

**R E S O L U T I O N**

Resolution G-3449. Compliance Advice Letter to Establish the Multifamily and Commercial Project Portion of the CSI-Thermal Program Handbook per Decision 10-01-022.

PROPOSED OUTCOME: Within seven days, Southern California Gas Company (SoCalGas), Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE) and the California Center for Sustainable Energy (CCSE) will re-file “Compliance Advice Letter to Establish the Multi-Family and Commercial Project Portion of the CSI-Thermal Program Handbook” per Decision (D) 10-01-022. The revised filing will implement changes to the Handbook directed by this Resolution.

ESTIMATED COST: \$0

By SoCalGas AL 4115, PG&E AL 3673-E/3119-G, SCE AL 2475-E, and CCSE AL 12, filed on May 24, 2010

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**SUMMARY**

D. 10-01-022 requires the CSI-Thermal Program Administrators (SoCalGas, PG&E, SCE and CCSE) to draft a CSI-Thermal Program Handbook and submit that Handbook to the CPUC by Advice Letter. The Program Administrators (PAs) submitted the CSI-Thermal Handbook, which incorporates rules pertaining to incentives for multi-family and commercial SWH systems, on May 24 via joint Advice Letter. The AL was protested on or before June 13 by Heliodyne, Abengoa Solar, PVT Solar, Cantabria Homeowner’s Association, Free Hot Water, California Solar Thermal, Western Manufactured Housing Community Association

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(WMA), Skyline Innovations, Libre Energy, Cogenra, California Solar Energy Industries Association (CalSEIA), Solid Energy, and JTG-Muir. The PAs responded to protests on June 28. Based on protests and PA responses, this Resolution directs the PAs to modify the CSI-Thermal Program Handbook and re-file the modified version within seven days.

## **BACKGROUND**

On January 21, 2010, the Commission issued Decision (D.) 10-01-022, establishing the California Solar Initiative - Thermal Program. That Decision established staggered deadlines for setting up various program components so that simpler components could be set up first and more complex program features could be added in later.

The first phase of the CSI-Thermal Program to go into effect was the single-family residential portion of the program. D. 10-01-022 required the Program Administrators (PAs) to submit by April 1, 2010, the single-family portion of the CSI-Thermal Program Handbook via Advice Letter in order to begin accepting solar water heating incentive applications from single-family residential customers by May 1, 2010. The Program Administrators met these deadlines and the CSI-Thermal Program began accepting applications from single-family customers on May 1, 2010.

For the second phase of the program, D. 10-01-022 required the PAs to submit the multi-family/commercial portion of the CSI-Thermal Handbook via Advice Letter by May 1, 2010, so that the program could begin accepting applications from multi-family and commercial customers by June 1, 2010. To solicit input from interested stakeholders and gain insight into some of the complex technical issues surrounding large solar thermal systems, Energy Division facilitated a workshop on the multi-family/commercial portion of the Handbook on March 30, 2010. Due to the difficulty in resolving some of the technical issues involved in drafting the handbook and the diversion of resources to resolve protests over single-family issues, the PAs requested, and Administrative Law Judge Dorothy Duda granted, a 24-day extension of the deadline to file the multi-family/commercial portion of the handbook.

On May 24, 2010 the PAs jointly filed the *Compliance Advice Letter to Establish the Multi-Family and Commercial Project Portion of the California*

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*Solar Initiative Thermal Program Handbook*. The Advice Letter proposes to add into the existing CSI-Thermal Handbook – which currently applies only to single-family SWH systems – the rules, regulations and requirements for multi-family and commercial systems to participate in the program.

The Advice Letter establishes the following program components:

- Identifies equipment and end uses that are eligible to participate in the program.
- Establishes requirements for system metering and monitoring, for the purpose of both program evaluation and for making payments to large systems.
- Establishes a method of paying systems smaller than 30 kW<sub>th</sub><sup>1</sup>, which is a one-time, up-front payment calculated by the on-line incentive calculation tool and made once the system is installed and operational.
- Establishes a method of paying systems larger than 30 kW<sub>th</sub>, known as the “50/50 True-up.” This is a two-part payment: the first part is half of the amount calculated by the on-line incentive calculation tool, paid once the system is installed and operational; the second part is a “true-up” payment made after the system has produced one year of energy production data. The “true-up” payment is equal to the difference between the initial payment and the actual first-year energy production times the incentive rate.
- Identifies the inputs to the multi-family/commercial incentive calculator.
- Describes the multi-family/commercial project application process.
- Explains technical requirements for equipment eligible to participate in the program.

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<sup>1</sup> 30 kW<sub>th</sub> is equal to approximately 462 square feet of collector space.

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## **NOTICE**

Notice of Advice Letter SCG 4115, PG&E 3673-E/3119-G, SCE 2475-E, CCSE 12 was made by publication in the Commission's Daily Calendar. PG&E, SCE, and SoCalGas state that a copy of the Advice Letter was mailed and distributed in accordance with Section 3.14 of General Order 96-B.

## **PROTESTS**

Advice Letter SCG 4115, PG&E 3673-E/3119-G, SCE 2475-E, CCSE 12 was protested.

The joint Advice Letter was timely protested by Heliodyne, Abengoa Solar, PVT Solar, Cantabria Homeowner's Association, Free Hot Water, California Solar Thermal, Western Manufactured Housing Community Association (WMA), Skyline Innovations, Libre Energy, Cogenra, California Solar Energy Industries Association (CalSEIA), Solid Energy, and JTG-Muir. The protest of JTG-Muir was served to the CPUC, but not to the PAs.

### *Summary of the Protests*

The following summarizes the major issues raised in the protests, with the corresponding handbook section noted in parentheses. Since some issues are raised repeatedly, each issue is identified by a unique number.

**Issue 1. Eligible Equipment (Section 2.2.1):** Abengoa recommends eliminating the requirement that commercial/multifamily systems have an OG-100 rating from the Solar Rating and Certification Corporation (SRCC). Instead, Abengoa recommends that large systems be paid a performance-based incentive over a period of time that would alleviate the need for third-party system certification. Alternatively, Abengoa recommends that performance analysis validated by a certified Professional Engineer stamp be acceptable for the incentive calculation for an up-front incentive instead of using the OG-100/OG-300 online calculator.

**Issue 2. Multi-family/Commercial End Uses (Section 2.2.2.2):** Cogenra recommends that the list of multi-family/commercial end uses be

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expanded so that digester heating in wastewater treatment plants, hot water usage in the production of beer, wine and spirits, and uses of hot water in the pharmaceutical industry not be excluded from the program.

Solid questions the rationale in the handbook for excluding process heat applications. Solid recommends that language in this section be modified to allow beverage processes, manufacturing processes and other similar applications.

Solid also notes that the site definition is confusing with regard to district heat systems. Solid recommends that incentives be permitted to exceed \$500,000 for district heating systems where multiple buildings are serviced by a single hot water distribution system, as long as the total incentive amount is not greater than \$500,000 times the number of buildings served by the system.

Abengoa recommends that multi-family/commercial end uses include food preparation, sanitation and sterilization.

**Issue 3. Ineligible Technology and System Applications (Section 2.2.3):** Cogenra recommends that process heat applications that displace the use of natural gas should be eligible for program rebates.

