



DPS

**Montgomery County
Department of Permitting Services**

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<http://www.montgomerycountymd.gov/permittingservices>

Commercial Energy Code

Building Envelope, Mechanical, Service Water Heating and Lighting

PART I – GUIDELINES FOR PLAN SUBMITTAL; APPLICABILITY OF THE COMMERCIAL 2015 IECC:

The 2015 IECC Commercial Section is applicable to any *new commercial building with conditioned space and to any residential building four stories and above grade.*

Where a building has mixed use of residential and commercial, the appropriate section of the IECC shall apply with appropriate submittal documents; Residential and Commercial submittals are required as appropriate for the portion of the mixed-use building.

For additions to, remodel/alterations to, repairs of, and change of occupancy or change in use of an existing commercial building, Chapter 5 CE (*Existing Buildings*) of the 2015 IECC applies and lists specific requirements and exemptions. Generally a ComCheck/ResCheck (or similar) is not required unless a building is being “guttled” – brought down to the structural framing and being totally renovated. **Note:** *Energy models must include both input data and results (output).*

PART II – INFORMATION ON CONSTRUCTION DOCUMENTS:

Construction documents shall be drawn to scale. ***The IECC Design Checklists shall be submitted indicating sheet or page numbers associated with the code provisions of your chosen path of compliance. Follow this guideline for completion of the Checklists.*** Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment as governed by the IECC. Details shall include, but are not limited to, the following as applicable:

1. Insulation materials and their R-values.
2. Fenestration U-factors and solar heat gain coefficients (SHGCs).
3. Area-weighted U-factor and solar heat gain coefficient (SHGC) calculations.
4. Mechanical system design criteria. Include HVAC load calculations, both input and output.
5. Mechanical and service water heating system and equipment types, sizes and efficiencies. Specify in the equipment schedules the actual equipment to be installed, do not use "basis of design".
6. Economizer description.
7. Equipment and system controls.
8. Fan motor horsepower (hp) and controls. Provide a motor schedule for all motors not integral to a packaged system
9. Duct sealing, duct and pipe insulation and location.
10. Lighting fixture schedule with wattage and control narrative. Supply lighting load calculations.
11. Location of daylight zones on floor plans.

Building thermal envelope depiction. The building’s thermal envelope shall be represented on the construction drawings.

PART III – ENERGY FORMS/REPORTS TO SUBMIT:

A Building Permit Application Package shall include:

REQUIRED – The energy compliance documentation provided to DPS at the time of plan submittal shall identify the Path of Energy Compliance being used. See page 5 of the Design Checklist.

1. 2015 IECC or ASHRAE 90.1-2013?
2. If 2015 IECC is chosen, which sub-compliance method will be used?
3. Prescriptive Path (C402 through C406), or Total Building Performance Path (C407)?
4. Will the Air Barrier Details be provided, or will there be a building pressure test?
5. If 2013 ASHRAE 90.1 is chosen, which sub-method will be used?
6. Prescriptive Path (See 5.2.1), or Energy Cost Budget Method (Section 11)?
7. For the IECC Prescriptive Path, indicate which *Additional Efficiency Package* is chosen and provided in design documents.

A commissioning plan (where required) shall be developed by a registered design professional and shall include the following: Mechanical, service water heating systems (SWH), and electrical systems. This includes requirements for air balancing, list of mechanical electrical and plumbing systems to be included in commissioning and functional testing of controls (mechanical, electrical and plumbing) to be included.

1. A narrative of the activities that will be accomplished during each phase of *commissioning*, including the personnel intended to accomplish each of the activities.
2. A listing of the specific equipment, appliances or systems to be tested and a description of the tests to be performed.
3. Functions to be tested including, but not limited to, calibrations and economizer controls.
4. Conditions under which the test will be performed. Testing shall affirm winter and summer design conditions and full outside air conditions.
5. Measurable criteria for performance.

Two copies of the commissioning plan shall be provided with the construction drawings. If submitting electronically, one copy shall be with the *drawings folder* and one copy shall be placed in the *documents folder*.

REQUIRED - Provide an **energy performance analysis for the building design** as applicable, based on the chosen compliance strategy. HVAC load calculations shall be provided separately.

