



## Department of the Navy Combined Heat and Power Installations



Russell Dominy, CEM



## Navy/Marine Corps CHP Sites



- NSB New London, Groton CT. -5.5MW Solar Turbine Generator with 52 KPPH HRSG, Operational Dec. 97
- PNSY (ESPC Proj 1), Kittery ME. -5.5MW Solar Turbine Generator with 70 KPPH HRSG, Operational Dec. 00
- MCAGCC Twentynine Palms, CA. -7.2MW solar Turbine Generator with 30KPPH HRHWG, Operational May 03
- NSY Portsmouth (ESPC Proj 2), Kittery ME. -5.5 MW Solar Turbine Generator With 70 KPPH HRSG, 2 70 KPPH Packaged Boilers, Operational Dec 03
- NMC Balboa, CA. -4.2MW Solar Turbine Generator with HRSG, Operational June 03



## PNSY ESPC Proj. 1, Year 1 - System Availability

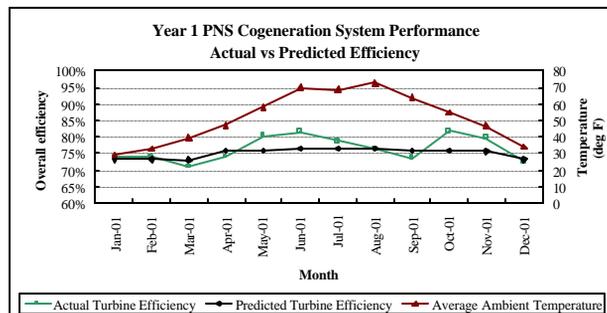


- Cogeneration system will be available a minimum of 85% of the time annually for electricity and steam production

Month	Total Monthly Hours	Actual Equipment Availability (Hours)	Equipment Unavailability Due to SFSI Responsibility (Hours)	Equipment Run-Time (Hours)	Hours Equipment Not Operated by PNS
Dec 2000 – Nov 2001	8,016	7853	162	6,875	979
Dec 2001	744	460	284	460	0
<b>Year 1 Totals</b>	<b>8,760</b>	<b>8,313</b>	<b>446</b>	<b>7,335</b>	<b>979</b>
<b>Year 1 %</b>	<b>N/A</b>	<b>94.9%</b>	<b>5.1%</b>	<b>83.7%</b>	<b>11.2%</b>



## PNSY Cogeneration System Performance



*Please note that the cogeneration system efficiency varies with ambient temperature, equipment loading, and duct burner operation.*



## PNSY Projected & Verified Energy Savings

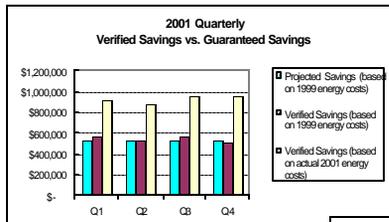


Total Year 1	Power Plant Upgrade	Steam / HW System Improvements	Total Savings
<b>Projected Energy Savings (Based on 1999 energy costs)</b>			
	\$1,789,842	\$330,737	\$2,120,579
<b>Verified Energy Savings (Based on 1999 energy costs)</b>			
	\$1,836,667	\$329,121 *	\$2,165,788
<b>Verified Energy Savings (Based on 2001 energy costs)</b>			
	\$2,821,571	\$889,363 *	\$3,710,934

\* Verified Savings for Steam / HW Sys Improvements include a steam trap savings adjustment.



## PNSY 2001 ESPC Energy Savings





## Selecting the Appropriate Level of Verification Effort



Energy Measure	Investment	Projected Annual Savings	Annual M&V Cost	Annual O&M Cost
FCSM-1 Power Plant Upgrade	\$9,941,217	\$1,789,842	\$23,630	\$236,068
FCSM-2 Measure	\$1,026,480	\$330,737	\$12,734	\$81,595
Total	\$10,967,697	\$2,120,579	\$36,364	\$317,663

FCSM-2 Measure Breakdown	Projected Annual Savings	Annual M&V Cost	Annual O&M Cost
Boiler Decentralization	\$48,282	\$2,678	\$1,451
HW Pumping Upgrades	\$9,958	\$2,168	\$795
Steam Traps	\$272,497	\$7,888	\$79,349