Free Hot Water recommends allowing open loop commercial systems and commercial pre-heat, open-loop systems with freeze protection to qualify for incentives in the CSI-Thermal Program.

Libre Energy recommends allowing systems that provide space heating and cooling, solar assisted desiccant cooling and solar assisted desiccant dehumidification to be added as allowable SWH system configurations to receive CSI-Thermal rebates and that their review and timely adoption be given high priority. If solar space heating and cooling are authorized to receive CSI-Thermal incentives, Libre recommends thermal mass associated with radiant heating and cooling be allowed to reduce requirements for solar-thermal storage tank capacity.

Further, Libre Energy notes that pure water direct forced circulation has proven to be a reliable and cost-effective means of ensuring freeze

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protection, and Libre contends that such systems can have a lower installed cost than those that use propylene glycol antifreeze.

Solid recommends that the term “process heat” be eliminated from this section, or that the section be modified to say “process heat applications, other than those described in Section 2.2.2.2.”

**Issue 4. Single-family incentives (Section 3.1):** WMA recommends that mobile homes located in a sub-metered mobile home park be disqualified from program participation, since the billing and metering is performed by the community owner, and incentives contemplated by the program would not reach the residents.

**Issue 5. The 50/50 Rebate Payment True-Up (Section 3.3.2):** CalSEIA objects to the 50/50 true-up method for paying incentives to commercial and multi-family systems larger than 30 kW<sub>th</sub>. CalSEIA argues that withholding half of the incentive payment for the first year would harm small businesses and would be unworkable for certain types of facilities, such as new construction, affordable housing and retrofit projects where capitalization comes from cash reserves.

CalSEIA recommends eliminating the 50/50 true-up and instead requiring standard hot water load assumptions be used in the incentive calculator, and CalSEIA provides a list of standard hot water load assumptions for several types of facilities. For facilities not included in the list of standard hot water load assumptions, CalSEIA recommends using either utility billing data or metered hot water usage. For systems larger than 200 kW<sub>th</sub>, CalSEIA recommends requiring a performance calculation by a registered California Professional Engineer. CalSEIA further recommends strengthening the PAs’ audit powers to prevent fraud and authorizing the PAs to use market facilitation funds to retain a professional engineer to review applications on an as-needed basis.

CalSEIA recommends that if further restrictions are deemed necessary, the 50/50 true-up method should be limited only to commercial systems larger than 250 kW<sub>th</sub>, only 10 percent of the rebate should be held back for the second payment, and the true-up period should be reduced from 12 months to 3 months.

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Cogenra opposes the 50/50 true-up method for making incentive payments, maintaining that neither third-party providers nor end-use customers would be willing to absorb the risk associated with the second payment. Cogenra recommends that the entire incentive payment be made up-front.

Free Hot Water recommends that multi-family/commercial SWH systems that follow the installation guidelines established in the Handbook receive the entire incentive when the inspection is completed. For systems that lack inspection guidelines, Free Hot Water recommends using historical energy usage in the form of utility bills for water and energy as well as 2-3 weeks of actual metered hot water usage at the facility in the form of a flow meter connected to the main hot water supply. Free Hot Water recommends paying a 90/10 incentive split for contractors who are willing to go through the metering process and 50/50 for those who are not.

Cantabria HOA recommends eliminating the 50/50 true-up incentive payment mechanism and instead paying the entire incentive in one up-front lump sum. Cantabria HOA maintains that the potential gaming problem surrounding calculator inputs that are not verifiable can be resolved by having staff at the CPUC or other agency enter calculator inputs or charge applicants a fee to have design inputs validated.

Solid recommends that if stamped engineering projections submitted along with the initial application show higher output projections than shown by the incentive calculator, the Program Administrator should allow a greater than 50 percent final payment. Solid supports CalSEIA's comments on the 50/50 true-up method.

**Issue 6. Table 7 of 2007 ASHRAE HVAC Applications Handbook (Appendix D):** CalSEIA asserts that Appendix D, which provides gallons per day of hot water use for various types of facilities and claims as its source Table 7 of the 2007 ASHRAE guidelines, is not Table 7 of the ASHRAE guidelines. CalSEIA requests that this table be revised to conform with the referenced ASHRAE document.

**Issue 7. Incentive Calculator (Section 3.5.2):** Solid recommends that the use of stamped professional engineering drawing should be made available as an alternative to using the incentive calculator for systems

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with OG 100 certification that differ from the typical multi-family/commercial model.

**Issue 8. Other Incentives or Rebates (Section 3.6.3):** PVT recommends that SWH systems receiving a CSI-Thermal incentive also be allowed to participate in the California Advanced Homes Program (CAHP). PVT points out that energy efficiency measures that contribute to whole-house savings for the purposes of the CAHP are still eligible for utility energy efficiency incentives.

**Issue 9. Multi-family/Commercial Project Application Process (Section 4.3):** Cogenra recommends that the requirement of a PE review/signature should be deferred to step 2 in the process. Also, Cogenra recommends extending the step 2 deadline (Proof of Project Milestone) from 60 days to 90 days.

**Issue 10. Application Fee Process (Section 4.3.1.1):** Cogenra recommends that the application fee structure be based on expected therms displaced per year rather than square footage of collectors in order to include non-flat plate technologies.

**Issue 11. Reservation Period (Section 4.4.3):** CalSEIA recommends increasing the reservation period from 12 months to 18 months with an extension of up to 180 calendar days. CalSEIA argues that lengthening the reservation period will maintain consistency in the CSI Programs, create a more realistic timeframe to complete >30kW<sub>th</sub> projects and relieve the PAs of the burden of processing extension requests.

**Issue 12. Reservation Request Form (Section 4.7.1):** CalSEIA argues that requiring reservation request forms be signed by the applicant, host customer and system owner prior to the SWH being installed would eliminate retroactive projects from July 16, 2009 that are specifically allowed in D. 10-01-022. CalSEIA recommends eliminating this requirement for projects that were installed prior to approval of the Handbook.

**Issue 13. Direct Forced Circulation (Section 6.1.2):** JTG Muir recommends excluding systems that use recirculation freeze protection from the CSI-Thermal Program. JTG Muir cites numerous problems with

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this method of freeze protection in 20 years of experience in the solar thermal industry.

**Issue 14. Indirect Forced Circulation (Section 6.1.3):** Libre Energy recommends that a third type of indirect forced circulation system be added to this section: active closed loop water with a capability to recirculate warm water. Libre asks that language be added stating that freeze damage in these systems can be precluded by the use of sensing control and circulation with an alternate uninterrupted power system to preclude freezing damage in the event of simultaneous freezing and power loss, and that the system manufacturer/installer warrants the system against frost damage.

**Issue 15. Air collectors (Section 6.1.5):** PVT Solar recommends that non-coupled, open-loop water circulation systems be allowed to be maintained in weatherized or semi-conditioned spaces, in addition to conditioned spaces as currently required in the Handbook.

Likewise, CalSEIA recommends that the term “enclosed spaces” be used instead of “conditioned” to describe the spaces where open-loop air collectors are permissible.

**Issue 16. System Sizing of Multi-Family/Commercial Projects (Section 6.3.2):** Skyline Innovations recommends measuring the run time of water heaters using data loggers to determine hot water energy consumption.

