TITLE 24, PART 6 | 2028 CODE CYCLE

Healthcare

Codes and Standards Enhancement (CASE) Proposal

Ian Blanding
September 23, 2025

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

Agenda

- Proposal Description
- Market and Technical Consideration
- Technical Barriers and Solutions
- Per Unit Energy and Cost Methodology
- Compliance and Enforcement
- Discussion and Next Steps

Proposal Description

- Code Change Proposal
- Benefits
- Background Information

Proposed Code Change

New Construction

- Modify or remove exceptions for healthcare buildings for new construction requirements in sections 120.2(e), 140.4(d), and 140.4(m).
  - **120.2(e) Shut-off and reset controls for space-conditioning systems.** Timeclocks, occupancy sensing, etc.
  - **140.4(d) Space-conditioning zone controls.** Prevents simultaneous heating and cooling or VAV to reduce cooled air before reheating
  - **140.4 (m) Fan control.** At least two stage fan control for DX > 65 kBtu/h, variable speed fans for VAV systems

See Title24stakeholders.com for proposal description, justification, draft code language, and requested data https://title24stakeholders.com/wp-content/uploads/2025/08/2028_T24_Measure_Summary_Healthcare48.pdf

Proposed Code Change

Existing Buildings - Alterations

- Modify or remove exceptions for healthcare buildings in existing buildings for *specific alterations* in section 141.0(b).
  - The systems covered in 141.0(b) include requirements for:
    - Envelope (Mandatory and Prescriptive)
    - Lighting (Prescriptive)
    - HVAC (Mandatory and Prescriptive)
    - SWH (Prescriptive)
    - Electrical Power Distribution Systems (Prescriptive)

See Title24stakeholders.com for proposal description, justification, draft code language, and requested data https://title24stakeholders.com/wp-content/uploads/2025/08/2028_T24_Measure_Summary_Healthcare48.pdf

Healthcare facilities undergoing additions are already required to comply with 141.0

Benefits of the Proposed Change

Small Change, Big Impact

- Of the 50 healthcare exceptions in Title 24, Part 6—this proposal targets a few measures with the greatest potential energy saving

No Impact on Patient Health

- Proposed changes will improve building efficiency without impacting patient health and safety

Simplified Permitting and Compliance

- Goal is to more closely align HCAI, Title 24 Part 6, ASHRAE 90.1, the California Mechanical Code (Table 4A), and other healthcare documents including Facilities Guidelines Institute

Background Information—Codes and Standards

California Department of Health Care Access and Information (HCAI)

- HCAI and the Hospital Building Safety Board develop codes and standards for healthcare facilities and enforce them through Office of Statewide Hospital Planning and Development (OSHPD)
- HCAI regulations are adopted into the California Buildings Standards Code

Title 24, Part 6

- Healthcare facilities are currently exempt from meeting 50 sections of Title 24 Part 6
- The Statewide CASE Team has been working with HCAI and Healthcare SMEs to identify changes to Title 24 Part 6 that would bring the largest amount of energy savings in healthcare buildings

National Model Codes

- IECC & Standard 90.1 already require many of the requirements for healthcare facilities included in this CASE Proposal

Goal: increased alignment between HCAI, Title 24 Part 6, and ASHRAE 90.1

Background Information—Building Types

HCAI Healthcare Designation	OSHPD Healthcare Facility	As Defined in T24, Part 6 (*CHSC Section 1204 and 1250*)	Impacted by this Proposal
OSHPD 1	Hospital	General Acute Care Hospital	Yes
OSHPD 2	Skilled Nursing Facility	Skilled Nursing Facility; Intermediate Care Facilities	Yes
OSHPD 3	Licensed Clinics	Clinic Types: Community, Free, Surgical, Rehabilitation, Chronic Dialysis, Alterative Birth Center	No, already covered under Part 6
OSHPD 4	Correctional Treatment Centers	Correctional Treatment Centers	No, outside of scope
OSHPD 5	Acute Psychiatric Hospitals	Acute Psychiatric Hospital	No, outside of scope
OSHPD 6	Chemical Dependency Recovery Hospital		No, outside of scope

https://hcai.ca.gov/wp-content/uploads/2024/09/CAN-2-0-OSHPD-Jurisdiction-08012024-A.pdf
https://hcai.ca.gov/wp-content/uploads/2024/12/Design_Guide-Working_on_Projects_Under_OSHPD_Jurisdiction-04-15-2024_A.pdf
https://law.justia.com/codes/california/code-hsc/division-2/chapter-2/article-1/section-1250/
https://law.justia.com/codes/california/code-hsc/division-2/chapter-1/article-1/section-1204/

