


Climate Briefings

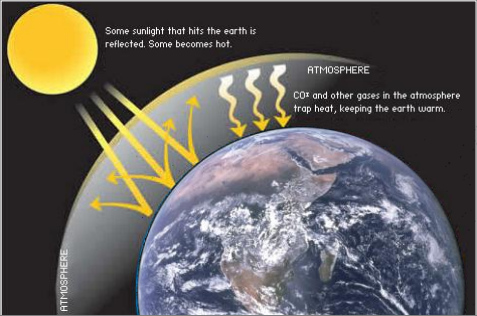
The methane part of the problem

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permafrost methane

By now we all know that...



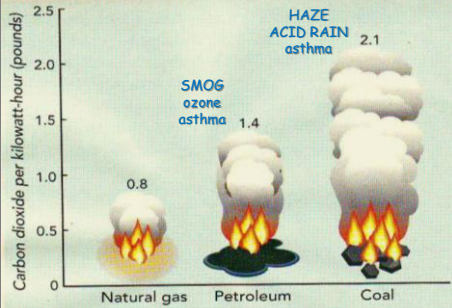
Some sunlight that hits the earth is reflected. Some becomes heat.

ATMOSPHERE

CO₂ and other gases in the atmosphere trap heat, keeping the earth warm.

...excess CO₂ in the air traps heat.


As a fuel for generating electricity, methane is the least problematic fossil fuel.



Fuel	Carbon dioxide per kilowatt-hour (pounds)	Associated Environmental Impacts
Natural gas	0.8	SMOG, ozone, asthma
Petroleum	1.4	
Coal	2.1	HAZE, ACID RAIN, asthma

Source: Natural Resources Defense Council, from data provided by the U.S. Energy Information Administration

Dead space methane escapes unburned

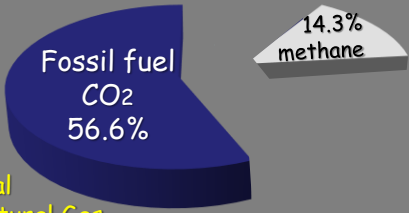


All gas burners have a "dead space" between the shutoff valve and the flame, filled with unburned methane.

Each time that the flame is turned off, that amount of methane escapes into the air.

Compared to CO₂, methane is 23X as effective at trapping heat.

CO₂ Sources and Equivalents



Fossil fuel CO₂ 56.6%

Oil
Coal
Natural Gas
(ancient methane)

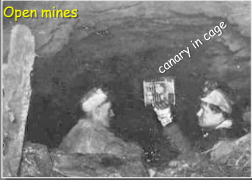
14.3% methane

Methane is 1/7th of the problem now but is projected to become even larger than CO₂.

The methane part of the problem

- Scrapped for parts: New methane comes from the decomposition of cells in a low-oxygen environment
 - permafrost, swamps, termites, cattle.
- Rice paddies also have unstirred bottoms, ideal for methane production.
- Ancient methane is found near coal seams.
- Selling the odorless gas that frequently kills coal miners perhaps caused a euphemism to be invented: "natural" gas.

