Appendix C
Acronyms, Abbreviations, and Glossary

AC	alternating current
ACRS	accelerated cost recovery system
AEP	American Electric Power Service Corp.
AFB	atmospheric fluidized bed
AFUDC	allowance for funds used during construction
AGA	American Gas Association
APCD	air pollution control district
AP&L	Arkansas Power & Light Co,
APPA	American public Power Association
bbl	barrel
boe	barrels of oil equivalent
Btu	British thermal unit
CAQCA	Colorado Air Quality Control Act
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	National Rural Utilities Cooperative Finance Corp.
c o	carbon monoxide
ConEd	Consolidated Edison Co. of New York
CPUC	California Public Utilities Commission
CWE	Commonwealth Edison Co,
CWIP	construction work in progress
DC	direct current
DELTA	Dispersed Electricity Technology Assessment model
DOE	Department of Energy
EIA	Energy Information Administration
EIR	environmental impact report (required under CEQA)
EIS	environmental impact statement
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ERTA	Economic Recovery Tax Act of 1981
E/S ratio	electricity-to-steam ratio
FERC	Federal Energy Regulatory Commission
FFB	Federal Financing Bank
FGD	flue gas desulfurization
FUA	Powerplant and Industrial Fuel Use Act of 1978
g	gram
G W	gigawatt
GWh	gigawatthour
HC	hydrocarbon
hph	horsepowerhour
IEEE	Institute of Electrical and Electronics Engineers
I o u	investor-owned utility
1P	Illinois Power Co.
IRS	Internal Revenue Service
ITC	investment tax credit
JPL	Jet Propulsion Laboratory
kv	kilovolt
kVAR	kilovolt-amperes-reactive
kwf	killowatt
kwh	kilowatthour
LAER	lowest achievable emission rate
lb	pound
LRMC	longrun marginal cost
	meter
; C F	million cubic feet
MFBI	major fuel burning installation
MMBD	million barrels per day
MMBtu	million Btu
MSW	municipal solid waste
M W	megawatt
MWh	megawatthour
NAAQS	national ambient air quality standards
NECPA	National Energy Conservation Policy Act of 1978
NEES	New England Electric System
NEPA	National Environmental Policy Act of 1969
NEPOOL	New England Power Pool
NERC	North American Electric Reliability Council
NGPA	Natural Gas Policy Act of 1978
N O	nitrous oxide
$N 0_2$	nitrogen dioxide
$N O_x$	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSPS	new source performance standard
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
PFB	pressurized fluidized bed
PG&E	Pacific Gas & Electric Co,
ppm	parts per million
Psc	public service commission
PSD	prevention of significant deterioration (of air quality)
psi	pounds per square inch
psia	psi absolute
psig	psi gauge
Puc	public utilities commission
PUHCA	Public Utility Holding Company Act of 1935
PURPA	Public Utility Regulatory Policies Act of 1978
QF	qualifying facility
REA	Rural Electrification Administration
rpm	revolutions per minute

SCF	standard cubic foot
SEC	Securities and Exchange Commission
SERI	Solar Energy Research Institute
SO_2	sulfur dioxide
SO_x	sulfur oxides
SRMC	shortrun marginal cost
SRP	Salt River Project
TCF	trillion cubic feet
tpy	tons per year
TSP	total suspended particulate
TVA	Tennessee Valley Authority
g	microgram

Glossary

Availability: A measure of the frequency of scheduled outages for generating unit (e.g., for maintenance).

Avoided Cost: The incremental cost to an electric utility of electric energy or capacity or both which, but for the purchase from a cogenerator or small power producer, the utility would generate itself or purchase from another source.

Back-Up Power: Electricity sold to a cogenerator by a utility during unscheduled outages of the cogenerator (e.g., during equipment failure).

Balance of System: The equipment required for a cogeneration system excluding the prime mover (e.g., combustion chamber, environmental controls, fuel handling equipment).

