



Goal 2: Commercial Quality Maintenance Committee Tuesday April 12, 2016 Meeting Notes

Call to Order

The meeting was called to order at 10:06 am PST by Don Langston, Chair and President of Aire Rite AC and Refrigeration. Meetings are normally scheduled for 60 minutes.

Roll Call

Quorum for voting organizations = 7 of 13. 7 voting members, 7 non-voting members and 3 guest and staff attended this meeting. A total of 17 members, guests and staff attended.

P = present at meeting

A = absent voting member; if proxy has been assigned it will be noted below.

WHPA Goal 2: CQM Committee VOTING Members				Roll Call
ACCA (Air Conditioning Contractors of America)	Donald	Prather	Contractor Association	
Aire Rite AC & Refrigeration	Don	Langston	Contractor (Nonresidential)	P
ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers)	Richard	Danks	Engineering Society	
CLEAResult (formerly CSG)	Liz (Elizabeth)	DeSouza	Energy Efficiency Program Consultant	
FDSI (Field Diagnostic Services Inc.)	Dale	Rossi	Third Party Quality Assurance Providers	P
Honeywell ECC (Commercial Buildings, Trade Sales)	Mike	Lawing	Controls (Manufacturer or Distributor)	
HSGS (Honeywell Smart Grid Solutions)	Shayne	Holderby	Energy Efficiency Program Consultant	P
Marina Mechanical	Denny	Mann	Contractor (Nonresidential)	
CLEAResult (formerly PECE)	Paul	Kyllo	Energy Efficiency Program Consultant	P
PG&E (Pacific Gas and Electric Company)	Jeanne	Duvall	California IOU	
SCE (Southern California Edison)	Scott	Higa	California IOU	P
Tre' Laine Associates	Pepper	Hunziker	Energy Efficiency Program Consultant	P
Western Allied Corporation	Mike	Gallagher	Contractor (Nonresidential)	P
WHPA Goal 2: CQM Committee NON-VOTING Members				Roll Call
ASHRAE	Jim	Scarborough	Engineering Society	
BELIMO Aircontrols, Inc	Vanessa	Castro	Controls (Manufacturer or Distributor)	
BELIMO Aircontrols, Inc	Darryl	DeAngelis	Controls (Manufacturer or Distributor)	
Brownson Technical School	Bill	Brown	Educator, Trainer	P
BuildingMetrics Inc. (BMI)	Pete	Jacobs	Energy Efficiency Program Consultant	
Clean Energy Horizons	Norm	Stone	Energy Efficiency Program Consultant	
Climate Pro Mechanical	Ken	Robinson	Contractor (Nonresidential)	
CLEAResult (formerly PECE)	Michael	Blazey	Energy Efficiency Program Consultant	
CLEAResult (formerly PECE)	Steve	Clinton	Energy Efficiency Program Consultant	P
CLEAResult (formerly PECE)	Phil	Jordan	Energy Efficiency Program Consultant	P
CLEAResult (formerly PECE)	Duane	Whitehurst	Energy Efficiency Program Consultant	
CLEAResult (formerly CSG)	Michael	Withers	Energy Efficiency Program Consultant	P
CLEAResult (formerly CSG)	Monica	Thilges	Energy Efficiency Program Consultant	
Honeywell ECC (Commercial Buildings, Product Management)	Adrienne	Thomle	Controls (Manufacturer or Distributor)	P
HVACRedu.net	Jeff	Taylor	Educator, Trainer	
KEMA/DNV-GL	Timothy	Devine	Energy Efficiency Program Consultant	



