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The Key Technology for GHG Reduction is Nuclear Power Generation - Part 3

This set of spreadsheets underscore the need to expand nuclear power in California to reduce GHG emissions. The high capacity factor of the low-cost emissions-free power generated by Diablo Canyon Power Plant is contrasted with the millions of pounds of CO₂ emitted annually by natural-gas-fired Moss Landing Power Plant with a much lower capacity factor. Furthermore, as noted in a previous filing Dr. James Conca noted that hard coal power generation produces 30 times as much emissions as nuclear. (Soft coal is even worse.) The spreadsheet highlights the significant imports of dirty coal power into the California, per the CEC. The amount imported is comparable to the annual power production at the San Onofre Nuclear Generating Station (SONGS) prior to its premature forced closure in January, 2012.

Additional submitted attachment is included below.

2013 Total System Power in Gigawatt Hours

Fuel Type	California In-State Generation (GWh)	Percent of California In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	California Power Mix (GWh)	Percent California Power Mix
Carbon-Free Sources						
Nuclear	17,860	8.94%	0	8,357	26,217	8.84%
Large Hydro	20,754	10.39%	96	2,159	23,009	7.76%
Biomass	6,423	3.21%	1,485	21	7,929	2.67%
Geothermal	12,485	6.25%	212	495	13,192	4.45%
Small Hydro	3,343	1.67%	470	0	3813	1.29%
Solar	4,291	2.15%	58	1,040	5,389	1.82%
Wind	12,694	6.35%	10,962	1,700	25,356	8.55%
Totals	77,850	38.97%	13,283	13,772	104,905	35.37%
Non-Carbon-Free Sources						
Coal	1,018	0.51%	812	21,363	23,193	7.82%
Natural Gas	120,863	60.50%	1,241	9,319	131,423	44.31%
Oil	38	0.02%	0	0	38	0.01%
Unspecified Sources of Power	N/A	N/A	19,750	17,305	37,055	12.49%
Other	14	0.01%	0	0	14	0.00%
Totals	121,933	61.04%	21,803	47,987	191,723	64.63%
Grand Total	199,783	100.01%	35,086	61,759	296,628	100.00%

Source URL: http://energyalmanac.ca.gov/electricity/total_system_power.html Archived 05 04 15

PLANT_NAME	COUNTY	ONLINE MW	PRIMARY_FUEL	TECHNOLOGY	TURBINE_UNIT	TURBINE COUNT
MOSS LANDING	MONTEREY	2484	NATURAL GAS	COMBUSTION TURBINE, STEAM, HEAT RECOVERY	GEN 1-2, GEN 6-7	4
DIABLO CANYON	SAN LUIS OBISPO	2323	NUCLEAR	STEAM, URANIUM	GEN 1-2	2
ALAMITOS GEN. STATION	LOS ANGELES	1970	NATURAL GAS	STEAM	GEN 1-6	6
HAYNES	LOS ANGELES	1724	NATURAL GAS	STEAM TURBINE, NATURAL GAS	GEN 1-6	6
ORMOND BEACH	VENTURA	1613	NATURAL GAS	STEAM TURBINE	GEN 1-2	2
PITTSBURG	CONTRA COSTA	1370	NATURAL GAS	STEAM TURBINE	GEN 5-7 (#1-4 NON-OPERATIC	3
REDONDO BEACH GEN. STATION	LOS ANGELES	1343	NATURAL GAS	STEAM	GEN 5-8 (#1-4 NON-OPERATIC	4
CASTAIC	LOS ANGELES	1331	WATER	PUMPED STORAGE, WATER, PONDAGE	UNIT 1-7	7
HELMS PUMPED STORAGE	FRESNO	1212	WATER	PUMPED STORAGE	UNIT 936-8	3
LA PALOMA GENERATING PROJECT	KERN	1200	NATURAL GAS	COMBINED CYCLE		4
MOUNTAINVIEW	SAN BERNARDINO	1058	NATURAL GAS	COMBUSTION TURBINE, STEAM, HEAT RECOVERY	3A-C & 4A-C	6

Source URL: http://energyalmanac.ca.gov/powerplants/Power_Plants.xls Archived 05 04 15

PLANT_NAME	TURBINE_MW	ONLINE YEAR	PLANT_CITY	PLANT STATE	OPERATOR	ELEVATION
MOSS LANDING	1=510, 2=510, 6=754.33, 7=755.7	2002	MOSS LANDING	CA	DYNERGY POWER AND NRG ENERGY, INC.	9.6
DIABLO CANYON	1=1159 , 2=1164	1985	AVILA BEACH	CA	PACIFIC GAS AND ELECTRIC COMPANY	36.9
ALAMITOS GEN. STATION	1=174.56, 2=175, 3=332.18, 4=335.67, 5=497.97, 6=495	1956	LONG BEACH	CA	AES CORP./WILLIAMS	224.8
HAYNES	1=222, 2=222, 3 & 4 = 444, 5=341, 6=341	1962	LONG BEACH	CA	LOS ANGELES DEPT. OF WATER & POWER	224.8
ORMOND BEACH	1=750, 2=750	1971	OXNARD	CA	RELIANT ENERGY	19.0
PITTSBURG	5=325, 6=325, 7=720	1954	PITTSBURG	CA	MIRANT CORP.	1.6
REDONDO BEACH GEN. STATION	5=178.87, 6=175, 7=493.24, 8=486.87	1954	REDONDO BEACH	CA	AES CORP.	225.1
CASTAIC	1=212.5, 2=212.5, 3=212.5, 4=212.5, 5=212.5, 6=212.5, 7=56	1973	CASTAIC	CA	LOS ANGELES DEPT. OF WATER & POWER	467.1
HELMS PUMPED STORAGE	1=407, 2=407, 3=404	1984	SHAVER LAKE	CA	PACIFIC GAS AND ELECTRIC COMPANY	2237.9
LA PALOMA GENERATING PROJECT	1=259.8, 2=260.2, 3=256.15, 4=259.54	2003	MCKITTRICK	CA	LA PALOMA GENERATING COMPANY	298.0
MOUNTAINVIEW	3A=160, 3B=160, 3C=202, 4A=160, 4B=160, 4C=202	2005	REDLANDS	CA	MOUNTAINVIEW POWER COMPANY, LLC	436.0

Source URL: <http://www.sfpw.org>

	Rated Capacity GWh	2006 Production GWh		
Moss Landing Combined Cycle	9,461	5,364		
Moss Landing Steam Turbine (Natural Gas)	12,299	1,043		
Total	21,760	6,407		
Moss Landing Capacity factor		29.44%		
Source document at page 77 - Table 18 Annual Cost Summary - Facility				
Scoping Document: Water Quality Control Policy on the Use of Coastal and Estuarine Waters For Power Plant Cooling - SWRCB 2008				
http://www.energy.ca.gov/2008publications/SWRCB-1000-2008-001/SWRCB-1000-2008-001.PDF				
Moss Landing Nameplate Capacity, MW	2,484			
Hours in year	8,766			
Maximum Production	21,775			
DCPP Nameplate Capacity, MW	2,323			
Hours in year	8,766			
Maximum Production	20,363			
DCPP 2013 Production	17,860			
DCPP 2013 Capacity Factor		87.71%		