Rhode Island Commercial Codes – FAQs

Energy code technical support

BROUGHT TO YOU BY nationalgrid

When does the new code go into effect?

The new suite of building codes (including the new state energy conservation code, SBC-8) was adopted on July 1, 2013. A brief concurrency period July 1—October 1, 2013 provided an option as to which code a building permit would adhere. During this concurrency period, the design team along with the project owner will select the project pathway for code compliance and submit to the building official. Every permit application after October 1, 2013 must be in compliance with the 2013 State Building Code (SBC). The SBC-2 for 1- and 2-family dwellings, and SBC-8 for 3-family (or more) dwellings and commercial buildings govern energy efficiency. See www.ribcc.ri.gov.

SCOPE AND ADMINISTRATION

1. Who is responsible for compliance with the energy code?

Responsibility for energy code compliance rests with many parties. The building official is ultimately responsible for enforcing the code, but compliance responsibilities are shared:

- The **building official** is responsible for issuing permits, maintaining compliance records, conducting inspections, and other administrative procedures associated with code compliance.
- The **project owner** is responsible for performing all work in accordance with the documents filed with the building official; assuring that all codes requirements are met; and certifying that all work has been done in accordance with code provisions. Any or all of this responsibility can be assigned by the owner to a project architect or engineer.
- A **professional engineer or registered architect** acting on behalf of the owner is responsible for reviewing shop drawings and other submittals submitted to the building official; reviewing, approving, and submitting all change orders; reviewing and approving all required testing procedures; and providing construction site professional services on a regular basis to assure that work is proceeding in accordance with the submitted and approved design/construction documents.
- The **construction contractor** is responsible for performing the work in accordance with the submitted and approved documents, and to certify to that effect upon project completion.

2. Do building officials sometimes waive the right to review project drawings?

Building officials have the option of waiving the review of project drawings. They can exercise this option when the plans are prepared by a professional engineer and/or architect, and where design professionals have stated in writing that they have supervised the preparation of all design documents and conform to all code provisions.

3. Does the energy code apply to existing buildings?

Yes, but only when a renovation, repair, addition or change of use is executed.

4. What determines if a renovation or alteration needs to meet the energy code?

The code states that additions, alterations, renovations or repairs to existing buildings, or building systems, must comply “as they relate to new construction.” This is interpreted to mean that if the renovation includes changes that are covered by the code for new construction, the code provisions must be met for the renovation. There are several exceptions, where compliance with the energy code is not required, including:

- Installing storm windows over existing windows.
- Replacing glass only.
- Existing wall, floor, or ceiling cavities exposed during construction if filled with insulation.

STATE BUILDING COMMISSION 1977

ers energy & resource solutions

CSG Conservation Services Group

- Existing wall, floor, or ceiling cavities not exposed during construction.
- Re-roofing when neither the cavity nor roof sheathing is exposed.
- Replacing existing doors separating exterior from conditioned space will not require a revolving door or vestibule. In this circumstance, however, pre-existing vestibules may not be removed.
- Replacement of less than 50% of luminaires (light fixtures) in the space, provided the installed lighting power is not increased.
- Replacement of lamps and ballasts of existing lighting fixtures as long as the existing lighting power is not increased.

*The exceptions are also based on the condition that the energy use for the building is not increased.

Reference SBC-8 C101.4.3

5. How do I determine if a building repair needs to meet the energy code?

Repairs that are "related to new construction" must meet the energy code. For example, replacing a non-functional heating system would require complying with the energy code provisions associated with the replaced components. However, the repair of a leaking heat exchanger in an existing boiler would not require energy code compliance as the project does not "relate to new construction." See the above question for specific exceptions to this requirement.

6. When does a change in occupancy or use require compliance with the energy code?

If a change in occupancy or use will result in an increase in demand for electricity or fossil fuel, the project must comply with energy code provisions. In addition, a change in use requires that the lighting power requirements for the new space type be met.

7. If designing and constructing a LEED certified building, does one still need to submit energy code compliance documentation?

The code official may at their option allow the written approval of a building for an "above code program" to be submitted as evidence of energy code compliance. The code official must approve this compliance path in advance. All code requirements identified as "mandatory" in Chapter 4 of the energy code must be complied with regardless of their status in the above code program.