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MAS Service/ DbA JB Mechanical	John	Billheimer	Contractor (Nonresidential)	
Richard Danks Consulting	Richard	Danks	Other Stakeholder	
SDG&E (San Diego Gas and Electric Company)	Jeremy	Reefe	California IOU	
SDG&E (San Diego Gas and Electric Company)	Robert	Nacke	California IOU	
SMW (Sheet Metal Workers) Local # 104	Randy	Young	Organized Labor	
Sacramento Municipal Utility District	Bruce	Baccei	Publicly Owned Utility	
SCE (Southern California Edison)	Steve	Clinton	California IOU	P
SCE (Southern California Edison)	Andres	Fergadiotti	California IOU	
Transformative Wave	Joe	Schmutzler	Controls (Manufacturer of Distributor)	P
Transformative Wave	Justin	Sipe	Controls (Manufacturer of Distributor)	
XCSpec	Jeff	Aalfs	Controls (Manufacturer of Distributor)	
XCSpec	Janet	Peterson	Controls (Manufacturer of Distributor)	
WHPA Goal 2: CQM Committee Invited Guests and Staff				Roll Call
AirTest Technologies	Mike	Schell	HVAC Manufacturer	
American Commissioning Group	Craig	Hofferber	Third Party Quality Assurance Provider	
Bay Controls	Stephan	Parry	Controls (Manufacturer of Distributor)	
CalCERTS	Barbara	Hernesman	Certifying Body	
California Public Utilities Commission (CPUC) - Energy Division	Carmen	Best	California PUC	
California Public Utilities Commission (CPUC) - Energy Division	Lola	Odunlami	California PUC	
California Public Utilities Commission (CPUC) - Energy Division	Pete	Skala+	California PUC	
Galawish & Associates	Elsia	Galawish	Energy Efficiency Program Consultant	P
Honeywell ECC	Daniel	Jones	Controls (Manufacturer or Distributor)	
Honeywell Smart Grid Solutions (HSGS)	Eddy	Saleh+	Energy Efficiency Program Consultant	
Honeywell Smart Grid Solutions (HSGS)	Steve	Varnum	Energy Efficiency Program Consultant	
HVACRedu.net	Chris	Compton	Educator, Trainer	
ICF (ICF International)	Emily	Pearce	Energy Efficiency Program Consultant	
ICF (ICF International)	James	Jackson	Energy Efficiency Program Consultant	
Integrity Mechanical Systems Corp.	Susan	Siegert	Contractor (Nonresidential)	
LAUSD (Los Angeles Unified School District)	Steve	Granados	Government (Other than CPUC)	
Mark Cherniack Emeritus	Mark	Cherniack	Emeritus	
NCI (National Comfort Institute)	Rob	Falke	Educator / Trainer	
Pax-Sun Engineering, Inc.	Tom	Paxson	Other Stakeholder	P
PG&E (Pacific Gas and Electric Company)	Mary	Anderson	California IOU	
PG&E (Pacific Gas and Electric Company)	Robert	Davis	California IOU	
SCE (Southern California Edison)	Tara	Becnel	California IOU	
SCE (Southern California Edison)	Ryan	Cho+	California IOU	
SCE (Southern California Edison)	Brett	Close	California IOU	
Service All-Stars	Shaheda	Lodhi	Contractor (Nonresidential)	



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UC Davis Energy Efficiency Center	Kristin	Heinemeier	Research Organization	
STAFF				
BBI (Better Buildings Inc.)	Mark	Lowry	WHPA Executive Advisor/BBI COO	
BNB Consulting/WHPA Staff, host, admin. support & scribe	Bob	Sundberg	WHPA Staff	P
Empowered LLC	Shea	Dibble	WHPA Co-Director	
CLEARresult	Paul	Kyllo+	WHPA Senior Advisor	
Galawish & Associates	Elsia	Galawish	WHPA Staff	

** Organization is Not a Member of the WHPA; + Individual is NOT Registered with the WHPA;

(P) after last name = Member/Registrant is Pending Approval from the WHPA Executive Committee

AGENDA		
Topic	Discussion Leader	Desired Outcome
Welcome, roll call, review agenda, approve past meeting minutes and ACTION items	Don Langston and Bob Sundberg/staff	Record meeting attendees, finalize past meeting minutes, review status of meeting action items.
Welcome new members & guests, review new candidates	Don Langston	New members and invited guests welcomed. Decision made on suggested revisions to candidate options and the review process.
CQM Program Updates SCE/PG&E/SDG&E	Paul Kyllo, Shayne Holderby	Gain a current understanding of IOU CQM program status, progress, developments and issues.
CQM STD 180 User Guide Working Group	Dale Rossi	Members understand overall WG goal and plans
CPUC/ED DNV GL Impact Evaluation Report of 2013-2014 CM related Programs, Public Comments and CPUC/ED Responses	Don Langston	Member understanding of impact evaluation approach, assumptions, EE measures evaluated.
CQM Committee 2016 Goals	Don Langston	Discuss goal topics approved by Executive Committee for CQM C. & WG
IOU Business Plan Development – WHPA webinar March 24	Don Langston	Understand opportunity for WHPA member input into IOU program implementation plan development
Review meeting Action Items, set next meeting date/time, adjourn	Don Langston	Set next meeting date and confirm time.

