in which an electric utility uses the different fuels available to generate additional electric power.

DOE. The United States Department of Energy.

Drive Train. The components of a vehicle which convert stored energy into propulsive force, usually including an internal-combustion engine or electric motor and its controller, a transmission and a differential.

EHV. Electric and hybrid vehicles.

Electric Mode. The operation of a hybrid vehicle using only the electric storage battery as a power source.

Electric Vehicles (EVs). Vehicles whose propulsion power is electricity drawn from batteries.

Electricity Use of Electric Vehicles. The average electric energy input to the battery charger per mile of driving.

Electrification of Travel. The accomplishing of travel using electric vehicles, or hybrid vehicles operating on electricity alone, rather than conventional vehicles.

Electrode. Positive or negative plates in a battery which emit or accept ions during an electrochemical reaction.

Electrolyte. A non-metallic electric conductor in which current is carried by the movement of ions between the positive and negative electrodes in a battery.

Emissions. Substances released as a by-product of some activity.

Energy Efficiency. The percent of input energy which a device outputs after internal energy losses.

EV. Electric vehicle.

Federal Noise Control Act. A national policy established in 1972 to control the emissions of noise that are detrimental to human health.

Fleet Fuel Economy. The average miles per gallon attained by a group of vehicles.

Flywheel. A mechanical device for storing energy in a rotating wheel, usually made of high-strength metals or reinforced plastics and operated at high speed in an evacuated container.

Flywheel Hybrid. A vehicle which has incorporated into its propulsion system a flywheel to store and deliver energy.

Fossil Fuel. A carbon based burnable material composed of animal or plant matter which has decomposed in the earth's crust over the **ages**, such as oil or coal.

Friction Brakes. A device which slows the motion of a vehicle by mechanically applying friction to oppose the rotation of the wheels.

Fuel Economy. Miles traveled per gallon of fuel consumed.

Fuel Mix. The mix of fuels employed by electric utilities to generate electricity.

Gross Vehicle Weight. The weight of the vehicle plus the weight of maximum design payload.

HV. Hybrid vehicles.

Hybrid Vehicles (HVs). Vehicles equipped with two or more systems for supplying propulsion power such as vehicles with both a battery-powered electric motor and an internal combustion engine.

ICE. Internal combustion engine; a vehicle whose only propulsion power supply is an internal combustion engine.

Identified Resources. Specific bodies of mineral-bearing material whose location, quality and quantity are known from geologic evidence supported by engineering measurements.

Infrastructure. Basic institutions and facilities necessary for the continuance and growth of electric and hybrid vehicle use.

Initial Cost. purchase price; the amount of money which must be expended to obtain the vehicle.

Internal Combustion Engine (ICE). A source of power (for propulsion of vehicles) in which power is supplied by piston movement caused by the controlled explosion of gasoline or other fuel.

Kilowatt (kW). The metric unit of power. It is 1000 times the work done in one second by a force which will impart an acceleration of one meter per second squared to a mass of one kilogram acting through a distance of one meter. In electrical circuits, power in kilowatts is given by the product of electromotive force and current (volts times amps) divided by **1000**.

Kilowatt-Hour (kWh). The metric unit of energy. A kilowatt-hour is 3,600,000 times the work done by a force which will impart an acceleration of one meter per second squared to a mass of one kilogram acting through a distance of one meter.

Life-Cycle Cost. The expenditures required to purchase, operate, and maintain a vehicle throughout its useful life, including cost of capital.

Light-Duty Vehicles. Passenger automobiles and small vans and trucks with gross weight ratings under 10,000 pounds.

Lena-Distance Travel. Generally inter-city travel of several hundred miles or more.

Market Penetration. The percent of all vehicles sold which are of a certain type.

Maximum Design Payload. The heaviest weight which a vehicle is designed to safely carry.

Median Automotive passby Noise. Composite noise levels which average sound emissions during cruise and acceleration conditions representative of urban driving.

Motor. A rotating machine that transforms electrical energy into mechanical energy.

Near-Term. A technology expected in this report to be commercially available in quantity by the year **1990**.

Noise Pollution. Unwanted sound which interferes with human activity.

Nominal Range. The mileage rating of a **vehicle; the** approximate distance which a vehicle will travel before refueling.

Off-Peak. A period of relatively low electricity demand as specified by the supplier.

Off-Peak Electricity Prices. A lower rate charged for electricity during periods of low demand.

Operating Cost. The cost of running and maintaining a vehicle throughout its life including charges for fuel, repair and maintenance, insurance, garaging, parking, tolls, titling, registration, replacement of parts with shorter lives than the basic vehicle and the cost of capital.

Operating Life. The period of time during which a device can function normally.

Outdoor Day-Night Equivalent Sound Level. Average community noise throughout a 24-hour day calculated by averaging the minute-to-minute readings of an A-weighted sound level meter, with nighttime readings increased 10 dB in recognition of the greater sensitivity of typical activities to noise during these hours.