The design itself must utilize the specific energy values indicated by the energy analysis. Mandatory sections of the 2015 IECC or ASHRAE 90.1-2013 must be complied with even if the energy analysis software printout passes without the design in compliance with a mandatory section. The software used must be a DOE approved software from one of the following options:

1. **ComCheck** published by the US Department of Energy (DOE) based on the 2013 ASHRAE Standard 90.1 (ComCheck Windows Version 4.0.0 - Build 4.0.0.3 - Downloadable – not available as the Web version) for the prescriptive path; user completed inspection checklists shall be provided with the printout.
2. **ComCheck** based on the 2015 IECC for the prescriptive path; user completed inspection checklists shall be provided with the printout.
3. **Other DOE approved/sponsored software based on the 2015 IECC, or ASHRAE Standard 90.1-2013;** Based on Whole Building Energy Performance Simulation: DOE-2, EnergyPlus, SPARK, Building Design Advisor, Trace, etc. Provide full input values not just the results.

REQUIRED – All energy compliance documentation must be signed, sealed, stamped and dated by the appropriate design professional.

PART IV – RESPONSIBILITIES FOR ENERGY REVIEW/INSPECTION AND SPECIFIC SUBMITTAL REQUIREMENTS:

The project's *Registered Design Professional in Responsible Charge* will perform a plan submittal QC for the building design relating to energy compliance utilizing the Design Checklists. Some individual energy related provisions ask for a number (percent/value) or a narrative be provided with the plans or specifications. Narratives must be submitted as a document in the submittal package referencing the appropriate drawing.

PART V – LIST OF MANDATORY REQUIREMENTS OF THE 2015 IECC OR ASHRAE 90.1-2013:

If ASHRAE 90.1-2013 is chosen, there is a **Prescriptive Path (Sections 5 through 10)** and, **Energy Cost Budget Method (Section 11)**. Designers must choose one or another;

Mandatory provisions of the **Energy Cost Budget Method (Section 11)** are:

- A. **Section 5.4 Thermal Envelope Mandatory Provisions:** Insulation, Fenestration, and Air Leakage
- B. **Section 6.4 HVAC Mandatory Provisions:** Minimum Efficiencies, Equipment Sizing, HVAC Controls, HVAC construction and Insulation, Walk-in Coolers and Freezers
- C. **Section 7.4 Service Water Heating Equipment:** Load Calculations, Equipment Efficiencies, Insulation, and Controls
- D. **Section 8.4 Electrical Mandatory Provisions:** Maximum voltage drop, Receptacle Control, Energy Monitoring; Low Voltage Dry Type Distribution Transformers
- E. **Section 9.4 Lighting Mandatory Provisions:** Lighting Controls (Interior and Exterior), Functional Testing
- F. **Section 10.4 Other Mandatory Provisions:** Electric Motors, Service Water Pressure Booster Systems, Elevators, Escalators and Moving Walkways, Whole Building Energy Monitoring
- G. **Energy Cost Budget** less than or equal to the Design Energy Cost (Software for Energy Cost Budget – DOE-2, BLAST, other software that complies with Section 11.4.1.1)

Mandatory Provisions of the ASHRAE 90.1-2013 Prescriptive Path are:

- A. **Section 5 Building Envelope;** Sections 5.1, 5.2, 5.3, 5.4, 5.7, 5.8 and either Section 5.5 OR Section 5.6
- B. **Section 6 HVAC;** Sections 6.1, 6.2, 6.7, and either Section 6.3 OR Section 6.4 and 6.5
- C. **Section 7 Service Water Heating;** All of Section 7
- D. **Section 8 Electrical Power;** All of Section 8
- E. **Section 9 Lighting;** Sections 9.1, 9.2, 9.4, 9.7, and either Section 9.5 OR Section 9.6.

If the 2015 IECC path is Chosen, there is a **Prescriptive Path (Sections C402 through C406)** and a **Total Building Performance Path (Section C407)**. Designers must choose one or another.

Mandatory provisions of the Total Building Performance Path (Section C407) are:

- A. Section C402.5 Air Leakage
- B. Section 403.2 HVAC; Minimum Efficiencies, Equipment Sizing, HVAC Controls, Energy Recovery Ventilators, HVAC construction and Insulation, Fan Horsepower and Efficiencies, Walk-in Coolers and Freezers
- C. Section C404 Service Water Heating
- D. Section C405 Electrical Power and Lighting
- E. Section C407 Total Building Performance; Building Energy Costs shall be equal to or less than 85% of the standard reference building design
- F. Section C408 System Commissioning

Mandatory Provisions of the 2015 IECC Prescriptive Path are:

- A. All of Sections C402 through C405; Building Envelope, HVAC, Service Water Heating, Power and Lighting
- B. Commercial Buildings must comply with C406 Additional Efficiency Package (Chose one of 6 options)
- C. Tenant Spaces must comply with C406.1.1 (either one of the following)
- D. Where the shell building is not in compliance, tenant spaces must comply with one of the following additional energy efficiency packages:
 - a. C406.2; or C406.3; or C406.4; or C406.6; or C406.7
 - b. Where the shell building is in compliance, comply with C406.5 On-Site Renewable Energy

PART VI - COMMISSIONING REQUIREMENTS:

A Maryland State Licensed architect or engineer (*Registered Design Professional*) may perform commissioning and submit the **Preliminary Report of Commissioning** to the building owner or authorized agent.

