

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

**Order Instituting Rulemaking to Examine the  
Commission's Future Energy Efficiency Policies,  
Administration and Programs.**

**Rulemaking 01-08-028  
(Filed August 23, 2001)**

**WILL EXAGGERATION BE THE HIGHEST  
SCORING ATTRIBUTE?**

**COMMENTS OF SESCO, INC. ON THE PROCEDURES USED TO  
SCORE 2004-2005 ENERGY EFFICIENCY PROPOSALS**

Prepared by Richard M. Esteves

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Richard M. Esteves  
SESCO, Inc.  
415 West Foothill Boulevard, #212  
Claremont, California 91711

(909) 445-0450 (ph.)

(909) 445-0446 (fax)

sesco@optonline.net

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### **COMMENTS OF SESCO, INC. ON THE PROCEDURES USED TO SCORE 2004-2005 ENERGY EFFICIENCY PROPOSALS**

#### **Summary**

When the Commission approved the evaluation procedures to be used for the 2004-2005 energy efficiency proposals, 75% of the possible points were attributed to factors directly affected by the projected energy savings: Cost-effectiveness (40%); Long-term Annual Energy Savings (20%); and, Peak Demand Reduction (15%). (D.03-08-067, p.24)

Because of the obvious importance of fairly calculating the savings, the Commission provided specific in-put procedures to be used in calculating the energy savings. Specifically, the Net-To-Gross (NTG) ratios were set<sup>1</sup> for 23 different program types; the effective useful life (EUL) was set for 88 commonly installed measures<sup>2</sup>, and the source for specific per-unit energy savings estimates was specified<sup>3</sup> (the DEER database). In theory, all proposals would thus be using the same long term energy savings per measure; certainly no one could have an advantage by artificially exaggerating the life of their measures or the potential savings from each measure installed while others were held to a different standard.

Unfortunately this is not the case. Based upon an evaluation of nineteen proposals offering the same types of measures to the same types of customers using the same fuel in the same geographic area, 23.1% of the 117 measure lives listed were exaggerated, many by a serious amount. Of the 115 per-unit energy savings listed, 22.6% were exaggerated by 15% or more.

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<sup>1</sup> Energy Efficiency Policy Manual, Version 2, August 2003 (Policy Manual), pp. 18-19

<sup>2</sup> Ibid, pp. 16-18

<sup>3</sup> Ibid, p. 23

The tendency to exaggerate<sup>4</sup> in any one area was highly correlated with exaggerations in other areas. For example, while the average measure life was exaggerated 23% of the time, the seven “worst” proposals exaggerated on 51% of their measure lives; two exaggerated at a below average rate; and ten never exaggerated on their EULs. Similarly, while 22.6% of the savings were exaggerated by a minimum of 15% or more, the “worst” third exaggerated on their per-unit savings 69% of the time, while the best third never exaggerated on the savings.

The impact is very significant. For example, the largest exaggerations of long-term energy savings resulted in increases of 130%, 120% and 72% in claimed long term savings. The largest impacts on TRC cost-effectiveness values resulted in increases from 1.58 to 2.61 and from 3.19 to 3.68.

The details of this evaluation are on the succeeding pages. Since we do not mean to criticize individual proposals and since this is based only upon a sample of the submittals, we are not identifying the individual proposals. However, to allow the Energy Division to corroborate our findings, we are providing it with a confidential listing of the proposals included in the sample and the source of our findings.

The lesson to be learned from this study is that, before the preliminary selections of 2004-2005 Energy Efficiency programs are completed by the Energy Division, the ALJ and the Assigned Commissioner, the finalists should be checked to assure that no such exaggerations of EULs or of per-unit energy savings are used to artificially raise the claimed energy savings. If this has occurred, the Energy Division should correct for such exaggerations to assure that this exaggeration was not substantive with respect to the final selections.

Not correcting for such exaggerations relative to the lower scored alternatives may well result in not selecting the most optimal portfolio of programs and would open the process up to

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<sup>4</sup> We deliberately use the term “exaggerate” as a neutral term. It may well be that the higher value provided by some proposals is more accurate than the EUL mandated or the savings value in the DEER database. However, when evaluating programs, it is vital that all use the same “deemed” values. For example, it may well be that programmable thermostats do have a 15 year life, rather than the 11 years mandated in the Policy Manual. If so, then everyone should be using the 15 year value. To the extent that there are inaccuracies in the Policy Manual or DEER Database values used, if everyone uses the same values, then the impact on selection will be balanced out. Allowing a few to use higher deemed values provides them with an unfair and unmerited advantage that will be detrimental to selecting the best portfolio of programs.

serious subsequent challenges and valid second-guessing once the preliminary list is published and comparisons can take place.

