



ALBANY CALIFORNIA

GREEN BUILDING RESOLUTION REGULATIONS CHECKLIST AND WORKSHEET

Review the City of Albany Green Building Resolution Regulations and complete each section of the worksheet applicable to your project.

		CITY OF ALBANY REGULATION	Existing Single-Family	NEW Single-Family	Existing Multi-Family	NEW Multi-Family	Existing Non-Residential	NEW Non-Residential
1	Permeable Paving	30% of all paved areas of the property, excluding the primary driveway, entry walkway, and entry porch or landing, must use permeable paving.	■	■	■	■		
2	Energy Star rated appliances	Each residential unit in which a clothes washer or dishwasher is to be installed, at least one of those appliances must be Energy Star approved.	■	■	■	■		
3	Kitchen Faucets	Kitchen faucets must have a maximum flow of 1.5 gallons per minute or less.	■	■	■	■		
4	Low Carbon Concrete	Cement content of concrete must be reduced by at least 25% by replacing with fly ash, slag, silica fume, rice hull ash, or another similar material.	■	■	■	■	■	■
5	Resilient Flooring	Resilient flooring is non-textile synthetic flooring materials which have a firm surface but offer a slight give or bounce. Examples are: vinyl tile, linoleum, cork, rubber, or polymer flooring. At least 90% of the total area of resilient flooring installed must comply with Volatile Organic Compound (VOC) emissions limits by being a certified UL GREENGUARD Gold product OR a Resilient Floor Covering Institute (RFCI) FloorScore Program certified product.	■	■	■	■	■	■
6	Energy Design Rating (EDR) Margin	New dwelling construction must adhere to the EDR margin appropriate to the building type & energy source.		■		■		
7	Outdoor Lighting	Outdoor lighting systems must reduce Backlight, Uplight, and Glare (BUG) ratings or Allowed Outdoor Lighting Power, as listed in California Energy Code, whichever is applicable			■	■	■	■
8	EV Charging	20% of parking spaces must be equipped with level 2 EV Chargers. The remainder must be EV-Ready.				■		
9	Designated Parking Spaces	12% of parking spaces must be designated for Clean Air Vehicles.					■	■
10	Water Use	Reduce indoor water use by 12% via prescriptive or performance methods.						■
11	Solar Panels	Solar Panels must be installed on the required "solar zone" that either cover the entire solar zone OR produce as much electricity as the building uses annually.						■
12	Compliance Margin	Mixed-fuel buildings in Occupancy Group B must achieve a Compliance Margin of 20%. All-electric buildings must achieve 10%. All buildings in Occupancy Group M must achieve a 16% Compliance Margin. Non-residential buildings which are in an Occupancy Group other than B or M have no additional requirement.						■

1. PERMEABLE PAVING

Permeable paving is any paving materials or techniques that allow water to percolate through the paved surface to the soil below. Examples: gravel, spaced brick or tile, permeable asphalt or concrete
 When calculating the total paved area of your property, you can exclude the primary driveway, entry walkway, and entry porch or landing. You can also exclude any accessible routes for persons with disabilities.
 30% of the remaining paved area after those exclusions must use permeable paving.

Will the project involve installing or replacing paving?

YES / NO

List the paved areas below, separated into permeable areas and non-permeable areas. DO NOT include exempted areas in the list.

PERMEABLE PAVEMENT AREAS		
Location	Sq Ft	Pavement Type
Permeable Subtotal	(A)	
IMPERMEABLE PAVEMENT AREAS		
Location	Sq Ft	Pavement Type
Impermeable Subtotal	(B)	

TOTAL PAVED AREA (A+B): _____ = (C)

PERCENTAGE OF PERMEABLE PAVING (A / C) = _____ (Must be at least 0.3)

Example:

PERMEABLE PAVEMENT AREAS		
Location	Sq Ft	Pavement Type
Front Walkway	25	Gravel
Side Walkway	50	Gravel
Front Patio	50	Brick Pavers
Permeable Subtotal	125 (A)	
IMPERMEABLE PAVEMENT AREAS		
Location	Sq Ft	Pavement Type
Back Patio	120	Concrete
Impermeable Subtotal	120 (B)	

Total Paved Area (A+B): 125 + 120 = 245 (C)

Percentage of Permeable Paving (A / C) = 125 / 245 = 0.51

2. ENERGY STAR RATED APPLIANCES

In each unit where a dishwasher or clothes-washer is being installed, at least one dishwasher or clothes-washer shall be Energy Star approved.

