

BUILDING ENERGY ANALYSIS REPORT

PROJECT:

Public Library Expansion
200 W. 9th Street
Imperial, CA 92251

Project Designer:

Vexer Engineering
653 W. Main Street Ste 103
El Centro, CA 92243
760-352-8100

Report Prepared by:

Guillermo Garcia
GMG Graphics
P.O. Box 1560
El Centro, CA 92244
760-791-1961

Job Number:

J15010

Date:

5/22/2015

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2013 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

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PERFORMANCE CERTIFICATE OF COMPLIANCE (Part 1 of 3) **PERF-1C**

Project Name <i>Public Library Expansion</i>			Date <i>5/22/2015</i>
Project Address <i>200 W. 9th Street Imperial</i>	Climate Zone <i>CA Climate Zone 15</i>	Total Cond. Floor Area <i>11,295</i>	Addition Floor Area <i>4,024</i>

GENERAL INFORMATION

Building Type:	<input checked="" type="checkbox"/> Nonresidential	<input type="checkbox"/> High-Rise Residential	<input type="checkbox"/> Hotel/Motel Guest Room
	<input type="checkbox"/> Relocatable - indicate	<input type="checkbox"/> specific climate zone	<input type="checkbox"/> all climates
Phase of Construction:	<input type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input checked="" type="checkbox"/> Alteration

STATEMENT OF COMPLIANCE
 This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to a Building using the performance compliance approach.

The documentation author hereby certifies that the documentation is accurate and complete.

Documentation Author

Name <i>Guillermo Garcia</i>	Signature
Company <i>GMG Graphics</i>	Date <i>5/22/2015</i>
Address <i>P.O. Box 1560</i>	Phone <i>760-791-1961</i>
City/State/Zip <i>El Centro, CA 92244</i>	

The Principal Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the energy efficiency requirements contained in sections 110.0, 116.0 through 118.0, and 140.0 through 149.0 of Title 24, Part 6.

Please check one:

ENV. LTG. MECH.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am licensed in the State of California as a civil engineer, mechanical engineer, electrical engineer, or I am a licensed architect.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code by section 5537.2 or 6737.3 to sign this document as the person responsible for its preparation; and that I am a licensed contractor performing this work.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	I affirm that I am eligible under Division 3 of the Business and Professions Code to sign this document because it pertains to a structure or type of work described as exempt pursuant to Business and Professions Code Sections 5537, 5538 and 6737.1.

Principal Envelope Designer

Name <i>Vexer Engineering</i>	Signature
Company <i>Vexer Engineering</i>	Date
Address <i>653 W. Main Street Ste 103</i>	License #
City/State/Zip <i>El Centro, CA 92243</i>	Phone <i>760-352-8100</i>

Principal Mechanical Designer

Name <i>City of Imperial</i>	Signature
Company <i>City of Imperial</i>	Date
Address <i>420 S. Imperial Ave.</i>	License #
City/State/Zip <i>Imperial, CA 92251</i>	Phone

Principal Lighting Designer

Name <i>Jose Luis Reyes Lemus</i>	Signature
Company	Date
Address <i>P.O. Box 9015-930</i>	License #
City/State/Zip <i>Calexico, CA 92231</i>	Phone <i>0115126862713074</i>

INSTRUCTIONS TO APPLICANT COMPLIANCE & WORKSHEETS (check box if worksheets are included)

<input checked="" type="checkbox"/> ENV-01	Certificate of Compliance. Required on plans.	<input checked="" type="checkbox"/> MCH-01	Certificate of Compliance. Required on plans.
<input checked="" type="checkbox"/> LTI-01	Certificate of Compliance. Required on plans.	<input checked="" type="checkbox"/> MCH-02	HVAC Air/Water Side Requirements.
<input checked="" type="checkbox"/> LTI-02	Lighting Controls Credit Worksheet.	<input checked="" type="checkbox"/> MCH-03	Mechanical Ventilation and Reheat.
<input type="checkbox"/> LTI-03	Indoor Lighting Power Allowance.	<input checked="" type="checkbox"/> MCH-08	Mechanical Equipment Details.

PERFORMANCE CERTIFICATE OF COMPLIANCE

(Part 2 of 3)

PERF-1C

Project Name

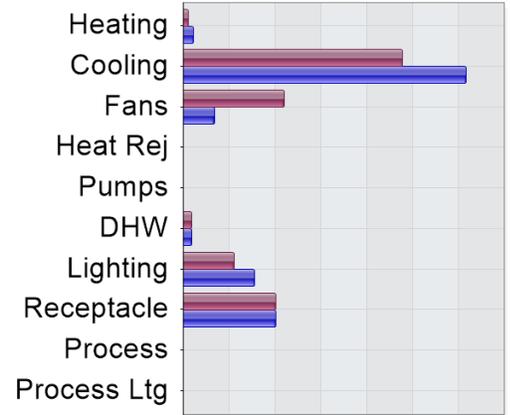
Public Library Expansion

Date

5/22/2015

ANNUAL TDV ENERGY USE SUMMARY (kBtu/sqft-yr)

Energy Component	Standard Design	Proposed Design	Compliance Margin
Space Heating	11.25	5.89	5.36
Space Cooling	308.42	239.35	69.08
Indoor Fans	33.84	109.87	-76.03
Heat Rejection	0.00	0.00	0.00
Pumps & Misc.	0.00	0.00	0.00
Domestic Hot Water	9.47	9.47	0.00
Lighting	78.14	55.98	22.16
Receptacle	100.88	100.88	0.00
Process	0.00	0.00	0.00
Process Lighting	0.00	0.00	0.00
TOTALS	542.01	521.44	20.57



Percent better than Standard: 3.8% (3.8% excluding process)

BUILDING COMPLIES

GENERAL INFORMATION

Building Orientation	(N) 0 deg	Conditioned Floor Area	11,295 sqft.
Number of Stories	1	Unconditioned Floor Area	0 sqft.
Number of Systems	9	Conditioned Footprint Area	11,295 sqft.
Number of Zones	6	Natural Gas Available On Site	Yes

	Orientation	Gross Area	Glazing Area	Glazing Ratio
Front Elevation	(N)	1,928 sqft.	288 sqft.	14.9 %
Left Elevation	(E)	1,015 sqft.	59 sqft.	5.8 %
Rear Elevation	(S)	1,927 sqft.	165 sqft.	8.5 %
Right Elevation	(W)	1,068 sqft.	42 sqft.	3.9 %
Total		5,938 sqft.	553 sqft.	9.3 %
Roof		11,295 sqft.	0 sqft.	0.0 %

Prescriptive Lighting Power Density	Standard: 1.241 W/sqft.	Proposed: 0.958 W/sqft.	Prescriptive Values for Comparison only. See LTI-01 for allowed LPD.
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Remarks:

ENVELOPE COMPONENT APPROACH

CEC-NRCC-ENV-01-E (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE	NRCC-ENV-01-E
Envelope Component Approach	(Page 1 of 4)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015

A. GENERAL INFORMATION										
1	Project Location:	200 W. 9th Street		6	Compliance Method:	<input checked="" type="checkbox"/> Component <input type="checkbox"/> Unconditioned (file Affidavit)				
2	CA City and Zip Code:	Imperial, 92251		7	Building Front Orientation (deg or cardinal):	0 deg				
3	Climate Zone:	15		8	Permitted Scope of Work	<input type="checkbox"/> New Construction <input type="checkbox"/> Addition <input checked="" type="checkbox"/> Alteration				
4	Total Conditioned Floor Area:	11,295		9	Building Type(s)	<input checked="" type="checkbox"/> Nonresidential <input type="checkbox"/> High-Rise Residential <input type="checkbox"/> Hotel/Motel Guest Room				
5	<input type="checkbox"/> Schools (Public School) <input type="checkbox"/> Relocatable Public School Bldg. <input checked="" type="checkbox"/> Conditioned Spaces <input type="checkbox"/> Unconditioned Spaces <input type="checkbox"/> Skylight Area for Large Enclosed Space > 5000 ft ² (If checked include the NRCC-ENV-04-E with submittal)									

