OGWC Natural & Working Lands
Technical Expert Kickoff Meeting

28 October 2022

10:30am-NOON

AGENDA

- Welcome and introductions
- Oregon Global Warming Commission Natural & Working Lands Proposal
- Project Deliverables and Timeline
- Roles and Responsibilities; Process to Achieve Deliverables
- Questions We Seek to Answer/Technical Approach
- Examples of Scoping Documents
- Definitions
- Q and A, Wrap-up and Key Next Steps

Oregon Natural and Working Lands Proposal

Presentation to U.S. Climate Alliance
October 4th, 2022

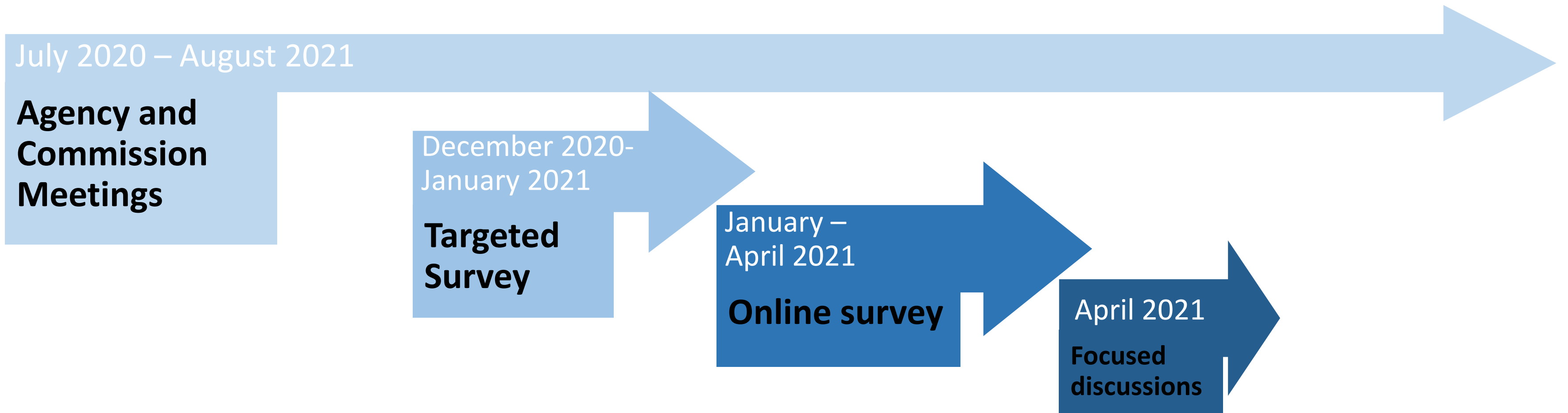Catherine Macdonald, Chair Oregon Global Warming Commission

Governor Brown's Executive Order 20-04

Directive to the Oregon Global Warming Commission:

In coordination with ODA, ODF and OWEB, the OGWC is directed to submit a ***proposal to the Governor for consideration of adoption of state goals for carbon sequestration and storage by Oregon's natural and working landscapes****, including forests, wetlands and agricultural lands, based on best available science. The proposal shall be submitted no later than June 30, 2021.*

