



DEPARTMENT OF PERMITTING SERVICES

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The following document is a user-friendly version of the Executive Regulation that was approved by Council through the County Executive's Office containing the Commercial Energy and Green Codes only. The information provided in this document are the Commercial Energy Code and Green Code amendments as drafted by the Department of Permitting Services. In addition to the amendment language, we have provided additional commentary identified in **RED** text.

Below is a link to PNNL-35193 as referenced in 4.2.1 Compliance Paths.

<https://www.energycodes.gov/stretch-codes>

Title: Zero Code Plug-In

Report Link: Commercial Plug-In (pdf)

If you have any questions about the content of this document, please contact the appropriate individuals listed below.

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Thank you and we look forward to the 2021 code adoption process,

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Montgomery County Department of Permitting Services Amendments to the Energy Code and Green Code

Section C401.2 Application. Delete in its entirety and replace with “Commercial buildings shall comply with the requirements of ANSI/ASHRAE/IES Standard 90.1 2022 (I-P), and all amendments listed below”.

By transitioning to AHSRAE 90.1 2022, Montgomery County best aligns with Climate Action Plan and Bill 13-22 goals. 90.1 2022 is the most advanced energy standard available to the market and addresses several issues that would require substantial amendments to the International Energy Conservation Code (IECC). Large complex buildings have been utilizing 90.1 for decades.

4.2.1 Compliance Paths: new buildings over 20,000 square feet shall comply with *PNNL-35193 Technical Brief, section 3.1 Net Zero Energy*. New building less than 20,000 square feet shall comply with either:

- a. *PNNL-35193 Technical Brief: Section 3.1 Net Zero Energy* or
- b. sections 4.2.2 through 4.2.5 and sections 5,6,7,8,9,10, and 11

Additional items for PNNL-35193:

1. Set Site Zero Performance Energy Index (PEI) to: 0.67
2. Table G1.2.2.2, change Class 3 Procurement factor to: 1.0, and add under classification at end: “All offsite energy must be located within the PJM service territory”.

This Modified Appendix G methodology sets Montgomery County on an aggressive but achievable path to Net-Zero over the next three code cycles. This aligns with both our CAP and bill 13-22 goals. Additionally, site energy better aligns the energy code calculations and provides clear benefits to onsite energy production.

Section 4.2.5.2 Building Commissioning Requirements. Exceptions to 4.2.5.2:

Replace Exception 1 with the following language: “1. Mechanical systems and service water heater systems in buildings where the total mechanical equipment capacity is both less than 480,000 Btu/h (140.7 kW) cooling capacity and less than 600,000 Btu/h (175.8 kW) combined service water-heating and space-heating capacity.”

Delete Exception 4.

This maintains Montgomery County’s current code (and the state-adopted 2021 IECC) threshold for the types of buildings that require commissioning. The amendment was necessary because ASHRAE 90.1 has a different threshold.



Section 4.2.5.3 Activities Prior to Building Occupancy: Change (c) to: The owner/owner representative shall provide the building official with the following:

1. A letter of transmittal acknowledging that the building owner or owner’s authorized agent has received and accepted all required verification documentation, FPT documentation, and required preliminary commissioning report
2. A copy of the reports listed in Section 4.2.5.3(b).

This clarifies that the owner must provide the commissioning report to the Department of Permitting Services (DPS).

Add new Section 5.4.3.4.5. Door Switches. Any conditioned space with a door, including doors with more than one-half glass, opening to the outdoors shall be provided with controls that, when any such door is open,

- a. disable mechanical heating or reset the heating set point to 55 F or lower within five minutes of the door opening and
- b. disable mechanical cooling or reset the cooling set point to 90 F or greater within five minutes of the door opening. Mechanical cooling may remain enabled if outdoor air temperature is below space temperature.

Exceptions:

1. Building entries with automatic closing devices.
2. Any space without a thermostat.
3. Loading docks

By relocating this measure to mandatory, it requires all projects to comply regardless of compliance path. Previously, projects choosing the energy performance pathway were exempt.

Section 5.5.3.1.4 Roof Solar Reflectance and Thermal Emittance. Delete and replace “Zones 0 through 3” to “Zones 0 through 4”. Delete Option “c”.

Adjusting the climate zone from 3 to 4 now includes Montgomery County. All new construction will be required to specify a “cool roof” as identified in the Climate Action Plan.

Section 6.5.10 Door Switches. Delete.

This section has been moved to mandatory requirements.

Section 11.1.4.2 Initial Build-out Construction. Delete “exceeding 1000 square feet of gross floor area”

This includes all new build-out projects.

Section 11.5.2.2. Improved HVAC Performance At the beginning of the paragraph, add “All credits are only applicable when using non-gas-fueled equipment”.