Reference – SBC-8 C401.2

8. Are construction documents, prepared by registered design professionals, required for all projects?

Not necessarily. The code official may waive the requirements for such construction documents if they determine that they are not necessary to confirm compliance. This is typically only done for smaller projects.

Reference – SBC-8 C103.1

9. We cannot find the "Performance Path" in the current code. Is that no longer allowed?

The option to follow a performance path is available by utilizing the "Energy Cost Budget" methodology detailed in ASHRAE Standard 90.1. If choosing that path, all code requirements identified as "mandatory" in Chapter 4 of the energy code must be complied with in addition to meeting the performance requirements.

Reference – SBC-8 C401.2

10. Can portions of the RI Energy Code be used for compliance along with portions of ASHRAE 90.1?

Only provisions of the state energy code, or the Energy Cost Budget method detailed in 90.1 plus the mandatory requirements of the RI Energy Code may be utilized for compliance. The prescriptive provisions of 90.1 cannot be used for compliance in RI.

ENVELOPE

1. What exactly is meant by continuous insulation?

It is a layer of insulation that is not "broken" by the framing. It is typically rigid or semi rigid insulation foam board installed on the inside or outside of the assembly cavity.

2. Is it possible to increase the cavity insulation and avoid installing continuous insulation?

No, wherever continuous insulation is mandated, it must be installed regardless of the R-value of the cavity insulation.

3. What is needed to meet the requirements for a continuous air barrier?

A continuous air barrier must be installed to seal the building envelope assemblies from air leakage. It must connect all the components of the envelope, and it must meet the specifications listed in section C402.4.1 of the code.

Reference SBC-8 C402.4.1

4. Can the air barrier be installed outside the sheathing?

It is most commonly installed outside the sheathing, but may be placed inside, outside, or within envelope assemblies.

5. What is the difference between air barriers and vapor barriers or retarders?

Vapor barriers and retarders are designed to prevent vapor from entering envelope assemblies through diffusion. The air barrier is intended to stop air leakage. Some air barriers serve as both air and vapor barriers.

6. What are the requirements for vapor barriers or retarders in the new code?

They are no longer required as building scientists have determined that if envelope assemblies are properly sealed against air leakage, vapor retarders are not necessary. This does not mean that you cannot use vapor retarders, only that they are not required.

7. Our firm believes that sealing up the building is a bad idea and leads to indoor air pollution. Can we avoid sealing the building, and still meet the code?

As an alternative to meeting all of the air sealing requirements, a blower door test can be conducted to demonstrate air tightness performance. But in order to pass the blower door test, the building will need to be sealed in similar fashion to the prescriptive air sealing requirements. Many studies show that sealing buildings from uncontrolled air leakage and introducing controlled ventilation, results in better energy performance and improved indoor air quality.

8. Can blower door testing be performed on large commercial buildings?

Yes, recent techniques and equipment have been developed for testing large buildings.

Technical assistance associated with the energy code is available at 855-343-0105. A code advisor can assist you by providing information on blower door testing for commercial buildings.

9. Where can we get help in deciding what material and approach to create a continuous air barrier for the opaque building envelope?

Two New England based organizations offer guidance on air barrier materials, associated assemblies, and installation techniques and technical assistance is also available (as noted above);

1. Building Science Corporation; www.buildingscience.com
2. Air Barrier Association; www.airbarrier.org

10. Our clients typically request a lot of glass in their new office buildings. The new code has reduced the allowable percentage of glass to 30% of the wall area. The past codes allowed 40%, but we often installed more and followed the performance path for compliance. Now the performance path has been deleted. What options do we have?

There are two options available in Rhode Island which allow for a larger percentage of glazed area. The maximum area may be increased to 40% of the wall area, if the project can meet the daylight requirements of C 402.3.1.1 which includes installing automatic daylighting controls in daylight zones. The other option is to utilize ASHRAE/IESNA standard 90.1 2010 for code compliance, utilizing the “Energy Cost Budget” methodology. With this methodology there are no restrictions for the amount of glazed area, as the total building performance is determined through a modeling procedure.

