

BUILDING ENERGY ANALYSIS REPORT

PROJECT:

UC Riverside - Health & Sciences Building - HR

,

Project Designer:

,

Report Prepared by:

Stuart Gregson
Affiliated Engineers, Inc.
2700 Ygnacio Valley Rd, Suite 170
Walnut Creek, CA 94598

Job Number:

08223

Date:

1/26/2011

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 2008 Building Energy Efficiency Standards.

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

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

Project Name <i>UC Riverside - Health & Sciences Building - HR</i>			Date <i>1/26/2011</i>
Project Address	Climate Zone <i>CA Climate Zone 10</i>	Total Cond. Floor Area <i>53,823</i>	Addition Floor Area <i>n/a</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 checked="" type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input 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>Stuart Gregson</i>	Signature
Company <i>Affiliated Engineers, Inc.</i>	Date <i>1/26/2011</i>
Address <i>2700 Ygnacio Valley Rd, Suite 170</i>	Phone
City/State/Zip <i>Walnut Creek, CA 94598</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, 116 through 118, and 140 through 149 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	Signature
Company	Date
Address	License #
City/State/Zip	Phone

Principal Mechanical Designer

Name	Signature
Company	Date
Address	License #
City/State/Zip	Phone

Principal Lighting Designer

Name	Signature
Company	Date
Address	License #
City/State/Zip	Phone

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

<input checked="" type="checkbox"/> ENV-1C	Certificate of Compliance. Required on plans.	<input checked="" type="checkbox"/> MECH-1C	Certificate of Compliance. Required on plans.
<input checked="" type="checkbox"/> LTG-1C	Certificate of Compliance. Required on plans.	<input checked="" type="checkbox"/> MECH-2C	Air/Water Side/Service Hot Water & Pool Requirements.
<input type="checkbox"/> LTG-2C	Lighting Controls Credit Worksheet.	<input checked="" type="checkbox"/> MECH-3C	Mechanical Ventilation and Reheat.
<input checked="" type="checkbox"/> LTG-3C	Indoor Lighting Power Allowance.	<input checked="" type="checkbox"/> MECH-5C	Mechanical Equipment Details.

PERFORMANCE CERTIFICATE OF COMPLIANCE

(Part 2 of 3)

PERF-1C

Project Name

UC Riverside - Health & Sciences Building - HR

Date

1/26/2011

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

Energy Component	Standard Design	Proposed Design	Compliance Margin
Space Heating	59.63	48.36	11.27
Space Cooling	306.13	145.34	160.80
Indoor Fans	126.80	118.23	8.57
Heat Rejection	0.00	55.52	-55.52
Pumps & Misc.	0.46	22.77	-22.31
Domestic Hot Water	3.47	3.47	0.00
Lighting	71.57	57.22	14.35
Receptacle	48.56	48.56	0.00
Process	263.27	263.27	0.00
Process Lighting	0.00	0.00	117.15
TOTALS	879.89	762.74	

Percent better than Standard 13.3 % (19.0 % excluding process)

BUILDING COMPLIES

GENERAL INFORMATION

Building Orientation	(N) 0 deg	Conditioned Floor Area	53,823	sqft.
Number of Stories	3	Unconditioned Floor Area	1,000	sqft.
Number of Systems	143	Conditioned Footprint Area	18,699	sqft.
Number of Zones	116	Natural Gas Available On Site	Yes	

	Orientation	Gross Area		Glazing Area		Glazing Ratio
Front Elevation	(N)	6,744	sqft.	2,194	sqft.	32.5 %
Left Elevation	(E)	8,198	sqft.	1,572	sqft.	19.2 %
Rear Elevation	(S)	7,590	sqft.	2,463	sqft.	32.5 %
Right Elevation	(W)	6,735	sqft.	2,776	sqft.	41.2 %
Total		29,267	sqft.	9,005	sqft.	30.8 %
Roof		16,242	sqft.	0	sqft.	0.0 %

Lighting Power Density	Standard	1.081	W/sqft.	Proposed	0.864	W/sqft.
Prescriptive Envelope TDV Energy		1,990,307			2,173,854	

Remarks:

PERFORMANCE CERTIFICATE OF COMPLIANCE

(Part 3 of 3)

