



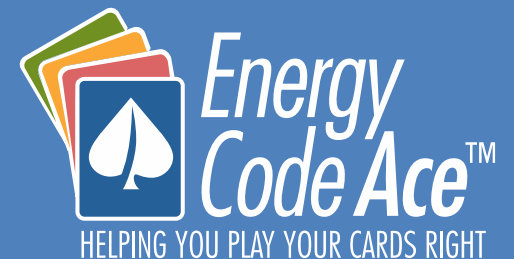
# Acing the Code through a *really smart* *electronic* Ace consultant

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On behalf of The Statewide  
Codes & Standards Team

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# Why even think about it?

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Because the CIAG (and so many others) told us we should...and our observations, and experience confirms they're right.

## CIAG Paper #1 Recommendations:

- ✧ “Automate the process of demonstrating compliance as much as possible. Like with TurboTax, the applicant would simply answer questions about their project, the software would direct them into the right forms, and assist them in completing the forms.”



# Today vs Tomorrow

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- ✧ People have trouble figuring out how to comply
  - ✧ Once they learn the code, it changes
  - ✧ Rx forms must be completed by hand (after figuring out which forms you need!)
  - ✧ 19 forms required for nonres lighting retrofit
  - ✧ Rx forms generally tossed after used
  - ✧ People can't get enough training and support due to lack of time
- ✧ **Ace** invites industry to ***Comply With Me*** by using his smart energy advisor
  - ✧ Ace leads designers/permit applicants through the code requirements and helps them complete the required forms online
  - ✧ Paper form frustration is alleviated
  - ✧ Applicants can print required forms on plans
  - ✧ Plans Examiners spend less time examining since projects have been verified by Ace
  - ✧ Designers and Contractors can easily identify compliant products by using online product library and note substitutions
  - ✧ People don't require as much training and as many job aides...they just follow Ace



DESIGN PHASE



Meet Nancy. She is a nonresidential architect with familiarity to sustainable design concepts. Most of her projects are retail shopping centers; some are new construction whereas others are tenant improvements.



Nancy needs to understand whether her project is compliant, as well as to put completed forms on the project plans for permit application. Other stakeholders could also benefit from the data on her forms, as she frequently participates in rebate incentive and other similar programs.



CBECC-Com



EnergyPro



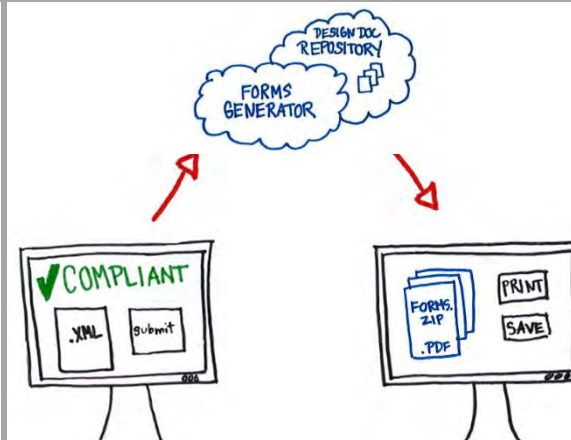
Nancy needs a compliance tool to indicate requirements and verify compliance. She needs to initiate the project in the tool during concept or schematic design phase so that energy efficiency measures are included in the early pricing package.



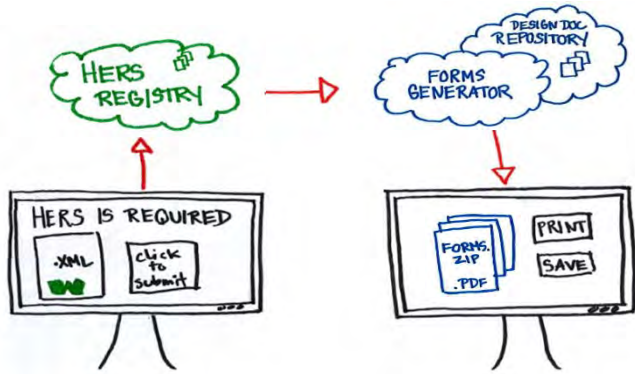
Nancy decides to use the Mother Ace because she hasn't decided whether the project should pursue performance or prescriptive path. She answers questions about the project, similar to TurboTax®.