**Issue 17. Minimum Metering Requirements (Section 6.4):** PVT recommends that separate metering requirements be developed and included in the Handbook for residential systems opting to provide system performance data for measurement and evaluation. PVT recommends that residential system metering accuracy should be set at +/-5% and should avoid prescriptive requirements such as 1) water-side metering, 2) electromagnetic meters 3) mA temperature transducers and 4) NIST bath calibration. Furthermore, PVT asks that payment for opt-in metering and third-party monitoring be made at the same time as the final incentive payment. Finally, PVT requests that the contractor’s responsibility for maintenance of meters and communications should be limited to the term of the Performance Data Provider contract.

Free Hot Water recommends lowering the metering accuracy standard to +/- 2%, arguing that this change would allow many more industrial hardware manufacturers to compete in the marketplace.

CalSEIA objects to the Handbook requirement that all systems larger than 30 kW<sub>th</sub> be installed with electro-magnetic flow meters with an accuracy of +/- 0.4%. CalSEIA proposes that the accuracy requirement be set at +/- 2% to ensure that turbine, vortex, and positive displacement technologies are allowed.

In addition, CalSEIA argues that load-side monitoring required in the Handbook is unnecessarily expensive, unpredictable and inaccurate, and does not serve the purpose of allowing the customer to monitor the performance of the SWH system. CalSEIA recommends that monitoring equipment be required on the solar side of the loop only.

Finally, CalSEIA recommends that Thermistor Temperature sensors with an accuracy of +/- 0.25F be allowed in addition to the semiconductor-based electronic temperature sensors with an accuracy of +/- 0.15F that are currently required in the Handbook. CalSEIA argues that Thermistor sensors are more common in the SWH industry.

Heliodyne recommends changing the accuracy standard on the flow meter to +/- 1.5% at full scale and also allowing vortex flow sensors.

Heliodyne also recommends lowering the accuracy standard on temperature sensors to +/- 0.25F. Heliodyne argues that this change would improve the cost-effectiveness of the technology and align the program with industry practice. Heliodyne also questions why the handbook deals with relative temperature tolerance rather than Delta T.

Skyline Innovations recommends requiring EN 1434/OIML R75 compliance for the thermal metering equipment used to measure and monitor system performance, since these standard specify the accuracy of components and subcomponents, and most off-the shelf products will comply with these standards.

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Skyline further recommends EN 1434/OIML R75 standards for flow meters, which allow error of +/- 3.5% for Class 1 flow meters and +/-5% for Class 2 and 3 flow meters. Skyline asserts that the +/-0.4% requirement specified in the handbook will be difficult to comply with.

**Issue 18. One-Tank Fluid System (Section 6.4.2.2):** Heliodyne recommends placing sensors on the glycol side of one-tank systems with an external heat exchanger, rather than on the potable water side, as prescribed in the Handbook. Heliodyne maintains that placing sensors on the potable water side differs from industry practice and introduces scaling to the sensor, while providing only small improvement in accuracy.

#### Summary of PAs Response to Protests

The CSI-Thermal PAs responded on June 28, 2010 to the protests of all parties with the exception of JTG-Muir, which served its protest to the CPUC but not to the PAs.

**Issue 1. Eligible Equipment (Section 2.2.1):** The PAs disagree with Abengoa Solar that systems without an SRCC rating be allowed to participate in the program and be paid performance-based incentives. The PAs point out that an SRCC rating is required by AB 1470 and D. 10-01-022.

**Issue 2. Multi-family/Commercial End Uses (Section 2.2.2.2):** The PAs recommend clarifying that the list of eligible end-uses listed in section 2.2.2.2 is not meant to be all-inclusive, but is merely meant to provide examples of eligible end uses that would be allowed in the program. The PAs recommend that Section 2.2.2.2 be modified to state “In addition, the following are examples of eligible end uses of hot water: commercial laundries, Laundromats, restaurants, food processors, agricultural processes and car washes.

**Issue 3. Ineligible Technology and System Applications (Section 2.2.3):** The PAs acknowledge the validity of open loop Thermosiphon systems, but recommend that they remain ineligible for the program due to the contention that these systems do not have adequate freeze protection for all California Energy Commission Climate Zones. The PAs

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also point out that the eligibility of open loop Direct Forced Circulation systems is pending the results of a technical task force study on the feasibility of these freeze protection methodologies. Moreover, the PAs note that open loop Integral Collector Storage (ICS) systems are currently eligible for CSI-Thermal Incentives.

With regards to the protest of Libre Energy, the PAs note that D. 10-01-022 states that the CPUC may consider including other non-solar water heating solar thermal technologies at a later date, and therefore the PAs recommend denying Libre's request that these technologies be eligible for incentives at this time.

With regard to the concerns of Cogenra Solar and Solid Energy about the ineligibility of process heat and the vagueness of its definition, the PAs recommend that process heat remain ineligible but that it should be more clearly defined in the Program Handbook.

The PAs further recommend the following Handbook modification to clarify eligible end uses: "Eligible SWH applications must directly consume the solar heated potable water, as opposed to using the solar heated water as a medium. Process heat, much like solar heating and cooling does not directly consume the solar heated water, but uses it as a medium for some other end use. Under this program, process heating applications would be considered a non-SWH solar thermal technology, and therefore would be ineligible for a CSI-Thermal Incentive. Further, feed water (aka make-up water) systems for steam boilers would be ineligible."

Finally, the PAs recommend that process heat applications remain ineligible pending further review by the CPUC.

**Issue 4. Single-family incentives (Section 3.1):** The PAs opine that the program Handbook should not be changed to exclude any particular communities, and therefore WMA's protest should be denied.

**Issue 5. The 50/50 Rebate Payment True-Up (Section 3.3.2):** The PAs recommend that the handbook be revised so that 75 percent of the incentive payment is made upfront and 25 percent be withheld as a true-up based on a year's worth of metered data. Moreover, the PAs

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recommend that the true-up incentive payment should be limited to systems greater than or equal to 250 kW<sub>th</sub>. The PAs recommend that systems smaller than 250 kW<sub>th</sub> be required to use the ASHRAE guidelines average daily gallons per day (GPD) estimates for various types of facilities or meter GPD for 30 days if there are no ASHRAE guidelines for the project building type.

With regard to CalSEIA's recommendation that the Handbook incorporate Table 1 of CalSEIA's protest as the standard assumption for gallons per day of hot water load, the PAs recommend that this suggestion be denied and that the Handbook should instead continue to rely on standard ASHRAE guidelines Average Daily GPD column.

The PAs recommend denying Skyline Innovations request to use the run time of water heaters using data loggers to determine hot water energy consumption.

**Issue 6. Table 7 of 2007 ASHRAE HVAC Applications Handbook (Appendix D):** The PAs clarify that appendix D is a modified version of Table 7, showing only average daily demands and not maximum and minimum demands. Also, the PAs recommend that hotels and Laundromats be removed from the table, since they are not part of ASHRAE Table 7.

**Issue 7. Incentive Calculator (Section 3.5.2):** The PAs note the language in D. 10-01-022 requiring the development of an online incentive calculation tool and they point out that the intent of this tool is to provide a fair and consistent method to estimate annual energy savings and calculate incentives for multi-family/commercial projects. The PAs recommend that the CPUC deny Solid's request to allowed stamped professional engineering drawings as an alternative to the incentive calculation tool.

