

Getting Ready for Mandatory Reporting of GHG Emissions

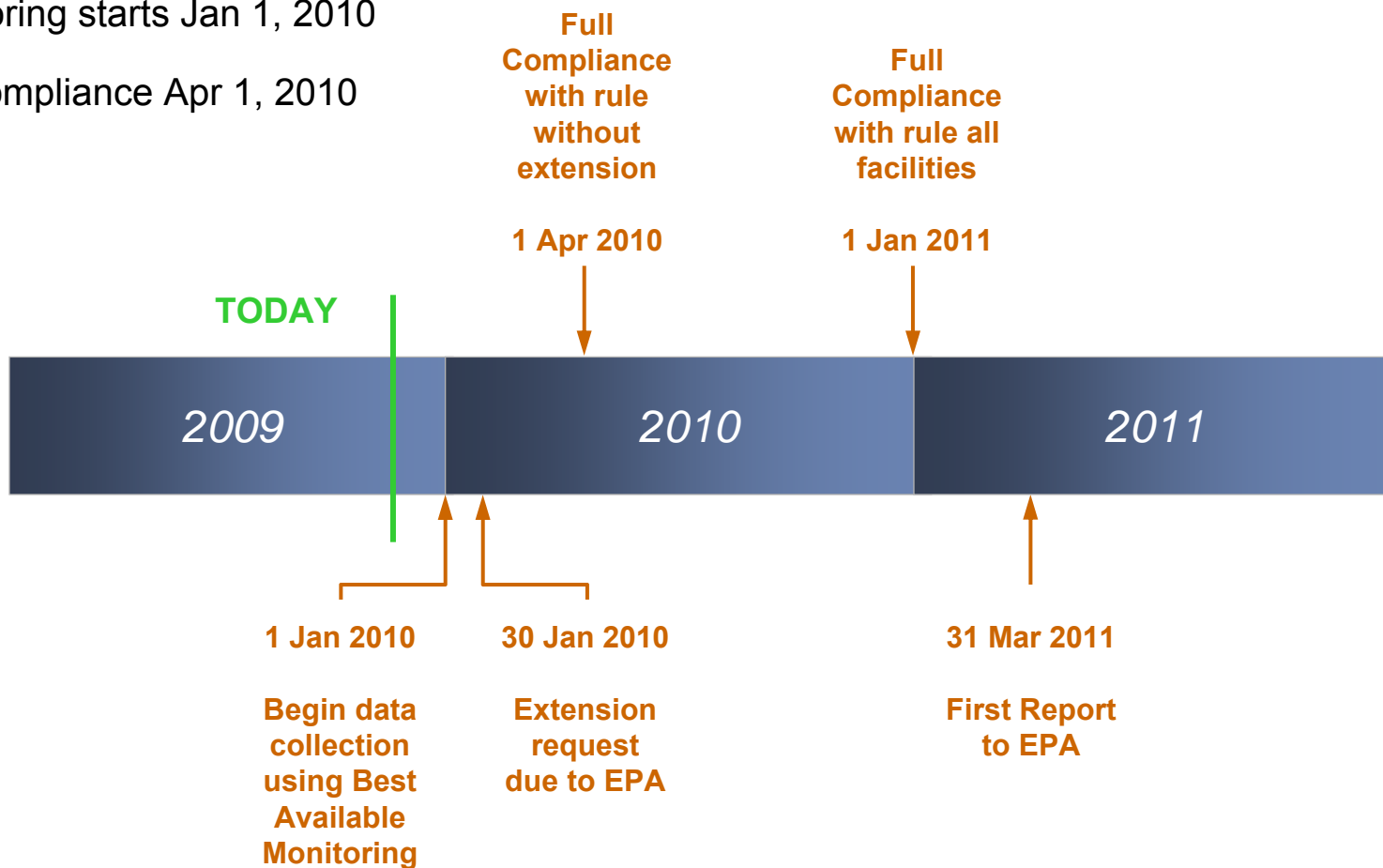
October 2009

USEPA GHG Reporting Final Rule

- Compliance Countdown
- Rule Overview
 - ◆ Applicability
 - ◆ General provisions
 - ◆ Stationary combustion
 - ◆ What has changed?
- Getting Ready
 - ◆ Timeline for compliance
 - ◆ What needs to be done

Compliance countdown

- Monitoring starts Jan 1, 2010
- Full compliance Apr 1, 2010



<http://www.epa.gov/climatechange/emissions/ghgrulemaking.html>

Roll Call of Source Categories...