Section 11.5.2.3 Reduced Energy Use in Service Water Heating. At the beginning of the paragraph, add “All credits are only applicable when using non-gas-fueled equipment except for commercial kitchens applications.”

Section 11.5.2.3.3 Improved Service Hot-Water Temperature Maintenance. Delete a.

Amendments to section 11 are designed to focus on non-gas fueled equipment in line with the County’s electrification goal. (more info needed here).

Informative Appendix H Additional Guidance for Verification, Testing and Commissioning. Appendix H is hereby incorporated as provisions which establish standards of verification, testing, and commissioning to enhance the base functional performance testing and commissioning processes in Sections 4.2.5, 5.9, 6.9, 7.9, 8.9, 9.9, 10.9, 12.2(e) and G1.2.1(e) of Standard 90.1.

Building commissioning is important to ensuring that systems work properly and that the building achieves the energy efficiency as designed. Appendix H provides further guidance aspects including selecting a qualified commissioning agent, functional performance tests, and documentation such as systems manuals, which help building owners run their HVAC and other systems efficiently.

Normative Appendix J Sets of Performance Curves. Appendix J is hereby adopted in its entirety.

Normative Appendix L Mechanical System Performance Rating Method. Appendix L is hereby adopted in its entirety and shall utilize site energy as listed in conversion table L5-4.

Building codes have historically used “prescriptive requirements” for energy efficiency, however these are not sufficient to ensure that buildings are consistently performing at an expected level of energy efficiency. Even if a building meets individual component requirements such as insulation values and HVAC equipment efficiency, the overall design may still not result in an expected level of energy efficiency. A better approach is to use computer software to model a building’s energy use. The Mechanical System Performance Rating uses a simplified computer model of a building. It is included in this code cycle to introduce the building industry to this method for the subset of buildings that must comply with the Green Code and that are either office, retail, multifamily, or schools.

Appendix M Addenda Description. Change M to N.

Preparation of additional appendix amendments in future code cycles

AMENDMENTS TO THE 2021 INTERNATIONAL GREEN CONSTRUCTION CODE (IgCC)

Section 101.1. Delete the brackets and replace the phrase in the brackets with "Montgomery County, Maryland."

Section 101.3.1. Add the following item: 6. Group R-4 occupancy buildings not exceeding 16 residents.

Section 101.3.2. (add new section) This code applies only to the following building projects:

1. New buildings greater than 5,000 square feet in gross aggregate area and their systems.
2. New portions of buildings exceeding 5,000 square feet in gross aggregate square area and their systems.

This clarifies which buildings are required to use the Green Code. This may change to additional buildings in the future.

Section 102.6. Existing Structures. Delete.

The preceding amendments are based on historical carryover amendments from previous versions of the IgCC.

Section 111. Board of Appeals. Delete.

Remainder of the deleted sections within the IgCC were determined to be overlaps of other county requirements.

Section 301.2. Definitions. Add the following definitions:

Gross Aggregate Area means the sum of the floor areas of all the spaces within the building with no deductions for floor penetrations. Gross Aggregate Area is measured from the exterior faces of exterior walls or from the centerline of walls separating buildings. Gross Aggregate Area includes covered walkways, open roofed-over areas, porches and similar spaces, exterior terraces or steps, roof overhangs, parking garages, surface parking, and similar features.

EVSE Installed: Fully Installed EVSE with connector (plug) with a minimum 208/240 volt, 40-amp circuits, including sufficient panel capacity, conduit, and wiring. Dedicated parking spaces shall be identified at original building permit submittal.

Delete EV Ready Space and replace with:

EV Ready: has installed panel capacity and conduit, to accommodate future build-out of EV charging with minimum 208/240 volt, 40-amp circuits. Dedicated parking spaces shall be identified at original building permit submittal.

EV Capable: has sufficient conduit (capable of facilitating 208/240 volt 40-amp) installed to accommodate future build-out of EV charging but lacks panel capacity, or dedicated parking spaces but shall have physical electrical equipment space available via additional sub-panel/additional dedicated panel(s).

Amend the definition of Owner's Project Requirements (OPR) to add the following sentence at the end: "All information in the OPR document shall certify that the items identified in the plans are constructed, installed and operate as intended in the approved plans and specifications."

Section 501.3.1.2 Prohibited development activity. Delete.

Section 501.3.2 Predesign site inventory and assessment. Delete

Section 501.3.3 Plants. Delete

Section 501.3.4 Stormwater management. Delete.

Section 501.3.5.3 Roofs. Delete

Section 501.3.7.2.3 Horizontal parking racks. Delete.

Chapter 6 Water efficiency. Delete.

Montgomery County does not have jurisdiction over water efficiency measures. WSSC is the authority having jurisdiction.

