Carbon Sequestration: Background

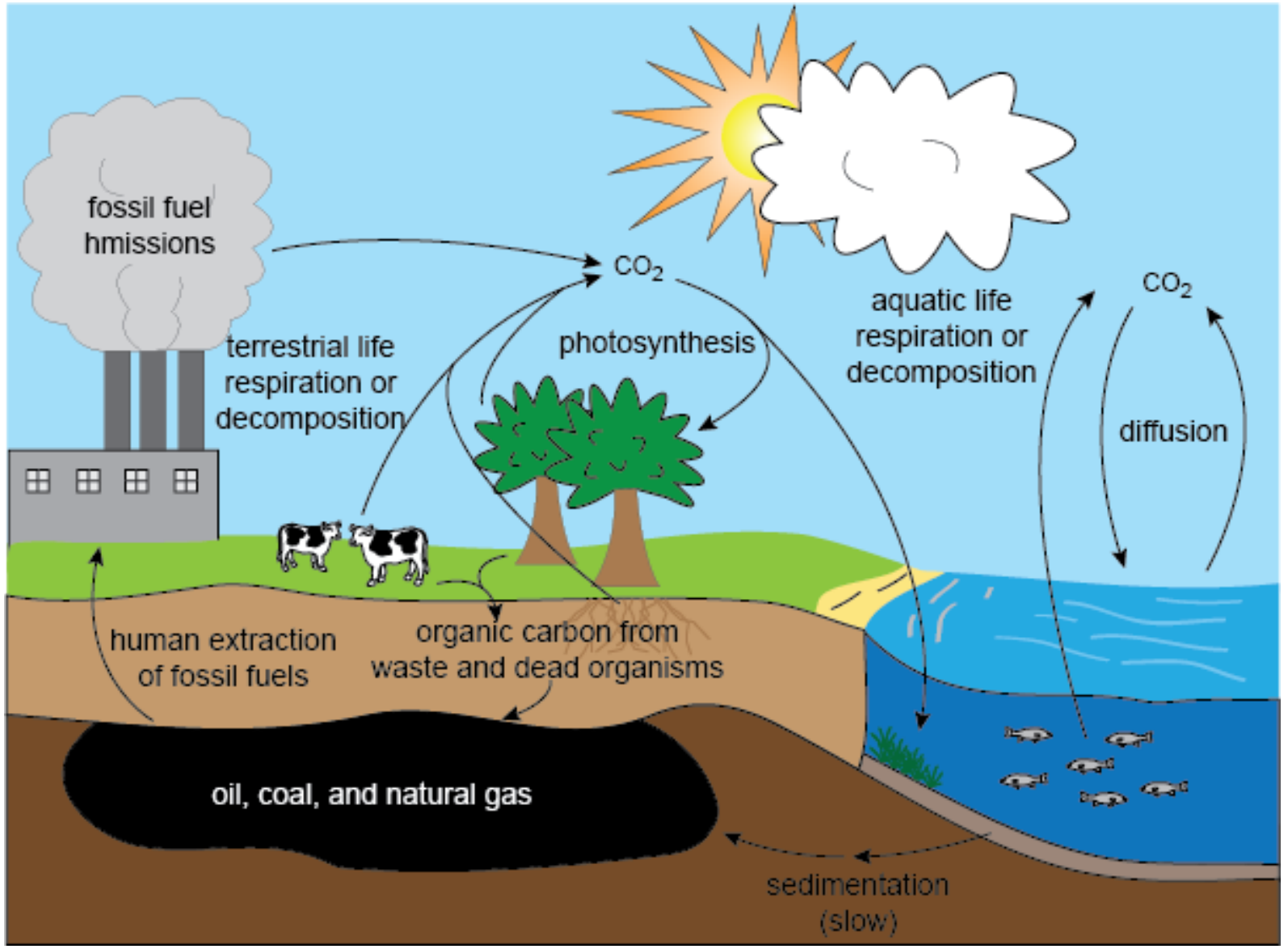
February 28, 2022

Climate Action Steering Committee

What is carbon sequestration?