Reference SBC-8 C402.3.1, C402.3.1.1

11. If one of the envelope assemblies we wish to use does not meet the R-value or U-factor requirement listed in the table, can a tradeoff be made with other assemblies that are designed to perform better than the code requires?

Yes, some tradeoffs are allowable within the envelope provisions. But it is best to discuss such tradeoffs with the code official **prior to construction**, to make sure that the tradeoff is allowable. Although the tradeoff calculation can be done manually, COMcheck automatically performs tradeoff calculations as the envelope section is completed.

Technical assistance associated with the energy code is available at 855-343-0105. A code advisor can assist you in determining if proposed tradeoffs are appropriate under the current code.

12. Can lighting or mechanical systems provide tradeoffs with envelope performance?

No, envelope assemblies and components can only be traded off with other envelope assemblies and components.

13. The provisions that limit total skylight size while requiring skylights are confusing. Can you provide some guidance?

In most cases the following will apply:

- The total skylight area may not exceed 3% of the roof area.
  - — However, the allowable skylight area increases to 5% of the gross roof area if automatic day light controls are utilized in the space where the skylights are installed.
- Skylights with automatic daylight controls are required for all of the following spaces:
  - — Enclosed spaces with floor area greater than 10,000 ft^2, with ceiling heights greater than 15 feet, have an installed general lighting LPD greater than 0.5 W/ft^2, a minimum of 50% of the roof area receives direct sunlight, and fall under the following use categories:

• Office	• Corridor	• Automotive service	• Distribution/sorting area
• Lobby	• Storage	• Manufacturing	• Transportation area
• Atrium	• Gymnasium/exercise center	• Non-refrigerated warehouse	• Workshop
• Concourse	• Convention center	• Retail store	

For these spaces the daylight zone must include at least 50% of the floor area, and the skylight area must be at least 3% of the roof area (see C402.3.2 for additional information).

Reference SBC-8 C402.3.1.2, C402.3.2

Technical assistance associated with the energy code is available at 855-343-0105. A code advisor can assist you in navigating the skylight requirements.

14. The energy code now requires skylights for some spaces. What is the relative electrical lighting savings compared to the heat loss through the skylights?

The code requirements for skylights and daylighting were developed to produce large enough electrical lighting savings to offset any associated heat loss. The New Buildings Institute (NBI) has developed daylighting pattern guides that are helpful when meeting code requirements. They are available at www.advancedbuildings.net/daylighting-pattern-guide.

15. We are commercial roofing contractors. When re-roofing commercial buildings, do our projects need to meet the insulation requirements?

The answer is based on the extent of work and existing conditions as follows:

- If neither the roofs sheathing nor insulation are exposed, the roof does not need to be brought up to current code insulation levels.
- However, if either the sheathing or insulation is exposed, or if the roof is found to have no insulation in the cavity, the roof is required to be insulated either above or below the sheathing, to current code levels.

Reference SBC-8 C101.4.3 (4, 5)

16. What are C-Factors and F-Factors and when are these factors applicable?

These factors are alternatives to using insulation R values for below grade walls (C-Factor) and slabs (F-Factor). Both factors are pre-calculated insulation performance levels for particular assemblies. The assemblies are described and provided with default C or F Factors in Appendix A of ASHRAE Standard 90.1. These default values can only be utilized for the particular assemblies specifically listed in Appendix A of ASHRAE 90.1 2010. Otherwise, R- values listed in C402.2 should be utilized for below grade walls and slabs.

Reference SBC-8 C402.2

17. When do the default tables for fenestration performance apply?

These tables are utilized when the factory applied performance label is not attached to the window or door. The default tables are conservative, so it is best (and is a code requirement) to retain the rating labels until the code official has viewed them.

18. Why are some envelope provisions termed “mandatory” and others are not?

The term mandatory means that the provision cannot be “traded-off” with other envelope provisions, and that it still must be complied with if utilizing the ASHRAE 90.1 Energy Cost Budget compliance methodology.

19. Are there any financial incentives available for energy efficient construction?

Yes. National Grid offers a variety of energy efficiency incentives for commercial buildings. Information is available at; www1.nationalgridus.com/EnergyEfficiencyPrograms, or by calling 1-800-322-3223.