Section 701.1 (7.1) Scope. Delete and replace with the following: "This section specifies requirements for EV Capable/Ready, Additional Electrical Infrastructure, and Mechanical System Performance Rating Method."

Chapter 7 in IgCC, Energy Efficiency, must comply with IECC codes. However, additional requirements have been added to the IgCC Chapter 7 regarding EV spaces, additional electrical infrastructure, heating and water heater requirements that are mandatory as listed below to help buildings meet additional energy efficiency.

Sections 701.2 (7.2) Compliance. Delete.

Section 701.3 (7.3) Mandatory Provisions. Delete in its entirety and replace with the following:

The mandatory provisions below are designed to prepare projects for future electrification in alignment with the Climate Action Plan and Bill 13-22.

701.3.1 EV Capable/Ready Parking. Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EVSE. Construction documents shall also provide information on amperage of future EVSE, raceway methods, wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformers, meet the requirements of this code. Parking spaces equipped with EVSE shall



be identified by signage. A permanent and visible “EV-Capable” or “EV-Ready” label shall be posted in a conspicuous place at the service panel to identify each panel space reserved to support EV-Capable or EV-Ready Spaces, respectively and at the termination point of the raceway or circuit termination point. See table 701.3.6.1 for details.

Other requirements:

- a.) EV Ready shall comply with ZTA 59-e-2.23 & 24 (Spaces for handicapped and Space for charging electric vehicles).
- b.) Federal requirements (Regulations under Titles II and III of the Americans with Disabilities Act).

TABLE 701.3.1				
	EVSE Installed	EVSE Ready	EVSE Capable	Total
Commercial Construction Residential use:				
Multi-family apartments, hotels, dormitories.	0%	25%	65%	90%
<i>R-1, R-2</i>	0%	25%	65%	90%
Longer dwell time visitor destinations:				
Business (B), Educational (E), Assembly (A), Factory (F) Institutional (I), <i>Residential (R-3, R-4)</i> , Large Mercantile > 50 spaces (M), S-2 parking garages, High Hazard (H)	0%	5% (10% employee parking)	20% (25% employee parking)	25 (35) %
Brief destinations:				
Small Mercantile (M) < 50 spaces, Storage (S except parking garages), Utility and Misc. (U)	0%	5%	5%	10%

701.3.2 Additional electric infrastructure. Buildings that contain combustion equipment and end-uses shall be required to install electric infrastructure in accordance with this section.

701.3.2.1 Combustion space heating. Space heating equipment that uses fossil fuels shall comply with either 701.3.6.2.1.1 or 701.3.6.2.1.2

701.3.2.1.1 Low-capacity heating. Warm-air furnaces with a capacity less than 225,000 Btu/h and gas- and oil-fired boilers with a capacity less than 400,000 Btu/h shall be provided with a designated exterior location(s) in accordance with the following:

1. Natural drainage for condensate from cooling equipment operation or a condensate drain located within 3 feet (914 mm) of the location of the space heating equipment.
2. A dedicated branch circuit in compliance with NFPA70 Section 424.4 based on heat pump space heating equipment sized in accordance with the requirements of ASHRAE 90.1 Section 6.4.2.1 and terminating within 3 feet (914 mm) of the location of the space heating equipment with no obstructions. Both ends of the branch circuit shall be labeled "For Future Heat Pump Space Heater."

Exception: Where an electrical circuit in compliance with NFPA70 Sections 440.4(B) and 440.35 exists for space cooling equipment.

701.3.2.1.2 High-capacity heating. All other space heating equipment shall be provided with conduit that is continuous between a junction box located within 3 feet (914 mm) of the equipment and an electrical panel. The junction box, conduit and bus bar in the electrical panel shall be rated and sized to accommodate a branch circuit with sufficient capacity for an equivalent electric equipment with an equivalent equipment capacity. The electrical junction box and electrical panel shall have labels stating, "For Future Electric Space Heating Equipment".

701.3.2.2 Combustion water heating. Water heating equipment that uses fossil fuels shall comply with either 701.3.6.2.2.1 or 701.3.6.2.2.2.

Electric infrastructure will better meet the County Climate Action Goals. Combustion equipment uses fossil fuels which produce greenhouse gases. Electrical infrastructure helps reduce greenhouse gas emissions.

