



Constellation Energy®

GHG Mandatory Reporting “What you should Know”



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Outline

- Federal Requirements
- Other States
- Other reporting registries
- eGRRT Reporting tool
- Information Has Value



Federal GHG Reduction Initiatives



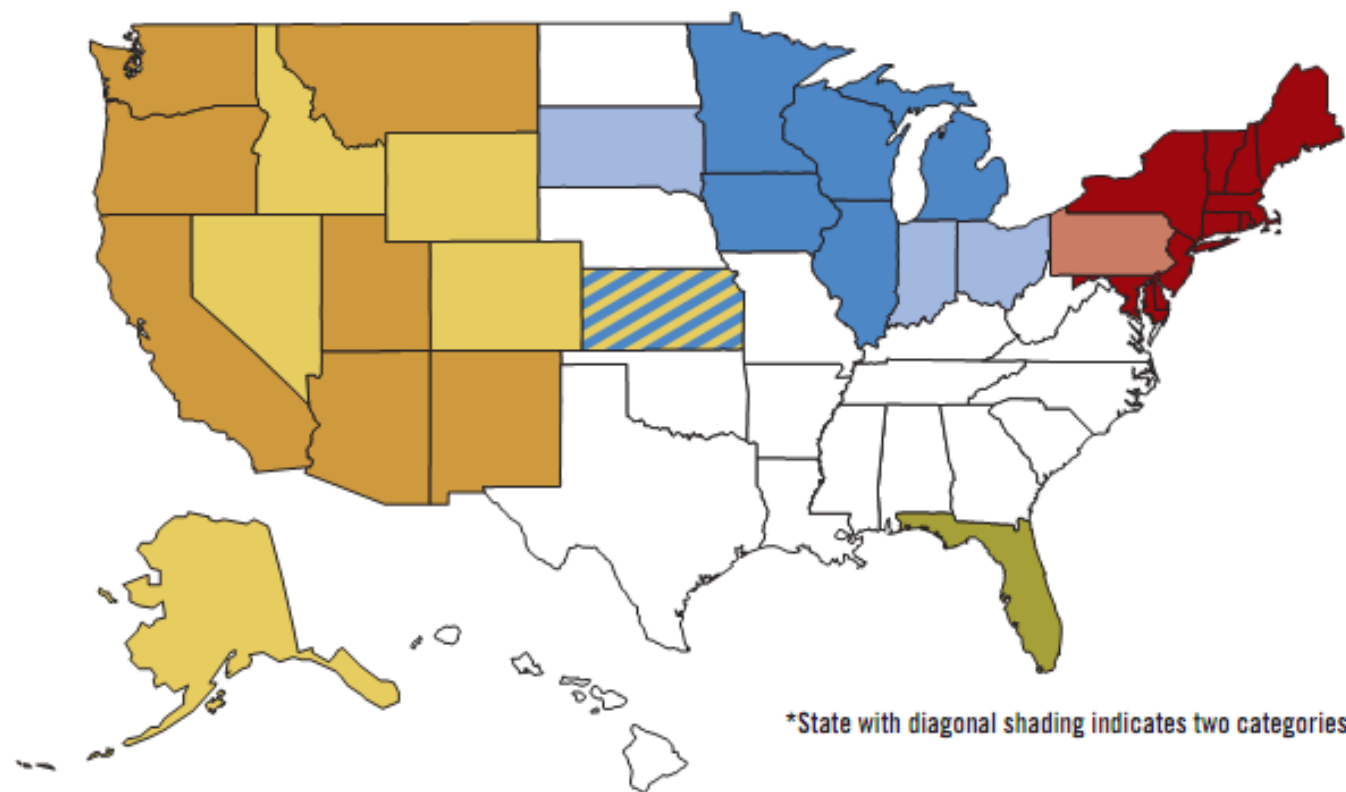


Map of State Initiatives (Cap and Trade)

Figure 1

Regional Cap-and-Trade Initiatives

- Western Climate Initiative
- Western Climate Initiative - Observer
- Midwest Greenhouse Gas Reduction Accord
- Midwest Accord - Observer
- Individual State Cap-and-Trade Program
- Regional Greenhouse Gas Initiative
- Regional Greenhouse Gas Initiative - Observer



Source: Pew Center on Climate Change and the Pew Center on States (1/2009)



