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PG&E Comments on Mar 21 Workshop on 2022 Code Compliance Opportunities

Additional submitted attachment is included below.

Pacific Gas and Electric Company

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April 26, 2022

California Energy Commission
Dockets Office, MS-4
Re: Docket Number 22-BSTD-01
715 P Street
Sacramento, CA 95814-5504
Docket@energy.ca.gov

RE: Pacific Gas & Electric Comments on the 2025 Energy Code Compliance Tools Staff Workshop (Docket Number 22-BSTD-01)

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to comment in response to the California Energy Commission's (CEC) 2025 energy code compliance tools staff workshop held on March 22, 2022.

PG&E applauds the CEC's efforts to assess energy code compliance barriers and identify solutions. Gaining direct feedback from market actors who must implement the State's codes and standards and working with industry to implement viable solutions is key to realizing our collective energy savings and decarbonization goals.

PG&E's comments focus on how the Codes and Standards Compliance Improvement Subprogram (Energy Code Ace) is responding to the concerns discussed during the workshop. PG&E invites the CEC and other industry partners to consider how we might work together to implement and augment the following solutions that address each panel's concerns:

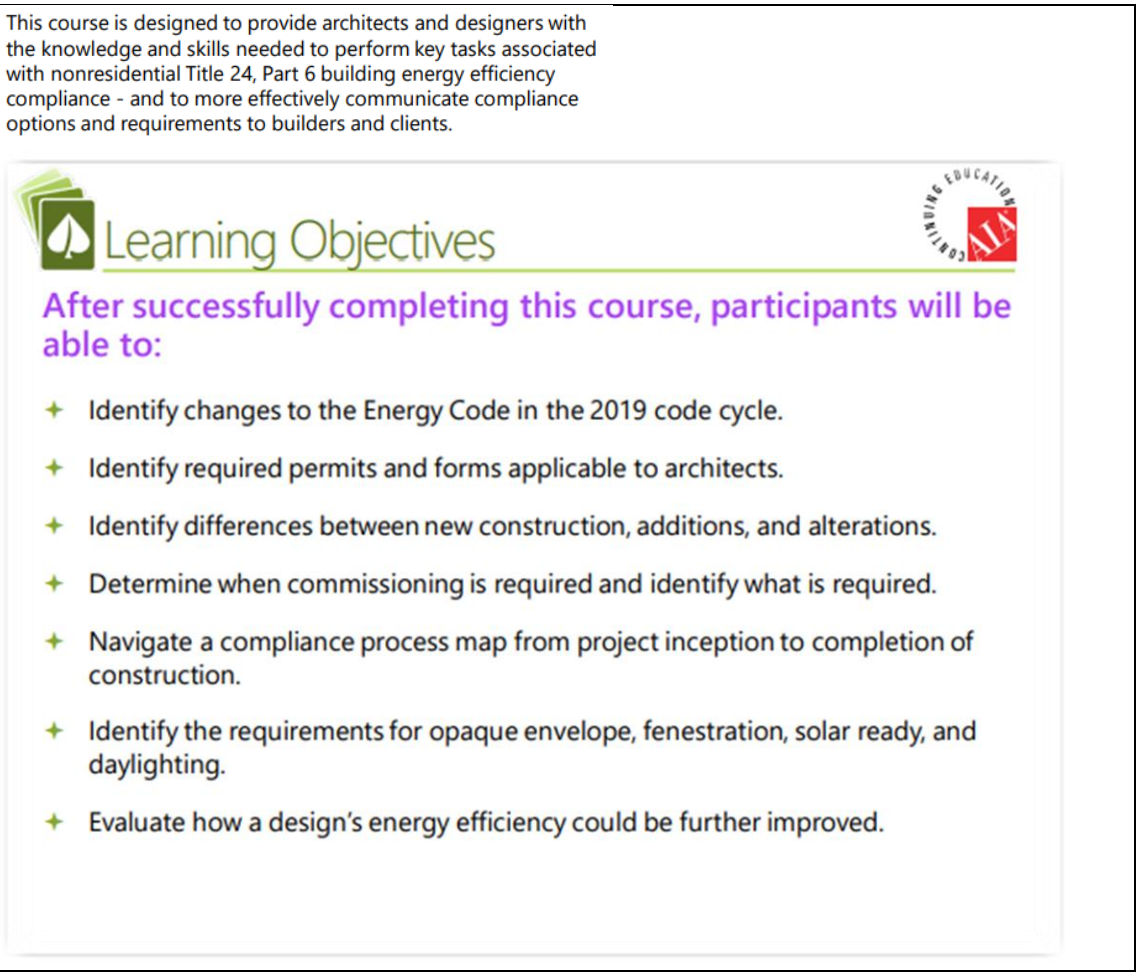
Issues Voiced per Panel and Energy Code Ace Solutions at a Glance

Panel	How to Resolve Issues Voiced	Solutions Provided by Energy Code Ace
1: Designers	Help ensure designers understand the current code, have the skills to facilitate an integrated design process, and are spending a minimal amount of time documenting compliance.	• Role-based training for architects and energy consultants • Live modeling demonstrations • Certified Energy Analysts (CEA) • Fact sheets for energy consultants to educate clients • Reference Ace to quickly navigate energy code language • Virtual Compliance Assistant (VCA) • Q&Ace (Provides help in 24 hours)
2: Authorities Having Jurisdiction	Help building departments expedite permits and make it faster and easier for plans examiners and building inspectors to perform their	• Role-based training • Checklists to guide key tasks • Fact and trigger sheets to educate customers • Reference Ace to quickly navigate code language • Forms Ace to identify applicable forms

	energy code enforcement responsibilities.	• Dynamic forms and VCA to verify that inputs comply • Q&Ace
3: Installers	Empower installers with the code knowledge and job aides that automate key compliance tasks.	• On-demand courses available 24/7 • VCA – pre-populated installation forms for nonresidential projects • Note blocks for mandatory measures, Home Energy Rating System (HERS) measures and acceptance testing • Fact and trigger sheets to educate clients • Product Finder

The following pages feature illustrative examples of Energy Code Ace solutions that apply to each panel's comments. Please refer to www.EnergyCodeAce.com for more information.

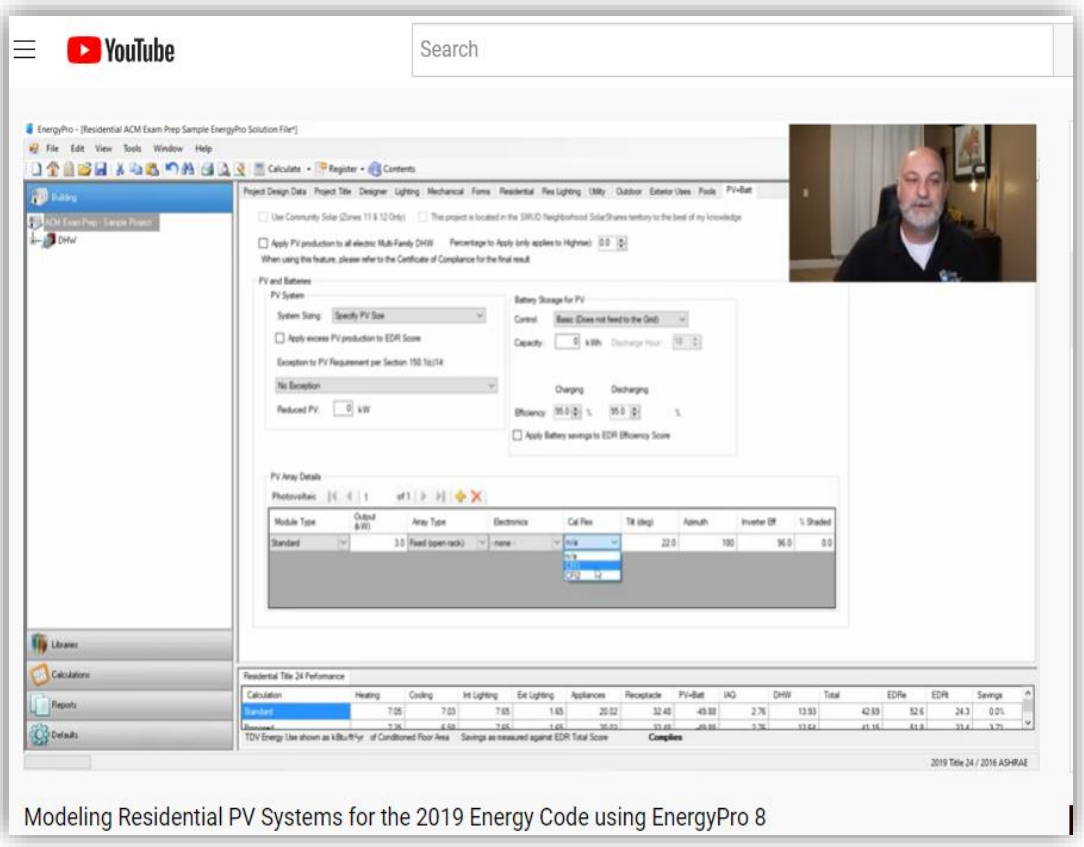
Panel 1: Energy Code Ace provides support needed to facilitate an integrated design process and minimize the amount of time required to document compliance

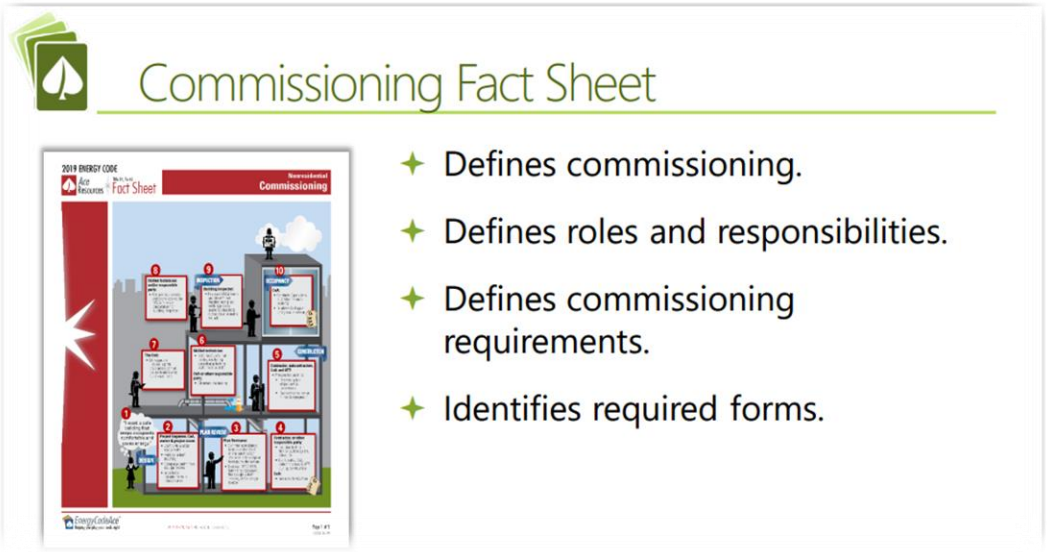
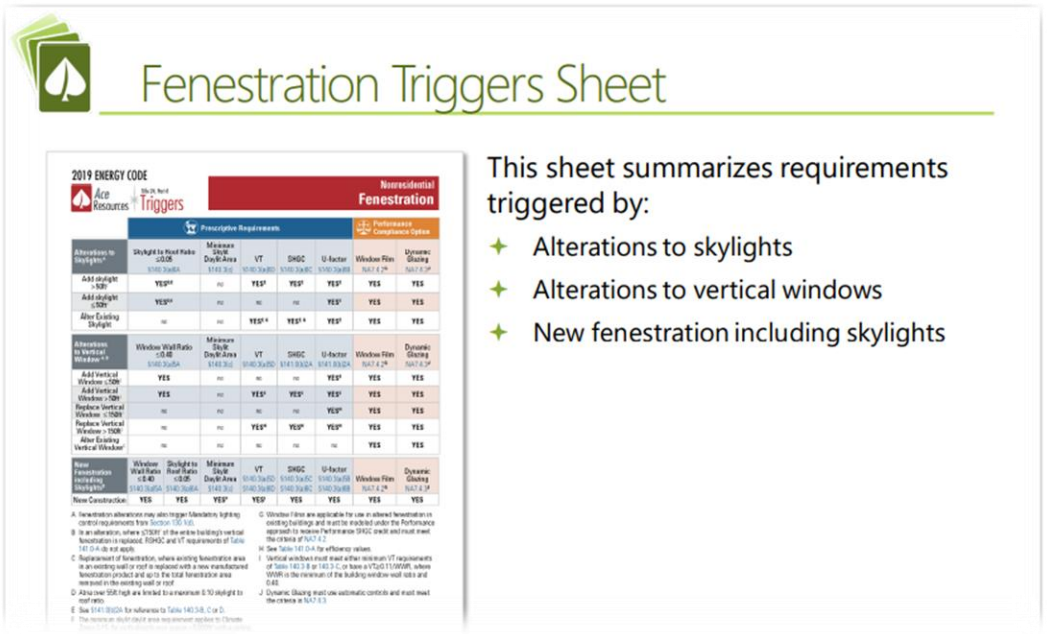
Training is specifically designed to support the tasks that energy consultants, architects, lighting designers and modelers perform and is provided in numerous formats. These screen shots illustrate some of our Title 24, Part 6 Essentials for Architects and Designers course materials.	

