

**Mendocino County Jail
SB844 Jail Addition
Ukiah, CA
Schematic HVAC Life Cycle Analysis - revised 7/14/20**

	Base case	Alt 1:	Alt 2:	Alt 3:
	Pkg AC	Air HPs	WSHPs	GSHPs
INITIAL COST:	954,760	1,120,600	1,253,726	2,430,490
ANNUAL ENERGY USE:				
Electrical (kWh)	188,100	256,500	241,700	225,900
Gas (Therms)	3,830	0	0	0
TOTAL (Million BTUs)	1,025	875	825	771
% Difference		-14.6%	-19.5%	-24.8%
ANNUAL ENERGY COSTS:				
Electricity	\$21,537	\$29,369	\$27,675	\$25,866
Gas	\$5,362	\$0	\$0	\$0
TOTAL	\$26,899	\$29,369	\$27,675	\$25,866
% Difference		9.2%	2.9%	-3.8%
Annualized Maint. and Replacement Costs	\$14,071	\$19,887	\$22,013	\$18,843
TOTAL MAINTENANCE OVER 30 YRS (PV):	\$275,796	\$389,782	\$431,456	\$369,320
% Difference		41.3%	56.4%	33.9%
ANNUAL OPERATING COST:	\$40,971	\$49,256	\$49,688	\$44,708
% Difference		20.2%	21.3%	9.1%
30 YR. LIFE CYCLE COST	\$1,757,785	\$2,086,020	\$2,227,605	\$3,306,775
% Difference		18.7%	26.7%	88.1%
SITE CARBON USE (METRIC TONS/YR)	38.5	24.3	22.9	21.4
% Difference		-37.0%	-40.6%	-44.5%

Notes:

1. Electrical costs based on \$.1145/kWh, Gas costs based on \$1.4/therm
2. 30 yr. Cost of ownership is a present value cost based on 3% discount rate, 3% energy escalation rate, 3% replacement and maintenance escalation rate.
3. Annual energy costs include interior lighting electrical use.
4. Note that energy usage is based on computer energy models of the building which may differ significantly from actual measured data due to weather conditions, building occupancy and use, mechanical and lighting system operational schedules, system maintenance and operation, etc.
5. Maintenance costs are rough estimates only and are for the purpose of determining potential operational