

# **Greenhouse Gas Reporting Program**

## **Training for Colleges and Universities**



# Applicability for Direct Emitters is Facility-based



A facility is defined as...

- Physical property, plant, building, structure, source, or stationary equipment;
- on contiguous or adjacent properties;
- in actual physical contact or separated solely by public roadway or other public right of way; and
- under common ownership or common control

Military installations may be classified as more than one facility.

# Facility Issues



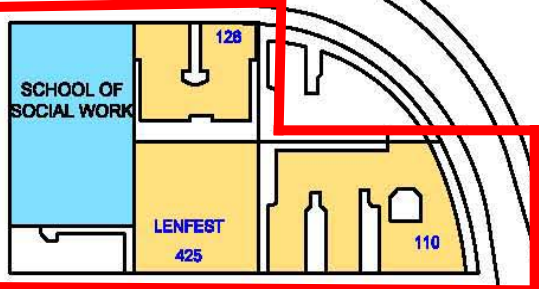
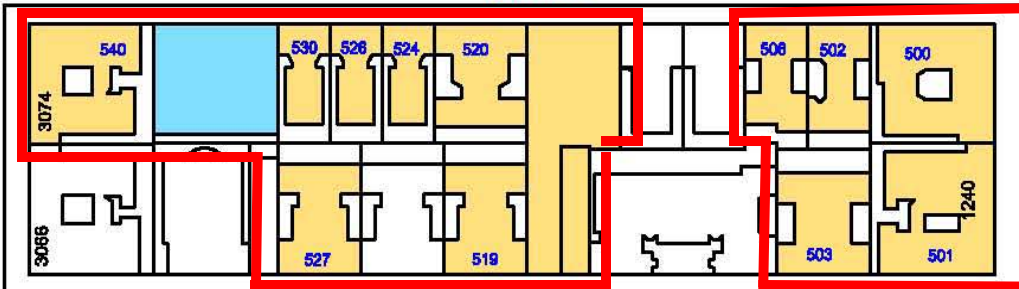
## Question F-1:

*If a campus is divided by several blocks of property not owned by the entity – can that area be defined as a facility by itself?*

## Answer F-1:

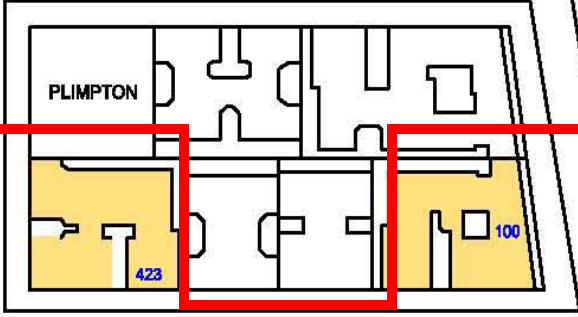
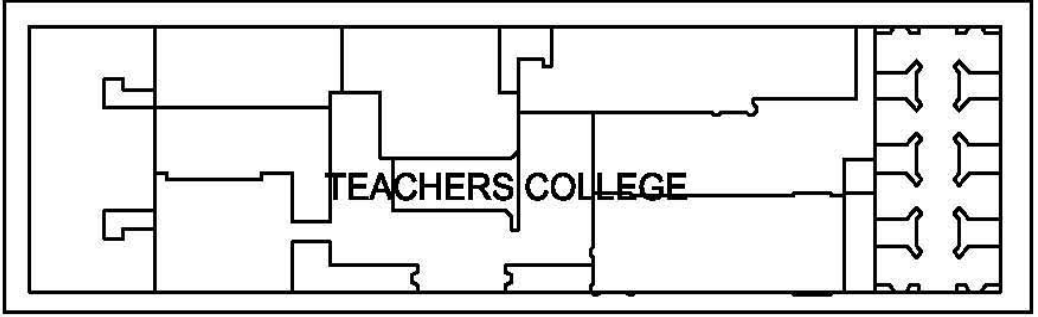
If the campus is separated as described, the campus would be defined as two facilities, because the properties are not contiguous or adjacent (i.e., not in actual physical contact) or separated solely by a roadway or other public right-of-way.

