QUICK START GUIDE FOR *CBECC 2025*

Overview

CBECC is an open-source software program developed by the California Energy Commission for use in showing compliance with the *2025 Building Energy Efficiency Standards* for nonresidential and multifamily residential buildings. This Quick Start Guide is for *CBECC 2025.1.0* released in June 2025.

This version has been approved by the California Energy Commission and can be used to show compliance with the Title-24 2025 Standards.

This Quick Start Guide provides brief descriptions of the software program's major features and enhancements. It is a good idea to review the Quick Start Guide before using the program for the first time or if you have questions while using the program.

Capabilities/Enhancements included in CBECC 2025.1.0

- General
  - PV/Battery building types updated for consistency with 2025 standard & ACM with backward compatibility and a revised defaulting map based on space function. PV and battery system capacity formulas and exceptions also updated per 2025 standard.
  - Nonresidential and residential SARA (solar access roof area) % steep-slope inputs added to ensure proper calculation of 2025 SARA-based PV system capacity.
  - Analysis results screen fix preventing display of Total LSC & Source results for those analyses (EAA) that exclude them as metrics.
  - Changes to ensure roof and cathedral ceiling reflectance and emittance for multifamily dwelling and common area surfaces align w/ 2025 code.
  - Exceptional condition added for reporting of exceptions to the mandatory vestibule requirements.
- Internal Loads
  - The end-use classification for electric equipment has been updated from "Process" to "Receptacle" to ensure consistency with the categorization used for gas equipment.
  - The lighting allowance type previously labeled as "GeneralAllowanc" has been renamed to "GeneralLighting" to improve clarity.
- HVAC & Ventilation
  - Users can now designate a space as a vivarium or a laboratory classified as Biosafety Level 3 or higher. These spaces are exempt from Section 140.9(c)5, reheat limitation requirement.

- The mandatory minimum efficiency checks have been revised to align with the 2025 Standard requirements.
- HVAC & Ventilation (Plant)
  - Cooling Tower minimum efficiency GPM/HP has been revised to align with the 2025 ACM.
- Reporting
  - NRCC/LMCC PRF compliance reports include updates to compliance tables to reflect the new LSC metric. Current reporting is based on the 2022 schema with updates for 2025 code cycle in certain tables. Update to reflect 2025 reporting is still work in progress and will be included in later release(s) of the compliance software.
- CUAC (California Utility Allowance Calculator)
  - Enabled access to CUAC analysis via 2025 software releases (no changes from 2022).

[Previous Version] Capabilities/Enhancements included in CBECC 2025.1.0 RC

- General
  - Expanded available weather locations from the minimal 16 climate zones to all 92 locations supported in 2022 analysis.
- HVAC & Ventilation
  - The baseline HVAC system determination logic for EAA projects has been updated to reflect the NMACM.
  - Add new "HeatPump" plant equipment object. Currently, this object can only be used in the proposed design as an air-to-water heat pump for space heating. This object is also used in the new baseline Systems 14 and 15 described below.
  - The new Baseline System 14 has been implemented as the new laboratory system in the Standard Design. There will be a few small adjustments to this system in the coming release.
  - The new Baseline System 15 has been implemented as the new school/office system in the Standard Design.
  - Occupied/unoccupied ventilation and exhaust inputs for laboratory systems are now defined using previously available Space inputs. Updates made to enforce minimum flow terminal unit and exhaust flow at these specified rates.
- HVAC & Ventilation (Plant)
  - The boiler hot water supply temperature and hot water temperature difference has been updated to reflect the 2025 ACM.
  - Updates to ensure 2025 Standard design highrise residential dwelling HVAC systems are properly configured (CZ1 from HP w/ Elec supp to HP w/ Gas supp and CZ16 from AC/Gas Furnace to HP w/ Gas supp).
- Envelope
  - Added new limitation on area-weighted U-factor for vertical fenestrations per 2025 standards section 120.7(d).

- Updated roof U-value and reflectance per 2025 standards section 140.3
- CUAC (California Utility Allowance Calculator)
  - Enabled access to CUAC analysis via 2025 software releases (no changes from 2022).

[Previous Version] Capabilities/Enhancements included in CBECC 2025.1.0 RV
- General
  - Upgraded simulation engine from EnergyPlus 9.4 to EnergyPlus 24.1 along with related updates to OpenStudio translation.
- Envelope
  - The standard design for nonresidential new construction has been updated to reflect 2025 envelope changes.
  - Updates related to the standard design for nonresidential additions/alterations has not been incorporated into CBECC 2025.1.0 RV
  - New vestibule requirements of 120.7 have not been incorporated into CBECC 2025.1.0 RV.
  - New area weighted nonresidential new construction mandatory fenestration requirements have not been incorporated into CBECC 2025.1.0 RV.
  - Changes to residential (dwelling and common area) window U-factor and SHGC requirements as stated in the 2025 energy code.
- Internal Loads
  - Occupancy density has been revised to follow Table 120.1-A in the 2025 Standard. When the density is not defined in the Table the old value based on the space function type is used. The minimum occupant load density for ventilation calculation is half of what is for egress/DCV purposes except for the retail spaces where the two values are the same.
  - Tailored Method has been removed from the lighting in puts, and a few additional power allowances for the Tailored Method were added for the Area Category Method following the 2025 Standard update.
  - The Standard design lighting power density has been updated to reflect 2025 changes.
  - The mandatory check of the daylighting controls and the daylighting controls in the Standard model have been updated to follow updated Standard.
- HVAC & Ventilation
  - Replace prior residential heat pump and air conditioner (CSE) simulation method/algorithms w/ the new Performance Map model based on in depth statistical analysis of the NEEP database. This impacts how all split heat pumps and air conditioners are simulated and allows specification of single vs. variable speed for each equipment. This also allows for specification of heat pump backup as none, electric resistance or gas.
  - Standard design HVAC system mapping updated to reflect 2025 changes. Notice that this update does not include the details of the new lab, large school, and medium office systems, systems 14 and 15.
  - Minimum ventilation calculation has been updated to reflect the 2025 Standard.