**Issue 8. Other Incentives or Rebates (Section 3.6.3):** The PAs point out that Conclusion of Law D. 10-01-022 states that customers may not receive SWH incentives from both a utility energy efficiency program and the CSI-Thermal Program for the same SWH system. The PAs interpret this language to mean that PVT's request cannot legally be implemented.

**Issue 9. Multi-family/Commercial Application Process (Section 4.3):**

The PAs clarify that system sizing calculations by a PE are only required if the proposed system is outside the program sizing guidelines outlined in the Handbook and therefore recommend against adopting Cogenra's recommendation to review system sizing documentation in Step 2 rather than Step 1.

With regard to Cogenra's request to increase the Proof of Project milestone deadline from 60 days to 90 days, the PAs recommend against adopting that recommendation on the basis of data from the CSI-PV program. However, the PAs state that they would support providing more time to provide Proof of Project Milestone documentation for government, non-profit and public entities.

**Issue 10. Application Fee Process (Section 4.3.1.1):** The PAs state that since the program incentivizes both gas and electric displacing systems, square footage of collectors is the most consistent measurement and can be applied to both flat plate and evacuated tube collectors. The PAs recommend against adopting Cogenra's recommendation.

**Issue 11. Reservation Period (Section 4.4.3):** The PAs agree with CalSEIA and recommend that the CPUC adopt an 18-month reservation period with a potential extension of up to 180 calendar days.

**Issue 12. Reservation Request Form (Section 4.7.1):** The PAs recommend that this section of the Handbook be clarified to state: "The reservation request form must be signed by the applicant, host customer, and system owner prior to submitting the application."

**Issue 13. Direct Forced Circulation (Section 6.1.2):** The PAs did not respond to JTG Muir's protest because the protest was not served to any of the Program Administrators that filed the joint Advice Letter.

**Issue 14. Indirect Forced Circulation (Section 6.1.3):** The PAs note that the new section on Indirect Forced Circulation systems already includes closed loop recirculation systems. The PAs further note that the eligibility of these systems is pending the results of a technical task force studying the feasibility of these freeze protection systems in California. The PAs recommend denying Libre's request.

**Issue 15. Air Collectors (Section 6.1.5):** The PAs agree with the recommendations of CalSEIA and PVT Solar and recommend that the proposed language be adopted into the Handbook: “Air collectors do not require freeze protection. Non-coupled water circulation systems maintained in an enclosed space do not require freeze protection and may be open loop. If the water piping of the circulation system is exposed to the environment, automatic freeze protection for the piping is required.”

**Issue 16. System Sizing of Multi-Family/Commercial Projects (Section 6.3.2):** The PAs recommend denying Skyline’s request to determine hot water energy consumption for the purposes of system sizing by measuring the run time of water heaters using data loggers.

**Issue 17. Minimum Metering Requirements (Section 6.4):** The PAs clarify that the requirements in section 6.4 previously pertained to systems greater than 30 kW<sub>th</sub>, which were subject to the 50/50 true-up method. Because the PAs are proposing to change the starting point for the true-up payment from 30 kW<sub>th</sub> to 250 kW<sub>th</sub>, they point out that there are now three separate metering standards: 1) program measurement and evaluation; 2) customer performance monitoring on systems larger than 30 kW<sub>th</sub> but smaller than 250 kW<sub>th</sub>, and 3) true-up payments for systems larger than or equal to 250 kW<sub>th</sub>.

The PAs agree with Heliodyne and CalSEIA that for the second purpose, system performance monitoring, measuring equipment is necessary on the collector loop only. Thus, the PAs recommend that performance monitoring for systems between 30 kW<sub>th</sub> and 250 kW<sub>th</sub> require metering on the collector loop only.

The PAs also promise to look closely at the EN 1434 and OIML R75 standards, as recommended by Skyline Innovations and work with the CPUC to align program metering requirements with recognized industry standards.

The PAs also state they will take into account the suggestions of CalSEIA, California Solar Thermal, Free Hot Water, Heliodyne, PVT Solar and Skyline Innovations when developing metering standards in the next version of the Handbook.

**Issue 18. One-Tank Fluid System (Section 6.4.2.2):** The PAs agree with Heliodyne and recommend that glycol-side metering be allowed for customer performance monitoring. When metering is employed for the purpose of payment under the 75/25 method, the sensors should be placed on the potable water side of the external heat exchanger.

## **DISCUSSION**

The Commission has reviewed the Advice Letter, protests and responses and makes the following observations.

**Issue 1. Eligible Equipment (Section 2.2.1):** The PAs are correct in stating that in order to qualify for CSI-Thermal Program incentives, both AB 1470 and D. 10-01-022 require that commercial/multi-family SWH systems have an SRCC OG-100 rating.

With regard to performance-based incentives, D. 10-01-022 states: “Within 180 days of this order, the Energy Division will hold a workshop on the issue of the eligibility of non-solar water heating solar thermal technologies that displace gas usage and meet all other program requirements, including certification from the Solar Rating and Certification Corporation. The workshop shall address how to estimate these technologies’ thermal displacement for incentive calculation purposes and whether performance-based incentives are appropriate for these systems.”

D. 10-01-022 is clear that even if the CPUC adopts performance-based incentives, the solar thermal systems that apply for them will still need to be certified by the SRCC.

**Conclusion:** The CSI-Thermal Program Handbook should not allow multi-family/commercial SWH systems that lack an SRCC OG-100 rating to qualify for incentives.

**Issue 2. Multi-family/Commercial End Uses (Section 2.2.2.2):** Section 2.2.2.2 and Section 2.2.3 are confusing with regard to end uses that are eligible for program incentives. Section 2.2.2.2 lists domestic hot water (DHW) as an eligible end use but then creates confusion by providing an

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incomplete list of non-DHW uses that could also qualify. Section 2.2.3 further confuses the issue by stating in item (g) that “Non DHW thermal end uses” are ineligible for incentives.

The PAs have proposed in the reply comments a reasonable solution for clarifying the issue. They propose to define as eligible any facility that directly consumes the solar heated water, rather than using it as a medium. This solution creates a clear definition of eligible technologies and should be implemented. The Commission proposes some minor changes to further clarify the definition. In addition, the Handbook should clearly state that commercial end uses are eligible in addition to domestic end uses.

Finally, the term “process heat” is not defined in the Handbook, and this is likely to create confusion, as various parties might have different interpretations as to what constitutes process heat. Since applications that use solar heated water as a medium to carry heat for other purposes are already prohibited, it seems redundant to further single out process heat as a prohibited end use. Until the PAs clearly define the term “process heat” it should be eliminated from the handbook.

Energy Division will convene a workshop following the approval of this Handbook where the eligibility of other end uses, including solar space heating and cooling, will be considered. The Handbook may be revised to incorporate these technologies at that time.

**Conclusion:** The PAs should replace the text in Section 2.2.2.2 of the CSI-Thermal Program Handbook with the following paragraph: “To be eligible, SWH applications must directly consume the solar heated potable water, as opposed to using the solar heated water as a medium to carry heat for some other end use. In multi-family/commercial applications, DHW and commercial end uses are eligible for CSI-Thermal Program incentives. Examples of eligible DHW end uses include: apartment buildings with central DHW systems, convalescent homes, hotels and motels, military bachelor quarters, school dormitories with central DHW systems and prisons. Examples of eligible commercial end uses include: commercial laundries, Laundromats, restaurants, food processors, agricultural processes and car washes.”