### **Determining the Sample and Reasonable Baseline Values**

The ideal circumstance for such a study would have been to evaluate all of the proposals. However, limited resources forced SESCO to use a sample of proposals to determine what may be the extent of the problem, if any.

Rather than take a sample of the total, and leave ourselves open to questions as to why some were selected but not others, we decided to evaluate 100% of the proposals<sup>5</sup> that fit some reasonably sized category.

We elected to test all residential (both single family and multifamily) gas-savings programs in the SoCalGas service area, other than new construction. There were nineteen such proposals (including those submitted for Southern California Edison as long as they claimed gas savings in their programs). There were eight single family and four multifamily proposals and seven that covered both. Those that provided measures to both housing types were included in both categories in that savings are often differentiated between these housing types. As a result, there were sometimes a total of 26 total “proposals” being evaluated, fifteen single-family and eleven multifamily.

For purposes of the evaluation, we sampled those gas-savings measures that tended to appear in multiple proposals. The measures evaluated and the number of times each appeared in the proposals:

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<sup>5</sup> Disclosure: During the study we determined that one of SESCO’s own proposals was included and that a measure’s per-unit savings had been exaggerated. This has resulted in an exaggeration in the long term energy savings for that proposal. It has been so identified to the Commission Staff.

<b>Measures Evaluated</b>	<b>Proposed</b>
<b>Appliances</b>	<b>27</b>
Coin-Op Clothes Washer	2
ES Clothes Washer	8
ES Dishwasher	8
ES Water Heater	9
<b>Boilers</b>	<b>8</b>
Controllers	3
DHW Boiler	2
Space Htg Boiler	3
<b>HVAC</b>	<b>30</b>
Duct Sealing	15
Gas Furnace(>90%)	5
Programmable T-stat	10
<b>Shell Measures</b>	<b>22</b>
Insul. Attic	7
Insul. Wall	7
W/stripping, Infiltration	8
<b>DWH Measures</b>	<b>30</b>
EE Aerator	10
EE Showerhead	11
Insul. Pipe	4
Insul. Tank	5

The data on each proposal was taken from the proposal’s workbook posted on the CPUC website. When the data was corrected to determine the impact, the procedure used was to replace the exaggerated values in the workbook with the corrected values and to then read the correct results from that workbook.

The correct EUL was taken from the Policy Manual if the measure was listed. Any higher value was counted as an exaggeration. There were five measures evaluated that were not listed in the Policy Manual table. The procedure used to calculate the correct EUL in those cases was to average all of the proposed values. Because these were less “certain” we counted a higher EUL as an “exaggeration” only if the claimed measure life was more than 2 years greater than the average. Thus, if Infiltration has an overall average of 10.5 years, a proposal was counted as an exaggeration only if that proposal claimed an EUL in excess of 12.5 years for infiltration. The measures that were so involved are the following:

<b>Measure</b>	<b>Average EUL</b>	<b>Exaggerated EUL</b>
Infiltration	10.5	12.5
EE Aerator	10.2	12.2
EE Showerhead	11.5	13.5
Insul. Pipe	11.3	13.3
Insul. Tank	8.8	10.8

To calculate the impact of an EUL exaggeration, we input the correct EUL as it appeared in the Policy Manual or, if not listed in the Policy Manual, as the average of all the claimed EULs for that measure.

A similar procedure was used for determining exaggerations for per-unit energy savings. We took the average of per-unit energy savings as claimed for multifamily applications and the average as claimed for single-family units. Because there could be some reasonable variances in per unit savings, we allowed for an increase of 15% before we defined an “exaggeration”. Thus, for example, since the average savings for a multifamily programmable thermostat was 51.2 therms, we did not define any differing value as an “exaggeration” unless the proposal claimed its programmable thermostats would save in excess of 58.9 therms in multifamily residences.

