12_1 Geothermal - Direct Use

Recap:

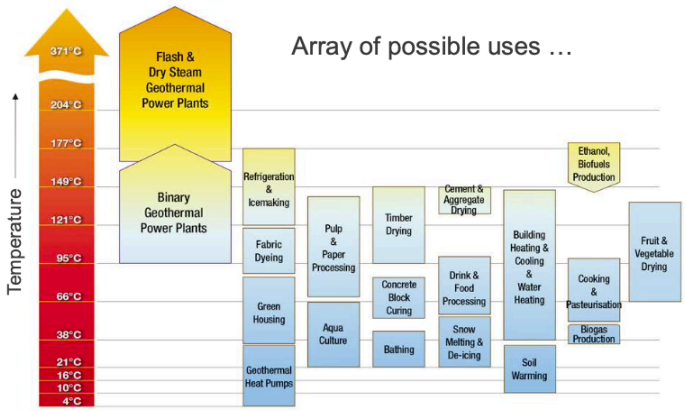
1. EGS challenges:
   a. Creating a low-impedance high-heat-transfer long-lived heat exchanger
   b. Minimizing environmental effects, esp. seismicity

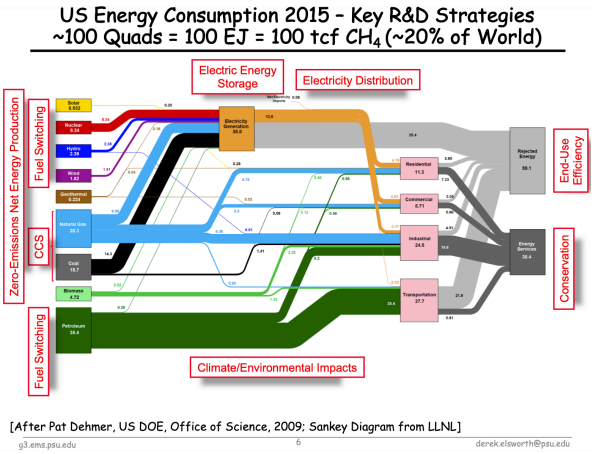
Movies: (Great Lakes SedHeat Network): https://igws.indiana.edu/glsn/speakers
(P. Fulton): https://psu.zoom.us/rec/share/
iuFAh64nqxbLUhZH18NtNC49ieLkSzubs4xwjUmmQoLtRhSr63DjdxdVzX9K_uoh.PYzJEaPv1juZxyn0
(Mozoun): https://personal.ems.psu.edu/~fkd/courses/eme_497/videos/2_v_alyammahimozoun.mp4
(Brent): https://www.youtube.com/watch?v=6FrNdtsvW9U
(Tim): https://personal.ems.psu.edu/~fkd/courses/eme_497/videos/6_v_bruggemantimothy.mp4

Resources: WG12

Motivation:

1. Motivation [10%] Provide context for the topic. *Use of relevant public domain videos* are a useful method for this. Why is this particular topic or sub-topic important in the broad view of geothermal energy engineering?





Utilize low quality heat without the penalty of conversion to electricity
Utilize the 50% "rejected power" from the Sankey diagram
Opportunities:
1. Low temperature resource
2. Cascade of successively lower heat uses

Scientific Questions:

2. Scientific Questions to be Answered/Outline [10%] What questions arise from the motivation. What are the sub-topical areas that address these scientific questions.

Direct Use

1. What are the "highest" uses at each stage?