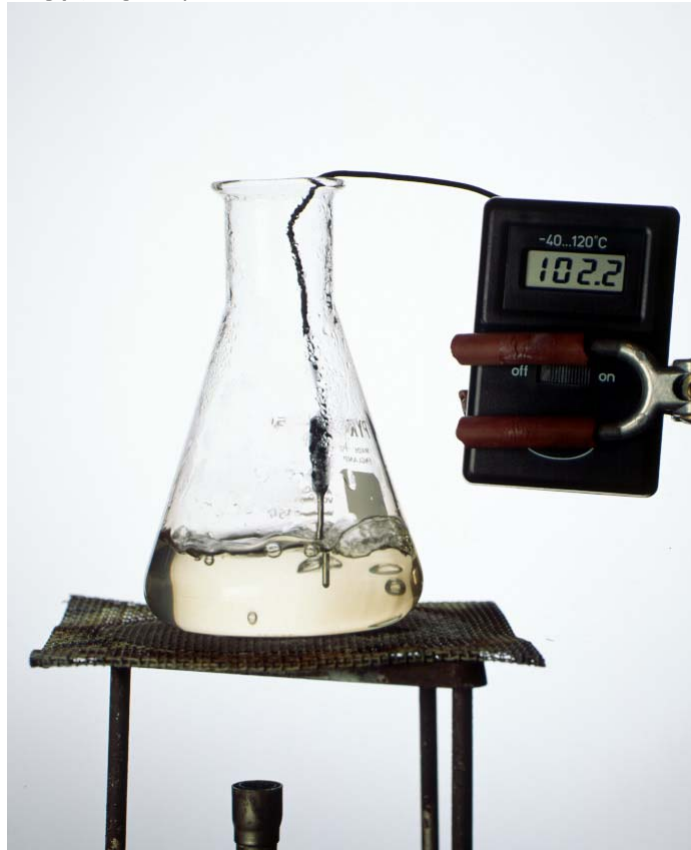




Steam!

IT'S JUST WATER!

- **Steam** is water vapor. It forms when water is heated past its boiling point and absorbs the latent heat of vaporization.



USES OF STEAM

- Under pressure, steam can be very powerful in applications such as transportation, cleaning, and heating
- In the past, steam was mainly used in rail travel to power locomotives. It was also used in large ocean traveling ships like the Titanic



POWERS OF STEAM



When compressed and under pressure, enough steam can be used to turn large turbines in power generation and heating systems.

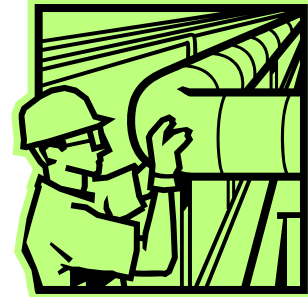


VCU AND STEAM

- VCU generates steam for space heating and process purposes on both the MCV and Monroe Park campuses
- The steam is generated by burning natural gas in water boilers. These boilers are nearly 20 feet tall and just one can supply the entire MCV campus