Mandatory GHG Reporting and Registry Initiatives

- **EPA Mandatory GHG Reporting** – In response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), EPA issued the Mandatory Reporting of Greenhouse Gases Rule (74 FR 56260) which requires reporting of greenhouse gas (GHG) data and other relevant information from large sources and suppliers in the United States.
- **CARB AB 32** – Global Warming Solutions Act of 2006 (Assembly Bill 32) passed in California to reduce GHG and establish mandatory reporting
- **Regional GHG Initiative (RGGI)** – Mandatory reporting for reduction program with 10 Northeastern states
- **Western Climate Exchange** – Mandatory reporting for GHG reduction program. Started by states and provinces along the western rim of North America
- **The Climate Registry** - The Climate Registry (TCR) is a non-profit organization that provides public reporting in a common, accurate, and transparent manner consistent across industry sectors and borders. 17 states require TCR reporting

Federal – Applicability

EPA's Mandatory GHG Reporting Rule (MRR) finalized October 30, 2009.

Applies to direct greenhouse gas emitters, fossil fuel suppliers, industrial gas suppliers

Threshold for reporting is 25,000 metric tons or more of carbon dioxide (CO₂) equivalent per year. Reporting is at the facility level, except for certain suppliers of fossil fuels and industrial greenhouse gases.

Monitoring began in 2010 for most emission sources and first reports were due by September 30, 2011.



Federal Greenhouse Gas Reporting Program

- EPA issued the Mandatory Reporting of Greenhouse Gases Rule (74 FR 56260) in response to the Consolidated Appropriations Act.
- “The purpose of the rule is to collect accurate and timely GHG data to inform future policy decisions.” - source EPA website
- If subject to the rule, you must collect data; calculate GHG emissions; and follow the procedures for quality assurance, missing data, recordkeeping, and reporting that are specified in the 40 CFR part 98 subparts A through UU.
- Reporting only requirements, no control or use requirements.



Federal – Source Categories

- The Rule covers 41 source categories, accounting 85-90% of U.S. GHG emissions.
 - The stationary combustion source category comprises electricity generating units (EGUs) that are subject to the requirements of the Acid Rain Program and any other EGUs that are required to monitor and report to EPA CO₂ emissions year-round according to 40 CFR part 75 (e.g., units subject to CAIR, RGGI).
 - The suppliers source category comprises Natural Gas Liquids, importers, and Natural Gas Distribution

Federal – Natural Gas Reporting

- Natural Gas Suppliers must report CO2 emissions that would result from the complete combustion or oxidation of the annual volumes of natural gas provided to end-users on their distribution systems.
- Must also report:
 - Annual volume received at city gate
 - Annual volume placed in storage
 - Annual volume of vaporized liquid natural gas on system
 - Annual volume withdrawn for storage
 - Annual volume for residential; commercial; large industrial (over 460,000 MCF); and electric generation facilities
 - Annual volumes delivered to other LDC's



Federal GHG Program: e-GRRT

- **Data available a few months after submission deadline**
 - 2010 Data submitted by 09/30/11 available by end of 2011
 - 2011 Data submitted by 03/31/12 available 06/30/12 (est.)
 - However, EPA is proposing a limited, one time extension of 2012 reporting deadline from 3/31/12 to 9/28/12 for sources required to start collecting data in 2011 for stakeholder testing of e-GGRT; therefore some 2011 data may not be publicly available until end of 2012
- **Inputs to emissions equations have been deemed CBI for a majority of industry source categories**
 - These data elements will not be required until 03/31/13 or 03/31/15
 - Unable to reverse engineer without equation input values
- **Data should be available similar to EPA's current Electronic Data Reporting (EDR) system**
 - Post-reporting data shared through the Environmental Information Exchange Network
 - Data validation system uses range checks, statistical analysis, electronic audits; errors would require resubmission
 - Raw data available likely in XML and spreadsheets
 - Different aggregation and chart options
- **Currently the system is available only to registered reporters**
 - Contractors/representatives of reporting organization could gain access
- **EPA will have a hotline available**



Federal GHG Program: Publicly Available Information

Public Information Categories:

Data from Direct emitters

- | | |
|---|---|
| <ul style="list-style-type: none">• Facility and Unit Identifier Information• Emissions• Calculation Methodology & Method• Test & Calibration Methods• Data elements reported for periods of missing data that are not inputs to emission equations | <ul style="list-style-type: none">• Production/ Throughput data that are not inputs to emission equations• Raw materials consumed that are not inputs to emission equations• Process specific & vendor data submitted in BMM extension requests |
| <ul style="list-style-type: none">• Unit/Process static characteristics that are not inputs to emission equations• Unit/Process operating characteristics that are not inputs to emission equations | |

Data from Suppliers

- | | |
|---|--|
| <ul style="list-style-type: none">• Identification information• Calculation, Test, and Calibration Methods• Data elements reported for periods of missing data that are not related to production/ throughput or materials received | <ul style="list-style-type: none">• Emission Factors• Amount & composition of materials received• Data elements reported for periods of missing data that are related to production/ throughput or materials received• Customer and Vendor Information• Process specific and vendor data submitted in BMM extension requests |
| <ul style="list-style-type: none">• GHGs Reported• Production/Throughput quantities and composition• Unit/Process operating characteristics | |

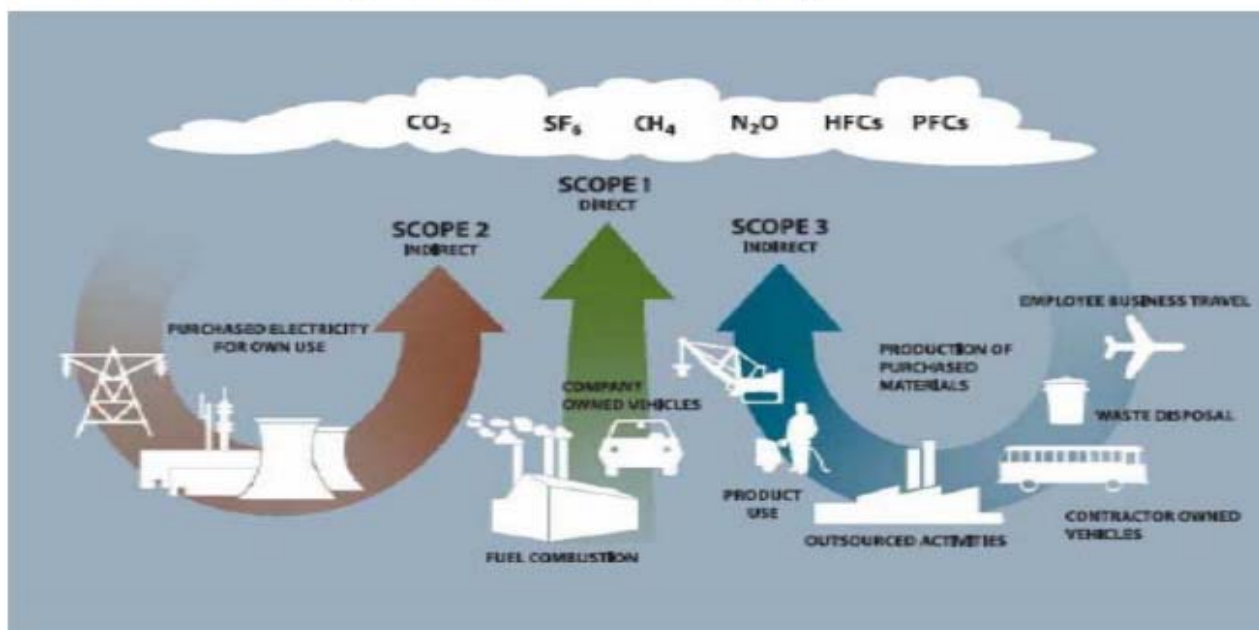


Direct Now – Indirect Later

GHG ACCOUNTING

Greenhouse gas protocol WRI-WBCSD

- **Carbon Dioxide** (CO_2), **Methane** (CH_4), **Nitrous Oxide** (N_2O), **Hydrofluorocarbons** (HFCs), **Perfluorocarbons** (PFCs), and **Sulphur Hexafluoride** (SF_6):



The Greenhouse Gas Quiz !



Fossil Fuel and CO₂

Fossil Fuel is made up of a mix of carbon compounds and impurities.



How much carbon dioxide do you get from burning a pound of coal (Assume 100% carbon)?

- a) 1 lb
- b) 3.667 lbs
- c) 1 ton
- d) 2.86 tons





Bear Hint:

**Use the atomic
weight ratio:**

C = 12

O = 16





12 lbs coal + 2(16 lbs) oxygen = 44 lbs

Carbon dioxide (CO_2) forms during coal combustion when one atom of carbon (C) unites with two atoms of oxygen (O) from the air.