122nd Street



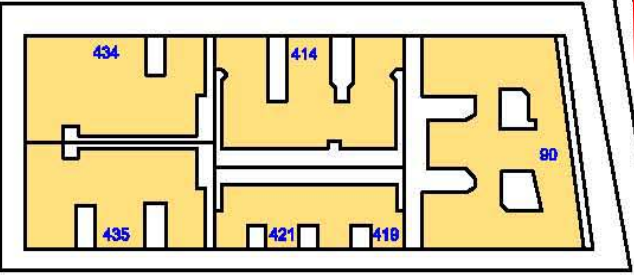
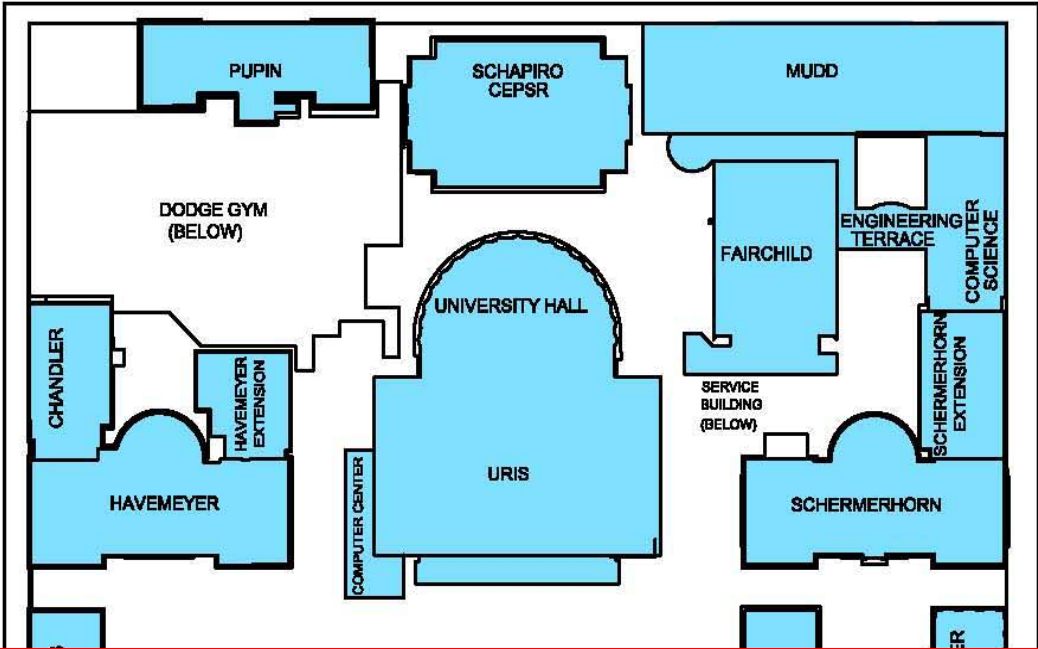
WEST 121st STREET

WEST 121st STREET

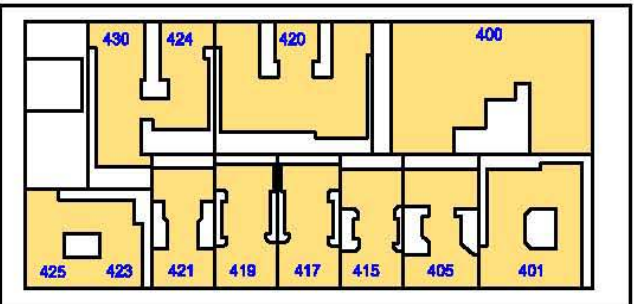


WEST 120th STREET

WEST 120th STREET



WEST 119th STREET



WEST 118th STREET

BROADWAY

AMSTERDAM AVENUE

AMSTERDAM AVENUE

# Facility Issues (cont.)



## Question F-2:

*If a campus is divided by a non-owned body of water (e.g., the Charles River), does that create two distinct facilities?*

## Answer F-2:

No. Separation by a public right-of-way (e.g., a road or river) does not break the continuity of the property that is under common ownership or control.

# Facility Issues (cont.)



## Question F-3:

*I bought/sold a building within a calendar year, how do I account for that?*

## Answer F-3:

- The company that owns or operates the facility at the end of the reporting year will be responsible for reporting, and the annual emissions report must cover emissions for the entire calendar year. In the event a university adds or reduces emissions by way of acquiring or selling property with sources, the net effect should be reflected in the annual emissions report.
- If total emissions are reduced below the 25,000 ton/year threshold by way of selling a property with sources, the university may cease reporting if reported emissions are less than 25,000 tons/year for five consecutive years, less than 15,000 for three consecutive years, or if all GHG-emitting processes cease to operate.
- Regarding the reporting threshold, change of ownership does not affect a facility's status with respect to reporting threshold. Applicability to the 25,000 ton/year threshold is determined based on annual emissions from the “facility” as defined in the rule.

# Facility Issues (cont.)



## Question F-4:

*I leased space within my definition of “facility”, if I do not track fuel use for that space, do I have to include it in my report?*

## Answer F-4:

The answer depends on who owns and operates the emitting equipment. Keep in mind that the “facility” is the emitting equipment not the property. If you own and operate the emitting equipment, then it must be included in the report (e.g., you lease a building and install a combustion unit). If you do not own or operate the equipment (e.g., hot water heaters or furnaces that come with the building) but just pay the fuel bill, then emissions from the equipment are not included.

