### Savings and Implementation

|  |  |
| --- | --- |
| Estimated Energy Savings | 33,782,400 kWh/yr |
| Estimated Demand Savings | *Varies with Load* |
| Implementation Cost | $15,000,000 |

### Anticipated Power Savings

The Power savings, P, can be calculated as follows:

|  |  |  |
| --- | --- | --- |
| *P* | = | Power Usage per year kWh/yr |
|  | = | 33.78x106 kWh/yr |

### Implementation Cost

The implementation cost for this recommendation is the cost of the 34.3MW Vectra 40G system. The cost of the 40G turbine system is $15,000,000. (2)  This amount only covers the amount of the equipment and not the infrastructure, piping, or the installation. It is hard to determine this amount but it may be as high as the cost of the system its self.(1)(3) Therefore, the implementation cost for the 34.3 MW system cannot be determined at this time without knowledge of the current infrastructure and piping. The implementation cost is beyond the scope of the project and should be looked at further to determine a more accurate number.

### Annual cost of recommended system

The recommended system runs on Methane and will require no further power generation assistance from SDGE. The price of Methane in 2010 was $0.1859/m3 (1). The plants annual cost will increase from $2,600,000 for the cost of the power from SDGE to $7,024,400 for the cost of the Methane. By increasing our system the power will also increase of 19MW. After careful calculations we were able to approximate a methane demand with a flow rate of 0.8(Kg/s). Furthermore, we were able to determine annual operating costs of $7,024,400 as calculated below. This price does not include maintenance. Therefore; the annual yearly cost will vary.

### Anticipated Annual Cost

|  |  |  |
| --- | --- | --- |
| OC | = | Operating cost |
| C | = | Cost per term |
| m | = | Mass flow rate |
| k | = | Conversion factor from second to year |
| d | = | Density |

|  |  |  |
| --- | --- | --- |
| OC | = | [(C) (m) (k)] /(d) |
| OC | = | [(.1859) (0.8) (31,556,926)] / (.668) per yr |
|  | = | $7,024,400/yr |

(1)http://www.dresser-rand.com/literature/turbo/85209-GasTurbineBro.pdf

(2)http://www.eia.gov/dnav/ng/ng\_pri\_sum\_dcu\_nus\_a.htm

(3)Company, R. S. M. (1997). *Means repair & remodeling cost data 1998, commercial/residential*. Robert s Means Co.