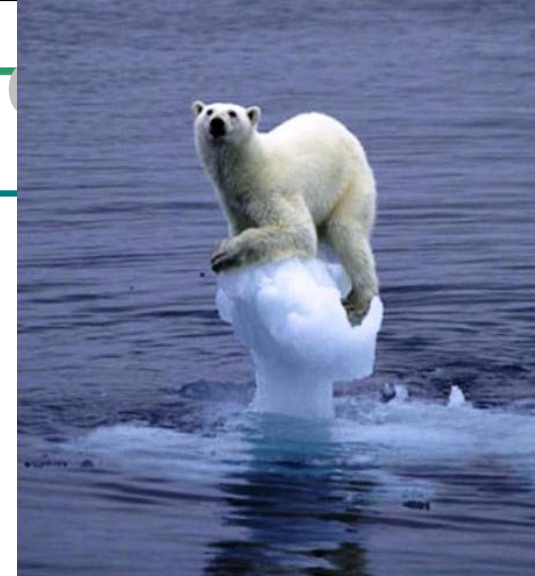
Because the atomic weight of carbon is 12 and that of oxygen is 16, the atomic weight of carbon dioxide is 44.

Based on that ratio, and assuming complete combustion, 1 pound of carbon combines with 2.667 pounds of oxygen to produce 3.667 pounds of carbon dioxide.

Divide all by 12 to get one pound of coal (assume pure carbon) and the ratio of the others

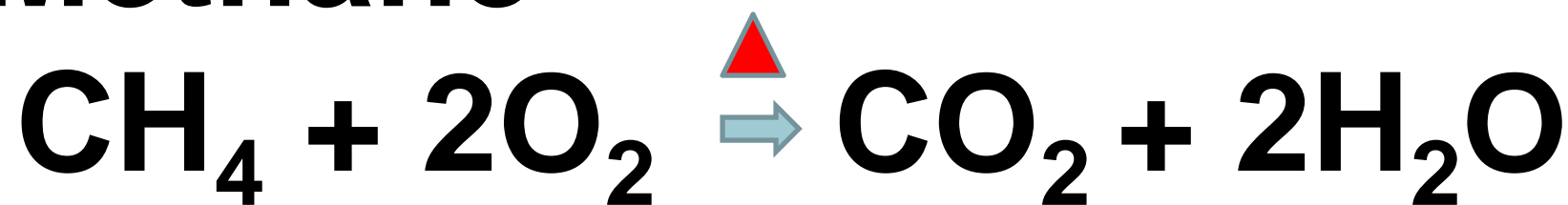
$$44/12 = 3.666666666666666666666666$$

OK – Bear says 3.667 is close enough – it's getting hot and slippery out here!





Methane





How much carbon dioxide do you produce driving Round Trip to Ocean City?

[Assume 300 total miles in a 20 mpg vehicle please]

- a) About 60 pounds
- b) About a ton
- c) About 36 pounds
- d) About a pound
- e) None of the Above





Bear Hint

motor gas
generates about
19.564 lbs CO₂
per gallon
(from EPA





Answer: e) None of the above

- 300 miles/20 mpg = 15 gallons
- motor gas 19.564 lbs CO₂/gal (from EPA website)
- 15 gal x 19.564 lbs CO₂/gal = 293 lbs



What is the U.S. share of world population?

