DEVENS FORWARD
Embracing the Past, Transforming the Future

Open Space Sequestration Analysis

Open Space & Recreation Advisory Committee Meeting

April 29, 2020

KLA

Trees Getting Their Due in Climate Plans

1. ‘Negative Emissions’ strategies are recognized as required in order to hit reduction targets for concentration of atmospheric carbon

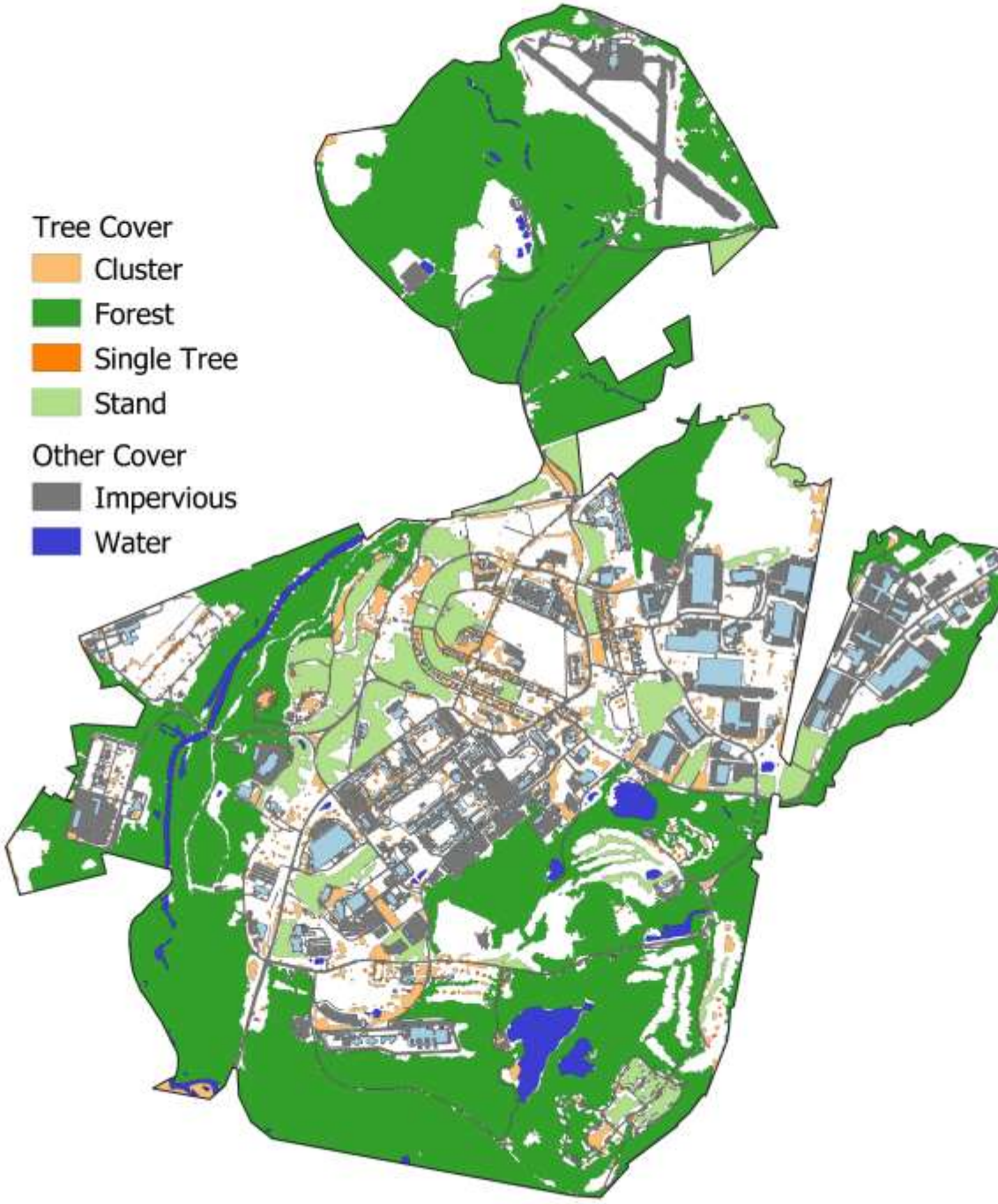
2. Sinks from land are a significant portion of the US Nationally Determined Contribution to the Paris Agreement (we’ll be back!)