A unit is an individual residence. Only one appliance per unit needs to be Energy Star approved. If the residence only has a clothes-washer but no dishwasher, or vice versa, the appliance that is installed will need to be Energy Star approved.

Will the project involve installing at least one clothes washer or dishwasher?

YES / NO

List the dishwasher and clothes-washer model below or write "none". Then check the box if the model is Energy Star approved.

Dishwasher:	Energy Star rated?	Clothes-Washer:	Energy Star rated?
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3. KITCHEN FAUCETS

All kitchen faucets must have a flow rate of no more than 1.5 gallons per minute, either through the use of a low flow faucet, or aerator.

Will the project involve installing or replacing a kitchen faucet?

YES / NO

List the model name and flow rate of the faucet or aerator to be installed below:

Model Name:	Flow Rate:
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4. LOW CARBON CONCRETE

The cement content of concrete must be reduced using additives such as fly ash, slag, silica fume, rice hull ash, or another similar material. For residential projects, the weight of the additives must equal at least 25% of the weight of the total cementitious material (additives and cement). For non-residential projects, concrete additives must follow the equation: $F/25 + SL/50 + UF/12 \geq 1$.

Will the project involve pouring concrete?

YES / NO

RESIDENTIAL: To demonstrate compliance, fill out the following equations for each concrete mix used in the project.

$\frac{\text{Weight of Cement} + \text{Weight of Additives}}{\text{Weight of Total Cementitious Material}}$	$\frac{\quad}{\quad} + \frac{\quad}{\quad} = \frac{\quad}{\quad}$	$\frac{\text{Weight of Additives}}{\text{Weight of Total Cementitious Material}}$ <p>(Must be at least 0.25)</p>	$\frac{\quad}{\quad} \div \frac{\quad}{\quad} = \frac{\quad}{\quad}$
<p>Example:</p> $\frac{\text{Weight of Cement} + \text{Weight of Additives}}{\text{Weight of Total Cementitious Material}}$	$\frac{100}{\quad} + \frac{50}{\quad} = \frac{150}{\quad}$	$\frac{\text{Weight of Additives}}{\text{Weight of Total Cementitious Material}}$ <p>(Must be at least 0.25)</p>	$\frac{50}{\quad} \div \frac{150}{\quad} = \frac{0.33}{\quad}$

NON-RESIDENTIAL: To demonstrate compliance, complete the below tables.

<p>Calculate Total Weight of materials used for all concrete.</p> <p>Cement _____ lbs Slag Cement _____ lbs Silica Fume, Metakaolin, or UFFA _____ lbs Fly Ash, Pozzolan, or other SCM _____ lbs ADD ABOVE = Total Cementitious Material (TCM) _____ lbs</p>	<p>Determine values of SL, UF and F and complete below equation.</p> $SL = \frac{\quad}{\text{slag cement}} \div \frac{\quad}{\text{TCM}} = \frac{\quad}{\text{SL}}$ $UF = \frac{\quad}{\text{silica fume, UFFA}} \div \frac{\quad}{\text{TCM}} = \frac{\quad}{\text{UF}}$ $F = \frac{\quad}{\text{fly ash, SCM}} \div \frac{\quad}{\text{TCM}} = \frac{\quad}{\text{F}}$ $\left(\frac{\quad}{\text{SL}} / 50\right) + \left(\frac{\quad}{\text{UF}} / 12\right) + \left(\frac{\quad}{\text{F}} / 25\right) = \quad \text{(must be } \leq 1)$
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5. RESILIENT FLOORING

Resilient flooring is nontextile synthetic flooring materials which have a firm surface but offer a slight give or bounce. Examples: vinyl tile, linoleum, cork, rubber, polymer flooring.
 At least 90% of the total area of resilient flooring installed must use products that are certified by one of the two programs below.

1. Products certified UL GREENGUARD Gold
2. Products certified under the Resilient Floor Covering Institute (RCFI) FloorScore Program.

Will the project involve installing or replacing resilient flooring?