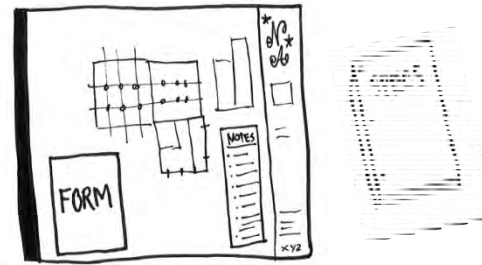
Nancy uses Mother Ace to inform her design as she works. This helps her evaluate compliance well before she needs forms. The tool can also help her specify compliant products. The Mother Ace tool confirms compliance with prescriptive requirements, but not the performance path. Nancy opts to use prescriptive.



If HERS is not triggered, the Mother Ace tool will generate an .XML file to be submitted to the Forms Generator. The Forms Generator will save data in a repository "As Designed" database and produce completed forms without a watermark in PDF format. The PDF files will be sent back to the Mother Ace tool, ready to be easily dropped into plans.



If HERS verification is triggered, an .XML file is generated and sent to the HERS Registry of Nancy's choosing. The HERS Registry will process the file, save relevant data in its database, then send the data to the Forms Generator. The Forms Generator will save data in a repository "As Designed" database and produce completed forms without a watermark in PDF format. The PDF files will be sent back the Mother Ace tool, ready to be easily dropped into plans.



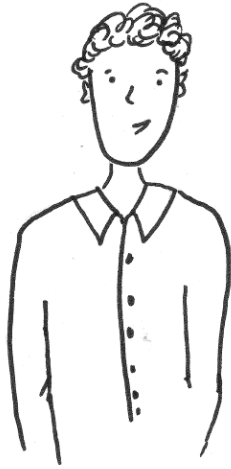
Nancy inserts the completed forms on the drawings in preparation for permit application.



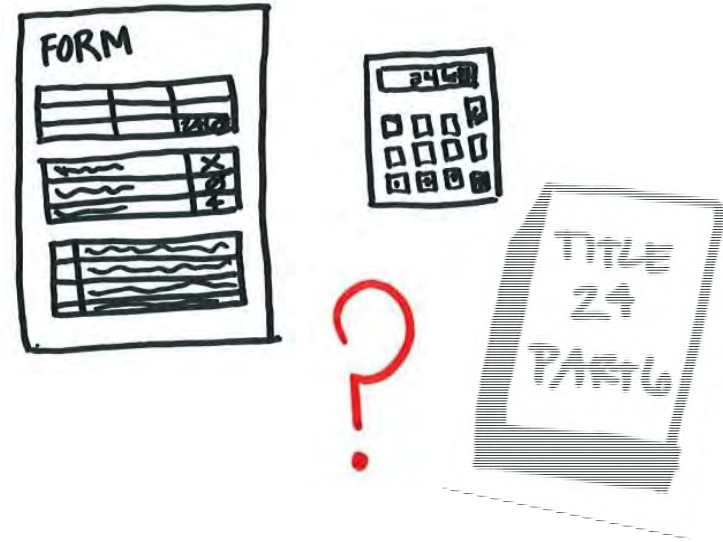
Nancy submits the construction documents to the building department for plan check.



PERMIT APPLICATION PHASE



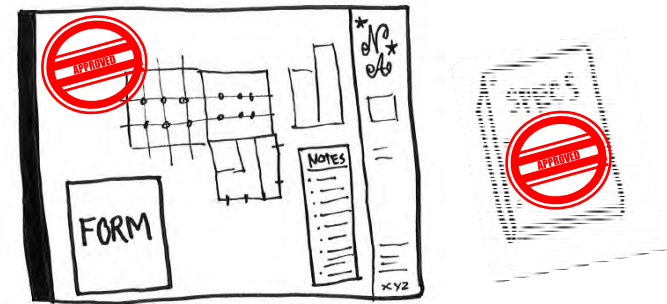
Meet Jim; a plans examiner. He has been with the building department for several years and is a licensed professional engineer and ICC member.



