

Summary of Requirements Related to Boiler Work Practice Standards

- A. Key Dates and Reconsideration Process**
- B. Applicability**
- C. Tune-up Work Practice Standards**
- D. Energy Assessment Requirements**
- E. Energy Credits for Major Sources**
- F. Recordkeeping and Reporting**



Waste Rule Link

- ⊗ Concurrent rulemaking for Non-Hazardous Secondary Materials from the Office of Solid Waste referenced by the Boiler and CISWI rules
- ⊗ Any solid waste that is combusted must be covered under CAA Section 129 for Waste Incineration – (CISWI for Commercial & Industrial sources), rather than CAA section 112 boiler rules
- ⊗ If “Waste” materials are transferred from off site and combusted they require a non-waste determination by Region, to remain regulated as a boiler rather than an Incinerator
 - ⊗ Examples: C&D Waste / Urban Wood, Old Corrugated Cardboard OCC Rejects, Resonated Wood
- ⊗ Materials that are waste and unable to meet legitimacy criteria
 - ⊗ Off-spec. used oil, Creosote treated wood

Important Dates on the Horizon

- ☼ **Effective Date May 20, 2011**

- ☼ **Initial Notifications Due:**
 - ☼ **September 17, 2011, if Startup before May 20, 2011**
 - ☼ **15 days after startup, if Startup After May 20, 2011**

- ☼ **Compliance Dates**
 - ☼ **New Sources**
 - ☼ **Constructed or reconstructed after June 4, 2010**
 - ☼ **Must be in compliance by May 20, 2011 or upon startup**

 - ☼ **Existing Area Source tune-ups – 1 year, Due March 21, 2012**

 - ☼ **Existing MACT tune-ups – 3 years, Due March 21, 2014**
 - ☼ **Existing MACT and Area Source compliance with limits and energy assessment – 3 years, due March 21, 2014**

 - ☼ **Existing CISWI Compliance with limits – 5 years, Due 21, 2016**

Reconsideration

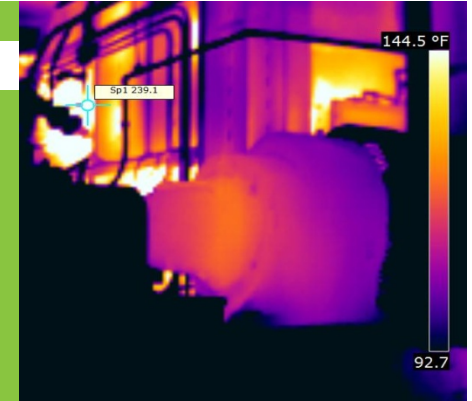
- ☼ **Notice of Intent to Reconsider – released with package on March 21, 2011**
- ☼ **Currently developing a Proposed Reconsideration Notice identifying elements:**
 - ☼ **Issues raised in petitions submitted by stakeholders. EPA requests petitions be submitted ASAP. (Must be within 60 days of publish)**
 - ☼ <http://edocket.access.gpo.gov/2011/pdf/2011-4490.pdf>
- ☼ **Once released – public comment period.**
- ☼ **Amendments will follow once comments are analyzed.**
- ☼ **The rule remains on the books for implementation**

Boiler **MACT** Applicability

- ☀ **New and Existing, Boilers and process heaters at major sources**
 - ☀ All sizes, all fuels
- ☀ **A major (MACT) source is:**
 - ☀ Any source located at a facility that emits, or has PTE, more than 10 tpy any one Hazardous Air Pollutant (HAP) or 25 tpy of all HAPs combined
- ☀ **Expected to apply to about 13,800 boilers located at 1,600 facilities, nationally**
 - ☀ Primarily larger industrial sources such as refineries, chemical and manufacturing plants, pulp and paper mills
 - ☀ Also includes boilers at some larger commercial and institutional facilities, such as shopping malls and universities
 - ☀ Maps of major source boilers:
<http://www.epa.gov/airquality/combustion/boilermap.htm>
- ☀ **Natural gas boilers and process heaters are subject, but to work practices only**