B. ENVELOPE DETAILS – Framed										
1	2	3	4	5	6	7	8	9	10	11
Tag/ID	Assembly Type	Frame Material	Frame Depth	Frame Spacing	Appendix JA4 Reference	Cavity R-value	Continuous Insulation R-value	Proposed U-Factor	Required U-Factor From Tables, B, C, D	Comments
1	Roof	Wood	Suspende		4.2.8-A8	30	0.0	0.102		Existing Metal R-30 Roo
2	Wall	Wood	2x4 @ 16		4.3.1-A3	13	18.0	0.036		R-13 Wall
3	Wall	Metal	2x4 @ 16		4.3.3-A5	15	18.0	0.044		R-19 Wall Metal Stud

C. ENVELOPE DETAILS – Non-framed										
1	2	3	4	5	6	7	8	9	10	11
Tag/ID	Assembly Type	Assembly Materials	Thickness (inches)	Interior or Core Insulation R-value	Continuous Insulation R-value	Appendix JA4 Reference	Proposed U-Factor	Required U-Factor from Tables, B, C, D	Comments	
1	Door	Wood, 1-3/4 in.		0	0.0	4.5.1-A4	0.500		Wood Door	

D. ENVELOPE DETAILS – Mass										
1	2	3	4	5	6	7	8	9	10	11
Tag/ID	Mass Type	Density (lb/ft ³)	Mass Thickness (inches)	Furring Strip Thickness (inches)	Interior Insulation R-value	Exterior Insulation R-value	Appendix JA4 Reference	Proposed Insulation U-factor	Required U-Factor from Tables, B, C, D	Comments

ENVELOPE COMPONENT APPROACH

CEC-NRCC-ENV-01-E (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE	NRCC-ENV-01-E
Envelope Component Approach	(Page 1 of 4)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015

A. GENERAL INFORMATION										
1	Project Location:	200 W. 9th Street		6	Compliance Method:	<input checked="" type="checkbox"/> Component <input type="checkbox"/> Unconditioned (file Affidavit)				
2	CA City and Zip Code:	Imperial, 92251		7	Building Front Orientation (deg or cardinal):	0 deg				
3	Climate Zone:	15		8	Permitted Scope of Work	<input type="checkbox"/> New Construction <input type="checkbox"/> Addition <input checked="" type="checkbox"/> Alteration				
4	Total Conditioned Floor Area:	11,295		9	Building Type(s)	<input checked="" type="checkbox"/> Nonresidential <input type="checkbox"/> High-Rise Residential <input type="checkbox"/> Hotel/Motel Guest Room				
5	<input type="checkbox"/> Schools (Public School) <input type="checkbox"/> Relocatable Public School Bldg. <input checked="" type="checkbox"/> Conditioned Spaces <input type="checkbox"/> Unconditioned Spaces <input type="checkbox"/> Skylight Area for Large Enclosed Space > 5000 ft ² (If checked include the NRCC-ENV-04-E with submittal)									

B. ENVELOPE DETAILS – Framed										
1	2	3	4	5	6	7	8	9	10	11
Tag/ID	Assembly Type	Frame Material	Frame Depth	Frame Spacing	Appendix JA4 Reference	Cavity R-value	Continuous Insulation R-value	Proposed U-Factor	Required U-Factor From Tables, B, C, D	Comments
4	Wall	Metal	2x4 @ 16		4.3.3-A5	15	18.0	0.044		R-19 Wall Metal Stud
5	Roof	Wood	2x4 @ 24		4.2.1-A20	30	0.0	0.031		R-30 Roof Attic
6	Wall	Wood	2x4 @ 16		4.3.1-A3	13	18.0	0.036		R-13 Wall

C. ENVELOPE DETAILS – Non-framed										
1	2	3	4	5	6	7	8	9	10	11
Tag/ID	Assembly Type	Assembly Materials	Thickness (inches)	Interior or Core Insulation R-value	Continuous Insulation R-value	Appendix JA4 Reference	Proposed U-Factor	Required U-Factor from Tables, B, C, D	Comments	

D. ENVELOPE DETAILS – Mass										
1	2	3	4	5	6	7	8	9	10	11
Tag/ID	Mass Type	Density (lb/ft ³)	Mass Thickness (inches)	Furring Strip Thickness (inches)	Interior Insulation R-value	Exterior Insulation R-value	Appendix JA4 Reference	Proposed Insulation U-factor	Required U-Factor from Tables, B, C, D	Comments

ENVELOPE COMPONENT APPROACH

CEC-NRCC-ENV-01-E (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE

NRCC-ENV-01-E

Envelope Component Approach

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Project Name: Public Library Expansion

Date Prepared: 5/22/2015

E. ROOFING PRODUCTS (COOL ROOF)										
1	2	3	4	5			6			11
Mass Roof 25 lb ft ² or greater	Roof Pitch	CRRC Product ID Number	Product Type	Proposed			Minimum Required			Comments
				Aged Solar Reflectance	Thermal Emittance	SRI ² (Optional)	Aged Solar Reflectance	Thermal Emittance	SRI (optional)	
<input type="checkbox"/>				<input type="checkbox"/> ¹						
<input type="checkbox"/>				<input type="checkbox"/> ¹						
<input type="checkbox"/>				<input type="checkbox"/> ¹						
<input type="checkbox"/> An aged solar reflectance less than 0.63 is allowed provided the maximum roof / ceiling U-factor in TABLE 140.3 is not exceeded										
<input type="checkbox"/> High-rise residential buildings and Hotels and Motels with low-sloped roofs in Climate Zones 1 through 8, 12 and 16 are exempted from aged Solar Reflectance and emittance requirements.										
<input type="checkbox"/> High-rise residential buildings and Hotels and Motels with steep-sloped roofs in Climate Zones 1 and 16 are exempt from aged Solar Reflectance and emittance requirements.										
<input type="checkbox"/> The roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels are exempt from aged Solar Reflectance and emittance requirements										
To apply Liquid Field Applied Coatings , the coating must be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the coatings manufacturer and meet minimum performance requirements listed in §110.8(i)4. Select the applicable coating:										
<input type="checkbox"/> Aluminum-Pigmented Asphalt Roof Coating <input type="checkbox"/> Cement-Based Roof Coating <input type="checkbox"/> Other _____										
NOTES: 1. Check the box if the aged Solar reflectance was not available in the Cool Roof Rating Council's Rated Product Directory, Then use the equation in Section 110.8(i)2 where the Initial Reflectance value from the same directory and use the equation $(0.2+B(p_{initial} - 0.2))$ to obtain a calculated aged value. Where p is the Initial Solar Reflectance and B is either set to 0.65 for Field-Applied Coatings or it is set to 0.70 for all other roofing products other than Field-Applied Coating. 2. Calculate the SRI Value by using the SRI-Worksheet at (TBD) and enter the resulting value in the SRI Column above and attach a copy for the SRI-Worksheet NRCC-ENV-03-E to the to this form.										

F. Air Barrier				
1	2	3	4	5
Tag/ID	Air Barrier Material Type	Air Barrier Assembly Type	Whole Building Air Leakage Testing	Comments

ENVELOPE COMPONENT APPROACH

CEC-NRCC-ENV-01-E (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE		NRCC-ENV-01-E
Envelope Component Approach		(Page 3 of 4)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015	

G. FENESTRATION PROPOSED AREAS AND EFFICIENCIES

1	2	3	4	5	6	7	8	9	10	11	12
Tag/ID	Fenestration Type	Area	Orientation N, S, W, E or Roof	# of Panels	Max U-Factor	Overhang	Max (R)SHGC	Min VT	Label	Conditions Status	Comments
1	Window No.3	9	N	1	0.36	No	0.25	0.42		Altered	
2	Window No.3	9	N	1	0.36	No	0.25	0.42		Altered	
3	Window No.3	9	N	1	0.36	No	0.25	0.42		Altered	
4	Window No.3	9	N	1	0.36	No	0.25	0.42		Altered	
5	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
6	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
7	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
8	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
9	Window No.2	8	E	1	0.36	No	0.25	0.42		Altered	

H. ENVELOPE MANDATORY MEASURESIndicate location on building plans of Mandatory Envelope Measures Note Block: ENV-MM**INSTRUCTIONS TO APPLICANT ENVELOPE COMPLIANCE & WORKSHEETS (check box if worksheet are included)***For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Compliance Manual.*

- NRCC-ENV-01-E Certificate of Compliance. Required on plans for all submittals.
- NRCC-ENV-04-E Use when minimum skylight requirements for large enclosed spaces are required in climate zones 2 through 15. Optional on plans.