LIGHTING

1. What types of lamps and light fixtures meet the code requirements for interior lighting?

The energy code allows flexibility for lamp and light fixture choices. Compliance is determined by the installed lighting wattage, per floor area, for a space type, or a building type. The resulting calculation of installed watts/ft^2 is termed "lighting power density (LPD)." The maximum LPD allowed by code for a space or building type is termed the "lighting power allowance (LPA)." An exception to this code relates to residential spaces within commercial buildings. For these spaces, commercial lighting requirements are waived if 75% of the lamps installed are "high efficacy" lamps.

2. What is the definition of "high efficacy" lamps?

The energy code defines high efficacy lamps as T8 or smaller diameter fluorescent lamps, or lamps that meet the following efficacy levels:

1. 60 lumens per watt for lamps over 40 watts;
2. 50 lumens per watt for lamps between 15 and 40 watts;
3. 40 lumens per watt for lamps 15 watts or less

In practice, T5, T8, compact fluorescent (CFL), and LED lamps meet these efficacy levels.

3. Why is the term efficacy used? Isn't it the same as "efficiency?"

Efficacy is the efficiency of the lamp in producing light in lumens. Efficiency is not used as the term, as lighting efficiency is typically used to define the ability of the lamp, ballast, and fixture to deliver light to the desired area.

4. How do I calculate the LPD for a given space?

It is an easy calculation involving 3 steps:

1. Determine the rated wattage for each light fixture to be installed in the space.
2. Total the rated wattage.
3. Divide that total by the floor area in square feet to obtain the LPD.

Technical assistance associated with the energy code is available at 855-343-0105. A code advisor can assist you with LPD calculations.

5. Can LPD be calculated using COMcheck?

Yes, you can enter the lamp type and quantity per fixture; the ballast type; rated fixture wattage, # of fixtures, and floor area and COMcheck will complete the calculation.

6. Does COMcheck calculate the rated fixture watts when the lamp and ballast data is entered?

No, you must determine the rated fixture watts and enter it in the tool.

7. How do I determine the rated fixture wattage?

It depends on the lamp type, as follows:

- **Linear Fluorescent and HID** – is the rated wattage for the ballast when powering the specified lamps. This can be found on the ballast specification sheet (cut sheet) or is often listed on the fixture cut sheet for a given lamp/ballast combination. The rated wattage may be higher or lower than the sum of the lamp nominal wattages.
- **Compact fluorescent (CFL)** – For one piece CFLs using a bayonet (G2) socket, it is the listed wattage. For two-piece CFLs, it is determined the same way as linear fluorescent. A commonly accepted rated wattage for two-piece CFLs is the nominal lamp wattage plus 2 watts for the ballast.
- **Incandescent, screw-in CFLs, and screw-in LEDs** – The rated wattage is the maximum rated wattage of the socket.
- **Hardwired LEDs** – It is the LED plus the driver wattage. This is typically available on the specification sheet.

Technical assistance associated with the energy code is available at 855-343-0105. A code advisor can assist you with LPD calculations.

8. Are there any alternative ways to determine the rated wattage?

Yes; National Grid maintains a list of rated wattages which can be used for fluorescent, HID, and other hardwired fixture types. For screw-in lamps you must use the socket maximum wattage. The list is available at the following website:

www.nationalgridus.com/non_html/2010_Retrofit_Lighting_Device_Codes_MA_02-26-2010.pdf

9. Using COMcheck, I entered 40W incandescent lamps and the tool determined that code was met. Does that prove compliance? It did not prompt me to enter the maximum socket wattage?

COMcheck **does not prove compliance**; it is simply a calculation tool. However, this is indeed a mistake in COMcheck that should be corrected. In order to demonstrate compliance you should enter the maximum socket wattage for any screw-in lamp.

10. How do I choose whether to use the "space-by-space" or "building area" lighting power method for a project?

In most cases it is simpler to use the building area method as it allows similar contiguous areas to be calculated as one area. And it allows many of the areas specified in the space-by-space method to be included in larger general areas. For example, hallways, closets, mechanical rooms, etc. can all be included with general areas, such as "office" in the building area method. In addition, if choosing "reduced lighting power" as the section C406 "Additional Efficiency Package" option, the building area method must be used.

