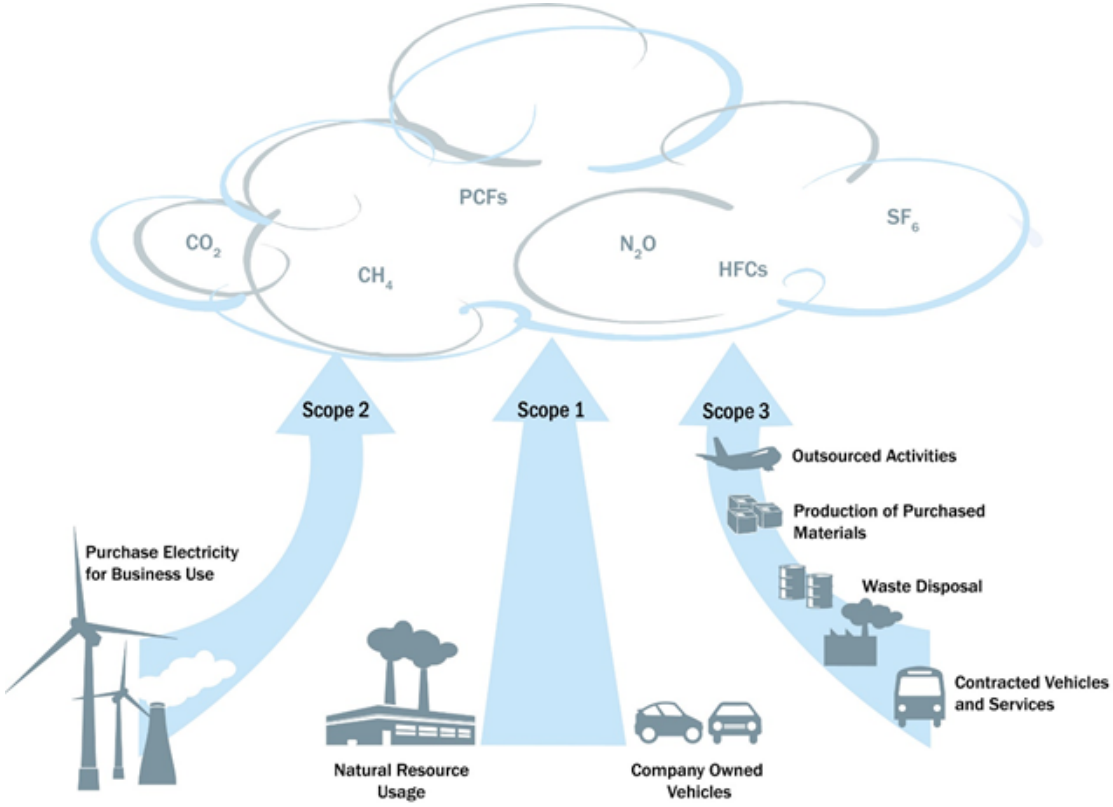
Brown AND Caldwell

Northeast Residuals and Biosolids Conference 2017

Impact of Greenhouse Gas Emissions on Biosolids Management Decision Making

October 26, 2017



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Outline

- Overview of Greenhouse Gases (GHG)
- Example of GHG in Biosolids Management Planning
- Summary

