SAN ANTONIO RIVER AUTHORITY

Water Resource Impacts of Solar Farms and appropriate BMPs

December 16th, 2022

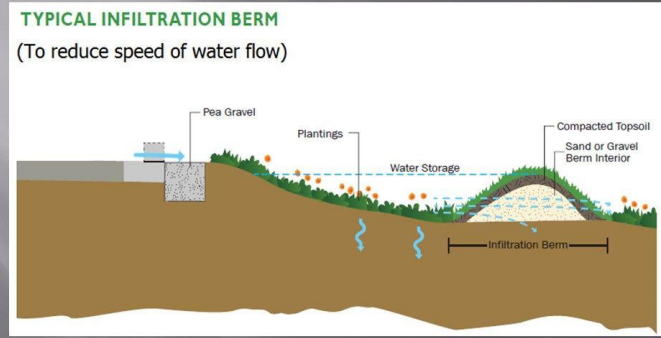
Typical Solar Farm Site

Traditional photovoltaic (PV) panel farm

Types of Potential Impacts

- Drainage and Erosion
  - During construction
  - Often solar farms are built on “lower quality” land where there can be difficulties maintaining permanent vegetation.
    - Soil amendments can improve vegetation survival.
    - Alternative slope protection can be installed (like gravel/rock protection)
  - Spacing between panels/lines of panels should be adequate for the sunlight needs of the ground cover.
  - Special treatments of “drip lines”.
    - turf reinforcement matting
    - French drains.

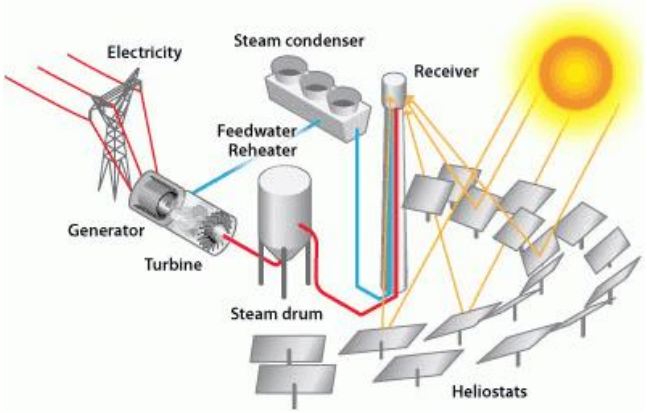
Examples of Negative Impacts

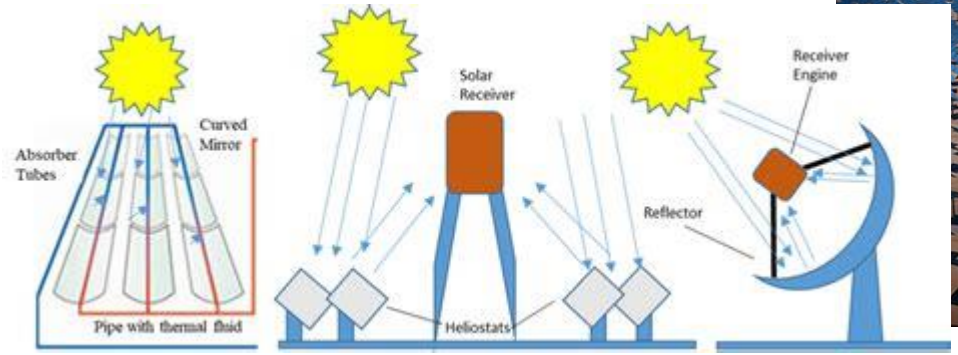


Types of Potential Impacts

- Water Demand
  - During operation to clean panels of dust and dirt
    - 0-33 gal per MWh
    - 0.3 acre-ft of water per acre (For comparison, average water use for irrigated crops is 1.5 acre-ft per acre)
    - Experiments with waterless cleaning technology using electrostatic repulsion
  - concentrating solar-thermal power technologies
    - 0-33 gal per MWh (dry cooling); 90-345 gal/MWh (hybrid); 725-1000 gal/MWh (wet cooling)
    - Coal = 530 gal per MWh; Natural gas = 280 gal per MWh; Nuclear = 460 gal per MWh

Photovoltaic (PV) panels verses Concentrate Solar Radiation





Questions?