

# DC Green & Energy Codes Update

30 July 2018 | 6:30-8:00 p.m.

1.5 HSW | LUs

# Agenda

- Codes & Policy Context
- Lessons Learned from Current Green & Energy Codes
- Proposed Green & Energy Code Updates
- DC Incentives & Resources
- Global Policy & Codes Context
- Advocacy & Engagement

# POLICY TIMELINE

2006

2008

2010

2012

2013

2014

2015

2016

2018

Green Building Act

Clean Affordable Energy Act

Energy Efficiency Financing Act

Sustainable DC Plan

Community Renewables Act

Green Area Ratio

Stormwater Regulations

Green Codes

Wildlife Action Plan

RPS Update

Climate Ready DC

Green Bank & Clean Energy DC

Launched DC SEU & benchmarking and disclosure program

Created DC PACE

Enabled community solar

Implemented environmental sustainable zoning

Adopted 2012 International Green Construction Code

Protects endangered species habitat

Identified Climate Resilience Strategies for Buildings & Development

*Coming Soon*

Created the Green Building Fund

Set minimum green building standards

Developed a long-term plan for sustainability in the built environment

Provided plan to transition to a new storm water management requirements

Created a storm water credits trading platform

Creation of Solar for All



# GOALS: 2032



**ADAPT TO CLIMATE CHANGE**

**CLIMATE READY BUILDINGS**

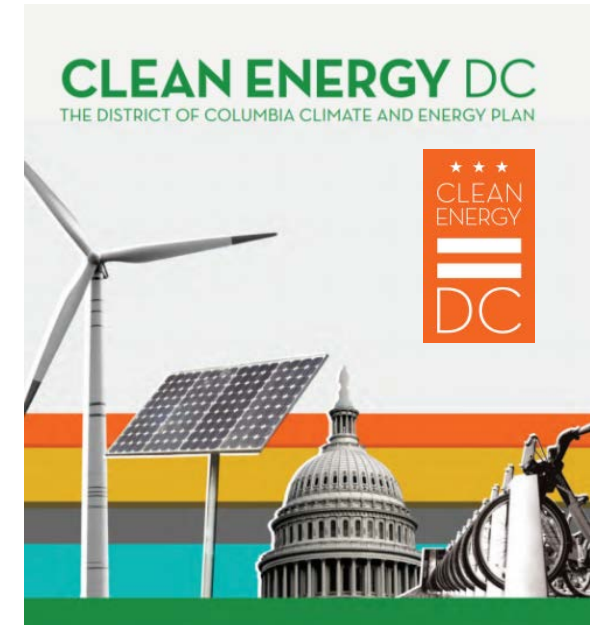
**CUT ENERGY USE 50%**

**50% RENEWABLE ENERGY**

**NET ZERO NEW BUILDINGS**

**NET ZERO RETROFITS**

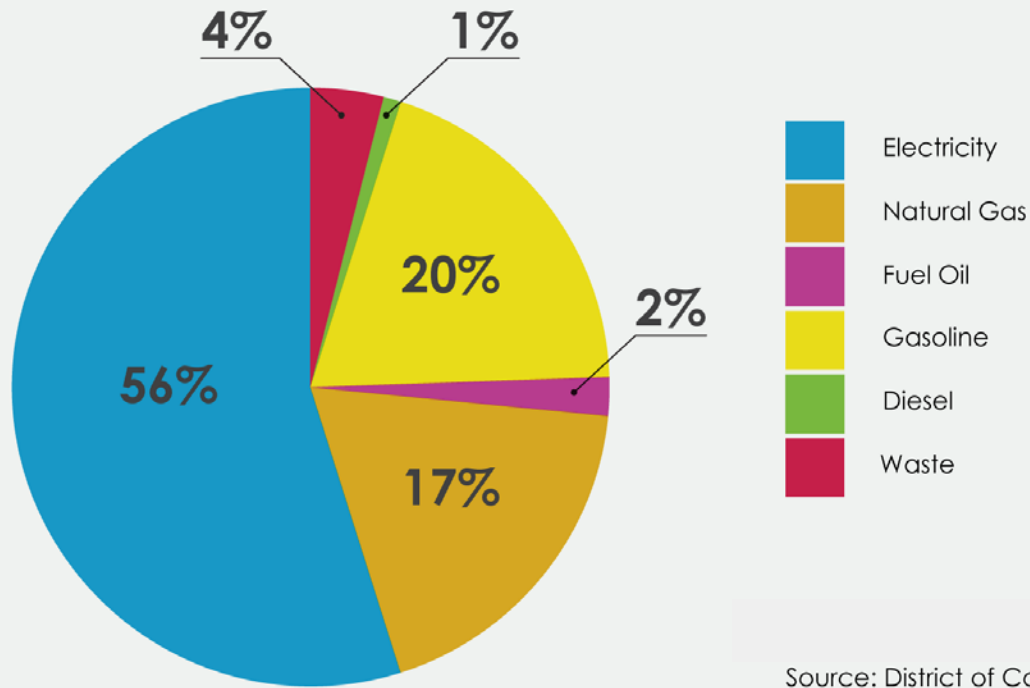
**CUT GHG EMISSIONS 50%**



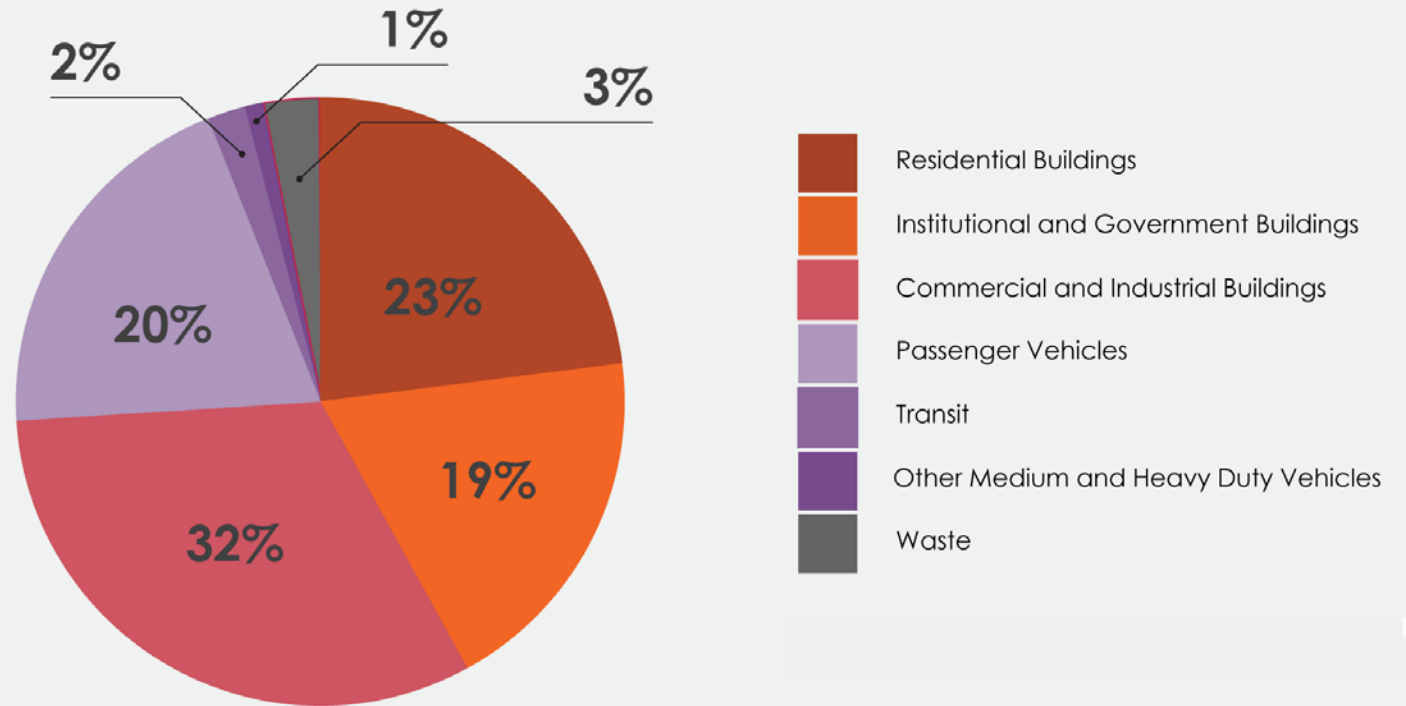
## 2050: Mayor Bowser Commitment to ZERO Carbon