Poll

New Construction: What are the key exceptions that could be eliminated without impacting the health and operational requirements of the healthcare facilities? (select all that apply)

a. Load reduction and controls
b. Simultaneous heating and cooling
c. Commissioning and acceptance testing requirements
d. Others (please specify)

Poll

Alterations: If we were to consider a threshold for when alterations must comply with 141.0(b), how should we structure it and what threshold should we consider?

Marked-up Code Language

See Title24stakeholders.com for marked-up code language

The following sections would be modified

Title 24, Part 1	Title 24, Part 6	Reference Appendices
▪ No changes	▪ 120.2(e) – Shut-off and reset controls for space conditioning systems. ▪ 140.4(d) – Zone controls for space conditioning. ▪ 140.4(m) – Fan controls. ▪ 141.0(b) – Alterations.	▪ TBD

Market and Technical Considerations

- Current Conditions and Trends
- Potential Barriers and Solutions
- Technical feasibility

Current Market Conditions

Estimated Construction Forecast (2026)

- New Construction – 5.8 million sq. ft.
- Existing Buildings – 400.51 million sq. ft.

Estimates for Existing Healthcare Facilities across California[1]

- Hospital Facilities (OSHPD 1) – 2,681
- Skilled Nursing Facilities (OSHPD 2) – 1,190

Current HVAC and Fan Control Designs

- Estimating approximately 1.5 million sq. ft. (25%) of new healthcare facilities include:
  - Shut-off/Reset
  - Zone Controls
  - Fan Controls

1. California Department of Public Health (CDPH) Data

Market Barrers and Solutions

Market Barriers	Potential Solutions
1. Concerns about compromising patient health, safety, and comfort 2. Concerns about upfront costs and overall cost effectiveness 3. Healthcare facilities may be resource constrained and unable to retrofit to code requirements	1. Only exceptions affecting non-critical areas in healthcare facilities will be removed 2. Research and analysis will be conducted to demonstrate proposed changes are cost-effective 3. Incorporate alteration size threshold to avoid impacting smaller facilities

Current Market Share

Market share: Estimated percentage of buildings that already use the proposed technology or design practice (at or above the proposed stringency level)

Current estimates of healthcare buildings with proposed measure technology based on previous stakeholder conversations – additional research and stakeholder feedback may be necessary

New Construction and Additions	**25% for OSHPD 1&2**

Alterations	**<5%**

Poll

Do you agree with our assessment that 25% of new construction meets or exceeds requirements in Title 24 Part 6 sections 120.2(e), 140.4(d), and 140.4(m)?

a. Yes
b. No – Should be greater than 25%
c. No – Should be less than 25%

Technical Considerations

Single system, multiple spaces

- Single AHU and system serve many non-critical spaces with different operational schedules (e.g., cafeteria vs. patient intake)
- Non-critical spaces running 24/7 need to be on a separate system to implement proposed changes to HVAC controls

Existing Buildings

- Healthcare facilities must effectively manage space during retrofits to ensure patient care is not compromised—additional requirements may impact length of construction
- Some skilled nursing facilities are resource constrained—mandatory efficiency upgrades during regular alterations (e.g., roof replacement) may further constrain those facilities
- It can be difficult to integrate efficiency measures into complex healthcare building systems

Standard Design Baseline

- Hospitals are modeled with the same standard and proposed design for excepted and non-excepted sections
- Our team is working to define the standard design prototypes to more appropriately reflect healthcare facilities

Technical Barriers and Solutions

Technical Barriers	Potential Solutions
1. Lack of a skilled nursing facility building prototype and clearly established baseline 2. Integrating efficiency measures into complex healthcare building systems (especially in existing buildings)	1. Establish skilled nursing facility prototype and update baselines as needed 2. Support education and training programs on new code requirements. Develop technical guidance on integrating code requirements into existing healthcare facilities