- a) 1%
- b) 5%
- c) 3.2%
- d) 20%

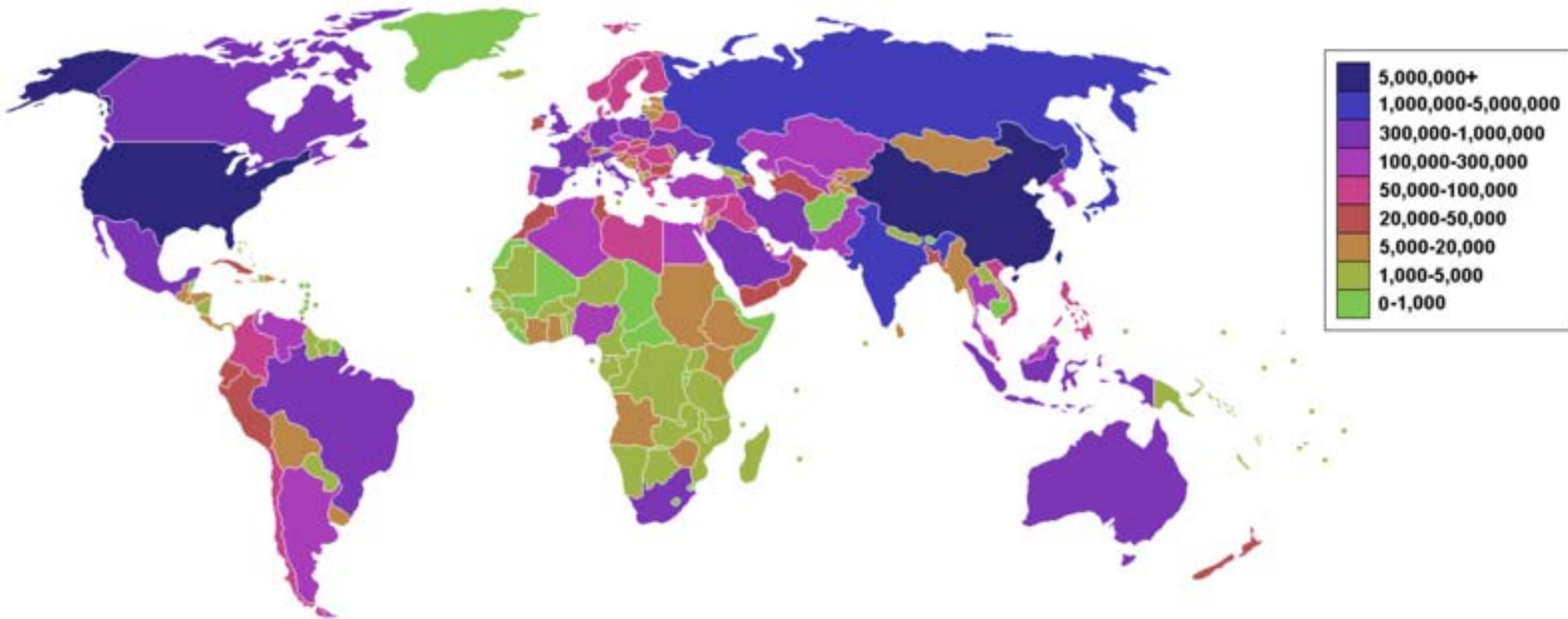
What is U.S. share of world GHG emissions?