Blowdown: The effluent from boilers and wet cooling systems.

Bottoming Cycle: A cogeneration system in which high-temperature thermal energy is produced first, and then the waste heat is recovered and used to generate electricity or mechanical power plus additional, lower temperature thermal energy,

Capacity Factor: The percent of a year that a generator actually supplies power.

Cooling Tower Drift: The discharge and dispersal of small droplets of water from wet cooling towers.

Dispatching: Control by a utility from a central location of the amount of electricity generated by a powerplant and of its distribution to the point of use.

Diversity: The difference in electricity usage patterns among customers.

Downwash: An aerodynamic wind action that causes stack plumes to be caught around the stack or around neighboring buildings.

Dry Controls: Technological air pollution controls that use a nonliquid control medium.

Dual Fuel System: An engine or boiler that can switch back and forth from one fuel (e.g., coal) to another (e.g., oil) with no technological modification and minimal downtime.

Efficiency: A measure of the amount of energy which is converted to useful work versus how much is wasted.

- ***Fuel Use Efficiency*** for a cogenerator credits the thermal as well as electric output and is expressed as the ratio of electric output plus heat recovered in Btu to fuel input in Btu.
- ***First Law Efficiency*** reflects the simple percentage of fuel input energy that is actually used to produce useful thermal and electric energy, but does not distinguish the relative value of the two outputs.
- Second Law Efficiency recognizes that electricity is a much higher quality form of energy than heat or steam.
- ***Full-Load Electric Etliciency*** is measured when the maximum possible amount of electricity is being produced.
- ***Part-Load Electric Eiliciency*** is measured when less than the maximum possible amount of electricity is being produced.

Electricity-to-Steam Ratio: The proportions of electric and thermal energy produced by a cogenerator, measured in kilowatthours per million Btu of useful thermal energy.

Fumigation: When plumes from either tall or short stacks are forced to ground level by meteorological conditions.

Harmonic Distortion: The production in a power system of one or several frequencies that are multiples of the basic power frequency of 60 cycles per second.

Heat Exchanger: A mechanical device that transfers waste heat from one part of a system (e.g., the turbine) to another medium (e.g., water) for process use.

Heat Rate: A measure of the amount of fuel used to produce electric and/or thermal energy.

- ***Total Heat Rate*** refers to the total amount of fuel (in Btu) required to produce 1 kilowatthour of electricity with no credit given for waste heat use,
- ***Incremental Heat Rate*** is calculated as the additional (or saved) Btu to produce (or not produce) the next kilowatthour of electricity.
- ***Net F/eat Rate*** (also measured in Btu/kWh) credits the thermal output and denotes the energy required to produce electricity, beyond what would be needed to produce a given quanti-

ty of thermal energy in a separate facility (e.g., a boiler).

Induction Generator: A rotating machine in which current supplied by an external alternating current source such as the electric power grid, induces a voltage and current in the rotating part of the machine.

Interest Coverage Ratio: The ratio of a firm's earnings to its current interest obligations.

Interruptible Power: Energy or capacity supplied by a utility to a cogenerator that is subject to interruption by the utility under specified conditions and is normally provided at a lower rate than non-interruptible service if it enables the utility to reduce peakloads.

Inverter: A device for converting direct current to alternating current.

Load: The demand for electric or thermal energy at any particular time.

- ***Base Load*** is the normal, relatively constant demand for energy on a given system.
- ***Peakload*** is the highest demand for energy from a supplying system, measured either daily, seasonally, or annually.
- ***Intermediate Load*** falls between the base and peak.
- ***Load Factor*** is the ratio of the average load over a designated time period to the peak load occurring during that period.
- ***Load Cycle Pattern*** is the variation in demand over a specified period of time.

Maintenance Power: Energy or capacity supplied by a utility during scheduled outages of a cogenerator or small power producer–presumably scheduled when the utility's other load is low.

Market Potential: The number of instances in which a technology will be sufficiently attractive-all things considered—that the investment is likely to be made.

