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CONTRACTOR'S REPORT

VOLUME 3 - ANALYSIS AND IMPACT

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Analysis and Impact

This Contractor Report, prepared by Berkeley Solar Group, Enercomp, Inc., Proctor Engineering and Modera Consulting Engineers, contains the analysis of the energy impacts to California resulting from proposed changes to the Residential Building Energy Efficiency Standards. This report is intended for discussion at an Efficiency Standards Committee hearing on November 28, 2000. The hearing purpose is to obtain public comment on this report and revisions to the Title 24 Building Energy Efficiency Standards (California Code of Regulations, Title 24, Part 6).

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November 17, 2000

AB970 Residential Building Energy Efficiency Standards

Volume III

Analysis and Impact

Preface

The proposed AB970 changes for Residential Buildings are documented in three parts. Volume I summarizes the proposed changes. Volume II documents the proposed language changes to the Standards and the ACM Manual. Volume III provides the analysis and impact of the proposed changes.

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1. Summary

Volume III documents the analysis supporting the proposed changes in the Residential Standards described in Volumes I and II of this report.

A description of the economic analysis required under the Warren-Alquist act and a discussion of the three energy price forecasts used in this analysis are described in Section 2.

While changes to the Alternative Calculation Methods (ACM) Manual were limited by the time constraints of the proceeding, one significant change is the modeling of seasonal cooling system efficiencies. A discussion of the basis for the changes is described in Section 3. These changes make the seasonal energy analysis more accurate and tend to increase the importance of cooling measures in the standards.

The on peak analysis of air conditioner performance is considered in Section 4 and a discussion of the assumptions used in the energy analysis is provided in Section 5.

Sections 6 and 7 describe the proposed measures and their cost. Each measure is analyzed for a range of costs to make sure that measures selected are cost effective under different cost assumptions.

Key assumption cases for the life cycle cost (LCC) analysis are described in Section 8. Similar to using a range of costs for each measure, a range of cases for overhangs and cost savings with reduced air conditioner sizing is included to ensure that the proposed packages are cost effective under different assumptions.

The LCC cost analysis is summarized in Section 9 and the detailed LCC tables for each of the sixteen climate zones are presented in Section 10. Tables are included for each energy price forecast and each assumption case with a range of measure costs.

Appendix A contains information about the prototype building used in the analysis.

2. Economic Analysis

A. Life Cycle Cost Analysis

The Energy Commission is required by law to develop and maintain energy efficiency standards that are ". . . cost effective, when taken in their entirety, and when amortized over the economic life of the structure when compared with historic practice".[1] The economic assumptions used in previous life cycle cost analysis are documented in "Summary of Cost Effectiveness Methodology and Assumptions", Building and Appliances Efficiency Office, California Energy Commission, March 29, 1990. This general approach is used in this measure analysis report. The key points are as follows:

- If a measure reduces overall life-cycle cost, then it is considered to be cost effective.
- The change in life cycle cost between two measures is calculated as follows:

Change in Life-Cycle Cost	=	Change in Initial Cost	–	Present Value of Electricity Cost Savings	–	Present Value of Gas Cost Savings

- The present value of electricity and gas cost savings is calculated as follows:

Present Value of Energy Cost Savings	=	Energy Saved Per Year	X	Present value of the cost of energy over the life of the measure

Determining the value of future energy savings is both a technical task and a policy exercise. The following bullets summarize the basis of the estimate.

- Future energy savings are discounted to present value at the rate of 3%. The discount rate is used to devalue energy savings in the future. The 3% rate is a real rate, with no consideration of inflation and is unchanged from previous CEC life cycle cost analysis.
- Energy savings in residential buildings are considered over a period of 30 years.
- Three alternate net present value projections of future energy costs are used to show the impact of the life cycle cost of measures.

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1 Warren Alquist Act, Section 25402.

B. Statewide Average Net Present Value of Electricity and Gas

CEC Forecast

The statewide average 30-year net present value of electricity for residential buildings is $2.07 per kWh saved each year. The comparable value for natural gas is $13.27 per therm saved each year. These values are identified as “CEC Forecast” elsewhere in this report.

The electricity values were determined based on statewide average price projections provided by the CEC for the years 2000 to 2019. Price projections for the years 2020 to 2030 were calculated through a linear extrapolation of the change in price over the preceding 10 years. The projected trends in electricity and gas prices are illustrated in Figure 1 and Figure 2. The same extrapolation method was also used for gas prices between the years 2020 to 2030. Gas prices for the years 2000 to 2019 are weighted by demand and are based on information from Appendices C and H of the *Natural Gas Market Outlook 2000-2020*.

Figure 1 – Projected Statewide Average Electricity Prices

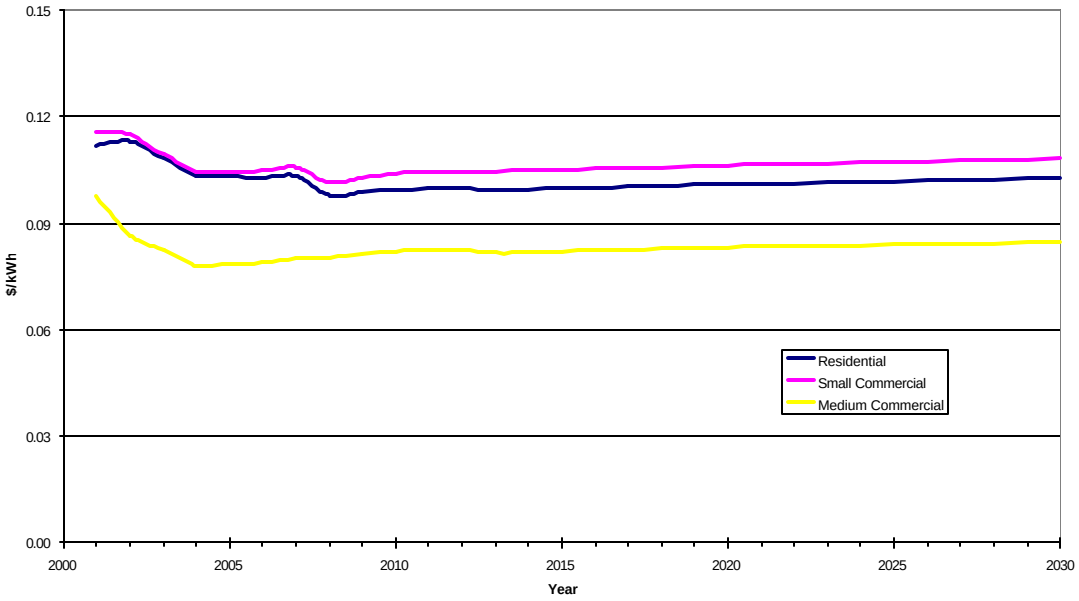
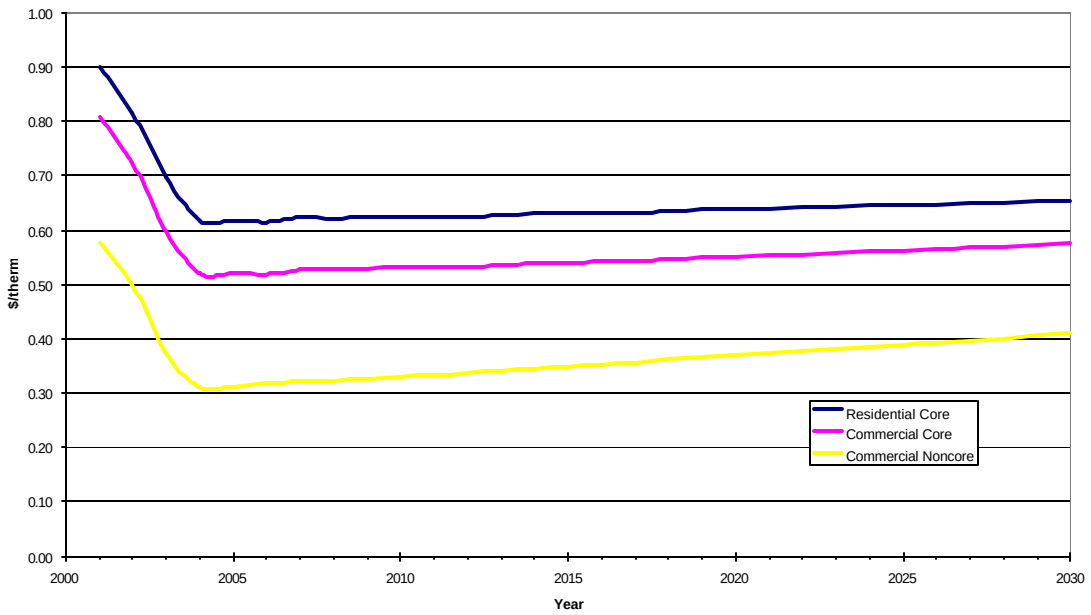


Figure 2 – Projected Statewide Average Gas Prices



C. Time Block Weighted Net Present Value of Electricity

An alternative to using the statewide average value is to use a time weighted present value. This method is based upon projected electricity prices that vary with season and time of use. The projected prices are estimated for five different time blocks; three for summer and two for winter. Table 1 defines each of the time charge periods.

Table 1 – Definition of Time Blocks

	On-Peak	Mid-Peak	Off-Peak
Summer (May 1 - October 31)	Noon to 6 pm during all non-holiday weekdays	9 AM to 6 PM during all non-holiday weekdays	9 PM to 9 AM during all non-holiday weekdays and 24 hours/day during weekends and holidays
Winter (November 1 - April 30)	Not Applicable	9 AM to 9 PM during all non-holiday weekdays	

Note: Winter on-peak was not considered here as it is rarely used by California utilities in their tariffs.

Table 2 displays the net present value of electricity in each time block as calculated by CEC staff. Two values are given.

<u>CEC Forecast by Time Block</u>

The first set is based on projections by the California Energy Commission. These values are identified as “CEC Forecast by Time Block” elsewhere in this report.

PUC ALJ Forecast

The second set, labeled “ALJ”, are based on a recent directive of the California Public Utility Commission (CPUC) as described in a ruling by the CPUC’s administrative law judge (ALJ). These values are identified as “PUC ALJ Forecast” elsewhere in this report.

Table 2 - CEC and ALJ Adjusted Statewide Average Net Present Value of Electricity

	Summer On-Peak	Summer Mid-Peak	Summer Off-Peak	Winter Mid-Peak	Winter Off-Peak
CEC	2.59	2.10	1.79	2.15	1.94
ALJ	5.31	2.44	2.13	2.40	2.12

Note: NPV calculations based on price projections provided by the CEC.

In order to use the time block values to evaluate energy saving measures, it is necessary to estimate the savings that are expected to occur during each time charge period. This is based on Micropas5 simulations of the basecase house comparing the electricity use of the proposed packages to the 1998 prescriptive packages in each climate zone. Table 3 shows the fraction of electricity saved by time period and climate zone.

Table 3 – Fraction of Electricity Savings by Period

CTZ	Summer Peak	Summer Partial	Summer Off	Winter Partial	Winter Off
1	0.01	0.00	0.18	0.15	0.66
2	0.57	0.05	0.31	0.05	0.03
3	0.60	0.02	0.12	0.06	0.20
4	0.59	0.05	0.29	0.05	0.02
5	0.27	0.05	0.29	0.12	0.28
6	0.48	0.11	0.19	0.12	0.11
7	0.53	0.09	0.26	0.06	0.06
8	0.39	0.11	0.29	0.13	0.09
9	0.43	0.12	0.23	0.15	0.07
10	0.40	0.12	0.26	0.17	0.04
11	0.52	0.13	0.32	0.02	0.01
12	0.57	0.08	0.30	0.03	0.02
13	0.45	0.18	0.30	0.04	0.02
14	0.47	0.18	0.32	0.01	0.02
15	0.33	0.21	0.39	0.05	0.02
16	0.37	0.05	0.28	0.07	0.23

The Fractional savings in each time period were used to weight the electricity values from Table 2 for each climate zone. The resulting time block weighted present values are shown in Table 4.

Table 4 - kWh PV weighted by proposed package savings in each period

CTZ	CEC Forecast	PUC ALJ
1	1.95	2.21
2	2.28	3.99
3	2.33	4.09
4	2.30	4.05
5	2.10	3.04
6	2.27	3.74
7	2.27	3.88
8	2.20	3.45
9	2.23	3.58
10	2.22	3.52
11	2.25	3.84
12	2.28	4.00
13	2.23	3.66
14	2.23	3.70
15	2.14	3.26
16	2.16	3.37

3. Modeling Seasonal Heating and Cooling Efficiency

A. Distribution Efficiency

Houses were assumed to have ducts in the attic and the standard distribution efficiency factors from the 1998 ACM manual were used to calculate the impact of the duct measures on the seasonal heating and cooling efficiency.

The energy savings calculated using this approach are conservative for several reasons. First, the duct leakage savings (22% of fan flow for unsealed ducts and 8% of fan flow for sealed ducts) are less than must be achieved in the field where the 1998 Standards require sealed ducts to demonstrate less than 6% leakage. This reduces the estimated savings from sealing by 12.5%. Second, in a number of climate zones the energy savings are somewhat low due to the algorithms used to obtain the ACM seasonal values for duct-zone temperatures from design condition values. The current version of ASHRAE Standard 152P uses on-time weighted weather data rather than a simple fixed subtraction from design conditions.

B. Radiant Barrier

A radiant barrier reduces the heat gain to the attic and improves the efficiency of attic ducts and air handlers. This effect is accounted for in the 1998 duct efficiency calculations, but at the magnitude of the savings may be underestimated. Due to the constraints in the AB970 process there was insufficient time to re-evaluate the ACM manual radiant barrier calculations and no changes are proposed in this algorithm at this time. The radiant barrier life cycle cost was calculated using the distribution factors from the 1998 ACM manual.

C. Heating Equipment

Heating energy consumption was modeled using the 1998 ACM manual specification with no changes.

D. Cooling Source Seasonal Energy Efficiency Ratios (SSEER)

Because AB970 is focused on peak electric energy consumption the LCC analysis used improved algorithms to better represent actual energy use and savings during peak periods. These algorithms include the effects of outdoor temperature in each Climate Zone, the effect of incorrect air flow, refrigerant flow and fan wattage, and the effect of a Thermostatic Expansion Valve (TXV),

Temperature Adjusted SEER

The SEER rating of cooling equipment is a rating of the efficiency at 82 °F outdoor temperature. However, as shown in Table 5, in many California climates a large fraction of the cooling energy consumption occurs at higher temperatures.

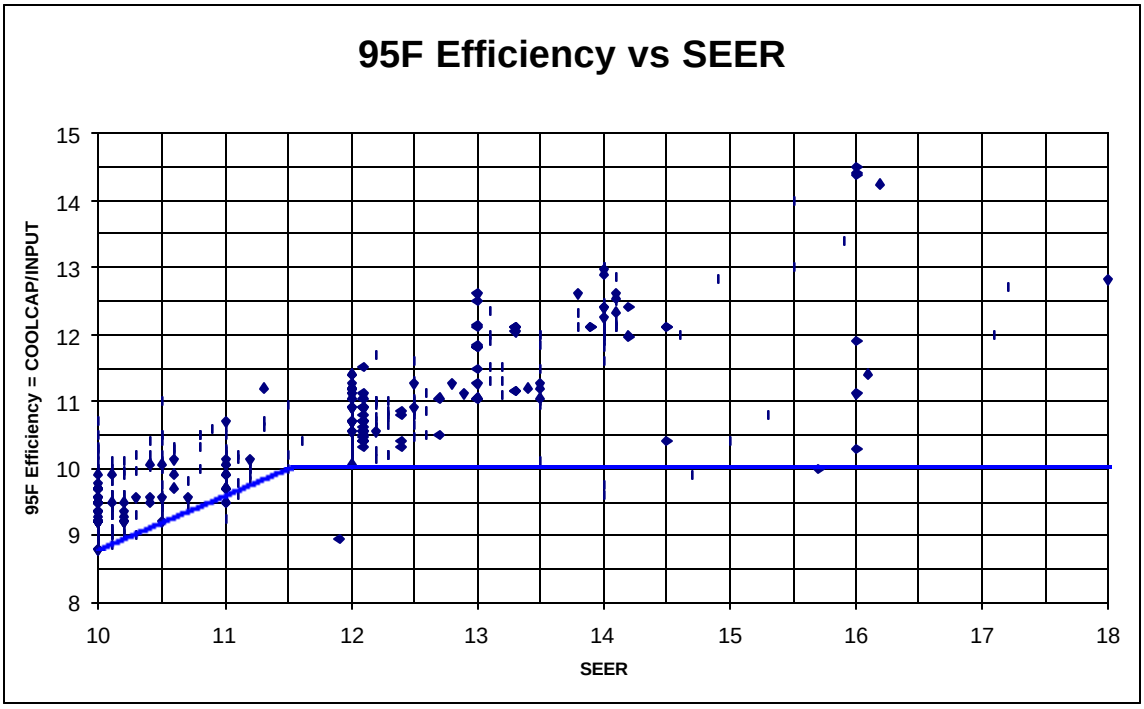
Table 5 - Fraction of Cooling Load versus Outdoor Temperature

Temp CTZ	Above 75	Above 80	Above 85	Above 90	Above 95
1	0.25				
2	0.99	0.89	0.70	0.39	0.13
3	0.92	0.46	0.18	0.01	
4	1.00	0.63	0.25	0.09	0.04
5	0.84	0.34	0.07	0.04	
6	0.80	0.20	0.02		
7	0.84	0.32	0.09	0.00	
8	0.98	0.74	0.46	0.17	0.02
9	0.99	0.86	0.60	0.33	0.10
10	1.00	0.92	0.76	0.51	0.19
11	1.00	0.96	0.84	0.58	0.26
12	1.00	0.92	0.75	0.52	0.24
13	1.00	0.96	0.85	0.61	0.32
14	1.00	0.96	0.86	0.66	0.35
15	1.00	0.98	0.91	0.77	0.59
16	0.90	0.68	0.38	0.10	0.00

Figure 3 shows the SEER and efficiency at 95 °F outdoors for all of the split system residential size air conditioners listed in the CEC database. The line

represents a conservative estimate of the on peak efficiency at 95 °F or above of a cooling unit of any SEER rating.

Figure 3 – SEER and Efficiency at 95 °F



The efficiency at any hour can be estimated from Figure 3 using the following algorithm:

- At 82 °F or below efficiency equals SEER
- At 95 °F or above efficiency as shown by the line
- Between 82 and 95 °F, interpolate between 1 and 2.

Using this approach and the proposed packages installed in the prototype house in each climate zone the annual electricity consumption for cooling was calculated for the range of SEERs in the database. The temperature adjusted SEER was calculated for each climate zone by dividing the total load by the electricity consumption. Table 6 shows the resulting efficiencies that were used for the LCC analysis.

Table 6 - Temperature adjusted SEER by Climate Zone

CZ	SEER 10	SEER 11	SEER 12	SEER 13	SEER 14	SEER 15	SEER 16	SEER 17	SEER 18
1	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
2	9.71	10.57	11.52	12.25	12.96	13.65	14.34	15.00	15.66
3	9.75	10.63	11.59	12.37	13.13	13.89	14.63	15.36	16.08
4	9.75	10.63	11.59	12.37	13.13	13.89	14.63	15.36	16.08
5	9.91	10.87	11.86	12.78	13.70	14.61	15.53	16.44	17.34
6	9.98	10.96	11.96	12.94	13.92	14.90	15.88	16.85	17.83
7	9.93	10.90	11.89	12.83	13.77	14.71	15.65	16.58	17.52
8	9.62	10.44	11.38	12.05	12.70	13.34	13.97	14.60	15.21
9	9.41	10.14	11.04	11.53	12.00	12.45	12.89	13.31	13.72
10	9.23	9.88	10.76	11.11	11.44	11.76	12.07	12.36	12.64
11	9.16	9.78	10.64	10.94	11.22	11.48	11.74	11.99	12.22
12	9.22	9.87	10.74	11.08	11.41	11.72	12.01	12.29	12.56
13	9.11	9.72	10.57	10.83	11.08	11.31	11.53	11.74	11.95
14	8.85	9.35	10.16	10.24	10.31	10.38	10.45	10.51	10.58
15	8.87	9.36	10.18	10.26	10.34	10.41	10.48	10.54	10.61
16	9.70	10.56	11.51	12.24	12.97	13.68	14.39	15.09	15.79

Installation Adjustment Factor

The seasonal efficiency of air conditioners is multiplied by 0.852 to adjust for typical field installation to account for the effects of incorrect charge and increased fan wattage. Large California field studies by John Proctor and others have shown that new air conditioners installed in the field perform with a lower than rated efficiency. SEER tests are (quite naturally) run on units with proper refrigerant charge and proper air flow across the inside coil. These conditions are not duplicated in most of the installations in California or elsewhere across the United States. Also SEER tests are usually run without an indoor fan and default values are used for fan heat and fan watt draw. These default values are significantly lower than the actual fan draws measured in installed systems.

The factor for the effect of incorrect air flow (7.5% reduction in cooling efficiency) is already included in the 1998 ACM manual duct efficiency calculations so no additional adjustment is proposed here.

The average effect of incorrect refrigerant and air handler fan wattage is included as a 14.8% reduction in seasonal efficiency. This is based on field measurements which show that average fan wattage is 0.51 w/cfm rather than the 0.365 w/cfm assumed in the test.

Thermostatic Expansion Valve (TXV)

A TXV improves seasonal air conditioner efficiency by an amount that depends on whether the unit is installed with correct air flow and refrigerant charge. Average refrigerant charge is assumed. With average air flow the

TXV increases cooling efficiency 11%. If correct air flow has been provided by the builder and verified according to the procedures in the ACM manual, the TXV increases the cooling efficiency 7%.

4. On Peak Air Conditioner Performance

A. Distribution Efficiency

On peak or design condition losses from attic ducts are larger than the average losses appropriate for seasonal calculations. ASHRAE Standard 152P, which is the technical basis for the ACM manual seasonal distribution efficiencies, includes a parallel procedure for calculating design values for use in equipment sizing. This procedure with the design conditions for each climate zone was used to calculate design efficiencies for each climate zone. These factors were then used in calculating the impact of proposed measures on the air conditioner size and peak electrical demand for the prototype house. Table 7- Distribution Efficiencies by Climate Zone shows the design distribution efficiencies by climate zone

B. Radiant Barrier

A radiant barrier also has a larger impact on distribution efficiency during peak conditions than during average seasonal conditions. This effect is included in the ASHRAE 152P design calculation.

Table 7 shows the design distribution efficiencies by climate zone calculated with the 152P procedure with and without duct sealing and radiant barriers.

Table 7- Distribution Efficiencies by Climate Zone

Ducts	Unsealed		Sealed	
Radiant Barrier	No	Yes	No	Yes
01	0.61	0.73	0.64	0.75
02	0.45	0.61	0.55	0.68
03	0.49	0.64	0.57	0.69
04	0.50	0.65	0.58	0.70
05	0.53	0.67	0.59	0.71
06	0.49	0.64	0.57	0.69
07	0.53	0.67	0.59	0.71
08	0.49	0.64	0.57	0.69
09	0.45	0.61	0.55	0.68
10	0.43	0.59	0.54	0.67
11	0.41	0.58	0.52	0.66
12	0.43	0.59	0.54	0.67
13	0.42	0.59	0.53	0.66
14	0.38	0.56	0.51	0.65
15	0.36	0.55	0.50	0.64
16	0.52	0.64	0.54	0.66

C. Proper Air Flow

Manual J duct design providing proper air flow is assumed to increase the peak efficiency of the air conditioner 8.1%. This is based on the seasonal factor in Appendix J of the 1998 ACM manual.

5. Energy Analysis

As part of the LCC analysis and impact analysis, a dataset of computer performance runs were created using a version of the Commission approved Micropas5 program using full year weather data. Key features of this analysis are described in this section.

A. Basecase Building

The basecase building used for this analysis is the 1761 ft^2 two story slab-on-grade home used with ducts in the attic as the basis for the standards since 1992. As part of this analysis, the building is modified in each climate zone to meet Package D requirements. For example, in climate zone 13, the basecase building has 16% window area with R-19 walls and R-38 ceiling insulation. In climate zone 7, the building is modified to have 20% window area with R-13 walls and R-30 ceiling insulation. A drawing of the basecase building and a sample printout is provided in Appendix A.

B. Modeling Assumptions

Fenestration, radiant barriers, sealed ducts and duct design are modeled in accordance with the requirements of the 1998 standards and ACM Manual. Thermostatic expansion valves and adjustments to air conditioner equipment performance are modeled using the new equations added to the ACM Manual. The proposed equations are described in Section 3 and Section 3.8.3 of Volume II.

C. Overhangs

Runs are included with and without fenestration shading due to overhangs. The assumption with overhangs is a 2-foot overhang extension with 4-foot tall fenestration products. The presence of an overhang reduces the cooling loads and reduces the cost effectiveness of cooling measures, especially the low solar gain low emissivity glass.

D. Load Calculations

All runs include load calculations based on the ASHRAE sizing methodology included in the Micropas program. The sizing location was selected to match the representative city for each climate zone. Many of the

measures proposed reduce the design cooling load which may result in smaller installed cooling systems.

6. Description of Measures

A. Fenestration

A range of dual glazed fenestration products are included in the analysis based on current building practice and product availability. Products are specified in terms of their NFRC U-value and solar heat gain coefficients (SHGC). The performance values specified were chosen so that the majority of product at a given performance level will be able to meet the specification. Table 8 shows the fenestration products analyzed.

Table 8 - Fenestration Products

Frame	Glass	U-value	SHGC
Metal 1998 Standards	Clear	0.60 0.65 0.75	0.70 0.70 0.70
Metal 1998 Standards	Low solar gain low E	0.65 0.65 0.75	0.40 E/W 0.40 S/E/W 0.40 E/W
Metal	Low solar gain low E	0.65	0.40
Non-metal	Clear	0.55	0.65
Non-metal	Low solar gain low E	0.40	0.35
Non-metal	Low solar gain low E	0.40	0.30
Non-metal	High solar gain low E	0.45	0.60

The fenestration product performance is complicated because the 1998 standards reference a variety of U-values and SHGC values based on climate zone and orientation. Each of these products was modeled to allow comparisons between the 1998 and proposed standards.

The new proposed values for metal and non-metal frames with low solar gain glass were reviewed and revised based on the comments of the Western Region of the American Architectural Manufacturers Association.

For the proposed package D, climates with significant cooling are based on a metal frame product with low solar gain low emissivity glass. In climates without significant cooling, zones 1, 3, 5, 6 and 16, the performance levels required in the 1998 standards remain unchanged.

For the package D alternative, climates with significant cooling are based on a non-metal (vinyl, wood and other low conductance materials) framed product with low solar gain low emissivity glass. In two extreme cooling climates, zones 14 and 15, a lower SHGC is specified.

B. Other Measures

The other measures, radiant barriers, sealed ducts, duct design and TXVs, have only one performance level as described in the ACM Manual. Typical inputs for the measures are “Yes” or “No.”

7. Cost of Measures

In order to investigate the sensitivity of the LCC analysis to the first cost assumptions each measure is analyzed for a range of costs as shown in Table 9. Costs were developed from a variety of industry sources and are representative of costs to home buyers. The threshold column is the cost that was assumed to represent the average cost and was used to determine if a feature should be included in the proposed package D.

Table 9 - Cost of Measures

Measure	Metric	Range	Threshold
LSLE	Per ft^2	$1.00, $1.50, $2.00, $2.50, $3.00	$1.50
Non-metal Frames	Per ft^2	$1.00, $1.50, $2.00, $3.00	$1.50
Radiant Barriers	Per ft^2 of roof x 1.2 to account for roof slope	$0.10, $0.15 and $0.20	$0.15
Sealed Ducts	Per dwelling	$200, $250, $300	$250
Duct Design	Per dwelling	$50, $250, $500	N/a
TXV	Per dwelling	$75, $150, $225	$150
Combo HVAC	Per dwelling	$250, $300, $400, $500	N/a

The cost of duct sealing is based upon data obtained from a variety of sources. The three cost increase components were 1) extra time and materials for sealing, 2) subcontractor costs for testing, and 3) costs for third party testing. The costs for time and materials were estimated to be between $100 and $150. The cost of testing was estimated at $50, and the cost of third-party testing was estimated at $27 to $35 per sealed house for production builders. Adding these all together yields a total cost range of $177 to $235.

The costs for sealing and testing by the HVAC subcontractors in new construction are based upon interviews with Rob Hammon of Consol, Frank Galvery of the Southern California Gas Company (SCG), and Rick Wiesner of the Sacramento Municipal Utility District (SMUD), as well as the experience of Aeroseal with training new-construction contractors in San Diego.

8. Life Cycle Cost Assumptions

The Life Cycle Cost (LCC) of each measure is analyzed with three different life cycle cost cases for each of the three different energy cost scenarios described in Section 2. The three LCC approaches include variations on context variables which are not requirements in the prescriptive packages, but which significantly affect the calculated LCC of measures. The three cases are:

A. Case A – With Overhangs/With Air Conditioner Size Reductions

The first table on each page assumes that houses built to the proposed standards will have 2 foot roof overhangs in addition to the prescriptive glazing solar heat gain coefficients called for in the packages. The overhang reduces the energy and demand savings calculated for the package measures (particularly the glazing SHGC) because it provides shading. This is an extremely conservative approach since more than 80% of houses have historically used the performance approach which allows the builder to take credit for energy effect of an overhang. The energy analysis for this case likely under predicts the savings of cooling measures as few buildings have the level of overhang shading specified.

In addition, a credit of $400/ton is taken against the first cost of measures that reduce the peak cooling load. This credit is central to accurately analyzing the benefits of demand reduction in new houses because it demonstrates that in many cases demand reducing measures have very low real net first costs to the home buyer.

B. Case B – With Overhangs/Without Air Conditioner Size Reductions

This case explores the effect of not including air conditioner first cost in the analysis.

C. Case C – Without Overhangs/With Air Conditioner Size Reductions

This case uses the performance compliance rules in which buildings are assumed to have no overhangs except as included by the builder as measures in the proposed house. Not including overhangs significantly increases the LCC effectiveness of all cooling measures and has been used in the development of the 1992 and earlier standards to demonstrate cost effectiveness.

9. Summary of Life Cycle Cost Tables

The proposed package measures are consistently life cycle cost effective under any of the energy price forecasts with any of the LCC assumptions with the range of measure costs analyzed. In particular, every measure proposed is cost

effective at the assumed threshold price if either the PUC energy price forecast or the Case C (no overhang) analysis is used together or in combination with any of the other assumptions. One measure in Climate Zone 4 was slightly not cost effective using the Case A approach and CEC price forecast.

A summary of the LCC tables is shown in Table 10. A “Yes” in Table 10 means that the package was cost effective with the specified assumptions. A “No” means that the package was not cost effective with the specified assumptions.

Table 10 - Summary of LCC Tables

	Overhang/AC Sizing Reduction			No AC Sizing Reduction			No Overhang		
CZ	PUC	CECBlock	CEC	PUC	CECBlock	CEC	PUC	CECBlock	CEC
1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

10. Life Cycle Cost Tables

A. How to interpret LCC Tables

As described in previous sections, LCC tables are provided for the three energy price forecasts for each of the sixteen climate zones. Within each climate zone three tables are provided for the different LCC assumptions cases about overhangs and air conditioner equipment sizing.

The top table on each page assumes that overhangs are used and includes the cost savings associated with smaller sized air conditioning equipment (Case A). The middle table assumes that overhangs are used, but that there are no cost savings associated with smaller sized air conditioners (Case B). The bottom table does not include overhangs, but does include the cost savings of smaller sized air conditioners (Case C).

Each table shows the measures at a variety of costs sorted in order of relative LCC. The proposed package LCC is the basis of comparison (0 relative LCC) for all of the other cases. To test the LCC of measures they

are each removed or added one at a time. Items are proven individually cost effective in the package if the LCC increases when they are removed. Such items end up below the package in the sorted list. Items would be cost effective to add if the case that includes them has a lower LCC. Such items end up above the package in the sorted list.

The proposed package is cost effective compared to the 1998 Standards if the 1998 Standards case appears below the proposed package on the list. The relative measure first cost, cooling equipment size first cost, present value of heating and cooling energy and total LCC are shown for each case along with it's source energy consumption.

B. Abbreviations used in LCC Tables

The following codes and abbreviations are used in the LCC Tables to describe the measured modeled.

Proposed Standards

There is one line in each table in bold that has "Package" included in the description. This line represents the proposed package for the climate zone. There are four different packages depending on the type of climate:

"Package 1 Ducts, LSLE, TXV, RB"
"Package 2 Ducts, LSLE, RB"
"Package 3 Tight Ducts, LSLE"
"Package 4 Tight Ducts"

The abbreviations following the package number are described below.

1998 Standards

"98 Standards" is included in the description for runs based on the 1998 Package D requirements. These packages vary by climate zone and include the proposed air conditioning equipment installation adjustment so direct comparisons can be made to proposed packages.

Fenestration

"LSLE" is included in the description if low solar low emissivity glass is modeled. "Non-metal Frames" is included in the description if non-metal frames are modeled. Actual runs are based on NFRC product performance values shown in Table 1.

Radiant Barriers

“RB” or “Rad Bar” is included in description if a radiant barrier is modeled.

Sealed Ducts

“Ducts” or “Duct Sealing” or “Tight Ducts” is included in description if sealed ducts are modeled. This feature is subject to field verification by a HERS certified rater.

Duct Design

“Duct Design” is included in description if ducts designed in accordance with ACCA Manual D are modeled. This feature is subject to field verification by a HERS certified rater.

Thermostatic Expansion Valves

“TXV” is included in description if a TXV is included in the modeling. This feature is subject to field verification by a HERS certified rater.

Sealed Ducts and TXV

“Combo HVAC” is included in description if sealed ducts and a TXV are modeled. These features are subject to field verification by a HERS certified rater. They were analyzed combined together because it is likely that the field verification costs are shared if both features are included.

C. LCC Tables for PUC ALJ Forecast

Climate Zone 01 PUC ALJ

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	33.2	19.0	0.0
Add Duct Design @ $50	50	-40	0	0	10	33.2	19.0	0.0
Add Non-metal Frames @ $1/ft2	282	-18	-241	0	23	32.1	18.0	0.0
Add TXV @ $75	75	-29	0	0	46	33.2	19.0	0.0
Add Rad Bar @ $0.10/ft1	151	-58	-28	0	65	33.0	18.9	0.0
Add TXV @ $150	150	-29	0	0	121	33.2	19.0	0.0
Add Rad Bar @ $0.15/ft2	227	-58	-28	0	141	33.0	18.9	0.0
Add Non-metal Frames @ $1.5/ft2	423	-18	-241	0	164	32.1	18.0	0.0
Add TXV @ $225	225	-29	0	0	196	33.2	19.0	0.0
Add Duct Design @ $250	250	-40	0	0	210	33.2	19.0	0.0
Remove Duct Seal @ $300	-300	105	418	4	227	34.9	20.8	0.0
98 Standards	-300	105	418	4	227	34.9	20.8	0.0
Remove Duct Seal @ $250	-250	105	418	4	277	34.9	20.8	0.0
Add Non-metal Frames @ $2/ft2	564	-18	-241	0	305	32.1	18.0	0.0
Remove Duct Seal @ $200	-200	105	418	4	327	34.9	20.8	0.0
Add Duct Design @ $500	500	-40	0	0	460	33.2	19.0	0.0
Add Non-metal Frames @ $3/ft2	846	-18	-241	0	587	32.1	18.0	0.0
Add LSLE @ $1/ft2	282	-148	1033	0	1166	37.6	23.4	0.0
Add LSLE @ $1.5/ft2	423	-148	1033	0	1307	37.6	23.4	0.0
Add LSLE @ $2/ft2	564	-148	1033	0	1448	37.6	23.4	0.0
Add LSLE @ $2.5/ft2	705	-148	1033	0	1589	37.6	23.4	0.0
Add LSLE @ $3/ft2	846	-148	1033	0	1730	37.6	23.4	0.0

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	33.2	19.0	0.0
Add Non-metal Frames @ $1/ft2	282	0	-241	0	41	32.1	18.0	0.0
Add Duct Design @ $50	50	0	0	0	50	33.2	19.0	0.0
Add TXV @ $75	75	0	0	0	75	33.2	19.0	0.0
Remove Duct Seal @ $300	-300	0	418	4	122	34.9	20.8	0.0
98 Standards	-300	0	418	4	122	34.9	20.8	0.0
Add Rad Bar @ $0.10/ft1	151	0	-28	0	123	33.0	18.9	0.0
Add TXV @ $150	150	0	0	0	150	33.2	19.0	0.0
Remove Duct Seal @ $250	-250	0	418	4	172	34.9	20.8	0.0
Add Non-metal Frames @ $1.5/ft2	423	0	-241	0	182	32.1	18.0	0.0
Add Rad Bar @ $0.15/ft2	227	0	-28	0	199	33.0	18.9	0.0
Remove Duct Seal @ $200	-200	0	418	4	222	34.9	20.8	0.0
Add TXV @ $225	225	0	0	0	225	33.2	19.0	0.0
Add Duct Design @ $250	250	0	0	0	250	33.2	19.0	0.0
Add Non-metal Frames @ $2/ft2	564	0	-241	0	323	32.1	18.0	0.0
Add Duct Design @ $500	500	0	0	0	500	33.2	19.0	0.0
Add Non-metal Frames @ $3/ft2	846	0	-241	0	605	32.1	18.0	0.0
Add LSLE @ $1/ft2	282	0	1033	0	1315	37.6	23.4	0.0
Add LSLE @ $1.5/ft2	423	0	1033	0	1456	37.6	23.4	0.0
Add LSLE @ $2/ft2	564	0	1033	0	1597	37.6	23.4	0.0
Add LSLE @ $2.5/ft2	705	0	1033	0	1738	37.6	23.4	0.0
Add LSLE @ $3/ft2	846	0	1033	0	1879	37.6	23.4	0.0

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	32.1	18.0	0.0
Add Duct Design @ $50	50	-49	0	0	1	32.1	18.0	0.0
Add Non-metal Frames @ $1/ft2	282	-24	-231	-4	23	31.1	17.0	0.0
Add TXV @ $75	75	-35	0	-1	39	32.1	18.0	0.0
Add Rad Bar @ $0.10/ft1	151	-61	-30	0	60	32.0	17.8	0.0
Add TXV @ $150	150	-35	0	-1	114	32.1	18.0	0.0
Add Rad Bar @ $0.15/ft2	227	-61	-30	0	135	32.0	17.8	0.0
Add Non-metal Frames @ $1.5/ft2	423	-24	-231	-4	164	31.1	17.0	0.0
Add TXV @ $225	225	-35	0	-1	189	32.1	18.0	0.0
Add Duct Design @ $250	250	-49	0	0	201	32.1	18.0	0.0
Remove Duct Seal @ $300	-300	129	393	0	222	33.8	19.6	0.0
98 Standards	-300	129	393	0	222	33.8	19.6	0.0
Remove Duct Seal @ $250	-250	129	393	0	272	33.8	19.6	0.0
Add Non-metal Frames @ $2/ft2	564	-24	-231	-4	305	31.1	17.0	0.0
Remove Duct Seal @ $200	-200	129	393	0	322	33.8	19.6	0.0
Add Duct Design @ $500	500	-49	0	0	451	32.1	18.0	0.0
Add Non-metal Frames @ $3/ft2	846	-24	-231	-4	587	31.1	17.0	0.0
Add LSLE @ $1/ft2	282	-199	1077	-11	1150	36.7	22.6	0.0
Add LSLE @ $1.5/ft2	423	-199	1077	-11	1291	36.7	22.6	0.0
Add LSLE @ $2/ft2	564	-199	1077	-11	1432	36.7	22.6	0.0
Add LSLE @ $2.5/ft2	705	-199	1077	-11	1573	36.7	22.6	0.0
Add LSLE @ $3/ft2	846	-199	1077	-11	1714	36.7	22.6	0.0

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Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-85	-706	-301	-810	34.9	18.1	2.6
Add Non-metal Frames @ $1.5/ft2	423	-85	-706	-301	-669	34.9	18.1	2.6
Add Non-metal Frames @ $2/ft2	564	-85	-706	-301	-528	34.9	18.1	2.6
Add Non-metal Frames @ $3/ft2	846	-85	-706	-301	-246	34.9	18.1	2.6
Add Duct Design @ $50	50	-37	0	-80	-68	38.3	21.2	3.0
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.4	21.2	3.1
Remove TXV @ $225	-225	40	0	232	46	38.7	21.2	3.4
Remove TXV @ $150	-150	40	0	232	121	38.7	21.2	3.4
Add Duct Design @ $250	250	-37	0	-80	132	38.3	21.2	3.0
Remove TXV @ $75	-75	40	0	232	196	38.7	21.2	3.4
Remove Rad Bar @ $0.15/ft2	-227	144	35	278	229	38.9	21.3	3.5
Remove Rad Bar @ $0.10/ft2	-151	144	35	278	305	38.9	21.3	3.5
Add Duct Design @ $500	500	-37	0	-80	382	38.3	21.2	3.0
Remove LSLE @ 3$/ft2	-846	174	-337	1423	415	39.0	19.7	5.1
Remove Duct Sealing @ $300	-300	164	491	195	550	40.8	23.3	3.4
Remove LSLE @ $2.5/ft2	-705	174	-337	1423	556	39.0	19.7	5.1
Remove Duct Sealing @ $250	-250	164	491	195	600	40.8	23.3	3.4
Remove Duct Seaing @ $200	-200	164	491	195	650	40.8	23.3	3.4
Remove Combo HVAC@500	-500	213	491	448	652	41.1	23.3	3.7
Remove LSLE @ $2/ft2	-564	174	-337	1423	697	39.0	19.7	5.1
Remove Combo HVAC@400	-400	213	491	448	752	41.1	23.3	3.7
Remove LSLE @ 1.5$/ft2	-423	174	-337	1423	838	39.0	19.7	5.1
Remove Combo HVAC@300	-300	213	491	448	852	41.1	23.3	3.7
Remove Combo HVAC@250	-250	213	491	448	902	41.1	23.3	3.7
Remove LSLE @ $1/ft2	-282	174	-337	1423	979	39.0	19.7	5.1
98 Standards	-1100	747	-168	2605	2084	41.4	20.4	6.9

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-706	-301	-725	34.9	18.1	2.6
Add Non-metal Frames @ $1.5/ft2	423	0	-706	-301	-584	34.9	18.1	2.6
Add Non-metal Frames @ $2/ft2	564	0	-706	-301	-443	34.9	18.1	2.6
Add Non-metal Frames @ $3/ft2	846	0	-706	-301	-161	34.9	18.1	2.6
Add Duct Design @ $50	50	0	0	-80	-30	38.3	21.2	3.0
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.4	21.2	3.1
Remove TXV @ $225	-225	0	0	232	7	38.7	21.2	3.4
Remove TXV @ $150	-150	0	0	232	82	38.7	21.2	3.4
Remove Rad Bar @ $0.15/ft2	-227	0	35	278	86	38.9	21.3	3.5
Remove TXV @ $75	-75	0	0	232	157	38.7	21.2	3.4
Remove Rad Bar @ $0.10/ft2	-151	0	35	278	161	38.9	21.3	3.5
Add Duct Design @ $250	250	0	0	-80	170	38.3	21.2	3.0
Remove LSLE @ 3$/ft2	-846	0	-337	1423	241	39.0	19.7	5.1
Remove LSLE @ $2.5/ft2	-705	0	-337	1423	382	39.0	19.7	5.1
Remove Duct Sealing @ $300	-300	0	491	195	386	40.8	23.3	3.4
Add Duct Design @ $500	500	0	0	-80	420	38.3	21.2	3.0
Remove Duct Sealing @ $250	-250	0	491	195	436	40.8	23.3	3.4
Remove Combo HVAC@500	-500	0	491	448	439	41.1	23.3	3.7
Remove Duct Seaing @ $200	-200	0	491	195	486	40.8	23.3	3.4
Remove LSLE @ $2/ft2	-564	0	-337	1423	523	39.0	19.7	5.1
Remove Combo HVAC@400	-400	0	491	448	539	41.1	23.3	3.7
Remove Combo HVAC@300	-300	0	491	448	639	41.1	23.3	3.7
Remove LSLE @ 1.5$/ft2	-423	0	-337	1423	664	39.0	19.7	5.1
Remove Combo HVAC@250	-250	0	491	448	689	41.1	23.3	3.7
Remove LSLE @ $1/ft2	-282	0	-337	1423	805	39.0	19.7	5.1
98 Standards	-1100	0	-168	2605	1336	41.4	20.4	6.9

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-94	-689	-407	-909	35.2	17.7	3.4
Add Non-metal Frames @ $1.5/ft2	423	-94	-689	-407	-768	35.2	17.7	3.4
Add Non-metal Frames @ $2/ft2	564	-94	-689	-407	-627	35.2	17.7	3.4
Add Non-metal Frames @ $3/ft2	846	-94	-689	-407	-345	35.2	17.7	3.4
Add Duct Design @ $50	50	-41	0	-111	-102	38.6	20.6	3.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.8	20.6	4.0
Add Duct Design @ $250	250	-41	0	-111	98	38.6	20.6	3.9
Remove TXV @ $225	-225	44	0	304	123	39.2	20.6	4.5
Remove TXV @ $150	-150	44	0	304	198	39.2	20.6	4.5
Remove TXV @ $75	-75	44	0	304	273	39.2	20.6	4.5
Remove Rad Bar @ $0.15/ft2	-227	152	37	319	281	39.4	20.8	4.5
Add Duct Design @ $500	500	-41	0	-111	348	38.6	20.6	3.9
Remove Rad Bar @ $0.10/ft2	-151	152	37	319	357	39.4	20.8	4.5
Remove Duct Sealing @ $300	-300	181	481	254	616	41.2	22.7	4.4
Remove Duct Sealing @ $250	-250	181	481	254	666	41.2	22.7	4.4
Remove Duct Seaing @ $200	-200	181	481	254	716	41.2	22.7	4.4
Remove Combo HVAC@500	-500	235	481	586	802	41.7	22.7	4.9
Remove Combo HVAC@400	-400	235	481	586	902	41.7	22.7	4.9
Remove Combo HVAC@300	-300	235	481	586	1002	41.7	22.7	4.9
Remove Combo HVAC@250	-250	235	481	586	1052	41.7	22.7	4.9
Remove LSLE @ 3$/ft2	-846	225	-362	2185	1202	40.4	19.1	7.2
Remove LSLE @ $2.5/ft2	-705	225	-362	2185	1343	40.4	19.1	7.2
Remove LSLE @ $2/ft2	-564	225	-362	2185	1484	40.4	19.1	7.2
Remove LSLE @ 1.5$/ft2	-423	225	-362	2185	1625	40.4	19.1	7.2
Remove LSLE @ $1/ft2	-282	225	-362	2185	1766	40.4	19.1	7.2
98 Standards	-1100	872	-201	3771	3342	43.4	19.7	9.5