Approve Minutes of Previous Meeting

The March 22 meeting draft notes were distributed March 30. Approved meeting notes would be finalized and posted to the CQM Committee site.

Review Status of Action Items from Previous Meeting

March 2016 ACTION: Scott Higa committed to providing CQM program existing customer comments at a future meeting.



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September 2015 ACTION: Pete Jacobs volunteered to investigate what the impacts might be for IOU claimed savings if the current CPUC/ED assumed 100% compliance with HVAC equipment installations was reduced to a much lower, possibly low double digit, % from CPUC permitting and compliance rates research. Pending. Postponed.

September 2015 ACTION: Scott Higa, SCE, would report progress on the testimonials and access to and analysis of customer energy data at the next monthly meeting. Postponed.

Welcome New Members and Guests; Consider Pending Members

- Phil Jordan of CLEAResult will be supplying SCE program engineering support previously provided by Ben Lipscomb.
- Steve Granados, facility manager for Los Angeles Unified School District, joined the WHPA and requested becoming a member of this committee. Not in attendance so he will be welcomed at the May meeting.

New Business - Don Langston

None.

IOU CQM Program Updates

SCE CQM program summary (Monica Thilges of CLEAResult is on work leave):

Paul Kylo, CLEAResult, provided the monthly update.

SCE CQM HVAC – March

	Mar-16	2016 YTD
New contractors	0	1
New customers - application received	1	20
New buildings – check cut	0	23
% of units w/ economizers	N/A (no new units)	52%
New tonnage – check cut	0	1,819
Units w/ CSA – check cut	21	497
Units w/ DCV/VFD – check cut	18	199
Units w/ ADEC w/ CSA – check cut*	10	192
kWh – check cut	142,213	1,968,278
kW – check cut	48	789

*does not count units with ADEC pre-existing at CSA or units where ADEC is installed at DCV



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The results for March didn't look very impressive. Most of this was because the work in the field hadn't translated into paid incentives which was when they were scored monthly. He expected all the current activity to be reported over the next couple of monthly updates.

- The internal numbers were tracking strongly toward their 2016 goals
- Much greater interest being shown for advanced measures which included DCV and VFD optimized economizer control

PG&E CQM Program Summary (Jeanne Duvall of PG&E & Shayne Holderby of HSGS)

Shayne Holderby, HSGS, provided the program update.

PG&E CQM HVAC

	March 2016	2016 YTD
New/Active Contractors	4	44
New customers – app submitted	8	15
New buildings – app submitted	-	-
% of units w/ economizers	53%	45%
New tonnage – app submitted	764	886
Units w/ CSA - app submitted	128	154
Units w/ DCV/VFD - app submitted	68	70
Units w/ ADEC w/ CSA - app submitted	0	0
kWh - app submitted	271901	332904
kW - app submitted	34897	34904

Shayne was relieved to report substantially greater progress compared to the previous monthly update.

- New contractor enrollment was a healthy trend
- Renewed interest in DCV economizer upgrades which accounted for slightly more than half the units enrolled in the past month
- Substantial increases in both kWh and kW applications & savings
- Seeing far greater activity both by contractors and owners
- Not seeing the intended volume in the enhanced ventilation control (VFD/supply fan) yet
- More contractors were proposing and installing DCV economizer upgrades following a large emphasis on contractor orientation and training on this new technology
- Sales staffs finally had a better grasp of the advantages of DCV integrated economizers over basic ADEC digital economizer systems



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SDG&E CQM Program Update

No update.