Natural and Working Lands Outreach

July 2020 – August 2021

Agency and Commission Meetings

December 2020-January 2021

Targeted Survey

January – April 2021

Online survey

April 2021

Focused discussions

Setting a Goal for Oregon's Natural and Working Lands

Potential for Conservation Practices to Reduce Greenhouse Gas Emissions and Sequester Carbon on Croplands and Grazing Lands – Oregon
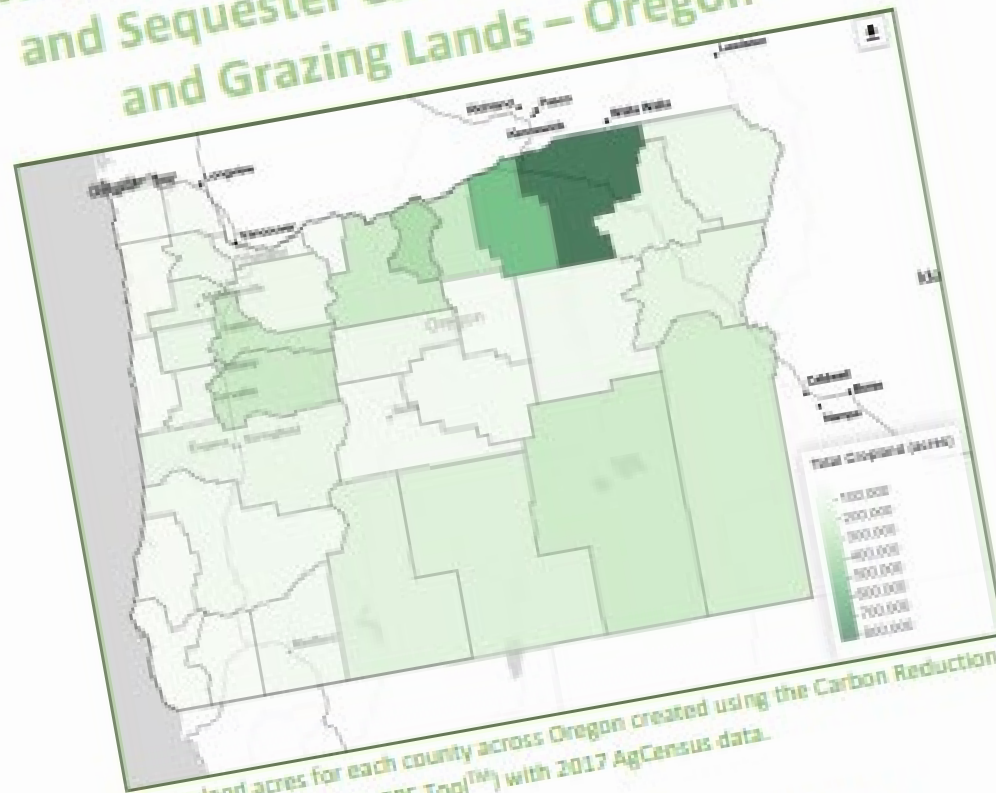
Image: Cropland acres for each county across Oregon created using the Carbon Reduction Potential Evaluation Tool (CaRPE Tool™) with 2017 AgCensus data.

Authors: J. Moore[1], D.K. Manter[2], T. Brown[1], and S.C. McClelland[1].

[1]American Farmland Trust; [2]United States Department of Agriculture - Agricultural Research Service, Fort Collins, CO

Draft report last update: 17 February 2021

Oregon Forest Ecosystem Carbon Inventory: 2001-2016

Glenn A. Christensen[1], Andrew N. Gray[1], Olaf Kuegler[1], & Andrew C. Yost[2]

Report completed through an agreement between the U.S. Forest Service, Pacific Northwest Research Station, and the Oregon Department of Forestry
(PNW Agreement No. 18-C-CO-11261979-019)

[1]U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station
[2] Oregon Department of Forestry

