

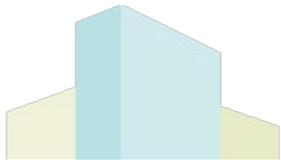


**CONSORTIUM for
BUILDING ENERGY
INNOVATION**

Change of Occupancy Compliance Guidance

**DOE National Energy Codes Conference 2016
Tucson, AZ**

Jennifer Senick, Ph.D, Executive Director, Rutgers Center for Green Building
David Hattis, M.Arch, President, Building Technology, Inc.



RUTGERS

Edward J. Bloustein School
of Planning and Public Policy

**Rutgers Center
for Green Building**



**CONSORTIUM for
BUILDING ENERGY
INNOVATION**

Motivation for Change of Occupancy Focus

The application of the IECC to existing buildings and its relationship to the IEBC is not well understood by code officials.

IECC change of occupancy provision (Section C505) is hard to enforce in its current form, which lumps together all possible such projects into a single requirement with limited exceptions.

Spaces undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with this code.

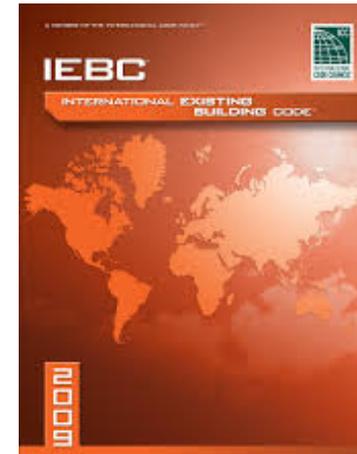
Market trends such as increased demand for urban living (and associated commerce), tax credits and other incentives that make adaptive re-use attractive, and along with permissive planning and zoning codes are leading to significantly more commercial building re-use.

Needed is a responsive and predictable compliance method for change of occupancy energy efficiency requirements for codes officials, project applicants and other stakeholders.



A Tradition of Rehabilitation “Smart Codes”

- International Existing Building Code (IEBC)
- Nationally Applicable Recommended Rehabilitation Provisions (NARRP)
- NJ Rehabilitation Code
- Massachusetts Article 22



Change of Occupancy Scale— Space Heating, Cooling, and Ventilation		
	CBECS Building Type	IBC Occupancy Classification
1.	Health Care (Inpatient)	I-2
2.	Food Service, Public Assembly	A-1, A-2, A-3, A-4, A-5, B-Broadcasting Studios
3.	Education, Health Care (outpatient), Public Order and Safety, Office, Service, Food Sales, Retail (other than mall), Religious Worship	A-3-Courthouse or Religious Worship, B, E, I-3, M
4.	Lodging	I-1, R-1, R-2-Dormitory, R-4
5.	Warehouse and Storage	S-1, S-2



Table 1. Change of Occupancy Scale for Space Conditioning

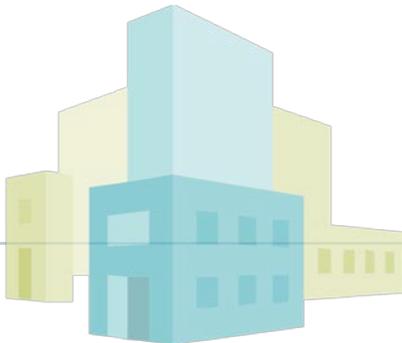


Proposed Code Change

C505.3 Energy Intensities. Where a change of occupancy or use is made to an existing building that results in an increase in energy intensity classification as specified in Table C505.3.1, C505.3.2 or 505.3.3, the building or portion thereof shall comply with Sections C505.3.1 through C505.3.3 respectively that are applicable to the new occupancy and use. Where changes in occupancy and use are made to portions of an existing building only those portions of the building shall comply with Sections C505.3.1 through C505.3.3 as specified herein.

Exceptions:

1. Where it is demonstrated by analysis *approved* by the *code official* that the change will not increase usage of fossil fuel or electrical energy.
2. Where the occupancy or use change is less than 5,000 square feet in area.



