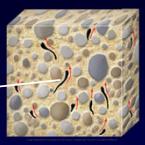


Conventional oil and gas occur in connected pores, so it can flow out

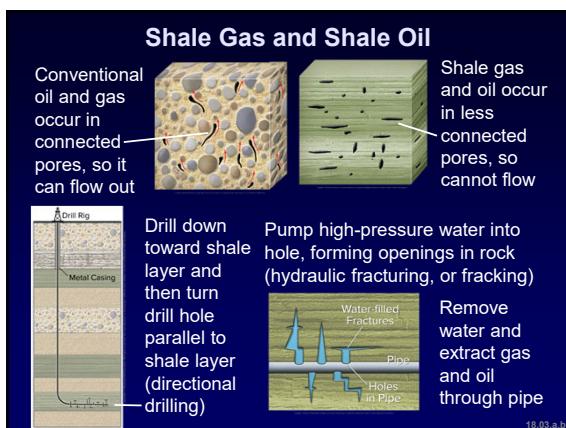


Shale gas and oil occur in less connected pores, so cannot flow

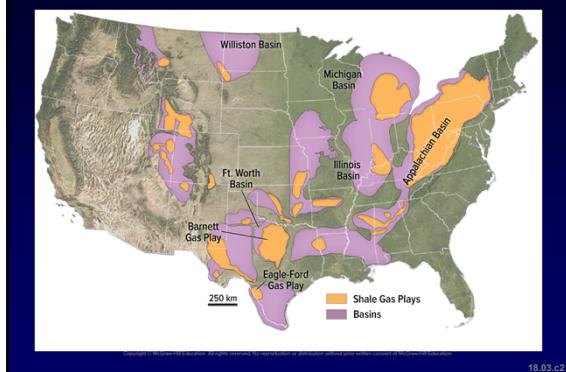
Drill down toward shale layer and then turn drill hole parallel to shale layer (directional drilling)

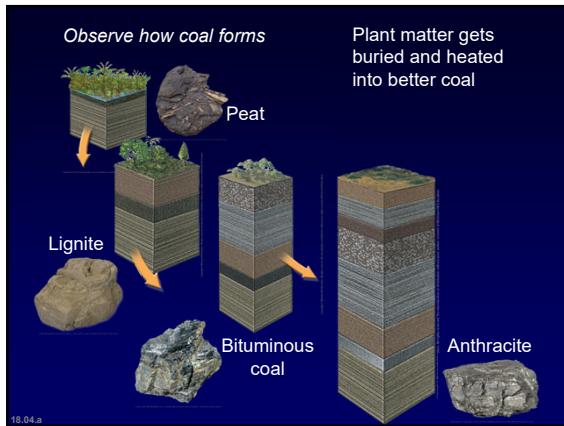
18.03.a,b

Shale Gas and Shale Oil



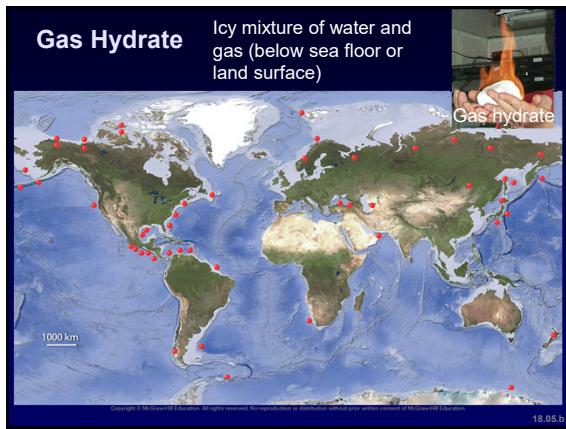
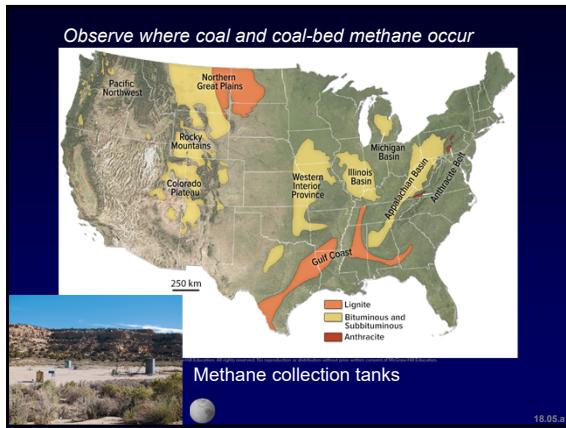
Observe basins with shale gas and shale oil in the U.S.

