



Greenhouse Gas Emissions Reduction Mitigation Grant Program Final Construction Report

Note to Grant Recipients: This report will supply the Port with information about the completion of your GHG Grant project. We are interested to know about project successes, problems, and measures that you will take to ensure the project meets or exceeds the useful life described in your grant application. Now that your project is finished, we want to know what kind of metrics you will use, and the frequency of those measurements, to determine the effectiveness of your project in reducing greenhouse gas emissions. Use as much space as you need for each field; there is no page limit. For more information, please contact the Port's GHG Grant program manager at (562) 283-7100.

General Information	
Grant Recipient Organization Name	California Aquatic Therapy & Wellness Center, Inc.
POLB Contract Number	HD-8128
Grant Project Title	Solar Water Heating System Installation

Expenditures	
Total Grant Award	\$46,952
Total POLB Grant Funds Expended	\$46,952
Total POLB Grant Funds Invoiced to Date	\$46,952
Total Project Cost	\$49,681
Will you be applying for a rebate?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, amount: (There aren't any rebate programs available for commercial properties.)

Project Completion Evaluation	
What was the project completion date?	July 9, 2013
On a scale of 1 to 10, how satisfied were you with the project implementation?	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input checked="" type="radio"/> 9 <input type="radio"/> 10
Were the project costs the same as what you expected?	<input type="checkbox"/> Yes <input type="checkbox"/> No, they were less <input checked="" type="checkbox"/> No, they were more
Would you recommend this type of project to an agency or organization similar to yours?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No



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Describe any significant problems you had in implementing this project. What were the notable successes?

Problems:

Unforeseen price increases.

The pricing for the solar panels had increased since the original proposal by 12%. We had the manufacturer retreat to only a 3% increase as long as the panels were delivered and paid by 12-31-12. AMECO took the hit on the small 3% increase and stored the panels in the warehouse until the day of installation. Also, we did not anticipated having to pay higher sales tax in 2013.

b) Unforeseen construction delays.

We had anticipated the project's start and completion in Q1, which would have been during our slow season. Instead, it occurred during our peak season, owing to delays in the contract process with the Port. This lead to overtime and higher than expected labor costs during this period.

c) Unexpected permit cost.

The cost of the permit from the City was \$1,000 more than expected.

d) Non-compliant existing electrical

The pools bonding for redundant equipment ground was nonexistent. The swimming pools re-bar had to be located and re-tapped to provide this essential safety feature.

Successes:

a) System was installed without incident. It is providing heat to the pools at the rate of 3 to 8 therms per hour. If online monitoring of system performance is desired, the additional cost will be \$2,040 for two pools (\$1,020 each).

Metrics and Measurements

What metric will you use to determine the effectiveness of your project in reducing, capturing, or avoiding GHG emissions? How will it be calculated?

Metrics to determine effectiveness of GHG reduction:

a) Compare gas consumption pre and post solar.

b) Thermometers and Flowmeters allow us to measure the heat generated. The heat generated will translate into Btu's replaced by gas and then translated into GHG NOT emitted.

How can it be calculated?

Flow (GPM) x { Temperature out - Temperature in}F x 8.23 = Btu's per minute.

Btu's / min x 60 = Btu's / hr

Total Btu's per day / 100,000 = therms generated

therms generated / 0.75* = Gas consumption displaced in therms

1 therm of natural gas = 97.02 cubic feet of gas

Therms displaced x 0.9702 = Cubic Feet of Gas

1 cubic feet of gas = 0.122 pounds of CO2.



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	<p>The math is: $(\text{therms displaced}) \times (0.9702) \times (0.122) = \text{pounds of carbon dioxide Not generated}$</p> <p>For example, System running at 80 gpm with a temperature difference (from solar) of 10 degrees Fahrenheit. Btu's generated = $80 \times 10 \times 8.23 = 6,584 \text{ Btu's per minute}$ The system operates for 6 hours avg daily $6,584 \text{ Btu's} \times 60 \times 6 = 2,370,240$ divide by 100,000 = therms = 23.7 divide by boiler efficiency (75%) = 31.6 therms per day $31.6 \text{ therms} \times 0.9702 = 30.66 \text{ Cu Ft of Avoided Gas}$ $30.66 \times 0.122 = 3.74 \text{ lbs of CO daily}$ $3.74 \text{ lbs} \times 365 = 1,365 \text{ lbs CO}_2 \text{ annual.}$</p>
How frequently will you be collecting these measurements?	<input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input checked="" type="checkbox"/> Yearly <input type="checkbox"/> Other:
If your project has an educational aspect, what type of data will you collect to determine its effectiveness?	N/A

Project Maintenance	
What type of maintenance will you conduct to ensure that your project produces GHG emission reduction benefits throughout or beyond the warranted or predicted life of the equipment/materials?	
How often will you need to perform maintenance on your project?	<input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input checked="" type="checkbox"/> Yearly <input type="checkbox"/> Other:

You may attach documentation relating to the completion of your project. This documentation may include receipts, invoices, meeting sign-in sheets, photographs, fliers, media coverage, educational materials, or presentations.

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