



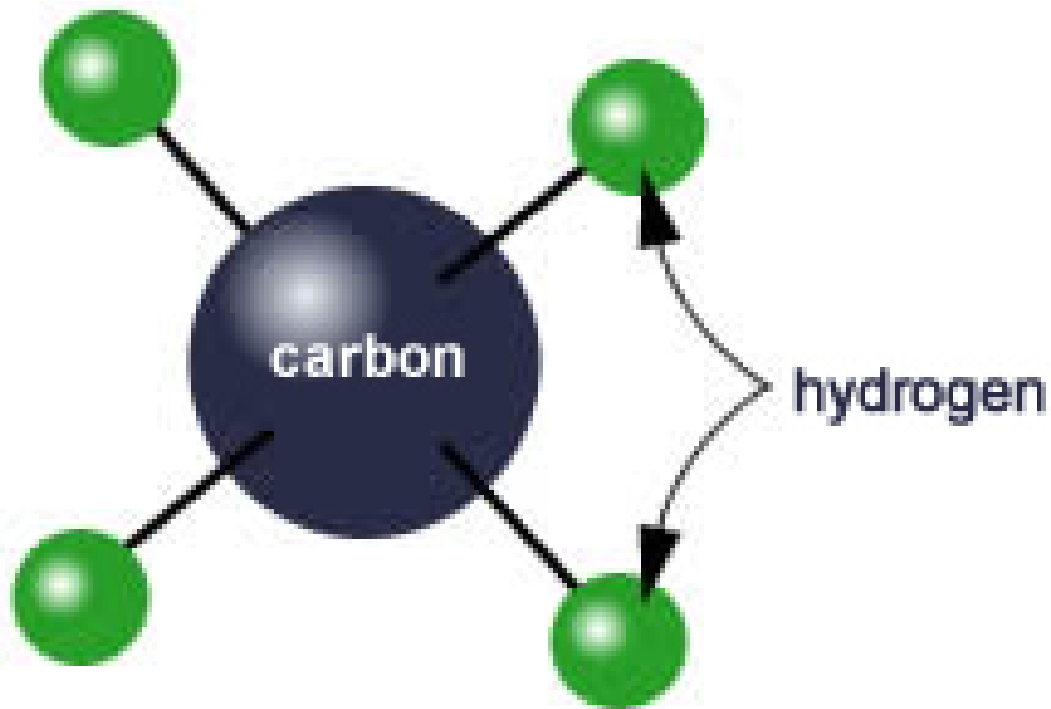
One Big (Simple) Idea

Michael Taylor



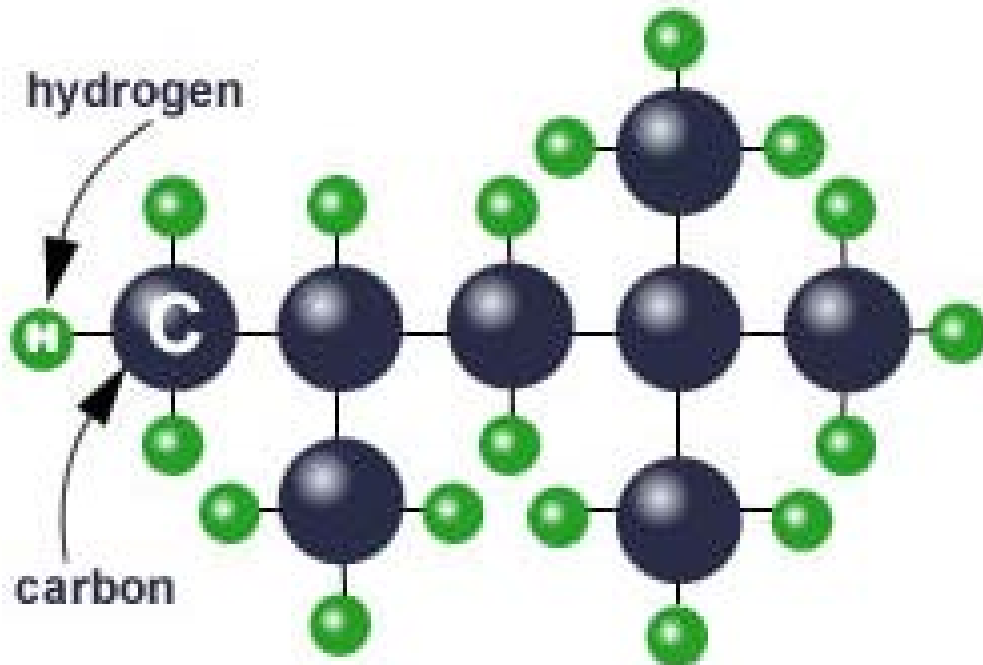


Methane molecule



methane molecule - CH₄

Gasoline molecule



typical gasoline - C_8H_{18}