# Facility Issues (Cont.)



## Question F-5:

*I have space which I own, but lease to a third party within my “facility” and the tenant pays the utilities, do I have to include that building space in my report?*

## Answer F-5:

It depends on who owns and operates the emitting equipment.

–If you own the equipment (e.g., furnaces, hot water heaters, incinerators), then you must include the equipment in your report. Even if the tenant pays the fuel bills, you must report the emissions.

–If the tenant leases space and installs and operates emitting equipment, then the equipment is not part of your facility.



# Applicability Example



Facility Description	Required to Report?	Explanation
A <b>university</b> emits 24,000 metric tons/yr CO <sub>2</sub> e from a cogeneration unit and 2,000 metric tons/yr CO <sub>2</sub> e from coal storage.	No	Because the rule does not prescribe a method for calculating GHG emissions from coal storage, coal storage emissions are not counted in determining applicability.

# Research and Development



- *Research and development* means those activities conducted in process units or at laboratory bench-scale settings whose purpose is to conduct research and development for new processes, technologies, or products and whose purpose is not for the manufacture of products for commercial sale, except in a de minimis manner.

# Applicability Tool



To help determine if facilities must report...

- Check-off list of source categories
- Combustion calculator
- Municipal landfill calculator

<http://www.epa.gov/ghgreporting/help/tool/index.html>

# What Is Not Reported?



- Indirect emissions (e.g., electricity use)
- Mobile source emissions (e.g., fleet emissions, off-road equipment)
- Emission offsets

# Monitoring Plan



- Identifies responsibilities (i.e., job titles) for data collection
- Explains processes and methods used for data collection
- Describes QA/QC procedures for monitors
- May rely on references to existing corporate documents (e.g., existing QA plans, standard operating procedures)

# Monitoring Plan



## Question M-1:

*Provide one or two specific examples of what would be acceptable to EPA under 98.3(g)(5)(i)(B), “Explanation of processes and methods used to collect the necessary data for the GHG calculations.”*

## Answer M-1:

The rule generally provides choices for how to collect or measure the data needed for inputs to the GHG calculation equations. In the monitoring plan, you need to describe the processes and methods you are using to collect the necessary data.

(cont.)

# Monitoring Plan (cont.)



## *Answer M-1: (cont.)*

For example, if you are using Tier 1 to determine CO<sub>2</sub> emissions from a stationary fuel combustion source under subpart C, you need to determine the annual mass or volume of fuel combusted during the reporting year for input to equation C-8. The rule specifies that you can use company records or a fuel flow meter to determine the amount of fuel combusted. Company records is broadly defined in 40 CFR 98.6. If you decide, for example, to use billing records to determine fuel usage from a boiler, then your monitoring plan could specify that you will obtain monthly bills from the natural gas supplier that show the quantity of gas delivered each month. It could describe any calculations you will do to prorate January and/or December bills to adjust for the amount of fuel burned in the calendar year if the billing cycle does not start on the 1st day or each month. And it could specify that you will add the monthly amounts to determine annual natural gas usage during the year, and that a second person will review the calculation for accuracy.

# Electronic Reporting System



- All reporting under the GHG Reporting Program will be electronic.
- EPA's Electronic Greenhouse Gas Reporting Tool (e-GGRT) is under development.
- Web-based system for facility/supplier to EPA reporting
  - Web-forms will guide reporters through data entry and submission.
  - Built-in emissions calculations.
  - Will include a mechanism to submit file directly using Extensible Markup Language (XML) format.
  - Draft XML schema is available on the EPA website.
- For updates on the Data System and to view the draft XML schema:

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# **Subpart C - Stationary Fuel Combustion Sources**

# What Units are Covered?



- Devices that combust solid, liquid, or gaseous fuel for:
  - producing electricity, generating steam, or providing useful heat or energy for industrial, commercial, or institutional use, or
  - reducing the volume of waste by removing combustible matter
- Examples:
  - Boilers
  - Stationary Internal Combustion Engines
  - Process Heaters
  - Combustion Turbines
  - Incinerators
  - Other Stationary Fuel Combustion Equipment (e.g. control devices)
- Covers any fuel combustion device, unless specifically exempted

# Subpart C does not apply to:



- Portable equipment
- Emergency generators and emergency equipment
- Agricultural irrigation devices
- Flares, unless otherwise required by another subpart
- Electricity Generating Units subject to subpart D
- Hazardous waste combustion (co-fired fossil fuels only)
- Pilot lights

# Calculation Methods: Coal, Oil, Gas



Device/ Fuel/ Data	Tier 1 Default EF Default HHV	Tier 2 Default EF Measured HHV	Tier 3 Measured fuel composition Measured MW	Tier 4 CEMS
≤250 MMBtu/hr and no fuel HHV available	✓	✓	✓	✓
≤250 MMBtu/hr HHV available or >250 MMBtu/hr and burn oil or gas		✓	✓	✓
≥250 MMBtu/hr and burn coal			✓	✓
Solid fuel, existing CEMS, and meets certain conditions				✓

# Fuel Combustion



## Question C-1:

*Can I use more than 1 Tier Method for my facility?*

## Answer C-1:

Yes. The tier methodology applies to each unit and to each fuel combusted in a unit. Therefore, you can use different tiers for different units and different tiers for different fuels in a co-fired unit (providing that an allowable tier method is used in each situation). The exception is if you use common pipe provisions for multiple units. In this case, you must use the highest tier method that applies to any unit within the aggregated group for which you use the common pipe provision.

