



Update on Codes and Guidelines 2017

Affecting U.S. District Energy Systems



So...You have a district energy system.

...Do you know what you need to know
about Codes and Standards?

- **STANDARD:**

- “An established norm or requirement about technical systems.”

– *Wikipedia*

- “A standard can be defined as a set of technical definitions and guidelines, “how to” instructions for designers, manufacturers, and users.” – *ASME*

- **CODE**

- “A code is a type of legislation that purports to exhaustively cover a complete system of laws or a particular area of law as it existed at the time the code was enacted, by a process of codification.”– *Wikipedia*

- “Codify” example:

- Articles, Titles, Sections, Subsections, Paragraphs, Subparagraphs, etc

Codes & Standards (C&S)

Ignorantia juris non excusat

“Ignorantia juris non excusat or ignorantia legis neminem excusat is a legal principle holding that a person who is unaware of a law may not escape liability for violating that law merely because he or she was unaware of its content.”

It is **YOUR** responsibility to know and follow the law.

Laws & Regulations

“THE LAW”

- **LAW**

- “Law is a system of rules that are enforced through social institutions to govern behavior.”
- Typically the product of a primary legislative body.
- Usually elected officials/representatives.

- **REGULATION**

- “A regulation specifically means a piece of the delegated legislation drafted by subject matter experts to enforce a statutory instrument (primary legislation).”
- Typically the product of a secondary legislative body / institution.
- Usually appointed officials/representatives.

Laws & Regulations

FEDERAL:

- **Code of Federal Regulations (CFR)**
 - **Occupational Safety and Health Administration (OSHA)**
 - **Environmental Protection Agency (EPA)**

STATE:

- **Statutes**
- **Regulations typically adopt International Codes:**
 - **International Mechanical Code**
 - **International Electric Code**
 - **International Plumbing Code**

LOCAL:

- **Jurisdictional (city, county, township, etc.)**

Laws & Regulations

Maryland



Maryland General Assembly

REGULATIONS CODIFICATION SYSTEM

Under the COMAR codification system, every regulation is assigned a unique four-part codification number by which it may be identified. All regulations found in COMAR are arranged by title. Each title is divided into numbered subtitles, each subtitle is divided into numbered chapters, and each chapter into numbered regulations.

09.12.01.02D(2)(c)(iii)

1	1	1	1	1
Title	Chapter	Section	Paragraph	
	Subtitle	Regulation	Subsection	Subparagraph

A regulation may be divided into lettered sections, a section divided into numbered subsections, a subsection divided into lettered paragraphs, and a paragraph divided into numbered subparagraphs.

Code of Maryland Regulations (COMAR)

- Title 09, Subtitle 12, Chapter 1
- Board of Boiler Rules' Regulations

Laws & Regulations

Viewing your local state boiler laws and related boiler links

search

GO!

Did you know? This custom search box only queries official state boiler division web sites! Try it out!

Maryland MD Boiler Laws and Codes



The Safety Inspection Boiler and Pressure Vessel unit is responsible for the inspection of boilers and pressure vessels used in commercial establishments, places of public gathering, and apartment buildings with six or more units. This responsibility involves ensuring the safe operation of those boilers and pressure vessels by performing periodic inspections and by close monitoring of all repair work. *(excerpt from the State of Maryland's boiler section official web site)*

[Maryland MD Boiler Inspection Division official web site](#)

Sponsored advertisements:

ASME Pressure Tanks

ASME Tanks & Pressure Vessels Manufacturer of ASME Pressure Tanks [Go to ipstanks.com](#)



FRP Design and Inspection

FRP Process Piping and Vessels Visit our site for more information [Go to consultco.ca](#)



Boilers Steam Generators

General Boiler.com Steam & Hot Water Boilers Pirobloc [Go to generalboiler.com](#)



Background Check Yourself

Enter a Name & Search for Free! View Background Check Instantly. [Go to checkpeople.com/background](#)



State of Maryland boiler links:

Need to Know (Forms, Fees, FAQs, etc)

