Meeting Notes

Timberlake Lodge Hotel, Grand Rapids, MN

May 24, 2022

Members Present:

Pete Aube-Chair, Kim Berns-Melhus, Forrest Boe, Craig Engwall, Janet Erdman, Rick Horton, Mike Kilgore, Jim Manolis, Bob Owens, Scott Pittack, Kathleen Preece, Deb Theisen, Tim Wegner

Members Present Via Electronic Means:

Keith Karnes, Katie Fernholz

Members Absent:

Tim Wegner, Connie Cummins

Alternates Present:

Brenda Jordan, Brendan Jordan, Kory Cease

Alternates Present Via Electronic Means:

Joel Mielke, Michael Stansberry, Ray Higgins,

Staff Present:

Eric Schenck, Sadie Mathison, Dick Rossman

Staff Present Via Electronic Means:

Anna Stockstad

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Guests Present Via Electronic Means:

Grant Domke, USFS Team Leader, FIA Carbon Estimation & Reporting | Thomas Buchholz, University of Vermont | Richard Bergman, USFS Forest Products Laboratory | Luke Peterson, General Manager, Hibbing Public Utilities | Prakash Nepal | Julie Marinucci | Jennifer Corcoran, DNR | Molly Jansen, TNC | Sachi Graber, TNC | Bjorgvin Saevarsson | Dave Roerick, MFA | Matt Russell, UMN | Mary Hammes, TNC

Guest Present:

Jason Meyer, St. Louis County Land and Minerasl | Cliff Shermer |

PRESENTATION- Forest Carbon Accounting & USFS Baseline—Grant Domke, USFS Team Leader, FIA Carbon Estimation & Reporting

- Provided basis on increases in atmospheric CO_2 over time and the use of forests to mitigate climate change as a cost-effective solution
- Summarized ecosystem carbon pools – aboveground live biomass, belowground live biomass, dead wood, litter, soil organic matter
    - Trying to capture transfers in carbon between these pools and the interactions between the pools
- Forest sector offsets more carbon than the emissions from more than all the passenger vehicles in the US
- About 55% of all carbon in forest ecosystems is stored in forest soils
- Most states are net carbon sinks
- Majority of carbon sink is in private forest land in southern US
- Forest carbon sink in MN has increased over time
- What causes interannual variability in forest carbon stocks?
    - Fire, insects, disease in intermountain west → net source
    - Active forest management in southeast → net sink
    - Land change contributes to transfers of carbon between pools (human activity contributes to the ability of forests to sequester carbon)
    - Decline in total forest area in US due to land changes → decreases sink strength in US
    - Forest clearing, forest degradation, wildfire contribute to emissions
- Nature-based solutions
    - Need to be considered as part of portfolio approach for climate change mitigation; must be realistic and work with nature and consider all lands and people

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    - Tree planting to enhance or maintain sink strength in US
        - Target understocked forest land on moderate to high productivity sites
        - 44% of forest land is fully stocked on moderate to high productivity sites
- Trees, forests, and harvested wood products represent some of the greatest opportunities to enhance carbon sequestration capacity, avoid emissions, and substitution of fossil fuels

PRESENTATION– New England Wood Pellet and California Wildfire Examples of Biomass Management Decisions–Thomas Buchholz, University of Vermont

- Presentation of greenhouse gas emissions and the use of life cycle assessments
- What is a life cycle assessment (LCA)?
    - comparative LCA → compare two scenarios on outcomes, use a unifying metric
    - define scenarios, boundaries
- Boundary setting in LCA
    - Different elements that play into carbon footprint for a wood product
    - Must be aware of boundaries when evaluating studies – do they include bioenergy emissions during processing? Post-use carbon dynamics?
- Scenario assumptions – NE wood pellet production example
    - With current harvesting activities, where will we go?
        - New harvest pellet future: add additional harvests to current harvests to satisfy growing pellet demand. This scenario did not consider economics – it is unlikely in NE US that biomass market will drive harvest decisions since incentive for landowner is low.
        - Current harvest activities pellet future: Pulpwood is harvested to make pellets instead of pulp and paper and engineered structural wood.
        - Current harvest activities pellet future: forest industry declines, less material is being harvested due to low demand → less bioenergy being produced
- LCA: forest C modeling
    - Level 1: Standard LCA – forest C dynamics excluded
    - Level 2: Include forest C dynamics – grown and yield (can include climate change projections)
    - Level 3: include stochastic events with probability discounting (wildfire, drought, insects)
- LCA example – salvage harvest
    - Investigated climate impact of salvage harvest
    - Benchmark scenario (no timber harvesting, no spruce budworm) has greatest net carbon sequestration
    - wildfire