	1B-1 **Directions** Project Goals **Initial Design Meeting Breakout 1** ✦ Starting with the basic plans for Winchester Way, your group will create your own version of the project throughout the class. ✦ To begin, choose which member(s) of your group will play the following roles (you will keep these roles throughout the class): ✦ **Client** (will determine project scope/location, energy goals, and budget) ✦ **Energy Consultant** (supports project scope, envelope details and compliance option choices) ✦ **Architect** (working with Client and Energy Consultant, develop project design for envelope details, schedule and coordination) ✦ Next, establish the project's occupancy/function type(s), and where the project is located, per the Client's parameters. ✦ Finally, determine the project's energy goals (meet minimum compliance / LEED / ZNE / Calgreen Tier 1 or 2 / other). **Time: 15 Minutes** 

Collaborative Decision Making

- Determine early on what design features do NOT meet Prescriptive requirements so that the other design professionals can work together on solutions.
- Multi-disciplinary teams are more effective at brainstorming innovative solutions.
- Be open to suggestions, and actively solicit input. Even if you don't implement their exact idea, it may spark an innovative idea of your own.

Code and Coffee modeling demonstrations are available on You Tube for a variety of project types.	
CEAs can be incorporated into the integrated design process.	Per www.CABEC.org/cea, here is a description of the CEA program: **What is a CEA?** Certification as a CEA signifies that a consultant understands the California Building Energy Efficiency Standards (Title 24, Part 6) and has an understanding of broader energy efficiency issues, is committed to providing quality service to clients, and that he/she has made a commitment to conduct business in an ethical fashion. Because CEAs have also make a commitment to ongoing educational requirements, attending advanced industry training puts them on the cutting edge. Certified Energy Analysts (CEAs) are individuals who have demonstrated their mastery of the Residential and/or Nonresidential California Energy Standards through the following steps. 1. Pass the appropriate two-part (Multiple Choice and ACM Modeling) CEA Exam for Residential and/or Nonresidential. 2. Have verified experience and/or education and other certifications related to Title 24 compliance work. 3. Participate in a Professional Practices Workshop (PPW), sponsored by CABEC. 4. Attend at least nine hours per year of continuing education training. Since energy consultants are not regulated by the state, CABEC designed the CEA to be a statement of an energy consultant's working knowledge and understanding of the California Energy Efficiency Standards. When an energy consultant is a Certified Energy Analyst it is a statement to a building department, builder, architect, or homeowner of the professional skills and knowledge of that energy consultant. This certification has become a highly regarded symbol of expertise within the industry and with regard to Title 24 in California.

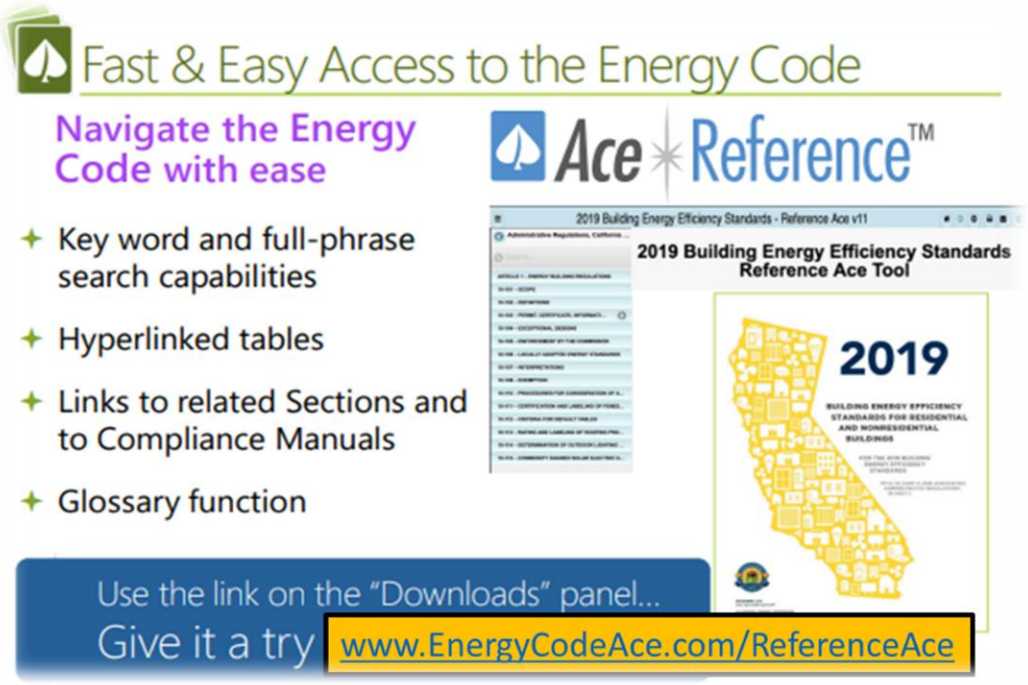
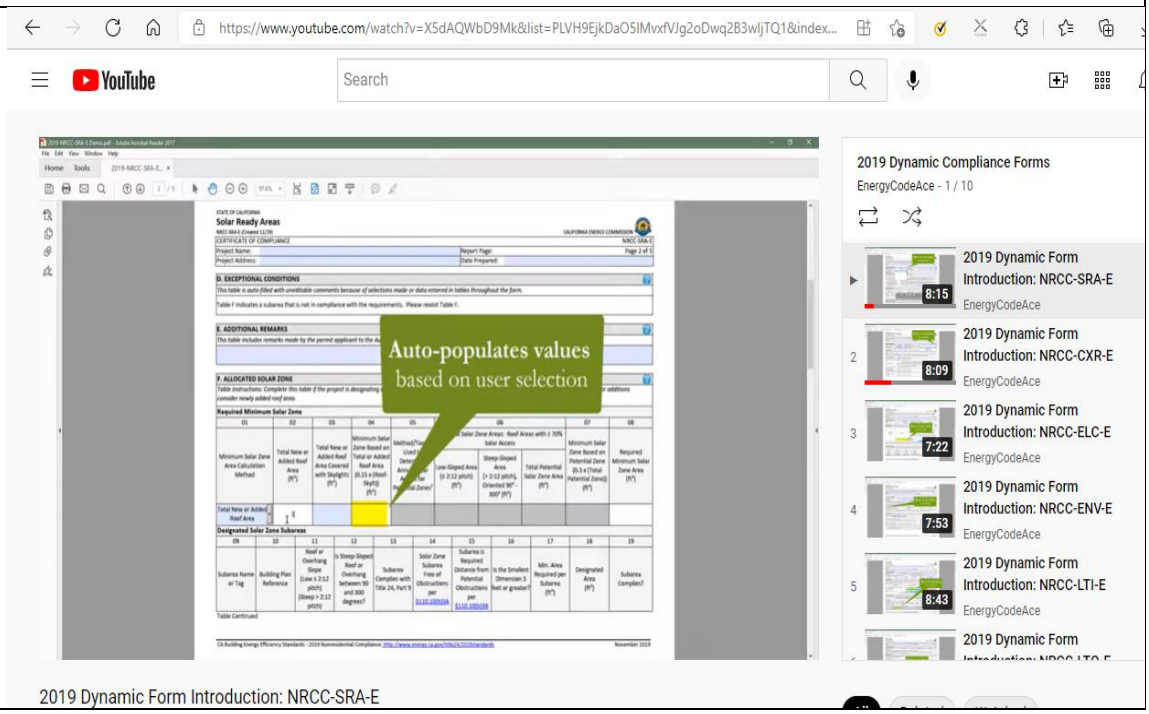
Fact and trigger sheets on a variety of topics can be used to educate clients. Here are a few most commonly used by architects and designers.	 

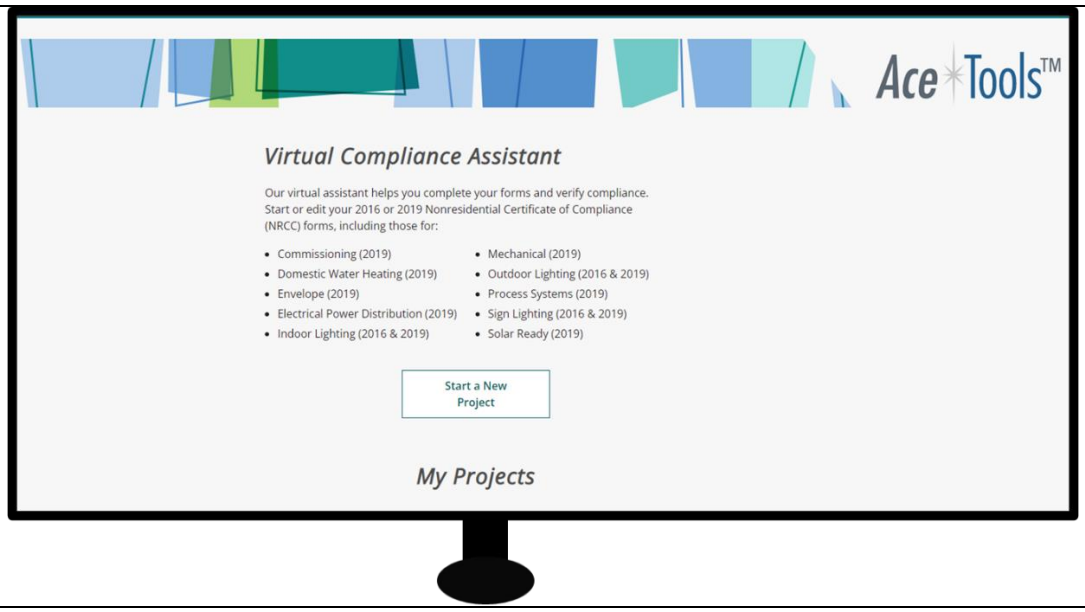
2019 Title 24, Part 6 Essentials — Nonresidential Standards for Architects and Designers 2-49