Greenhouse Gas Background

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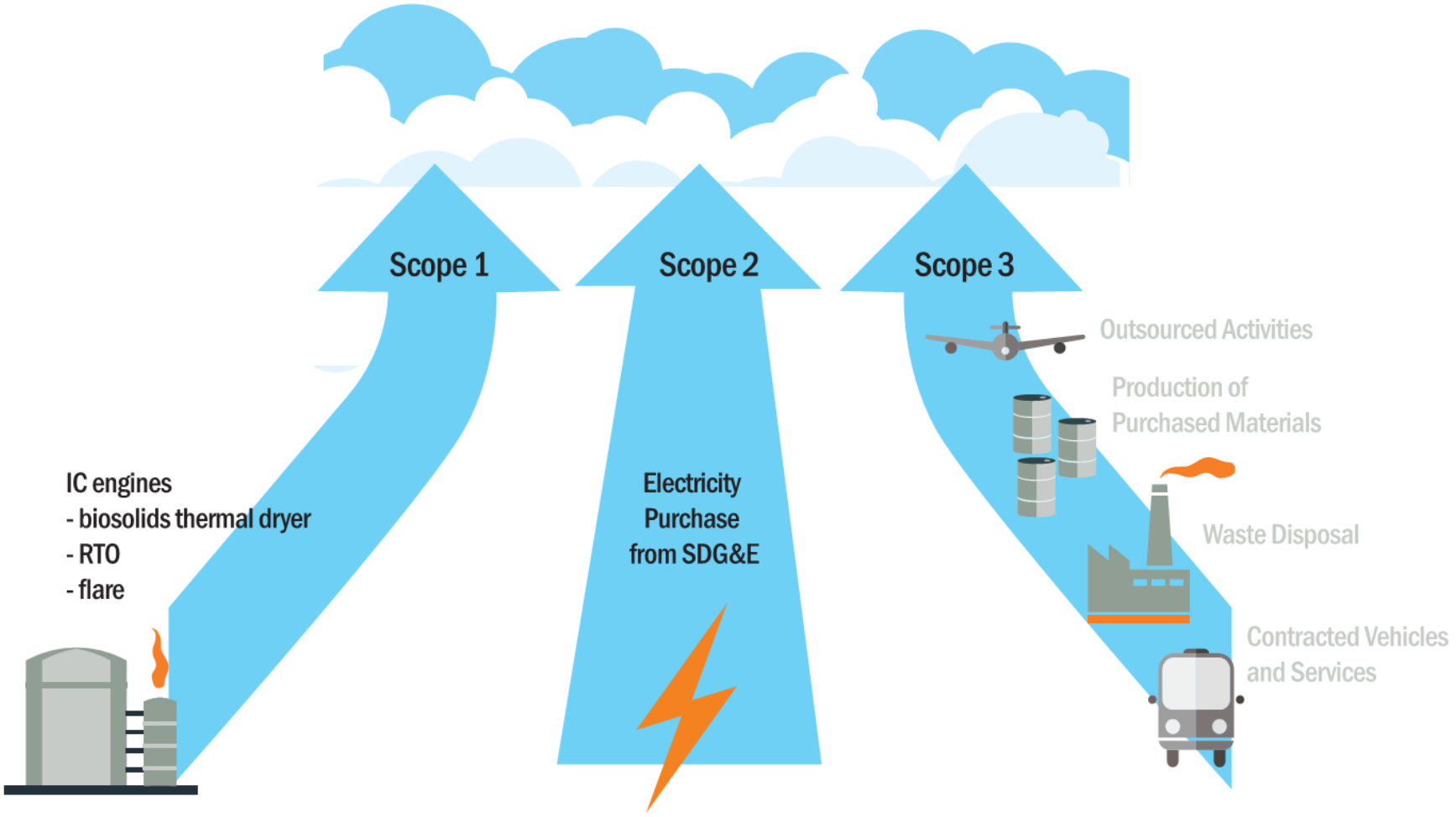
Greenhouse Gases

- Gases that trap heat in the atmosphere
  - Carbon Dioxide (CO_2)
  - Methane (CH_4)
  - Nitrous Oxide (N_2O)
  - Fluorinated Gases (e.g. CFCs and HFCs)
- EPA: The goal is to reduce Scope 1 and 2 emissions 46 percent by FY 2025 and reduce Scope 3 emissions 35 percent by 2025. (Executive Order 13693)

