

CITY & COUNTY OF DENVER COMMUNITY PLANNING & DEVELOPMENT BUILDING PERMIT POLICY		
Subject: SUBMITTAL REQUIREMENTS FOR THE IECC COMMERCIAL PROVISIONS		
Approved: Scott V. Prisco, AIA, Building Official		
Number: IECC Sections C101.5.1, C103.2, C202 and C408.2.4	Effective Date: April 25, 2016 Revised: February 13, 2019	Page: 1 of 6

Reference: International Energy Conservation Code (IECC) Commercial Provisions and the Denver Building and Fire Code Amendments (DBCA) to the 2015 IECC

SCOPE

The IECC contains separate provisions for commercial and residential buildings. This policy outlines the documentation needed to demonstrate compliance with the IECC’s *commercial provisions*. As of November 7, 2017, submittal requirements per the IECC’s *residential provisions* have been contained in a separate policy available for [download here](#) or at www.denvergov.org/buildingcode.

APPLICABILITY

The IECC addresses the design of an energy-efficient building envelope (consisting of the roof and ceiling, walls, floors, and foundation assemblies that surround the conditioned space) as well as the selection and installation of energy-efficient mechanical, lighting and service water-heating systems.

The *commercial provisions* of the IECC apply to new commercial buildings with conditioned space, new residential buildings that have four or more stories above the grade plane, and any such buildings undergoing an addition, remodel, alteration, repair, change of occupancy that would result in an increase in demand for either fossil fuel or electrical energy, or change of use.

The *residential provisions* of the IECC apply to residential buildings—including multifamily structures—that have three stories or less above the grade plane.

If your project has a mixture of residential and commercial uses, the respective provisions of the IECC will apply, and submittals are required as applicable for each portion of the mixed-use building.

SUBMITTAL REQUIREMENTS

To demonstrate compliance with the energy code, all projects submitted for plan review must include the information outlined below in Sections A (Code Analysis), B (Construction Documents), and C (Additional Documents).

Section A. Code Analysis

1. The IECC allows commercial buildings to comply with either ANSI/ASHRAE/IESNA 90.1-2013 without addenda (“ASHRAE 90.1”) or the 2015 IECC. For either ASHRAE 90.1 or the 2015 IECC, applicants must use the same code or standard for the entire project. For example, if mechanical systems are designed and built to ASHRAE 90.1, the electrical systems and building envelope must also use ASHRAE 90.1.
2. In the code analysis, list whether you are using the 2015 IECC or ASHRAE 90.1 **and** which compliance path you are using.

2015 IECC Compliance Paths

- Prescriptive Path, which must meet IECC C402-C406
- Total Building Performance Path (“performance method”), which must meet IECC C402.5, C403.2, C404, C405.2, C405.3, C405.4, C405.6, and C407. The building energy cost must be 85% or less of the standard reference design building.

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ASHRAE 90.1 Compliance Paths

- Prescriptive Path
 - Energy Cost Budget Method
3. To use the 2015 IECC’s prescriptive path, the project must comply with one of the **additional efficiency package options**, as listed in IECC C406. The additional efficiency package option is only required for new construction and is not required for existing construction. There are six options listed in the IECC: choose one of these and list it in your code analysis. The option selected must be the same for all disciplines (electrical, mechanical, domestic hot water [plumbing], and building envelope).

For best results, coordinate electrical, mechanical, and envelope design at an early stage, because the additional efficiency option must be the same for all three disciplines. For example, if the project’s option is “more efficient HVAC performance,” then this must be on the COMcheck for electrical, mechanical, etc. You cannot have “more efficient HVAC” on the COMcheck submitted for a mechanical review but “enhanced lighting controls” on the COMcheck for an electrical review.

4. Air barrier details are required for all projects, regardless of whether you use the 2015 IECC or ASHRAE 90.1. In the code analysis, indicate where in the plans air barrier details can be found.
- Alternatively, if a building pressure test will be done, indicate this in your code analysis.
5. **Tenant-finish projects in existing buildings undergoing a change in use where there is an increase in energy use:** Submit documentation to show the new occupancy has no more energy demand than the previously permitted construction. If the energy use not including process loads is greater than the previous use, the thermal envelope of the space must comply with IECC building envelope requirements (Sections C401 or C402).
6. **Phased construction projects when using an energy model (performance method):** Each building component assumption (envelope, HVAC, water heating, and lighting) included in an energy model used to show energy compliance in the initial submittal must be coordinated by the design team to ensure installation in future phases of construction. For example, if higher-efficiency boilers are used in the energy model to “trade off” for less roof insulation, but are to be installed in a later phase and the roof shown is to be built in the current phase, those same higher-efficiency boilers are required to be installed regardless of changes in contract. Alternatively, a new energy model for the future phase can be submitted showing compliance with the now-existing roof insulation values, new proposed boiler efficiencies, and any other proposed changes to the original energy model. This applies to new buildings, existing buildings undergoing a change in use, and white box/core and shell projects.

