INTERFACE ENGINEERING

717 Market Street, Suite 500
San Francisco, CA 94103
TEL 415.489.7240
FAX 415.489.7289
www.interfaceengineering .com

# memo

| | | | |
|---|---|---|---|
| SUBJECT/PROJECT | Peralta Merritt College PV System | DATE | July 17, 2009 |
| PROJECT NO. | TBD | | |
| TO | Dr. Sadiq Ikharo | @ | Peralta Community College District |
| FROM | Hormoz Janssens | @ | Interface Engineering, Inc, 415.489.7240 |
| DISTRIBUTION | Dr. Ikharo (PCCD), Atheria Smith (PCCD) | | |

APPLIES TO ☐Mechanical ☐Electrical ☐Plumbing ☐Building Technologies ☐Commissioning ☑Energy Consulting ☐Fire/Life Safety ☐Lighting Design ☐Sustainable Design

COMMENTS

Dr. Ikharo

As requested, our firm has reviewed the documentation sent to Peralta Community College District that was generated by Chevron Energy Solutions on Friday July 10, 2009. We received this documentation on Tuesday July 14, 2009.

Our comments are as follows:

1. We would recommend that Chevron verify that Merritt College is actually on the E-19 PG&E tariff. We would expect that the college is on an E-20 tariff schedule. We assume that Chevron has double checked, but would recommend that they re-check as the rates are different.
2. We reviewed the cost of the PV system. We would normally budget approximately $8 per installed Watt of PV system without the metering equipment. The cost proposal to the District is for $7.40 per Watt including the metering equipment. This cost appears within industry norm.
3. We reviewed the electrical generation that Chevron is anticipating and proposing and compared it roughly with the California Energy Commission PV calculator. Chevron Energy Solutions is anticipating 1,528,910 kWh/year production; the CEC calculator predicts approximately 1,818,987 kWh/year of production. This translates to 1,274 kWh/year production per installed kW from Chevron's calculations and 1,513 kWh/year production per installed kW from the CEC calculations. This tells us that the Chevron Energy Solutions

calculations are relatively conservative and within the realm of expected production from the PV system.

4. We would recommend that Chevron Energy Solutions provide some level of justification within their analysis for their economic assumptions including:
    a. Annual usage escalation (historical data)
    b. Utility cost increase (historical data)
    c. Degradation factor (documentation from manufacturer of PV panels)
    d. Maintenance costs and associated escalation rate (where are these numbers generated from)
    e. System life span (documentation from manufacturer of PV panels)
5. Conduit routing should be coordinated with the overall masterplan so as to not require trenching more than one time.

As always, should you have any questions or comments, feel free to call me.

Hormoz Janssens, PE, LEED AP
Principal
Interface Engineering, Inc.