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        - high severity, low frequency fires → periods of unstable carbon stocks followed by catastrophic wildfires with major carbon losses
        - Active fire regime of low severity, high frequency fires→ lose less carbon each burn
- Key points
    - GHG results for heat applications better than electricity only
    - Existing biomass power plants may have already paid back carbon debt
    - Baseline and future scenario assumptions drive results
    - Biomass markets rarely drive harvest decision in the north but can intensify harvests
    - Forest C stock trajectories are uncertain, some harvest activities can stabilize carbon
- MN next steps
    - Define future scenarios and important elements in LCA (market shift, climate change, new wood products)
    - Include "let grow" assumption
    - Identify time horizon
    - Analyze scenarios: forest resilience/health, climate impact

PRESENTATION– Using Life Cycle Analyses and Green House Gas Emission Assessments to Compare Wood Pellets, Briquettes and Other Biomass Products–*Richard Bergman, USFS Forest Products Laboratory*

- Review of carbon cycle
- Why we should be concerned about rising CO_2 levels → warming. But life-cycle assessment allows us to understand the carbon footprint of a product or process.
- Review of life cycle analysis – the basics
    - Goal and scope
    - Life-cycle inventory measures all inputs and outputs from a single process
        - Part of LCA
        - Data- and time-consuming phase
    - Life-cycle assessment analyzes these outputs from all processes for their impact or risk to human health
    - Cradle-to-grave vs cradle-to-gate → need to define boundary conditions in LCA
    - LCA tracks greenhouse gas emissions along the supply chain
    - Identify environmental hotspots
- Purpose of LCA
    - Estimate product carbon footprints
    - Show green products, compare to similar products to inform policy makers, industry, consumer
    - Benchmarking to provide baseline data

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- Forest Products Lab at USFS focuses on climate mitigation (increase C sequestration, storage)
    - Review of how forests and individual trees sequester/store carbon, difference between wood products
    - Wood products (pellets, briquettes, etc.) can be used to substitute for fossil-based alternatives → LCA can compare the two
- Example: Torrefied briquettes (TOB) vs coal – GHG impacts
    - 100% TOB replacement → 85% reduction potential of GHG-emissions
- Carbon impacts of wood products
    - gross carbon emissions during production + emissions from burning residues + carbon stored in the wood product + alternate product emissions avoided = net carbon savings
- key factors affecting GHG benefits of wood products
    - system boundary: broad (forest system) vs narrow (plot level)
    - reference vs alternate products
    - need to consider time frame, types and sources of feedstock, materials/fuels being replaced

PRESENTATION– Biomass for Bioenergy at Hibbing Public Utilities—Bjorgvin Sævarsson, filling in for *Luke Peterson, General Manager*

- Natural gas is replacing coal and biomass, and costs of natural gas are increasing
- Workforce at Hibbing Public Utilities (and Hibbing in general) has decreased in recent years
    - Must consider economic context when thinking about compliance with emissions (decline in workforce)
    - Economic vulnerability leads to regional expressions of economic and social hardship
- Utility plan: how can clean energy transition cause a transition to a new economic, where the utility can support entirely new industries?
    - Goals: ensure reliable and affordable services, provide reliable, affordable, clean energy, net-positive economic, social, and environmental performance → circular economy

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Action and Communication Strategy Discussion