CQM STD 180 User Guide Working Group Update – Dale Rossi

Dale Rossi, FDSI and WG Chair, gave a brief update about the launching of the 2016 Standard 180 User Guide Working Group. The first two meetings, scheduled for April 14 and 21, would address developing the working group's goals. Additional meetings would be scheduled bi-weekly for one hour each. Dale invited any interested members or guests to contact Bob Sundberg to be added to the working group roster and participate. That would include IOU program implementers, especially since they were a key audience for this output. He asked that representatives for at least SCE, PG&E and SDG&E be represented. Dale then asked Don Langston, committee chair, to describe their mandate.

Don Langston, Aire Rite AC and Refrigeration and Chair, explained that he had more of a "user guide" than a comprehensive user manual which was being addressed by the ASHRAE/ACCA Standard 180 User Manual Subcommittee which he chaired. There was more of an immediate need for California and other utilities attempting to develop and implement Standard 180 based programs. He hoped that this working group could fast track some key elements for major stakeholders and help operationalize the "who" and "how" to implement this standard which was written in code oriented language. What are the best business practices for implementing a maintenance program? What would that look like for the end users/owners/facility managers as well as for their service providers and/or staff.

Dale Rossi added that he thought the group would decide that it was important to produce a template for a recommended maintenance plan format.

Don agreed that one of the greatest obstacles to date was having owners and their contractor service providers gain a better idea of what a Standard 180 based maintenance plan should look like beyond the typical long list of maintenance tasks. Goals need to be spelled out in performance objectives with evaluative metrics for measuring progress. Condition indicators of subpar performance or failures need clear communications and reporting processes established and followed. Bringing energy consumption to the forefront with customers. How could and should they be looking at their smart meter data. The comparison to past usage to indicate the impact of higher performing HVAC equipment to reduce electrical consumption and demand costs and improve equipment reliability.

Pepper Hunziker recommended members of the CPUC or their consultants be invited to participate if they weren't already on a member roster.

Bob Sundberg committed to contact Lola Odunlami/CPUC and Pete Jacobs/BuildingMetrics to confirm their participation.

Paul Kylo of CLEAResult and Shayne Holderby of HSGS both agreed to participation.

CQM 2013-2014 Program Impact Evaluation Study conducted by DNV GL and the Public Comments and CPUC/ED Responses- Don Langston

CQM 2013-2014 Program Impact Evaluation Study:

Hyperlink direct to CQM program impact evaluation report:






http://www.energydataweb.com/cpucFiles/pdaDocs/1454/HVAC3ImpactReport_PUBLIC_COMMENT.pdf



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The CPUC/ED consultant evaluated five energy efficiency measures which were submitted with program claimed savings work papers.

Table 1. Realization rates of evaluated IOU QM programs and measure groups

	 Coil Cleaning	 Refrigerant Charge Adjustment	 Economizer Repair	 Thermostat Adjustment	 Supply Fan Control Adjustment
PG&E					
Commercial QM		29%	43%	30%	20%
Air Care Plus	619%	3%	44%	30%	pass-through
SDG&E					
Deemed Incentives – Commercial HVAC	64%	64%	56%		
Commercial Direct Install	58%	26%	56%	30%	
SCE – Quality Maintenance Measure					
Commercial QM	91%				

The SCE Quality Maintenance program did not report claims on a measure level so a program wide realization rate is given.

The study evaluated a series of Standard 180 based maintenance programs as well as recommissioning (AirCarePlus) programs. Five energy efficiency measures evaluated in this study were listed in Table 1, above.

Don Langston, Chair, stated that he found the report created or extended myths and misunderstandings around what better maintenance could deliver.

Public Comments and CPUC/ED Responses:

<http://www.energydataweb.com/cpucFiles/pdaDocs/1503/Comments%20on%20and%20Replies%20to%20HVAC3%20Report.pdf>

Bob Sundberg shared the 48 page comments and responses document online.

- Comments had been submitted by SDG&E, PG&E, Proctor Engineering, John Proctor individually, Honeywell Smart Grid Solutions (HSGS), SCE and Robert Mowris & Associates.
- Comment topics included: coil cleaning; economizers; study sample size and demographics; sampling precision; savings; laboratory data; fan control; methodology and collaboration; eQuest modeling; RCA – refrigerant charge; thermostat; evaluation methods; program implementation/ride-along; outdoor air measurement.

