

Carbon in Minnesota's Forests

current status and future opportunities

Matt Russell

Minnesota Forest Resources Council

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Goals

- Assemble and disseminate existing information on Minnesota's **forest carbon** resources
- **Scoping document** that identifies key information needs for state policymakers and forest land managers to better understand forest carbon

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Forest Carbon in Minnesota

Home Resources

Carbon in Minnesota's Forests



Pillsbury State Forest

In 2021, The University of Minnesota-Department of Forest Resources partnered with the Minnesota Forest Resources Council to better understand the role of carbon in Minnesota's forests. The website contains information and outreach materials on the project.

The goals of this project are to:

- Assemble and disseminate existing information on Minnesota's forest carbon resources and

- Develop a scoping document that identifies key information needs for state policymakers and forest land managers to better understand forest carbon.



Scoping document

1. Introduction to carbon in MN forests
2. Carbon storage and sequestration in MN forests
3. Carbon markets for MN landowners
4. **Forest carbon opportunities**

Carbon in Minnesota's Forests: Current Status and Future Opportunities

A report prepared for the Minnesota Forest Resources Council¹

Prepared by²:

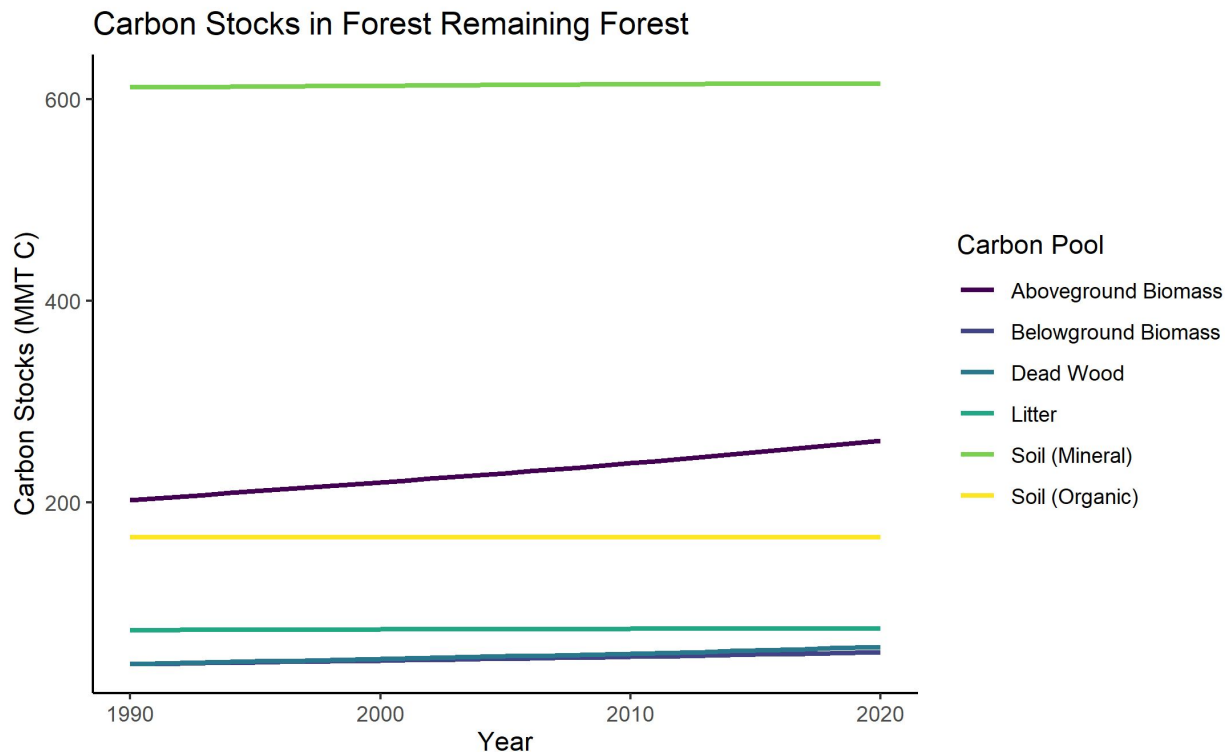
Matthew Russell
Christopher Edgar
Marcella Windmuller-Campione
R. Lane Moser
Eli Sagor
Jane Nolan
John Zobel
Chad Babcock

5 April 2022 **DRAFT**

¹ Funding and support for this project was provided by the Minnesota Forest Resources Council.