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LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-47	-444	-67	-206	26.4	11.4	0.9
Add Duct Design @ $50	50	-65	0	-54	-69	28.4	13.3	0.9
Add Rad Bar @ $0.10/ft1	151	-123	-21	-74	-66	28.2	13.3	0.8
Add TXV @ $75	75	-47	0	-66	-38	28.3	13.3	0.9
Add Non-metal Frames @ $1.5/ft2	529	-47	-444	-67	-30	26.4	11.4	0.9
Package 4 Tight Ducts	0	0	0	0	0	28.4	13.3	1.0
Add Rad Bar @ $0.15/ft2	227	-123	-21	-74	9	28.2	13.3	0.8
Add TXV @ $150	150	-47	0	-66	37	28.3	13.3	0.9
Add TXV @ $225	225	-47	0	-66	112	28.3	13.3	0.9
Add Duct Design @ $250	250	-65	0	-54	131	28.4	13.3	0.9
Add LSLE @ $1/ft2	353	-223	453	-448	135	29.7	15.3	0.3
Add Non-metal Frames @ $2/ft2	705	-47	-444	-67	147	26.4	11.4	0.9
Remove Duct Seal @ $300	-300	266	280	47	293	29.7	14.5	1.0
98 Standards	-300	266	280	47	293	29.7	14.5	1.0
Add LSLE @ $1.5/ft2	529	-223	453	-448	311	29.7	15.3	0.3
Remove Duct Seal @ $250	-250	266	280	47	343	29.7	14.5	1.0
Add Duct Design @ $500	500	-65	0	-54	381	28.4	13.3	0.9
Remove Duct Seal @ $200	-200	266	280	47	393	29.7	14.5	1.0
Add LSLE @ $2/ft2	705	-223	453	-448	487	29.7	15.3	0.3
Add Non-metal Frames @ $3/ft2	1058	-47	-444	-67	499	26.4	11.4	0.9
Add LSLE @ $2.5/ft2	881	-223	453	-448	664	29.7	15.3	0.3
Add LSLE @ $3/ft2	1058	-223	453	-448	840	29.7	15.3	0.3

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-444	-67	-158	26.4	11.4	0.9
Add Duct Design @ $50	50	0	0	-54	-4	28.4	13.3	0.9
Package 4 Tight Ducts	0	0	0	0	0	28.4	13.3	1.0
Add TXV @ $75	75	0	0	-66	9	28.3	13.3	0.9
Add Non-metal Frames @ $1.5/ft2	529	0	-444	-67	18	26.4	11.4	0.9
Remove Duct Seal @ $300	-300	0	280	47	27	29.7	14.5	1.0
98 Standards	-300	0	280	47	27	29.7	14.5	1.0
Add Rad Bar @ $0.10/ft1	151	0	-21	-74	57	28.2	13.3	0.8
Remove Duct Seal @ $250	-250	0	280	47	77	29.7	14.5	1.0
Add TXV @ $150	150	0	0	-66	84	28.3	13.3	0.9
Remove Duct Seal @ $200	-200	0	280	47	127	29.7	14.5	1.0
Add Rad Bar @ $0.15/ft2	227	0	-21	-74	132	28.2	13.3	0.8
Add TXV @ $225	225	0	0	-66	159	28.3	13.3	0.9
Add Non-metal Frames @ $2/ft2	705	0	-444	-67	194	26.4	11.4	0.9
Add Duct Design @ $250	250	0	0	-54	196	28.4	13.3	0.9
Add LSLE @ $1/ft2	353	0	453	-448	358	29.7	15.3	0.3
Add Duct Design @ $500	500	0	0	-54	446	28.4	13.3	0.9
Add LSLE @ $1.5/ft2	529	0	453	-448	534	29.7	15.3	0.3
Add Non-metal Frames @ $3/ft2	1058	0	-444	-67	547	26.4	11.4	0.9
Add LSLE @ $2/ft2	705	0	453	-448	710	29.7	15.3	0.3
Add LSLE @ $2.5/ft2	881	0	453	-448	886	29.7	15.3	0.3
Add LSLE @ $3/ft2	1058	0	453	-448	1063	29.7	15.3	0.3

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add LSLE @ $1/ft2	353	-295	465	-863	-340	29.3	14.6	0.6
Add Non-metal Frames @ $1/ft2	353	-56	-425	-134	-263	26.6	10.7	1.7
Add LSLE @ $1.5/ft2	529	-295	465	-863	-164	29.3	14.6	0.6
Add Duct Design @ $50	50	-78	0	-100	-129	28.4	12.6	1.7
Add Rad Bar @ $0.10/ft1	151	-136	-21	-107	-112	28.3	12.5	1.7
Add TXV @ $75	75	-56	0	-131	-112	28.4	12.6	1.7
Add Non-metal Frames @ $1.5/ft2	529	-56	-425	-134	-86	26.6	10.7	1.7
Add TXV @ $150	150	-56	0	-131	-37	28.4	12.6	1.7
Add Rad Bar @ $0.15/ft2	227	-136	-21	-107	-37	28.3	12.5	1.7
Package 4 Tight Ducts	0	0	0	0	0	28.6	12.6	1.9
Add LSLE @ $2/ft2	705	-295	465	-863	12	29.3	14.6	0.6
Add TXV @ $225	225	-56	0	-131	38	28.4	12.6	1.7
Add Duct Design @ $250	250	-78	0	-100	71	28.4	12.6	1.7
Add Non-metal Frames @ $2/ft2	705	-56	-425	-134	90	26.6	10.7	1.7
Add LSLE @ $2.5/ft2	881	-295	465	-863	189	29.3	14.6	0.6
Add Duct Design @ $500	500	-78	0	-100	321	28.4	12.6	1.7
Add LSLE @ $3/ft2	1058	-295	465	-863	365	29.3	14.6	0.6
Remove Duct Seal @ $300	-300	319	264	100	383	29.9	13.7	2.0
98 Standards	-300	319	264	100	383	29.9	13.7	2.0
Remove Duct Seal @ $250	-250	319	264	100	433	29.9	13.7	2.0
Add Non-metal Frames @ $3/ft2	1058	-56	-425	-134	442	26.6	10.7	1.7
Remove Duct Seal @ $200	-200	319	264	100	483	29.9	13.7	2.0

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Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-68	-636	-219	-569	28.0	12.7	1.2
Add Non-metal Frames @ $1.5/ft2	529	-68	-636	-219	-393	28.0	12.7	1.2
Add Non-metal Frames @ $2/ft2	705	-68	-636	-219	-217	28.0	12.7	1.2
Add Duct Design @ $50	50	-41	0	-80	-70	31.0	15.4	1.4
Add TXV @ $75	75	-29	0	-104	-59	30.9	15.4	1.4
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.1	15.4	1.5
Add TXV @ $150	150	-29	0	-104	16	30.9	15.4	1.4
Remove Rad Bar @ $0.15/ft2	-227	101	21	192	87	31.4	15.5	1.8
Add TXV @ $225	225	-29	0	-104	91	30.9	15.4	1.4
Add Duct Design @ $250	250	-41	0	-80	130	31.0	15.4	1.4
Add Non-metal Frames @ $3/ft2	1058	-68	-636	-219	136	28.0	12.7	1.2
Remove Rad Bar @ $0.10/ft2	-151	101	21	192	163	31.4	15.5	1.8
Remove Duct Sealing @ $300	-300	112	332	73	217	32.6	16.8	1.6
Remove Duct Sealing @ $250	-250	112	332	73	267	32.6	16.8	1.6
Remove LSLE @ 3$/ft2	-1058	207	-367	1491	274	31.6	13.8	3.7
Remove Duct Seaing @ $200	-200	112	332	73	317	32.6	16.8	1.6
Add Duct Design @ $500	500	-41	0	-80	380	31.0	15.4	1.4
Remove LSLE @ $2.5/ft2	-881	207	-367	1491	450	31.6	13.8	3.7
Remove LSLE @ $2/ft2	-705	207	-367	1491	626	31.6	13.8	3.7
Remove LSLE @ 1.5$/ft2	-529	207	-367	1491	802	31.6	13.8	3.7
Remove LSLE @ $1/ft2	-353	207	-367	1491	979	31.6	13.8	3.7
98 Standards	-950	583	-42	1968	1559	33.7	15.2	4.3

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-636	-219	-502	28.0	12.7	1.2
Add Non-metal Frames @ $1.5/ft2	529	0	-636	-219	-326	28.0	12.7	1.2
Add Non-metal Frames @ $2/ft2	705	0	-636	-219	-149	28.0	12.7	1.2
Add Duct Design @ $50	50	0	0	-80	-30	31.0	15.4	1.4
Add TXV @ $75	75	0	0	-104	-29	30.9	15.4	1.4
Remove Rad Bar @ $0.15/ft2	-227	0	21	192	-14	31.4	15.5	1.8
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.1	15.4	1.5
Add TXV @ $150	150	0	0	-104	46	30.9	15.4	1.4
Remove Rad Bar @ $0.10/ft2	-151	0	21	192	62	31.4	15.5	1.8
Remove LSLE @ 3$/ft2	-1058	0	-367	1491	67	31.6	13.8	3.7
Remove Duct Sealing @ $300	-300	0	332	73	105	32.6	16.8	1.6
Add TXV @ $225	225	0	0	-104	121	30.9	15.4	1.4
Remove Duct Sealing @ $250	-250	0	332	73	155	32.6	16.8	1.6
Add Duct Design @ $250	250	0	0	-80	170	31.0	15.4	1.4
Add Non-metal Frames @ $3/ft2	1058	0	-636	-219	203	28.0	12.7	1.2
Remove Duct Seaing @ $200	-200	0	332	73	205	32.6	16.8	1.6
Remove LSLE @ $2.5/ft2	-881	0	-367	1491	243	31.6	13.8	3.7
Remove LSLE @ $2/ft2	-705	0	-367	1491	419	31.6	13.8	3.7
Add Duct Design @ $500	500	0	0	-80	420	31.0	15.4	1.4
Remove LSLE @ 1.5$/ft2	-529	0	-367	1491	595	31.6	13.8	3.7
Remove LSLE @ $1/ft2	-353	0	-367	1491	772	31.6	13.8	3.7
98 Standards	-950	0	-42	1968	976	33.7	15.2	4.3

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-79	-617	-345	-688	28.4	12.2	2.1
Add Non-metal Frames @ $1.5/ft2	529	-79	-617	-345	-512	28.4	12.2	2.1
Add Non-metal Frames @ $2/ft2	705	-79	-617	-345	-336	28.4	12.2	2.1
Add TXV @ $75	75	-34	0	-179	-138	31.3	14.8	2.3
Add Duct Design @ $50	50	-48	0	-133	-130	31.4	14.8	2.4
Add TXV @ $150	150	-34	0	-179	-63	31.3	14.8	2.3
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.6	14.8	2.6
Add TXV @ $225	225	-34	0	-179	12	31.3	14.8	2.3
Add Non-metal Frames @ $3/ft2	1058	-79	-617	-345	17	28.4	12.2	2.1
Add Duct Design @ $250	250	-48	0	-133	70	31.4	14.8	2.4
Remove Rad Bar @ $0.15/ft2	-227	108	23	258	163	32.0	14.9	3.0
Remove Rad Bar @ $0.10/ft2	-151	108	23	258	239	32.0	14.9	3.0
Remove Duct Sealing @ $300	-300	131	320	126	277	33.1	16.2	2.8
Add Duct Design @ $500	500	-48	0	-133	320	31.4	14.8	2.4
Remove Duct Sealing @ $250	-250	131	320	126	327	33.1	16.2	2.8
Remove Duct Seaing @ $200	-200	131	320	126	377	33.1	16.2	2.8
Remove LSLE @ 3$/ft2	-1058	273	-383	2545	1376	33.6	13.2	6.2
Remove LSLE @ $2.5/ft2	-881	273	-383	2545	1553	33.6	13.2	6.2
Remove LSLE @ $2/ft2	-705	273	-383	2545	1729	33.6	13.2	6.2
Remove LSLE @ 1.5$/ft2	-529	273	-383	2545	1905	33.6	13.2	6.2
Remove LSLE @ $1/ft2	-353	273	-383	2545	2081	33.6	13.2	6.2
98 Standards	-950	712	-72	3207	2897	35.9	14.5	7.2

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LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-33	-379	-29	-159	25.1	10.4	0.6
Add Duct Design @ $50	50	-52	0	-24	-27	26.7	12.0	0.6
Add Non-metal Frames @ $1.5/ft2	423	-33	-379	-29	-18	25.1	10.4	0.6
Add Rad Bar @ $0.10/ft1	151	-97	-21	-39	-6	26.6	11.9	0.6
Package 4 Tight Ducts	0	0	0	0	0	26.8	12.0	0.7
Add TXV @ $75	75	-37	0	-34	4	26.7	12.0	0.6
Add Rad Bar @ $0.15/ft2	227	-97	-21	-39	69	26.6	11.9	0.6
Add TXV @ $150	150	-37	0	-34	79	26.7	12.0	0.6
Add Non-metal Frames @ $2/ft2	564	-33	-379	-29	123	25.1	10.4	0.6
Add TXV @ $225	225	-37	0	-34	154	26.7	12.0	0.6
Add Duct Design @ $250	250	-52	0	-24	173	26.7	12.0	0.6
Remove Duct Seal @ $300	-300	183	273	24	181	28.0	13.2	0.7
98 Standards	-300	183	273	24	181	28.0	13.2	0.7
Remove Duct Seal @ $250	-250	183	273	24	231	28.0	13.2	0.7
Add LSLE @ $1/ft2	282	-169	404	-244	273	28.0	13.7	0.2
Remove Duct Seal @ $200	-200	183	273	24	281	28.0	13.2	0.7
Add Non-metal Frames @ $3/ft2	846	-33	-379	-29	405	25.1	10.4	0.6
Add LSLE @ $1.5/ft2	423	-169	404	-244	414	28.0	13.7	0.2
Add Duct Design @ $500	500	-52	0	-24	423	26.7	12.0	0.6
Add LSLE @ $2/ft2	564	-169	404	-244	555	28.0	13.7	0.2
Add LSLE @ $2.5/ft2	705	-169	404	-244	696	28.0	13.7	0.2
Add LSLE @ $3/ft2	846	-169	404	-244	837	28.0	13.7	0.2

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-379	-29	-126	25.1	10.4	0.6
Remove Duct Seal @ $300	-300	0	273	24	-2	28.0	13.2	0.7
98 Standards	-300	0	273	24	-2	28.0	13.2	0.7
Package 4 Tight Ducts	0	0	0	0	0	26.8	12.0	0.7
Add Non-metal Frames @ $1.5/ft2	423	0	-379	-29	15	25.1	10.4	0.6
Add Duct Design @ $50	50	0	0	-24	26	26.7	12.0	0.6
Add TXV @ $75	75	0	0	-34	41	26.7	12.0	0.6
Remove Duct Seal @ $250	-250	0	273	24	48	28.0	13.2	0.7
Add Rad Bar @ $0.10/ft1	151	0	-21	-39	91	26.6	11.9	0.6
Remove Duct Seal @ $200	-200	0	273	24	98	28.0	13.2	0.7
Add TXV @ $150	150	0	0	-34	116	26.7	12.0	0.6
Add Non-metal Frames @ $2/ft2	564	0	-379	-29	156	25.1	10.4	0.6
Add Rad Bar @ $0.15/ft2	227	0	-21	-39	167	26.6	11.9	0.6
Add TXV @ $225	225	0	0	-34	191	26.7	12.0	0.6
Add Duct Design @ $250	250	0	0	-24	226	26.7	12.0	0.6
Add Non-metal Frames @ $3/ft2	846	0	-379	-29	438	25.1	10.4	0.6
Add LSLE @ $1/ft2	282	0	404	-244	442	28.0	13.7	0.2
Add Duct Design @ $500	500	0	0	-24	476	26.7	12.0	0.6
Add LSLE @ $1.5/ft2	423	0	404	-244	583	28.0	13.7	0.2
Add LSLE @ $2/ft2	564	0	404	-244	724	28.0	13.7	0.2
Add LSLE @ $2.5/ft2	705	0	404	-244	865	28.0	13.7	0.2
Add LSLE @ $3/ft2	846	0	404	-244	1006	28.0	13.7	0.2

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	92	-360	-64	-49	24.9	9.6	1.2
Add Duct Design @ $50	50	70	0	-54	66	26.5	11.1	1.2
Add Non-metal Frames @ $1.5/ft2	423	92	-360	-64	92	24.9	9.6	1.2
Add TXV @ $75	75	88	0	-69	94	26.5	11.1	1.2
Add Rad Bar @ $0.10/ft1	151	27	-26	-44	109	26.4	11.0	1.2
Add LSLE @ $1/ft2	282	-92	435	-494	131	27.5	13.0	0.4
Package 4 Tight Ducts	0	132	0	0	132	26.6	11.1	1.3
Add TXV @ $150	150	88	0	-69	169	26.5	11.1	1.2
Add Rad Bar @ $0.15/ft2	227	27	-26	-44	185	26.4	11.0	1.2
Add Non-metal Frames @ $2/ft2	564	92	-360	-64	233	24.9	9.6	1.2
Add TXV @ $225	225	88	0	-69	244	26.5	11.1	1.2
Add Duct Design @ $250	250	70	0	-54	266	26.5	11.1	1.2
Add LSLE @ $1.5/ft2	423	-92	435	-494	272	27.5	13.0	0.4
Remove Duct Seal @ $300	-300	350	252	49	352	27.8	12.2	1.4
98 Standards	-300	350	252	49	352	27.8	12.2	1.4
Remove Duct Seal @ $250	-250	350	252	49	402	27.8	12.2	1.4
Add LSLE @ $2/ft2	564	-92	435	-494	413	27.5	13.0	0.4
Remove Duct Seal @ $200	-200	350	252	49	452	27.8	12.2	1.4
Add Non-metal Frames @ $3/ft2	846	92	-360	-64	515	24.9	9.6	1.2
Add Duct Design @ $500	500	70	0	-54	516	26.5	11.1	1.2
Add LSLE @ $2.5/ft2	705	-92	435	-494	554	27.5	13.0	0.4
Add LSLE @ $3/ft2	846	-92	435	-494	695	27.5	13.0	0.4

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LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add LSLE @ $1/ft2	353	-234	290	-627	-218	21.1	6.5	0.5
Add Rad Bar @ $0.10/ft1	151	-136	-12	-113	-110	20.6	5.2	1.3
Add Duct Design @ $50	50	-79	0	-72	-100	20.7	5.2	1.4
Add TXV @ $75	75	-56	0	-93	-75	20.7	5.2	1.3
Add Non-metal Frames @ $1/ft2	353	-69	-224	-102	-43	19.7	4.3	1.3
Add LSLE @ $1.5/ft2	529	-234	290	-627	-42	21.1	6.5	0.5
Add Rad Bar @ $0.15/ft2	227	-136	-12	-113	-34	20.6	5.2	1.3
Package 4 Tight Ducts	0	0	0	0	0	20.8	5.2	1.5
Add TXV @ $150	150	-56	0	-93	0	20.7	5.2	1.3
Add TXV @ $225	225	-56	0	-93	75	20.7	5.2	1.3
Add Duct Design @ $250	250	-79	0	-72	100	20.7	5.2	1.4
Add Non-metal Frames @ $1.5/ft2	529	-69	-224	-102	133	19.7	4.3	1.3
Add LSLE @ $2/ft2	705	-234	290	-627	134	21.1	6.5	0.5
Remove Duct Seal @ $300	-300	320	105	72	197	21.4	5.7	1.6
98 Standards	-300	320	105	72	197	21.4	5.7	1.6
Remove Duct Seal @ $250	-250	320	105	72	247	21.4	5.7	1.6
Remove Duct Seal @ $200	-200	320	105	72	297	21.4	5.7	1.6
Add Non-metal Frames @ $2/ft2	705	-69	-224	-102	310	19.7	4.3	1.3
Add LSLE @ $2.5/ft2	881	-234	290	-627	310	21.1	6.5	0.5
Add Duct Design @ $500	500	-79	0	-72	350	20.7	5.2	1.4
Add LSLE @ $3/ft2	1058	-234	290	-627	487	21.1	6.5	0.5
Add Non-metal Frames @ $3/ft2	1058	-69	-224	-102	662	19.7	4.3	1.3

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Remove Duct Seal @ $300	-300	0	105	72	-123	21.4	5.7	1.6
98 Standards	-300	0	105	72	-123	21.4	5.7	1.6
Remove Duct Seal @ $250	-250	0	105	72	-73	21.4	5.7	1.6
Remove Duct Seal @ $200	-200	0	105	72	-23	21.4	5.7	1.6
Add Duct Design @ $50	50	0	0	-72	-22	20.7	5.2	1.4
Add TXV @ $75	75	0	0	-93	-18	20.7	5.2	1.3
Package 4 Tight Ducts	0	0	0	0	0	20.8	5.2	1.5
Add LSLE @ $1/ft2	353	0	290	-627	15	21.1	6.5	0.5
Add Rad Bar @ $0.10/ft1	151	0	-12	-113	26	20.6	5.2	1.3
Add Non-metal Frames @ $1/ft2	353	0	-224	-102	27	19.7	4.3	1.3
Add TXV @ $150	150	0	0	-93	57	20.7	5.2	1.3
Add Rad Bar @ $0.15/ft2	227	0	-12	-113	102	20.6	5.2	1.3
Add TXV @ $225	225	0	0	-93	132	20.7	5.2	1.3
Add Duct Design @ $250	250	0	0	-72	178	20.7	5.2	1.4
Add LSLE @ $1.5/ft2	529	0	290	-627	192	21.1	6.5	0.5
Add Non-metal Frames @ $1.5/ft2	529	0	-224	-102	203	19.7	4.3	1.3
Add LSLE @ $2/ft2	705	0	290	-627	368	21.1	6.5	0.5
Add Non-metal Frames @ $2/ft2	705	0	-224	-102	379	19.7	4.3	1.3
Add Duct Design @ $500	500	0	0	-72	428	20.7	5.2	1.4
Add LSLE @ $2.5/ft2	881	0	290	-627	544	21.1	6.5	0.5
Add LSLE @ $3/ft2	1058	0	290	-627	720	21.1	6.5	0.5
Add Non-metal Frames @ $3/ft2	1058	0	-224	-102	732	19.7	4.3	1.3

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add LSLE @ $1/ft2	353	-133	273	-1284	-790	21.1	6.0	1.0
Add LSLE @ $1.5/ft2	529	-133	273	-1284	-614	21.1	6.0	1.0
Add LSLE @ $2/ft2	705	-133	273	-1284	-438	21.1	6.0	1.0
Add LSLE @ $2.5/ft2	881	-133	273	-1284	-262	21.1	6.0	1.0
Add LSLE @ $3/ft2	1058	-133	273	-1284	-85	21.1	6.0	1.0
Add Duct Design @ $50	50	81	0	-143	-12	21.7	4.8	2.7
Add TXV @ $75	75	107	0	-189	-7	21.6	4.8	2.7
Add Rad Bar @ $0.10/ft1	151	25	-12	-167	-3	21.6	4.8	2.7
Add Non-metal Frames @ $1/ft2	353	95	-208	-185	54	20.8	3.9	2.7
Add TXV @ $150	150	107	0	-189	68	21.6	4.8	2.7
Add Rad Bar @ $0.15/ft2	227	25	-12	-167	73	21.6	4.8	2.7
Add TXV @ $225	225	107	0	-189	143	21.6	4.8	2.7
Package 4 Tight Ducts	0	173	0	0	173	21.9	4.8	3.0
Add Duct Design @ $250	250	81	0	-143	188	21.7	4.8	2.7
Add Non-metal Frames @ $1.5/ft2	529	95	-208	-185	231	20.8	3.9	2.7
Add Non-metal Frames @ $2/ft2	705	95	-208	-185	407	20.8	3.9	2.7
Add Duct Design @ $500	500	81	0	-143	438	21.7	4.8	2.7
Remove Duct Seal @ $300	-300	546	98	155	500	22.6	5.2	3.2
98 Standards	-300	546	98	155	500	22.6	5.2	3.2
Remove Duct Seal @ $250	-250	546	98	155	550	22.6	5.2	3.2
Remove Duct Seal @ $200	-200	546	98	155	600	22.6	5.2	3.2
Add Non-metal Frames @ $3/ft2	1058	95	-208	-185	759	20.8	3.9	2.7

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LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Add Non-metal Frames @ $1/ft2	353	-57	-283	-162	-150	19.1	4.0	0.9
Add Rad Bar @ $0.10/ft1	151	-94	-9	-125	-76	20.3	5.2	1.0
Add Duct Design @ $50	50	-47	0	-56	-53	20.4	5.2	1.1
Add TXV @ $75	75	-34	0	-77	-35	20.4	5.2	1.0
Add Rad Bar @ $0.15/ft2	227	-94	-9	-125	-1	20.3	5.2	1.0
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.5	5.2	1.16
Remove LSLE @ $3/ft2	-1058	211	-215	1065	4	21.2	4.3	2.8
Remove Duct Seal @ $300	-300	166	98	56	20	21.0	5.6	1.24
Add Non-metal Frames @ $1.5/ft2	529	-57	-283	-162	27	19.1	4.0	0.9
Add TXV @ $150	150	-34	0	-77	40	20.4	5.2	1.0
Remove Duct Seal @ $250	-250	166	98	56	70	21.0	5.6	1.2
Add TXV @ $225	225	-34	0	-77	115	20.4	5.2	1.0
Remove Duct Seal @ $200	-200	166	98	56	120	21.0	5.6	1.2
Add Duct Design @ $250	250	-47	0	-56	147	20.4	5.2	1.1
Remove LSLE @ $2.5/ft2	-881	211	-215	1065	180	21.2	4.3	2.8
Add Non-metal Frames @ $2/ft2	705	-57	-283	-162	203	19.1	4.0	0.9
Remove LSLE @ $2/ft2	-705	211	-215	1065	356	21.2	4.3	2.8
Add Duct Design @ $500	500	-47	0	-56	397	20.4	5.2	1.1
Remove LSLE @ $1.5/ft2	-529	211	-215	1065	532	21.2	4.3	2.8
Add Non-metal Frames @ $3/ft2	1058	-57	-283	-162	555	19.1	4.0	0.9
Remove LSLE @ $1/ft2	-353	211	-215	1065	709	21.2	4.3	2.8
98 Standards	-529	433	-133	1190	960	21.7	4.6	2.9

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Remove LSLE @ $3/ft2	-1058	0	-215	1065	-207	21.2	4.3	2.8
Remove Duct Seal @ $300	-300	0	98	56	-146	21.0	5.6	1.2
Remove Duct Seal @ $250	-250	0	98	56	-96	21.0	5.6	1.2
Add Non-metal Frames @ $1/ft2	353	0	-283	-162	-92	19.1	4.0	0.9
Remove Duct Seal @ $200	-200	0	98	56	-46	21.0	5.6	1.2
Remove LSLE @ $2.5/ft2	-881	0	-215	1065	-31	21.2	4.3	2.8
Add Duct Design @ $50	50	0	0	-56	-6	20.4	5.2	1.1
Add TXV @ $75	75	0	0	-77	-2	20.4	5.2	1.0
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.5	5.2	1.2
Add Rad Bar @ $0.10/ft1	151	0	-9	-125	17	20.3	5.2	1.0
Add TXV @ $150	150	0	0	-77	73	20.4	5.2	1.0
Add Non-metal Frames @ $1.5/ft2	529	0	-283	-162	84	19.1	4.0	0.9
Add Rad Bar @ $0.15/ft2	227	0	-9	-125	93	20.3	5.2	1.0
Remove LSLE @ $2/ft2	-705	0	-215	1065	145	21.2	4.3	2.8
Add TXV @ $225	225	0	0	-77	148	20.4	5.2	1.0
Add Duct Design @ $250	250	0	0	-56	194	20.4	5.2	1.1
Add Non-metal Frames @ $2/ft2	705	0	-283	-162	260	19.1	4.0	0.9
Remove LSLE @ $1.5/ft2	-529	0	-215	1065	321	21.2	4.3	2.8
Add Duct Design @ $500	500	0	0	-56	444	20.4	5.2	1.1
Remove LSLE @ $1/ft2	-353	0	-215	1065	498	21.2	4.3	2.8
98 Standards	-529	0	-133	1190	528	21.7	4.6	2.9
Add Non-metal Frames @ $3/ft2	1058	0	-283	-162	613	19.1	4.0	0.9

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Add Non-metal Frames @ $1/ft2	353	-70	-269	-237	-222	19.4	3.7	1.6
Add Rad Bar @ $0.10/ft1	151	-99	-12	-156	-115	20.6	4.8	1.7
Add Duct Design @ $50	50	-54	0	-93	-98	20.8	4.8	1.8
Add TXV @ $75	75	-39	0	-127	-91	20.7	4.8	1.7
Add Non-metal Frames @ $1.5/ft2	529	-70	-269	-237	-46	19.4	3.7	1.6
Add Rad Bar @ $0.15/ft2	227	-99	-12	-156	-40	20.6	4.8	1.7
Add TXV @ $150	150	-39	0	-127	-16	20.7	4.8	1.7
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.9	4.8	1.9
Add TXV @ $225	225	-39	0	-127	59	20.7	4.8	1.7
Remove Duct Seal @ $300	-300	191	89	93	74	21.4	5.2	2.1
Add Duct Design @ $250	250	-54	0	-93	102	20.8	4.8	1.8
Remove Duct Seal @ $250	-250	191	89	93	124	21.4	5.2	2.1
Add Non-metal Frames @ $2/ft2	705	-70	-269	-237	130	19.4	3.7	1.6
Remove Duct Seal @ $200	-200	191	89	93	174	21.4	5.2	2.1
Add Duct Design @ $500	500	-54	0	-93	352	20.8	4.8	1.8
Add Non-metal Frames @ $3/ft2	1058	-70	-269	-237	483	19.4	3.7	1.6
Remove LSLE @ $3/ft2	-1058	280	-189	1881	914	22.9	4.0	4.7
Remove LSLE @ $2.5/ft2	-881	280	-189	1881	1090	22.9	4.0	4.7
Remove LSLE @ $2/ft2	-705	280	-189	1881	1266	22.9	4.0	4.7
Remove LSLE @ $1.5/ft2	-529	280	-189	1881	1443	22.9	4.0	4.7
Remove LSLE @ $1/ft2	-353	280	-189	1881	1619	22.9	4.0	4.7
98 Standards	-529	545	-112	2099	2003	23.6	4.4	5.1

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Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-77	-315	-330	-370	21.9	5.0	2.7
Add Non-metal Frames @ $1.5/ft2	529	-77	-315	-330	-194	21.9	5.0	2.7
Add Duct Design @ $50	50	-32	0	-77	-58	23.7	6.4	3.2
Add Non-metal Frames @ $2/ft2	705	-77	-315	-330	-18	21.9	5.0	2.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	23.8	6.4	3.3
Remove TXV @ $225	-225	34	0	216	24	24.2	6.4	3.7
Remove Duct Sealing @ $300	-300	124	129	139	92	24.6	6.9	3.5
Remove TXV @ $150	-150	34	0	216	99	24.2	6.4	3.7
Remove Duct Sealing @ $250	-250	124	129	139	142	24.6	6.9	3.5
Add Duct Design @ $250	250	-32	0	-77	142	23.7	6.4	3.2
Remove Rad Bar @ $0.15/ft2	-227	107	14	248	142	24.3	6.4	3.7
Remove Combo HVAC@500	-500	165	129	370	163	25.0	6.9	3.9
Remove TXV @ $75	-75	34	0	216	174	24.2	6.4	3.7
Remove Duct Seaing @ $200	-200	124	129	139	192	24.6	6.9	3.5
Remove Rad Bar @ $0.10/ft2	-151	107	14	248	218	24.3	6.4	3.7
Remove Combo HVAC@400	-400	165	129	370	263	25.0	6.9	3.9
Add Non-metal Frames @ $3/ft2	1058	-77	-315	-330	335	21.9	5.0	2.7
Remove Combo HVAC@300	-300	165	129	370	363	25.0	6.9	3.9
Add Duct Design @ $500	500	-32	0	-77	392	23.7	6.4	3.2
Remove Combo HVAC@250	-250	165	129	370	413	25.0	6.9	3.9
Remove LSLE @ 3$/ft2	-1058	204	-220	1692	619	25.7	5.4	6.1
Remove LSLE @ $2.5/ft2	-881	204	-220	1692	795	25.7	5.4	6.1
98 Standards	-1100	456	96	1447	899	26.7	6.8	5.7
Remove LSLE @ $2/ft2	-705	204	-220	1692	971	25.7	5.4	6.1
Remove LSLE @ 1.5$/ft2	-529	204	-220	1692	1148	25.7	5.4	6.1
Remove LSLE @ $1/ft2	-353	204	-220	1692	1324	25.7	5.4	6.1

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-315	-330	-293	21.9	5.0	2.7
Add Non-metal Frames @ $1.5/ft2	529	0	-315	-330	-117	21.9	5.0	2.7
Remove Duct Sealing @ $300	-300	0	129	139	-32	24.6	6.9	3.5
Add Duct Design @ $50	50	0	0	-77	-27	23.7	6.4	3.2
Remove TXV @ $225	-225	0	0	216	-9	24.2	6.4	3.7
Remove Combo HVAC@500	-500	0	129	370	-1	25.0	6.9	3.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	23.8	6.4	3.3
Remove Duct Sealing @ $250	-250	0	129	139	18	24.6	6.9	3.5
Remove Rad Bar @ $0.15/ft2	-227	0	14	248	35	24.3	6.4	3.7
Add Non-metal Frames @ $2/ft2	705	0	-315	-330	59	21.9	5.0	2.7
Remove TXV @ $150	-150	0	0	216	66	24.2	6.4	3.7
Remove Duct Seaing @ $200	-200	0	129	139	68	24.6	6.9	3.5
Remove Combo HVAC@400	-400	0	129	370	99	25.0	6.9	3.9
Remove Rad Bar @ $0.10/ft2	-151	0	14	248	110	24.3	6.4	3.7
Remove TXV @ $75	-75	0	0	216	141	24.2	6.4	3.7
Add Duct Design @ $250	250	0	0	-77	173	23.7	6.4	3.2
Remove Combo HVAC@300	-300	0	129	370	199	25.0	6.9	3.9
Remove Combo HVAC@250	-250	0	129	370	249	25.0	6.9	3.9
Add Non-metal Frames @ $3/ft2	1058	0	-315	-330	412	21.9	5.0	2.7
Remove LSLE @ 3$/ft2	-1058	0	-220	1692	415	25.7	5.4	6.1
Add Duct Design @ $500	500	0	0	-77	423	23.7	6.4	3.2
98 Standards	-1100	0	96	1447	443	26.7	6.8	5.7
Remove LSLE @ $2.5/ft2	-881	0	-220	1692	592	25.7	5.4	6.1
Remove LSLE @ $2/ft2	-705	0	-220	1692	768	25.7	5.4	6.1
Remove LSLE @ 1.5$/ft2	-529	0	-220	1692	944	25.7	5.4	6.1
Remove LSLE @ $1/ft2	-353	0	-220	1692	1120	25.7	5.4	6.1

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-88	-301	-433	-470	22.7	4.7	3.8
Add Non-metal Frames @ $1.5/ft2	529	-88	-301	-433	-294	22.7	4.7	3.8
Add Non-metal Frames @ $2/ft2	705	-88	-301	-433	-118	22.7	4.7	3.8
Add Duct Design @ $50	50	-36	0	-107	-94	24.5	6.0	4.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	24.7	6.0	4.6
Add Duct Design @ $250	250	-36	0	-107	106	24.5	6.0	4.4
Remove TXV @ $225	-225	39	0	298	112	25.2	6.0	5.1
Remove Duct Sealing @ $300	-300	143	119	191	153	25.5	6.5	4.9
Remove Rad Bar @ $0.15/ft2	-227	114	12	273	172	25.2	6.0	5.0
Remove TXV @ $150	-150	39	0	298	187	25.2	6.0	5.1
Remove Duct Sealing @ $250	-250	143	119	191	203	25.5	6.5	4.9
Add Non-metal Frames @ $3/ft2	1058	-88	-301	-433	235	22.7	4.7	3.8
Remove Rad Bar @ $0.10/ft2	-151	114	12	273	248	25.2	6.0	5.0
Remove Duct Seaing @ $200	-200	143	119	191	253	25.5	6.5	4.9
Remove TXV @ $75	-75	39	0	298	262	25.2	6.0	5.1
Remove Combo HVAC@500	-500	189	119	510	318	26.1	6.5	5.4
Add Duct Design @ $500	500	-36	0	-107	356	24.5	6.0	4.4
Remove Combo HVAC@400	-400	189	119	510	418	26.1	6.5	5.4
Remove Combo HVAC@300	-300	189	119	510	518	26.1	6.5	5.4
Remove Combo HVAC@250	-250	189	119	510	568	26.1	6.5	5.4
Remove LSLE @ 3$/ft2	-1058	267	-199	2590	1601	28.2	5.1	8.9
98 Standards	-1100	532	82	2096	1610	28.6	6.3	8.1
Remove LSLE @ $2.5/ft2	-881	267	-199	2590	1777	28.2	5.1	8.9
Remove LSLE @ $2/ft2	-705	267	-199	2590	1953	28.2	5.1	8.9
Remove LSLE @ 1.5$/ft2	-529	267	-199	2590	2129	28.2	5.1	8.9
Remove LSLE @ $1/ft2	-353	267	-199	2590	2306	28.2	5.1	8.9

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Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse, kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-119	-329	-547	-642	24.6	5.3	5.2
Add Non-metal Frames @ $1.5/ft2	529	-119	-329	-547	-466	24.6	5.3	5.2
Add Non-metal Frames @ $2/ft2	705	-119	-329	-547	-290	24.6	5.3	5.2
Add Duct Design @ $50	50	-46	0	-150	-146	26.7	6.7	5.8
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	26.9	6.7	6.1
Add Duct Design @ $250	250	-46	0	-150	54	26.7	6.7	5.8
Add Non-metal Frames @ $3/ft2	1058	-119	-329	-547	63	24.6	5.3	5.2
Remove TXV @ $225	-225	49	0	411	235	27.6	6.7	6.7
Add Duct Design @ $500	500	-46	0	-150	304	26.7	6.7	5.8
Remove TXV @ $150	-150	49	0	411	310	27.6	6.7	6.7
Remove Rad Bar @ $0.15/ft2	-227	163	12	388	336	27.6	6.8	6.7
Remove TXV @ $75	-75	49	0	411	385	27.6	6.7	6.7
Remove Duct Sealing @ $300	-300	204	143	344	391	28.1	7.3	6.6
Remove Rad Bar @ $0.10/ft2	-151	163	12	388	412	27.6	6.8	6.7
Remove Duct Sealing @ $250	-250	204	143	344	441	28.1	7.3	6.6
Remove Duct Seaing @ $200	-200	204	143	344	491	28.1	7.3	6.6
Remove Combo HVAC@500	-500	265	143	793	700	28.8	7.3	7.3
Remove Combo HVAC@400	-400	265	143	793	800	28.8	7.3	7.3
Remove Combo HVAC@300	-300	265	143	793	900	28.8	7.3	7.3
Remove Combo HVAC@250	-250	265	143	793	950	28.8	7.3	7.3
Remove LSLE @ 3$/ft2	-1058	223	-173	2509	1501	30.2	6.0	10.1
Remove LSLE @ $2.5/ft2	-881	223	-173	2509	1677	30.2	6.0	10.1
Remove LSLE @ $2/ft2	-705	223	-173	2509	1853	30.2	6.0	10.1
Remove LSLE @ 1.5$/ft2	-529	223	-173	2509	2030	30.2	6.0	10.1
Remove LSLE @ $1/ft2	-353	223	-173	2509	2206	30.2	6.0	10.1
98 Standards	-1100	724	133	2564	2322	31.6	7.3	10.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse, kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-329	-547	-524	24.6	5.3	5.2
Add Non-metal Frames @ $1.5/ft2	529	0	-329	-547	-347	24.6	5.3	5.2
Add Non-metal Frames @ $2/ft2	705	0	-329	-547	-171	24.6	5.3	5.2
Add Duct Design @ $50	50	0	0	-150	-100	26.7	6.7	5.8
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	26.9	6.7	6.1
Add Duct Design @ $250	250	0	0	-150	100	26.7	6.7	5.8
Remove Rad Bar @ $0.15/ft2	-227	0	12	388	173	27.6	6.8	6.7
Add Non-metal Frames @ $3/ft2	1058	0	-329	-547	181	24.6	5.3	5.2
Remove TXV @ $225	-225	0	0	411	186	27.6	6.7	6.7
Remove Duct Sealing @ $300	-300	0	143	344	187	28.1	7.3	6.6
Remove Duct Sealing @ $250	-250	0	143	344	237	28.1	7.3	6.6
Remove Rad Bar @ $0.10/ft2	-151	0	12	388	248	27.6	6.8	6.7
Remove TXV @ $150	-150	0	0	411	261	27.6	6.7	6.7
Remove Duct Seaing @ $200	-200	0	143	344	287	28.1	7.3	6.6
Remove TXV @ $75	-75	0	0	411	336	27.6	6.7	6.7
Add Duct Design @ $500	500	0	0	-150	350	26.7	6.7	5.8
Remove Combo HVAC@500	-500	0	143	793	435	28.8	7.3	7.3
Remove Combo HVAC@400	-400	0	143	793	535	28.8	7.3	7.3
Remove Combo HVAC@300	-300	0	143	793	635	28.8	7.3	7.3
Remove Combo HVAC@250	-250	0	143	793	685	28.8	7.3	7.3
Remove LSLE @ 3$/ft2	-1058	0	-173	2509	1278	30.2	6.0	10.1
Remove LSLE @ $2.5/ft2	-881	0	-173	2509	1454	30.2	6.0	10.1
98 Standards	-1100	0	133	2564	1597	31.6	7.3	10.2
Remove LSLE @ $2/ft2	-705	0	-173	2509	1631	30.2	6.0	10.1
Remove LSLE @ 1.5$/ft2	-529	0	-173	2509	1807	30.2	6.0	10.1
Remove LSLE @ $1/ft2	-353	0	-173	2509	1983	30.2	6.0	10.1

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse, kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-130	-320	-700	-797	25.8	5.0	6.6
Add Non-metal Frames @ $1.5/ft2	529	-130	-320	-700	-621	25.8	5.0	6.6
Add Non-metal Frames @ $2/ft2	705	-130	-320	-700	-445	25.8	5.0	6.6
Add Duct Design @ $50	50	-51	0	-191	-192	28.0	6.4	7.4
Add Non-metal Frames @ $3/ft2	1058	-130	-320	-700	-92	25.8	5.0	6.6
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	28.3	6.4	7.7
Add Duct Design @ $250	250	-51	0	-191	8	28.0	6.4	7.4
Add Duct Design @ $500	500	-51	0	-191	258	28.0	6.4	7.4
Remove TXV @ $225	-225	54	0	522	352	29.1	6.4	8.6
Remove Rad Bar @ $0.15/ft2	-227	174	14	443	403	29.1	6.5	8.4
Remove TXV @ $150	-150	54	0	522	427	29.1	6.4	8.6
Remove Rad Bar @ $0.10/ft2	-151	174	14	443	479	29.1	6.5	8.4
Remove TXV @ $75	-75	54	0	522	502	29.1	6.4	8.6
Remove Duct Sealing @ $300	-300	225	138	443	506	29.6	7.0	8.4
Remove Duct Sealing @ $250	-250	225	138	443	556	29.6	7.0	8.4
Remove Duct Seaing @ $200	-200	225	138	443	606	29.6	7.0	8.4
Remove Combo HVAC@500	-500	292	138	1014	944	30.5	7.0	9.4
Remove Combo HVAC@400	-400	292	138	1014	1044	30.5	7.0	9.4
Remove Combo HVAC@300	-300	292	138	1014	1144	30.5	7.0	9.4
Remove Combo HVAC@250	-250	292	138	1014	1194	30.5	7.0	9.4
Remove LSLE @ 3$/ft2	-1058	287	-150	3727	2807	33.7	5.8	13.8
Remove LSLE @ $2.5/ft2	-881	287	-150	3727	2983	33.7	5.8	13.8
Remove LSLE @ $2/ft2	-705	287	-150	3727	3160	33.7	5.8	13.8
Remove LSLE @ 1.5$/ft2	-529	287	-150	3727	3336	33.7	5.8	13.8
98 Standards	-1100	814	138	3543	3395	34.6	7.0	13.5
Remove LSLE @ $1/ft2	-353	287	-150	3727	3512	33.7	5.8	13.8