- Carbon sequestration is a process that removes carbon dioxide from the atmosphere and stores it in natural or artificial sinks, such as soil, vegetation, and the ocean.
- Other terms: carbon dioxide removal (CDR), carbon or emissions offsets, and negative emissions technologies (NETs)
- Types of carbon sequestration
  - Oceanic (blue carbon)
  - Geologic
  - Terrestrial

What is carbon sequestration?



What is the role of carbon sequestration in climate mitigation?

- **IPCC:** carbon sequestration will be necessary to meet all modeled pathways to international climate targets

- **Benefits**
  - Offsets direct emissions – helps address overshoot
  - Environmental co-benefits

- **Criticisms**
  - Long-term effects and effectiveness unknown
  - Distracts from emissions reduction
  - Equity and environmental justice concerns

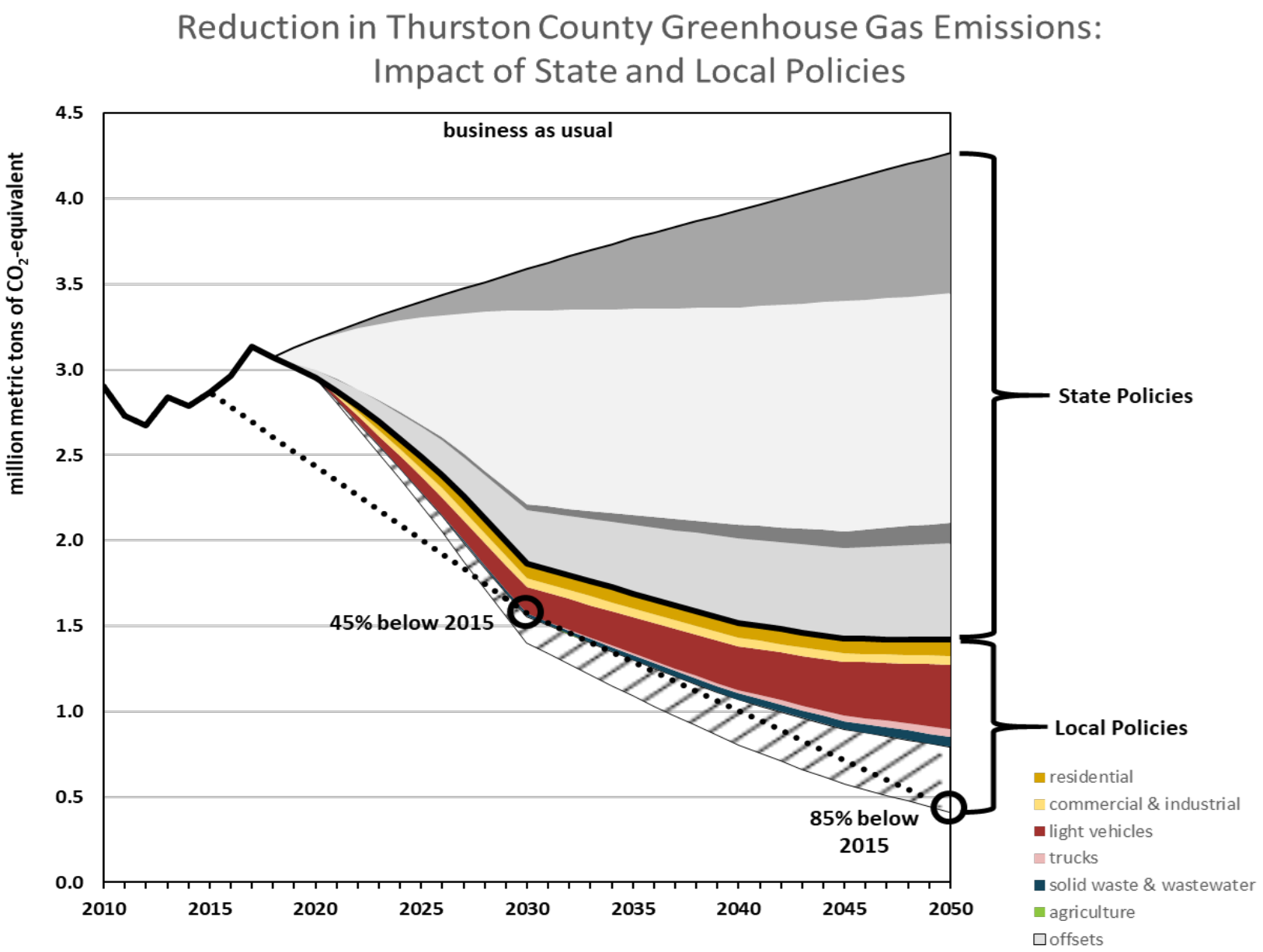
What is the role of carbon sequestration in the TCMP?