² University of Minnesota, Department of Forest Resources

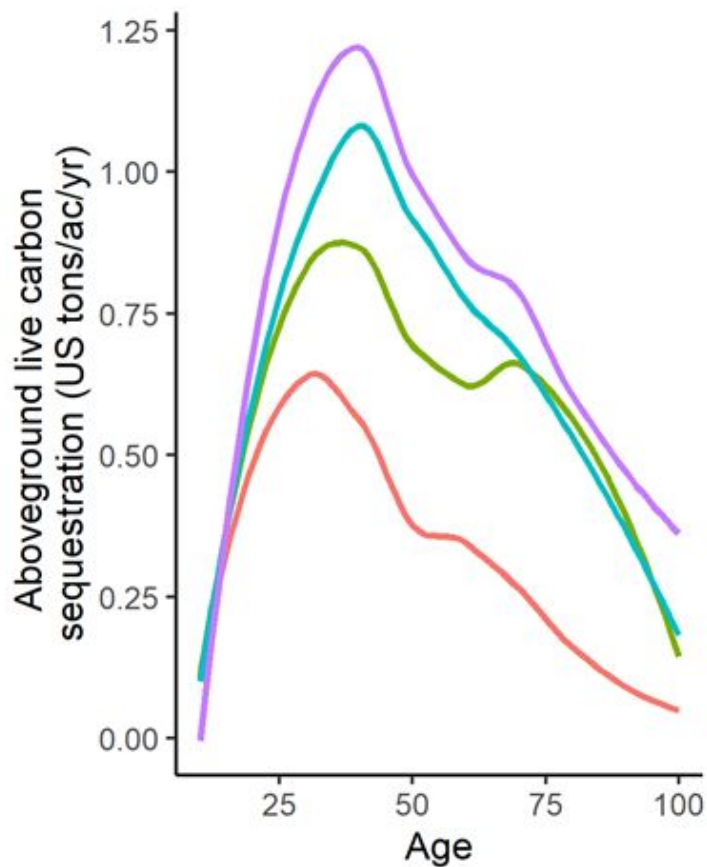
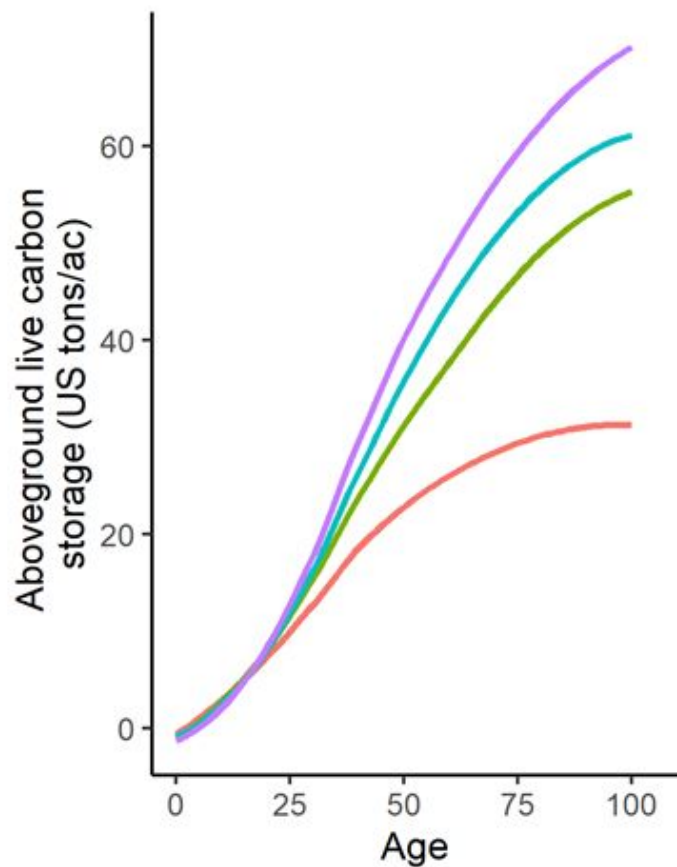
Carbon stocks have increased by 8% in Minnesota's forests since 1990



Forest Vegetation Simulator

- Individual tree growth model
- Uses lists of trees (e.g., species, diameter)
- Approved carbon accounting tool (e.g., through California ARB)





- Aspen
- Mesic hardwoods
- Oak
- Red pine

Recommendations for future work



1. There remains great uncertainty about the long-term effects of lands enrolled in forest carbon programs and **impacts to available wood** for forest product markets.