MACT Process Heaters

Definition



- ☼ An enclosed device using controlled flame,
- ☼ The unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material for use in a process unit, instead of generating steam.
- ☼ Process heaters are devices in which the combustion gases do not come into direct contact with process materials.
- ☼ Process heaters do not include
 - ☼ units used for comfort heat or space heat,
 - ☼ food preparation for on-site consumption,
 - ☼ or autoclaves.
- ☼ Examples: Heater in a petroleum process, Reactor vessels, thermal oil heaters

MACT Additional Categories Not Subject

- ☼ **Categories exempt from Area Source Rule (except for Gas Fired) are also exempt from MACT**
- ☼ *Autoclaves or process heaters that are used to provide comfort heat, space heat, or food preparation for on-site consumption.*
- ☼ *Electric utility steam generating unit means a fossil fuel-fired combustion unit of more than 25 megawatts that serves a generator that produces electricity for sale.*
- ☼ *Temporary portable boilers.*
- ☼ *Blast furnace stoves and Blast furnace gas fuel-fired boilers and process heaters*



MACT

Work and Management Practices

MACT Applicability for Tune-up Requirements

Tune-ups

⊗ Greater than 10 MMBtu/hr heat input – Boilers and Process Heaters in Gas 1 subcategory, and Metal Process Furnace subcategory



New: Due May 20, 2011 or Start-up

Existing: Due in 3 years, March 21, 2014

ANNUALLY after that

⊗ Below 10MMBtu/hr heat input – Boilers and Process Heaters
⊗ Limited-use Boilers and Process Heaters



New: Due May 20, 2011 or Start-up

Existing: Due in 3 years, March 21, 2014

BIENNIALLY after that

MACT Applicability for Energy Assessment Requirements

- ☼ **Energy Assessments – One time requirement**
 - ☼ All **Existing** Boilers and Process Heaters, any fuel, any size
 - ☼ Limited-use units must be included, only if the source has other existing boilers that are not limited-use boilers.
 - ☼ **Due March 21, 2014**

MACT Tune-ups

- ☼ **MACT tune-ups**

Requirements § 63.7540(a)(10) – (12)

Recordkeeping § 63.7550

- ☼ **Each Annual tune-up must be conducted no more than 13 months after the previous tune-up**
- ☼ **Each Biennial tune-up must be conducted no more than 25 months after the previous tune-up**
- ☼ **If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within one week of startup.**

MACT Inspection Requirements for Tune-ups

- ☀ **Burner inspection - clean or replace any components of the burner as necessary**
 - ☀ **Can be delayed until the next scheduled unit shutdown, but must inspect each burner at least once every 36 months**
- ☀ **Inspect and adjust the flame pattern, as necessary to optimize it. Adjustments should be consistent with the manufacturer's specifications, if those are available.**
- ☀ **Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly.**

MACT Emission Requirements for Tune-ups

- ⊗ **Optimize total emissions of carbon monoxide (CO). This optimization should be consistent with the manufacturer's specifications, if those are available**
- ⊗ **Before and after the adjustments to optimize CO emissions are made**
 - ⊗ **Measure the CO concentrations in the effluent stream**
 - ⊗ **In parts per million by volume**
 - ⊗ **Can be done with handheld or portable analyzers**
 - ⊗ **Measure Oxygen in the effluent stream**
 - ⊗ **In volume percent**
 - ⊗ **Measurements before and after the adjustments may be either on a dry or wet basis, as long as the basis is the same.**

MACT Energy Assessments – Key Guidance

- ☀ **Clarified what needs to be assessed**
- ☀ **Guidance on examination length**
- ☀ **Definition of qualified assessor added**

- ☀ **For MACT Major Sources, Emissions credits can be generated based on energy conservation measures**

- ☀ **Definition for *Energy management practices***

- ☀ **The use of the ENERGY STAR Facility Energy Assessment Matrix is recommended, but it was removed**