- ○ New input has been added for users to indicate that the certified guideline 36 libraries are used in the control system. When the libraries should be used but not used, penalties will be applied to the terminal flow rate and the performance of the fan.
        - ○ Changes to residential cooling equipment crankcase heater power by equipment type and size.
        - ○ Limitations
            - ■ Air system efficiency is still defaulted and checked based on the 2022 Standard.
- Service Water Heating / Domestic Hot Water Heating
    - ○ Updates to Service Water Heating not included in the RV release.
    - ○ Fixes to residential central HPWH secondary (loop) tank temperature setpoint to align with 2025 NRMF ACM
- Reporting
    - ○ NRCC/LMCC PRF compliance report currently uses the 2022 reporting templates and will be updated for final release.

Bugs Fixed in CBECC 2025.1.0
- Fixed an issue that caused an excessive number of UMLHs (Unmet Load Hours) when using multi-zone air systems.
- Resolved an issue where the Coefficient of Performance (COP) for Air-to-Water Heat Pumps was inaccurate in simulations.
- Resolved an issue that caused errors when fan-powered terminal units were included in Existing, Addition, and Alteration (EAA) projects.
- CUAC - fixed problem where PV & Battery allocation screen not displaying in 2025 software.

[Previous Version] Bugs Fixed in CBECC 2025.1.0 RC & CBECC 2025.1.0 RV
- Fixed ventilation air not constantly supplied to zones from multi-zone systems without DCV.
- The heating design day exhaust flow schedule for sizing lab systems has been revised to match the cooling design day.
- Fixed problem where Standard model PM (performance map) CSE HVAC systems were not accounting for number of dwellings served when setting supplemental heating capacity.
- Fixes to ensure Standard design Central HPWH systems have simulation inputs equivalent to Proposed systems that are classified as Existing (DHWHeater creation, solar thermal systems, loop pipe insulation thickness & location)
- Fixed error preventing analysis in models containing both residential dwelling units and hotel/motel guest rooms.

[Previous Version] Bugs Fixed in CBECC 2022.3.2
- A multifamily IAQ system simulation error caused by a rounding error has been resolved.
- There was a discrepancy between the definition of a computer room in the standard and the software. The software is now consistent with the standard, recognizing computer rooms with a power density greater than 20 W/ft² as covered process spaces.

- The HVAC systems created by the software for computer rooms with unknown systems were not always correct. The system type should be determined by the total process load, but it was not. This issue has been fixed.
- Fixed an error that prevented non-residential only project switching from newly constructed to EAA.
- The behavior of the optimum start control is not very predictable in EnergyPlus resulting in unexpected credits or penalties. Therefore the simulation of optimum start has been disabled.
- Fixed incorrect multifamily common space baseline HVAC system flow rate.
- Resolved minor issue with how the fan power was distributed in baseline HVAC systems.
- In a very specific condition where the ventilation system and the conditioning system are different systems with different statuses (new, altered, existing), the baseline terminal units were not created. This issue has been fixed.
- Air-side economizer low lockout temperature can now be edited by users, which was overwritten by the software.
- A simulation error caused by thermal zones with mixed-status HVAC systems has been resolved.
- Fixed an error causing analysis abort when assigning an existing residential DHW system to both res common areas (ResOtherZn) and dwellings (ResZn (via DwellUnitType)).
- Fix to prevent compliance reporting of air distribution (duct) systems added to ductless systems during analysis (when adding cooling to no-cooling systems).
- Fixed problem where a user's choice to auto-size proposed HVAC capacities using EnergyPlus was causing failures of residential CSE simulations.
- Fixed a problem in writing of hourly results CSV export for all-residential models conditioned by FPFC or WSHP systems (was excluding plant equipment simulated in EnergyPlus, though these results were properly included in compliance results).
- Fixed a problem causing incorrect water heater counts in compliance reports for central non-HPWH systems.
- Expanded allowable range for photovoltaic (PV) array azimuth (horizontal direction) from 90-300 to 0-360, enabling analysis of arrays pointed in any orientation.