 YES / NO

List all resilient flooring to be installed below. In the first list, include only areas that will be floored with products certified by one of the two programs listed. In the second list, include areas that will be floored with non-certified products.

LOW VOC CERTIFIED FLOORING		
Location	Sq Ft	Product
Certified Subtotal	(A)	
NON-CERTIFIED FLOORING		
Location	Sq Ft	Product
Non-Certified Subtotal	(B)	

TOTAL RESILIENT FLOORING (A + B) = _____ (C)

PERCENTAGE OF CERTIFIED FLOORING (A / C) = _____ (Must be at least 0.9)

Example:

CERTIFIED FLOORING		
Location	Sq Ft	Product:
Kitchen	100	
Downstairs Bath	40	
Upstairs Bath	65	
Permeable Subtotal	205 (A)	
NON-CERTIFIED FLOORING		
Location	Sq Ft	Product:
Laundry Nook	20	
Non-Certified Subtotal	20 (B)	

TOTAL RESILIENT FLOORING (A + B) = _____ 225 _____ (C)

PERCENTAGE OF CERTIFIED FLOORING (A / C) = _____ 0.91 _____ (Must be at least 0.9)

6. ENERGY DESIGN RATING (EDR) MARGIN

New dwelling construction must adhere to the EDR margin appropriate to the building type & energy source.

EDR Margin Requirements by building type

Single-family mixed-fuel buildings: 10 EDR Margin

Single-family all-electric buildings: 4.7 Efficiency EDR Margin

Multi-family mixed fuel buildings: 10.3 EDR Margin

Multi-family all-electric buildings: 0 EDR Margin (no additional requirement)

Multi-family Buildings over 3 stories: 0 EDR Margin (no additional requirement)

Does the project involve construction of a NEW SINGLE-FAMILY OR MULTI-FAMILY DWELLING? (excluding ADUs)

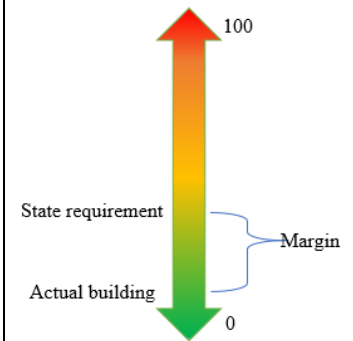
YES / NO

Staff will confirm compliance via T24 Report

What is an EDR Margin and Efficiency EDR Margin?

The EDR Margin is the difference between the state-required EDR and the actual EDR achieved by your building. For instance, if the required EDR is 30 and the actual building has an EDR of 18, the EDR Margin will be 12. Albany's Green Building Resolution includes required EDR Margins for some new building types. For instance, mixed-fuel single family homes must achieve an EDR Margin of 10. This requirement will make new buildings in Albany even more efficient than the State mandates.

An Efficiency EDR is a calculation of energy efficiency that DOES NOT include solar panels or solar storage batteries. It only includes measures that allow the building to use less energy. For example, insulation, efficient heating equipment, and double pane windows would all contribute to the Efficiency EDR. The Total EDR takes into account all of these same measures AND solar panels and batteries. The Efficiency EDR Margin *only applies to single family all-electric homes*, which must achieve an Efficiency EDR Margin of 4.7. These homes may add additional solar panels and batteries if they would like, but it will not count towards achieving the required Efficiency EDR Margin.



Get to know your Energy Report

When your contractor or architect models your building on the CBECC-Res software, it will generate a Title 24 Energy Report. This report includes all the information you need about your EDR and EDR Margin in a small chart on page 2. Look over the example chart below and read the explanations of each part below.

CERTIFICATE OF COMPLIANCE CF1R-PRF-01E
(Page 2 of 12)

Project Name: 1 Story Example PV+Battery Calculation Date/Time: 2021-02-17T11:38:12-08:00

Calculation Description: 1 Story Example Rev 3 Input File Name: 1storyExample3.ribd19

ENERGY DESIGN RATING		Energy Design Ratings		Compliance Margins	
		Efficiency ¹ (EDR)	Total ² (EDR)	Efficiency ¹ (EDR)	Total ² (EDR)
Standard Design		54.4	31.6		
Proposed Design		46.7	19.7	7.7	11.9
RESULT: 3: COMPLIES					
<small>1: Efficiency EDR includes improvements to the building envelope and more efficient equipment 2: Total EDR includes efficiency and demand response measures such as photovoltaic (PV) systems and batteries 3: Building complies when efficiency and total compliance margins are greater than or equal to zero</small>					
<small>• Standard Design PV Capacity: 2.50 kWdc • PV System resized to 2.50 kWdc (a factor of 1.250) to achieve 'Standard Design PV' PV scaling</small>					

Standard Design- This is the State requirement for your building type.