MACT Energy Assessments

Scope

- ☼ **Applies only to existing boilers and their energy use systems**
- ☼ **MACT – Any size boiler or process heater**
- ☼ ***Energy use system includes, but not limited to,***
 - ☼ **process heating;**
 - ☼ **compressed air systems;**
 - ☼ **machine drive (motors, pumps, fans);**
 - ☼ **process cooling;**
 - ☼ **facility heating, ventilation, and air conditioning (HVAC) systems;**
 - ☼ **hot heater systems,;**
 - ☼ **building envelop; and**
 - ☼ **lighting.**

MACT Components Evaluated in Energy Assessment for

- ☀ **The boiler and process heater systems and energy use systems that must be evaluated to identify energy savings opportunities**

Facilities with Boiler or Process Heater with facility Annual Heat Input in Trillion Btu/yr (Tbtu/yr)	Systems accounting this percent of the energy output from these units must be evaluated	Within the timeframe to perform
Less than 0.3	At least 50%	1 Day
0.3 to 1	At least 33%	3 Days
Greater than 1.0	At least 20%	No limit

Knowledge Base for Qualified Energy Assessor

- ☀ Capabilities and knowledge includes, but is not limited to:
 1. Background, experience, and recognized abilities to perform the assessment activities, data analysis, and report preparation.
 2. Familiarity with operating and maintenance practices for steam or process heating systems.
 3. Additional potential steam system improvement opportunities including improving steam turbine operations and reducing steam demand.
 4. Additional process heating system opportunities including effective utilization of waste heat and use of proper process heating methods.
 5. Boiler-steam turbine cogeneration systems.
 6. Industry specific steam end-use systems.

Qualified Energy Assessor Has Ability to Evaluate These Opportunities

- ☀ Typical energy savings opportunities, including, but not limited to:
 1. Boiler combustion management.
 2. Boiler thermal energy recovery, including (A) Conventional feed water economizer, (B) Conventional combustion air pre-heater, and (C) Condensing economizer.
 3. Boiler blow down thermal energy recovery.
 4. Primary energy resource selection, including (A) Fuel switching (primary energy source), and (B) Applied steam energy versus direct-fired energy versus electricity.
 5. Insulation issues.
 6. Steam trap and steam leak management.
 7. Condensate recovery.
 8. Steam end-use management.

MACT Energy Assessment Requirements

- 1. A visual inspection of the boiler system,**
- 2. An evaluation of operating characteristics of the facility, specifications of energy using systems, operating and maintenance procedures, and unusual operating constraints,**
- 3. Inventory of major systems consuming energy from affected boiler(s),**
- 4. A review of available architectural and engineering plans, facility operation and maintenance procedures and logs, and fuel usage,**
- 5. A list of major energy conservation measures,**
- 6. A list of the energy savings potential of the energy conservation measures identified,**
- 7. A comprehensive report detailing the ways to improve efficiency, the cost of specific improvements, benefits, and the time frame for recouping those investments.**

MACT Energy Assessment Requirements

- 8. Requirement to review the facility's energy management practices and provide recommendations for improvements consistent with the definition of energy management practices**
- 9. Recommended use of the ENERGY STAR Facility Energy Assessment Matrix, (but not required)**
 - ☼ ENERGY STAR provides a variety of tools and resources that support energy management programs. For more information, visit <http://www.energystar.gov>**

*** Requirements 8 and 9 are for MACT only, not Area Sources**

MACT Energy Assessment Requirements

- ☀ **New Definition for *Energy management practices*: means the set of practices and procedures designed to manage energy use, that are demonstrated by:**
 - ☀ **The facility's energy policies,**
 - ☀ **A facility energy manager and other staffing responsibilities,**
 - ☀ **Energy performance measurement and tracking methods,**
 - ☀ **An energy saving goal,**
 - ☀ **Action plans,**
 - ☀ **Operating procedures,**
 - ☀ **Internal reporting requirements,**
 - ☀ **And periodic review intervals used at the facility.**