Known Issues:

- General Issues
  - No resizing of standard design systems if unmet load hour (UMLH) requirement is not met.
- Spaces
  - Increasing the number of occupants in the space only currently impacts the ventilation calculation when using DCV. It does not increase the prescribed occupant density assumed in the compliance simulation.
  - Space without a ceiling can cause unexpected heating/cooling load.
- HVAC Secondary Systems
  - Simulation of supply air temperature and flow controls may not match ACM requirements
  - Specifying DCV for all zones of a multi-zone system results in unexpectedly high energy use.
  - The simulated supply air temperature for FPFC systems may be less than expected; which can result in more hours of fan operation and therefore high fan energy use.
  - AirSystem SZVAV systems with economizers act as constant volume systems when the economizer is not active. A higher economizer control limit is recommended to alleviate this.
  - AirSystem SZVAV systems with water-source cooling coils have higher cooling loads and energy use than comparable air-source cooling coils.
  - In some cases with central IAQ systems in multifamily buildings the Standard Design rules are not applied properly and incorrect compliance results may be produced
  - Imbalanced air flow with insufficient zone connection of a residential zone can cause CSE air pressure out of range error that leads to simulation termination. But this error is not obvious to users.
  - Due to limitations imposed by EnergyPlus, the maximum number of zone exhausts that can be connected to a heat recovery system is capped at eight.
  - In a project file with multiple VRF systems, if any VRF system is connected to only one zone system, and heat recovery is specified for one or more VRF systems, heat recovery for one of the units will be disabled causing UMLHs. The current workaround is to avoid having a VRF system connected to only one zone system. If the zone system represents multiple indoor units, divide the thermal zone into smaller zones, and create a zone system for each zone. Otherwise, use mini-split heat pumps to model the single zone VRF systems.
  - WSHP stopped providing any heating/cooling after the EnergyPlus upgrade. This will be fixed in the next EnergyPlus upgrade.
  - The simulated outdoor air in kitchens is not realistic and causes overestimating heating load and sometimes large numbers of UMLHs.

- HVAC Primary Systems

- ○ Simulation failures have been observed for WSHP models, where the condenser water loop temperature runs (high) out of the accepted E+ temperature range. Potential workarounds for this issue include:
    - ■ Modeling the WSHP system as an AirSystem (Type = 'SZHP' or 'SZVAVHP' with 'WaterSource' as the condenser type).
    - ■ Modeling CW system with a single variable-speed pump on the return FluidSegment.
    - ■ Modeling CW loop pump in 'StandBy' mode.
  - ○ VRF and WSHP systems, when modeled for multifamily dwelling units, can yield unreasonable results which could result in incorrect compliance results.
  - ○ The capacities of the auto-sized condensing water loop equipment which serve WSHP in multifamily dwelling units are doubled in simulation.
  - ○ Some models with constant speed pumps on hot water loops may see errors where the water temperature exceeds upper limits due to an EnergyPlus issue where pumps run and add heat to the loop during periods when there is no heating demand.
  - ○ All pumps on primary loop of primary/secondary pumping systems will run if there is any demand on the secondary loop
  - ○ Evaporative-only cooling systems that cycle to meet cooling loads are not simulated correctly.
  - ○ Multifamily WSHP loop cooling tower pump turns on when boiler pump is on. This happens to the systems with separate 'constant speed' pumps serving the cooling tower and the boiler respectively.
  - ○ WSHP loop temperature is not properly controlled if the heat rejection device is "ClosedTowerEvaporative" and the pump(s) is variable speed.
  - ○ Cooling tower total fan horsepower has not been updated per the 2025 ACM
- ● Material Data
  - ○ The values in Table 4.3.8 of JA4 are being reviewed for potential revision. Spandrel panel and curtain wall material data are based on the current values in the table.

Example Nonresidential Input Files: A series of example models are installed along with CBECC in the Projects directory. These models are of various building types and HVAC systems.

CEC Standard Tests*

1. 010012-SchSml-CECStd
2. 020012-OffSml-CECStd
3. 020012S-OffSml-CECStd
4. 030012-OffMed-CECStd
5. 030012S-OffMed-CECStd
6. 040012-OffLrg-CECStd
7. 050012-RetlMed-CECStd
8. 060012-RstntSml-CECStd
9. 070012-HotSml-CECStd
10. 080012-Whse-CECStd
11. 090012-RetlLrg-CECStd

* Standard Test models may not exhibit a zero compliance margin.

VRF Tests

1. 021013-OffSml-VRFSys
2. 021015-OffSml-VRFSys
3. 021016-OffSml-VRFSys
4. 021113-OffSml-VRFSysHR
5. 021115-OffSml-VRFSysHR
6. 021116-OffSml-VRFSysHR