3. Ability to measure landscape level changes are getting easier with cheaper and more frequent aerial imagery.

Tree Cover In Devens

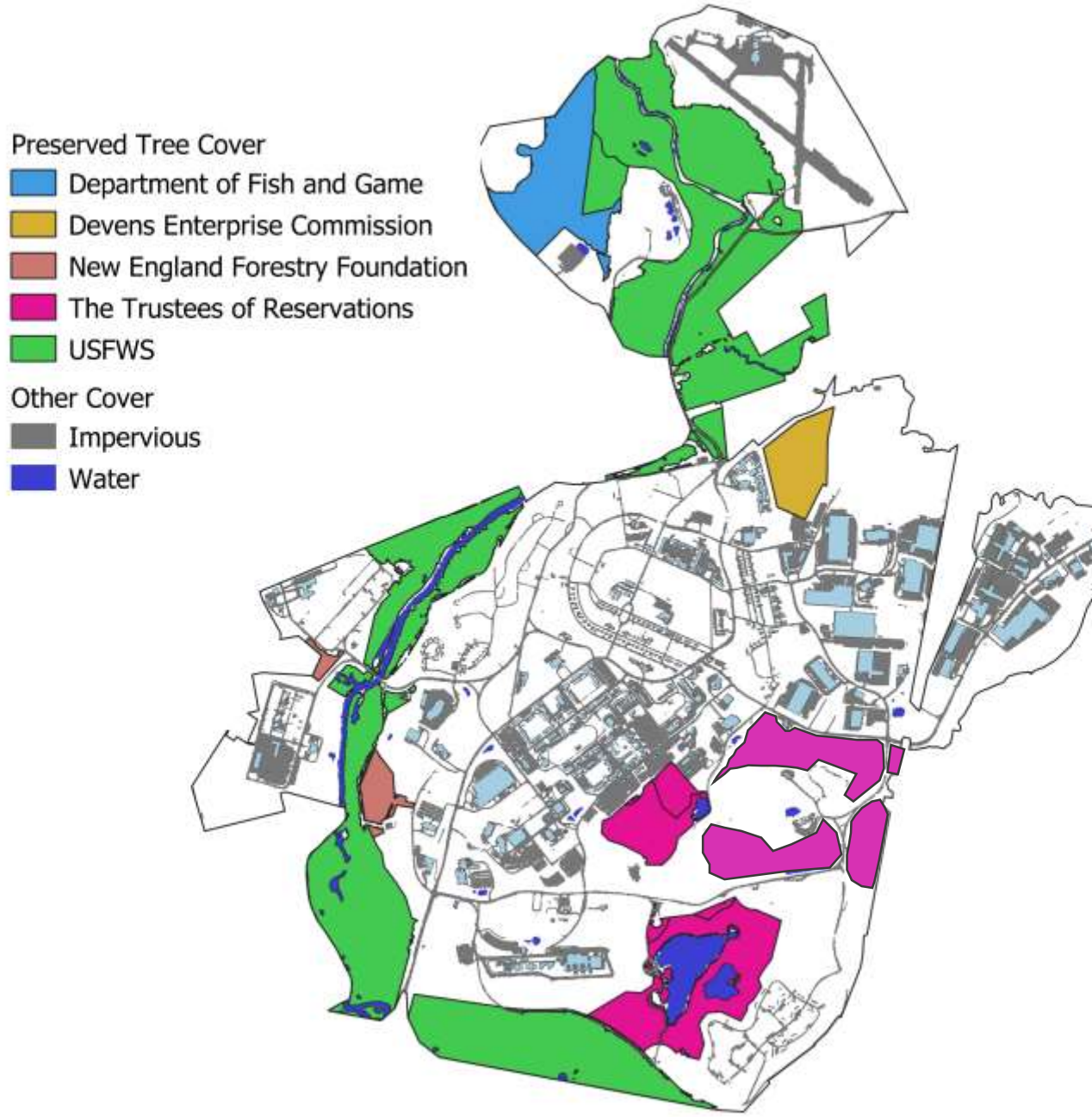
Map Developed MassGIS 2016 Land Use / Land Cover layer