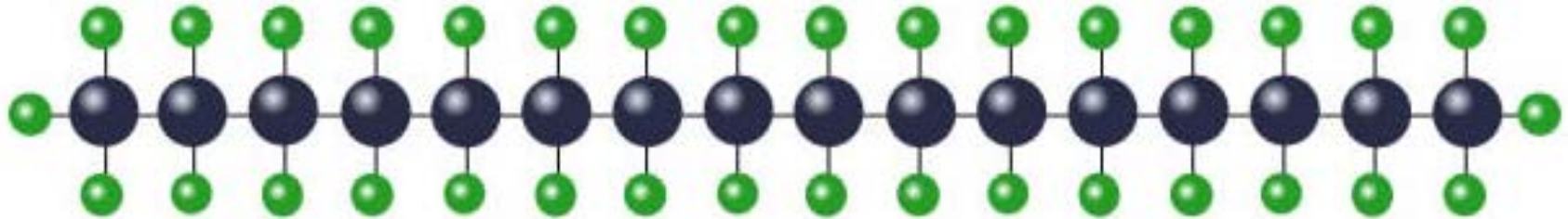
carbon
molecule



hydrogen
molecule



Diesel molecule



typical diesel chemical composition

cetane, or n-hexadecane is typical of diesel fuel - $C_{16}H_{34}$

carbon
molecule

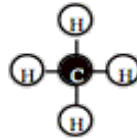