PERF-1C

Project Name

UC Riverside - Health & Sciences Building - HR

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ZONE INFORMATION

System Name	Zone Name	Occupancy Type	Floor Area (sqft.)	Inst. LPD (W/sf) ¹	Ctrl. Credits (W/sf) ²	Allowed LPD		Proc. Loads (W/sf)	
						Area (W/sf) ³	Tailored (W/sf) ⁴		
Perimeter Radiant Heating	L3 W Office	Office <= 250 sqft	154	*0.864				1.500	
	L1 N Office	Office <= 250 sqft	448	*0.864				1.500	
	L3 E Office	Office <= 250 sqft	294	*0.864				1.500	
	L1 NW Office	Office <= 250 sqft	140	*0.864				1.500	
	L2 W Office	Office <= 250 sqft	154	*0.864				1.500	
	L3 NW Office	Office <= 250 sqft	294	*0.864				1.500	
	L2 NW Office	Office <= 250 sqft	294	*0.864				1.500	
	L2 E Office	Office <= 250 sqft	154	*0.864				1.500	
	L2 NE Office	Office <= 250 sqft	434	*0.864				1.500	
	L3 NE Office	Office <= 250 sqft	294	*0.864				1.500	
	Core HVAC	L3 IDF	Electrical, Mechanical Room	180	*0.864				
		L3 Copy	Corridor/Restroom/Support	99	*0.864				
		L3 Jan	Office <= 250 sqft	81	*0.864				
L3 S S Hall		Corridor/Restroom/Support	598	*0.864					
L3 W S Hall		Corridor/Restroom/Support	638	*0.864					
L3 E S Hall		Corridor/Restroom/Support	638	*0.864					
L3 Activity Entrance		Corridor/Restroom/Support	110	*0.864					
L3 N Hall		Corridor/Restroom/Support	2,479	*0.864					
L3 Elec.		Electrical, Mechanical Room	126	*0.864					
L3 Seminar Room		Convention/Conference/Me	714	*0.864				2.000	

Notes: 1. See LTG-1C (items marked with asterisk, see LTG-1-C by others)

2. See LTG-2C 3. See LTG-3C (by others)

4. See LTG-4C

Items above require special documentation

EXCEPTIONAL CONDITIONS COMPLIANCE CHECKLIST

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The local enforcement agency determines the adequacy of the justifications, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

The HVAC System Chilled Beam System 1 ton A Premium Efficiency 0.20 BHP Supply Fan Motor has been specified.

The HVAC System Chilled Beam System 2 ton A Premium Efficiency 0.40 BHP Supply Fan Motor has been specified.

The HVAC System Chilled Beam System 3 ton A Premium Efficiency 0.60 BHP Supply Fan Motor has been specified.

The HVAC System Office Built-up VAV includes a Variable Speed Drive on the Fan.

The HVAC System Office Built-up VAV A Premium Efficiency 14.60 BHP Supply Fan Motor has been specified.

The HVAC System Radiant Heating includes an Economizer. This system has a cooling output < 75,000 Btu/h or a supply cfm < 2500.

A Premium Efficiency 31.00 BHP Chilled Water Pump Motor has been specified.

The Chilled Water Pump includes a Variable Speed Drive.

A Premium Efficiency 3.80 BHP Hot Water Pump Motor has been specified.

The Hot Water Pump includes a Variable Speed Drive.

The Cooling Tower 350 Ton Tower includes a Variable Speed Drive on the fan motor.

A Premium Efficiency 39.00 BHP Condenser Water Pump Motor has been specified.

The HVAC System Core HVAC includes Demand Control Ventilation per Standards Section 12.1.

The exceptional features listed in this performance approach application have specifically been reviewed. Adequate written justification and documentation for their use have been provided by the applicant.

Authorized Signature or Stamp _____

CERTIFICATE OF COMPLIANCE

(Part 1 of 4)

OLTG-1C

Project Name <i>UC Riverside - Health & Sciences Building - HR</i>		Date <i>1/26/2011</i>
Project Address <i>,</i>		Total Illuminated Area <i>15,783</i>

GENERAL INFORMATIONPhase of Construction: New Construction Addition Alteration**Documentation Author's Declaration Statement**

I certify that this Certificate of Compliance documentation is accurate and complete.