11. We have chosen "reduced lighting power" as the section C406 "Additional Efficiency Package" option for a project. The code book refers to table C406.3.1 but we cannot find the table?

The table was mistakenly not included in the current code book. The reduction is approximately 10% lower than the LPAs listed in the standard building area table, C405.5.2 (1). The option can be selected in COMcheck.

12. Will the spaces in the building be "under-illuminated" if the LPDs are not as high as code required LPAs?

The LPAs specified in the code are the maximum allowable figures. By selecting efficient lighting technologies and fixtures, LPDs well below code maximums can provide required lighting levels. Lighting levels are best determined on average lighting levels, typically measured in foot-candles. The Illuminating Engineering Society of North America (IESNA) www.iesna.org provides guidance for lighting levels and participates in establishing code LPAs.

Technical assistance associated with the energy code is available at 855-343-0105. A code advisor can assist you with LPD calculations associated with lighting levels.

13. Do the lighting power requirements in the code take into account reduced light over time due to lamp degradation, dust, and other factors?

Yes the requirements for lighting power are designed to provide more than adequate light throughout the expected life of the installed lamps.

14. Our firm does mostly renovation work. Do renovations need to comply with the lighting power requirements?

Yes, section C101.4 outlines the applicability of the lighting provisions for renovations as follows:

- When 50% or more of the light fixtures in a space are replaced.
- When a change in occupancy or usage would result in a lower LPA requirement. For example, converting an office space to a storage area.
- When lighting alterations create an increase in LPD for a space. For example, if converting a storage area to office space requires adding lighting, the code lighting provisions must be met.

15. It appears that the standard automatic on/off occupancy sensors no longer meet the code for private offices, conference rooms, classrooms and other enclosed spaces. Is that correct?

They can still be used to meet the requirements for these space types, but only if they automatically turn on 50% or less of the lighting-up occupancy. The remaining lighting could be turned on manually, but all lighting would need to be turned off automatically. Manual on/auto-off occupancy sensors, often termed vacancy sensors, are one method of meeting this requirement. They are available for controlling single and dual circuits. A 2-circuit vacancy sensor facilitates compliance with both the occupancy and 50% light reduction requirements.

Technical assistance associated with the energy code is available at 855-343-0105. A code advisor can assist you in determining the appropriate lighting controls for your application.

16. For what types of spaces should manual-on occupancy sensors (vacancy sensors) be installed, and where should standard automatic on/off occupancy sensors be installed?

Manual-on vacancy sensors should be installed in enclosed spaces where there is sufficient ambient light (daylight, or light from other spaces) to allow the lighting to remain off during some occupied periods. Typically private offices, conference rooms, and classrooms are good candidates for vacancy sensors, especially if there are windows or skylights in the space. Automatic on/off occupancy sensors work best in larger open spaces such as open office areas, lobbies, etc.

17. What are practical ways of meeting the 50% light reduction requirements for enclosed spaces?

There are many ways to meet this requirement, including:

- Wiring light fixtures to allow at least 50% of the lamps to be turned off, while others remain illuminated.
- Utilizing bi-level ballasts that "step-dim" the lamps to 50% power.
- Individually switching every other fixture, or every other row.
- Installing continuous dimming ballasts controlled manually.
- If the space is day lit, installing step or continuous dimming ballasts with automatic daylight controls.

18. With the new code, does all interior lighting now need to be controlled by a timer?

What has changed with the new code is that previous codes required spaces 5,000 ft^2 and larger to be controlled by a timer. The new code extends this provision to all space sizes. However, the exceptions remain in place, and include emergency egress lighting, and any lighting controlled by occupancy or vacancy sensors.

19. Where do I need to install daylighting controls?

The code requires that areas under skylights and areas adjacent to vertical fenestrations that receive daylight be identified as "daylight zones." The definitions (Chapter 2) published in the code book include details for identifying such zones. Daylight zones must be controlled separately from the general lighting. This provision can be met with manual controls that allow occupants to turn off the lighting when daylight is available, or automatic controls that dim the lighting in response to daylight. Options for automatic daylight harvesting control include continuous dimming with a 100% to <35% light output range or multilevel (stepped) controls offering 100%, a step between 50% and 70%, and another step between OFF and 35%.