- Aggregated all “Forest” Types
  - Deciduous
  - Evergreen
  - Palustrine



Preserved Area by Managing Org

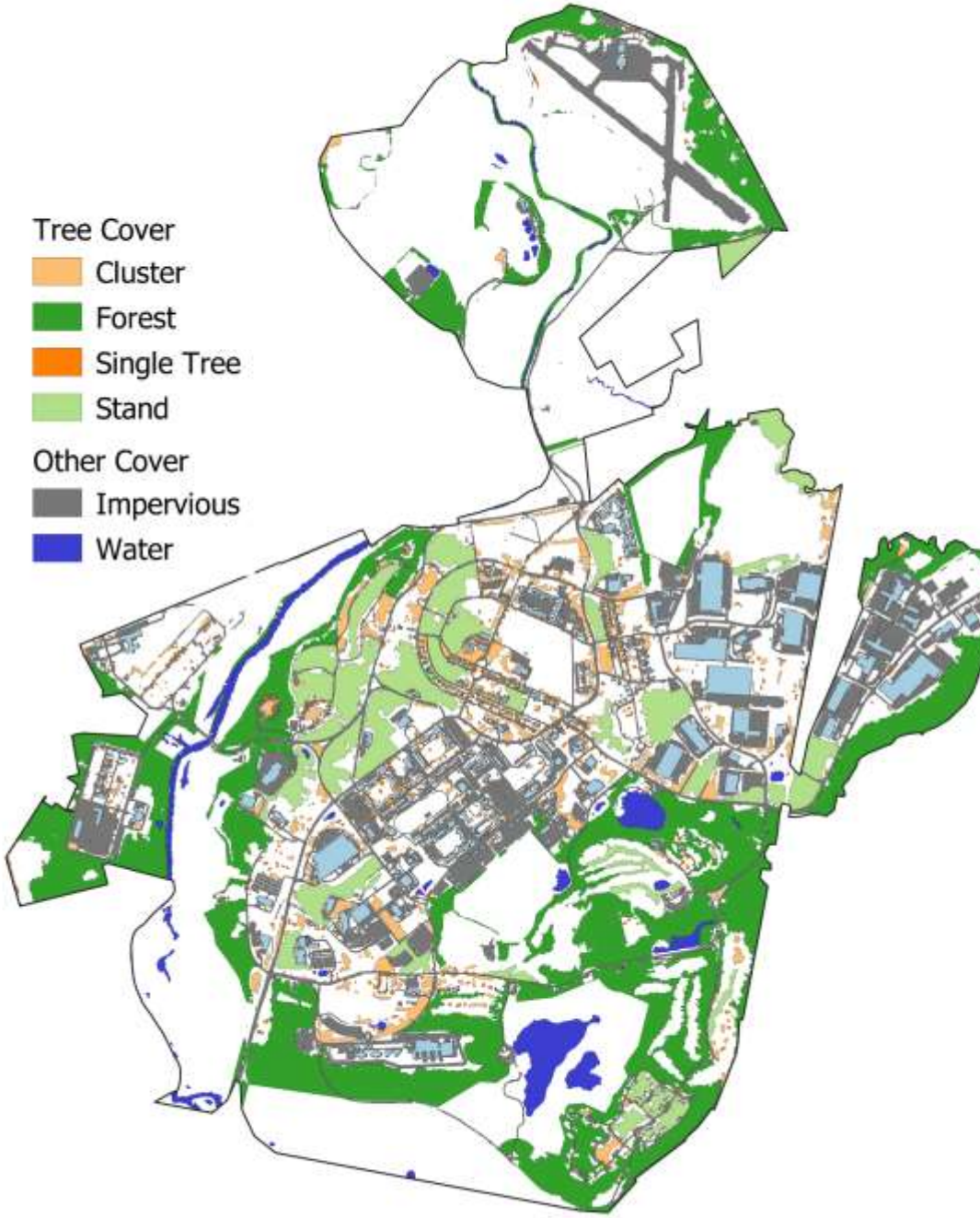
Goal – To understand how much is currently protected and ‘locked in’ for ongoing carbon sequestration