Other Tests

1. 010112-SchSml-PSZ
2. 010212-SchSml-PVAVAirZnSys
3. 010312-SchSml-VAVFluidZnSys
4. 040112-OffLrg-AbsorptionChiller
5. 040112-OffLrg-VAVPriSec
6. 040112-OffLrg-Waterside Economizer
7. 050112-RetlMed-SZVAV
8. 050312-RetlMed-Alterations
9. OffLrg-PlenumsFPBsData
10. OffLrg-PrkgExhaust
11. OffLrg-PrkgLab
12. OffLrg-PrkgLabKitchen
13. OffLrg-RetailHlthcare22
14. OffLrg-RetailHlthcarewithPlant
15. OffLrg-ThermalEnergyStorage_ChillerPriority
16. OffLrg-ThermalEnergyStorage_StoragePriority
17. OffMed-AWHP
18. OffMed-CoreAndShell
19. OffMed-CoreAndShellwithPlant
20. OffMed-FanPowerAdj
21. OffSml-ActiveBeams
22. OffSml-CommKit_SZVAV
23. OffSml-Data_SZVAV
24. OffSml-DOASCV+RadiantCeiling
25. OffSml-DOASCV+RadiantFloor
26. OffSml-DOASCV+RadiantFloorSimplified
27. OffSml-HtRcvry
28. OffSml-HtRcvryFromExh_AllZn
29. OffSml-HtRcvryFromExh_OneZn
30. OffSml-Lab_SZVAV
31. OffSml-MiniSplit
32. OffSml-Office_SZVAV
33. OffSml-PassiveBeams-DOASCV+HtRcvry
34. OffSml-PassiveBeams-DOASVAV
35. OffSml-PassiveBeams
36. OffSml-PSZ-Evap
37. RetlMed-PVAV-IndirDirEvap
38. RetlSml-DOAS+FPFC
39. RetlSml-DOAS+GravityFurnace

Example MultiFamily Input Files: A series of example models are installed along with CBECC in the Projects directory. These models are of various multifamily building types and HVAC systems.

Multifamily Standard Tests
1. MF36Unit_3Story_ELEC-CZ01
2. MF36Unit_3Story_ELEC-CZ02
3. MF36Unit_3Story_ELEC-CZ03
4. MF36Unit_3Story_ELEC-CZ04
5. MF36Unit_3Story_ELEC-CZ05
6. MF36Unit_3Story_ELEC-CZ06
7. MF36Unit_3Story_ELEC-CZ07
8. MF36Unit_3Story_ELEC-CZ08
9. MF36Unit_3Story_ELEC-CZ09
10. MF36Unit_3Story_ELEC-CZ10
11. MF36Unit_3Story_ELEC-CZ11
12. MF36Unit_3Story_ELEC-CZ12
13. MF36Unit_3Story_ELEC-CZ13
14. MF36Unit_3Story_ELEC-CZ14
15. MF36Unit_3Story_ELEC-CZ15
16. MF36Unit_3Story_ELEC-CZ16
17. MF36Unit_3Story_NGAS-CZ01
18. MF36Unit_3Story_NGAS-CZ02
19. MF36Unit_3Story_NGAS-CZ03
20. MF36Unit_3Story_NGAS-CZ04
21. MF36Unit_3Story_NGAS-CZ05
22. MF36Unit_3Story_NGAS-CZ06
23. MF36Unit_3Story_NGAS-CZ07
24. MF36Unit_3Story_NGAS-CZ08
25. MF36Unit_3Story_NGAS-CZ09
26. MF36Unit_3Story_NGAS-CZ10
27. MF36Unit_3Story_NGAS-CZ11
28. MF36Unit_3Story_NGAS-CZ12
29. MF36Unit_3Story_NGAS-CZ13
30. MF36Unit_3Story_NGAS-CZ14
31. MF36Unit_3Story_NGAS-CZ15
32. MF36Unit_3Story_NGAS-CZ16
33. MF88Unit_5Story_ELEC-CZ12
34. MF117Unit_10Story_Elec-CZ12
35. MF8Unit_2Story_ELEC-CZ12
36. MF8Unit_2Story_NGAS-CZ12

MultiFamily Other Tests
1. MF88Unit_Central Exhaust and Supply Heat Recovery
2. MF88Unit_Central Exhaust Individual Supply
3. MF88Unit_Individual Exhaust Central Supply
4. MF88Unit_Individual Exhaust
5. MF8Unit_2Story_ELEC-CZ12-VRF
6. MF36Unit_3Story_NGAS-CZ12-VRF
7. MF88Unit_5Story_ELEC-CZ12-FPFC
8. MF88Unit_5Story_ELEC-CZ12-VRF
9. MF88Unit_5Story_ELEC-CZ12-FlrMult
10. MF117Unit_10Story_ELEC-CZ12-FlrMult

CUAC Samples
1. CUAC-MF8Unit_2Story_ELEC-CZ12
2. CUAC-MF33Unit_5Story_ELEC-CZ03-PVBatt
3. CUAC-MF36Unit_3Story_NGAS-CZ09
4. CUAC-MF88Unit_5Story_ELEC-CZ12

Quick Start Guide Topics

Menu of Topics in this Quick Start Guide

Updates and New Project Website

We plan to issue updates to CBECC often. You can check the new project website (http://bees.noresco.com/) where a link to the latest version will always be posted.

Starting a New Project

When CBECC is first started, a dialog box will appear with the options (No. 2 option may not be available on new CBECC installations):

1. Open Recent Project
2. Select an Existing Project to Open
3. Create a New Simplified Geometry Project

Option 1 and Option 2 are essentially the same, except that the "Open Recent Project" option automatically selects the project that was being worked on the last time CBECC was open. The "Select an Existing Project to Open" option simply requires browsing to the desired project.

If "Select an Existing Project to Open" is selected, the default file type in the browse window is a .cibd25 file. However, this can be changed to .cibd25x or .xml, allowing you to open a SDD XML file. This option should be used when working on a Detailed Geometry project.