Title 24 –100.1 Healthcare Facility Room Definitions

Slide NOT shown

- **Exam/Treatment Room** is a room or area that does not provide overnight patient care and that is used to provide physical and mental care through medical, dental, or psychological examination and treatment, including laboratories and treatment spaces.
- **Imaging Room** is a diagnostic room and area for application and review of results from imaging technologies including x-ray, ultrasound, computerized tomography (CT), and magnetic resonance imaging (MRI).
- **Medical Supply Room** is a room or area used for storing medical supplies.
- **Nursery** is a room or area for providing medical care for newly born infants.
- **Nurse's Station** is a room or area where health care staff work when not directly interacting with patients.
- **Operating Room** is a room or area where surgical operations are carried out in a sterile environment. This category also applies to veterinary operating rooms.
- **Patient Room** is a room or area that is occupied by one or more patients during a stay in a healthcare facility or hospital.
- **Physical Therapy Room** is a room or area for providing physical therapy treatment.
- **Recovery Room** is a room or area that is equipped with apparatus for meeting postoperative emergencies and in which surgical patients are kept during the immediate postoperative period for care and recovery from anesthesia.

Per Unit Energy and Cost Impacts

Methodology and Assumptions

- Energy and Energy Cost Savings
- Incremental Costs

Energy and Energy Cost Savings Methodology

- Using CEC's methodology and metrics to estimate energy and cost savings

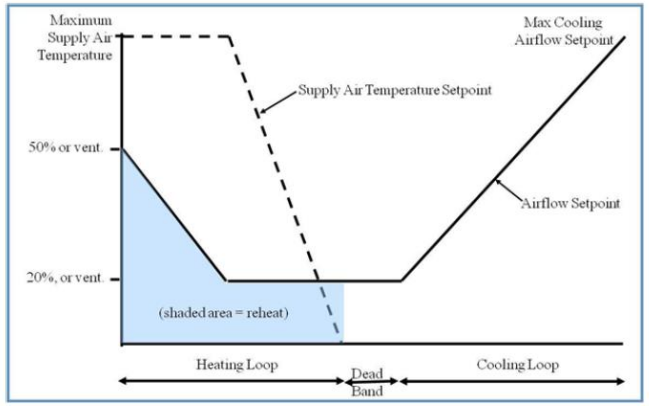
Proposed Measures: HVAC and Fan Controls

- **120.2(e) – Shut-off and reset controls for space conditioning systems**
  - Baseline: Continuously operating schedule for HVAC space conditioning systems with (i)no shut-off control during period of non-use hours, (ii)no heating setback and cooling setup controls, (iii)no occupancy sensing controls either to setup/setback controls or turn-off mechanical ventilation when a zone is in deadband, in 5 minutes or less after entering into occupied-standby mode
  - Proposed: Modified schedule with controls to shut off during period of nonuse hours, heating setback and cooling setup controls, and occupancy sensing controls either to setup/setback controls or turn off mechanical ventilation when a zone is in deadband, in 5 minutes or less after entering into occupied-standby mode
- **140.4(d) – Zone controls for space conditioning**
  - Baseline: No space conditioning controls at the zone levels for systems with DDC
  - Proposed: Zone-level space conditioning controls with modified schedules and thermoset settings
- **140.4(m) – Fan controls**
  - Baseline: Cooling system with constant flow
  - Proposed: Fans with proportional fan control such that at 50 percent air flow the power draw is no more than 30 percent of the fan power at full fan speed. Two-speed fan control during economizer mode for systems that include an air side economizer

Prototype Standard Defaults - Terminal Unit Reheat Control

Example: All terminal units in the hospital prototype are modeled with dual maximum reheat control, however, healthcare facilities in the ACM reference Manual and T24 Part 6 have an exception.

Figure ~~99910~~: Dual Maximum Control Sequence



Source: California Energy Commission

Units: List:

- Single maximum
- Dual maximum

Input Restrictions: Fixed at single maximum if control system type is not direct digital control (DDC) control to the zone level.

Standard Design: For healthcare facilities, same as the Proposed Design. For all other cases, dual maximum.

Hospitals—Changes to Standard Design for CASE Report

2025 Prototype Standard Design does not factor in current exceptions for all spaces and zones. Other measures are treated as offices and don't accurately reflect hospitals.