A – General Provisions

B – Reserved

C – General Stationary Fuel Combustion

D – Electricity Generation

E – Adipic Acid Production

F – Aluminum Production

G – Ammonia Manufacturing

H – Cement Production

I – Reserved

J – Reserved

K – Ferroalloy Production

L – Reserved

M – Reserved

N – Glass Production

P – Hydrogen Production

Q – Iron and Steel Production

R – Lead Production

S – Lime Manufacturing

T – Reserved

U – Miscellaneous Uses of Carbonate

V – Nitric Acid Production

W – Reserved

X – Petrochemical Production

Y – Petrochemical Refineries

Z – Phosphoric Acid Production

AA – Pulp and Paper Manufacturing

BB – Silicone Carbide Production

CC – Soda Ash Manufacturing

DD – Reserved

EE – Titanium Dioxide Production

FF – Reserved

GG – Zinc Production

HH – Municipal Solid Waste Landfills

II – Reserved

JJ – Manure Management

Suppliers of:

KK – Reserved

LL – Coal-based Liquid Fuels

MM – Petroleum Products

NN – Natural Gas and Natural Gas Liquids

OO – Industrial Greenhouse Gases

PP – Carbon Dioxide

Source categories deferred until 2011

- EPA deferred the following source categories for further action *
 - ◆ Specific electronics manufacturing
 - ◆ Ethanol production
 - ◆ Fluorinated GHG production
 - ◆ Food processing
 - ◆ Industrial landfills
 - ◆ Magnesium production
 - ◆ Oil and natural gas systems
 - ◆ SF6 from electrical equipment
 - ◆ Underground coal mines
 - ◆ Wastewater treatment equipment
 - ◆ Suppliers of coal

* *Although not included in the final rule, these source categories apparently will be finalized by EPA in the future, but no earlier than the 2011 reporting year.*

NOTE: The facility may still need to report under the Subpart C stationary combustion source provisions.

Who needs to report?

General Provisions – If Subject based on Table 1 or 2, then report emissions from sources in Subparts C - JJ