### **Exaggerating Effective Useful Lives**

Nine of the nineteen proposals sampled (47%) had one or more exaggerations of the 17 gas savings measures evaluated. Two of the proposals had the same exaggerations in both their multifamily and single-family applications for that measure. In all, measure lives of 27 of 117 (23%) the gas savings measures sampled for single or multifamily applications were exaggerated. As can be seen from the table below, proposals that exaggerate once tend to do it again with other measures.

MEASURE	Percent Exaggerated	Allowed EUL	Exaggerated EULs, by Project Proposal (Coded)											
			D	I-MF	J-SF	M	N-MF	O-SF	P	U	V	X	Z	
Coin-op Clothes Washer	100%	10									14		14	
ES ClothesWasher	63%	10		14	14						14	14	14	
ES Dishwasher	50%	5		13	13						10	10		
ES Water Heater	0%	15												
Controllers	0%	15												
DHW Boiler	0%	20												
Space Htg Boiler	0%	20												
Duct Sealing	13%	20					25	25						
Gas Furnace(>90%)	0%	20												
Program. T-stat	50%	11	15				12	12		12				15
Insul. Attic	20%	20					25	25						
Insul. Wall	0%	20												
Infiltration	17%	10.5												15
EE Aerator	20%	10							15	15				
EE Showerhead	27%	11.5				15			15	15				
Insul. Pipe	25%	11							15					
Insul. Tank	0%	9												

Where there are exaggerations, they can be very significant. For example, programmable thermostats, a very important measure in most residential applications, had exaggerations of up to 36%. Appliances such as dishwashers and clothes washers had life exaggerations of 40%, 100% and 160%. Water savings measures had several exaggerations of 30% and 50%.

The exaggerations can have a serious impact on the final results, especially in a tight evaluation. For example, by exaggerating just two of its measures, Proposal “Z” exaggerated its lifecycle therm savings by 18% and its Net Benefits by 23%.

## **Exaggerating Per-Unit Measure Savings**

While there is a clear listing of EULs in the Policy Manual, proposers must search through the DEER database to determine the value for the correct per-unit energy savings. The instructions were unclear concerning whether or not the latest study value should be used or to what extent the values could be adjusted.

Because of this lack of full clarity, we have given a looser interpretation of “exaggerated” so that a per unit savings value could be as much as 15% above the average and not be considered as an “exaggeration.” This is a very liberal interpretation of the instructions, as a 15% swing in a competitive arena could have a very significant impact on the final portfolio selected. However, even with this liberal interpretation, a large number of proposals exceed this exaggeration threshold.

Because the per-unit savings vary significantly between single-family and multi-family units, we have separated the comparisons of measures for these two housing types.

There are 11 proposals in the sample of nineteen that propose to treat multifamily residences. Of the 57 times that one of the seventeen gas savings measures appears in these 11 proposals, the per unit savings are exaggerated (by more than 15%) 14 times, or 25% of the time. Of the 11 multifamily proposals, seven (64%) have exaggerated at least one savings value. Proposal “E” exaggerates 100% of its gas-savings measures and Proposal “Z” exaggerates 80% of its gas savings measures. The following table shows the percent of the times a particular measure is exaggerated compared to the times it was used in the proposals. It then shows the average per-unit savings to those proposals with exaggerated per unit savings.

MEASURE	Percent Exaggerated	Average Per-Unit Therms	Exaggerated Per-Unit Savings, by Multifamily Proposal (Coded)						
			B	E	G	K	N	U	Z
Coin-Op Clothes Washer	0%	29.4							
ES ClothesWasher	25%	30.8		37.5					
ES Dishwasher	25%	17.9		20.9					
ES Water Heater	25%	16.5		29.1					
Controllers	33%	1440		2280					
DHW Boiler	0%	257							
Space Htg Boiler	33%	1596					1900		
Duct Sealing	33%	34.3	73.5						48
Gas Furnace(>90%)	50%	26.4				36			
Program. T-stat	25%	44.5							69
Insul. Attic	0%	0.14							
Insul. Wall	33%	0.10				0.13			
w/s, Infiltration	50%	17.3				32.2			24
EE Aerator	20%	4.8		8.2					
EE Showerhead	20%	9.2							17
Insul. Pipe	0%	4.3							
Insul. Tank	0%	10.3							

Although there are fewer gas savings measures offered in the single-family proposals, the tendency to exaggerate per-unit savings is almost the same as among multifamily proposals. Since there are no coin-operating clothes washers, no DWH or space heating boilers and no controllers, there are only 13 gas savings measures. However, of the 58 times one of these appears, the per-unit savings are exaggerated 12 times (21% of the time). Of the fifteen single family proposals, seven (47%) exaggerated the savings on at least one gas savings measure.