Climate Zone 10 PUC ALJ

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-125	-437	-788	-997	30.0	7.6	8.3
Add Non-metal Frames @ $1.5/ft2	529	-125	-437	-788	-821	30.0	7.6	8.3
Add Non-metal Frames @ $2/ft2	705	-125	-437	-788	-645	30.0	7.6	8.3
Add Non-metal Frames @ $3/ft2	1058	-125	-437	-788	-292	30.0	7.6	8.3
Add Duct Design @ $50	50	-48	0	-232	-230	32.8	9.5	9.2
Add Duct Design @ $250	250	-48	0	-232	-30	32.8	9.5	9.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	33.2	9.5	9.6
Add Duct Design @ $500	500	-48	0	-232	220	32.8	9.5	9.2
Remove TXV @ $225	-225	51	0	637	464	34.2	9.5	10.6
Remove Rad Bar @ $0.15/ft2	-227	189	21	520	503	34.1	9.6	10.4
Remove TXV @ $150	-150	51	0	637	539	34.2	9.5	10.6
Remove Rad Bar @ $0.10/ft2	-151	189	21	520	578	34.1	9.6	10.4
Remove TXV @ $75	-75	51	0	637	614	34.2	9.5	10.6
Remove Duct Sealing @ $300	-300	217	206	618	741	35.1	10.3	10.6
Remove Duct Sealing @ $250	-250	217	206	618	791	35.1	10.3	10.6
Remove Duct Seaing @ $200	-200	217	206	618	841	35.1	10.3	10.6
Remove Combo HVAC@500	-500	281	206	1324	1310	36.3	10.3	11.8
Remove Combo HVAC@400	-400	281	206	1324	1410	36.3	10.3	11.8
Remove Combo HVAC@300	-300	281	206	1324	1510	36.3	10.3	11.8
Remove Combo HVAC@250	-250	281	206	1324	1560	36.3	10.3	11.8
Remove LSLE @ 3$/ft2	-1058	228	-222	3004	1952	37.2	8.5	14.5
Remove LSLE @ $2.5/ft2	-881	228	-222	3004	2128	37.2	8.5	14.5
Remove LSLE @ $2/ft2	-705	228	-222	3004	2304	37.2	8.5	14.5
Remove LSLE @ 1.5$/ft2	-529	228	-222	3004	2481	37.2	8.5	14.5
Remove LSLE @ $1/ft2	-353	228	-222	3004	2657	37.2	8.5	14.5
98 Standards	-1100	806	199	3692	3597	40.1	10.3	15.7

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-437	-788	-872	30.0	7.6	8.3
Add Non-metal Frames @ $1.5/ft2	529	0	-437	-788	-696	30.0	7.6	8.3
Add Non-metal Frames @ $2/ft2	705	0	-437	-788	-520	30.0	7.6	8.3
Add Duct Design @ $50	50	0	0	-232	-182	32.8	9.5	9.2
Add Non-metal Frames @ $3/ft2	1058	0	-437	-788	-167	30.0	7.6	8.3
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	33.2	9.5	9.6
Add Duct Design @ $250	250	0	0	-232	18	32.8	9.5	9.2
Add Duct Design @ $500	500	0	0	-232	268	32.8	9.5	9.2
Remove Rad Bar @ $0.15/ft2	-227	0	21	520	314	34.1	9.6	10.4
Remove Rad Bar @ $0.10/ft2	-151	0	21	520	389	34.1	9.6	10.4
Remove TXV @ $225	-225	0	0	637	412	34.2	9.5	10.6
Remove TXV @ $150	-150	0	0	637	487	34.2	9.5	10.6
Remove Duct Sealing @ $300	-300	0	206	618	524	35.1	10.3	10.6
Remove TXV @ $75	-75	0	0	637	562	34.2	9.5	10.6
Remove Duct Sealing @ $250	-250	0	206	618	574	35.1	10.3	10.6
Remove Duct Seaing @ $200	-200	0	206	618	624	35.1	10.3	10.6
Remove Combo HVAC@500	-500	0	206	1324	1029	36.3	10.3	11.8
Remove Combo HVAC@400	-400	0	206	1324	1129	36.3	10.3	11.8
Remove Combo HVAC@300	-300	0	206	1324	1229	36.3	10.3	11.8
Remove Combo HVAC@250	-250	0	206	1324	1279	36.3	10.3	11.8
Remove LSLE @ 3$/ft2	-1058	0	-222	3004	1724	37.2	8.5	14.5
Remove LSLE @ $2.5/ft2	-881	0	-222	3004	1900	37.2	8.5	14.5
Remove LSLE @ $2/ft2	-705	0	-222	3004	2077	37.2	8.5	14.5
Remove LSLE @ 1.5$/ft2	-529	0	-222	3004	2253	37.2	8.5	14.5
Remove LSLE @ $1/ft2	-353	0	-222	3004	2429	37.2	8.5	14.5
98 Standards	-1100	0	199	3692	2791	40.1	10.3	15.7

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-136	-425	-952	-1161	31.3	7.2	9.9
Add Non-metal Frames @ $1.5/ft2	529	-136	-425	-952	-985	31.3	7.2	9.9
Add Non-metal Frames @ $2/ft2	705	-136	-425	-952	-809	31.3	7.2	9.9
Add Non-metal Frames @ $3/ft2	1058	-136	-425	-952	-456	31.3	7.2	9.9
Add Duct Design @ $50	50	-53	0	-280	-283	34.2	9.1	11.0
Add Duct Design @ $250	250	-53	0	-280	-83	34.2	9.1	11.0
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	34.7	9.1	11.5
Add Duct Design @ $500	500	-53	0	-280	167	34.2	9.1	11.0
Remove Rad Bar @ $0.15/ft2	-227	201	19	569	562	35.7	9.1	12.4
Remove TXV @ $225	-225	57	0	763	594	35.9	9.1	12.7
Remove Rad Bar @ $0.10/ft2	-151	201	19	569	638	35.7	9.1	12.4
Remove TXV @ $150	-150	57	0	763	669	35.9	9.1	12.7
Remove TXV @ $75	-75	57	0	763	744	35.9	9.1	12.7
Remove Duct Sealing @ $300	-300	239	194	739	872	36.7	9.9	12.7
Remove Duct Sealing @ $250	-250	239	194	739	922	36.7	9.9	12.7
Remove Duct Seaing @ $200	-200	239	194	739	972	36.7	9.9	12.7
Remove Combo HVAC@500	-500	310	194	1582	1586	38.1	9.9	14.1
Remove Combo HVAC@400	-400	310	194	1582	1686	38.1	9.9	14.1
Remove Combo HVAC@300	-300	310	194	1582	1786	38.1	9.9	14.1
Remove Combo HVAC@250	-250	310	194	1582	1836	38.1	9.9	14.1
Remove LSLE @ 3$/ft2	-1058	293	-210	4240	3265	40.8	8.2	18.5
Remove LSLE @ $2.5/ft2	-881	293	-210	4240	3441	40.8	8.2	18.5
Remove LSLE @ $2/ft2	-705	293	-210	4240	3617	40.8	8.2	18.5
Remove LSLE @ 1.5$/ft2	-529	293	-210	4240	3794	40.8	8.2	18.5
Remove LSLE @ $1/ft2	-353	293	-210	4240	3970	40.8	8.2	18.5
98 Standards	-1100	903	187	4752	4742	43.3	9.9	19.3

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Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-111	-650	-729	-1208	39.0	17.2	7.7
Add Non-metal Frames @ $1.5/ft2	423	-111	-650	-729	-1067	39.0	17.2	7.7
Add Non-metal Frames @ $2/ft2	564	-111	-650	-729	-926	39.0	17.2	7.7
Add Non-metal Frames @ $3/ft2	846	-111	-650	-729	-644	39.0	17.2	7.7
Add Duct Design @ $50	50	-46	0	-233	-229	42.6	20.0	8.4
Add Duct Design @ $250	250	-46	0	-233	-29	42.6	20.0	8.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	42.9	20.0	8.8
Add Duct Design @ $500	500	-46	0	-233	221	42.6	20.0	8.4
Remove TXV @ $225	-225	49	0	637	460	43.9	20.0	9.7
Remove Rad Bar @ $0.15/ft2	-227	174	23	542	512	43.8	20.1	9.6
Remove TXV @ $150	-150	49	0	637	535	43.9	20.0	9.7
Remove Rad Bar @ $0.10/ft2	-151	174	23	542	588	43.8	20.1	9.6
Remove TXV @ $75	-75	49	0	637	610	43.9	20.0	9.7
Remove Duct Sealing @ $300	-300	230	463	705	1098	46.0	22.0	9.8
Remove Duct Sealing @ $250	-250	230	463	705	1148	46.0	22.0	9.8
Remove Duct Seaing @ $200	-200	230	463	705	1198	46.0	22.0	9.8
Remove LSLE @ 3$/ft2	-846	189	-252	2379	1469	45.4	18.9	12.4
Remove LSLE @ $2.5/ft2	-705	189	-252	2379	1610	45.4	18.9	12.4
Remove Combo HVAC@500	-500	292	463	1419	1674	47.0	22.0	10.9
Remove LSLE @ $2/ft2	-564	189	-252	2379	1751	45.4	18.9	12.4
Remove Combo HVAC@400	-400	292	463	1419	1774	47.0	22.0	10.9
Remove Combo HVAC@300	-300	292	463	1419	1874	47.0	22.0	10.9
Remove LSLE @ 1.5$/ft2	-423	189	-252	2379	1892	45.4	18.9	12.4
Remove Combo HVAC@250	-250	292	463	1419	1924	47.0	22.0	10.9
Remove LSLE @ $1/ft2	-282	189	-252	2379	2033	45.4	18.9	12.4
98 Standards	-1100	739	185	3150	2973	48.5	20.8	13.5

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-650	-729	-1096	39.0	17.2	7.7
Add Non-metal Frames @ $1.5/ft2	423	0	-650	-729	-955	39.0	17.2	7.7
Add Non-metal Frames @ $2/ft2	564	0	-650	-729	-814	39.0	17.2	7.7
Add Non-metal Frames @ $3/ft2	846	0	-650	-729	-532	39.0	17.2	7.7
Add Duct Design @ $50	50	0	0	-233	-183	42.6	20.0	8.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	42.9	20.0	8.8
Add Duct Design @ $250	250	0	0	-233	17	42.6	20.0	8.4
Add Duct Design @ $500	500	0	0	-233	267	42.6	20.0	8.4
Remove Rad Bar @ $0.15/ft2	-227	0	23	542	338	43.8	20.1	9.6
Remove TXV @ $225	-225	0	0	637	412	43.9	20.0	9.7
Remove Rad Bar @ $0.10/ft2	-151	0	23	542	414	43.8	20.1	9.6
Remove TXV @ $150	-150	0	0	637	487	43.9	20.0	9.7
Remove TXV @ $75	-75	0	0	637	562	43.9	20.0	9.7
Remove Duct Sealing @ $300	-300	0	463	705	867	46.0	22.0	9.8
Remove Duct Sealing @ $250	-250	0	463	705	917	46.0	22.0	9.8
Remove Duct Seaing @ $200	-200	0	463	705	967	46.0	22.0	9.8
Remove LSLE @ 3$/ft2	-846	0	-252	2379	1280	45.4	18.9	12.4
Remove Combo HVAC@500	-500	0	463	1419	1381	47.0	22.0	10.9
Remove LSLE @ $2.5/ft2	-705	0	-252	2379	1421	45.4	18.9	12.4
Remove Combo HVAC@400	-400	0	463	1419	1481	47.0	22.0	10.9
Remove LSLE @ $2/ft2	-564	0	-252	2379	1562	45.4	18.9	12.4
Remove Combo HVAC@300	-300	0	463	1419	1581	47.0	22.0	10.9
Remove Combo HVAC@250	-250	0	463	1419	1631	47.0	22.0	10.9
Remove LSLE @ 1.5$/ft2	-423	0	-252	2379	1703	45.4	18.9	12.4
Remove LSLE @ $1/ft2	-282	0	-252	2379	1844	45.4	18.9	12.4
98 Standards	-1100	0	185	3150	2234	48.5	20.8	13.5

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-121	-636	-891	-1366	40.1	16.9	9.1
Add Non-metal Frames @ $1.5/ft2	423	-121	-636	-891	-1225	40.1	16.9	9.1
Add Non-metal Frames @ $2/ft2	564	-121	-636	-891	-1084	40.1	16.9	9.1
Add Non-metal Frames @ $3/ft2	846	-121	-636	-891	-802	40.1	16.9	9.1
Add Duct Design @ $50	50	-50	0	-279	-278	43.8	19.6	10.1
Add Duct Design @ $250	250	-50	0	-279	-78	43.8	19.6	10.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	44.2	19.6	10.5
Add Duct Design @ $500	500	-50	0	-279	172	43.8	19.6	10.1
Remove Rad Bar @ $0.15/ft2	-227	184	28	590	575	45.2	19.7	11.4
Remove TXV @ $225	-225	53	0	761	589	45.4	19.6	11.6
Remove Rad Bar @ $0.10/ft2	-151	184	28	590	651	45.2	19.7	11.4
Remove TXV @ $150	-150	53	0	761	664	45.4	19.6	11.6
Remove TXV @ $75	-75	53	0	761	739	45.4	19.6	11.6
Remove Duct Sealing @ $300	-300	250	456	837	1243	47.4	21.5	11.7
Remove Duct Sealing @ $250	-250	250	456	837	1293	47.4	21.5	11.7
Remove Duct Seaing @ $200	-200	250	456	837	1343	47.4	21.5	11.7
Remove Combo HVAC@500	-500	318	456	1690	1964	48.7	21.5	13.0
Remove Combo HVAC@400	-400	318	456	1690	2064	48.7	21.5	13.0
Remove Combo HVAC@300	-300	318	456	1690	2164	48.7	21.5	13.0
Remove Combo HVAC@250	-250	318	456	1690	2214	48.7	21.5	13.0
Remove LSLE @ 3$/ft2	-846	242	-269	3474	2601	48.3	18.4	15.7
Remove LSLE @ $2.5/ft2	-705	242	-269	3474	2742	48.3	18.4	15.7
Remove LSLE @ $2/ft2	-564	242	-269	3474	2883	48.3	18.4	15.7
Remove LSLE @ 1.5$/ft2	-423	242	-269	3474	3024	48.3	18.4	15.7
Remove LSLE @ $1/ft2	-282	242	-269	3474	3165	48.3	18.4	15.7
98 Standards	-1100	822	159	4190	4071	51.2	20.3	16.8

Climate Zone 12 PUC ALJ

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-100	-610	-523	-951	33.8	15.4	4.3
Add Non-metal Frames @ $1.5/ft2	423	-100	-610	-523	-810	33.8	15.4	4.3
Add Non-metal Frames @ $2/ft2	564	-100	-610	-523	-669	33.8	15.4	4.3
Add Non-metal Frames @ $3/ft2	846	-100	-610	-523	-387	33.8	15.4	4.3
Add Duct Design @ $50	50	-41	0	-141	-132	37.0	18.0	4.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	37.2	18.0	5.1
Add Duct Design @ $250	250	-41	0	-141	68	37.0	18.0	4.9
Remove TXV @ $225	-225	44	0	383	202	37.8	18.0	5.6
Remove TXV @ $150	-150	44	0	383	277	37.8	18.0	5.6
Add Duct Design @ $500	500	-41	0	-141	318	37.0	18.0	4.9
Remove TXV @ $75	-75	44	0	383	352	37.8	18.0	5.6
Remove Rad Bar @ $0.15/ft2	-227	159	21	405	358	37.9	18.1	5.7
Remove Rad Bar @ $0.10/ft2	-151	159	21	405	433	37.9	18.1	5.7
Remove Duct Sealing @ $300	-300	185	407	373	665	39.5	19.7	5.6
Remove Duct Sealing @ $250	-250	185	407	373	715	39.5	19.7	5.6
Remove Duct Seaing @ $200	-200	185	407	373	765	39.5	19.7	5.6
Remove Combo HVAC@500	-500	239	407	798	944	40.1	19.7	6.2
Remove Combo HVAC@400	-400	239	407	798	1044	40.1	19.7	6.2
Remove Combo HVAC@300	-300	239	407	798	1144	40.1	19.7	6.2
Remove LSLE @ 3$/ft2	-846	182	-297	2123	1162	39.0	16.7	8.2
Remove Combo HVAC@250	-250	239	407	798	1194	40.1	19.7	6.2
Remove LSLE @ $2.5/ft2	-705	182	-297	2123	1303	39.0	16.7	8.2
Remove LSLE @ $2/ft2	-564	182	-297	2123	1444	39.0	16.7	8.2
Remove LSLE @ 1.5$/ft2	-423	182	-297	2123	1585	39.0	16.7	8.2
Remove LSLE @ $1/ft2	-282	182	-297	2123	1726	39.0	16.7	8.2
98 Standards	-1100	629	105	2159	1794	40.8	18.4	8.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-610	-523	-851	33.8	15.4	4.3
Add Non-metal Frames @ $1.5/ft2	423	0	-610	-523	-710	33.8	15.4	4.3
Add Non-metal Frames @ $2/ft2	564	0	-610	-523	-569	33.8	15.4	4.3
Add Non-metal Frames @ $3/ft2	846	0	-610	-523	-287	33.8	15.4	4.3
Add Duct Design @ $50	50	0	0	-141	-91	37.0	18.0	4.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	37.2	18.0	5.1
Add Duct Design @ $250	250	0	0	-141	109	37.0	18.0	4.9
Remove TXV @ $225	-225	0	0	383	158	37.8	18.0	5.6
Remove Rad Bar @ $0.15/ft2	-227	0	21	405	199	37.9	18.1	5.7
Remove TXV @ $150	-150	0	0	383	233	37.8	18.0	5.6
Remove Rad Bar @ $0.10/ft2	-151	0	21	405	274	37.9	18.1	5.7
Remove TXV @ $75	-75	0	0	383	308	37.8	18.0	5.6
Add Duct Design @ $500	500	0	0	-141	359	37.0	18.0	4.9
Remove Duct Sealing @ $300	-300	0	407	373	480	39.5	19.7	5.6
Remove Duct Sealing @ $250	-250	0	407	373	530	39.5	19.7	5.6
Remove Duct Seaing @ $200	-200	0	407	373	580	39.5	19.7	5.6
Remove Combo HVAC@500	-500	0	407	798	705	40.1	19.7	6.2
Remove Combo HVAC@400	-400	0	407	798	805	40.1	19.7	6.2
Remove Combo HVAC@300	-300	0	407	798	905	40.1	19.7	6.2
Remove Combo HVAC@250	-250	0	407	798	955	40.1	19.7	6.2
Remove LSLE @ 3$/ft2	-846	0	-297	2123	980	39.0	16.7	8.2
Remove LSLE @ $2.5/ft2	-705	0	-297	2123	1121	39.0	16.7	8.2
98 Standards	-1100	0	105	2159	1164	40.8	18.4	8.2
Remove LSLE @ $2/ft2	-564	0	-297	2123	1262	39.0	16.7	8.2
Remove LSLE @ 1.5$/ft2	-423	0	-297	2123	1403	39.0	16.7	8.2
Remove LSLE @ $1/ft2	-282	0	-297	2123	1544	39.0	16.7	8.2

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-109	-596	-691	-1114	34.7	15.0	5.6
Add Non-metal Frames @ $1.5/ft2	423	-109	-596	-691	-973	34.7	15.0	5.6
Add Non-metal Frames @ $2/ft2	564	-109	-596	-691	-832	34.7	15.0	5.6
Add Non-metal Frames @ $3/ft2	846	-109	-596	-691	-550	34.7	15.0	5.6
Add Duct Design @ $50	50	-45	0	-180	-175	38.0	17.5	6.3
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.2	17.5	6.6
Add Duct Design @ $250	250	-45	0	-180	25	38.0	17.5	6.3
Add Duct Design @ $500	500	-45	0	-180	275	38.0	17.5	6.3
Remove TXV @ $225	-225	48	0	498	321	39.0	17.5	7.3
Remove TXV @ $150	-150	48	0	498	396	39.0	17.5	7.3
Remove Rad Bar @ $0.15/ft2	-227	169	23	454	420	39.0	17.6	7.2
Remove TXV @ $75	-75	48	0	498	471	39.0	17.5	7.3
Remove Rad Bar @ $0.10/ft2	-151	169	23	454	495	39.0	17.6	7.2
Remove Duct Sealing @ $300	-300	203	395	486	783	40.6	19.2	7.3
Remove Duct Sealing @ $250	-250	203	395	486	833	40.6	19.2	7.3
Remove Duct Seaing @ $200	-200	203	395	486	883	40.6	19.2	7.3
Remove Combo HVAC@500	-500	262	395	1037	1194	41.4	19.2	8.1
Remove Combo HVAC@400	-400	262	395	1037	1294	41.4	19.2	8.1
Remove Combo HVAC@300	-300	262	395	1037	1394	41.4	19.2	8.1
Remove Combo HVAC@250	-250	262	395	1037	1444	41.4	19.2	8.1
Remove LSLE @ 3$/ft2	-846	234	-322	3243	2309	41.6	16.1	11.3
Remove LSLE @ $2.5/ft2	-705	234	-322	3243	2450	41.6	16.1	11.3
Remove LSLE @ $2/ft2	-564	234	-322	3243	2591	41.6	16.1	11.3
Remove LSLE @ 1.5$/ft2	-423	234	-322	3243	2732	41.6	16.1	11.3
98 Standards	-1100	706	72	3130	2809	43.1	17.8	11.1
Remove LSLE @ $1/ft2	-282	234	-322	3243	2873	41.6	16.1	11.3

Climate Zone 13 PUC ALJ

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-105	-512	-918	-1252	38.0	12.1	11.8
Add Non-metal Frames @ $1.5/ft2	423	-105	-512	-918	-1111	38.0	12.1	11.8
Add Non-metal Frames @ $2/ft2	564	-105	-512	-918	-970	38.0	12.1	11.8
Add Non-metal Frames @ $3/ft2	846	-105	-512	-918	-688	38.0	12.1	11.8
Add Duct Design @ $50	50	-43	0	-335	-328	41.1	14.3	12.7
Add Duct Design @ $250	250	-43	0	-335	-128	41.1	14.3	12.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	41.6	14.3	13.2
Add Duct Design @ $500	500	-43	0	-335	122	41.1	14.3	12.7
Remove Rad Bar @ $0.15/ft2	-227	150	19	664	606	42.8	14.3	14.3
Remove Rad Bar @ $0.10/ft2	-151	150	19	664	681	42.8	14.3	14.3
Remove TXV @ $225	-225	46	0	917	738	43.1	14.3	14.7
Remove TXV @ $150	-150	46	0	917	813	43.1	14.3	14.7
Remove TXV @ $75	-75	46	0	917	888	43.1	14.3	14.7
Remove Duct Sealing @ $300	-300	198	329	918	1145	44.5	15.7	14.7
Remove Duct Sealing @ $250	-250	198	329	918	1195	44.5	15.7	14.7
Remove Duct Seaing @ $200	-200	198	329	918	1245	44.5	15.7	14.7
Remove LSLE @ 3$/ft2	-846	186	-241	2754	1853	45.0	13.2	17.6
Remove LSLE @ $2.5/ft2	-705	186	-241	2754	1994	45.0	13.2	17.6
Remove Combo HVAC@500	-500	255	329	1936	2020	46.1	15.7	16.3
Remove Combo HVAC@400	-400	255	329	1936	2120	46.1	15.7	16.3
Remove LSLE @ $2/ft2	-564	186	-241	2754	2135	45.0	13.2	17.6
Remove Combo HVAC@300	-300	255	329	1936	2220	46.1	15.7	16.3
Remove Combo HVAC@250	-250	255	329	1936	2270	46.1	15.7	16.3
Remove LSLE @ 1.5$/ft2	-423	186	-241	2754	2276	45.0	13.2	17.6
Remove LSLE @ $1/ft2	-282	186	-241	2754	2417	45.0	13.2	17.6
98 Standards	-1100	667	84	3941	3593	48.2	14.6	19.5

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-512	-918	-1148	38.0	12.1	11.8
Add Non-metal Frames @ $1.5/ft2	423	0	-512	-918	-1007	38.0	12.1	11.8
Add Non-metal Frames @ $2/ft2	564	0	-512	-918	-866	38.0	12.1	11.8
Add Non-metal Frames @ $3/ft2	846	0	-512	-918	-584	38.0	12.1	11.8
Add Duct Design @ $50	50	0	0	-335	-285	41.1	14.3	12.7
Add Duct Design @ $250	250	0	0	-335	-85	41.1	14.3	12.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	41.6	14.3	13.2
Add Duct Design @ $500	500	0	0	-335	165	41.1	14.3	12.7
Remove Rad Bar @ $0.15/ft2	-227	0	19	664	456	42.8	14.3	14.3
Remove Rad Bar @ $0.10/ft2	-151	0	19	664	531	42.8	14.3	14.3
Remove TXV @ $225	-225	0	0	917	692	43.1	14.3	14.7
Remove TXV @ $150	-150	0	0	917	767	43.1	14.3	14.7
Remove TXV @ $75	-75	0	0	917	842	43.1	14.3	14.7
Remove Duct Sealing @ $300	-300	0	329	918	947	44.5	15.7	14.7
Remove Duct Sealing @ $250	-250	0	329	918	997	44.5	15.7	14.7
Remove Duct Seaing @ $200	-200	0	329	918	1047	44.5	15.7	14.7
Remove LSLE @ 3$/ft2	-846	0	-241	2754	1667	45.0	13.2	17.6
Remove Combo HVAC@500	-500	0	329	1936	1765	46.1	15.7	16.3
Remove LSLE @ $2.5/ft2	-705	0	-241	2754	1808	45.0	13.2	17.6
Remove Combo HVAC@400	-400	0	329	1936	1865	46.1	15.7	16.3
Remove LSLE @ $2/ft2	-564	0	-241	2754	1949	45.0	13.2	17.6
Remove Combo HVAC@300	-300	0	329	1936	1965	46.1	15.7	16.3
Remove Combo HVAC@250	-250	0	329	1936	2015	46.1	15.7	16.3
Remove LSLE @ 1.5$/ft2	-423	0	-241	2754	2090	45.0	13.2	17.6
Remove LSLE @ $1/ft2	-282	0	-241	2754	2231	45.0	13.2	17.6
98 Standards	-1100	0	84	3941	2925	48.2	14.6	19.5

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-114	-498	-1091	-1421	39.4	11.7	13.5
Add Non-metal Frames @ $1.5/ft2	423	-114	-498	-1091	-1280	39.4	11.7	13.5
Add Non-metal Frames @ $2/ft2	564	-114	-498	-1091	-1139	39.4	11.7	13.5
Add Non-metal Frames @ $3/ft2	846	-114	-498	-1091	-857	39.4	11.7	13.5
Add Duct Design @ $50	50	-47	0	-390	-387	42.6	13.9	14.6
Add Duct Design @ $250	250	-47	0	-390	-187	42.6	13.9	14.6
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	43.2	13.9	15.2
Add Duct Design @ $500	500	-47	0	-390	63	42.6	13.9	14.6
Remove Rad Bar @ $0.15/ft2	-227	159	23	710	665	44.4	14.0	16.3
Remove Rad Bar @ $0.10/ft2	-151	159	23	710	741	44.4	14.0	16.3
Remove TXV @ $225	-225	50	0	1054	879	44.9	13.9	16.9
Remove TXV @ $150	-150	50	0	1054	954	44.9	13.9	16.9
Remove TXV @ $75	-75	50	0	1054	1029	44.9	13.9	16.9
Remove Duct Sealing @ $300	-300	216	322	1051	1289	46.3	15.2	16.9
Remove Duct Sealing @ $250	-250	216	322	1051	1339	46.3	15.2	16.9
Remove Duct Seaing @ $200	-200	216	322	1051	1389	46.3	15.2	16.9
Remove Combo HVAC@500	-500	278	322	2220	2321	48.1	15.2	18.7
Remove Combo HVAC@400	-400	278	322	2220	2421	48.1	15.2	18.7
Remove Combo HVAC@300	-300	278	322	2220	2521	48.1	15.2	18.7
Remove Combo HVAC@250	-250	278	322	2220	2571	48.1	15.2	18.7
Remove LSLE @ 3$/ft2	-846	239	-257	3885	3021	48.3	12.8	21.4
Remove LSLE @ $2.5/ft2	-705	239	-257	3885	3162	48.3	12.8	21.4
Remove LSLE @ $2/ft2	-564	239	-257	3885	3303	48.3	12.8	21.4
Remove LSLE @ 1.5$/ft2	-423	239	-257	3885	3444	48.3	12.8	21.4
Remove LSLE @ $1/ft2	-282	239	-257	3885	3585	48.3	12.8	21.4
98 Standards	-1100	747	61	4963	4670	51.4	14.1	23.1

Climate Zone 14 PUC ALJ

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-147	-715	-894	-1474	42.8	17.4	11.2
Add Non-metal Frames @ $1.5/ft2	423	-147	-715	-894	-1333	42.8	17.4	11.2
Add Non-metal Frames @ $2/ft2	564	-147	-715	-894	-1192	42.8	17.4	11.2
Add Non-metal Frames @ $3/ft2	846	-147	-715	-894	-910	42.8	17.4	11.2
Add Duct Design @ $50	50	-60	0	-322	-332	46.8	20.5	12.1
Add Duct Design @ $250	250	-60	0	-322	-132	46.8	20.5	12.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	47.3	20.5	12.6
Add Duct Design @ $500	500	-60	0	-322	118	46.8	20.5	12.1
Remove TXV @ $225	-225	64	0	883	722	48.7	20.5	14.0
Remove Rad Bar @ $0.15/ft2	-227	238	23	708	743	48.5	20.6	13.7
Remove TXV @ $150	-150	64	0	883	797	48.7	20.5	14.0
Remove Rad Bar @ $0.10/ft2	-151	238	23	708	818	48.5	20.6	13.7
Remove TXV @ $75	-75	64	0	883	872	48.7	20.5	14.0
Remove LSLE @ 3$/ft2	-846	206	-418	2555	1496	49.5	18.7	16.6
Remove LSLE @ $2.5/ft2	-705	206	-418	2555	1637	49.5	18.7	16.6
Remove Duct Sealing @ $300	-300	309	542	1098	1648	51.3	22.8	14.3
Remove Duct Sealing @ $250	-250	309	542	1098	1698	51.3	22.8	14.3
Remove Duct Seaing @ $200	-200	309	542	1098	1748	51.3	22.8	14.3
Remove LSLE @ $2/ft2	-564	206	-418	2555	1778	49.5	18.7	16.6
Remove LSLE @ 1.5$/ft2	-423	206	-418	2555	1919	49.5	18.7	16.6
Remove LSLE @ $1/ft2	-282	206	-418	2555	2060	49.5	18.7	16.6
Remove Combo HVAC@500	-500	390	542	2101	2534	52.9	22.8	15.9
Remove Combo HVAC@400	-400	390	542	2101	2634	52.9	22.8	15.9
Remove Combo HVAC@300	-300	390	542	2101	2734	52.9	22.8	15.9
Remove Combo HVAC@250	-250	390	542	2101	2784	52.9	22.8	15.9
98 Standards	-1100	1058	147	4171	4277	54.5	21.1	19.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-715	-894	-1327	42.8	17.4	11.2
Add Non-metal Frames @ $1.5/ft2	423	0	-715	-894	-1186	42.8	17.4	11.2
Add Non-metal Frames @ $2/ft2	564	0	-715	-894	-1045	42.8	17.4	11.2
Add Non-metal Frames @ $3/ft2	846	0	-715	-894	-763	42.8	17.4	11.2
Add Duct Design @ $50	50	0	0	-322	-272	46.8	20.5	12.1
Add Duct Design @ $250	250	0	0	-322	-72	46.8	20.5	12.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	47.3	20.5	12.6
Add Duct Design @ $500	500	0	0	-322	178	46.8	20.5	12.1
Remove Rad Bar @ $0.15/ft2	-227	0	23	708	504	48.5	20.6	13.7
Remove Rad Bar @ $0.10/ft2	-151	0	23	708	580	48.5	20.6	13.7
Remove TXV @ $225	-225	0	0	883	658	48.7	20.5	14.0
Remove TXV @ $150	-150	0	0	883	733	48.7	20.5	14.0
Remove TXV @ $75	-75	0	0	883	808	48.7	20.5	14.0
Remove LSLE @ 3$/ft2	-846	0	-418	2555	1291	49.5	18.7	16.6
Remove Duct Sealing @ $300	-300	0	542	1098	1340	51.3	22.8	14.3
Remove Duct Sealing @ $250	-250	0	542	1098	1390	51.3	22.8	14.3
Remove LSLE @ $2.5/ft2	-705	0	-418	2555	1432	49.5	18.7	16.6
Remove Duct Seaing @ $200	-200	0	542	1098	1440	51.3	22.8	14.3
Remove LSLE @ $2/ft2	-564	0	-418	2555	1573	49.5	18.7	16.6
Remove LSLE @ 1.5$/ft2	-423	0	-418	2555	1714	49.5	18.7	16.6
Remove LSLE @ $1/ft2	-282	0	-418	2555	1855	49.5	18.7	16.6
Remove Combo HVAC@500	-500	0	542	2101	2143	52.9	22.8	15.9
Remove Combo HVAC@400	-400	0	542	2101	2243	52.9	22.8	15.9
Remove Combo HVAC@300	-300	0	542	2101	2343	52.9	22.8	15.9
Remove Combo HVAC@250	-250	0	542	2101	2393	52.9	22.8	15.9
98 Standards	-1100	0	147	4171	3219	54.5	21.1	19.2

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-157	-685	-1056	-1615	43.6	16.7	12.8
Add Non-metal Frames @ $1.5/ft2	423	-157	-685	-1056	-1474	43.6	16.7	12.8
Add Non-metal Frames @ $2/ft2	564	-157	-685	-1056	-1333	43.6	16.7	12.8
Add Non-metal Frames @ $3/ft2	846	-157	-685	-1056	-1051	43.6	16.7	12.8
Add Duct Design @ $50	50	-64	0	-373	-387	47.6	19.6	13.8
Add Duct Design @ $250	250	-64	0	-373	-187	47.6	19.6	13.8
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	48.2	19.6	14.4
Add Duct Design @ $500	500	-64	0	-373	63	47.6	19.6	13.8
Remove Rad Bar @ $0.15/ft2	-227	251	28	762	813	49.5	19.7	15.6
Remove TXV @ $225	-225	68	0	1009	852	49.8	19.6	16.0
Remove Rad Bar @ $0.10/ft2	-151	251	28	762	889	49.5	19.7	15.6
Remove TXV @ $150	-150	68	0	1009	927	49.8	19.6	16.0
Remove TXV @ $75	-75	68	0	1009	1002	49.8	19.6	16.0
Remove Duct Sealing @ $300	-300	329	521	1254	1804	52.4	21.8	16.4
Remove Duct Sealing @ $250	-250	329	521	1254	1854	52.4	21.8	16.4
Remove Duct Seaing @ $200	-200	329	521	1254	1904	52.4	21.8	16.4
Remove LSLE @ 3$/ft2	-846	259	-477	3725	2661	52.0	17.6	20.3
Remove LSLE @ $2.5/ft2	-705	259	-477	3725	2802	52.0	17.6	20.3
Remove Combo HVAC@500	-500	417	521	2400	2838	54.2	21.8	18.2
Remove Combo HVAC@400	-400	417	521	2400	2938	54.2	21.8	18.2
Remove LSLE @ $2/ft2	-564	259	-477	3725	2943	52.0	17.6	20.3
Remove Combo HVAC@300	-300	417	521	2400	3038	54.2	21.8	18.2
Remove LSLE @ 1.5$/ft2	-423	259	-477	3725	3084	52.0	17.6	20.3
Remove Combo HVAC@250	-250	417	521	2400	3088	54.2	21.8	18.2
Remove LSLE @ $1/ft2	-282	259	-477	3725	3225	52.0	17.6	20.3
98 Standards	-1100	1153	82	5230	5364	56.8	20.0	22.6

Climate Zone 15 PUC ALJ

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-139	-175	-1822	-1854	48.2	3.1	31.0
Add Non-metal Frames @ $1.5/ft2	423	-139	-175	-1822	-1713	48.2	3.1	31.0
Add Non-metal Frames @ $2/ft2	564	-139	-175	-1822	-1572	48.2	3.1	31.0
Add Non-metal Frames @ $3/ft2	846	-139	-175	-1822	-1290	48.2	3.1	31.0
Add Duct Design @ $50	50	-57	0	-777	-784	50.9	3.8	32.9
Add Duct Design @ $250	250	-57	0	-777	-584	50.9	3.8	32.9
Add Duct Design @ $500	500	-57	0	-777	-334	50.9	3.8	32.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	52.2	3.8	34.3
Remove Rad Bar @ $0.15/ft2	-227	232	7	1426	1438	54.8	3.9	36.8
Remove Rad Bar @ $0.10/ft2	-151	232	7	1426	1513	54.8	3.9	36.8
Remove TXV @ $225	-225	60	0	2113	1948	56.0	3.8	38.0
Remove TXV @ $150	-150	60	0	2113	2023	56.0	3.8	38.0
Remove TXV @ $75	-75	60	0	2113	2098	56.0	3.8	38.0
Remove Duct Sealing @ $300	-300	296	86	2857	2940	57.7	4.2	39.4
Remove LSLE @ 3$/ft2	-846	205	-119	3739	2978	58.4	3.3	40.9
Remove Duct Sealing @ $250	-250	296	86	2857	2990	57.7	4.2	39.4
Remove Duct Seaing @ $200	-200	296	86	2857	3040	57.7	4.2	39.4
Remove LSLE @ $2.5/ft2	-705	205	-119	3739	3119	58.4	3.3	40.9
Remove LSLE @ $2/ft2	-564	205	-119	3739	3260	58.4	3.3	40.9
Remove LSLE @ 1.5$/ft2	-423	205	-119	3739	3401	58.4	3.3	40.9
Remove LSLE @ $1/ft2	-282	205	-119	3739	3542	58.4	3.3	40.9
Remove Combo HVAC@500	-500	374	86	5284	5244	62.0	4.2	43.7
Remove Combo HVAC@400	-400	374	86	5284	5344	62.0	4.2	43.7
Remove Combo HVAC@300	-300	374	86	5284	5444	62.0	4.2	43.7
Remove Combo HVAC@250	-250	374	86	5284	5494	62.0	4.2	43.7
98 Standards	-1100	1057	75	8344	8375	67.4	4.1	49.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-175	-1822	-1715	48.2	3.1	31.0
Add Non-metal Frames @ $1.5/ft2	423	0	-175	-1822	-1574	48.2	3.1	31.0
Add Non-metal Frames @ $2/ft2	564	0	-175	-1822	-1433	48.2	3.1	31.0
Add Non-metal Frames @ $3/ft2	846	0	-175	-1822	-1151	48.2	3.1	31.0
Add Duct Design @ $50	50	0	0	-777	-727	50.9	3.8	32.9
Add Duct Design @ $250	250	0	0	-777	-527	50.9	3.8	32.9
Add Duct Design @ $500	500	0	0	-777	-277	50.9	3.8	32.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	52.2	3.8	34.3
Remove Rad Bar @ $0.15/ft2	-227	0	7	1426	1206	54.8	3.9	36.8
Remove Rad Bar @ $0.10/ft2	-151	0	7	1426	1281	54.8	3.9	36.8
Remove TXV @ $225	-225	0	0	2113	1888	56.0	3.8	38.0
Remove TXV @ $150	-150	0	0	2113	1963	56.0	3.8	38.0
Remove TXV @ $75	-75	0	0	2113	2038	56.0	3.8	38.0
Remove Duct Sealing @ $300	-300	0	86	2857	2643	57.7	4.2	39.4
Remove Duct Sealing @ $250	-250	0	86	2857	2693	57.7	4.2	39.4
Remove Duct Seaing @ $200	-200	0	86	2857	2743	57.7	4.2	39.4
Remove LSLE @ 3$/ft2	-846	0	-119	3739	2773	58.4	3.3	40.9
Remove LSLE @ $2.5/ft2	-705	0	-119	3739	2914	58.4	3.3	40.9
Remove LSLE @ $2/ft2	-564	0	-119	3739	3055	58.4	3.3	40.9
Remove LSLE @ 1.5$/ft2	-423	0	-119	3739	3196	58.4	3.3	40.9
Remove LSLE @ $1/ft2	-282	0	-119	3739	3337	58.4	3.3	40.9
Remove Combo HVAC@500	-500	0	86	5284	4871	62.0	4.2	43.7
Remove Combo HVAC@400	-400	0	86	5284	4971	62.0	4.2	43.7
Remove Combo HVAC@300	-300	0	86	5284	5071	62.0	4.2	43.7
Remove Combo HVAC@250	-250	0	86	5284	5121	62.0	4.2	43.7
98 Standards	-1100	0	75	8344	7318	67.4	4.1	49.2

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-149	-171	-2012	-2049	50.2	2.9	33.1
Add Non-metal Frames @ $1.5/ft2	423	-149	-171	-2012	-1908	50.2	2.9	33.1
Add Non-metal Frames @ $2/ft2	564	-149	-171	-2012	-1767	50.2	2.9	33.1
Add Non-metal Frames @ $3/ft2	846	-149	-171	-2012	-1485	50.2	2.9	33.1
Add Duct Design @ $50	50	-61	0	-830	-841	53.0	3.6	35.2
Add Duct Design @ $250	250	-61	0	-830	-641	53.0	3.6	35.2
Add Duct Design @ $500	500	-61	0	-830	-391	53.0	3.6	35.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	54.5	3.6	36.7
Remove Rad Bar @ $0.15/ft2	-227	244	7	1489	1514	57.2	3.7	39.4
Remove Rad Bar @ $0.10/ft2	-151	244	7	1489	1589	57.2	3.7	39.4
Remove TXV @ $225	-225	65	0	2265	2104	58.5	3.6	40.8
Remove TXV @ $150	-150	65	0	2265	2179	58.5	3.6	40.8
Remove TXV @ $75	-75	65	0	2265	2254	58.5	3.6	40.8
Remove Duct Sealing @ $300	-300	318	79	3068	3165	60.3	4.0	42.2
Remove Duct Sealing @ $250	-250	318	79	3068	3215	60.3	4.0	42.2
Remove Duct Seaing @ $200	-200	318	79	3068	3265	60.3	4.0	42.2
Remove LSLE @ 3$/ft2	-846	259	-110	4995	4298	62.9	3.2	45.6
Remove LSLE @ $2.5/ft2	-705	259	-110	4995	4439	62.9	3.2	45.6
Remove LSLE @ $2/ft2	-564	259	-110	4995	4580	62.9	3.2	45.6
Remove LSLE @ 1.5$/ft2	-423	259	-110	4995	4721	62.9	3.2	45.6
Remove LSLE @ $1/ft2	-282	259	-110	4995	4862	62.9	3.2	45.6
Remove Combo HVAC@500	-500	401	79	5670	5650	65.0	4.0	46.8
Remove Combo HVAC@400	-400	401	79	5670	5750	65.0	4.0	46.8
Remove Combo HVAC@300	-300	401	79	5670	5850	65.0	4.0	46.8
Remove Combo HVAC@250	-250	401	79	5670	5900	65.0	4.0	46.8
98 Standards	-1100	1124	70	8888	8982	70.7	3.9	52.6

Climate Zone 16 PUC ALJ

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Duct Design @ $50	50	-58	0	-122	-130	54.1	37.4	2.6
Add TXV @ $75	75	-42	0	-162	-129	54.1	37.4	2.5
Add Rad Bar @ $0.10/ft1	151	-69	-56	-144	-117	53.9	37.1	2.6
Add TXV @ $150	150	-42	0	-162	-54	54.1	37.4	2.5
Add Rad Bar @ $0.15/ft2	227	-69	-56	-144	-42	53.9	37.1	2.6
Add Non-metal Frames @ $1/ft2	282	-28	-145	-144	-35	53.5	36.8	2.6
Package 4 Tight Ducts	0	0	0	0	0	54.4	37.4	2.8
Add TXV @ $225	225	-42	0	-162	21	54.1	37.4	2.5
Add Duct Design @ $250	250	-58	0	-122	70	54.1	37.4	2.6
Add Non-metal Frames @ $1.5/ft2	423	-28	-145	-144	106	53.5	36.8	2.6
Add Non-metal Frames @ $2/ft2	564	-28	-145	-144	247	53.5	36.8	2.6
Add Duct Design @ $500	500	-58	0	-122	320	54.1	37.4	2.6
Add Non-metal Frames @ $3/ft2	846	-28	-145	-144	529	53.5	36.8	2.6
Add LSLE @ $1/ft2	282	-160	1355	-837	641	58.7	43.2	1.4
Add LSLE @ $1.5/ft2	423	-160	1355	-837	782	58.7	43.2	1.4
Add LSLE @ $2/ft2	564	-160	1355	-837	923	58.7	43.2	1.4
Add LSLE @ $2.5/ft2	705	-160	1355	-837	1064	58.7	43.2	1.4
Remove Duct Seal @ $300	-300	185	1091	127	1104	59.2	42.1	3.0
98 Standards	-300	185	1091	127	1104	59.2	42.1	3.0
Remove Duct Seal @ $250	-250	185	1091	127	1154	59.2	42.1	3.0
Remove Duct Seal @ $200	-200	185	1091	127	1204	59.2	42.1	3.0
Add LSLE @ $3/ft2	846	-160	1355	-837	1205	58.7	43.2	1.4

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add TXV @ $75	75	0	0	-162	-87	54.1	37.4	2.5
Add Duct Design @ $50	50	0	0	-122	-72	54.1	37.4	2.6
Add Rad Bar @ $0.10/ft1	151	0	-56	-144	-49	53.9	37.1	2.6
Add TXV @ $150	150	0	0	-162	-12	54.1	37.4	2.5
Add Non-metal Frames @ $1/ft2	282	0	-145	-144	-7	53.5	36.8	2.6
Package 4 Tight Ducts	0	0	0	0	0	54.4	37.4	2.8
Add Rad Bar @ $0.15/ft2	227	0	-56	-144	27	53.9	37.1	2.6
Add TXV @ $225	225	0	0	-162	63	54.1	37.4	2.5
Add Duct Design @ $250	250	0	0	-122	128	54.1	37.4	2.6
Add Non-metal Frames @ $1.5/ft2	423	0	-145	-144	134	53.5	36.8	2.6
Add Non-metal Frames @ $2/ft2	564	0	-145	-144	275	53.5	36.8	2.6
Add Duct Design @ $500	500	0	0	-122	378	54.1	37.4	2.6
Add Non-metal Frames @ $3/ft2	846	0	-145	-144	557	53.5	36.8	2.6
Add LSLE @ $1/ft2	282	0	1355	-837	801	58.7	43.2	1.4
Remove Duct Seal @ $300	-300	0	1091	127	919	59.2	42.1	3.0
98 Standards	-300	0	1091	127	919	59.2	42.1	3.0
Add LSLE @ $1.5/ft2	423	0	1355	-837	942	58.7	43.2	1.4
Remove Duct Seal @ $250	-250	0	1091	127	969	59.2	42.1	3.0
Remove Duct Seal @ $200	-200	0	1091	127	1019	59.2	42.1	3.0
Add LSLE @ $2/ft2	564	0	1355	-837	1083	58.7	43.2	1.4
Add LSLE @ $2.5/ft2	705	0	1355	-837	1224	58.7	43.2	1.4
Add LSLE @ $3/ft2	846	0	1355	-837	1365	58.7	43.2	1.4