October 29, 2019

INCORPORATING COASTAL BLUE CARBON DATA AND APPROACHES IN OREGON'S FIRST GENERATION NATURAL AND WORKING LANDS PROPOSAL
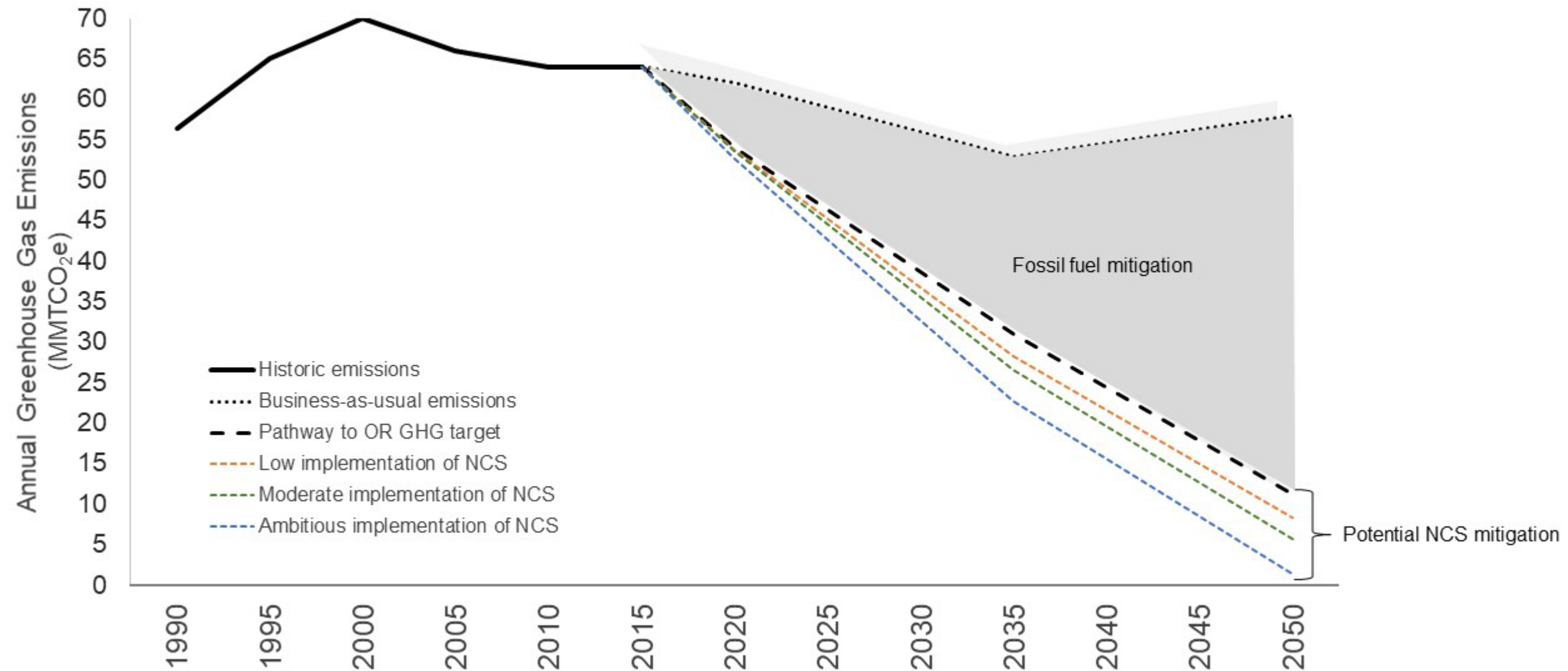
South Slough, Oregon (Photo courtesy of Craig Cornu)

White paper submitted to the Oregon Global Warming Commission
July 2021 (Updated Sept. 2021)

Setting a Goal for Oregon's Natural and Working Lands

Source Graves et al. 2020
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0230424

Proposed Goals & Metrics

Outcome-Based Goal

Sequester at least an **additional 5MMTCO2e per year in Oregon's natural and working lands and waters by 2030**, and at least **9.5MMTCO2e per year by 2050**

- Relative to a 2010 to 2019 activity-based baseline.

- Separate from, and in addition to, Oregon's sector-based emissions reduction goals.

- Periodically re-evaluated as we better understand the potential from the land sector in Oregon

Proposed Goals & Metrics

Activity-Based Metrics

Activity-based metrics (e.g., acres of adopted soil health practices, riparian reforestation, and urban forest canopy expansion)

Community Impact Metrics

Community impact metrics should be designed to evaluate the benefits and burdens associated with different Natural and Working Lands strategies, practices, and programs including effects on jobs, local economies, public health, and access to programs, among other factors.

Input on Strategies

- Equitable and collaborative processes
- Informed by science including Traditional Ecological Knowledge
- Streamline policies and programs
- Create a continuous improvement process
- Expand technical assistance and education capacity
- Evaluate and eliminate disincentives
- Recognize and reward good practices
- Cover transition costs for adoption of new practices
- Align N&WL strategies with other state, federal, and tribal needs and goals
- Focus on incentives with judicious/strategic improvements in regulations

Strategies

1. Position the state **to leverage federal lands and investments** in climate-smart natural and working lands practices.

2. **Create a sustained source of state funding** to increase sequestration in natural and working lands.

3. **Fund and direct the agencies** to advance natural and working lands strategies.