Fact Sheet: Opaque Envelopes

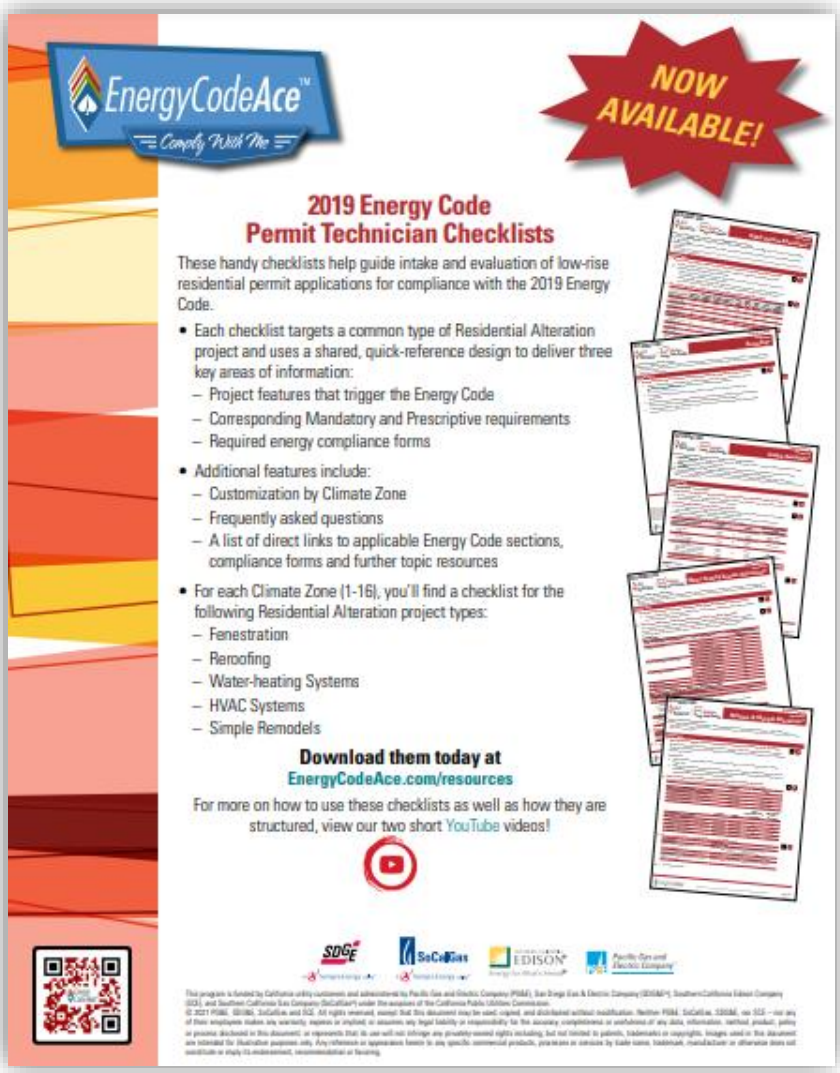
Summarizes:

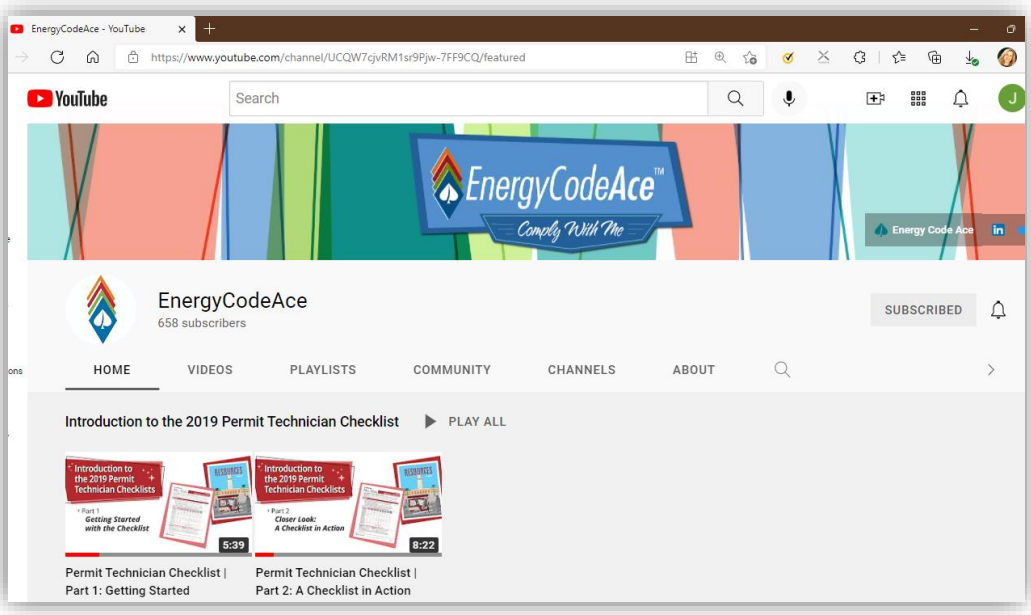
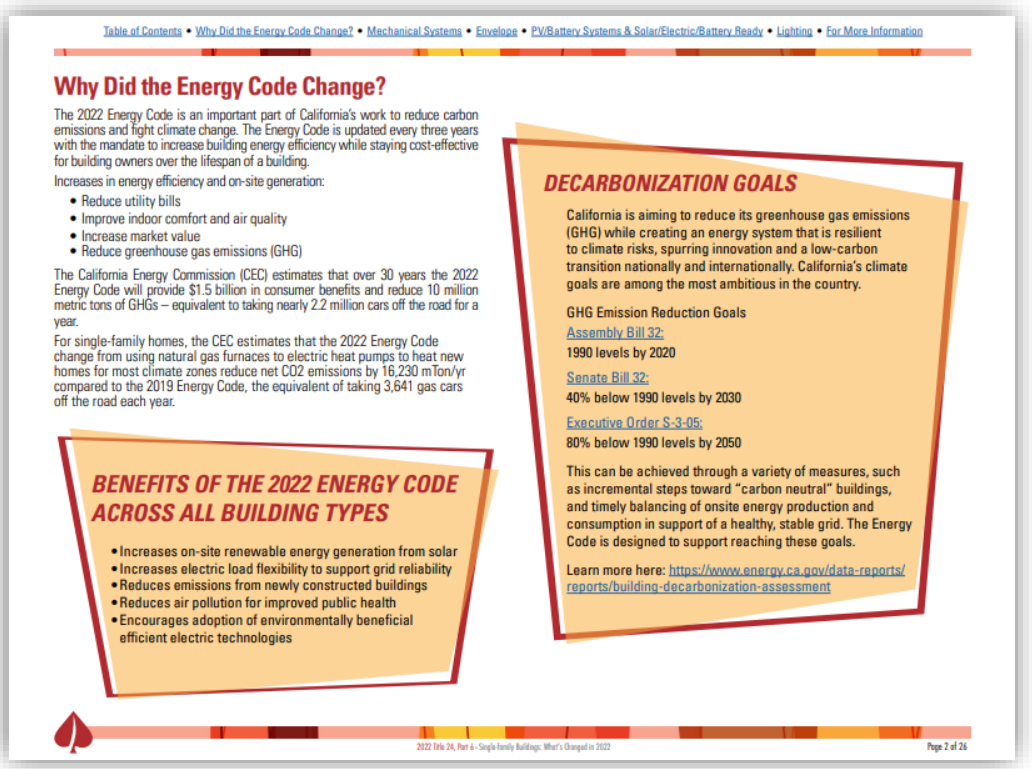
- Mandatory insulation & air sealing requirements
- Prescriptive and Performance paths
- Insulation requirements for Alterations
- Compliance forms

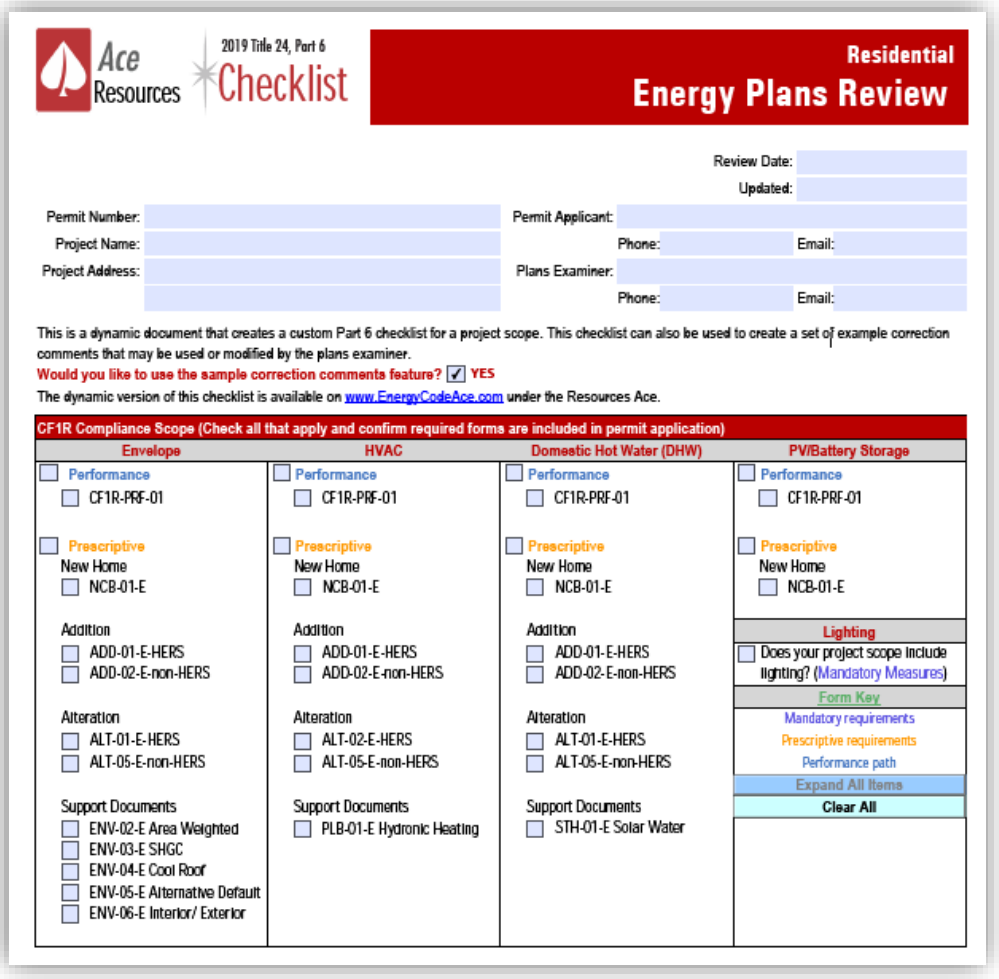
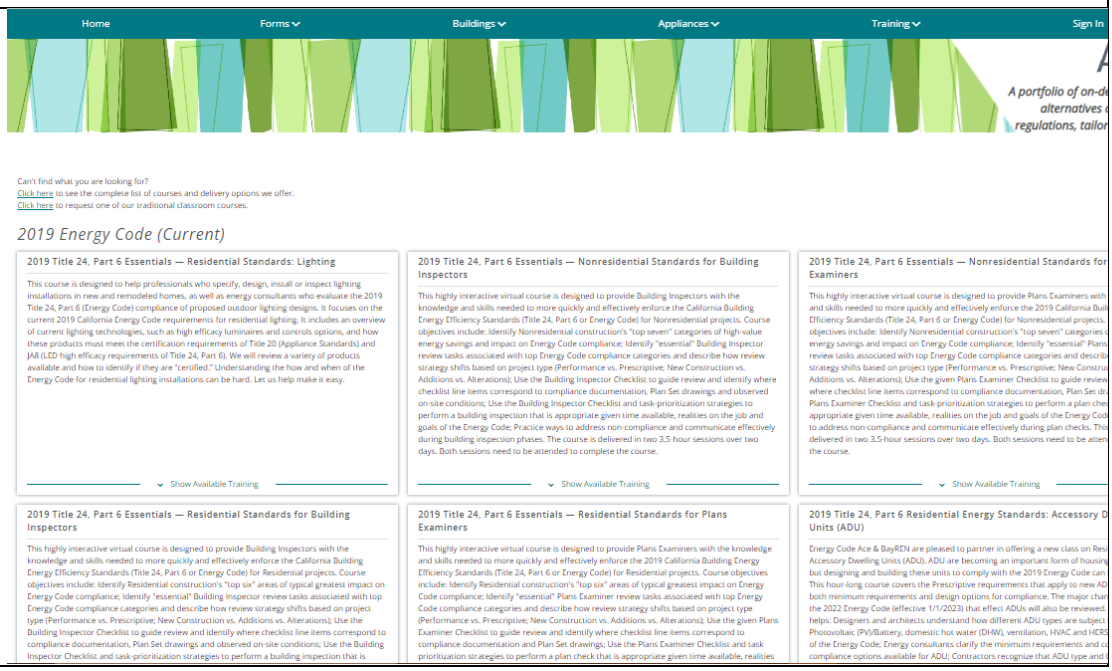
Reference Ace helps designers quickly navigate Title 24, Part 6 and Title 20 and supporting documents.	
Dynamic compliance forms reduce cognitive overload and help verify compliant inputs. Watch how to complete the dynamic forms on the Energy Code Ace YouTube channel.	

