

ASW Engineering Consultants

2512 Chambers Road, Suite 103
Tustin, Ca. 92780

asw@aswengineering.com

Phone: 714-731-8193

Fax: 714-731-1921

<http://www.aswengineering.com>

Sample Cogeneration Report

Page 1 of 1

Sample Cogeneration System Simulation: Cogeneration System Cost-Benefits Report

| DATE: Aug 27, 2002 | | | | | | | | | | Option # : 1 | | | |
|---|---------------|-----------------------------|------------------------------|----------------------------|-------------------------------|--------------------------------|------------------|----------------------------|-------------------------|------------------------|---------------------------------|--------------------------------|---------------|
| PROJECT: Sample Project | | | | | | | | | | | | | |
| COGEN KW: 980 | | | | | | | | | | | | | |
| A.C. TONS: 175 | | | | | | | | | | | | | |
| Cogen Month | Cogen Day/Mo. | Equivalent Weekdays Hrs/Day | Equivalent Saturdays Hrs/Day | Equivalent Sundays Hrs/Day | Equivalent Full Cogen Hrs/Mo. | Cogen Therms/Mo. | Cogen kWh/Mo. | Absorption Savings kWh/Mo. | Present Utility kWh/Mo. | Future Utility kWh/Mo. | Facility's Present NG Therms/Mo | Facility's Future NG Therms/Mo | |
| 1 | 30 | 24 | 24 | 24 | 720 | 92,557 | 705,600 | - | 4,135,944 | 3,430,344 | 48,573 | 8,186 | |
| 2 | 29 | 24 | 24 | 24 | 696 | 89,472 | 682,080 | - | 3,997,038 | 3,314,958 | 45,184 | 7,221 | |
| 3 | 31 | 24 | 24 | 24 | 744 | 95,642 | 729,120 | - | 3,559,482 | 2,830,362 | 40,590 | - | |
| 4 | 23 | 24 | 24 | 24 | 552 | 70,960 | 540,960 | 15,632 | 3,725,475 | 3,168,884 | 31,734 | 7,404 | |
| 5 | 31 | 24 | 24 | 24 | 744 | 95,642 | 729,120 | 45,763 | 4,230,321 | 3,455,438 | 23,147 | - | |
| 6 | 30 | 24 | 24 | 24 | 720 | 92,557 | 705,600 | 77,379 | 4,649,031 | 3,866,052 | 10,930 | - | |
| 7 | 31 | 24 | 24 | 24 | 744 | 95,642 | 729,120 | 75,576 | 4,452,970 | 3,648,274 | 11,145 | - | |
| 8 | 31 | 24 | 24 | 24 | 744 | 95,642 | 729,120 | 79,958 | 4,987,326 | 4,178,248 | 7,464 | - | |
| 9 | 30 | 24 | 24 | 24 | 720 | 92,557 | 705,600 | 77,379 | 4,735,124 | 3,952,145 | 7,249 | - | |
| 10 | 24 | 24 | 24 | 24 | 576 | 74,046 | 564,480 | 60,581 | 4,233,758 | 3,608,697 | 13,545 | 3,059 | |
| 11 | 30 | 24 | 24 | 24 | 720 | 92,557 | 705,600 | - | 4,128,999 | 3,423,399 | 24,052 | - | |
| 12 | 31 | 24 | 24 | 24 | 744 | 95,642 | 729,120 | - | 3,559,482 | 2,830,362 | 42,670 | 2,617 | |
| Totals = | | 351 | | | | 8,424 | 1,082,917 | 8,255,520 | 432,265 | 50,394,948 | 41,707,163 | 306,283 | 28,487 |
| Actual Running Hrs/Year = | | 8,424 | Utilization = | | 100.0% | Cogen - Total kWh/Yr. = | | 8,687,785 | Savgs Th/Yr. | | 277,796 | | |
| Cogen Annual Energy Efficiency = | | | | | | | | | | | 58.9% | | |

| SUMMARY RESULTS | | | |
|------------------------------|---------------------------------|---------------------|---------------------|
| Present Operating Costs | | | |
| \$ 0.110 | Utility kWh./Yr. = | 50,394,948 | \$ 5,543,444 |
| \$ 0.550 | Utility Therms./Yr. = | 306,283 | 168,456 |
| Total Energy \$ /Yr = | | \$ 5,711,900 | |
| Future Operating Costs | | | |
| \$ 0.110 | Utility kWh./Yr. = | 41,707,163 | \$ 4,587,788 |
| \$ 0.500 | Utility - Cogen Therms/Yr. = | 1,082,917 | \$ 541,459 |
| \$ 0.550 | Utility - Facility Therms/Yr. = | 28,487 | \$ 15,668 |
| \$ 0.010 | Cogen Maintenance = | 8,255,520 | \$ 82,555 |
| \$ 1,423 | kW & Annualized Cost = | 980 | \$ 185,047 |
| 6% | Other Cost = (M & A.C.) | | \$ 16,056 |
| \$ 6.17 | Standby Power Cost = | 0 | \$ - |
| Net System Cost = | | \$ 1,394,530 | \$ 5,428,573 |

| Loan - Yrs | Intrest |
|------------|---------|
| 12 | 8% |

| Financial Information | |
|--------------------------|--------------|
| Cost of Cogen System = | \$ 1,671,426 |
| State Incentive = | \$ 501,428 |
| | \$ 1,169,998 |
| Heat Recovery Cost = | \$ 224,532 |
| Net Capital Investment = | \$ 1,394,530 |
| Cost Savings/Yr. = | \$ 283,327 |
| Years to Payback = | 4.9 |