ENVELOPE COMPONENT APPROACH

CEC-NRCC-ENV-01-E (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE		NRCC-ENV-01-E
Envelope Component Approach		(Page 3 of 4)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015	

G. FENESTRATION PROPOSED AREAS AND EFFICIENCIES

1	2	3	4	5	6	7	8	9	10	11	12
Tag/ID	Fenestration Type	Area	Orientation N, S, W, E or Roof	# of Panels	Max U-Factor	Overhang	Max (R)SHGC	Min VT	Label	Conditions Status	Comments
10	Window No.2	8	E	1	0.36	No	0.25	0.42		Altered	
11	Window No.2	8	E	1	0.36	No	0.25	0.42		Altered	
12	Storefront Door	21	S	1	0.45	No	0.23	0.17		Altered	
13	Window No.2	8	E	1	0.36	No	0.25	0.42		Altered	
14	Window No.2	8	E	1	0.36	No	0.25	0.42		Altered	
15	Window No.2	8	S	1	0.36	No	0.25	0.42		Altered	
16	Window No.2	8	S	1	0.36	No	0.25	0.42		Altered	
17	Window No.2	8	N	1	0.36	No	0.25	0.42		Altered	
18	Storefront Door	21	E	1	0.45	No	0.23	0.17		New	

H. ENVELOPE MANDATORY MEASURES

Indicate location on building plans of Mandatory Envelope Measures Note Block: ENV-MM

INSTRUCTIONS TO APPLICANT ENVELOPE COMPLIANCE & WORKSHEETS (check box if worksheet are included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Compliance Manual.

- NRCC-ENV-01-E Certificate of Compliance. Required on plans for all submittals.
- NRCC-ENV-04-E Use when minimum skylight requirements for large enclosed spaces are required in climate zones 2 through 15. Optional on plans.

ENVELOPE COMPONENT APPROACH

CEC-NRCC-ENV-01-E (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE		NRCC-ENV-01-E
Envelope Component Approach		(Page 3 of 4)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015	

G. FENESTRATION PROPOSED AREAS AND EFFICIENCIES

1	2	3	4	5	6	7	8	9	10	11	12
Tag/ID	Fenestration Type	Area	Orientation N, S, W, E or Roof	# of Panels	Max U-Factor	Overhang	Max (R)SHGC	Min VT	Label	Conditions Status	Comments
19	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
20	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
21	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
22	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
23	Window No.1	8	N	1	0.36	No	0.25	0.42		Altered	
24	Window No.6	78	N	1	0.36	No	0.25	0.42		Altered	
25	Window No.6	78	N	1	0.36	No	0.25	0.42		Altered	
26	Storefront Door	42	W	1	0.45	No	0.23	0.17		New	

H. ENVELOPE MANDATORY MEASURESIndicate location on building plans of Mandatory Envelope Measures Note Block: ENV-MM**INSTRUCTIONS TO APPLICANT ENVELOPE COMPLIANCE & WORKSHEETS (check box if worksheet are included)***For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Compliance Manual.*

- NRCC-ENV-01-E Certificate of Compliance. Required on plans for all submittals.
- NRCC-ENV-04-E Use when minimum skylight requirements for large enclosed spaces are required in climate zones 2 through 15. Optional on plans.

INDOOR LIGHTING

CEC-NRCC-LTI-01-E (Revised 06/14)



CERTIFICATE OF COMPLIANCE – USER INSTRUCTIONS

NRCC-LTI-01-E

Indoor Lighting

(Page 1 of 5)

Project Name: Public Library Expansion

Date Prepared: 5/22/2015

Climate Zone: 15	Conditioned Floor Area : 11,295
	Unconditioned Floor Area : 0

General Information

Building Type:	<input checked="" type="checkbox"/> Nonresidential	<input type="checkbox"/> High-Rise Residential	<input type="checkbox"/> Hotel/Motel
<input type="checkbox"/> Schools	<input type="checkbox"/> Relocatable Public Schools	<input checked="" type="checkbox"/> Conditioned Spaces	<input type="checkbox"/> Unconditioned Spaces
Phase of Construction:	<input type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input checked="" type="checkbox"/> Alteration
Method of Compliance:	<input checked="" type="checkbox"/> Complete Building	<input type="checkbox"/> Area Category	<input type="checkbox"/> Tailored

LIGHTING COMPLIANCE DOCUMENTS (select yes for each document included)			
For detailed instructions on the use of this and all Energy Efficiency Standards compliance documents, refer to the Nonresidential Manual published by the California Energy Commission.			
YES	NO	FORM	TITLE
YES		NRCC-LIT-01-E	Certificate of Compliance. All Pages required on plans for all submittals.
YES		NRCC-LIT-02-E	Lighting Controls, Certificate of Compliance, and PAF Calculation. All Pages required on plans for all submittals.
	NO	NRCC-LIT-03-E	Indoor Lighting Power Allowance
	NO	NRCC-LIT-04-E	Tailored Method Worksheets
	NO	NRCC-LIT-05-E	Line Voltage Track Lighting Worksheets

Summary of Allowed Lighting Power						
Conditioned and Unconditioned space Lighting must not be combined for compliance						
Indoor Lighting Power for Conditioned Spaces				Indoor Lighting Power for Unconditioned Spaces		
			Watts		Watts	
1.	Installed Lighting NRCC-LTI-01-E, page 4	+	11,525	Installed Lighting NRCC-LTI-01-E, page 4	+	0
2.	PORTABLE ONLY FOR OFFICES NRCC-LTI-01-E, page 3	+				
3.	Minus Lighting Control Credits NRCC-LTI-02-E, page 2	-	700	Minus Lighting Control Credits NRCC-LTI-02-E, page 2	-	0
4.	Adjusted Installed Lighting Power (row 1 plus row 2 minus row 3)	=	10,825	Adjusted Installed Lighting Power (row 1 minus row 3)	=	0

INDOOR LIGHTING

CEC-NRCC-LTI-01-E (Revised 06/14)

**CERTIFICATE OF COMPLIANCE – USER INSTRUCTIONS**

NRCC-LTI-01-E

Indoor Lighting

(Page 2 of 5)

Project Name: Public Library Expansion

Date Prepared: 5/22/2015

5.	Complies ONLY if Installed \leq Allowed		Complies ONLY if Installed \leq Allowed	
6.	Allowed Lighting Power Conditioned NRCC-LTI-03-E, page 1	10,825	Allowed Lighting Power Unconditioned NRCC-LTI-03-E, page 1	0

Declaration of Required Installation Certificates – Declare by selecting yes for all Installation Certificates that will be submitted. (Retain copies and verify forms are completed and signed.)

YES	NO	Form/Title	
		NRCI-LTI-01-E - Must be submitted for all buildings	<input type="checkbox"/> Field Inspector
		NRCI-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	<input type="checkbox"/> Field Inspector
		NRCI-LTI-03-E - Must be submitted for a line-voltage track lighting integral current limiter, or for a supplementary overcurrent protection panel used to energize only line-voltage track lighting, to be recognized for compliance.	<input type="checkbox"/> Field Inspector
		NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room, or a theater to be recognized for compliance.	<input type="checkbox"/> Field Inspector
		NRCI-LTI-05-E - Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	<input type="checkbox"/> Field Inspector
		NRCI-LTI-06-E - Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	<input type="checkbox"/> Field Inspector

Declaration of Required Certificates of Acceptance – Declare by checking all of the Certificates of Acceptance that will be submitted. (Retain copies and verify forms are completed and signed.)

YES	NO	Form/Title	
		NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	<input type="checkbox"/> Field Inspector
		NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	<input type="checkbox"/> Field Inspector
		NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	<input type="checkbox"/> Field Inspector

CERTIFICATE OF COMPLIANCE – USER INSTRUCTIONS		NRCC-LTI-01-E
Indoor Lighting		(Page 3 of 5)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015	

A separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces. Installed Lighting Power listed on this Lighting Schedule is only for:

CONDITIONED SPACE **UNCONDITIONED SPACE**

A. INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST

- The actual indoor lighting power listed on this page and on the next page includes all installed permanent and planned portable lighting systems.
- When Complete Building Method is used for compliance, list each different type of luminaire on separate lines.
- When Area Category Method or Tailored Method is used for compliance, list each different type of luminaire by each different function area on separate lines
- Also include track lighting in schedule, and submit the track lighting compliance form (NRCC-LTI-05-E) when line-voltage track lighting is installed.