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**Issue 3. Ineligible Technology and System Applications (Section 2.2.3):** With regard to the issues raised by Free Hot Water and Libre Energy, the Commission agrees with the PAs that open loop Thermosiphon systems and open loop Direct Forced Circulation systems remain ineligible pending the results of the technical task force review.

With regard to Libre Energy's request to provide incentives to systems that provide space heating, cooling and dehumidification, the Commission agrees with the PAs that those end uses should remain ineligible until they can be addressed at the upcoming workshop mentioned under Issue 2.

With regard to Congenra and Solid's request to eliminate or clarify the term "process heat" in the list of ineligible end uses, the Commission agrees that item (g) in this list, which includes process heat, is confusing. Moreover, process heat is not defined in the glossary. Finally, Item (g) is not correct, since non-DHW end uses are in fact eligible for the program.

**Conclusion:** The request of Libre Energy and Free Hot water to remove open loop Thermosiphon systems and open loop Direct Forced Circulation systems from the list of ineligible technologies should be denied at this time. Libre Energy's request to make non-SWH end uses eligible for incentives should also be denied.

The PAs should change Item (g) in the list of Ineligible Technologies and System Applications to read: "End uses that do not directly consume the solar heated water, but rather use the water as a medium to carry heat for some other end use."

**Issue 4. Single-family incentives (Section 3.1):** The Commission agrees with the PAs that the change requested by WMA is not necessary. WMA is concerned with mobile home owners applying for single-family CSI-Thermal Incentives in sub-metered mobile home parks where the park owner is the customer of record. This concern is ill-founded, as there are already safeguards to prevent a resident of a sub-metered mobile home park from applying for CSI-Thermal Incentives against the will of the park owner. For instance, to apply for incentives, the applicant must be a utility customer of record.

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**Conclusion:** No change to the handbook is warranted to address WMA's concern.

**Issue 5. The 50/50 Rebate Payment True-Up (Section 3.3.2):** The 50/50 payment mechanism was devised to solve a problem unique to SWH and inherent in the way the CSI-Thermal program was established. Specifically, D. 10-01-022 requires the CSI-Thermal program to pay incentives to multi-family and commercial systems based on the output of an online incentive calculation tool. However, the result of any solar water heating simulation software tool will vary dramatically depending on the value the applicant enters for the gallons per day (GPD) of hot water used by the facility.

Because the Program Administrators have no easy means of independently verifying the GPD value, the calculator could easily be manipulated by applicants entering arbitrarily high values for GPD. Although many contractors would no doubt carefully calculate or measure the hot water used by the facility, those contractors would be at a disadvantage when competing with disreputable actors who simply "guess high" on GPD in order to maximize the value of the incentive for their customers and avoid the cost of measuring or calculating GPD. In a workshop held on March 30 at the CPUC, industry participants widely recognized the potential for "gaming" an online incentive calculator.

The 50/50 payment mechanism is intended to eliminate the gaming potential inherent in the incentive calculator by providing a mechanism to ensure that the calculator inputs are entered accurately and honestly. Under this mechanism, if an incentive payment is inflated because GPD was estimated too high, the incentive would be adjusted downward in the second payment. On the other hand, if a system produced more than expected, the customer's incentive payment would be adjusted upward in the second payment.

In their protests, several parties complained that withholding half of the incentive payment for a year creates uncertainty and financial burden for contractors and/or their customers. These parties all recommend that the payment be made in one up-front lump sum and many recommend alternatives to the 50/50 method for addressing the gaming concerns. The Commission finds that the concerns of these parties have merit, and they

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should be addressed in a way that relieves their financial burden and uncertainty without opening the program to possible gaming.

First, the Commission agrees with the PAs and CalSEIA that requiring applicants to use standard GPD assumptions from the ASHRAE guidelines is a satisfactory solution. Although it might not result in a perfect prediction of energy displaced, this solution creates a level playing field for similar types of facilities; it is simple, transparent, and eliminates the potential for gaming the GPD input. For this reason, the Commission endorses the PAs' recommendation to allow systems smaller than 250 kW<sub>th</sub> to receive a single lump-sum incentive based on the incentive calculator provided that they use ASHRAE guidelines for GPD.

The Commission also agrees with the PAs and CalSEIA that for systems taking the split incentive, the split should be adjusted so that the applicant receives a larger share of the incentive up-front. To avoid the situation where an applicant is overpaid, however, the split should be 70/30.

Systems smaller than 250 kW<sub>th</sub> for which no ASHRAE guidelines exist still create a problem, however. CalSEIA and Free Hot Water recommend using utility billing data or metered hot water data to determine hot water load. The PAs recommend using 30 days of metered hot water use data.

All of these methods are problematic. Using utility billing data would require developing a methodology for converting natural gas usage data into hot water usage data, since natural gas is used for purposes other than heating water. It is not clear that such a methodology exists or that it can be developed.

Metering the hot water use for 30 days also creates a problem. Many types of facilities have seasonal usage and will thus have water usage patterns that vary dramatically from month to month. For instance, a vineyard likely uses many times more hot water in September than it does in February. If the program were to rely on 30 days of metered data, it would be difficult to determine which 30 days are acceptable to meter in systems with highly variable seasonal use.

Finally, CalSEIA suggests that Marketing Funds could be used to retain a Professional Engineer to review applications on an as-needed basis. The

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Commission is reluctant to authorize the use of marketing funds for activities that do not involve marketing. Moreover, if this solution was implemented, it is difficult to see how disputes between the engineer retained by the PA and the applicant would be resolved. It would seem that resolving such disputes would require universally accepted guidelines for gauging hot water use for various types of facilities; but the engineer would be reviewing the application in this case precisely because there are no such guidelines.

Because an adequate solution for determining hot water load on facilities without standard water usage assumptions from ASHRAE has not been proposed, The Commission finds it prudent to require such systems in the 30 kW<sub>th</sub> to 250 kW<sub>th</sub> size range to take the 70/30 split incentive payment. The Commission implements this measure keeping in mind that the incentive payment mechanism can always be adjusted in the future if program participation lags; but money spent unwisely can never be recovered.

**Conclusion:** Systems smaller than 250 kW<sub>th</sub> should be allowed to receive the entire incentive amount in a single lump sum payment determined by the incentive calculator, provided they use the standard GPD assumption for that facility type provided in the Program Handbook. The PAs should incorporate Table 1 of CalSEIA's protest as the standard GPD assumptions.

Systems larger than 250 kW<sub>th</sub> and those for which standard GPD assumptions do not exist should be required to take an incentive paid in two parts. The first part should be paid out when the project is completed, approved and inspected (if applicable) and should be 70% of the amount estimated by the online incentive calculator. The second part should be paid out after the PA has received a year's worth of metered data and should be equal to the actual metered energy production for that year times the applicable incentive rate, minus the first payment.