Technical assistance associated with the energy code is available at 855-343-0105. A code advisor can assist you with meeting the daylight requirements.

20. Is the procedure for meeting the outdoor lighting power provisions the same as for interior lighting power?

Similar to interior lighting, the lighting power allowance (LPA) is based on the rated watts per area in ft^2. Section C405.6.2 of the code provides guidelines for establishing "exterior lighting zones." The maximum LPA for each zone type is listed in table C405.6.2 (2).

Reference SBC-8 C405.6.2 (2)

21. Do the exterior lighting power provisions of the code mean that lighting must be provided in the listed zones?

No, the provisions simply restrict outdoor lighting to a maximum installed power (watts/ ft^2.) Decisions regarding whether or not to install exterior lighting, and to what level (up to the code maximum) are outside the scope of the energy code.

22. Are there any financial incentives available for installing efficient lighting?

Yes. National Grid offers a variety of energy efficiency incentives for commercial buildings. Information is available at www1.nationalgridus.com/EnergyEfficiencyPrograms, or by calling 1-800-322-3223.

HVAC SYSTEMS

1. Can any "rules of thumb" be used in load calculation and/or with sizing a mechanical system?

"Rules of thumb" **cannot** be used as the basis for system sizing. In addition, safety factor upsizing, or putting some extra capacity into a heating or cooling system, is **not** acceptable. Heating and cooling loads should be determined according to C403.2.1, while using an acceptable method such as ANSI/ASHRAE/ACCA Standard 183. The equipment must be selected to match the load or consistent with the next commercially available size option. Proper load calculation and sizing will reduce energy consumption and maximize operating system efficiency.

Reference SBC-8 C403.2.1

2. There are a several equipment efficiency ratings that can be found for different types of HVAC systems. Which should be utilized in the design process?

Different types of heating and cooling equipment are commonly characterized by a single type of efficiency rating. For example, rooftop cooling systems are characterized by EER. Efficiencies for any planned piece of equipment must meet the minimum efficiencies shown in Tables C403.2.3 (1) through C403.2.3 (8). If values are not supplied for a piece of equipment, or if it is comprised of several components (small air handler and field-attached heating coil), the designer must be able to provide calculations to demonstrate that the overall system meets the required rating. Further, when using the equipment manufacture's rating, it is important to use ratings that encompass an entire system, (for example; to capture the overall efficiency of a DX split-system.) Additionally, for chillers that have variable speed drives for optimized part-load condition operation, proper calculated efficiencies must be considered.

Reference SBC-8 Tables C403.2.3 (1) through C403.2.3 (8)

3. I want to use a combination boiler that provides both domestic hot water and space heat for the air handling system within an apartment complex. How does the efficiency rating system account for this?

A boiler system providing both domestic hot water and reheat hot water to the air handler needs to meet the efficiency requirement of each separate system.

4. If a facility runs 24 hours per day for a 5 day week, is a temperature setback control required?

Yes. The code mandates that the installed temperature control be capable of automatically scheduling space temperatures for each day of the week independently. This will enable temperature adjustment for occupied and unoccupied periods of the week. The exception would be if the building (or particular areas) consumed less than 2kW at full load, and had an accessible manual OFF switch.

Reference SBC-8 C403.2.4.3

5. Can a single thermostat be used for contiguous spaces, such as a full floor of office cubicles?

There must be at least one thermostatic control for **each zone** in the building, where the zone characterizes a space with unique heating and cooling requirements. Therefore, if the entire floor in this example represents a single zone, only one thermostat is required. However, if there are different heating and cooling requirements (representing multiple zones), then multiple thermostats are required. In such a case, use of a single control point would be inefficient.

6. If I am not using a direct digital control (DDC) system, do I need to worry about a deadband between heating and cooling?

Yes, C403.2.4.2 requires a 5°F separation of heating functions to prevent short cycling between heating and cooling. Most programmable automatic changeover thermostats have this function.