Building Component	Standard Design (*2025 Energy Code*)	Standard Design (*2028 Energy Code*)	Proposed Design (*2028 Energy Code*)
120.2(e) – Shut-off and reset controls	**No exception** - shut-off and reset controls installed and set	**Applies exception** – continuously operating HVAC	**No exception** - shut-off and reset controls installed and set
140.4(d) – Zone controls	**No exception** - zone controls installed and set	**Applies exception** – no zone controls installed or set	**No exception** - zone controls installed and set
140.4(m) – Fan controls	**No exception** - Fan control and power efficiency installed	**Applies exception** – cooling system with constant flow	**No exception** - Fan control and power efficiency installed
Service Hot Water	Per T24, Part 6	Per CA Plumbing Code	Per 2028 Standard Design
Infiltration Schedules	Per Office Prototype	Updated to reflect Hospitals	Per 2028 Standard Design
Building Requirements	Per Office Prototype	Updated to reflect Hospitals	Per 2028 Standard Design
Ventilation Schedules	Per Office Prototype	ASHRAE Standard 170	Per 2028 Standard Design
HVAC Plant	Centrifugal water-cooled chiller, condensing boiler	Centrifugal water-cooled chiller, condensing boiler	Per 2028 Standard Design
HVAC System	VAV systems for all zones; CAV systems for Kitchen	VAV systems for all zones; CAV systems for Kitchen	Per 2028 Standard Design

Poll

Do you agree that changes to the hospital prototype baseline are needed?

a. Yes
b. No
c. I do not know
d. I am interested in providing feedback on the prototype baseline

Poll

The hospital prototype baseline assumes VAV for all zones except kitchen – does this align with current construction practices?

a. Yes
b. No
c. I do not know
d. I am interested in providing feedback

Energy Modeling Assumptions

- Simulating energy savings in EnergyPlus with CBECC rulesets
- Simulating using the following prototypical buildings and climate zones

Prototypical Buildings

- Hospitals *(updated)*
- Skilled Nursing Facilities *(new)*
- New Construction and additions
- Alterations based on vintage construction and building type

Climate Zones

- Climate Zones 1-16

Skilled Nursing Facility- Proposed Prototype for CASE Report

- **Footprint & Height:** Two-story with an aspect ratio of 3, 13 ft floor to floor height with a 4 ft plenum space
- **Conditioned Floor Area (CFA):** 29,450 ft^2
- **WWR:** 20%
- **HVAC:** HP for patient rooms and Packaged VAV for other areas
- **Thermal Zones:**

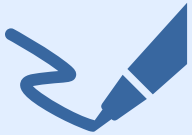
Zone Type	Floor 1: Sum of Area (ft^2)	Floor 2: Sum of Area (ft^2)	Total Area
Activity	2,891	4,262	24%
Admin	1,289		4%
Rest Room	995	600	5%
Clinic	660		2%
Kitchen	2,238		8%
Patients Room	5,536	8,436	47%
Storage	1,284	1,260	9%
Total	14,892	14,558	100%

Key Modeling Assumptions

Prototype: Hospitals and Skilled Nursing Facilities (New Construction)

Standard Design

1. Part 6 Code requirements and HCAI's requirements for each exception
2. No Space Conditioning/Fan Controls Assumed
   - Shut-off/Reset
   - Zone Controls
   - Fan Controls
3. Assume: 8760 hours/yr HVAC and fan operation



Proposed Design

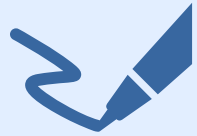
1. Modified/removed exceptions
2. Add Space Conditioning/Fan Controls
   - Shut-off/Reset
   - Zone Controls
   - Fan Controls
3. Revised hours based on the control and efficiency requirements for each exception (*still under research*)

Key Modeling Assumptions

Prototype: Hospitals and Skilled Nursing Facilities (Alterations)

Standard Design

1. Healthcare alterations not required to comply with Title 24 Part 6
2. Baseline – *Still determining baseline for existing buildings*
   - Envelope
   - Lighting
   - HVAC
   - SWH
   - Electrical Power Distribution



Proposed Design

1. Modified/removed exceptions
2. Require compliance with the following sections of 140.0
   - Envelope
   - Lighting
   - HVAC
   - SWH
   - Electrical Power Distribution

Incremental Cost Framework

Prototype(s): Hospitals and Skilled Nursing Facilities (New Construction)

Baseline

First Cost

1. Design
2. Equipment
   - No Controls
3. Installation
4. Commissioning
5. Other

30-Year Maintenance Costs

1. Equipment Replacement
2. Regular Maintenance

Proposed

First Cost

1. Design
2. Equipment
   - Space Conditioning Shut-off/Reset Controls
   - Space Conditioning Zone Controls
   - Fan Controls
3. Installation
4. Commissioning
5. Other