Proposals “C” and “F” exaggerated 100% of their gas savings measures and Proposal “D” exaggerated the savings on 60% of its measures. The total lifecycle gas savings attributed solely to exaggerating the unit energy savings resulted in an increase of 22% in “B” and of 30% in “D”.

MEASURE	Percent Exaggerated	Allowed Per-Unit Therms	Exaggerated Per-Unit Savings, by Single Family Proposal (Coded)							
			C	D	F	L	O	P	X	
Coin-Op Clothes Washer	NA	NA								
ES ClothesWasher	25%	29.6			37.5					
ES Dishwasher	25%	17.2			20.9					
ES Water Heater	20%	18.1			29.1					
Controllers	NA	NA								
DHW Boiler	NA	NA								
Space Htg Boiler	NA	NA								
Duct Sealing	22%	52.3	147.1					130		
Gas Furnace(>90%)	33%	37.0						46		
Program. T-stat	33%	89.6							112	107
Insul. Attic	0%	0.10								
Insul. Wall	0%	0.13								
w/s, Infiltration	50%	17.6		24		32.2				
EE Aerator	20%	4.1		5						
EE Showerhead	17%	11.0		17						
Insul. Pipe	0%	5.1								
Insul. Tank	0%	12.9								

### Impact of Exaggerations

Because so many of the exaggerations occurred in proposals with other exaggerations, the impacts often had a “multiplier” effect in which one exaggeration multiplies the effect of another. For example, a 40% increase in the EUL, if combined with a 40% increase in the per-unit savings, will result in a combined increase of 96% overall.

For our sample, we selected a single “grouping” of proposals with the intent that it could demonstrate the impact on the selection process by comparing the results of those proposals with serious exaggerations to those who appear to have “played by the rules.” The following compares the impact of total savings within the group, with those at the top of the list having had the most serious savings exaggerations while those at the bottom having abided by the Commission’s guidelines in calculating savings.

<b>Proposal (Coded)<sup>6</sup></b>	<b>Actual Long Term Therm Savings</b>	<b>Exaggerated Long Term Therm Savings</b>	<b>Exaggerated L-T Savings Impact Ratio</b>
B/C	1,991,820	4,580,385	230%
I/J	3,856,000	8,470,400	220%
Z	4,799,352	8,251,190	172%
N/O	1,996,080	3,050,000	153%
G	4,584,000	6,095,200	133%
E/F	755,786	980,949	130%
D	12,104,712	14,642,280	121%
X	12,020,607	13,553,721	113%
U	13,043,198	14,401,910	110%
V	29,918,648	32,325,048	108%
M	794,032	836,752	105%
K/L	942,440	992,248	105%
P	11,488,108	11,726,069	102%
W	21,267,235	21,273,483	100%
A	9,486,720	9,486,720	100%
H	2,830,500	2,830,500	100%
Y	1,703,460	1,703,460	100%
S/T	534,000	534,000	100%
Q/R	356,339	356,339	100%

The bottom half (last nine) of the group above had essentially zero exaggerations in their savings calculations. Compare this with the top half (top ten), which increased their total gas savings by an average of 49%, and the top quartile (top five), which exaggerated their gas savings by an average of 81%.

Keep in mind that these proposals have a high likelihood of being in direct competition with each other for a restricted pot of funding. All are gas savings proposals, all serve residential markets, all serve retrofit markets, all are located in SoCalGas' service area, and all derive their gas savings from the same limited group of measures.