# Fuel Combustion (cont.)



## Question C-2:

*I have a natural gas emergency generator and a boiler in a building within the facility but no means to separate the usage out – how do I account for that, since the e-gen is not included?*

## Answer C-2:

You have two options. (1) You may elect to include the emissions from the emergency generator. (2) If you choose to exclude these emissions, then you may use “company records” to determine the fuel flow to the emergency generator and deduct this volume from the total annual volume of fuel. When using company records, you have flexibility to use any credible method to determine fuel use (e.g., hours of operation and maximum fuel flow rate), but you must document the method in the Monitoring Plan and retain appropriate records to document fuel use in the emergency equipment.

# Fuel Combustion (cont.)



## Question C-3:

*I have natural gas meter records for a building that uses natural gas for heating and cooking – but no separate meters – how do we account for that?*

## Answer C-3:

For units that burn a common fuel and are served by a common pipe, you are not required to meter each unit separately. This provision applies regardless of the size of the units.

# Fuel Combustion (cont.)



## Question C-4:

*I have multiple fuel suppliers providing fuel to my “facility”, do I have to analyze each supplier on the frequency specified in the monitoring requirements?*

## Answer C-4:

Yes. If using Tier 2 or 3, then you must sample the fuel from each supplier, unless fuel from multiple suppliers is mixed in a common pipe. If mixed, then you can sample the mixed fuel.



# Fuel Combustion (cont.)



## Question C-5:

*I do not have a fuel meters at a building on the source, but know how much fuel is delivered. This is not the actual amount used, since my inventory at the beginning of the year may be different than the end – should I use the delivered amount?*

## Answer C-5:

No. If using company records rather than meters, you must accurately determine fuel consumption during the calendar year. In this case, you would adjust deliveries to account for beginning and ending inventories.

# Fuel Combustion (cont.)



## Question C-6:

*Please explain what High Heat Value (HHV) testing is and how a school's EH&S personnel would know if this is occurring?*

## Answer C-6:

If the supplier uses a method cited in the rule, provides the data at the required frequency and supplies the necessary records describing the methods used and frequency, Tier 2 is required.

# Fuel Combustion (cont.)



## Question C-7:

*Would a boiler (or other combustion unit) that is mounted on a trailer or movable platform, that is used to provide temporary services while facility equipment is serviced, upgraded, or replaced, and where such equipment remains at the facility for >12 months, still be considered portable and not subject to the reporting rule?*

## Answer C-7:

If the fuel-burning equipment on the trailer or moveable platform is moved to different locations on campus during the year as different facility equipment is serviced, then it is considered portable. If the fuel-burning equipment remains in the same spot for more than 12 consecutive months, then it is not considered portable per the definition of “portable” in 40 CFR 98.6.

# Fuel Combustion (cont.)



## Question C-8:

*Would the following be considered stationary or portable sources, assuming their location falls within the definition of facility?*

- Gas-fired stove in a student or faculty residence?*
- Industrial gas-fired stove in a campus dining hall?*
- Gas-fired laundry dryer in a student or faculty residence?*
- Gas or oil fired hot water heater in a student or faculty residence?*

## Answer C-8:

All of these are stationary fuel combustion sources.

# Technical Assistance



- On-line applicability tool: Assists potential reporters in assessing whether they are required to report
- Technical assistance materials (e.g., Information Sheets, Monitoring Checklists)
- Trainings and webinars
- Other materials later
- RSS available to announce new outreach materials

For complete list of materials and training schedule, see:  
<http://www.epa.gov/ghgreporting/reporters/index.html>

# Harvard University's GHG Inventory Process

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EPA GHG Reporting Webinar –  
Colleges and Universities  
February 10, 2010