MACT Energy Credits

- ☀ **If complying with the alternative output based emission limits, and you want credit for implementing measures identified in an energy assessment,**
 - ☀ **May demonstrate compliance using emission reduction credits according to the procedures in section § 63.7533**
- ☀ **Only for measures implemented after January 14, 2011 and boiler that are shut down can not be used for credits**

MACT Energy Credits - Procedures

- ⊗ **Procedures for demonstrating compliance with the use of credits in section § 63.7533:**
 - ⊗ **Must establish an emissions benchmark,**
 - ⊗ **Determining the actual annual fuel heat input to the affected boiler before initiation of an energy conservation activity**
 - ⊗ **Calculate and document the emission credits,**
 - ⊗ **Develop an Implementation Plan,**
 - ⊗ **Comply with the general reporting requirements, and**
 - ⊗ **Apply the emission credit according to the procedures in paragraphs (b) through (f) of this section**

MACT Energy Credits - Generation of Credits

- ☀ Generated by the difference between
 - ☀ The benchmarks for each boiler, and the actual energy demand reductions

$$Credits = \sum_{i=1}^n EIS_{iactual} \div EI_{baseline} \quad (\text{Eq. 12})$$

Credits = EC = Energy Input Savings for all energy conservation measures implemented for an affected boiler, million Btu per year.

$EIS_{iactual}$ = Energy Input Savings for each energy conservation measure implemented for an affected boiler, million Btu per year.

$EI_{baseline}$ = Energy Input for the affected boiler, million Btu.

n = Number of energy conservation measures included in the emissions credit for the affected boiler.

MACT Energy Credits - Generation of Credits

$$E_{adj} = E_m \times (1 - EC) \quad (\text{Eq. 13})$$

- ⊗ E_{adj} = Emission level adjusted applying the emission credits earned, lb per million Btu steam output for the affected boiler.
- ⊗ E_m = Emissions measured during the performance test, lb per million Btu steam output for the affected boiler.
- ⊗ EC = Emission Credits (Credits from equation 12) for the affected boiler.

MACT Initial Compliance REPORTING

- ☀ **Complete Tune-up by compliance date**
 - ☀ **New – Due May 20, 2011 or Start-up**
 - ☀ **Existing – Due March 21, 2014**
- ☀ **Completed Energy Assessment by compliance date**
 - ☀ **Existing – Due March 21, 2014**
- ☀ **Initial Compliance Report**
 - ☀ **Submit a signed statement in the Initial Notification of Compliance indicating that you conducted a tune-up or energy assessment if subject to those requirements**
- ☀ **Initial Compliance report due 180 days after compliance date**
 - ☀ **New – November 16, 2011 or 180 days after Start-up**
 - ☀ **Existing – September 17, 2014**

MACT Ongoing Compliance

REPORTING Requirements

- ☀ **If subject to emission limits**
 - ☀ **(Greater than 10MMBtu/hr)**
 - ☀ **Must submit Compliance Reports SEMIANNUALLY (every 6 months)**

- ☀ **If subject only to work practices and no limits**
 - ☀ **(Gas 1, Less than 10MMBtu/hr, Limited Use, Metal process furnace greater than 10MMBTu/hr)**
 - ☀ **May submit only an ANNUAL or BIENNIAL Compliance Report, as applicable, instead of a semiannual Compliance Report.**

- ☀ **Upon Request, Sources must also submit**
 - ☀ **The Energy Assessment Report**
 - ☀ **Annual or Biennial Compliance Report (if not required)**
 - ☀ **Biennial Tune-up Report as part of Biennial Compliance Report**