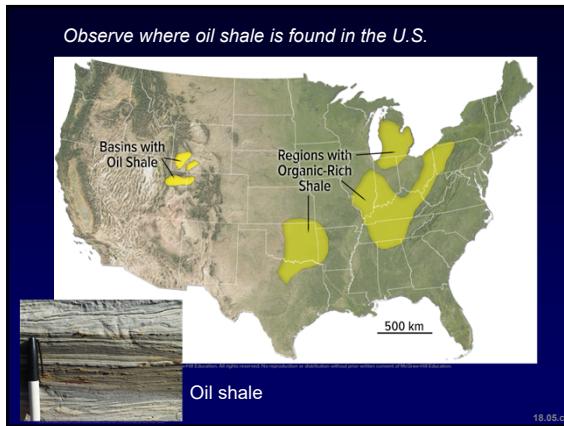


















How Do We Explore for Fossil Fuels?

Favorable structures, such as folds and faults

Avoid unfavorable rock types: granite and metamorphic rocks

Favorable environment of rocks and heated right amount

Layer sequence

Structures

Seismic-reflection studies

18.06.a,b

How Uranium Generates Electricity

Uranium mined and processed at mill

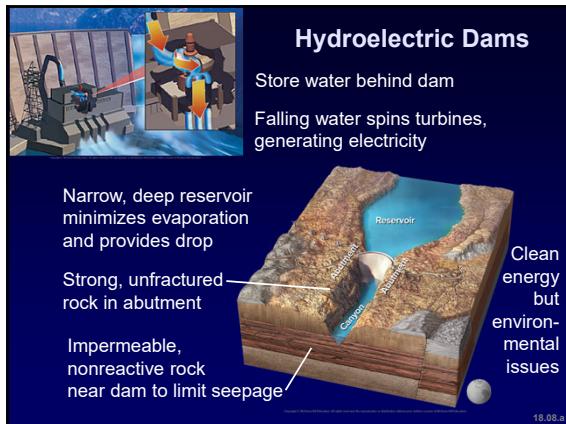
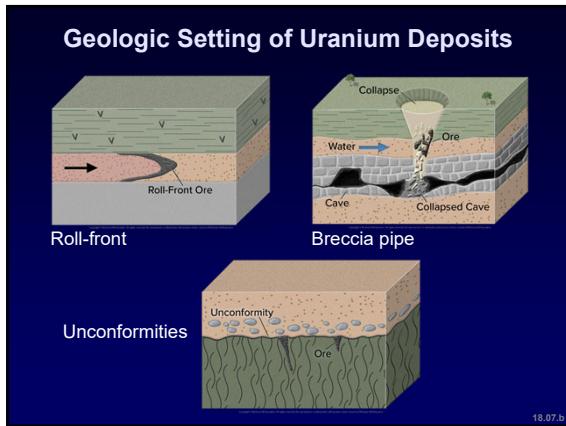
Gas centrifuges to enrich uranium

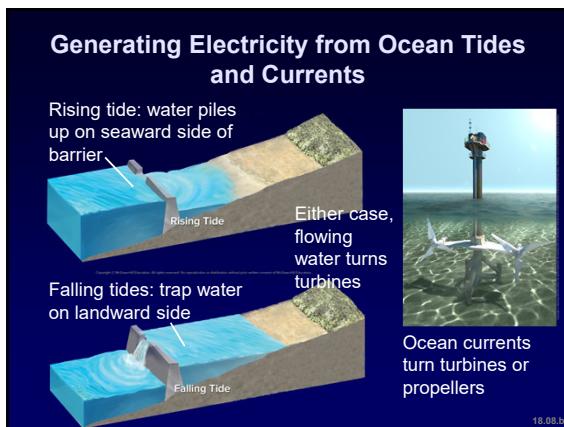
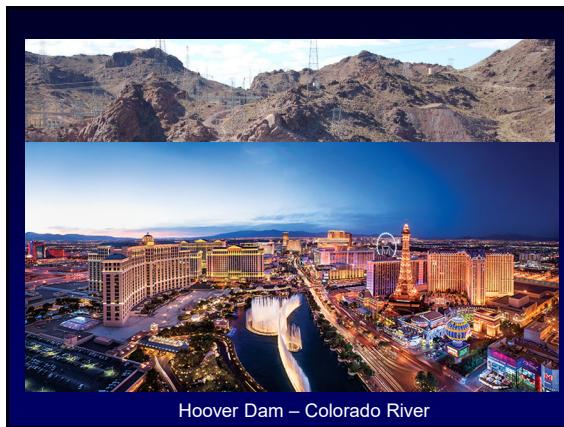
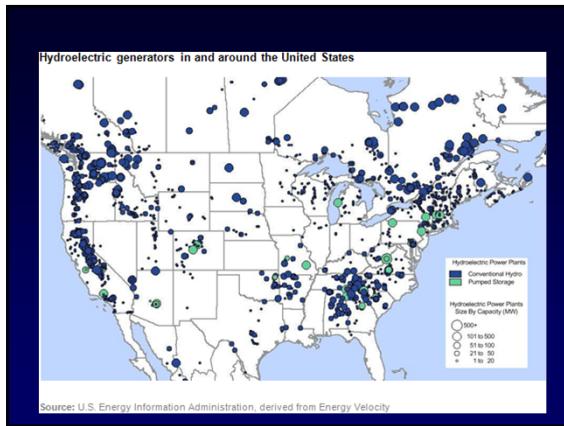
Nuclear reactor