hydrogen
molecule



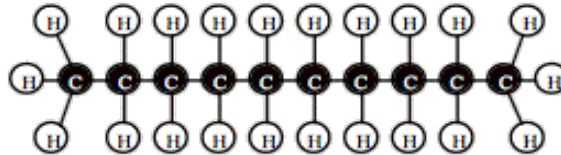
Hydrogen-Carbon Ratios of Fuels

Methane Gas



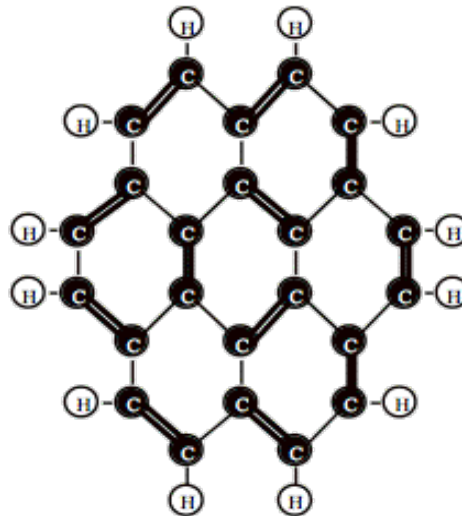
H:C = 4:1

Typical Oil

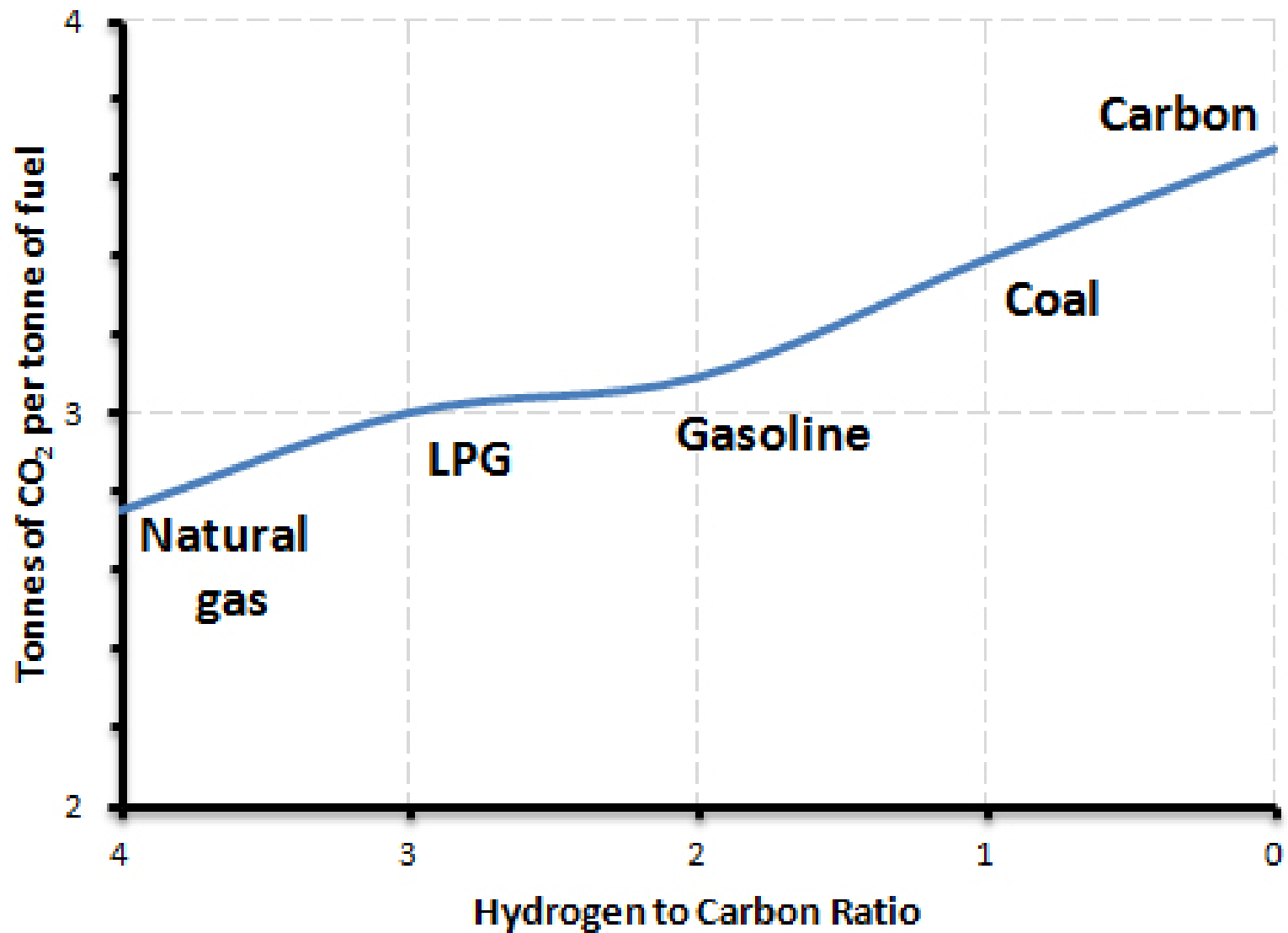