**Issue 6. Table 7 of 2007 ASHRAE HVAC Applications Handbook (Appendix D):** The Commission finds that the table provided by CalSEIA is superior to the one provided by the PAs and should be adopted. The table provided by CalSEIA is largely based on the ASHRAE guidelines but offers some notable improvements, such as differentiating between apartments with on-site laundry and those without. Moreover, the

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estimate in the Handbook's Appendix D of GPD per room used by hotels seems unreasonably high – nine times that of motels.

**Conclusion:** The standard assumption of GPD in CSI-Thermal Handbook should be based on Table 1 of CalSEIA's protest.

**Issue 7. Incentive Calculator (Section 3.5.2):** The Commission agrees with the PAs that stamped professional engineering drawings should not be allowed to substitute for an incentive calculated by the incentive calculation tool. Not all PAs will employ staff qualified to analyze these drawings, and no mechanism exists to resolve disputes between the PA and the applicant over the validity of engineering estimates.

**Conclusion:** Solid's request to use stamped professional engineering drawings in lieu of the incentive calculation tool should be denied.

**Issue 8. Other Incentives or Rebates (Section 3.6.3):** The Commission agrees with the PAs that PVT's request cannot legally be implemented.

**Conclusion:** No Handbook change is necessary.

**Issue 9. Multi-family/Commercial Project Application Process (Section 4.3):** The Commission agrees with the PAs that it is not necessary to move the system sizing documentation to Step 2 rather than Step 1. The Commission also agrees with the PAs that more time should be provided to provide Proof of Project Milestone documentation for government, non-profit and public entities.

**Conclusion:** Section 4.3 of the Handbook should be amended to provide 90 days for the Proof of Project Milestone deadline government, non-profit and public entities.

**Issue 10. Application Fee Process (Section 4.3.1.1):** The Commission agrees with the PAs that square footage of collectors is an appropriate metric for determining application fees.

**Conclusion:** No Handbook change is necessary.

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**Issue 11. Reservation Period (Section 4.4.3):** The Commission agrees with the PAs and CalSEIA that the reservation period should be extended to 18 months with a potential extension of up to 180 calendar days.

**Conclusion:** The Handbook should be amended to provide a reservation period of 18 months with a potential extension of up to 180 calendar days for multi-family/commercial projects.

**Issue 12. Reservation Request Form (Section 4.7.1):** The Commission agrees with the PAs and CalSEIA that this section of the Handbook should be clarified to allow applications that are retroactive to July 15, 2009.

**Conclusion:** The Handbook should be amended to state: “The reservation request form must be signed by the applicant, host customer, and system owner prior to submitting the application.”

**Issue 13. Direct Forced Circulation (Section 6.1.2):** Direct Forced Circulation systems are not eligible for program incentives pending the results of a technical task force.

**Conclusion:** No Handbook change is necessary.

**Issue 14. Indirect Forced Circulation (Section 6.1.3):** The Commission agrees with the PAs that Libre Energy’s request should be denied.

**Conclusion:** No Handbook change is necessary.

**Issue 15. Air Collectors (Section 6.1.5):** The Commission agrees with the PAs, CalSEIA and PVT Solar that conditioned spaces are not necessary to ensure freeze protection for non-coupled, open-loop water circulation systems.

**Conclusion:** The Handbook should be modified to state: “Air collectors do not require freeze protection. Non-coupled water circulation systems maintained in an enclosed space do not require freeze protection and may be open loop. If the water piping of the circulation system is exposed to the environment, automatic freeze protection for the piping is required.”

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**Issue 16. System Sizing of Multi-Family/Commercial Projects (Section 6.3.2):** The Commission agrees with the PAs that Skyline's recommendation should be denied.

**Conclusion:** No change to the Handbook is necessary.

**Issue 17. Minimum Metering Requirements (Section 6.4):** The Commission agrees with the PAs that there are three separate purposes for metering and monitoring: 1) program measurement and evaluation 2) customer performance monitoring on systems larger than 30 kW<sub>th</sub> but smaller than 250 kW<sub>th</sub>, and 3) true-up payments for systems larger than 250 kW<sub>th</sub>. Each of these separate purposes is addressed below.

1) The Commission agrees with PVT that separate metering requirements should be developed and included in the Handbook for residential systems opting to provide system performance data for measurement and evaluation.

2) For the purposes of metering and monitoring equipment required by statute on systems greater than 30 kW<sub>th</sub> but smaller than 250 kW<sub>th</sub>, the Commission agrees with CalSEIA and Free Hot Water that accuracy standards should be lowered. Accuracy standards should be set at +/- 2% at full scale for the flow meter and +/- 0.25F for the temperature sensors. Moreover, the Commission agrees with CalSEIA and Heliodyne that for these types of systems, monitoring equipment may be placed on the solar side of the loop only.

3) For systems larger than 250 kW<sub>th</sub> and others taking the 70/30 true-up payment, it is still important to balance accuracy of metering with affordability. Thus, the PAs should revise the Handbook to allow meter types other than electromagnetic flow meters. The accuracy standard should be set at +/- 1% on the flow meter and +/- 0.25F on the temperature sensors. The PAs should maintain the requirement that metering equipment must be placed on the potable water side of the system, rather than on the collector loop.

**Conclusion:** The PAs should develop metering requirements for residential systems opting to provide system performance data for

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measurement and evaluation. These requirements should balance accuracy of information with affordability.

For the purposes of metering and monitoring equipment required by statute on systems greater than 30 kW<sub>th</sub> but smaller than 250 kW<sub>th</sub> that are not taking the 70/30 true-up payment, the PAs should set standards at +/- 2% for the flow meter and +/- 0.25F for the temperature sensors.

Alternatively, the PAs may specify a common standard that covers subcomponents, such as EN 1434/OIML R75. For these types of systems, the PAs should specify that monitoring equipment may be placed on the collector loop.

For systems larger than 250 kW<sub>th</sub> and others taking the 70/30 true-up payment, the PAs should revise the Handbook to allow meter types other than electromagnetic flow meters. The PAs should also relax the metering standards to allow a variety of companies to participate in the metering program. The PAs should revise the Handbook to set the metering accuracy standard at +/- 1% for the flow meter and +/- 0.25F for the temperature sensors. The PAs should maintain the requirement that metering equipment must be placed on the potable water side of the system, rather than on the collector loop.

**Issue 18. One-Tank Fluid System (Section 6.4.2.2):** The Commission agrees with the PAs and Heliodyne that glycol-side metering be allowed for customer performance monitoring. When metering is employed for the purpose of payment under the 75/25 method, the sensors should be placed

**Conclusion:** The Handbook should be amended so that glycol-side metering is allowed for customer performance monitoring.

**Issues 19. Energy Efficiency Affidavit (Section 4.1):** Item 4 of Section 4.1 (Single-Family) Residential Project Application Process states applicants for single-family residential incentives must provide a customer affidavit stating that the contractor has informed the customer about energy efficiency improvement opportunities. This item was originally included in the Handbook with the expectation that the CPUC Division of Ratepayer Advocates would provide a list of recommendations on ways better integrate SWH with energy efficiency. Since those recommendations have not yet been provided, the Commission finds it prudent to remove

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the requirement for an energy efficiency affidavit at this time. The requirement can be revisited in the future if and when a list of appropriate energy efficiency improvements has been developed.