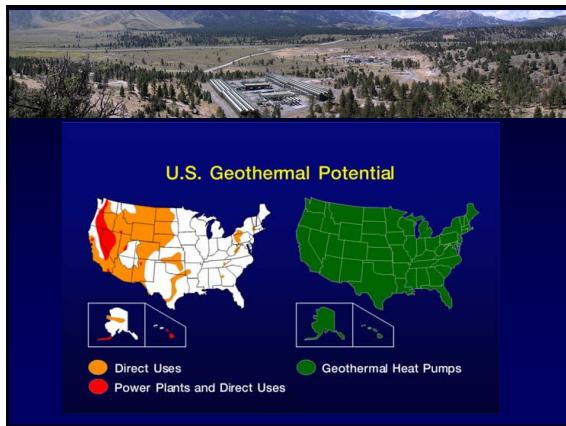
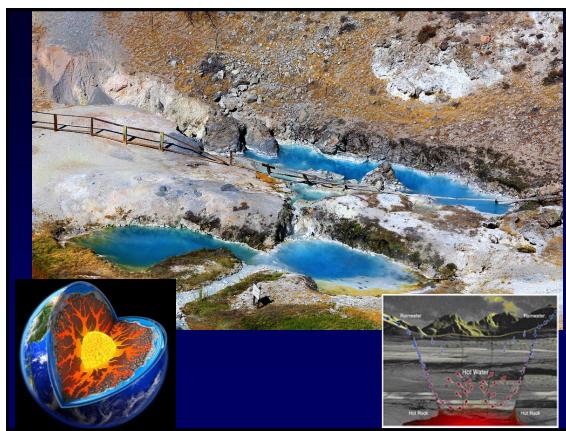
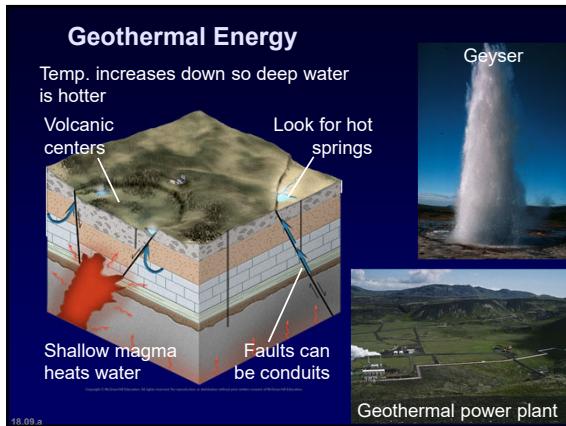
^{235}U radioactive decay by fission, splitting apart

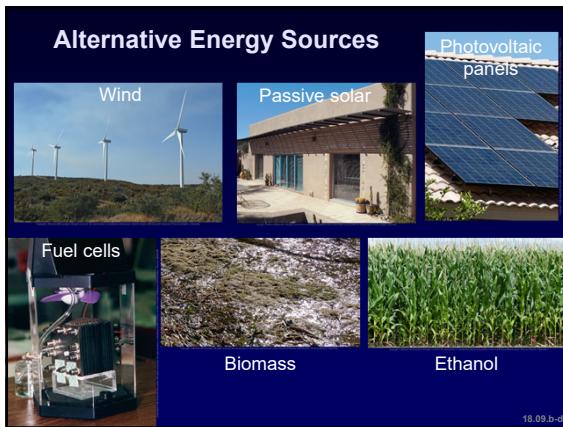
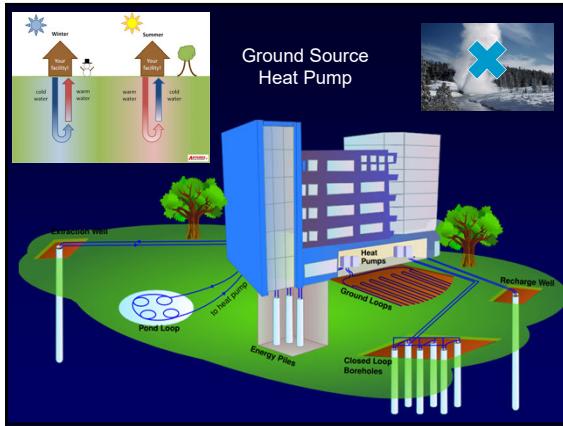
Produces heat to make steam to power generator