GHG Emission Types

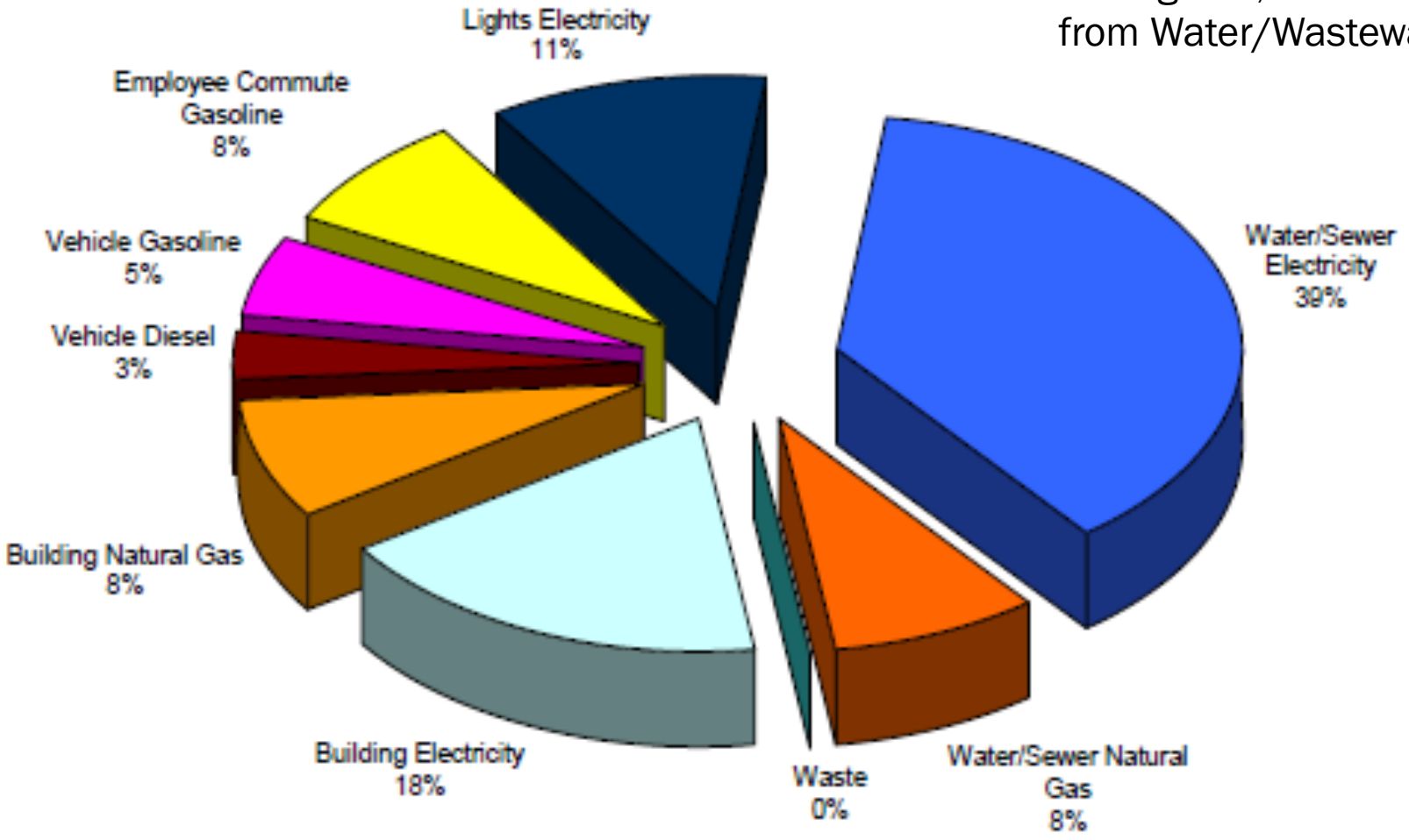


Why Track GHG?

- GHG Emission Tracking and Reduction
  - King County, Washington
  - Columbus, Ohio
  - Flagstaff, Arizona
  - Bellingham, Washington
- Clean Energy Initiatives
  - King County – clean energy transit
  - Minneapolis - utilities partnerships for new clean energy options