Users can take either approach (Detailed or Simplified – see User's Manual for more information) to modeling their project; however, the preferred workflow is to use the *Detailed Geometry* approach using OpenStudio to create building model geometry using SketchUp with the OpenStudio plug-in. OpenStudio includes an option for exporting an SDD file, which CBECC can then open. The *Simplified Geometry* approach is recommended for simpler buildings since this approach comes with certain limitations that could prevent the project from getting credit for certain efficiency measures included in the design.

For more information on the recommended workflow, please view the tutorials at
http://bees.archenergy.com/faq.html.

Analysis Types

Title24ProposedOnly: This will simulate the building input by the user with the 2025 compliance rules.

Title24Compliance: In addition to simulating the Proposed Design, this will simulate the Standard Design building which complies with the 2025 Prescriptive Standards and establishes the energy budget for compliance.

Analysis Scope Options

The scope of analysis is specified through use of a series of checkboxes. Use of these checkboxes results in specification of Compliance Type, which was input directly in CBECC 2016.2.1 and earlier versions.

New and Existing. One (and only one) of these two boxes must always be selected. In the CBECC UI, checking or unchecking either of these options results in the other option automatically being set the opposite way.

New should be selected when the project involves construction on a site where there is not an existing building or where the subscope (described below) has not been previously constructed. For example, if a new building has been built with tenant spaces that did not have lighting or mechanical systems, a subsequent analysis addressing the lighting or mechanical systems for those tenant spaces is still New, even though the building shell is existing. On the other hand, if that same tenant space is remodeled later, analysis of that project would use *Existing*.

Existing should be selected when the project is an addition to an existing building or when an existing building is being altered, or both.

Addition and Alteration. When *Existing* has been selected, the *Addition* and *Alteration* checkboxes must be used. At least one of these must be selected, and both may be selected. An *Addition* means that new conditioned floor area is being added to the building, and the construction related to that new floor area is treated in the same way as new construction. *Alteration* means that portions of the existing building are being changed in ways that affect the energy performance, but without adding new conditioned floor area. When alterations are analyzed, determining the characteristics of the standard design follows different rules than new construction.

When an *Existing* building is described in CBECC, careful attention must be paid to properly specifying the *Status* of all components to be *New*, *Existing*, *Altered*, or *Future*, in order to achieve a valid analysis.

Envelope, Lighting, Mechanical, DHW. These checkboxes allow analysis of partial compliance options. These options are used when only the specified aspects of the building are included in the building permit and energy performance analysis.

Partial Lighting, Partial Mechanical. These checkboxes allow analysis of core and shell projects, where a portion of the lighting or mechanical systems in the building are included in the building permit and energy performance analysis, but other portions have either already been built or will be built in the future.

Note that if some combinations of *Existing*, *Addition* and *Alteration* are selected, then *Envelope, Lighting, Mechanical, Partial Lighting,* and *Partial Mechanical* may be automatically checked or unchecked and the user may not be able to change those selections. In this case, the *Status* of individual components in the model will determine how the analysis will proceed.

Envelope. For all models, the building envelope, including opaque surfaces and fenestration must be described in the user's input model, which will provide the basis of the proposed model. When Envelope is not checked, it is assumed that the envelope is existing and the envelope in the standard design model will match the proposed model. If the project includes any new or altered envelope components, then *Envelope* must be checked and the status of envelope components will determine how the standard design model is specified.

Lighting and Partial Lighting. If the project includes any new or altered lighting systems, then *Lighting* or *Partial Lighting* must be checked. The status of the lighting in each space will be used to determine the characteristics of the lighting in the standard design.

For a *New* project, if lighting will be designed and permitted at some point in the future, *Lighting* must be left unchecked. The *Status* of lighting in all spaces will default to *Future*. In both the proposed and standard design models, lighting will be specified by the rules and will normally be identical. If the lighting in all spaces has been designed and is being permitted, then *Lighting* should be checked. If the lighting for some spaces is designed and included in the permit, but the lighting for other portions of the building will be designed and permitted in the future, such as for a core and shell project, then *Partial Lighting* should be checked.

For an *Existing* project, if *Lighting* is unchecked, then the *Status* of the lighting in each space may be set to either *Existing* or *Future*. If the *Status* of the lighting in a space is set to *Existing*, that same lighting will be used in the standard design. If the Status is set to *Future*, then the rules will determine the lighting for both the proposed and standard design (same as for *New* without lighting).

If the *Status* of the lighting in any space is *New* or *Altered*, then either *Lighting* or *Partial Lighting* (but not both) must be checked. In this case, the standard design lighting will be different from the lighting in the proposed model. If a project is *New* or an *Addition* where the *Status* of the lighting in some spaces is *Future* along with other spaces with the *Status* of the lighting being *New* or *Altered*, then *Partial Lighting* should be checked. If all spaces have the *Status* of lighting set to *New*, *Altered* or *Existing*, then *Lighting* should be checked.

Mechanical and Partial Mechanical. If the project includes any new mechanical system components, then *Mechanical* or *Partial Mechanical* must be checked. The status of the systems serving each thermal zone will be used to determine the characteristics of the standard design HVAC systems.

For a *New* project, if the HVAC systems will be designed and permitted at some point in the future, *Mechanical* and *Partial Mechanical* must be left unchecked. The HVAC systems in both the proposed and standard design models, will be specified by the rules and will normally be of the same type, with system capacities determined by sizing runs.