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add TXV @ $75	75	88	0	-267	-104	54.5	36.2	4.2
Add Duct Design @ $50	50	69	0	-205	-86	54.6	36.2	4.3
Add TXV @ $150	150	88	0	-267	-29	54.5	36.2	4.2
Add Rad Bar @ $0.10/ft1	151	66	-56	-172	-11	54.4	35.9	4.4
Add Non-metal Frames @ $1/ft2	282	102	-133	-233	19	54.0	35.6	4.3
Add TXV @ $225	225	88	0	-267	46	54.5	36.2	4.2
Add Rad Bar @ $0.15/ft2	227	66	-56	-172	65	54.4	35.9	4.4
Add Duct Design @ $250	250	69	0	-205	114	54.6	36.2	4.3
Package 4 Tight Ducts	0	137	0	0	137	55.0	36.2	4.7
Add LSLE @ $1/ft2	282	-80	1411	-1468	146	58.5	42.2	2.1
Add Non-metal Frames @ $1.5/ft2	423	102	-133	-233	160	54.0	35.6	4.3
Add LSLE @ $1.5/ft2	423	-80	1411	-1468	287	58.5	42.2	2.1
Add Non-metal Frames @ $2/ft2	564	102	-133	-233	301	54.0	35.6	4.3
Add Duct Design @ $500	500	69	0	-205	364	54.6	36.2	4.3
Add LSLE @ $2/ft2	564	-80	1411	-1468	428	58.5	42.2	2.1
Add LSLE @ $2.5/ft2	705	-80	1411	-1468	569	58.5	42.2	2.1
Add Non-metal Frames @ $3/ft2	846	102	-133	-233	583	54.0	35.6	4.3
Add LSLE @ $3/ft2	846	-80	1411	-1468	710	58.5	42.2	2.1
Remove Duct Seal @ $300	-300	356	1056	205	1317	59.8	40.7	5.0
98 Standards	-300	356	1056	205	1317	59.8	40.7	5.0
Remove Duct Seal @ $250	-250	356	1056	205	1367	59.8	40.7	5.0
Remove Duct Seal @ $200	-200	356	1056	205	1417	59.8	40.7	5.0

D. LCC Tables for CEC Forecast by Time Block

Climate Zone 01 CEC Forecast by Time Block

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	33.2	19.0	0.0
Add Duct Design @ $50	50	-40	0	0	10	33.2	19.0	0.0
Add Non-metal Frames @ $1/ft2	282	-18	-241	0	23	32.1	18.0	0.0
Add TXV @ $75	75	-29	0	0	46	33.2	19.0	0.0
Add Rad Bar @ $0.10/ft1	151	-58	-28	0	65	33.0	18.9	0.0
Add TXV @ $150	150	-29	0	0	121	33.2	19.0	0.0
Add Rad Bar @ $0.15/ft2	227	-58	-28	0	141	33.0	18.9	0.0
Add Non-metal Frames @ $1.5/ft2	423	-18	-241	0	164	32.1	18.0	0.0
Add TXV @ $225	225	-29	0	0	196	33.2	19.0	0.0
Add Duct Design @ $250	250	-40	0	0	210	33.2	19.0	0.0
Remove Duct Seal @ $300	-300	105	418	3	227	34.9	20.8	0.0
98 Standards	-300	105	418	3	227	34.9	20.8	0.0
Remove Duct Seal @ $250	-250	105	418	3	277	34.9	20.8	0.0
Add Non-metal Frames @ $2/ft2	564	-18	-241	0	305	32.1	18.0	0.0
Remove Duct Seal @ $200	-200	105	418	3	327	34.9	20.8	0.0
Add Duct Design @ $500	500	-40	0	0	460	33.2	19.0	0.0
Add Non-metal Frames @ $3/ft2	846	-18	-241	0	587	32.1	18.0	0.0
Add LSLE @ $1/ft2	282	-148	1033	0	1166	37.6	23.4	0.0
Add LSLE @ $1.5/ft2	423	-148	1033	0	1307	37.6	23.4	0.0
Add LSLE @ $2/ft2	564	-148	1033	0	1448	37.6	23.4	0.0
Add LSLE @ $2.5/ft2	705	-148	1033	0	1589	37.6	23.4	0.0
Add LSLE @ $3/ft2	846	-148	1033	0	1730	37.6	23.4	0.0

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	33.2	19.0	0.0
Add Non-metal Frames @ $1/ft2	282	0	-241	0	41	32.1	18.0	0.0
Add Duct Design @ $50	50	0	0	0	50	33.2	19.0	0.0
Add TXV @ $75	75	0	0	0	75	33.2	19.0	0.0
Remove Duct Seal @ $300	-300	0	418	3	121	34.9	20.8	0.0
98 Standards	-300	0	418	3	121	34.9	20.8	0.0
Add Rad Bar @ $0.10/ft1	151	0	-28	0	123	33.0	18.9	0.0
Add TXV @ $150	150	0	0	0	150	33.2	19.0	0.0
Remove Duct Seal @ $250	-250	0	418	3	171	34.9	20.8	0.0
Add Non-metal Frames @ $1.5/ft2	423	0	-241	0	182	32.1	18.0	0.0
Add Rad Bar @ $0.15/ft2	227	0	-28	0	199	33.0	18.9	0.0
Remove Duct Seal @ $200	-200	0	418	3	221	34.9	20.8	0.0
Add TXV @ $225	225	0	0	0	225	33.2	19.0	0.0
Add Duct Design @ $250	250	0	0	0	250	33.2	19.0	0.0
Add Non-metal Frames @ $2/ft2	564	0	-241	0	323	32.1	18.0	0.0
Add Duct Design @ $500	500	0	0	0	500	33.2	19.0	0.0
Add Non-metal Frames @ $3/ft2	846	0	-241	0	605	32.1	18.0	0.0
Add LSLE @ $1/ft2	282	0	1033	0	1315	37.6	23.4	0.0
Add LSLE @ $1.5/ft2	423	0	1033	0	1456	37.6	23.4	0.0
Add LSLE @ $2/ft2	564	0	1033	0	1597	37.6	23.4	0.0
Add LSLE @ $2.5/ft2	705	0	1033	0	1738	37.6	23.4	0.0
Add LSLE @ $3/ft2	846	0	1033	0	1879	37.6	23.4	0.0

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	32.1	18.0	0.0
Add Duct Design @ $50	50	-49	0	0	1	32.1	18.0	0.0
Add Non-metal Frames @ $1/ft2	282	-24	-231	-3	24	31.1	17.0	0.0
Add TXV @ $75	75	-35	0	-1	39	32.1	18.0	0.0
Add Rad Bar @ $0.10/ft1	151	-61	-30	0	60	32.0	17.8	0.0
Add TXV @ $150	150	-35	0	-1	114	32.1	18.0	0.0
Add Rad Bar @ $0.15/ft2	227	-61	-30	0	135	32.0	17.8	0.0
Add Non-metal Frames @ $1.5/ft2	423	-24	-231	-3	165	31.1	17.0	0.0
Add TXV @ $225	225	-35	0	-1	189	32.1	18.0	0.0
Add Duct Design @ $250	250	-49	0	0	201	32.1	18.0	0.0
Remove Duct Seal @ $300	-300	129	393	0	222	33.8	19.6	0.0
98 Standards	-300	129	393	0	222	33.8	19.6	0.0
Remove Duct Seal @ $250	-250	129	393	0	272	33.8	19.6	0.0
Add Non-metal Frames @ $2/ft2	564	-24	-231	-3	306	31.1	17.0	0.0
Remove Duct Seal @ $200	-200	129	393	0	322	33.8	19.6	0.0
Add Duct Design @ $500	500	-49	0	0	451	32.1	18.0	0.0
Add Non-metal Frames @ $3/ft2	846	-24	-231	-3	588	31.1	17.0	0.0
Add LSLE @ $1/ft2	282	-199	1077	-9	1151	36.7	22.6	0.0
Add LSLE @ $1.5/ft2	423	-199	1077	-9	1292	36.7	22.6	0.0
Add LSLE @ $2/ft2	564	-199	1077	-9	1433	36.7	22.6	0.0
Add LSLE @ $2.5/ft2	705	-199	1077	-9	1574	36.7	22.6	0.0
Add LSLE @ $3/ft2	846	-199	1077	-9	1715	36.7	22.6	0.0

Climate Zone 02 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-85	-706	-172	-681	34.9	18.1	2.6
Add Non-metal Frames @ $1.5/ft2	423	-85	-706	-172	-540	34.9	18.1	2.6
Add Non-metal Frames @ $2/ft2	564	-85	-706	-172	-399	34.9	18.1	2.6
Remove LSLE @ 3$/ft2	-846	174	-337	814	-195	39.0	19.7	5.1
Add Non-metal Frames @ $3/ft2	846	-85	-706	-172	-117	34.9	18.1	2.6
Remove LSLE @ $2.5/ft2	-705	174	-337	814	-54	39.0	19.7	5.1
Remove TXV @ $225	-225	40	0	133	-53	38.7	21.2	3.4
Add Duct Design @ $50	50	-37	0	-46	-33	38.3	21.2	3.0
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.4	21.2	3.1
Remove TXV @ $150	-150	40	0	133	22	38.7	21.2	3.4
Remove LSLE @ $2/ft2	-564	174	-337	814	87	39.0	19.7	5.1
Remove TXV @ $75	-75	40	0	133	97	38.7	21.2	3.4
Remove Rad Bar @ $0.15/ft2	-227	144	35	159	111	38.9	21.3	3.5
Add Duct Design @ $250	250	-37	0	-46	167	38.3	21.2	3.0
Remove Rad Bar @ $0.10/ft2	-151	144	35	159	186	38.9	21.3	3.5
Remove LSLE @ 1.5$/ft2	-423	174	-337	814	228	39.0	19.7	5.1
Remove LSLE @ $1/ft2	-282	174	-337	814	369	39.0	19.7	5.1
Add Duct Design @ $500	500	-37	0	-46	417	38.3	21.2	3.0
Remove Combo HVAC@500	-500	213	491	256	460	41.1	23.3	3.7
Remove Duct Sealing @ $300	-300	164	491	111	466	40.8	23.3	3.4
Remove Duct Sealing @ $250	-250	164	491	111	516	40.8	23.3	3.4
Remove Combo HVAC@400	-400	213	491	256	560	41.1	23.3	3.7
Remove Duct Seaing @ $200	-200	164	491	111	566	40.8	23.3	3.4
Remove Combo HVAC@300	-300	213	491	256	660	41.1	23.3	3.7
Remove Combo HVAC@250	-250	213	491	256	710	41.1	23.3	3.7
98 Standards	-1100	747	-168	1489	968	41.4	20.4	6.9

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-706	-172	-596	34.9	18.1	2.6
Add Non-metal Frames @ $1.5/ft2	423	0	-706	-172	-455	34.9	18.1	2.6
Remove LSLE @ 3$/ft2	-846	0	-337	814	-369	39.0	19.7	5.1
Add Non-metal Frames @ $2/ft2	564	0	-706	-172	-314	34.9	18.1	2.6
Remove LSLE @ $2.5/ft2	-705	0	-337	814	-228	39.0	19.7	5.1
Remove TXV @ $225	-225	0	0	133	-92	38.7	21.2	3.4
Remove LSLE @ $2/ft2	-564	0	-337	814	-87	39.0	19.7	5.1
Remove Rad Bar @ $0.15/ft2	-227	0	35	159	-33	38.9	21.3	3.5
Add Non-metal Frames @ $3/ft2	846	0	-706	-172	-32	34.9	18.1	2.6
Remove TXV @ $150	-150	0	0	133	-17	38.7	21.2	3.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.4	21.2	3.1
Add Duct Design @ $50	50	0	0	-46	4	38.3	21.2	3.0
Remove Rad Bar @ $0.10/ft2	-151	0	35	159	42	38.9	21.3	3.5
Remove LSLE @ 1.5$/ft2	-423	0	-337	814	54	39.0	19.7	5.1
Remove TXV @ $75	-75	0	0	133	58	38.7	21.2	3.4
Remove LSLE @ $1/ft2	-282	0	-337	814	195	39.0	19.7	5.1
Add Duct Design @ $250	250	0	0	-46	204	38.3	21.2	3.0
98 Standards	-1100	0	-168	1489	221	41.4	20.4	6.9
Remove Combo HVAC@500	-500	0	491	256	247	41.1	23.3	3.7
Remove Duct Sealing @ $300	-300	0	491	111	302	40.8	23.3	3.4
Remove Combo HVAC@400	-400	0	491	256	347	41.1	23.3	3.7
Remove Duct Sealing @ $250	-250	0	491	111	352	40.8	23.3	3.4
Remove Duct Seaing @ $200	-200	0	491	111	402	40.8	23.3	3.4
Remove Combo HVAC@300	-300	0	491	256	447	41.1	23.3	3.7
Add Duct Design @ $500	500	0	0	-46	454	38.3	21.2	3.0
Remove Combo HVAC@250	-250	0	491	256	497	41.1	23.3	3.7

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-94	-689	-233	-735	35.2	17.7	3.4
Add Non-metal Frames @ $1.5/ft2	423	-94	-689	-233	-594	35.2	17.7	3.4
Add Non-metal Frames @ $2/ft2	564	-94	-689	-233	-453	35.2	17.7	3.4
Add Non-metal Frames @ $3/ft2	846	-94	-689	-233	-171	35.2	17.7	3.4
Add Duct Design @ $50	50	-41	0	-64	-55	38.6	20.6	3.9
Remove TXV @ $225	-225	44	0	174	-8	39.2	20.6	4.5
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.8	20.6	4.0
Remove TXV @ $150	-150	44	0	174	67	39.2	20.6	4.5
Remove TXV @ $75	-75	44	0	174	142	39.2	20.6	4.5
Remove Rad Bar @ $0.15/ft2	-227	152	37	182	145	39.4	20.8	4.5
Add Duct Design @ $250	250	-41	0	-64	145	38.6	20.6	3.9
Remove Rad Bar @ $0.10/ft2	-151	152	37	182	220	39.4	20.8	4.5
Remove LSLE @ 3$/ft2	-846	225	-362	1249	266	40.4	19.1	7.2
Add Duct Design @ $500	500	-41	0	-64	395	38.6	20.6	3.9
Remove LSLE @ $2.5/ft2	-705	225	-362	1249	407	40.4	19.1	7.2
Remove Duct Sealing @ $300	-300	181	481	145	508	41.2	22.7	4.4
Remove LSLE @ $2/ft2	-564	225	-362	1249	548	40.4	19.1	7.2
Remove Combo HVAC@500	-500	235	481	335	551	41.7	22.7	4.9
Remove Duct Sealing @ $250	-250	181	481	145	558	41.2	22.7	4.4
Remove Duct Seaing @ $200	-200	181	481	145	608	41.2	22.7	4.4
Remove Combo HVAC@400	-400	235	481	335	651	41.7	22.7	4.9
Remove LSLE @ 1.5$/ft2	-423	225	-362	1249	689	40.4	19.1	7.2
Remove Combo HVAC@300	-300	235	481	335	751	41.7	22.7	4.9
Remove Combo HVAC@250	-250	235	481	335	801	41.7	22.7	4.9
Remove LSLE @ $1/ft2	-282	225	-362	1249	830	40.4	19.1	7.2
98 Standards	-1100	872	-201	2156	1727	43.4	19.7	9.5

Climate Zone 03 CEC Forecast by Time Block

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-47	-444	-38	-177	26.4	11.4	0.9
Add Duct Design @ $50	50	-65	0	-30	-46	28.4	13.3	0.9
Add Rad Bar @ $0.10/ft1	151	-123	-21	-42	-35	28.2	13.3	0.8
Add TXV @ $75	75	-47	0	-38	-10	28.3	13.3	0.9
Add Non-metal Frames @ $1.5/ft2	529	-47	-444	-38	-1	26.4	11.4	0.9
Package 4 Tight Ducts	0	0	0	0	0	28.4	13.3	1.0
Add Rad Bar @ $0.15/ft2	227	-123	-21	-42	41	28.2	13.3	0.8
Add TXV @ $150	150	-47	0	-38	65	28.3	13.3	0.9
Add TXV @ $225	225	-47	0	-38	140	28.3	13.3	0.9
Add Duct Design @ $250	250	-65	0	-30	154	28.4	13.3	0.9
Add Non-metal Frames @ $2/ft2	705	-47	-444	-38	175	26.4	11.4	0.9
Remove Duct Seal @ $300	-300	266	280	27	273	29.7	14.5	1.0
98 Standards	-300	266	280	27	273	29.7	14.5	1.0
Remove Duct Seal @ $250	-250	266	280	27	323	29.7	14.5	1.0
Add LSLE @ $1/ft2	353	-223	453	-255	328	29.7	15.3	0.3
Remove Duct Seal @ $200	-200	266	280	27	373	29.7	14.5	1.0
Add Duct Design @ $500	500	-65	0	-30	404	28.4	13.3	0.9
Add LSLE @ $1.5/ft2	529	-223	453	-255	504	29.7	15.3	0.3
Add Non-metal Frames @ $3/ft2	1058	-47	-444	-38	528	26.4	11.4	0.9
Add LSLE @ $2/ft2	705	-223	453	-255	680	29.7	15.3	0.3
Add LSLE @ $2.5/ft2	881	-223	453	-255	857	29.7	15.3	0.3
Add LSLE @ $3/ft2	1058	-223	453	-255	1033	29.7	15.3	0.3

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-444	-38	-130	26.4	11.4	0.9
Package 4 Tight Ducts	0	0	0	0	0	28.4	13.3	1.0
Remove Duct Seal @ $300	-300	0	280	27	7	29.7	14.5	1.0
98 Standards	-300	0	280	27	7	29.7	14.5	1.0
Add Duct Design @ $50	50	0	0	-30	20	28.4	13.3	0.9
Add TXV @ $75	75	0	0	-38	37	28.3	13.3	0.9
Add Non-metal Frames @ $1.5/ft2	529	0	-444	-38	47	26.4	11.4	0.9
Remove Duct Seal @ $250	-250	0	280	27	57	29.7	14.5	1.0
Add Rad Bar @ $0.10/ft1	151	0	-21	-42	88	28.2	13.3	0.8
Remove Duct Seal @ $200	-200	0	280	27	107	29.7	14.5	1.0
Add TXV @ $150	150	0	0	-38	112	28.3	13.3	0.9
Add Rad Bar @ $0.15/ft2	227	0	-21	-42	164	28.2	13.3	0.8
Add TXV @ $225	225	0	0	-38	187	28.3	13.3	0.9
Add Duct Design @ $250	250	0	0	-30	220	28.4	13.3	0.9
Add Non-metal Frames @ $2/ft2	705	0	-444	-38	223	26.4	11.4	0.9
Add Duct Design @ $500	500	0	0	-30	470	28.4	13.3	0.9
Add LSLE @ $1/ft2	353	0	453	-255	551	29.7	15.3	0.3
Add Non-metal Frames @ $3/ft2	1058	0	-444	-38	575	26.4	11.4	0.9
Add LSLE @ $1.5/ft2	529	0	453	-255	727	29.7	15.3	0.3
Add LSLE @ $2/ft2	705	0	453	-255	903	29.7	15.3	0.3
Add LSLE @ $2.5/ft2	881	0	453	-255	1079	29.7	15.3	0.3
Add LSLE @ $3/ft2	1058	0	453	-255	1256	29.7	15.3	0.3

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-56	-425	-76	-205	26.6	10.7	1.7
Add Duct Design @ $50	50	-78	0	-57	-85	28.4	12.6	1.7
Add Rad Bar @ $0.10/ft1	151	-136	-21	-61	-66	28.3	12.5	1.7
Add TXV @ $75	75	-56	0	-74	-56	28.4	12.6	1.7
Add Non-metal Frames @ $1.5/ft2	529	-56	-425	-76	-29	26.6	10.7	1.7
Package 4 Tight Ducts	0	0	0	0	0	28.6	12.6	1.9
Add Rad Bar @ $0.15/ft2	227	-136	-21	-61	9	28.3	12.5	1.7
Add TXV @ $150	150	-56	0	-74	19	28.4	12.6	1.7
Add LSLE @ $1/ft2	353	-295	465	-492	31	29.3	14.6	0.6
Add TXV @ $225	225	-56	0	-74	94	28.4	12.6	1.7
Add Duct Design @ $250	250	-78	0	-57	115	28.4	12.6	1.7
Add Non-metal Frames @ $2/ft2	705	-56	-425	-76	147	26.6	10.7	1.7
Add LSLE @ $1.5/ft2	529	-295	465	-492	208	29.3	14.6	0.6
Remove Duct Seal @ $300	-300	319	264	57	340	29.9	13.7	2.0
98 Standards	-300	319	264	57	340	29.9	13.7	2.0
Add Duct Design @ $500	500	-78	0	-57	365	28.4	12.6	1.7
Add LSLE @ $2/ft2	705	-295	465	-492	384	29.3	14.6	0.6
Remove Duct Seal @ $250	-250	319	264	57	390	29.9	13.7	2.0
Remove Duct Seal @ $200	-200	319	264	57	440	29.9	13.7	2.0
Add Non-metal Frames @ $3/ft2	1058	-56	-425	-76	500	26.6	10.7	1.7
Add LSLE @ $2.5/ft2	881	-295	465	-492	560	29.3	14.6	0.6
Add LSLE @ $3/ft2	1058	-295	465	-492	736	29.3	14.6	0.6

Climate Zone 04 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-68	-636	-124	-475	28.0	12.7	1.2
Remove LSLE @ 3$/ft2	-1058	207	-367	845	-372	31.6	13.8	3.7
Add Non-metal Frames @ $1.5/ft2	529	-68	-636	-124	-298	28.0	12.7	1.2
Remove LSLE @ $2.5/ft2	-881	207	-367	845	-196	31.6	13.8	3.7
Add Non-metal Frames @ $2/ft2	705	-68	-636	-124	-122	28.0	12.7	1.2
Add Duct Design @ $50	50	-41	0	-45	-36	31.0	15.4	1.4
Remove LSLE @ $2/ft2	-705	207	-367	845	-20	31.6	13.8	3.7
Add TXV @ $75	75	-29	0	-59	-13	30.9	15.4	1.4
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.1	15.4	1.5
Remove Rad Bar @ $0.15/ft2	-227	101	21	109	4	31.4	15.5	1.8
Add TXV @ $150	150	-29	0	-59	62	30.9	15.4	1.4
Remove Rad Bar @ $0.10/ft2	-151	101	21	109	80	31.4	15.5	1.8
Add TXV @ $225	225	-29	0	-59	137	30.9	15.4	1.4
Remove LSLE @ 1.5$/ft2	-529	207	-367	845	156	31.6	13.8	3.7
Add Duct Design @ $250	250	-41	0	-45	164	31.0	15.4	1.4
Remove Duct Sealing @ $300	-300	112	332	41	185	32.6	16.8	1.6
Add Non-metal Frames @ $3/ft2	1058	-68	-636	-124	230	28.0	12.7	1.2
Remove Duct Sealing @ $250	-250	112	332	41	235	32.6	16.8	1.6
Remove Duct Seaing @ $200	-200	112	332	41	285	32.6	16.8	1.6
Remove LSLE @ $1/ft2	-353	207	-367	845	333	31.6	13.8	3.7
Add Duct Design @ $500	500	-41	0	-45	414	31.0	15.4	1.4
98 Standards	-950	583	-42	1115	707	33.7	15.2	4.3

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Remove LSLE @ 3$/ft2	-1058	0	-367	845	-579	31.6	13.8	3.7
Add Non-metal Frames @ $1/ft2	353	0	-636	-124	-407	28.0	12.7	1.2
Remove LSLE @ $2.5/ft2	-881	0	-367	845	-403	31.6	13.8	3.7
Add Non-metal Frames @ $1.5/ft2	529	0	-636	-124	-231	28.0	12.7	1.2
Remove LSLE @ $2/ft2	-705	0	-367	845	-227	31.6	13.8	3.7
Remove Rad Bar @ $0.15/ft2	-227	0	21	109	-97	31.4	15.5	1.8
Add Non-metal Frames @ $2/ft2	705	0	-636	-124	-55	28.0	12.7	1.2
Remove LSLE @ 1.5$/ft2	-529	0	-367	845	-51	31.6	13.8	3.7
Remove Rad Bar @ $0.10/ft2	-151	0	21	109	-21	31.4	15.5	1.8
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.1	15.4	1.5
Add Duct Design @ $50	50	0	0	-45	5	31.0	15.4	1.4
Add TXV @ $75	75	0	0	-59	16	30.9	15.4	1.4
Remove Duct Sealing @ $300	-300	0	332	41	73	32.6	16.8	1.6
Add TXV @ $150	150	0	0	-59	91	30.9	15.4	1.4
Remove Duct Sealing @ $250	-250	0	332	41	123	32.6	16.8	1.6
98 Standards	-950	0	-42	1115	123	33.7	15.2	4.3
Remove LSLE @ $1/ft2	-353	0	-367	845	126	31.6	13.8	3.7
Add TXV @ $225	225	0	0	-59	166	30.9	15.4	1.4
Remove Duct Seaing @ $200	-200	0	332	41	173	32.6	16.8	1.6
Add Duct Design @ $250	250	0	0	-45	205	31.0	15.4	1.4
Add Non-metal Frames @ $3/ft2	1058	0	-636	-124	298	28.0	12.7	1.2
Add Duct Design @ $500	500	0	0	-45	455	31.0	15.4	1.4

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-79	-617	-195	-539	28.4	12.2	2.1
Add Non-metal Frames @ $1.5/ft2	529	-79	-617	-195	-363	28.4	12.2	2.1
Add Non-metal Frames @ $2/ft2	705	-79	-617	-195	-186	28.4	12.2	2.1
Add Duct Design @ $50	50	-48	0	-75	-73	31.4	14.8	2.4
Add TXV @ $75	75	-34	0	-102	-61	31.3	14.8	2.3
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.6	14.8	2.6
Add TXV @ $150	150	-34	0	-102	14	31.3	14.8	2.3
Remove Rad Bar @ $0.15/ft2	-227	108	23	146	51	32.0	14.9	3.0
Add TXV @ $225	225	-34	0	-102	89	31.3	14.8	2.3
Remove Rad Bar @ $0.10/ft2	-151	108	23	146	127	32.0	14.9	3.0
Add Duct Design @ $250	250	-48	0	-75	127	31.4	14.8	2.4
Add Non-metal Frames @ $3/ft2	1058	-79	-617	-195	166	28.4	12.2	2.1
Remove Duct Sealing @ $300	-300	131	320	71	223	33.1	16.2	2.8
Remove Duct Sealing @ $250	-250	131	320	71	273	33.1	16.2	2.8
Remove LSLE @ 3$/ft2	-1058	273	-383	1442	274	33.6	13.2	6.2
Remove Duct Seaing @ $200	-200	131	320	71	323	33.1	16.2	2.8
Add Duct Design @ $500	500	-48	0	-75	377	31.4	14.8	2.4
Remove LSLE @ $2.5/ft2	-881	273	-383	1442	450	33.6	13.2	6.2
Remove LSLE @ $2/ft2	-705	273	-383	1442	627	33.6	13.2	6.2
Remove LSLE @ 1.5$/ft2	-529	273	-383	1442	803	33.6	13.2	6.2
Remove LSLE @ $1/ft2	-353	273	-383	1442	979	33.6	13.2	6.2
98 Standards	-950	712	-72	1818	1508	35.9	14.5	7.2

Climate Zone 05 CEC Forecast by Time Block

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-33	-379	-20	-150	25.1	10.4	0.6
Add Duct Design @ $50	50	-52	0	-17	-19	26.7	12.0	0.6
Add Non-metal Frames @ $1.5/ft2	423	-33	-379	-20	-9	25.1	10.4	0.6
Package 4 Tight Ducts	0	0	0	0	0	26.8	12.0	0.7
Add Rad Bar @ $0.10/ft1	151	-97	-21	-27	6	26.6	11.9	0.6
Add TXV @ $75	75	-37	0	-23	14	26.7	12.0	0.6
Add Rad Bar @ $0.15/ft2	227	-97	-21	-27	81	26.6	11.9	0.6
Add TXV @ $150	150	-37	0	-23	89	26.7	12.0	0.6
Add Non-metal Frames @ $2/ft2	564	-33	-379	-20	132	25.1	10.4	0.6
Add TXV @ $225	225	-37	0	-23	164	26.7	12.0	0.6
Remove Duct Seal @ $300	-300	183	273	17	174	28.0	13.2	0.7
98 Standards	-300	183	273	17	174	28.0	13.2	0.7
Add Duct Design @ $250	250	-52	0	-17	181	26.7	12.0	0.6
Remove Duct Seal @ $250	-250	183	273	17	224	28.0	13.2	0.7
Remove Duct Seal @ $200	-200	183	273	17	274	28.0	13.2	0.7
Add LSLE @ $1/ft2	282	-169	404	-169	348	28.0	13.7	0.2
Add Non-metal Frames @ $3/ft2	846	-33	-379	-20	414	25.1	10.4	0.6
Add Duct Design @ $500	500	-52	0	-17	431	26.7	12.0	0.6
Add LSLE @ $1.5/ft2	423	-169	404	-169	489	28.0	13.7	0.2
Add LSLE @ $2/ft2	564	-169	404	-169	630	28.0	13.7	0.2
Add LSLE @ $2.5/ft2	705	-169	404	-169	771	28.0	13.7	0.2
Add LSLE @ $3/ft2	846	-169	404	-169	912	28.0	13.7	0.2

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-379	-20	-117	25.1	10.4	0.6
Remove Duct Seal @ $300	-300	0	273	17	-10	28.0	13.2	0.7
98 Standards	-300	0	273	17	-10	28.0	13.2	0.7
Package 4 Tight Ducts	0	0	0	0	0	26.8	12.0	0.7
Add Non-metal Frames @ $1.5/ft2	423	0	-379	-20	24	25.1	10.4	0.6
Add Duct Design @ $50	50	0	0	-17	33	26.7	12.0	0.6
Remove Duct Seal @ $250	-250	0	273	17	40	28.0	13.2	0.7
Add TXV @ $75	75	0	0	-23	52	26.7	12.0	0.6
Remove Duct Seal @ $200	-200	0	273	17	90	28.0	13.2	0.7
Add Rad Bar @ $0.10/ft1	151	0	-21	-27	103	26.6	11.9	0.6
Add TXV @ $150	150	0	0	-23	127	26.7	12.0	0.6
Add Non-metal Frames @ $2/ft2	564	0	-379	-20	165	25.1	10.4	0.6
Add Rad Bar @ $0.15/ft2	227	0	-21	-27	179	26.6	11.9	0.6
Add TXV @ $225	225	0	0	-23	202	26.7	12.0	0.6
Add Duct Design @ $250	250	0	0	-17	233	26.7	12.0	0.6
Add Non-metal Frames @ $3/ft2	846	0	-379	-20	447	25.1	10.4	0.6
Add Duct Design @ $500	500	0	0	-17	483	26.7	12.0	0.6
Add LSLE @ $1/ft2	282	0	404	-169	517	28.0	13.7	0.2
Add LSLE @ $1.5/ft2	423	0	404	-169	658	28.0	13.7	0.2
Add LSLE @ $2/ft2	564	0	404	-169	799	28.0	13.7	0.2
Add LSLE @ $2.5/ft2	705	0	404	-169	940	28.0	13.7	0.2
Add LSLE @ $3/ft2	846	0	404	-169	1081	28.0	13.7	0.2

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	92	-360	-44	-30	24.9	9.6	1.2
Add Duct Design @ $50	50	70	0	-37	83	26.5	11.1	1.2
Add Non-metal Frames @ $1.5/ft2	423	92	-360	-44	111	24.9	9.6	1.2
Add TXV @ $75	75	88	0	-48	115	26.5	11.1	1.2
Add Rad Bar @ $0.10/ft1	151	27	-26	-30	122	26.4	11.0	1.2
Package 4 Tight Ducts	0	132	0	0	132	26.6	11.1	1.3
Add TXV @ $150	150	88	0	-48	190	26.5	11.1	1.2
Add Rad Bar @ $0.15/ft2	227	27	-26	-30	198	26.4	11.0	1.2
Add Non-metal Frames @ $2/ft2	564	92	-360	-44	252	24.9	9.6	1.2
Add TXV @ $225	225	88	0	-48	265	26.5	11.1	1.2
Add Duct Design @ $250	250	70	0	-37	283	26.5	11.1	1.2
Add LSLE @ $1/ft2	282	-92	435	-342	283	27.5	13.0	0.4
Remove Duct Seal @ $300	-300	350	252	34	337	27.8	12.2	1.4
98 Standards	-300	350	252	34	337	27.8	12.2	1.4
Remove Duct Seal @ $250	-250	350	252	34	387	27.8	12.2	1.4
Add LSLE @ $1.5/ft2	423	-92	435	-342	424	27.5	13.0	0.4
Remove Duct Seal @ $200	-200	350	252	34	437	27.8	12.2	1.4
Add Duct Design @ $500	500	70	0	-37	533	26.5	11.1	1.2
Add Non-metal Frames @ $3/ft2	846	92	-360	-44	534	24.9	9.6	1.2
Add LSLE @ $2/ft2	564	-92	435	-342	565	27.5	13.0	0.4
Add LSLE @ $2.5/ft2	705	-92	435	-342	706	27.5	13.0	0.4
Add LSLE @ $3/ft2	846	-92	435	-342	847	27.5	13.0	0.4

Climate Zone 06 CEC Forecast by Time Block

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Duct Design @ $50	50	-79	0	-43	-72	20.7	5.2	1.4
Add Rad Bar @ $0.10/ft1	151	-136	-12	-69	-65	20.6	5.2	1.3
Add TXV @ $75	75	-56	0	-57	-38	20.7	5.2	1.3
Add Non-metal Frames @ $1/ft2	353	-69	-224	-62	-3	19.7	4.3	1.3
Package 4 Tight Ducts	0	0	0	0	0	20.8	5.2	1.5
Add Rad Bar @ $0.15/ft2	227	-136	-12	-69	11	20.6	5.2	1.3
Add LSLE @ $1/ft2	353	-234	290	-380	28	21.1	6.5	0.5
Add TXV @ $150	150	-56	0	-57	37	20.7	5.2	1.3
Add TXV @ $225	225	-56	0	-57	112	20.7	5.2	1.3
Add Duct Design @ $250	250	-79	0	-43	128	20.7	5.2	1.4
Remove Duct Seal @ $300	-300	320	105	43	169	21.4	5.7	1.6
98 Standards	-300	320	105	43	169	21.4	5.7	1.6
Add Non-metal Frames @ $1.5/ft2	529	-69	-224	-62	173	19.7	4.3	1.3
Add LSLE @ $1.5/ft2	529	-234	290	-380	205	21.1	6.5	0.5
Remove Duct Seal @ $250	-250	320	105	43	219	21.4	5.7	1.6
Remove Duct Seal @ $200	-200	320	105	43	269	21.4	5.7	1.6
Add Non-metal Frames @ $2/ft2	705	-69	-224	-62	350	19.7	4.3	1.3
Add Duct Design @ $500	500	-79	0	-43	378	20.7	5.2	1.4
Add LSLE @ $2/ft2	705	-234	290	-380	381	21.1	6.5	0.5
Add LSLE @ $2.5/ft2	881	-234	290	-380	557	21.1	6.5	0.5
Add Non-metal Frames @ $3/ft2	1058	-69	-224	-62	702	19.7	4.3	1.3
Add LSLE @ $3/ft2	1058	-234	290	-380	733	21.1	6.5	0.5

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Remove Duct Seal @ $300	-300	0	105	43	-151	21.4	5.7	1.6
98 Standards	-300	0	105	43	-151	21.4	5.7	1.6
Remove Duct Seal @ $250	-250	0	105	43	-101	21.4	5.7	1.6
Remove Duct Seal @ $200	-200	0	105	43	-51	21.4	5.7	1.6
Package 4 Tight Ducts	0	0	0	0	0	20.8	5.2	1.5
Add Duct Design @ $50	50	0	0	-43	7	20.7	5.2	1.4
Add TXV @ $75	75	0	0	-57	18	20.7	5.2	1.3
Add Non-metal Frames @ $1/ft2	353	0	-224	-62	67	19.7	4.3	1.3
Add Rad Bar @ $0.10/ft1	151	0	-12	-69	71	20.6	5.2	1.3
Add TXV @ $150	150	0	0	-57	93	20.7	5.2	1.3
Add Rad Bar @ $0.15/ft2	227	0	-12	-69	147	20.6	5.2	1.3
Add TXV @ $225	225	0	0	-57	168	20.7	5.2	1.3
Add Duct Design @ $250	250	0	0	-43	207	20.7	5.2	1.4
Add Non-metal Frames @ $1.5/ft2	529	0	-224	-62	243	19.7	4.3	1.3
Add LSLE @ $1/ft2	353	0	290	-380	262	21.1	6.5	0.5
Add Non-metal Frames @ $2/ft2	705	0	-224	-62	419	19.7	4.3	1.3
Add LSLE @ $1.5/ft2	529	0	290	-380	438	21.1	6.5	0.5
Add Duct Design @ $500	500	0	0	-43	457	20.7	5.2	1.4
Add LSLE @ $2/ft2	705	0	290	-380	615	21.1	6.5	0.5
Add Non-metal Frames @ $3/ft2	1058	0	-224	-62	772	19.7	4.3	1.3
Add LSLE @ $2.5/ft2	881	0	290	-380	791	21.1	6.5	0.5
Add LSLE @ $3/ft2	1058	0	290	-380	967	21.1	6.5	0.5

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add LSLE @ $1/ft2	353	-133	273	-778	-285	21.1	6.0	1.0
Add LSLE @ $1.5/ft2	529	-133	273	-778	-109	21.1	6.0	1.0
Add Duct Design @ $50	50	81	0	-87	45	21.7	4.8	2.7
Add Rad Bar @ $0.10/ft1	151	25	-12	-101	63	21.6	4.8	2.7
Add LSLE @ $2/ft2	705	-133	273	-778	67	21.1	6.0	1.0
Add TXV @ $75	75	107	0	-114	68	21.6	4.8	2.7
Add Non-metal Frames @ $1/ft2	353	95	-208	-112	127	20.8	3.9	2.7
Add Rad Bar @ $0.15/ft2	227	25	-12	-101	138	21.6	4.8	2.7
Add TXV @ $150	150	107	0	-114	143	21.6	4.8	2.7
Package 4 Tight Ducts	0	173	0	0	173	21.9	4.8	3.0
Add TXV @ $225	225	107	0	-114	218	21.6	4.8	2.7
Add LSLE @ $2.5/ft2	881	-133	273	-778	244	21.1	6.0	1.0
Add Duct Design @ $250	250	81	0	-87	245	21.7	4.8	2.7
Add Non-metal Frames @ $1.5/ft2	529	95	-208	-112	303	20.8	3.9	2.7
Add LSLE @ $3/ft2	1058	-133	273	-778	420	21.1	6.0	1.0
Remove Duct Seal @ $300	-300	546	98	94	439	22.6	5.2	3.2
98 Standards	-300	546	98	94	439	22.6	5.2	3.2
Add Non-metal Frames @ $2/ft2	705	95	-208	-112	480	20.8	3.9	2.7
Remove Duct Seal @ $250	-250	546	98	94	489	22.6	5.2	3.2
Add Duct Design @ $500	500	81	0	-87	495	21.7	4.8	2.7
Remove Duct Seal @ $200	-200	546	98	94	539	22.6	5.2	3.2
Add Non-metal Frames @ $3/ft2	1058	95	-208	-112	832	20.8	3.9	2.7

Climate Zone 07 CEC Forecast by Time Block

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Remove LSLE @ $3/ft2	-1058	211	-215	624	-438	21.2	4.3	2.8
Remove LSLE @ $2.5/ft2	-881	211	-215	624	-261	21.2	4.3	2.8
Remove LSLE @ $2/ft2	-705	211	-215	624	-85	21.2	4.3	2.8
Add Non-metal Frames @ $1/ft2	353	-57	-283	-95	-83	19.1	4.0	0.9
Add Duct Design @ $50	50	-47	0	-33	-30	20.4	5.2	1.1
Add Rad Bar @ $0.10/ft1	151	-94	-9	-73	-25	20.3	5.2	1.0
Add TXV @ $75	75	-34	0	-45	-4	20.4	5.2	1.0
Remove Duct Seal @ $300	-300	166	98	33	-3	21.0	5.6	1.24
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.5	5.2	1.16
Remove Duct Seal @ $250	-250	166	98	33	47	21.0	5.6	1.2
Add Rad Bar @ $0.15/ft2	227	-94	-9	-73	51	20.3	5.2	1.0
Add TXV @ $150	150	-34	0	-45	71	20.4	5.2	1.0
Remove LSLE @ $1.5/ft2	-529	211	-215	624	91	21.2	4.3	2.8
Add Non-metal Frames @ $1.5/ft2	529	-57	-283	-95	94	19.1	4.0	0.9
Remove Duct Seal @ $200	-200	166	98	33	97	21.0	5.6	1.2
Add TXV @ $225	225	-34	0	-45	146	20.4	5.2	1.0
Add Duct Design @ $250	250	-47	0	-33	170	20.4	5.2	1.1
Remove LSLE @ $1/ft2	-353	211	-215	624	267	21.2	4.3	2.8
Add Non-metal Frames @ $2/ft2	705	-57	-283	-95	270	19.1	4.0	0.9
Add Duct Design @ $500	500	-47	0	-33	420	20.4	5.2	1.1
98 Standards	-529	433	-133	697	467	21.7	4.6	2.9
Add Non-metal Frames @ $3/ft2	1058	-57	-283	-95	622	19.1	4.0	0.9

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Remove LSLE @ $3/ft2	-1058	0	-215	624	-649	21.2	4.3	2.8
Remove LSLE @ $2.5/ft2	-881	0	-215	624	-472	21.2	4.3	2.8
Remove LSLE @ $2/ft2	-705	0	-215	624	-296	21.2	4.3	2.8
Remove Duct Seal @ $300	-300	0	98	33	-169	21.0	5.6	1.2
Remove LSLE @ $1.5/ft2	-529	0	-215	624	-120	21.2	4.3	2.8
Remove Duct Seal @ $250	-250	0	98	33	-119	21.0	5.6	1.2
Remove Duct Seal @ $200	-200	0	98	33	-69	21.0	5.6	1.2
Add Non-metal Frames @ $1/ft2	353	0	-283	-95	-25	19.1	4.0	0.9
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.5	5.2	1.2
Add Duct Design @ $50	50	0	0	-33	17	20.4	5.2	1.1
Add TXV @ $75	75	0	0	-45	30	20.4	5.2	1.0
98 Standards	-529	0	-133	697	35	21.7	4.6	2.9
Remove LSLE @ $1/ft2	-353	0	-215	624	56	21.2	4.3	2.8
Add Rad Bar @ $0.10/ft1	151	0	-9	-73	69	20.3	5.2	1.0
Add TXV @ $150	150	0	0	-45	105	20.4	5.2	1.0
Add Rad Bar @ $0.15/ft2	227	0	-9	-73	145	20.3	5.2	1.0
Add Non-metal Frames @ $1.5/ft2	529	0	-283	-95	151	19.1	4.0	0.9
Add TXV @ $225	225	0	0	-45	180	20.4	5.2	1.0
Add Duct Design @ $250	250	0	0	-33	217	20.4	5.2	1.1
Add Non-metal Frames @ $2/ft2	705	0	-283	-95	327	19.1	4.0	0.9
Add Duct Design @ $500	500	0	0	-33	467	20.4	5.2	1.1
Add Non-metal Frames @ $3/ft2	1058	0	-283	-95	680	19.1	4.0	0.9

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Add Non-metal Frames @ $1/ft2	353	-70	-269	-139	-124	19.4	3.7	1.6
Add Duct Design @ $50	50	-54	0	-55	-59	20.8	4.8	1.8
Add Rad Bar @ $0.10/ft1	151	-99	-12	-91	-51	20.6	4.8	1.7
Add TXV @ $75	75	-39	0	-74	-38	20.7	4.8	1.7
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.9	4.8	1.9
Add Rad Bar @ $0.15/ft2	227	-99	-12	-91	25	20.6	4.8	1.7
Remove Duct Seal @ $300	-300	191	89	55	35	21.4	5.2	2.1
Add TXV @ $150	150	-39	0	-74	37	20.7	4.8	1.7
Add Non-metal Frames @ $1.5/ft2	529	-70	-269	-139	52	19.4	3.7	1.6
Remove Duct Seal @ $250	-250	191	89	55	85	21.4	5.2	2.1
Add TXV @ $225	225	-39	0	-74	112	20.7	4.8	1.7
Remove LSLE @ $3/ft2	-1058	280	-189	1102	135	22.9	4.0	4.7
Remove Duct Seal @ $200	-200	191	89	55	135	21.4	5.2	2.1
Add Duct Design @ $250	250	-54	0	-55	141	20.8	4.8	1.8
Add Non-metal Frames @ $2/ft2	705	-70	-269	-139	228	19.4	3.7	1.6
Remove LSLE @ $2.5/ft2	-881	280	-189	1102	311	22.9	4.0	4.7
Add Duct Design @ $500	500	-54	0	-55	391	20.8	4.8	1.8
Remove LSLE @ $2/ft2	-705	280	-189	1102	487	22.9	4.0	4.7
Add Non-metal Frames @ $3/ft2	1058	-70	-269	-139	581	19.4	3.7	1.6
Remove LSLE @ $1.5/ft2	-529	280	-189	1102	663	22.9	4.0	4.7
Remove LSLE @ $1/ft2	-353	280	-189	1102	840	22.9	4.0	4.7
98 Standards	-529	545	-112	1229	1133	23.6	4.4	5.1