2. The opportunities, advantages, and **barriers** to entering voluntary and regulatory carbon markets for Minnesota's diverse landowners needs to be fully assessed. Research that investigates the price of carbon and **landowner willingness** to enroll in carbon markets should be a focus of future work.



3. Carbon markets are perceived in both a negative and positive manner from Minnesota's diverse landowners. The **socio-environmental aspects of carbon markets** need to be fully explored.

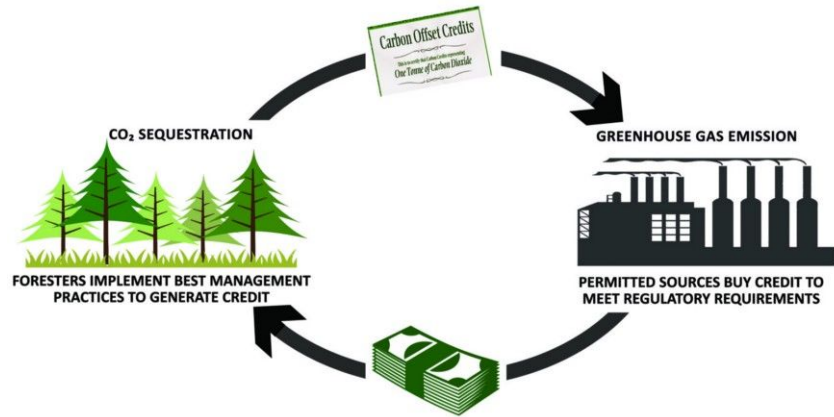


Image: R. Greenfield. Blockchain enabled carbon credit markets:
<https://medium.com/@robertgreenfielddiv/blockchain-enabled-carbon-credit-markets-1a195520f0e1>

4. Integrating carbon as a forest management objective needs to be evaluated along with **several other management objectives.**



5. Forest management is transitioning from managing forests for resources to managing them for multiple services and values including climate adaptation and now climate mitigation. A more thorough understanding of how different **adaptive management treatments** influence forest carbon storage and sequestration patterns should be carried out for Minnesota's primary forest types.

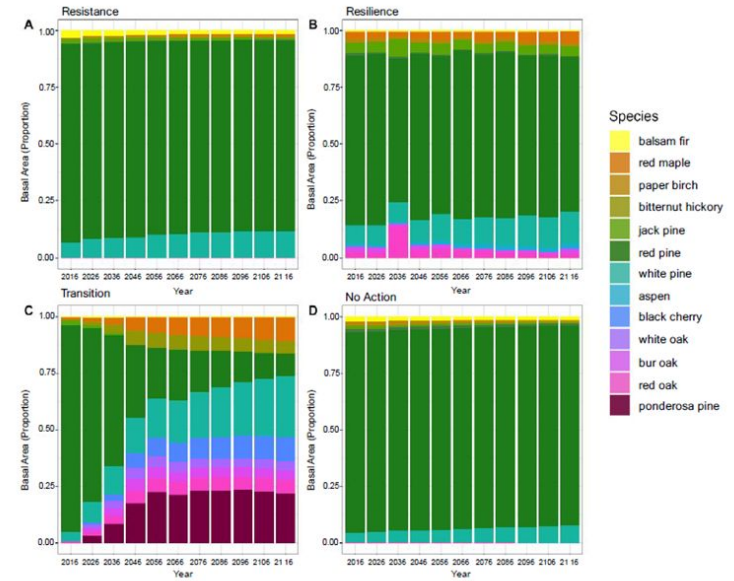
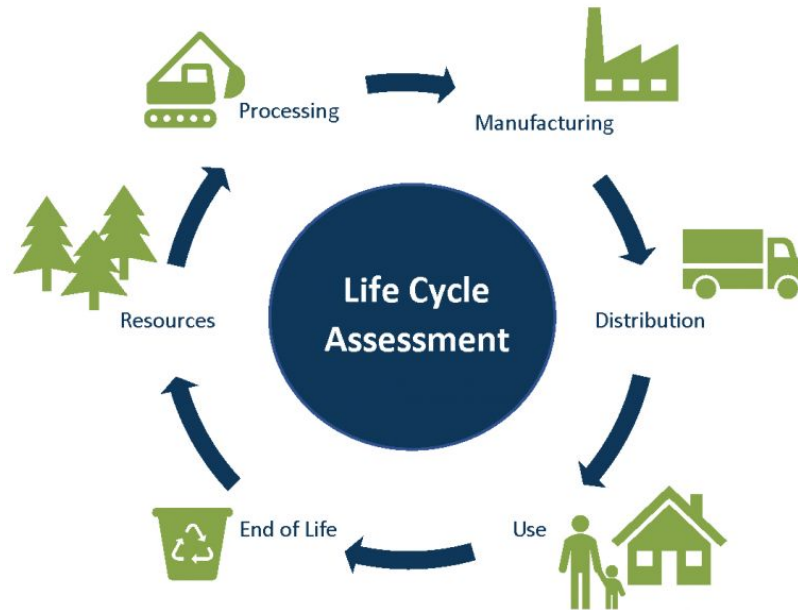
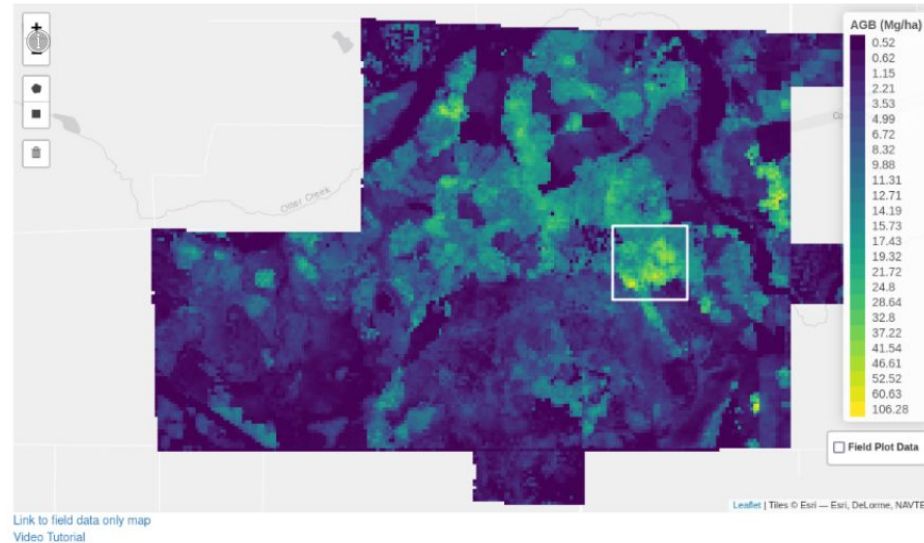