  - Westchester County, NY - utilities partnerships for cleaner, cheaper energy options
- Grant opportunities
  - California - Greenhouse Gas Reduction Grant and Loan Programs to help fund new infrastructure projects, which resulting GHG reduction

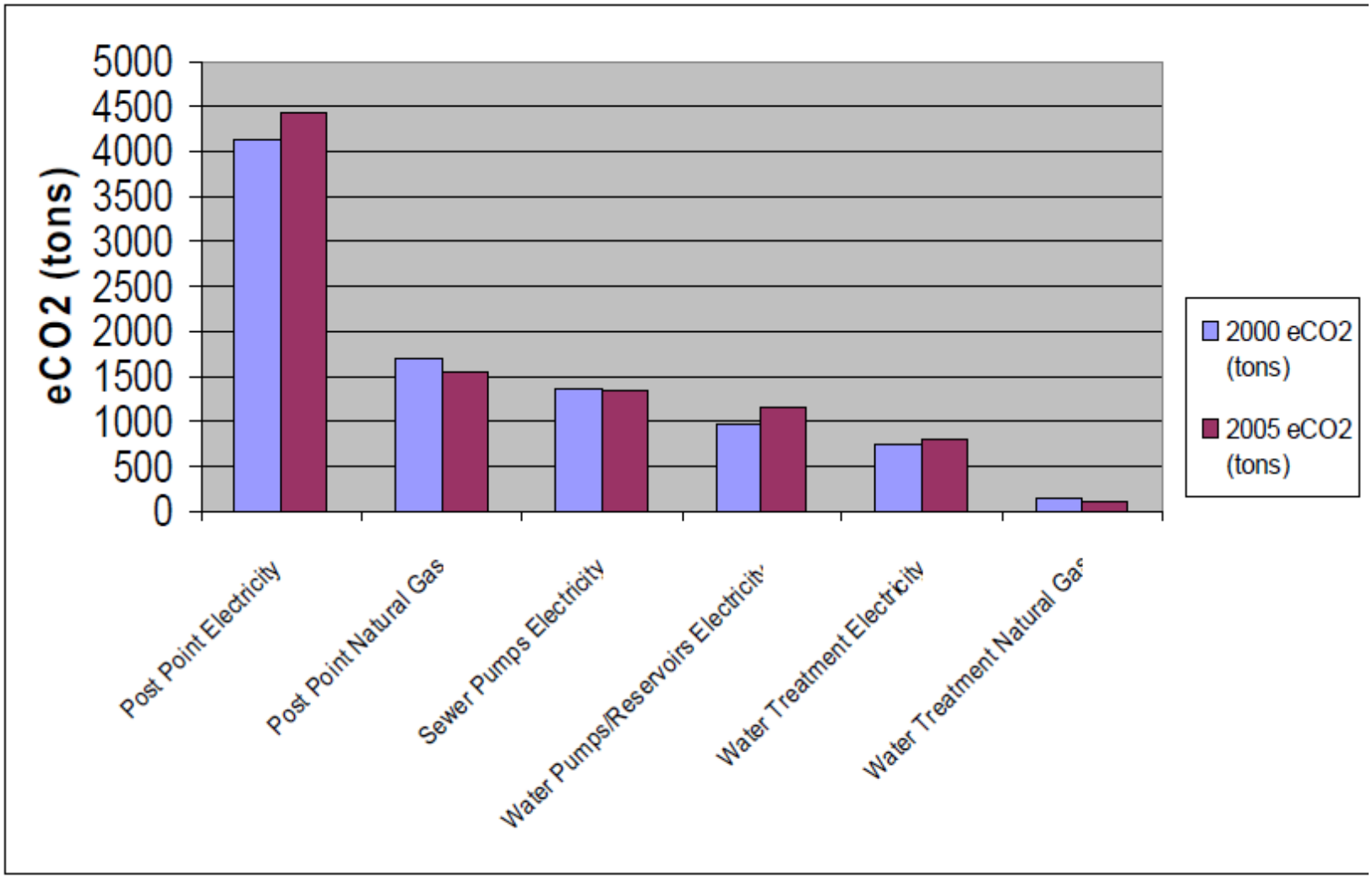
Why should municipalities track GHG?