4. Invest in **improvements to the natural and working lands inventory and research**.

10 Elements Included in Strategy 3

- Enhance and maintain Oregon's statewide land use planning program
- Establish a comprehensive climate-smart agricultural program including funding for the Oregon Agricultural Heritage Program (OAHP)
- Support the implementation of climate-smart forest management
  - Invest in expanded Urban Tree Canopies
  - Adopt Forest Accord Recommendations
  - Complete an all-lands strategic plan for incentivizing climate-smart forestry
  - Complete a strategic plan for expanding reforestation capacity
  - Expand forest resiliency treatments
  - Expand the Oregon Agricultural Heritage Program to assist forest landowners
- Increase protection and restoration of carbon-rich tidally influenced coastal ecosystems
- Fund a workforce and economic development study

Senate Bill 1534

- Defined natural and working lands (N&WL)

- Declared that it was the policy of the state to advance N&WL strategies

- Directed the OGWC to create a N&WL Advisory Group

- Funded OSU's Institute for Natural Resources to support the Commission in laying the foundation for a N&WL Program including

  - Development of Metrics & an GHG Inventory

  - Completion of a N&WL Workforce, Training and Economic Development study

- Directed agencies to report on metrics and the inventory

Questions?

www.keeporegoncool.org

Oregon.GWC@oregon.gov

PROJECT DELIVERABLES AND TIMELINE

Intent is to build off work that has been completed to date

ESTABLISH NWL ADVISORY COMMITTEE

OCT 22

DEFINE SCOPE OF WORK FOR A NWL WORKFORCE DEVELOPMENT AND TRAINING ANALYSIS

JAN 23

DEVELOP ACTIVITY-BASED METRICS AND BASELINE

DEVELOP METHODOLOGY FOR ESTABLISHING AN INVENTORY OF NET SEQUESTRATION AND STORAGE IN OREGON'S NWL

JAN 23

MAY 23

AUG 23

FINAL REPORT

IMPLEMENTATION!