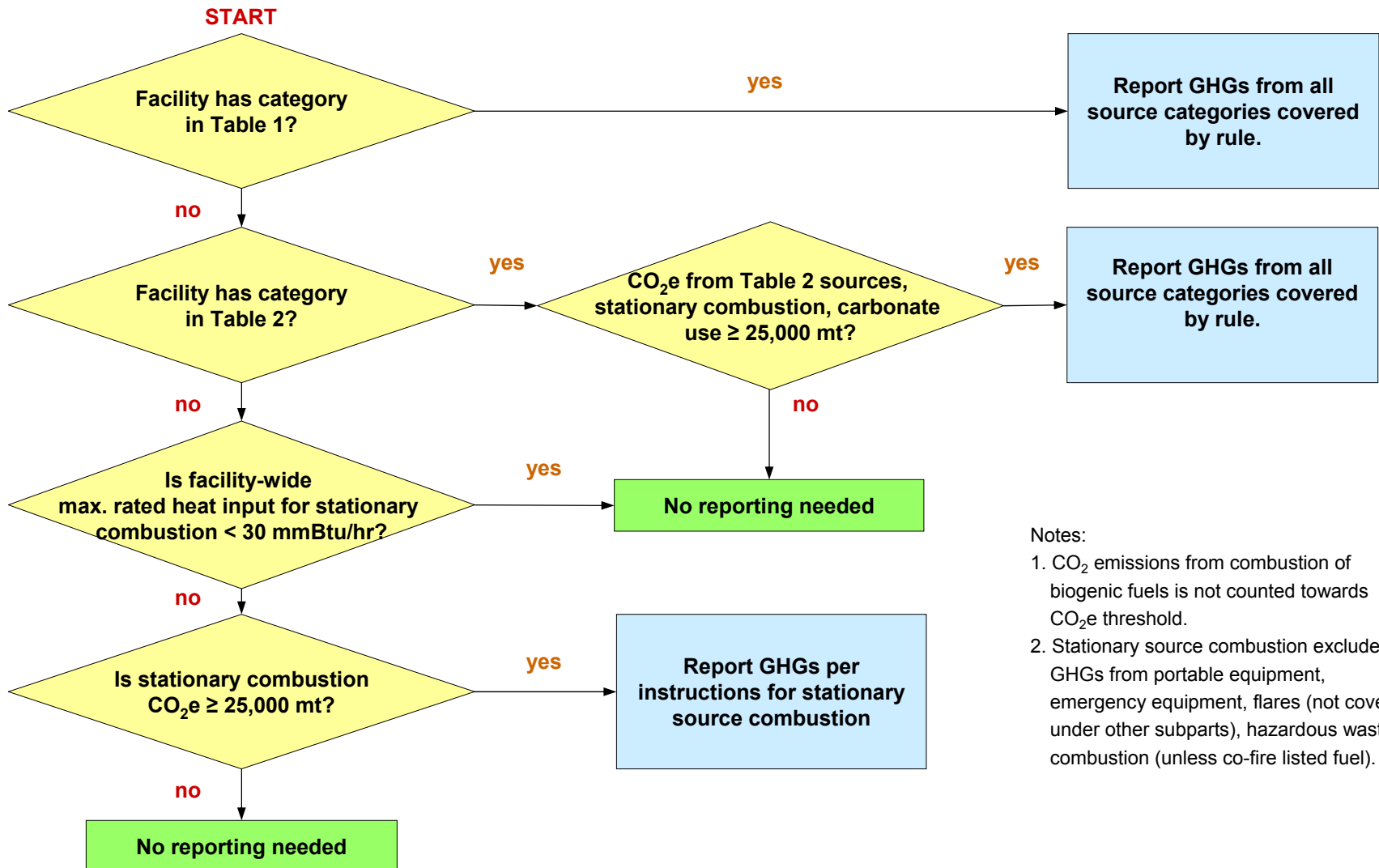
Table 1		Table 2
§ 98.2 (a)(1) Source Categories		§ 98.2 (a)(2) Source Categories
No Threshold	Threshold	25,000 mt Emissions Threshold
Adipic Acid Production Aluminum Production Ammonia Manufacturing Cement Production Electricity-Generating Facilities subject to the Acid Rain Program HCFC-22 Production Lime Manufacturing Nitric Acid Production Petrochemical Production Petroleum Refineries Phosphoric Acid Production Silicon Carbide Production Soda Ash Production Titanium Dioxide Production	HFC-23 Destruction Processes not located at HCFC-22 production facility and that destroy > 2.14 mt of HFC-23. Manure Management Systems that emit, in aggregate, CH ₄ and N ₂ O in amounts ≥ 25,000 mt CO ₂ e per year. Municipal Solid Waste Landfills that generate CH ₄ in amounts ≥ 25,000 mt CO ₂ e per year.	Stationary Fuel Combustion + Miscellaneous Uses of Carbonate + Ferroalloy Production Glass Production Hydrogen Production Iron and Steel Production Lead Production Pulp and Paper Manufacturing Zinc Production <i>Applicability threshold @ 25,000 metric tonnes CO₂ equivalent emissions per year, based on actual emissions.</i>

Who needs to report?