18.07.a-c











Mineral Deposits and Ores

18.10.b

Mineral deposit: contains something valuable, but is ore if it can be mined at a profit

Quartz vein with gold can be ore

Vein with only quartz: not a mineral deposit

18.10.a

Determining Whether Rock Is Ore

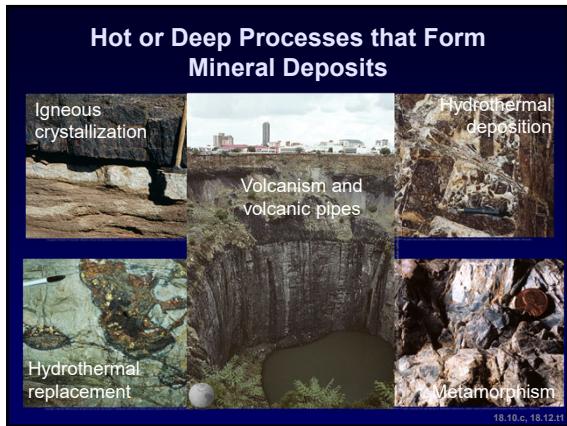
18.10.b

Grade of ore

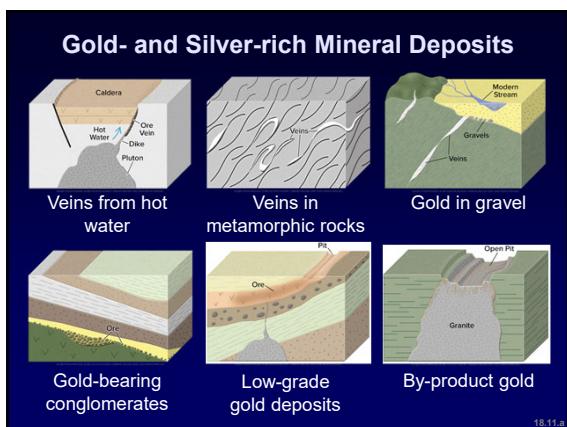
Type of ore

Size and depth of deposit

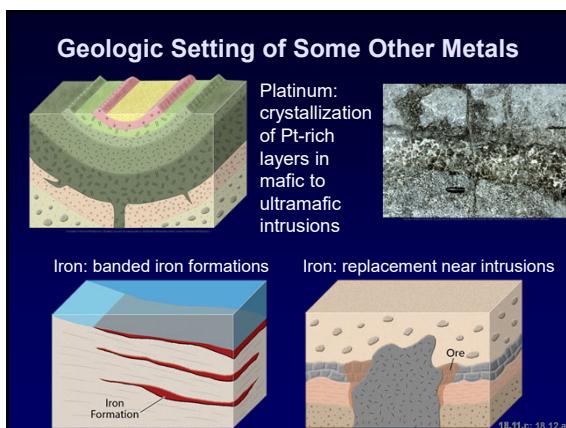
Location of deposit

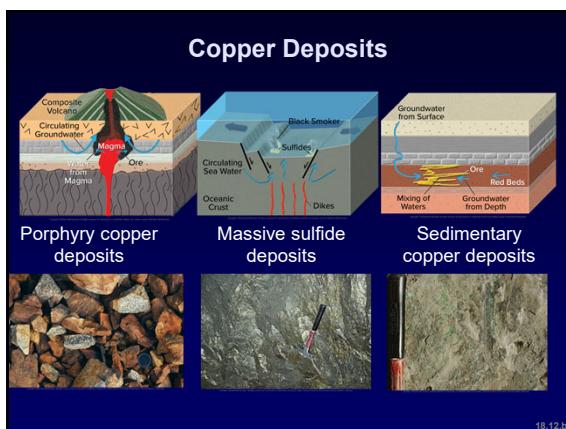


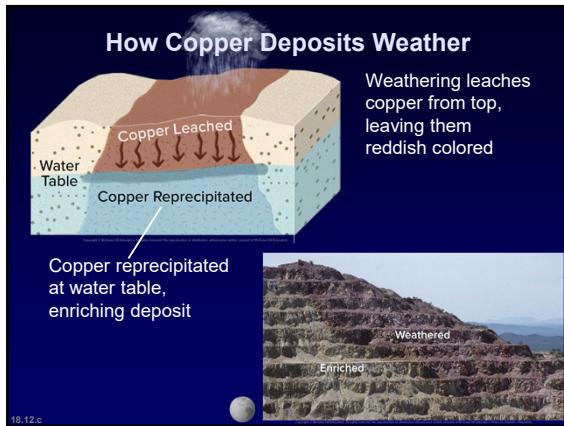


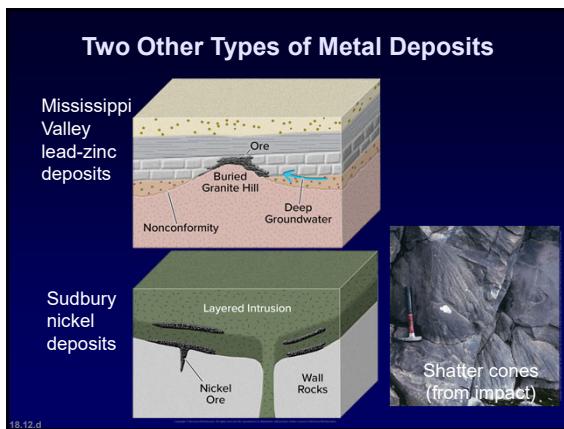