VCA helps complete all types of nonresidential certificates of compliance (NRCC) forms while verifying compliance. Also, the VCA will soon issue pre-populated installation forms for installers to use.	

Panel 2: Energy Code Ace helps make it faster and easier for permit technicians, plans examiners and building inspectors to perform their energy code enforcement responsibilities

Permit technician checklists guide intake for most commonly pulled residential permits.	

Energy Code Ace You Tube Channel offers videos that teach permit techs how to use the checklists.	
Fact and trigger sheets may be used to educate customers on code requirements. Note: Energy Code Ace factsheets include “the why” which is something we heard panelists say was important.	

Plans examiner (PE) and building inspector (BI) Checklists help guide energy code enforcement. PE Checklists auto populate plan check comments to help save PEs time.	 Ace Resources 2019 Title 24, Part 6 Checklist Residential Energy Plans Review Review Date: Updated: Permit Number: Project Name: Project Address: Permit Applicant: Phone: Email: Plans Examiner: Phone: Email: This is a dynamic document that creates a custom Part 6 checklist for a project scope. This checklist can also be used to create a set of example correction comments that may be used or modified by the plans examiner. Would you like to use the sample correction comments feature? ☑ YES The dynamic version of this checklist is available on www.EnergyCodeAce.com under the Resources Ace. CF1R Compliance Scope (Check all that apply and confirm required forms are included in permit application) Envelope: Performance; CF1R-PRF-01; Prescriptive; New Home; NCB-01-E; Addition; ADD-01-E-HERS; ADD-02-E-non-HERS; Alteration; ALT-01-E-HERS; ALT-05-E-non-HERS; Support Documents; ENV-02-E Area Weighted; ENV-03-E SHGC; ENV-04-E Cool Roof; ENV-05-E Alternative Default; ENV-06-E Interior/ Exterior HVAC: Performance; CF1R-PRF-01; Prescriptive; New Home; NCB-01-E; Addition; ADD-01-E-HERS; ADD-02-E-non-HERS; Alteration; ALT-02-E-HERS; ALT-05-E-non-HERS; Support Documents; PLB-01-E Hydronic Heating Domestic Hot Water (DHW): Performance; CF1R-PRF-01; Prescriptive; New Home; NCB-01-E; Addition; ADD-01-E-HERS; ADD-02-E-non-HERS; Alteration; ALT-01-E-HERS; ALT-05-E-non-HERS; Support Documents; STH-01-E Solar Water PV/Battery Storage: Performance; CF1R-PRF-01; Prescriptive; New Home; NCB-01-E; Lighting; Does your project scope include lighting? (Mandatory Measures); Form Key; Mandatory requirements; Prescriptive requirements; Performance path; Expand All Items; Clear All
Live training teaches plans examiners and building inspectors to use the checklists to help prioritize energy code enforcement.	 Home Forms Buildings Appliances Training Sign In A portfolio of on-d… alternatives … regulations, tailor… Can't find what you are looking for? Click here to see the complete list of courses and delivery options we offer. Click here to request one of our traditional classroom courses. 2019 Energy Code (Current) 2019 Title 24, Part 6 Essentials — Residential Standards: Lighting This course is designed to help professionals who specify, design, install or inspect lighting installations in new and remodeled homes, as well as energy consultants who evaluate the 2019 Title 24, Part 6 (Energy Code) compliance of proposed outdoor lighting designs. It focuses on the current 2019 California Energy Code requirements for residential lighting. It includes an overview of current lighting technologies, such as high efficacy luminaires and controls options, and how these products must meet the certification requirements of Title 20 (Appliance Standards) and JA8 (LED high efficacy requirements of Title 24, Part 6). We will review a variety of products available and how to identify if they are "certified." Understanding the how and when of the Energy Code for residential lighting installations can be hard. Let us help make it easy. Show Available Training 2019 Title 24, Part 6 Essentials — Nonresidential Standards for Building Inspectors This highly interactive virtual course is designed to provide Building Inspectors with the knowledge and skills needed to more quickly and effectively enforce the California Building Energy Efficiency Standards (Title 24, Part 6 or Energy Code) for Nonresidential projects. Course objectives include: Identify Nonresidential construction's "top seven" categories of high-value energy savings and impact on Energy Code compliance; Identify "essential" Building Inspector review tasks associated with top Energy Code compliance categories and describe how review strategy shifts based on project type (Performance vs. Prescriptive; New Construction vs. Additions vs. Alterations); Use the Building Inspector Checklist to guide review and identify where checklist line items correspond to compliance documentation, Plan Set drawings and observed on-site conditions; Use the Building Inspector Checklist and task-prioritization strategies to perform a building inspection that is appropriate given time available, realities on the job and goals of the Energy Code; Practice ways to address non-compliance and communicate effectively during