B. Installed Portable Luminaires in Offices – Exception to Section 140.6(a)

- This section shall be filled out ONLY for portable luminaires in offices (As defined in §100.1). All other planned portable luminaires shall be documented on next page of this compliance form.
- This section is used to determine if greater than 0.3 watts of portable lighting is planned for any office
- Fill out a separate line for each different office. Small offices that are typical (having the same general and portable lighting) may be grouped together. This allowance shall not be traded between offices having different lighting systems.

Office Portable Luminaire Schedule	Office Installed Portable Luminaire Watts Per Square Foot					Accountable Watts	Office Location	Field Inspector		
A	B	C	D	E	F	G	H	I	J	
Complete Luminaire Description (i.e., LED, under cabinet, furniture mounted direct/indirect)	Watts per Luminaire	Number of Luminaires	Installed portable luminaire watts in this office (B x C)	Square feet of this office	Watts per square foot (D / E)	If $F \leq 0.3$, enter zero; if $F > 0.3$, (F-0.3)	E x G	Identify Office area in which these portable luminaires are installed	Pass	Fail
									<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>	<input type="checkbox"/>
Total installed portable luminaire watts that are greater than 0.3 watts per square foot per office:								Enter sum total of all pages into NRCC-LTI-01-E; Page 1		

INDOOR LIGHTING

CEC-NRCC-LTI-01-E (Revised 06/14)



CERTIFICATE OF COMPLIANCE – USER INSTRUCTIONS

NRCC-LTI-01-E

Indoor Lighting

(Page 4 of 5)

Project Name: Public Library Expansion

Date Prepared: 5/22/2015

A separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces. Installed Lighting Power listed on this Lighting Schedule is only for:

CONDITIONED SPACE **UNCONDITIONED SPACE**

C. INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST									
Luminaire Schedule			Installed Watts				Location	Field Inspector ¹	
A	B	C	D		E	F	G	H	
Name or Item Tag	Complete Luminaire Description (i.e., 3 lamp fluorescent troffer, F32T8, one dimmable electronic ballast)	Watts per Luminaire	How wattage was determined		Number Luminaires	Total Installed Watts in this area (C x E)	Primary Function area in which these luminaires are installed	Pass	Fail
			CEC Default from NA8	According to §130.0(c)					
	2x4 Led Light Fixture (4) Lamps	40.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4	160	Computer Room	<input type="checkbox"/>	<input type="checkbox"/>
	2x4 Led Light Fixture (4) Lamps	40.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	26	1,040	Convention/Conference/Meeting	<input type="checkbox"/>	<input type="checkbox"/>
	2x2 Led Light Fixture (4) Lamps	32.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	21	672	Convention/Conference/Meeting	<input type="checkbox"/>	<input type="checkbox"/>
	Standard Allowance: 7271 sqft at 1.200 watt/s		<input type="checkbox"/>	<input type="checkbox"/>		8,725	Library, Reading Area	<input type="checkbox"/>	<input type="checkbox"/>
	2x4 Led Light Fixture (4) Lamps	40.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16	640	Library, Reading Area	<input type="checkbox"/>	<input type="checkbox"/>
	2x2 Led Light Fixture (4) Lamps	32.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	9	288	Office <= 250 sqft	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
INSTALLED WATTS PAGE TOTAL:						11,525	Enter sum total of all pages into NRCC-LTI-01-E; Page 2		

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 1 of 3)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015

MECHANICAL COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)

*For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2013 Nonresidential Manual
 Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.*

YES	NO	Form/Worksheet #	Title
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NRCC-MCH-01-E (Part 1 of 3)	Certificate of Compliance, Declaration. Required on plans for all submittals.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NRCC-MCH-01-E (Part 2 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-02A to 11A). Required on plans for all submittals.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NRCC-MCH-01-E (Part 3 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-12A to 18A). Required on plans where applicable.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NRCC-MCH-02-E (Part 1 of 2)	Mechanical Dry Equipment Summary is required for all submittals with Central Air Systems. It is optional on plans.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NRCC-MCH-02-E (Part 2 of 2)	Mechanical Wet Equipment Summary is required for all submittals with chilled water, hot water or condenser water systems. It is optional on plans.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NRCC-MCH-03-E	Mechanical Ventilation and Reheat is required for all submittals with multiple zone heating and cooling systems. It is optional on plans.

MECHANICAL HVAC ACCEPTANCE FORMS (check box for required forms)

Designer:
This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
 The contractor who installed the equipment is responsible to either conduct the acceptance test them self or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
*Plancheck – The NRCC-MCH-01-E form is not considered a completed form and is not to be accepted by the building department unless the correct boxes are checked.
 Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.*

Test Description		MCH-02A	MCH-03A	MCH-04A	MCH-05A	MCH-06A	MCH-07A	MCH-08A	MCH-09A	MCH-10A	MCH-11A
Equipment Requiring Testing or Verification	# of units	Outdoor Air	Single Zone Unitary	Air Distribution Ducts	Economizer Controls	Demand Control Ventilation (DCV)	Supply Fan VAV	Valve Leakage Test	Supply Water Temp. Reset	Hydronic System Variable Flow Control	Automatic Demand Shed Control
Day & Night RH	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 2 of 3)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015

MECHANICAL HVAC ACCEPTANCE FORMS (check box for required forms)

Designer:
This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
 The contractor who installed the equipment is responsible to either conduct the acceptance test them self or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible. The following tests require a

Enforcement Agency:
*Plancheck – The NRCC-MCH-01-E form is not considered a completed form and is not to be accepted by the building department unless the correct boxes are checked.
 Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.*

Test Description		MCH-12A	MCH-13A	MCH-14A	MCH-15A	MCH-16A	MCH-17A	MCH-18A
Equipment Requiring Testing or Verification	# of units	Fault Detection & Diagnostics for DX Units	Automatic Fault Detection & Diagnostics for Air & Zone	Distributed Energy Storage DX AC Systems	Thermal Energy Storage (TES) Systems	Supply Air Temperature Reset Controls	Condenser Water Reset Controls	ECMS
Day & Night RH	2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

INDOOR LIGHTING – LIGHTING CONTROLS

CEC-NRCC-LTI-02-E (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE		NRCC-LTI-02-E
Indoor Lighting - Lighting Controls		(Page 1 of 3)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015	

The NRCC-LTI-02-E shall be used to document all mandatory and prescriptive lighting controls that are applicable to the project.

Mandatory Lighting Control Declaration Statements (Indicate if the measure applies by checking yes or no below.)		
YES	NO	Control Requirements
		Lighting shall be controlled by self-contained lighting control devices which are certified to the Energy Commission according to the Title 20 Appliance Efficiency Regulations in accordance with Section 110.9.
		Lighting shall be controlled by a lighting control a system or energy management control system in accordance with §110.9. An Installation Certificate shall be submitted in accordance with Section 130.4(b).
		One or more Track Lighting Integral Current Limiters shall be installed which have been certified to the Energy Commission in accordance with §110.9 and §130.0. Additionally, an Installation Certificate shall be submitted in accordance with Section 130.4(b).
		A Track Lighting Supplementary Overcurrent Protection Panel shall be installed in accordance with Section 110.9 and Section 130.0. Additionally, an Installation Certificate shall be installed in accordance with Section 130.4(b).
		All lighting controls and equipment shall comply with the applicable requirements in §110.9 and shall be installed in accordance with the manufacturer's instructions in accordance with Section 130.1.
		All luminaires shall be functionally controlled with manually switched ON and OFF lighting controls in accordance with Section 130.1(a).
		General lighting shall be separately controlled from all other lighting systems in an area. Floor and wall display, window display, case display, ornamental, and special effects lighting shall each be separately controlled on circuits that are 20 amps or less. When track lighting is used, general, display, ornamental, and special effects lighting shall each be separately controlled; in accordance with Section 130.1(a)4.
		The general lighting of any enclosed area 100 square feet or larger, with a connected lighting load that exceeds 0.5 watts per square foot shall meet the multi-level lighting control requirements in accordance with Section 130.1(b).
		All installed indoor lighting shall be equipped with controls that meet the applicable Shut-OFF control requirements in Section 130.1(c).
		Lighting in all Daylit Zones shall be controlled in accordance with the requirements in Section 130.1(d) and daylit zones are shown on the plans.
		Lighting power in buildings larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Responsive Signal in accordance with Section 130.1(e).
		Before an occupancy permit is granted for a newly constructed building or area, or a new lighting system serving a building, area, or site is operated for normal use, indoor lighting controls serving the building, area, or site shall be certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4.(a). The controls required to meet the Acceptance Requirements include automatic daylight controls, automatic shut-OFF controls, and demand responsive controls.