30-Year Maintenance Costs

1. Equipment Replacement
2. Regular Maintenance

Incremental Cost Framework

Prototype(s): Hospitals and Skilled Nursing Facilities (Alterations)

Baseline

First Cost

1. Design
2. Equipment
   - Baseline costs for Envelope, lighting, HVAC, SWH, Electrical Power Distribution
3. Installation
   - Baseline installation costs
4. Commissioning
5. Other

30-Year Maintenance Costs

1. Equipment Replacement
2. Regular Maintenance

Proposed

First Cost

1. Design
2. Equipment
   - Incremental product costs for Envelope, lighting, HVAC, SWH, Electrical Power Distribution
3. Installation
   - Incremental installation costs, if any
4. Commissioning
5. Other

30-Year Maintenance Costs

1. Equipment Replacement
2. Regular Maintenance

Approach for Gathering Costs

- **Previous Code Cycle CASE Reports**
  - Of proposed non-residential measures (e.g., space conditioning & fan controls)
- **Other Codes & Standards Reports**
  - National Code Proposals (IECC/ASHRAE 90.1)
  - Voluntary standards documents
- **Cost Databases**
- **Stakeholder Outreach**
  - Equipment manufacturers
  - Healthcare Design & Engineering Firms
  - Contractors & Skilled Trades

Compliance Verification

- Key Aspects of Compliance Verification
- Barriers and Solutions
- Revisions to Compliance Software

Key Aspects of Compliance Verification

- **Review and modify Section 10-103 (a)** – ensure healthcare facilities are required to explicitly demonstrate compliance with Part 6
  - Current Language: *Section 10-103(a): For all buildings other than healthcare facilities, the following documentation is required to demonstrate compliance with Part 6. This documentation shall meet the requirements of Section 10-103(a) or alternatives approved by the Executive Director. Healthcare facilities shall instead comply with the applicable provisions of Chapter 7.*
- **Create a separate compliance form for healthcare facilities**
- **Add commissioning and acceptance requirements** related to T24 Part 6 compliance requirements in consultation with the HCAI team, since they do have their own testing and commissioning requirements
- **Update Compliance Manual**
- **Modify performance path requirements to be in compliance with Section 140.1 –** currently, standard and proposed design is the same for mechanical equipment and no credit is provided