If the HVAC systems for the entire building have been designed and are being permitted, then *Mechanical* should be checked. If the systems serving some thermal zones are designed and included in the permit, but for other portions of the building will be designed and permitted in the future, such as for a core and shell project, then *Partial Mechanical* should be checked.

For an *Existing* project, if *Mechanical* is unchecked, then the *Status* of the systems may be set to *Existing* or at the Thermal Zone, "HVAC is unknown" should be checked. This checkbox is used for either existing systems where the details are unknown or for systems that will be designed in the future. In either case, the rules will determine the system configuration for both the proposed and standard design models with sizing determined by sizing runs.

DHW. *DHW* may be checked or unchecked regardless of other analysis scope options. If it is included, then DHW systems must be specified and all spaces assigned to a residential DHW system or a fluid system of type service hot water. If *DHW* is not checked, the rules will create systems for both the proposed and standard design models.

Menu Bar

This section explains the program features you access by selecting the options on the menu bar at the top of the screen.

File – The *File* menu contains the standard functions for file management, loading recently used files, saving a newly created file, printing a file and exiting the program.

Edit – In addition to the standard Windows™ *Cut, Copy,* and *Paste* commands, the *Edit* menu contains several commands for editing building descriptions. They are:

- *Edit Component*
- *Create Component*
- *Delete Component*

These menus allow you to edit all building components, including components that are not displayed on the tree control. Use this method to edit components like schedules and performance curves.

Ruleset –*CBECC* is designed to support multiple rulesets that implement the requirements in different codes. However, different codes can require different information, and therefore, compliance projects and model inputs defined using one ruleset will likely need to be revised to work with other rulesets. This function may or may not be enabled in this version of the software.

View – Enables you to toggle the display of the ToolBar and the Status Bar on and off.

Tools – The *Tools* menu contains the following options of interest to end-users:

- *Program and Analysis Options* – Allows users to set the various options related to storage of simulation output and analysis files. Also allows users to set the proxy server settings to enable access to the online report generator if the computer is behind a firewall
- *View T-24 Compliance Report* – Allows users to open an approved CBECC compliance report in the local PDF document viewing software; typically Acrobat Reader. If no valid report or results file is found it will prompt the user to perform the compliance analysis before generating and/or viewing the compliance report.
- *View Project Folder* - Allows easy access to users to open the folder where all the project files are stored and/or generated on analysis.
- *View Project Log File* - Allows users to open the project log file in the local text editor software; typically Notepad.
- *Delete Project Log File* - Allows users to delete the project log file generated for the project. Typically the project log file gets appended with information on opening/saving and running the project. So if the user wishes to start with a fresh project log file this option allows the user to delete the old log file.
- *Perform Analysis* – Performs compliance input checks and simulations based on the current building description.
- *Review Analysis Results* – Allows users to review the results of the last simulation analysis that was performed for the project. Please note that if any changes to the project were made after the analysis and the project was not simulated again, the displayed results would not be current.
- *Generate Draft T-24 Compliance Report* – Generates a watermarked compliance report (pdf) for review/printing. This watermarked report cannot be used to submit for compliance.

Help – The *Help* menu contains the following options of interest to end-users:

- *Quick Start Guide* – Opens up the Quick Start Guide for the software in the local PDF document viewing software.
- *User Manual* - Opens up the User's Manual for the software in the local PDF document viewing software.

Tool Bar

This section explains the program features you access by selecting the icons on the toolbar at the top of the screen.

New File

This button closes the current file (if one is open) and opens a new file.

Open Existing File

This button closes the current file (if one is open) and launches the *Open* dialog to enable you to select an existing file to open.

Save File

This button saves the file under its current name or, if you have not named the file, launches the *Save As* dialog to enable you to provide a new file name.

Cut Selected Item

This button is not currently enabled in *CBECC*.

Copy Selected Item

This button enables you to copy the selected item on the tree control (along with any child components) to the Windows clipboard. The *Copy* button is not available from within program dialogs, but you can use the keyboard equivalent, Ctrl+C, to copy selected text.

Paste Contents of Clipboard

This button enables you to paste components copied from the tree control to the selected location in the tree control (provided that location is compatible with the stored component). The *Paste* button is not available from within program dialogs, but you can use the keyboard equivalent, Ctrl+V, to paste text from the Windows clipboard to the selected input field.

Print

This function is not available in CBECC.

Building Creation Wizard

This function is not available in CBECC.

Perform Analysis

⊞ This button enables you to launch a compliance analysis using the currently loaded building description. The behavior of this button is identical to the Tools menu option. You must save the current building description before performing the analysis.

Compliance Reports

⊞ This icon opens an approved *CBECC Report* in your local document viewing software; typically Acrobat Reader. The behavior of this button is identical to the Tools menu option - "View Compliance Report". You cannot open an approved report unless an analysis has been performed and the model has not been modified since the analysis has been performed. This button may or may not be enabled in this version of the software.

About California Building Energy Code Compliance Software

⊞ This button enables you to view program license and version information.

Print Preview

⊞ This function is not available in CBECC and will be removed in future versions.

Help

⊞ Not yet implemented. For help with the program, please refer to this Quick Start Guide.