# ENERGY USE AND EMISSIONS IN DC

## PROPORTION OF GHG EMISSIONS BY SOURCE

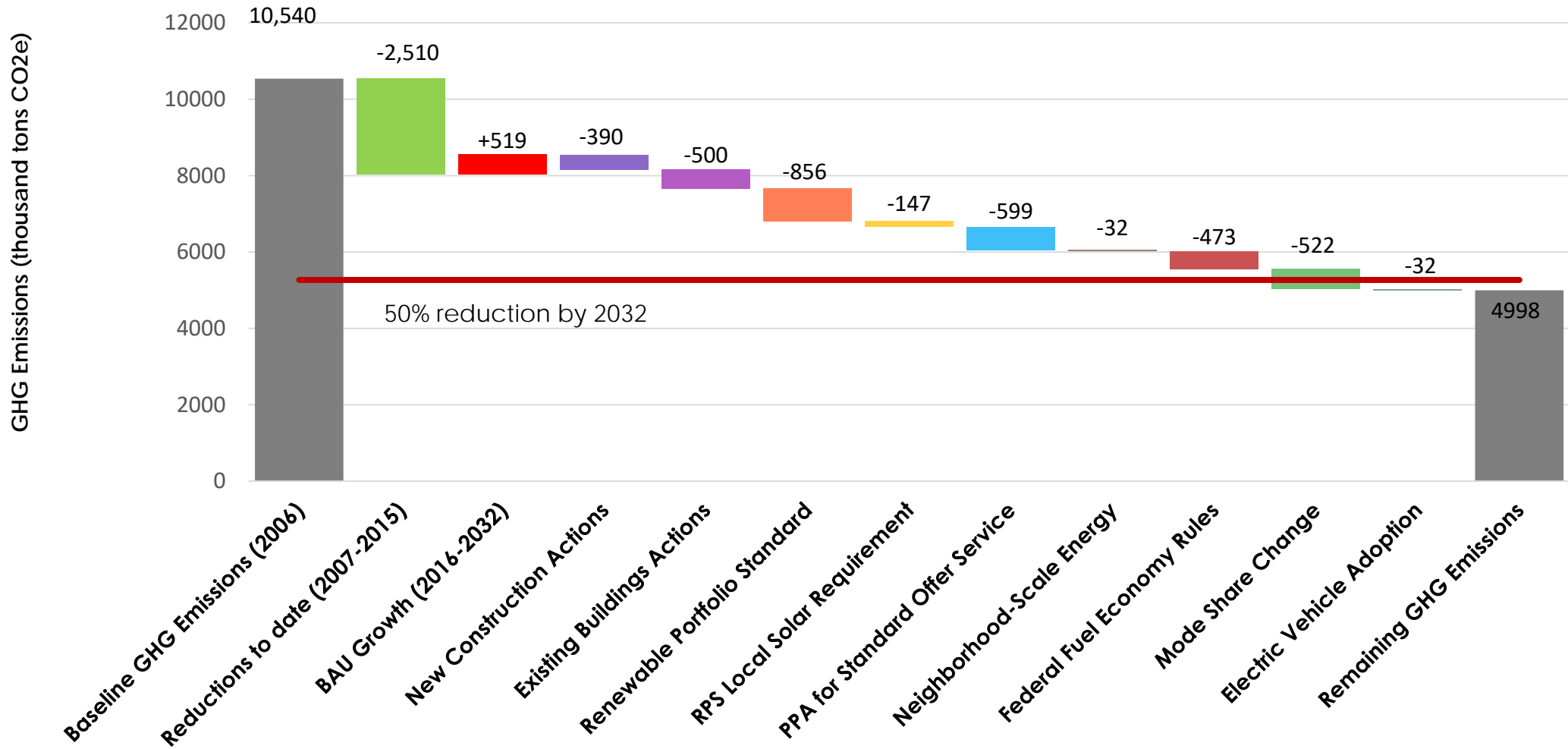


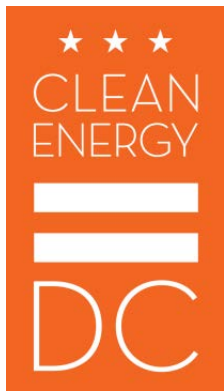
## MODELED PROPORTION OF GHG EMISSIONS BY SECTOR





# CLEAN ENERGY DC: DC's Climate & Energy Plan





# NET-ZERO ENERGY CONSTRUCTION

- Residential new construction – 2020
- Commercial requirements – 2026
- Proposed DC 2018 Energy Code includes Appendix Z: Net-Zero Pathway
- DC easing the path for adoption
  - Solar + Stormwater
  - Zoning regulations
  - Permitting
- District Energy & Microgrids