- A. The preliminary report should include an itemization of deficiencies found that have not been corrected by the time of the report, list of deferred tests not accomplished because of climatic conditions, and conditions necessary for scheduling of deferred tests. The report should address the following in particular:
- a. Mechanical, and service hot water commissioning – Air system balancing, hydronic systems balancing per C408.2.2.
 - b. Functional Performance Testing of Equipment and Controls per C408.2.3.
 - c. Lighting System Controls Functional Testing per C408.3.
- B. **ASHRAE - Duct Leakage Test Results** - If applicable to the project. For ducts designed to operate in excess of 3 in water gauge and all ductwork outside conditioned space per Section C403.2.9.
- C. **Pressure Testing of the Envelope Test Results** (under Section C402.5; if applicable).

The Preliminary Report of Commissioning shall be submitted by the Architect, Engineer or the certified commissioning agent (Where required). The items listed must address all the items in the Commissioning Plan submitted at the time of application. The preliminary commissioning report must be provided to the building owner or owner's agent. A letter of transmittal from the owner or agent verifying receipt of the preliminary commissioning report must be received by DPS prior to the building final inspection.

Final building occupancy approval shall not be granted until DPS receives a letter of transmittal from the building owner verifying receipt of the final commissioning report (Where required). The Final Report of Commissioning is to be provided to the owner. **All documentation required by C408.2.5 shall be provided to the building owner or owner's agent within 90 days of occupancy. All reports shall be made available to DPS upon request.*

Final building inspection approval shall not be granted until DPS receives a *Post Construction Compliance Statement*; the *Post Construction Compliance Statement* shall be a statement of functional systems testing from the Architect, Engineer or agent assigned to perform system balancing and testing per the approved plans and design specifications.

Please email all reports and letters of transmittal listed above to: mark.nauman@montgomerycountymd.gov and Ye.Jiang@montgomerycountymd.gov

Project Address: _____ Project Name: _____

The above referenced project is being designed under the commercial provisions of (*Path of Compliance*):

- 2015 - IECC
- Prescriptive Performance

- ASHRAE 90.1 –2013
- Prescriptive Performance (Energy Cost Budget)

The following checklist is separated into *envelope, mechanical, lighting, additions and alterations*. Complete the appropriate checklists in their entirety, Indicate chosen compliance path and complete the Registered Design Professional in Responsible Charge section; sign and date, and provide stamp/seal/electronic signature as appropriate.

In accordance with DPS Energy Code Plan Submittal Guidelines, we have reviewed the design of this project for the following related provisions. It is our opinion that the items checked below, as designed, meet the substantial intent of the 2015 – IECC or ASHRAE 90.1 -2013. Code provisions not contained within the checklist will be provided to DPS for their review with the application submittal for a building permit.

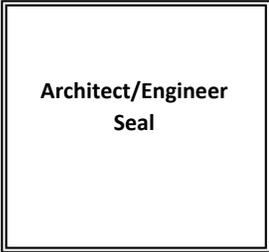
REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE – CONTACT INFORMATION

Individual/Company Name: _____

Address: _____

Email: _____ Phone: _____ Mobile: _____

Signature: _____ Print: _____ Date: _____



The *Commercial Design Checklist* must accompany all Commercial Building Permit Plan Submittals which are subject to the requirements of the International Energy Conservation Code (IECC) inclusive of all other documentation, forms, calculations, specifications and certifications.



DPS

Montgomery County
Department of Permitting Services

**COMMERCIAL DESIGN CHECKLIST
IECC-2015**

ENVELOPE REQUIREMENTS

Project: _____

Date: _____

Instructions *Code References: Cxxx.x refers to an IECC Section - While 5.xx, 6.xx, 7.xx...etc. refer to ASHRAE 90.1 Sections*

- **REQUIRED:** List performance values, note exceptions that were applied, or provide other notes to the reviewer.
- **REQUIRED:** Indicate the sheet on the plans where the reviewer can find relevant information.
- **REQUIRED:** For each requirement check either "Complies" or "N/A" to indicate whether the project complies or the requirement is not applicable in this case.