Figure 6. Bar charts showing proportional (0.0-1.0) basal area (m²/ha) by species for each treatment across simulated timesteps (2016-2116), where (A) is resistance treatment, (B) is resilience treatment, (C) is transition treatment, and (D) is the no action control. Colors represent individual species.

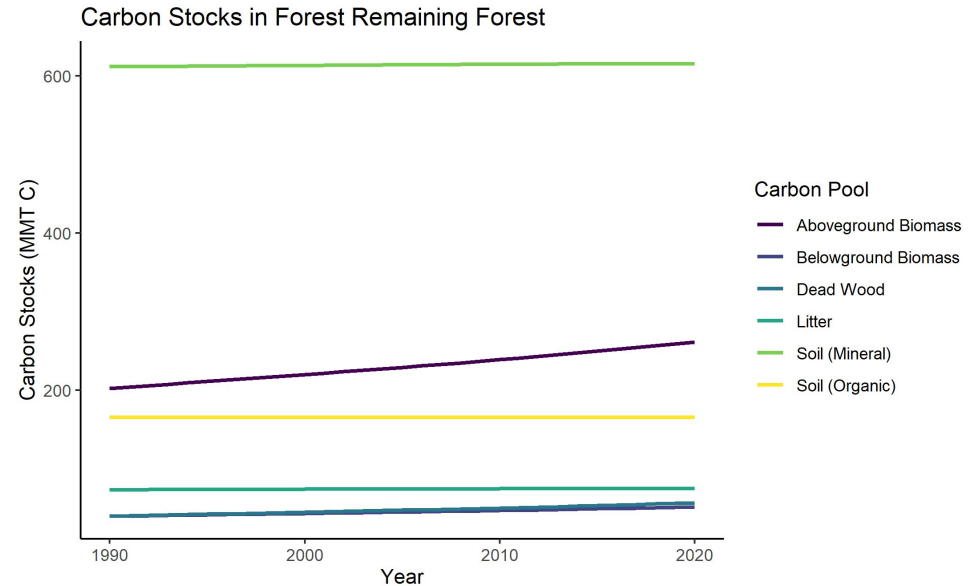
6. A complete **life cycle assessment** that focuses on timber harvesting, forest management for carbon, and in harvested wood products should be carried out for Minnesota's primary forest types.



