Forests and Carbon

• Introduction
  – Forests and carbon
  – Smart practices
  – Looking ahead
    • Grants
    • Research
    • Inventory
    • Carbon markets
Forests and Carbon

Forests of PA ~ 16.6 million acres
Pennsylvania State Forest – 2.2 million acres

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Considerations for Climate Change

- Forest Resilience
- Mitigation
  - Carbon sequestration
  - Carbon storage
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- Significant contributions to carbon management
  - Total C stocks on PA forests 16.6 million acres of forestland is 174 billion tons or 104 tons/acre (2019 USDA FIA).
- Young, middle-aged forests sequester more carbon
- Older forests store more carbon
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- Management guidance
  - Bureau of Forestry Strategic Plan
  - Pennsylvania Forest Action Plan
  - State Forest Resource Management Plan
  - Certification Standards

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• Some carbon smart practices:
  – Keep forests as forests
  – Restore degraded areas
  – Ensure diversity (ages, species)
  – Ensure regeneration
  – Manage invasive pests
  – Healthy durable wood products market
  – Tools for private forest landowners and communities
  – Trade-offs/balanced approach

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• Forests play a vital role
• Dynamic learning environment
• How do we adapt our management?
USCA Grant

• July 2019 PA joined USCA
• Partnered with MD DNR, American Forests, and US Forest Service
  – Submitted proposal “Impacts of Forest Management on Carbon Sequestration and Storage in Maryland and Pennsylvania”
Modeling Carbon Impacts of Forest Management

Objectives:

• Model carbon impacts of forest mgmt. and wood utilization scenarios
• Understand climate mitigation potential of scenarios/practices
• Integrate carbon in forest management and planning
• Integrate forests in state climate planning

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Modeling Scenarios

- Changes in rotation length
- Afforestation
- Restock understocked stands
- Increase timber stand improvements
- Keep forest as forest
- Reduce diameter limit cuts
- Control deer browse
- Silvopasture

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- No harvest activities
- Climate change impacts on growth
- Climate change impacts on natural disturbance
- Using more mill residues for bioenergy
- Portfolio
Standardized cumulative ecosystem + HWP carbon flux - Pennsylvania

Relative to the baseline (Scenario carbon flux – Baseline carbon flux)
Takeaways & Recommendations

No one answer – Combination of strategies

Good Forest Mgmt. = Good Carbon Mgmt.

- Prioritize forest health and structure, rebalancing age distribution; focus on protecting natural regeneration
- Expand adoption of silvopasture
- Scale up ambition for tree planting
- Incentivize more sustainable management practices on private lands
- Using woody biomass for energy (from existing harvest material) is not likely to yield significant carbon benefits
- Prepare for potential negative impacts of climate change, especially from more pests and disease

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USFS Supplemental Grant

- USCA grant focused on carbon
- Economic trade-off of management strategies in terms of timber products
- RFP in development
- Completed by December 2022
USFS NE Climate Hub Grant

- May 2021
- PI – Dr. Marc McDill, Associate Professor of Forest Management, PSU Ecosystem Science and Management
  - PSU Forest Economists, Center for Private Forests, Extension, DCNR Bureau of Forestry, DEP and USFS
- “Evaluating the Feasibility of a Pennsylvania Forest Carbon Cooperative”
  - Evaluate the legal, technical, and socio-economic feasibility of a proposed Pennsylvania forest carbon cooperative

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Voluntary Carbon Markets

• Numerous companies
• Approaches
  – Improved Forest Management
  – Harvest deferral
  – Afforestation
  – Current mgmt. practices compared to regional norms
• Uncertainty of carbon baseline and additivity
• Uncertainty of true climate benefits
PA Carbon Quantification Models

• July 2022

“Development of High-Resolution Biomass, Carbon, Volume and Forest Type Prediction Models and Maps for Pennsylvania”

• Goals
  – Model and map of aboveground forest biomass and timber volume for the state of Pennsylvania with a resolution of 25×25m
  – Forest type map at the same resolution for the state of Pennsylvania

• Utilizing and integrated with CFI

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Conclusion

- PA Forest Lands are part of the climate solution
- Engagement with research projects
  - Understanding effective strategies
  - Evaluating trade-offs
  - Developing techniques to quantify carbon
- Evaluating carbon offset programs
  - True positive impact to climate
  - Understanding terms and consequences
- Adapt SFL management for optimizing carbon along with other uses and values
Forests and Carbon

Questions?