Component/System	Requirement	Code Section	Describe Proposed Design <small>(Indicate performance values, exceptions applied, notes to reviewer, etc.)</small>	Indicate Plan Sheet	Complies	N/A
ENVELOPE REQUIREMENTS						
Certification	Responsible design professional certification on plans	C103.1				
Construction documents	Include: <ul style="list-style-type: none"> ▪ Insulation R-values ▪ Fenestration U-factors and solar heat gain coefficients (SHGCs) 	C103.2 5.7				
Roof – insulation above deck	R-30ci	C402.1.3 5.5.4				
Roof – metal building	R-19 + R-11 (with thermal block and liner system)	C402.1.3 5.5.4				
Roof – attic or other	R-38	C402.1.3 5.5.4				
Wall – mass	R-9.5ci R-11.4ci (Group R)	C402.1.3 5.5.4				
Wall – metal building	R-13 + R-13ci	C402.1.3 5.5.4				
Wall – metal frame	R-13 + R-7.5ci	C402.1.3 5.5.4				
Wall – wood frame and other	R-13 + R3.8 or R-20	C402.1.3 5.5.4				

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Plan Sheet	Complies	N/A
Door - swinging	U-0.61	C402.1 5.5.4				
Door – non-swinging	R-4.75	C402.1 5.5.4				
Windows – maximum area	≤ 30% of gross wall area (≤ 40% when meeting daylighting requirements)	C402.4.1 5.5.4				
Windows – solar heat gain coefficient (SHGC)	≤ 0.25 if projection factor < 0.2. ≤ 0.30 if projection factor 0.2-0.5. ≤ 0.40 if projection factor ≥ 0.5.	C402.4.3 5.5.4				
Windows – U-factor	≤ 0.38 fixed fenestration ≤ 0.45 operable fenestration ≤ 0.77 entrance doors	C402.4.3 5.5.4				
Skylights – minimum area	Skylights and daylight responsive controls required for certain spaces ≥2,500 ft ² with ceiling height ≥15 ft.	C402.4.2 5.5.4				
Skylights – maximum area	≤ 3% of gross roof area (≤ 5% when meeting daylighting requirements)	C402.4.1.2 5.5.4				
Skylights – solar heat gain coefficient (SHGC)	≤ 0.40 (≤ 0.60 with daylighting control)	C402.4.3 5.5.4				
Skylights – U-factor	≤ 0.50 (≤ 0.75 with daylighting control)	C402.4.3 5.5.4				
Air leakage	<ul style="list-style-type: none"> ▪ Continuous air barrier ▪ Fenestration air leakage ▪ Openings to shafts, chutes, stairways and elevator lobbies ▪ Air intakes, exhaust openings, stairways, and shafts. ▪ Loading-dock weatherseals ▪ Recessed lighting 	C402.5 5.4.3				



COMMERCIAL DESIGN CHECKLIST

MECHANICAL SYSTEM REQUIREMENTS

Project: _____

Date: _____

Instructions *Code References: Cxxx.x refers to an IECC Section - While 5.xx, 6.xx, 7.xx...etc. refer to ASHRAE 90.1 Sections*

- **REQUIRED:** List performance values, note exceptions that were applied, or provide other notes to the reviewer. **Provide HVAC load sizing calculations.**
- **REQUIRED:** Indicate the sheet on the plans where the reviewer can find relevant information.
- **REQUIRED:** For each requirement check either "Complies" or "N/A" to indicate whether the project complies or the requirement is not applicable in this case.

Component/System	Requirement	Code Section	Describe Proposed Design <small>(Indicate performance values, exceptions applied, notes to reviewer, etc.)</small>	Indicate Plan Sheet	Complies	N/A
MECHANICAL SYSTEM REQUIREMENTS						
Certification	Responsible design professional certification on plans	C103.1				
Information on construction documents	Include: <ul style="list-style-type: none"> ▪ System design criteria ▪ Equipment type, capacity, efficiency and load sizing calcs ▪ System controls ▪ Fan motor hp and controls ▪ Duct sealing ▪ Duct and pipe insulation and location 	C103.2 6.7				
Mechanical system commissioning	For buildings with ≥ 480 kBtu/hr cooling capacity: <ul style="list-style-type: none"> ▪ Include construction document notes indicating commissioning requirements ▪ Provide evidence of commissioning prior to final inspection. 	C408.2 6.7.2.3 6.7.2.4				
HVAC equipment performance	Tables C403.2.3(1) - C403.2.3(9)	C403.2.3 6.4.2.1, 6.8				