Bellingham, WA: 47%
from Water/Wastewater



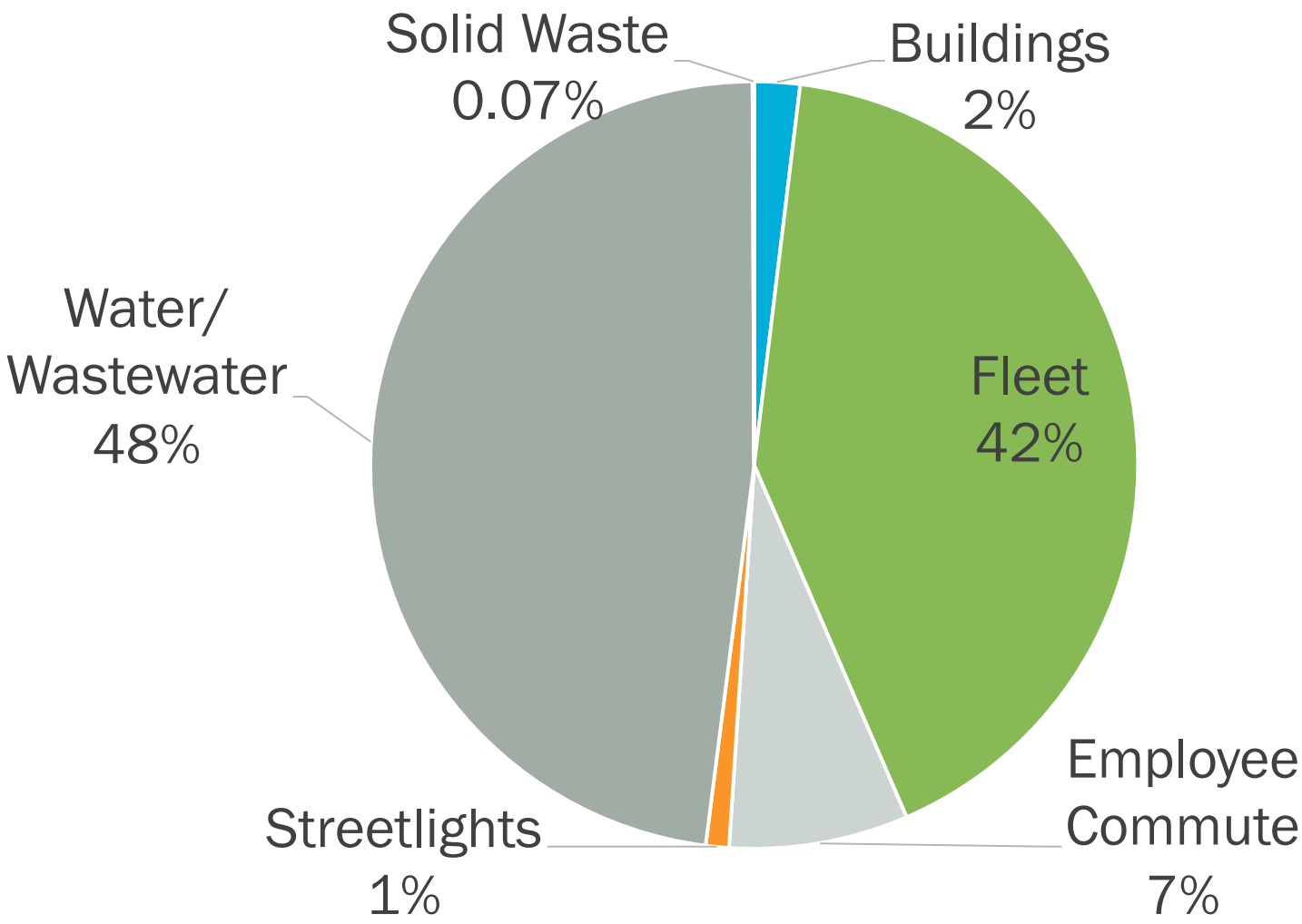
Source: City of Bellingham 2007

Bellingham Breakdown of Water & Wastewater



Source: City of Bellingham 2007

Tacoma Municipal Operations GHG Emissions



Source: City of Tacoma 2012

Types of Models and Calculators

- EPA: GHG Equivalency calculator
  - Calculates CO_2 emissions from areas such as electricity use and fuel consumed (scope 1 and 2)
  - Does not provide carbon sequestration benefits
- The Community Protocol (Local Governments for Sustainability USA)
  - International Council for Local Environmental Initiatives
- BEAM: Biosolids Emissions Assessment Model
  - Excel based model that accounts for Scope 1, 2, and 3 emissions.
  - Carbon sequestration benefits
  - Focuses on processes associated with solids handling and transportation