INDOOR LIGHTING – LIGHTING CONTROLS

CEC-NRCC-LTI-02-E (Revised 06/14)



CERTIFICATE OF COMPLIANCE		NRCC-LTI-02-E
Indoor Lighting - Lighting Controls		(Page 2 of 3)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015	

A separate document must be filled out for Conditioned and Unconditioned Spaces. This page is used only for the following:

CONDITIONED SPACES UNCONDITIONED SPACES

MANDATORY AND PRESCRIPTIVE INDOOR LIGHTING CONTROL SCHEDULE, PAF CALCULATION, and FIELD INSPECTION CHECKLIST															
Lighting Control Schedule			Standards Complying With ¹ (✓ all that apply, or enter 'E' if Exempted)							PAF Credit Calculation ²			✓ if Acceptance Test Required	Field Inspector	
										Watts of Controlled Lighting	PAF	Control Credit (K x L)			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Location in Building	Type/ Description of Lighting Control (i.e.: occupancy sensor, automatic time switch, dimmer, automatic daylight, etc...)	# of Units	§130.1(a)	§130.0(b)	§130.1(c)	§130.1(d)	§130.1(e)	§140.6(a)2	§140.6(d)					Pass	Fail
Carnegie Area	Dimming w/Occ Sensor							✓		280	0.25	70	✓	<input type="checkbox"/>	<input type="checkbox"/>
Office	Dimming w/Occ Sensor							✓		288	0.25	72	✓	<input type="checkbox"/>	<input type="checkbox"/>
Computer Room	Dimming w/Occ Sensor							✓		160	0.25	40	✓	<input type="checkbox"/>	<input type="checkbox"/>
Reading Room	Dimming w/Occ Sensor							✓		360	0.25	90	✓	<input type="checkbox"/>	<input type="checkbox"/>
Conference/Meeting Room	Dimming w/Occ Sensor							✓		1,040	0.25	260	✓	<input type="checkbox"/>	<input type="checkbox"/>
Conference/Meeting Room	Dimming w/Occ Sensor							✓		672	0.25	168	✓	<input type="checkbox"/>	<input type="checkbox"/>
Control Credit PAGE TOTAL (Sum of Column M):												700			
IF MULTIPLE PAGES ARE USED, ENTER SUM TOTAL OF Control Credit for all pages HERE (Sum of all Column M):												700			
												Enter Control Credit total into NRCC-LTI-01-E; Page 1.			

1. §130.1(a) = Manual area controls; §130.0(b) = Multi Level; §130.1(c) = Auto Shut-Off; §130.1(d) = Mandatory Daylight; §130.1(e) = Demand Responsive; §140.6(d) = Additional lighting controls installed to earn a PAF; §140.6(d) = Prescriptive Secondary Sidelit Daylight Controls.
 2. Check Table 140.6-A for correct Factor. PAFs shall not be traded between conditioned and unconditioned spaces. As a condition to earn a PAF, an Installation Certificate is also required to be filled out, signed, and submitted.



CERTIFICATE OF COMPLIANCE		NRCC-MCH-02-E
HVAC Dry System Requirements		(Page 1 of 3)
Project Name: Public Library Expansion	Date Prepared: 5/22/2015	

Equipment Tags and System Description ¹		Existing System	New System	
MANDATORY MEASURES	T-24 Sections	Reference to the Requirements in the Contract Documents²		
Heating Equipment Efficiency ³	110.1 or 110.2(a)			
Cooling Equipment Efficiency ³	110.1 or 110.2(a)			
HVAC or Heat Pump Thermostats	110.2(b), 110.2(c)			
Furnace Standby Loss Control	110.2(d)			
Low leakage AHUs	110.2(f)			
Ventilation ⁴	120.1(b)			
Demand Control Ventilation ⁵	120.1(c)4			
Occupant Sensor Ventilation Control ⁶	120.1(c)5, 120.2(e)3			
Shutoff and Reset Controls ⁷	120.2(e)			
Outdoor Air and Exhaust Damper Control	120.2(f)			
Isolation Zones	120.2(g)			
Automatic Demand Shed Controls	120.2(h)			
Economizer FDD	120.2(i)			
Duct Insulation	120.4			
PRESCRIPTIVE MEASURES				
Equipment is sized in conformance with 140.4 (a & b)	140.4(a & b)	Y	Y	
Supply Fan Pressure Control	140.4(c)			
Simultaneous Heat/Cool ⁸	140.4(d)			
Economizer	140.4(e)			
Heat and Cool Air Supply Reset	140.4(f)			
Electric Resistance Heating ⁹	140.4(g)			
Duct Leakage Sealing and Testing. ¹⁰	140.4(l)			
Notes:				
<ol style="list-style-type: none"> Provide equipment tags (e.g. AHU 1 to 10) and system description (e.g. Single Duct VAV reheat) as appropriate. Multiple units with common requirements can be grouped together. Provide references to plans (i.e. Drawing Sheet Numbers) and/or specifications (including Section name/number and relevant paragraphs) where each requirement is specified. Enter "N/A" if the requirement is not applicable to this system. The referenced plans and specifications must include all of the following information: equipment tag, equipment nominal capacity, Title 24 minimum efficiency requirements, and actual rated equipment efficiencies. Where multiple efficiency requirements are applicable (e.g. full- and part-load) include all. Where appliance standards apply (110.1), identify where equipment is required to be listed per Title 20 1601 et seq. Identify where the ventilation requirements are documented for each central HVAC system. Include references to both central unit schedules and sequences of operation. If one or more space is naturally ventilated identify where this is documented in the plans and specifications. Multiple zone central air systems must also provide a MCH-03-E form. If one or more space has demand controlled ventilation identify where it is specified including the sensor specifications and the sequence of operation. If one or more space has occupant sensor ventilation control identify where it is specified including the sensor specifications and the sequence of operation If the system is DDC identify the sequences for the system start/stop, optimal start, setback (if required) and setup (if required). For all systems identify the specification for the thermostats and time clocks (if applicable). Identify where the heating, cooling and deadband airflows are scheduled for this system. Include a reference to the specification of the zone controls. Provide a MCH-03-E form. Enter N/A if there is no electric heating. If the system has electric heating indicate which exception to 140.4(g) applies. If duct leakage sealing and testing is required, a MCH-04-A form must be submitted. 				

MECHANICAL VENTILATION AND REHEAT

CEC-NRCC-MCH-03-E (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE															NRCC-MCH-03-E				
Mechanical Ventilation & Reheat															(Page 1 of 2)				
Project Name: Public Library Expansion										Date Prepared: 5/22/2015									

ACTUAL DESIGN INFO (FROM EQUIPMENT SCHEDULES, ETC)				AREA BASIS			OCCUPANCY BASIS			MINIMUM		VAV Reheated Primary Air CFM		VAV Deadband Primary Air CFM					
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
ZONE / SYSTEM / VAV BOX TAG	DESIGN PRIMARY COOLING AIRFLOW (CFM)	DESIGN PRIMARY DEAD-BAND AIRFLOW (CFM)	DESIGN PRIMARY HEATING AIRFLOW (CFM)	CNTRL TYPE DDC (Y/N)	TRANSFER AIRFLOW (CFM)	CONDITIONED AREA (ft ²)	MIN CFM PER AREA	MIN CFM BY AREA	NUM. OF PEOPLE	CFM PER PERSON	MIN CFM BY OCCU-PANT	REQ'D VENT AIRFLOW (MAX OF I OR L) (CFM)	COM-PLIES	PRIMARY COOLING AIR (50% DDC, 30% NON-DDC) (CFM)	MAXIMUM REHEAT CFM (MAX OF M OR O)	COM-PLIES?	(20% DDC, N/A NON-DDC) (CFM)	(larger of M or R, N/A for NON-DDC) (CFM)	COM-PLIES
Existin						7,271	0.15	1,091	145.4	7.5	1,091	1,091	Y						
Carney						158	0.15	24	3.2	7.5	24	24	Y						
Direct						144	0.15	22	1.4	15.0	22	22	Y						
Compu						231	0.15	35	0.7	50.0	35	35	Y						
Kids Z						582	0.15	87	11.6	7.5	87	87	Y						
											Total	1,258							
Confer						2,909	0.50	1,454	194.9	7.5	1,454	1,454	Y						
											Total	1,454							