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Plan Sheet	Complies	N/A
HVAC system controls	<ul style="list-style-type: none"> ▪ Thermostatic controls ▪ Off-hour controls ▪ Shutoff dampers ▪ Zone isolation 	C403.2.4 6.4.3 6.5.2				
Ventilation	<ul style="list-style-type: none"> ▪ Outdoor air ventilation per IMC ▪ Demand controlled ventilation ▪ Parking garage ventilation control ▪ Energy recovery ▪ Kitchen exhaust systems 	C403.2.4.7 C403.2.6 6.4.3.4 6.4.4.1.2 6.5.1.1				
Duct and plenum insulation	≥ R-6 in unconditioned space ≥ R-8 outdoors	C403.2.9 6.4.4.1.2				
Duct and plenum sealing	Sealed per IMC	C403.2.9				
Piping insulation	Minimum thickness per table C403.2.10	C403.2.10 6.4.4.1.3				
HVAC fans	When fan motors' total hp ≥ 5hp <ul style="list-style-type: none"> ▪ Allowable fan horsepower ▪ Motor nameplate horsepower ▪ Fan efficiency 	C403.2.12 6.5.3.1				
Refrigeration systems	<ul style="list-style-type: none"> ▪ Refrigeration equipment performance ▪ Walk-in coolers, walk-in freezers, refrigerated warehouse coolers and freezers ▪ Refrigerated display cases ▪ Condenser requirements ▪ Compressor requirements 	C403.2.14 C403.2.15 C403.2.16 C403.2.17 C403.5 6.4.5 6.4.6 6.5.11.1				
Multiple-zone system fan control	<ul style="list-style-type: none"> ▪ Two-stage or variable airflow control ▪ Static pressure sensor location ▪ Static pressure reset control 	C403.4.1 6.4.3.4 6.5.3				
Hydronic system controls	<ul style="list-style-type: none"> ▪ Part-load controls for systems ≥500kBtu/hr ▪ Pump isolation with multiple chillers or boilers 	C403.4.2 6.5.2.2 6.5.4				

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Plan Sheet	Complies	N/A
Heat rejection equipment fan speed control	<ul style="list-style-type: none"> ▪ Speed control for cooling tower fans ≥ 7.5 hp ▪ Multiple-cell cooling tower fan control ▪ Limitation on centrifugal fan open-circuit cooling towers ▪ Tower flow turndown 	C403.4.3 6.5.5				
Multiple-zone systems	<ul style="list-style-type: none"> ▪ Variable air flow ▪ ECM motors for 1/12 hp - 1 hp ▪ Supply air temperature reset control ▪ Ventilation optimization control 	C403.4.4 6.4.3				
Heat recovery for service water heating	Condenser heat recovery for systems operating 24 hr/day with water-cooled cooling capacity $\geq 6,000$ kBtu/hr and service water heating load $\geq 1,000$ kBtu/hr	C403.4.5 6.5.6.2				
Hot gas bypass	Not allowed except under specific conditions	C403.4.6 6.5.9				



DPS

**Montgomery County
Department of Permitting Services**

COMMERCIAL DESIGN CHECKLIST

SERVICE WATER HEATING REQUIREMENTS

Project: _____

Date: _____

Instructions *Code References: Cxxx.x refers to an IECC Section - While 5.xx, 6.xx, 7.xx...etc. refer to ASHRAE 90.1 Sections*

- **REQUIRED:** List performance values, note exceptions that were applied, or provide other notes to the reviewer.
- **REQUIRED:** Indicate the sheet on the plans where the reviewer can find relevant information.
- **REQUIRED:** For each requirement check either "Complies" or "N/A" to indicate whether the project complies or the requirement is not applicable in this case.

Component/System	Requirement	Code Section	Describe Proposed Design <small>(Indicate performance values, exceptions applied, notes to reviewer, etc.)</small>	Indicate Location on Plans	Complies	N/A
SERVICE WATER HEATING REQUIREMENTS						
Certification	Responsible design professional certification on plans	C103.1				
Information on construction documents	Include <ul style="list-style-type: none"> ▪ Water heating equipment type, size and efficiency ▪ System controls ▪ Pipe insulation and location 	C103.2 7.7				
System commissioning	For buildings with $\geq 600\text{kBtu/hr}$ combined space heating and service water heating capacity: <ul style="list-style-type: none"> ▪ Include construction document notes indicating commissioning requirements ▪ Provide evidence of commissioning prior to final inspection. 	C408.2 6.7.2.3 6.7.2.4				
Service water-heating equipment efficiency	Efficiency per Table C404.2	C404.2 7.8, 7.4.2				
Heat traps	For non-circulating systems provide equipment with integral heat traps or provide heat traps on supply and discharge piping.	C404.3 7.4.6				

