Countdown to Compliance

The Department of Energy's (DOE) energy efficiency regulations on commercial refrigeration equipment are on the horizon and will have an impact on the industry

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2019
2020
EPA

For the last several years, the refrigeration industry has been forced to come to terms with a dynamic and often uncertain regulatory environment. On the one hand, the DOE is mandating significant new energy efficiency improvements. On the other hand, the Environmental Protection Agency (EPA) is phasing out the use of widely used high global warming potential (GWP) refrigerants while sanctioning a growing list of acceptable substitutes via its Significant New Alternatives Policy (SNAP) program. The convergence of these two regulatory fronts has created the perfect storm — a once-in-a-generation occurrence that promises to permanently reshape the commercial refrigeration landscape.

This tectonic shift in our industry is creating unprecedented challenges for every segment of the commercial refrigeration supply chain, from OEMs, wholesalers and contractors to design consultants and end users.

Foodservice equipment manufacturers find themselves at the leading edge of this transition. March 27, 2017, is the DOE's energy reductions compliance date for stand-alone commercial refrigeration equipment — an average of 30–50 percent reductions, as measured in kWh per day. Affected equipment architectures include: remote condensing commercial refrigerators and freezers; self-contained commercial refrigerators and freezers with and without doors, as well as open display cases. This means that all new equipment manufactured after this date fall within the purview of this rule. And with the EPA's decision to phase out commonly used refrigerants, like R-404A and HFC-134a in 2019, OEMs must factor this key design consideration into their engineering equation.

What's at stake for OEMs?

The combination of these fast-approaching regulatory deadlines poses significant business risks and challenges to foodservice OEMs. Important considerations include:

One design cycle or two? — When it comes to achieving DOE and EPA regulatory compliance, OEMs face a critical design choice: approach each regulation as a separate engineering effort or combine compliance into a single design cycle.

Compressed design cycle — Regardless of the design cycle decision, OEMs will need to allot sufficient laboratory and testing time to make the necessary design adjustments to achieve DOE compliance and secure requisite UL, ASHRAE and NSF certifications.

Civil penalties — The details around how the DOE will enforce the ruling remain to be seen, but past performance indicates that they will be prepared to issue civil penalties. After March 27, 2017, equipment manufacturers who are still offering reach-in units that don't comply with the DOE rule may be subject to these penalties.

Peer scrutiny — As many OEMs will be making significant investments in design changes to achieve compliance, those who are neglecting or avoiding these efforts will likely be subject to the scrutiny of their industry peers. In other words, the industry will also police itself.

Registration in DOE compliance database — It's important to understand that the DOE maintains a database of commercial equipment for compliance called the Compliance Certification Management System (CCMS). Please see: https://www.regulations.doe.gov/ccms. This database is essentially a record of the baseline energy consumption of equipment prior to making the mandated design changes to achieve new energy efficiency levels. Manufacturers who have not listed their equipment in this database may be subject to civil penalties.

Market pressures — Because design consultants and end users are already seeking refrigeration units that comply with DOE and EPA regulations, OEMs who

Regulatory summary

Here are the key facts about the DOE and EPA final rules with respect to stand-alone, commercial refrigeration equipment.

DOE Energy Conservations Standards for Commercial Refrigeration Equipment

Effective date: May 27, 2014

Summary: The DOE is mandating a 30–50 percent reduction (on average) in energy consumption on new stand-alone commercial refrigeration equipment, as measured in kWh per day. Efficiency is evaluated on the system as a whole, including: doors, lighting, insulation, controls, fans and the condensing unit.

Compliance date: March 27, 2017

EPA Change of Listing Status for Certain Substitutes Under the SNAP Program

Effective date: July 20, 2015

Summary: The EPA, through its SNAP program, has changed the listing status of many common refrigerants to "unacceptable". Among these "delisted" refrigerants include R-404A, R-507A, R-410A, R-407A/C/F and HFC-134a.

Compliance date: Jan. 1, 2019, in medium-temperature (MT), stand-alone equipment less than or equal to 2,200 BTU/hr. and not containing a flooded evaporator. The same ruling states a compliance date of Jan. 1, 2020, for MT stand-alone equipment above 2,200 BTU/hr. with or without a flooded evaporator, as well as low-temperature, stand-alone units.