Proposed Code Change Energy Matrices

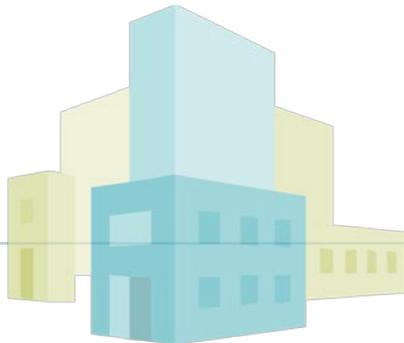
- **Table C505.3.1**
Space Heating, Cooling and Ventilation

Energy Intensity Classification	IBC Occupancy Classification and Use
1. High	A-2, B-Laboratories, I-2
2. Medium	A-1, A-3 ^a , A-4, B ^b , E, I-1, I-3, M, r-4
3. Low	A-3-Places of Religious Worship, R-1, R-2, S-1, S-2

^a except for Places of Religious Worship

^b except for Laboratories

Exception: Where the change of occupancy or use is made to a portion of the building, the new occupancy is exempt from Section C402.4.1 provided that there is not an increase in fenestration



Proposed Code Change Energy Matrices

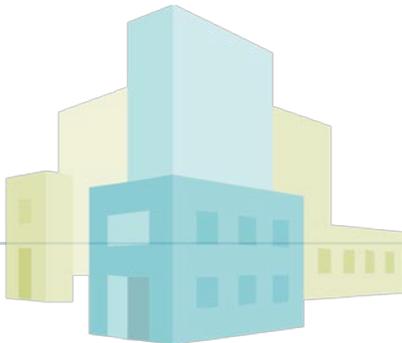
- **Table C505.3.2**
Lighting

Energy Intensity Classification	IBC Occupation Classification and Use
1. High	A-2, B-Laboratories, I-2, M-Food Sales
2. Medium	A-3-Courtrooms, B ^a , I-1, I-3, M ^b , R-1, R-2, R-4, S-1, S-2
3. Low	A-1, A-3 ^c , A-4, E

^a except for Laboratories

^b except for Food Sales

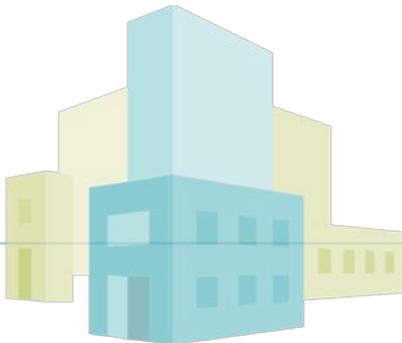
^c except for Courtrooms



Proposed Code Change Energy Matrices

- **Table C505.3.3**
Service Water Heating

Energy Intensity Classification	IBC Occupation Classification and Use
1. High	A-2, I-1, I-2, R-1, R-4
2. Low	All Other Occupancies and Uses



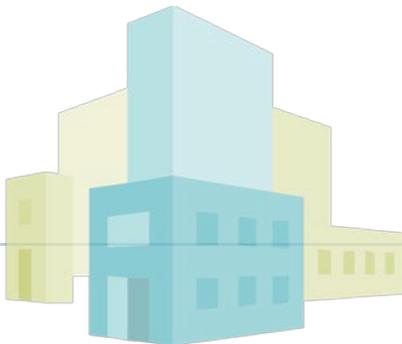
Proposed Code Change

C505.1 General. Spaces undergoing a change of occupancy—from a F, H or U occupancy to any other occupancy classification shall comply with this code. Other spaces undergoing a change of occupancy shall comply with Sections C505.2 and C505.3. *Alterations* made concurrently with the change of occupancy shall be in accordance with Section C503.

C505.2 Loads.

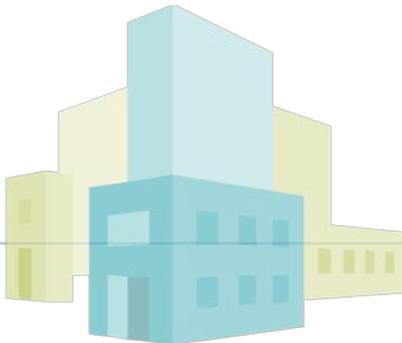
C505.2.1 Lighting Wattage. Where the use in a space changes from one use in Table C405.4.2(1) or C405.4.2(2) to another use in Table C405.4.2(1) or C405.4.2(2), the installed lighting wattage shall comply with Section C405.4.