# CONSTRUCTION CODE UPDATES

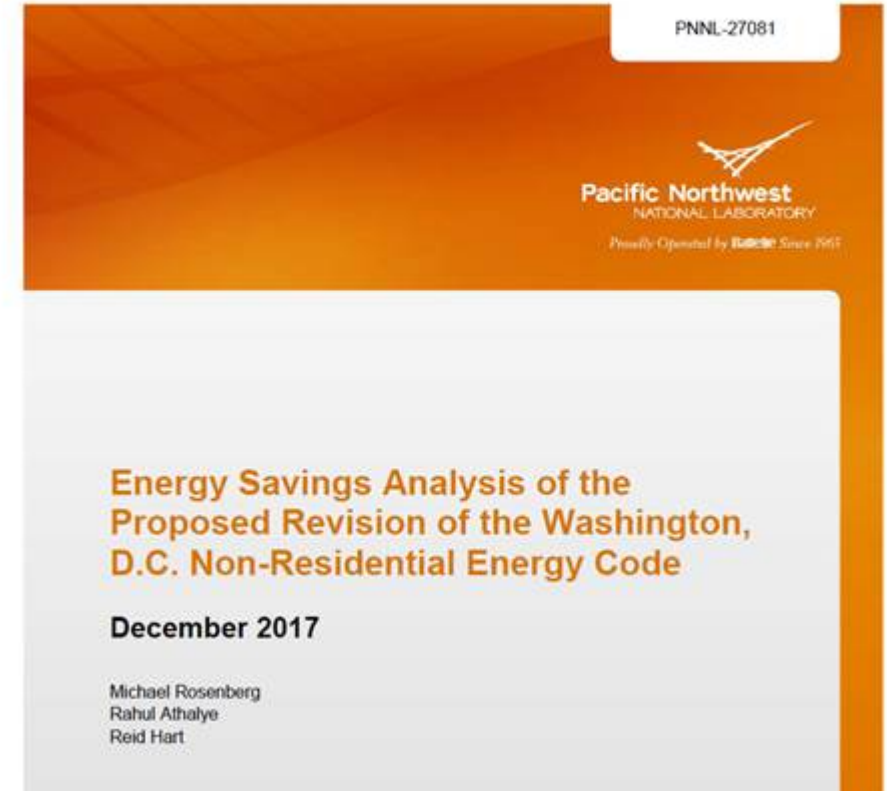
- Clean Energy DC Action - Path to 2032
- Proposed codes passed by the CCCB and currently being reviewed by EOM
- Public Comment Period (1 or 2) before proposal to Council
- 2018 Energy Conservation Code
  - 15% improvement in efficiency over current code
  - Significant efficiency changes for residential construction
  - Amendments incorporate IECC 2015 along with ASHRAE 90.1-2013 & 2016, 189.1 energy sections.

***CODES ARE  
OUTDATED AS  
SOON AS THEY  
ARE PASSED.***



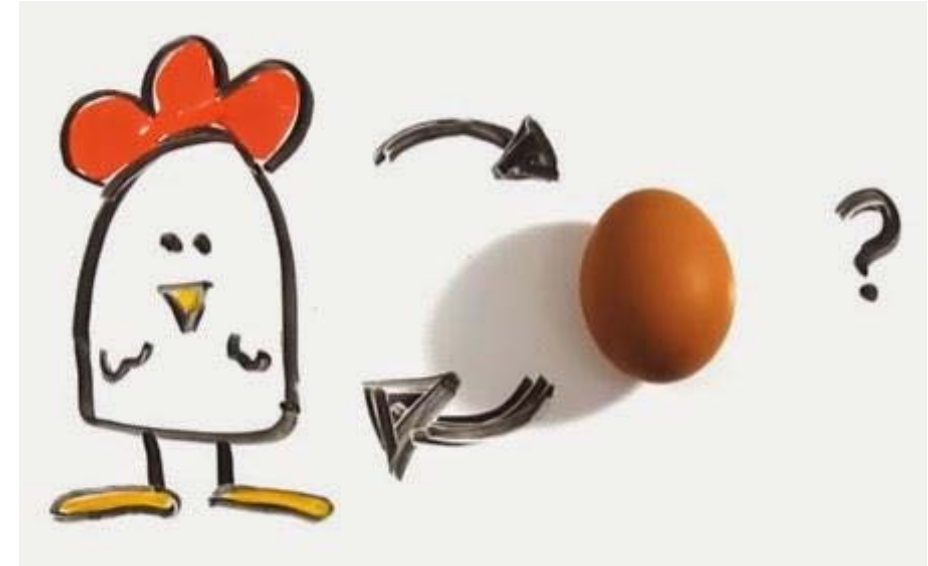
# PNNL Study

- 54% of new construction is multifamily
- 14% of new construction is office buildings
- Overall, new code is intended to save 11% site energy and 10% source energy over current code
- Energy cost savings are estimated at 10% Office buildings and 17.6% for Midrise Multifamily
- Biggest impacts: prescriptive mandatory exterior shading, solar power, reduced interior lighting power density



# What's Changed Since 2013?

- 2013 DC Green Construction Code and Energy Conservation Code adopted March 28, 2014
- DCRA Green Building Division established 2013
  - We've grown to a team of 12 people. We handle design coaching, plan review, inspections, and certificate of occupancy reviews.
  - We also educate, train, advocate, develop policy, & regulate new technology
  - FY16 & FY17 = 7,392 unique building permits
    - 480 Green Code & 190 GBA
  - 3,000 solar permits for 50 megawatts of solar



# Updates: How Are We Doing?

- Project teams have improved compliance! Especially tenant layouts
- Coordinate energy model with drawings prior to sending permit
- Use performance requirements for compliance
- The GECS and EVS are tools to help you comply. If you do not use them or use them incorrectly, then you are more likely to see HFC.
- Most significant Green Code issues: ENERGY STAR kitchen equipment, pipe line length, lighting Controls - daylighting, schedule inspections! (review permit/coversheet for GCC note)
- Most significant Energy Code issues: slab edge insulation, load sizing, and lighting control details

## What are you seeing?



# Updates: Where Are We Headed?

- RECAP: Net-zero energy Construction
  - Residential new construction – 2020
  - Commercial requirements – 2026
- We are building out voluntary net-zero programs for residential and commercial buildings that **pulls** the industry forward
- The base code **pushes** from behind
- Regional Net-Zero Energy Buildings Coalition
  - Looking for building professionals across the board who are interested in participating
- Green Seminar Series 8/29 – Energy Modeling
- Green Building & Net-Zero Expo