The EPA SNAP initiative continues to propose additional "change of status" notices as addendums to its 2015 ruling. This results in both the introduction of acceptable, new refrigerant substitutes and the delisting or phasing down of other existing substances. New, low-GWP refrigerant alternatives will play an ever-increasing role in commercial refrigeration.

See the chart below for an illustration of how the timing of DOE and EPA rulings interact.

Emerson Perspective: EPA'S FINAL RULE AND DOE ENERGY REGULATION TIMING

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Phase-out Refrigerant	Super-market *New*	Super-market *Retrofit*	Remote CDU *New*	Remote CDU *Retrofit*	Stand-alone			
					MT <2,200 BTU/hr. and not contain flooded evap. *New*	MT ≥2,200 BTU/hr. with or without flooded evap. *New*	LT *New*	LT and MT *Retrofit*
R-404A/507A	**Jan. 1, 2017**	**July 20, 2016**	**Jan. 1, 2018**	**July 20, 2016**	**Jan. 1, 2019**	**Jan. 1, 2020**	**Jan. 1, 2020**	**July 20, 2016**
R-410A	OK	–	OK	–	**Jan. 1, 2019**	**Jan. 1, 2020**	**Jan. 1, 2020**	–
R-407A/C/F	OK	OK	OK	OK	**Jan. 1, 2019**	**Jan. 1, 2020**	**Jan. 1, 2020**	OK
HFC-134a	OK	OK	OK	OK	**Jan. 1, 2019**	**Jan. 1, 2020**	OK	OK
DOE Energy Reduction Compliance			**Jan. 1, 2020 (Walk-in)**		**March 27, 2017**	**March 27, 2017**	**March 27, 2017**	

Both DOE and EPA rulings take effect in the 2017–2020 time frame. But, the effective dates of respective rulings don't necessarily correspond. To avoid a duplication of efforts, OEMs should attempt to satisfy both requirements in one product development cycle.

fail to bring viable products to market may face significant business risks.

Broad impacts felt throughout the supply chain

The impacts of this perfect regulatory storm will be felt throughout the commercial refrigeration supply chain. Whether you are a wholesaler, contractor, manufacturing rep, dealer, design consultant or end user, there are many uncertainties and questions, including:

- Which products should I select or recommend for specific applications?
- What servicing considerations should I be aware of?
- Should I select DOE-compliant units now and EPA-compliant units later, or seek products that achieve compliance to both regulations from the outset?
- Which compression and condensing unit manufacturer offers the best efficiency for commercial refrigeration equipment?

Because no two applications, business requirements or scenarios are the same, there is no single correct answer to these questions. As OEMs begin to manufacture refrigeration units that satisfy these more stringent regulatory requirements, the variety of options available in the market will only increase. Selecting the best option for you or your customers' businesses will require a more thorough understanding of the technologies and refrigerants at play.