- [\[+\] Maryland MD Boiler Contact List](#)
- [\[+\] Maryland MD Boiler Installation Application \(xls\)](#)
- [\[+\] Maryland MD Boiler Inspection Fees](#)

Nice to Know (Regs, Statutes, Requirements)

- [\[+\] Maryland MD Boiler Rules, Regulations, and Laws](#)
- [\[+\] Maryland MD Boiler Article "Do's and Don't's of High Pressure Boiler Operations"](#)

Laws & Regulations

- **INDUSTRY STANDARDS:**

- American Society of Mechanical Engineers (ASME)
- National Board of Boiler and Pressure Vessel Inspectors (NBBI)
- American Society for Testing and Materials (ASTM)
- American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
- National Fire Protection Agency (NFPA)
- National Electrical Manufacturers Association (NEMA)
- Institute of Electrical and Electronics Engineers (IEEE)
- Heat Exchanger Institute (HEI)
- Cooling Technology Institute (CTI)
- Manufacturer's Standardization Society (MSS)
- American Welding Society (AWS)
- Underwriters Laboratories (UL)
- Etc., etc., etc., ...

District Energy C&S

- **FEDERAL:**

- **Department of Energy (DOE):**

- Docket Number: **EERE-2013-BT-STD-0030**
- Energy Conservation Standards for Commercial Packaged Boilers
- Final Rule: December 20, 2016

- **INDUSTRY:**

- **American Society of Mechanical Engineers (ASME)**

- BPVC Sec I, V, VII, VIII Div 1, IX

- **National Board of Boiler and Pressure Vessel Inspectors (NBBI)**

- NB-263 RC-1 2017

District Energy C&S

Status: Prepublication Issuance

Energy Conservation Standards for Commercial Packaged Boilers

Docket Folder Summary [View all documents and comments in this Docket](#)

Docket ID: EERE-2013-BT-STD-0030 Agency: Energy Efficiency and Renewable Energy Office (EERE) Parent Agency: Department of Energy (DOE)

Summary:

EPCA, as amended by AEMTCA, requires the Secretary to determine whether updating the statutory energy conservation standards for commercial packaged boilers is technically feasible and economically justified and would save a significant amount of energy. If justified, the Secretary will issue amended energy conservation standards for such equipment.

RIN: 1904-AD01 Impacts and Effects: None CFR Citation: 10 CFR 431.87(B) Priority: Economically Significant

[+ View More UA and Regulatory Plan Information and Docket Details](#)

Next Steps:

Publication Date

Published in the Federal Register (TBD)

Effective Date

Becomes Effective 60 days after publication

Compliance Date

Required compliance 3 years after publication

Primary Documents		View All (6)
	2016-05-04 Energy Conservation Program: Energy Conservation Standards for Commercial Packaged... Proposed Rule Posted: 05/04/2016 ID: EERE-2013-BT-STD-0000056	Comment Period Closed Jun 22, 2016 11:59 PM ET
	2016-03-24 Energy Conservation Program: Energy Conservation Standards for Commercial Packaged... Proposed Rule Posted: 03/24/2016 ID: EERE-2013-BT-STD-0030-0043	Comment Period Closed Jun 22, 2016 11:59 PM ET
	2014-11-20 Energy Conservation Standards for Commercial Packaged Boilers: Public Meeting and... Proposed Rule Posted: 11/20/2014 ID: EERE-2013-BT-STD-0030-0026	Comment Period Closed Jan 20, 2015 11:59 PM ET
	2013-09-03 Energy Efficiency Program: Commercial and Industrial Equipment Energy Conservation... Proposed Rule Posted: 09/03/2013 ID: EERE-2013-BT-STD-0030-0004	Comment Period Closed Oct 18, 2013 11:59 PM ET
	2013-08-13 Energy Conservation Program for Certain Commercial and Industrial Equipment: Proposed...	Comment Period Closed