H:C = 2:1

Typical Coal



H:C = 0.5:1



Combustion Reaction

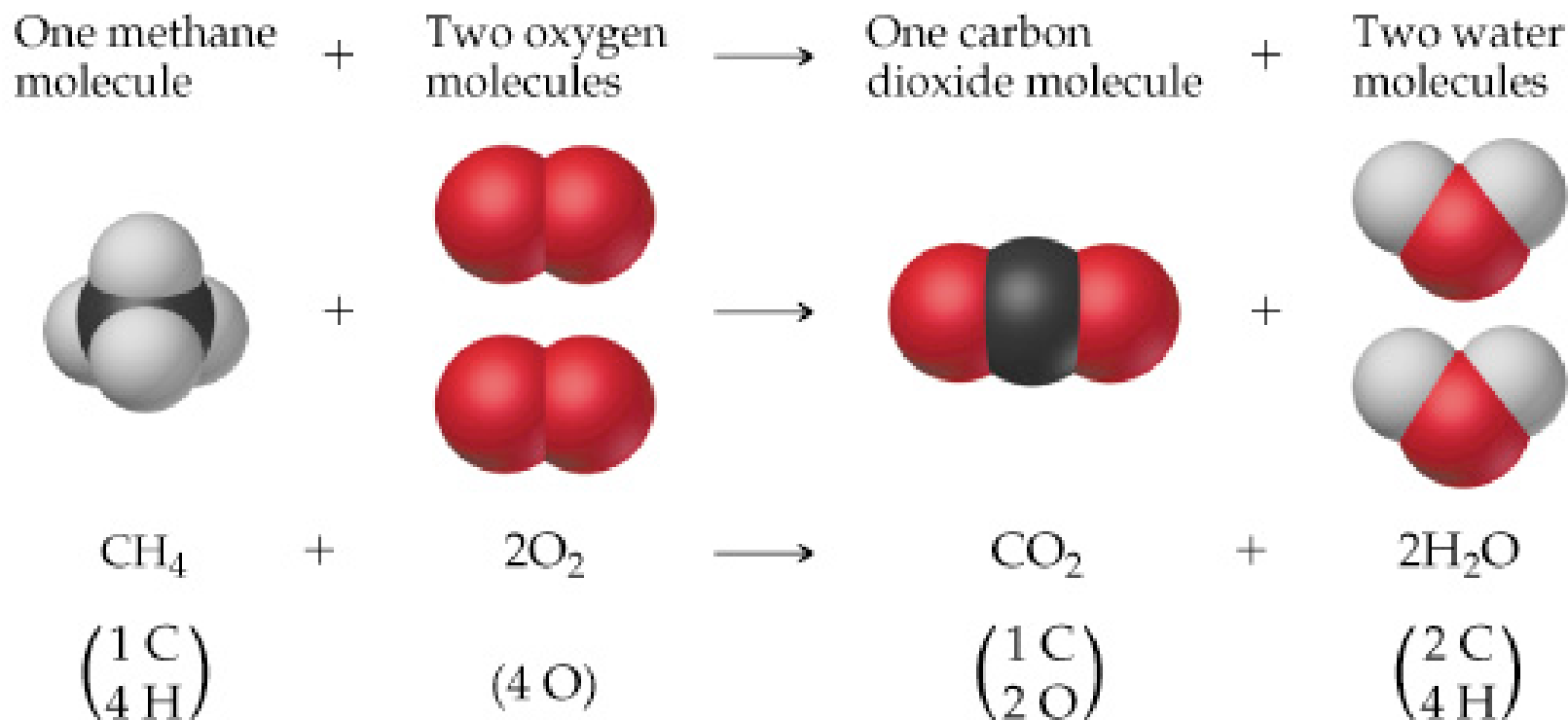
-: Example :-

In general:



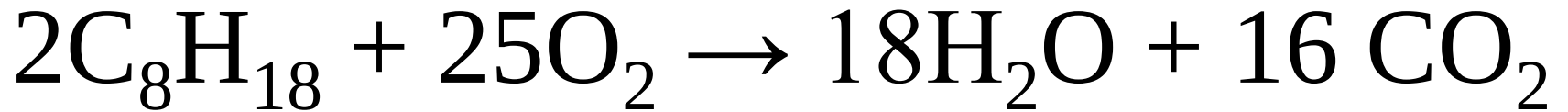
Products in combustion are ALWAYS carbon dioxide
And water.