building inspection phases. The course is delivered in two 3.5-hour sessions over two days. Both sessions need to be attended to complete the course. Show Available Training 2019 Title 24, Part 6 Essentials — Nonresidential Standards for Examiners This highly interactive virtual course is designed to provide Plans Examiners with the knowledge and skills needed to more quickly and effectively enforce the 2019 California Building Efficiency Standards (Title 24, Part 6 or Energy Code) for Nonresidential projects. Course objectives include: Identify Nonresidential construction's "top seven" categories of high-value energy savings and impact on Energy Code compliance; Identify "essential" Plans Examiner review tasks associated with top Energy Code compliance categories and describe how review strategy shifts based on project type (Performance vs. Prescriptive; New Construction vs. Additions vs. Alterations); Use the given Plans Examiner Checklist to guide review where checklist line items correspond to compliance documentation, Plan Set drawings and observed on-site conditions; Use the given Plans Examiner Checklist and task-prioritization strategies to perform a plan check that is appropriate given time available, realities on the job and goals of the Energy Code; Practice ways to address non-compliance and communicate effectively during plan checks. This course is delivered in two 3.5-hour sessions over two days. Both sessions need to be attended to complete the course. Show Available Training 2019 Title 24, Part 6 Essentials — Residential Standards for Building Inspectors This highly interactive virtual course is designed to provide Building Inspectors with the knowledge and skills needed to more quickly and effectively enforce the California Building Energy Efficiency Standards (Title 24, Part 6 or Energy Code) for Residential projects. Course objectives include: Identify Residential construction's "top six" areas of typical greatest impact on Energy Code compliance; Identify "essential" Building Inspector review tasks associated with top Energy Code compliance categories and describe how review strategy shifts based on project type (Performance vs. Prescriptive; New Construction vs. Additions vs. Alterations); Use the Building Inspector Checklist to guide review and identify where checklist line items correspond to compliance documentation, Plan Set drawings and observed on-site conditions; Use the Building Inspector Checklist and task-prioritization strategies to perform a building inspection that is 2019 Title 24, Part 6 Essentials — Residential Standards for Plans Examiners This highly interactive virtual course is designed to provide Plans Examiners with the knowledge and skills needed to more quickly and effectively enforce the 2019 California Building Energy Efficiency Standards (Title 24, Part 6 or Energy Code) for Residential projects. 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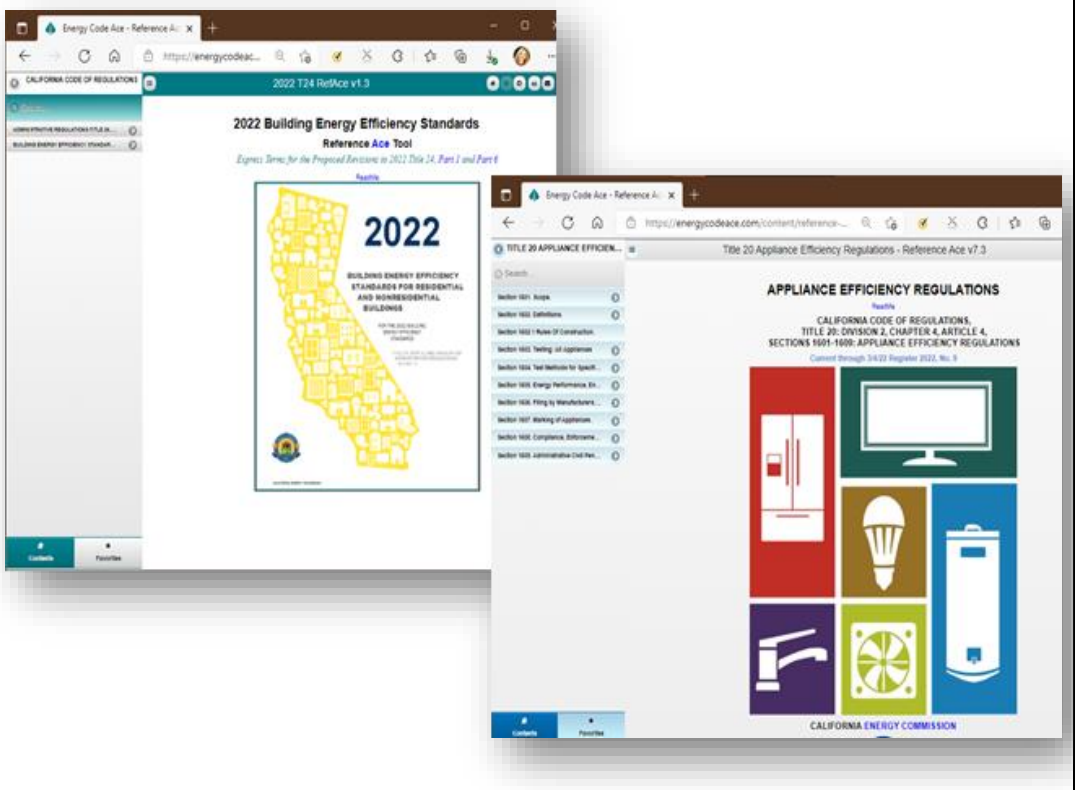
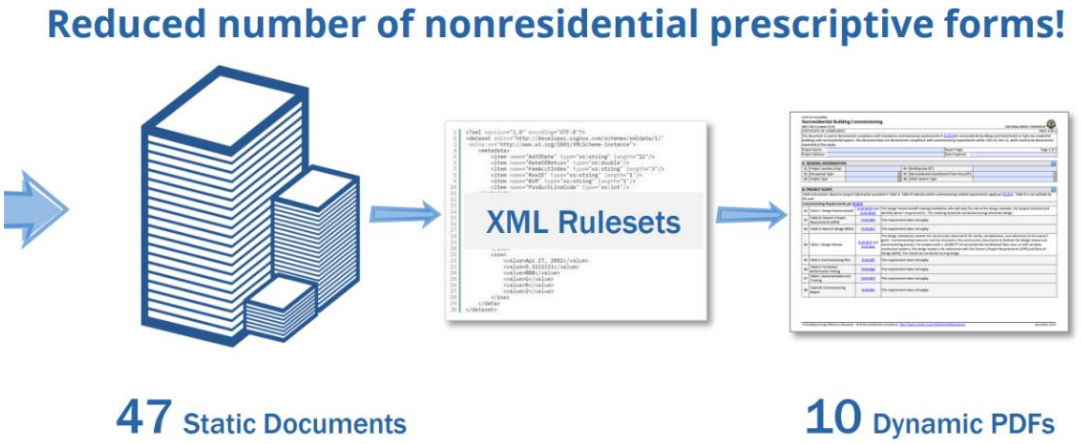
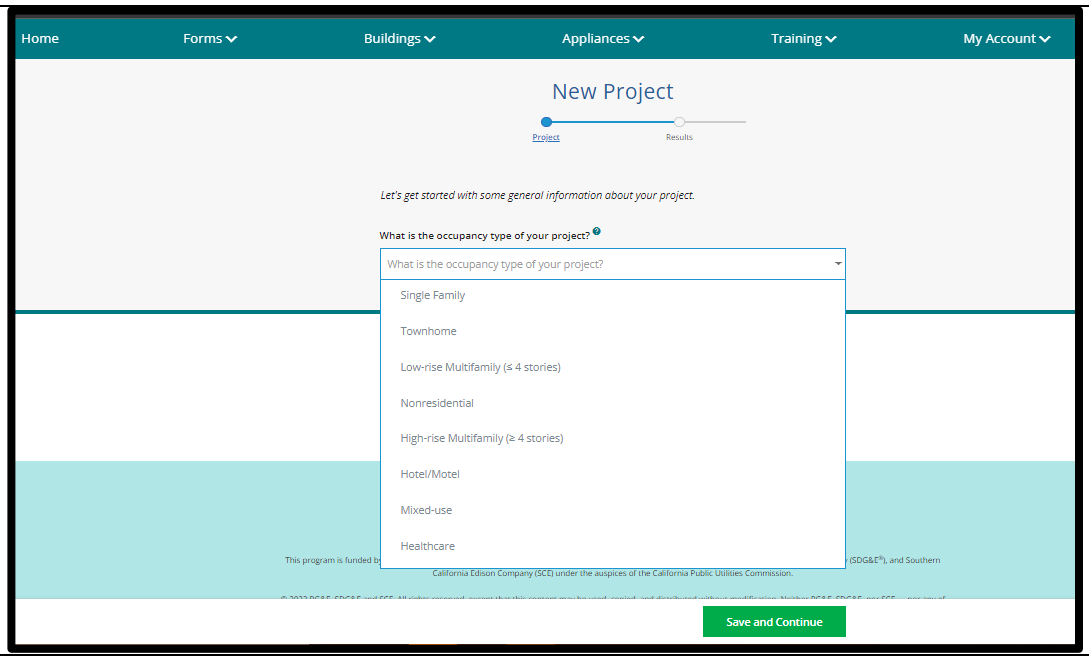
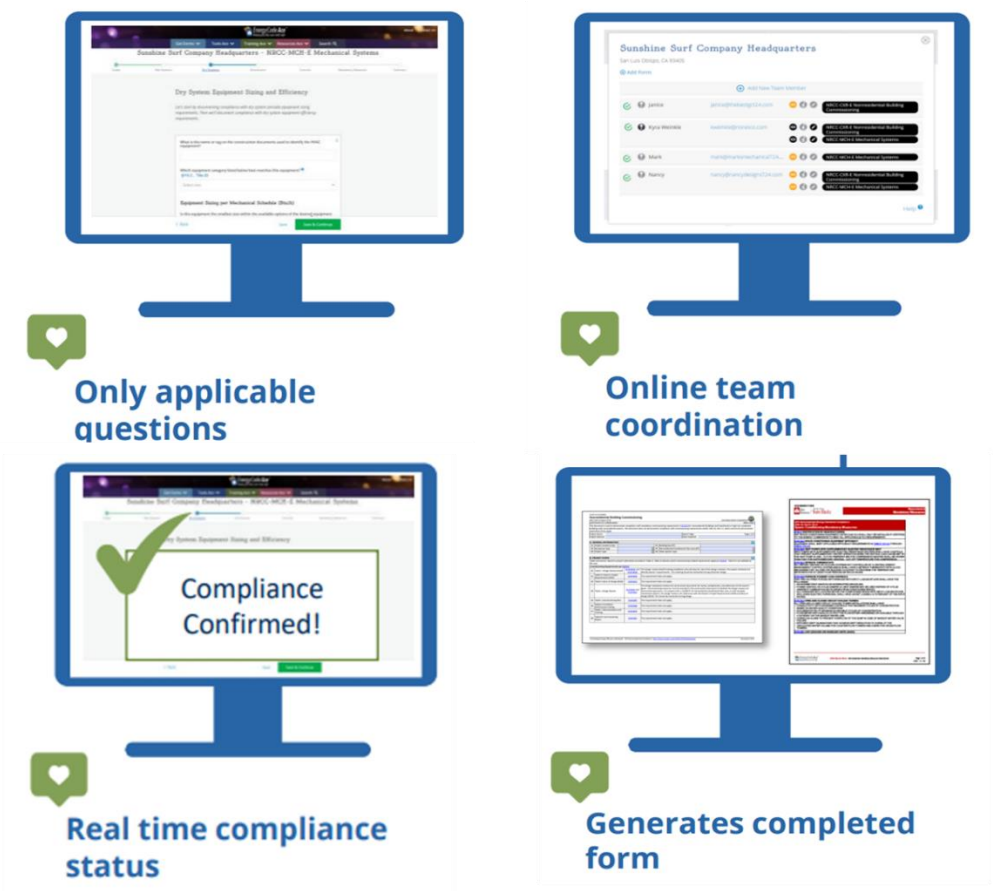
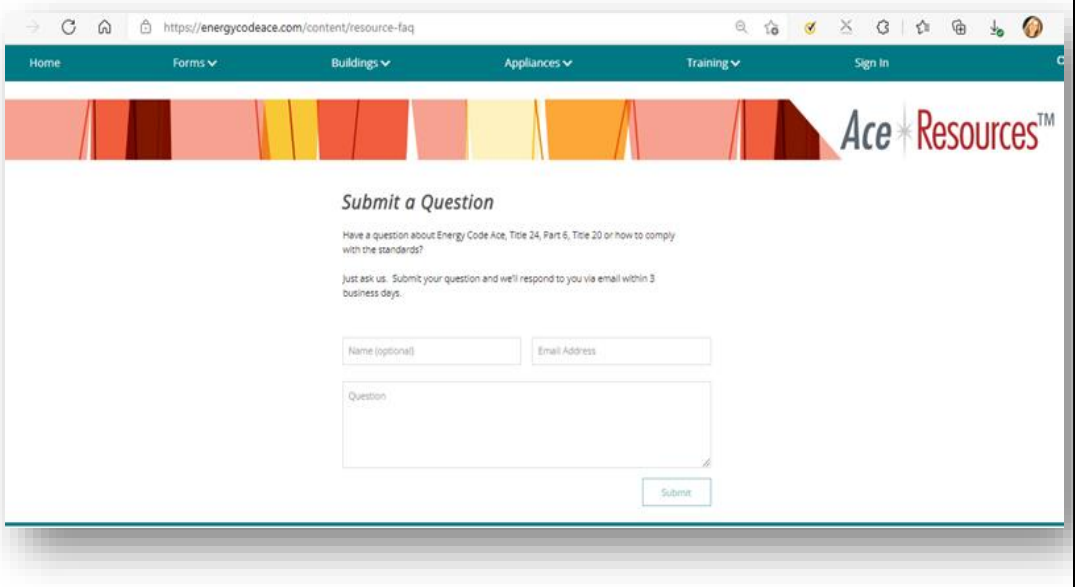
ADU are becoming an important form of housing… but designing and building these units to comply with the 2019 Energy Code can… This hour-long course covers the Prescriptive requirements that apply to new AD… both minimum requirements and design options for compliance. The major chan… the 2022 Energy Code (effective 1/1/2023) that effect ADUs will also be reviewed… helps: Designers and architects understand how different ADU types are subject … Photovoltaic (PV)/Battery, domestic hot water (DHW), ventilation, HVAC and HERS… of the Energy Code; Energy consultants clarify the minimum requirements and c… compliance options available for ADU; Contractors recognize that ADU type and …

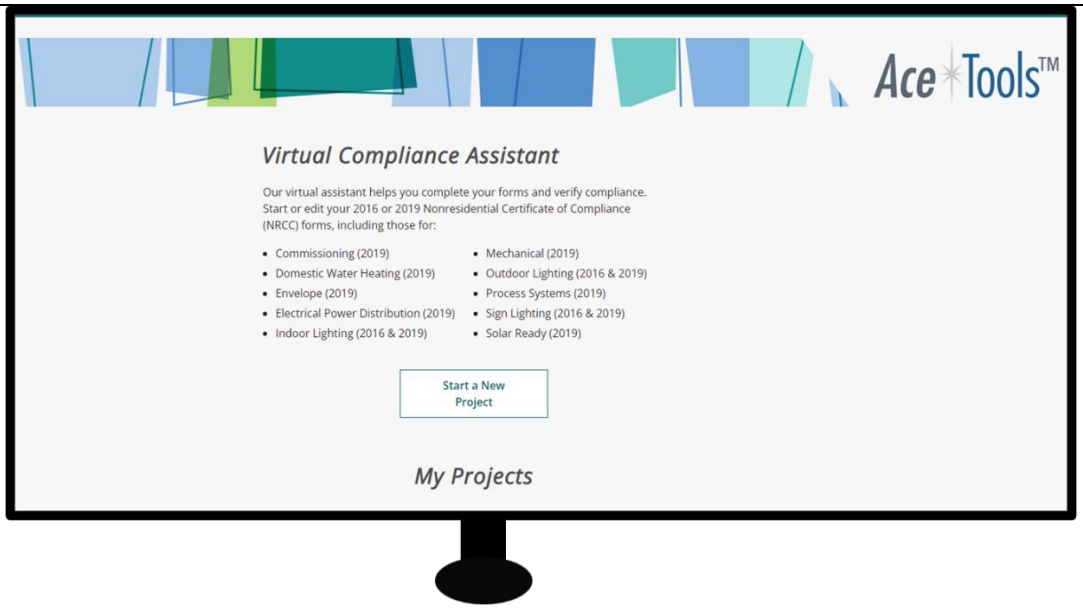
Reference Ace helps building departments and their clients quickly navigate the code language and appendices. Notice the Reference Ace includes both Title 24, Part 6 and Title 20 standards documents.	
Energy Code Ace worked with the CEC to reduce the number of NRCC forms and build in compliance “rulesets” to automate compliance verification.	
Forms Ace helps building department customers determine which forms will be required for their project - and whether their	○ https://www.energycodeace.com/2019-forms-ace-tool

project requires HERS verification.	
VCA can ease identifying code requirements, verifying compliance, and completing forms for all types of nonresidential projects.	This tool verifies compliance and generates forms that indicate when a project does and doesn't comply *before* the permit application arrives at the permit counter. It also auto populates certificates of installation with permitted project data, saving the installer time and indicates if field substitutions are equal or better than what was permitted. This saves designers and installers time on change orders and should streamline inspections. Schemas may be used by other entities who have tools that automate tasks, and these schemas will lead to consistent as-designed vs. as-built project data that may be captured in a central repository.

