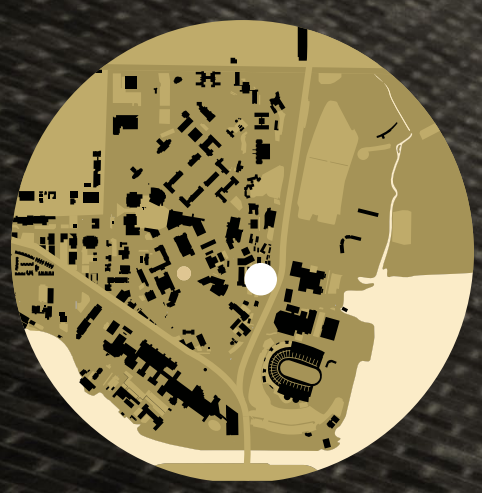
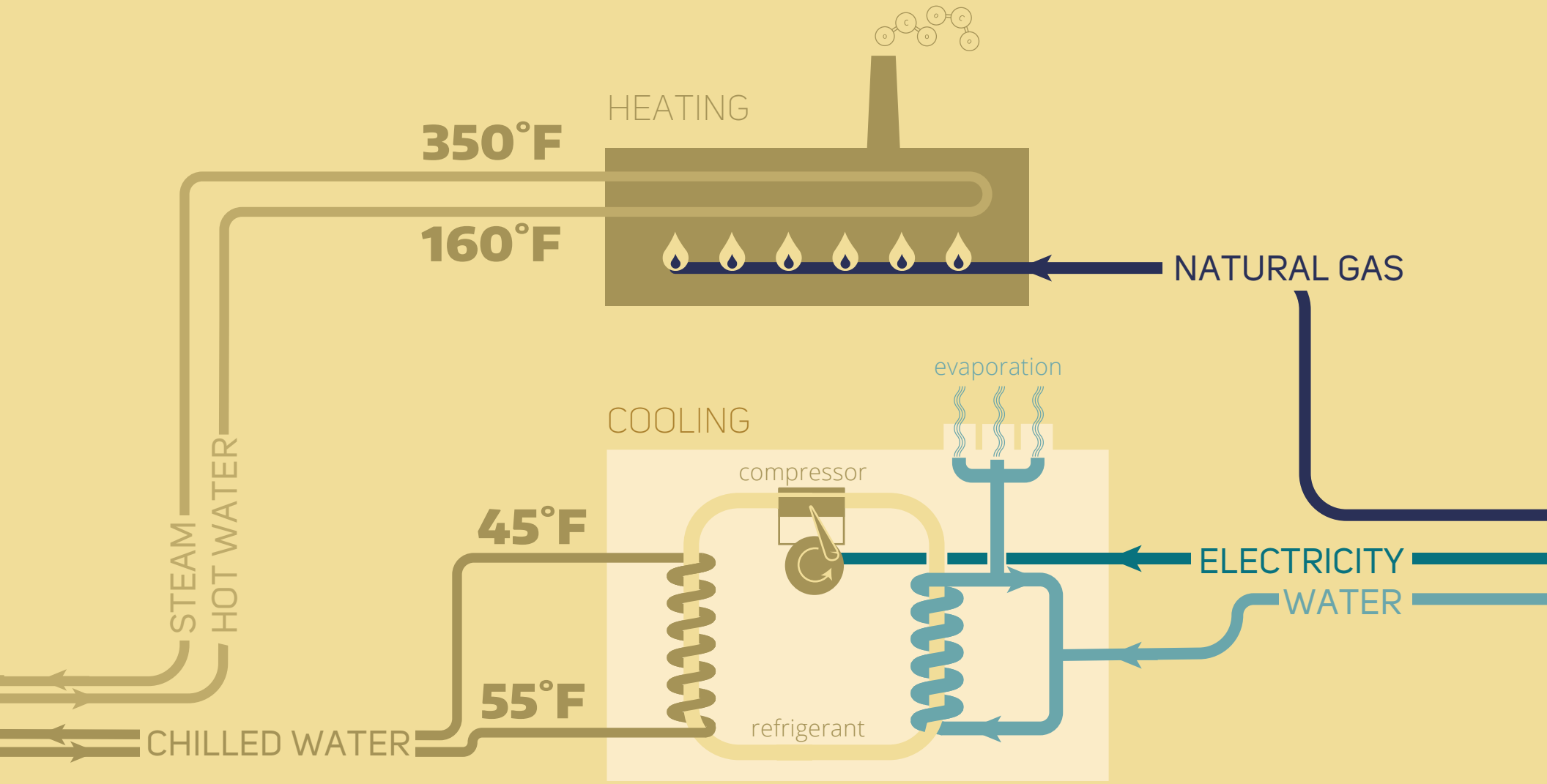
STEAM & CHILLED WATER