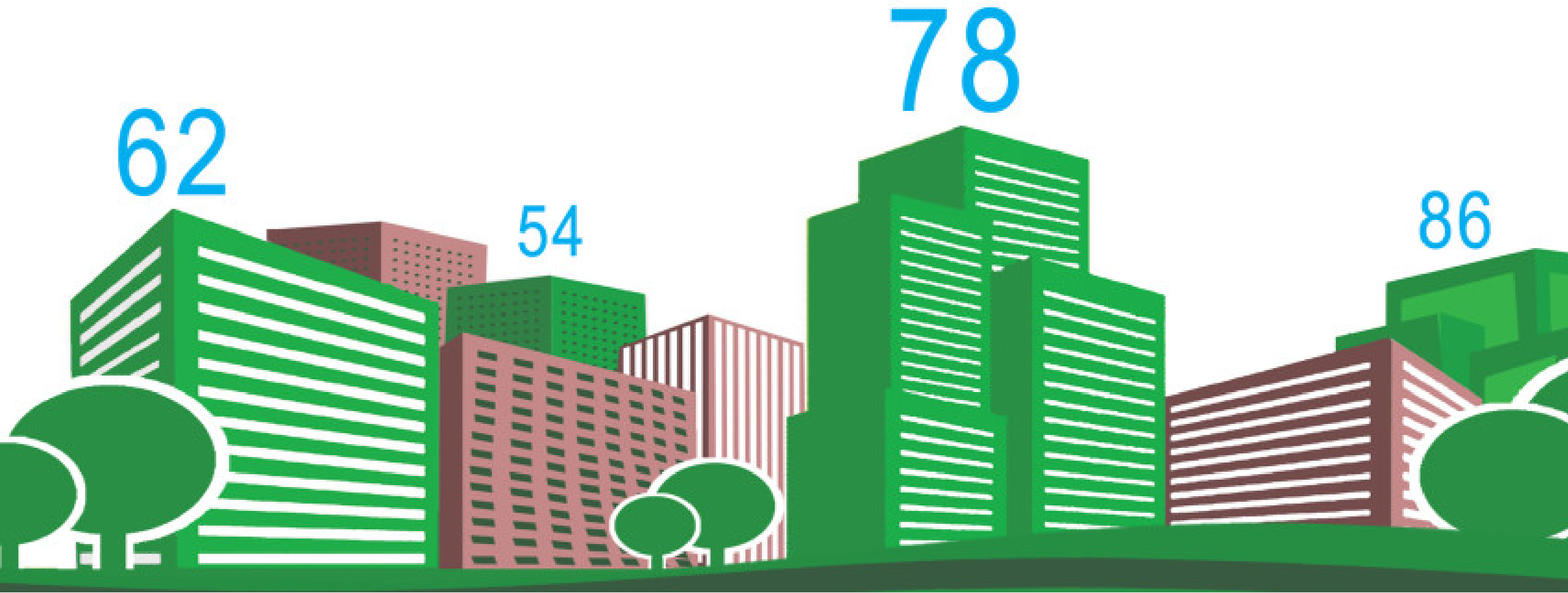
*There's mountains beyond mountains.*

*The devil's in the details.*

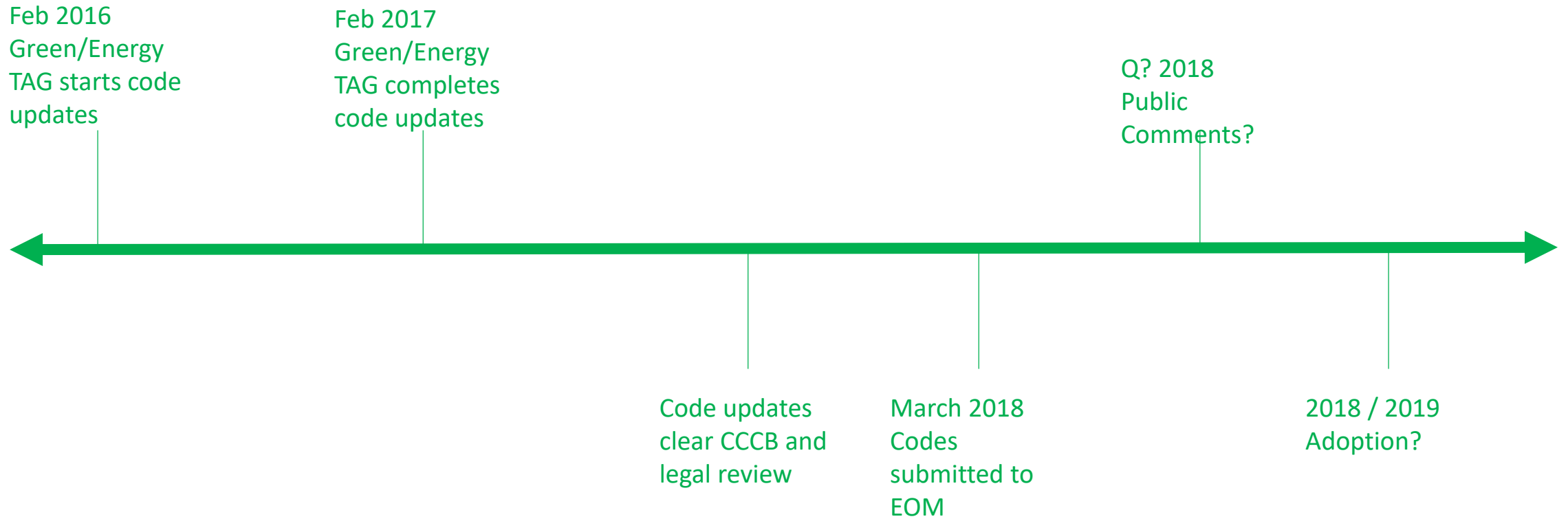
*The more you know, the more you know  
you don't know*



# DC Energy & Green Code Update



# Timeline DC Green & Energy Code Updates



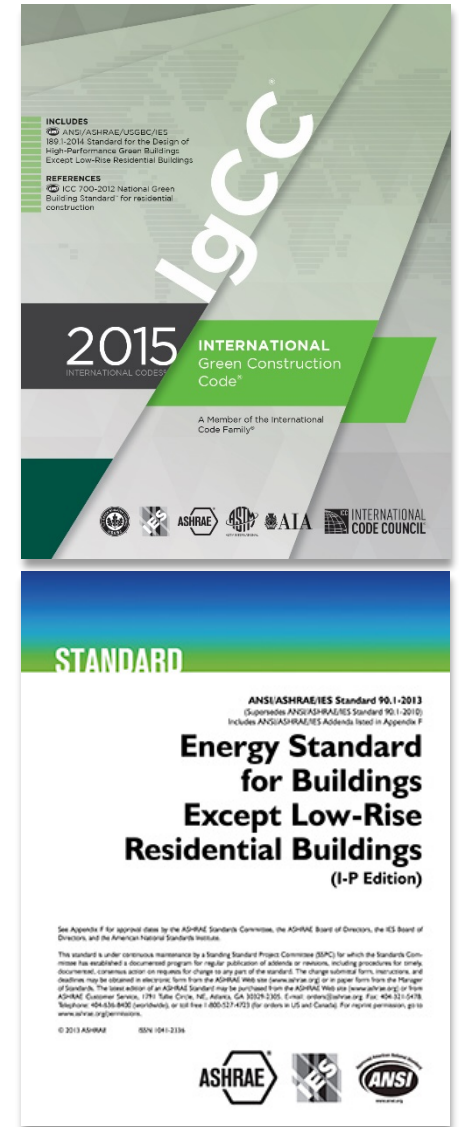
# Code Update

DC Green & Energy Codes are approved by CCCB:

- Draft out for Public Comments Q? 2018.
- Adoption in Q? 2018.
- Any projects without permit or design contract will be kicked into new codes.