Climate Zone 08 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-77	-315	-210	-250	21.9	5.0	2.7
Add Non-metal Frames @ $1.5/ft2	529	-77	-315	-210	-74	21.9	5.0	2.7
Remove TXV @ $225	-225	34	0	137	-54	24.2	6.4	3.7
Add Duct Design @ $50	50	-32	0	-49	-30	23.7	6.4	3.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	23.8	6.4	3.3
Remove LSLE @ 3$/ft2	-1058	204	-220	1076	2	25.7	5.4	6.1
Remove TXV @ $150	-150	34	0	137	21	24.2	6.4	3.7
Remove Combo HVAC@500	-500	165	129	235	28	25.0	6.9	3.9
Remove Duct Sealing @ $300	-300	124	129	89	41	24.6	6.9	3.5
Remove Rad Bar @ $0.15/ft2	-227	107	14	157	52	24.3	6.4	3.7
Remove Duct Sealing @ $250	-250	124	129	89	91	24.6	6.9	3.5
Remove TXV @ $75	-75	34	0	137	96	24.2	6.4	3.7
Add Non-metal Frames @ $2/ft2	705	-77	-315	-210	103	21.9	5.0	2.7
Remove Rad Bar @ $0.10/ft2	-151	107	14	157	127	24.3	6.4	3.7
Remove Combo HVAC@400	-400	165	129	235	128	25.0	6.9	3.9
Remove Duct Seaing @ $200	-200	124	129	89	141	24.6	6.9	3.5
Add Duct Design @ $250	250	-32	0	-49	170	23.7	6.4	3.2
Remove LSLE @ $2.5/ft2	-881	204	-220	1076	178	25.7	5.4	6.1
Remove Combo HVAC@300	-300	165	129	235	228	25.0	6.9	3.9
Remove Combo HVAC@250	-250	165	129	235	278	25.0	6.9	3.9
Remove LSLE @ $2/ft2	-705	204	-220	1076	355	25.7	5.4	6.1
98 Standards	-1100	456	96	920	372	26.7	6.8	5.7
Add Duct Design @ $500	500	-32	0	-49	420	23.7	6.4	3.2
Add Non-metal Frames @ $3/ft2	1058	-77	-315	-210	455	21.9	5.0	2.7
Remove LSLE @ 1.5$/ft2	-529	204	-220	1076	531	25.7	5.4	6.1
Remove LSLE @ $1/ft2	-353	204	-220	1076	707	25.7	5.4	6.1

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Remove LSLE @ 3$/ft2	-1058	0	-220	1076	-201	25.7	5.4	6.1
Add Non-metal Frames @ $1/ft2	353	0	-315	-210	-173	21.9	5.0	2.7
Remove Combo HVAC@500	-500	0	129	235	-136	25.0	6.9	3.9
Remove TXV @ $225	-225	0	0	137	-88	24.2	6.4	3.7
98 Standards	-1100	0	96	920	-84	26.7	6.8	5.7
Remove Duct Sealing @ $300	-300	0	129	89	-83	24.6	6.9	3.5
Remove Rad Bar @ $0.15/ft2	-227	0	14	157	-56	24.3	6.4	3.7
Remove Combo HVAC@400	-400	0	129	235	-36	25.0	6.9	3.9
Remove Duct Sealing @ $250	-250	0	129	89	-33	24.6	6.9	3.5
Remove LSLE @ $2.5/ft2	-881	0	-220	1076	-25	25.7	5.4	6.1
Remove TXV @ $150	-150	0	0	137	-13	24.2	6.4	3.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	23.8	6.4	3.3
Add Duct Design @ $50	50	0	0	-49	1	23.7	6.4	3.2
Add Non-metal Frames @ $1.5/ft2	529	0	-315	-210	3	21.9	5.0	2.7
Remove Duct Seaing @ $200	-200	0	129	89	17	24.6	6.9	3.5
Remove Rad Bar @ $0.10/ft2	-151	0	14	157	20	24.3	6.4	3.7
Remove TXV @ $75	-75	0	0	137	62	24.2	6.4	3.7
Remove Combo HVAC@300	-300	0	129	235	64	25.0	6.9	3.9
Remove Combo HVAC@250	-250	0	129	235	114	25.0	6.9	3.9
Remove LSLE @ $2/ft2	-705	0	-220	1076	151	25.7	5.4	6.1
Add Non-metal Frames @ $2/ft2	705	0	-315	-210	180	21.9	5.0	2.7
Add Duct Design @ $250	250	0	0	-49	201	23.7	6.4	3.2
Remove LSLE @ 1.5$/ft2	-529	0	-220	1076	327	25.7	5.4	6.1
Add Duct Design @ $500	500	0	0	-49	451	23.7	6.4	3.2
Remove LSLE @ $1/ft2	-353	0	-220	1076	504	25.7	5.4	6.1
Add Non-metal Frames @ $3/ft2	1058	0	-315	-210	532	21.9	5.0	2.7

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-88	-301	-275	-312	22.7	4.7	3.8
Add Non-metal Frames @ $1.5/ft2	529	-88	-301	-275	-136	22.7	4.7	3.8
Add Duct Design @ $50	50	-36	0	-68	-55	24.5	6.0	4.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	24.7	6.0	4.6
Remove TXV @ $225	-225	39	0	189	3	25.2	6.0	5.1
Add Non-metal Frames @ $2/ft2	705	-88	-301	-275	40	22.7	4.7	3.8
Remove Rad Bar @ $0.15/ft2	-227	114	12	174	73	25.2	6.0	5.0
Remove TXV @ $150	-150	39	0	189	78	25.2	6.0	5.1
Remove Duct Sealing @ $300	-300	143	119	121	83	25.5	6.5	4.9
Remove Combo HVAC@500	-500	189	119	324	133	26.1	6.5	5.4
Remove Duct Sealing @ $250	-250	143	119	121	133	25.5	6.5	4.9
Add Duct Design @ $250	250	-36	0	-68	145	24.5	6.0	4.4
Remove Rad Bar @ $0.10/ft2	-151	114	12	174	148	25.2	6.0	5.0
Remove TXV @ $75	-75	39	0	189	153	25.2	6.0	5.1
Remove Duct Seaing @ $200	-200	143	119	121	183	25.5	6.5	4.9
Remove Combo HVAC@400	-400	189	119	324	233	26.1	6.5	5.4
Remove Combo HVAC@300	-300	189	119	324	333	26.1	6.5	5.4
Remove Combo HVAC@250	-250	189	119	324	383	26.1	6.5	5.4
Add Non-metal Frames @ $3/ft2	1058	-88	-301	-275	393	22.7	4.7	3.8
Add Duct Design @ $500	500	-36	0	-68	395	24.5	6.0	4.4
Remove LSLE @ 3$/ft2	-1058	267	-199	1646	657	28.2	5.1	8.9
Remove LSLE @ $2.5/ft2	-881	267	-199	1646	833	28.2	5.1	8.9
98 Standards	-1100	532	82	1332	846	28.6	6.3	8.1
Remove LSLE @ $2/ft2	-705	267	-199	1646	1009	28.2	5.1	8.9
Remove LSLE @ 1.5$/ft2	-529	267	-199	1646	1186	28.2	5.1	8.9
Remove LSLE @ $1/ft2	-353	267	-199	1646	1362	28.2	5.1	8.9

Climate Zone 09 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-119	-329	-341	-437	24.6	5.3	5.2
Add Non-metal Frames @ $1.5/ft2	529	-119	-329	-341	-261	24.6	5.3	5.2
Add Duct Design @ $50	50	-46	0	-93	-90	26.7	6.7	5.8
Add Non-metal Frames @ $2/ft2	705	-119	-329	-341	-84	24.6	5.3	5.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	26.9	6.7	6.1
Remove TXV @ $225	-225	49	0	256	80	27.6	6.7	6.7
Add Duct Design @ $250	250	-46	0	-93	110	26.7	6.7	5.8
Remove TXV @ $150	-150	49	0	256	155	27.6	6.7	6.7
Remove Rad Bar @ $0.15/ft2	-227	163	12	242	190	27.6	6.8	6.7
Remove TXV @ $75	-75	49	0	256	230	27.6	6.7	6.7
Remove Duct Sealing @ $300	-300	204	143	215	261	28.1	7.3	6.6
Remove Rad Bar @ $0.10/ft2	-151	163	12	242	266	27.6	6.8	6.7
Add Non-metal Frames @ $3/ft2	1058	-119	-329	-341	268	24.6	5.3	5.2
Remove Duct Sealing @ $250	-250	204	143	215	311	28.1	7.3	6.6
Add Duct Design @ $500	500	-46	0	-93	360	26.7	6.7	5.8
Remove Duct Seaing @ $200	-200	204	143	215	361	28.1	7.3	6.6
Remove Combo HVAC@500	-500	265	143	494	402	28.8	7.3	7.3
Remove Combo HVAC@400	-400	265	143	494	502	28.8	7.3	7.3
Remove LSLE @ 3$/ft2	-1058	223	-173	1565	557	30.2	6.0	10.1
Remove Combo HVAC@300	-300	265	143	494	602	28.8	7.3	7.3
Remove Combo HVAC@250	-250	265	143	494	652	28.8	7.3	7.3
Remove LSLE @ $2.5/ft2	-881	223	-173	1565	733	30.2	6.0	10.1
Remove LSLE @ $2/ft2	-705	223	-173	1565	909	30.2	6.0	10.1
Remove LSLE @ 1.5$/ft2	-529	223	-173	1565	1086	30.2	6.0	10.1
Remove LSLE @ $1/ft2	-353	223	-173	1565	1262	30.2	6.0	10.1
98 Standards	-1100	724	133	1599	1357	31.6	7.3	10.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-329	-341	-318	24.6	5.3	5.2
Add Non-metal Frames @ $1.5/ft2	529	0	-329	-341	-142	24.6	5.3	5.2
Add Duct Design @ $50	50	0	0	-93	-43	26.7	6.7	5.8
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	26.9	6.7	6.1
Remove Rad Bar @ $0.15/ft2	-227	0	12	242	27	27.6	6.8	6.7
Remove TXV @ $225	-225	0	0	256	31	27.6	6.7	6.7
Add Non-metal Frames @ $2/ft2	705	0	-329	-341	35	24.6	5.3	5.2
Remove Duct Sealing @ $300	-300	0	143	215	57	28.1	7.3	6.6
Remove Rad Bar @ $0.10/ft2	-151	0	12	242	102	27.6	6.8	6.7
Remove TXV @ $150	-150	0	0	256	106	27.6	6.7	6.7
Remove Duct Sealing @ $250	-250	0	143	215	107	28.1	7.3	6.6
Remove Combo HVAC@500	-500	0	143	494	137	28.8	7.3	7.3
Add Duct Design @ $250	250	0	0	-93	157	26.7	6.7	5.8
Remove Duct Seaing @ $200	-200	0	143	215	157	28.1	7.3	6.6
Remove TXV @ $75	-75	0	0	256	181	27.6	6.7	6.7
Remove Combo HVAC@400	-400	0	143	494	237	28.8	7.3	7.3
Remove LSLE @ 3$/ft2	-1058	0	-173	1565	334	30.2	6.0	10.1
Remove Combo HVAC@300	-300	0	143	494	337	28.8	7.3	7.3
Remove Combo HVAC@250	-250	0	143	494	387	28.8	7.3	7.3
Add Non-metal Frames @ $3/ft2	1058	0	-329	-341	387	24.6	5.3	5.2
Add Duct Design @ $500	500	0	0	-93	407	26.7	6.7	5.8
Remove LSLE @ $2.5/ft2	-881	0	-173	1565	510	30.2	6.0	10.1
98 Standards	-1100	0	133	1599	633	31.6	7.3	10.2
Remove LSLE @ $2/ft2	-705	0	-173	1565	687	30.2	6.0	10.1
Remove LSLE @ 1.5$/ft2	-529	0	-173	1565	863	30.2	6.0	10.1
Remove LSLE @ $1/ft2	-353	0	-173	1565	1039	30.2	6.0	10.1

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-130	-320	-436	-534	25.8	5.0	6.6
Add Non-metal Frames @ $1.5/ft2	529	-130	-320	-436	-358	25.8	5.0	6.6
Add Non-metal Frames @ $2/ft2	705	-130	-320	-436	-182	25.8	5.0	6.6
Add Duct Design @ $50	50	-51	0	-119	-120	28.0	6.4	7.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	28.3	6.4	7.7
Add Duct Design @ $250	250	-51	0	-119	80	28.0	6.4	7.4
Remove TXV @ $225	-225	54	0	326	155	29.1	6.4	8.6
Add Non-metal Frames @ $3/ft2	1058	-130	-320	-436	171	25.8	5.0	6.6
Remove TXV @ $150	-150	54	0	326	230	29.1	6.4	8.6
Remove Rad Bar @ $0.15/ft2	-227	174	14	276	237	29.1	6.5	8.4
Remove TXV @ $75	-75	54	0	326	305	29.1	6.4	8.6
Remove Rad Bar @ $0.10/ft2	-151	174	14	276	312	29.1	6.5	8.4
Add Duct Design @ $500	500	-51	0	-119	330	28.0	6.4	7.4
Remove Duct Sealing @ $300	-300	225	138	276	339	29.6	7.0	8.4
Remove Duct Sealing @ $250	-250	225	138	276	389	29.6	7.0	8.4
Remove Duct Seaing @ $200	-200	225	138	276	439	29.6	7.0	8.4
Remove Combo HVAC@500	-500	292	138	632	562	30.5	7.0	9.4
Remove Combo HVAC@400	-400	292	138	632	662	30.5	7.0	9.4
Remove Combo HVAC@300	-300	292	138	632	762	30.5	7.0	9.4
Remove Combo HVAC@250	-250	292	138	632	812	30.5	7.0	9.4
Remove LSLE @ 3$/ft2	-1058	287	-150	2325	1404	33.7	5.8	13.8
Remove LSLE @ $2.5/ft2	-881	287	-150	2325	1581	33.7	5.8	13.8
Remove LSLE @ $2/ft2	-705	287	-150	2325	1757	33.7	5.8	13.8
Remove LSLE @ 1.5$/ft2	-529	287	-150	2325	1933	33.7	5.8	13.8
98 Standards	-1100	814	138	2210	2062	34.6	7.0	13.5
Remove LSLE @ $1/ft2	-353	287	-150	2325	2109	33.7	5.8	13.8

Climate Zone 10 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-125	-437	-497	-707	30.0	7.6	8.3
Add Non-metal Frames @ $1.5/ft2	529	-125	-437	-497	-530	30.0	7.6	8.3
Add Non-metal Frames @ $2/ft2	705	-125	-437	-497	-354	30.0	7.6	8.3
Add Duct Design @ $50	50	-48	0	-146	-145	32.8	9.5	9.2
Add Non-metal Frames @ $3/ft2	1058	-125	-437	-497	-2	30.0	7.6	8.3
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	33.2	9.5	9.6
Add Duct Design @ $250	250	-48	0	-146	55	32.8	9.5	9.2
Remove TXV @ $225	-225	51	0	402	229	34.2	9.5	10.6
Remove TXV @ $150	-150	51	0	402	304	34.2	9.5	10.6
Add Duct Design @ $500	500	-48	0	-146	305	32.8	9.5	9.2
Remove Rad Bar @ $0.15/ft2	-227	189	21	328	311	34.1	9.6	10.4
Remove TXV @ $75	-75	51	0	402	379	34.2	9.5	10.6
Remove Rad Bar @ $0.10/ft2	-151	189	21	328	387	34.1	9.6	10.4
Remove Duct Sealing @ $300	-300	217	206	390	513	35.1	10.3	10.6
Remove Duct Sealing @ $250	-250	217	206	390	563	35.1	10.3	10.6
Remove Duct Seaing @ $200	-200	217	206	390	613	35.1	10.3	10.6
Remove Combo HVAC@500	-500	281	206	836	822	36.3	10.3	11.8
Remove LSLE @ 3$/ft2	-1058	228	-222	1896	844	37.2	8.5	14.5
Remove Combo HVAC@400	-400	281	206	836	922	36.3	10.3	11.8
Remove LSLE @ $2.5/ft2	-881	228	-222	1896	1021	37.2	8.5	14.5
Remove Combo HVAC@300	-300	281	206	836	1022	36.3	10.3	11.8
Remove Combo HVAC@250	-250	281	206	836	1072	36.3	10.3	11.8
Remove LSLE @ $2/ft2	-705	228	-222	1896	1197	37.2	8.5	14.5
Remove LSLE @ 1.5$/ft2	-529	228	-222	1896	1373	37.2	8.5	14.5
Remove LSLE @ $1/ft2	-353	228	-222	1896	1549	37.2	8.5	14.5
98 Standards	-1100	806	199	2331	2236	40.1	10.3	15.7

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-437	-497	-582	30.0	7.6	8.3
Add Non-metal Frames @ $1.5/ft2	529	0	-437	-497	-406	30.0	7.6	8.3
Add Non-metal Frames @ $2/ft2	705	0	-437	-497	-229	30.0	7.6	8.3
Add Duct Design @ $50	50	0	0	-146	-96	32.8	9.5	9.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	33.2	9.5	9.6
Add Duct Design @ $250	250	0	0	-146	104	32.8	9.5	9.2
Remove Rad Bar @ $0.15/ft2	-227	0	21	328	122	34.1	9.6	10.4
Add Non-metal Frames @ $3/ft2	1058	0	-437	-497	123	30.0	7.6	8.3
Remove TXV @ $225	-225	0	0	402	177	34.2	9.5	10.6
Remove Rad Bar @ $0.10/ft2	-151	0	21	328	198	34.1	9.6	10.4
Remove TXV @ $150	-150	0	0	402	252	34.2	9.5	10.6
Remove Duct Sealing @ $300	-300	0	206	390	296	35.1	10.3	10.6
Remove TXV @ $75	-75	0	0	402	327	34.2	9.5	10.6
Remove Duct Sealing @ $250	-250	0	206	390	346	35.1	10.3	10.6
Add Duct Design @ $500	500	0	0	-146	354	32.8	9.5	9.2
Remove Duct Seaing @ $200	-200	0	206	390	396	35.1	10.3	10.6
Remove Combo HVAC@500	-500	0	206	836	541	36.3	10.3	11.8
Remove LSLE @ 3$/ft2	-1058	0	-222	1896	617	37.2	8.5	14.5
Remove Combo HVAC@400	-400	0	206	836	641	36.3	10.3	11.8
Remove Combo HVAC@300	-300	0	206	836	741	36.3	10.3	11.8
Remove Combo HVAC@250	-250	0	206	836	791	36.3	10.3	11.8
Remove LSLE @ $2.5/ft2	-881	0	-222	1896	793	37.2	8.5	14.5
Remove LSLE @ $2/ft2	-705	0	-222	1896	969	37.2	8.5	14.5
Remove LSLE @ 1.5$/ft2	-529	0	-222	1896	1145	37.2	8.5	14.5
Remove LSLE @ $1/ft2	-353	0	-222	1896	1322	37.2	8.5	14.5
98 Standards	-1100	0	199	2331	1429	40.1	10.3	15.7

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-136	-425	-601	-810	31.3	7.2	9.9
Add Non-metal Frames @ $1.5/ft2	529	-136	-425	-601	-634	31.3	7.2	9.9
Add Non-metal Frames @ $2/ft2	705	-136	-425	-601	-458	31.3	7.2	9.9
Add Duct Design @ $50	50	-53	0	-177	-180	34.2	9.1	11.0
Add Non-metal Frames @ $3/ft2	1058	-136	-425	-601	-105	31.3	7.2	9.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	34.7	9.1	11.5
Add Duct Design @ $250	250	-53	0	-177	20	34.2	9.1	11.0
Add Duct Design @ $500	500	-53	0	-177	270	34.2	9.1	11.0
Remove TXV @ $225	-225	57	0	481	313	35.9	9.1	12.7
Remove Rad Bar @ $0.15/ft2	-227	201	19	359	352	35.7	9.1	12.4
Remove TXV @ $150	-150	57	0	481	388	35.9	9.1	12.7
Remove Rad Bar @ $0.10/ft2	-151	201	19	359	428	35.7	9.1	12.4
Remove TXV @ $75	-75	57	0	481	463	35.9	9.1	12.7
Remove Duct Sealing @ $300	-300	239	194	466	600	36.7	9.9	12.7
Remove Duct Sealing @ $250	-250	239	194	466	650	36.7	9.9	12.7
Remove Duct Seaing @ $200	-200	239	194	466	700	36.7	9.9	12.7
Remove Combo HVAC@500	-500	310	194	999	1003	38.1	9.9	14.1
Remove Combo HVAC@400	-400	310	194	999	1103	38.1	9.9	14.1
Remove Combo HVAC@300	-300	310	194	999	1203	38.1	9.9	14.1
Remove Combo HVAC@250	-250	310	194	999	1253	38.1	9.9	14.1
Remove LSLE @ 3$/ft2	-1058	293	-210	2677	1702	40.8	8.2	18.5
Remove LSLE @ $2.5/ft2	-881	293	-210	2677	1878	40.8	8.2	18.5
Remove LSLE @ $2/ft2	-705	293	-210	2677	2054	40.8	8.2	18.5
Remove LSLE @ 1.5$/ft2	-529	293	-210	2677	2230	40.8	8.2	18.5
Remove LSLE @ $1/ft2	-353	293	-210	2677	2407	40.8	8.2	18.5
98 Standards	-1100	903	187	3000	2990	43.3	9.9	19.3

Climate Zone 11 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-111	-650	-428	-907	39.0	17.2	7.7
Add Non-metal Frames @ $1.5/ft2	423	-111	-650	-428	-766	39.0	17.2	7.7
Add Non-metal Frames @ $2/ft2	564	-111	-650	-428	-625	39.0	17.2	7.7
Add Non-metal Frames @ $3/ft2	846	-111	-650	-428	-343	39.0	17.2	7.7
Add Duct Design @ $50	50	-46	0	-137	-133	42.6	20.0	8.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	42.9	20.0	8.8
Add Duct Design @ $250	250	-46	0	-137	67	42.6	20.0	8.4
Remove TXV @ $225	-225	49	0	374	198	43.9	20.0	9.7
Remove TXV @ $150	-150	49	0	374	273	43.9	20.0	9.7
Remove Rad Bar @ $0.15/ft2	-227	174	23	318	288	43.8	20.1	9.6
Add Duct Design @ $500	500	-46	0	-137	317	42.6	20.0	8.4
Remove TXV @ $75	-75	49	0	374	348	43.9	20.0	9.7
Remove Rad Bar @ $0.10/ft2	-151	174	23	318	364	43.8	20.1	9.6
Remove LSLE @ 3$/ft2	-846	189	-252	1397	487	45.4	18.9	12.4
Remove LSLE @ $2.5/ft2	-705	189	-252	1397	628	45.4	18.9	12.4
Remove LSLE @ $2/ft2	-564	189	-252	1397	769	45.4	18.9	12.4
Remove Duct Sealing @ $300	-300	230	463	414	807	46.0	22.0	9.8
Remove Duct Sealing @ $250	-250	230	463	414	857	46.0	22.0	9.8
Remove Duct Seaing @ $200	-200	230	463	414	907	46.0	22.0	9.8
Remove LSLE @ 1.5$/ft2	-423	189	-252	1397	910	45.4	18.9	12.4
Remove LSLE @ $1/ft2	-282	189	-252	1397	1051	45.4	18.9	12.4
Remove Combo HVAC@500	-500	292	463	833	1088	47.0	22.0	10.9
Remove Combo HVAC@400	-400	292	463	833	1188	47.0	22.0	10.9
Remove Combo HVAC@300	-300	292	463	833	1288	47.0	22.0	10.9
Remove Combo HVAC@250	-250	292	463	833	1338	47.0	22.0	10.9
98 Standards	-1100	739	185	1849	1673	48.5	20.8	13.5

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-650	-428	-795	39.0	17.2	7.7
Add Non-metal Frames @ $1.5/ft2	423	0	-650	-428	-654	39.0	17.2	7.7
Add Non-metal Frames @ $2/ft2	564	0	-650	-428	-513	39.0	17.2	7.7
Add Non-metal Frames @ $3/ft2	846	0	-650	-428	-231	39.0	17.2	7.7
Add Duct Design @ $50	50	0	0	-137	-87	42.6	20.0	8.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	42.9	20.0	8.8
Add Duct Design @ $250	250	0	0	-137	113	42.6	20.0	8.4
Remove Rad Bar @ $0.15/ft2	-227	0	23	318	115	43.8	20.1	9.6
Remove TXV @ $225	-225	0	0	374	149	43.9	20.0	9.7
Remove Rad Bar @ $0.10/ft2	-151	0	23	318	190	43.8	20.1	9.6
Remove TXV @ $150	-150	0	0	374	224	43.9	20.0	9.7
Remove LSLE @ 3$/ft2	-846	0	-252	1397	298	45.4	18.9	12.4
Remove TXV @ $75	-75	0	0	374	299	43.9	20.0	9.7
Add Duct Design @ $500	500	0	0	-137	363	42.6	20.0	8.4
Remove LSLE @ $2.5/ft2	-705	0	-252	1397	439	45.4	18.9	12.4
Remove Duct Sealing @ $300	-300	0	463	414	576	46.0	22.0	9.8
Remove LSLE @ $2/ft2	-564	0	-252	1397	580	45.4	18.9	12.4
Remove Duct Sealing @ $250	-250	0	463	414	626	46.0	22.0	9.8
Remove Duct Seaing @ $200	-200	0	463	414	676	46.0	22.0	9.8
Remove LSLE @ 1.5$/ft2	-423	0	-252	1397	721	45.4	18.9	12.4
Remove Combo HVAC@500	-500	0	463	833	796	47.0	22.0	10.9
Remove LSLE @ $1/ft2	-282	0	-252	1397	862	45.4	18.9	12.4
Remove Combo HVAC@400	-400	0	463	833	896	47.0	22.0	10.9
98 Standards	-1100	0	185	1849	934	48.5	20.8	13.5
Remove Combo HVAC@300	-300	0	463	833	996	47.0	22.0	10.9
Remove Combo HVAC@250	-250	0	463	833	1046	47.0	22.0	10.9

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-121	-636	-523	-998	40.1	16.9	9.1
Add Non-metal Frames @ $1.5/ft2	423	-121	-636	-523	-857	40.1	16.9	9.1
Add Non-metal Frames @ $2/ft2	564	-121	-636	-523	-716	40.1	16.9	9.1
Add Non-metal Frames @ $3/ft2	846	-121	-636	-523	-434	40.1	16.9	9.1
Add Duct Design @ $50	50	-50	0	-164	-163	43.8	19.6	10.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	44.2	19.6	10.5
Add Duct Design @ $250	250	-50	0	-164	37	43.8	19.6	10.1
Remove TXV @ $225	-225	53	0	447	275	45.4	19.6	11.6
Add Duct Design @ $500	500	-50	0	-164	287	43.8	19.6	10.1
Remove Rad Bar @ $0.15/ft2	-227	184	28	346	332	45.2	19.7	11.4
Remove TXV @ $150	-150	53	0	447	350	45.4	19.6	11.6
Remove Rad Bar @ $0.10/ft2	-151	184	28	346	407	45.2	19.7	11.4
Remove TXV @ $75	-75	53	0	447	425	45.4	19.6	11.6
Remove Duct Sealing @ $300	-300	250	456	491	898	47.4	21.5	11.7
Remove Duct Sealing @ $250	-250	250	456	491	948	47.4	21.5	11.7
Remove Duct Seaing @ $200	-200	250	456	491	998	47.4	21.5	11.7
Remove LSLE @ 3$/ft2	-846	242	-269	2040	1167	48.3	18.4	15.7
Remove Combo HVAC@500	-500	318	456	992	1266	48.7	21.5	13.0
Remove LSLE @ $2.5/ft2	-705	242	-269	2040	1308	48.3	18.4	15.7
Remove Combo HVAC@400	-400	318	456	992	1366	48.7	21.5	13.0
Remove LSLE @ $2/ft2	-564	242	-269	2040	1449	48.3	18.4	15.7
Remove Combo HVAC@300	-300	318	456	992	1466	48.7	21.5	13.0
Remove Combo HVAC@250	-250	318	456	992	1516	48.7	21.5	13.0
Remove LSLE @ 1.5$/ft2	-423	242	-269	2040	1590	48.3	18.4	15.7
Remove LSLE @ $1/ft2	-282	242	-269	2040	1731	48.3	18.4	15.7
98 Standards	-1100	822	159	2460	2341	51.2	20.3	16.8

Climate Zone 12 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-100	-610	-299	-726	33.8	15.4	4.3
Add Non-metal Frames @ $1.5/ft2	423	-100	-610	-299	-585	33.8	15.4	4.3
Add Non-metal Frames @ $2/ft2	564	-100	-610	-299	-444	33.8	15.4	4.3
Add Non-metal Frames @ $3/ft2	846	-100	-610	-299	-162	33.8	15.4	4.3
Add Duct Design @ $50	50	-41	0	-80	-72	37.0	18.0	4.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	37.2	18.0	5.1
Remove TXV @ $225	-225	44	0	219	38	37.8	18.0	5.6
Remove TXV @ $150	-150	44	0	219	113	37.8	18.0	5.6
Add Duct Design @ $250	250	-41	0	-80	128	37.0	18.0	4.9
Remove Rad Bar @ $0.15/ft2	-227	159	21	231	184	37.9	18.1	5.7
Remove TXV @ $75	-75	44	0	219	188	37.8	18.0	5.6
Remove LSLE @ 3$/ft2	-846	182	-297	1213	252	39.0	16.7	8.2
Remove Rad Bar @ $0.10/ft2	-151	159	21	231	260	37.9	18.1	5.7
Add Duct Design @ $500	500	-41	0	-80	378	37.0	18.0	4.9
Remove LSLE @ $2.5/ft2	-705	182	-297	1213	393	39.0	16.7	8.2
Remove Duct Sealing @ $300	-300	185	407	213	505	39.5	19.7	5.6
Remove LSLE @ $2/ft2	-564	182	-297	1213	534	39.0	16.7	8.2
Remove Duct Sealing @ $250	-250	185	407	213	555	39.5	19.7	5.6
Remove Combo HVAC@500	-500	239	407	456	602	40.1	19.7	6.2
Remove Duct Seaing @ $200	-200	185	407	213	605	39.5	19.7	5.6
Remove LSLE @ 1.5$/ft2	-423	182	-297	1213	675	39.0	16.7	8.2
Remove Combo HVAC@400	-400	239	407	456	702	40.1	19.7	6.2
Remove Combo HVAC@300	-300	239	407	456	802	40.1	19.7	6.2
Remove LSLE @ $1/ft2	-282	182	-297	1213	816	39.0	16.7	8.2
Remove Combo HVAC@250	-250	239	407	456	852	40.1	19.7	6.2
98 Standards	-1100	629	105	1233	868	40.8	18.4	8.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-610	-299	-627	33.8	15.4	4.3
Add Non-metal Frames @ $1.5/ft2	423	0	-610	-299	-486	33.8	15.4	4.3
Add Non-metal Frames @ $2/ft2	564	0	-610	-299	-345	33.8	15.4	4.3
Add Non-metal Frames @ $3/ft2	846	0	-610	-299	-63	33.8	15.4	4.3
Add Duct Design @ $50	50	0	0	-80	-30	37.0	18.0	4.9
Remove TXV @ $225	-225	0	0	219	-6	37.8	18.0	5.6
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	37.2	18.0	5.1
Remove Rad Bar @ $0.15/ft2	-227	0	21	231	25	37.9	18.1	5.7
Remove TXV @ $150	-150	0	0	219	69	37.8	18.0	5.6
Remove LSLE @ 3$/ft2	-846	0	-297	1213	70	39.0	16.7	8.2
Remove Rad Bar @ $0.10/ft2	-151	0	21	231	101	37.9	18.1	5.7
Remove TXV @ $75	-75	0	0	219	144	37.8	18.0	5.6
Add Duct Design @ $250	250	0	0	-80	170	37.0	18.0	4.9
Remove LSLE @ $2.5/ft2	-705	0	-297	1213	211	39.0	16.7	8.2
98 Standards	-1100	0	105	1233	239	40.8	18.4	8.2
Remove Duct Sealing @ $300	-300	0	407	213	320	39.5	19.7	5.6
Remove LSLE @ $2/ft2	-564	0	-297	1213	352	39.0	16.7	8.2
Remove Combo HVAC@500	-500	0	407	456	362	40.1	19.7	6.2
Remove Duct Sealing @ $250	-250	0	407	213	370	39.5	19.7	5.6
Add Duct Design @ $500	500	0	0	-80	420	37.0	18.0	4.9
Remove Duct Seaing @ $200	-200	0	407	213	420	39.5	19.7	5.6
Remove Combo HVAC@400	-400	0	407	456	462	40.1	19.7	6.2
Remove LSLE @ 1.5$/ft2	-423	0	-297	1213	493	39.0	16.7	8.2
Remove Combo HVAC@300	-300	0	407	456	562	40.1	19.7	6.2
Remove Combo HVAC@250	-250	0	407	456	612	40.1	19.7	6.2
Remove LSLE @ $1/ft2	-282	0	-297	1213	634	39.0	16.7	8.2

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-109	-596	-395	-818	34.7	15.0	5.6
Add Non-metal Frames @ $1.5/ft2	423	-109	-596	-395	-677	34.7	15.0	5.6
Add Non-metal Frames @ $2/ft2	564	-109	-596	-395	-536	34.7	15.0	5.6
Add Non-metal Frames @ $3/ft2	846	-109	-596	-395	-254	34.7	15.0	5.6
Add Duct Design @ $50	50	-45	0	-103	-98	38.0	17.5	6.3
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.2	17.5	6.6
Add Duct Design @ $250	250	-45	0	-103	102	38.0	17.5	6.3
Remove TXV @ $225	-225	48	0	284	107	39.0	17.5	7.3
Remove TXV @ $150	-150	48	0	284	182	39.0	17.5	7.3
Remove Rad Bar @ $0.15/ft2	-227	169	23	260	225	39.0	17.6	7.2
Remove TXV @ $75	-75	48	0	284	257	39.0	17.5	7.3
Remove Rad Bar @ $0.10/ft2	-151	169	23	260	301	39.0	17.6	7.2
Add Duct Design @ $500	500	-45	0	-103	352	38.0	17.5	6.3
Remove Duct Sealing @ $300	-300	203	395	277	575	40.6	19.2	7.3
Remove Duct Sealing @ $250	-250	203	395	277	625	40.6	19.2	7.3
Remove Duct Seaing @ $200	-200	203	395	277	675	40.6	19.2	7.3
Remove Combo HVAC@500	-500	262	395	592	749	41.4	19.2	8.1
Remove Combo HVAC@400	-400	262	395	592	849	41.4	19.2	8.1
Remove LSLE @ 3$/ft2	-846	234	-322	1853	918	41.6	16.1	11.3
Remove Combo HVAC@300	-300	262	395	592	949	41.4	19.2	8.1
Remove Combo HVAC@250	-250	262	395	592	999	41.4	19.2	8.1
Remove LSLE @ $2.5/ft2	-705	234	-322	1853	1059	41.6	16.1	11.3
Remove LSLE @ $2/ft2	-564	234	-322	1853	1200	41.6	16.1	11.3
Remove LSLE @ 1.5$/ft2	-423	234	-322	1853	1341	41.6	16.1	11.3
98 Standards	-1100	706	72	1788	1467	43.1	17.8	11.1
Remove LSLE @ $1/ft2	-282	234	-322	1853	1482	41.6	16.1	11.3

Climate Zone 13 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-105	-512	-558	-893	38.0	12.1	11.8
Add Non-metal Frames @ $1.5/ft2	423	-105	-512	-558	-752	38.0	12.1	11.8
Add Non-metal Frames @ $2/ft2	564	-105	-512	-558	-611	38.0	12.1	11.8
Add Non-metal Frames @ $3/ft2	846	-105	-512	-558	-329	38.0	12.1	11.8
Add Duct Design @ $50	50	-43	0	-204	-197	41.1	14.3	12.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	41.6	14.3	13.2
Add Duct Design @ $250	250	-43	0	-204	3	41.1	14.3	12.7
Add Duct Design @ $500	500	-43	0	-204	253	41.1	14.3	12.7
Remove Rad Bar @ $0.15/ft2	-227	150	19	404	346	42.8	14.3	14.3
Remove TXV @ $225	-225	46	0	558	379	43.1	14.3	14.7
Remove Rad Bar @ $0.10/ft2	-151	150	19	404	422	42.8	14.3	14.3
Remove TXV @ $150	-150	46	0	558	454	43.1	14.3	14.7
Remove TXV @ $75	-75	46	0	558	529	43.1	14.3	14.7
Remove LSLE @ 3$/ft2	-846	186	-241	1675	775	45.0	13.2	17.6
Remove Duct Sealing @ $300	-300	198	329	558	785	44.5	15.7	14.7
Remove Duct Sealing @ $250	-250	198	329	558	835	44.5	15.7	14.7
Remove Duct Seaing @ $200	-200	198	329	558	885	44.5	15.7	14.7
Remove LSLE @ $2.5/ft2	-705	186	-241	1675	916	45.0	13.2	17.6
Remove LSLE @ $2/ft2	-564	186	-241	1675	1057	45.0	13.2	17.6
Remove LSLE @ 1.5$/ft2	-423	186	-241	1675	1198	45.0	13.2	17.6
Remove Combo HVAC@500	-500	255	329	1178	1262	46.1	15.7	16.3
Remove LSLE @ $1/ft2	-282	186	-241	1675	1339	45.0	13.2	17.6
Remove Combo HVAC@400	-400	255	329	1178	1362	46.1	15.7	16.3
Remove Combo HVAC@300	-300	255	329	1178	1462	46.1	15.7	16.3
Remove Combo HVAC@250	-250	255	329	1178	1512	46.1	15.7	16.3
98 Standards	-1100	667	84	2398	2049	48.2	14.6	19.5

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-512	-558	-788	38.0	12.1	11.8
Add Non-metal Frames @ $1.5/ft2	423	0	-512	-558	-647	38.0	12.1	11.8
Add Non-metal Frames @ $2/ft2	564	0	-512	-558	-506	38.0	12.1	11.8
Add Non-metal Frames @ $3/ft2	846	0	-512	-558	-224	38.0	12.1	11.8
Add Duct Design @ $50	50	0	0	-204	-154	41.1	14.3	12.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	41.6	14.3	13.2
Add Duct Design @ $250	250	0	0	-204	46	41.1	14.3	12.7
Remove Rad Bar @ $0.15/ft2	-227	0	19	404	196	42.8	14.3	14.3
Remove Rad Bar @ $0.10/ft2	-151	0	19	404	271	42.8	14.3	14.3
Add Duct Design @ $500	500	0	0	-204	296	41.1	14.3	12.7
Remove TXV @ $225	-225	0	0	558	333	43.1	14.3	14.7
Remove TXV @ $150	-150	0	0	558	408	43.1	14.3	14.7
Remove TXV @ $75	-75	0	0	558	483	43.1	14.3	14.7
Remove Duct Sealing @ $300	-300	0	329	558	588	44.5	15.7	14.7
Remove LSLE @ 3$/ft2	-846	0	-241	1675	589	45.0	13.2	17.6
Remove Duct Sealing @ $250	-250	0	329	558	638	44.5	15.7	14.7
Remove Duct Seaing @ $200	-200	0	329	558	688	44.5	15.7	14.7
Remove LSLE @ $2.5/ft2	-705	0	-241	1675	730	45.0	13.2	17.6
Remove LSLE @ $2/ft2	-564	0	-241	1675	871	45.0	13.2	17.6
Remove Combo HVAC@500	-500	0	329	1178	1007	46.1	15.7	16.3
Remove LSLE @ 1.5$/ft2	-423	0	-241	1675	1012	45.0	13.2	17.6
Remove Combo HVAC@400	-400	0	329	1178	1107	46.1	15.7	16.3
Remove LSLE @ $1/ft2	-282	0	-241	1675	1153	45.0	13.2	17.6
Remove Combo HVAC@300	-300	0	329	1178	1207	46.1	15.7	16.3
Remove Combo HVAC@250	-250	0	329	1178	1257	46.1	15.7	16.3
98 Standards	-1100	0	84	2398	1382	48.2	14.6	19.5

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-114	-498	-664	-994	39.4	11.7	13.5
Add Non-metal Frames @ $1.5/ft2	423	-114	-498	-664	-853	39.4	11.7	13.5
Add Non-metal Frames @ $2/ft2	564	-114	-498	-664	-712	39.4	11.7	13.5
Add Non-metal Frames @ $3/ft2	846	-114	-498	-664	-430	39.4	11.7	13.5
Add Duct Design @ $50	50	-47	0	-237	-235	42.6	13.9	14.6
Add Duct Design @ $250	250	-47	0	-237	-35	42.6	13.9	14.6
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	43.2	13.9	15.2
Add Duct Design @ $500	500	-47	0	-237	215	42.6	13.9	14.6
Remove Rad Bar @ $0.15/ft2	-227	159	23	432	387	44.4	14.0	16.3
Remove Rad Bar @ $0.10/ft2	-151	159	23	432	463	44.4	14.0	16.3
Remove TXV @ $225	-225	50	0	641	466	44.9	13.9	16.9
Remove TXV @ $150	-150	50	0	641	541	44.9	13.9	16.9
Remove TXV @ $75	-75	50	0	641	616	44.9	13.9	16.9
Remove Duct Sealing @ $300	-300	216	322	639	877	46.3	15.2	16.9
Remove Duct Sealing @ $250	-250	216	322	639	927	46.3	15.2	16.9
Remove Duct Seaing @ $200	-200	216	322	639	977	46.3	15.2	16.9
Remove Combo HVAC@500	-500	278	322	1351	1451	48.1	15.2	18.7
Remove LSLE @ 3$/ft2	-846	239	-257	2364	1500	48.3	12.8	21.4
Remove Combo HVAC@400	-400	278	322	1351	1551	48.1	15.2	18.7
Remove LSLE @ $2.5/ft2	-705	239	-257	2364	1641	48.3	12.8	21.4
Remove Combo HVAC@300	-300	278	322	1351	1651	48.1	15.2	18.7
Remove Combo HVAC@250	-250	278	322	1351	1701	48.1	15.2	18.7
Remove LSLE @ $2/ft2	-564	239	-257	2364	1782	48.3	12.8	21.4
Remove LSLE @ 1.5$/ft2	-423	239	-257	2364	1923	48.3	12.8	21.4
Remove LSLE @ $1/ft2	-282	239	-257	2364	2064	48.3	12.8	21.4
98 Standards	-1100	747	61	3019	2727	51.4	14.1	23.1

Climate Zone 14 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-147	-715	-538	-1119	42.8	17.4	11.2
Add Non-metal Frames @ $1.5/ft2	423	-147	-715	-538	-978	42.8	17.4	11.2
Add Non-metal Frames @ $2/ft2	564	-147	-715	-538	-837	42.8	17.4	11.2
Add Non-metal Frames @ $3/ft2	846	-147	-715	-538	-555	42.8	17.4	11.2
Add Duct Design @ $50	50	-60	0	-194	-204	46.8	20.5	12.1
Add Duct Design @ $250	250	-60	0	-194	-4	46.8	20.5	12.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	47.3	20.5	12.6
Add Duct Design @ $500	500	-60	0	-194	246	46.8	20.5	12.1
Remove TXV @ $225	-225	64	0	532	371	48.7	20.5	14.0
Remove TXV @ $150	-150	64	0	532	446	48.7	20.5	14.0
Remove Rad Bar @ $0.15/ft2	-227	238	23	426	461	48.5	20.6	13.7
Remove LSLE @ 3$/ft2	-846	206	-418	1539	481	49.5	18.7	16.6
Remove TXV @ $75	-75	64	0	532	521	48.7	20.5	14.0
Remove Rad Bar @ $0.10/ft2	-151	238	23	426	537	48.5	20.6	13.7
Remove LSLE @ $2.5/ft2	-705	206	-418	1539	622	49.5	18.7	16.6
Remove LSLE @ $2/ft2	-564	206	-418	1539	763	49.5	18.7	16.6
Remove LSLE @ 1.5$/ft2	-423	206	-418	1539	904	49.5	18.7	16.6
Remove LSLE @ $1/ft2	-282	206	-418	1539	1045	49.5	18.7	16.6
Remove Duct Sealing @ $300	-300	309	542	661	1212	51.3	22.8	14.3
Remove Duct Sealing @ $250	-250	309	542	661	1262	51.3	22.8	14.3
Remove Duct Seaing @ $200	-200	309	542	661	1312	51.3	22.8	14.3
Remove Combo HVAC@500	-500	390	542	1266	1698	52.9	22.8	15.9
Remove Combo HVAC@400	-400	390	542	1266	1798	52.9	22.8	15.9
Remove Combo HVAC@300	-300	390	542	1266	1898	52.9	22.8	15.9
Remove Combo HVAC@250	-250	390	542	1266	1948	52.9	22.8	15.9
98 Standards	-1100	1058	147	2513	2618	54.5	21.1	19.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-715	-538	-971	42.8	17.4	11.2
Add Non-metal Frames @ $1.5/ft2	423	0	-715	-538	-830	42.8	17.4	11.2
Add Non-metal Frames @ $2/ft2	564	0	-715	-538	-689	42.8	17.4	11.2
Add Non-metal Frames @ $3/ft2	846	0	-715	-538	-407	42.8	17.4	11.2
Add Duct Design @ $50	50	0	0	-194	-144	46.8	20.5	12.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	47.3	20.5	12.6
Add Duct Design @ $250	250	0	0	-194	56	46.8	20.5	12.1
Remove Rad Bar @ $0.15/ft2	-227	0	23	426	223	48.5	20.6	13.7
Remove LSLE @ 3$/ft2	-846	0	-418	1539	275	49.5	18.7	16.6
Remove Rad Bar @ $0.10/ft2	-151	0	23	426	298	48.5	20.6	13.7
Add Duct Design @ $500	500	0	0	-194	306	46.8	20.5	12.1
Remove TXV @ $225	-225	0	0	532	307	48.7	20.5	14.0
Remove TXV @ $150	-150	0	0	532	382	48.7	20.5	14.0
Remove LSLE @ $2.5/ft2	-705	0	-418	1539	416	49.5	18.7	16.6
Remove TXV @ $75	-75	0	0	532	457	48.7	20.5	14.0
Remove LSLE @ $2/ft2	-564	0	-418	1539	557	49.5	18.7	16.6
Remove LSLE @ 1.5$/ft2	-423	0	-418	1539	698	49.5	18.7	16.6
Remove LSLE @ $1/ft2	-282	0	-418	1539	839	49.5	18.7	16.6
Remove Duct Sealing @ $300	-300	0	542	661	903	51.3	22.8	14.3
Remove Duct Sealing @ $250	-250	0	542	661	953	51.3	22.8	14.3
Remove Duct Seaing @ $200	-200	0	542	661	1003	51.3	22.8	14.3
Remove Combo HVAC@500	-500	0	542	1266	1308	52.9	22.8	15.9
Remove Combo HVAC@400	-400	0	542	1266	1408	52.9	22.8	15.9
Remove Combo HVAC@300	-300	0	542	1266	1508	52.9	22.8	15.9
Remove Combo HVAC@250	-250	0	542	1266	1558	52.9	22.8	15.9
98 Standards	-1100	0	147	2513	1560	54.5	21.1	19.2