Proposed Design- This is the actual EDR of your building (as modeled).

Efficiency (EDR)- This is a measure of efficiency that does NOT include solar panels or storage batteries

Total (EDR)- This is a measure of efficiency that DOES include solar panels or storage batteries.

Compliance Margins (Also called EDR Margins). These are calculated by subtracting the Proposed Design EDR from the Standard Design EDR. In this example

Efficiency EDR Margin: $54.5 - 46.7 = 7.7$

Total EDR Margin: $31.6 - 19.7 = 11.9$

These values determine whether your building is in compliance with Albany's Green Building Requirements.

Result- This is a determination of whether your building complies with State requirements, not Albany's requirements. As long as the EDR Margin is greater than or equal to 0, it complies with State requirements. However, the City of Albany has increased requirements for most building types. Be sure to check your EDR Margin against the requirements list provided below to ensure that it complies with the City's requirements.

7. OUTDOOR LIGHTING

<p>For NON-RESIDENTIAL projects: Outdoor lighting power must be 90% or less of the Allowed Outdoor Lighting Power. Any outdoor lights with a color temperature over 3000K must be for an application listed as an exception in the California Energy Code Part 6 Section 140.7(a), or a "specific application" in Section 140.7(b)2 and Table 140.7. The details to calculate the allowed power for your project and identify exceptions can be found in the California Energy Code Section 140.7.</p>	<p>Is this a NON-RESIDENTIAL project that involves installing or replacing outdoor lighting?</p> <p style="text-align: center;">YES / NO</p>
<p>Complete the following for each outdoor lighting area:</p> <p>Determine the Allowed Outdoor Lighting Power (OLP) using the calculation in the California Energy Code Section 140.7.</p>	<div style="text-align: center; border-top: 1px solid black; width: 50px; margin: 0 auto;">/</div> <div style="text-align: center; border-top: 1px solid black; width: 50px; margin: 5px auto;">=</div> <p style="text-align: center; font-size: small;">(must be no more than 0.9)</p>
<p>Color Temperature: Any outdoor lights with a color temperature over 3000K must be for an application listed as an exception in the California Energy Code Part 6 Section 140.7(a), or a "specific application" in Section 140.7(b)2 and Table 140.7.</p>	<p>Do any of the outdoor lights have a color temperature over 3000K?</p> <p style="text-align: center;">YES / NO</p>
<p>If yes, please list applications:</p>	

<p>For MULTI-FAMILY RESIDENTIAL projects: Outdoor lighting systems, except for emergency lighting, must reduce Backlight, Uplight, and Glare (BUG) ratings to comply with the Lighting Zone 3 column of the table below.</p>	<p>Is this a MULTI-FAMILY RESIDENTIAL project that involves installing or replacing outdoor lighting?</p> <p style="text-align: center;">YES / NO</p>
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Fill out the table below, creating a row for each luminaire.

The "Back hemisphere distance" and "Front hemisphere distance" columns refer to the distance from the back and front hemisphere of the luminaire (respectively) to the nearest property line. The distance should be measured in mounting heights (MH). This is calculated by dividing the distance by the mounting height. For instance, if the luminaire is mounted 8 feet high, and is 12 feet from the property line, it would be 1.5 mounting heights (12/8=1.5). For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for the purpose of this calculation. For property lines that abut public roadways and transit corridors, the property line may be considered to be the centerline of the roadway or corridor for the purpose of this calculation.

In the "Area Lighting?" column, mark "yes" for general lighting luminaires in areas such as outdoor parking, sales, or storage lots. For all other lighting uses, including decorative lighting, mark "no."