Evaluating Appropriate Sources of "Woody Biomass" or "Forest Residuals":

Mill Residuals, Harvest Residuals, Wood Waste, Dead/Diseased Wood, Unmerchantable Wood, Material Removed for Wildfire Fuel Reductions

- Discussion of the day's talks
    - Utilizing biomass for electricity production is economically viable

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    - Combination of thermal heat and electricity is most economically beneficial
    - Avoiding wildfire Emissions - fire restoration (in the long run) is an emissions reducer
    - Social leg of forest management - Many demographics deserve recognition of what they utilize the forest for, not just a bottom dollar.
    - New markets are projected to be an emissions increaser if stacked on top of what is already being utilized.
    - Need to encourage utilization of what's already out there
    - Is there a difference between old carbon and new carbon emissions?
    - Must factor in climate change resilience
- Different types of mill residuals
    - Mill residuals is large, underutilized market
    - Subsidies related to mill residuals may compete with existing markets
    - Need to create carbon markets
- Types of harvest residuals
    - Under what circumstances would harvest residuals be a positive? When would there be concern?
    - Positives:
        - Way too much debris on sites post-harvest → limits regeneration, can promote insects and disease, dries out and can be fuel for fire
        - Public opinion of forest management: "it's so messy"
        - But sometimes an excess of debris is necessary to limit impacts to soils depending on the site
    - Negatives:
        - Can impact cultural resources
        - Depending on soil type or native plant community, biomass removal can deplete nutrient-poor sites
        - Not all sites are biomass sites
    - Where is it appropriate to leave more?
        - Slash mat for sensitive sites
        - Steep slopes with high potential for erosion
        - Preventing erosion on approaches
        - Promoting wildlife habitat for certain species, but while acknowledging that leaving biomass benefits some species, it may negatively impact other species
            - These site-level forest management decisions should be specific, not generalized
            - Can't be prescriptive, leave that to the manager
- Unmarketable wood and shrubs
    - Ash, red maple, birch, basswood pulp, etc

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    - Just because something is unmarketable, does that mean it should even be cut? Just because it's unmarketable doesn't mean it doesn't have other value
- Dead and dying trees
    - Is the amount of dead and dying trees increasing at a rate that is becoming a concern?
    - Strike balance between need for utilization of biomass without compromising environmental quality
    - Lots of dead tamarack from eastern larch beetle – what to do with it?
        - Remove dead trees, use for biomass → clean-up site and allow for regeneration
- Wind and weather
    - Biomass guideline focused on logging slash, doesn't consider salvage
        - But does the actual guideline need to change?
    - Extreme wind and weather events are increasing in frequency
- Wildfire fuel reduction
    - Common out west, would be beneficial in MN

Acknowledging Tribal Treaty Rights, Forest Management Plans, Timber Harvest Guidelines, Forest Certification Standards

- Tribal treaty rights
    - Eric provided summary of land ownership and tribal rights
- Forest plans- Lack of markets can be an impediment to implementation of plans.
    - Council can try to help people understand the context of the many different management plans that occur
- Forest certification
- Forest management guidelines

Aligning New Markets with State's Management Objectives: Energy (Thermal/Electrical Generation, Pellets, Biofuels) and Non-Energy (Thermally Modified Wood, Bio-Char, Activated Carbon, Bio-Chemicals, Engineered Wood & Specialty Products)

- Where do we go from here? What can the Council do?
    - Communication, policy recommendations, landscape planning, forest management guidelines
        - Communications strategy should extend beyond just economic development
- Is it our responsibility to align management with markets?

Further notes from Sadie:

- State entities (IRRR, DEED) put a lot of energy into attracting markets. We can make recommendations to these entities.

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- A low carbon standard that includes biomass would remove barriers.
- A lifecycle analysis as a means to compare market opportunities for recommendation – recommended by Jim.
- Need for a case study based on the Hibbing plant.
- We do not have the technology to pick carbon winner and loser markets…at this time. Let's not stop studying it, but let's not reject opportunities because we do not yet have the answers.

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