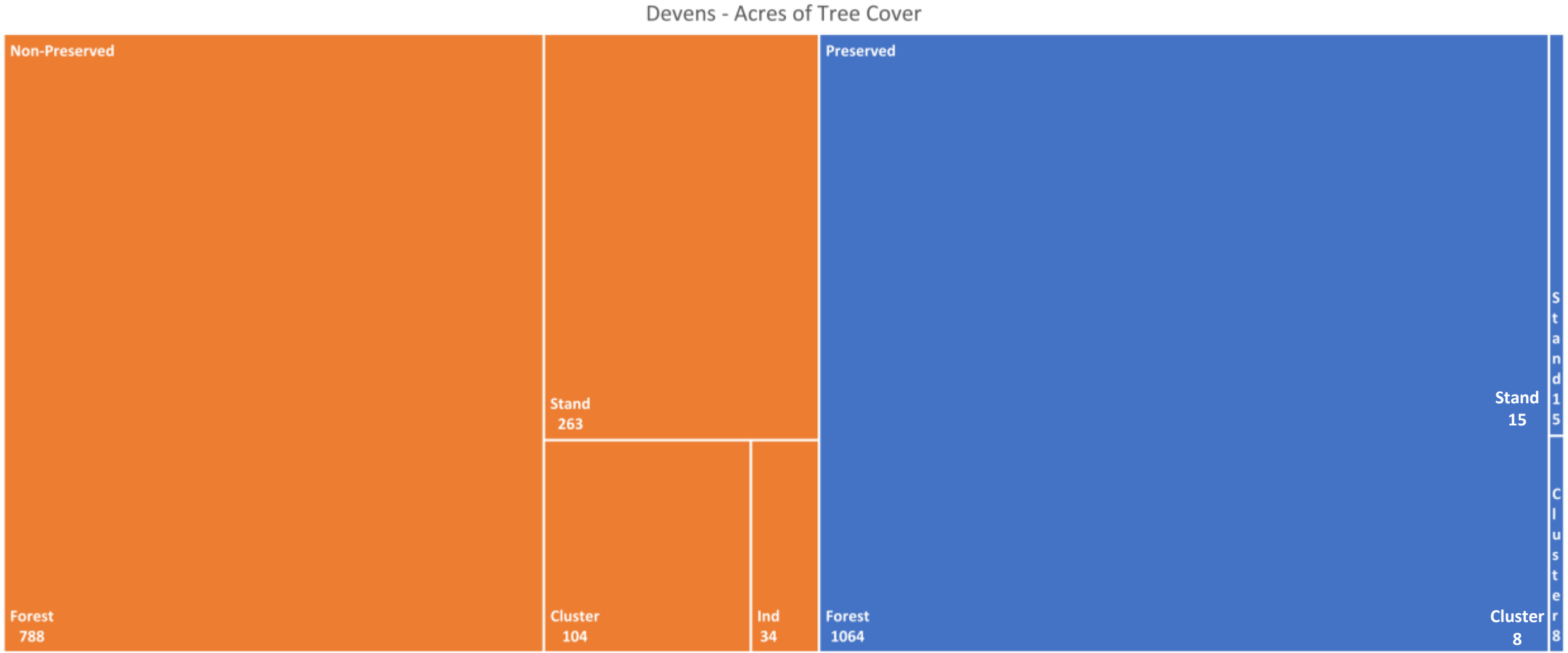
Non-Preserved Tree Cover

Considerable Tree Cover Exists without formal protection

Many areas ‘effectively’ preserved from development standards for slopes and riparian areas