Name <i>Stuart Gregson</i>	Signature
Company <i>Affiliated Engineers, Inc.</i>	Date <i>1/26/2011</i>
Address <i>2700 Ygnacio Valley Rd, Suite 170</i>	EA # CEPE #
City/State/Zip <i>Walnut Creek, CA 94598</i>	Phone

Principal Lighting Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professional Code to accept responsibility for the lighting design.
- This Certificate of Compliance identifies the lighting features and performance specifications required for compliance with Title 24, Pages 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name	Signature
Company	Phone
Address	License #
City/State/Zip <i>,</i>	Date

Principal Lighting Designer's Declaration

I certify that this Certificate of Compliance documentation is accurate and complete, and accounts for all outdoor lighting power, including building mounted, pole mounted, as well as all other lighting designed for the site, and that Additional Lighting Power Allowances for Specific Applications or Additional Lighting Power Allowances for Ordinance Requirements have not been counted more than one time for the same area, in accordance with Section 147 of the Standards.

Outdoor Lighting Mandatory Measures

Indicate location on building plans of Mandatory Measures Note Block: _____

LIGHTING COMPLIANCE FORMS & WORKSHEETS (check box if worksheets is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms; please refer to the Nonresidential Manual published by the California Energy Commission.

<input checked="" type="checkbox"/>	OLTG-1C	Certificate of Compliance. All 4 pages required on plans for all submittals.
<input checked="" type="checkbox"/>	OLTG-2C	(Pages 1 of 3) Lighting Wattage Allowances for General Hardscape, Sales Frontage, or Ornamental Lighting. Optional on plans.
<input checked="" type="checkbox"/>	OLTG-2C	(Pages 2 of 3) Lighting Wattage Allowance for Per Application or Per Area. Optional on plans.
<input type="checkbox"/>	OLTG-2C	(Pages 3 of 3) Additional Lighting Power Allowance for Ordinance Requirements. Optional on plans.

CERTIFICATE OF COMPLIANCE

(Part 2 of 4)

OLTG-1C

Project Name

UC Riverside - Health & Sciences Building - HR

Date

1/26/2011

COMPLIANCE FIXTURE / LIGHTING CONTROL SCHEDULE and FIELD INSPECTION CHECKLIST

INSTALLATION CERTIFICATE, OLTG-1INST (Retain a copy and verify form is completed and signed.)

Field Inspection

CERTIFICATE OF ACCEPTANCE, OLTG-2A (Retain a copy and verify form is completed and signed.)

Field Inspection

Luminaire Schedule			Installed Watts							
A Name or Item Tag	B Luminaire Description ¹ See footnote below (i.e.: 1 lamp pole-top shoe-box 400 watt metal halide)	C Cutoff Designation	D Watts per Luminaire	E Special Features	F How wattage was determined		G Number of Luminaires	H Installed Watts (D X G)	I Field Inspector ²	
					Default from NA-8	According to §130 (D or E)			Pass	Fail
H3	UCR H3		173	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17	2,941	<input type="checkbox"/>	<input type="checkbox"/>
C7	UCR C7		35	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3	105	<input type="checkbox"/>	<input type="checkbox"/>
L1	UCR L1		8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	132	1,056	<input type="checkbox"/>	<input type="checkbox"/>
C4D	UCR C4D		28	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4	112	<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"/>
Enter total into OLTG-1C; Page 4 of 4; Row H; Total Installed Watts:								4,214		

1. Type of luminaire (i.e.: post top, wall pack, surface, shoe box); for non-incandescent luminaires, indicate nominal lamp wattage and lamp type (i.e.: fluorescent, incandescent, HID); ballast type (i.e.: electronic or magnetic); number of lamps and number of ballasts per luminaire. For incandescent luminaires, the luminaire wattage listed in column D shall be the maximum relamping rated wattage on a permanent factory-installed label on the luminaire, NOT the wattage of the lamp (bulb) used, in accordance with Section 130(d or e).
2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

EXEMPT LUMINAIRES

Field Inspection

Name or Symbol	Description of exempt luminaires in accordance with §147

MANDATORY CONTROLS

Field Inspection

#	Description	Location	#	Description	Location

SPECIAL FEATURES INSPECTION CHECKLIST (See Page 2 of 4 of OLTG-1C)

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

Filed Inspector Notes or Discrepancies:

CERTIFICATE OF COMPLIANCE

(Part 3 of 4)

OLTG-1C

Project Name

UC Riverside - Health & Sciences Building - HR

Date

1/26/2011

A. OUTDOOR LIGHTING ZONE

OUTDOOR LIGHTING ZONE: OLZ 1 OLZ 2 OLZ 3 OLZ 4

Is the Outdoor Lighting Zone: Default in accordance with §10-114, or Amended by JHA

Complete the information below if the default Outdoor Lighting Zone has been amended by the local jurisdiction having authority (JHA):

- The site is a government designated park, recreational area, wildlife preserve, or portion thereof, and has been designated as LZ2 or LZ3, in accordance with Table 10-114-A, because the site is contained within such a zone.
- The local jurisdiction having authority has officially adopted a change to the State Default Lighting Zone and has notified the Energy Commission by providing the materials required in §10-114(d) to the Executive Director.
- The adopted change is posted on the Energy Commission website.