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Location on Plans	Complies	N/A
Pipe insulation	Insulation thickness per Table C403.2.10: <ul style="list-style-type: none"> ▪ 1" for pipes <1½" diameter ▪ 1½" for pipes ≥1½" diameter Circulating systems: all supply pipe. Non-circulating storage systems: first 8 ft from tank (or from tank to heat trap) on inlet and outlet.	C404.4 7.4.3				
Maximum supply pipe length/volume	Table C404.5.1 lists maximum hot water supply pipe length or volume, which varies with pipe diameter.	C404.5				
Circulation system controls	Automatic controls to start pump based on demand and to automatically shut off pump based on temperature and on lack of demand	C404.6.1 7.4.4.4				
Pool and spas	Readily accessible on/off switch No continuous pilot light Time switch for heater and pumps Pool covers required, except with >70% site-recovered heat	C404.9 7.4.5				

COMMERCIAL DESIGN CHECKLIST

LIGHTING AND ELECTRICAL REQUIREMENTS

Project: _____

Date: _____

Instructions *Code References: Cxxx.x refers to an IECC Section - While 5.xx, 6.xx, 7.xx...etc. refer to ASHRAE 90.1 Sections*

- **REQUIRED:** List performance values, note exceptions that were applied, or provide other notes to the reviewer.
- **REQUIRED:** Indicate the sheet on the plans where the reviewer can find relevant information.
- **REQUIRED:** For each requirement check either "Complies" or "N/A" to indicate whether the project complies or the requirement is not applicable in this case.

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Location on Plans	Complies	N/A
LIGHTING AND ELECTRICAL REQUIREMENTS						
Certification	Responsible design professional certification on plans	C103.1				
Information on construction documents	Include <ul style="list-style-type: none"> ▪ Lighting fixture schedule with input power ▪ Lighting control narrative ▪ Location of daylight zones on floor plans 	C103.2 8.7 9.7 9.72 9.7.2.3				
Lighting system functional testing	Prior to final inspection the registered design professional provides evidence of testing. <ul style="list-style-type: none"> ▪ Occupant sensor controls ▪ Time-switch controls ▪ Daylight responsive controls Construction documents specify that certification documents be provided to the owner within 90 days of certificate of occupancy.	C408.3 9.7.2 9.4.3				
Dwelling unit lighting	Lighting equipment ≥75% high efficacy lamps	R404.1 9.1.1				

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Location on Plans	Complies	N/A
Controls - occupant sensor	Required in many specific spaces. Manual-on type required in most cases.	C405.2.1 9.4.1				
Controls - time-switch	Required where occupant sensors are not used. Specific spaces allowed to use light-reduction controls as an alternative.	C405.2.2 9.4.1				
Controls - daylight-responsive	Required in spaces with $\geq 150W$ of lighting within daylight zones. Some exceptions, such as patient care areas and dwelling units. Definitions provided for sidelight and toplight daylight zones.	C405.2.3 9.4.1				
Controls – display & accent lighting	Display lighting, accent lighting and display-case lighting controlled separately from general lighting.	C405.2.4 9.4.1.3				
Controls – guest rooms	Hotel, motel, and timeshare sleeping units and guest suites have master control to automatically switch off luminaires and switched receptacles within 20 minutes after all occupants leave the room	C405.2.4 9.4.1.3				
Exit signs	≤ 5 watts per face	C405.3 9.1.1				
Total connected interior lighting power	Includes input power for all proposed luminaires. Some exceptions apply. Special cases: <ul style="list-style-type: none"> ▪ Screw-in luminaires. Rated luminaire power (not the lamp power) ▪ Low-voltage lighting. Power rating of the transformer (not the lamp power) ▪ Line-voltage track lighting. Input power for the proposed luminaire power (but not less than 30 W/linear foot) or the power of the circuit breaker or other current-limiting device. 	C405.4.1 9.2.2 9.5 9.6				