Tree Cover by Preservation Status & Size



Sequestration by Protected Tree Cover

Size Class	Acres	Percent of Total	Standing Carbon (MTCO2)*	Annual Sequestration (MTCO2/Yr)*
Cluster	8	0.3%	1,465	58
Stand	15	1%	2,720	108
Forest	1064	47%	198,695	7,912

*Calculated with standing carbon and sequestration rate factors from i-Tree Landscape for Middlesex County

Non-Protected Tree Cover

Size Class	Acres	Percent of Total	Standing Carbon (MTCO2)*	Annual Sequestration (MTCO2/Yr)*	Management Options for Action Plan
Individual Tree	34	2%	6,376	254	• Street/Park Tree Planting • Landscape Standards
Cluster	104	5%	19,351	771	• Low Impact Development • Landscaping Standards
Stand	263	12%	49,227	1,960	• Low Impact Development • Harvested Wood Products / Cross Laminated Timber?
Forest	788	35%	147,145	5,859	• Additional Preservation • Low Impact Development • Harvested Wood Products / Cross Laminated Timber?

*Calculated with standing carbon and sequestration rate factors from i-Tree Landscape for Middlesex County

Compared to Devens GHG Inventory

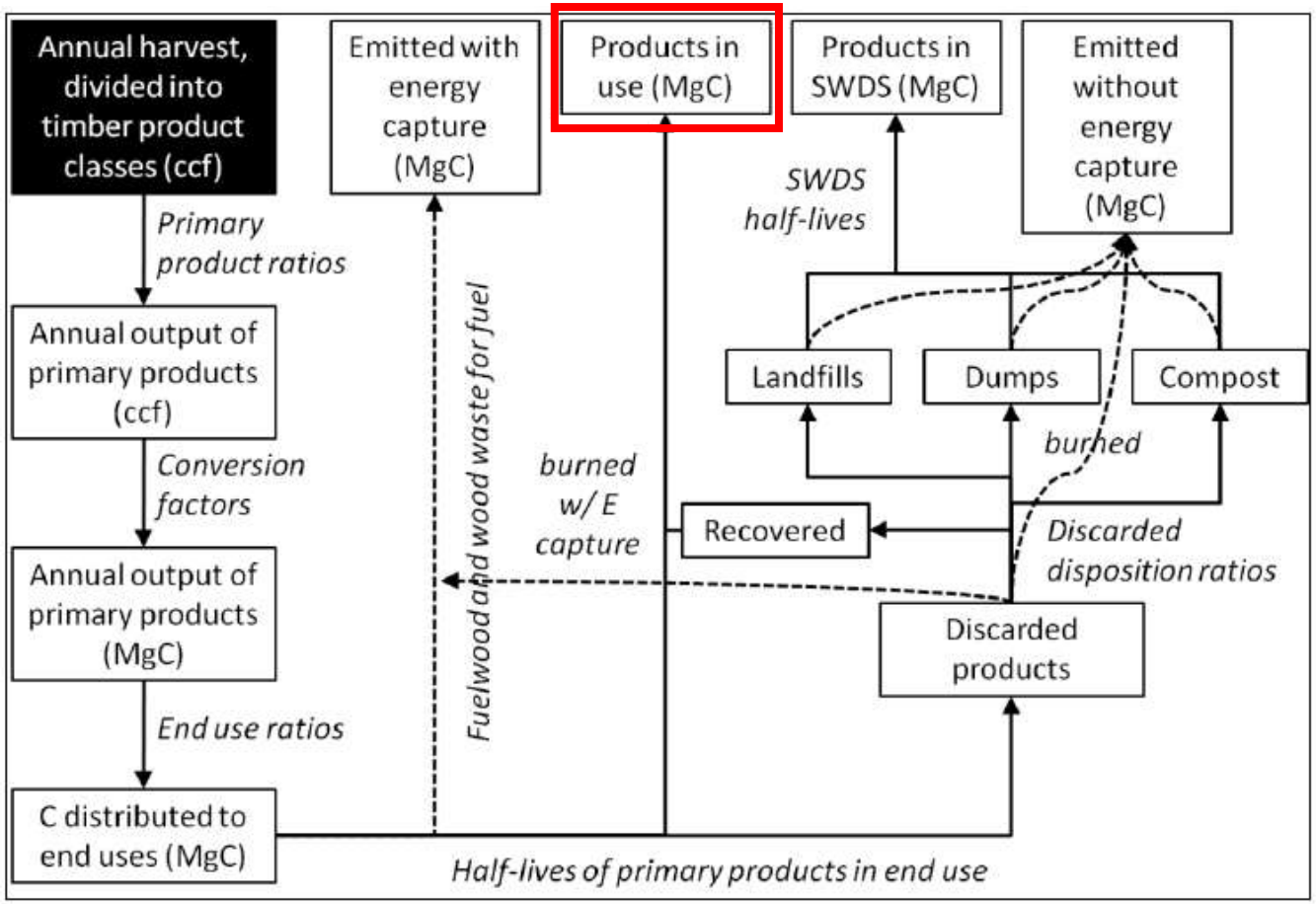
Sector	2015 ($MTCO_2e$)	% of Total 2015
Electricity	46,984	48.9%
Natural Gas	43,709	45.5%
Gasoline	2,697	2.8%
Diesel	1,642	1.7%
Fugitive Natural Gas	646	0.7%
Landfilled Waste	223	0.2%
Biosolid Incineration	81	0.1%
Wastewater Treatment	71	0.1%
Total	96,054	100%

	$MTCO_2e$	Equivalent to	
Standing Carbon	424,979	4.4	Years of Emissions
Annual Sequestration	16,922	18%	of Annual GHGs

Forest Carbon and Targets

- Sale of Carbon Offset Credits
  - Good to help finance additional conservation work