**Conclusion:** The Handbook should be amended to remove Item 4 from section 4.1.

## **COMMENTS**

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review and comment prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

All parties in the proceeding have stipulated to reduce the 30-day waiting period required by PU Code section 311(g)(1) to 28 days. Accordingly, this matter will be placed on the first Commission's agenda twenty-eight (28) days following the mailing of this draft resolution. By stipulation of all parties, comments shall be filed no later than 15 days following the mailing of this draft resolution, reply comments shall be filed no later than 22 days following the mailing, of this draft resolution.

## **FINDINGS**

1. D.10-01-022 directed the CSI-Thermal Program Administrators (Pacific Gas and Electric Company, Southern California Edison, Southern California Gas Company and California Center for Sustainable Energy) to file an Advice Letter to submit to the Commission for approval the commercial and multi-family project portion of the California Solar Initiative Thermal Program Handbook.
2. On May 24, 2010, the Program Administrators jointly filed PG&E 3673-E/3119-G, SoCalGas AL 4115, SCE AL 2475-E, and CCSE AL 12, the Compliance Advice Letter to Establish the Multifamily and Commercial Project Portion of the California Solar Initiative Thermal Program Handbook.

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3. The joint Advice Letter filing was protested on or before June 14 by Heliodyne, Abengoa Solar, PVT Solar, Cogenra Solar, Cantabria Homeowners Association, Free Hot Water, California Solar Thermal, Free Hot Water, Western Manufactured Housing Community Association, Skyline Innovations, Libre Energy, California Solar Energy Industry Association (CalSEIA), Solid Energy and JTG-Muir.
4. The CSI-Thermal Program Handbook should not allow multi-family/commercial SWH systems that lack an SRCC OG-100 rating to qualify for incentives.
5. The PAs should replace the text in Section 2.2.2.2 of the CSI-Thermal Program Handbook with the following paragraph: "To be eligible, SWH applications must directly consume the solar heated potable water, as opposed to using the solar heated water as a medium to carry heat for some other end use. In multi-family/commercial applications, DHW and commercial end uses are eligible for CSI-Thermal Program incentives. Examples of eligible DHW end uses include: apartment buildings with central DHW systems, convalescent homes, hotels and motels, military bachelor quarters, school dormitories with central DHW systems and prisons. Examples of eligible commercial end uses include: commercial laundries, Laundromats, restaurants, food processors, agricultural processes and car washes."
6. The PAs should change Item (g) in the list of Ineligible Technologies and System Applications (Section 2.2.3) to read: "End uses that do not directly consume the solar heated water, but rather use the water as a medium to carry heat for some other end use."
7. Systems smaller than 250 kW<sub>th</sub> should be allowed to receive the entire incentive amount in a single lump sum payment determined by the incentive calculator provided they use the standard gallons per day (GPD) assumption for that facility type provided in the Program Handbook. The PAs should incorporate Table 1 of CalSEIA's protest as the standard GPD assumptions.
8. Systems larger than 250 kW<sub>th</sub> and those for which standard GPD assumptions do not exist should be required to take an incentive paid in two parts. The first part should be paid out when the project is completed, approved and inspected (if applicable) and should be 70% of the amount estimated by the online incentive calculator. The second part should be paid out after the PA has received a year's worth of metered data and should be equal to the actual metered energy

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production for that year times the applicable incentive rate, minus the first payment.

9. For the standard assumptions of GPD for various types of facilities, the PAs should incorporate into the CSI-Thermal Handbook the assumptions provided by CalSEIA in Table 1 of its protest.
10. Stamped professional engineering drawings should not be allowed for the purposes of calculating incentives in lieu of using the incentive calculation tool.
11. Section 4.3 of Handbook should be amended to provide 90 days for the Proof of Project Milestone deadline government, non-profit and public entities.
12. Section 4.4.3 of the Handbook should be amended to provide a reservation period of 18 months with a potential extension of up to 180 calendar days for multi-family/commercial projects.
13. Section 4.7.1 of the Handbook should be amended to state: "The reservation request form must be signed by the applicant, host customer, and system owner prior to submitting the application."
14. Direct Forced Circulation systems are not eligible for CSI-Thermal Program incentives pending the results of a technical task force.
15. Closed Loop Recirculation systems are not eligible for program incentives pending the results of a technical task force.
16. Section 6.1.5 of the Handbook should be modified to state: "Air collectors do not require freeze protection. Non-coupled water circulation systems maintained in an enclosed space do not require freeze protection and may be open loop. If the water piping of the circulation system is exposed to the environment, automatic freeze protection for the piping is required."
17. The PAs should develop metering requirements for residential systems opting to provide system performance data for measurement and evaluation. These requirements should balance accuracy of information with affordability.
18. For the purposes of metering and monitoring equipment required by statute on systems greater than 30 kW<sub>th</sub> but smaller than 250 kW<sub>th</sub>, that are not taking the 70/30 true-up payment, the PAs should set standards at +/- 2% for the flow meter and +/- 0.25F for the temperature sensors. Alternatively, the PAs may specify a common standard that covers subcomponents, such as EN 1434/OIML R75.
19. For the purposes of metering and monitoring equipment required by statute on systems greater than 30 kW<sub>th</sub> but smaller than 250 kW<sub>th</sub>, that

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are not taking the 70/30 true-up payment, monitoring equipment may be placed on the solar side of the loop.

20. For systems larger than 250 kW<sub>th</sub> taking the 70/30 true-up payment, the PAs should revise the Handbook to allow meter types other than electromagnetic flow meters. The PAs should also relax the metering standards to allow a variety of companies to participate in the metering program. The PAs should revise the Handbook to set the metering accuracy standard at +/- 1% for the flow meter and +/- 0.25F for the temperature sensors. The PAs should maintain the requirement that metering equipment must be placed on the potable water side of the system, rather than on the collector loop.
21. The requirement that single-family applicants be required to submit an affidavit stating their contractor has informed them of energy efficiency improvements should be removed.

### **THEREFORE IT IS ORDERED THAT:**

The request of PG&E, SoCalGas, SCE and CCSE to implement D. 10-01-022 as requested in Advice Letters PG&E 3673-E/3119-G, SoCalGas 4115, SCE 2475-E and CCSE 12, respectively is approved with the following conditions and modifications.

1. The joint Advice Letter shall be re-filed within 14 days to comply with the orders herein.
2. The PAs shall replace the text in Section 2.2.2.2 of the CSI-Thermal Program Handbook with the following paragraph: "To be eligible, SWH applications must directly consume the solar heated potable water, as opposed to using the solar heated water as a medium to carry heat for some other end use. In multi-family/commercial applications, DHW and commercial end uses are eligible for CSI-Thermal Program incentives. Examples of eligible DHW end uses include: apartment buildings with central DHW systems, convalescent homes, hotels and motels, military bachelor quarters, school dormitories with central DHW systems and prisons. Examples of eligible commercial end uses include: commercial laundries, Laundromats, restaurants, food processors, agricultural processes and car washes."