Long term annual energy savings itself represents 20% of the points and is directly related to two other categories controlling an additional 55% of the scoring points: cost-effectiveness (40%) and peak demand reduction (15%). Peak demand reductions are obviously related to the expected savings and the term over which the peak savings occur. Impacts on Cost-effectiveness tests (e.g., the TRC Ratio), are also very directly and closely correlated with

<sup>6</sup> A double-lettered code (e.g., "B/C") indicates that one proposal covered both single family and multifamily markets.

long term energy savings. For example, we examined the exaggeration impacts on cost-effectiveness (TRC ratios) of the following primarily gas savings proposals<sup>7</sup> in the sample:

<b>Proposal (Coded)</b>	<b>Actual TRC Ratio</b>	<b>Exaggerated TRC Ratio</b>	<b>Exaggerated TRC Impact Ratio</b>
Z	1.58	2.61	165%
D	3.19	3.68	115%
X	2.03	2.28	112%
U	2.67	2.86	107%
V	1.27	1.36	107%
W	2.08	2.08	100%
A	3.26	3.26	100%

The impact of EUL and per-unit savings exaggerations on TRC ratios can be very significant. In these gas savings proposals, the TRC changes are not only very significant (going up to an increase of 65%), but if the evaluations were extended to include both electric and gas measures, we can expect that the differences in total energy savings will correlate very closely with the impacts on all proposals' cost-effectiveness ratios. This is demonstrated both from common sense and from a comparison of the similar proposals in the above two tables:

<b>Proposal (Coded)</b>	<b>Exaggeration TRC Impact Ratio</b>	<b>Exaggeration L-T Savings Impact Ratio</b>
Z	165%	172%
D	115%	121%
X	112%	113%
U	107%	110%
V	107%	108%
W	100%	100%
A	100%	100%

Even a cursory examination shows that the impacts of exaggerations are virtually the same on long term annual savings and as on TRC Ratios.

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<sup>7</sup> Because this sample considers only gas savings, we have not adjusted for exaggerations of electric savings or for the EULs of electric savings measures. For this reason, including proposals with large amounts of unadjusted electric savings would present a distorted comparison.

## **Transferability of Findings**

This evaluation is *not* a critique of the individual proposals evaluated in our sample. For that reason, we have not identified the actual individual proposals. (Note: SESCO is providing to the CPUC staff, on a confidential basis, the listing of proposals so that the Staff can verify and corroborate the findings presented.)

Nor do we mean to criticize of those parties that have apparently “exaggerated” the values. It may well be that their values are more accurate than those mandated by the Policy Manual, or provided by the DEER database, or used by the majority of other providers. That is not the point. Since we are using “deemed” savings and measure lives to select from among proposed ideas, it is vital that all use the same values for common measures. Otherwise, evaluators will have a distorted picture of which are the best selections to comprise the portfolio of programs.

For that reason, this study does represent a call of concern that the values used by some proposers may well be giving evaluators bad information (often inadvertently) because a number of proposers have exaggerated both the measures lives (EULs) and the per-unit energy savings to make them appear higher relative to others who “played by the rules” and did not exaggerate or deviate from the proscribed values.

We believe that the findings from this sample of 19 proposals are very robust. The findings were consistent across both single family and multifamily. It was true for both IOU and non-IOU programs. It was true for both small and large proposals. Many of the proposers included have submitted numerous other proposals in other service areas, while some are unique to this area. A number of the proposers have submitted proposals outside of the residential area.

Given the large number and variety of proposers, there is no reason to believe that this pattern is unique to this type of program or proposers.

We did not systematically examine electric savings, but we expect that the same exaggeration issues confront electric savings proposals. Many of the measures are also used for electric savings. For example, programmable thermostats was the single most frequently exaggerated measure and they are used extensively for electric savings programs. The same is

true for such other measures tested as duct sealing, showerheads/aerators, infiltration reduction, and insulation.

In reviewing for gas savings measures, we noted a large number of exaggerations for electric measures that will have a significant impact on electric savings. For example, a large number of electric savings proposals rely extensively upon screw-in CFLs, but have used EULs of 9 or more years, rather than the 8 years mandated by the Policy Manual for CFLs.

Finally, the determination of peak demand savings per unit is much more problematic and less well documented than gas or electric energy savings. We expect that the portion of proposals with exaggerated values for electric peak demand savings is probably higher than what we have shown here for gas savings.

### **Conclusion and Recommendations**

In a sample of nineteen 2004-2005 Energy Efficiency Proposals which contained one or more of 17 common gas measures listed in multiple proposals, thirteen (68%) had exaggerated either measure lives or per-unit savings or both to a significant degree, such that long term annual energy savings were inflated by amounts ranging from 2% up to 130%. The “worst” half inflated their values by an average of 49% and the “worst” quartile inflated their values by an average of 81%. About 23% of all EULs and of all per-unit energy savings listed were exaggerated. In the case of the energy savings, all of these exaggerations exceeded at least 15% of the average savings values.

