

## Commercial Energy Code Training

To **schedule a training session** with your group email [energycodesma@psdconsulting.com](mailto:energycodesma@psdconsulting.com)

All courses have been approved for **continuing education** for MA code officials and CSL licensees

### Course 1: 9<sup>th</sup> Edition Energy Code: Top Ten Things You Need to Know (180 min.)

#### Module 1.1 – 9<sup>th</sup> Edition Energy Code: Top Ten Things You Need to Know (60-120 min.)



The 9th Edition of the Massachusetts State Building Code (780 CMR) became mandatory on August 7, 2020. This course, intended for code enforcement officials, contractors, and design professionals, will address 9<sup>th</sup> Edition updates, changes between the 2015 and 2018 IECC, and the “Top 10” commercial energy code compliance issues. The biggest changes that came with the 9<sup>th</sup> Edition were the requirement for COMcheck documentation for all commercial new construction projects, and the requirement for most commercial new construction designs to designate solar-ready zones on plans. Additional topics include 2015 IECC requirements for air barrier construction, mechanical and lighting system commissioning, and “additional efficiency packages”.

#### Module 1.2 – Shining a Light on Solar-Ready Requirement (60 min.)



A new requirement in the MA 780 CMR 9<sup>th</sup> Edition, Chapter 13 code amendments require all commercial new construction subject to that code to be designed and constructed to be “Solar-Ready”. This requirement is to ensure that future building infrastructure can take advantage of a market that is expected to become more conducive to renewable energy. This 1-hour presentation further expands on the requirements with guidance for code officials as to what they should expect to look for in plan reviews and site inspections. Draft checklists for those criteria will also be unveiled and reviewed for additional comments and enhancement, for use by code officials and other construction stakeholders.

### Course 2: COMcheck™ for Building Professionals (180 Minutes)

#### Module 2.1 - COMcheck 101 – A New Energy Code Requirement Made Easy (60 min.)



The Massachusetts 9th Edition State Building Energy Code contains a new requirement that ALL commercial building energy code projects have COMcheck reports as part of the permit application. This is a tool for jurisdictions to gather all the relevant energy code information, including a plan review checklist. This also assures that the jurisdiction has a project-specific list of “Mandatory” compliance elements for verification during plan reviews and inspections. This course will familiarize Massachusetts commercial building stakeholders with the US-DOE COMcheck software. By attending this course, you will be able to identify construction specifications needed to complete a compliant COMcheck calculation and you'll learn how to enter building envelope, lighting, and mechanical components into the software. We'll also discuss how to create COMcheck compliance reports and ensure they are accurate with respect to the building plans.

#### Module 2.2 COMcheck Case Study – Simple Commercial Building Case Study (60 min.)



COMcheck is most often used as a compliance tool for simple commercial buildings and it is easily adapted to renovations. As of January 1, 2018, COMcheck report submittals are required by the Massachusetts 9th Edition and its Energy Code. In this course, through the lens of a simple building case study, attendees will learn about entering data into COMcheck and conducting a simple commercial plan review for code compliance. The presentation will highlight the most commonly observed entry errors and inconsistencies, including reference to building plans and specifications. Finally, the instructor will prepare attendees to conduct site inspections using the site inspection checklist tool.

## Module 2.3 - COMcheck and Your Existing Building Projects (60 min.)



Commercial renovation projects dominate permit request applications across the Commonwealth and hold tremendous opportunity for energy savings via energy code compliance. In many cases, designers, builders, and code officials overlook elements with energy code implications. Designers can document commercial renovation projects using COMcheck in a similar manner to new construction projects and this will address how COMcheck is used to meet permit application requirements for renovation projects.

The takeaways from this course will include how to determine what constitutes an addition, alteration, or repair, how the energy code applies to change-of-occupancy and change-of-use, and code exceptions for commercial alterations. This is followed by a demonstration of how to use COMcheck software to show compliance for additions, alterations, and repairs.

## Course 3: Air Barriers for Commercial Buildings (180 min.)

### Module 3.1 - Commercial Air Barriers – Since When?! (60-90 min.)



This course will cover Massachusetts 9th Edition energy code requirements for commercial building air barriers, including those in ASHRAE 90.1-2016 and the 2018 IECC. The course will clarify these requirements for better specification by designers and easier review by code enforcement officials. The course is organized around examples that show differences between systems-based, assembly-based, and testing-based compliance options. This introductory course will provide background for a subsequent and more advanced air barrier strategy module.

