Introduction:
- Sewage sludge (i.e., biosolids) is the solid organic byproduct of wastewater treatment.
- Across the U.S., this sludge is treated and disposed of in many different ways.
- Many of these practices have a large environmental footprint and represent health risks to the public and ecosystems.

Economic Factors:
- Biofuels are renewable, cost competitive, applicable in diverse markets, and show reduced carbon emissions.
- Funding is available for thermochemical processing, and several companies are already investing in the technology.

Conclusions:
- Barriers/drawbacks to widespread implementation:
  - Great variability amongst wastewater treatment facilities
  - Many of these practices have a large environmental footprint and represent health risks to the public
  - Reduction of GHG emissions, may become more important
  - Increase in criteria emissions and associated regulation
  - Production of carbon
  - Across the Bay Area, it is currently in ‘valley of death’ in terms of funding and proof of feasibility
  - Wastewater treatment plants that use anaerobic digesters
    - Biosolids
    - Bay Area
    - Investment on advanced Biofuels fluctuate

Environmental Implications:
- Biosolids contain heavy metals and micropollutants detrimental to both human and environmental health.
- Thermochemical Processing dramatically reduces the volume of sewage sludge, helping to mitigate methane emissions and to relieve pressure on landfills.

Policy Factors:
- Status Quo:
  - As of yet, there are no regulations for chemical pollutants in biosolids, with the exception of heavy metals.
  - “The application of biosolids should be abandoned immediately...the current regulatory restrictions and biosolids treatment programs allow for the continued contamination of the environment and threaten human health.”
  - Symptoms, includingashes, have been linked to proximity to agricultural soils treated with biosolids...one study published in 2009 found that 25% of residents living within approximately one kilometer (0.6 miles) of [Biosolids] land application sites were affected by Staphylococcus aureus in their skin and respiratory tracts, including two who died.

Support for Change:
- Assembly Bill 1900:
  - Recognized biomethane as a renewable fuel in California
  - Landfill Methane Outreach Program and Waste Energy Recovery Registry:
    - Incentivizes GHG emissions reductions
  - Biogas Investment Tax Act:
    - 30% investment tax credit for systems using anaerobic digesters to convert biomass gas consisting of at least 52% methane

Acknowledgements:
- Bay Area Biosolids Coalition
- Berkeley Center for Green Chemistry
- BERMUD
- Instructor: Joseph Guth, Saha Harris
- Alastair Iles, Tom McKone, Martin Mulvihill, Chris Rosen, Megan Schwarzen, Chris Vulpe