C505.2.2 Ventilation. Where the use in a space changes from one use to another as listed in Table 403.3.1.1 of the *International Mechanical Code (IMC)* the ventilation rate provided shall be as specified for the new occupancy in the IMC.



Why Do This? Change Serves Multiple Goals

- Economic development (through reuse)
- Improved energy performance of existing building stock (EUI not peak load)
- Predictability and Proportionality
- No negative impact on Life/Safety

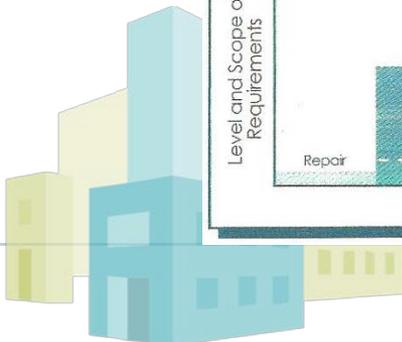
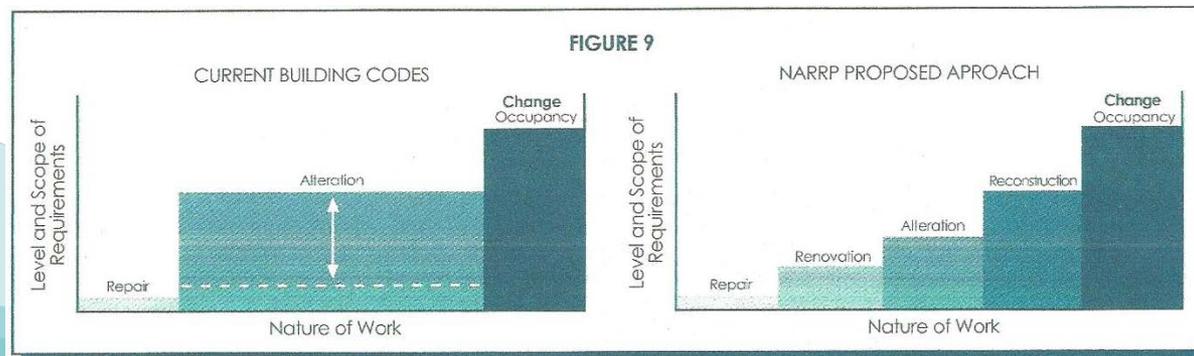


Why Do This? Change Will Not Increase Cost

The current code requirement triggers full compliance with the code when there is an increase in energy demand.

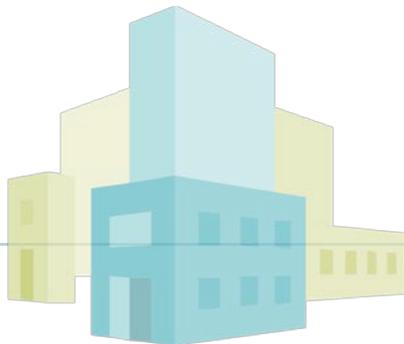
The proposed code change offers the metric of energy intensity per square foot per year for measuring energy demand by occupancy. It applies this metric separately to three energy end uses: space conditioning, lighting, and water heating. Compliance with the code is triggered only for the end uses for which energy intensity is increased.

In most cases, the proposed change triggers partial code compliance, and only rarely will it trigger full code compliance.



Proposed Code Change Incorporates Extensive Stakeholder Input

- Code Officials/Consultants
- Energy Organizations
- Code Organizations
- Professional Associations/Industry



Can we Count on your Vote?



Your Expertise is Needed!

2016 COMMITTEE ACTION HEARINGS
GROUP B CODES **LOUISVILLE**

ICG
INTERNATIONAL CODE COUNCIL®