Methane Combustion



Gasoline Combustion

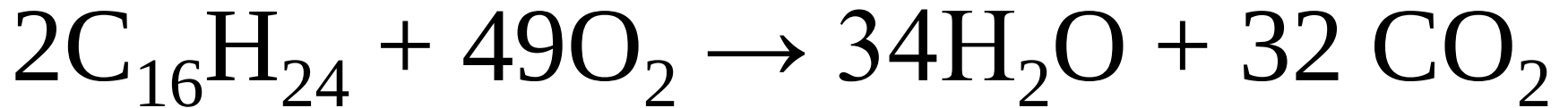
Two gasoline molecules + 25 oxygen molecules $\rightarrow$ 18 water molecules + 16 carbon dioxide molecules



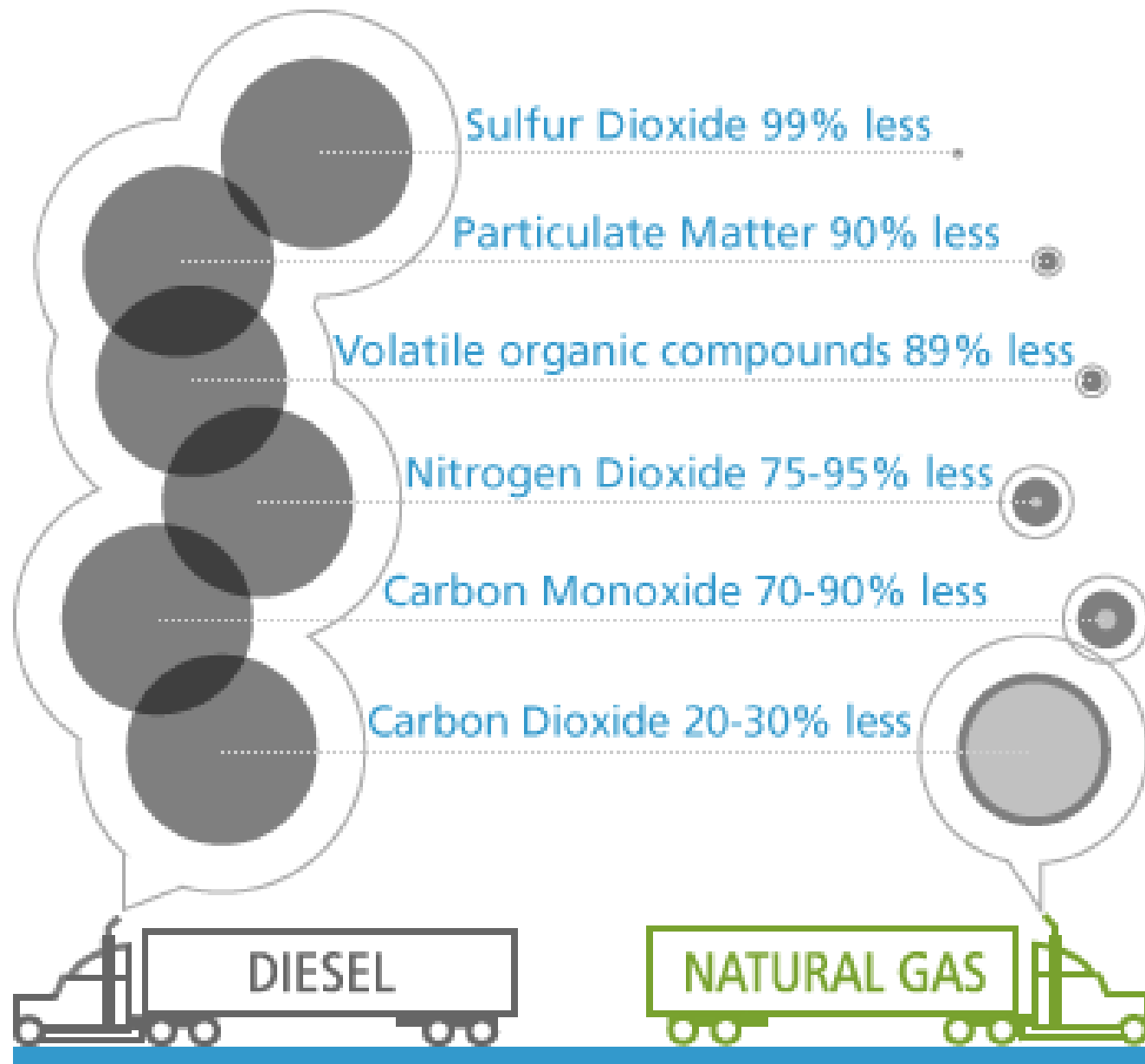
(octane + oxygen $\rightarrow$ water + carbon dioxide + energy)