Section B. Construction Documents (2015 IECC and ASHRAE 90.1)

Construction documents must be drawn to scale and be of sufficient clarity to indicate the location, nature, and extent of proposed work, and show in sufficient detail pertinent data and features of the building, systems, and equipment as governed by the IECC. Additionally, if commissioning is required (*see inset box on next page*), construction documents must indicate the scope of the commissioning—specifically, what systems are to be commissioned and what functional tests and reports are required.

Include the items listed below on construction documents (as applicable to the project’s scope of work):

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1. **Energy Drawings:** All commercial projects with an area of work of 10,000 square feet or more must include energy drawings within their construction documents. Energy drawings are separate, dedicated pages that only contain details of how the project complies with applicable energy codes. The energy drawing(s) should reference where the rest of the items listed below can be found in the plans (if they are not already on the energy drawing).
 - o *Exception:* Separate energy drawings are not required for commercial projects where the area of work is less than 10,000 square feet in an existing space. This exception does not apply to new construction projects or first-time tenant projects.
2. A code analysis with the information listed in Section A (Code Analysis).
3. The 12 items listed in IECC C103.2.
4. Drawings that depict the thermal envelope in accordance with the requirements of IECC C402.
5. COMcheck or a Department of Energy (DOE)-approved modeling program that shows an energy analysis for the building design and an inspection checklist based on the selected method of compliance (2015 IECC or ASHRAE 90.1). COMcheck can be downloaded for free at www.energycodes.gov/comcheck.
 - o The following software programs are allowed:
 - a. COMcheck based on the 2015 IECC for the prescriptive path
 - b. COMcheck published by the DOE based on ASHRAE 90.1-2013 for the prescriptive path
 - c. Other DOE-approved software based on 2015 IECC or ASHRAE 90.1-2013
6. When installing new tenant lighting or replacing 10% or more of existing lights, the new lighting must comply with requirements for lighting controls in IECC C405. Submit a COMcheck interior lighting compliance certificate based on the energy code or standard used for the project (either 2015 IECC or ASHRAE 90.1), and if applicable, submit a COMcheck exterior lighting compliance certificate for any new or changing exterior lighting.
7. **For projects commissioning a lighting system per the 2015 IECC**, the design must meet the performance criteria of IECC C405. A separate document attesting to this must be sent to the building owner within 90 days of Certificate of Occupancy. See IECC C408.3.2 for details.

Section C. Commissioning

If commissioning is required, submit a letter to the electrical or mechanical/plumbing reviewer that includes the information below. The review will not be approved until this letter is provided.

- Project address and log number
- General contractor's name
- Name of the individual (if known) and/or company that will perform the system commissioning
- Describe whether the commissioning agent is a registered design professional or an "approved agency." Letters for design professionals must provide their specialty and license number. The

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design professional stamping the design cannot be same design professional performing the commissioning, but can be in the same firm. Letters for approved agencies must indicate which of the qualification requirements listed on page 4 are met to qualify them as an approved agency.

- For phased construction projects, identify the phase or phases when commissioning will occur at a level of completion expected to satisfy the requirements of the Preliminary Commissioning Report described on page 5.
- The letter must be signed and dated by the project developer, owner, or authorized agent.

Qualification Requirements for Approved Agencies

An “approved agency” responsible for the execution of the commissioning process must have at least one of the following qualifications:

- a building commissioning certification from an ISO/IES 17024-accredited agency or another entity that certifies building commissioning professionals;
- at least two years of experience commissioning projects of a similar scale and complexity and a licensed professional engineer designation in the State of Colorado; or
- staff credentials recognized by the Building Commissioning Association, such as the Certified Commissioning Professional (CCP) or equivalent.

When System Commissioning/Testing is Required

Under the 2015 IECC:

- Per IECC C408.2, mechanical and service water-heating systems must be commissioned when the total mechanical equipment capacity is 480,000 Btu/h (140.7 kW) or more of cooling capacity, or the combined service water-heating and space-heating capacity is $\geq 600,000$ Btu/h (175.8 kW).
 - Systems that serve individual dwelling units and sleeping units are exempt.
 - Systems in existing buildings where the area of work is less than 10,000 sq. ft. are exempt.
- Per the DBCA C408.3, lighting systems must be commissioned when the new installed lighting load is 20 kW or greater, and the area of work is 10,000 sq. ft. or more.
- Existing buildings undergoing a major equipment replacement exceeding the sizing thresholds of IECC C408.2 will require commissioning when most of the devices directly connected to that equipment are also being replaced, such as in a complete floor demolition.

