Environmental Tobacco Smoke (ETS) Control

SS | WE | EA | MR | **EQ** | ID

Prerequisite 2

Required

Can assist tenants in certification under LEED for Commercial Interiors

Intent

Minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to Environmental Tobacco Smoke (ETS).

Requirements

OPTION 1

- ❑ Prohibit smoking in the building.
- ❑ Locate any exterior designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows.

OR

OPTION 2

- ❑ Prohibit smoking in the public areas of the building except in designated smoking areas. Public areas include all common areas that are part of the core and shell that are not tenant spaces. Locate any exterior designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows.
- ❑ Locate designated smoking rooms to effectively contain, capture and remove ETS from the building. At a minimum, the smoking room must be directly exhausted to the outdoors with no re-circulation of ETS-containing air to the non-smoking area of the building, and enclosed with impermeable deck-to-deck partitions. With the doors to the smoking room closed, operate exhaust sufficient to create a negative pressure with respect to the adjacent spaces of at least an average of 5 Pa (0.02 inches of water gauge) and with a minimum of 1 Pa (0.004 inches of water gauge).
- ❑ Performance of the smoking room differential air pressures shall be verified by conducting 15 minutes of measurement, with a minimum of one measurement every 10 seconds, of the differential pressure in the smoking room with respect to each adjacent area and in each adjacent vertical chase with the doors to the smoking room closed. The testing will be conducted with each space configured for worst case conditions of transport of air from the smoking rooms to adjacent spaces with the smoking rooms' doors closed to the adjacent spaces.

OR

OPTION 3 (For residential buildings only)

- ❑ Prohibit smoking in all common areas of the building.
- ❑ Locate any exterior designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows opening to common areas.
- ❑ Minimize uncontrolled pathways for ETS transfer between individual residential units by sealing penetrations in walls, ceilings and floors in the residential units, and by sealing vertical chases adjacent to the units.
- ❑ All doors in the residential units leading to common hallways shall be weather-stripped to minimize air leakage into the hallway.

- ❑ If the common hallways are pressurized with respect to the residential units then doors in the residential units leading to the common hallways need not be weather-stripped provided that the positive differential pressure is demonstrated as in Option 2, considering the residential unit as the smoking room. Acceptable sealing of residential units shall be demonstrated by a blower door test conducted in accordance with ANSI/ASTM-E779-03, Standard Test Method for Determining Air Leakage Rate By Fan Pressurization, AND use of the progressive sampling methodology defined in Chapter 4 (Building HVAC Requirements) of the Residential Manual for Compliance with California's 2005 Energy Efficiency Standards (www.energy.ca.gov/title24/residential_manual). Residential units must demonstrate less than 1.25 square inches leakage area per 100 square feet of enclosure area (i.e., sum of all wall, ceiling and floor areas).

Potential Technologies & Strategies

Prohibit smoking in commercial buildings or effectively control the ventilation air in smoking rooms. For residential buildings, prohibit smoking in common areas, design building envelope and systems to minimize ETS transfer among dwelling units.

Summary of Referenced Standards

ANSI/ASTM-E779-03, Standard Test Method for Determining Air Leakage Rate By Fan Pressurization

To purchase this standard go to: www.astm.org

"1.1 This test method covers a standardized technique for measuring air-leakage rates through a building envelope under controlled pressurization and de-pressurization…1.3 This test method is intended to produce a measure of airtightness of a building envelope..." (ASTM-E779-03)

Residential Manual for Compliance with California's 2005 Energy Efficiency Standards (For Low Rise Residential Buildings), Chapter 4

www.energy.ca.gov/2005publications/CEC-400-2005-005/chapters_3q/4_Building_HVAC.pdf

"The *Standards* require quality design and construction of HVAC systems and air distribution systems. They also offer compliance credit for the construction of less leaky building envelopes. With the 2005 *Standards*, testing of ducts, refrigerant charge, and airflow was added to the prescriptive requirements (Package D) and is assumed as part of the standard design in performance calculations. Many of the compliance credit options require installer diagnostic testing and certification, and independent diagnostic testing and field verification by a certified Home Energy Rater." (Residential Manual for Compliance with California's 2005 Energy Efficiency Standards [For Low Rise Residential Buildings] Chapter 4)

Approach and Implementation

Prohibit smoking in the building. Provide designated smoking areas outside of the building in locations where ETS will not enter the building or ventilation system. These designated areas should also be located away from concentrations of building occupants or pedestrian traffic. Post information regarding the building's non-smoking policy for all occupants to read.

If interior smoking areas are designed within the building, separate ventilation systems must be installed, and their effectiveness must be tested to ensure that they are isolated from other, non-smoking portions of the building.

The design criteria and instructions for Options 2 and 3 are detailed in the credit requirements and the referenced standard for Option 3.

