California Title 24 Compliance with View Dynamic Glass

What is Title 24?

The **California Code of Regulations (CCR)** contains the rules and regulations of various state regulatory agencies for California, divided into 28 titles. Title 24 contains the **California Building Standards Code**. Within Title 24 are 12 "parts" that cover different aspects of building construction. Part 6 is the **California Energy Code**, also titled **The Energy Efficiency Standards for Residential and Nonresidential Buildings**. The goal of the California Title 24 energy standards is the reduction of energy use. As such, the standards address the energy efficiency requirements of new and altered homes and commercial buildings. These are updated on an approximately three-year cycle, the previous revision being in 2008.

On July 1, 2014, the 2013 California Building Energy Efficiency Standards (Title 24, Part 6) went into effect.

What changes were made to Title 24 in the new 2013 revision?

ENERGY

The new Title 24 standards will lead to 25 percent less energy consumption for residential buildings and 30 percent savings for nonresidential buildings over 2008 Energy Standards.

As part of its long term energy efficiency strategic plan, California has established two zero net energy goals:

By 2020: All California new **residential** construction zero net energy

By 2030: All California new **commercial** construction zero net energy

What is "Zero Net Energy?"

The Zero Net Energy (ZNE) goal means new buildings must use a combination of improved efficiency and distributed renewable energy generation to meet 100 percent of their annual energy need. The total power into and out of the property must equal zero or better (meaning net energy generation) each year.

BUILDING ENVELOPES

All vertical windows shall have an area-weighted average **U-factor, RSHGC** no greater than the values below, and a **VT** no less than the values below:

Prescriptive Envelope Criteria for Nonresidential Building Fenestrations		
	Fixed Window	Curtain wall / Storefront
U-factor	0.36	0.41
RSHGC	0.25	0.26
Min VT	0.42	0.46
Max WWR	40%	40%

U-factor: U-factor of entire framed window
RSHGC: Relative Solar Heat Gain Coefficient which takes into account overhang benefits
VT: Visible Transmittance of the window area
WWR: Window Wall Ratio - the ratio of the total window area of the entire building to the total gross exterior wall area of the entire building

All skylights shall have an area-weighted average **U-factor, SHGC,** no greater than the values below, and a **VT** no less than the values below:

Prescriptive Envelope Criteria for Nonresidential Building Fenestrations		
	Glass, curb mounted	Glass, deck mounted
U-factor	0.58	0.46
RSHGC	0.25	0.25
Min VT	0.49	0.49
Max SRR	5%	5%

SRR: Skylight-to-Roof Ratio

Daylighting

Floor plans shall have 75% of their total area in daylit zones for enclosed spaces > 5,000 sf and have ceiling heights > 15 ft. A daylit zone consists of a calculated area slightly larger than the window areas of skylights and vertical windows. For reference, the 2008 standard was 50%.

How Does View Dynamic Glass help buildings comply with 2013 Title 24?

Prescriptive Method vs Performance Method

Projects can comply with Title 24 via either of two methods: Prescriptive or Performance. Under the Prescriptive method, each component of the building envelope must meet a specific, prescriptive energy-efficiency requirement. The prescriptive approach is the simplest but also the least flexible, as even if one component does not comply, another compliance method must be chosen.

Under the Performance method, the building is measured by its overall energy output using a computer-simulated building model that is compared to a baseline building modeled with components that comply with the prescriptive requirements. This allows more flexibility to the architect who can choose certain products that do not comply with the prescriptive requirements as long as the overall building energy use is lower than that required and therefore compliant.

View Dynamic Glass can be a compliant component with either approach. Under the Prescriptive method, its SHGC, U-factor and VT all meet the prescriptive requirements for fenestrations. Under the Performance method, View Dynamic Glass will contribute superior energy savings to the project, and could permit the use of more glass (> 40% WWR and >5% SRR) allowing for greater design freedom.

Dynamic Glass Compliance

View Dynamic Glass has the ability to change its performance properties with automatic control to modulate the amount of heat and light through the window. Dynamic glass, referred to as chromogenic or chromatic glazing in Title 24, is recognized in the new 2013 standards as a compliant fenestration product. Its performance falls within the new prescriptive criteria for U-factor, SHGC and VT.

For vertical walls and skylights containing chromogenic type glazing, the **lower-rated SHGC** (0.09) and the **higher-rated VT** (58%) **can be used** with the implementation of automatic controls that modulate these values in response to daylight levels or solar intensity.

View Dynamic Glass Performance Table						
	Fixed Window Compliance	Skylight Compliance	Tint 1	Tint 2	Tint 3	Tint 4
U-factor	0.36	0.46	**0.30**	**0.30**	**0.30**	**0.30**
SHGC	0.25	0.25	0.40	0.23	**0.13**	**0.09**
VT	0.42	0.49	**0.58**	0.30	0.10	0.01

Is View Dynamic Glass NFRC rated?

Any fenestration product or glazed door must be rated or certified by the methods developed by the National Fenestration Rating Council (NFRC). The Traditional method is commonly used in most residential products. The Component Modeling Approach (CMA) is implemented in software named CMAST and is only available for non-residential products. View Dynamic Glass is recognized by both methods and a label/certificate can be provided by the window manufacturer.

Daylighting

View Dynamic Glass allows the use of more glazing under the Performance method, allowing for larger daylit zones that comply with the 75% total area requirement.

Support

For more information, please contact View at sales@viewglass.com or 408.514.6512.