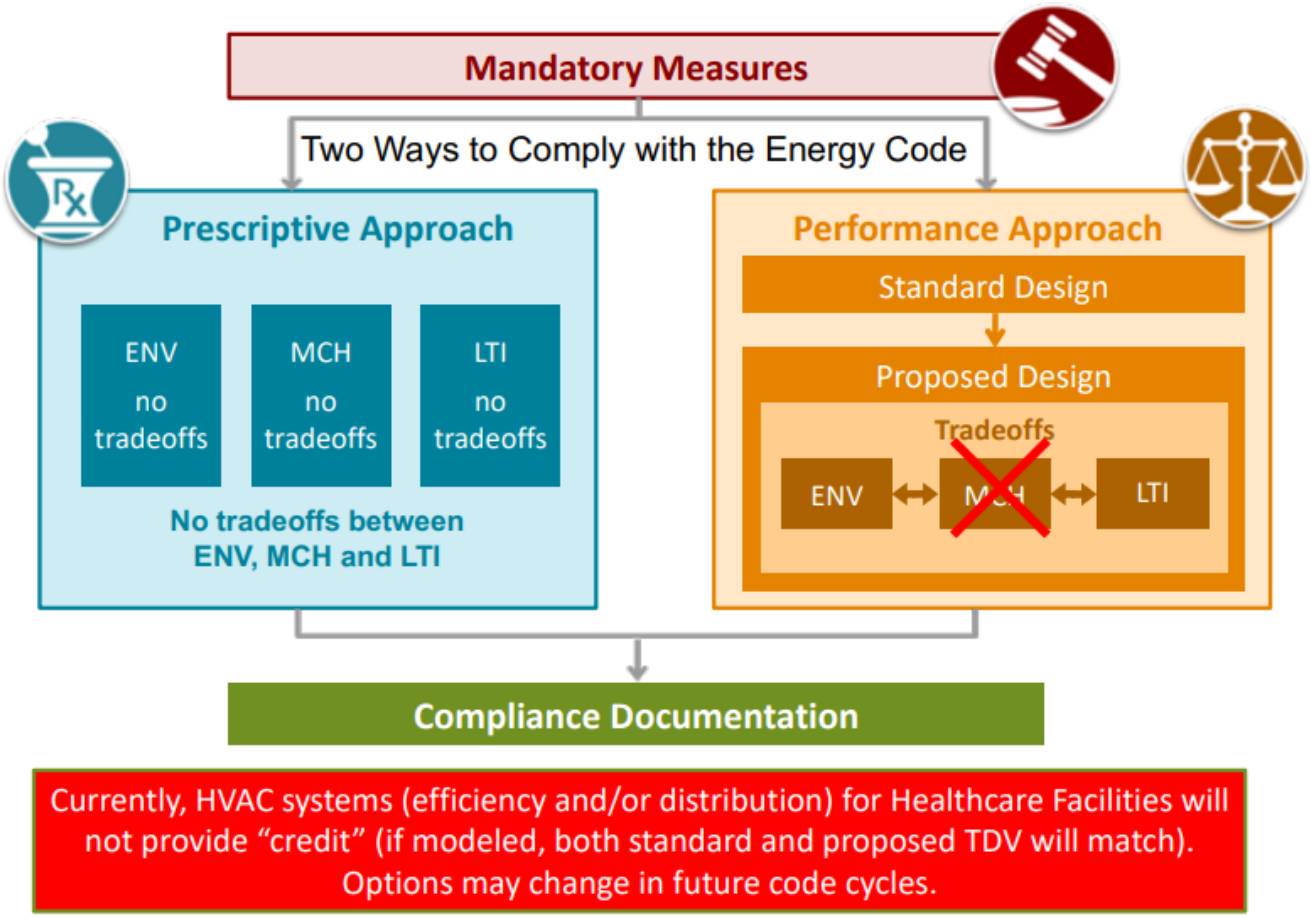
Performance Path Approach – Feedback Requested

Issue: 2025 Energy Code treats Healthcare mechanical equipment standard design in performance path the same as the proposed design.

Proposal: 2028 Energy Code to treat Standard Design as the minimum code requirement and the Proposed Design as designed, when there is no exception.

Source: 2019 Energy Code Ace, Nonresidential Healthcare Facilities Fact Sheet

2025 Energy Code – Current Performance Path



Poll

Currently there is no credit for mechanical equipment in the performance path for healthcare facilities. Should we include performance credit for mechanical equipment?

a. Yes
b. No
c. I am interested in providing feedback

Compliance Barriers and Solutions

Compliance Verification Barriers

1. Approved tools capable of accurately estimating energy consumption
2. Need to sync requirements in Part 6, Part 11, HCAI's documents, California Mechanical and Plumbing Code
3. Market actors' resistance
4. Increased cost
5. Currently, standard and proposed design is the same for mechanical equipment in healthcare - no credit is provided per Section 140.1

Potential Solutions

1. Understand challenges with energy assessment tools and identify necessary upgrades
2. Compare all documents and work with relevant parties to resolve conflicting information
3. Reach out to stakeholders and get feedback to understand challenges
4. Investigate the cost factors and provide recommendations
5. Modify Standard Design for relevant sections for healthcare facilities and include a HVAC mapping system

Compliance Software Updates

CBECC Updates

- Update Hospital Prototype (OSHPD 1) to reflect current construction practices
- Develop a Skilled Nursing Facility Prototype (OSHPD 2)

ACM Updates

- Include a separate HVAC mapping system for healthcare buildings in the Alternative Calculation Methods manual, and modify the modeling standard and proposed design requirements
- Provide performance credit for measures with exceptions removed for healthcare
- Add compliance report and performance credit for healthcare buildings in line with section 140.1

Proposed Process

- Review CBECC and ACM and identify limitations with healthcare facility compliance
- Engage stakeholders to understand software challenges
- Review proposed prototypes to ensure accuracy

Poll

Does the CBECC software address all design features used in real world projects? For example, CBECC default ventilation is Part 6 compliance, not Standard 170.

Ian Blanding
Energy Solutions
510.482.4420 x1138
iblanding@energy-solution.com

Please copy: info@title24stakeholders.com

More information on
CEC's 2028 proceeding website.

We want to hear from you!

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM