



zone green text amendment

...for a greener, greater NEW YORK

NYCPLANNING

December 12, 2011





Bike Parking



FRESH Food



Greening of Front Yards



Transit-oriented development



Planting Strips and Street Trees



Car Share



Greening Parking Lots



GREEN BUILDINGS BENEFIT EVERYONE



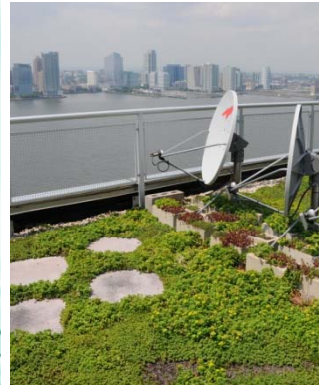
SAVE ENERGY



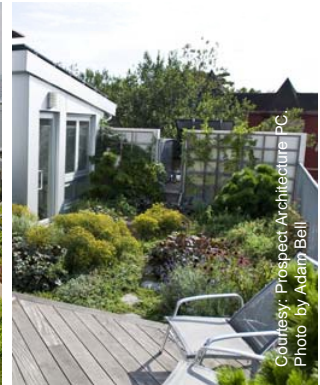
PRODUCE ENERGY



SAVE WATER



CAPTURE RAINWATER



OPEN SPACE



FOOD

Courtesy: Prospect Architecture LLC
Photo by Adam Bell

savings ...insulating buildings saves money on heating and cooling bills

health ...improved air quality and water quality; rooftop open space; better access to fresh food;

infrastructure ...reduced burden on City's electrical grid and sewer system

nature ...reduced pollution and carbon emissions; increased biodiversity; connects New Yorkers' to the environment

GREEN BUILDINGS & ZONING



Lefrak City. Photo Courtesy: Google Archives

Basic zoning provisions were created half a century ago, before environmental quality was considered important to quality of life in NYC

GREEN BUILDINGS & ZONING



Via Verde, Bronx. Photo Courtesy: Jonathan Rose Companies

- Many buildings have incorporated green building features in recent years.
- But in some instances, zoning discourages or even prohibits green features

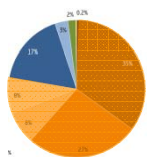


Solaire, Battery Park City. Photo Courtesy: American Hydrotech Inc.

GOAL OF THE TEXT AMENDMENT



Empower property owners to build or retrofit buildings to 21st century standards



Save energy and money
(air seal & insulate buildings)



Reduce urban heat island effect
(built up areas are hotter than vegetated ones)



Generate clean and renewable energy



Grow fresh, local food *(rooftop agriculture)*



Manage stormwater *(green roofs & blue roofs)*



Reduce carbon emissions & promote a healthier & greener city

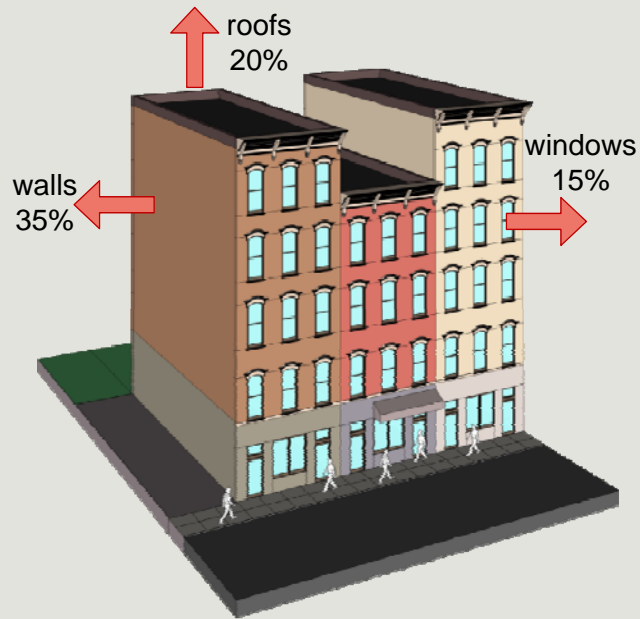
GREEN BUILDING COMPONENTS

- ❑ High performance building envelope
 - ❑ Sun control devices *(to reduce summer cooling needs)*
 - ❑ Rooftop features
 - ❑ Other sustainable features

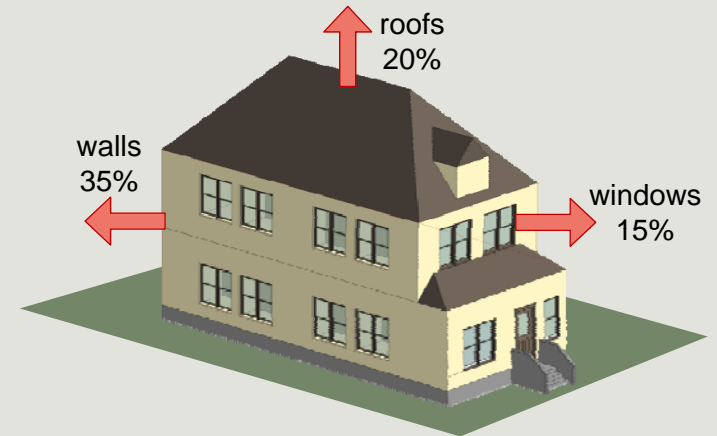
WHY ENVELOPE IS IMPORTANT



The building “envelope” is the external walls, windows and roof of the building



- Space heating and cooling = 50% of total building energy usage
- An un-insulated and leaky envelope = 70% of energy loss



- Well insulated and air sealed exterior walls can **save 20%-50% on energy costs** *(by lowering heating and cooling demands)*
- **Long term savings** *(envelope is the longest lasting design element of the building)*

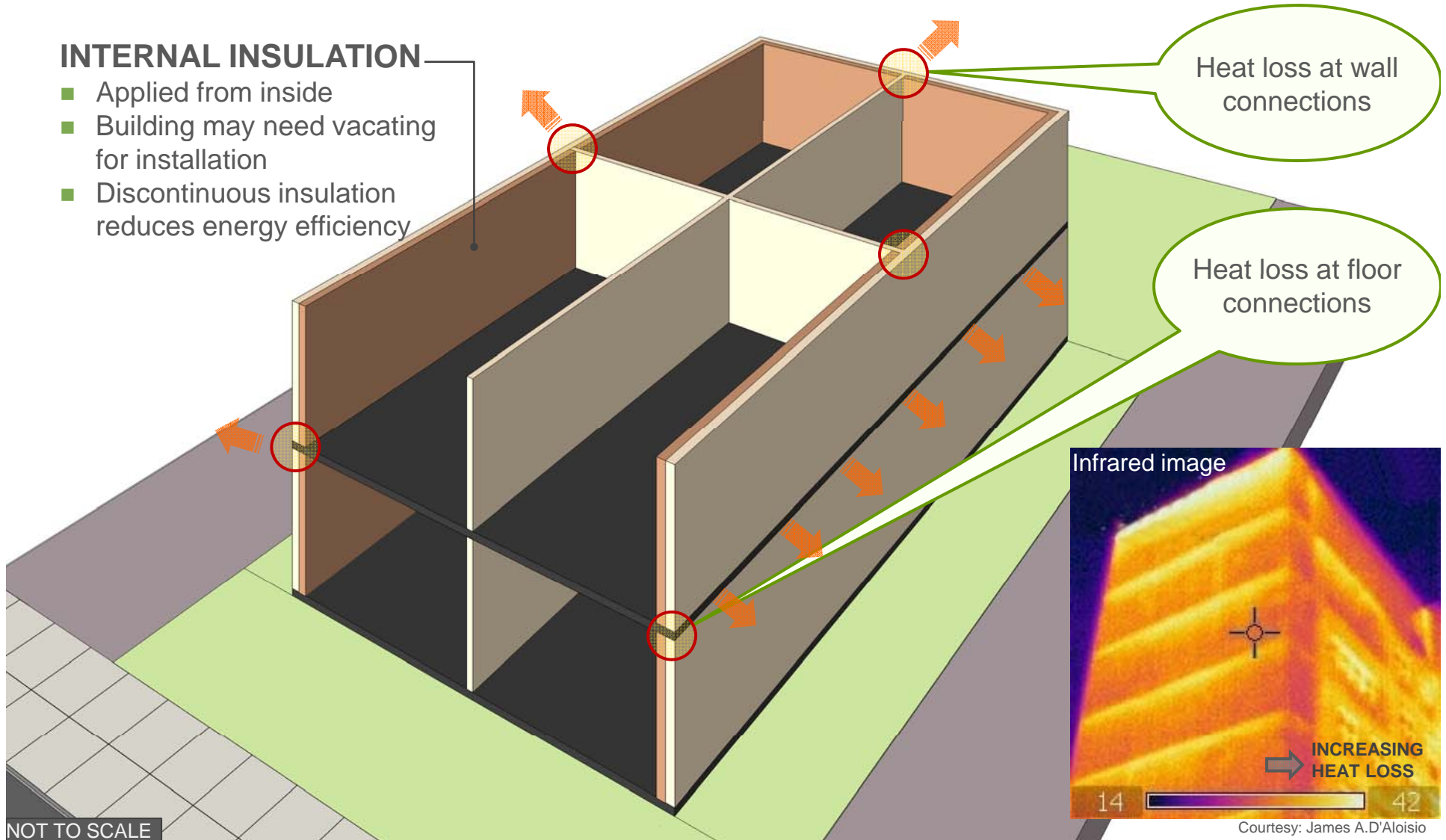
INSULATION

EXTERNAL VERSUS INTERNAL



INTERNAL INSULATION

- Applied from inside
- Building may need vacating for installation
- Discontinuous insulation reduces energy efficiency



NOT TO SCALE

Courtesy: James A.D'Aloisio

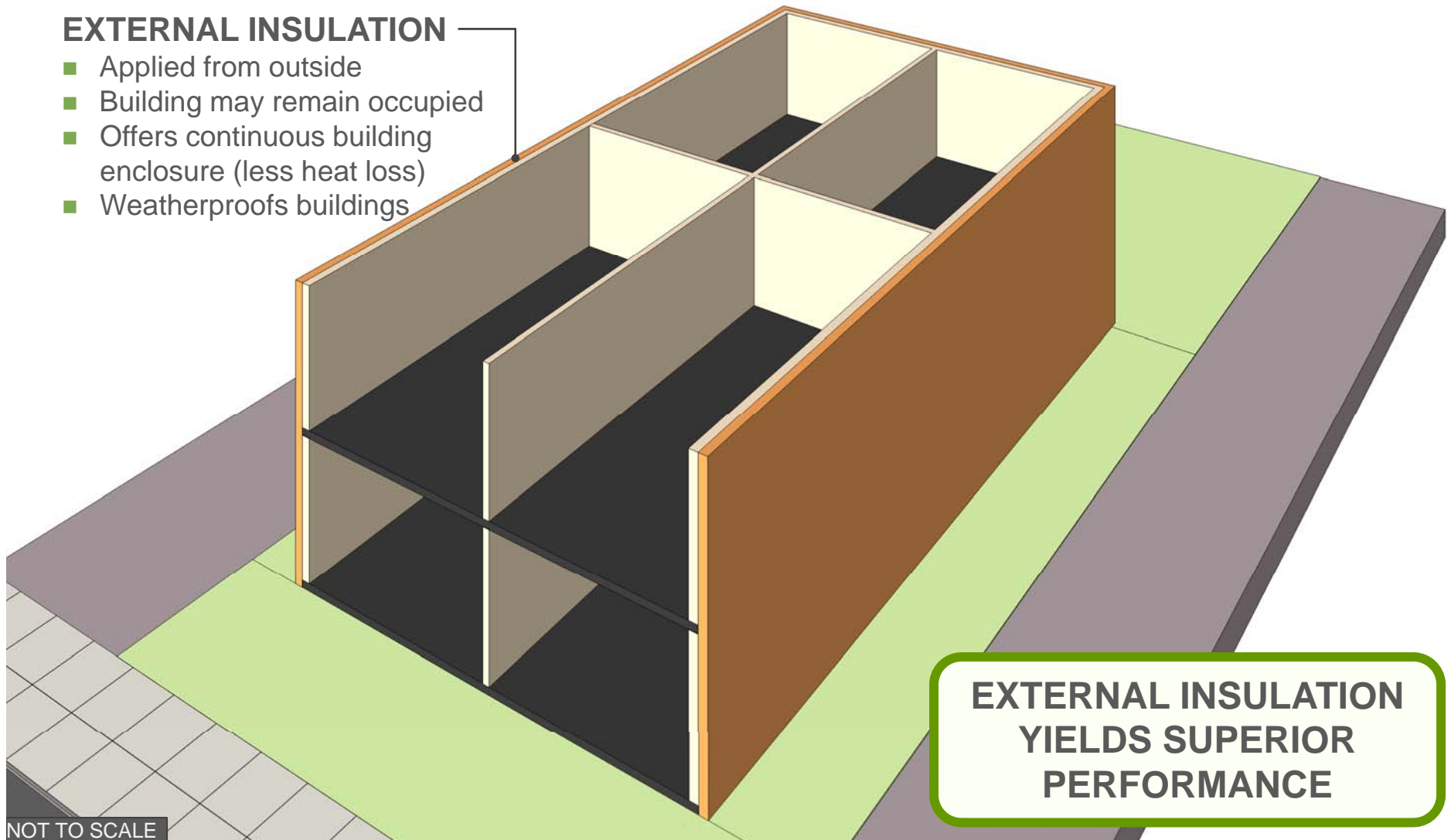
INSULATION

EXTERNAL VERSUS INTERNAL



EXTERNAL INSULATION

- Applied from outside
- Building may remain occupied
- Offers continuous building enclosure (less heat loss)
- Weatherproofs buildings



**EXTERNAL INSULATION
YIELDS SUPERIOR
PERFORMANCE**

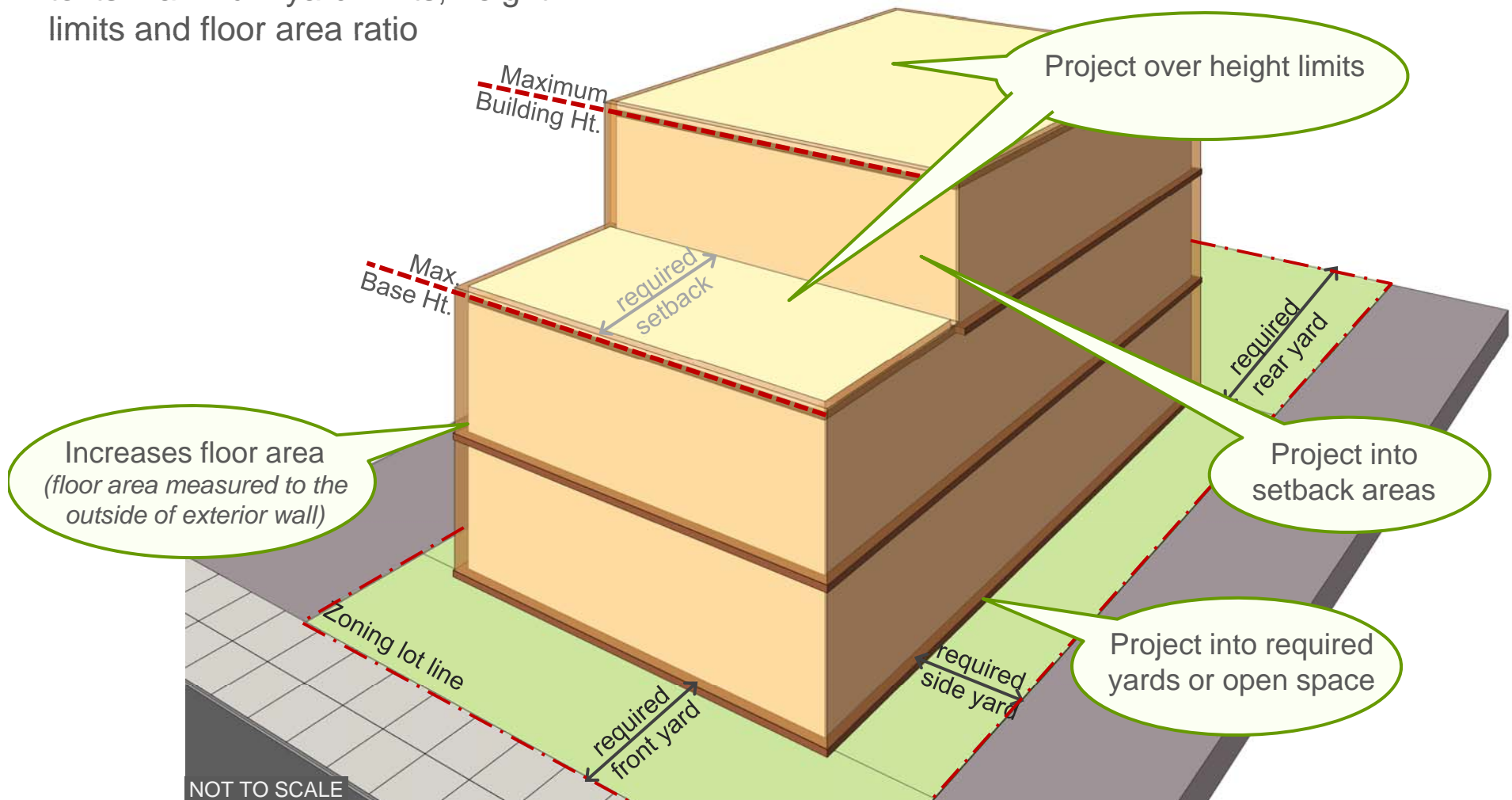
NOT TO SCALE

INSULATION

EXISTING BUILDINGS: ZONING ISSUES



Example: Existing building built to its maximum yard limits, height limits and floor area ratio



INSULATION

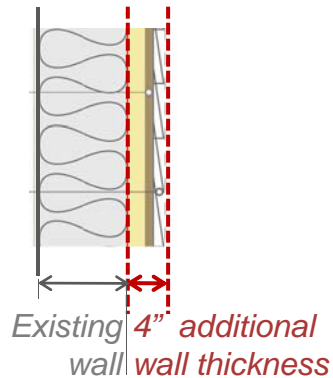
PROPOSAL FOR EXISTING BUILDINGS



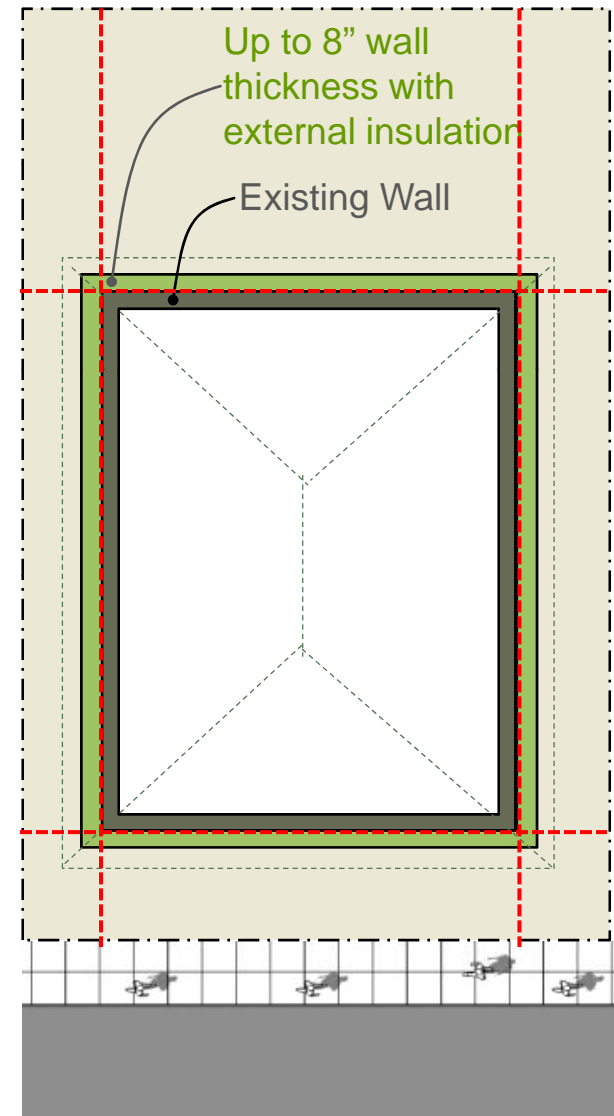
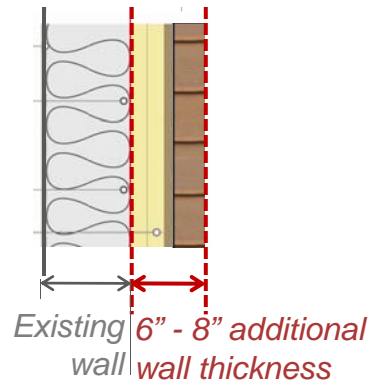
Promote insulation of existing buildings

Up to 8 inches of wall thickness may project into a required yard, open space or setback area and not count toward floor area or lot coverage

**2" Insulation
(Typical Retrofit)**



**4"+ Insulation
(Deep Retrofit)**



INSULATION PROPOSAL FOR EXISTING BUILDINGS

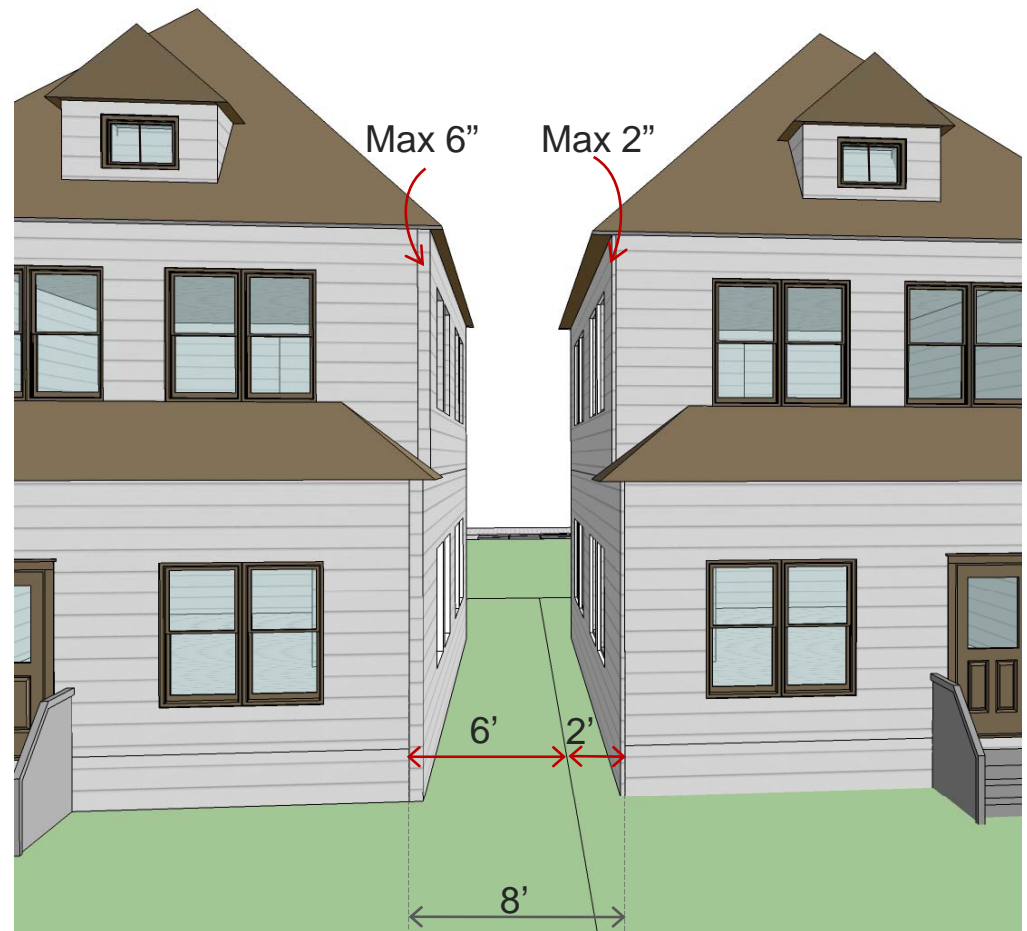


Limit reduction of small open areas

For open areas 8' or less, 1" of additional wall thickness would be allowed for each 1' of open area

- Protects small open areas
- Driveways cannot be obstructed

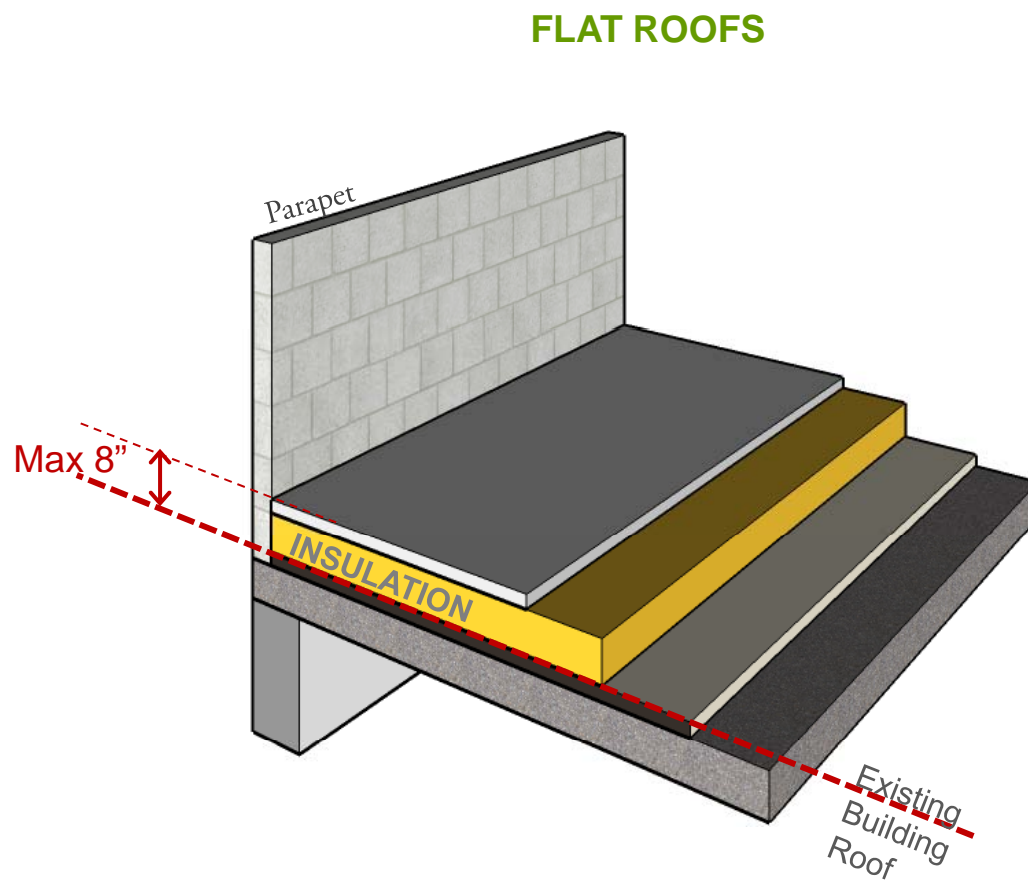
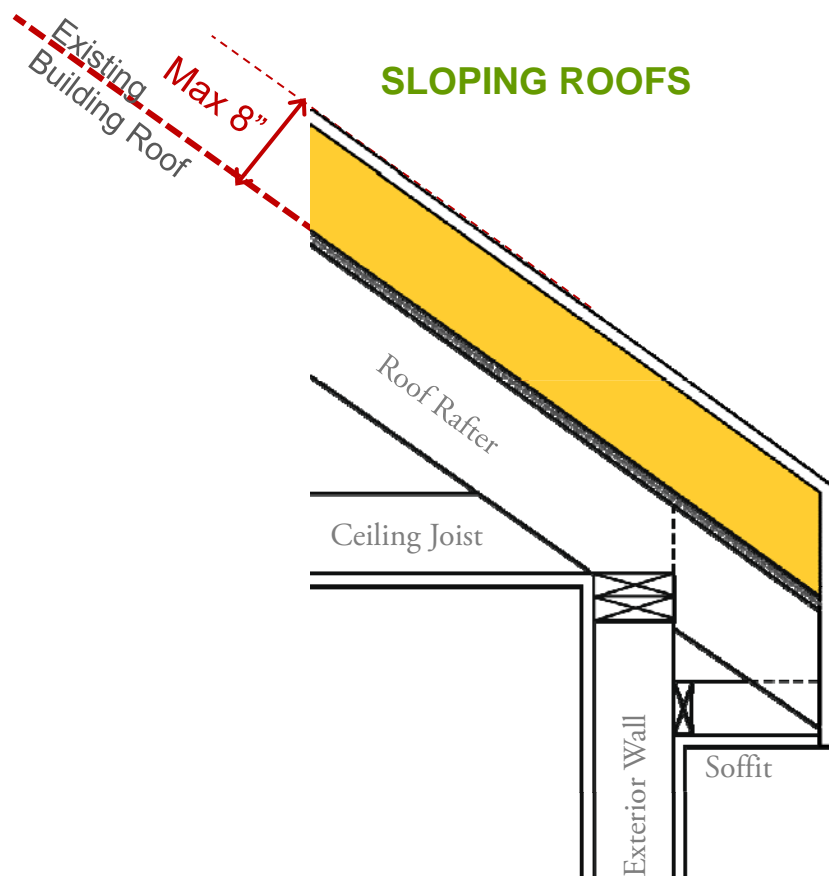
Note: Similar rule would apply to buildings with non-complying yards, courts, and distance between buildings.



INSULATION PROPOSAL FOR EXISTING BUILDINGS



Allow up to 8 inches of external roof insulation above the roof

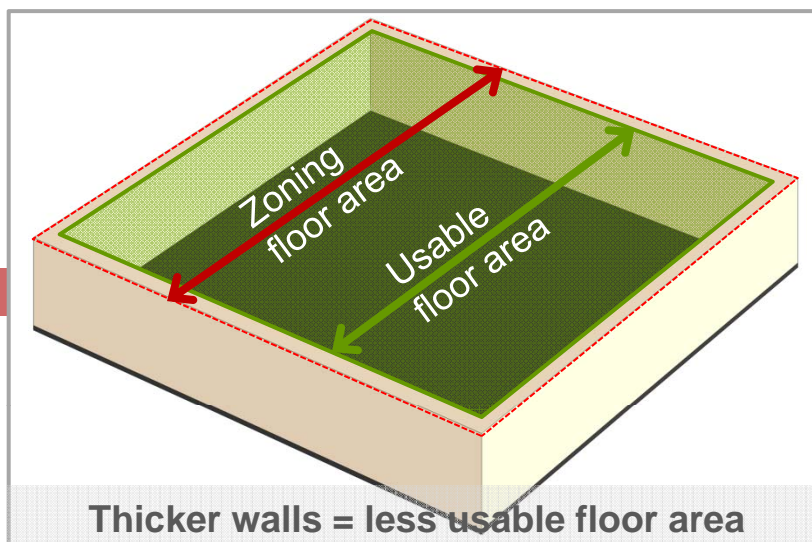
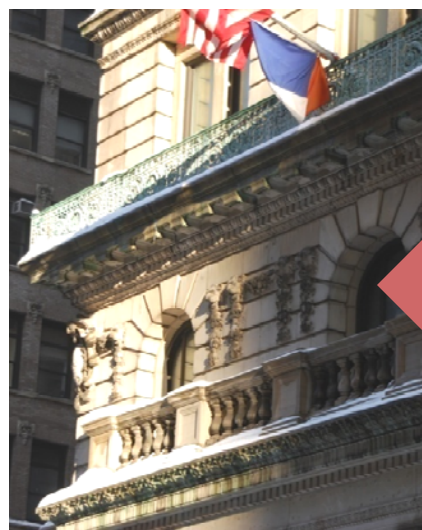
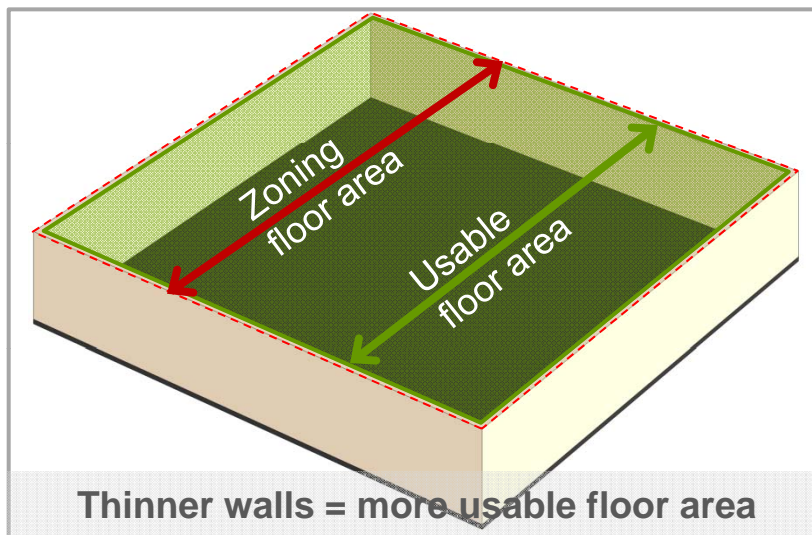


INSULATION

NEW BUILDINGS: ZONING ISSUES



- New buildings must meet NYC energy code requirements
- Buildings that seek to exceed code will generally require thicker walls



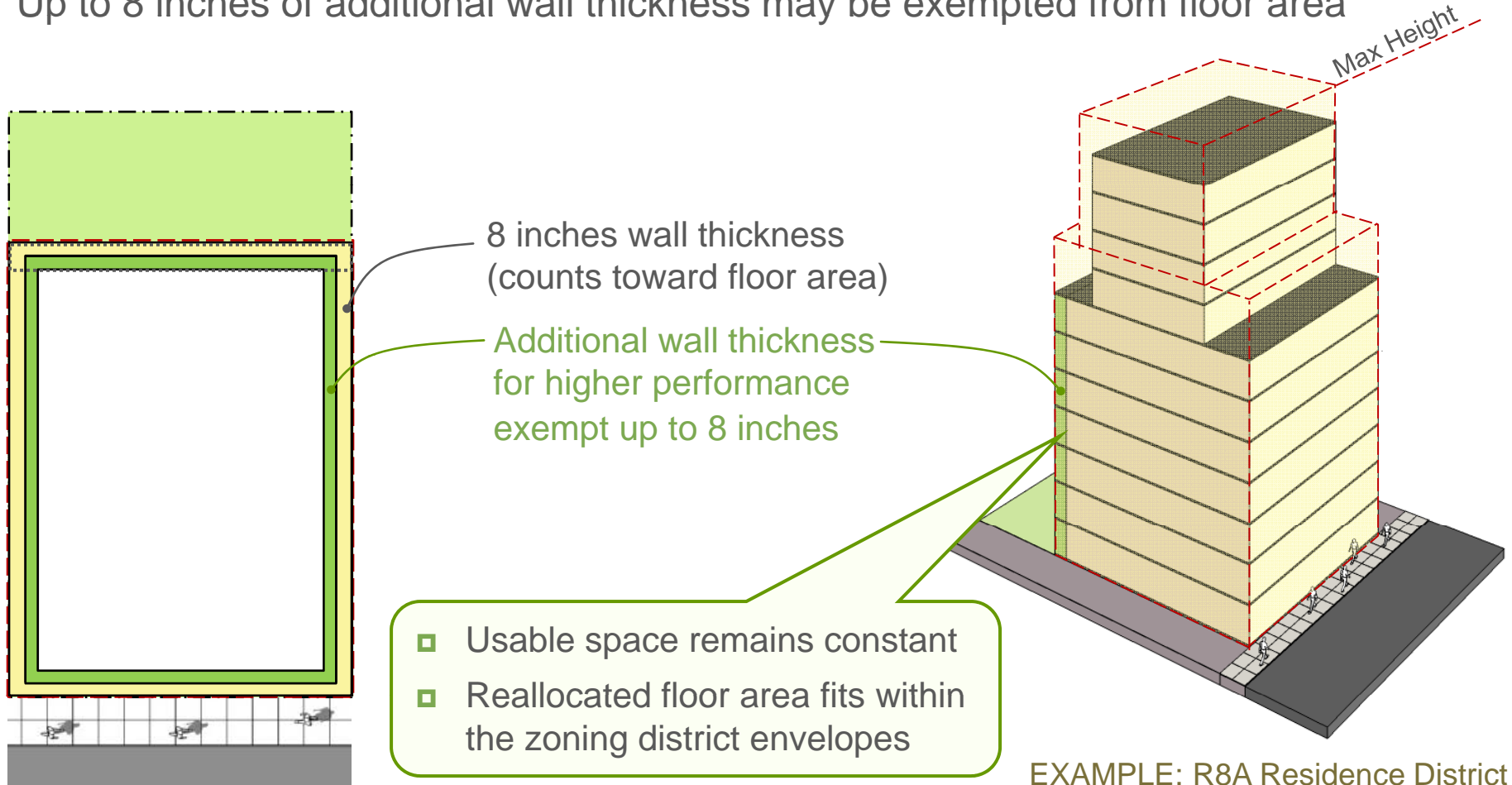
Issue : Thicker, energy efficient walls count as floor area
➡ Reduces the incentive for efficiency

INSULATION PROPOSAL FOR NEW BUILDINGS



Encourage new buildings with envelope that outperforms NYC energy code

Up to 8 inches of additional wall thickness may be exempt from floor area



AIR-CONDITIONERS



WINDOW AIR-CONDITIONER



Photo Courtesy: Steven Winter Associates

- Creates leaks and drafts in building envelope
- Poorly fitted ACs cost building owners \$130-\$180 million a year in extra fuel consumption (= an extra 375,000 to 525,000 tons of CO₂e). Source: Urban Green Council
- Window ACs not removed during winter time increase the heating costs by the same amount as cooling cost in summer

Other AC techniques such as central air or mini-splits are more efficient alternatives to window AC

AIR-CONDITIONERS

EXISTING ZONING



AC condenser units are allowed in rear yards for one- or two- family homes

ISSUE: AC units are required to be at least 8 feet from all lot lines

- Older models were huge and noisy
- Today AC units are much more energy efficient and much less noisy.

On typical narrow lots, very few options to place the condensing units



AIR-CONDITIONERS PROPOSAL



■ Allow adequate space and flexibility in location of efficient AC equipment

For one- or two-family homes, air-condensing units shall be permitted in rear and side yards, provided that such units do not obstruct driveways

- DEP Noise Code regulates noise levels of air-conditioners at open door or window of a nearby residence



GREEN BUILDING COMPONENTS

- ❑ High performance building envelope
- ❑ Sun control devices *(to reduce summer cooling needs)*
- ❑ Rooftop features
- ❑ Other sustainable features

SUN CONTROL DEVICES



Before advent of air-conditioning, awnings were used to block out the sun and keep spaces cool



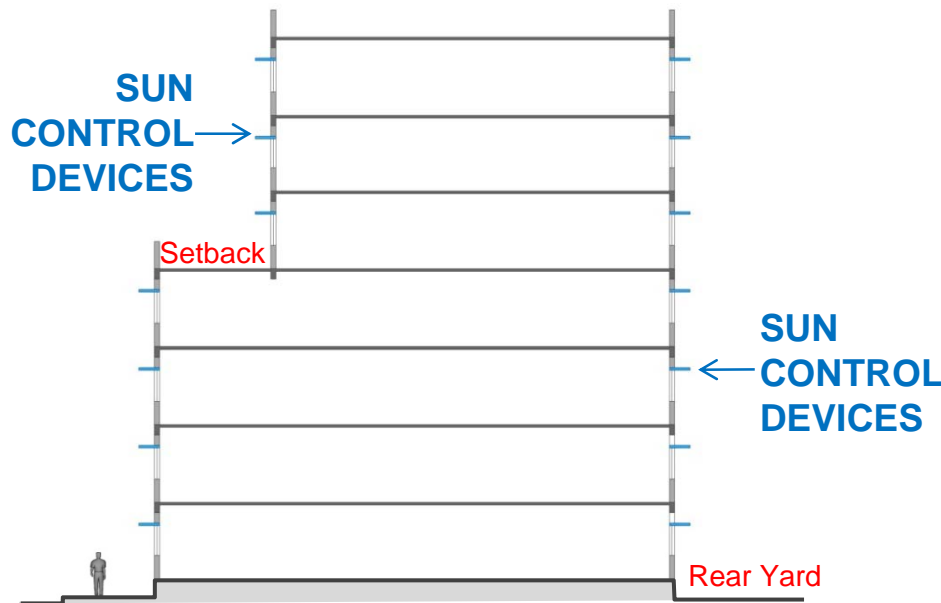
The Manhasset.

SUN CONTROL DEVICES



As buildings have become glassier, types of sun control devices have changed

Awnings are permitted in zoning, but a variety of sun control devices may not be permitted



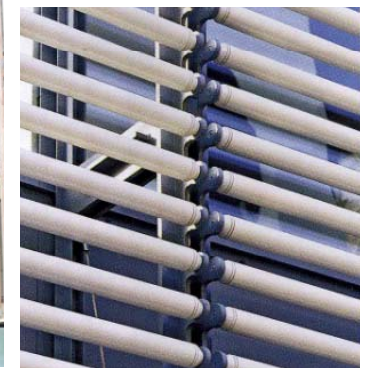
Woermann Plaza, Las Palmas



Taiwan



91 Metropolitan Ave, Brooklyn



The New York Times Building, New York

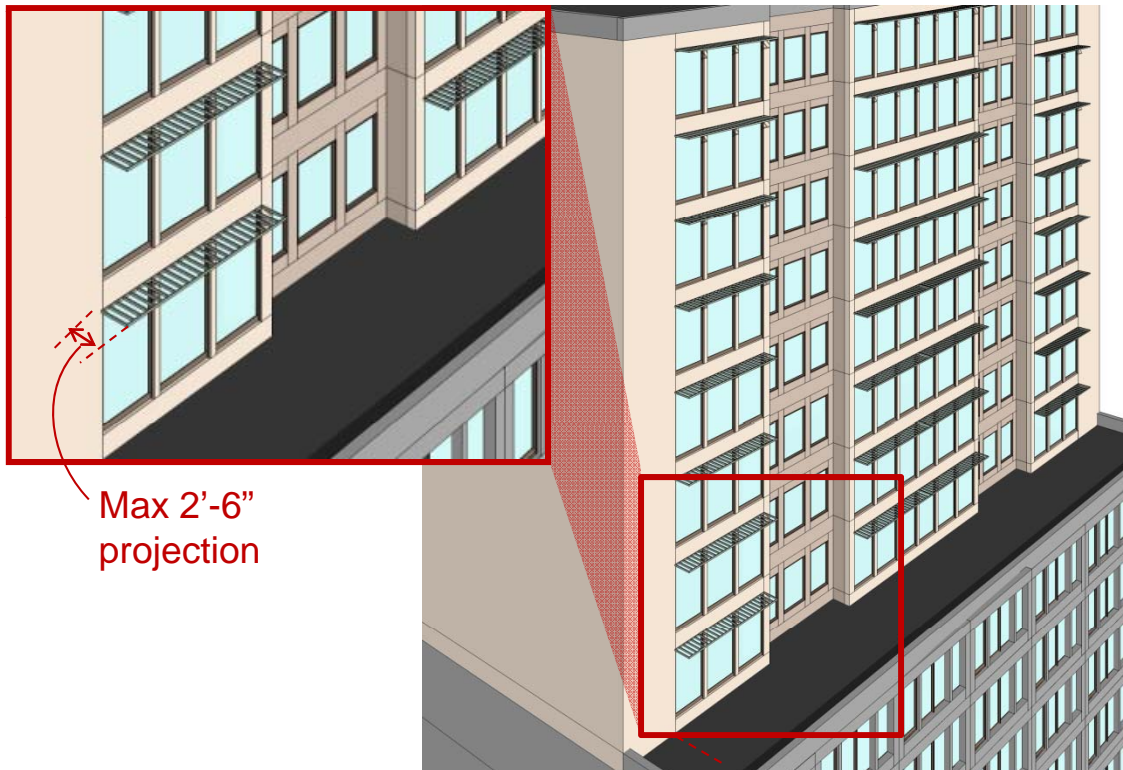
SUN CONTROL DEVICES

PROPOSAL FOR PROJECTION



■ Allow shading of windows to reduce summer cooling needs

Above ground floor, allow awnings & sun control to project 2'-6" in to required setbacks, yards and open space.



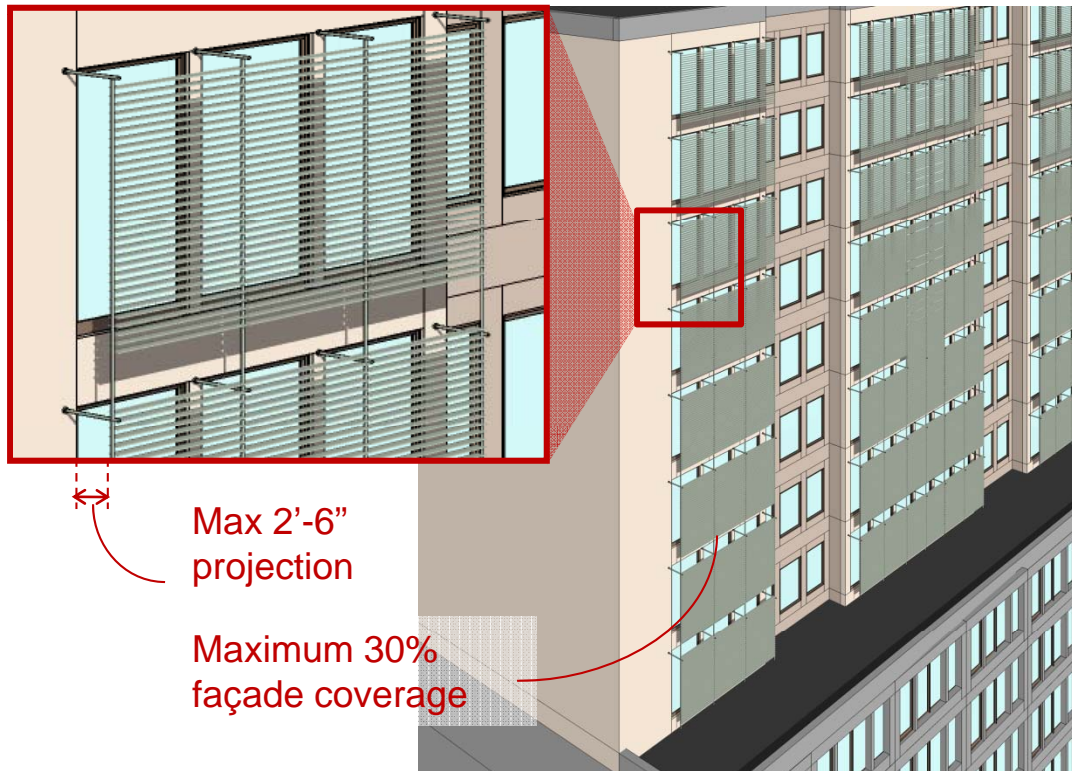
SUN CONTROL DEVICES AS SCREENS

PROPOSAL FOR FAÇADE COVERAGE

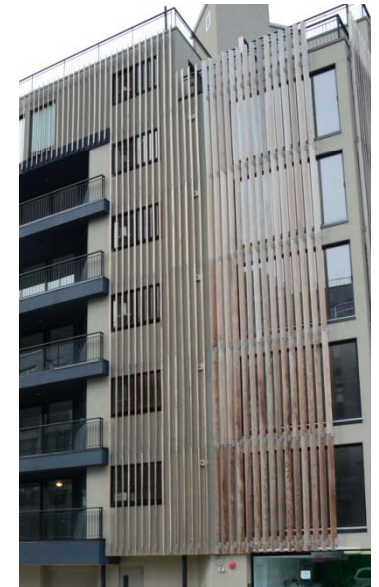


■ Allow shading of windows to reduce summer cooling needs

Screens (only solid portions) used for sun control shall cover no more than 30% of the area of the façade from which they project



New York Times
building ~ 30%
coverage (only
solid portions)



GREEN BUILDING COMPONENTS

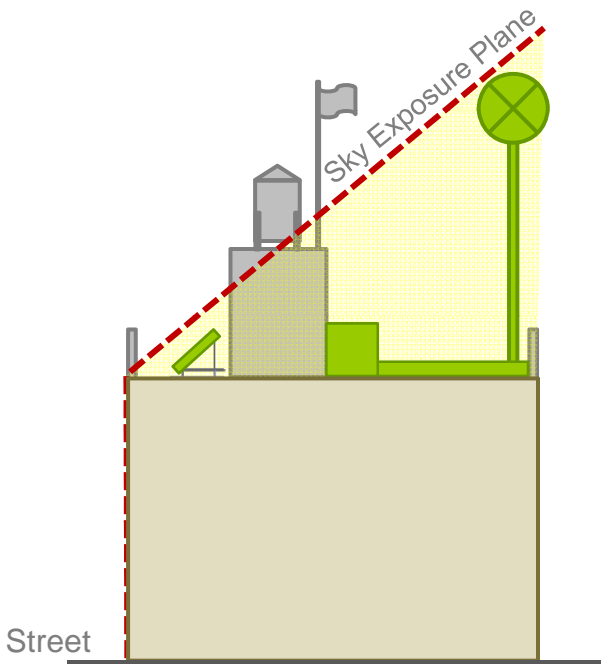
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ROOFTOP FEATURES

ZONING ISSUES



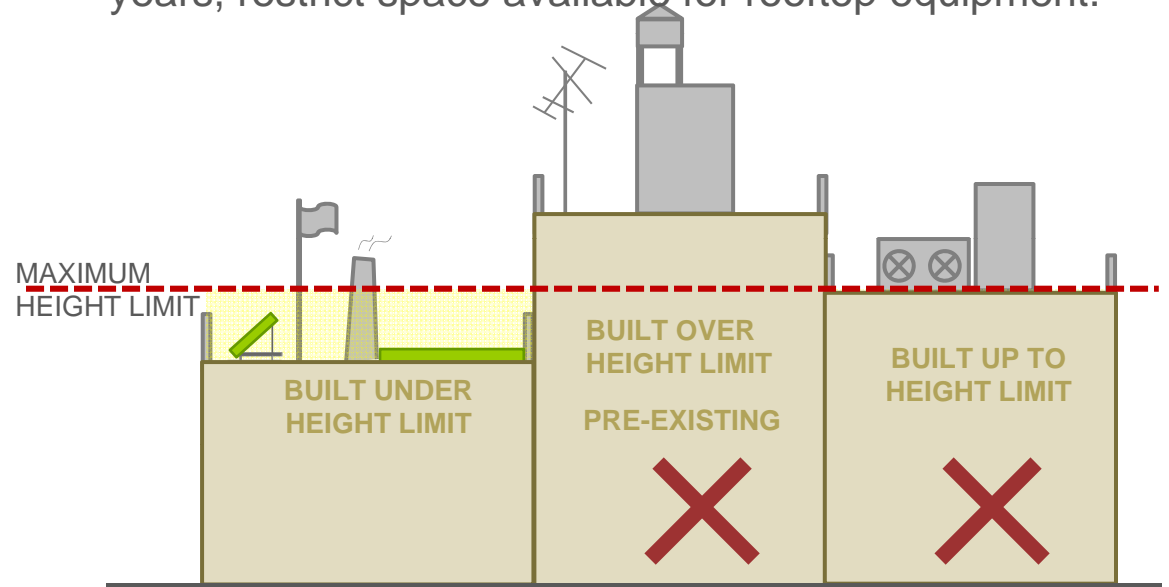
NON-CONTEXTUAL



SIDE ELEVATION (not to scale)

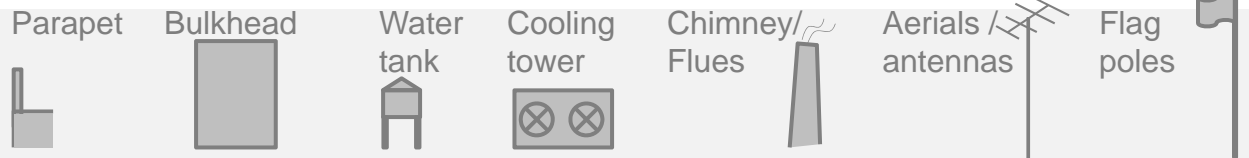
CONTEXTUAL

Contextual height limits, mapped extensively in recent years, restrict space available for rooftop equipment.

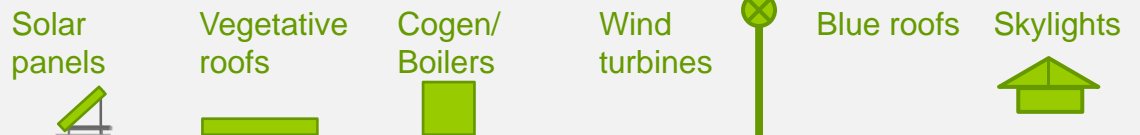


STREET ELEVATION (not to scale)

Permitted Obstructions



Not Permitted Currently

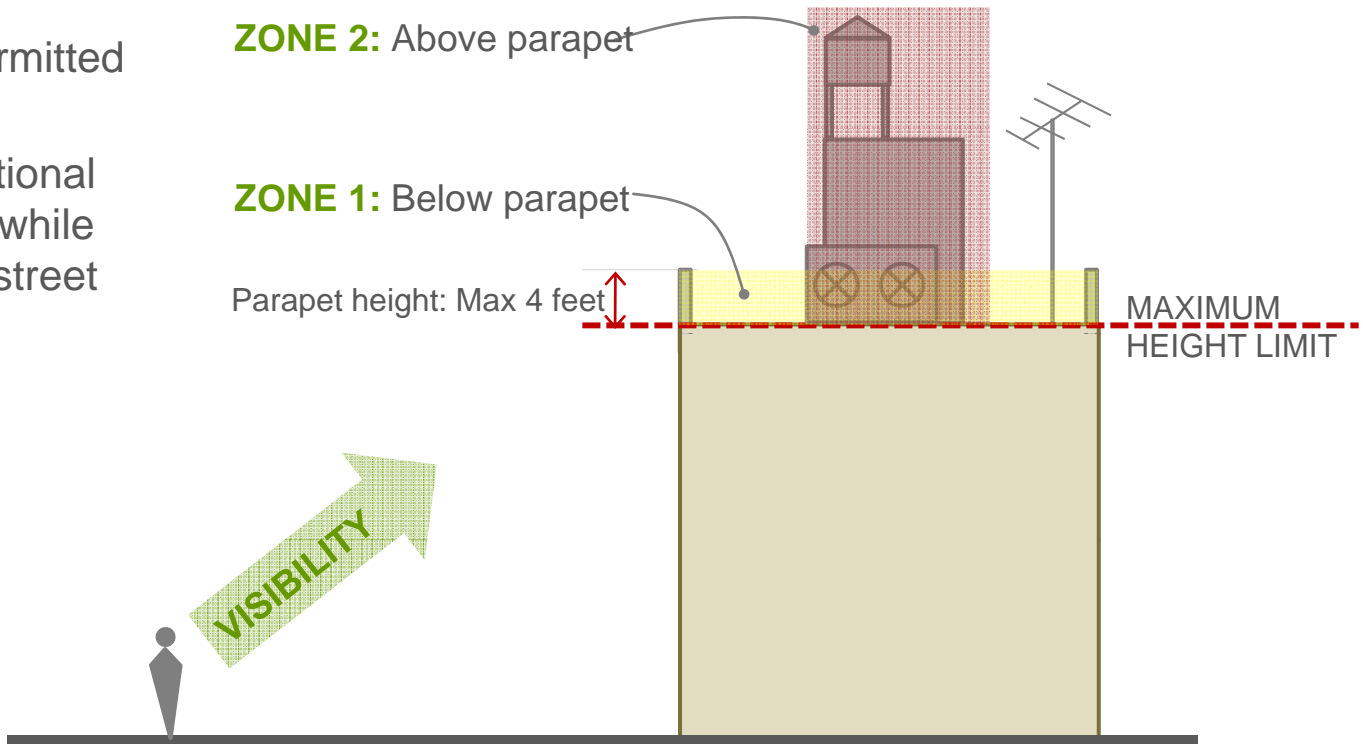


ROOFTOP FEATURES

OVERALL ZONING APPROACH



- Broaden the list of permitted obstructions
- Add flexibility for additional rooftop infrastructure while limiting visibility from street



Permitted Obstructions	Parapet	Bulkhead	Water tank	Cooling tower	Chimney/Flues	Aerials / antennas	Flag poles
✓ Not Permitted Currently							

ROOFTOP FEATURES – UPTO 4’ PROPOSAL



■ Support storm water management, open space, and other beneficial rooftop uses

Above the roof of buildings:

- Allow specified rooftop features up to 3’-6”



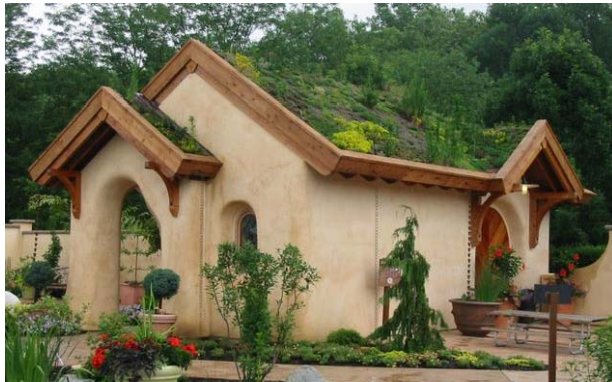
GREEN ROOF FOR STORMWATER DETENTION



BLUE ROOF FOR STORMWATER DETENTION



DECKS – OPEN SPACE FOR RECREATION



Gwinnett Environmental & Heritage Center - Buford, GA.
Photo courtesy of American Hydrotech, Inc.

- On sloping roofs, allow vegetative roof up to 12”
- Allow skylights and clerestories up to 4 feet



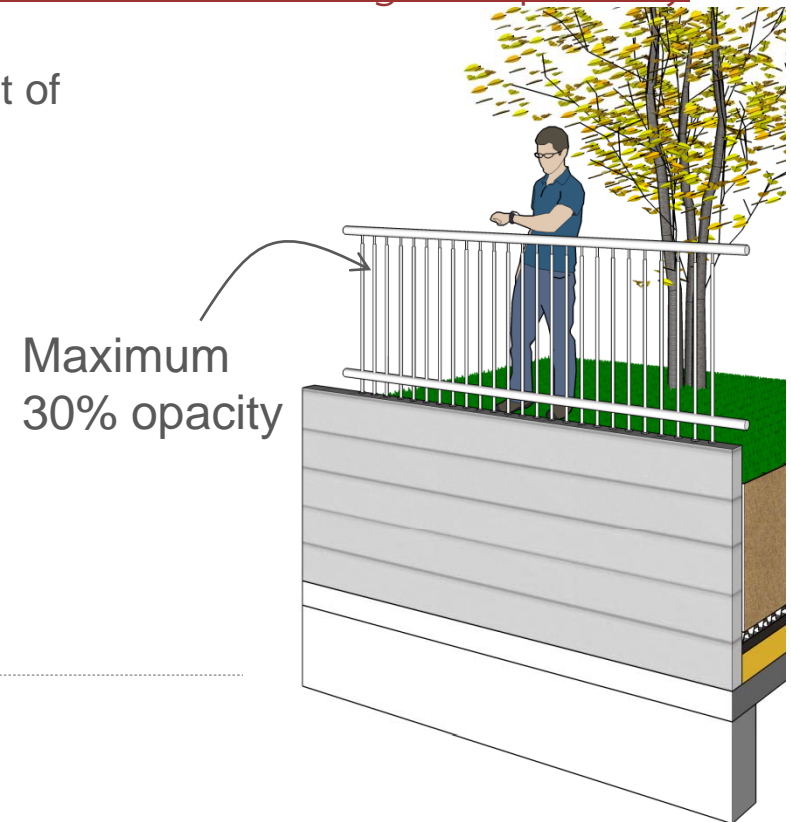
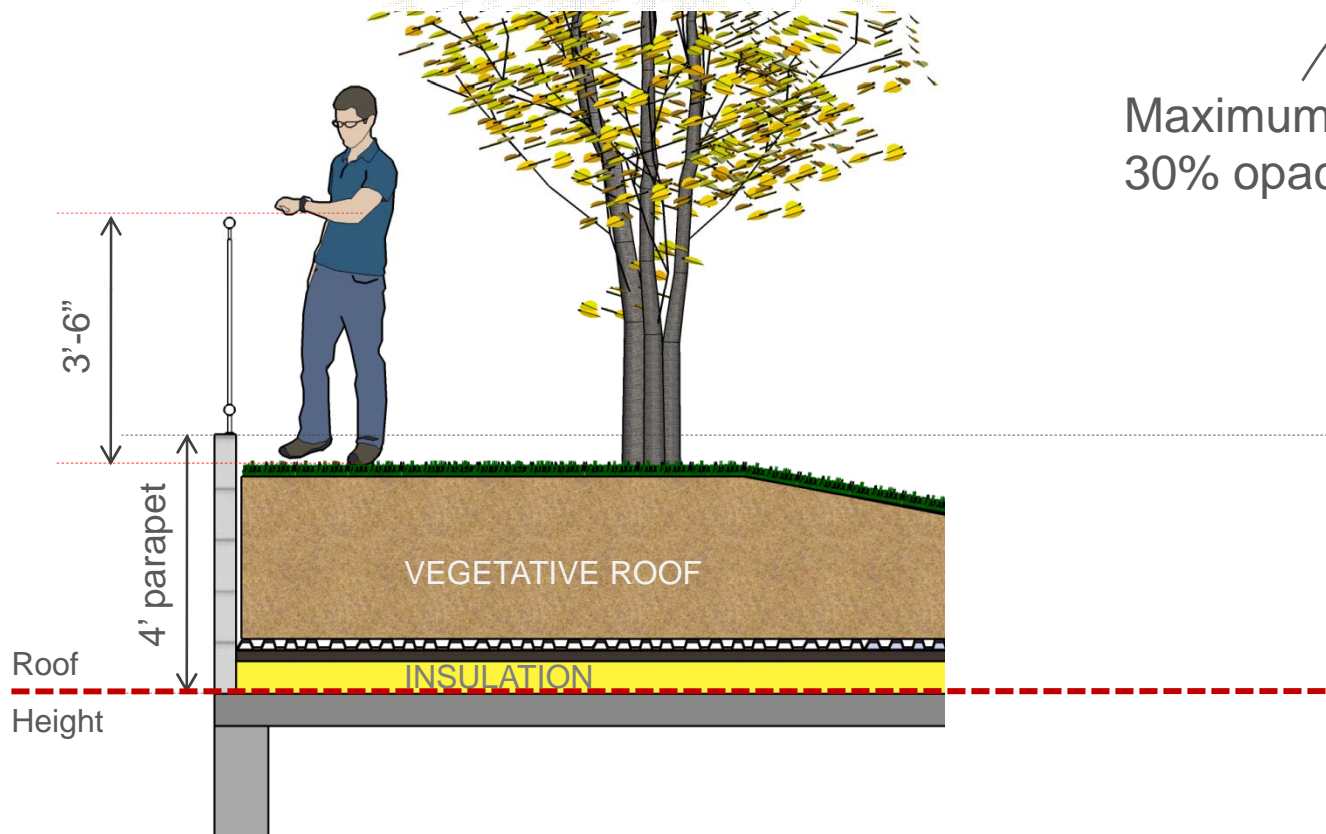
SKYLIGHTS FOR DAYLIGHTING

GUARDRAIL PROPOSAL



Accommodate safety features on accessible roofs while maintaining transparency

- Where required for safety, allow guardrail at a height of 3'-6" above the accessible roof surface
- Such guardrail shall not exceed 30% opacity



SOLAR (UPTO 4 FEET) PROPOSAL

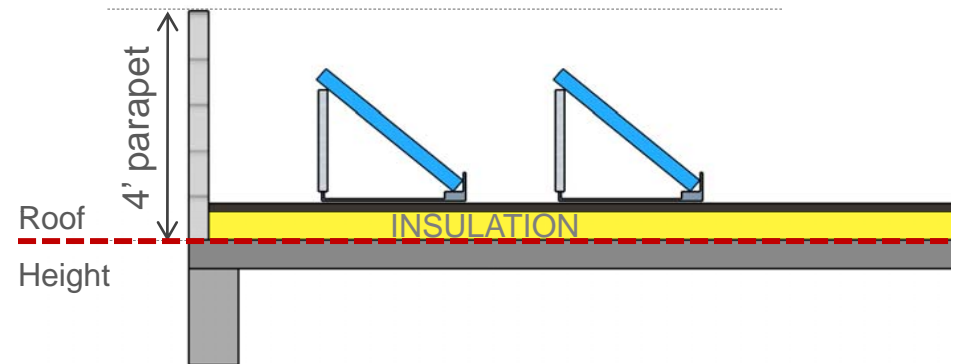


Promote solar electric and hot water systems

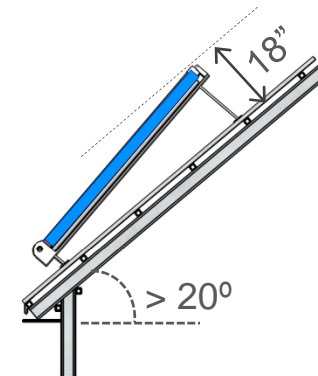
Above the roof of buildings

- On flat roofs, solar panels may be located up to 4 feet above the roof
- On slopes greater than 20 degrees, solar panel height shall be limited to 18"