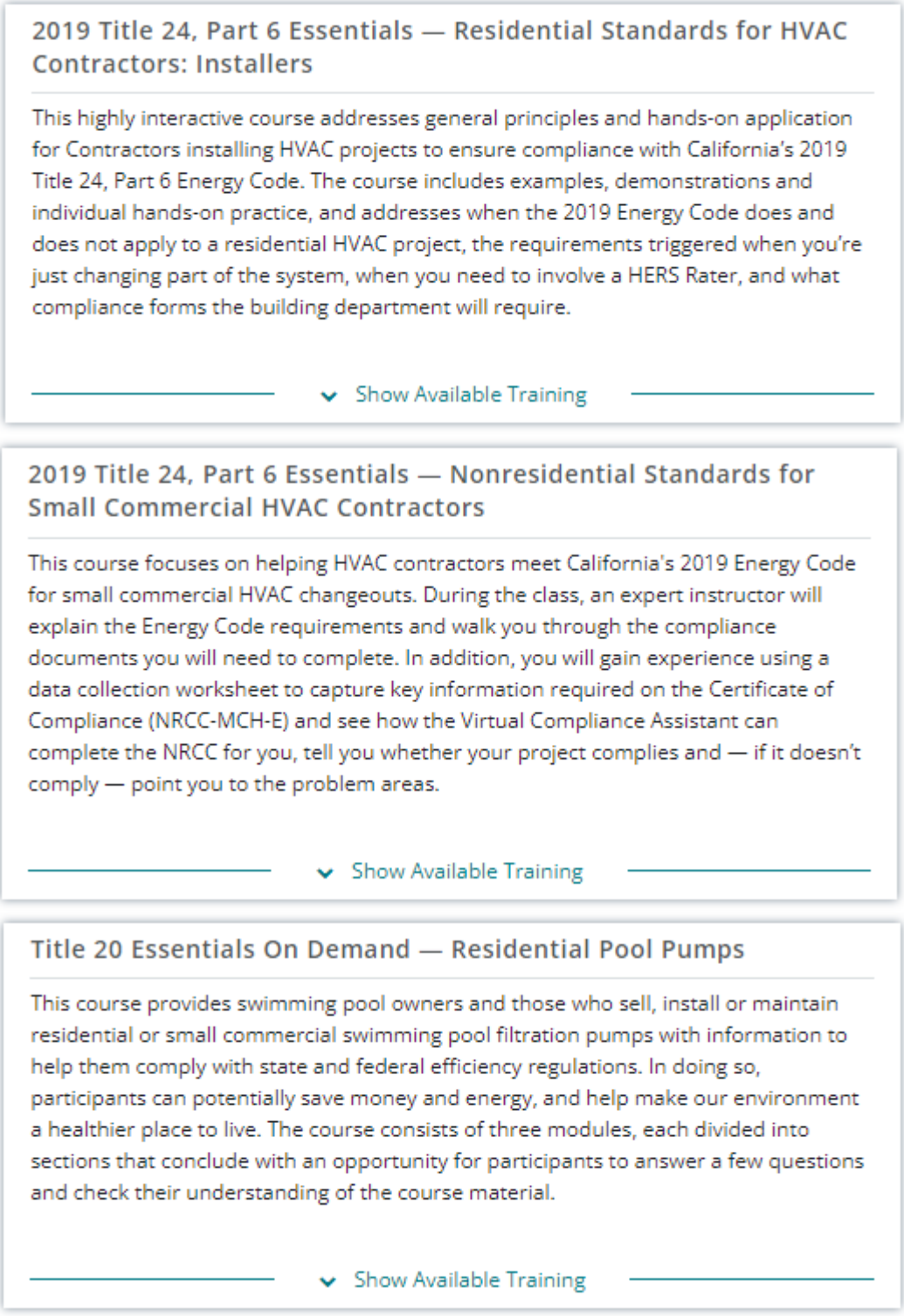
	
Submit a Question through EnergyCodeAce.com and receive one-on-one support from a Certified Energy Analyst at no extra cost. Energy Code Ace fielded more than 2,000 questions in 2021.	

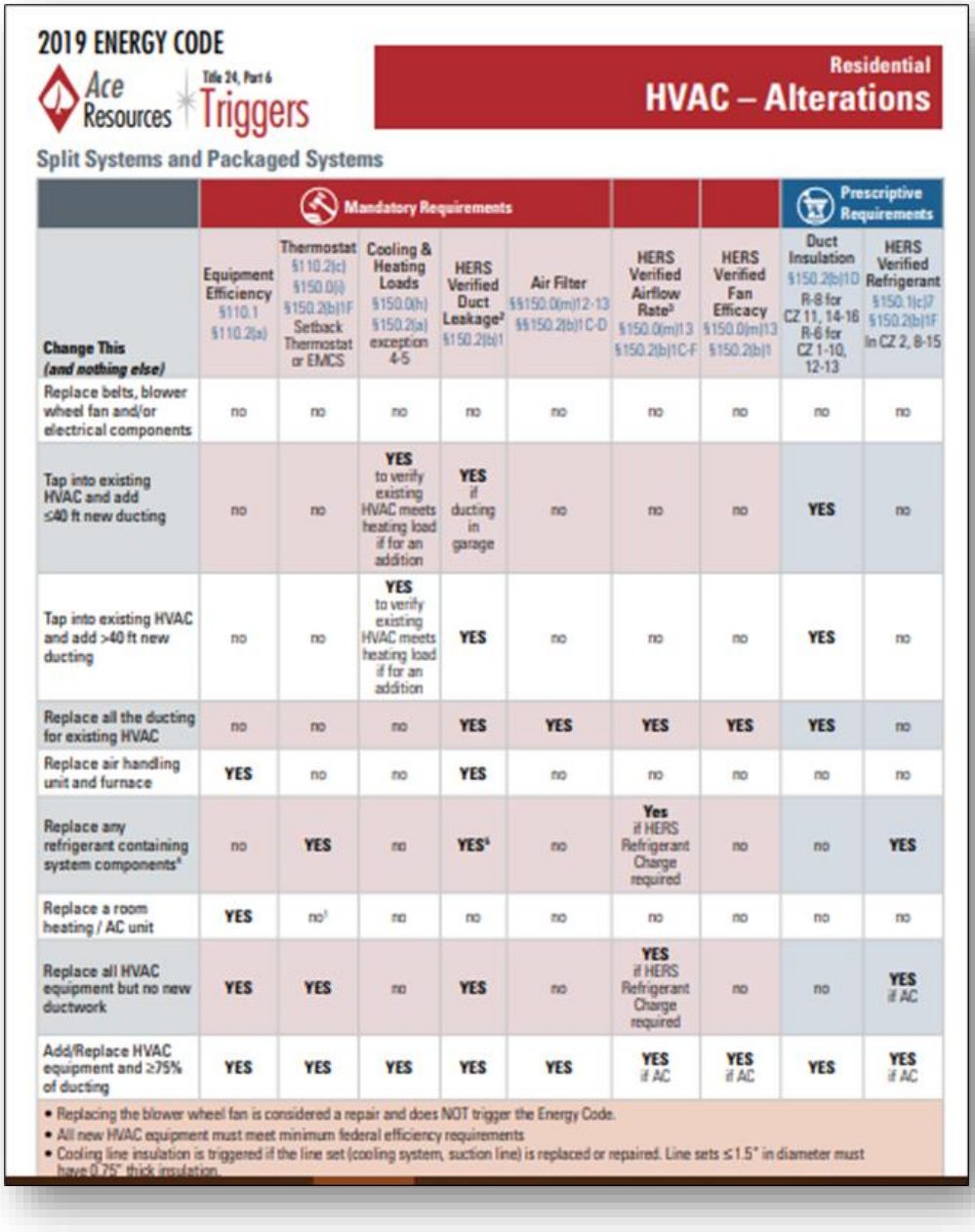
CEA Program	PG&E agrees that the state needs to bolster the compliance supply chain at key points with energy code experts. That's why PG&E supports the California Association of Building Energy Consultants' (CABEC), CEAs exam development, exam administration and mentoring program. CEAs have demonstrated proficiency with each stage of the design/build process. Building departments can encourage clients to bring on CEAs during the design phase of their projects and use them to inform architects, builder, installers, and inspectors throughout the entire project. As stated during the workshop, some building departments are doing this through local ordinances.

Panel 3: Train installers and automate key code compliance tasks

VCA provides pre-populated certificates of installation forms for installers for nonresidential projects and built-in code logic helps verify substitutions.	

Designers can insert Energy Code Ace's note blocks onto plans to help installers realize which mandatory measures, HERS verifications and acceptance tests apply to their projects. Note blocks can be inserted on plans with other project note blocks as part of the construction documents, not separate with the Title 24, Part 6 forms.	2019 ENERGY CODE Ace Resources 2019 Title 24, Part 6 Note Blocks Residential **Quality Insulation Installation (QII)** ***Residential Newly Constructed Buildings and Additions >700 ft²*** ***Prescriptive and Performance Approach*** **PROJECT QII CONSTRUCTION SCHEDULE:** **Design:** QII is included as energy feature in CF1R-ADD or CF1R-PRF and supported in drawings as a design feature. Kickoff meeting including Architect, Builder, HERS Rater, and all subs (insulation, framer, drywall, plumbing, HVAC. Etc. installers) so that the QII inspection schedule and process can be explained and supported before design drawings are complete is recommended. **Building Permit:** CF1R registered through HERS provider and incorporated into submittal set. HERS Rater to confirm verification procedure (sampling procedures is applicable) with team. **Grading:** HERS Rater should set up inspection schedule with all subs off site and coordinate with insulation installer verification requirements and provide tools and resources to support inspection process. **Framing:** To be coordinated by HERS Rater: • Framer incorporating continuous air barrier requirements • All hard covers and draft stops to meet air barrier requirements • Set up inspection schedule with all other subs on site and coordinate with insulation installer for inspections **Rough-In:** To be inspected and verified by HERS Rater and documented with CF2R/3R-ENV-21: • Pre-Insulation inspection to confirm continuous air barrier w/insulation installer including all penetrations by various subs have been caulked and sealed **Insulation:** To be inspected and verified by HERS Rater and documented with CF2R/3R-ENV-22: • Batt insulation inspections to confirm direct contact with air barrier **Drywall:** To be inspected and verified by HERS Rater and documented with CF2R/3R-ENV-22: • Loose-fill insulation inspections to confirm direct contact with air barrier and meets R- value per manufacturer's instructions • All penetrations caulked and sealed of all provided to maintain continuous air barrier in addition to sealing of drywall **Finish:** All CF2R/CF3R forms to be finished up and registered through HERS provider so that final inspection can be scheduled which can be verified with Project Status Report (PSR) **Final Inspection:** All registered CF2R (provided by the Contractors) and CF3R (provided by the HERS Rater) forms are to be provided to the building occupant.