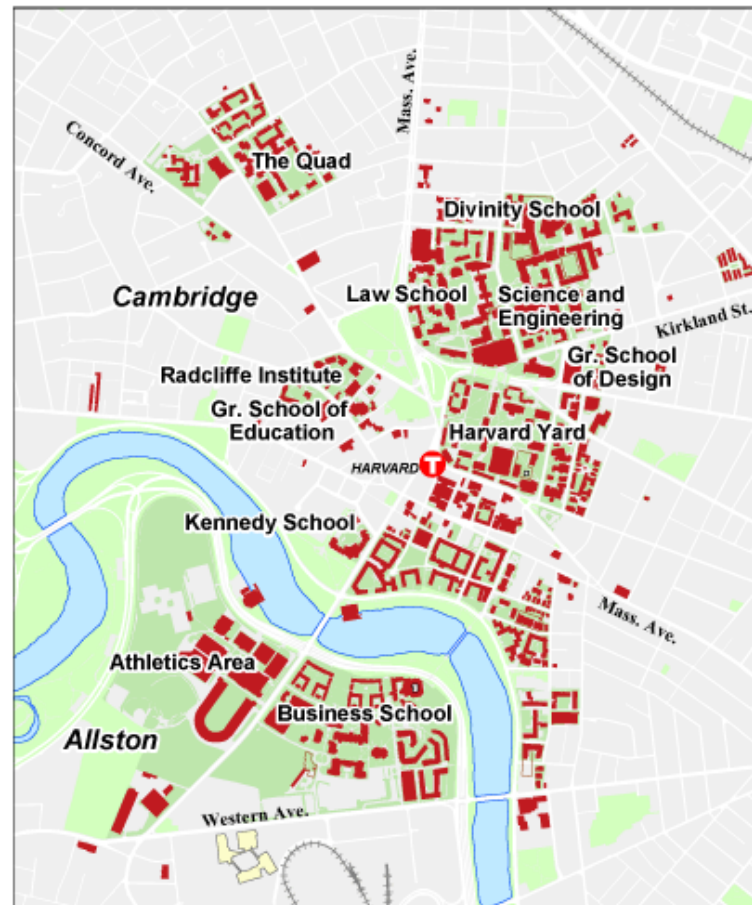
# What's a Facility?? – Depends

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- ❑ Harvard's Voluntary Program
  - North America Facilities
    - ❑ Owned with control
    - ❑ Lease space with control
- ❑ Massachusetts DEP GHG Reporting Rule
  - MA Only facilities
    - ❑ Covered by a Title V Air Permit
    - ❑ More than 5,000 tons of GHG per year
- ❑ EPA Program
  - Similar to MA Program
  - 25,000 Metric Tons

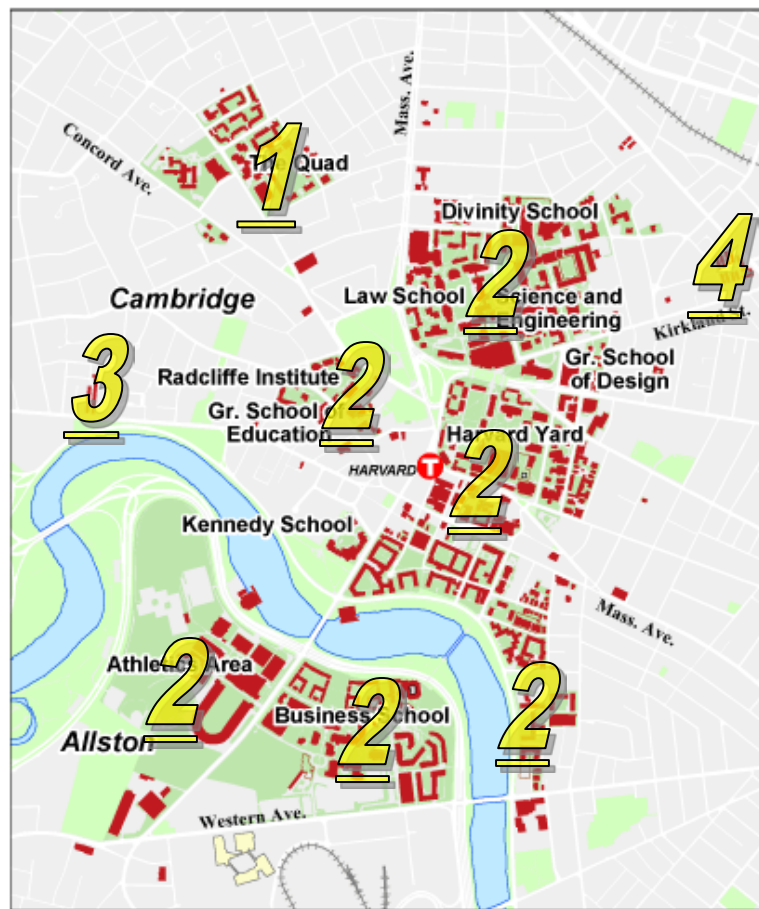
# Consider Cambridge/Allston

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# Consider Cambridge/Allston



- 4 Different Facilities by EPA's Definition
- 4 Different Facilities by MA DEP's Definitions
- 1 Facility by Harvard's Definition
- 1 Facility by Most Inventory Programs