Main Screen

The main screen of the *CBECC* program is used primarily for editing building descriptions. There are two folder tabs at the top of the main screen—Envelope and Mechanical. These tabs provide different views of the building description and provide access to two different subsets of the building description data.

Right Mouse Button Menu Options

The *CBECC* program makes extensive use of the menu accessible by clicking the right mouse button. The functions available through these menus depend on whether you are on the main screen or in an input dialog window.

Main Screen Right Mouse Menu. When clicked over a building component, the following choices are available:

- *Edit* – Opens the input dialog window for the selected component

- *Rename* – Enables you to rename the selected component

- *Delete* – Deletes the selected component

- *Copy* – Copies the selected component with all of its child components

- *Paste* – Adds copied components and their children to the selected component

- *Move Up in list, Move Down in list* – Moves the component up or down in the list of components that share a common parent. The input file is reordered accordingly. HVAC components are reordered and will be simulated with components in the displayed order, except for fans which are ordered based on the Fan Position parameter. For example, an evaporative cooler placed before or after a cooling coil will have different effects in the simulation.

- *View Space Footprint* – Displays in your browser a diagram of the space (available for space components only)

- *Expand/contract* – Expands or contracts the list of children components attached to a selected component

- *Create* – Enables you to create new child components for the selected component

Input Dialog Right Mouse Menu. When clicked over an input value in the window, the following choices are available:

- *Item Help* – Not yet implemented. Accesses Help information applicable to the selected input field.

- *Topic Help* – Not yet implemented. Accesses Help information applicable to the selected component.

- *Restore Default* – Returns the value of the field to its default value (if applicable)

- *Critical Default Comment* –Not yet implemented. Opens a dialog enabling you to enter a justification for overriding values designated by the Code as critical defaults, i.e., a value that should only be overridden with special justification.

Building Tree Controls (Parent/Child Relationships)

In order to analyze a building's energy use, it is necessary to track relationships among building components. *CBECC* displays these relationships using the familiar tree control, found in Windows™ Explorer and many other applications. For example, under the Envelope tab, exterior walls are shown as parents to windows (windows are connected to exterior walls and appear underneath walls) and children to spaces. The tree controls vary in the components they display and depend on which folder tab is currently selected.

Use the Tree Control for Rapid Editing

The tree control can be used to move and copy components or groups of components. To move a component, just drag and drop. If an association isn't allowed, the program will prevent the move from being carried out. To copy a component, select the component, copy, and paste. It is advisable to rename

copied components to maintain readability. Whenever parents are moved, copied, or deleted, all related child components are also moved, copied, or deleted.

Components shown on the tree can be moved using a drag-and-drop technique to other components provided it results in a compatible parent-child relationship. For example, you can drag a window onto a different wall, but not vice versa. Re-ordering of child objects assigned to the same parent is currently not supported.

A set of right mouse menu edit commands can be used with the tree control. These are described in the [Right Mouse Button Menu Options](#) section. Double-clicking on any component on the tree opens its input dialog window.

Input Dialog Windows
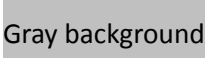
The attributes of each building component can be edited by opening the input dialog window for the component. The dialog can be opened by double-clicking on the component on the tree control, using the *Edit* option on the right mouse menu, or using the *Edit Component* option on the *Edit* menu. (The tree control does not appear until you have created a project description using the wizard or loaded an existing project file [Ctrl+O]).

In keeping with good practice for use of any software, we recommend that you save your building description often and revise the file name once you have substantial effort invested in editing the description under the current file name.

Background Colors

The following background color convention has been used in displaying data on the dialogs:

- White background = available for user input

- Gray background = not user editable

Text Colors

The following text color convention has been used in displaying data on the dialogs:

- Dark blue or cyan text = default values as defined by the current ruleset

- Red text = values that have been changed from their default values

For information on editing features available from the input dialog windows, see the [Right Mouse Button Menu Options](#) section.

To understand what information you are required to enter, see the [Status Bar](#) section.

Status Bar

The second and third panes of the program status bar now report detailed version IDs of (1) the software and (2) the ruleset that is referenced by the project currently loaded into the program:
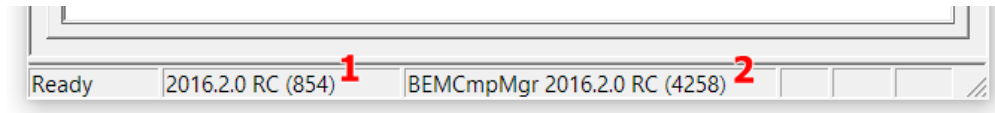
Note: The following features of the Status Bar have not been implemented in this version of CBECC.

The status bar at the bottom of the screen provides useful information about each input field you select. There are three panes on the status bar that provide context-sensitive information. This same information is displayed in the ToolTips if you allow your mouse pointer to linger over an input field.

1. Input Description Pane – Concise descriptions of the selected input field are displayed at the far left of the status bar.
2. Input Classification Pane – The next pane to the right on the status bar displays a set of labels that indicates which inputs you are required to provide, which are optional, and which are unavailable for input. The input classification labels are explained in the table below.
3. Data Source Pane – The pane at the far right of the status bar displays a set of labels that identify the source of the information (if any) contained in the field. This can help you distinguish between information that is dictated by the compliance checking process and the information you have entered and for which you are responsible. The data source labels are explained below.