.5 miles away



Delivering heat & cold with water

To heat buildings, the Power Plant burns **natural gas** to create steam which travels to buildings through the 7 miles of tunnels on campus. For cooling, the plant chills water in a process that consumes **electricity** and **water**. This type of centralized heating and cooling system can be much more efficient and more effectively monitored than numerous individual building systems. (Watch for big changes in the next few years. Some of the oldest components are aging and will be replaced with new, more efficient ones.)

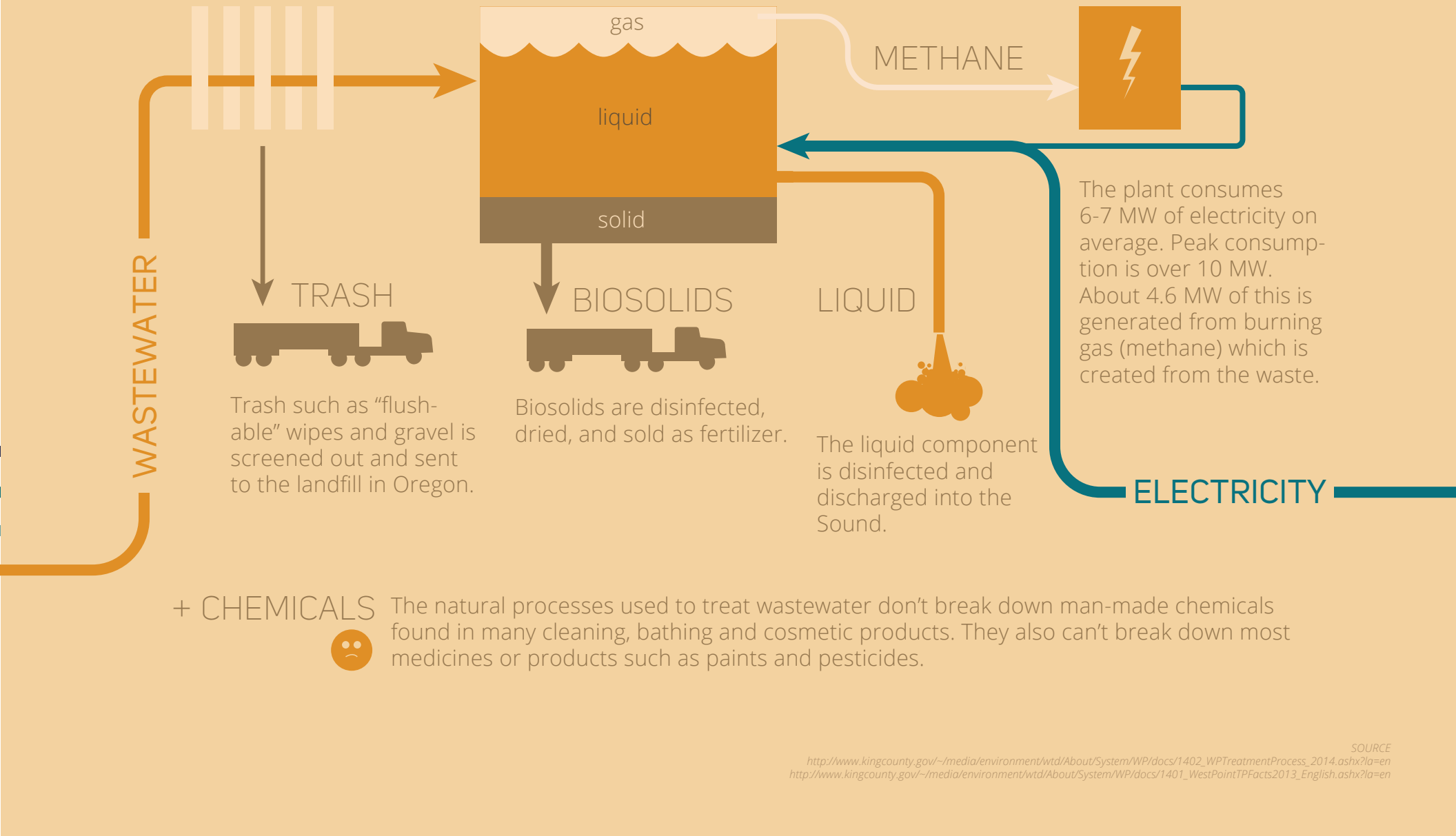


WASTEWATER

7 miles away

Making our um... waste useful

Wastewater from Gould travels about seven miles through enormous pipes to the West Point Wastewater Treatment Plant in Discovery Park where it is cleaned and turned into fertilizer, fuel and water. It isn't perfect. Some of the waste ends up being hauled to the landfill in Oregon and some unpleasant byproducts end up in Puget Sound.

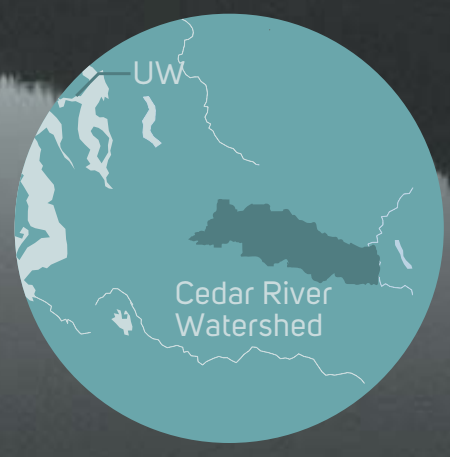