Flat roofs



Sloping
roofs



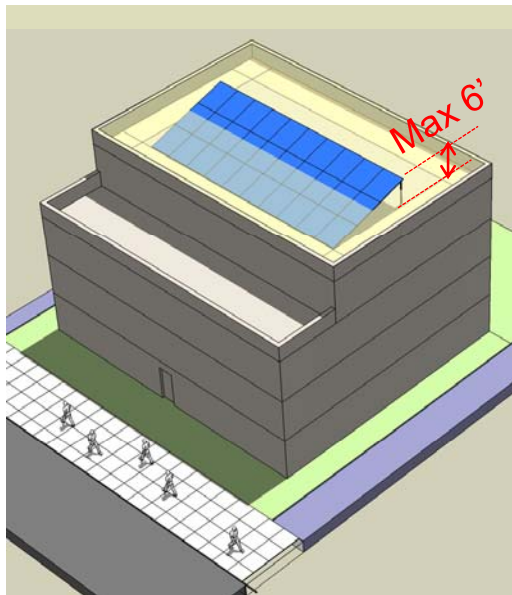
SOLAR (HIGHER THAN 4 FEET) PROPOSAL



■ Allow elevated solar panels for fire access or other purposes, while limiting visibility

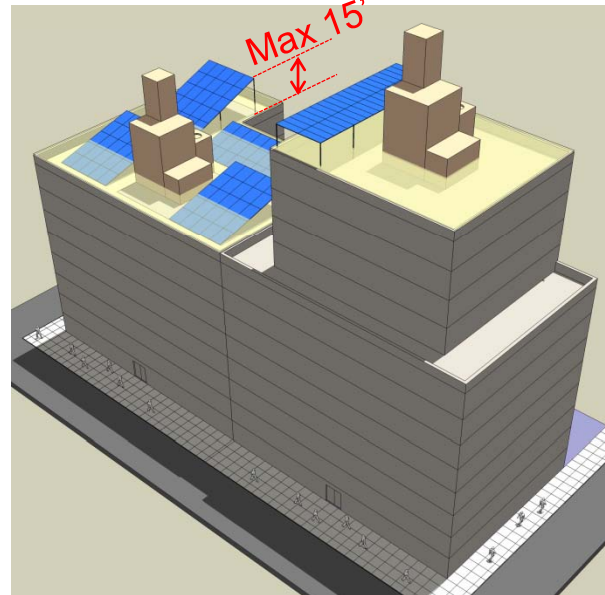
Solar more than 4 feet above height limit shall be set back 6 feet from roof edge and limited to 25 percent roof coverage

R1-R5 (including C overlays)



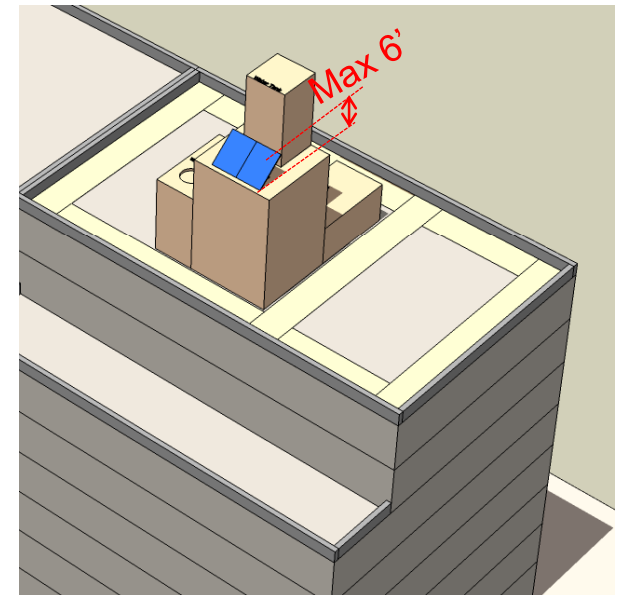
- 6 feet height above roof height

R6 – R10, C & M districts



- 15 feet height above the roof height

R5 – R10, C & M districts



- 6 feet above bulkhead

SMALL WIND TURBINES



Small wind has limited potential in an urban environment, but can generate clean energy where wind conditions are favorable



HORIZONTAL AXIS WIND TURBINE



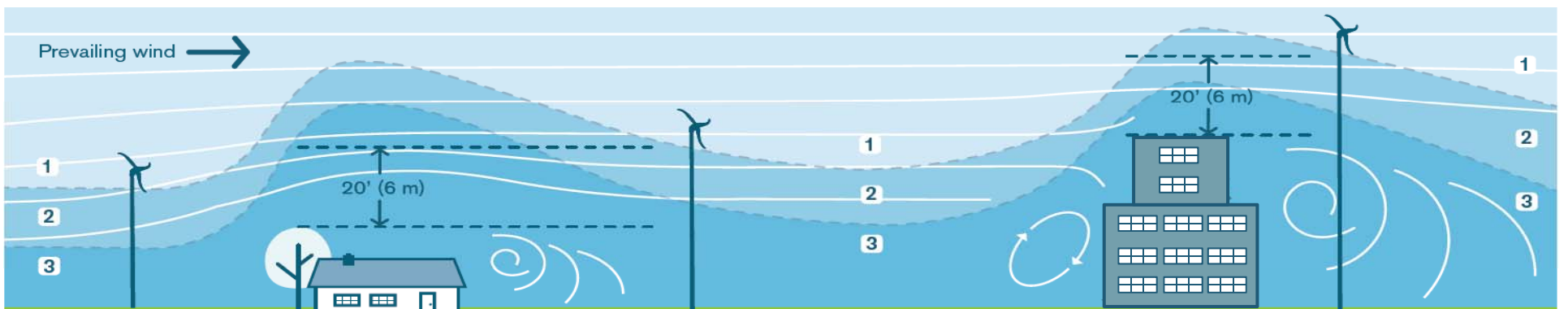
ZONING TODAY

- In all districts, accessory wind turbines are allowed within height and setback regulations

All wind turbines are subject to DOB safety & engineering standards and DEP noise code requirements



VERTICAL AXIS WIND TURBINE



Wind energy converted to electrical energy

Image adapted from Southwest Windpower Siting Guide (Southwest Windpower does not endorse installations in urban areas)

1 Good 2 Fair 3 Poor

SMALL WIND TURBINES PROPOSAL



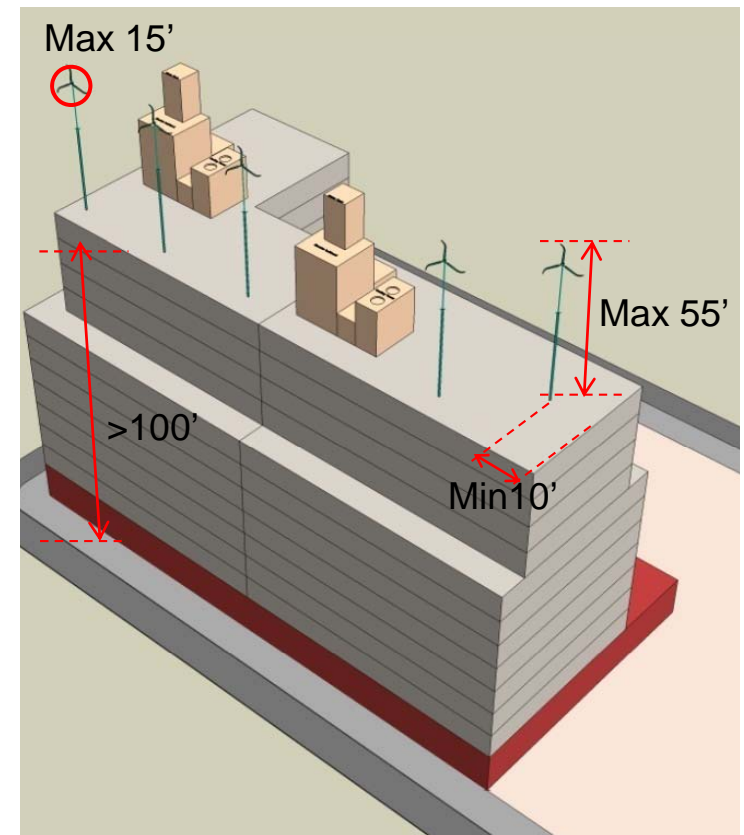
Allow additional flexibility for small wind on tall buildings

On buildings taller than 100 feet:

- Allow turbine up to a maximum height of **55 feet**
- No portion of the turbine within 10 feet of any lot line
- In districts in which residences are allowed and within 100 feet of such districts, the diameter of the swept area of a turbine shall not exceed 15 feet.