- **§ 98.2 (a)(3) Source Categories Not Otherwise Named**
 - ◆ Not listed in one of the source categories listed above (a)(1) or (2);
 - ◆ Aggregate facility heat input capacity \geq 30 mmBtu/Hr; and
 - ◆ 25,000 metric tons CO₂e from all stationary combustion sources
 - » ***Report stationary fuel combustion emissions only***

- **§ 98.2 (a)(4) Suppliers of the following which meet specified criteria**
 - ◆ Coal-based Liquid Fuels
 - ◆ Petroleum Products
 - ◆ Natural Gas and Natural Gas Liquids
 - ◆ Industrial Greenhouse Gases
 - ◆ Carbon Dioxide
 - » ***Report for all applicable products for which calculation methodologies are provided in Subparts KK - PP***

Applicability for Direct Emitters

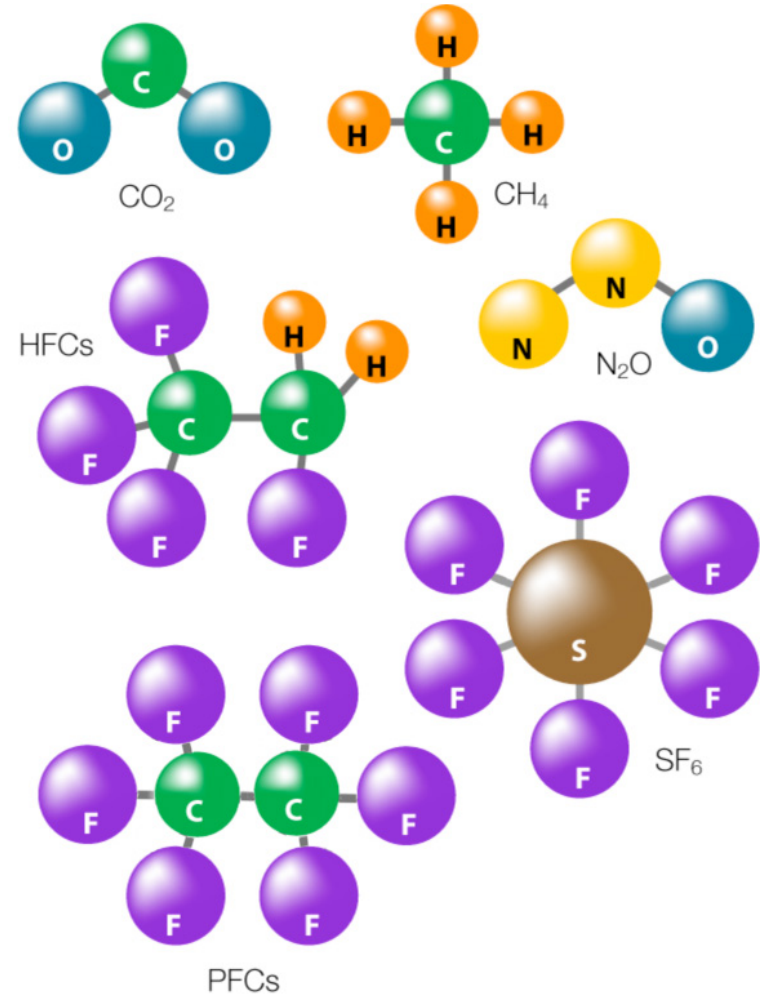


Notes:

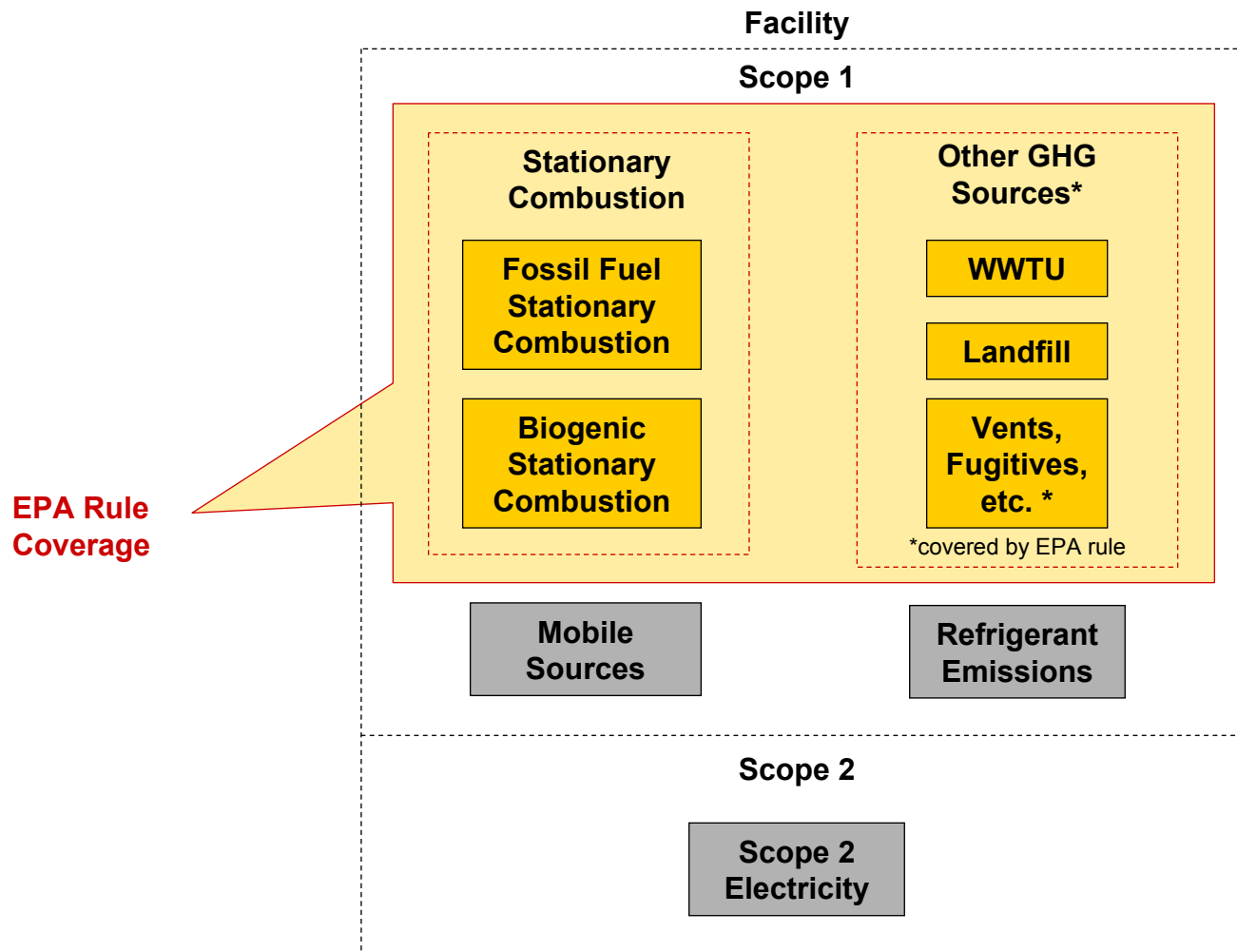
1. CO₂ emissions from combustion of biogenic fuels is not counted towards the CO₂e threshold.
2. Stationary source combustion excludes GHGs from portable equipment, emergency equipment, flares (not covered under other subparts), hazardous waste combustion (unless co-fire listed fuel).

Reporting Emissions

- What to report – mandatory reporting:
 - ◆ Kyoto six: CO_2 , CH_4 , N_2O , SF_6 , Perfluorocarbons (PFCs), Hydrofluorocarbons (HFCs)
 - ◆ Other fluorinated gases: Nitrogen trifluoride (NF_3), Hydrofluorinated ethers (HFEs)
- All converted to CO_2 equivalent emissions using Global Warming Potentials (GWP)
 - ◆ $\text{CO}_2 = 1$
 - ◆ $\text{CH}_4 = 21$
 - ◆ $\text{N}_2\text{O} = 310$