Shayne Holderby, HSGS, indicated that Adam Scheer of the PG&E staff had successfully challenged and reversed the CPUC/ED ex ante team’s coil cleaning disposition document position which had disallowed PG&E being able to claim



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coil cleaning energy savings. With IOU data re-submitted, savings was reconsidered and the results showed up in the impact evaluation final report. The realization rate went from a .16 to a 1.14 which was a huge increase. The group also challenged that the impact study only address five of about twenty-two tasks required by the PG&E program and that many of those “tasks” included several subtasks which they all believed contributed to the savings which was actually being delivered to owners.

Elsia Galawish, Galawish Consulting, emphasized the importance of their challenging the disposition which initially denied PG&E being able to even make any claim to coil cleaning savings.

Don Langston stated his disbelief that the CPUC could conclude that there was no savings from coil cleaning unless done to a disassembled coil from the inside out which was rarely, almost never done in the marketplace because of the exorbitant and unjustifiable cost. He just couldn't comprehend how they could conclude that coil cleaning didn't produce energy savings. In his over 30 years he'd always seen an amperage drop after a coil cleaning. The challenge for industry was to document and quantify just what the performance delta and savings would be.

Mike Gallagher, Western Allied Corp., commented on how good an example this was of the disconnect between the academic or regulatory world from the real world perception of terms. People on the street would have a common understanding of what energy savings meant. The use of these same terms by regulators and even utilities in specialized manners led to great confusion. One key role of the WHPA was to help regulatory and utility groups understand the basis for the confusion which could get in the way of the good work which everyone was trying to accomplish.

Adrienne Thomle, Honeywell ECC, asked how contracting for coil cleaning actually worked with customers. If coils were inspected and found to be dirty, would cleaning them just be part of their maintenance program?

Mike Gallagher answered that if and how often coil cleaning would occur was a function of the maintenance agreement contract. It was very important to have that conversation up front with the owner about what were their goals and objectives and what were they willing to pay for. That agreement had to define and address whether this service was included in the fixed cost or, as was the case most often, was as an optional additional service that was bid separately and agreed to be delivered at some interval or under some agreed conditions if system optimization and energy savings were goals the owner wanted to achieve and would fund.

Don Langston added that this was all the more reason for a User Guide to suggest adding objectives and provide examples of services, the goals they addressed and probable benefits and evidence of those benefits which the service provider could provide and report on. His firm would routinely turn down maintenance Requests for Proposal (RFPs) if they were just a bare bones list of tasks with no effort to establish goals or basic services required to keep HVAC systems operating effectively.

Scott Higa, SCE, comments:

- The 2013-2014 evaluation was an improvement over previous Standard 180 based maintenance programs
- SCE took a different approach on its claimed savings work paper from PG&E and SDG&E. SCE aggregated CQM tasks/measures, utilized a group averaging approach to claiming savings from a group of maintenance related tasks. The other IOUs used the individual energy efficiency measure claim approach.
- SCE intended to move toward the individual EE measure approach even though the evaluation had provided their approach with higher savings as a response, again, as a result of a 2013 CPUC/ED ex-ante disposition guidance document.



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Paul Kylo, CLEAResult, indicated that Phil Jordan, CLEAResult, led the implementer effort to compile SCE program comments.

Phil Jordan, CLEAResult, comments:

- The evaluator's realization rate for kWh was over 100%, a great result
- Their team was still questioning how the evaluators determine the realization rate for the demand savings
- The initial response to evaporator coil cleaning by the CPUC consultants was that laboratory testing and verification of savings couldn't be demonstrated and the evaporator savings claims were ignored. SCE challenged that position and provided a lab test methodology. CPUC consultants were using cardboard to obstruct evaporator airflow but totally ignored the impact of coil fouling. This resulted in a reinstatement of the evaporator coil cleaning savings and an increase in the condenser coil cleaning savings.

Bob Sundberg, WHPA staff, asked Scott Higa, SCE, to confirm that even though they'd received favorable and approved claimed savings with their aggregated task approach, they intended to move away from it and back to the individual EE measure claims approach. Why?