B. ADDITIONAL LIGHTING POWER ALLOWANCE FOR ORDINANCE REQUIREMENTS

Are additional lighting power allowances for ordinance in Table 147-C used? Yes No

Complete the information below if additional lighting power allowances for ordinance requirements are used:

- The local jurisdiction having authority has officially adopted specific outdoor light levels, which are expressed as average or minimum footcandle levels, by following a public process that allowed for formal public notification, review, and comment about the proposed change.
- The local jurisdiction having authority which adopted specific outdoor light levels and has notified the Commission by providing the following materials required §10-114(f) to the Executive Director.

C. ACCEPTANCE FORMS

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for the Lighting system, **LTG-2A**. The designer is required to check the acceptance tests and list all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. If all the lighting system or control of a certain type requires a test, list the different lighting and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately. **Forms can be grouped by type of Luminaire controlled.**

Enforcement Agency:

Systems Acceptance. Before Occupancy Permit is granted for a newly constructed building or space or when ever new lighting system with controls is installed in the building or space shall be certified as meeting the Acceptance Requirements. The **LTG-2A** form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the **LTG-2A** for each different lighting luminaire control(s) must be provided to the owner of the building for their records.

Certificate of Acceptance

Equipment Requiring Testing	Luminaires Controlled			OLTG-2A ¹
	Description	Qty. of Like Controls	Location	Outdoor Lighting Acceptance Tests

1. Insert: **OMS** for Outdoor Motion Sensor; **OLSC** for Outdoor Lighting Shutoff Controls; **OP** for Outdoor Photocontrol; **ATS** for Astronomical Time Switch; and, **STS** for Standard (non-astronomical) Time Switch acceptance.

CERTIFICATE OF COMPLIANCE

(Part 4 of 4)

OLTG-1C

Project Name

UC Riverside - Health & Sciences Building - HR

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ALLOWED AND INSTALLED OUTDOOR LIGHTING POWER

		Lighting Wattage Power Allowance
A	Lighting power allowance for general hardscape (from OLTG-2C Page 1 of 3)	5,478
B	Specific application lighting wattage allowance per unit length (from OLTG-2C Page 1 of 3)	0
C	Specific application lighting wattage allowance for ornamental lighting (from OLTG-2C Page 1 of 3)	0
D	Specific application lighting wattage allowance per application (from OLTG-2C Page 2 of 3)	0
E	Specific application lighting wattage allowance per area (from OLTG-2C Page 2 of 3)	112
F	Specific application lighting wattage allowance for ordinance requirements (from OLTG-2C Page 3 of 3)	0
G	Total Allowed Wattage = Sum of rows A through G:	5,590
H	Total installed watts (from Compliance Fixture Schedule, (from OLTG-2C Page 1 of 3)	4,214
Complies if wattage in row H is less than or equal to the wattages in row G		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

OUTDOOR LIGHTING WORKSHEET

(Part 1 of 3)

OLTG-2C

Project Name

UC Riverside - Health & Sciences Building - HR

Date

1/26/2011

A. LIGHTING POWER ALLOWANCE FOR GENERAL HARDSCAPE

AREA WATTAGE ALLOWANCE (AWA)			LINEAR WATTAGE ALLOWANCE (LWA)			INITIAL WATTAGE ALLOWANCE	TOTAL GENERAL HARDSCAPE LIGHTING ALLOWANCE
A	B	C	D	E	F	G	H
Illuminated Hardscape Area	AWA Per Square Foot	AWA (A X B)	Perimeter Length of General Hardscape	LWA Per Linear Foot	LWA (D X E)	IWA (Watts)	C + F + G
12,781	0.092	1,176	1,601	0.920	1,473	770	3,419
428	0.092	39	130	0.920	120	770	929
951	0.092	87	296	0.920	272	770	1,130
Enter total into OLTG-1C; Page 4 of 4; Row A; Lighting Power Allowance for General Hardscape							5,478

Yes AWA, LWA, and IWA from Table 147-A was used as appropriate for the Outdoor Lighting Zone