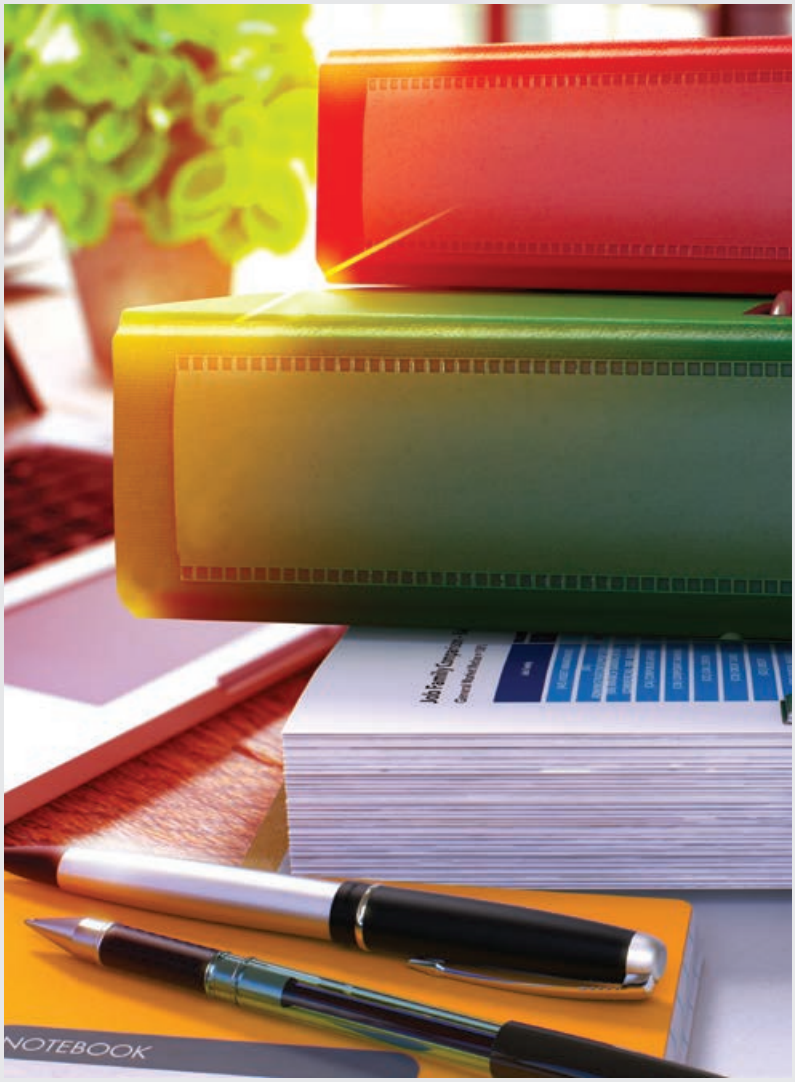
Don't go it alone: consult an expert

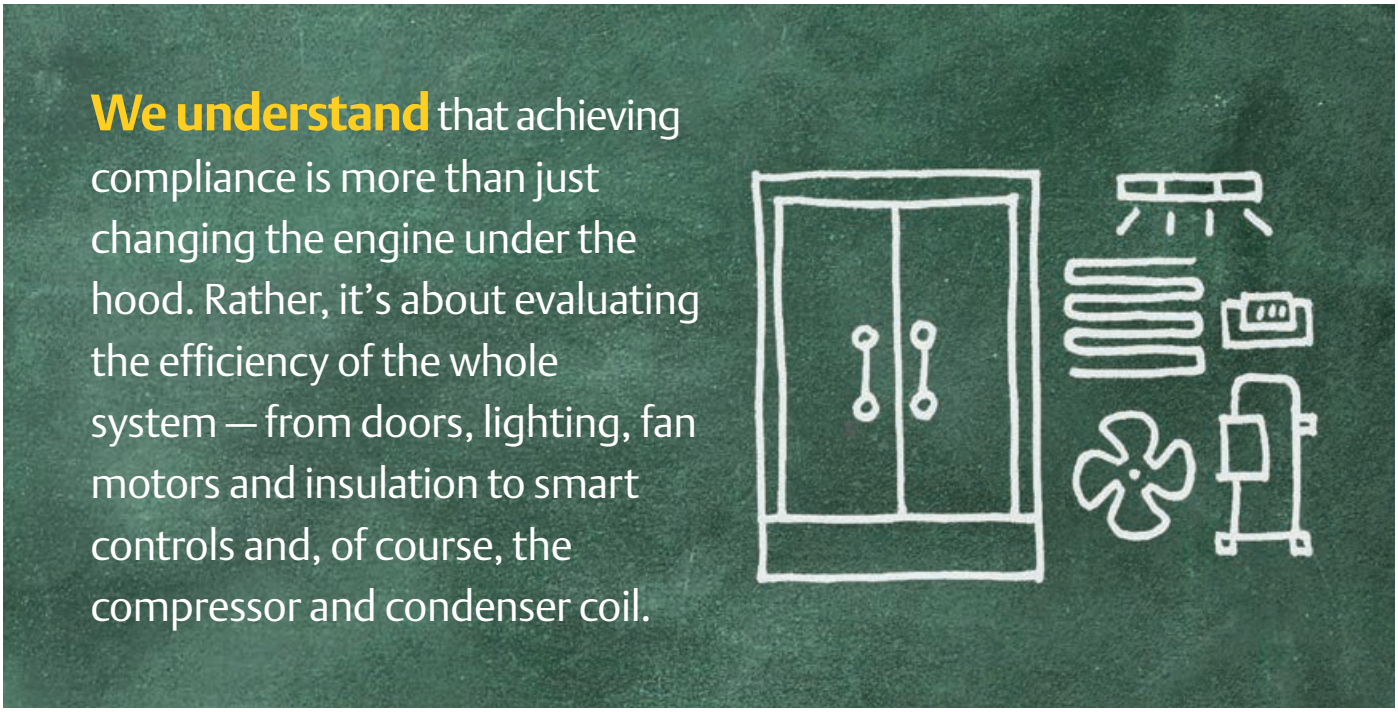
Whether you're a foodservice OEM or another critical link in the commercial refrigeration supply chain, there are difficult decisions to be made, both now and in the