Jim needs verification that data on the forms is already compliant so he doesn't need to deeply understand Part 6 requirements. He wants to use his limited time checking plans and specifications for prioritized compliance measures.



Jim checks to make sure the forms came from the Forms Generator by verifying there is no watermark. This confirms data on the forms is compliant. Jim uses the Energy Code Ace checklist to compare information within the forms to the plans and specifications.



When satisfied with the documents, Jim stamps his approval for construction to begin.





FIRST PHASE OF SMART ENERGY ACE PROJECT

**Indoor Lighting**

NRCC-LTI-E (Created 9/17)



## CERTIFICATE OF COMPLIANCE

NRCC-LTI-E

This document is used to demonstrate compliance with requirements in [§110.9](#), [§130.0](#), [§130.1](#), [§140.6](#), and [§141.0\(b\)2](#) for indoor lighting scopes using the prescriptive path.

Project Name: Retail Tenant Improvement Report Page: Page 1 of 8

Project Address: 1228 Lincoln Ave., Sacramento, CA Date Prepared: 12/11/17

**A. GENERAL INFORMATION**

01	Project Location (city)	Sacramento	04	Total Conditioned Floor Area (ft <sup>2</sup> )	1,330
02	Climate Zone	12	05	Total Unconditioned Floor Area (ft <sup>2</sup> )	160
03	Occupancy Types Within Project (select all that apply):		06	# of Stories (Habitable Above Grade)	1
<input checked="" type="checkbox"/>	Office	<input checked="" type="checkbox"/>	Retail	<input type="checkbox"/>	Warehouse
<input type="checkbox"/>	Parking Garage	<input type="checkbox"/>	High-Rise Residential	<input type="checkbox"/>	Relocatable
<input type="checkbox"/>		<input type="checkbox"/>	Hotel/Motel	<input type="checkbox"/>	School
<input type="checkbox"/>		<input type="checkbox"/>	Other (write in):	Support Spaces	Support Areas

**B. PROJECT SCOPE**

Table Instructions: Include any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in [§140.6](#) or [§141.0\(b\)2](#) for alterations. WARNING: Changing the Calculation Method in this table will result in the deletion of data previously input. If you need to change the calculation method, please open a new form or use "Save As".

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft <sup>2</sup> )	Calculation Method	Area (ft <sup>2</sup> )
<input checked="" type="checkbox"/> New Lighting System	Area Category	1,330	Area Category	160
	Add Parking Garage-Complete Bldg Method		Remove Parking Garage	
<input type="checkbox"/> Altered Lighting System				
	Add Altered Lighting System		Remove Last Altered System	
<b>Total Area of Work (ft<sup>2</sup>)</b>	<b>1,330</b>		<b>160</b>	

**C. COMPLIANCE RESULTS**

Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per <a href="#">§140.6(b)1</a> .	Allowed Lighting Power per <a href="#">§140.6(b)</a> (Watts)					Actual Lighting Power per <a href="#">§140.6(a)</a> (Watts)				Compliance Results
	01	02	03	04	05	06	07	08	09	10
	Complete Building <a href="#">§140.6(c)1</a> (See Table I)	Area Category <a href="#">§140.6(c)2</a> (See Table I)	Area Category Footnotes <a href="#">§140.6(c)2G</a> (+) (See Table K)	Tailored <a href="#">§140.6(c)3</a> (+) (See Table L)	Total Allowed (Watts)	Total Designed (Watts) (See Table F)	Adjustments Portable Lighting <a href="#">§140.6(a)</a> (-) PAF Control Credits <a href="#">§140.6(a)2</a> (-) (See Table J) (See Table R)		Total Actual (Watts) *Includes Adjustments	05 Must be ≥ 09 <a href="#">§140.6</a>
<b>Conditioned:</b>		1,288	234		1,522	1,334			1,334	COMPLIES
<b>Unconditioned:</b>		96			96	87			87	COMPLIES
<b>Controls Compliance (See Table H for Details)</b>									<b>DOES NOT COMPLY</b>	
<b>Rated Power Reduction Compliance (See Table S for Details)</b>									<b>Not Applicable</b>	

Welcome

+ Introduction to Dynamic Forms

+ NRCC LTI Form

+ NRCC LTO Form

+ NRCC LTS Form

+ NRCC ELC Form

Conclusion

Welcome

**DESCRIPTION**

OBJECTIVES

CREDITS

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2016 Standards will continue to improve upon the 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The effective date of the 2016 Standards was January 1, 2017. One of the latest improvements in 2017 is updating the nonresidential compliance forms so they consist of one dynamic form that prompts you as you complete each section.