GHG in Biosolids Management Plan

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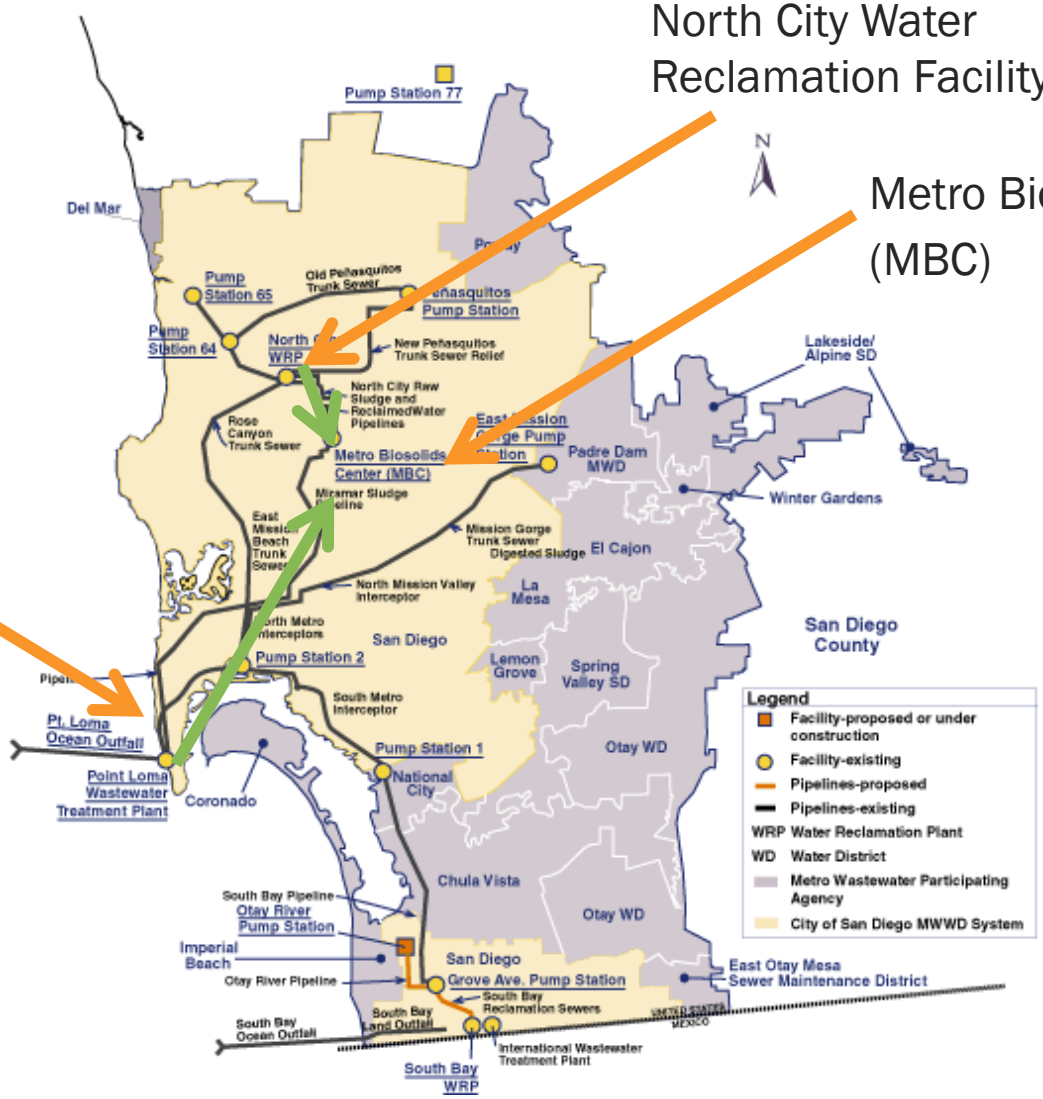
City of San Diego Service Area

North City Water Reclamation Facility

Metro Biosolids Center (MBC)

