

10 THINGS YOU NEED TO KNOW

COMMERCIAL HVAC REGULATIONS

Emerson Climate Technologies recently conducted a survey among consulting specifying engineers and found that only 11% are aware of upcoming regulations and also understand how those regulations will impact their business. Here are 10 things you need to know about the changes affecting the commercial air conditioning market.

1

HOW BIG IS THIS?

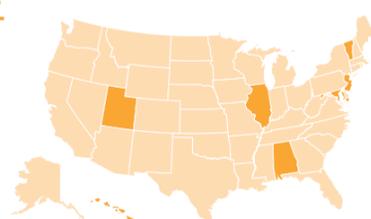
According to the Department of Energy (DOE), over half of the commercial real estate space in the U.S. is cooled by packaged HVAC equipment.



2

TODAY'S EFFICIENCY LANDSCAPE

Today, new energy code adoption is done state-by-state. The latest revision for commercial HVAC is **ASHRAE 90.1-2013**, which has already been adopted by **7 states** to date. The balance of states have adopted revisions that are older or they have no standard code.



3

NEW NATIONWIDE DOE MINIMUMS

New commercial rooftop and split system efficiency regulations will go into effect **January 1, 2018, for IEER minimums**. IEER (Integrated Energy Efficiency Ratio) is used as a representation for part-load performance.



4

NEW REGULATIONS WILL BE A TWO PHASE APPROACH

The new minimum standards will occur in two phases. The first phase will begin in **2018** and will require, **on average, a 13% efficiency improvement** in systems. Five years later, an additional **16% increase in efficiency**, on average, is required for new commercial units.



5

ESTIMATED SAVINGS

Over the lifetime of the products, businesses will save **\$167 billion** on their utility bills, and carbon pollution will be reduced by **885 million** metric tons.



6

ADVANCED ROOFTOP UNITS (RTUs)

The **Consortium of Energy Efficiency (CEE)** released final efficiency tiers that went into effect **January 12, 2016**. An advanced RTU is defined as one that meets or exceeds the **CEE Tier 2** unitary air conditioning specification.

CEE commercial specifications for air cooled packaged / split systems (with electric heat)			
	6 to 10T	11 to 20T	21-63T
CEE Tier 1	11.7 EER 12.9 IEER	11.7 EER 12.4 IEER	10.5 EER 11.6 IEER
CEE Tier 2	12.2 EER 14.0 IEER	12.2 EER 13.2 IEER	10.8 EER 12.3 IEER
CEE Advanced Tier	12.6 EER 18.0 IEER	12.2 EER 17.0 IEER	10.8 EER 13.5 IEER

7

REPLACING/RETROFITTING RTUs WITH HIGHER EFFICIENCY UNITS

A building owner can **save on average \$3,700 per RTU** by replacing aging equipment with high-efficiency units or retrofitting with advanced controls. Now consider a typical big box retailer may have more than **20 units**.



8

REGULATIONS ARE DRIVING SYSTEM REDESIGN

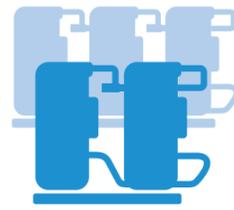
System manufacturers are redesigning air conditioning equipment now to meet **2018 minimums**, as well as product portfolios to include new mid- and premium tiers above the minimum levels.



9

MEETING REGULATIONS WITH MODULATION SOLUTIONS

A cost effective way to meet efficiency standards is by installing tandems. In fact, **45% of contractors** expect an increase in sales of tandems and trios as a result of new efficiency standards.



IMPACT OF NEW REGULATIONS

With higher part-load efficiency (IEER) systems, building owners may experience potentially higher initial costs, but lower operating costs. In addition, the industry will likely see several system design updates including:

- Possible larger system sizes due to heat exchanger surface area
- An increased use of modulated scroll compressors, such as two-step capacity scrolls and multiples, as well as variable speed scroll compressors
- Staged fan speeds with variable frequency drives on blower motors



10

SOURCES
 Department of Energy
<https://www.energycodes.gov/status-state-energy-code-adoption>
<http://www.achrnews.com/articles/132707-efficiency-standards-prompt-rooftop-innovations>
<http://www.achrnews.com/articles/132407-doe-recognizes-organizations-for-leadership-in-hvac-rooftop-unit-efficiency>
 Emerson 2015 Survey