Luminaire ID	Back hemisphere distance (MH)	B Rating	Area Lighting?	U Rating	Front hemisphere distance (MH)	G Rating
<i>Example</i>	1.5	B4	Yes	U0	1.3	G1

8. EV CHARGING

<p>In new multi-family buildings, 20% of the parking spaces must be electric vehicle (EV) charging stations. The remainder of spaces must be EV-Ready, with inaccessible wiring installed and electrical panel capacity.</p> <p>EV-Charging spaces must have a level 2 charger available at the space. They must be able to deliver 40 amps of power at 240 volts. The EV-Ready spaces must have all inaccessible raceway installed. This means that the physical pathways for future wiring must be installed during construction if they won't be accessible later (for example if they will be underground or go through a wall). If the raceway will be accessible, such as on the outside of a wall or ceiling, it does NOT need to be installed during construction. The raceway must lead to an electrical panel with enough capacity to serve 20% of spaces with 40 amps at 240 volts. In most cases, this overall capacity requirement will be identical to the required capacity for the EV-Charging spaces. The panel must also include an open breaker space labeled "EV-Ready" for each EV-Ready parking space.</p>	<p>Is this project construction of a NEW MULTI-FAMILY DWELLING (three or more units)?</p> <p style="text-align: center;">YES / NO</p>
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Total number of parking spaces: _____ **X 0.2 =** _____ **number of required EV Charging Stations (rounded to nearest whole number)**

Remaining spaces must be EV Ready

9. DESIGNATED PARKING SPACES

<p>12% of parking spaces (rounded to the nearest whole number) must be designated for clean air vehicles.</p> <p>Clean air vehicles include any zero-emissions vehicle, vehicles with High-occupancy Vehicle (HOV) carpool lane stickers, or carpool or van pool vehicles. Each space must be marked with the words "CLEAN AIR/VANPOOL/EV" in stall striping paint at the end of the stall striping.</p>	<p>Does the project involve construction of a NEW NON-RESIDENTIAL unit?</p> <p style="text-align: center;">YES / NO</p>
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Total number of parking spaces: _____ **X 0.12 =** _____ **number of required marked Clean Air spaces (rounded to the nearest whole number)**

10. WATER USE

<p>Reduce indoor water use by 12% via prescriptive or performance methods.</p> <p>The prescriptive method, which requires all plumbing fixtures in the building have a 12% reduction in flow rate and the performance method, which requires a calculation showing that the overall water use in calculate the overall water use of the building and demonstrate that it is at least a 12% reduction from the maximum water use.</p> <p>Choose only ONE of the methods and fill out the worksheet for that method below.</p>	<p>If this project involves construction of a NEW NON-RESIDENTIAL unit, which method will be used to meet compliance:</p> <p style="text-align: center;"> <input type="checkbox"/> Prescriptive OR <input type="checkbox"/> Performance </p>
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PRESCRIPTIVE METHOD

Fill in the flow rate of the fixtures to be installed in the far-right column. The actual flow rates may not be greater than those listed in the "Maximum flow rate at 12% reduction" column.

Fixture Type	Maximum flow rate at 12% reduction	Actual flow rate of installed fixtures
Showerheads	1.8 gpm @80 psi	
Lavatory Faucets	0.35 gpm @ 60 psi	
Kitchen Faucets/ Aerators	1.6 gpm@ 60 psi	
Wash Fountains	1.6 gpm/20 [rim space (in.) @ 60 psi]	
Metering Facuets	0.18 gallons/cycle	

Metering Faucets for wash fountains	0.18 gallons/ cycle 20 [rim space (in.) @ 60 psi]	
Water Closets	1.12 gallons/flush	
Floor mounted urinal	0.44 gallons/flush	
Wall Mounted urinal	0.11 gallons/flush	

PERFORMANCE METHOD

Fill in the number of occupants, using Table A, Chapter 4 of the California Plumbing Code to determine occupant load. Then, multiply the numbers in each row to determine the baseline gallons per day for each fixture. Finally, add together all the gallons per day to determine the total gallons per day.