EERE-2013-BT-STD-0030

Energy Conservation Standards for Commercial Packaged Boilers

- **12 Commercial Packaged Boiler (CPB) classes**
 - Discontinue use of draft-type as criterion for classes
 - Separate class for “Very Large” CPBs (>10MMBtu) which is unaffected by this regulation.
- **Updated (increased) required combustion or thermal efficiency.**

EERE-2013-BT-STD-0030

Energy Conservation Standards for Commercial Packaged Boilers

Table I.1 Energy Conservation Standards for Commercial Packaged Boilers

Equipment	Size Category (input)	Energy Conservation Standard*	Compliance Date†
Small Gas-Fired Hot Water Commercial Packaged Boilers	>300,000 Btu/h and ≤2,500,000 Btu/h	84.0% E _T	[INSERT DATE]
Large Gas-Fired Hot Water	>2,500,000 Btu/h and	85.0% E _T	[INSERT DATE]

Table I.2 Impacts of Adopted Energy Conservation Standards on Consumers of Commercial Packaged Boilers

Equipment Class	Average LCC Savings <u>2015\$</u>	Simple Payback Period <u>years</u>
Small Gas-Fired Hot Water	\$212	10.1
Large Gas-Fired Hot Water	\$2,037	7.0
Small Oil-Fired Hot Water	\$14,421	4.1
Large Oil-Fired Hot Water	\$31,379	4.8
Small Gas-Fired Steam	\$1,002	10.1
Large Gas-fired Steam	\$11,188	4.2
Small Oil-fired Steam	\$5,839	4.0
Large Oil-Fired Steam	\$36,832	2.7

Very Large Oil-Fired Steam Commercial Packaged Boilers	>10,000,000 Btu/h	81.0% E _T	March 2, 2012
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* E_T means "thermal efficiency." E_C means "combustion efficiency."

EERE-2013-BT-STD-0030

Energy Conservation Standards for Commercial Packaged Boilers



Connect With Us:

Topics

Events

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Food Waste for Solar Storage

Researchers at the Eindhoven University of Technology have shown how sugar alcohols, which are abundantly found in food waste, can effectively lock up the sun's heat for the long term.

- **Boilers**
- **Pressure vessels**
- **Pressure piping**

[Read the article](#)

Creates the standards governing Design, fabrication, operation, testing, accreditation



THE AMERICAN SOCIETY OF

ASME – American Society of Mechanical Engineers

- **Boiler & Pressure Vessel Code**

- **Section I: Power Boilers** (A, S, H, M, E, V, PP, PRT)
- *Section II: Materials*
- Section III: Nuclear Facility Components
- *Section IV: Heating Boilers*
- **Section V: Nondestructive Examination**
- *Section VI: Care and Operation of Heating Boilers*
- **Section VII: Care and Operation of Power Boilers**
- **Section VIII: Pressure Vessels**
- **Section IX: Welding and Brazing**
- Section X: Inservice Inspection of Nuclear Components
- Section XII: Transport Tanks

ASME – American Society of Mechanical Engineers

- **B31 Pressure Piping**
 - **B31.1 Power Piping**
 - **B31.3 Process Piping**
 - B31.4 Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids
 - *B31.5 Refrigeration Piping and Heat Transfer Components*
 - *B31.8 Gas Transportation and Distribution Piping Systems*
 - **B31.9 Building Services Piping**
 - B31.11 Slurry Transportation Piping Systems
 - B31.12 Hydrogen Piping and Pipelines

ASME – American Society of Mechanical Engineers

ASME PTCs on Power Production

PTC 6, Steam Turbines

- **ASME PTCs on Combustion and Heat Transfer**

PTC 4, Fired Steam Generators

ASME PTCs on Fluid Handling

ASME General Documents on Measurement of Process Parameters and Associated

ASME General Documents on Guiding Information

PTC 1, General Instructions

PTC 2, Definitions and Values

PTC 19.3 TW, Thermowells

PTC 19.6, Electrical Power Measurement (under development)