Scott Higa, SCE, confirmed that that was their intent. They'd decided to use the PG&E work paper approach rather than update their aggregated measure approach during 2015 prior to receiving this impact evaluation final report in 2016.

Bob Sundberg asked Scott Higa whether that 2015 decision was being reconsidered? And, what they might be doing in a claimed savings work paper approach to prepare for the new AB802 directive that energy savings was to be claimed and verified at the building electrical meter?

Scott Higa stated that it was not their intent to move away from the AB802 building meter approach. It was a change in the ex-ante work paper approach from aggregated to disaggregated energy efficiency measures. He didn't know how the results in the CPUC/ED 2013-2014 impact evaluation would impact their approach. SCE was looking for CPUC/ED guidance for how to do HVAC benchmarking from whole building meter records.

Bob Sundberg asked Scott Higa how that CPUC/ED guidance would be developed. Were the IOUs part of that process? Would industry representatives be invited to participate and/or provide input? He wondered whether reading a building meter when all packaged HVAC systems were turned off for a short duration at several intervals per year would allow for accurate benchmarking of building electrical use without HVAC systems and avoid many of the possible pitfalls of assumption and modeling.

Elsia Galawish, Galawish Consulting, reported that she understood that the CPUC/ED was having their consultants review their guidance documents. She understood that the consultant review was intended to be completed in March. She hoped it would be completed in April.

Before the group left Scott Higa's explanation regarding the SCE approach for their commercial maintenance program savings work paper, Don Langston wanted to remind everyone about the ACCA sponsored IEA Annex 36 impact of HVAC faults study just published the previous year. Performance impact was studied for a large group of unit and system single as well as multiple simultaneous faults. He thought that a maintenance savings work paper which looked only at selected faults individually would not capture the cumulative impact of improved maintenance on a whole HVAC system's operation. Lab simulations of fault conditions and the dependence on many assumptions and extensive modeling worried him. Changing the goals and moving the goal posts didn't seem to provide for a solid foundation for them to move forward on. He favored the more holistic, cumulative impact approach.



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Scott Higa explained that they had to submit new work papers each year and each time and year had to respond to the new CPUC/ED dispositions and responses to the previous year attempts. The current Energy Division approach of making IOUs base how they made energy savings claims on individual measures stitched together later didn't actually look at what the program as a whole was doing or delivering. The individual measure approach would miss pieces which contributed to total energy savings. It wouldn't adequately evaluate the impact of the program, just the selected pieces.

Elsia Galawish commented that she believed the selective individual measure approach didn't take into account the full impact of the maintenance program on total energy savings.

California Legislative Assembly Bill 802 & Senate Bill 350

No one had updates for legislative and CPUC progress regarding implementation of the two bills.

CQM Committee 2016 Goals

Postponed.

Closing Comments/Adjournment

Don Langston suggested the next meeting be scheduled for Tuesday May 10 at the usual 10:00 am PDT. Also, that IOU representatives come to the next meeting prepared to help the committee better understand how it might best be able to help the IOUs with their business plan development process.

ACTION: Don Langston asked that representatives of PG&E, SCE and SDG&E be prepared at the next meeting to inform committee members how they might best be able to assist the IOUs with their business plan development.

Tentative agenda items:

- IOU program monthly updates
- CQM User Guide Working Group update
- CQM Committee detailed goals and progress milestones
- IOU business plan development – committee/individual involvement and committee input

The meeting was formally adjourned at 11:15 am PST.

* * * * *

Summary of NEW Action Items and Key Decisions

April 2016 **ACTION:** Don Langston asked that representatives of PG&E, SCE and SDG&E be prepared at the next meeting to inform committee members how they might best be able to assist the IOUs with their business plan development.

March 2016 **ACTION:** Scott Higa committed to providing CQM program existing customer comments at a future meeting.

PAST ACTION ITEMS:

September 2015 **ACTION:** Pete Jacobs volunteered to investigate what the impacts might be for IOU claimed savings if the current CPUC/ED assumed 100% compliance with HVAC equipment installations was reduced to a much lower, possibly low double digit, % from CPUC permitting and compliance rates research. Pending. Postponed.



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