2024
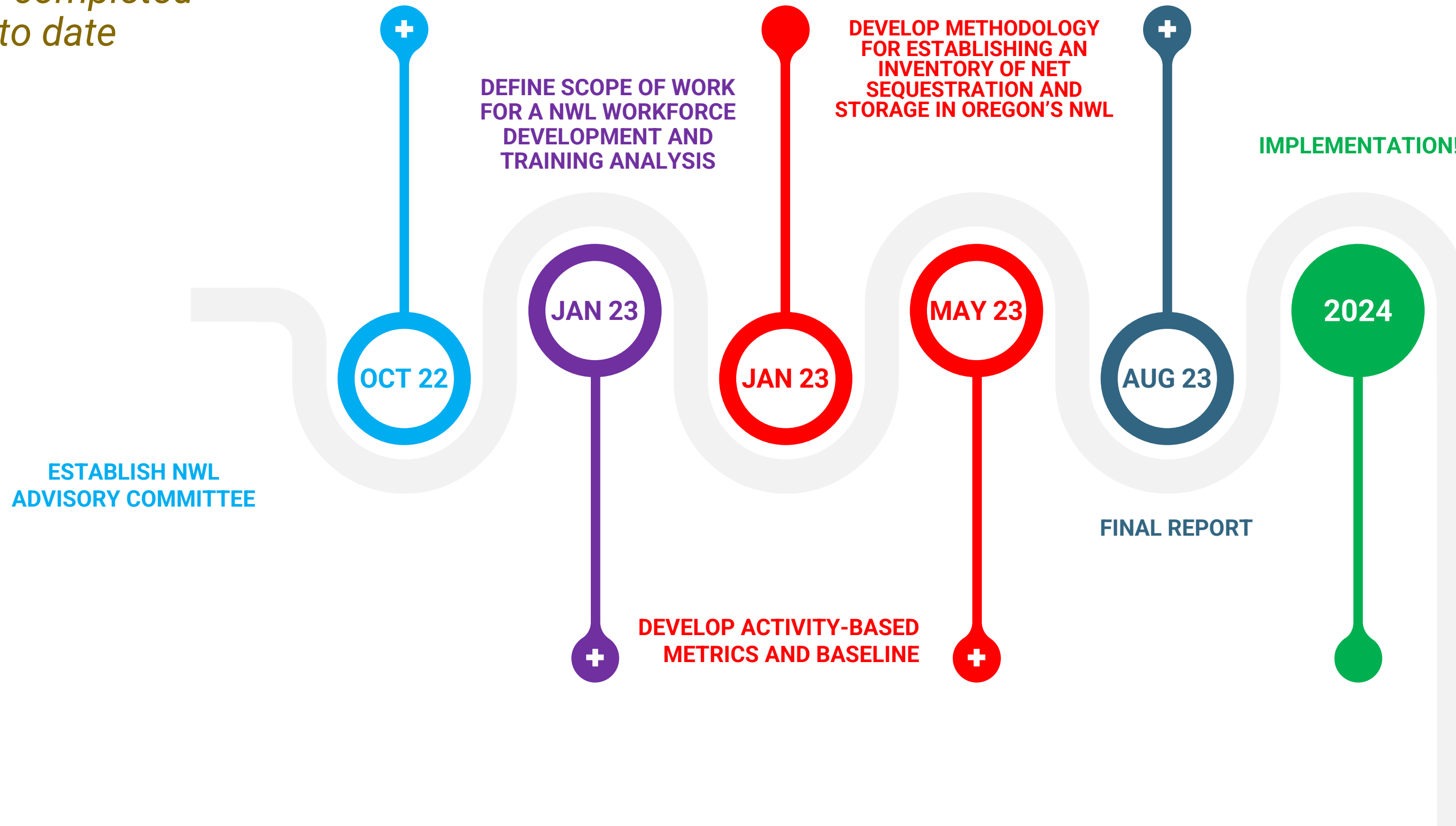
Expectations

- Be actively engaged in ensuring the fairness and transparency of the process.
- Actively participate in productive exchanges.
- Work collegially to produce quality deliverables.
- Openly acknowledge any potential conflict of interest.

OUR PROCESS

OGWC NATURAL & WORKING LANDS PROJECT

Scope of Work

1. Create Advisory Committee
2. Develop activity-based metrics and establish baseline
3. Identify community impact metrics
4. Define scope of work for Workforce and Training Analysis
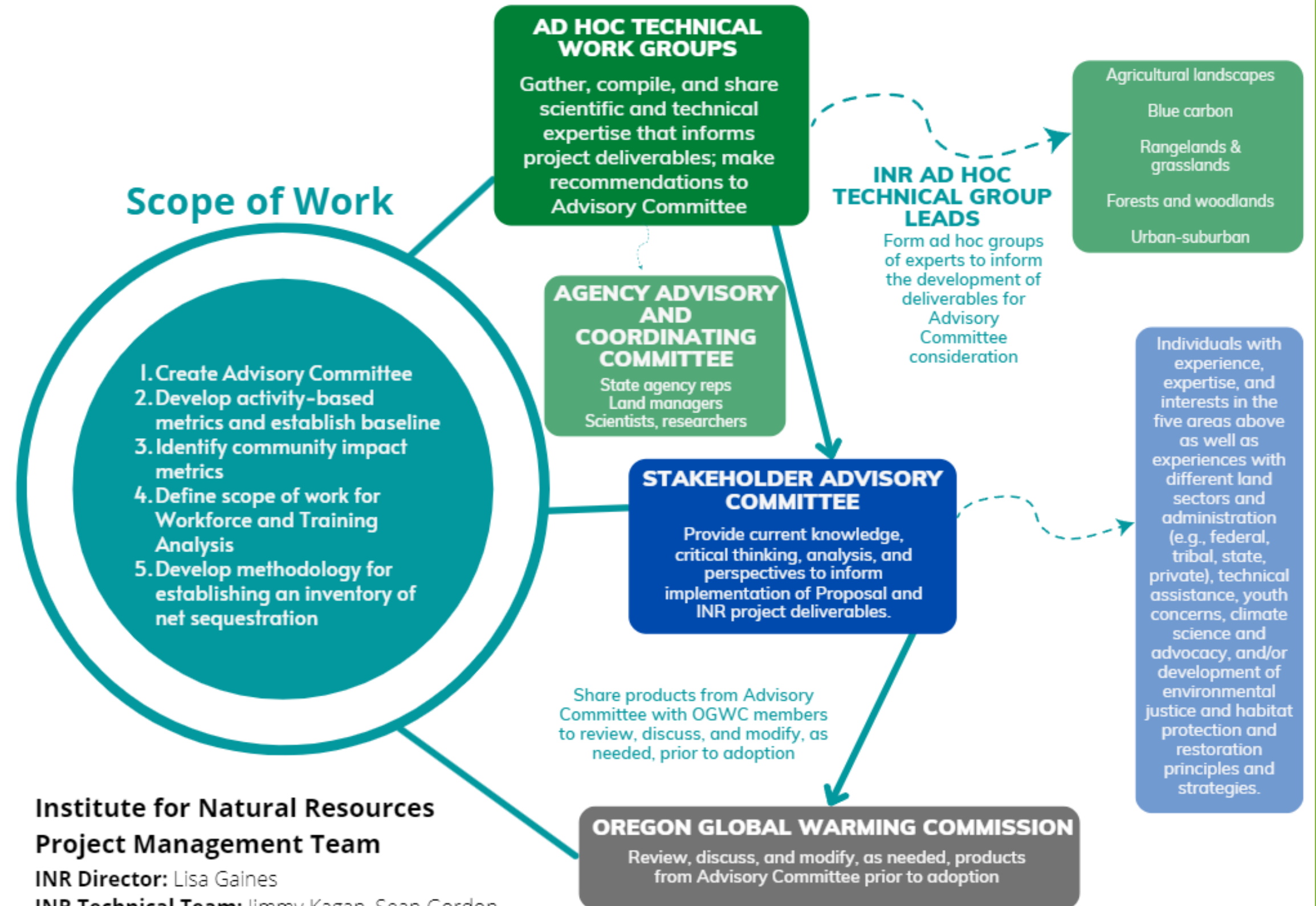5. Develop methodology for establishing an inventory of net sequestration