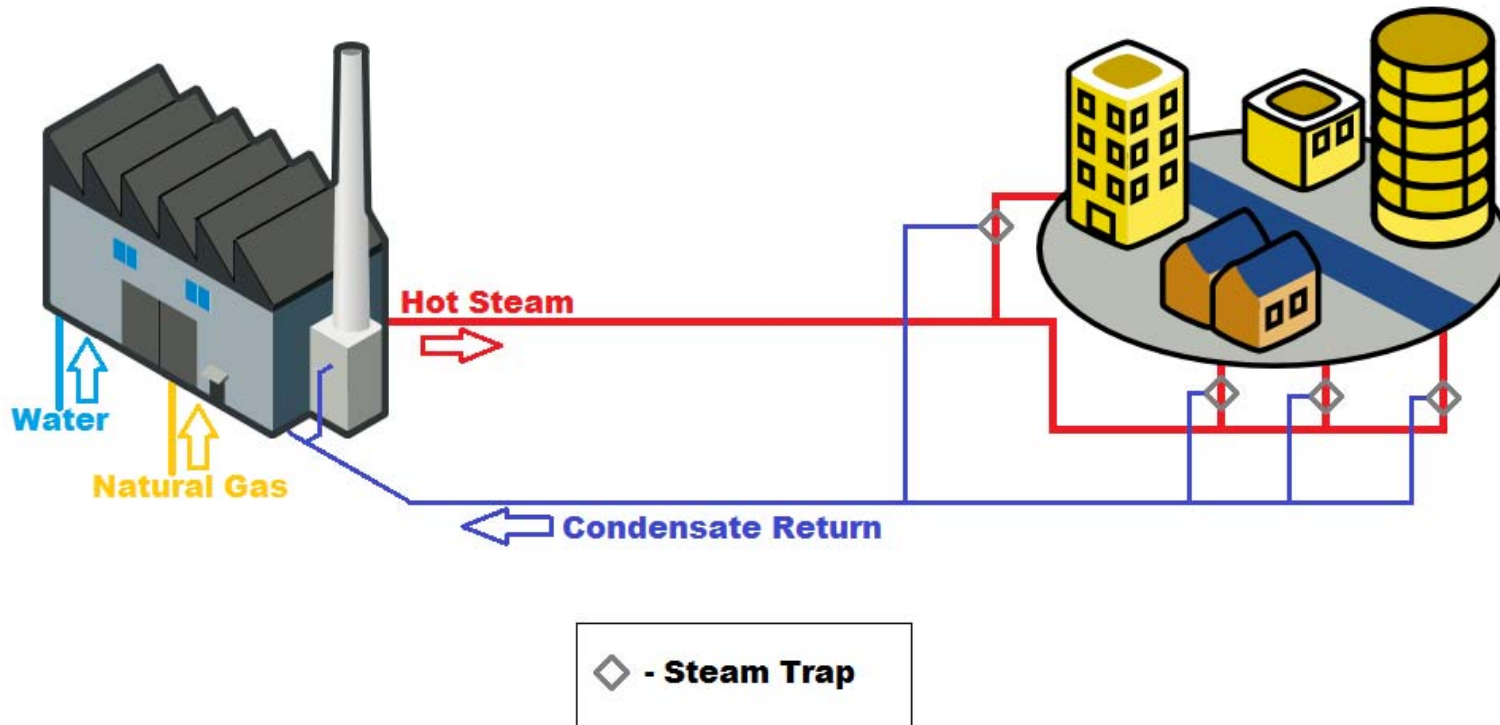
WHERE IS THE STEAM?



- The steam plant for the MCV campus is located on the other side of I-95. It is a large facility containing three boilers, it also services the hospitals and the State Capital Complex
- Steam produced at this plant is piped above ground and along the underside of the Leigh Street Bridge to make it to MCV. For Monroe Park Campus, a smaller plant is in service behind the Shaffer dining hall
- Once it's on Campus, the steam is distributed via a network of pipes to various buildings where it is used for heating rooms and other processes



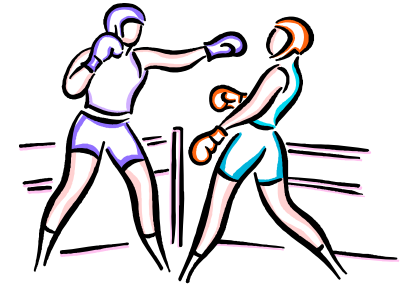
THE BIG PICTURE



Condensation is how heat is given up by the steam, however this can clog up lines with standing water and lead to inefficiency. To avoid this, devices called steam traps are installed to open and return the water back to the plant so it can be boiled again. An economizer can also be placed in the exhaust stack of the plant, to help preheat the incoming return water.



NATURAL GAS VS. FUEL OIL



- VCU chooses to burn natural gas when boiling its water for steam production. Natural gas is a cleaner burning alternative to fossil fuel because it offers lower green house gases when compared to oil.

Fossil Fuel Emission Levels
- Pounds per Billion Btu of Energy Input

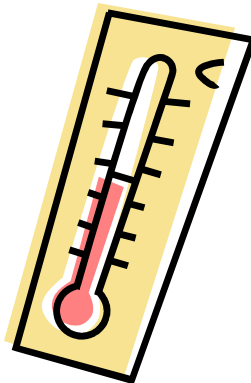
Pollutant	Natural Gas	Oil	Coal
Carbon Dioxide	117,000	164,000	208,000
Carbon Monoxide	40	33	208
Nitrogen Oxides	92	448	457
Sulfur Dioxide	1	1,122	2,591
Particulates	7	84	2,744
Mercury	0.000	0.007	0.016

Source: EIA - Natural Gas Issues and Trends 1998



STEAM TO CLEAN VCU

- Steam is past the temperature at which germs and organisms can live, so applying steam to any surface or material can rid it of bacteria and leaving only water as a by product
- VCU uses steam to clean medical equipment in various buildings on the MCV campus



STEAM'S FUTURE

- Steam will be still put to work to sterilize medical equipment and heat VCU
- The Steam Plant for MCV will continue to work hard to maintain its 98%+ uptime and 84%+ efficiency