In this course, you will learn the roadmap and consolidation of the new 2016 Nonresidential Prescriptive Compliance forms. You'll recognize the benefits of the new forms and have an opportunity to see first-hand how they function with real data.



2%  
complete  
My progress

Post-test

You can take the post-test as often as you like. The system will save your highest score.

## My Projects

Search projects  Active/Inactive

Project Title	Form	Status	Role
1009 Deep Woods Trail			
	Indoor Lighting (LTI)	Submitted	Document Author
	Outdoor Lighting (LTO)	Waiting on Responsible Person	Document Author
High Rise South Ave.			
	Indoor Lighting (LTI)	In progress...	Document Author
	Outdoor Lighting (LTO)	Ready for Submission	Document Author/Responsible Person
High Rise Eddy Lane			

Add Project

## Lighting Scope.

Make sure you have the following items handy as we go through the form:

- Lighting luminaire (fixture) schedule including controls info
- Cut sheets showing fixture wattages and controls

If you are using the Rated Power Reduction method, you will also need:

- List of luminaires (fixtures) being removed

For the Area Category method:

- List of each space type (this is found on plan set)

### What type of lighting system are you installing?

Choose all that apply.

|

Altered Lighting

New Lighting

New Lighting - Parking Garage

### In your *conditioned* space, which calculation method will you use to determine wattage allowance for compliance? [§140.6\(c\)](#)

Select one

Complete Building Method

Area Category Method

Tailored Method

Area Category + Tailored

### What is the square footage of this conditioned space?

Conditioned

1330 | ft<sup>2</sup>

### In your *unconditioned* space, which calculation method will you use to determine wattage allowance for compliance? [§140.6\(c\)](#)

Select one

Complete Building Method

Area Category Method

Tailored Method

Area Category + Tailored

### What is the square footage of this unconditioned space?

Unconditioned

500 | ft<sup>2</sup>

## Lighting Scope.

Make sure you have the following items handy as we go through the form:

- Lighting luminaire (fixture) schedule including controls info
- Cut sheets showing fixture wattages and controls

If you are using the Rated Power Reduction method, you will also need:

- List of luminaires (fixtures) being removed

For the Area Category method:

- List of each space type (this is found on plan set)

### What type of lighting system are you installing?

Choose all that apply.

▾

Altered Lighting  
 New Lighting  
 New Lighting - Parking Garage

### In your *conditioned* space, which calculation method determine wattage allowance for compliance? [§140.6\(c\)](#)

Select one

Complete Building Method  
 Area Category Method  
 Tailored Method  
 Area Category + Tailored

All three methods involve multiplying the area of a space (square feet) by the allowed LPD (W / ft<sup>2</sup>) for that space and adding special allowances for display lighting and decorative or ornamental lighting. Actual lighting power may not exceed this allotment.

The **Complete Building Method** is used when all areas of the building are of the same space type.

The **Area Category Method** is used for buildings with multiple space types and can be used in combination with the Tailored Method.

The **Tailored Method** is an option for areas that utilize lighting to highlight unique features. The Tailored Method may be used for, retail spaces, a lobby or a waiting area where awards or artwork is displayed.