Reference SBC-8 C403.2.4.2

7. What defines a "simple" versus a "complex" mechanical system?

A simple mechanical system is one that typically uses a single piece of cooling or heating equipment for serving a single zone, such as a basic rooftop unit, a split system, or a through-the-wall heat pump. Several pieces of the same type of equipment may serve multiple single zones throughout a building. A complex mechanical system is one that is assembled of many components such as those with a central plant, consisting of chillers, boilers, pumps, air handlers, and complex distribution networks. Simple systems are described in section C403.3. Complex systems are described in section C403.4.

Reference SBC-8 C403.3, C403.4

8. Are automatic control dampers required on all duct connections to the building's exterior?

No. Gravity or back-draft dampers can be used in buildings with less than three (3) stories because the stack effect in shorter buildings is less pronounced. Gravity dampers can also be used in smaller exhaust fans, less than 300cfm.

9. What is demand control ventilation? Is it always required?

Demand control ventilation (DCV) is a specialized ventilation control system that is intended for spaces that experience highly variable occupancy (cafeterias, auditoriums, etc.). The approach with DCV is to modulate (reduce) the amount of outside air and supply air to a space as CO_2 levels fluctuate due to varying occupancy levels, thereby reducing fan and heating and cooling energy. DCV is not required for all spaces. Only spaces which exceed a specified number of occupants per square foot and a certain rate of outside air flow need to have such a system. Spaces with certain specialty applications, i.e. ventilation provided for process loads,are an exception to this requirement.

Reference SBC-8 C403.2.5.1

10. I am designing a laboratory area. Do I need to use an energy recovery unit?

No, not if the fume hoods in the space utilize a variable volume control where the make-up and exhaust volumes can be turned down by 50%, or if direct make-up air is used to supply the fume hood with limited tempering.

Reference SBC-8 403.2.6 (2)

11. Does ductwork in a conditioned space need to be insulated?

Ductwork running in a conditioned space only needs to be insulated if the temperature difference between the air in the duct (any duct) and the space temperature is greater than 15°F.

12. Is ductwork required to be pressure tested?

Ductwork does not need to be pressure tested unless it will run at over 3"w.c., in which case it is considered to be a high pressure duct system and will need to be tested.

13. Is the condensate drain from an air handler required to be insulated?

Although code C403.2.8 states that water which is not heated or cooled by fossil fuels or electricity **does not** require insulation, it may be needed to prevent condensation (more so if it's copper).

Reference SBC-8 C402.2.8

14. Does a small rooftop AC unit require the use of a simple air economizer for the system?

Yes, as long as the system has greater than 54,000 Btu/hr cooling capacity, an economizer is required. The economizer must have limits that lock-out the function when the outside air cannot provide the required cooling.

Reference SBC-8 C403.3.1.1.3

15. When are variable speed drives required on variable air volume (VAV) supply fans?

According to C403.4.2, the Code states that when the supply fan motor is larger than 7.5 hp, there must be some automatic mechanism for varying the supply air volume, either by electrical or mechanical means. This is most commonly done with a variable frequency drive (VFD).

Reference SBC-8 C403.4.2

16. What kinds of controls are required on hot water reheat systems?

Variable flow or supply temperature reset controls are required for systems larger than 300,000 Btu/hr.

17. Do I need to utilize an air temperature reset on my air handler?

Yes. According to C403.4.5.4, an air temperature reset is required unless 75% of the reheating energy comes from solar energy, is site-recovered, or the zones are supplied with peak supply volumes of 300 cfm or less.

Reference SBC-8 C403.4.5.4

18. Do installed mechanical systems need to be commissioned?

Yes. According to C403.2.9, installed mechanical systems shall be commissioned according to C408.2 in order to verify that the systems operate according to their design intent.

Reference SBC-8 C403.2.9

19. Is a snowmelt system possible within the energy code?

Yes. But note that the snowmelt system cannot cause an increase in the purchased energy from the utility, as certified by the designing P.E. The interpretation here is that the snowmelt system can take advantage of waste heat or a reusable source like photovoltaic electricity or solar hot water.

Reference SBC-8 C403.2.4.5

20. Are there any financial incentives available for installing efficient HVAC?

Yes. National Grid offers a variety of energy efficiency incentives for commercial buildings. Information is available at www1.nationalgridus.com/EnergyEfficiencyPrograms, or by calling 1-800-322-3223.