+ CHEMICALS The natural processes used to treat wastewater don't break down man-made chemicals found in many cleaning, bathing and cosmetic products. They also can't break down most medicines or products such as paints and pesticides.

SOURCE
http://www.kingcounty.gov/~/media/environment/wtd/About/System/WP/docs/1402_WPTreatmentProcess_2014.ashx?la=en
http://www.kingcounty.gov/~/media/environment/wtd/About/System/WP/docs/1401_WestPointTPFacts2013_English.ashx?la=en

WATER

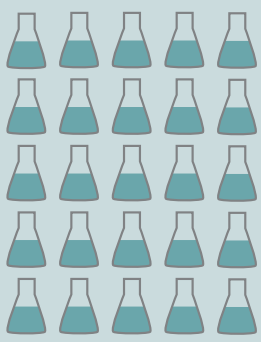
50 miles away



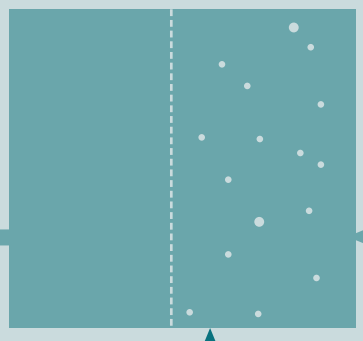
World class water supply

We get our water from the Cedar River Watershed, an area owned by Seattle which is 1.7x larger than the city itself. The water drains into Chester Morse Lake (which you see in the photo above). The surrounding forest filters the rainwater, keeping it pure. We have some of the cleanest and best-protected water in the world.

78%
of the water flows to the Puget Sound in rivers and streams where salmon spawn.



DISINFECTION
Bacteria, viruses and other pathogens are removed.



TESTING
Every day, over 50 samples are tested before and after treatment.

22%
of the water flows to Seattle in pipes for use in our homes and businesses.