# What Sources are Covered???

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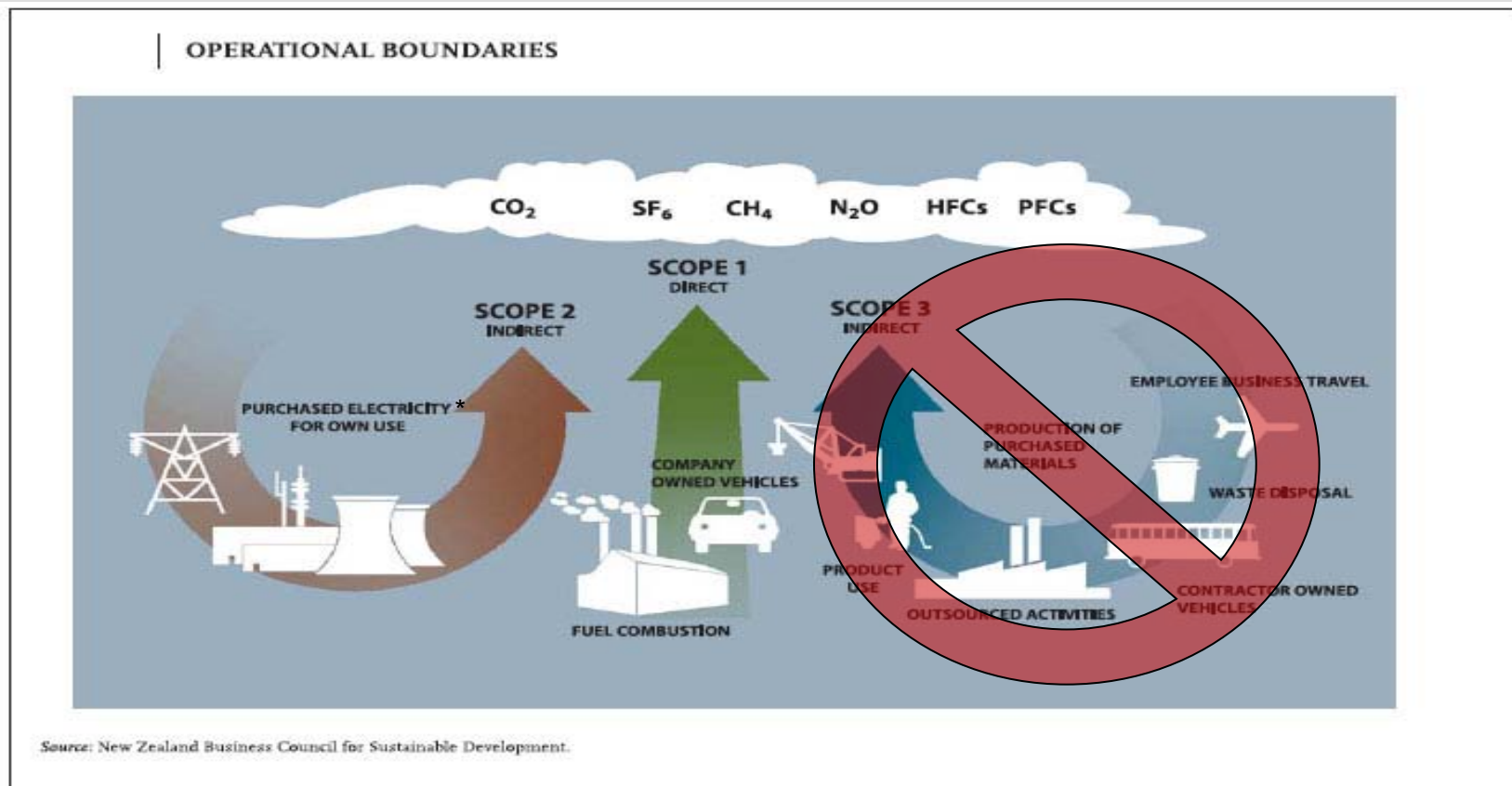
- Harvard's Voluntary Program
  - All "Direct" sources of GHG Emissions – Scope 1
    - Combustion Sources
    - Mobile Sources
    - Other "Fugitive Sources"
  - All "Indirect" sources of GHG Emissions – Scope 2
    - Purchased utilities
      - Electricity, steam, chilled water
- Massachusetts DEP GHG Reporting Rule
  - Same as Harvard's Scope 1 Emissions
  - Harvard is subject to a "Retail Seller" reporting requirement
- EPA Program
  - Scope 1 - Combustion sources or electric generation sources
    - Excludes "Emergency" Generators
  - All other "Sources" in EPA program not applicable to Harvard
- Other GHG Inventory Programs
  - Same as Harvard's Voluntary Program