DC Green and Energy Code TAG:

- HOK, GHT, WDG, Akridge, Paladino, JLL, WRL Design
- DCRA, DOEE, AOBA, DC SEU, IMT



# Green Code Update

## Added

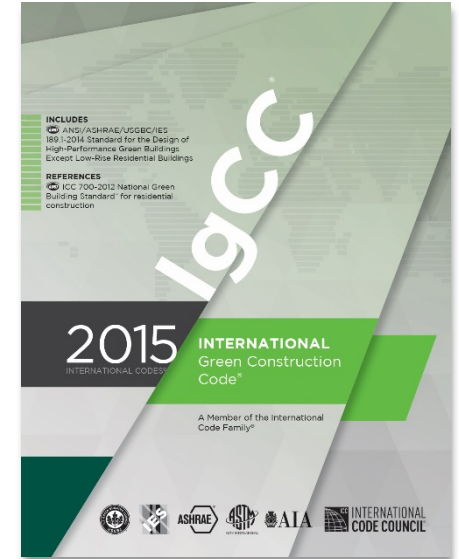
- Preferred parking req'ts for LE/FE, HOV vehicles
- WaterSense pre-rinse spray valves
- Condensate drainage recovery (New Construction & Level III Alterations)
- Ventilation req'ts for interior fitouts
- IAQ testing ACP for low emitting materials (moved from Appendix A)

## More stringent

- Light pollution req'ts for athletic fields and industrial areas
- Water efficiency private kitchen faucets, public & remote WCs

## Replaced / Removed

- Section 505 IgCC with Section 505 ASHRAE 189.1 (more robust, can't count materials multiple times)
- Chapter 6 (Energy) & 9 (Commissioning) -> see energy code

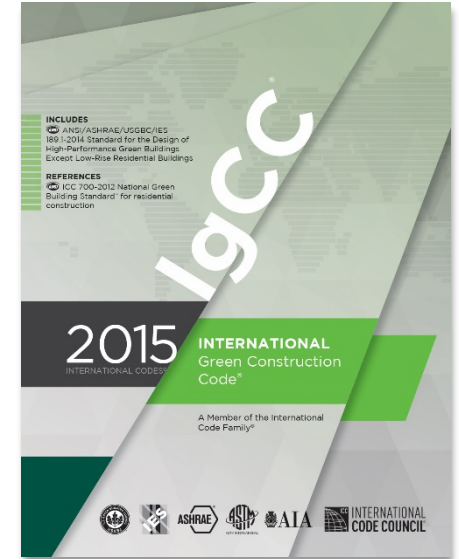




# Green Code Update

## Appendix A

- Includes Level II Alterations (50,000 sf+)
- Includes first time fitouts (10,000 sf+)
- Increasing req'd number of electives by 2
- Bird-safe building design guidelines
- Larger green roof coverage
- Electric vehicle charging stations
- Deconstruction
- More electives for energy conservation, green power
- More electives for LPD reduction and ADR for lighting
- Increased insulation & higher performing windows
- Permanent shading devices
- Reduced air leakage
- Waste water heat recovery
- Recirculating hot water
- Very high efficiency equipment
- Condensate drainage recovery (when not req'd)
- Wet hood exhaust scrubber systems
- Views
- Pre-occ AQ testing or flush out (in addition to low emitting materials)



# Energy Code Update

DC will adopt:

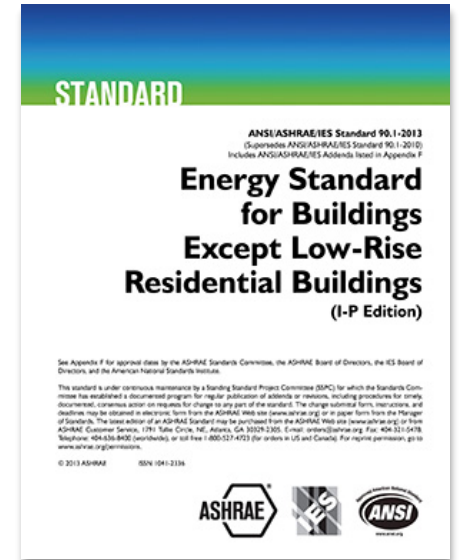
- ASHRAE 90.1 (2013) merged with Chapter 7 of ASHRAE 189.1 (2014) = energy code

DC will not adopt:

- IECC 2015

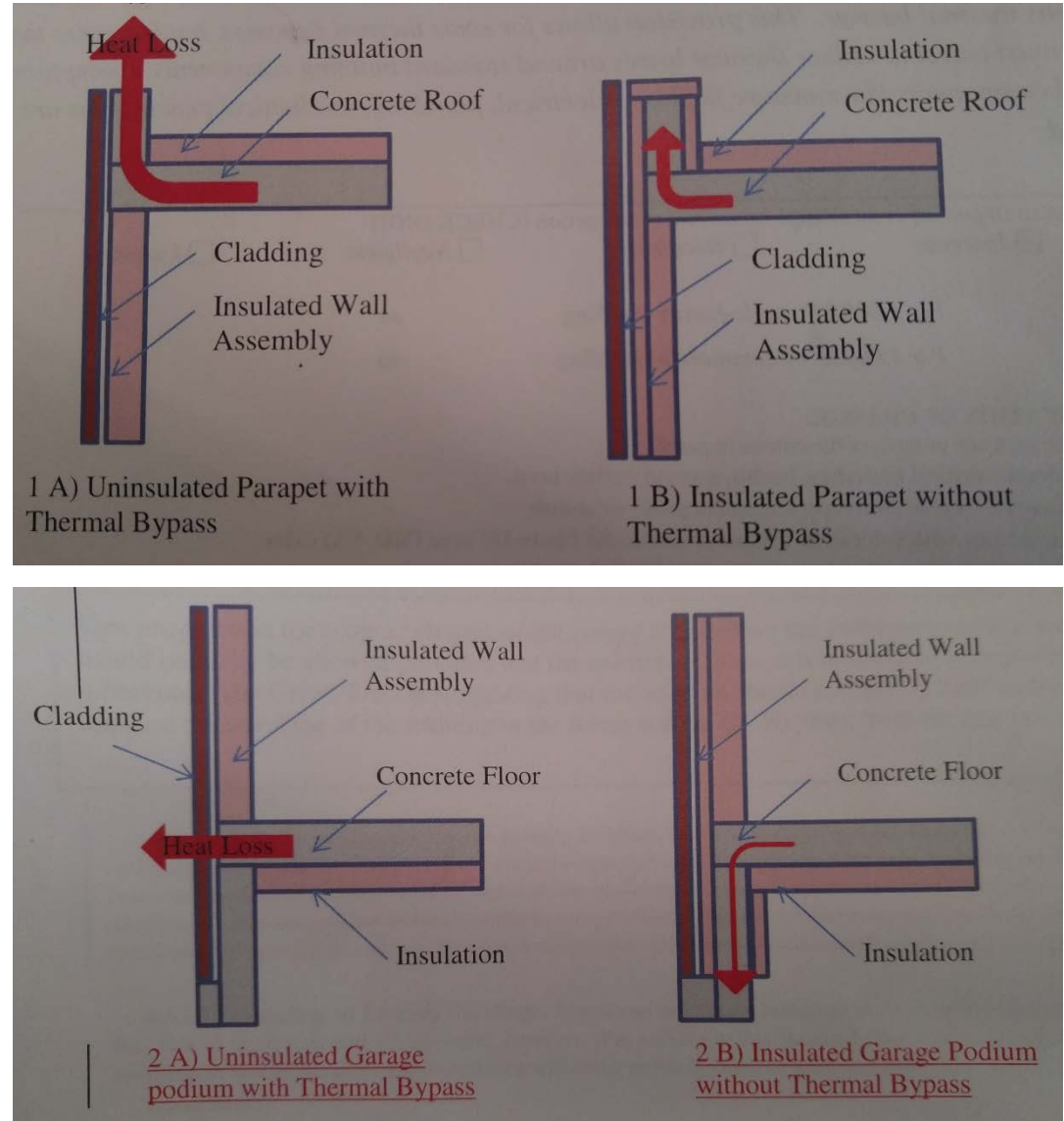
New:

- Cleaned up, streamlined language
- More stringent req'ts for additions (>5%), alterations, core & shells improvements
  - e.g. bldg. insulation must be brought up to code when roof is replaced
- Measured Performance Pathway (replaces energy cost budget method with Appendix G)
- Stretch goals for Net Zero, Passive House, LBC (tie to incentives)



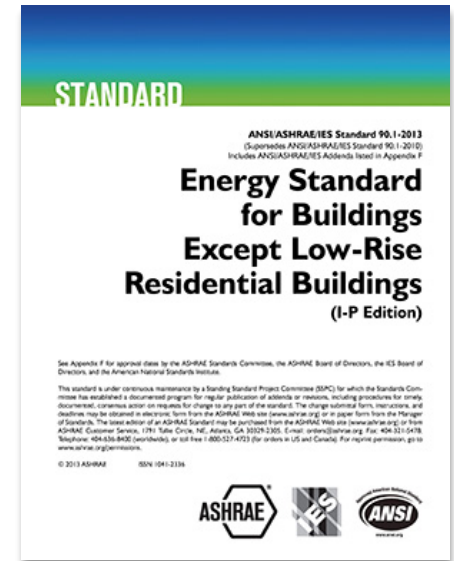
# Energy Code Update

- More stringent envelope req'ts:
  - c.i., r-values, u-values
  - SHGC
  - Prescriptive path *requires* permanent shade devices
  - Continuous Thermal Barrier
  - Best practices dehumidification & ventilation



# Energy Code Update

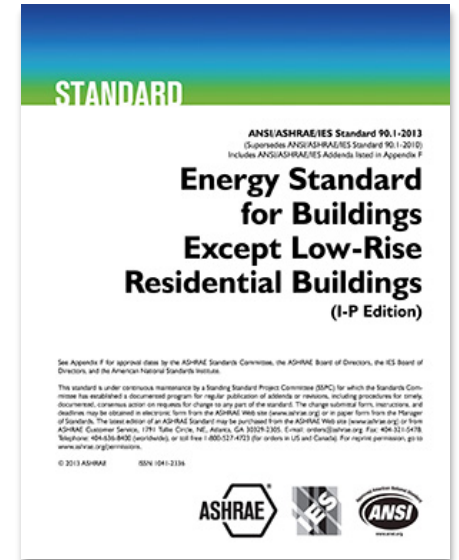
- More stringent HVAC req'ts:
  - If compressor, use heat pump instead of electric resistance
  - High occupancy areas must use CO<sub>2</sub> sensors
  - Improve efficiency of hotel/motel HVAC
  - Automatic HVAC controls in hotels/motels
  - Fan power limitation 10% lower
  - Fan efficiency increased from 15% to 10% of maximum total efficiency
  - Exhaust air energy recovery efficiency increased from 50% to 60%
  - Supermarkets over 25,000 sf included in heat recovery req'ts
  - Restaurants and kitchens compliance threshold down from 5000 cfm to 2000 cfm
  - Spa pool insulation req'd
  - ADR equipment (not participation)
  - Higher efficiency lighting in dwellings
  - Exceptions for replacement lighting, lighting load 50%
  - Automatic controls parking lighting





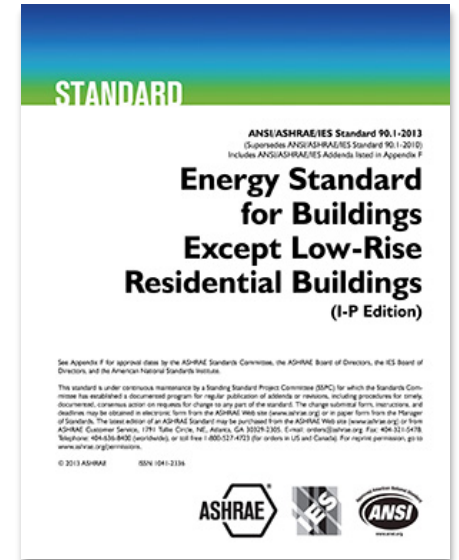
# Energy Code Update

- More stringent Lighting req'ts:
  - Higher efficiency lighting in dwellings
  - Exceptions for alterations replacement lighting, lighting load 50%
  - Automatic controls parking lighting
  - Prescriptive req'ts occupancy sensors or auto controls
  - Lower LPD cap space-by-space or building area method. *ex: office 0.77 W/sf*
  - Additional 20% total LPD reduction in lieu of daylight harvesting controls.
  - Daylight zone simplification (15' from window, 3' on either side).
  - Specialty/Decorative lighting capped at 5% of overall lighting allowance.
  - Sign lighting requirements



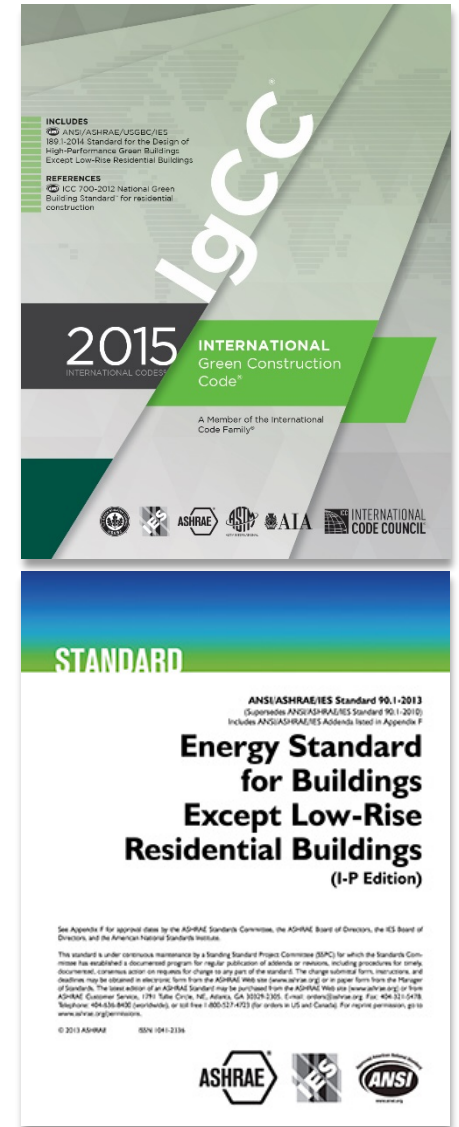
# Energy Code Update

- Renewables:
  - Renewable energy space & pathways requirement (25% gross roof area).
  - Prescriptive path *requires* 20% roof area renewables installation (higher req'ts for core and shell)
  - Alternate Renewables/Equipment Efficiency (higher Energy Star req'ts) 15%
  - Renewables to include biogas