TRC cost-effectiveness values were also significantly impacted. Five of the seven proposals which were primarily gas-savings oriented had seriously inflated TRC ratios, with differences ranging from 7% to 65% increases in actual TRC Ratios. There is a tight overall correlation between exaggeration impact on long term annual energy savings and exaggeration impacts on TRC Ratios and on Peak Demand Savings.

These exaggerations have a substantive impact on these three categories, which make up 75% of the 2004-2005 EE program evaluation scoring. Unless corrected, these exaggerations will have a serious negative impact on the selection of the best overall portfolio of energy

savings programs, harming the selection process, ratepayers, participants and those proposers who “played by the rules” but were unfairly rejected in favor of an exaggerated score.

At the very least, the use of these exaggerated values to select the portfolio will leave the Commission open to valid follow-up appeals and other actions, perhaps delaying the final selection and implementation of the program portfolios.

We recommend the following actions be taken, to the extent they may not already have been undertaken:

1. All of the selected (or short-listed) programs be re-evaluated to determine if their submitted EULs and per-unit measure savings are accurate. If not, then correct the values and rerun the evaluation. Should a new program be selected in its place due to the reduced values, then repeat this process with the new program.
2. In accepting comments on the draft decision providing the preliminary selections, be particularly open to comments that identify specific inaccuracies in the values submitted for evaluation, such as exaggerated EULs and savings values.
3. In any future solicitation, emphasize that, when provided, only the approved EULs, NTGs, and per-unit savings can be used as “deemed” savings. If there is any dispute about these, they should be made early and apply to all proposal evaluations. And seek to provide a more inclusive listing of EULs and per unit energy savings.

We welcome any comments or suggestions concerning this study and its findings and/or the recommendations that we have made based upon those results. SESCO is prepared to work with Staff and any interested party to further review this study.

Respectfully submitted,

Richard M. Esteves  
SESCO, Inc.  
973-663-5125  
[sesco@optonline.net](mailto:sesco@optonline.net)  
November 11, 2003

## **CERTIFICATE OF SERVICE**

I hereby certify that I served the foregoing document entitled “WILL EXAGGERATION BE THE HIGHEST SCORING ATTRIBUTE? COMMENTS OF SESCO, INC. ON THE PROCEDURES USED TO SCORE 2004-2005 ENERGY EFFICIENCY PROPOSALS” by emailing this document in MS Word 6.0 format to all email addresses on the R.01-08-028 service list. A list of the email addresses is attached to the original of this filing.