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-157	-685	-636	-1195	43.6	16.7	12.8
Add Non-metal Frames @ $1.5/ft2	423	-157	-685	-636	-1054	43.6	16.7	12.8
Add Non-metal Frames @ $2/ft2	564	-157	-685	-636	-913	43.6	16.7	12.8
Add Non-metal Frames @ $3/ft2	846	-157	-685	-636	-631	43.6	16.7	12.8
Add Duct Design @ $50	50	-64	0	-225	-239	47.6	19.6	13.8
Add Duct Design @ $250	250	-64	0	-225	-39	47.6	19.6	13.8
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	48.2	19.6	14.4
Add Duct Design @ $500	500	-64	0	-225	211	47.6	19.6	13.8
Remove TXV @ $225	-225	68	0	608	451	49.8	19.6	16.0
Remove Rad Bar @ $0.15/ft2	-227	251	28	459	511	49.5	19.7	15.6
Remove TXV @ $150	-150	68	0	608	526	49.8	19.6	16.0
Remove Rad Bar @ $0.10/ft2	-151	251	28	459	586	49.5	19.7	15.6
Remove TXV @ $75	-75	68	0	608	601	49.8	19.6	16.0
Remove LSLE @ 3$/ft2	-846	259	-477	2244	1180	52.0	17.6	20.3
Remove Duct Sealing @ $300	-300	329	521	755	1306	52.4	21.8	16.4
Remove LSLE @ $2.5/ft2	-705	259	-477	2244	1321	52.0	17.6	20.3
Remove Duct Sealing @ $250	-250	329	521	755	1356	52.4	21.8	16.4
Remove Duct Seaing @ $200	-200	329	521	755	1406	52.4	21.8	16.4
Remove LSLE @ $2/ft2	-564	259	-477	2244	1462	52.0	17.6	20.3
Remove LSLE @ 1.5$/ft2	-423	259	-477	2244	1603	52.0	17.6	20.3
Remove LSLE @ $1/ft2	-282	259	-477	2244	1744	52.0	17.6	20.3
Remove Combo HVAC@500	-500	417	521	1446	1884	54.2	21.8	18.2
Remove Combo HVAC@400	-400	417	521	1446	1984	54.2	21.8	18.2
Remove Combo HVAC@300	-300	417	521	1446	2084	54.2	21.8	18.2
Remove Combo HVAC@250	-250	417	521	1446	2134	54.2	21.8	18.2
98 Standards	-1100	1153	82	3150	3285	56.8	20.0	22.6

Climate Zone 15 CEC Forecast by Time Block

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-139	-175	-1195	-1227	48.2	3.1	31.0
Add Non-metal Frames @ $1.5/ft2	423	-139	-175	-1195	-1086	48.2	3.1	31.0
Add Non-metal Frames @ $2/ft2	564	-139	-175	-1195	-945	48.2	3.1	31.0
Add Non-metal Frames @ $3/ft2	846	-139	-175	-1195	-663	48.2	3.1	31.0
Add Duct Design @ $50	50	-57	0	-510	-517	50.9	3.8	32.9
Add Duct Design @ $250	250	-57	0	-510	-317	50.9	3.8	32.9
Add Duct Design @ $500	500	-57	0	-510	-67	50.9	3.8	32.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	52.2	3.8	34.3
Remove Rad Bar @ $0.15/ft2	-227	232	7	935	947	54.8	3.9	36.8
Remove Rad Bar @ $0.10/ft2	-151	232	7	935	1023	54.8	3.9	36.8
Remove TXV @ $225	-225	60	0	1386	1221	56.0	3.8	38.0
Remove TXV @ $150	-150	60	0	1386	1296	56.0	3.8	38.0
Remove TXV @ $75	-75	60	0	1386	1371	56.0	3.8	38.0
Remove LSLE @ 3$/ft2	-846	205	-119	2452	1692	58.4	3.3	40.9
Remove LSLE @ $2.5/ft2	-705	205	-119	2452	1833	58.4	3.3	40.9
Remove Duct Sealing @ $300	-300	296	86	1874	1957	57.7	4.2	39.4
Remove LSLE @ $2/ft2	-564	205	-119	2452	1974	58.4	3.3	40.9
Remove Duct Sealing @ $250	-250	296	86	1874	2007	57.7	4.2	39.4
Remove Duct Seaing @ $200	-200	296	86	1874	2057	57.7	4.2	39.4
Remove LSLE @ 1.5$/ft2	-423	205	-119	2452	2115	58.4	3.3	40.9
Remove LSLE @ $1/ft2	-282	205	-119	2452	2256	58.4	3.3	40.9
Remove Combo HVAC@500	-500	374	86	3466	3426	62.0	4.2	43.7
Remove Combo HVAC@400	-400	374	86	3466	3526	62.0	4.2	43.7
Remove Combo HVAC@300	-300	374	86	3466	3626	62.0	4.2	43.7
Remove Combo HVAC@250	-250	374	86	3466	3676	62.0	4.2	43.7
98 Standards	-1100	1057	75	5473	5504	67.4	4.1	49.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-175	-1195	-1088	48.2	3.1	31.0
Add Non-metal Frames @ $1.5/ft2	423	0	-175	-1195	-947	48.2	3.1	31.0
Add Non-metal Frames @ $2/ft2	564	0	-175	-1195	-806	48.2	3.1	31.0
Add Non-metal Frames @ $3/ft2	846	0	-175	-1195	-524	48.2	3.1	31.0
Add Duct Design @ $50	50	0	0	-510	-460	50.9	3.8	32.9
Add Duct Design @ $250	250	0	0	-510	-260	50.9	3.8	32.9
Add Duct Design @ $500	500	0	0	-510	-10	50.9	3.8	32.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	52.2	3.8	34.3
Remove Rad Bar @ $0.15/ft2	-227	0	7	935	715	54.8	3.9	36.8
Remove Rad Bar @ $0.10/ft2	-151	0	7	935	791	54.8	3.9	36.8
Remove TXV @ $225	-225	0	0	1386	1161	56.0	3.8	38.0
Remove TXV @ $150	-150	0	0	1386	1236	56.0	3.8	38.0
Remove TXV @ $75	-75	0	0	1386	1311	56.0	3.8	38.0
Remove LSLE @ 3$/ft2	-846	0	-119	2452	1487	58.4	3.3	40.9
Remove LSLE @ $2.5/ft2	-705	0	-119	2452	1628	58.4	3.3	40.9
Remove Duct Sealing @ $300	-300	0	86	1874	1660	57.7	4.2	39.4
Remove Duct Sealing @ $250	-250	0	86	1874	1710	57.7	4.2	39.4
Remove Duct Seaing @ $200	-200	0	86	1874	1760	57.7	4.2	39.4
Remove LSLE @ $2/ft2	-564	0	-119	2452	1769	58.4	3.3	40.9
Remove LSLE @ 1.5$/ft2	-423	0	-119	2452	1910	58.4	3.3	40.9
Remove LSLE @ $1/ft2	-282	0	-119	2452	2051	58.4	3.3	40.9
Remove Combo HVAC@500	-500	0	86	3466	3053	62.0	4.2	43.7
Remove Combo HVAC@400	-400	0	86	3466	3153	62.0	4.2	43.7
Remove Combo HVAC@300	-300	0	86	3466	3253	62.0	4.2	43.7
Remove Combo HVAC@250	-250	0	86	3466	3303	62.0	4.2	43.7
98 Standards	-1100	0	75	5473	4448	67.4	4.1	49.2

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-149	-171	-1320	-1357	50.2	2.9	33.1
Add Non-metal Frames @ $1.5/ft2	423	-149	-171	-1320	-1216	50.2	2.9	33.1
Add Non-metal Frames @ $2/ft2	564	-149	-171	-1320	-1075	50.2	2.9	33.1
Add Non-metal Frames @ $3/ft2	846	-149	-171	-1320	-793	50.2	2.9	33.1
Add Duct Design @ $50	50	-61	0	-544	-555	53.0	3.6	35.2
Add Duct Design @ $250	250	-61	0	-544	-355	53.0	3.6	35.2
Add Duct Design @ $500	500	-61	0	-544	-105	53.0	3.6	35.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	54.5	3.6	36.7
Remove Rad Bar @ $0.15/ft2	-227	244	7	977	1001	57.2	3.7	39.4
Remove Rad Bar @ $0.10/ft2	-151	244	7	977	1077	57.2	3.7	39.4
Remove TXV @ $225	-225	65	0	1486	1325	58.5	3.6	40.8
Remove TXV @ $150	-150	65	0	1486	1400	58.5	3.6	40.8
Remove TXV @ $75	-75	65	0	1486	1475	58.5	3.6	40.8
Remove Duct Sealing @ $300	-300	318	79	2012	2110	60.3	4.0	42.2
Remove Duct Sealing @ $250	-250	318	79	2012	2160	60.3	4.0	42.2
Remove Duct Seaing @ $200	-200	318	79	2012	2210	60.3	4.0	42.2
Remove LSLE @ 3$/ft2	-846	259	-110	3277	2580	62.9	3.2	45.6
Remove LSLE @ $2.5/ft2	-705	259	-110	3277	2721	62.9	3.2	45.6
Remove LSLE @ $2/ft2	-564	259	-110	3277	2862	62.9	3.2	45.6
Remove LSLE @ 1.5$/ft2	-423	259	-110	3277	3003	62.9	3.2	45.6
Remove LSLE @ $1/ft2	-282	259	-110	3277	3144	62.9	3.2	45.6
Remove Combo HVAC@500	-500	401	79	3719	3699	65.0	4.0	46.8
Remove Combo HVAC@400	-400	401	79	3719	3799	65.0	4.0	46.8
Remove Combo HVAC@300	-300	401	79	3719	3899	65.0	4.0	46.8
Remove Combo HVAC@250	-250	401	79	3719	3949	65.0	4.0	46.8
98 Standards	-1100	1124	70	5830	5924	70.7	3.9	52.6

Climate Zone 16 CEC Forecast by Time Block

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Duct Design @ $50	50	-58	0	-78	-86	54.1	37.4	2.6
Add TXV @ $75	75	-42	0	-104	-71	54.1	37.4	2.5
Add Rad Bar @ $0.10/ft1	151	-69	-56	-93	-66	53.9	37.1	2.6
Package 4 Tight Ducts	0	0	0	0	0	54.4	37.4	2.8
Add TXV @ $150	150	-42	0	-104	4	54.1	37.4	2.5
Add Rad Bar @ $0.15/ft2	227	-69	-56	-93	10	53.9	37.1	2.6
Add Non-metal Frames @ $1/ft2	282	-28	-145	-93	16	53.5	36.8	2.6
Add TXV @ $225	225	-42	0	-104	79	54.1	37.4	2.5
Add Duct Design @ $250	250	-58	0	-78	114	54.1	37.4	2.6
Add Non-metal Frames @ $1.5/ft2	423	-28	-145	-93	157	53.5	36.8	2.6
Add Non-metal Frames @ $2/ft2	564	-28	-145	-93	298	53.5	36.8	2.6
Add Duct Design @ $500	500	-58	0	-78	364	54.1	37.4	2.6
Add Non-metal Frames @ $3/ft2	846	-28	-145	-93	580	53.5	36.8	2.6
Add LSLE @ $1/ft2	282	-160	1355	-537	940	58.7	43.2	1.4
Remove Duct Seal @ $300	-300	185	1091	82	1059	59.2	42.1	3.0
98 Standards	-300	185	1091	82	1059	59.2	42.1	3.0
Add LSLE @ $1.5/ft2	423	-160	1355	-537	1081	58.7	43.2	1.4
Remove Duct Seal @ $250	-250	185	1091	82	1109	59.2	42.1	3.0
Remove Duct Seal @ $200	-200	185	1091	82	1159	59.2	42.1	3.0
Add LSLE @ $2/ft2	564	-160	1355	-537	1222	58.7	43.2	1.4
Add LSLE @ $2.5/ft2	705	-160	1355	-537	1363	58.7	43.2	1.4
Add LSLE @ $3/ft2	846	-160	1355	-537	1504	58.7	43.2	1.4

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add TXV @ $75	75	0	0	-104	-29	54.1	37.4	2.5
Add Duct Design @ $50	50	0	0	-78	-28	54.1	37.4	2.6
Package 4 Tight Ducts	0	0	0	0	0	54.4	37.4	2.8
Add Rad Bar @ $0.10/ft1	151	0	-56	-93	3	53.9	37.1	2.6
Add Non-metal Frames @ $1/ft2	282	0	-145	-93	45	53.5	36.8	2.6
Add TXV @ $150	150	0	0	-104	46	54.1	37.4	2.5
Add Rad Bar @ $0.15/ft2	227	0	-56	-93	78	53.9	37.1	2.6
Add TXV @ $225	225	0	0	-104	121	54.1	37.4	2.5
Add Duct Design @ $250	250	0	0	-78	172	54.1	37.4	2.6
Add Non-metal Frames @ $1.5/ft2	423	0	-145	-93	186	53.5	36.8	2.6
Add Non-metal Frames @ $2/ft2	564	0	-145	-93	327	53.5	36.8	2.6
Add Duct Design @ $500	500	0	0	-78	422	54.1	37.4	2.6
Add Non-metal Frames @ $3/ft2	846	0	-145	-93	609	53.5	36.8	2.6
Remove Duct Seal @ $300	-300	0	1091	82	873	59.2	42.1	3.0
98 Standards	-300	0	1091	82	873	59.2	42.1	3.0
Remove Duct Seal @ $250	-250	0	1091	82	923	59.2	42.1	3.0
Remove Duct Seal @ $200	-200	0	1091	82	973	59.2	42.1	3.0
Add LSLE @ $1/ft2	282	0	1355	-537	1100	58.7	43.2	1.4
Add LSLE @ $1.5/ft2	423	0	1355	-537	1241	58.7	43.2	1.4
Add LSLE @ $2/ft2	564	0	1355	-537	1382	58.7	43.2	1.4
Add LSLE @ $2.5/ft2	705	0	1355	-537	1523	58.7	43.2	1.4
Add LSLE @ $3/ft2	846	0	1355	-537	1664	58.7	43.2	1.4

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Duct Design @ $50	50	69	0	-132	-13	54.6	36.2	4.3
Add TXV @ $75	75	88	0	-172	-8	54.5	36.2	4.2
Add Rad Bar @ $0.10/ft1	151	66	-56	-110	51	54.4	35.9	4.4
Add TXV @ $150	150	88	0	-172	67	54.5	36.2	4.2
Add Non-metal Frames @ $1/ft2	282	102	-133	-149	102	54.0	35.6	4.3
Add Rad Bar @ $0.15/ft2	227	66	-56	-110	127	54.4	35.9	4.4
Package 4 Tight Ducts	0	137	0	0	137	55.0	36.2	4.7
Add TXV @ $225	225	88	0	-172	142	54.5	36.2	4.2
Add Duct Design @ $250	250	69	0	-132	187	54.6	36.2	4.3
Add Non-metal Frames @ $1.5/ft2	423	102	-133	-149	243	54.0	35.6	4.3
Add Non-metal Frames @ $2/ft2	564	102	-133	-149	384	54.0	35.6	4.3
Add Duct Design @ $500	500	69	0	-132	437	54.6	36.2	4.3
Add Non-metal Frames @ $3/ft2	846	102	-133	-149	666	54.0	35.6	4.3
Add LSLE @ $1/ft2	282	-80	1411	-943	671	58.5	42.2	2.1
Add LSLE @ $1.5/ft2	423	-80	1411	-943	812	58.5	42.2	2.1
Add LSLE @ $2/ft2	564	-80	1411	-943	953	58.5	42.2	2.1
Add LSLE @ $2.5/ft2	705	-80	1411	-943	1094	58.5	42.2	2.1
Add LSLE @ $3/ft2	846	-80	1411	-943	1235	58.5	42.2	2.1
Remove Duct Seal @ $300	-300	356	1056	132	1244	59.8	40.7	5.0
98 Standards	-300	356	1056	132	1244	59.8	40.7	5.0
Remove Duct Seal @ $250	-250	356	1056	132	1294	59.8	40.7	5.0
Remove Duct Seal @ $200	-200	356	1056	132	1344	59.8	40.7	5.0

E. LCC Tables for CEC Forecast

Climate Zone 01 CEC Forecast

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	33.2	19.0	0.0
Add Duct Design @ $50	50	-40	0	0	10	33.2	19.0	0.0
Add Non-metal Frames @ $1/ft2	282	-18	-241	0	23	32.1	18.0	0.0
Add TXV @ $75	75	-29	0	0	46	33.2	19.0	0.0
Add Rad Bar @ $0.10/ft1	151	-58	-28	0	65	33.0	18.9	0.0
Add TXV @ $150	150	-29	0	0	121	33.2	19.0	0.0
Add Rad Bar @ $0.15/ft2	227	-58	-28	0	141	33.0	18.9	0.0
Add Non-metal Frames @ $1.5/ft2	423	-18	-241	0	164	32.1	18.0	0.0
Add TXV @ $225	225	-29	0	0	196	33.2	19.0	0.0
Add Duct Design @ $250	250	-40	0	0	210	33.2	19.0	0.0
Remove Duct Seal @ $300	-300	105	418	3	227	34.9	20.8	0.0
98 Standards	-300	105	418	3	227	34.9	20.8	0.0
Remove Duct Seal @ $250	-250	105	418	3	277	34.9	20.8	0.0
Add Non-metal Frames @ $2/ft2	564	-18	-241	0	305	32.1	18.0	0.0
Remove Duct Seal @ $200	-200	105	418	3	327	34.9	20.8	0.0
Add Duct Design @ $500	500	-40	0	0	460	33.2	19.0	0.0
Add Non-metal Frames @ $3/ft2	846	-18	-241	0	587	32.1	18.0	0.0
Add LSLE @ $1/ft2	282	-148	1033	0	1166	37.6	23.4	0.0
Add LSLE @ $1.5/ft2	423	-148	1033	0	1307	37.6	23.4	0.0
Add LSLE @ $2/ft2	564	-148	1033	0	1448	37.6	23.4	0.0
Add LSLE @ $2.5/ft2	705	-148	1033	0	1589	37.6	23.4	0.0
Add LSLE @ $3/ft2	846	-148	1033	0	1730	37.6	23.4	0.0

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	33.2	19.0	0.0
Add Non-metal Frames @ $1/ft2	282	0	-241	0	41	32.1	18.0	0.0
Add Duct Design @ $50	50	0	0	0	50	33.2	19.0	0.0
Add TXV @ $75	75	0	0	0	75	33.2	19.0	0.0
Remove Duct Seal @ $300	-300	0	418	3	122	34.9	20.8	0.0
98 Standards	-300	0	418	3	122	34.9	20.8	0.0
Add Rad Bar @ $0.10/ft1	151	0	-28	0	123	33.0	18.9	0.0
Add TXV @ $150	150	0	0	0	150	33.2	19.0	0.0
Remove Duct Seal @ $250	-250	0	418	3	172	34.9	20.8	0.0
Add Non-metal Frames @ $1.5/ft2	423	0	-241	0	182	32.1	18.0	0.0
Add Rad Bar @ $0.15/ft2	227	0	-28	0	199	33.0	18.9	0.0
Remove Duct Seal @ $200	-200	0	418	3	222	34.9	20.8	0.0
Add TXV @ $225	225	0	0	0	225	33.2	19.0	0.0
Add Duct Design @ $250	250	0	0	0	250	33.2	19.0	0.0
Add Non-metal Frames @ $2/ft2	564	0	-241	0	323	32.1	18.0	0.0
Add Duct Design @ $500	500	0	0	0	500	33.2	19.0	0.0
Add Non-metal Frames @ $3/ft2	846	0	-241	0	605	32.1	18.0	0.0
Add LSLE @ $1/ft2	282	0	1033	0	1315	37.6	23.4	0.0
Add LSLE @ $1.5/ft2	423	0	1033	0	1456	37.6	23.4	0.0
Add LSLE @ $2/ft2	564	0	1033	0	1597	37.6	23.4	0.0
Add LSLE @ $2.5/ft2	705	0	1033	0	1738	37.6	23.4	0.0
Add LSLE @ $3/ft2	846	0	1033	0	1879	37.6	23.4	0.0

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Package 4 Tight Ducts	0	0	0	0	0	32.1	18.0	0.0
Add Duct Design @ $50	50	-49	0	0	1	32.1	18.0	0.0
Add Non-metal Frames @ $1/ft2	282	-24	-231	-3	23	31.1	17.0	0.0
Add TXV @ $75	75	-35	0	-1	39	32.1	18.0	0.0
Add Rad Bar @ $0.10/ft1	151	-61	-30	0	60	32.0	17.8	0.0
Add TXV @ $150	150	-35	0	-1	114	32.1	18.0	0.0
Add Rad Bar @ $0.15/ft2	227	-61	-30	0	135	32.0	17.8	0.0
Add Non-metal Frames @ $1.5/ft2	423	-24	-231	-3	164	31.1	17.0	0.0
Add TXV @ $225	225	-35	0	-1	189	32.1	18.0	0.0
Add Duct Design @ $250	250	-49	0	0	201	32.1	18.0	0.0
Remove Duct Seal @ $300	-300	129	393	0	222	33.8	19.6	0.0
98 Standards	-300	129	393	0	222	33.8	19.6	0.0
Remove Duct Seal @ $250	-250	129	393	0	272	33.8	19.6	0.0
Add Non-metal Frames @ $2/ft2	564	-24	-231	-3	305	31.1	17.0	0.0
Remove Duct Seal @ $200	-200	129	393	0	322	33.8	19.6	0.0
Add Duct Design @ $500	500	-49	0	0	451	32.1	18.0	0.0
Add Non-metal Frames @ $3/ft2	846	-24	-231	-3	587	31.1	17.0	0.0
Add LSLE @ $1/ft2	282	-199	1077	-10	1151	36.7	22.6	0.0
Add LSLE @ $1.5/ft2	423	-199	1077	-10	1292	36.7	22.6	0.0
Add LSLE @ $2/ft2	564	-199	1077	-10	1433	36.7	22.6	0.0
Add LSLE @ $2.5/ft2	705	-199	1077	-10	1574	36.7	22.6	0.0
Add LSLE @ $3/ft2	846	-199	1077	-10	1715	36.7	22.6	0.0

Climate Zone 02 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-85	-706	-156	-665	34.9	18.1	2.6
Add Non-metal Frames @ $1.5/ft2	423	-85	-706	-156	-524	34.9	18.1	2.6
Add Non-metal Frames @ $2/ft2	564	-85	-706	-156	-383	34.9	18.1	2.6
Remove LSLE @ 3$/ft2	-846	174	-337	738	-270	39.0	19.7	5.1
Remove LSLE @ $2.5/ft2	-705	174	-337	738	-129	39.0	19.7	5.1
Add Non-metal Frames @ $3/ft2	846	-85	-706	-156	-101	34.9	18.1	2.6
Remove TXV @ $225	-225	40	0	120	-65	38.7	21.2	3.4
Add Duct Design @ $50	50	-37	0	-42	-29	38.3	21.2	3.0
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.4	21.2	3.1
Remove TXV @ $150	-150	40	0	120	10	38.7	21.2	3.4
Remove LSLE @ $2/ft2	-564	174	-337	738	12	39.0	19.7	5.1
Remove TXV @ $75	-75	40	0	120	85	38.7	21.2	3.4
Remove Rad Bar @ $0.15/ft2	-227	144	35	144	96	38.9	21.3	3.5
Remove LSLE @ 1.5$/ft2	-423	174	-337	738	153	39.0	19.7	5.1
Add Duct Design @ $250	250	-37	0	-42	171	38.3	21.2	3.0
Remove Rad Bar @ $0.10/ft2	-151	144	35	144	172	38.9	21.3	3.5
Remove LSLE @ $1/ft2	-282	174	-337	738	294	39.0	19.7	5.1
Add Duct Design @ $500	500	-37	0	-42	421	38.3	21.2	3.0
Remove Combo HVAC@500	-500	213	491	233	436	41.1	23.3	3.7
Remove Duct Sealing @ $300	-300	164	491	101	456	40.8	23.3	3.4
Remove Duct Sealing @ $250	-250	164	491	101	506	40.8	23.3	3.4
Remove Combo HVAC@400	-400	213	491	233	536	41.1	23.3	3.7
Remove Duct Seaing @ $200	-200	164	491	101	556	40.8	23.3	3.4
Remove Combo HVAC@300	-300	213	491	233	636	41.1	23.3	3.7
Remove Combo HVAC@250	-250	213	491	233	686	41.1	23.3	3.7
98 Standards	-1100	747	-168	1351	830	41.4	20.4	6.9

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-706	-156	-580	34.9	18.1	2.6
Remove LSLE @ 3$/ft2	-846	0	-337	738	-444	39.0	19.7	5.1
Add Non-metal Frames @ $1.5/ft2	423	0	-706	-156	-439	34.9	18.1	2.6
Remove LSLE @ $2.5/ft2	-705	0	-337	738	-303	39.0	19.7	5.1
Add Non-metal Frames @ $2/ft2	564	0	-706	-156	-298	34.9	18.1	2.6
Remove LSLE @ $2/ft2	-564	0	-337	738	-162	39.0	19.7	5.1
Remove TXV @ $225	-225	0	0	120	-105	38.7	21.2	3.4
Remove Rad Bar @ $0.15/ft2	-227	0	35	144	-48	38.9	21.3	3.5
Remove TXV @ $150	-150	0	0	120	-30	38.7	21.2	3.4
Remove LSLE @ 1.5$/ft2	-423	0	-337	738	-21	39.0	19.7	5.1
Add Non-metal Frames @ $3/ft2	846	0	-706	-156	-16	34.9	18.1	2.6
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.4	21.2	3.1
Add Duct Design @ $50	50	0	0	-42	8	38.3	21.2	3.0
Remove Rad Bar @ $0.10/ft2	-151	0	35	144	28	38.9	21.3	3.5
Remove TXV @ $75	-75	0	0	120	45	38.7	21.2	3.4
98 Standards	-1100	0	-168	1351	83	41.4	20.4	6.9
Remove LSLE @ $1/ft2	-282	0	-337	738	120	39.0	19.7	5.1
Add Duct Design @ $250	250	0	0	-42	208	38.3	21.2	3.0
Remove Combo HVAC@500	-500	0	491	233	223	41.1	23.3	3.7
Remove Duct Sealing @ $300	-300	0	491	101	292	40.8	23.3	3.4
Remove Combo HVAC@400	-400	0	491	233	323	41.1	23.3	3.7
Remove Duct Sealing @ $250	-250	0	491	101	342	40.8	23.3	3.4
Remove Duct Seaing @ $200	-200	0	491	101	392	40.8	23.3	3.4
Remove Combo HVAC@300	-300	0	491	233	423	41.1	23.3	3.7
Add Duct Design @ $500	500	0	0	-42	458	38.3	21.2	3.0
Remove Combo HVAC@250	-250	0	491	233	473	41.1	23.3	3.7

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-94	-689	-211	-713	35.2	17.7	3.4
Add Non-metal Frames @ $1.5/ft2	423	-94	-689	-211	-572	35.2	17.7	3.4
Add Non-metal Frames @ $2/ft2	564	-94	-689	-211	-431	35.2	17.7	3.4
Add Non-metal Frames @ $3/ft2	846	-94	-689	-211	-149	35.2	17.7	3.4
Add Duct Design @ $50	50	-41	0	-58	-49	38.6	20.6	3.9
Remove TXV @ $225	-225	44	0	158	-24	39.2	20.6	4.5
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.8	20.6	4.0
Remove TXV @ $150	-150	44	0	158	51	39.2	20.6	4.5
Remove TXV @ $75	-75	44	0	158	126	39.2	20.6	4.5
Remove Rad Bar @ $0.15/ft2	-227	152	37	165	128	39.4	20.8	4.5
Remove LSLE @ 3$/ft2	-846	225	-362	1133	151	40.4	19.1	7.2
Add Duct Design @ $250	250	-41	0	-58	151	38.6	20.6	3.9
Remove Rad Bar @ $0.10/ft2	-151	152	37	165	204	39.4	20.8	4.5
Remove LSLE @ $2.5/ft2	-705	225	-362	1133	292	40.4	19.1	7.2
Add Duct Design @ $500	500	-41	0	-58	401	38.6	20.6	3.9
Remove LSLE @ $2/ft2	-564	225	-362	1133	433	40.4	19.1	7.2
Remove Duct Sealing @ $300	-300	181	481	132	494	41.2	22.7	4.4
Remove Combo HVAC@500	-500	235	481	304	520	41.7	22.7	4.9
Remove Duct Sealing @ $250	-250	181	481	132	544	41.2	22.7	4.4
Remove LSLE @ 1.5$/ft2	-423	225	-362	1133	574	40.4	19.1	7.2
Remove Duct Seaing @ $200	-200	181	481	132	594	41.2	22.7	4.4
Remove Combo HVAC@400	-400	235	481	304	620	41.7	22.7	4.9
Remove LSLE @ $1/ft2	-282	225	-362	1133	715	40.4	19.1	7.2
Remove Combo HVAC@300	-300	235	481	304	720	41.7	22.7	4.9
Remove Combo HVAC@250	-250	235	481	304	770	41.7	22.7	4.9
98 Standards	-1100	872	-201	1957	1528	43.4	19.7	9.5

Climate Zone 03 CEC Forecast

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-47	-444	-34	-173	26.4	11.4	0.9
Add Duct Design @ $50	50	-65	0	-27	-42	28.4	13.3	0.9
Add Rad Bar @ $0.10/ft1	151	-123	-21	-37	-30	28.2	13.3	0.8
Add TXV @ $75	75	-47	0	-34	-5	28.3	13.3	0.9
Package 4 Tight Ducts	0	0	0	0	0	28.4	13.3	1.0
Add Non-metal Frames @ $1.5/ft2	529	-47	-444	-34	3	26.4	11.4	0.9
Add Rad Bar @ $0.15/ft2	227	-123	-21	-37	46	28.2	13.3	0.8
Add TXV @ $150	150	-47	0	-34	70	28.3	13.3	0.9
Add TXV @ $225	225	-47	0	-34	145	28.3	13.3	0.9
Add Duct Design @ $250	250	-65	0	-27	158	28.4	13.3	0.9
Add Non-metal Frames @ $2/ft2	705	-47	-444	-34	180	26.4	11.4	0.9
Remove Duct Seal @ $300	-300	266	280	24	270	29.7	14.5	1.0
98 Standards	-300	266	280	24	270	29.7	14.5	1.0
Remove Duct Seal @ $250	-250	266	280	24	320	29.7	14.5	1.0
Add LSLE @ $1/ft2	353	-223	453	-227	356	29.7	15.3	0.3
Remove Duct Seal @ $200	-200	266	280	24	370	29.7	14.5	1.0
Add Duct Design @ $500	500	-65	0	-27	408	28.4	13.3	0.9
Add Non-metal Frames @ $3/ft2	1058	-47	-444	-34	532	26.4	11.4	0.9
Add LSLE @ $1.5/ft2	529	-223	453	-227	533	29.7	15.3	0.3
Add LSLE @ $2/ft2	705	-223	453	-227	709	29.7	15.3	0.3
Add LSLE @ $2.5/ft2	881	-223	453	-227	885	29.7	15.3	0.3
Add LSLE @ $3/ft2	1058	-223	453	-227	1061	29.7	15.3	0.3

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-444	-34	-125	26.4	11.4	0.9
Package 4 Tight Ducts	0	0	0	0	0	28.4	13.3	1.0
Remove Duct Seal @ $300	-300	0	280	24	4	29.7	14.5	1.0
98 Standards	-300	0	280	24	4	29.7	14.5	1.0
Add Duct Design @ $50	50	0	0	-27	23	28.4	13.3	0.9
Add TXV @ $75	75	0	0	-34	41	28.3	13.3	0.9
Add Non-metal Frames @ $1.5/ft2	529	0	-444	-34	51	26.4	11.4	0.9
Remove Duct Seal @ $250	-250	0	280	24	54	29.7	14.5	1.0
Add Rad Bar @ $0.10/ft1	151	0	-21	-37	93	28.2	13.3	0.8
Remove Duct Seal @ $200	-200	0	280	24	104	29.7	14.5	1.0
Add TXV @ $150	150	0	0	-34	116	28.3	13.3	0.9
Add Rad Bar @ $0.15/ft2	227	0	-21	-37	169	28.2	13.3	0.8
Add TXV @ $225	225	0	0	-34	191	28.3	13.3	0.9
Add Duct Design @ $250	250	0	0	-27	223	28.4	13.3	0.9
Add Non-metal Frames @ $2/ft2	705	0	-444	-34	227	26.4	11.4	0.9
Add Duct Design @ $500	500	0	0	-27	473	28.4	13.3	0.9
Add LSLE @ $1/ft2	353	0	453	-227	579	29.7	15.3	0.3
Add Non-metal Frames @ $3/ft2	1058	0	-444	-34	580	26.4	11.4	0.9
Add LSLE @ $1.5/ft2	529	0	453	-227	755	29.7	15.3	0.3
Add LSLE @ $2/ft2	705	0	453	-227	932	29.7	15.3	0.3
Add LSLE @ $2.5/ft2	881	0	453	-227	1108	29.7	15.3	0.3
Add LSLE @ $3/ft2	1058	0	453	-227	1284	29.7	15.3	0.3

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-56	-425	-68	-197	26.6	10.7	1.7
Add Duct Design @ $50	50	-78	0	-51	-79	28.4	12.6	1.7
Add Rad Bar @ $0.10/ft1	151	-136	-21	-54	-59	28.3	12.5	1.7
Add TXV @ $75	75	-56	0	-66	-47	28.4	12.6	1.7
Add Non-metal Frames @ $1.5/ft2	529	-56	-425	-68	-20	26.6	10.7	1.7
Package 4 Tight Ducts	0	0	0	0	0	28.6	12.6	1.9
Add Rad Bar @ $0.15/ft2	227	-136	-21	-54	16	28.3	12.5	1.7
Add TXV @ $150	150	-56	0	-66	28	28.4	12.6	1.7
Add LSLE @ $1/ft2	353	-295	465	-437	86	29.3	14.6	0.6
Add TXV @ $225	225	-56	0	-66	103	28.4	12.6	1.7
Add Duct Design @ $250	250	-78	0	-51	121	28.4	12.6	1.7
Add Non-metal Frames @ $2/ft2	705	-56	-425	-68	156	26.6	10.7	1.7
Add LSLE @ $1.5/ft2	529	-295	465	-437	263	29.3	14.6	0.6
Remove Duct Seal @ $300	-300	319	264	51	334	29.9	13.7	2.0
98 Standards	-300	319	264	51	334	29.9	13.7	2.0
Add Duct Design @ $500	500	-78	0	-51	371	28.4	12.6	1.7
Remove Duct Seal @ $250	-250	319	264	51	384	29.9	13.7	2.0
Remove Duct Seal @ $200	-200	319	264	51	434	29.9	13.7	2.0
Add LSLE @ $2/ft2	705	-295	465	-437	439	29.3	14.6	0.6
Add Non-metal Frames @ $3/ft2	1058	-56	-425	-68	508	26.6	10.7	1.7
Add LSLE @ $2.5/ft2	881	-295	465	-437	615	29.3	14.6	0.6
Add LSLE @ $3/ft2	1058	-295	465	-437	791	29.3	14.6	0.6

Climate Zone 04 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-68	-636	-112	-462	28.0	12.7	1.2
Remove LSLE @ 3$/ft2	-1058	207	-367	762	-456	31.6	13.8	3.7
Add Non-metal Frames @ $1.5/ft2	529	-68	-636	-112	-286	28.0	12.7	1.2
Remove LSLE @ $2.5/ft2	-881	207	-367	762	-280	31.6	13.8	3.7
Add Non-metal Frames @ $2/ft2	705	-68	-636	-112	-110	28.0	12.7	1.2
Remove LSLE @ $2/ft2	-705	207	-367	762	-103	31.6	13.8	3.7
Add Duct Design @ $50	50	-41	0	-41	-31	31.0	15.4	1.4
Add TXV @ $75	75	-29	0	-53	-7	30.9	15.4	1.4
Remove Rad Bar @ $0.15/ft2	-227	101	21	98	-7	31.4	15.5	1.8
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.1	15.4	1.5
Add TXV @ $150	150	-29	0	-53	68	30.9	15.4	1.4
Remove Rad Bar @ $0.10/ft2	-151	101	21	98	69	31.4	15.5	1.8
Remove LSLE @ 1.5$/ft2	-529	207	-367	762	73	31.6	13.8	3.7
Add TXV @ $225	225	-29	0	-53	143	30.9	15.4	1.4
Add Duct Design @ $250	250	-41	0	-41	169	31.0	15.4	1.4
Remove Duct Sealing @ $300	-300	112	332	37	181	32.6	16.8	1.6
Remove Duct Sealing @ $250	-250	112	332	37	231	32.6	16.8	1.6
Add Non-metal Frames @ $3/ft2	1058	-68	-636	-112	243	28.0	12.7	1.2
Remove LSLE @ $1/ft2	-353	207	-367	762	249	31.6	13.8	3.7
Remove Duct Seaing @ $200	-200	112	332	37	281	32.6	16.8	1.6
Add Duct Design @ $500	500	-41	0	-41	419	31.0	15.4	1.4
98 Standards	-950	583	-42	1005	596	33.7	15.2	4.3

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Remove LSLE @ 3$/ft2	-1058	0	-367	762	-663	31.6	13.8	3.7
Remove LSLE @ $2.5/ft2	-881	0	-367	762	-487	31.6	13.8	3.7
Add Non-metal Frames @ $1/ft2	353	0	-636	-112	-395	28.0	12.7	1.2
Remove LSLE @ $2/ft2	-705	0	-367	762	-310	31.6	13.8	3.7
Add Non-metal Frames @ $1.5/ft2	529	0	-636	-112	-219	28.0	12.7	1.2
Remove LSLE @ 1.5$/ft2	-529	0	-367	762	-134	31.6	13.8	3.7
Remove Rad Bar @ $0.15/ft2	-227	0	21	98	-108	31.4	15.5	1.8
Add Non-metal Frames @ $2/ft2	705	0	-636	-112	-42	28.0	12.7	1.2
Remove Rad Bar @ $0.10/ft2	-151	0	21	98	-32	31.4	15.5	1.8
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.1	15.4	1.5
Add Duct Design @ $50	50	0	0	-41	9	31.0	15.4	1.4
98 Standards	-950	0	-42	1005	13	33.7	15.2	4.3
Add TXV @ $75	75	0	0	-53	22	30.9	15.4	1.4
Remove LSLE @ $1/ft2	-353	0	-367	762	42	31.6	13.8	3.7
Remove Duct Sealing @ $300	-300	0	332	37	69	32.6	16.8	1.6
Add TXV @ $150	150	0	0	-53	97	30.9	15.4	1.4
Remove Duct Sealing @ $250	-250	0	332	37	119	32.6	16.8	1.6
Remove Duct Seaing @ $200	-200	0	332	37	169	32.6	16.8	1.6
Add TXV @ $225	225	0	0	-53	172	30.9	15.4	1.4
Add Duct Design @ $250	250	0	0	-41	209	31.0	15.4	1.4
Add Non-metal Frames @ $3/ft2	1058	0	-636	-112	310	28.0	12.7	1.2
Add Duct Design @ $500	500	0	0	-41	459	31.0	15.4	1.4

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measur	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-79	-617	-176	-520	28.4	12.2	2.1
Add Non-metal Frames @ $1.5/ft2	529	-79	-617	-176	-343	28.4	12.2	2.1
Add Non-metal Frames @ $2/ft2	705	-79	-617	-176	-167	28.4	12.2	2.1
Add Duct Design @ $50	50	-48	0	-68	-65	31.4	14.8	2.4
Add TXV @ $75	75	-34	0	-92	-51	31.3	14.8	2.3
Package 3 Ducts, LSLE, RB	0	0	0	0	0	31.6	14.8	2.6
Add TXV @ $150	150	-34	0	-92	24	31.3	14.8	2.3
Remove Rad Bar @ $0.15/ft2	-227	108	23	132	36	32.0	14.9	3.0
Add TXV @ $225	225	-34	0	-92	99	31.3	14.8	2.3
Remove Rad Bar @ $0.10/ft2	-151	108	23	132	112	32.0	14.9	3.0
Remove LSLE @ 3$/ft2	-1058	273	-383	1300	132	33.6	13.2	6.2
Add Duct Design @ $250	250	-48	0	-68	135	31.4	14.8	2.4
Add Non-metal Frames @ $3/ft2	1058	-79	-617	-176	185	28.4	12.2	2.1
Remove Duct Sealing @ $300	-300	131	320	64	215	33.1	16.2	2.8
Remove Duct Sealing @ $250	-250	131	320	64	265	33.1	16.2	2.8
Remove LSLE @ $2.5/ft2	-881	273	-383	1300	308	33.6	13.2	6.2
Remove Duct Seaing @ $200	-200	131	320	64	315	33.1	16.2	2.8
Add Duct Design @ $500	500	-48	0	-68	385	31.4	14.8	2.4
Remove LSLE @ $2/ft2	-705	273	-383	1300	484	33.6	13.2	6.2
Remove LSLE @ 1.5$/ft2	-529	273	-383	1300	660	33.6	13.2	6.2
Remove LSLE @ $1/ft2	-353	273	-383	1300	837	33.6	13.2	6.2
98 Standards	-950	712	-72	1638	1328	35.9	14.5	7.2

Climate Zone 05 CEC Forecast

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-33	-379	-20	-150	25.1	10.4	0.6
Add Duct Design @ $50	50	-52	0	-17	-19	26.7	12.0	0.6
Add Non-metal Frames @ $1.5/ft2	423	-33	-379	-20	-9	25.1	10.4	0.6
Package 4 Tight Ducts	0	0	0	0	0	26.8	12.0	0.7
Add Rad Bar @ $0.10/ft1	151	-97	-21	-27	6	26.6	11.9	0.6
Add TXV @ $75	75	-37	0	-23	14	26.7	12.0	0.6
Add Rad Bar @ $0.15/ft2	227	-97	-21	-27	82	26.6	11.9	0.6
Add TXV @ $150	150	-37	0	-23	89	26.7	12.0	0.6
Add Non-metal Frames @ $2/ft2	564	-33	-379	-20	132	25.1	10.4	0.6
Add TXV @ $225	225	-37	0	-23	164	26.7	12.0	0.6
Remove Duct Seal @ $300	-300	183	273	17	173	28.0	13.2	0.7
98 Standards	-300	183	273	17	173	28.0	13.2	0.7
Add Duct Design @ $250	250	-52	0	-17	181	26.7	12.0	0.6
Remove Duct Seal @ $250	-250	183	273	17	223	28.0	13.2	0.7
Remove Duct Seal @ $200	-200	183	273	17	273	28.0	13.2	0.7
Add LSLE @ $1/ft2	282	-169	404	-166	351	28.0	13.7	0.2
Add Non-metal Frames @ $3/ft2	846	-33	-379	-20	414	25.1	10.4	0.6
Add Duct Design @ $500	500	-52	0	-17	431	26.7	12.0	0.6
Add LSLE @ $1.5/ft2	423	-169	404	-166	492	28.0	13.7	0.2
Add LSLE @ $2/ft2	564	-169	404	-166	633	28.0	13.7	0.2
Add LSLE @ $2.5/ft2	705	-169	404	-166	774	28.0	13.7	0.2
Add LSLE @ $3/ft2	846	-169	404	-166	915	28.0	13.7	0.2

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-379	-20	-117	25.1	10.4	0.6
Remove Duct Seal @ $300	-300	0	273	17	-10	28.0	13.2	0.7
98 Standards	-300	0	273	17	-10	28.0	13.2	0.7
Package 4 Tight Ducts	0	0	0	0	0	26.8	12.0	0.7
Add Non-metal Frames @ $1.5/ft2	423	0	-379	-20	24	25.1	10.4	0.6
Add Duct Design @ $50	50	0	0	-17	33	26.7	12.0	0.6
Remove Duct Seal @ $250	-250	0	273	17	40	28.0	13.2	0.7
Add TXV @ $75	75	0	0	-23	52	26.7	12.0	0.6
Remove Duct Seal @ $200	-200	0	273	17	90	28.0	13.2	0.7
Add Rad Bar @ $0.10/ft1	151	0	-21	-27	104	26.6	11.9	0.6
Add TXV @ $150	150	0	0	-23	127	26.7	12.0	0.6
Add Non-metal Frames @ $2/ft2	564	0	-379	-20	165	25.1	10.4	0.6
Add Rad Bar @ $0.15/ft2	227	0	-21	-27	179	26.6	11.9	0.6
Add TXV @ $225	225	0	0	-23	202	26.7	12.0	0.6
Add Duct Design @ $250	250	0	0	-17	233	26.7	12.0	0.6
Add Non-metal Frames @ $3/ft2	846	0	-379	-20	447	25.1	10.4	0.6
Add Duct Design @ $500	500	0	0	-17	483	26.7	12.0	0.6
Add LSLE @ $1/ft2	282	0	404	-166	520	28.0	13.7	0.2
Add LSLE @ $1.5/ft2	423	0	404	-166	661	28.0	13.7	0.2
Add LSLE @ $2/ft2	564	0	404	-166	802	28.0	13.7	0.2
Add LSLE @ $2.5/ft2	705	0	404	-166	943	28.0	13.7	0.2
Add LSLE @ $3/ft2	846	0	404	-166	1084	28.0	13.7	0.2