Point Loma WWTP

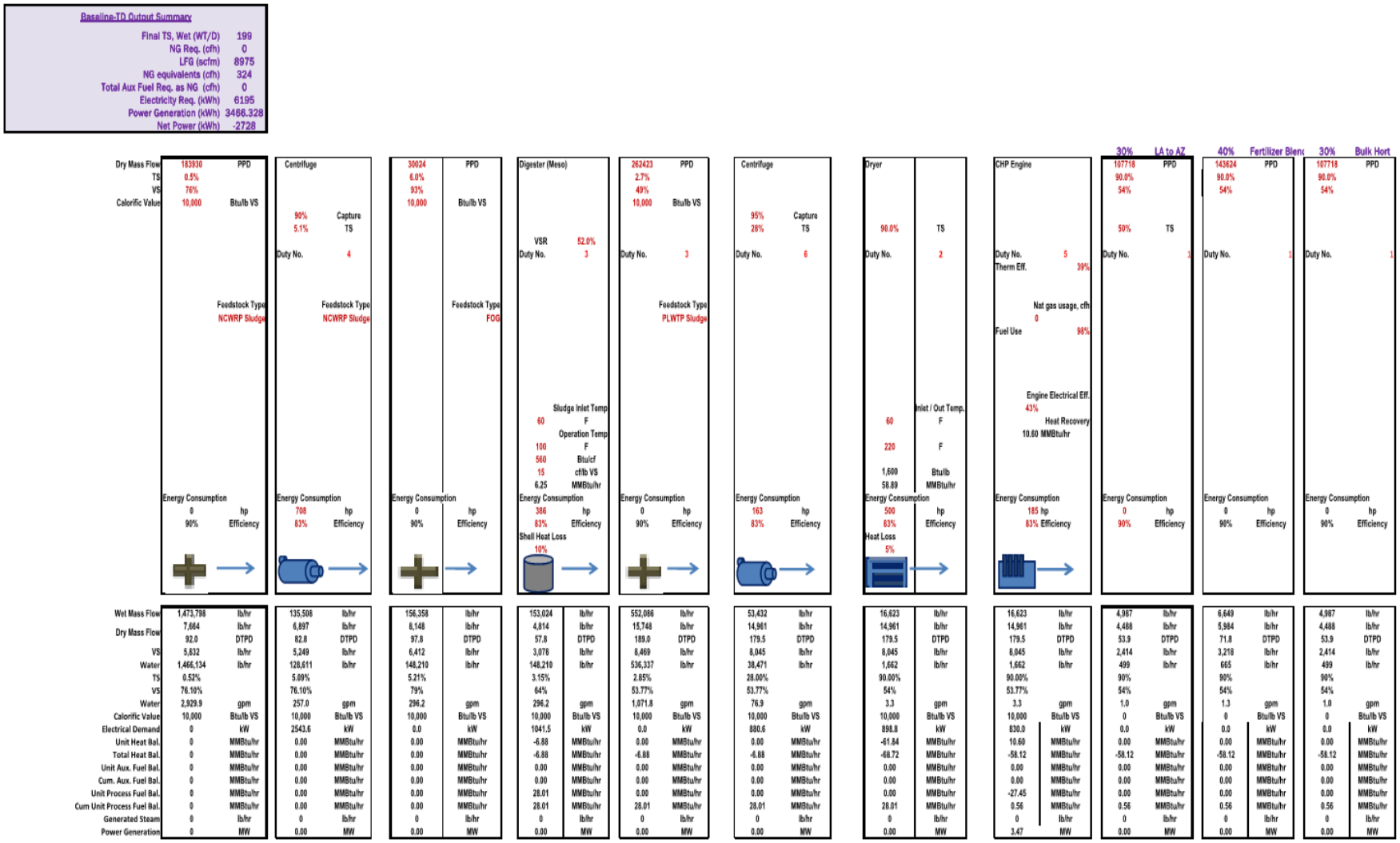


Source: https://www.sandiego.gov/mwwd/general/servicearea

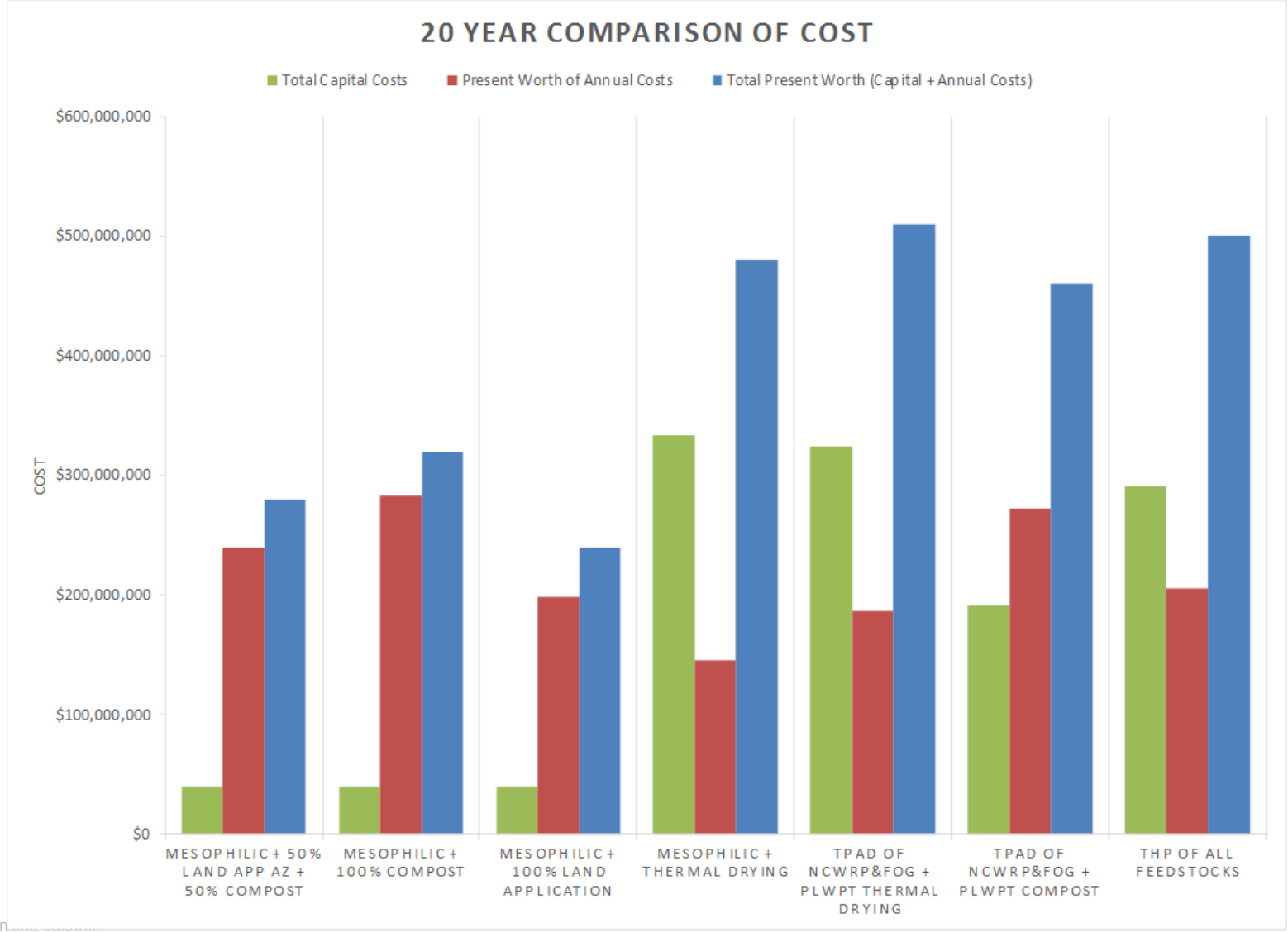
Alternatives Evaluated

- Mesophilic – Land Application
- Mesophilic – Land Application and Compost
- Mesophilic – Thermal Dryers
- Temperature Phased Anaerobic Digestion - Land Application
- Temperature Phased Anaerobic Digestion - Thermal Dryer
- Thermal Hydrolysis - Land Application