Yellow shaded cells require user input. Remaining cells are protected and automatic

- B. The largest amount of primary air supplied by the terminal unit when it's operating in the cooling mode.
- C. The smallest amount of primary air supplied by the terminal unit in the deadband mode.
- D. The largest amount of primary air supplied by the terminal unit when it's operating in the heating mode.
- E. A terminal unit can be controlled with DDC controls, or non-DDC controls. Each control category has different reheat limitations in code.
- F. Transfer Air must be provided where Required Ventilation Airflow (Column M) is greater than the Design Primary Deadband Airflow (Column C).
- H. Minimum ventilation rate per Section §120.1. Table 120.1-A.
- J. Based on number of fixed seats where applicable or the greater of the expected number of occupants and 50% of the CBC occupant load for egress purposes for spaces without fixed seating.
- M. Required Ventilation Airflow (Req'd Ventilation Airflow) is the larger of the ventilation rates calculated on an AREA BASIS or OCCUPANCY BASIS (Column I or L)
- N. This column identifies whether or not the Design Primary Deadband Airflow complies or not. It compares the value in column M to the value in column C and column F.
- O. Design Primary Cooling Airflow * 0.50 for DDC, Design Primary Cooling Airflow * 0.30 for Non-DDC. If the Design Primary Cooling Airflow is less than 300 cfm, then this is not applicable.
- P. Maximum of Column M and Column O. If the Design Primary Cooling Airflow is 300 cfm or less, then this is not applicable.
- Q. This column identifies whether or not the Design Primary Reheat Airflow at the zone level, complies or not. It compares the value in column P to the value in column D.
- R. Design Primary Cooling Airflow * 0.20 for DDC. Not applicable for Non-DDC zones or zones where Design Primary Cooling Airflow is is 300 cfm or less.
- S. Maximum of Column M and Column R. Not applicable if the Design Primary Cooling Airflow is 300 cfm or less.
- T. This column identifies whether or not the Design Primary Deadband Airflow at the zone level, complies or not. It compares the value in column S to the value in column C.

MECHANICAL EQUIPMENT DETAILS

(Part 1 of 2) NRCC-MCH-08-E

Project Name
Public Library Expansion

Date
5/22/2015

CHILLER AND TOWER SUMMARY

Equipment Name	Type	Qty.	Efficiency	Tons	PUMPS			
					Qty.	GPM	BHP	Pump Control

DHW / BOILER SUMMARY

System Name	Type	Distribution	Qty.	Rated Input	Vol. (Gals.)	Energy Factor or RE	Standby Loss or Pilot	Tank Ext. R-Value	Status

MULTI-FAMILY CENTRAL WATER HEATING DETAILS

Hot Water Pump				Hot Water Piping Length (ft)			
Control	Qty.	HP	Type	In Plenum	Outside	Buried	Add ½" Insulation
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

CENTRAL SYSTEM RATINGS

System Name	Type	Qty.	HEATING			COOLING		Status
			Output	Aux. kW	Efficiency	Output	Efficiency	
Rheem RJMA-A060CL	Packaged DX	7	60,000	0.0	7.70 HSPF	59,000	13.0 SEER / 11.5 EER	Existing
Day & Night RHH060*0XA0AAA	Packaged DX	2	60,000	0.0	8.00 HSPF	59,000	15.0 SEER / 11.5 EER	New

CENTRAL SYSTEM FAN SUMMARY

System Name	Fan Type	Economizer Type	SUPPLY FAN		RETURN FAN	
			CFM	BHP	CFM	BHP
Rheem RJMA-A060CL	Constant Volume	No Economizer	2,000	0.75	none	
Day & Night RHH060*0XA0AAA	Constant Volume	No Economizer	2,000	0.75	none	



CERTIFICATE OF COMPLIANCE		NRCC-PLB-01-E
Water Heating System General Information		(Page 1 of 2)
Project Name: <i>Public Library Expansion</i>	Date Prepared: <i>5/22/2015</i>	

A. GENERAL INFORMATION/SYSTEM INFORMATION		
1.	Water Heater System Name:	
2.	Water Heater System Configuration:	<i>Non-Central</i>
3.	Water Heater System Type:	
4.	Building Type:	
5.	Total Number of Water Heaters in Systems:	<i>1</i>
6.	Central DHW Distribution Type:	<i>n/a</i>
7.	Dwelling Unit DHW Distribution Type:	<i>Standard</i>

B. WATER HEATER INFORMATION		
<i>Each water heater type requires a separate form.</i>		
1.	Water Heater Type:	
2.	Fuel Type	
3.	Number of Identical Water Heaters:	
4.	Efficiency:	
5.	Required Minimum Efficiency:	
6.	Standby loss percent or Standby loss total:	
7.	Rated Input	
8.	Pilot Energy:	
9.	Water Heater Tank Storage Volume:	
10.	Exterior Insulation On Water Heater:	
11.	Volume of Supplemental Storage:	
12.	Internal Insulation on Supplemental Storage:	
13.	Exterior Insulation on Supplemental Storage:	

PLUMBING COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)			
<i>For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2013 Nonresidential Manual</i>			
<i>Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.</i>			
YES	NO	Form/Worksheet #	Title
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NRCC-PLB-01-E	Certificate of Compliance, Declaration. Required on plans for all submittals.
<input type="checkbox"/>	<input type="checkbox"/>	NRCI-PLB-01-E	Certificate of Installation. Required on plans for all submittals.
<input type="checkbox"/>	<input type="checkbox"/>	NRCI-PLB-02-E	Certificate of Installation, required on central systems in high-rise residential, hotel/motel application.
<input type="checkbox"/>	<input type="checkbox"/>	NRCI-PLB-03-E	Certificate of Installation, required on single dwelling unit systems in high-rise residential, hotel/motel application.
<input type="checkbox"/>	<input type="checkbox"/>	NRCI-PLB-21-H	Certificate of Installation, required on HERS verified central systems in high-rise residential, hotel/motel application.
<input type="checkbox"/>	<input type="checkbox"/>	NRCI-PLB-22-H	Certificate of Installation, required on HERS verified single dwelling unit systems in high-rise residential, hotel/motel application.
<input type="checkbox"/>	<input type="checkbox"/>	NRCI-STH-01-E	Certificate of Installation, required on any solar water heating

ENVELOPE MANDATORY MEASURES: NONRESIDENTIAL**ENV-MM**

Project Name

Public Library Expansion

Date

*5/22/2015***DESCRIPTION****Building Envelope Measures:**

- §110.8(a): Installed insulating material shall have been certified by the manufacturer to comply with the California Quality Standards for insulating material, Title 20 Chapter 4, Article 3.
- §110.8(c): All Insulating Materials shall be installed in compliance with the flame spread rating and smoke density requirements of Sections 2602 and 707 of Title 24, Part 2.
- §110.8(f): The opaque portions of framed demising walls in nonresidential buildings shall have insulation with an installed R-value of no less than R-13 between framing members.
- §110.7(a): All Exterior Joints and openings in the building that are observable sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed.
- §110.6(a): Manufactured fenestration products and exterior doors shall have air infiltration rates not exceeding 0.3 cfm/ft.² of window area, 0.3 cfm/ft.² of door area for residential doors, 0.3 cfm/ft.² of door area for nonresidential single doors (swinging and sliding), and 1.0 cfm/ft.² for nonresidential double doors (swinging).
- §110.6(a): Fenestration U-factor shall be rated in accordance with NFRC 100, or the applicable default U-factor.
- §110.6(a) : Fenestration SHGC shall be rated in accordance with NFRC 200, or NFRC 100 for site-built fenestration, or the applicable default SHGC.
- §110.6(b): Site Constructed Doors, Windows and Skylights shall be caulked between the unit and the building, and shall be weatherstripped (except for unframed glass doors and fire doors).