Voluntary reporting vs. EPA rule



General recordkeeping requirements

1. A list of all units and operations for which GHG emissions are calculated
2. Data used to calculate GHG emissions categorized by fuel or material type
 - ◆ Actual GHG emissions calculations and methods
 - ◆ Analytical results for HHV, CC, fuel or feedstock parameters
 - ◆ Facility operating or process data used for GHG calculations
3. Annual GHG report
4. Missing data computations
5. Written GHG Monitoring Plan

Records retained for 3 years

Monitoring Plan requirements

- Positions of responsibility for data collection
- Process used to collect GHG data
- Procedures for quality assurance, maintenance, and repair of meters and instrumentation
 - ◆ Can refer to other documents
- Changes in production, monitoring, QA, maintenance
- Maintenance records for all instrumentation and flow meters
- Certification and QA tests for CEMS, meters, instrumentation



Best Available Monitoring allowed for Q1 2010

- **Best Available Monitoring** is allowed for the first quarter of 2010 (through March 31, 2010) in lieu of following monitoring and QA/QC requirements of applicable subparts
- Best Available Monitoring can be used “for any parameter (e.g., fuel use, carbon content of feedstock by process line) that can not be reasonably measured according to the monitoring and QA/QC requirements of the relevant subpart.”
 - ◆ Facilities may use existing monitoring methods, engineering calculations, supplier data or other company records
 - ◆ Facilities must use the calculation equations that are specified in the rule starting Jan 1, 2010
 - ◆ Facilities must include all covered sources starting Jan 1, 2010











What if April 1, 2010 deadline can't be met?

- Facility can request an extension from EPA to use Best Available Monitoring beyond March 31, 2010 (no later than December 31, 2010)
 - ◆ Timeline – Within 30 days of rule effective date
 - ◆ In ERM's experience upgrades need substantial lead time
- EPA anticipates granting very few extensions, but will consider:
 - ◆ continuous monitoring devices not available within the required timeframe or
 - ◆ circumstances that would require an unscheduled shutdown prior to April 1, 2010
- What if EPA disapproves an extension request?
 - ◆ Facility must meet all monitoring requirements by April 1, 2010

Stationary fuel combustion category (Subpart C)

- Broad definition of Source Category: devices that combust solid, liquid, or gaseous fuel to either:
 - ◆ Produce electricity, steam, heat, or other useful energy; or
 - ◆ Reduce the volume of waste by removing combustible matter
 - ◆ *Note: does not include portable equipment, emergency equipment, flares (unless covered in other subparts), and hazardous waste combustion (unless co-fire listed fuel)*
- What GHGs are covered:
 - ◆ CO₂, CH₄, N₂O from each fuel combustion unit
 - ◆ Report separately for each fuel
 - ◆ Aggregation of combustion sources using common fuel is allowed, but units over 250 MMBtu/hr must be broken out separately

Stationary combustion calculation methods

Device Type	Tier 1 Default EF Default HHV	Tier 2 Default EF Measured HHV	Tier 3 Measured fuel composition Measured MW	Tier 4 CEMS
<ul style="list-style-type: none"> • ≤ 250MMBtu/hr and EF avail. • No fuel analyses performed • Biogenic fuels 				
<ul style="list-style-type: none"> • ≤ 250MMBtu/hr and EF avail. • Any size NG or distillate oil unit • Have site specific HHV data • RFG (still gas) starts here 				
<ul style="list-style-type: none"> • Any fuel, any size unit • ≥ 250MMBtu/hr, any fuel • RFG or process gas 				
<ul style="list-style-type: none"> • Certain solid waste incinerators 				

Stationary combustion measurement requirements

- Fuel flow measurements (Tiers 1, 2, 3)
 - ◆ Fuel flow metered or
 - ◆ Fuel invoices allowed, tank drop measurements allowed
- Fuel sampling for HHV (Tier 2) and HHV / Carbon Content (Tier 3)
 - ◆ Semi-annual sampling for natural gas
 - ◆ One sample per fuel lot for coal and fuel oil
 - ◆ Quarterly sampling for other liquid fuel, gaseous fuels and biogas
 - ◆ Weekly sampling for solid fuels (other than coal and MSW) to form monthly composite for analysis
 - ◆ Weekly for other gaseous fuels, including refinery fuel gas (RFG) and process gas
- CO₂ or GHG direct measurement similar to Part 75 requirements (Tier 4)