Portland, Oregon. Source: Zimmer Gunsul Frasca Architects



SMALL WIND TURBINES

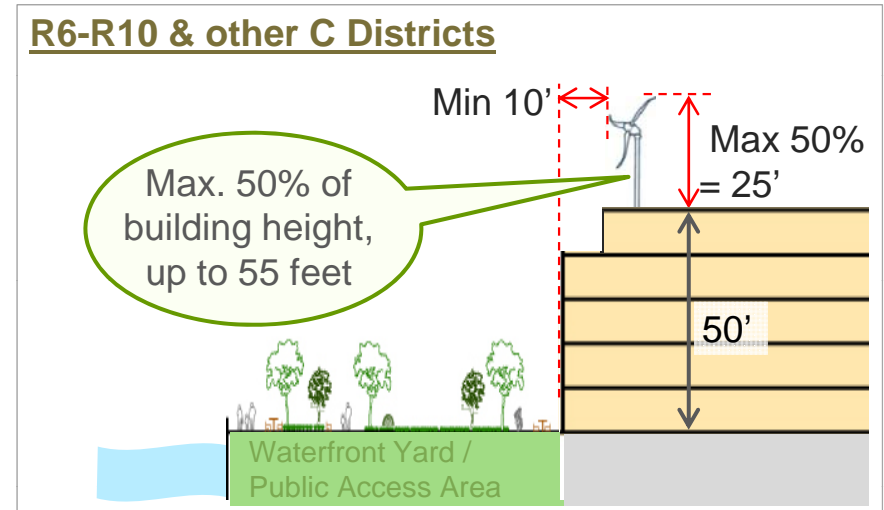
PROPOSAL FOR WATERFRONT BLOCKS



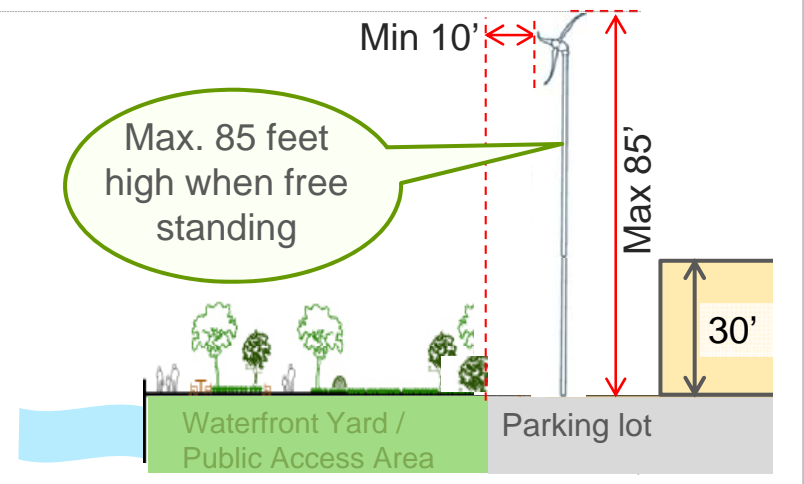
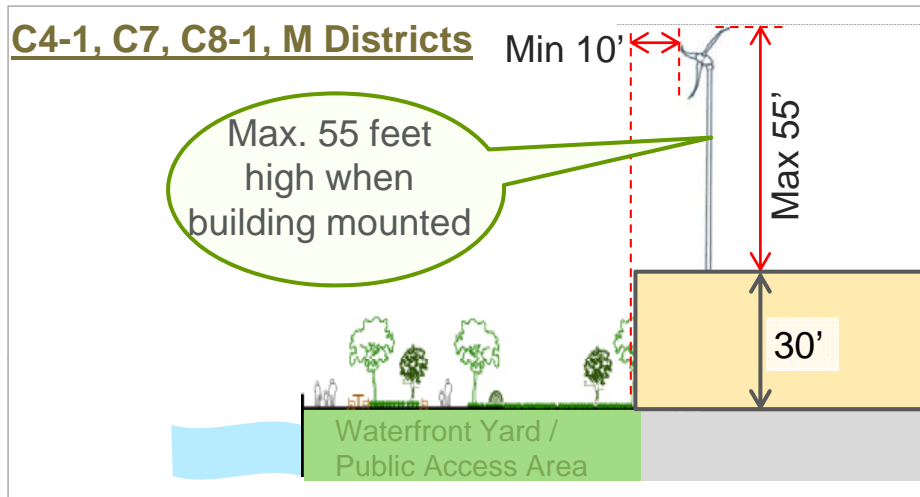
Allow additional flexibility on the waterfront where building height is restricted

- On top of low commercial and industrial buildings, allow turbines up to 55 feet and up to 85 feet, if free standing
- In C & R districts, allow turbines that are half the building height, up to 55 feet
- No portion of the turbine within 10 feet of any lot line or waterfront public access area boundary

R6-R10 & other C Districts



C4-1, C7, C8-1, M Districts



ROOFTOP GREENHOUSES



PS 333. Photo by Ari Burling. Courtesy: NY Sun Works



Photo by Delmy Perez.
Courtesy: NY Sun Works



Copyright Gotham Greens



Benefits:

- Education (*when attached to schools*)
- Year round local food production in an urban environment
- Food travels less distance, reducing energy use and related carbon emissions



Photo Courtesy: Gotham Greens

Existing zoning permits greenhouses subject to floor area and height limits

ROOFTOP GREENHOUSES

PROPOSAL



■ Encourage educational and food production-oriented rooftop greenhouses

By certification from CPC chair, allow rooftop greenhouses to be exempt from floor area and height limits if:

- On top of a building that does not contain residences or sleeping accommodations
- Greenhouse includes rain water harvesting
- Set back at least 6 feet from roof edges
- No more than 25 feet tall



Photo Courtesy: Gotham Greens.



PS 333. Photo by Ari Burling. Courtesy: New York Sunworks.

BULKHEADS PROPOSAL



Allow flexibility for a variety of rooftop equipment, while limiting visibility from street

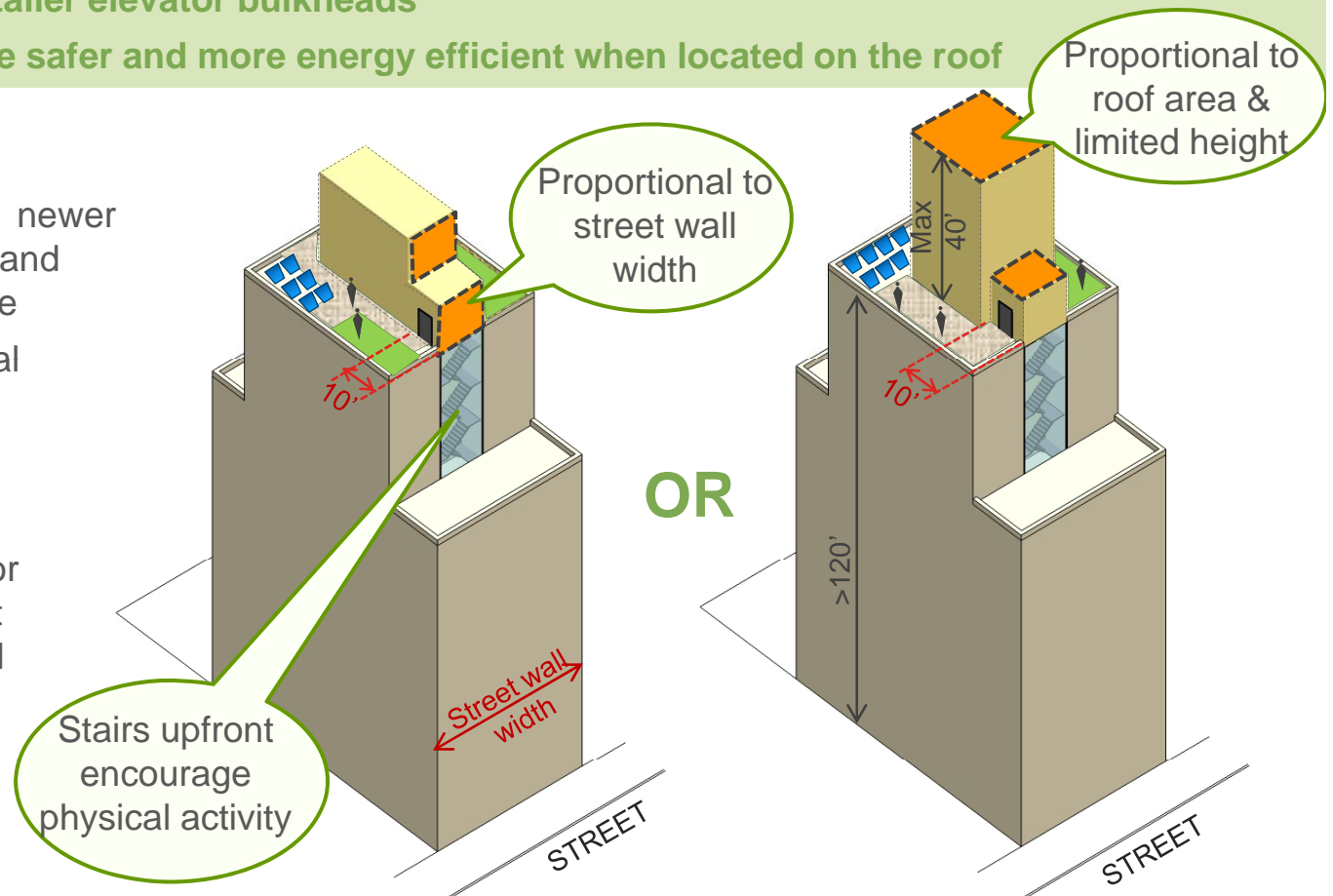
- Solar panels, roof decks, and other features require flexible options for location on roof
- Locating stairs near building entrance encourages physical activity
- Roof accessibility requires taller elevator bulkheads
- Boilers & cogen systems are safer and more energy efficient when located on the roof

Allow flexibility

- Apply bulkhead envelope of newer Special Districts to medium and high density districts citywide
- Allow a variety of mechanical equipment within bulkheads

Limit Visibility

- Equipment other than stair or elevator bulkheads must set back 10 feet from street wall
- Require screening of mechanical equipment



GREEN BUILDING COMPONENTS

- ❑ High performance building envelope
- ❑ Sun control devices *(to reduce summer cooling needs)*
- ❑ Rooftop features
- ❑ Other sustainable features

OTHER SUSTAINABLE FEATURES PROPOSAL



Update and clarify zoning standards for green features

Solar Energy Generation



- Allow solar energy generation as accessory to any use or as a free standing use in Commercial Districts (*subject to height and setback limits*)

Electric Vehicles



- Clarify that electric vehicle (EV) charging is allowed in all parking facilities
- Allow EV charging or battery swapping in Commercial Districts (*Use Group 7*)

Sidewalk Planting Strips



- For schools in lower-density districts where sidewalk planting strips are required, allow permeable pavement as an alternative where required to accommodate foot traffic

GREEN BUILDINGS BENEFIT EVERYONE



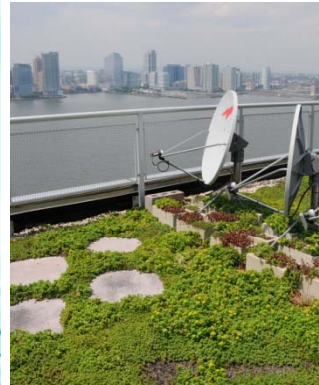
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OPEN SPACE



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savings

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health

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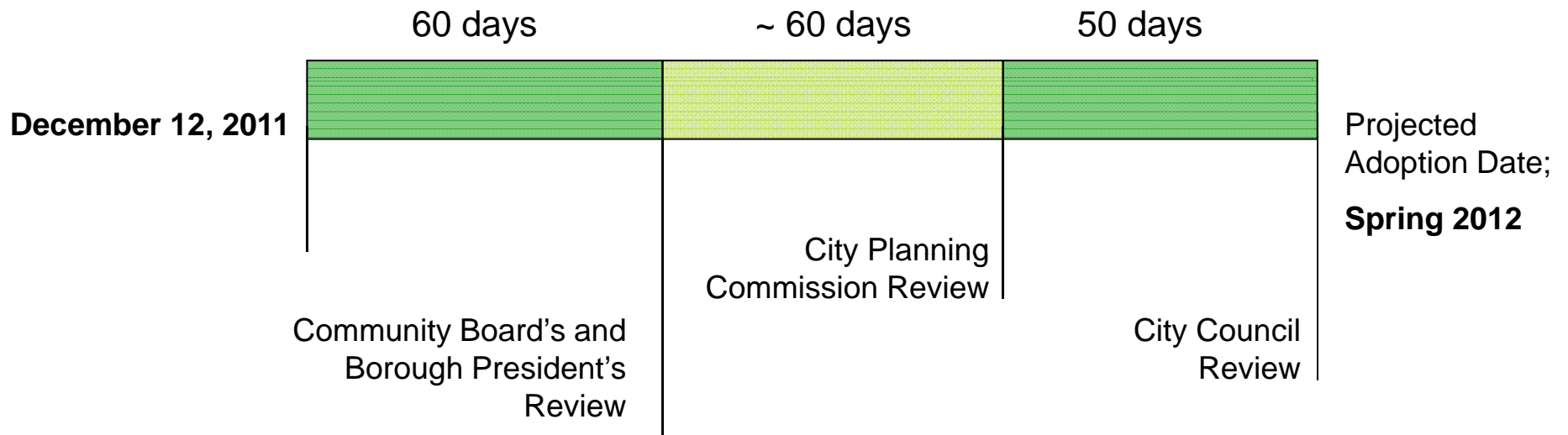
infrastructure

...reduced burden on City's electrical grid and sewer system

nature

...reduced pollution and carbon emissions; increased biodiversity; connects New Yorkers' to the environment

PUBLIC REVIEW TIME LINE





Thank You

More information at:
nyc.gov/zonegreen