

PACIFIC POWER & LIGHT COMPANY

GENERAL INFORMATION ABOUT SWIFT HYDROELECTRIC PROJECT

Location: Upper Lewis river, about 38 miles east of Woodland, Wash., and U. S. Highway 99, and approximately 45 miles northeast of Portland, Ore. The Lewis river flows into the Columbia river near Woodland and drains a large watershed in the Cascade mountains.

Capacity: 204,000 kilowatts installed in three units, capable of producing 687,300,000 kilowatt hours of electricity in an average water year.

Cost: \$51,000,000

Construction Time Table: Construction started May, 1956, third generator unit is scheduled to be installed by December 15, 1958

Dam: Type -- earth fill, highest in world
Height -- 510 feet above foundation
Crest length -- 2100 feet from bank to bank
Thickness of base -- 1950 feet, more than a third of a mile
Crest elevation -- 1012 feet above sea level
Volume of fill -- 15,300,000 cubic yards
River diversion tunnel -- 2990 feet long, 32 feet in diameter

Reservoir: Length -- 12 miles
Storage -- 740,000 acre feet total, 450,000 acre feet usable for generation

Spillway: Length -- 1750 feet
Capacity -- 120,000 cubic feet per second
Control -- Two radial gates located at crest, above power tunnel intake

Power Tunnel: Intake -- Located below and between gates of south bank spillway
Length -- 1575 feet
Diameter -- 25 feet
Penstocks -- 13' diameter; branch from main power tunnel
Surge chamber -- diameter 50 feet, depth 200 feet

Powerhouse: Indoor-type steel structure sheathed with aluminum panels
Three Francis type turbines of 107,000 HP each operated at 378 feet of head and a maximum total output of 351,000 HP
Three generators with nameplate rating of 68,000 kilowatts each and total capability of 250,000 kilowatts

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GENERAL INFORMATION ABOUT YALE HYDROELECTRIC PROJECT

Construction started 1951, completed 1953

Location: Upper Lewis river, about 24 miles east of Woodland, Wash., and U. S. Highway 99, and approximately 40 miles northeast of Portland, Ore. The Lewis river flows into the Columbia river near Woodland and drains a large watershed in the Cascade mountains.

Capacity: 108,000 kilowatts installed in two units, capable of producing 557,280,000 kilowatt hours of electricity in an average water year.

Cost: \$36,590,000

Main Dam: Type--Earth fill
Height--323 feet above foundation
Crest length--1500 feet
Thickness at base--1600 feet
Crest elevation--509 feet above sea level
Volume of fill--4,200,807 cubic yards
River diversion tunnel--1500 feet long, 30 feet in diameter

Secondary
Saddle Dam: Earth fill, 40 feet high with crest 1600 feet long and base 200 feet thick.

Reservoir: Length--10 miles
Storage--402,000 acre feet total, 190,000 acre feet usable for generation

Spillway: Concrete side channel equipped with five gates to control spilling.

Power Tunnel: Intake--South abutment
Length--1100 feet
Diameter--18½ feet
Penstocks--520 feet long, 16 feet in diameter

Powerhouse: Concrete indoor-type structure
Two Francis type turbines rated at 161,000 Horsepower and a maximum total output of 185,500 HP when operated at 250 feet of head
Two generators with nameplate rating of 54,000 kilowatts each and total peaking capability of 133,000 kilowatts.

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GENERAL INFORMATION ABOUT MERWIN HYDROELECTRIC PROJECT

Construction started November, 1929; first generator unit in service September, 1931, and second unit December, 1949*.

- Location:** Upper Lewis river, about 12 miles east of Woodland, Wash., and U. S. Highway 99 and approximately 40 miles northeast of Portland, Ore. The Columbia river flows into the Columbia river near Woodland and drains a large watershed in the Cascade mountains.
- Capacity:** 90,000 kilowatts installed capacity in two units(*) capable of producing 514,590,000 kilowatt hours of electricity in an average water year.
- Cost:** \$10,888,355
- Main Dam:** Type--Concrete arch
Height--313 feet above foundation
Crest length--728 feet for concrete arch dam, total 1250 feet
Crest elevation--240 feet above sea level
Volume of concrete--307,000 cubic yards
River diversion tunnel--1462 feet long, 25 feet in diameter
- Reservoir:** Length--12 miles
Storage--401,760 acre feet, 189,529 acre feet usable for generation
- Spillway:** Concrete gravity overflow type with 120,000 feet per second capacity and five gates to control spilling
- Power Tunnel:** Intake--Four located in face of dam directly behind powerhouse
Length--150 feet
Diameter--15½ feet
- Powerhouse:** Semi-outdoor type with provision in original plan for expansion to four units
Present installed capacity--90,000 kilowatts*
Water wheel reaction type turbines of 61,500 horsepower each at 188 feet of head
Two generators with nameplate rating of 45,000 kilowatts each and total peak capability of 100,000 kilowatts

*Third unit with nameplate rating of 45,000 kilowatts now being installed to increase peak capability to 150,000 kilowatts by late 1958.