

Power and Water T. B. Simon Power Plant Facts and Figures

STEAM GENERATORS

UNITS 1 & 2	
Manufacturer	Wickes Boiler Company
Design	Pulverized Coal
Start-Up	1965 -1966
Capacity	250,000 lb. per hour
Operating Temperature	835° F @ Superheater Outlet
Operating Pressure	900 P.S.I.G.
Primary Fuels	Pulverized Coal - Natural Gas
Coal Consumption at Full Load	12 tons per hour

UNIT 3	
Manufacturer	Erie City Energy Division of Zurn Industries
Design	Pulverized Coal
Start-Up	1975
Capacity	350,000 lb. per hour
Operating Temperature	835° F @ Superheater Outlet
Operating Pressure	900 P.S.I.G.
Primary Fuels	Pulverized Coal - Natural Gas
Coal Consumption at Full Load	20 tons per hour

UNIT 4	
Manufacturer	Tampella Power Corporation
Design	Circulating Fluidized Bed
Start-Up	1993
Capacity	350,000 lb. per hour
Operating Temperature	835° F @ Superheater Outlet
Operating Pressure	900 P.S.I.G.
Primary Fuels	Coal - Natural Gas
Coal Consumption at Full Load	20 tons per hour
Limestone Consumption at Full Load	4 tons per hour

UNIT 6	
Manufacturer	Nebraska Boiler
Design	Heat Recovery Steam Generator
Start-Up	2006
Capacity	115,000 lb. per hour
Operating Temperature	835° F @ Superheater Outlet
Operating Pressure	900 P.S.I.G.
Primary Fuels	Natural Gas
Gas Consumption at Full Load	4200 lb. per hour

Power and Water T. B. Simon Power Plant Facts and Figures TURBINE GENERATORS

UNITS 1 & 2	
Manufacturer	Turbine – DeLaval Generator - Electric Machinery Inc
Description	3600 RPM, fully condensing, single automatic extraction. Steam turbine with direct connected electric generator and D.C. exciter.
Throttle Steam Conditions	825° F, 850 P.S.I.G.
Turbine Controlled Extraction Pressure	90 P.S.I.G.
Generator Electrical Characteristics	12.5 MW, .80 power factor, 13,800 volts, 3 phase, 60 Hertz, 3600 RPM, air cooled.

UNIT 3	
Manufacturer	General Electric Co.
Description	3600 RPM, Straight, non-condensing steam turbine with direct connected electric generator, static exciter
Throttle Steam Conditions	825° F, 850 P.S.I.G.
Turbine Controlled Extraction Pressure	90 P.S.I.G.
Generator Electrical Characteristics	3600 RPM, 15 MW, .85 power factor, 13,800 volts, 3 phase, 60 Hertz, 3600 RPM, 250 volts

UNIT 4	
Manufacturer	General Electric Co.
Description	Generator controlled General Electric extracting condensing steam turbine with direct coupled electric generator and brushless static exciter.
Throttle Steam Conditions	825° F, 850 P.S.I.G.
Turbine Controlled Extraction Pressure	90 P.S.I.G.
Generator Electrical Characteristics	3600 RPM, 21 MW, .85 power factor, 13,800 volts, 3 phase, 60 Hertz

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TURBINE GENERATORS

UNIT 5	
Manufacturer	Dresser-Rand
Description	Condensing, single controlled extraction steam turbine with direct coupled electric generator with a brushless static exciter.
Throttle Steam Conditions	825° F, 865 P.S.I.G.
Turbine Controlled Extraction Pressure	90 P.S.I.G.
Generator Electrical Characteristics	3600 RPM, 24 MW, .85 power factor, 13,800 volts, 3 phase, 60 Hertz

Manufacturer	Solar Turbines Inc.
Description	Single shaft axial flow gas turbine with reduction gear and completely integrated ABB electric generator with a brushless rotating exciter
Primary Fuel	Natural Gas
Fuel Consumption at Full Load	6,500 lb. per hour
Emmissions Control	Dry Low NOx Burners
Pressure Ratio	16:1
Generator Electrical Characteristics	3600 RPM, 13.5 MW, .85 power factor, 13,800 volts, 3 phase, 60 Hertz

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GENERAL INFORMATION

Cubic Content of Main Building	6,102,000 cubic feet (Units 1-4)
Ground Area of Main Building	40,000 square feet (?)
Height of Main Building	109 feet
Height of Boilers	Units 1 & 2 - 80 feet Unit 3 - 97 feet Unit 4 - 125 feet
Bunker Coal Storage Capacity	2,000 tons
Maximum Coal Storage at Site	100,000 tons
Coal System Capacity	200 tons per hour
Cooling Towers	East - 6 cells capable of cooling 25,000 GPM of water with 2,140,000 cubic feet per minute of air Center - 4 cells cooling 20,000 gpm of water with 1,560,000 cubic feet per minute of air West - 3 cells cooling 19,500 gpm of water with 1,633,000 cubic feet per minute of air
Pollution Equipment	Units 1 & 2 - 8 Module, 2400 bag fabric filter Unit 3 - 4 Field Hot Side, Electrostatic precipitator Unit 6 - Dry Low NOx Burners

WATER CAPACITIES

	Normal Water Level	Hydrostatic Test Water Level
Units 1 & 2	15,500 gal 129,115 lbs	19,233 gal 160,215 lbs
Unit 3	21,608 gal 180,211 lbs	26,890 gal 224,263 lbs
Unit 4	16,500 gal 136,941 lbs	23,023 gal 191,782 lbs
Unit 6	3,975 gal 33,000 lbs	6,867 gal 57,000 lbs

PLANT CAPACITIES

Steam (5 boilers)	1,315,000 lbs/hr
Electricity (6 turbine generators)	98.5 MW
CPCO Tie Line	25 MW

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FISCAL YEAR 2011-2012 PLANT DATA

PEAK DEMANDS	
Boiler Steam	825,500 lbs/hr
Sendout Steam	541,360 lbs/hr
Electricity	60,880 KW

TOTAL PRODUCTION	
Boiler Steam	4,568,883,000 lbs
Sendout Steam	2,496,724,000 lbs
Electricity	318,028,000 KWH

FUEL CONSUMPTION	
Coal	113,547 tons
Natural Gas	345,153 KCFT
Biofuels	5,510 tons

ELECTRICAL SYSTEM	
Number of Circuits	18 - 13.8 KV to campus from plant 5 - 4160V circuits form 1 substation
Length of Cable	71.47 miles

WATER SYSTEM PRODUCTION	
Well Production	1,325,000,000 Gallons
Peak System Demand	5,600 GPM

WATER SYSTEM GENERAL INFORMATION	
Number of Wells	Eighteen
Bore Depth	Nominally 400'
Bore Diameter	9", 12", 14" and 16"
Average :Pump Settings	250'
Pumps	8" Dia. 8-Stage, 9-Stage Vert. Turbine
Motors	50 Hp, 60 Hp, 75 Hp, 100 Hp 480 V, 3-Phase
Average Pump Capacity	450 GPM
Well Transmission Main	8 miles, 10", 12", 14", 16"
Water Storage	1,000,000 Gal. Underground
Distribution Pumps	Four
Capacity	3400 GPM each
Motors	200 Hp, 480V, 3-Phase
Distribution System	Approximately 65 miles
Steam Lines	20 miles