Fixture Type	Baseline Flow Rate	Duration (min or cycle)	Daily Uses	Occupants	Gallons per day
Showerheads	2 gpm	5	1		
Lavatory Faucets	0.5 gpm	25	3		
Kitchen faucets	1.8 gpm	4	1		
Aerators	2 gpm	4	1		
Wash Fountains	1.8/20		3		
Metering Faucets	0.2 gal per 20" rim space	1	4		
Water Closet	1.28	1	4		
Floor mounted urinal	0.5	1	2		
Wall mounted urinal	0.125	1	2		
Total	-----	-----	-----	-----	Baseline GPD

In this chart, fill in the same number of occupants, but insert the actual flow rates of the fixtures to be installed. Then, multiply each row to determine the gallons per day, and add up to the total gallons per day at the bottom.

Fixture Type	Actual Flow Rate	Duration (min or cycle)	Daily Uses	Occupants	Gallons per day
Showerheads		5	1		
Lavatory Faucets		25	3		
Kitchen Faucets/aerators		4	1		
Wash Fountains		1	3		
Metering Faucets		1	4		
Water Closets		1	4		
Floor mounted urinal		1	2		
Wall mounted urinal		1	2		
Total	-----	-----	-----	-----	Actual GPD

$$\frac{\text{Actual GPD}}{\text{Baseline GPD}} = \text{_____} \text{ (must be no more than 0.88)}$$

11. SOLAR PANELS

<p>All new non-residential buildings must have a Solar Zone occupying at least 15% of the rooftop area and must either:</p> <ul style="list-style-type: none"> • Fill the entire solar zone with solar panels OR • Install enough panels to produce as much electricity as the building is modeled to use annually. (compliance is determined using the T24 Energy Report) 	<p>If this project involves construction of a NEW NON-RESIDENTIAL unit, which method will be used to meet compliance:</p> <p><input type="checkbox"/> Cover entire Solar Zone OR</p> <p><input type="checkbox"/> Cover annual use</p>
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12. COMPLIANCE MARGIN

New NON-RESIDENTIAL buildings must achieve a Compliance Margin appropriate to the Occupancy Group and energy source.

Mixed-Fuel buildings in Occupancy Group B must achieve a Compliance Margin of 20%.

All-Electric buildings in Occupancy Group B must achieve a Compliance Margin of 10%.

All buildings in Occupancy Group M must achieve a Compliance Margin of 16%.

Non-Residential buildings in all other Occupancy Groups have no additional requirements.

Does this project involve new non-residential construction?

YES / NO

If Yes, select appropriate type:

- Occupancy Group B, mixed-fuel
- Occupancy Group B, all-electric
- Occupancy Group M
- Other Occupancy Group

What is a Compliance Margin?

A Compliance Margin is a percentage used to determine the energy efficiency of a given non-residential building. The higher the Compliance Margin, the more efficient the building, with a rating of 100% indicating that the building has zero net-energy use. All buildings have a required level of energy efficiency which is determined by a state-certified software program, called CBECC-Com. When a contractor or architect models your building on the software, the program will model the annual energy use of the building. It will also identify how much energy a building of that type is permitted to use each year based on the California Energy Code. The Compliance Margin is a way of expressing how much more efficient your building is than the state requirement.

How to find your Compliance Margin

When your contractor or architect models your building on the CBECC-Res software, it will generate a Title 24 Energy Report. This report includes all the information you need about your Compliance Margin in a small chart on page 2.

C1. COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft ² -yr)			
COMPLIES			
Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV) ¹
Space Heating	9.83	6.01	3.82
Space Cooling	74.20	61.07	13.13
Indoor Fans	106.75	106.39	0.36
Heat Rejection	--	--	--
Pumps & Misc.	--	--	--
Domestic Hot Water	8.52	7.73	0.79
Indoor Lighting	28.68	22.75	5.93
ENERGY STANDARDS COMPLIANCE TOTAL	227.98	203.95	24.03 (10.5%)

¹ Notes: The number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

The "Standard Design" shows the maximum energy use allowed by the Energy Code. The "Proposed Design" shows the modelled energy use for your building. The Compliance Margin is the number circled in green. Note that it is always a percentage

You can determine your Compliance Margin simply by finding it on the chart above. However, it may be useful to understand how it is calculated by the program. First the Proposed Design energy use is subtracted from the Standard Design, then that difference is divided by the Standard Design energy use. The 10.5% Margin in the example above was determined as follows:

$$\begin{aligned}
 227.98 - 203.95 &= 24.03 \\
 24.03 / 227.98 &= 0.105 \\
 &= 10.5\%
 \end{aligned}$$