PTC 19.7, Measurement of Shaft Power

PTC 19.22, Data Acquisition Systems

PTC 36, Measurement of Industrial Sound

B133.6, Gas Turbine Installation Sound Emissions

PTC 39, Steam Traps

POM 101, Performance Related Outage Inspections

POM 102, Operating Walkdowns of Power Plants (under development)

PTC PM, Performance Monitoring Guidelines for Power Plants

ASME – American Society of Mechanical Engineers

Typically Most Popular

PTC 1, General Instructions

PTC 2, Definitions and Values

PTC 4, Fired Steam Generators

PTC 4.4, Gas Turbine Heat Recovery Steam Generators

PTC 8.2, Centrifugal Pumps

PTC 11, Fans

PTC 12.3, Deaerators

PTC 17, Reciprocating Internal Combustion Engines

PTC 22, Gas Turbines

PTC 19.1, Test Uncertainty

PTC 19.2, Pressure Measurement

PTC 19.3, Temperature Measurement

PTC 19.3 TW, Thermowells

PTC 19.5, Flow Measurement

PTC 19.10, Flue and Exhaust Gas Analysis

PTC 19.11, Steam and Water Sampling, Conditioning, and Analysis in the Power Cycle

PTC 19.22, Data Acquisition Systems

PTC 31, High Purity Water Treatment Systems

PTC 39, Steam Traps

PTC 46, Overall Plant Performance

ASME – American Society of Mechanical Engineers

Addenda

Starting with the 2013 edition of the Code, ASME shifted from a three-year cycle to a two-year cycle and **eliminated annual addenda.**

Publishing Date: July 1st

Compliance Date: January 1st

ASME – American Society of Mechanical Engineers

Errata & Special Notices

- “**Errata** to the BPV Code may be posted on the ASME website to **provide corrections to incorrectly published items**, or to correct typographical or grammatical errors in BPV Codes. Such errata shall be used on the date posted.”
- “A **Special Notice** may be posted on the ASME website in advance of the next edition of the Boiler and Pressure Vessel Code for the purpose of **providing approved revisions** to Code requirements. Such revisions may be used on the date posted and will become mandatory six months after the date of issuance in the next edition. A Special Notice may also include a revision to a Code Case. The superseded version of the Code Case shall not be used. “

ASME – American Society of Mechanical Engineers

Interpretations

- **“ASME issues written replies to inquiries concerning interpretation of technical aspects of the Code. The interpretations for each individual Section will be published separately and will be included as part of the update service to that Section.”**
- **“Following the 2015 Edition, interpretations will not be included in editions; they will be issued in real time in ASME's Interpretations Database at <http://go.asme.org/Interpretations>.”**

ASME – American Society of Mechanical Engineers

Code Cases

“In the event there is an urgent need for alternative rules concerning materials, construction, or in-service inspection activities not covered by existing Boiler and Pressure Vessel Code rules, or for early implementation of an approved Code revision, ASME may issue a Code Case. **Code Cases are effective immediately upon ASME approval and do not expire.**”

ASME – American Society of Mechanical Engineers

BPVC Section I

Rules of Construction of Power Boilers

- **ASME CA-1 – Conformity Assessment Requirements**
 - Requirement for ASME Shop Certification
- **“PRT” designator for ASME stamp**
 - PG-106.8 – Stamping and Marking of Parts

ASME – American Society of Mechanical Engineers

BPVC Section V

Nondestructive Examination

- **Article 1, Mandatory Appendix II:** training, experience, and examination requirements are to be included in the employer's written practice for the following:
 - computed radiography (CR), digital radiography (DR), phased-array ultrasonic technology (PAUT), ultrasonic time-of-flight diffraction (TOFD)
- **Personnel Qualifications NDE Certification**
 - Experience & Training
- **Maximum pixel intensity** variation of 2% for digital radiography to determine “equal to”.