Meter and instrument calibrations

- Initial calibration prior to April 1, 2010 (unless shutdown is required or within acceptable frequency since last calibration)
- Subsequent calibrations annually, per manufacturer's recommendation, or per industry standard
- Calibration procedures and frequency:
 - ◆ Manufacturer's recommended procedure
 - ◆ Industry standards
 - ◆ Calibration standard specified in rule
 - ◆ Orifice, nozzle, venturi meters – calibrate transducers initially, primary element inspection every 3 years
- Accuracy within 5%
- Fuel billing meters exempted from QA requirements

Initial calibrations means prior to April 1, 2010 for existing sources

Summary of rule changes from EPA's proposal

- **Best Available Monitoring**
 - ◆ Allowed for Q1 2010 unless
 - ◆ Extension request approved by EPA
- **Title V and State Issues**
 - ◆ Rule not considered an “applicable requirement” under Title V
 - ◆ Rule does not preempt or replace state reporting programs
- **Exemption for R&D facilities**
- **Once in, always in provision changed to allow opting out of reporting if:**
 - ◆ Below 25,000 tpy for 5 years
 - ◆ Below 15,000 tpy for 3 years

Summary of rule changes from EPA's proposal

- **Stationary combustion changes:**

- ◆ Exemptions: portable, emergency equipment, flares, hazardous waste incineration
- ◆ Source aggregation: no limit on total heat input
- ◆ Fuel sampling less frequent than proposed

- **Calibration and Accuracy Requirements**

- ◆ Calibration to within 5% accuracy
- ◆ Initial calibration by April 1, 2010

GHG reporting timeline

Gap Analysis

- What sources are covered?
- Consistency of methods?
- Meters / instruments required?

Adapt Systems

- Adapt data management and reporting systems
- Develop monitoring plan

Begin Monitoring

- Start required data collection
- Begin recordkeeping

Prepare for Full Compliance

- Calibrate meters and instruments
- Install necessary equipment

Ongoing Monitoring

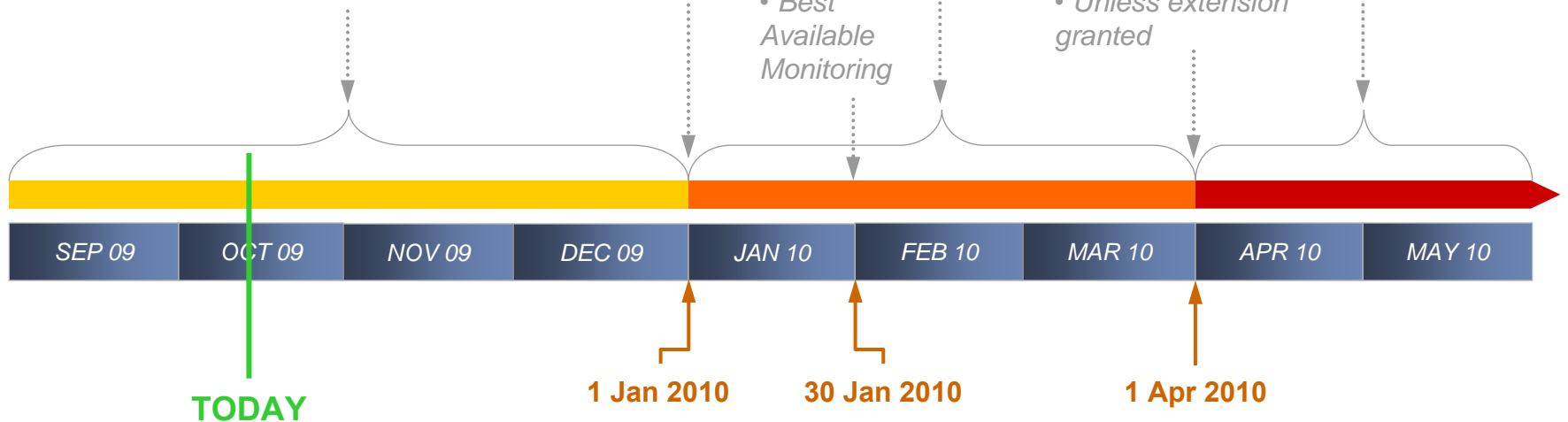
- Upgrade data management systems
- Report submittal
- Improve efficiency of reporting process