Market-to-Book Ratio: The ratio of the market price of a firm's stock to its book value,

Negative Load: A technique by which utility system controllers subtract the power supplied to the grid by customer-operated generating equipment from the overall system demand and dispatch the utility's generating units to meet the remainder of the demand, rather than dispatching customers' equipment.

Parallel Operation: The automatic export to the utility grid of customer-generated electricity not consumed by the customer's load, such that the same circuits can be served simultaneously by customer—and utility-generated electricity.

Payout Ratio: The ratio of a firm's earnings to its dividends.

Power Factor: A measure of the phase difference between the voltage and current maximums on an electrical circuit.

Prime Mover: The turbine, engine, or other source of mechanical power that is used to turn the rotor of a generator.

Purchase Power: Customer-generated electricity supplied to the grid and purchased by a utility.

Quad: One quadrillion British thermal units (Btu) (approximately 500,000 barrels of oil per day for 1 year, or 50,000,000 tons of coal).

Qualifying Facility: A cogenerator or small power producer that meets the requirements specified in the Public Utility Regulatory Policies Act of 1978–in the case of a cogenerator, one that produces electricity and useful thermal energy for industrial, commercial, heating, or cooling purposes; that meets the operating requirements specified by the Federal Energy Regulatory Commission with respect to such factors as size, fuel use, and fuel efficiency); and that is owned by a person not primarily engaged in the generation or sale of electric power (other than cogenerated power).

Rankine Cycle: The thermodynamic cycle which describes the operating cycle of an actual steam engine.

Rate Base: The net valuation of utility property in service, consisting of the gross valuation minus accrued depreciation.

Regenerator: A device used in a turbine or engine to preheat incoming air or gas by exposing it to the heat of exhaust gases.

Relays: Devices by means of which a change of current or a variation in conditions of an electric circuit causes a change in conditions of or operates another circuit.

- ***Over/Under Relays*** are used to disconnect a generator if its voltage falls outside of a certain range.

Reliability: A measure of the frequency of scheduled and unscheduled outages of a generating unit (e.g., due to equipment failure).

Self-Excitation: The continued operation of induction generators when disconnected from the outside power source.

Simultaneous Purchase and Sale: When a utility purchases all of the electricity generated by a customer at avoided cost rates and sells power to the customer at retail rates; in practice, no actual transmission of power to or from the customer may take place and the amounts "purchased"

and "sold" are calculated from the customer's meter.

Supplementary Power: Capacity required by a cogenerator or small power producer in addition to its own.

Switchgear: All of the necessary relays, wiring, and switches that are used in interconnection equipment.

Synchronous Generator: A prime mover (e.g., turbine, engine) in which the rotor current comes from a separate direct current source on the generator.

Synthesis Gas: A synthetic gas created from a solid or liquid fuel with an energy content of 300 to 400 Btu/SCF.

System Stability: The ability of all generators supplying power to a utility system to stay synchronized after a disturbance (e.g., a fault on part of the power system).

Technical Potential: The number of instances in which a technology is technically suitable or appropriate.

Telemetry Equipment: Used in dispatching to transmit signals from a control center to electrical equipment (e.g. a generator) in the field in order to remotely operate that equipment.

Topping Cycle: A cogenerator in which the electric or mechanical power is produced first, and then the thermal energy exhausted from power production is captured and used.

Transformer: A device for increasing or decreasing the voltage of an alternating electric current.

Dedicated Distribution Transformers: These units connect a single large utility customer directly to a higher voltage distribution line, substation, or transmission network in order to confine voltage flicker problems to the customer's own system.

Urban Meteorology: The conditions surrounding urban buildings that alter normal dispersion of emissions.

Voltage Flicker: Very brief (less than 1 minute) changes power system voltages.

Waste Heat: Thermal energy that is exhausted rather than being captured and used.

Wet Controls: Technological air pollution controls that operate through the injection of water or some other liquid.