7. Remote sensing technology can leverage existing forest inventory information to better understand forest carbon, yet applications are currently **limited at a broad scale** in Minnesota.

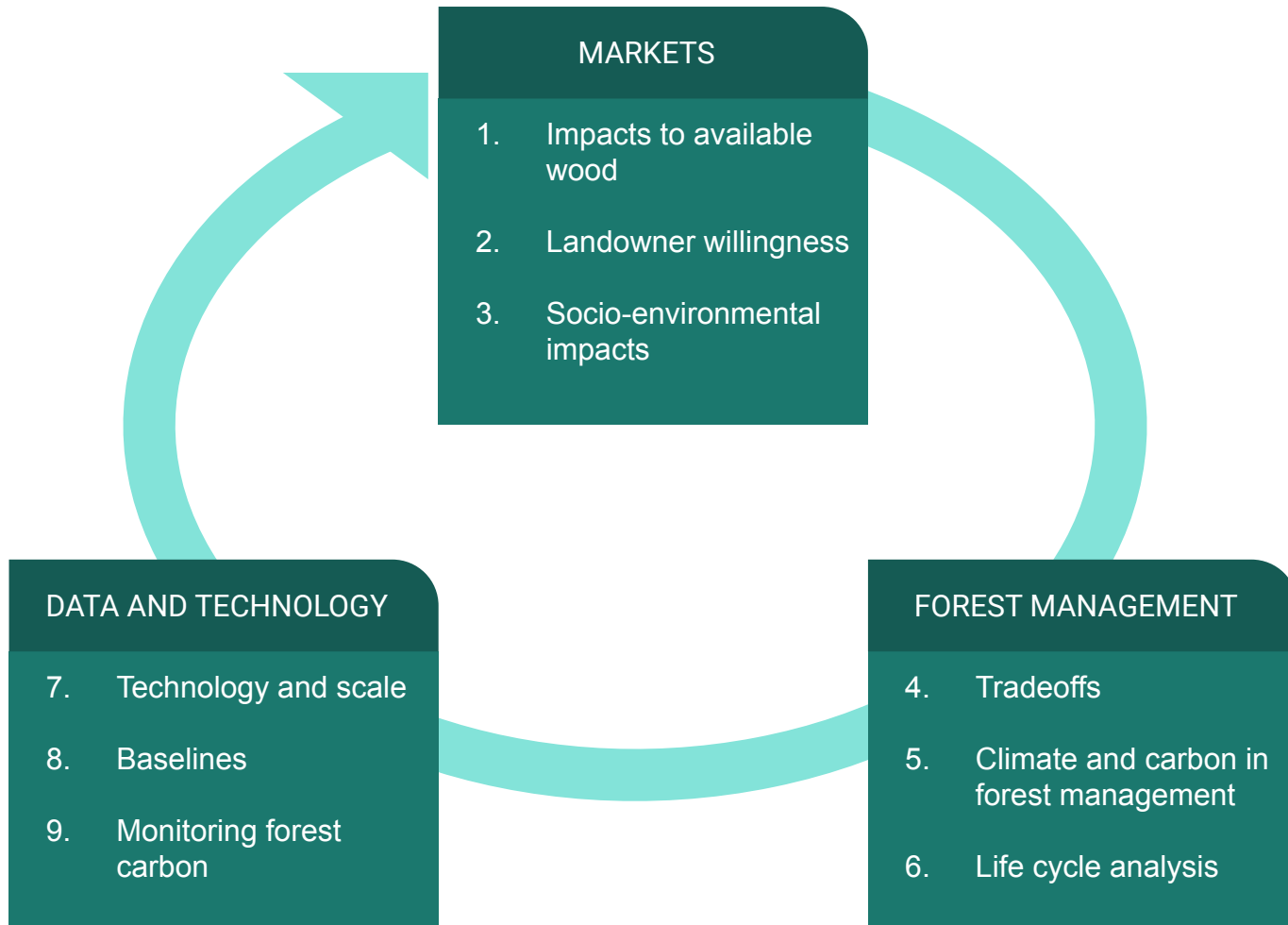


8. There is an urgent need to better understand **baselines** of forest carbon in Minnesota, for example, the amount of carbon being stored and sequestered annually in Minnesota. Continuing to develop and deliver this information in a form that is **accessible and understandable** to a broad audience should be prioritized.