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	92	-360	-43	-29	24.9	9.6	1.2
Add Duct Design @ $50	50	70	0	-37	83	26.5	11.1	1.2
Add Non-metal Frames @ $1.5/ft2	423	92	-360	-43	112	24.9	9.6	1.2
Add TXV @ $75	75	88	0	-47	116	26.5	11.1	1.2
Add Rad Bar @ $0.10/ft1	151	27	-26	-30	123	26.4	11.0	1.2
Package 4 Tight Ducts	0	132	0	0	132	26.6	11.1	1.3
Add TXV @ $150	150	88	0	-47	191	26.5	11.1	1.2
Add Rad Bar @ $0.15/ft2	227	27	-26	-30	199	26.4	11.0	1.2
Add Non-metal Frames @ $2/ft2	564	92	-360	-43	253	24.9	9.6	1.2
Add TXV @ $225	225	88	0	-47	266	26.5	11.1	1.2
Add Duct Design @ $250	250	70	0	-37	283	26.5	11.1	1.2
Add LSLE @ $1/ft2	282	-92	435	-336	289	27.5	13.0	0.4
Remove Duct Seal @ $300	-300	350	252	33	336	27.8	12.2	1.4
98 Standards	-300	350	252	33	336	27.8	12.2	1.4
Remove Duct Seal @ $250	-250	350	252	33	386	27.8	12.2	1.4
Add LSLE @ $1.5/ft2	423	-92	435	-336	430	27.5	13.0	0.4
Remove Duct Seal @ $200	-200	350	252	33	436	27.8	12.2	1.4
Add Duct Design @ $500	500	70	0	-37	533	26.5	11.1	1.2
Add Non-metal Frames @ $3/ft2	846	92	-360	-43	535	24.9	9.6	1.2
Add LSLE @ $2/ft2	564	-92	435	-336	571	27.5	13.0	0.4
Add LSLE @ $2.5/ft2	705	-92	435	-336	712	27.5	13.0	0.4
Add LSLE @ $3/ft2	846	-92	435	-336	853	27.5	13.0	0.4

Climate Zone 06 CEC Forecast

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Duct Design @ $50	50	-79	0	-40	-68	20.7	5.2	1.4
Add Rad Bar @ $0.10/ft1	151	-136	-12	-63	-59	20.6	5.2	1.3
Add TXV @ $75	75	-56	0	-52	-33	20.7	5.2	1.3
Package 4 Tight Ducts	0	0	0	0	0	20.8	5.2	1.5
Add Non-metal Frames @ $1/ft2	353	-69	-224	-56	2	19.7	4.3	1.3
Add Rad Bar @ $0.15/ft2	227	-136	-12	-63	17	20.6	5.2	1.3
Add TXV @ $150	150	-56	0	-52	42	20.7	5.2	1.3
Add LSLE @ $1/ft2	353	-234	290	-347	61	21.1	6.5	0.5
Add TXV @ $225	225	-56	0	-52	117	20.7	5.2	1.3
Add Duct Design @ $250	250	-79	0	-40	132	20.7	5.2	1.4
Remove Duct Seal @ $300	-300	320	105	40	165	21.4	5.7	1.6
98 Standards	-300	320	105	40	165	21.4	5.7	1.6
Add Non-metal Frames @ $1.5/ft2	529	-69	-224	-56	179	19.7	4.3	1.3
Remove Duct Seal @ $250	-250	320	105	40	215	21.4	5.7	1.6
Add LSLE @ $1.5/ft2	529	-234	290	-347	237	21.1	6.5	0.5
Remove Duct Seal @ $200	-200	320	105	40	265	21.4	5.7	1.6
Add Non-metal Frames @ $2/ft2	705	-69	-224	-56	355	19.7	4.3	1.3
Add Duct Design @ $500	500	-79	0	-40	382	20.7	5.2	1.4
Add LSLE @ $2/ft2	705	-234	290	-347	414	21.1	6.5	0.5
Add LSLE @ $2.5/ft2	881	-234	290	-347	590	21.1	6.5	0.5
Add Non-metal Frames @ $3/ft2	1058	-69	-224	-56	707	19.7	4.3	1.3
Add LSLE @ $3/ft2	1058	-234	290	-347	766	21.1	6.5	0.5

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Remove Duct Seal @ $300	-300	0	105	40	-155	21.4	5.7	1.6
98 Standards	-300	0	105	40	-155	21.4	5.7	1.6
Remove Duct Seal @ $250	-250	0	105	40	-105	21.4	5.7	1.6
Remove Duct Seal @ $200	-200	0	105	40	-55	21.4	5.7	1.6
Package 4 Tight Ducts	0	0	0	0	0	20.8	5.2	1.5
Add Duct Design @ $50	50	0	0	-40	10	20.7	5.2	1.4
Add TXV @ $75	75	0	0	-52	23	20.7	5.2	1.3
Add Non-metal Frames @ $1/ft2	353	0	-224	-56	72	19.7	4.3	1.3
Add Rad Bar @ $0.10/ft1	151	0	-12	-63	77	20.6	5.2	1.3
Add TXV @ $150	150	0	0	-52	98	20.7	5.2	1.3
Add Rad Bar @ $0.15/ft2	227	0	-12	-63	152	20.6	5.2	1.3
Add TXV @ $225	225	0	0	-52	173	20.7	5.2	1.3
Add Duct Design @ $250	250	0	0	-40	210	20.7	5.2	1.4
Add Non-metal Frames @ $1.5/ft2	529	0	-224	-56	248	19.7	4.3	1.3
Add LSLE @ $1/ft2	353	0	290	-347	295	21.1	6.5	0.5
Add Non-metal Frames @ $2/ft2	705	0	-224	-56	424	19.7	4.3	1.3
Add Duct Design @ $500	500	0	0	-40	460	20.7	5.2	1.4
Add LSLE @ $1.5/ft2	529	0	290	-347	471	21.1	6.5	0.5
Add LSLE @ $2/ft2	705	0	290	-347	647	21.1	6.5	0.5
Add Non-metal Frames @ $3/ft2	1058	0	-224	-56	777	19.7	4.3	1.3
Add LSLE @ $2.5/ft2	881	0	290	-347	824	21.1	6.5	0.5
Add LSLE @ $3/ft2	1058	0	290	-347	1000	21.1	6.5	0.5

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add LSLE @ $1/ft2	353	-133	273	-711	-218	21.1	6.0	1.0
Add LSLE @ $1.5/ft2	529	-133	273	-711	-42	21.1	6.0	1.0
Add Duct Design @ $50	50	81	0	-79	52	21.7	4.8	2.7
Add Rad Bar @ $0.10/ft1	151	25	-12	-93	72	21.6	4.8	2.7
Add TXV @ $75	75	107	0	-105	78	21.6	4.8	2.7
Add LSLE @ $2/ft2	705	-133	273	-711	135	21.1	6.0	1.0
Add Non-metal Frames @ $1/ft2	353	95	-208	-103	137	20.8	3.9	2.7
Add Rad Bar @ $0.15/ft2	227	25	-12	-93	147	21.6	4.8	2.7
Add TXV @ $150	150	107	0	-105	153	21.6	4.8	2.7
Package 4 Tight Ducts	0	173	0	0	173	21.9	4.8	3.0
Add TXV @ $225	225	107	0	-105	228	21.6	4.8	2.7
Add Duct Design @ $250	250	81	0	-79	252	21.7	4.8	2.7
Add LSLE @ $2.5/ft2	881	-133	273	-711	311	21.1	6.0	1.0
Add Non-metal Frames @ $1.5/ft2	529	95	-208	-103	313	20.8	3.9	2.7
Remove Duct Seal @ $300	-300	546	98	86	431	22.6	5.2	3.2
98 Standards	-300	546	98	86	431	22.6	5.2	3.2
Remove Duct Seal @ $250	-250	546	98	86	481	22.6	5.2	3.2
Add LSLE @ $3/ft2	1058	-133	273	-711	487	21.1	6.0	1.0
Add Non-metal Frames @ $2/ft2	705	95	-208	-103	489	20.8	3.9	2.7
Add Duct Design @ $500	500	81	0	-79	502	21.7	4.8	2.7
Remove Duct Seal @ $200	-200	546	98	86	531	22.6	5.2	3.2
Add Non-metal Frames @ $3/ft2	1058	95	-208	-103	842	20.8	3.9	2.7

Climate Zone 07 CEC Forecast

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Remove LSLE @ $3/ft2	-1058	211	-215	568	-493	21.2	4.3	2.8
Remove LSLE @ $2.5/ft2	-881	211	-215	568	-317	21.2	4.3	2.8
Remove LSLE @ $2/ft2	-705	211	-215	568	-141	21.2	4.3	2.8
Add Non-metal Frames @ $1/ft2	353	-57	-283	-86	-74	19.1	4.0	0.9
Add Duct Design @ $50	50	-47	0	-30	-27	20.4	5.2	1.1
Add Rad Bar @ $0.10/ft1	151	-94	-9	-66	-18	20.3	5.2	1.0
Remove Duct Seal @ $300	-300	166	98	30	-6	21.0	5.6	1.24
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.5	5.2	1.16
Add TXV @ $75	75	-34	0	-41	0	20.4	5.2	1.0
Remove LSLE @ $1.5/ft2	-529	211	-215	568	35	21.2	4.3	2.8
Remove Duct Seal @ $250	-250	166	98	30	44	21.0	5.6	1.2
Add Rad Bar @ $0.15/ft2	227	-94	-9	-66	57	20.3	5.2	1.0
Add TXV @ $150	150	-34	0	-41	75	20.4	5.2	1.0
Remove Duct Seal @ $200	-200	166	98	30	94	21.0	5.6	1.2
Add Non-metal Frames @ $1.5/ft2	529	-57	-283	-86	102	19.1	4.0	0.9
Add TXV @ $225	225	-34	0	-41	150	20.4	5.2	1.0
Add Duct Design @ $250	250	-47	0	-30	173	20.4	5.2	1.1
Remove LSLE @ $1/ft2	-353	211	-215	568	212	21.2	4.3	2.8
Add Non-metal Frames @ $2/ft2	705	-57	-283	-86	278	19.1	4.0	0.9
98 Standards	-529	433	-133	635	405	21.7	4.6	2.9
Add Duct Design @ $500	500	-47	0	-30	423	20.4	5.2	1.1
Add Non-metal Frames @ $3/ft2	1058	-57	-283	-86	631	19.1	4.0	0.9

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Remove LSLE @ $3/ft2	-1058	0	-215	568	-704	21.2	4.3	2.8
Remove LSLE @ $2.5/ft2	-881	0	-215	568	-528	21.2	4.3	2.8
Remove LSLE @ $2/ft2	-705	0	-215	568	-352	21.2	4.3	2.8
Remove LSLE @ $1.5/ft2	-529	0	-215	568	-176	21.2	4.3	2.8
Remove Duct Seal @ $300	-300	0	98	30	-172	21.0	5.6	1.2
Remove Duct Seal @ $250	-250	0	98	30	-122	21.0	5.6	1.2
Remove Duct Seal @ $200	-200	0	98	30	-72	21.0	5.6	1.2
98 Standards	-529	0	-133	635	-27	21.7	4.6	2.9
Add Non-metal Frames @ $1/ft2	353	0	-283	-86	-17	19.1	4.0	0.9
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.5	5.2	1.2
Remove LSLE @ $1/ft2	-353	0	-215	568	1	21.2	4.3	2.8
Add Duct Design @ $50	50	0	0	-30	20	20.4	5.2	1.1
Add TXV @ $75	75	0	0	-41	34	20.4	5.2	1.0
Add Rad Bar @ $0.10/ft1	151	0	-9	-66	76	20.3	5.2	1.0
Add TXV @ $150	150	0	0	-41	109	20.4	5.2	1.0
Add Rad Bar @ $0.15/ft2	227	0	-9	-66	151	20.3	5.2	1.0
Add Non-metal Frames @ $1.5/ft2	529	0	-283	-86	160	19.1	4.0	0.9
Add TXV @ $225	225	0	0	-41	184	20.4	5.2	1.0
Add Duct Design @ $250	250	0	0	-30	220	20.4	5.2	1.1
Add Non-metal Frames @ $2/ft2	705	0	-283	-86	336	19.1	4.0	0.9
Add Duct Design @ $500	500	0	0	-30	470	20.4	5.2	1.1
Add Non-metal Frames @ $3/ft2	1058	0	-283	-86	688	19.1	4.0	0.9

LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATIN(	COOLING
Add Non-metal Frames @ $1/ft2	353	-70	-269	-126	-112	19.4	3.7	1.6
Add Duct Design @ $50	50	-54	0	-50	-54	20.8	4.8	1.8
Add Rad Bar @ $0.10/ft1	151	-99	-12	-83	-43	20.6	4.8	1.7
Add TXV @ $75	75	-39	0	-68	-32	20.7	4.8	1.7
Package 2 Tight Ducts, LSLE	0	0	0	0	0	20.9	4.8	1.9
Remove Duct Seal @ $300	-300	191	89	50	30	21.4	5.2	2.1
Add Rad Bar @ $0.15/ft2	227	-99	-12	-83	33	20.6	4.8	1.7
Remove LSLE @ $3/ft2	-1058	280	-189	1003	36	22.9	4.0	4.7
Add TXV @ $150	150	-39	0	-68	43	20.7	4.8	1.7
Add Non-metal Frames @ $1.5/ft2	529	-70	-269	-126	64	19.4	3.7	1.6
Remove Duct Seal @ $250	-250	191	89	50	80	21.4	5.2	2.1
Add TXV @ $225	225	-39	0	-68	118	20.7	4.8	1.7
Remove Duct Seal @ $200	-200	191	89	50	130	21.4	5.2	2.1
Add Duct Design @ $250	250	-54	0	-50	146	20.8	4.8	1.8
Remove LSLE @ $2.5/ft2	-881	280	-189	1003	213	22.9	4.0	4.7
Add Non-metal Frames @ $2/ft2	705	-70	-269	-126	240	19.4	3.7	1.6
Remove LSLE @ $2/ft2	-705	280	-189	1003	389	22.9	4.0	4.7
Add Duct Design @ $500	500	-54	0	-50	396	20.8	4.8	1.8
Remove LSLE @ $1.5/ft2	-529	280	-189	1003	565	22.9	4.0	4.7
Add Non-metal Frames @ $3/ft2	1058	-70	-269	-126	593	19.4	3.7	1.6
Remove LSLE @ $1/ft2	-353	280	-189	1003	741	22.9	4.0	4.7
98 Standards	-529	545	-112	1120	1024	23.6	4.4	5.1

Climate Zone 08 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-77	-315	-198	-238	21.9	5.0	2.7
Remove TXV @ $225	-225	34	0	129	-62	24.2	6.4	3.7
Add Non-metal Frames @ $1.5/ft2	529	-77	-315	-198	-62	21.9	5.0	2.7
Remove LSLE @ 3$/ft2	-1058	204	-220	1014	-60	25.7	5.4	6.1
Add Duct Design @ $50	50	-32	0	-46	-27	23.7	6.4	3.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	23.8	6.4	3.3
Remove TXV @ $150	-150	34	0	129	13	24.2	6.4	3.7
Remove Combo HVAC@500	-500	165	129	222	15	25.0	6.9	3.9
Remove Duct Sealing @ $300	-300	124	129	83	36	24.6	6.9	3.5
Remove Rad Bar @ $0.15/ft2	-227	107	14	148	43	24.3	6.4	3.7
Remove Duct Sealing @ $250	-250	124	129	83	86	24.6	6.9	3.5
Remove TXV @ $75	-75	34	0	129	88	24.2	6.4	3.7
Add Non-metal Frames @ $2/ft2	705	-77	-315	-198	115	21.9	5.0	2.7
Remove Combo HVAC@400	-400	165	129	222	115	25.0	6.9	3.9
Remove LSLE @ $2.5/ft2	-881	204	-220	1014	117	25.7	5.4	6.1
Remove Rad Bar @ $0.10/ft2	-151	107	14	148	118	24.3	6.4	3.7
Remove Duct Seaing @ $200	-200	124	129	83	136	24.6	6.9	3.5
Add Duct Design @ $250	250	-32	0	-46	173	23.7	6.4	3.2
Remove Combo HVAC@300	-300	165	129	222	215	25.0	6.9	3.9
Remove Combo HVAC@250	-250	165	129	222	265	25.0	6.9	3.9
Remove LSLE @ $2/ft2	-705	204	-220	1014	293	25.7	5.4	6.1
98 Standards	-1100	456	96	867	319	26.7	6.8	5.7
Add Duct Design @ $500	500	-32	0	-46	423	23.7	6.4	3.2
Add Non-metal Frames @ $3/ft2	1058	-77	-315	-198	467	21.9	5.0	2.7
Remove LSLE @ 1.5$/ft2	-529	204	-220	1014	469	25.7	5.4	6.1
Remove LSLE @ $1/ft2	-353	204	-220	1014	645	25.7	5.4	6.1

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Remove LSLE @ 3$/ft2	-1058	0	-220	1014	-263	25.7	5.4	6.1
Add Non-metal Frames @ $1/ft2	353	0	-315	-198	-161	21.9	5.0	2.7
Remove Combo HVAC@500	-500	0	129	222	-150	25.0	6.9	3.9
98 Standards	-1100	0	96	867	-137	26.7	6.8	5.7
Remove TXV @ $225	-225	0	0	129	-96	24.2	6.4	3.7
Remove Duct Sealing @ $300	-300	0	129	83	-88	24.6	6.9	3.5
Remove LSLE @ $2.5/ft2	-881	0	-220	1014	-87	25.7	5.4	6.1
Remove Rad Bar @ $0.15/ft2	-227	0	14	148	-65	24.3	6.4	3.7
Remove Combo HVAC@400	-400	0	129	222	-50	25.0	6.9	3.9
Remove Duct Sealing @ $250	-250	0	129	83	-38	24.6	6.9	3.5
Remove TXV @ $150	-150	0	0	129	-21	24.2	6.4	3.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	23.8	6.4	3.3
Add Duct Design @ $50	50	0	0	-46	4	23.7	6.4	3.2
Remove Rad Bar @ $0.10/ft2	-151	0	14	148	11	24.3	6.4	3.7
Remove Duct Seaing @ $200	-200	0	129	83	12	24.6	6.9	3.5
Add Non-metal Frames @ $1.5/ft2	529	0	-315	-198	15	21.9	5.0	2.7
Remove Combo HVAC@300	-300	0	129	222	50	25.0	6.9	3.9
Remove TXV @ $75	-75	0	0	129	54	24.2	6.4	3.7
Remove LSLE @ $2/ft2	-705	0	-220	1014	89	25.7	5.4	6.1
Remove Combo HVAC@250	-250	0	129	222	100	25.0	6.9	3.9
Add Non-metal Frames @ $2/ft2	705	0	-315	-198	192	21.9	5.0	2.7
Add Duct Design @ $250	250	0	0	-46	204	23.7	6.4	3.2
Remove LSLE @ 1.5$/ft2	-529	0	-220	1014	266	25.7	5.4	6.1
Remove LSLE @ $1/ft2	-353	0	-220	1014	442	25.7	5.4	6.1
Add Duct Design @ $500	500	0	0	-46	454	23.7	6.4	3.2
Add Non-metal Frames @ $3/ft2	1058	0	-315	-198	544	21.9	5.0	2.7

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-88	-301	-260	-297	22.7	4.7	3.8
Add Non-metal Frames @ $1.5/ft2	529	-88	-301	-260	-120	22.7	4.7	3.8
Add Duct Design @ $50	50	-36	0	-64	-51	24.5	6.0	4.4
Remove TXV @ $225	-225	39	0	179	-8	25.2	6.0	5.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	24.7	6.0	4.6
Add Non-metal Frames @ $2/ft2	705	-88	-301	-260	56	22.7	4.7	3.8
Remove Rad Bar @ $0.15/ft2	-227	114	12	164	63	25.2	6.0	5.0
Remove TXV @ $150	-150	39	0	179	67	25.2	6.0	5.1
Remove Duct Sealing @ $300	-300	143	119	114	76	25.5	6.5	4.9
Remove Combo HVAC@500	-500	189	119	306	114	26.1	6.5	5.4
Remove Duct Sealing @ $250	-250	143	119	114	126	25.5	6.5	4.9
Remove Rad Bar @ $0.10/ft2	-151	114	12	164	138	25.2	6.0	5.0
Remove TXV @ $75	-75	39	0	179	142	25.2	6.0	5.1
Add Duct Design @ $250	250	-36	0	-64	149	24.5	6.0	4.4
Remove Duct Seaing @ $200	-200	143	119	114	176	25.5	6.5	4.9
Remove Combo HVAC@400	-400	189	119	306	214	26.1	6.5	5.4
Remove Combo HVAC@300	-300	189	119	306	314	26.1	6.5	5.4
Remove Combo HVAC@250	-250	189	119	306	364	26.1	6.5	5.4
Add Duct Design @ $500	500	-36	0	-64	399	24.5	6.0	4.4
Add Non-metal Frames @ $3/ft2	1058	-88	-301	-260	408	22.7	4.7	3.8
Remove LSLE @ 3$/ft2	-1058	267	-199	1552	562	28.2	5.1	8.9
Remove LSLE @ $2.5/ft2	-881	267	-199	1552	739	28.2	5.1	8.9
98 Standards	-1100	532	82	1256	770	28.6	6.3	8.1
Remove LSLE @ $2/ft2	-705	267	-199	1552	915	28.2	5.1	8.9
Remove LSLE @ 1.5$/ft2	-529	267	-199	1552	1091	28.2	5.1	8.9
Remove LSLE @ $1/ft2	-353	267	-199	1552	1267	28.2	5.1	8.9

Climate Zone 09 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse, kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-119	-329	-316	-412	24.6	5.3	5.2
Add Non-metal Frames @ $1.5/ft2	529	-119	-329	-316	-236	24.6	5.3	5.2
Add Duct Design @ $50	50	-46	0	-86	-83	26.7	6.7	5.8
Add Non-metal Frames @ $2/ft2	705	-119	-329	-316	-59	24.6	5.3	5.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	26.9	6.7	6.1
Remove TXV @ $225	-225	49	0	237	62	27.6	6.7	6.7
Add Duct Design @ $250	250	-46	0	-86	117	26.7	6.7	5.8
Remove TXV @ $150	-150	49	0	237	137	27.6	6.7	6.7
Remove Rad Bar @ $0.15/ft2	-227	163	12	224	172	27.6	6.8	6.7
Remove TXV @ $75	-75	49	0	237	212	27.6	6.7	6.7
Remove Duct Sealing @ $300	-300	204	143	199	245	28.1	7.3	6.6
Remove Rad Bar @ $0.10/ft2	-151	163	12	224	248	27.6	6.8	6.7
Add Non-metal Frames @ $3/ft2	1058	-119	-329	-316	293	24.6	5.3	5.2
Remove Duct Sealing @ $250	-250	204	143	199	295	28.1	7.3	6.6
Remove Duct Seaing @ $200	-200	204	143	199	345	28.1	7.3	6.6
Remove Combo HVAC@500	-500	265	143	458	365	28.8	7.3	7.3
Add Duct Design @ $500	500	-46	0	-86	367	26.7	6.7	5.8
Remove LSLE @ 3$/ft2	-1058	223	-173	1450	443	30.2	6.0	10.1
Remove Combo HVAC@400	-400	265	143	458	465	28.8	7.3	7.3
Remove Combo HVAC@300	-300	265	143	458	565	28.8	7.3	7.3
Remove Combo HVAC@250	-250	265	143	458	615	28.8	7.3	7.3
Remove LSLE @ $2.5/ft2	-881	223	-173	1450	619	30.2	6.0	10.1
Remove LSLE @ $2/ft2	-705	223	-173	1450	795	30.2	6.0	10.1
Remove LSLE @ 1.5$/ft2	-529	223	-173	1450	971	30.2	6.0	10.1
Remove LSLE @ $1/ft2	-353	223	-173	1450	1148	30.2	6.0	10.1
98 Standards	-1100	724	133	1482	1240	31.6	7.3	10.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse, kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-329	-316	-293	24.6	5.3	5.2
Add Non-metal Frames @ $1.5/ft2	529	0	-329	-316	-117	24.6	5.3	5.2
Add Duct Design @ $50	50	0	0	-86	-36	26.7	6.7	5.8
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	26.9	6.7	6.1
Remove Rad Bar @ $0.15/ft2	-227	0	12	224	9	27.6	6.8	6.7
Remove TXV @ $225	-225	0	0	237	12	27.6	6.7	6.7
Remove Duct Sealing @ $300	-300	0	143	199	42	28.1	7.3	6.6
Add Non-metal Frames @ $2/ft2	705	0	-329	-316	60	24.6	5.3	5.2
Remove Rad Bar @ $0.10/ft2	-151	0	12	224	85	27.6	6.8	6.7
Remove TXV @ $150	-150	0	0	237	87	27.6	6.7	6.7
Remove Duct Sealing @ $250	-250	0	143	199	92	28.1	7.3	6.6
Remove Combo HVAC@500	-500	0	143	458	101	28.8	7.3	7.3
Remove Duct Seaing @ $200	-200	0	143	199	142	28.1	7.3	6.6
Remove TXV @ $75	-75	0	0	237	162	27.6	6.7	6.7
Add Duct Design @ $250	250	0	0	-86	164	26.7	6.7	5.8
Remove Combo HVAC@400	-400	0	143	458	201	28.8	7.3	7.3
Remove LSLE @ 3$/ft2	-1058	0	-173	1450	220	30.2	6.0	10.1
Remove Combo HVAC@300	-300	0	143	458	301	28.8	7.3	7.3
Remove Combo HVAC@250	-250	0	143	458	351	28.8	7.3	7.3
Remove LSLE @ $2.5/ft2	-881	0	-173	1450	396	30.2	6.0	10.1
Add Non-metal Frames @ $3/ft2	1058	0	-329	-316	412	24.6	5.3	5.2
Add Duct Design @ $500	500	0	0	-86	414	26.7	6.7	5.8
98 Standards	-1100	0	133	1482	516	31.6	7.3	10.2
Remove LSLE @ $2/ft2	-705	0	-173	1450	572	30.2	6.0	10.1
Remove LSLE @ 1.5$/ft2	-529	0	-173	1450	749	30.2	6.0	10.1
Remove LSLE @ $1/ft2	-353	0	-173	1450	925	30.2	6.0	10.1

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse, kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-130	-320	-404	-502	25.8	5.0	6.6
Add Non-metal Frames @ $1.5/ft2	529	-130	-320	-404	-326	25.8	5.0	6.6
Add Non-metal Frames @ $2/ft2	705	-130	-320	-404	-150	25.8	5.0	6.6
Add Duct Design @ $50	50	-51	0	-110	-111	28.0	6.4	7.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	28.3	6.4	7.7
Add Duct Design @ $250	250	-51	0	-110	89	28.0	6.4	7.4
Remove TXV @ $225	-225	54	0	302	131	29.1	6.4	8.6
Add Non-metal Frames @ $3/ft2	1058	-130	-320	-404	203	25.8	5.0	6.6
Remove TXV @ $150	-150	54	0	302	206	29.1	6.4	8.6
Remove Rad Bar @ $0.15/ft2	-227	174	14	256	216	29.1	6.5	8.4
Remove TXV @ $75	-75	54	0	302	281	29.1	6.4	8.6
Remove Rad Bar @ $0.10/ft2	-151	174	14	256	292	29.1	6.5	8.4
Remove Duct Sealing @ $300	-300	225	138	256	319	29.6	7.0	8.4
Add Duct Design @ $500	500	-51	0	-110	339	28.0	6.4	7.4
Remove Duct Sealing @ $250	-250	225	138	256	369	29.6	7.0	8.4
Remove Duct Seaing @ $200	-200	225	138	256	419	29.6	7.0	8.4
Remove Combo HVAC@500	-500	292	138	586	516	30.5	7.0	9.4
Remove Combo HVAC@400	-400	292	138	586	616	30.5	7.0	9.4
Remove Combo HVAC@300	-300	292	138	586	716	30.5	7.0	9.4
Remove Combo HVAC@250	-250	292	138	586	766	30.5	7.0	9.4
Remove LSLE @ 3$/ft2	-1058	287	-150	2155	1235	33.7	5.8	13.8
Remove LSLE @ $2.5/ft2	-881	287	-150	2155	1411	33.7	5.8	13.8
Remove LSLE @ $2/ft2	-705	287	-150	2155	1587	33.7	5.8	13.8
Remove LSLE @ 1.5$/ft2	-529	287	-150	2155	1763	33.7	5.8	13.8
98 Standards	-1100	814	138	2049	1900	34.6	7.0	13.5
Remove LSLE @ $1/ft2	-353	287	-150	2155	1940	33.7	5.8	13.8

Climate Zone 10 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-125	-437	-464	-673	30.0	7.6	8.3
Add Non-metal Frames @ $1.5/ft2	529	-125	-437	-464	-497	30.0	7.6	8.3
Add Non-metal Frames @ $2/ft2	705	-125	-437	-464	-321	30.0	7.6	8.3
Add Duct Design @ $50	50	-48	0	-136	-135	32.8	9.5	9.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	33.2	9.5	9.6
Add Non-metal Frames @ $3/ft2	1058	-125	-437	-464	32	30.0	7.6	8.3
Add Duct Design @ $250	250	-48	0	-136	65	32.8	9.5	9.2
Remove TXV @ $225	-225	51	0	375	202	34.2	9.5	10.6
Remove TXV @ $150	-150	51	0	375	277	34.2	9.5	10.6
Remove Rad Bar @ $0.15/ft2	-227	189	21	306	289	34.1	9.6	10.4
Add Duct Design @ $500	500	-48	0	-136	315	32.8	9.5	9.2
Remove TXV @ $75	-75	51	0	375	352	34.2	9.5	10.6
Remove Rad Bar @ $0.10/ft2	-151	189	21	306	365	34.1	9.6	10.4
Remove Duct Sealing @ $300	-300	217	206	364	487	35.1	10.3	10.6
Remove Duct Sealing @ $250	-250	217	206	364	537	35.1	10.3	10.6
Remove Duct Seaing @ $200	-200	217	206	364	587	35.1	10.3	10.6
Remove LSLE @ 3$/ft2	-1058	228	-222	1768	716	37.2	8.5	14.5
Remove Combo HVAC@500	-500	281	206	779	766	36.3	10.3	11.8
Remove Combo HVAC@400	-400	281	206	779	866	36.3	10.3	11.8
Remove LSLE @ $2.5/ft2	-881	228	-222	1768	893	37.2	8.5	14.5
Remove Combo HVAC@300	-300	281	206	779	966	36.3	10.3	11.8
Remove Combo HVAC@250	-250	281	206	779	1016	36.3	10.3	11.8
Remove LSLE @ $2/ft2	-705	228	-222	1768	1069	37.2	8.5	14.5
Remove LSLE @ 1.5$/ft2	-529	228	-222	1768	1245	37.2	8.5	14.5
Remove LSLE @ $1/ft2	-353	228	-222	1768	1421	37.2	8.5	14.5
98 Standards	-1100	806	199	2173	2078	40.1	10.3	15.7

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	0	-437	-464	-548	30.0	7.6	8.3
Add Non-metal Frames @ $1.5/ft2	529	0	-437	-464	-372	30.0	7.6	8.3
Add Non-metal Frames @ $2/ft2	705	0	-437	-464	-196	30.0	7.6	8.3
Add Duct Design @ $50	50	0	0	-136	-86	32.8	9.5	9.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	33.2	9.5	9.6
Remove Rad Bar @ $0.15/ft2	-227	0	21	306	100	34.1	9.6	10.4
Add Duct Design @ $250	250	0	0	-136	114	32.8	9.5	9.2
Remove TXV @ $225	-225	0	0	375	150	34.2	9.5	10.6
Add Non-metal Frames @ $3/ft2	1058	0	-437	-464	157	30.0	7.6	8.3
Remove Rad Bar @ $0.10/ft2	-151	0	21	306	176	34.1	9.6	10.4
Remove TXV @ $150	-150	0	0	375	225	34.2	9.5	10.6
Remove Duct Sealing @ $300	-300	0	206	364	270	35.1	10.3	10.6
Remove TXV @ $75	-75	0	0	375	300	34.2	9.5	10.6
Remove Duct Sealing @ $250	-250	0	206	364	320	35.1	10.3	10.6
Add Duct Design @ $500	500	0	0	-136	364	32.8	9.5	9.2
Remove Duct Seaing @ $200	-200	0	206	364	370	35.1	10.3	10.6
Remove Combo HVAC@500	-500	0	206	779	485	36.3	10.3	11.8
Remove LSLE @ 3$/ft2	-1058	0	-222	1768	489	37.2	8.5	14.5
Remove Combo HVAC@400	-400	0	206	779	585	36.3	10.3	11.8
Remove LSLE @ $2.5/ft2	-881	0	-222	1768	665	37.2	8.5	14.5
Remove Combo HVAC@300	-300	0	206	779	685	36.3	10.3	11.8
Remove Combo HVAC@250	-250	0	206	779	735	36.3	10.3	11.8
Remove LSLE @ $2/ft2	-705	0	-222	1768	841	37.2	8.5	14.5
Remove LSLE @ 1.5$/ft2	-529	0	-222	1768	1017	37.2	8.5	14.5
Remove LSLE @ $1/ft2	-353	0	-222	1768	1194	37.2	8.5	14.5
98 Standards	-1100	0	199	2173	1272	40.1	10.3	15.7

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	353	-136	-425	-560	-770	31.3	7.2	9.9
Add Non-metal Frames @ $1.5/ft2	529	-136	-425	-560	-593	31.3	7.2	9.9
Add Non-metal Frames @ $2/ft2	705	-136	-425	-560	-417	31.3	7.2	9.9
Add Duct Design @ $50	50	-53	0	-165	-168	34.2	9.1	11.0
Add Non-metal Frames @ $3/ft2	1058	-136	-425	-560	-65	31.3	7.2	9.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	34.7	9.1	11.5
Add Duct Design @ $250	250	-53	0	-165	32	34.2	9.1	11.0
Remove TXV @ $225	-225	57	0	449	281	35.9	9.1	12.7
Add Duct Design @ $500	500	-53	0	-165	282	34.2	9.1	11.0
Remove Rad Bar @ $0.15/ft2	-227	201	19	335	328	35.7	9.1	12.4
Remove TXV @ $150	-150	57	0	449	356	35.9	9.1	12.7
Remove Rad Bar @ $0.10/ft2	-151	201	19	335	404	35.7	9.1	12.4
Remove TXV @ $75	-75	57	0	449	431	35.9	9.1	12.7
Remove Duct Sealing @ $300	-300	239	194	435	568	36.7	9.9	12.7
Remove Duct Sealing @ $250	-250	239	194	435	618	36.7	9.9	12.7
Remove Duct Seaing @ $200	-200	239	194	435	668	36.7	9.9	12.7
Remove Combo HVAC@500	-500	310	194	932	935	38.1	9.9	14.1
Remove Combo HVAC@400	-400	310	194	932	1035	38.1	9.9	14.1
Remove Combo HVAC@300	-300	310	194	932	1135	38.1	9.9	14.1
Remove Combo HVAC@250	-250	310	194	932	1185	38.1	9.9	14.1
Remove LSLE @ 3$/ft2	-1058	293	-210	2496	1521	40.8	8.2	18.5
Remove LSLE @ $2.5/ft2	-881	293	-210	2496	1697	40.8	8.2	18.5
Remove LSLE @ $2/ft2	-705	293	-210	2496	1874	40.8	8.2	18.5
Remove LSLE @ 1.5$/ft2	-529	293	-210	2496	2050	40.8	8.2	18.5
Remove LSLE @ $1/ft2	-353	293	-210	2496	2226	40.8	8.2	18.5
98 Standards	-1100	903	187	2798	2787	43.3	9.9	19.3

Climate Zone 11 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-111	-650	-393	-872	39.0	17.2	7.7
Add Non-metal Frames @ $1.5/ft2	423	-111	-650	-393	-731	39.0	17.2	7.7
Add Non-metal Frames @ $2/ft2	564	-111	-650	-393	-590	39.0	17.2	7.7
Add Non-metal Frames @ $3/ft2	846	-111	-650	-393	-308	39.0	17.2	7.7
Add Duct Design @ $50	50	-46	0	-126	-122	42.6	20.0	8.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	42.9	20.0	8.8
Add Duct Design @ $250	250	-46	0	-126	78	42.6	20.0	8.4
Remove TXV @ $225	-225	49	0	343	167	43.9	20.0	9.7
Remove TXV @ $150	-150	49	0	343	242	43.9	20.0	9.7
Remove Rad Bar @ $0.15/ft2	-227	174	23	292	262	43.8	20.1	9.6
Remove TXV @ $75	-75	49	0	343	317	43.9	20.0	9.7
Add Duct Design @ $500	500	-46	0	-126	328	42.6	20.0	8.4
Remove Rad Bar @ $0.10/ft2	-151	174	23	292	338	43.8	20.1	9.6
Remove LSLE @ 3$/ft2	-846	189	-252	1282	373	45.4	18.9	12.4
Remove LSLE @ $2.5/ft2	-705	189	-252	1282	514	45.4	18.9	12.4
Remove LSLE @ $2/ft2	-564	189	-252	1282	655	45.4	18.9	12.4
Remove Duct Sealing @ $300	-300	230	463	380	773	46.0	22.0	9.8
Remove LSLE @ 1.5$/ft2	-423	189	-252	1282	796	45.4	18.9	12.4
Remove Duct Sealing @ $250	-250	230	463	380	823	46.0	22.0	9.8
Remove Duct Seaing @ $200	-200	230	463	380	873	46.0	22.0	9.8
Remove LSLE @ $1/ft2	-282	189	-252	1282	937	45.4	18.9	12.4
Remove Combo HVAC@500	-500	292	463	765	1020	47.0	22.0	10.9
Remove Combo HVAC@400	-400	292	463	765	1120	47.0	22.0	10.9
Remove Combo HVAC@300	-300	292	463	765	1220	47.0	22.0	10.9
Remove Combo HVAC@250	-250	292	463	765	1270	47.0	22.0	10.9
98 Standards	-1100	739	185	1698	1522	48.5	20.8	13.5

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-650	-393	-761	39.0	17.2	7.7
Add Non-metal Frames @ $1.5/ft2	423	0	-650	-393	-620	39.0	17.2	7.7
Add Non-metal Frames @ $2/ft2	564	0	-650	-393	-479	39.0	17.2	7.7
Add Non-metal Frames @ $3/ft2	846	0	-650	-393	-197	39.0	17.2	7.7
Add Duct Design @ $50	50	0	0	-126	-76	42.6	20.0	8.4
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	42.9	20.0	8.8
Remove Rad Bar @ $0.15/ft2	-227	0	23	292	89	43.8	20.1	9.6
Remove TXV @ $225	-225	0	0	343	118	43.9	20.0	9.7
Add Duct Design @ $250	250	0	0	-126	124	42.6	20.0	8.4
Remove Rad Bar @ $0.10/ft2	-151	0	23	292	164	43.8	20.1	9.6
Remove LSLE @ 3$/ft2	-846	0	-252	1282	184	45.4	18.9	12.4
Remove TXV @ $150	-150	0	0	343	193	43.9	20.0	9.7
Remove TXV @ $75	-75	0	0	343	268	43.9	20.0	9.7
Remove LSLE @ $2.5/ft2	-705	0	-252	1282	325	45.4	18.9	12.4
Add Duct Design @ $500	500	0	0	-126	374	42.6	20.0	8.4
Remove LSLE @ $2/ft2	-564	0	-252	1282	466	45.4	18.9	12.4
Remove Duct Sealing @ $300	-300	0	463	380	543	46.0	22.0	9.8
Remove Duct Sealing @ $250	-250	0	463	380	593	46.0	22.0	9.8
Remove LSLE @ 1.5$/ft2	-423	0	-252	1282	607	45.4	18.9	12.4
Remove Duct Seaing @ $200	-200	0	463	380	643	46.0	22.0	9.8
Remove Combo HVAC@500	-500	0	463	765	728	47.0	22.0	10.9
Remove LSLE @ $1/ft2	-282	0	-252	1282	748	45.4	18.9	12.4
98 Standards	-1100	0	185	1698	783	48.5	20.8	13.5
Remove Combo HVAC@400	-400	0	463	765	828	47.0	22.0	10.9
Remove Combo HVAC@300	-300	0	463	765	928	47.0	22.0	10.9
Remove Combo HVAC@250	-250	0	463	765	978	47.0	22.0	10.9

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-121	-636	-481	-955	40.1	16.9	9.1
Add Non-metal Frames @ $1.5/ft2	423	-121	-636	-481	-814	40.1	16.9	9.1
Add Non-metal Frames @ $2/ft2	564	-121	-636	-481	-673	40.1	16.9	9.1
Add Non-metal Frames @ $3/ft2	846	-121	-636	-481	-391	40.1	16.9	9.1
Add Duct Design @ $50	50	-50	0	-150	-150	43.8	19.6	10.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	44.2	19.6	10.5
Add Duct Design @ $250	250	-50	0	-150	50	43.8	19.6	10.1
Remove TXV @ $225	-225	53	0	410	238	45.4	19.6	11.6
Add Duct Design @ $500	500	-50	0	-150	300	43.8	19.6	10.1
Remove Rad Bar @ $0.15/ft2	-227	184	28	318	303	45.2	19.7	11.4
Remove TXV @ $150	-150	53	0	410	313	45.4	19.6	11.6
Remove Rad Bar @ $0.10/ft2	-151	184	28	318	379	45.2	19.7	11.4
Remove TXV @ $75	-75	53	0	410	388	45.4	19.6	11.6
Remove Duct Sealing @ $300	-300	250	456	451	857	47.4	21.5	11.7
Remove Duct Sealing @ $250	-250	250	456	451	907	47.4	21.5	11.7
Remove Duct Seaing @ $200	-200	250	456	451	957	47.4	21.5	11.7
Remove LSLE @ 3$/ft2	-846	242	-269	1873	1000	48.3	18.4	15.7
Remove LSLE @ $2.5/ft2	-705	242	-269	1873	1141	48.3	18.4	15.7
Remove Combo HVAC@500	-500	318	456	911	1185	48.7	21.5	13.0
Remove LSLE @ $2/ft2	-564	242	-269	1873	1282	48.3	18.4	15.7
Remove Combo HVAC@400	-400	318	456	911	1285	48.7	21.5	13.0
Remove Combo HVAC@300	-300	318	456	911	1385	48.7	21.5	13.0
Remove LSLE @ 1.5$/ft2	-423	242	-269	1873	1423	48.3	18.4	15.7
Remove Combo HVAC@250	-250	318	456	911	1435	48.7	21.5	13.0
Remove LSLE @ $1/ft2	-282	242	-269	1873	1564	48.3	18.4	15.7
98 Standards	-1100	822	159	2259	2140	51.2	20.3	16.8

Climate Zone 12 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-100	-610	-271	-699	33.8	15.4	4.3
Add Non-metal Frames @ $1.5/ft2	423	-100	-610	-271	-558	33.8	15.4	4.3
Add Non-metal Frames @ $2/ft2	564	-100	-610	-271	-417	33.8	15.4	4.3
Add Non-metal Frames @ $3/ft2	846	-100	-610	-271	-135	33.8	15.4	4.3
Add Duct Design @ $50	50	-41	0	-73	-64	37.0	18.0	4.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	37.2	18.0	5.1
Remove TXV @ $225	-225	44	0	199	17	37.8	18.0	5.6
Remove TXV @ $150	-150	44	0	199	92	37.8	18.0	5.6
Add Duct Design @ $250	250	-41	0	-73	136	37.0	18.0	4.9
Remove LSLE @ 3$/ft2	-846	182	-297	1099	139	39.0	16.7	8.2
Remove Rad Bar @ $0.15/ft2	-227	159	21	210	163	37.9	18.1	5.7
Remove TXV @ $75	-75	44	0	199	167	37.8	18.0	5.6
Remove Rad Bar @ $0.10/ft2	-151	159	21	210	238	37.9	18.1	5.7
Remove LSLE @ $2.5/ft2	-705	182	-297	1099	280	39.0	16.7	8.2
Add Duct Design @ $500	500	-41	0	-73	386	37.0	18.0	4.9
Remove LSLE @ $2/ft2	-564	182	-297	1099	421	39.0	16.7	8.2
Remove Duct Sealing @ $300	-300	185	407	193	485	39.5	19.7	5.6
Remove Duct Sealing @ $250	-250	185	407	193	535	39.5	19.7	5.6
Remove Combo HVAC@500	-500	239	407	413	559	40.1	19.7	6.2
Remove LSLE @ 1.5$/ft2	-423	182	-297	1099	562	39.0	16.7	8.2
Remove Duct Seaing @ $200	-200	185	407	193	585	39.5	19.7	5.6
Remove Combo HVAC@400	-400	239	407	413	659	40.1	19.7	6.2
Remove LSLE @ $1/ft2	-282	182	-297	1099	703	39.0	16.7	8.2
98 Standards	-1100	629	105	1118	753	40.8	18.4	8.2
Remove Combo HVAC@300	-300	239	407	413	759	40.1	19.7	6.2
Remove Combo HVAC@250	-250	239	407	413	809	40.1	19.7	6.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-610	-271	-599	33.8	15.4	4.3
Add Non-metal Frames @ $1.5/ft2	423	0	-610	-271	-458	33.8	15.4	4.3
Add Non-metal Frames @ $2/ft2	564	0	-610	-271	-317	33.8	15.4	4.3
Remove LSLE @ 3$/ft2	-846	0	-297	1099	-43	39.0	16.7	8.2
Add Non-metal Frames @ $3/ft2	846	0	-610	-271	-35	33.8	15.4	4.3
Remove TXV @ $225	-225	0	0	199	-26	37.8	18.0	5.6
Add Duct Design @ $50	50	0	0	-73	-23	37.0	18.0	4.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	37.2	18.0	5.1
Remove Rad Bar @ $0.15/ft2	-227	0	21	210	4	37.9	18.1	5.7
Remove TXV @ $150	-150	0	0	199	49	37.8	18.0	5.6
Remove Rad Bar @ $0.10/ft2	-151	0	21	210	79	37.9	18.1	5.7
Remove LSLE @ $2.5/ft2	-705	0	-297	1099	98	39.0	16.7	8.2
98 Standards	-1100	0	105	1118	123	40.8	18.4	8.2
Remove TXV @ $75	-75	0	0	199	124	37.8	18.0	5.6
Add Duct Design @ $250	250	0	0	-73	177	37.0	18.0	4.9
Remove LSLE @ $2/ft2	-564	0	-297	1099	239	39.0	16.7	8.2
Remove Duct Sealing @ $300	-300	0	407	193	300	39.5	19.7	5.6
Remove Combo HVAC@500	-500	0	407	413	320	40.1	19.7	6.2
Remove Duct Sealing @ $250	-250	0	407	193	350	39.5	19.7	5.6
Remove LSLE @ 1.5$/ft2	-423	0	-297	1099	380	39.0	16.7	8.2
Remove Duct Seaing @ $200	-200	0	407	193	400	39.5	19.7	5.6
Remove Combo HVAC@400	-400	0	407	413	420	40.1	19.7	6.2
Add Duct Design @ $500	500	0	0	-73	427	37.0	18.0	4.9
Remove Combo HVAC@300	-300	0	407	413	520	40.1	19.7	6.2
Remove LSLE @ $1/ft2	-282	0	-297	1099	521	39.0	16.7	8.2
Remove Combo HVAC@250	-250	0	407	413	570	40.1	19.7	6.2