Parallel Hybrid. A hybrid vehicle where the internal-combustion engine can drive the vehicle by a direct mechanical linkage to the wheels.

Peak Demand. The maximum amount of electricity required during a specified time period, usually the hour of greatest demand during a calendar year.

Peaking Units. Those portions of a generating system used to supply electric power only during daily periods of maximum demand.

Pollutant. That which makes substances physically impure or unclean.

Population-Weighted Average. A regional average in which the importance of each sub-region's value is proportional to its population. The regional average is calculated by summing each sub-region value multiplied by the sub-region population, then dividing by the total regional population.

Potential Resources. Unspecified bodies of mineral-bearing material surmised to exist on the basis of broad geologic knowledge and theory.

Power. The time rate of transferring energy, equal to the current times the voltage in an electric circuit. The metric unit of power is the watt.

Power Plants. A location at which one or more electric power generating units are located.

Primary Demand. The demand for newly-mined material as opposed to scrap or recycled material.

Propulsion Weight. Total weight of the propulsion components in an electric, hybrid, or conventional vehicle, including propulsion battery, electric motor, controller, gasoline tank and fuel, internal combustion engine, transmission, and differential.

Range-Extension Hybrid. A hybrid-electric vehicle with sufficient speed and range on electric power alone for most driving, with a small internal-combustion engine which can be started after battery depletion on long trips to extend highway cruising range.

RECAPS. Recharge Capacity Projection System.

Recharge. To feed electricity into a battery to renew its ability to be used as an electric power source.

Recharge Capacity Projection System (RECAPS). A computer program which projects the capacity of US electric utilities to generate additional power for recharging EHV's, and the fuels which would be used to do it, based on existing and planned generating stations and the hour-by-hour electricity demand projected for an entire future year at each individual utility.

Recharge Electricity. Electricity fed into a battery to renew its ability to be used as a power source.

Recharge Energy. The amount of energy used in feeding electricity into a battery.

Recharger. A device which feeds electricity into a battery to restore its ability to supply electric power.

Recoverable Resources. That portion of the identified resource from which a useable mineral or energy commodity can be economically and legally extracted at the time of determination.

Regenerative Braking. A method of braking a moving vehicle in which the electric motor acts as a generator, allowing the kinetic energy of a vehicle during deceleration to be converted to electricity which recharges the battery, avoiding loss of that energy as heat in ordinary friction brakes.

Regional Emissions Projection System (REPS). A computer model which projects air pollution emissions by Air Quality Control Region.

REPS. Regional Emissions Projection System.

Resources. A concentration of naturally occurring solid, liquid or gaseous materials in or on the earth's crust in such a form that economic extraction of a commodity is currently or potentially feasible.

Road Load. The amount of force which must be applied to a vehicle to overcome the aerodynamic drag, rolling resistance, gravity and inertia. The total resistance to forward motion of a vehicle due to rolling resistance, aerodynamic drag, gravity (on inclined roadways) , and inertia (during acceleration) , which must be overcome by propulsive forces.

Rolling Resistance. The amount of force which must be applied to the vehicle to overcome the forces of friction in the tires and wheel bearings.

SEAS. Strategic Environmental Assessment System.

Selective Load Control. Remote control of selected classes of electrical equipment or appliances, exercised by a utility to reduce total demand and thus avoid blackouts when available generating capacity is inadequate; ordinarily applied briefly to non-critical devices such as electric hot water heaters or air conditioners, at households agreeing to such interruptions in exchange for reduced electricity rates.

Series Hybrid. A hybrid vehicle in which the engine drives a generator which in turn drives the electric motor or charges the battery.

specific cost. Cost per unit weight measured in dollars per kilogram.

Specific Energy. Energy per unit weight.

Specific Power. Power per unit weight.

Sticker Price. Suggested retail price.

Strategic Environmental Assessment System (SEAS). A computer model developed by the US Environmental Protection Agency to assess the impact of various environment-related policies on the economy and the environment, both in terms of dollar changes in gross national product and pollutant tonnages released into the biosphere.

Structure and Chassis Weight. The weight of the structure, suspension, tires, wheels, and other components which must carry the weight of the upper body, battery, propulsion system and payload.

Surface Transportation Vehicle. Any vehicle capable of carrying people or loads which moves across the ground.

Test Weight. The curb weight of a vehicle, plus a payload of plus 300 pounds (the conventional assumption for the weight of two average occupants) .

Thermal Pollution. The introduction of hotter or colder elements into a substance causing an unwanted change in the substance's normal temperature.

Upper Body Weight. Weight of the passenger compartment, seats, instruments, heating and ventilation, and body panels.

Urban Driving Range. The distance a vehicle travels between refueling or recharges in stop/start city traffic; usually tested in a specific driving schedule chosen to be representative of urban driving conditions.

Windings. Material, such as wire, wound or coiled about an object, such as an armature in a motor.