

# Release Notes

Version CBECC-Res 2022.1.0

June 2022

## Overview

CBECC-Res is an open-source software program developed by the California Energy Commission for use in showing compliance with the *2022 Building Energy Efficiency Standards* for single family residential buildings. These Release Notes are for CBECC-Res 2022.1.0 released in June 2022.

**Please Note: For the 2022 Standards, all multifamily buildings will be included in CBECC 2022 and can no longer be analyzed in CBECC-Res.**

***This version has been approved by the California Energy Commission and can be used to show compliance with the 2022 Title-24 Standards.***

### **CBECC-Res changes since release of 2022.0.7 Beta (3/25/22)**

- Update of main executables and all program library dependencies from 32-bit to 64-bit (consistent w/ CBECC releases)
- Implementation of standalone battery storage systems, enabling battery charging from the (utility) grid. Standalone batteries are only allowed for models w/ no onsite PV arrays defined
- Ability to describe battery efficiency using either round-trip or separate charge/discharge efficiencies
- Several other PV and battery analysis changes for consistency with ACM
- Whole House Fan exception for SFam homes  $\leq 500\text{SF}$  added (Exception to 150.1(c)12)
- Updates to reduced PV requirement exception options, for consistency w/ 2022 code
- Updates to community solar analysis, now taking into account 2022 weather, TDV, source energy and CO2 emissions multipliers

### **CBECC-Res changes since release of 2022.0.6 Alpha (3/11/22)**

- Ducting for heat pump water heaters located in conditioned space
- Changes to cooling design temperatures and thermostat set points to improve calculations for heat pumps
- VCHP - Detailed is an optional model for variable capacity heat pumps that are on the cold climate heat pump list maintained by the Northeast Energy Efficiency Partnerships, Inc. (NEEP). The NEEP listing includes efficiency at minimum and maximum capacity over a range of outdoor temperatures as reported by manufacturers
- Self-Utilization Credit reinstated in UI for compliance analysis

**CBECC-Res changes since release of 2022.0.5-RV (4/10/21, SVN r2063)****Changes made primarily for 2019 analysis but also impacting 2022**

- Ruleset update fixing bug in report logic preventing output of Existing air distribution objects to CF1R's HVAC - Distribution Systems table (related to tic #1118)
- Added HVACSys:PropEqStd flag enabling adjustments to fan power for consistency with standard design systems
- Revisions to IAQ vent rules to prevent zeroing out CFM in EAA & addition-alone standard design models where no minimum CFM is calculated
- Revised duct location defaulting when location set to 'Multiple Places' to ensure ducts not too large for attic before placement there (related to tics #1151 & #1270)
- Change range check for ExtWall:Tilt and add for attic roof and CathedralCeiling tilt to reflect std (was wall > 60 & roof <= 60 but is now wall >= 60 and roof < 60) (tic #1271)
- Enumeration and ruleset update to OG-100 solar collector manufacturer, brand, model and performance data
- Added shuffling and averaging of DHW draw profiles in each SFam CSE simulation
- Ensure IAQFan error messages are reported during analysis for fan assigned only to ADU (fixes SRE/ASRE undefined issue)
- Prevent creation of main home DHWSYS in CSE input when project is all-ADU (addition alone), halving DHW draws & use
- Fixed omissions/errors in mapping DHWHeater:ASHPTType = "Rheem HB 50", "Rheem HBDR-22-65" & "Rheem HBDR-22-80" to CF1R XML  
T11a\_HeatPumpWaterHeaterSimulationGroup
- CSE v0.893 - Add tier3 generic hpwh presets (40, 50, 65, 80 gal)
- Addition of new (generic) brand: "tier 3 (40+ gal)", "tier 3 (50+ gal)", "tier 3 (65+ gal)" and "tier 3 (80+ gal)" NEEA HPWH options
- Added CF1R XML output of HSPF & COP to W04\_EfficiencyType and W04a\_EfficiencyType (tic #1273)
- Fixed Std design model prep bug where Existing PTHP equipment flagged as requiring air distribution equipment (user support)
- Altered executables and ruleset defaults & compliance report message to prevent shuffling of SFam DHW draw schedules for 2019 analysis
- New Use Default ACH50 input (Proj:UseDefaultACH50) toggled on in ALL sample models (other sample model differences related to recent restructuring changes to DHWHeater and DHWSys inputs)
- Fix related to 6/25 ducts in attic support issue (tic #1270) - prevent locating ducts outside when MaxSupDuctArea not set >= 0
- Mods to prevent CSE object names from ending with '\', which CSE interprets as a line-break

- Mods to prevent assignment of multiple DHW systems per zone in single family models
- Ruleset fix to ensure that ALL assigned fans are reported in Section\_Cc (HVAC - Fan Systems table)
- Addition of new 'VCHP - Detailed' heat pump type and numerous updates and adjustments over time as CSE model developed and tuned
- Removed 5% HERS derating on watts and SRE/ASRE (until future HERS audit implementation)
- Standard Design IAQ system CFM limit increased from 110% to 125%
- Update to IAQ filter/inlet/... accessibility checkbox label & tooltip message
- Add new building-wide IAQ FID (fault indication display) checkbox, defaulting to 0, which when checked removes 10% HRV & fan power derating
- Update to DWHR (drain water ht recov) default efficiency from 43 to 42%
- Update of default and standard design PV solar access from 100 to 98%.
- Data model, UI, defaulting and reporting rule mods enabling the user to specify DHW compactness factor (for compliance credit) without having to enter fixture distances
- New model checks added to ensure presence of a minimum window area ( $\geq .05 * CFA$ ) and reasonable volume to floor area ratio ( $CondVol \geq 7 * CFA$ )
- Fix for problem where reduced PV requirement (AB 178) with PV size of 0kW specified throwing divide by zero error for Multiple Orientation models
- Adjustments to thermostat setpoints and equipment sizing multipliers to improve simulation accuracy and sizing of equipment to both cooling and heating loads
- Revised logic to keep StdHeatingType = input HeatSysType for EXISTING systems that are not PropEqStd (tic #1324)

### **2022-specific Updates**

- Added 2022-specific DR HPWH Basic control schedules to look-up table
- Switch HVAC & DHW fuel options for '2022 Final', SFam, no proposed HPWHs, CZ 10 (making CZ 10 the same as CZs 1,2,5-9,11,12,15,16)
- Warning message presented to CBECC-Res users upon opening 2022 MFam project file (indicating MFam no longer supported)
- Error message added to pre-analysis check preventing 2022 MFam model calcs from any tool using CEC compliance engine
- Enable specification and use of EXCEPTION 2 to Section 150.1(c)8 of 2022 Std - allowing (no penalty) for an instantaneous electric water heater w/ point of use distribution installed in new dwelling units with a conditioned floor area  $\leq 500$  SF (tic #1289)
- Initial porting (placeholder) for 2022 Community Solar - calcs still require update to 2022 mults & weather (tic #1321)
- Target EDR, Self-Utilization Credit and Precooling options removed from UI and analysis (unless EnableResearchMode activated)