Dated: November 11, 2003

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Richard M. Esteves

## R.01-08-028 Email Service List

sesco@optonline.net; ykmcree@sablaw.com; mharrigan@ase.org; darrell@iwfa.com; jimross@r-c-s-inc.com; wally.kolberg@swgas.com; bridget.branigan@swgas.com; randy.sable@swags.com; ckmittchell@powernet.net; dnorris@sppc.com; jwhargrove@sppc.com; ceaston@sempra.com; pfeffer@scag.ca.gov; reflectormike@earthlink.net; wallis@winegardenergy.com; Mcart108@earthlink.net; arago@qcsca.com; rsperberg@onsitenergy.com; kenm@powerlogic-usa.com; kkam@sdenergy.org; Robsharp1@aol.com; cornstark1@aol.com; kmckenna@ambag.org; cal.broomhead@sfgov.org; marcel@turn.org; srovetti@sfwater.org; jes@cpuc.ca.gov; joe.como@sfgov.org; ek@a-klaw.com; jlondon@gralegal.com; ecl8@pge.com; SCarter@nrdc.org; mmccormick@gralegal.com; wmcguire@mcguireco.com; jhamrin@resource-solutions.org; shallenbgr@aol.com; ted@energy-solution.com; kmcelroy@xenergy.com; donlink@jps.net; paulfenn@local.org; twombly@kw-engineering.com; mrw@mrwassoc.com; pipowerlaw@aol.com; swentworth@oaklandnet.com; gpeterson@mncee.org; mike@comfortwise.com; glynnis@starband.net; rlw@rlw.com; springer@davisenergy.com; wem@igc.org; westdakota@aol.com; asowell@scsa.ca.gov; jtchera@energy.state.ca.us; lmh@eslawfirm.com; bburt@macnexus.org; kmills@cfbf.com; mpa@a-klaw.com; dan@meeek.net; bwildman@sbwconsulting.com; tom@ucons.com; dws@keywaycorp.com; christine.holbrook@csgrp.com; d.d.gilligan@worldnet.att.net; stevef@ensave.com; reknuj@aol.com; joseph.ballantine@uinet.com; jlb@anyserda.org; shastie@navigantconsulting.com; tdavis5128@aol.com; elsharif@ghpc.org; wseyay01@attglobal.net; jdrivera@drintl.com; spillerm@gru.com; rutledgev@publicfm.com; martha.davis@appl.qe.com; julie\_a\_white@email.whirlpool.com; staples@staples-ad.com; nphall@tecmrkt.com; sstrom@mncee.org; jcameron@arcainc.com; jodyk@ncat.org; jesherman@earthlink.net; skumatz@serainc.com; william.dalton@xcelenergy.com; dfrey@archenergy.com; derek.williams@mountainmonitoring.com; dm@getwise.org; olson@ghpc.org; fspasaro@semprautilities.com; moerbeznik@attbi.com; bgroch@greentechenergy.com; nancy.arter@rrwconsulting.com; suzanne.obermire@rrwconsulting.com; AGREENFIELD@GLOBALGREEN.ORG; ab50@aol.com; susan-munves@santa-monica.org; dinalane@gte.net; operations@ossonline.com; thamilton@cheers.org; michaelgibbs@icfconsulting.com; admin@gesusa.org; case.admin@sce.com; don.arambula@sce.com; janet.combs@sce.com; ipena@ecosconsulting.com; moore@ecosconsulting.com; kswitzer@scwater.com; shiv@quixnet.net; mgorman@agclawfirm.com; willieg@ci.chula-vista.ca.us; ercaldwell@maacproject.org; jet2@cox.net; rdt222@cox.net; RHS@AESC-INC.COM; dale.foster@ttemi.com; mshames@ucan.org; carellano\_sweinc@sbcglobal.net; gsanchez@rhainc.com; jjensen@rhainc.com; jon@vpideas.com; jyamagata@semprautilities.com; cpucservice@sdenergy.org; dgordon@sandiego.gov; jcervantes@sandiego.gov; neilmiller@earthlink.net; alan@rer.com; jsynesio@us-power.com; brenda@rer.com; sthigpen@drintl.com; energyanalysis@earthlink.net; sharong@moval.org; elmoa@cityoftemecula.org; ogradyj@cityoftemecula.org; harringk@cityoftemecula.org; mark@alohasys.com; MikeW@alohasys.com; jlcrafft@earthlink.net; bob.belhumeur@corporatesystems.com; johnp@energycoalition.org; tflanigan@energycoalition.org; toca@utility-savings.com; dwylie@aswengineering.com; johnt@blueowltechnologies.com; ltwiz@msn.com; koeller@earthlink.net; abrice@rhainc.com; kristine@rhainc.com; rkeyes@attbi.com; pcanessa@csufresno.edu; lcasentini@drintl.com; vrabl@aspensys.com; dbachrach@nrdc.org; chris@emeter.com; ann.kelly@sfgov.org; difellman@fellmanlaw.com; jpeck@semprautilities.com; cpuccases@pge.com; jcl@cpuc.ca.gov; pgh@cpuc.ca.gov; rg1@cpuc.ca.gov; michael@headquartersadv.com; pedro@headquartersadv.com; iberrio@greenlining.org; lifcentral@lif.org; docket-control@gralegal.com; leoralawton@fscgroup.com; tmfry@nexant.com; luluw@newsdata.com; lmacdonald@icfconsulting.com; mtirpak@icfconsulting.com; vjensen@icfconsulting.com; jparker@icfconsulting.com; renee\_fernandez@emcorgroup.com; jimflanagan@iname.com; chrischouteau@earthlink.net; jwwd@pge.com; rsridge@attbi.com; barbara@rhainc.com; fkeneipp@pacbell.net; tnicotre@attbi.com; chris@advancedheat.com; agoel@insyncinfo.com; rknight@bki.com; bfoster@gepllc.com; gephq@gellc.com; fisherconsultants@msn.com; etlowe@aol.com; Jaybhalla@aol.com; gtraynor@tmarshall.com; msutter@alamedanet.net; sam@energy-solution.com; bmast@frontierassoc.com; jerry1@abag.ca.gov; ssherwood@xenergy.com; kcorfee@xenergy.com; fountain@dnai.com; rdeangelis@energy-law-group.com; kchurhill@accenv.com; cwootencohen@earthlink.net; pmiller@nrdc.org; rschmidt@bartlewells.com; qcworldmail@yahoo.com; drebello@qcworld.com; eparker@qcworld.com; jcavalli@qcworld.com; ned2@ci.berkeley.ca.us; ppiette@qcworld.com; craigtyler@attbi.com; elvine@lbl.gov; mwbeck@lbl.gov; rwwilson@lbl.gov; irina@ideasarecheap.com; john@proctoreng.com; philsisson1@attbi.com; sustainablefairfax@earthlink.net; jna@speakeasy.org; timrosenfeld@earthlink.net; hmoore@marincounty.net; jdquinley@aol.com; emainland@earthlink.net; eie@geopraxis.com; tconlon@geopraxis.com; adiff@aol.com;

