

Frequently asked questions about CBECC-Com modeling for California's 2022 Building Energy Efficiency Standards, Title 24, Part 6.

Q: What is the new performance compliance metric that will apply to the 2022 California Title 24 Code?

Source Energy - NEW

- **New** metric that correlates with greenhouse gas emissions from combustion processes and leakage from fuel systems
- Represents net present value over time of source energy consumption as the utility generation mix evolves
- Driver for decarbonization
- Pending final approval, will be added to 2022 Title 24 compliance software

Time Dependent Valuation (TDV) - CURRENT

- Hourly metric that represents the net present value over time of utility costs
- Typically has more variability than utility retail rates, including time-of-use rates
- Is the only performance metric in the 2019 Title 24 compliance software
- Drives cost effective options
- Used to determine cost effectiveness of new code measures under consideration

When will the new metric go into effect?

The California Energy Commission is in the process of adopting new measures and approving the new metric for inclusion in the 2022 Title 24 Standards and compliance software. As part of the process, public hearings introducing the new metric occurred in 2020. Formal approval is expected in summer 2021. The new metric will be added to the Title 24 CBECC-Com software and a research version will be available to energy modelers to test results on real projects in late 2021 or early 2022.

For projects permitted after January 1, 2023, design teams using the Title 24 performance path will need to pass both TDV (cost effectiveness) and Source Energy (emissions from fuel source) compliance requirements.

Carbon Dioxide Equivalent

Per the EPA website (<https://www3.epa.gov/carbon-footprint-calculator/>), carbon dioxide equivalent, CO₂e, means the number of metric tons of CO₂ emissions with the same global warming potential as one metric ton of another greenhouse gas and is calculated using Equation A-1 in 40 CFR Part 98. A CO₂e metric will be calculated and displayed in CBECC-Com software, though it will not be used in determining compliance.

Why is this change important?

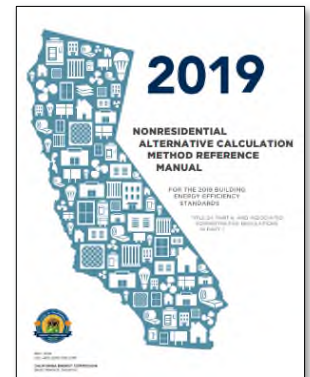
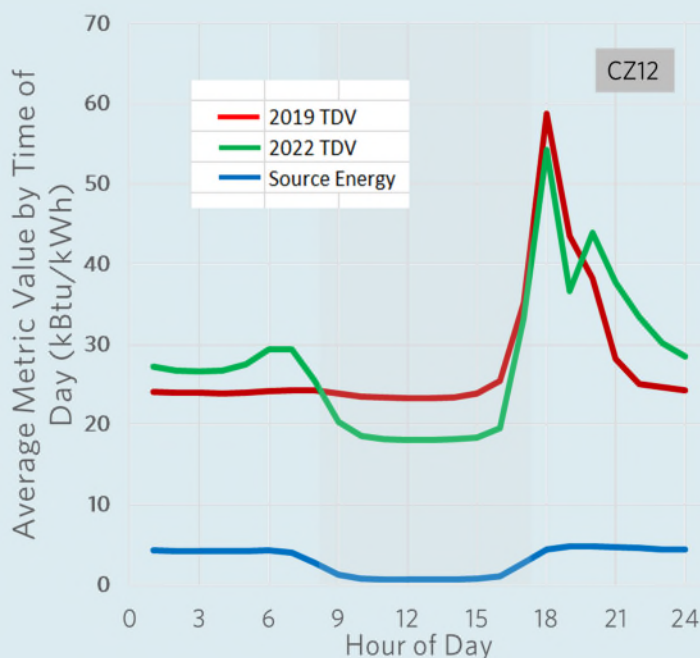
The new metric correlates to the global warming impacts of emissions and leaks associated with different fuel sources. The addition of a second metric to CBECC-Com software will make compliance more challenging for gas heat systems, making compliance for electric heat systems relatively easier. Also, compliance for electric heat systems will be less challenging due to changes in weather files and TDV profiles. However, design projects are required to comply with both metrics, starting January 1, 2023.

As electricity generation becomes increasingly renewable in California, the emissions from electricity-based cooling and heating sources become increasingly favorable. For a small office, a single zone air conditioner (SZAC) is a system that minimally complies with the 2019 Title 24 Standards. For 2022 Title 24 Standards, the single zone heat pumps in most cases will have a net positive compliance margin, in comparison with similar-efficiency systems that use gas heating. Systems that use natural gas for space heating will have a more difficult time complying with the new Source Energy metric, while systems that use electricity for space heating will have TDV as the limiting factor for compliance.

Designers can still use a system with gas heating if they demonstrate that the system uses no more TDV Energy or Source Energy than the baseline. Also, trading off envelope efficiency in a design will result in large Source Energy penalty and a larger TDV penalty than under the 2019 Title 24 Standards.

Did you know?

TDV places a higher value on energy use during late afternoon and early evening hours, when fossil-fired generation needs increase. In recent years, peak demand has been shifting to later in the day, with a deeper trough in the middle of the day when photovoltaic systems are at the highest output. As a result, source energy for electricity consumption is much lower during daytime hours when renewable production is at or near its peak.



2019 Nonresidential Alternative Calculation Method Reference Manual

Find the Manual here:
energy.ca.gov/2019publications/CEC-400-2019-006/CEC-400-2019-006-CMF.pdf

Additional Resources:

CalBEM: calbem.ibpsa.us/

CBECC-Com:
bees.archenergy.com/

Energy Code Hotline:
1-800-772-3300 (Free) or
Title24@energy.ca.gov

CEC Online Resource Center:
energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/online-resource-center

2019 NR Compliance Manual:
energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency-1

Energy Code Ace:
energycodeace.com