ASME – American Society of Mechanical Engineers

BPVC Section V

Nondestructive Examination

- **Article 6 – Liquid Penetrant Examination**
 - T-762 Penetrant (Dwell) Time
 - Maximum of 2 hours
 - Not allowed to dry
 - T-673.2 Post-Emulsification Penetrants
 - *Hydrophilic Emulsification*
 - T-676.3 Color Contrast Penetrants
 - One-time light intensity verification

ASME – American Society of Mechanical Engineers

BPVC Section VIII

Rules of Construction of Pressure Vessels

- **“USER” designator above “U” stamp**
 - If Manufacturer is also the User.
- **“Maximum Designed Steaming Capacity”**
 - To be identified on the nameplate of an unfired steam boiler (as per U-1(g)(1))

ASME – American Society of Mechanical Engineers

BPVC Section IX

QUALIFICATION STANDARD FOR WELDING, BRAZING, AND FUSING PROCEDURES;...

- **QG-105 Variables**
 - “Performance” vs. “Procedure” essential variables
- **QG 109.2 Definitions**
 - “Butt-Fusion” (BF) for polyethylene pipes
 - “Electrofusion” (EF) for polyethylene pipes
- **QW-124 Special Positions**
 - Other than specified in QW-120 through QW-123
- **Hybrid Welding**
- **Nonmandatory Appendix L**
 - Welders and Welding Operators Qualifying Under ISO 9606-1:2012 and ISO 14732-2013

ASME – American Society of Mechanical Engineers

- **Accreditations**
 - Stamps: S, PP, U, V, etc.
 - Company Search
- **Conferences**
 - Code Week
 - Power
 - Pressure Vessels & Piping
- **Committee Meetings**
 - Technical
 - Standards
- **Training**
 - Webinars
 - Workshops
 - Personnel Certification
- **Reference Materials**
 - Downloadable
 - Books
 - ME Magazine

ASME – American Society of Mechanical Engineers

THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS

- “The National Board of Boiler and Pressure Vessel Inspectors was created in 1919 to promote greater safety to life and property through uniformity in the construction, installation, repair, maintenance, and inspection of pressure equipment.”
- **National Board Members**
 - United States & Canada

NBBI - National Board of Boiler and Pressure Vessel
Inspectors



▶ [PVMA Annual Meeting is March 12-14 in Mesa, AZ. Click for more info.](#) ▶

[▶ Online Ordering](#)[▶ BULLETIN](#)[▶ Technical Articles](#)[▶ Report Forms](#)[▶ Stamps & Marks](#)[▶ Tech Scholarship](#)[▶ Safety Medal](#)[1](#)[2](#)[3](#)

INDUSTRY NEWS ARCHIVES



MEMBER NEWS

New Member Announced

[VIEW ARTICLE ▶](#)

NOW HIRING

**Deputy Boiler Inspector
State of Florida**

[View Info >>](#)

FEATURED TRAINING COURSES

[MORE ▶](#)

- ▶ Boiler and Pressure Vessel Repair Seminar (RO) *March 21, 2017 - March 23, 2017*
- ▶ Authorized Inspector Commission Course (AI) *May 1, 2017 - May 12, 2017*
- ▶ Inspector Supervisor Course (B)(O) *May 15, 2017 - May 19, 2017*

RESOURCES

[MORE ▶](#)

- ▶ Incident Report
- ▶ Manufacturer & Repair Directory
- ▶ NB-136, Replacement of Stamped Data Form
- ▶ NB-18, Pressure Relief Device Certification
- ▶ NB-27, A Guide for Blowoff Vessels
- ▶ NB-370, National Board Synopsis
- ▶ NB-57, Guide for ASME Joint Review

MEMBER'S CORNER

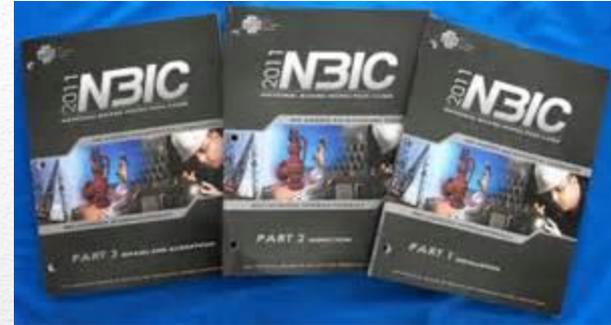


Contact Information

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State of South Dakota
Chief Boiler Inspector
24463 Oak Meadows Ct.