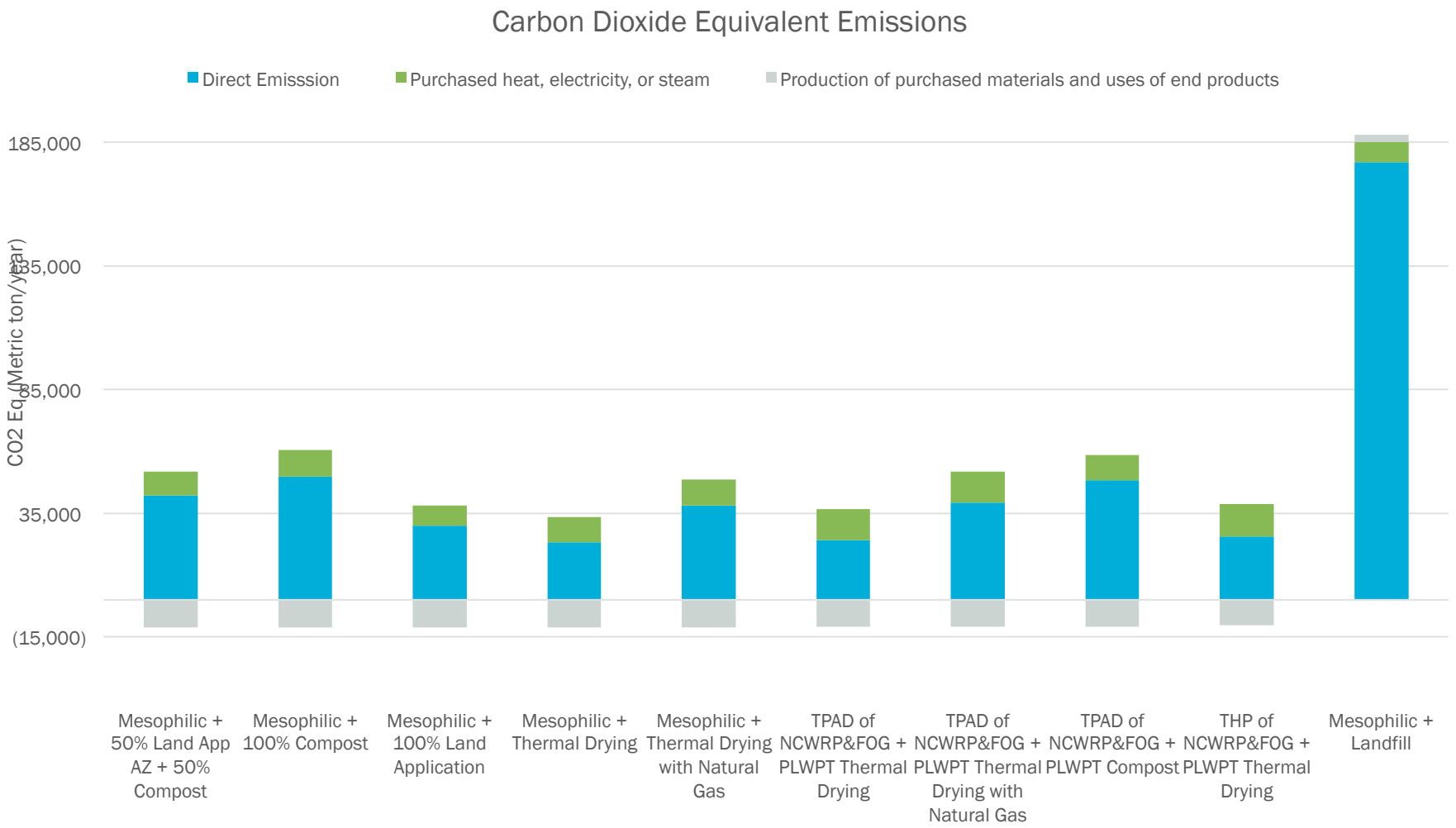
Solids Water Energy Evaluation Tool



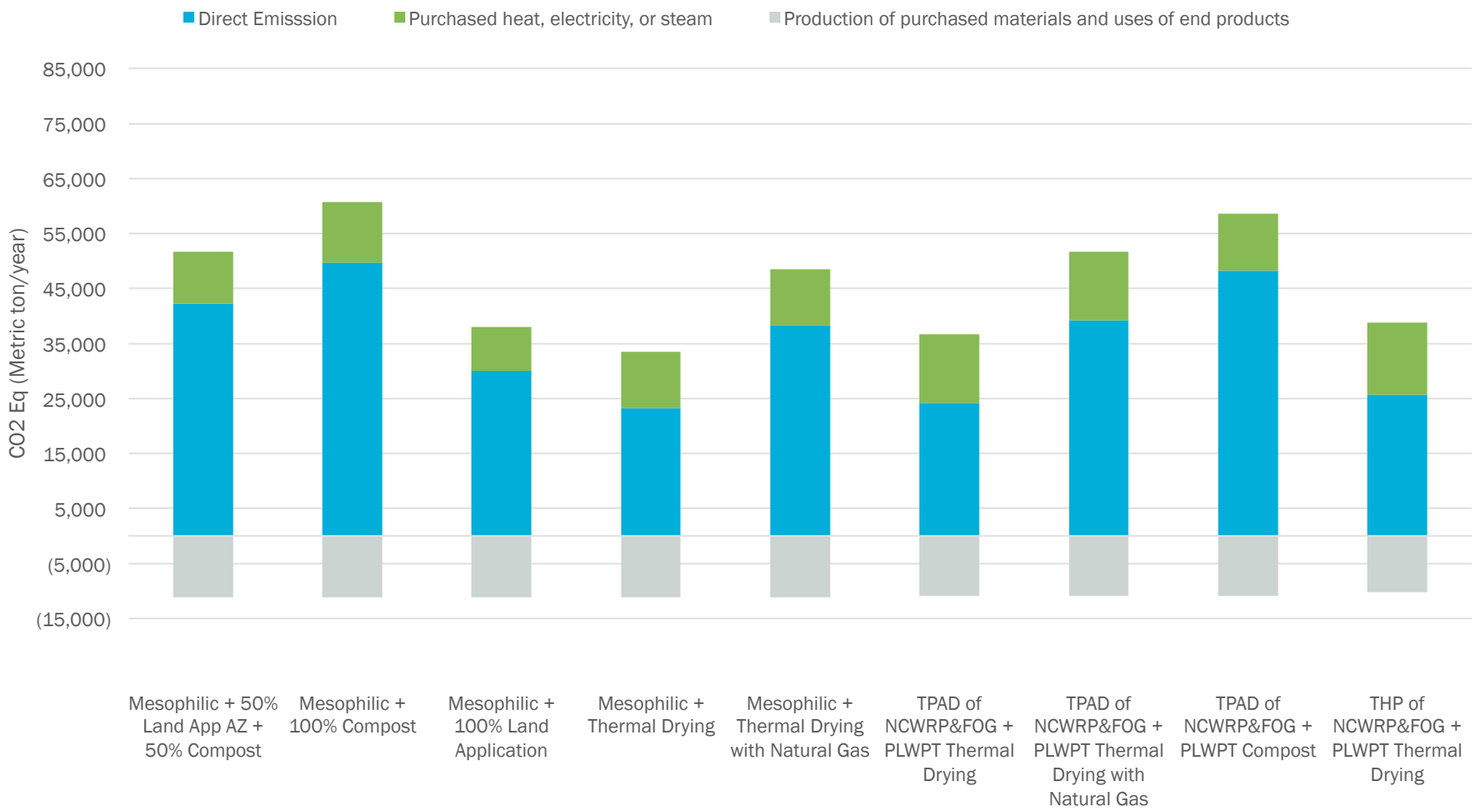
SWEET Economic Results



GHG Emissions



GHG Emissions



Summary

- GHG trap heat in the atmosphere
- 3 categories of GHG
- Municipalities are creating GHG reduction plans
- GHG reductions can impact planning decisions

Thank you.
Questions?

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References

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