# Energy Code Update

- All Commissioning is in Energy Code – applies to all projects (IgCC or LEED pathway)
- Envelope Cx - new requirement
  - All bldgs. 50,000+ sf
  - 2 pathways:
    - Document peer review and assembly testing OR
    - Whole building air tightness testing
  - Req'd for projects replacing or altering 25%+ of exterior façade, glazing, or fenestration in buildings 50,000+ sf
- MEP Cx – lower threshold
  - All bldgs. or fit-outs 25,000+ sf
  - Req'd for any Mechanical System(s) install/replacement rated at 600,000 BTUs



# Energy Code Update

- Alternative compliance paths:
  - Net Zero certified by ILFI
  - LBC certified (including energy petal) by ILFI
  - Passive House+



LIVING  
BUILDING  
CHALLENGE<sup>SM</sup>



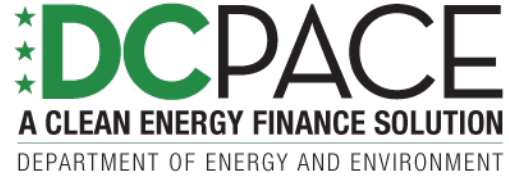


# Code Update

New in the [Residential Energy Code](#):

- Enhanced envelope insulation and air leakage requirements
- Energy Efficiency Options Packages (pick one mandatory)
- Addresses alterations in a more robust way
- Simplifies performance pathway
- Simplifies as strips out unnecessary, non-applicable language
- Alternative compliance paths:
  - Net Zero certified by ILFI
  - LBC certified (including energy petal) by ILFI
  - Passive House

# DC GREEN BUILDING INCENTIVES



▶ **SPECIAL TAX ASSESSMENT**

▶ **CASH-FLOW POSITIVE**



DC  
SUSTAINABLE ENERGY  
UTILITY

▶ **REBATES**

▶ **PAY FOR PERFORMANCE**



▶ **COMMUNITY SOLAR**

▶ **LMI BENEFITS**

@DOEE\_DC

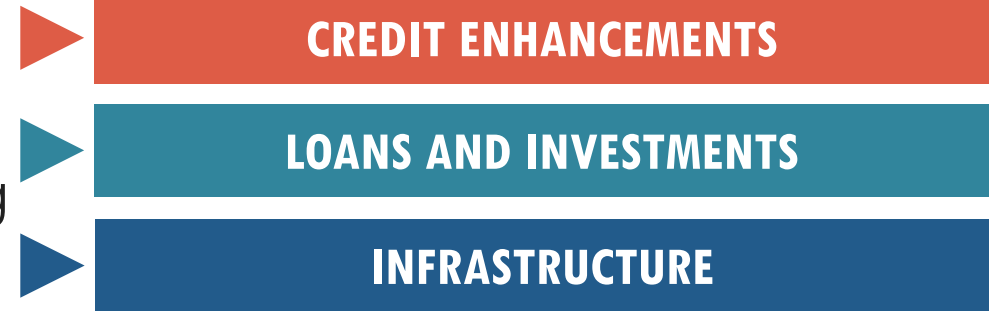




# This legislation to make the District of Columbia the **first** city in the United States to establish a Green Bank.

The DC Green Bank would utilize an initial investment of public funds and leverage private capital to:

- Create jobs and spur economic growth;
- Meet the city's sustainability goals; and
- Position DC as a national leader in meeting the commitments of the Paris Agreement.



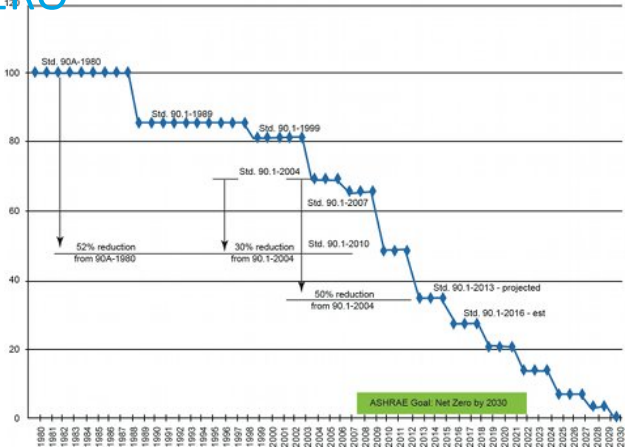
# World Green Building Council

**Target:**  
All buildings zero  
carbon by 2050



# Codes and Policy Driving to Net Zero

## ASHRAE DRIVING TOWARDS NET ZERO



## ARCHITECTURE 2030 ZERO CODE



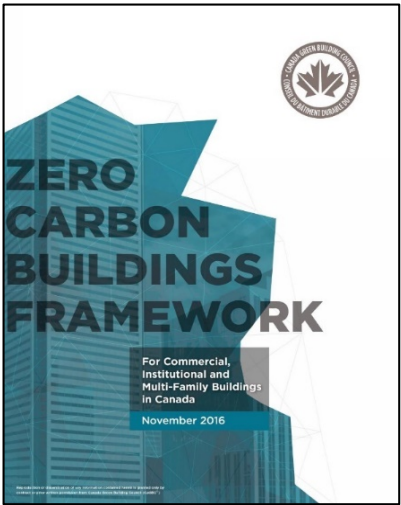
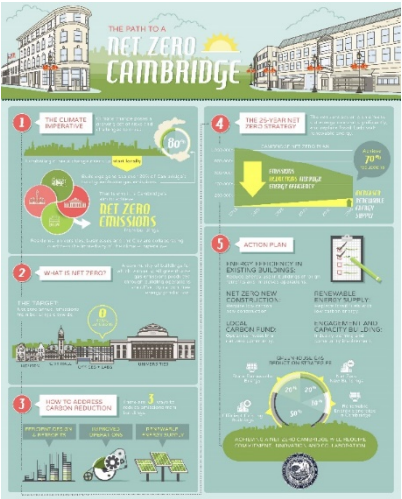
## CLEAN ENERGY DC