rita@ritanortonconsulting.com; gthomas@ecoact.org; emahlon@ecoact.org; jennifer@rer.com;  
joseph.leung@gsa.co.santa-clara.ca.us; Vicki.Swank@gsa.co.santa-clara.ca.us; terryhughes@afo.net;  
kenh@mid.org; BillM@soldata.com; mattb@rlw.com; bknox@cityofdavis.org; mjberm@davisenergy.com;  
rmccann@umich.edu; reports@aees.org; blaising@braunlegal.com; dmahone@h-m-g.com; stone@h-m-g.com;  
energy@directapps.com; tcrooks@navigantconsulting.com; vfleming@navigantconsulting.com;  
dreynolds@aspensys.com; gvigneron@scsa.ca.gov; jeinhorn@rs-e.com; JLENZMEIER@CBIA.ORG;  
jcastleberry@rs-e.com; lscott@rs-e.com; maryann@cuwcc.org; pstoner@lgc.org; rachel@ceert.org;  
rnaylor@nmgovlaw.com; tara.dunn@dgs.ca.gov; fdeleon@energy.state.ca.us; martha.lake@attbi.com;  
TMichel@egia.com; dick@adm-energy.com; talereza@adm-energy.com; karen@klindh.com; jparks@smud.org;  
shall@rcip.com; rmowris@earthlink.net; pwelker@peci.org; brianh@quantecllc.com; llutz@attbi.com;  
ssirkin@ecosconsulting.com; drobison@teleport.com; john\_mclain@pgn.com; carel.dewinkel@state.or.us;  
rbordner@emi1.com; MADUNHAM17@aol.com; phil.hastings@state.me.us; brian.k.dancause@state.me.us;  
wickend@together.net; charles.bredwell@cpa.state.tx.us; nieves.lopez@puc.state.tx.us; keklund@idwr.state.id.us;  
rknecht@puc.state.nv.us; mer@cpuc.ca.gov; ppl@cpuc.ca.gov; ru4@cpuc.ca.gov; tam@cpuc.ca.gov;  
ctd@cpuc.ca.gov; dmb@cpuc.ca.gov; dsh@cpuc.ca.gov; dlw@cpuc.ca.gov; ewk@cpuc.ca.gov; cpe@cpuc.ca.gov;  
jf2@cpuc.ca.gov; kim@cpuc.ca.gov; lrm@cpuc.ca.gov; nyg@cpuc.ca.gov; ska@cpuc.ca.gov; ssr@cpuc.ca.gov;  
zap@cpuc.ca.gov; ztc@cpuc.ca.gov; mary.tucker@ci.sj.ca.us; agarcia@energy.state.ca.us; alo@cpuc.ca.gov;  
cm2@cpuc.ca.gov; dhungerf@energy.state.ca.us; dks@cpuc.ca.gov; cpacounsel@dgs.ca.gov;  
jsugar@energy.state.ca.us; mmesseng@energy.state.ca.us; njenkins@energy.state.ca.us; taryn\_smith@dca.ca.gov;  
teckman@nwppc.org; charles.m.stephens@state.or.us; sprice7@mindspring.com; marie@greenaction.org