# What Emissions are Covered???

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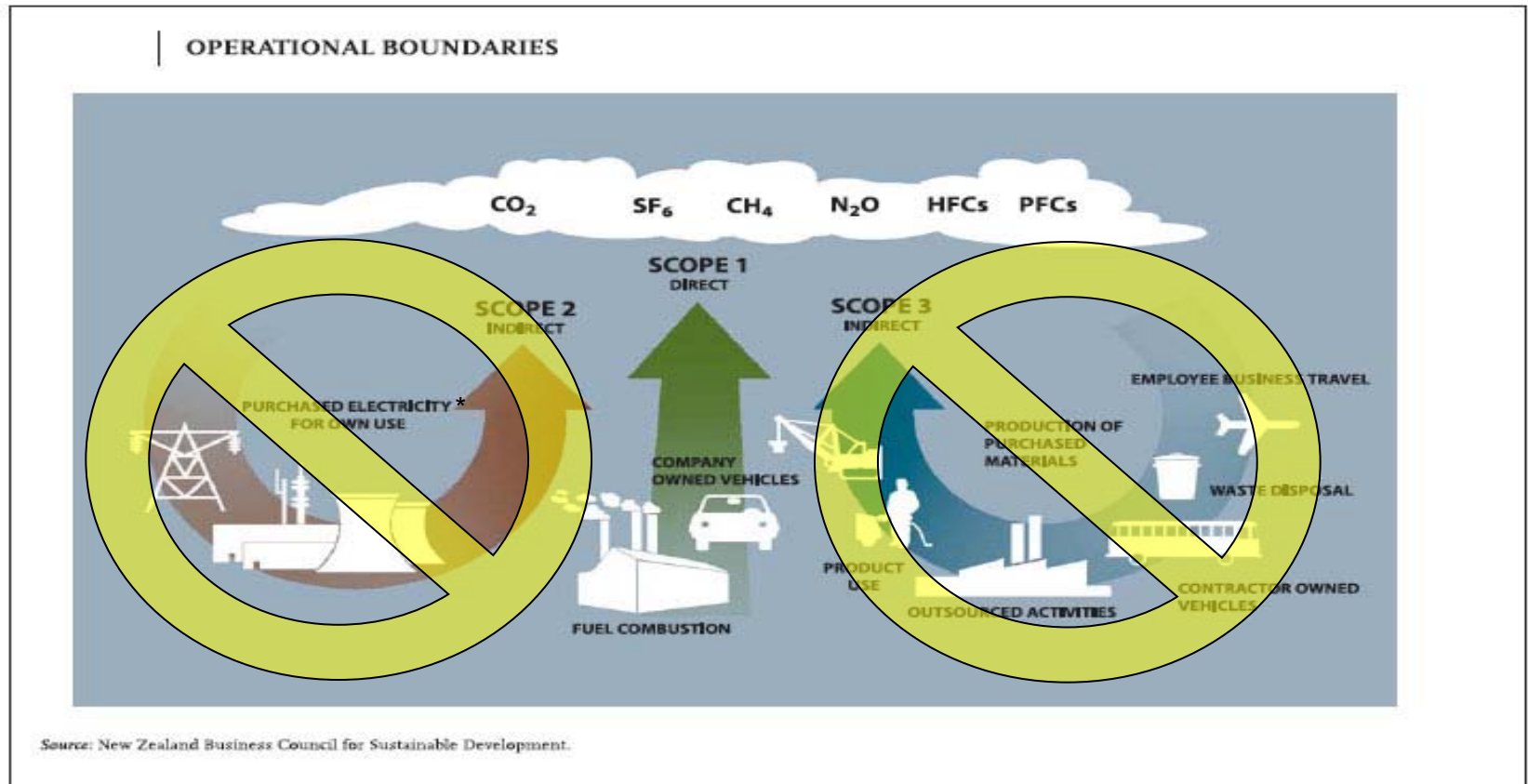
- Harvard's Voluntary Program
  - All 6 Kyoto Gases
    - Carbon Dioxide, Nitrous Oxide; Methane; Sulfur Hexafluoride; HFCs (family); PFCs (family)
- Massachusetts DEP GHG Reporting Rule
  - All 6 Kyoto Gases
- EPA Program
  - All 6 Kyoto Gases are covered, but...
    - Combustion sources need only to consider – Carbon Dioxide; Nitrous Oxide; Methane
- Other GHG Inventory Programs
  - All 6 Kyoto Gases

# Gases & Sources Covered – Harvard's Program and Most Other Inventory Programs



•Note: Purchased electricity includes all purchased utilities – steam and chilled water