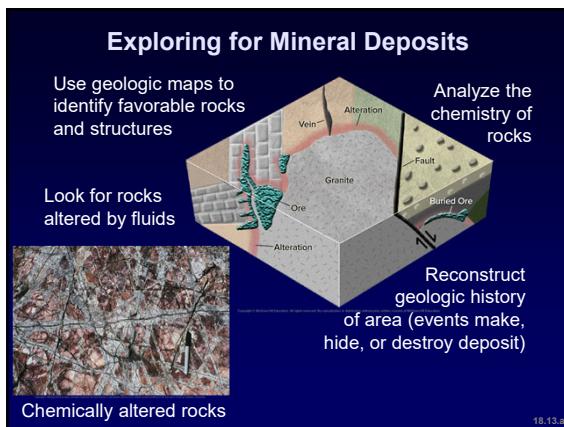


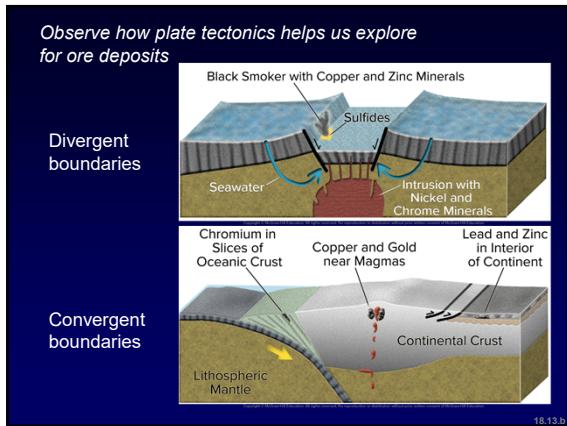






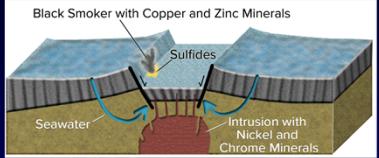




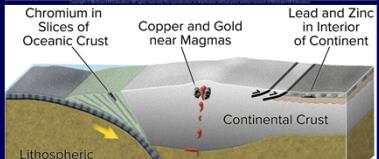


*Observe how plate tectonics helps us explore
for ore deposits*

Divergent boundaries

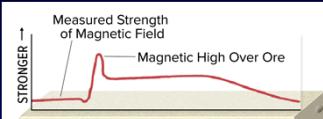


Convergent boundaries

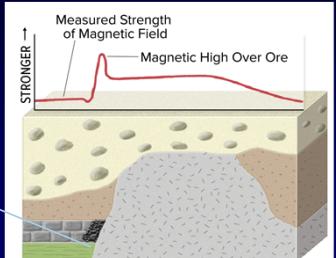


Finding Buried Mineral Deposits

Conduct surveys using geophysical methods, including magnetic surveys



Note where the magnetic strength is high over ore body



Extracting and Processing Minerals



Open-pit mine



Mill



THE GOLDEN CROWN



Leach pads