These screenshots illustrate the kind of courses Energy Code Ace offers for specific types of installers:	

Fact and Trigger Sheets provide overviews of code requirements for numerous project types.	

2019 ENERGY CODE

Ace Resources Title 24, Part 6 Triggers

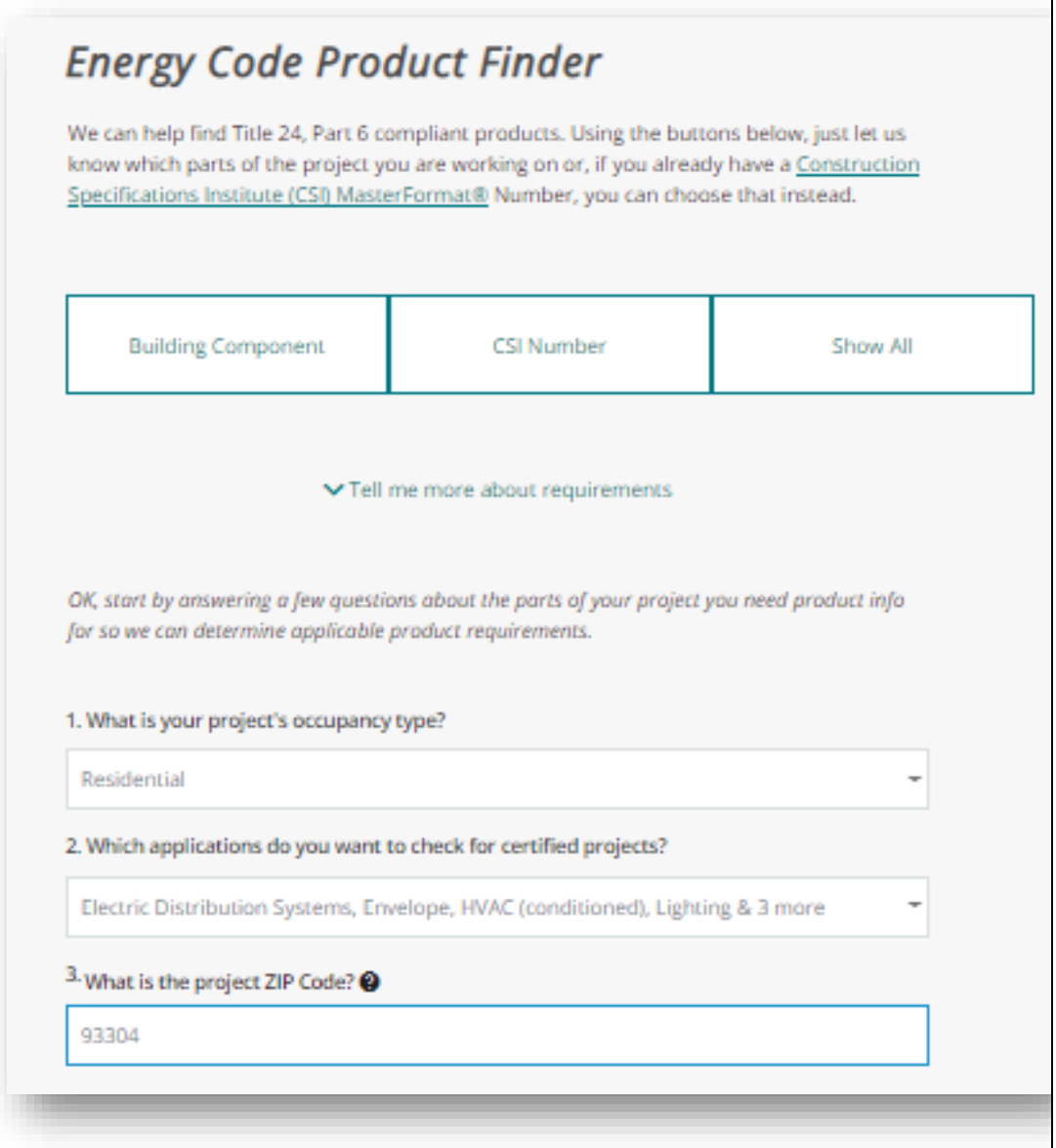
Residential

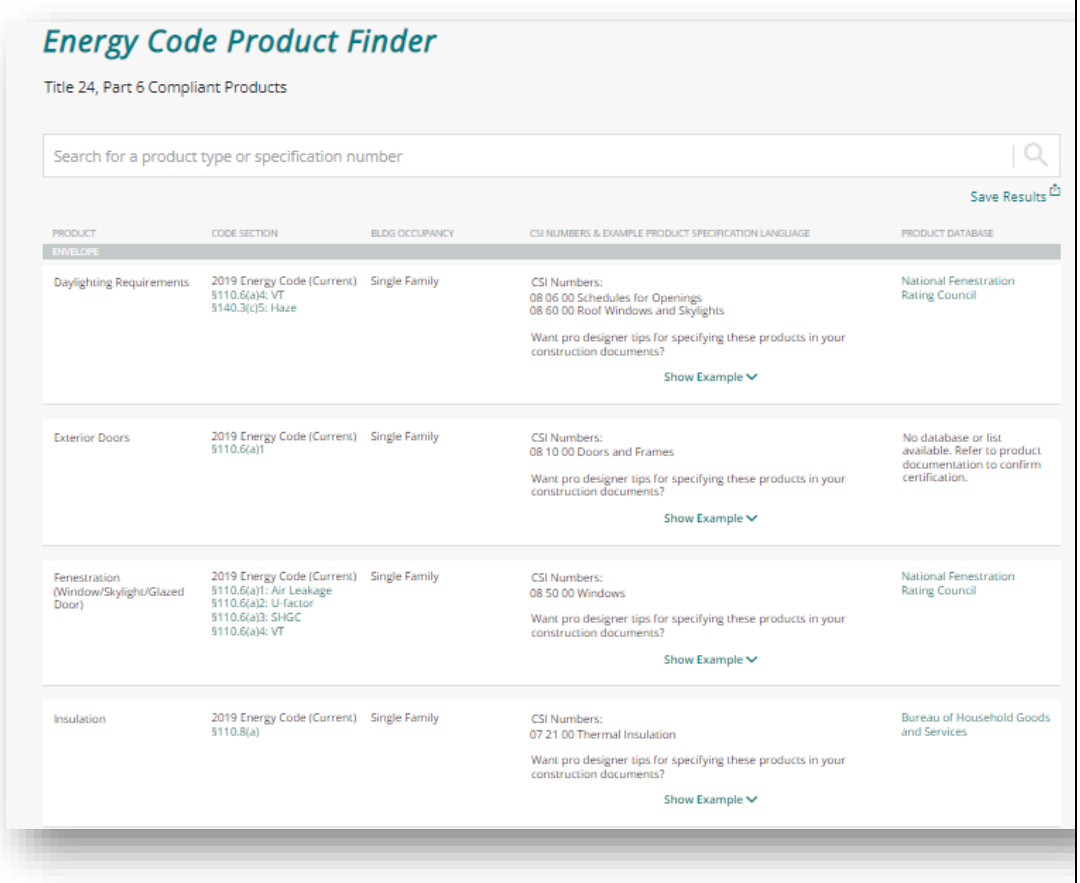
HVAC – Alterations

Split Systems and Packaged Systems

	Mandatory Requirements							Prescriptive Requirements	
Change This ***(and nothing else)***	Equipment Efficiency §110.1 §110.2(a)	Thermostat §110.2(c) §150.0(i) §150.2(b)1F Setback Thermostat or EMCS	Cooling & Heating Loads §150.0(h) §150.2(a) exception 4-5	HERS Verified Duct Leakage[2] §150.2(b)1	Air Filter §§150.0(m)12-13 §§150.2(b)1C-D	HERS Verified Airflow Rate[3] §150.0(m)13 §150.2(b)1C-F	HERS Verified Fan Efficacy §150.0(m)13 §150.2(b)1	Duct Insulation §150.2(b)1D R-8 for CZ 11, 14-16 R-6 for CZ 1-10, 12-13	HERS Verified Refrigerant §150.1(c)7 §150.2(b)1F in CZ 2, 8-15
Replace belts, blower wheel fan and/or electrical components	no	no	no	no	no	no	no	no	no
Tap into existing HVAC and add ≤40 ft new ducting	no	no	**YES** to verify existing HVAC meets heating load if for an addition	**YES** if ducting in garage	no	no	no	**YES**	no
Tap into existing HVAC and add >40 ft new ducting	no	no	**YES** to verify existing HVAC meets heating load if for an addition	**YES**	no	no	no	**YES**	no
Replace all the ducting for existing HVAC	no	no	no	**YES**	**YES**	**YES**	**YES**	**YES**	no
Replace air handling unit and furnace	**YES**	no	no	**YES**	no	no	no	no	no
Replace any refrigerant containing system components[4]	no	**YES**	no	**YES**[4]	no	**Yes** if HERS Refrigerant Charge required	no	no	**YES**
Replace a room heating / AC unit	**YES**	no[1]	no	no	no	no	no	no	no
Replace all HVAC equipment but no new ductwork	**YES**	**YES**	no	**YES**	no	**YES** if HERS Refrigerant Charge required	no	no	**YES** if AC
Add/Replace HVAC equipment and ≥75% of ducting	**YES**	**YES**	**YES**	**YES**	**YES**	**YES** if AC	**YES** if AC	**YES**	**YES** if AC

- Replacing the blower wheel fan is considered a repair and does NOT trigger the Energy Code.
- All new HVAC equipment must meet minimum federal efficiency requirements
- Cooling line insulation is triggered if the line set (cooling system, suction line) is replaced or repaired. Line sets ≤1.5" in diameter must have 0.75" thick insulation

The Product Finder identifies certified products and other product requirements for a specific project scope and provides example specification language to help designers reflect Title 24, Part 6 and Title 20 product requirements in construction documents. The tool also provides links to referenced product databases, such as the Cool Roof Rating Council (CRRC) or National Fenestration Rating Council (NFRC) websites.	