### Module 3.2 What Makes a Commercial Air Barrier – It's the Details! (60-90 min.)



Continuous air barriers are required by code and paramount to the energy efficiency of a building. There are numerous ways to provide a code-compliant air barrier system, including building wraps, sealed sheathing systems, and liquid- and spray-applied materials. This course will focus on the design and application of those systems, details important to the success of an air barrier system, and where designers and code officials can find additional support. The course will also provide tips on how to review construction details for air barrier continuity and how to inspect them in the field.

## Course 4: Energy Code Documentation for Successful Compliance (180 min.)

### Module 4.1 – Energy Code Documentation for Permit Applications (60 min.)



A significant barrier to energy code enforcement and verification in Massachusetts is the poor documentation of those code requirements on plans and permit application materials. This energy code documentation module will run through what code officials should ask for, and what designers or other permit applicants (GCs, builders) should submit, in terms of proper documentation for permit applications. Attendees will be given a draft "Commercial Building Minimum Documentation Checklist"

to work with along with the presenter, and feedback will be solicited to the final version of this checklist. This session will walk through the "Minimum Documentation" checklist, COMcheck reports and checklists and the reasons behind their requirement by the code and their best usage in plan review and site inspection.

### Module 4.2 – 3<sup>rd</sup>-Party Energy Code Documentation & Relationship to Above-Code Programs (60 min.)



Third party providers can fulfill a variety of code compliance tests and measures with specialized expertise that may not be available or feasible for the design and construction teams. This presentation will discuss minimum third-party documentation for commercial code compliance, including commissioning reports, air barrier test reports, and building energy simulations for performance-path compliance. Noting that many construction and renovation projects may simultaneously pursue LEED

or ENERGY STAR® certification, we will also compare these certifications' energy performance standards with those required by the current Massachusetts energy code (780 CMR 9th edition) to explore the question of whether environmental building certifications are equivalent to code-compliant buildings. We will also provide guidance to assure that special inspections, tests, and certifications are documented for ease of compliance review and

verification, and how construction professionals can assure that everyone is on the same page, and path, to compliance.

## Module 4.3 – Designers, Builders, and Code Officials Working Together for Compliance (60 min.)



The role of architects and designers versus builders and building owners regarding energy code-compliant design and construction is not always clear. Architects and designers are responsible for providing compliant drawings but may not be tasked with handling third-party documentation or on-site supervision. Conflicts may arise when these roles are not clearly delineated in the scope of work. This module will cover various energy code documentation requirements and construction supervision duties and present various models and best practices for who is responsible for what. Code officials will also benefit from this session by gaining a more thorough understanding of documentation and verification processes.

## Course 5: 2018 IECC Update (1 hour)



A In March 2019, the BBRS approved the 2018 IECC with MA amendments as the baseline energy code. This new energy code had an effective date of February 7th, 2020, with a concurrency period expiring on November 7th, 2020. These presentations will highlight the salient changes to the base energy code. Which include changes to compliance paths, prescriptive and performance requirements, and documentation requirements.

## Course 6: Mechanical, Plumbing, and Lighting: Controls and Operations (180 mins.)



The function of a commercial building relies heavily on the control of its systems. According to an analysis of potential savings, improperly installed and operated HVAC, lighting and plumbing controls can account for as much as a building envelope with no insulation and no air sealing. Join this session to review code requirements around Mechanical, Plumbing and Lighting controls with a focus on what to include in plans and specifications, what to look for at plan review and inspections, and where DOE's COMcheck tools can be used.

## Course 7: Building Systems Commissioning: Saving Money and Meeting Code (60 mins.)



Building commissioning reduces energy bills, improves comfort, reduces CO2 and other emissions, and... it's the law. According to data from US Energy Information Administration (EIA), in 2018 commercial buildings accounted for over 18% of the energy consumed in the US, with over half that energy dedicated to heating, cooling, and lighting. While most building owners and builders understand the importance of high-efficacy lighting and efficient HVAC systems, the importance of building system commissioning is less widely appreciated. Studies have shown that the operating efficiency of commercial buildings improves by as much as 13% with commissioning. This course will provide an overview of mechanical systems and lighting commissioning including the benefits to building owners and occupants, the general commissioning process, and a review of energy code requirements and associated documentation. The course will also identify the roles that building owners, builders, code officials, and commissioning agents play in the commissioning process and highlight relevant industry standards and certifications.