Methane sources

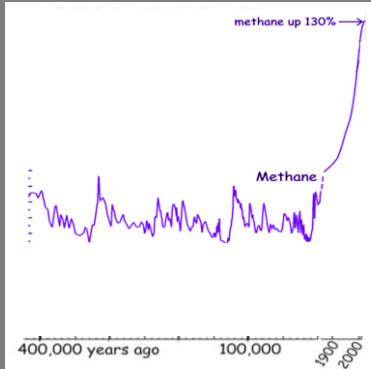


Also landfills, agricultural fires, swamps, permafrost

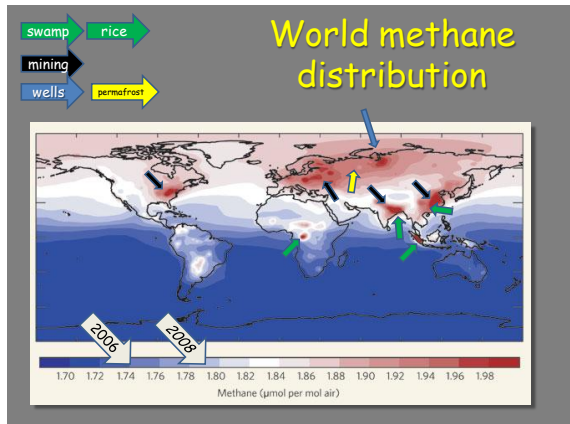
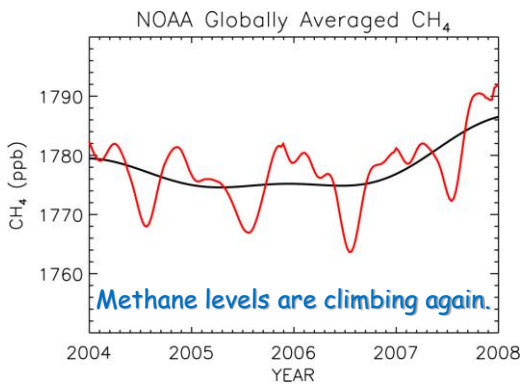
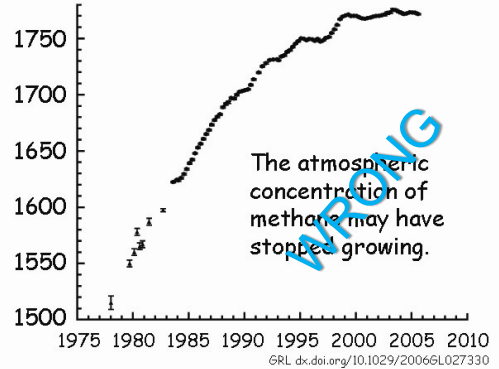


Permafrost researcher Katy Walter igniting methane trapped beneath the surface of a frozen pond in Siberia.

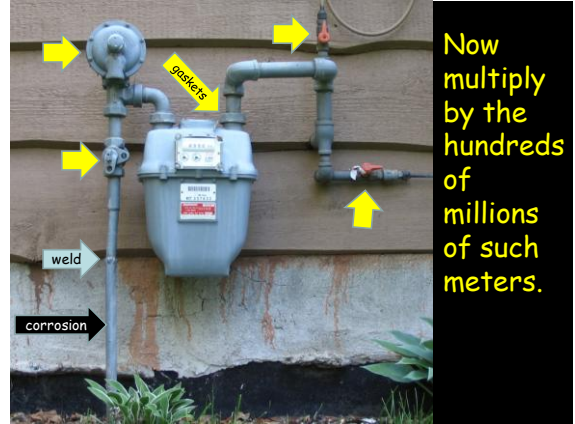
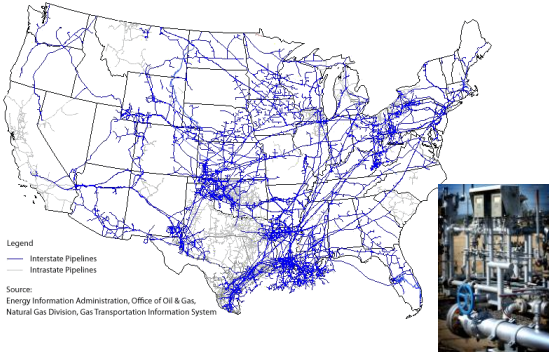
Methane levels have risen 130%



1800 ppb METHANE



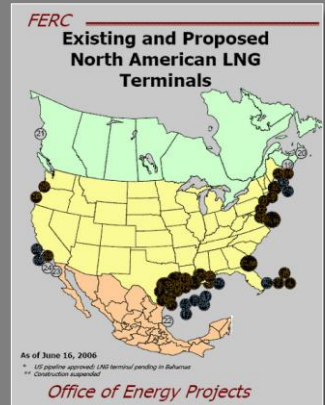
Natural gas pipelines are estimated to leak 1 to 4 percent of the methane carried. Old pipes in neighborhoods may be worse.



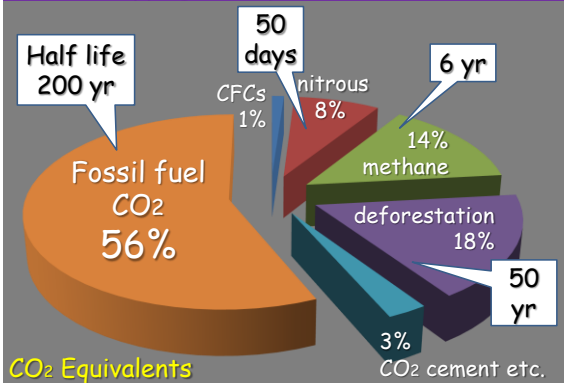
Besides pipelines for "natural" gas, there are now LNG tankers from distant sources.



Vast plans for expanding LNG long-haul transport



Stopping leaks yields fast results



The End

My books and talks may be found at:

WilliamCalvin.org