Energy Code Product Finder

Title 24, Part 6 Compliant Products

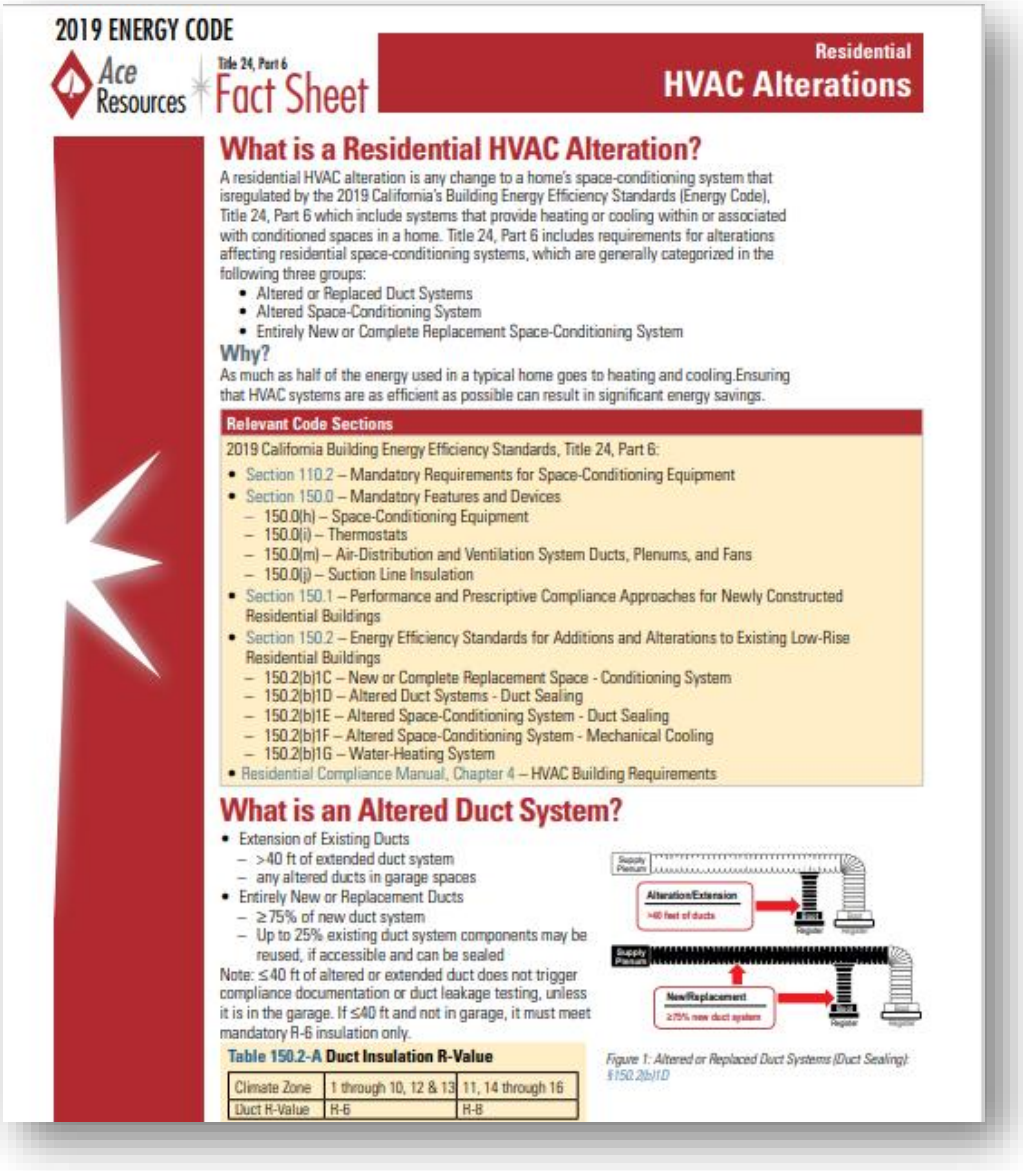
Search for a product type or specification number

Save Results

PRODUCT	CODE SECTION	BLDG OCCUPANCY	CSI NUMBERS & EXAMPLE PRODUCT SPECIFICATION LANGUAGE	PRODUCT DATABASE
ENVELOPE				
Daylighting Requirements	2019 Energy Code (Current) §110.6(a)4: VT §140.3(c)5: Haze	Single Family	CSI Numbers: 08 06 00 Schedules for Openings 08 60 00 Roof Windows and Skylights Want pro designer tips for specifying these products in your construction documents? Show Example	National Fenestration Rating Council
Exterior Doors	2019 Energy Code (Current) §110.6(a)1	Single Family	CSI Numbers: 08 10 00 Doors and Frames Want pro designer tips for specifying these products in your construction documents? Show Example	No database or list available. Refer to product documentation to confirm certification.
Fenestration (Window/Skylight/Glazed Door)	2019 Energy Code (Current) §110.6(a)1: Air Leakage §110.6(a)2: U-factor §110.6(a)3: SHGC §110.6(a)4: VT	Single Family	CSI Numbers: 08 50 00 Windows Want pro designer tips for specifying these products in your construction documents? Show Example	National Fenestration Rating Council
Insulation	2019 Energy Code (Current) §110.8(a)	Single Family	CSI Numbers: 07 21 00 Thermal Insulation Want pro designer tips for specifying these products in your construction documents? Show Example	Bureau of Household Goods and Services

How to improve the quality of heating, ventilation, and air conditioning (HVAC) alterations:

Begin requiring continuing education units for HVAC contractors/ installers.	Energy Code Ace offers multiple courses geared toward quality installation of heating and air conditioning equipment. These courses are offered live in a virtual classroom, are free and the timing of delivery can be customized. Certificates of completion are issued to students at the end of each course and students could submit their Energy Code Ace certificates to the Contractor State License Board (CSLB) for continuing education units (CEUs). Courses include: **2019 Title 24, Part 6 Essentials – Residential Standards for HVAC Designers and Estimators** Addresses general principles and hands-on application for contractors designing and estimating HVAC installation projects to ensure compliance with California's 2019 Energy Code. Its highly interactive format includes examples, demonstrations, and hands-on practice. **2019 Title 24, Part 6 Essentials – Residential Standards for HVAC Installers** Addresses general principles and hands-on application for contractors installing HVAC projects to ensure compliance with California's 2019 Energy Code. Its highly interactive format includes examples, demonstrations and individual hands-on practice. **2019 Title 24, Part 6 Essentials – Nonresidential Standards for Small Commercial HVAC Contractors** Focuses on helping HVAC contractors meet the 2019 energy code for small commercial HVAC changeouts. Learn about energy code requirements, how to complete applicable compliance documents, how to use a data collection worksheet to capture key information required on the NRCC-MCH-E and how the Virtual Compliance Assistant can complete the NRCC for the contractors.
Additionally, residential contractors have another option of taking an on-demand course at any time through the energy code Ace online self-study platform:	**2019 Title 24, Part 6 Essentials on Demand – Residential Standards & Technology: HVAC:** Gives a robust look at the requirements and considerations for recommending HVAC system features that will help a residential project meet or exceed the 2019 energy code requirements for new construction and alterations.
Equip HVAC Contractors with the VCA:	The VCA responds to the Compliance Improvement Advisory Group's (CIAG) first paper in which they recommended "Turbo Taxing" the compliance process. Contractors can now use the VCA to navigate their small to mid-size nonresidential HVAC projects, verify compliance along the way and get the completed forms they need. Perhaps local jurisdictions could hook into the VCA for permit payments and approvals? https://www.energycodeace.com/content/project-tool

Help contractors educate customers using the following existing Energy Code Ace Resources	 2019 ENERGY CODE Ace Resources Title 24, Part 6 Fact Sheet Residential HVAC Alterations **What is a Residential HVAC Alteration?** A residential HVAC alteration is any change to a home's space-conditioning system that isregulated by the 2019 California's Building Energy Efficiency Standards (Energy Code), Title 24, Part 6 which include systems that provide heating or cooling within or associated with conditioned spaces in a home. Title 24, Part 6 includes requirements for alterations affecting residential space-conditioning systems, which are generally categorized in the following three groups: • Altered or Replaced Duct Systems • Altered Space-Conditioning System • Entirely New or Complete Replacement Space-Conditioning System **Why?** As much as half of the energy used in a typical home goes to heating and cooling.Ensuring that HVAC systems are as efficient as possible can result in significant energy savings. **Relevant Code Sections** 2019 California Building Energy Efficiency Standards, Title 24, Part 6: • Section 110.2 – Mandatory Requirements for Space-Conditioning Equipment • Section 150.0 – Mandatory Features and Devices – 150.0(h) – Space-Conditioning Equipment – 150.0(i) – Thermostats – 150.0(m) – Air-Distribution and Ventilation System Ducts, Plenums, and Fans – 150.0(j) – Suction Line Insulation • Section 150.1 – Performance and Prescriptive Compliance Approaches for Newly Constructed Residential Buildings • Section 150.2 – Energy Efficiency Standards for Additions and Alterations to Existing Low-Rise Residential Buildings – 150.2(b)1C – New or Complete Replacement Space - Conditioning System – 150.2(b)1D – Altered Duct Systems - Duct Sealing – 150.2(b)1E – Altered Space-Conditioning System - Duct Sealing – 150.2(b)1F – Altered Space-Conditioning System - Mechanical Cooling – 150.2(b)1G – Water-Heating System • Residential Compliance Manual, Chapter 4 – HVAC Building Requirements **What is an Altered Duct System?** • Extension of Existing Ducts – >40 ft of extended duct system – any altered ducts in garage spaces • Entirely New or Replacement Ducts – ≥75% of new duct system – Up to 25% existing duct system components may be reused, if accessible and can be sealed Note: ≤40 ft of altered or extended duct does not trigger compliance documentation or duct leakage testing, unless it is in the garage. If ≤40 ft and not in garage, it must meet mandatory R-6 insulation only. Table 150.2-A Duct Insulation R-Value Climate Zone | 1 through 10, 12 & 13 | 11, 14 through 16 Duct R-Value | R-6 | R-8 Figure 1: Altered or Replaced Duct Systems (Duct Sealing): §150.2(b)1D o Residential HVAC and Plumbing Application Guide o Nonresidential HVAC and Plumbing Application Guide
Measure contractor performance and reward or penalize accordingly.	PG&E agrees that equipment tracking of some sort is essential and that the following recommendations made by the (CIAG) in their tracking sales and permit volume paper should be revisited and refined with industry partners. Below is an excerpt: *a) Manufacturers must report to the Commission, data on equipment sales to local distributors who sell equipment in California.* *b) Distributors who sell equipment in California must report to the Commission, data on equipment sales to contractors who work in California, as well as non-contractors who take delivery of equipment (e.g., retail stores, unlicensed contractors).* *c) Initially, these sales data could be reported at the zip code level where the equipment is delivered, instead of reporting the contractor or other buyer's identity.*

	d) Eventually, contractors must report to the Commission, data on sales of residential replacement equipment. These data need only be reported at a level aggregated by zip code; no customer names or addresses would be required. *e) At a later time, the same process would apply to commercial replacement sales.* *Second, the Commission would receive data from HERS Providers on all replacement work verified by their Raters. The Commission would compare these data at the zip code or building department jurisdictional level, identify the jurisdictions where the ratio of unpermitted to permitted work is low, and work with the IOUs to determine what practices from those jurisdictions contribute to that success, so that the lessons can be shared with other jurisdictions. The Commission could establish the HERS Repository it plans to develop with the capability of automatically aggregating data by building department jurisdiction.* *The data on sales of equipment should then be compared with the HERS or CEC repository data by serial number and location (zip code level). If equipment is found to be sold to a contractor, and there is no corresponding entry in the HERS registry, the contractor should be asked to provide evidence of where the equipment was installed.* *Third, using these comparisons, the Commission and the IOUs could identify those jurisdictions that need the most help, and work with them to increase the percentage of permitted projects.* *All of these steps should be taken with the goal of increasing collaboration and cooperation, and expressly voiding the specter of punitive outcomes.*
Assist local jurisdictions with adopting local time of sale ordinances through the codes and standards reach code subprogram	A requirement to conduct building energy use audits at time of listing, sale or remodel can incentivize owners to invest in retrofits and to comply with code requirements. The IOUs can equip jurisdictions with the tools and information they need to pursue such ordinances. Please see www.LocalEnergyCodes.com for more information.

PG&E appreciates the CEC for its close coordination with stakeholders and interest in identifying effective compliance tools. We look forward to continued dialogue with the CEC and other stakeholders on this important topic.

Sincerely,

/s/

Mark Krausse

Director, State Agency Relations