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3. The PAs shall change Item (g) in the list of Ineligible Technologies and System Applications (Section 2.2.3) to read: “End uses that do not directly consume the solar heated water, but rather use the water as a medium to carry heat for some other end use.”
4. Systems smaller than 250 kW<sub>th</sub> shall be allowed to receive the entire incentive amount in a single lump sum payment determined by the incentive calculator provided they use the standard gallons per day (GPD) assumption for that facility type provided in the Program Handbook. The PAs should incorporate Table 1 of CalSEIA’s protest as the standard GPD assumptions.
5. Systems larger than 250 kW<sub>th</sub> and those for which standard GPD assumptions do not exist shall be required to take an incentive paid in two parts. The first part shall be paid out when the project is completed, approved and inspected (if applicable) and should be 70% of the amount estimated by the online incentive calculator. The second part shall be paid out after the PA has received a year’s worth of metered data and shall be equal to the actual metered energy production for that year times the applicable incentive rate, minus the first payment.
6. For the standard assumptions of GPD for various types of facilities, the PAs shall incorporate into the CSI-Thermal Handbook the assumptions provided by CalSEIA in Table 1 of its protest.
7. Section 4.3 of Handbook shall be amended to provide 90 days for the Proof of Project Milestone deadline government, non-profit and public entities.
8. Section 4.4.3 of the Handbook shall be amended to provide a reservation period of 18 months with a potential extension of up to 180 calendar days for multi-family/commercial projects.
9. Section 4.7.1 of the Handbook shall be amended to state: “The reservation request form must be signed by the applicant, host customer, and system owner prior to submitting the application.”
10. Section 6.1.5 of the Handbook shall be modified to state: “Air collectors do not require freeze protection. Non-coupled water circulation systems maintained in an enclosed space do not require freeze protection and may be open loop. If the water piping of the circulation system is exposed to the environment, automatic freeze protection for the piping is required.”
11. The PAs shall develop metering requirements for residential systems opting to provide system performance data for measurement and

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and CCSE AL 12/DF1

evaluation. These requirements should balance accuracy of information with affordability.

12. For the purposes of metering and monitoring equipment required by statute on systems greater than 30 kW<sub>th</sub> but smaller than 250 kW<sub>th</sub>, that are not taking the 70/30 true-up payment, the PAs shall set standards at +/- 2% for the flow meter and +/- 0.25F for the temperature sensors. Alternatively, the PAs may specify a common standard that covers subcomponents, such as EN 1434/OIML R75.
13. For the purposes of metering and monitoring equipment required by statute on systems greater than 30 kW<sub>th</sub> but smaller than 250 kW<sub>th</sub>, that are not taking the 70/30 true-up payment, monitoring equipment may be placed on the solar collector loop.
14. For systems larger than 250 kW<sub>th</sub> taking the 70/30 true-up payment, the PAs shall revise the Handbook to allow meter types other than electromagnetic flow meters. The PAs should also relax the metering standards to allow a variety of companies to participate in the metering program. The PAs should revise the Handbook to set the metering accuracy standard at +/- 1% for the flow meter and +/- 0.25F for the temperature sensors. The PAs should maintain the requirement that metering equipment must be placed on the potable water side of the system, rather than on the collector loop.
15. The PAs shall amend the Handbook to remove Item 4 from Section 4.1.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on August 12, 2010; the following Commissioners voting favorably thereon:

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Resolution G-3449  
SoCal Gas AL 4115, PG&E AL 3673E | 3119G, SCE AL 2475,  
and CCSE AL 12/DF1

DRAFT

August 12, 2010

Paul Clanon  
Executive Director

STATE OF CALIFORNIA

ARNOLD SCHWARZENEGGER, *Governor*

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**PUBLIC UTILITIES COMMISSION**

505 VAN NESS AVENUE  
SAN FRANCISCO, CA 94102-3298



July 16, 2010

I.D.# 9657  
RESOLUTION G-3449  
Commission Meeting August 12, 2010

SoCal Gas AL 4115, PG&E AL 3673E | 3119G, SCE AL 2475,  
and CCSE AL 12/DF1

TO: PARTIES TO SOCALGAS ADVICE LETTER NO. 4115, PG&E AL  
3673E/3119G, SCE AL 2475, and CCSE AL 12

Enclosed is draft Resolution Number G-3449 of the Energy Division. Resolution G-3449 will be on the agenda for the Commission's August 12, 2010 meeting. Public Utilities Code Section 311(g)(2) provides that the 30-day review and comment period for a draft resolution may be reduced or waived upon the stipulation of all the parties in the proceeding. All parties to this proceeding (SoCalGas, PG&E, SCE, CCSE, Heliodyne, Abengoa Solar, PVT Solar, Cantabria Homeowner's Association, Free Hot Water, California Solar Thermal, Western Manufactured Housing Community Association (WMA), Skyline Innovations, Libre Energy, Cogentra, California Solar Energy Industries Association (CalSEIA) and JTG Muir) have agreed to a reduced comment period. At the Commission's August 12, 2010 meeting, the Commission may vote on this Resolution or it may postpone a vote until later.

When the Commission votes on a draft Resolution, it may adopt all or part of it as written, amend, modify or set it aside and prepare a different Resolution. Only when the Commission acts does the Resolution become binding on the parties.

Parties may submit comments on the draft Resolution.

An original and two copies of the comments, with a certificate of service, should be submitted to:

Honesto Gatchalian  
Energy Division  
California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102

SoCal Gas AL 4115, PG&E AL 3673E | 3119G, SCE AL 2475,  
and CCSE AL 12/DF1

Fax: 415-703-2200

A copy of the comments should be submitted in electronic format to:

Damon Franz  
Energy Division  
California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102  
Email: df1@cpuc.ca.gov

Any comments on the draft Resolution must be received by the Energy Division by July 30, 2010. Those submitting comments must serve a copy of their comments on 1) the entire service list attached to the draft Resolution, 2) all Commissioners, and 3) the Director of the Energy Division, 4) the Chief Administrative Law Judge, and 5) the General Counsel on the same date that the comments are submitted to the Energy Division.

Comments shall be limited to five pages in length and should list the recommended changes to the draft Resolution. Comments shall focus on factual, legal or technical errors in the proposed draft Resolution. Comments that merely reargue positions taken in the advice letter or protests will be accorded no weight and are not to be submitted.

Replies to comments on the draft resolution may be filed (i.e., received by the Energy Division) on August 6, five business days after comments are filed, and shall be limited to identifying misrepresentations of law or fact contained in the comments of other parties. Replies shall not exceed five pages in length, and shall be filed and served as set forth above for comments.

Late submitted comments or replies will not be considered.

/s/ Damon Franz

Damon Franz, Public Utilities Regulatory Analyst  
Energy Division

Enclosure: Service List  
Certificate of Service

**CERTIFICATE OF SERVICE**

I certify that I have by mail this day served a true copy of Draft Resolution G-3449 on all parties in these filings or their attorneys as shown on the attached list.

Dated July 16, 2010 at San Francisco, California.

/s/ Honesto Gatchalian

*Honesto Gatchalian*

**NOTICE**

Parties should notify the Energy Division, Public Utilities Commission, 505 Van Ness Avenue, Room 4002 San Francisco, CA 94102, of any change of address to insure that they continue to receive documents. You must indicate the Resolution number on the service list on which your name appears.

Resolution G-3449  
SoCal Gas AL 4115, PG&E AL 3673E | 3119G, SCE AL 2475,  
and CCSE AL 12/DF1

DRAFT

August 12, 2010

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Resolution G-3449

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SoCal Gas AL 4115, PG&E AL 3673E | 3119G, SCE AL 2475,  
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