THE DISTRICT OF COLUMBIA CLIMATE AND ENERGY PLAN



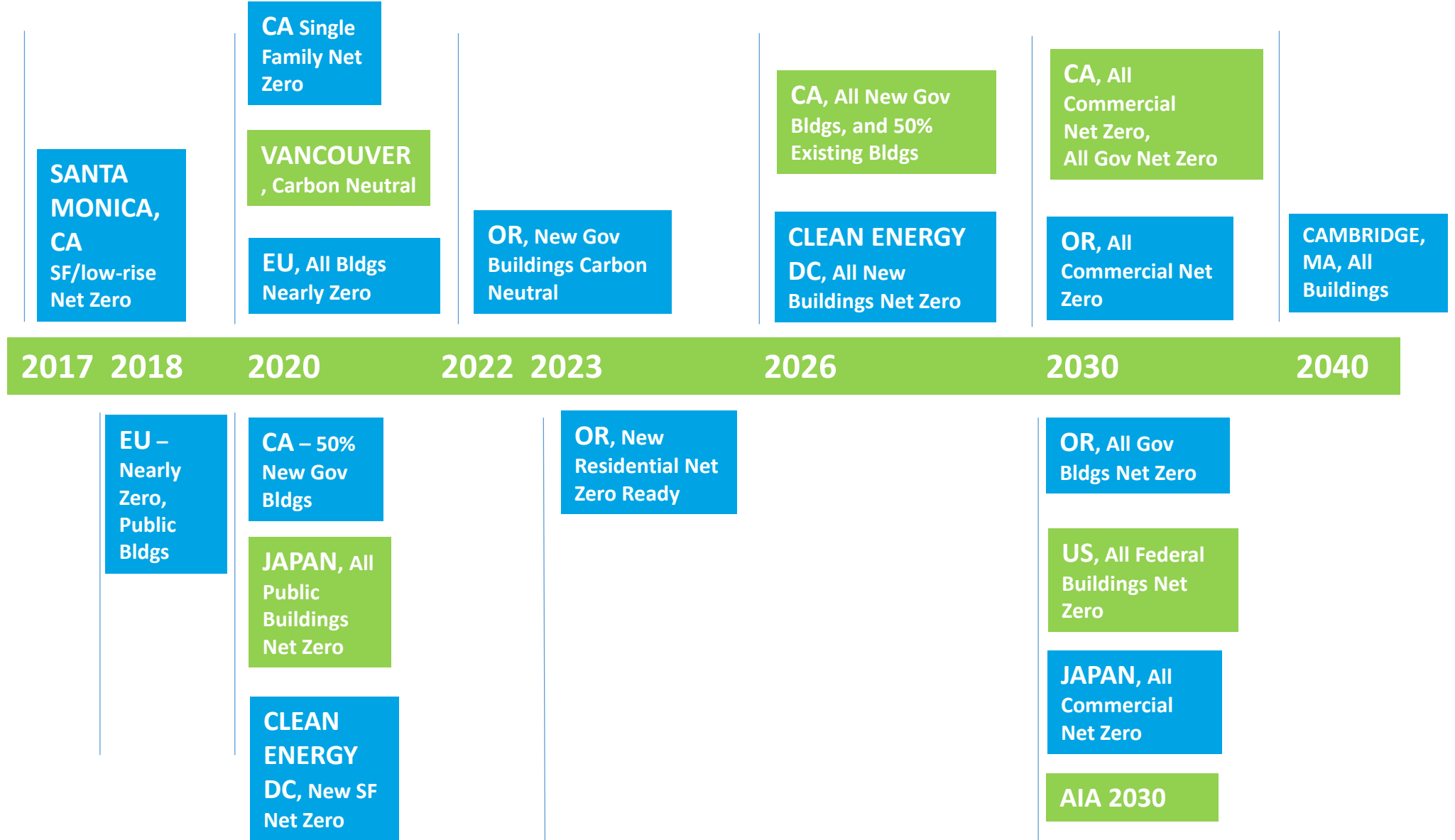
PRODUCED FOR:  
U.S. DEPARTMENT OF ENERGY & ENVIRONMENT  
DISTRICT OF COLUMBIA DEPARTMENT OF THE ENVIRONMENT

DRAFT  
OCTOBER 2016

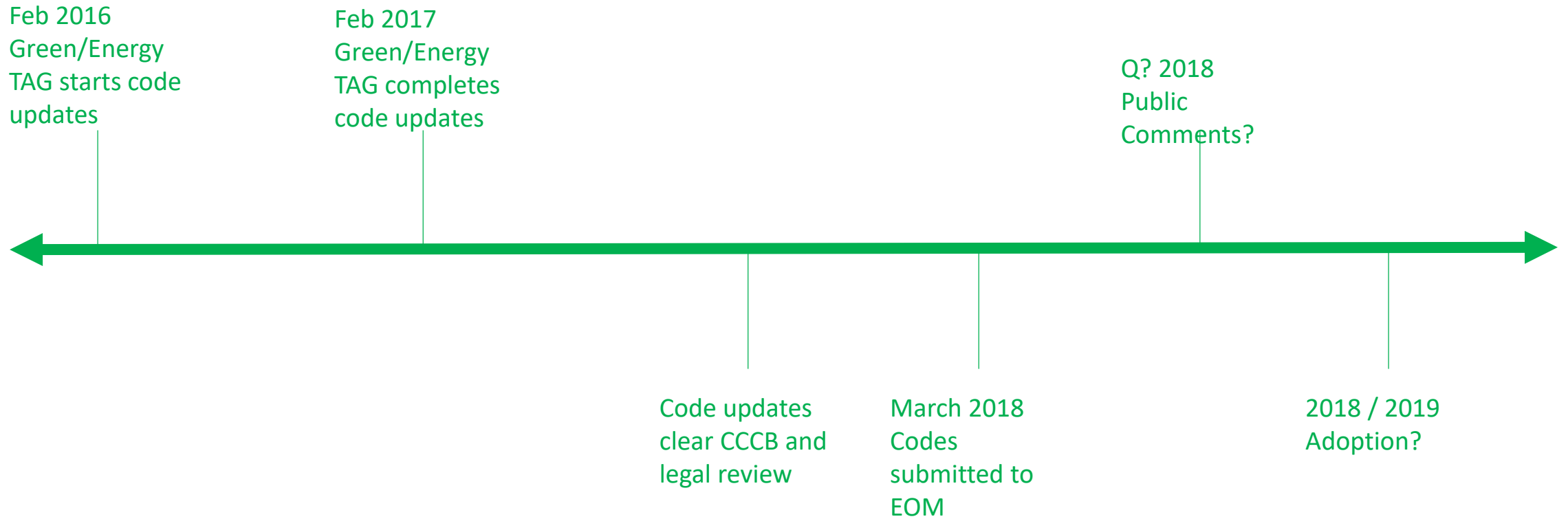




# Mandatory Net Zero Energy/Carbon Policies



# Timeline DC Green & Energy Code Updates



# Advocacy: Contact the Mayor

[@MayorBowser](#) or [eom@dc.gov](#)

Or:

Mayor Bowser

John A. Wilson Building

1350 Pennsylvania Avenue, NW, Washington, DC 20004

Or:

Phone: (202) 727-2643

# Contact the Council: <http://dccouncil.us/council>

- Chairman Phil Mendelson [pmendelson@dccouncil.us](mailto:pmendelson@dccouncil.us) or [\(202\) 724-8032](tel:(202)724-8032)
- Councilmember at-large Anita Bonds [abonds@dccouncil.us](mailto:abonds@dccouncil.us) or [\(202\) 724-8064](tel:(202)724-8064)
- Councilmember at-large David Grosso [dgrosso@dccouncil.us](mailto:dgrosso@dccouncil.us) or [\(202\) 724-8105](tel:(202)724-8105)
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- Councilmember Ward 7 Vincent Gray [vgray@dccouncil.us](mailto:vgray@dccouncil.us) or [\(202\) 724-8068](tel:(202)724-8068)
- Councilmember Ward 8 Trayon White [twhite@dccouncil.us](mailto:twhite@dccouncil.us) or [\(202\) 724-8045](tel:(202)724-8045)

\*Member Transportation & Environment Committee, \*\*Chair Transportation & Environment Committee