WATER

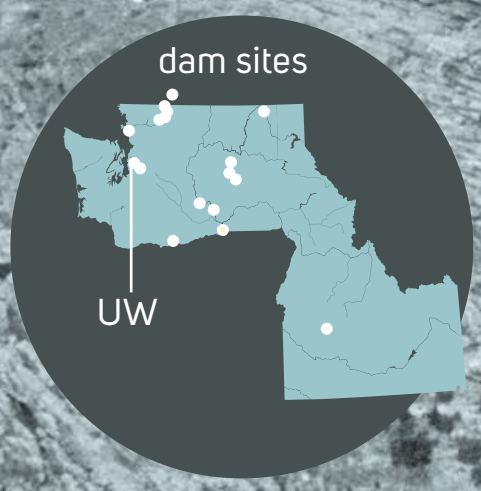
ELECTRICITY

+ BENEFITS

In addition to filtering the water we drink, the watershed provides a protected home for animals like the northern flying squirrel, amphibians like the rough-skinned newt, birds like the marbled murrelet, fish like the shorthead sculpin, insects like the very rare Beller's ground beetle, and plants like the pyramidal spirea.

SOURCES
http://www.seattle.gov/util/EnvironmentConservation/Education/CedarRiverWatershed/WaterSupplyTreatment/index.htm
http://www.seattle.gov/util/EnvironmentConservation/OurWatersheds/CedarRiverWatershed/SlideShow/index.htm
http://www.cedarriver.org/the-watershed

ELECTRICITY 40–500 miles away



Carbon-neutral electricity

Our electricity comes from the first electric utility in the country to achieve zero net greenhouse gas emissions. Seattle City Light (SCL) is owned by us, the residents of Seattle. SCL generates approximately 1/2 of what the city consumes and buys the remainder. Some of the purchased electricity comes from non-renewable sources and is offset by purchasing Renewable Energy Credits.

6% Non-renewable
offset by purchasing renewable energy credits

4.7% nuclear

0.7% coal

0.6% other
(natural gas, petroleum, etc.)

4% renewables

3.4% wind

0.5% landfill gases

90% Hydro

- No emissions (once the dam is built)
- But the ecology of the river is profoundly altered

ELECTRICITY

DISTRIBUTION LINES

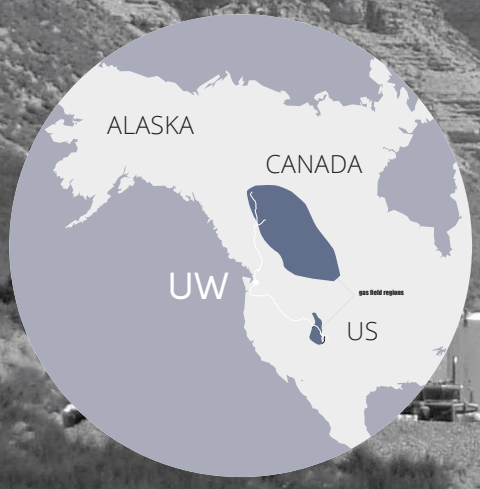
SUBSTATION
Reduces voltage

TRANSMISSION LINES (high voltage)

SOURCE:
http://www.seattle.gov/light/FuelMix/

NATURAL GAS

800–1000 miles away



Half of our carbon emissions

At the UW, we track greenhouse gas emissions generated by the operation of the University. This includes emissions from commuting, emissions associated with the electricity we consume and emissions generated by burning fuels on campus.

Of our total emissions, approximately half come from burning natural gas in the Power Plant to heat buildings.

GATHERING PIPELINES

Gathering lines bring raw natural gas from wells

PROCESSING PLANT

Various impurities are removed at the plant

oil

water

H_2S & CO_2

nitrogen

natural gas liquids

TRANSMISSION PIPELINES

Transmission lines carry natural gas for thousands of miles at high pressure

COMPRESSOR STATIONS

Stations every 50-60 miles maintain gas pressure

GATE STATION

At the gate station, odorant is added to enable us to detect leaks (natural gas is odorless)

DISTRIBUTION PIPELINES

Local distribution lines carry natural gas to its final destination

SOURCES
http://naturalgas.org/naturalgas/processing-ng/
https://pse.com/aboutpse/EnergySupply/Pages/Natural-Gas-Supply.aspx
http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/index.html
http://cdn.intechopen.com/pdfs/35293/InTech-Natural_gas_purification_technologies_major_advances_for_CO2_separation_and_future_directions.pdf,%20Last%20access%2010/11/2013