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-109	-596	-358	-781	34.7	15.0	5.6
Add Non-metal Frames @ $1.5/ft2	423	-109	-596	-358	-640	34.7	15.0	5.6
Add Non-metal Frames @ $2/ft2	564	-109	-596	-358	-499	34.7	15.0	5.6
Add Non-metal Frames @ $3/ft2	846	-109	-596	-358	-217	34.7	15.0	5.6
Add Duct Design @ $50	50	-45	0	-93	-88	38.0	17.5	6.3
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	38.2	17.5	6.6
Remove TXV @ $225	-225	48	0	258	81	39.0	17.5	7.3
Add Duct Design @ $250	250	-45	0	-93	112	38.0	17.5	6.3
Remove TXV @ $150	-150	48	0	258	156	39.0	17.5	7.3
Remove Rad Bar @ $0.15/ft2	-227	169	23	235	201	39.0	17.6	7.2
Remove TXV @ $75	-75	48	0	258	231	39.0	17.5	7.3
Remove Rad Bar @ $0.10/ft2	-151	169	23	235	276	39.0	17.6	7.2
Add Duct Design @ $500	500	-45	0	-93	362	38.0	17.5	6.3
Remove Duct Sealing @ $300	-300	203	395	251	549	40.6	19.2	7.3
Remove Duct Sealing @ $250	-250	203	395	251	599	40.6	19.2	7.3
Remove Duct Seaing @ $200	-200	203	395	251	649	40.6	19.2	7.3
Remove Combo HVAC@500	-500	262	395	537	694	41.4	19.2	8.1
Remove LSLE @ 3$/ft2	-846	234	-322	1680	745	41.6	16.1	11.3
Remove Combo HVAC@400	-400	262	395	537	794	41.4	19.2	8.1
Remove LSLE @ $2.5/ft2	-705	234	-322	1680	886	41.6	16.1	11.3
Remove Combo HVAC@300	-300	262	395	537	894	41.4	19.2	8.1
Remove Combo HVAC@250	-250	262	395	537	944	41.4	19.2	8.1
Remove LSLE @ $2/ft2	-564	234	-322	1680	1027	41.6	16.1	11.3
Remove LSLE @ 1.5$/ft2	-423	234	-322	1680	1168	41.6	16.1	11.3
98 Standards	-1100	706	72	1621	1300	43.1	17.8	11.1
Remove LSLE @ $1/ft2	-282	234	-322	1680	1309	41.6	16.1	11.3

Climate Zone 13 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-105	-512	-519	-853	38.0	12.1	11.8
Add Non-metal Frames @ $1.5/ft2	423	-105	-512	-519	-712	38.0	12.1	11.8
Add Non-metal Frames @ $2/ft2	564	-105	-512	-519	-571	38.0	12.1	11.8
Add Non-metal Frames @ $3/ft2	846	-105	-512	-519	-289	38.0	12.1	11.8
Add Duct Design @ $50	50	-43	0	-189	-183	41.1	14.3	12.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	41.6	14.3	13.2
Add Duct Design @ $250	250	-43	0	-189	17	41.1	14.3	12.7
Add Duct Design @ $500	500	-43	0	-189	267	41.1	14.3	12.7
Remove Rad Bar @ $0.15/ft2	-227	150	19	375	317	42.8	14.3	14.3
Remove TXV @ $225	-225	46	0	518	339	43.1	14.3	14.7
Remove Rad Bar @ $0.10/ft2	-151	150	19	375	393	42.8	14.3	14.3
Remove TXV @ $150	-150	46	0	518	414	43.1	14.3	14.7
Remove TXV @ $75	-75	46	0	518	489	43.1	14.3	14.7
Remove LSLE @ 3$/ft2	-846	186	-241	1556	656	45.0	13.2	17.6
Remove Duct Sealing @ $300	-300	198	329	519	746	44.5	15.7	14.7
Remove Duct Sealing @ $250	-250	198	329	519	796	44.5	15.7	14.7
Remove LSLE @ $2.5/ft2	-705	186	-241	1556	797	45.0	13.2	17.6
Remove Duct Seaing @ $200	-200	198	329	519	846	44.5	15.7	14.7
Remove LSLE @ $2/ft2	-564	186	-241	1556	938	45.0	13.2	17.6
Remove LSLE @ 1.5$/ft2	-423	186	-241	1556	1079	45.0	13.2	17.6
Remove Combo HVAC@500	-500	255	329	1094	1178	46.1	15.7	16.3
Remove LSLE @ $1/ft2	-282	186	-241	1556	1220	45.0	13.2	17.6
Remove Combo HVAC@400	-400	255	329	1094	1278	46.1	15.7	16.3
Remove Combo HVAC@300	-300	255	329	1094	1378	46.1	15.7	16.3
Remove Combo HVAC@250	-250	255	329	1094	1428	46.1	15.7	16.3
98 Standards	-1100	667	84	2227	1879	48.2	14.6	19.5

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-512	-519	-748	38.0	12.1	11.8
Add Non-metal Frames @ $1.5/ft2	423	0	-512	-519	-607	38.0	12.1	11.8
Add Non-metal Frames @ $2/ft2	564	0	-512	-519	-466	38.0	12.1	11.8
Add Non-metal Frames @ $3/ft2	846	0	-512	-519	-184	38.0	12.1	11.8
Add Duct Design @ $50	50	0	0	-189	-139	41.1	14.3	12.7
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	41.6	14.3	13.2
Add Duct Design @ $250	250	0	0	-189	61	41.1	14.3	12.7
Remove Rad Bar @ $0.15/ft2	-227	0	19	375	167	42.8	14.3	14.3
Remove Rad Bar @ $0.10/ft2	-151	0	19	375	243	42.8	14.3	14.3
Remove TXV @ $225	-225	0	0	518	293	43.1	14.3	14.7
Add Duct Design @ $500	500	0	0	-189	311	41.1	14.3	12.7
Remove TXV @ $150	-150	0	0	518	368	43.1	14.3	14.7
Remove TXV @ $75	-75	0	0	518	443	43.1	14.3	14.7
Remove LSLE @ 3$/ft2	-846	0	-241	1556	469	45.0	13.2	17.6
Remove Duct Sealing @ $300	-300	0	329	519	548	44.5	15.7	14.7
Remove Duct Sealing @ $250	-250	0	329	519	598	44.5	15.7	14.7
Remove LSLE @ $2.5/ft2	-705	0	-241	1556	610	45.0	13.2	17.6
Remove Duct Seaing @ $200	-200	0	329	519	648	44.5	15.7	14.7
Remove LSLE @ $2/ft2	-564	0	-241	1556	751	45.0	13.2	17.6
Remove LSLE @ 1.5$/ft2	-423	0	-241	1556	892	45.0	13.2	17.6
Remove Combo HVAC@500	-500	0	329	1094	923	46.1	15.7	16.3
Remove Combo HVAC@400	-400	0	329	1094	1023	46.1	15.7	16.3
Remove LSLE @ $1/ft2	-282	0	-241	1556	1033	45.0	13.2	17.6
Remove Combo HVAC@300	-300	0	329	1094	1123	46.1	15.7	16.3
Remove Combo HVAC@250	-250	0	329	1094	1173	46.1	15.7	16.3
98 Standards	-1100	0	84	2227	1212	48.2	14.6	19.5

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-114	-498	-617	-946	39.4	11.7	13.5
Add Non-metal Frames @ $1.5/ft2	423	-114	-498	-617	-805	39.4	11.7	13.5
Add Non-metal Frames @ $2/ft2	564	-114	-498	-617	-664	39.4	11.7	13.5
Add Non-metal Frames @ $3/ft2	846	-114	-498	-617	-382	39.4	11.7	13.5
Add Duct Design @ $50	50	-47	0	-221	-218	42.6	13.9	14.6
Add Duct Design @ $250	250	-47	0	-221	-18	42.6	13.9	14.6
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	43.2	13.9	15.2
Add Duct Design @ $500	500	-47	0	-221	232	42.6	13.9	14.6
Remove Rad Bar @ $0.15/ft2	-227	159	23	401	357	44.4	14.0	16.3
Remove TXV @ $225	-225	50	0	596	421	44.9	13.9	16.9
Remove Rad Bar @ $0.10/ft2	-151	159	23	401	432	44.4	14.0	16.3
Remove TXV @ $150	-150	50	0	596	496	44.9	13.9	16.9
Remove TXV @ $75	-75	50	0	596	571	44.9	13.9	16.9
Remove Duct Sealing @ $300	-300	216	322	594	832	46.3	15.2	16.9
Remove Duct Sealing @ $250	-250	216	322	594	882	46.3	15.2	16.9
Remove Duct Seaing @ $200	-200	216	322	594	932	46.3	15.2	16.9
Remove LSLE @ 3$/ft2	-846	239	-257	2196	1332	48.3	12.8	21.4
Remove Combo HVAC@500	-500	278	322	1255	1355	48.1	15.2	18.7
Remove Combo HVAC@400	-400	278	322	1255	1455	48.1	15.2	18.7
Remove LSLE @ $2.5/ft2	-705	239	-257	2196	1473	48.3	12.8	21.4
Remove Combo HVAC@300	-300	278	322	1255	1555	48.1	15.2	18.7
Remove Combo HVAC@250	-250	278	322	1255	1605	48.1	15.2	18.7
Remove LSLE @ $2/ft2	-564	239	-257	2196	1614	48.3	12.8	21.4
Remove LSLE @ 1.5$/ft2	-423	239	-257	2196	1755	48.3	12.8	21.4
Remove LSLE @ $1/ft2	-282	239	-257	2196	1896	48.3	12.8	21.4
98 Standards	-1100	747	61	2805	2512	51.4	14.1	23.1

Climate Zone 14 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-147	-715	-500	-1081	42.8	17.4	11.2
Add Non-metal Frames @ $1.5/ft2	423	-147	-715	-500	-940	42.8	17.4	11.2
Add Non-metal Frames @ $2/ft2	564	-147	-715	-500	-799	42.8	17.4	11.2
Add Non-metal Frames @ $3/ft2	846	-147	-715	-500	-517	42.8	17.4	11.2
Add Duct Design @ $50	50	-60	0	-180	-191	46.8	20.5	12.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	47.3	20.5	12.6
Add Duct Design @ $250	250	-60	0	-180	9	46.8	20.5	12.1
Add Duct Design @ $500	500	-60	0	-180	259	46.8	20.5	12.1
Remove TXV @ $225	-225	64	0	494	333	48.7	20.5	14.0
Remove LSLE @ 3$/ft2	-846	206	-418	1430	372	49.5	18.7	16.6
Remove TXV @ $150	-150	64	0	494	408	48.7	20.5	14.0
Remove Rad Bar @ $0.15/ft2	-227	238	23	396	431	48.5	20.6	13.7
Remove TXV @ $75	-75	64	0	494	483	48.7	20.5	14.0
Remove Rad Bar @ $0.10/ft2	-151	238	23	396	507	48.5	20.6	13.7
Remove LSLE @ $2.5/ft2	-705	206	-418	1430	513	49.5	18.7	16.6
Remove LSLE @ $2/ft2	-564	206	-418	1430	654	49.5	18.7	16.6
Remove LSLE @ 1.5$/ft2	-423	206	-418	1430	795	49.5	18.7	16.6
Remove LSLE @ $1/ft2	-282	206	-418	1430	936	49.5	18.7	16.6
Remove Duct Sealing @ $300	-300	309	542	615	1165	51.3	22.8	14.3
Remove Duct Sealing @ $250	-250	309	542	615	1215	51.3	22.8	14.3
Remove Duct Seaing @ $200	-200	309	542	615	1265	51.3	22.8	14.3
Remove Combo HVAC@500	-500	390	542	1176	1609	52.9	22.8	15.9
Remove Combo HVAC@400	-400	390	542	1176	1709	52.9	22.8	15.9
Remove Combo HVAC@300	-300	390	542	1176	1809	52.9	22.8	15.9
Remove Combo HVAC@250	-250	390	542	1176	1859	52.9	22.8	15.9
98 Standards	-1100	1058	147	2336	2441	54.5	21.1	19.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-715	-500	-933	42.8	17.4	11.2
Add Non-metal Frames @ $1.5/ft2	423	0	-715	-500	-792	42.8	17.4	11.2
Add Non-metal Frames @ $2/ft2	564	0	-715	-500	-651	42.8	17.4	11.2
Add Non-metal Frames @ $3/ft2	846	0	-715	-500	-369	42.8	17.4	11.2
Add Duct Design @ $50	50	0	0	-180	-130	46.8	20.5	12.1
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	47.3	20.5	12.6
Add Duct Design @ $250	250	0	0	-180	70	46.8	20.5	12.1
Remove LSLE @ 3$/ft2	-846	0	-418	1430	166	49.5	18.7	16.6
Remove Rad Bar @ $0.15/ft2	-227	0	23	396	193	48.5	20.6	13.7
Remove Rad Bar @ $0.10/ft2	-151	0	23	396	268	48.5	20.6	13.7
Remove TXV @ $225	-225	0	0	494	269	48.7	20.5	14.0
Remove LSLE @ $2.5/ft2	-705	0	-418	1430	307	49.5	18.7	16.6
Add Duct Design @ $500	500	0	0	-180	320	46.8	20.5	12.1
Remove TXV @ $150	-150	0	0	494	344	48.7	20.5	14.0
Remove TXV @ $75	-75	0	0	494	419	48.7	20.5	14.0
Remove LSLE @ $2/ft2	-564	0	-418	1430	448	49.5	18.7	16.6
Remove LSLE @ 1.5$/ft2	-423	0	-418	1430	589	49.5	18.7	16.6
Remove LSLE @ $1/ft2	-282	0	-418	1430	730	49.5	18.7	16.6
Remove Duct Sealing @ $300	-300	0	542	615	857	51.3	22.8	14.3
Remove Duct Sealing @ $250	-250	0	542	615	907	51.3	22.8	14.3
Remove Duct Seaing @ $200	-200	0	542	615	957	51.3	22.8	14.3
Remove Combo HVAC@500	-500	0	542	1176	1218	52.9	22.8	15.9
Remove Combo HVAC@400	-400	0	542	1176	1318	52.9	22.8	15.9
98 Standards	-1100	0	147	2336	1383	54.5	21.1	19.2
Remove Combo HVAC@300	-300	0	542	1176	1418	52.9	22.8	15.9
Remove Combo HVAC@250	-250	0	542	1176	1468	52.9	22.8	15.9

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-157	-685	-591	-1150	43.6	16.7	12.8
Add Non-metal Frames @ $1.5/ft2	423	-157	-685	-591	-1009	43.6	16.7	12.8
Add Non-metal Frames @ $2/ft2	564	-157	-685	-591	-868	43.6	16.7	12.8
Add Non-metal Frames @ $3/ft2	846	-157	-685	-591	-586	43.6	16.7	12.8
Add Duct Design @ $50	50	-64	0	-209	-223	47.6	19.6	13.8
Add Duct Design @ $250	250	-64	0	-209	-23	47.6	19.6	13.8
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	48.2	19.6	14.4
Add Duct Design @ $500	500	-64	0	-209	227	47.6	19.6	13.8
Remove TXV @ $225	-225	68	0	565	408	49.8	19.6	16.0
Remove Rad Bar @ $0.15/ft2	-227	251	28	426	478	49.5	19.7	15.6
Remove TXV @ $150	-150	68	0	565	483	49.8	19.6	16.0
Remove Rad Bar @ $0.10/ft2	-151	251	28	426	554	49.5	19.7	15.6
Remove TXV @ $75	-75	68	0	565	558	49.8	19.6	16.0
Remove LSLE @ 3$/ft2	-846	259	-477	2085	1022	52.0	17.6	20.3
Remove LSLE @ $2.5/ft2	-705	259	-477	2085	1163	52.0	17.6	20.3
Remove Duct Sealing @ $300	-300	329	521	702	1252	52.4	21.8	16.4
Remove Duct Sealing @ $250	-250	329	521	702	1302	52.4	21.8	16.4
Remove LSLE @ $2/ft2	-564	259	-477	2085	1304	52.0	17.6	20.3
Remove Duct Seaing @ $200	-200	329	521	702	1352	52.4	21.8	16.4
Remove LSLE @ 1.5$/ft2	-423	259	-477	2085	1445	52.0	17.6	20.3
Remove LSLE @ $1/ft2	-282	259	-477	2085	1586	52.0	17.6	20.3
Remove Combo HVAC@500	-500	417	521	1344	1782	54.2	21.8	18.2
Remove Combo HVAC@400	-400	417	521	1344	1882	54.2	21.8	18.2
Remove Combo HVAC@300	-300	417	521	1344	1982	54.2	21.8	18.2
Remove Combo HVAC@250	-250	417	521	1344	2032	54.2	21.8	18.2
98 Standards	-1100	1153	82	2928	3062	56.8	20.0	22.6

Climate Zone 15 CEC Forecast

Relative LCC with 2' overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-139	-175	-1157	-1189	48.2	3.1	31.0
Add Non-metal Frames @ $1.5/ft2	423	-139	-175	-1157	-1048	48.2	3.1	31.0
Add Non-metal Frames @ $2/ft2	564	-139	-175	-1157	-907	48.2	3.1	31.0
Add Non-metal Frames @ $3/ft2	846	-139	-175	-1157	-625	48.2	3.1	31.0
Add Duct Design @ $50	50	-57	0	-494	-500	50.9	3.8	32.9
Add Duct Design @ $250	250	-57	0	-494	-300	50.9	3.8	32.9
Add Duct Design @ $500	500	-57	0	-494	-50	50.9	3.8	32.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	52.2	3.8	34.3
Remove Rad Bar @ $0.15/ft2	-227	232	7	905	917	54.8	3.9	36.8
Remove Rad Bar @ $0.10/ft2	-151	232	7	905	993	54.8	3.9	36.8
Remove TXV @ $225	-225	60	0	1342	1177	56.0	3.8	38.0
Remove TXV @ $150	-150	60	0	1342	1252	56.0	3.8	38.0
Remove TXV @ $75	-75	60	0	1342	1327	56.0	3.8	38.0
Remove LSLE @ 3$/ft2	-846	205	-119	2374	1614	58.4	3.3	40.9
Remove LSLE @ $2.5/ft2	-705	205	-119	2374	1755	58.4	3.3	40.9
Remove LSLE @ $2/ft2	-564	205	-119	2374	1896	58.4	3.3	40.9
Remove Duct Sealing @ $300	-300	296	86	1814	1897	57.7	4.2	39.4
Remove Duct Sealing @ $250	-250	296	86	1814	1947	57.7	4.2	39.4
Remove Duct Seaing @ $200	-200	296	86	1814	1997	57.7	4.2	39.4
Remove LSLE @ 1.5$/ft2	-423	205	-119	2374	2037	58.4	3.3	40.9
Remove LSLE @ $1/ft2	-282	205	-119	2374	2178	58.4	3.3	40.9
Remove Combo HVAC@500	-500	374	86	3356	3316	62.0	4.2	43.7
Remove Combo HVAC@400	-400	374	86	3356	3416	62.0	4.2	43.7
Remove Combo HVAC@300	-300	374	86	3356	3516	62.0	4.2	43.7
Remove Combo HVAC@250	-250	374	86	3356	3566	62.0	4.2	43.7
98 Standards	-1100	1057	75	5299	5330	67.4	4.1	49.2

Relative LCC with 2' overhang and no credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	0	-175	-1157	-1050	48.2	3.1	31.0
Add Non-metal Frames @ $1.5/ft2	423	0	-175	-1157	-909	48.2	3.1	31.0
Add Non-metal Frames @ $2/ft2	564	0	-175	-1157	-768	48.2	3.1	31.0
Add Non-metal Frames @ $3/ft2	846	0	-175	-1157	-486	48.2	3.1	31.0
Add Duct Design @ $50	50	0	0	-494	-444	50.9	3.8	32.9
Add Duct Design @ $250	250	0	0	-494	-244	50.9	3.8	32.9
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	52.2	3.8	34.3
Add Duct Design @ $500	500	0	0	-494	6	50.9	3.8	32.9
Remove Rad Bar @ $0.15/ft2	-227	0	7	905	685	54.8	3.9	36.8
Remove Rad Bar @ $0.10/ft2	-151	0	7	905	761	54.8	3.9	36.8
Remove TXV @ $225	-225	0	0	1342	1117	56.0	3.8	38.0
Remove TXV @ $150	-150	0	0	1342	1192	56.0	3.8	38.0
Remove TXV @ $75	-75	0	0	1342	1267	56.0	3.8	38.0
Remove LSLE @ 3$/ft2	-846	0	-119	2374	1409	58.4	3.3	40.9
Remove LSLE @ $2.5/ft2	-705	0	-119	2374	1550	58.4	3.3	40.9
Remove Duct Sealing @ $300	-300	0	86	1814	1601	57.7	4.2	39.4
Remove Duct Sealing @ $250	-250	0	86	1814	1651	57.7	4.2	39.4
Remove LSLE @ $2/ft2	-564	0	-119	2374	1691	58.4	3.3	40.9
Remove Duct Seaing @ $200	-200	0	86	1814	1701	57.7	4.2	39.4
Remove LSLE @ 1.5$/ft2	-423	0	-119	2374	1832	58.4	3.3	40.9
Remove LSLE @ $1/ft2	-282	0	-119	2374	1973	58.4	3.3	40.9
Remove Combo HVAC@500	-500	0	86	3356	2942	62.0	4.2	43.7
Remove Combo HVAC@400	-400	0	86	3356	3042	62.0	4.2	43.7
Remove Combo HVAC@300	-300	0	86	3356	3142	62.0	4.2	43.7
Remove Combo HVAC@250	-250	0	86	3356	3192	62.0	4.2	43.7
98 Standards	-1100	0	75	5299	4274	67.4	4.1	49.2

Relative LCC with no overhang and credit for AC size reduction, $ Present Value						EnergyUse kBtu/cfa		
Description	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Non-metal Frames @ $1/ft2	282	-149	-171	-1278	-1315	50.2	2.9	33.1
Add Non-metal Frames @ $1.5/ft2	423	-149	-171	-1278	-1174	50.2	2.9	33.1
Add Non-metal Frames @ $2/ft2	564	-149	-171	-1278	-1033	50.2	2.9	33.1
Add Non-metal Frames @ $3/ft2	846	-149	-171	-1278	-751	50.2	2.9	33.1
Add Duct Design @ $50	50	-61	0	-527	-538	53.0	3.6	35.2
Add Duct Design @ $250	250	-61	0	-527	-338	53.0	3.6	35.2
Add Duct Design @ $500	500	-61	0	-527	-88	53.0	3.6	35.2
Package 1 Ducts, LSLE, TXV, RB	0	0	0	0	0	54.5	3.6	36.7
Remove Rad Bar @ $0.15/ft2	-227	244	7	946	970	57.2	3.7	39.4
Remove Rad Bar @ $0.10/ft2	-151	244	7	946	1046	57.2	3.7	39.4
Remove TXV @ $225	-225	65	0	1438	1278	58.5	3.6	40.8
Remove TXV @ $150	-150	65	0	1438	1353	58.5	3.6	40.8
Remove TXV @ $75	-75	65	0	1438	1428	58.5	3.6	40.8
Remove Duct Sealing @ $300	-300	318	79	1948	2046	60.3	4.0	42.2
Remove Duct Sealing @ $250	-250	318	79	1948	2096	60.3	4.0	42.2
Remove Duct Seaing @ $200	-200	318	79	1948	2146	60.3	4.0	42.2
Remove LSLE @ 3$/ft2	-846	259	-110	3172	2476	62.9	3.2	45.6
Remove LSLE @ $2.5/ft2	-705	259	-110	3172	2617	62.9	3.2	45.6
Remove LSLE @ $2/ft2	-564	259	-110	3172	2758	62.9	3.2	45.6
Remove LSLE @ 1.5$/ft2	-423	259	-110	3172	2899	62.9	3.2	45.6
Remove LSLE @ $1/ft2	-282	259	-110	3172	3040	62.9	3.2	45.6
Remove Combo HVAC@500	-500	401	79	3601	3581	65.0	4.0	46.8
Remove Combo HVAC@400	-400	401	79	3601	3681	65.0	4.0	46.8
Remove Combo HVAC@300	-300	401	79	3601	3781	65.0	4.0	46.8
Remove Combo HVAC@250	-250	401	79	3601	3831	65.0	4.0	46.8
98 Standards	-1100	1124	70	5645	5739	70.7	3.9	52.6

Climate Zone 16 CEC Forecast

LCC with 2' Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Duct Design @ $50	50	-58	0	-75	-83	54.1	37.4	2.6
Add TXV @ $75	75	-42	0	-100	-66	54.1	37.4	2.5
Add Rad Bar @ $0.10/ft1	151	-69	-56	-89	-62	53.9	37.1	2.6
Package 4 Tight Ducts	0	0	0	0	0	54.4	37.4	2.8
Add TXV @ $150	150	-42	0	-100	9	54.1	37.4	2.5
Add Rad Bar @ $0.15/ft2	227	-69	-56	-89	14	53.9	37.1	2.6
Add Non-metal Frames @ $1/ft2	282	-28	-145	-89	20	53.5	36.8	2.6
Add TXV @ $225	225	-42	0	-100	84	54.1	37.4	2.5
Add Duct Design @ $250	250	-58	0	-75	117	54.1	37.4	2.6
Add Non-metal Frames @ $1.5/ft2	423	-28	-145	-89	161	53.5	36.8	2.6
Add Non-metal Frames @ $2/ft2	564	-28	-145	-89	302	53.5	36.8	2.6
Add Duct Design @ $500	500	-58	0	-75	367	54.1	37.4	2.6
Add Non-metal Frames @ $3/ft2	846	-28	-145	-89	584	53.5	36.8	2.6
Add LSLE @ $1/ft2	282	-160	1355	-514	963	58.7	43.2	1.4
Remove Duct Seal @ $300	-300	185	1091	78	1055	59.2	42.1	3.0
98 Standards	-300	185	1091	78	1055	59.2	42.1	3.0
Add LSLE @ $1.5/ft2	423	-160	1355	-514	1104	58.7	43.2	1.4
Remove Duct Seal @ $250	-250	185	1091	78	1105	59.2	42.1	3.0
Remove Duct Seal @ $200	-200	185	1091	78	1155	59.2	42.1	3.0
Add LSLE @ $2/ft2	564	-160	1355	-514	1245	58.7	43.2	1.4
Add LSLE @ $2.5/ft2	705	-160	1355	-514	1386	58.7	43.2	1.4
Add LSLE @ $3/ft2	846	-160	1355	-514	1527	58.7	43.2	1.4

LCC with 2' Overhang and no credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Duct Design @ $50	50	0	0	-75	-25	54.1	37.4	2.6
Add TXV @ $75	75	0	0	-100	-25	54.1	37.4	2.5
Package 4 Tight Ducts	0	0	0	0	0	54.4	37.4	2.8
Add Rad Bar @ $0.10/ft1	151	0	-56	-89	7	53.9	37.1	2.6
Add Non-metal Frames @ $1/ft2	282	0	-145	-89	49	53.5	36.8	2.6
Add TXV @ $150	150	0	0	-100	50	54.1	37.4	2.5
Add Rad Bar @ $0.15/ft2	227	0	-56	-89	82	53.9	37.1	2.6
Add TXV @ $225	225	0	0	-100	125	54.1	37.4	2.5
Add Duct Design @ $250	250	0	0	-75	175	54.1	37.4	2.6
Add Non-metal Frames @ $1.5/ft2	423	0	-145	-89	190	53.5	36.8	2.6
Add Non-metal Frames @ $2/ft2	564	0	-145	-89	331	53.5	36.8	2.6
Add Duct Design @ $500	500	0	0	-75	425	54.1	37.4	2.6
Add Non-metal Frames @ $3/ft2	846	0	-145	-89	613	53.5	36.8	2.6
Remove Duct Seal @ $300	-300	0	1091	78	870	59.2	42.1	3.0
98 Standards	-300	0	1091	78	870	59.2	42.1	3.0
Remove Duct Seal @ $250	-250	0	1091	78	920	59.2	42.1	3.0
Remove Duct Seal @ $200	-200	0	1091	78	970	59.2	42.1	3.0
Add LSLE @ $1/ft2	282	0	1355	-514	1123	58.7	43.2	1.4
Add LSLE @ $1.5/ft2	423	0	1355	-514	1264	58.7	43.2	1.4
Add LSLE @ $2/ft2	564	0	1355	-514	1405	58.7	43.2	1.4
Add LSLE @ $2.5/ft2	705	0	1355	-514	1546	58.7	43.2	1.4
Add LSLE @ $3/ft2	846	0	1355	-514	1687	58.7	43.2	1.4

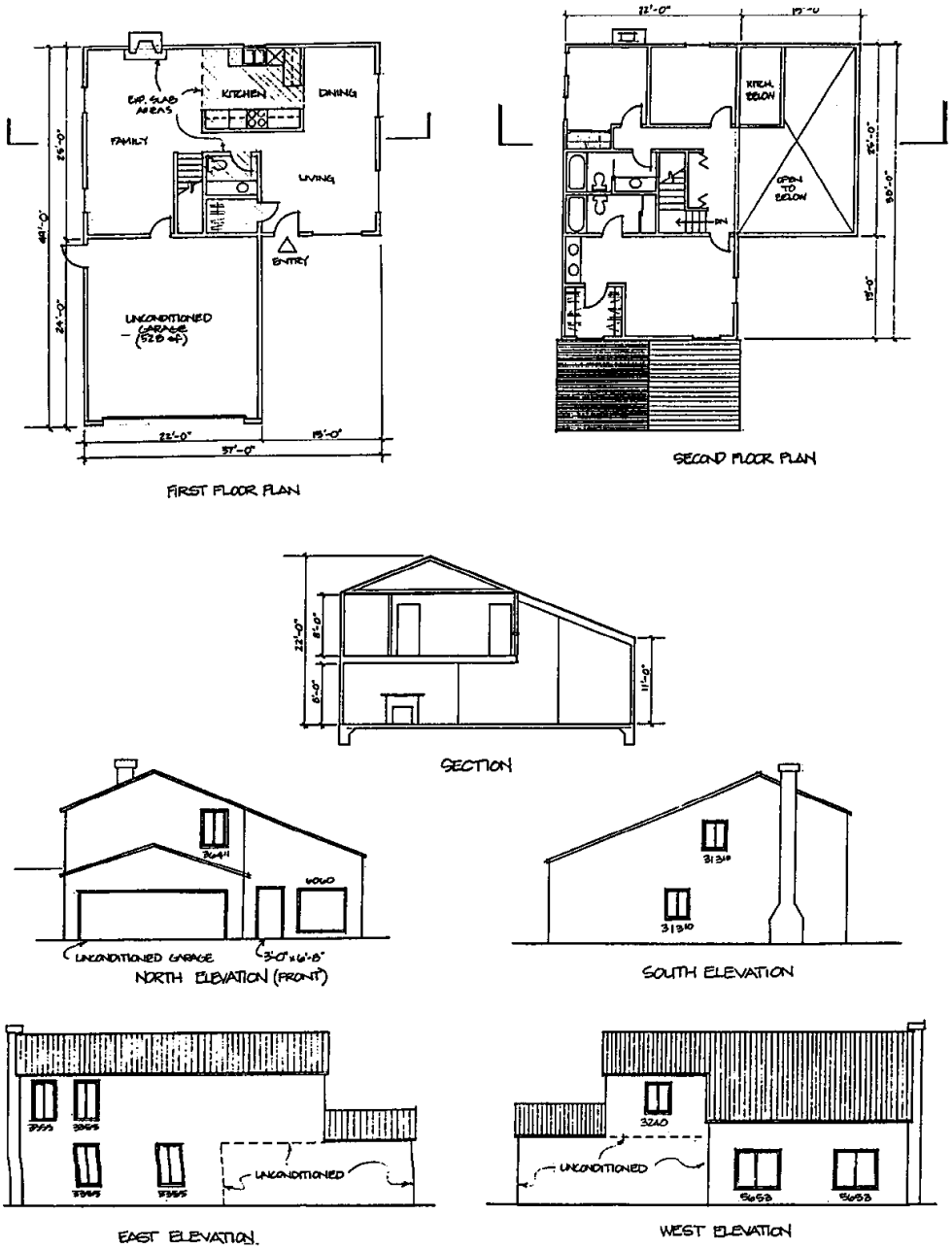
LCC with no Overhang and credit for AC size reduction, $ Present Value						EnergyUse skBtu/cfa		
Desc	Measure	AC Size	Gas	Elect	Total LCC	TOTAL	HEATING	COOLING
Add Duct Design @ $50	50	69	0	-126	-7	54.6	36.2	4.3
Add TXV @ $75	75	88	0	-164	-1	54.5	36.2	4.2
Add Rad Bar @ $0.10/ft1	151	66	-56	-106	56	54.4	35.9	4.4
Add TXV @ $150	150	88	0	-164	74	54.5	36.2	4.2
Add Non-metal Frames @ $1/ft2	282	102	-133	-143	108	54.0	35.6	4.3
Add Rad Bar @ $0.15/ft2	227	66	-56	-106	131	54.4	35.9	4.4
Package 4 Tight Ducts	0	137	0	0	137	55.0	36.2	4.7
Add TXV @ $225	225	88	0	-164	149	54.5	36.2	4.2
Add Duct Design @ $250	250	69	0	-126	193	54.6	36.2	4.3
Add Non-metal Frames @ $1.5/ft2	423	102	-133	-143	249	54.0	35.6	4.3
Add Non-metal Frames @ $2/ft2	564	102	-133	-143	390	54.0	35.6	4.3
Add Duct Design @ $500	500	69	0	-126	443	54.6	36.2	4.3
Add Non-metal Frames @ $3/ft2	846	102	-133	-143	672	54.0	35.6	4.3
Add LSLE @ $1/ft2	282	-80	1411	-902	711	58.5	42.2	2.1
Add LSLE @ $1.5/ft2	423	-80	1411	-902	852	58.5	42.2	2.1
Add LSLE @ $2/ft2	564	-80	1411	-902	993	58.5	42.2	2.1
Add LSLE @ $2.5/ft2	705	-80	1411	-902	1134	58.5	42.2	2.1
Remove Duct Seal @ $300	-300	356	1056	126	1238	59.8	40.7	5.0
98 Standards	-300	356	1056	126	1238	59.8	40.7	5.0
Add LSLE @ $3/ft2	846	-80	1411	-902	1275	58.5	42.2	2.1
Remove Duct Seal @ $250	-250	356	1056	126	1288	59.8	40.7	5.0
Remove Duct Seal @ $200	-200	356	1056	126	1338	59.8	40.7	5.0

Appendix A. Basecase Building

A. Drawing

Figure 1 shows a drawing of the basecase building created during the 1992 standards development process.

Figure 1 – Basecase Building Drawing



B. Printout

Figure 2 shows a sample Computer Method Summary (C-2R) printout for the basecase building in climate zone 13.

Figure 2 – Basecase Building Printout

```
COMPUTER METHOD SUMMARY                                      Page 1          C-2R
==============================================================================
Project Title.......... 1761sf 2000 Base                Date..11/15/00 13:16:33
Project Address........ ___________________________*******  --------------------
                        ___________________________*v5.13*  | _________________ |
Documentation Author... Ken Nittler              *******  | Building Permit # |
                         Enercomp, Inc.                    | _________________ |
                         1721 Arroyo Drive                 | Plan Check / Date |
                         Auburn, CA  95603                 | _________________ |
                          800-755-5908                      | Field Check/ Date |
Climate Zone........... 13                                  --------------------
Compliance Method...... MICROPAS5 v5.13 for 1998 Standards by Enercomp, Inc.
==============================================================================
|      MICROPAS5 v5.13  File-200013  Wth-CTZ13S92  Program-FORM C-2R         |
|                User#-MP0101  User-Enercomp, Inc.  Run-13 GE               |
------------------------------------------------------------------------------

       ==================================================================
       =                  MICROPAS5 ENERGY USE SUMMARY                  =
       =                  ----------------------------                  =
       =  Energy Use                Standard    Proposed   Compliance   =
       =  (kBtu/sf-yr)               Design      Design      Margin     =
       =  -----------------------  ----------  ----------  ----------   =
       =  Space Heating..........     13.86       13.86        0.00     =
       =  Space Cooling..........     15.22       15.22        0.00     =
       =  Water Heating..........     14.15       14.15        0.00     =
       =                            --------    --------    --------    =
       =                    Total     43.23       43.23        0.00     =
       =                                                               =
       =      *** Building complies with Computer Performance ***      =
       =            *** AB970_11/11/00 Standard Design ***             =
       ==================================================================

                          GENERAL INFORMATION
                          -------------------
             Run Type...................  NoCompliance
             Assumption Type............  AB970_11/11/00
             Conditioned Floor Area.....  1761 sf
             Building Type..............  Single Family Detached
             Construction Type .........  New
             Building Front Orientation.  Front Facing 90 deg (E)
             Number of Dwelling Units...  1
             Number of Building Stories.  2
             Weather Data Type..........  Fullyear

             Floor Construction Type....  Slab On Grade
             Number of Building Zones...  1
             Conditioned Volume.........  15588 cf
             Slab-On-Grade Area.........  925 sf
             Glazing Percentage.........  16 % of floor area
             Average Glazing U-value....  0.65 Btu/hr-sf-F
             Average Glazing SHGC.......  0.4
             Average Ceiling Height.....  8.9 ft
```

```
COMPUTER METHOD SUMMARY                                    Page 2          C-2R
==============================================================================
Project Title.......... 1761sf 2000 Base                Date..11/15/00 13:16:33
==============================================================================
|      MICROPAS5 v5.13  File-200013  Wth-CTZ13S92  Program-FORM C-2R         |
|                 User#-MP0101  User-Enercomp, Inc.  Run-13 GE               |
------------------------------------------------------------------------------

                           BUILDING ZONE INFORMATION
                           -------------------------
               Floor         # of                        Vent   Vent      Air
               Area  Volume  Dwell  Cond-  Thermostat  Height  Area    Leakage
Zone Type      (sf)   (cf)   Units itioned    Type      (ft)   (sf)    Credit
-------------- ----- ------- ----- ------- ----------- ----- -------- ---------
HOUSE
 Residence      1761  15588   1.00   Yes   Setback       8.0 Standard   No

                               OPAQUE SURFACES
                               ---------------
                Area   U-   Insul Act      Solar    Form 3       Location/
Surface         (sf)  value R-val Azm Tilt Gains  Reference      Comments
-------------- ------ ----- ----- --- ---- ----- ------------ ---------------
HOUSE
 1 Wall          358  0.065 19      0    90 Yes  None         Right Wall
 2 Wall          398  0.065 19     90    90 Yes  None         Front Wall
 3 Wall          398  0.065 19    180    90 Yes  None         Left Wall
 4 Wall          398  0.065 19    270    90 Yes  None         Back Wall
 5 RoofRadiant  1261  0.028 38    n/a     0 Yes  None         Attic Ceiling
 6 Door           40  0.330 0       0    90 Yes  None         North Door
 7 Floor         286  0.037 19    n/a     0 No   None         Garage Floor

                               PERIMETER LOSSES
                               ----------------
                   Length    F2     Insul  Solar
      Surface       (ft)   Factor   R-val  Gains Location/Comments
      ------------ ------ -------- ------- ----- ----------------------
      HOUSE
       8 SlabEdge    124    0.760  R-0       No  Exposed Edge

                             FENESTRATION SURFACES
                             ---------------------
                        Area   U-        Act      Exterior Shade Interior Shade
Orientation             (sf) Value SHGC  Azm Tilt Type/SHGC      Type/SHGC
---------------------- ----- ----- ----- --- ---- ------------- -------------
HOUSE
 1 Window   Right (N)   70.4 0.650 0.400   0  90  Standard/0.76  Standard/0.68
 2 Window   Front (E)   70.4 0.650 0.400  90  90  Standard/0.76  Standard/0.68
 3 Window   Left  (S)   70.4 0.650 0.400 180  90  Standard/0.76  Standard/0.68
 4 Window   Back  (W)   70.4 0.650 0.400 270  90  Standard/0.76  Standard/0.68
```

```
COMPUTER METHOD SUMMARY                                    Page 3          C-2R
==============================================================================
Project Title.......... 1761sf 2000 Base                Date..11/15/00 13:16:33
==============================================================================
|      MICROPAS5 v5.13  File-200013  Wth-CTZ13S92  Program-FORM C-2R         |
|                 User#-MP0101  User-Enercomp, Inc.  Run-13 GE               |
------------------------------------------------------------------------------

                                  THERMAL MASS
                                  ------------
                 Area  Thick  Heat Conduct-      Surface
Mass Type        (sf)  (in)   Cap   ivity   UIMC R-value  Location/Comments
--------------- ------ ----- ----- -------- ---- ------- ---------------------
HOUSE
 1 SlabOnGrade    185   3.5   28.0   0.98   4.60  R-0.0  Exposed Slab
 2 SlabOnGrade    740   3.5   28.0   0.98   1.80  R-2.0  Covered Slab
 3 InteriorHorz    42   2.0   28.0   0.98   2.80  R-0.0  Raised Floor Mass

                                  HVAC SYSTEMS
                                  ------------
                  Minimum        Duct       Duct  Tested Duct  ACCA     Duct
System Type       Efficiency    Location    R-value  Leakage  Manual D   Eff
---------------- ------------ ------------- ------- -------- -------- -------
HOUSE
 Furnace          0.780 AFUE  Attic          R-4.2    Yes        No      0.843
 ACSPLITTXV       10.00 SEER  Attic          R-4.2    Yes        No      0.793

                             DUCT TESTING DETAILS
                             --------------------
                                    Duct          Measured Supply
                              Leakage Target    Duct Surface Area
      Equipment Type           (% fan CFM/CFM25)        (ft2)
      ------------------------ ------------------ -----------------
      HOUSE
       Furnace / ACSPLITTXV           6% /   74.0       n/a

                            WATER HEATING SYSTEMS
                            ---------------------
                                                  Number          Tank   External
                                                    in    Energy  Size   Insulation
 Tank Type    Heater Type  Distribution Type  System  Factor  (gal)  R-value
 ------------ ----------- ------------------- ------ -------- ------ ----------
 Water Heater to meet minimum CEC Standards

                   SPECIAL FEATURES AND MODELING ASSUMPTIONS
                   -----------------------------------------
       *** Items in this section should be documented on the plans, ***
       *** installed to manufacturer and CEC specifications, and    ***
       *** verified during plan check and field inspection.         ***

This building incorporates a Radiant Barrier.

This building incorporates Tested Duct Leakage.
Leaks in the air distribution system connections shall not be sealed
with cloth backed rubber adhesive duct tapes unless such tape is used
in combination with mastic and drawbands.
```

```
COMPUTER METHOD SUMMARY                                    Page 4          C-2R
================================================================================
Project Title.......... 1761sf 2000 Base                Date..11/15/00 13:16:33
================================================================================
|      MICROPAS5 v5.13  File-200013  Wth-CTZ13S92  Program-FORM C-2R         |
|                 User#-MP0101  User-Enercomp, Inc.  Run-13 GE               |
--------------------------------------------------------------------------------

                          HERS REQUIRED VERIFICATION
                          --------------------------
         *** Items in this section require field testing and/or    ***
         *** verification by a certified home energy rater under   ***
         *** the supervision of a CEC-approved HERS provider using ***
         *** CEC approved testing and/or verification methods.     ***

This building incorporates Tested Duct Leakage. Target CFM leakage
values measured at 25 pascals are shown in DUCT TESTING DETAILS above.
If the measured CFM is above the target, then corrective action
must be taken to reduce the duct leakage and then retest. Alternatively,
the compliance calculations could be redone without duct testing.
Leaks in the air distribution system connections shall not be sealed
with cloth backed rubber adhesive duct tapes unless such tape is used
in combination with mastic and drawbands.

                                   REMARKS
                                   -------
```