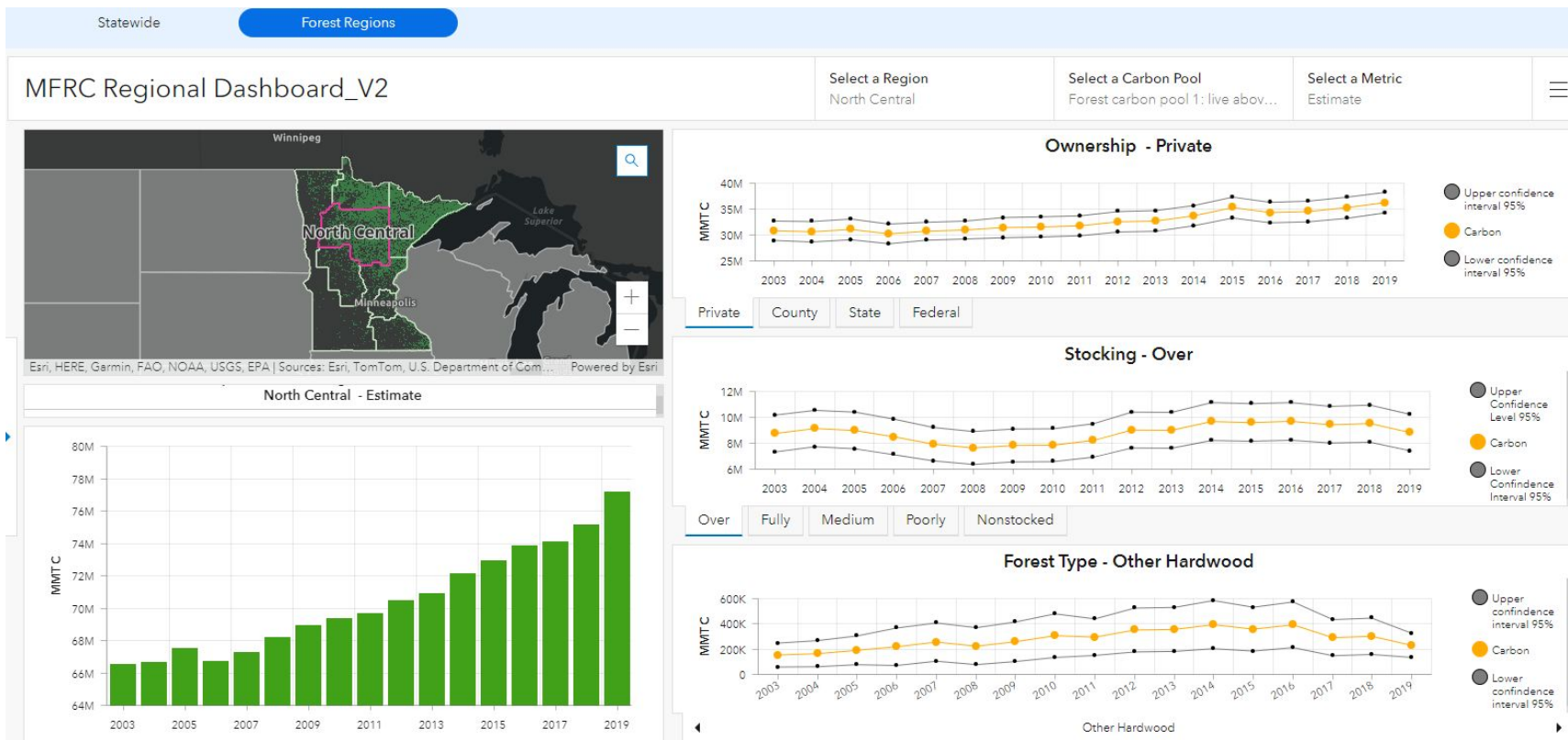


9. Agreement needs to be met across the forestry community about **how forest carbon is going to be monitored** at a stand, state, and regional level.





Forest Carbon Dashboard (draft, in development)



Progress and task list

- ☒ Forest carbon outreach workshops and programs
- ☒ Focus groups (2) with stakeholders
- ☒ Recent meetings since April:
 - MFRC RAC on (April 19)
 - MFRC Policy Committee (May 2)
 - NCASI Eastern Forests Spring Meeting (May 17)

- ☒ Simulations of carbon scenarios
- ☒ Draft of scoping document
- ☐ Final version of report (June 2022)
- ☐ Forest carbon dashboard (June 2022)

Questions/ feedback

Matt Russell

russellm@umn.edu



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