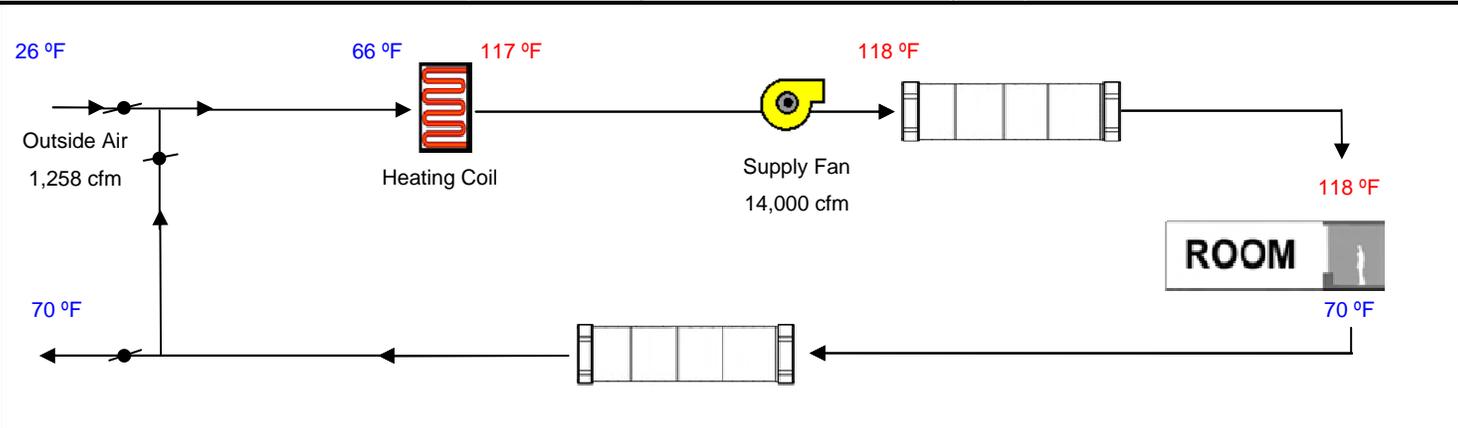
HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name Public Library Expansion	Date 5/22/2015
System Name Existing System	Floor Area 8,386

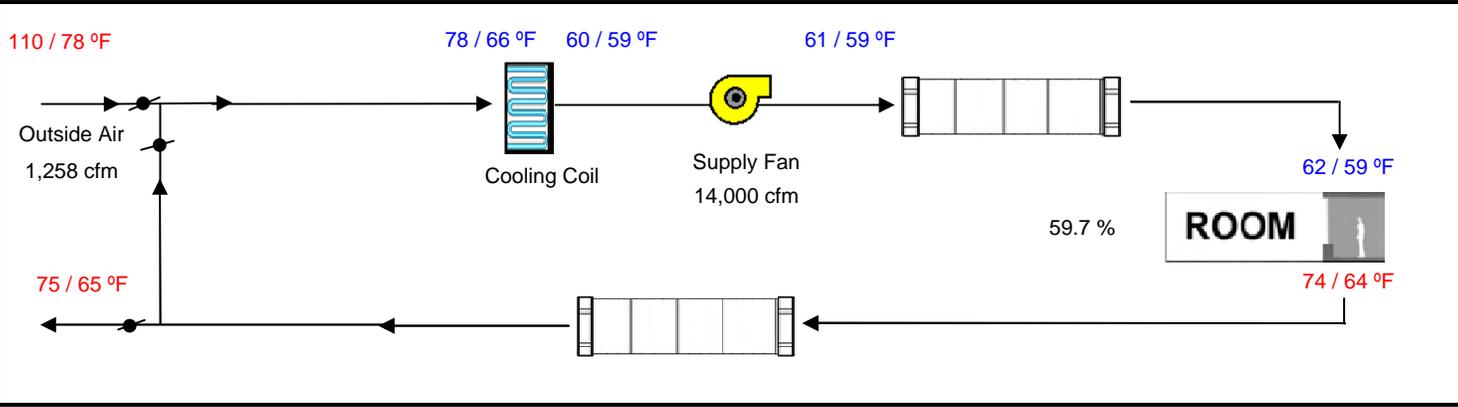
ENGINEERING CHECKS		SYSTEM LOAD					
Number of Systems	7	Total Room Loads Return Vented Lighting Return Air Ducts Return Fan Ventilation Supply Fan Supply Air Ducts TOTAL SYSTEM LOAD	COIL COOLING PEAK			COIL HTG. PEAK	
Heating System			CFM	Sensible	Latent	CFM	Sensible
Output per System	60,000		14,079	187,476	32,662	1,486	76,812
Total Output (Btuh)	420,000			0			
Output (Btuh/sqft)	50.1			9,374			3,841
Cooling System				0			0
Output per System	59,000		1,258	48,092	17,244	1,258	59,496
Total Output (Btuh)	413,000			16,117			-16,117
Total Output (Tons)	34.4			9,374			3,841
Total Output (Btuh/sqft)	49.2						
Total Output (sqft/Ton)	243.7						

Air System		HVAC EQUIPMENT SELECTION				
CFM per System	2,000	Rheem RJMA-A060CL	266,133	108,802		262,321
Airflow (cfm)	14,000					
Airflow (cfm/sqft)	1.67					
Airflow (cfm/Ton)	406.8					
Outside Air (%)	9.0 %	Total Adjusted System Output (Adjusted for Peak Design conditions)		266,133	108,802	262,321
Outside Air (cfm/sqft)	0.15					
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK			Aug 2 PM	Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)



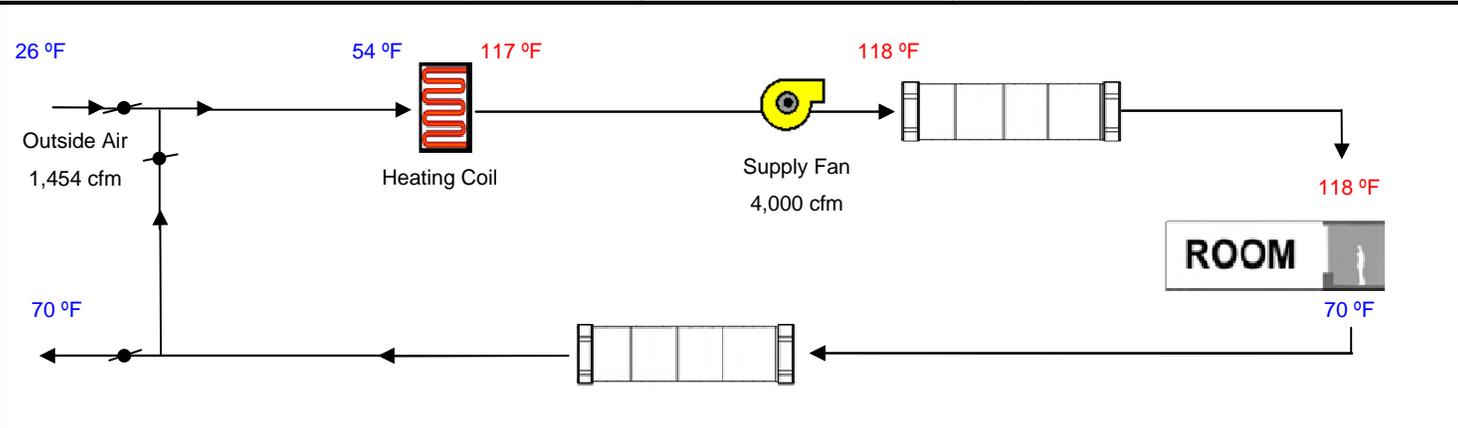
HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name Public Library Expansion	Date 5/22/2015
System Name New System	Floor Area 2,909