Request Extension

- Best Available Monitoring

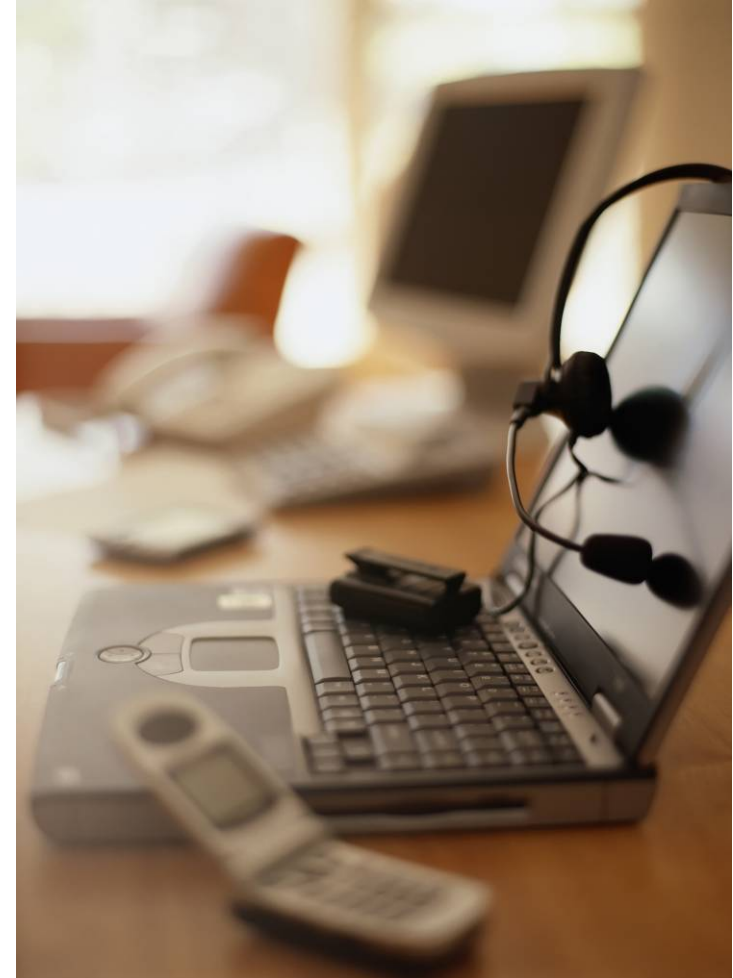
Stop Best Available Monitoring

- Unless extension granted



For additional information

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What needs to be done by when?

- January 1, 2010
 - ◆ Adapt existing reporting system for new requirements or develop new reporting system
 - ◆ Start collecting data **before** Jan. 2010 to ensure adequacy and completeness of data collection
 - ◆ Document data collection process, GHG calculations and methods, log book for change management, missing data calculations, QA monitoring plan, etc.
- January 15-30, 2010
 - ◆ Determine monitoring gaps and request extension (if necessary)
- April 1, 2010
 - ◆ Monitoring equipment procured and installed
 - ◆ Calibrations of all meters and instruments completed

What differs from common practice?

- Instrumentation requirements
- Variable fuel sampling requirements
- Calibrations required by April 1, 2010 to 5% accuracy
- Comprehensive Monitoring Plan
- Missing data procedures
- Maintaining maintenance records for EPA verification
- Management of Change records
- Documentation requirements
- Limited reporting - exclusion of Scope 2 sources, mobile sources, and some smaller sources