DC Green & Energy Codes Update
30 July 2018 | 6:30-8:00 p.m.
1.5 HSW|LU
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
- Created the Green Building Fund
- Set minimum green building standards

2008
- Launched DC SEU & benchmarking and disclosure program

2010
- Created DC PACE

2012
- Enabled community solar
- Developed a long-term plan for sustainability in the built environment

2013
- Implemented environmental sustainable zoning

2014
- Adopted 2012 International Green Construction Code
- Provided plan to transition to a new storm water management requirements
- Created a storm water credits trading platform

2015
- Protects endangered species habitat

2016
- Identified Climate Resilience Strategies for Buildings & Development
- Creation of Solar for All

2018
- Identified Climate Resilience Strategies for Buildings & Development
- Coming Soon

POLICY TIMELINE

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

@DOEE_DC
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

- Electricity: 56%
- Natural Gas: 20%
- Fuel Oil: 17%
- Gasoline: 4%
- Diesel: 2%
- Waste: 1%

MODELED PROPORTION OF GHG EMISSIONS BY SECTOR

- Residential Buildings: 32%
- Institutional and Government Buildings: 19%
- Commercial and Industrial Buildings: 23%
- Passenger Vehicles: 20%
- Transit: 1%
- Other Medium and Heavy Duty Vehicles: 1%
- Waste: 3%

Source: District of Col
CLEAN ENERGY DC: DC’s Climate & Energy Plan

-522
-473
-32
-32
-147
-599
-856
-500
-390
+519
-2,510

50% reduction by 2032

GHG Emissions (thousand tons CO2e)
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?

• 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
DC Energy & Green Code Update

62 54 78 86
Code Update

DC Green & Energy Codes are approved by CCCB:
- Draft out for Public Comments Q2 2018.
- Adoption in Q2 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
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 CO₂ 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+
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
- REBATES
- PAY FOR PERFORMANCE
- COMMUNITY SOLAR
- LMI BENEFITS
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.
Target:
All buildings zero carbon by 2050
Codes and Policy Driving to Net Zero
Mandatory Net Zero Energy/Carbon Policies

- SANTA MONICA, CA
  - SF/low-rise Net Zero
- VANCOUVER, Carbon Neutral
- EU – Nearly Zero, Public Bldgs
- OR, New Gov Bldgs Nearly Zero
- OR, New Gov Bldgs, and 50% Existing Bldgs
- CA, All New Gov Bldgs, Carbon Neutral
- OR, New Residential Net Zero Ready
- CA, All New Gov Bldgs, and 50% Existing Bldgs
- CA, All Gov Net Zero
- CAMBRIDGE, MA, All Buildings
- OR, All Commercial Net Zero
- US, All Federal Buildings Net Zero
- JAPAN, All Commercial Net Zero
- AIA 2030

Timeline:
- 2017
- 2018
- 2020
- 2022
- 2023
- 2026
- 2030
- 2040
Timeline DC Green & Energy Code Updates

- **Feb 2016**
  - Green/Energy TAG starts code updates

- **Feb 2017**
  - Green/Energy TAG completes code updates

- **March 2018**
  - Code updates clear CCCB and legal review
  - Codes submitted to EOM

- **Q? 2018**
  - Public Comments?

- **2018 / 2019**
  - Adoption?
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

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