- **National Board Inspector's Code (NBIC)**

- 2-year cycle
- NBIC (NB-23)
 - Part 1 – Installation
 - Part 2 – Inspection
 - Part 3 – Repair/Alterations
- Interpretations



- **Accreditations**

- “R” Stamp – Repairs/Alterations
- “V” Stamp – Power Boiler Valve
- “VR” Stamp – Power Boiler Safety Valve Repairs
- “UV” Stamp – Pressure Vessel Safety Valve Repairs

- **Repository of Manufacturer's Data Reports**

NBBI - National Board of Boiler and Pressure Vessel Inspectors

- **Commissions**
 - NB-263 RCI-1
 - 2-year cycle
 - Authorized Inspector (AI)
 - Inservice Inspector (IS)
- **Endorsements**
 - Repair Inspector (R)
 - AI Supervisor (B)
 - Owner-User Inspector Supervisor (O)



NBBI - National Board of Boiler and Pressure Vessel Inspectors

- **Commissioned Inspectors**

- “R” Endorsement
- Continued education requirement (yearly)

- **NBIC**

- Part 1, 2.5.3/3.5.3.1 – Added requirements for electrical potential disconnect for power/heating boilers
- Part 1, S3.4 – Revised requirements for CO₂ gas detection system alarm threshold levels
- Part 1, Supplement 4 – Added new supplement on installation of biomass fired boilers
- Part 2, 4.4.8.7 – Added requirements for leaving widely scattered corrosion pits in a pressure retaining item
- Part 3, 3.3.4.9 – Added requirements for tube plugging in a firetube boiler

NBBI - National Board of Boiler and Pressure Vessel Inspectors

- **Training**
 - Seminars
 - Courses
 - Classroom & On-Line
 - Safety Videos
- **Certifications**
 - Pressure Equipment Inspector (PEI)
- **Commissions**
 - In-Service Inspectors
 - Nuclear Inspectors
- **Look-Ups**
 - Authorized Inspection Agencies (AIA)
 - Manufacturer & Repair Companies
- **Statistical Data**
 - Violation Reports
 - Synopsis of Jurisdictional B&PV Laws (NB-370)
- **Publications**
 - BULLETIN
- **Annual General Meeting**

NBBI - National Board of Boiler and Pressure Vessel Inspectors

What's next?...

- **Energy Conservation Standards for Commercial Packaged Boilers**
 - Waiting for publication in the Federal Register
- **ASME BPVC & NBBI NBIC**
 - July 1, 2017 – New editions issued
 - January 1, 2018 – New editions enforced

Codes & Standards (C&S)

AHRI

ABMA

AGA

API

ASNT

ASHRAE

AWS

ASME

ASTM

CTI

EJMA

HEI

IEEE

NETA

ISA

MSS

NBBI

NEMA

NFPA

NIOSH

OSHA

SAE

US DOE

US EPA

Codes & Standards (C&S)

- en.wikipedia.org/wiki/Ignorantia_juris_non_excusat
- [en.wikipedia.org/wiki/Code_\(law\)](https://en.wikipedia.org/wiki/Code_(law))
- en.wikipedia.org/wiki/Standard
- en.wikipedia.org/wiki/Law
- en.wikipedia.org/wiki/Regulation
- www.Maryland.gov
- www.StateBoilerLaws.com
- www.ASME.org
- www.NationalBoard.org

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Cited References/Disclaimer

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- Maryland Board of Boiler Rules Member
- Maryland Board of Stationary Engineers Member
- ASME Power Conference Executive Committee Member
- ASME RAP Committee Vice Chair
- ASME RAM Technical Committee Chair
- ASME RAM Standards Committee Chair
- NBBI Commissioned Boiler Inspector

Questions?

More Information?