- **Strategies**
  - ***Strategy A2***: Support agricultural practices that sequester carbon.
  - ***Strategy A5-A7***: Preserve tree canopy and manage forests and prairies to sequester carbon.

- **Sequestration Types**
  - Regenerative Agriculture
  - Afforestation/Reforestation
    - Rural areas
    - Urban areas
  - Prairie Preservation and Restoration

- **Assumptions**
  - Sequestration will be used to offset countywide emissions
  - NOT traded for emissions occurring outside Thurston County

What is the role of carbon sequestration in the TCMP?



What is the role of carbon sequestration in the TCMP?

2020 Scenario Analysis	(million mtCO2e)	Portion of 2050 Emission Reductions
State Actions (CETA, building code, ZEV, etc)	2.87	74%
Local Emission Reduction Actions	.63	16%
Local Sequestration Offsets	.38	10%

What is the role of carbon sequestration in the TCMP?

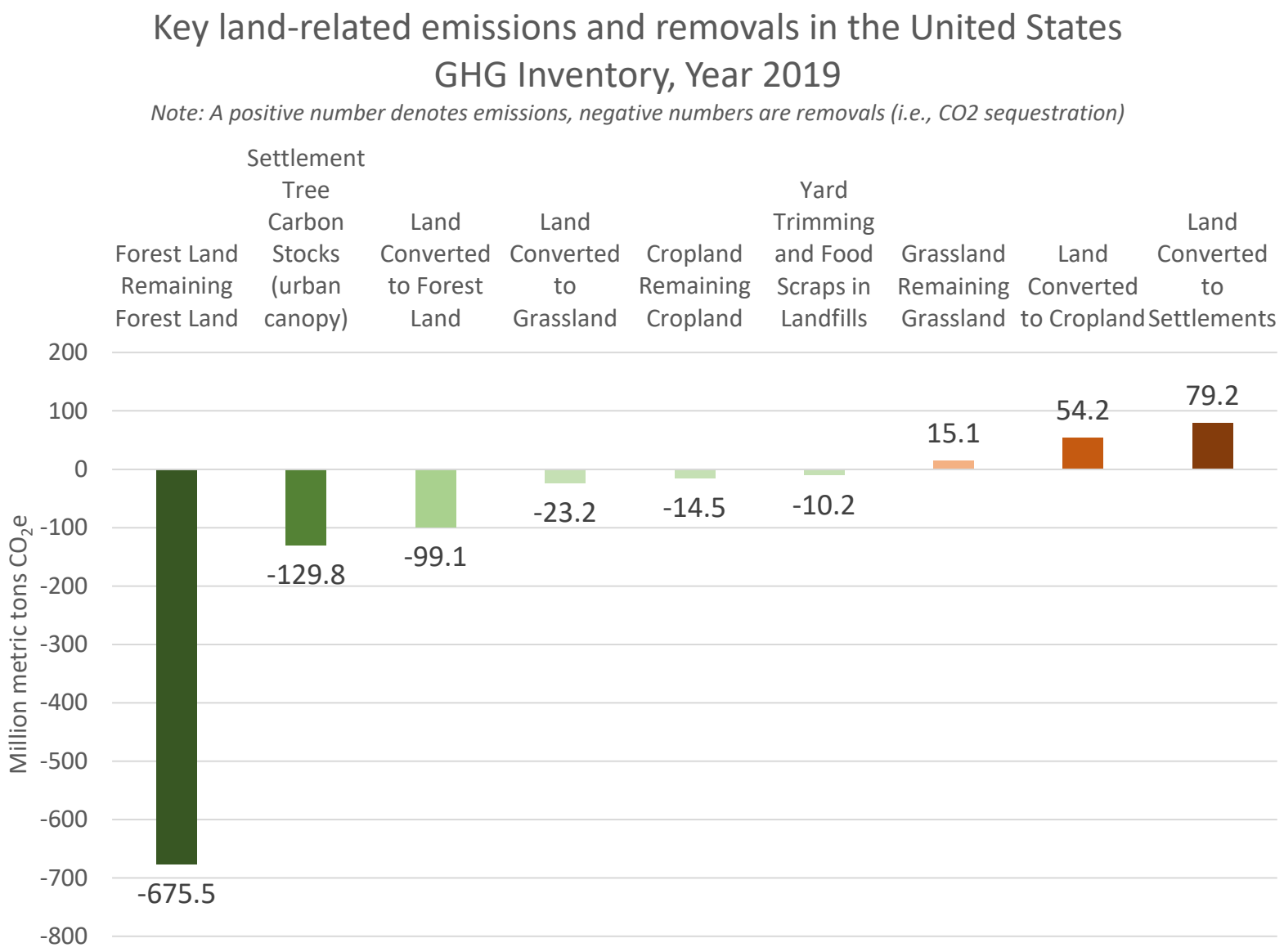
- **Target**: Sequester 380,000 tons CO2e by 2050