- a) 1%
- b) 50%
- c) 3.2%
- d) 18%



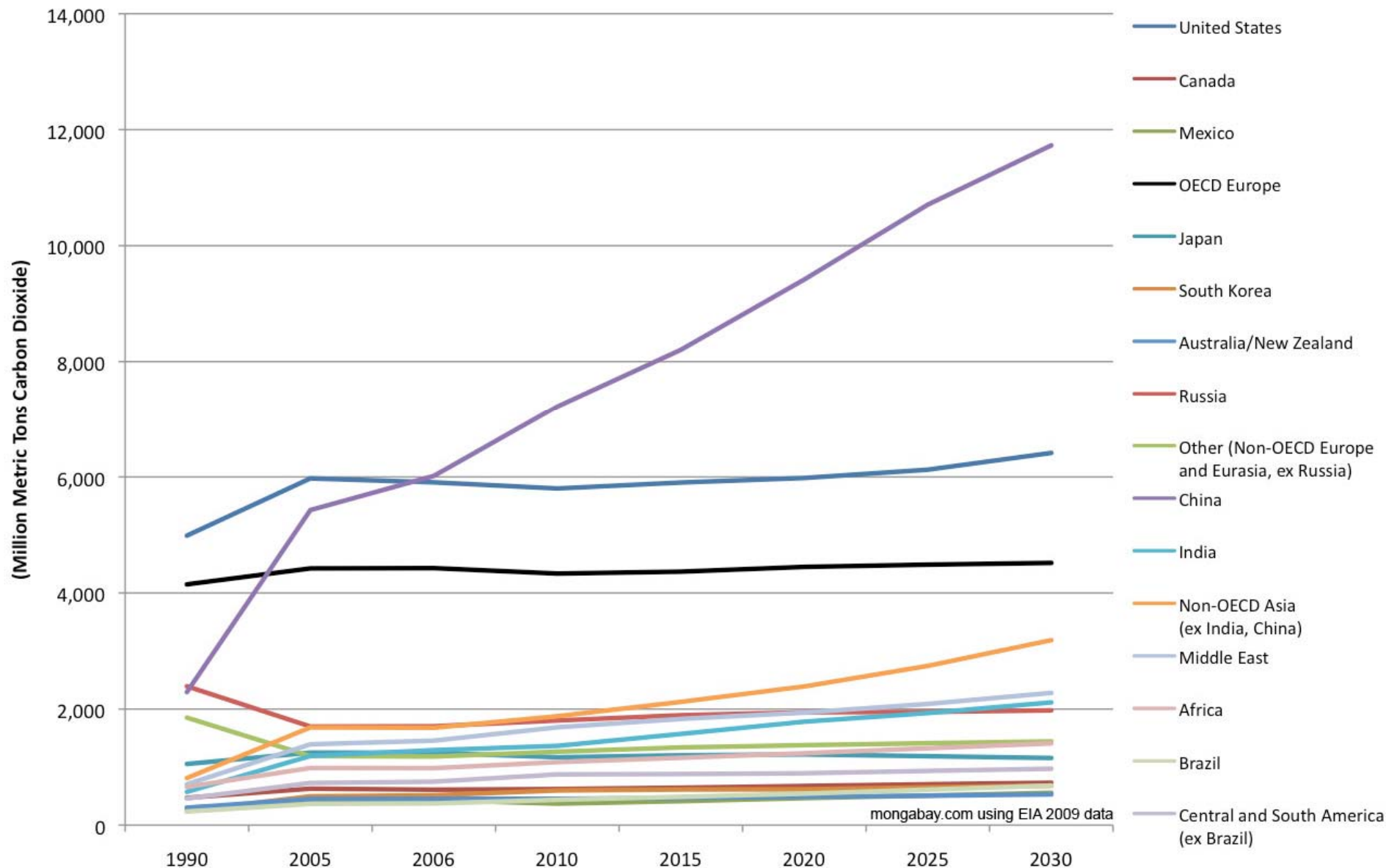
U.S. share of world population: 5%

GHG emissions Share: 18%



Countries by carbon dioxide emissions via the burning of fossil fuels
(Darker Blue is the highest).

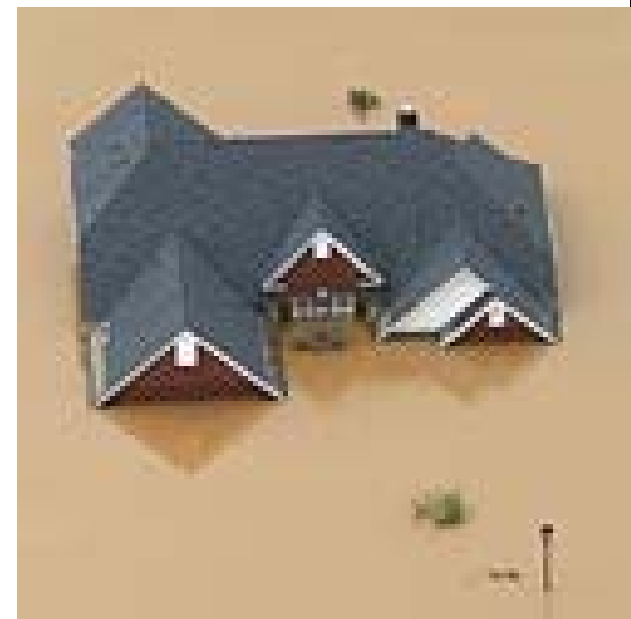
World Carbon Dioxide Emissions by Region, Reference Case, 1990-2030





What is the CO₂ equivalence factor for methane, SF₆?

- Methane
 - a) 1:1
 - b) 1:10
 - c) 1:25
 - d) 1:286
- Sulphur hexafluoride (SF₆)
 - a) 1:1
 - b) 1:25
 - c) 1:114
 - d) 1:16,300





GWPs of the 6 Kyoto-covered gases

Chemical (TAR)	GWP, 100 Years (SAR)	GWP, 100 Years
CO ₂	1	1
Methane	21	23
N ₂ O	310	296
HFCs	140-12,100	120 – 12,000
SF₆	23,900	22,200
PFCs	6,500-9,200	5,700 – 11,900

Source: U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2002, Annex 6.