Diesel combustion

Two diesel molecules + 49 oxygen molecules → 34 water molecules + 32 carbon dioxide molecules



(diesel + oxygen → water + carbon dioxide + energy)



Source: NGV America, Encana Estimate, Environmental Protection Agency



What is CNG?

- Compressed Natural Gas (CNG)
- Colorless, non-corrosive, non-toxic
- Same odor as natural gas
- 3,600 psi
- 1/200th the volume of natural gas
- Ambient temperature



MLGW Choctaw CNG Station



MLGW South Center CNG Station



What is LNG?

- Liquefied Natural Gas (LNG)
- Colorless, odorless, non-corrosive, non-toxic
- -260° Fahrenheit
- 1/600th the volume of natural gas
- Takes 1.72 gallons of LNG to equal 1 gallon of diesel



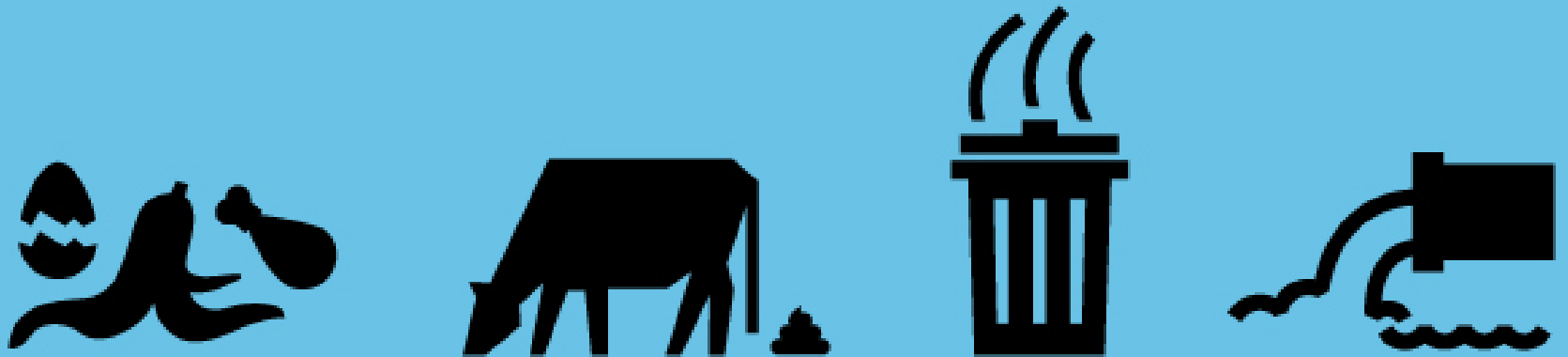
MLGW LNG Production Facility



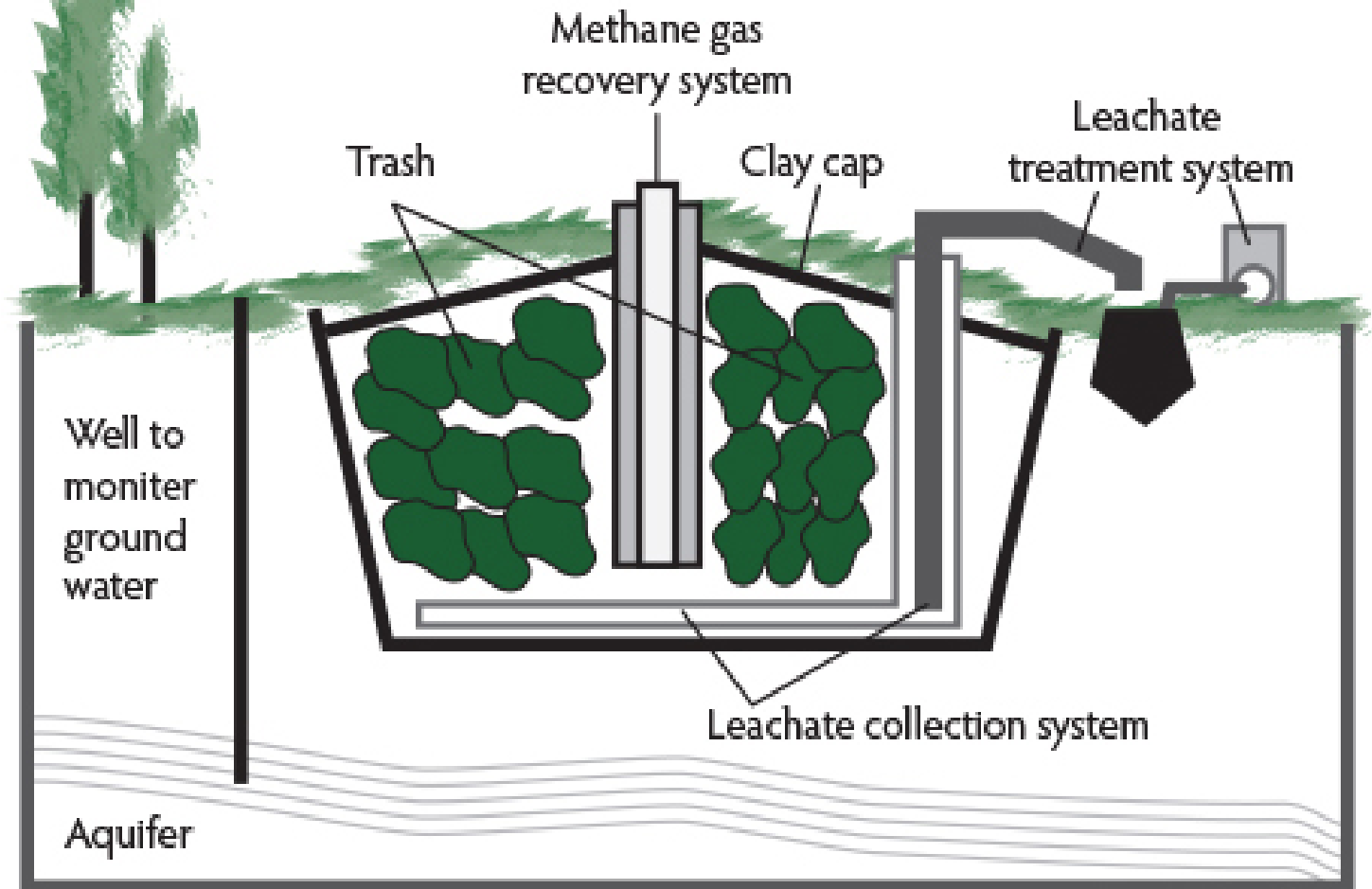
What's Better Than Methane?



Renewable Methane



MODERN LANDFILL





Flare



Plant



Collector





IDEAS CAN BE BOTH

BIG

AND

SIMPLE