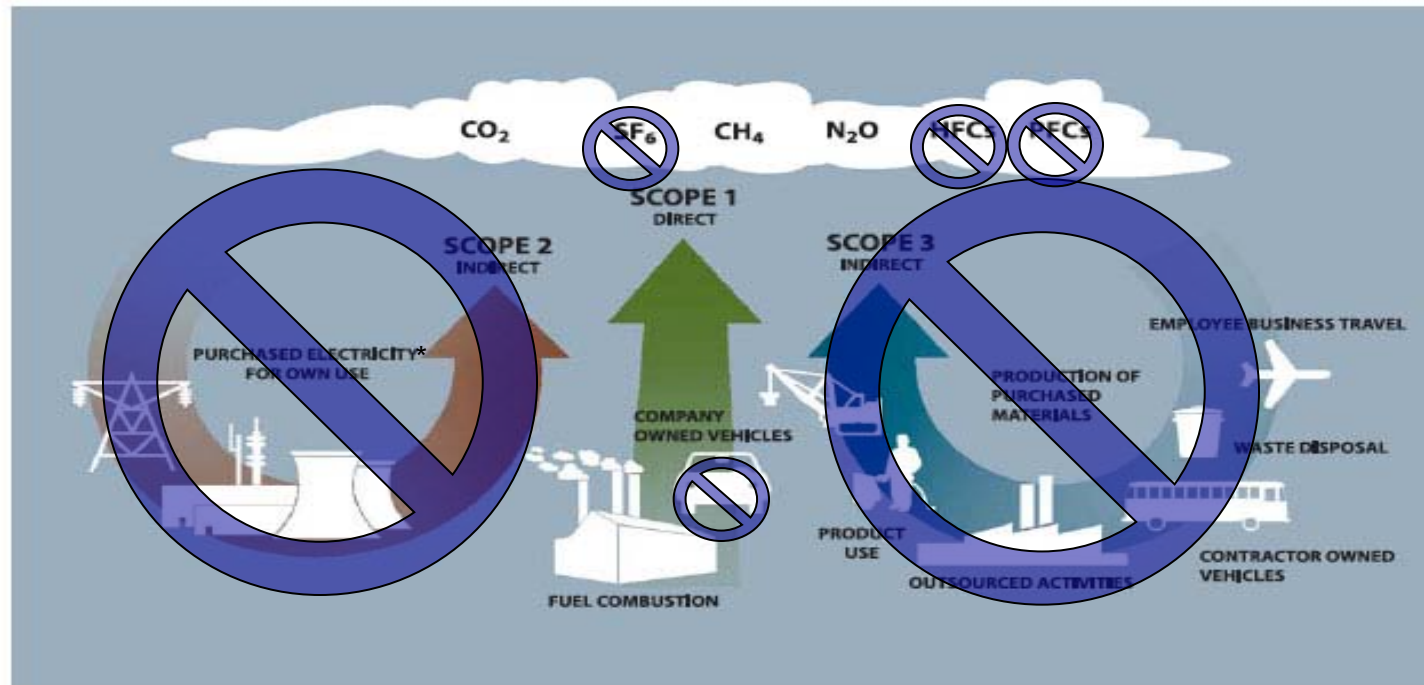
# Gases & Sources Covered for Colleges & Universities – MA DEP Program



•Note: Purchased electricity includes all purchased utilities – steam and chilled water

# Gases & Sources Covered for Colleges & Universities<sup>1</sup> - Combustion Sources Only – EPA Program

FIGURE 5 | OPERATIONAL BOUNDARIES



Source: New Zealand Business Council for Sustainable Development.

**\*Note: Purchased electricity includes all purchased utilities – steam and chilled water**

**1 – Colleges and Universities typically will only have combustion sources; May have electrical generation sources**

# Tracking Emissions – Monitoring Plan – Combustion Sources

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- Tier 1 Monitoring
  - Need fuel flow data;
  - Default factors for Higher heating value and fuel carbon content at 40 CFR 98
  - Limited to units less than 250 MMBtu/Hr Heat Input
- Tier II Monitoring
  - Need fuel flow data; Higher heating value of fuel
  - Default factors for fuel carbon content at 40 CFR 98
  - Limited to units less than 250 MMBtu/Hr Heat Input and greater than 250 firing only gas or distillate oil
- Tier III Monitoring
  - Need fuel flow data; Higher heating value and carbon content of fuel
- Tier IV Monitoring
  - Continuous Emission Monitoring
- Meter calibrations required
  - “Billing” meters do not have to be calculated (e.g., NG Meters)
- QA/QC Plans required

# What do I do now??

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- ❑ Define your “facility” (facilities)
- ❑ Identify the sources located within the “facility” boundaries – List of buildings; Size of combustion devices; Types of fuels used, if any
- ❑ Identify the resources within your organization that has the data you will need – Fuel use records; Types of fuels; Suppliers’ names;
- ❑ Document the meter calibrations being used;
- ❑ Determine the appropriate “Tier” monitoring plan for each source;
- ❑ Identify the Designated Representative – 60 days in advance of March 31, 2011
- ❑ Run the numbers....
- ❑ Report by September 30, 2011