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Location on Plans	Complies	N/A
Interior lighting power allowance	Total connected power shall be no greater than allowance. Two calculation methods for allowance: <ul style="list-style-type: none"> ▪ Building area method ▪ Space-by-space method (includes extra allowance for retail and decorative lighting) 	C405.4.2 9.2 9.2.2.3				
Exterior lighting controls	Photo cell and time-based control required. <ul style="list-style-type: none"> ▪ For façade and landscape lighting, automatic on/off off-hour required. ▪ Otherwise, automatic reduction ≥30% required during off-hours. ▪ Some exceptions apply. 	C405.2.5 9.4.1.4 9.4.2				
Exterior building lighting power	Maximum allowed power listed in Table C405.5.2(2) includes: <ul style="list-style-type: none"> ▪ Base allowance ▪ Tradeable allowance ▪ Non-tradeable allowance Allowances vary by lighting zone per Table C405.5.2(1)	C405.5 9.4.2				
Electricity meters	Each dwelling unit in R-2 building has a separate electric meter.	C405.6 8.4				
Electrical transformers	Electric transformers meet efficiency requirements of Table C405.7. Some exceptions apply.	C405.7 8.4.4				
Electrical motors	Electric motors meet the efficiency requirements of Tables C405.8(1)-(4)	C405.8 10.4.1				
Vertical and horizontal transportation systems	<ul style="list-style-type: none"> ▪ Elevator cab lighting ≥35 lumens/watt. ▪ Elevator cab fan ≤0.33 W/cfm. ▪ Escalator and moving walkway automatic speed control. ▪ Escalator regenerative drive. 	C405.9 10.4.3				



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Montgomery County
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COMMERCIAL DESIGN CHECKLIST

ADDITIONAL EFFICIENCY PACKAGE OPTIONS

Project: _____

Date: _____

Instructions *Code References: Cxxx.x refers to an IECC Section - While 5.xx, 6.xx, 7.xx...etc. refer to ASHRAE 90.1 Sections*

- **REQUIRED:** List performance values, note exceptions that were applied, or provide other notes to the reviewer.
- **REQUIRED:** Indicate the sheet on the plans where the reviewer can find relevant information.
- **REQUIRED:** For each requirement check either "Complies" or "N/A" to indicate whether the project complies or the requirement is not applicable in this case.

Component/System	Requirement	Code Section	Describe Proposed Design <small>(Indicate performance values, exceptions applied, notes to reviewer, etc.)</small>	Indicate Location on Plans	Complies	N/A
ADDITIONAL EFFICIENCY PACKAGE OPTIONS						
Requirements	Project must meet at least one of the following requirements.	C406.1				
More efficient HVAC equipment	<ul style="list-style-type: none"> ▪ 10% better than minimum efficiency 	C406.2				
Reduced lighting power density	<ul style="list-style-type: none"> ▪ 10% lower allowed lighting power 	C406.3				
Enhanced digital lighting controls	<ul style="list-style-type: none"> ▪ Continuous dimming and digitally-addressable luminaires 	C406.4				
On-site renewable energy	<ul style="list-style-type: none"> ▪ ≥ 0.5 W/ft², or $\geq 3\%$ of mechanical, water heating and lighting energy. 	C406.5				
Dedicated outdoor air system	<ul style="list-style-type: none"> ▪ For multiple-zone systems, include independent system with total heat recovery to condition ventilation air. 	C406.6				
Reduced energy in service water heating system	<ul style="list-style-type: none"> ▪ For specific building types, $\geq 60\%$ solar or waste heat recovery for water heating. 	C406.7				



DPS

**Montgomery County
Department of Permitting Services**

COMMERCIAL DESIGN CHECKLIST

ADDITIONS

Project: _____

Date: _____

Instructions Code References: Cxxx.x refers to an IECC Section - While 5.xx, 6.xx, 7.xx...etc. refer to ASHRAE 90.1 Sections

- **REQUIRED:** List performance values, note exceptions that were applied, or provide other notes to the reviewer. **Provide HVAC load sizing calculations.**
- **REQUIRED:** Indicate the sheet on the plans where the reviewer can find relevant information.
- **REQUIRED:** For each requirement check either "Complies" or "N/A" to indicate whether the project complies or the requirement is not applicable in this case.

Component/System	Requirement	Code Section	Describe Proposed Design <small>(Indicate performance values, exceptions applied, notes to reviewer, etc.)</small>	Indicate Location on Plans	Complies	N/A
ADDITIONS						
General	Requirements for new construction apply to additions. Unaltered portions of the existing building are not required to comply.	C502.1 4.1.1.2 4.2.1.2				
Windows – maximum area	<ul style="list-style-type: none"> ▪ Total building window area including addition ≤ 30% of gross wall area ▪ Or, window area in addition alone ≤ 30% of gross added wall area (≤ 40% when meeting daylighting requirements) 	C502.2.1 5.5.4				
Window – U-factor and SHGC	Same as new construction. See envelope checklist	C502.2.1 5.5.4				
Skylights – maximum area	<ul style="list-style-type: none"> ▪ Total building skylight area including addition ≤ 3% of gross roof area ▪ Or, skylight area in addition alone ≤ 3% of gross roof area (≤ 5% when meeting daylighting requirements) 	C502.2.2 5.5.4				
Skylight – U-factor and SHGC	Same as new construction. See envelope checklist	C502.2.2 5.5.4				