How will this transition impact you?

While foodservice OEMs of commercial refrigeration equipment are the first segment to feel the pressure of DOE regulations, every segment will be impacted by convergence of these regulatory actions. Here's what you can expect:

- **OEMs:** should presently be active in the engineering design cycle to improve their new stand-alone equipment, including testing and certification
- **Wholesalers:** must be prepared for changing inventories based on improved condensing units and compressors installed in new OEM systems
- **Contractors:** need to understand the new technologies, refrigerants and applications from an installation and servicing perspective
- **Design consultants:** must be well-versed in the regulatory impacts to better advise end users in the selection of energy-compliant and alternative refrigerant systems
- **End users:** will need to reconcile these two regulations and their timing to make the best decisions for their future





coming years. Perhaps the most challenging aspect of this transition is gaining the level of understanding necessary to decide what's best for your business or your customers. But this is not something to take on single-handedly. Emerson is uniquely qualified and prepared to answer your questions and help you take the next steps.

If you're an OEM who has hasn't begun to think about DOE compliance, we can help guide you through this rapid transition. No two systems are alike, and we understand that achieving compliance is more than just changing the engine under the hood. Rather, it's about evaluating the efficiency of the whole system — from doors, lighting, fan motors and insulation to smart controls and, of course, the compressor and condenser coil.

Emerson can help you expedite the testing process, limit costly lab time and save your resources by utilizing the third party test lab in our Design Services Network (DSN). DSN offers the certifications and accreditations to ensure your equipment is compliant, including: UL, NSF and ASHRAE. Our DSN is also accredited with ISO 17025 and approved by the California Energy Commission.

Not only do we understand the real challenges before you, we have also developed the strategies, expertise and breadth of products to help you successfully make this transition. For two years, we've been developing a new lineup of compressors and condensing units that address the challenges posed by the DOE and EPA. Our next generation product portfolio will introduce:

- Copeland Scroll™ line expansion to include smaller displacements, horsepower and capacities for both medium- and low-temp applications
- Higher-efficiency fractional horsepower reciprocating hermetic compressors
- Higher-efficiency condensing units designed to deliver double-digit efficiency gains

We're prepared to help you achieve compliance and determine the most viable path forward for your business.

The first steps in a larger journey

While many consider the March 27, 2017, DOE deadline on commercial refrigeration equipment the first significant regulatory milestone, it's important to remember that it's one of the first steps the industry must take on this journey for compliance. Among the challenges that still lie on the path ahead include:

- Jan. 1, 2018: DOE new efficiency targets on automatic commercial ice makers
- Jan. 1, 2018: EPA delisting R-404A for remote condensing unit architectures
- Jan. 1. 2019: EPA begins phasing out R-404A, R-507A, R-410A, R-407A/C/F and HFC-134a in stand-alone units
- Jan. 1. 2020: DOE new efficiency targets for walk-in coolers and freezers

There are many miles ahead of us in this journey, and for many in the industry this is uncharted territory. Emerson is committed to effectively navigating this shifting regulatory landscape and helping guide the industry toward the next generation of refrigeration technologies and equipment architectures. Through continued collaboration and innovation, we'll work with you to create systems that are both economically and environmentally viable.