Input Classification Explanations

No field selected	No building data field is currently selected.
Input is compulsory	You are required to enter data in the selected field; the program cannot perform a compliance analysis unless you do.
Input is required	You are required to enter data in the selected field if the field is applicable to your project.
Input is optional	You may enter data in the selected field if the field is applicable to your project, but you are not required to do so. If the field contains a default value, you are permitted to simply use that value without considering its suitability for your project.
Input is critical default	You may overwrite the data in the selected field with an entry more appropriate for your project than the default. However, if you do overwrite this "critical default" value, you must be prepared to provide documentation substantiating the value you have chosen.
Field is not editable	You cannot enter data in the selected field. The data in this field are defined by the compliance rule set or a supporting process.

	In some cases, the field may also be an intermediate calculated parameter or one that is not applicable to the currently selected compliance rule set.
Navigation input	The purpose of the selected field is to enable you to select a component for editing without having to exit the current component and choose the next component from the tree

Data Source Explanations

No field selected	No building data field is currently selected.
Value from user	The data shown have been defined by the user either directly through a user input or indirectly through wizard selections.
Value from simulation	The data shown have been defined by an energy simulation.
Value undefined	No data have yet been defined for the field.
Value from program	The data in this field have been defined by the program either to implement requirements and procedures specified in the energy code or to conform to building energy modeling conventions.

Defining New Components

There are two main ways to define new components (e.g., walls or equipment) in the main program interface.

Define a New Physical Component

To define a new physical component, follow these steps from the Main Program Screen:

- Right-click on the component on the tree control to which you want to add the new component.

- Select *Create*, then the type of object you want to add. (Only applicable component types will appear on the list.)

- Accept the default name, parent, and existing component to copy from or edit these fields and click OK.

- Edit the input fields with white backgrounds to describe the new component and click OK.

Deleting Project Files

If you have created multiple projects under different project names, you may want to delete project files to free up hard disk space on your computer. By default, project files are stored in the C:\Users\<your username>\My Documents\ CBECC 2025 Projects\ directory, although where the files are stored may differ on your computer depending upon where you installed the program and if you selected a different location for storing files.

In the Projects folder, you will find several files with the same project name you used but with differing file extensions. If you have no further use for information on a project, delete all files using the primary file name. If you would like to retain a project but store it as efficiently as possible, delete all files using the primary file name EXCEPT the one having a .cibd (input building design) file name extension. The other project files are recreated when an analysis is performed, with the exception of the project .log file. The log file lists compliance analysis warnings and errors shown in the UI, as well as other information related to processing/simulating models. Each time analysis is performed; new messages are appended to the end of this file, and should be reviewed when troubleshooting your compliance analysis.

How to Report a Problem

This software is released for testing purposes and we anticipate the user running into errors and problems. We appreciate your willingness to help us make progress by taking the extra time to document and report issues in a way that will help us fix them quickly.

When you come across an issue, please submit the issue by sending an email to:
        CBECC Support <cbecc.com@energy.ca.gov>

And include as much of the following as possible (copy and paste this template into your email):

- Type of Issue
- CBECC version (Version can be found in the Help-> About menu) and is represented as show below: CBECC 2025
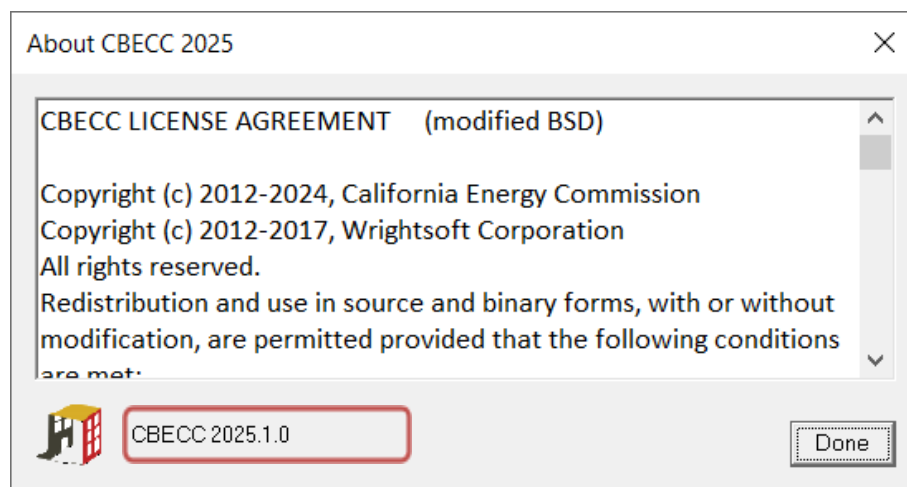
- Describe the error, using as much detail as possible.
- List the steps taken to produce the error, using as much detail as possible.
- If there is an error message, what is the message? If possible, take a screenshot of the error message and attach it to the email as a file.
- Please attach your <ProjectName>.cibd22 file. This is the file you open and save from inside CBECC. By default, this file is located in the following directory, C:\Users\<your username>\My Documents\CBECC 2025 Projects.

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