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Location on Plans	Complies	N/A
Mechanical systems	Requirements for new systems and equipment serving additions are the same as for new construction. See the mechanical checklist.	C502.2.3 6.1.1.2				
Service water heating	Requirements for new equipment, controls and piping serving additions are the same as for new construction. See the service water heating checklist.	C502.2.4 7.1.1.2				
Pools and spas	Requirements for new pools and in-ground spas are the same as for new construction. See the service water heating checklist.	C502.2.5 7.4.5				
Interior lighting	Requirements for lighting systems in additions are the same as for new construction. See the lighting checklist. Interior lighting power options: <ul style="list-style-type: none"> ▪ Addition alone complies ▪ Addition + existing building complies 	C502.2.6 C502.2.6.1 9.2 9.2.2.3				
Exterior lighting	Requirements for exterior lighting systems for additions are the same as for new construction. See the lighting checklist. Exterior lighting power options: <ul style="list-style-type: none"> ▪ Addition alone complies ▪ Addition + existing building complies 	C502.2.6 C502.2.6.1 9.4.1.4 9.4.2				

Project: _____

Date: _____

Instructions *Code References: Cxxx.x refers to an IECC Section - While 5.xx, 6.xx, 7.xx...etc. refer to ASHRAE 90.1 Sections*

- **REQUIRED:** List performance values, note exceptions that were applied, or provide other notes to the reviewer. **Provide HVAC load sizing calculations.**
- **REQUIRED:** Indicate the sheet on the plans where the reviewer can find relevant information.
- **REQUIRED:** For each requirement check either "Complies" or "N/A" to indicate whether the project complies or the requirement is not applicable in this case.

Component/System	Requirement	Code Section	Describe Proposed Design <small>(Indicate performance values, exceptions applied, notes to reviewer, etc.)</small>	Indicate Location on Plans	Complies	N/A
ALTERATIONS						
General	New-construction requirements apply to altered portions of the building. Unaltered portions are not required to comply.	C503.1 4.1.1.3 4.2.1.3				
Change in space conditioning	Full compliance is required for previously unconditioned spaces that are altered to become conditioned	C503.2 4.1.1.5				
Roof	No requirement: <ul style="list-style-type: none"> ▪ Roof recover ▪ Ceiling/roof cavity not exposed New-construction requirements: <ul style="list-style-type: none"> ▪ New roof ▪ Roof replacement where insulation is above deck ▪ Alteration where ceiling/roof cavity is exposed (exception if cavity is filled with insulation) 	C503.1 C503.3.1 4.2.1.3 5.1.3				
Wall	No requirement: <ul style="list-style-type: none"> ▪ Wall cavity is not exposed New-construction requirements: <ul style="list-style-type: none"> ▪ Wall cavity is exposed (exception if cavity is filled with insulation) 	C503.1 4.2.1.3 5.1.3				

Component/System	Requirement	Code Section	Describe Proposed Design (Indicate performance values, exceptions applied, notes to reviewer, etc.)	Indicate Location on Plans	Complies	N/A
Windows – maximum area	<ul style="list-style-type: none"> ▪ Total building window area after added windows ≤ 30% of gross wall area ▪ Or, window area in space with added windows alone ≤ 30% of gross wall area (≤ 40% when meeting daylighting requirements) 	C503.3.2 5.1.3				
Window – U-factor and SHGC	Same as new construction. See envelope checklist	C503.3.2 5.1.3				
Skylights – maximum area	<ul style="list-style-type: none"> ▪ Total building skylight area after added skylights ≤ 3% of gross roof area ▪ Or, skylight area in space with added skylight(s) alone ≤ 3% of gross roof area (≤ 5% when meeting daylighting requirements) 	C503.3.3				
Skylight – U-factor and SHGC	Same as new construction. See envelope checklist	C503.3.3 5.1.3, 5.5-4				
Mechanical systems	New heating, cooling and duct systems are required to meet new construction requirements.	C503.4 6.1.1.3				
Service water heating systems	New water heating systems are required to meet new construction requirements.	C503.5 7.1.1.3				
Lighting systems	<p>New lighting systems that are part of an alteration are required to meet new construction requirements.</p> <ul style="list-style-type: none"> ▪ Exception if less than 10% of luminaires in a space are replaced and installed lighting power does not increase 	C503.6 9.1.2				