  - Sale of Offsets eliminates the ability to claim reductions towards your own commitments
    - Double Claiming leads to falling short on global climate change mitigation efforts and must be avoided
- Accounting for but not selling sequestered carbon can allow you to count these towards targets – “retire the credits”
- Keeping in mind Devens and other local targets are voluntary

Fate of Harvested Wood Products



Source: https://www.fs.usda.gov/rmrs/projects/harvested-wood-products-carbon-accounting-united-states-national-forest-system

- Durable End Uses with long lifetimes
  - Building Construction, Cross Laminated Timber
- Some Cities are looking to count carbon stored in their built environment as a sink (SF Bay Area, Portland, OR)
- Will the carbon stay put?
- Can communities share the ‘credit’?

Other Management Goals

- What else are all of you managing for?
  - Maximize recreational value
  - Ensure healthy ecosystems and ecosystem other services
  - Safety and Fire Risk
  - Supporting Forest Jobs

- Could these be better coordinated among the group?

Opportunities for Refinement

- Choice of Sequestration Factors
  - Challenge in matching the resolution of forest data to appropriate factors
    - Species mix
    - Age Structure
    - Soils
    - Disturbances
  - Better factors exist, but do we have better characterization of the forests along these lines?

Sharing Info

- What studies are happening on your properties?
  - Invasive Species Monitoring
  - Forest Health
  - Fuel Loading
  - Economic – Recreational Value
- What can we leverage for each other's work?

Thanks!

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