### What is the square footage of this conditioned space?

Conditioned

ft<sup>2</sup>

### In your *unconditioned* space, which calculation method will you use to determine wattage allowance for compliance? [§140.6\(c\)](#)

Select one

Complete Building Method  
 Area Category Method  
 Tailored Method  
 Area Category + Tailored

### What is the square footage of this unconditioned space?

Unconditioned

ft<sup>2</sup>

## Lighting Scope.

Make sure you have the following items handy as we go through the form:

- Lighting luminaire (fixture) schedule including controls info
- Cut sheets showing fixture wattages and controls

If you are using the Rated Power Reduction method, you will also need:

- List of luminaires (fixtures) being removed

**2016 Building and Appliance Efficiency Regulations - Reference Ace v27**

**(c) Calculation of Allowed Indoor Lighting Power: Specific Methodologies.**

The allowed indoor Lighting Power for each building type, or each primary function area shall be calculated using only one of the methods in Subsection 1, 2 or 3 below as applicable.

- Complete Building Method.** Requirements for using the Complete Building Method include all of the following:
  - The Complete Building Method shall be used only for building types, as defined in Section 100.1, that are specifically listed in TABLE 140.6-B. (For example, retail and wholesale stores, hotel/motel, and highrise residential buildings shall not use this method.)
  - The Complete Building Method shall be used only on projects involving:
    - Entire buildings with one type of use occupancy; or
 

**EXCEPTION to Section 140.6(c)1Bi:** If a parking garage plus another type of use listed in TABLE 140.6-B are part of a single building, the parking garage portion of the building and other type of use portion of the building shall each separately use the Complete Building Method.
    - Mixed occupancy buildings where one type of use makes up at least 90 percent of the entire building (in which case, when applying the Complete Building Method, it shall be assumed that the primary use is 100 percent of the building); or
    - A tenant space where one type of use makes up at least 90 percent of the entire tenant space (in which case, when applying the Complete Building Method, it shall be assumed that the primary use is 100 percent of the tenant space).
  - The Complete Building Method shall be used only when the applicant is applying for a lighting permit and submits plans and specifications for the entire building or the entire tenant space.
  - Under the Complete Building Method, the allowed indoor Lighting Power allotment is the Lighting Power Density value times the floor area of the entire building.
- Area Category Method.** Requirements for using the Area Category Method include all of the following:
  - The Area Category Method shall be used only for primary function areas, as defined in Section 100.1, that are listed in TABLE 140.6-C.
  - Primary Function Areas in TABLE 140.6-C shall not apply to a complete building. Each primary function area shall be determined as a separate area.
  - For purposes of compliance with Section 140.6(c)2, an "area" shall be defined as all contiguous areas that accommodate or are associated with a single primary function area listed in TABLE 146.0-C.
  - Where areas are bounded or separated by interior partitions, the floor area occupied by those interior partitions may be included in a Primary Function Area.
  - If at the time of permitting for a newly constructed building, a tenant is not identified for a multi-tenant area, a maximum of 0.6 watts per square foot shall be allowed for the lighting in each area in which a tenant has not been identified. The area shall be classified as Unleased Tenant Area.

In your unconditioned space, which calculation method will you use to determine wattage allowance for compliance?

5140.6(c)

Select one ▾

- Complete Building Method
- Area Category Method
- Tailored Method
- Area Category + Tailored

## Lighting Scope Summary

⚠️ Your conditioned floor areas do not add up to the total for this project. Please edit existing information below.

### Retail Tenant Office Improvement

1228 Lincoln Ave.  
Sacramento, CA 95818  
Climate Zone 12

⚠️ 1330 ft<sup>2</sup> conditioned  
160 ft<sup>2</sup> unconditioned  
1490 ft<sup>2</sup> total

[✎ Make Changes](#)

### Conditioned Space Scope

Scope of Work	Type	Calculation Method	Area (ft2)
New Lighting System	N/A	Area Category	1000 <a href="#">✎</a>
Altered Lighting System	Luminaire Component	Complete Building	300 <a href="#">✎</a>
Select one ▾	Select one ▾	Select one ▾	Area (ft2)
Total			⚠️ 1300 (-30)

### Unconditioned Space Scope

Scope of Work	Type	Calculation Method	Area (ft2)
New Lighting System	N/A	Area Category	80 <a href="#">✎</a>
Altered Lighting System	Luminaire Component	Complete Building	80 <a href="#">✎</a>
Select one ▾	Select one ▾	Select one ▾	Area (ft2)
Total			160

[+ Add Lighting System](#)