701.3.2.2.1 Low-capacity water heating. Water heaters with a capacity less than 300,000 Btu/h (88 kW) shall be installed in accordance with the following:

1. A dedicated 208/240-volt branch circuit with a minimum capacity of 30 amps shall terminate within 3 feet (914 mm) from the water heater and be accessible to the water heater with no obstructions. Both ends of the branch circuit shall be labeled with the words "For Future Heat Pump Water Heater" and be electrically isolated.
2. A condensate drain that is no more than 2 inches (51 mm) higher than the base of the installed water heater and allows natural draining without pump assistance shall be installed within 3 feet (914 mm) of the water heater.
3. The water heater shall be installed in a space with minimum dimensions of 3 feet (914 mm) by 3 feet (914 mm) by 7 feet (2134 mm) high.
4. The water heater shall be installed in a space with a minimum volume of 700 cubic feet (20,000 L) or the equivalent of one 16-inch (406 mm) by 24-inch (610 mm) grill to a heated space and one 8-inch (203 mm) duct of no more than 10 feet (3048 mm) in length for cool exhaust air.

701.3.2.2.2 High-capacity water heating. Water heaters with a capacity greater than or equal to 300,000 Btu/h (88 kW) shall be provided with the following:

1. Conduit that is continuous between a junction box located within 3 feet (914 mm) of the equipment and an electrical panel. The junction box, conduit and bus bar in the electrical panel shall be rated and sized to accommodate a branch circuit with sufficient capacity for an equivalent electric equipment with an equivalent equipment capacity. The electrical junction box and electrical panel shall have labels stating, “For Future Electric Water Heating Equipment”.
2. A condensate drain that is no more than 2 inches (51 mm) higher than the base of the installed water heater and allows natural draining without pump assistance shall be installed within 3 feet (914 mm) of the water heater.

701.3.3 Record Documents. Construction documents shall require that within 90 days after the date of system acceptance, record documents shall be provided to the building owner to include: location of additional electric infrastructure for heating and water heating.

701.3.4 Electric infrastructure for energy storage. Each building site shall have space for on-site energy storage not less than 2 feet (610 mm) in one dimension and 4 feet (1219 mm) in another dimension and located in accordance with Section 1206.2.8 of the International Fire Code and Section 110.26 of the NFPA 70.

Exception: Where an onsite electrical energy system storage system is installed.

701.3.4.1 Electrical service reserved space. The main electrical service panel shall have a reserved space to allow installation of a two-pole circuit breaker for future electrical energy storage system installation. This space shall be labeled “For Future Electric Storage.” The reserved spaces shall be positioned at the end of the panel that is opposite from the panel supply conductor connection.

Section 701.4. Prescriptive option. Replace this Section with the following:

Section 701.4.1 ASHRAE 90.1 2022 Normative Appendix L: Mechanical System Performance Rating Method mandatory for all prescriptive projects that are allowed to use this method according to L1. General.

Building codes have historically used “prescriptive requirements” for energy efficiency, however these are not sufficient to ensure that buildings are consistently performing at an expected level of energy efficiency. Even if a building meets individual component requirements such as insulation values and HVAC equipment efficiency, the overall design may still not result in an expected level of energy efficiency. A better approach is to use computer software to model a building’s energy use. The Mechanical System Performance Rating uses a simplified computer model of a building. It is included in this code cycle to introduce the building industry to this method for the subset of buildings that must comply with the Green Code and that are either office, retail, multifamily, or schools.



701.5 (7.5) Performance option. Delete.

The introduction of ASHRAE 90.1 2022 raises the performance bar to a level where the IgCC energy performance option is no longer needed.

Section 801.3.1.3(b) Outdoor air ozone removal. Delete.

Section 801.3.1.7 Environmental tobacco smoke. Delete.

Section 801.3.3.4 Interior sound reverberation. Delete.

Section 801.3.3.5 Property line sound levels. Delete.

Section 801.3.9 Exterior views. Delete.

Section 1001.3 Functional and performance testing and commissioning. Delete

Subsection 1001.4.1 Erosion and sedimentation control (ESC). Delete

Subsection 1001.4.3 Construction activity pollution prevention: idling of construction vehicles. Delete.

Subsection 1001.5.3 Property line sound. Delete.

Section 1001.6 Building envelope airtightness. Delete.

Section 1001.8 Soil-gas control. Delete.

Subsection 1001.9.2 Water use efficiency. Delete.

Subsection 1001.9.7 Indoor environmental quality survey. Delete.

Section 1001.10 Service life plan. Delete.

Section 1001.11 Transportation management plan. Delete.

Appendix L. Informative Appendix L is adopted in its entirety.

Appendix M. Informative Appendix M Sections M101.1.3, M101.1.4, and M101.1.5 are adopted. Projects shall meet a minimum Silver rating for whole building. Delete all reference to ICC/ASHRAE 700-2015 and replace with "ICC/ASHRAE 700-most current version".

Appendix L and Appendix M help the Department of Permitting Services determine alternative compliance pathways (ACP) for the IgCC. It should be expected that the ACP approval process will remain the same as the previous code iteration.