***?MACT Ongoing Compliance REPORTING**

Category	First Ongoing Compliance Report Covers Period	First Ongoing Compliance Report Due
Existing Sources Annual	March 21, 2014 to June 30, 2015?	January 31, 2016
Existing Sources Biennial	March 21, 2014 to June 30, 2016?	January 31, 2017
New Sources Annual	From the compliance date of May 20, 2011 or Start-up to June 30 or December 31, whichever date is the first date that occurs after at least 1 year	January 31 after at least 1 year
New Sources Biennial	From the compliance date of May 20, 2011 or Start-up to June 30 or December 31, whichever date is the first date that occurs after at least 2 years	January 31 after at least 2 years

MACT Ongoing Compliance

REPORTING

- ☀ **Each subsequent Annual or Biennial compliance report must**
 - ☀ **Cover the applicable one or two year periods from January 1 to December 31, and is**
 - ☀ **Due January 31 of the following year after the annual or biennial period.**

MACT Compliance Report Contenance

☼ Compliance Report must contain:

63.7550(c)

- ☼ Company name, address,
- ☼ Contact info, and signed statement certifying truth,
- ☼ Date of report and beginning and ending dates of the reporting period.
- ☼ The date of the most recent tune-up for each unit.
 - ☼ Include the date of the most recent burner inspection if it was not done annually or biennially and was delayed until the next scheduled unit shutdown
- ☼ Details regarding any deviations

MACT Tune-up REPORTING

Requirements

- ☼ **Annual Tune-up Report as part of Compliance Report if requested**
 - ☼ **Annual Tune-up Report must contain:**
 - ☼ **The concentrations of CO and oxygen in the effluent, measured before and after the tune-up of the boiler.**
 - ☼ **A description of any corrective actions taken as a part of the tune-up of the boiler.**
 - ☼ **The type and amount of fuel used over the 12 months prior to the annual tune-up, or 24 months prior to the biennial tune-up**
 - ☼ **but only if the unit was physically and legally capable of using more than one type of fuel during that period.**
 - ☼ **Units sharing a fuel meter may estimate the fuel use by each unit.**

MACT Energy Assessment

REPORTING Requirements

- ⊗ **An energy assessment completed on or after January 1, 2008, that meets (or is amended to meet) the energy assessment requirements satisfies the requirement**
- ⊗ **Must complete Energy Assessment by March 21, 2014 for existing units**
- ⊗ **Notification of Compliance Status report Due July 19, 2014**
 - ⊗ **Must submit a signed certification that an energy assessment of the boiler and its energy use systems was completed and submit, upon request, the energy assessment report.**
 - ⊗ **The energy assessment report is a comprehensive report detailing**
 - ⊗ **the ways to improve efficiency,**
 - ⊗ **the cost of specific improvements,**
 - ⊗ **benefits, and**
 - ⊗ **the time frame for recouping those investments**

MACT Recordkeeping Requirements for Tune-up and Energy Assessment

☼ **Keep copies of:**

- ☼ **Each notification and report, and all supporting documentation for those, that you submitted to comply with this subpart.**
- ☼ **Records that identify each boiler, the date of tune-up, the procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned.**
- ☼ **Records documenting the fuel type(s) used monthly by each boiler, including, but not limited to,**
 - ☼ **The total fuel usage amount with units of measure**
 - ☼ **A description of the fuel, including whether the fuel has received a non-waste determination by you or EPA and all records that show how the legitimacy criteria are met for such determinations**

EPA , DOE, and USDA are developing guidance

- ⊗ **DOE (Department of Energy) Assistance for sources burning Coal or Oil**
 - ⊗ **Through regional Clean Energy Application Centers**
 - ⊗ **Including :**
 - ⊗ **Site visits and site-specific technical and cost information**
 - ⊗ **Development of Combined Heat and Power along side investments for controls**
 - ⊗ **Info on financial incentives, funding, and financing opportunities.**

- ⊗ **USDA (US Department of Agriculture) Assistance for sources burning Biomass**
 - ⊗ **Including:**
 - ⊗ **Understanding regulation**
 - ⊗ **Understanding benefits that can accrue from measures taken,**
 - ⊗ **Guidance on work practice standards**