- **Modeled**
  - Agricultural soil carbon: **3,300 tCO2e/year**
  - Afforestation/Reforestation: **376,300 t tCO2e/year**

- **Not Modeled**
  - Existing trees or other ecosystems
  - Prairies
  - Urban trees
  - Changes in land use

Who else is working on this?

Federal



Who else is working on this?

State

- Washington Forest Carbon Inventory
  - 270 million mtC stored in existing forest land statewide

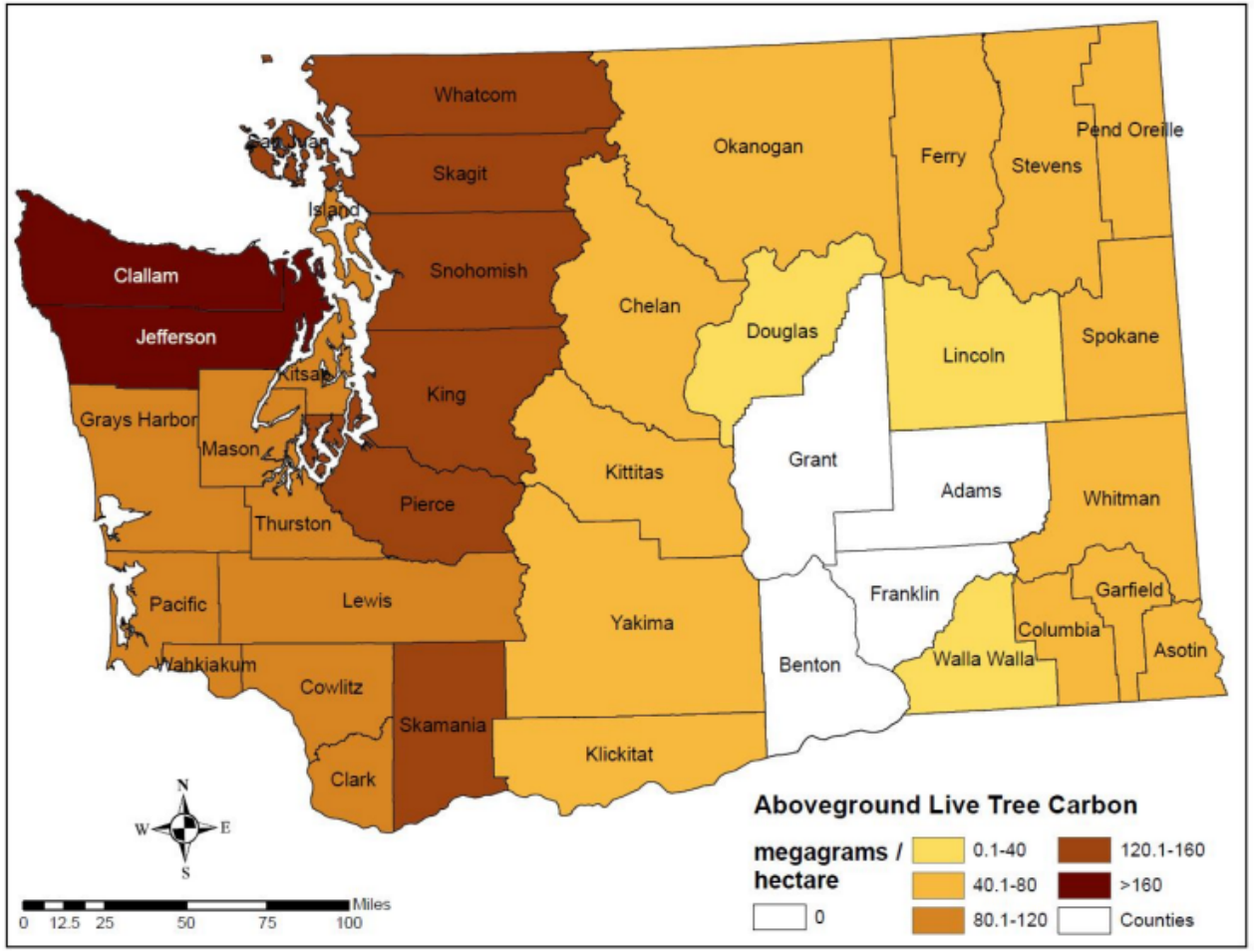


Figure 4.16. Washington average aboveground live tree carbon (megagrams per hectare) by county, 2007-2016. Map depicts only the live tree carbon pool (extracted from Palmer et al. 2019, Figure 17)

Who else is working on this?

State

- **Department of Natural Resources**
  - Climate Resilience Plan (2020) and Forest Action Plan (2020)
  - Small Forest Landowner and Stewardship Program
  - Urban and Community Forest Program
- **Washington State Conservation Commission**
  - Voluntary Stewardship Program
  - Sustainable Farms and Fields Program (unfunded)
- **Climate Commitment Act (Ecology)**
  - Will include carbon offsets

Case Studies

- **Carbon Credit Programs**
  - King County Forest Carbon Program (today's speaker)
  - Pierce Conservation District
  - Nisqually Community Forest
- **Urban Forest Management**
  - Tucson Million Trees
  - Tacoma Urban Forest Management Plan

Case Studies

- **Common Themes**
  - Partnerships help make efficient use of resources
  - Programs designed serve multiple goals (public health, stormwater, equity, cooling)
  - Tracking for sequestration adds administrative complexity
  - Community engagement before initiating program
  - Seed funding – grants for pilot effort to get started; utilities for ongoing
  - Consider benefits to marginalized and disadvantaged communities in program design

Sequestration Questions

- What actions should be taken to achieve carbon sequestration targets?
- What role should carbon sequestration play in achieving our emissions targets?
  - Should we adjust our assumptions/targets?
  - Focus on offsets? Focus on co-benefits?
  - Keep within county boundary? Consider expanded markets?
- What should be the relative role of different sequestration strategies?
- What are the costs relative to the benefits of different strategies?
  - How detailed should monitoring & accounting be?