Core and Shell Considerations

In many regions of North America, municipal regulations do not allow smoking. However, in areas where this is allowed and the owner does not make a building-wide policy prohibiting smoking in the building, careful consideration must be taken, if a core and shell building chooses to allow tenants the option of a smoking area in their space. Such an area must follow all of the requirements for smoking areas listed in this prerequisite. It is important to protect other tenants from the ETS and therefore extra care must be taken to ensure that the smoking area functions as intended. No air from the smoking area is allowed to return back to a common HVAC system. The building will have to accommodate a separate exhaust system from the smoking area. Providing for a separate exhaust system, that is not part of the original design can prove difficult. The space for mechanical equipment and chases in many buildings is so efficiently utilized that extra space for such systems will be at a premium.

Calculations

There are no calculations associated with this credit.

Exemplary Performance

This prerequisite is not eligible for exemplary performance under the Innovation in Design section.

Precertification Submittal Documentation

Provide the LEED-CS Precertification Submittal Templates, which include the following:

- ❑ Narrative describing how the project intends to accomplish the credit requirements on the credit-specific Submittal Template signed by the appropriate design team member
- ❑ Confirmation of this intent from the owner/developer on the LEED-CS Precertification Submittal Template

Certification Submittal Documentation

This prerequisite is submitted as part of the **Design Submittal**.

Design and Construction Credit Compliance

The following project data and information is required to document prerequisite compliance using the LEED-CS v2.0 Submittal Templates:

- ❑ Confirm that the project has met the requirements for the appropriate project category: Non-Smoking Building; Building with Designated Smoking Rooms; or Residential Project.
- ❑ For buildings with interior smoking rooms or for residential projects, provide appropriate copies of construction drawings to document the location of the smoking rooms, designed area separations, and dedicated ventilation systems.
- ❑ An optional narrative may be provided to further describe the testing protocols/results and compliance methods implemented by the project.

Tenant Sales or Lease Agreement Credit Compliance

This compliance method is not available for this credit.

Considerations

The relationship between smoking and various health risks, including lung disease, cancer and heart disease, has been well documented. A strong link between Environmental Tobacco Smoke (ETS) or "secondhand smoke" and health risks has also been demonstrated.

The most effective way to avoid health problems associated with ETS is to prohibit smoking indoors. If this cannot be accomplished, indoor smoking areas should be isolated from non-smoking areas and have separate ventilation systems to avoid the introduction of tobacco smoke contaminants to non-smoking areas.

Environmental Issues

Separate smoking areas occupy space in the building and may result in a larger building, additional material use and increased energy for ventilation. However, these environmental impacts can be offset by building occupants who are more comfortable, have higher productivity rates, and have lower absenteeism and illnesses.

Economic Issues

Separate smoking areas add to the design and construction costs of most projects. Maintenance of designated smoking areas also adds to lease and operating costs. Prohibition of indoor smoking can increase the useful life of interior fixtures and furnishings. Smoking within a building contaminates indoor air and can cause occupant reactions ranging from irritation and illness to decreased productivity. These problems increase expenses and

liability for building owners, tenants, operators and insurance companies.

Core and shell buildings that choose to allow tenants to build smoking areas may need to oversize mechanical rooms and chases for this potential.

Community Issues

Air is a community natural resource, and promoting clean air benefits everyone. Strict no-smoking policies improve the health of the community as a whole, resulting in lower health care and insurance costs.

Resources

Please see the USGBC website at www.usgbc.org/resources for more specific resources on materials sources and other technical information.

Websites

ANSI/ASTM-E779-03, Standard Test Method for Determining Air Leakage Rate By Fan Pressurization

www.astm.org

Standard may be purchased at this website.

Home Energy Rating Systems (HERS) Required Verification And Diagnostic Testing, California Low Rise Residential Alternative Calculation Method Approval Manual

www.energy.ca.gov/2005publications/CEC-400-2005-005/chapters_3q/4_Building_HVAC.pdf

What You Can Do About Secondhand Smoke as Parents, Decision Makers, and Building Occupants

U.S. Environmental Protection Agency

www.epa.gov/smokefree/pubs/etsbro.html

(800) 438-4318

An EPA document on the effects of ETS and measures to reduce human exposure to it.

Setting the Record Straight: Secondhand Smoke Is a Preventable Health Risk

U.S. Environmental Protection Agency

www.epa.gov/smokefree/pubs/strsfs.html

An EPA document with a discussion of laboratory research on ETS and federal legislation aimed at curbing ETS problems.

Print Media

The Chemistry of Environmental Tobacco Smoke: Composition and Measurement, Second Edition by R.A. Jenkins, B.A. Tomkins, et al., CRC Press & Lewis Publishers, 2000.

The Smoke-Free Guide. How to Eliminate Tobacco Smoke from Your Environment by Arlene Galloway, Gordon Soules Book Publishers, 1988.

Definitions

Environmental Tobacco Smoke (ETS), or secondhand smoke, consists of airborne particles emitted from the burning end of cigarettes, pipes, and cigars, and exhaled by smokers. These particles contain about 4,000 different compounds, up to 40 of which are known to cause cancer.