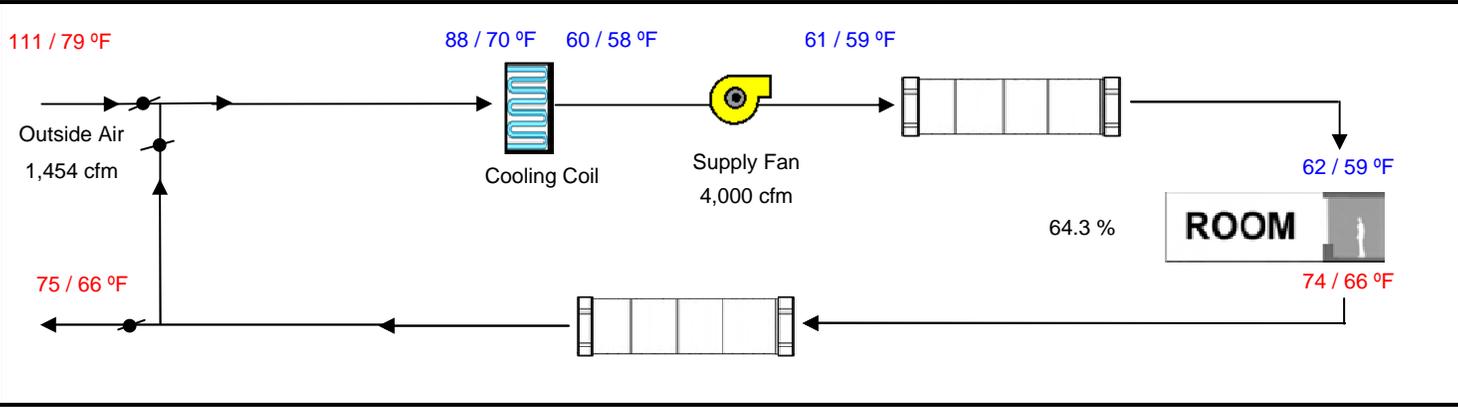
ENGINEERING CHECKS		SYSTEM LOAD					
Number of Systems	2	Total Room Loads Return Vented Lighting Return Air Ducts Return Fan Ventilation Supply Fan Supply Air Ducts TOTAL SYSTEM LOAD	COIL COOLING PEAK			COIL HTG. PEAK	
Heating System			CFM	Sensible	Latent	CFM	Sensible
Output per System	60,000		5,919	77,077	30,205	370	19,140
Total Output (Btuh)	120,000						
Output (Btuh/sqft)	41.3						
Cooling System							
Output per System	59,000						
Total Output (Btuh)	118,000						
Total Output (Tons)	9.8						
Total Output (Btuh/sqft)	40.6						
Total Output (sqft/Ton)	295.8						

Air System		HVAC EQUIPMENT SELECTION				
CFM per System	2,000	Day & Night RHH060*0XA0AAA				
Airflow (cfm)	4,000		98,224	16,869		74,949
Airflow (cfm/sqft)	1.38					
Airflow (cfm/Ton)	406.8					
Outside Air (%)	36.4 %	Total Adjusted System Output (Adjusted for Peak Design conditions)				
Outside Air (cfm/sqft)	0.50		98,224	16,869		74,949
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK			Jul 3 PM	Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)



Project Name: **Public Library Expansion** Date: **5/22/2015**

Step 1 ANNUAL TDV ENERGY USE (kBtu/sqft-yr)			
ENERGY COMPONENT	Standard	Proposed	Margin
Space Heating	11.25	5.89	5.36
Space Cooling	308.42	239.35	69.08
Indoor Fans	33.84	109.87	-76.03
Heat Rejection	0.00	0.00	0.00
Pumps	0.00	0.00	0.00
Domestic Hot Water	9.47	9.47	0.00
Lighting	78.14	55.98	22.16
Receptacle	100.88	100.88	0.00
Process	0.00	0.00	0.00
Process Lighting	0.00	0.00	0.00
TOTALS:	542.01	521.44	20.57

Step 2 PERCENT BELOW TITLE 24			
Adjusted TDV Energy Use (Excludes Process Energy)			
Standard Design	Proposed Design	Margin	
542.01	521.44	=	20.57
Margin	Standard Design	% Below Title 24*	
20.57	542.01	=	3.8 %
Incentive Eligibility		Yes	No
Owner Incentive (>=10%)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Conditioned Floor Area = 11,294.5 ft² sq. ft.			

Step 3 ANNUAL SITE ENERGY USE

	Standard	Proposed	Margin
Average 2pm - 5pm	54.3	55.9	-1.6
Peak Demand (kW)			

ENERGY COMPONENT	Standard		Proposed		Margin	
	Electricity (kWh)	Natural Gas (therms)	Electricity (kWh)	Natural Gas (therms)	Electricity (kWh)	Natural Gas (therms)
Space Heating	0	650	3,747	0	-3,747	650
Space Cooling	125,574	0	84,933	0	40,641	0
Indoor Fans	13,919	0	56,008	0	-42,089	0
Heat Rejection	0	0	0	0	0	0
Pumps	0	0	0	0	0	0
Domestic Hot Water	0	633	0	633	0	0
Lighting	36,233	0	25,950	0	10,283	0
Receptacle	46,220	0	46,220	0	0	0
Process	0	0	0	0	0	0
Process Lighting	0	0	0	0	0	0
TOTALS:	221,946	1,283	216,858	633	5,088	650

Step 4 POTENTIAL OWNER INCENTIVE CALCULATION

	% Below Title-24* (from step 2)	→	Incentive Rate	x	Savings (from Step 3)	=	Subtotal
Electricity (kWh)	n/a		n/a		n/a		n/a
			c/kWh		kWh		
Electricity (kW)			= n/a		n/a		n/a
			\$/kW		kW		
Natural Gas			= n/a		n/a		n/a
			c/therm		therm		
Owner Incentive						→	= n/a

Potential incentives indicated on this report are available only through the Whole Building Approach Element of the Savings By Design Program for new construction and are NOT GUARANTEED. Projects MUST receive prior, written approval from The Utility during conceptual or early design development and must meet all other program requirements to qualify. Potential incentives are subject to program limitations based upon the incremental cost of the measures.

ENERGY USE AND COST SUMMARY

ECON-1

Project Name
Public Library Expansion

Date
5/22/2015

	Rate:						Fuel Type: Electricity		
	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost (\$)	Energy Use (kWh)	Peak Demand (kW)	Cost (\$)	Energy Use (kWh)	Peak Demand (kW)	Cost (\$)
Jan	12,383	41.4		13,313	40.6		-930	0.8	
Feb	11,820	43.9		12,232	46.1		-412	-2.3	
Mar	14,801	47.9		14,849	49.0		-49	-1.1	
Apr	15,695	57.6		15,908	57.7		-213	-0.1	
May	19,742	78.1		19,662	79.8		80	-1.7	
Jun	23,342	83.4		22,350	79.1		992	4.3	
Jul	29,304	90.2		27,138	83.4		2,166	6.8	
Aug	28,429	100.1		25,762	92.2		2,667	7.9	
Sep	23,410	82.2		21,724	77.3		1,686	5.0	
Oct	17,970	62.3		17,782	61.1		188	1.3	
Nov	12,837	42.4		13,111	43.7		-275	-1.3	
Dec	12,213	42.0		13,026	42.3		-813	-0.3	
Year	221,946	100.1		216,858	92.2		5,088	7.9	
CO ₂		lbs/yr			lbs/yr			lbs/yr	

	Rate:						Fuel Type: Natural Gas		
	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost (\$)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost (\$)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost (\$)
Jan	265	421.1		54	23.5		211	397.6	
Feb	151	336.0		48	23.5		103	312.5	
Mar	95	202.5		54	23.5		41	179.0	
Apr	83	206.9		54	23.5		29	183.4	
May	57	46.7		54	23.5		2	23.2	
Jun	52	23.5		51	23.5		0	0.0	
Jul	54	23.5		54	23.5		0	0.0	
Aug	55	23.5		55	23.5		0	0.0	
Sep	51	23.5		51	23.5		0	0.0	
Oct	56	23.6		54	23.5		1	0.1	
Nov	131	307.9		50	23.5		81	284.4	
Dec	234	430.0		53	23.5		181	406.5	
Year	1,283	430.0		633	23.5		650	406.5	
CO ₂		lbs/yr			lbs/yr			lbs/yr	

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	216,858 kWh	92 kW	\$ 0	\$ 0.00 /sqft	\$ 0.00 /kWh
Natural Gas	633 therms	23 kBtu/hr	\$ 0	\$ 0.00 /sqft	\$ 0.00 /therm
		Total	\$ 0	\$ 0.00 /sqft	

Avoided CO₂ Emissions: 0 lbs/yr