B. SPECIFIC APPLICATION LIGHTING WATTAGE ALLOWANCE PER UNIT LENGTH (Available only for sales frontage)

DETERMINE WATTAGE ALLOWANCE				LUMINAIRE TYPE		DESIGN WATTS			
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Linear Foot of Frontage	Sales Frontage Allowance for OLZ (Watts per LF)	Wattage Allowance (B X C)	Name or Symbol	Luminaire Type	Lumin QTY	Watts Per Luminaire	Design Watts (G X H)	Allowed Watts Minimum of D or I
Enter total into OLTG-1C; Page 4 of 4; Row B; Specific Application Lighting Wattage Allowance Per Unit Length									0

C. SPECIFIC APPLICATION WATTAGE ALLOWANCE FOR ORNAMENTAL LIGHTING

DETERMINE WATTAGE ALLOWANCE				LUMINAIRE TYPE		DESIGN WATTS			
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Square feet of Hardscape	Ornamental Lighting Allowance for OLZ (Watts per ft ²)	Wattage Allowance (B X C)	Name or Symbol	Luminaire Type	Lumin QTY	Watts Per Luminaire	Design Watts (G X H)	Allowed Watts Minimum of D or I
Enter total into OLTG-1C; Page 4 of 4; Row C; Specific Application Wattage for Ornamental Lighting									0

OUTDOOR LIGHTING WORKSHEET

(Part 3 of 3)

OLTG-2C

Project Name

UC Riverside - Health & Sciences Building - HR

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1/26/2011

F. ADDITIONAL LIGHTING POWER ALLOWANCE FOR ORDINANCE REQUIREMENTS

Note: The additional lighting power allowance for ordinance requirements may be used only if the jurisdiction having authority has officially adopted specific outdoor light levels, which are expressed as average or minimum footcandle levels, by following a public process that allowed for formal public notification, review, and comment about the proposed change.

Information in OLTG-1C; Page 3 of 4; Section B has been completed.

A	B	C	D	E	F
Hardscape Application Having Official Lighting Ordinance	Illuminated Hardscape Area (ft ²)	Avg. or Min. Ordinance	Number Horizontal fc Required by Ordinance	Allowance (W/ft ²)	Wattage Allowance (B X E)
Drives/Parking Lot	12,781	Average	1.0	0.000	0
Stairways	428	Average	1.0	0.000	0
Pedestrian Walkway <10 ft wide	951	Average	1.0	0.000	0
1.	Total additional lighting power allowance for ordinance requirements (sum of column F)				0
2.	Enter actual additional incremental wattage used to meet local ordinance requirements				
3.	Enter smaller of row 1 or row 2				
Enter wattage from row 3 above into OLTG-1C; Page 4 of 4; Row F; Item: Additional lighting power allowance for ordinance requirements					0

Project Name: **UC Riverside - Health & Sciences Building - HR** Date: **1/26/2011**

Step 1 ANNUAL TDV ENERGY USE (kBtu/sqft-yr)			
ENERGY COMPONENT	Standard	Proposed	Margin
Space Heating	59.63	48.36	11.27
Space Cooling	306.13	145.34	160.80
Indoor Fans	126.80	118.23	8.57
Heating Rejection	0.00	55.52	-55.52
Pumps	0.46	22.77	-22.31
Domestic Hot Water	3.47	3.47	0.00
Lighting	71.57	57.22	14.35
Receptacle	48.56	48.56	0.00
Process	263.27	263.27	0.00
Process Lighting	0.00	0.00	0.00
TOTALS:	879.89	762.74	117.15

Step 2 PERCENT BELOW TITLE 24		
Adjusted TDV Energy Use (Excludes Process Energy)		
Standard Design	Proposed Design	Margin
879.89	762.74	= 117.15
Margin	Standard Design	% Below Title 24*
117.15	616.62	= 19.0 %
Incentive Eligibility		Yes No
Owner Incentive (>=10%)		<input checked="" type="checkbox"/> <input type="checkbox"/>
Conditioned Floor Area = 53,823.0 ft ² sq. ft.		

Step 3 ANNUAL SITE ENERGY USE			
Average 2pm - 5pm	Standard	Proposed	Margin
Peak Demand (kW)	1,014.7	591.9	422.8

The values shown here are based upon the results of an EnergyPro Compliance energy analysis that uses Title 24 profiles as specified in the Alternative Calculation Method manual.

