

EFFICIENCY CALC	
PNPS MW (electric)	690 MW/e
PNPS MW (thermal)	2028 MW/h
690/2028	34.0% Efficiency

NRC License
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 Calc: (690 / 2028) = Efficiency

COOLING WATER QUANTITY (Gallons & BTUs)	
PNPS permitted to pump	447,000,000 gal/day
PNPS permitted to pump	163,155,000,000 gal/yr
Specific heat of seawater	0.952
Weight of seawater	8.552 lbs/gal
Maximum permitted delta T	32 degrees F
Heat discharged into Bay	116,456,073,216 BTUs/day
Heat discharged into Bay	42,506,466,723,840 BTUs/year

PNPS Discharge Monitoring Reports (DMR)
 Calc: 447,000,000 gal/day x 365 - gal/yr
 Conversion Constant
 Conversion Constant
 PNPS DMR
 Calc: (447,000,000 gal/day x 0.953 x 8.552 lbs/gal x 32 deg F) = BTU/day
 Calc: (BTU/day x 365) = BTUs/yr

Waste BTUs converted to MW waste	
BTU discharged into Bay	4,852,336,384 BTUs/hr
	3,412,141 BTUs/hr per MW
Observed MW thermal waste	1,422 MW
Theoretical MW thermal waste	1,338 MW

Calc: (116,456,073,216 BTUs/day / 24) = BTUs/hr
 Conversion Constant
 Calc: (4,852,336,384 BTUs/hr / 3,412,141) = MW waste
 Calc: (2028 - 690) = MW waste

DOMESTIC EQUIVALENTS OF PNPS WATER VOLUME (Gallons)		
2010 Census Resident Population	Households	
Barnstable County	215,888	95,398
Dukes County	16,535	5,891
Nantucket County	10,172	4,069
Total	242,595	105,358 households
Standard shower head		2.5 gal/min
	138,440,412,000 gal/yr	

U.S. Census data
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 U.S. EPA
 Calc: (105,358 homes x 2.5 gal/min x 60 x 24 x 365) = gal/yr

FUEL OIL EQUIVALENTS OF PNPS WASTE THERMAL ENERGY	
Fuel oil used by average home	700 gal/yr
	138,700 BTUs/gal
Ave home uses	97,090,000 BTUs/yr/home
PNPS thermal waste would heat	437,805 Homes

U.S. Energy Information Administration data
 Conversion Constant
 Calc: (700 gal/yr x 138,700 BTU/gal) = BTU/yr/home
 Calc: (42,506,466,723,840 BTU/yr / 97,090,000 BTU/yr/home) = Homes