Under ASHRAE 90.1:

- Functional performance testing of all lighting systems, and
- HVAC systems in buildings over 50,000 square feet (Section 6.7.2.4) must be commissioned.

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PRELIMINARY COMMISSIONING REPORT

Submit after permits are issued, but before final inspection

If commissioning is required, the owner or owner's authorized agent must submit a Preliminary Commissioning Report to both the electrical inspector and mechanical/plumbing inspector two weeks before the project can receive a final inspection. If any system does not have sufficient functioning capability noted in the report, then the final inspection cannot be completed and a revised report must be submitted once corrective measures have been taken.

- The Preliminary Commissioning Report must be completed and certified by the registered design professional or approved agency.
- It must be titled "Preliminary Commissioning Report."
- It must contain the Commissioning Compliance Checklist (located at the end of this policy).
- It must be organized with mechanical, lighting controls, and service hot water findings in separate sections, which contain the following information:
 - itemization of deficiencies found during testing that had not been corrected at the time of report preparation,
 - a list of deferred tests that could not be performed by the time of report preparation due to climatic conditions,
 - the climatic conditions required for any deferred tests,
 - results of functional performance tests, and
 - the functional performance test procedures that were used during commissioning, including measurable criteria for test acceptance.
- If commissioning is performed by an approved agency who is a registered design professional or is an employee of a registered design professional of record or an employee or subcontractor of the project's general contractor, the Preliminary Commissioning Report must include an In-House Commissioning Disclosure and Conflict Management Plan. Disclose the approved agency's contractual relationship with other team members and detail how the approved agency is free to identify issues or conflicts and report directly to the owner or authorized owner's agent.

ENERGY DESIGN ASSISTANCE (EDA) PROGRAMS

Xcel's cost-saving EDA program uses some ASHRAE components and some IECC components. Since the 2015 IECC adopted by the City and County of Denver requires projects to comply with either ASHRAE or the IECC, the information required by Xcel for its EDA program is not sufficient for documenting compliance with current energy codes. EDA may be done in addition to demonstrating energy code compliance, but cannot replace the requirements of the Denver Building and Fire Code.

This policy outlines the minimum information needed to evaluate how a project complies with energy codes. It does not replace any specific IECC provisions that may also apply to your project.

END OF DOCUMENT

Attachments: #1 Commissioning Compliance Checklist

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All Preliminary Commissioning Reports must include this commissioning compliance checklist.

Commissioning Compliance Checklist

Project Information	Project Name:
	Project Address:
	Registered design professional or approved agency who completed commissioning:
Commissioning Plan (Section C408.2.1)	Commissioning Plan was used during construction and includes all items required by Section C408.2.1: (owner or owner representative to initial here) _____
Systems Adjusting and Balancing (Section C408.2.2)	Systems Adjusting and Balancing has been completed <ul style="list-style-type: none"> • Air and water flow rates have been measured and adjusted to deliver final flow rates within the tolerances provided in the produce specifications.
Functional Testing (Sections C408.2.3 and C408.3.1)	HVAC Equipment Functional Testing has been executed. If applicable, deferred and/or follow-up testing is scheduled to be provided on: _____
	HVAC Controls Functional Testing has been executed. If applicable, deferred and/or follow-up testing is scheduled to be provided on: _____
	Economizers Functional Testing has been executed. If applicable, deferred and/or follow-up testing is scheduled to be provided on: _____
	Lighting Controls Functional Testing has been executed. If applicable, deferred and/or follow-up testing is scheduled to be provided on: _____
	Service Water Heating System Functional Testing has been executed. If applicable, deferred and/or follow-up testing is scheduled to be provided on: _____
Supporting Documents (Sections C408.1.3.2)	Manuals, record documents and training have been completed or are scheduled <ul style="list-style-type: none"> • System documentation has been provided to the owner or scheduled to be delivered to the owner on: _____ • Record documents have been submitted to owner or scheduled to be delivered to the owner on: _____ • Training has been completed or scheduled to be completed on: _____
Preliminary Commissioning Report (Section C408.2.4)	Preliminary Commissioning Report submitted to Owner and includes all items required by Section C408.2.4 as amended: (owner or owner representative to initial here) _____
Certification	<p>I hereby certify that the commissioning provider has provided me with evidence of mechanical, service water heating and lighting systems commissioning in accordance with the 2015 IECC as amended.</p> <p>_____ Signature of Building Owner or Owner’s Representative</p> <p style="text-align: right;">_____ Date</p>