ENERGY COMPONENT	Standard		Proposed		Margin	
	Electricity (kWh)	Natural Gas (therms)	Electricity (kWh)	Natural Gas (therms)	Electricity (kWh)	Natural Gas (therms)
Space Heating	0	35,165	0	28,496	0	6,669
Space Cooling	565,078	0	295,111	0	269,967	0
Indoor Fans	321,384	0	300,259	0	21,125	0
Heating Rejection	0	0	136,613	0	-136,613	0
Pumps	1,155	0	49,204	0	-48,048	0
Domestic Hot Water	0	1,970	0	1,970	0	0
Lighting	178,614	0	142,804	0	35,810	0
Receptacle	125,792	0	125,792	0	0	0
Process	681,993	0	681,993	0	0	0
Process Lighting	0	0	0	0	0	0
TOTALS:	1,874,017	37,135	1,731,777	30,466	142,240	6,669

Step 4 POTENTIAL OWNER INCENTIVE CALCULATION

 	Electricity (kWh)	% Below Title-24* (from step 2)	→	Incentive Rate	×	Savings (from Step 3)	=	Subtotal
		19.0 %		19.0	×	142,240	=	\$27,026
				¢/kWh		kWh		
	Electricity (kW)			100.00	×	422.8	=	\$42,280
				\$/kW		kW		
	Natural Gas			100.0	×	6,669	=	\$6,669
				¢/therm		therm		
Owner Incentive							→	(\$500,000 max) = \$75,975

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
UC Riverside - Health & Sciences Building - HR

Date
1/26/2011

Rate: Flat Rate from AEI

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	124,849	579	8,115	128,597	495	8,359	-3,748	84	-244
Feb	114,398	584	7,436	117,365	503	7,629	-2,967	80	-193
Mar	126,593	530	8,229	130,000	481	8,450	-3,407	49	-221
Apr	137,619	691	8,945	138,073	540	8,975	-454	151	-29
May	150,331	886	9,772	147,383	582	9,580	2,948	304	192
Jun	171,065	991	11,119	152,481	616	9,911	18,583	375	1,208
Jul	233,225	1,200	15,160	181,151	670	11,775	52,074	530	3,385
Aug	227,810	1,306	14,808	181,296	673	11,784	46,514	633	3,023
Sep	185,349	1,268	12,048	156,542	669	10,175	28,808	599	1,873
Oct	159,030	885	10,337	150,548	597	9,786	8,482	288	551
Nov	123,542	679	8,030	124,844	522	8,115	-1,301	157	-85
Dec	120,205	487	7,813	123,496	462	8,027	-3,291	25	-214
Year	1,874,017	1,306	121,811	1,731,777	673	112,565	142,240	633	9,246
CO ₂	0	lbs/yr		0	lbs/yr		0	lbs/yr	

Rate: Flat Gas Rate From AEI

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	6,172	7,292	6,172	4,966	6,025	4,966	1,206	1,267	1,206
Feb	4,355	6,346	4,355	3,520	4,938	3,520	835	1,408	835
Mar	4,710	6,493	4,710	3,807	5,031	3,807	903	1,462	903
Apr	3,573	6,027	3,573	2,925	4,691	2,925	648	1,336	648
May	2,113	4,350	2,113	1,803	3,533	1,803	309	818	309
Jun	1,150	3,498	1,150	989	2,578	989	161	920	161
Jul	737	3,264	737	626	2,398	626	110	866	110
Aug	578	3,020	578	530	2,198	530	48	823	48
Sep	1,024	3,162	1,024	892	2,316	892	132	846	132
Oct	2,363	4,228	2,363	1,999	3,100	1,999	364	1,129	364
Nov	3,769	6,256	3,769	3,142	4,867	3,142	627	1,389	627
Dec	6,592	7,239	6,592	5,265	5,459	5,265	1,327	1,780	1,327
Year	37,135	7,292	37,135	30,466	6,025	30,466	6,669	1,267	6,669
CO ₂	0	lbs/yr		0	lbs/yr		0	lbs/yr	

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	1,731,777 kWh	673 kW	\$ 112,565	\$ 2.09 /sqft	\$ 0.07 /kWh
Natural Gas	30,466 therms	6,025 kBtu/hr	\$ 30,466	\$ 0.57 /sqft	\$ 1.00 /therm
	Total		\$ 143,032	\$ 2.66 /sqft	

Avoided CO₂ Emissions: 0 lbs/yr