AD HOC TECHNICAL WORK GROUPS

Gather, compile, and share scientific and technical expertise that informs project deliverables; make recommendations to Advisory Committee

INR AD HOC TECHNICAL GROUP LEADS

Form ad hoc groups of experts to inform the development of deliverables for Advisory Committee consideration

- Agricultural landscapes
- Blue carbon
- Rangelands & grasslands
- Forests and woodlands
- Urban-suburban

AGENCY ADVISORY AND COORDINATING COMMITTEE

State agency reps
Land managers
Scientists, researchers

STAKEHOLDER ADVISORY COMMITTEE

Provide current knowledge, critical thinking, analysis, and perspectives to inform implementation of Proposal and INR project deliverables.

Individuals with experience, expertise, and interests in the five areas above as well as experiences with different land sectors and administration (e.g., federal, tribal, state, private), technical assistance, youth concerns, climate science and advocacy, and/or development of environmental justice and habitat protection and restoration principles and strategies.

Share products from Advisory Committee with OGWC members to review, discuss, and modify, as needed, prior to adoption

OREGON GLOBAL WARMING COMMISSION

Review, discuss, and modify, as needed, products from Advisory Committee prior to adoption

Institute for Natural Resources Project Management Team

INR Director: Lisa Gaines
INR Technical Team: Jimmy Kagan, Sean Gordon, Megan Creutzburg, Michael Russell
Facilitator: Lisa DeBruyckere

Technical Work Group Focus

Activity-Based Metrics

Metrics to help track the implementation of activities (interventions) that contribute to the reduction of GHGs in the NWL sector.*

Objective: Develop activity-based metrics and a baseline of these activities for Oregon's NWL.

Natural & Working Lands (NWL) Inventory

NWL inventories estimate carbon stocks and fluxes of GHGs across different land use categories and quantify the uncertainty around these estimates.

Objective: Create a tiered proposal for a greenhouse gas inventory for Oregon's NWL sector.

* (e.g., IPCC's "land use, land use change and forestry (LULUCF)" GHG inventory sector)

Technical Work Group Approach

- Consistent with IPCC Guidelines and Best Practices

- Informed by National Approaches (e.g., EPA) and other State approaches

- Use the best available science

- Recognize that metrics and inventory methods may improve over time

Technical Work Group Approach

- Consistent with IPCC Guidelines and Best Practices
- Informed by National Approaches (e.g., EPA) and other State approaches
- Use the best available science
- Recognize that metrics and inventory methods may improve over time
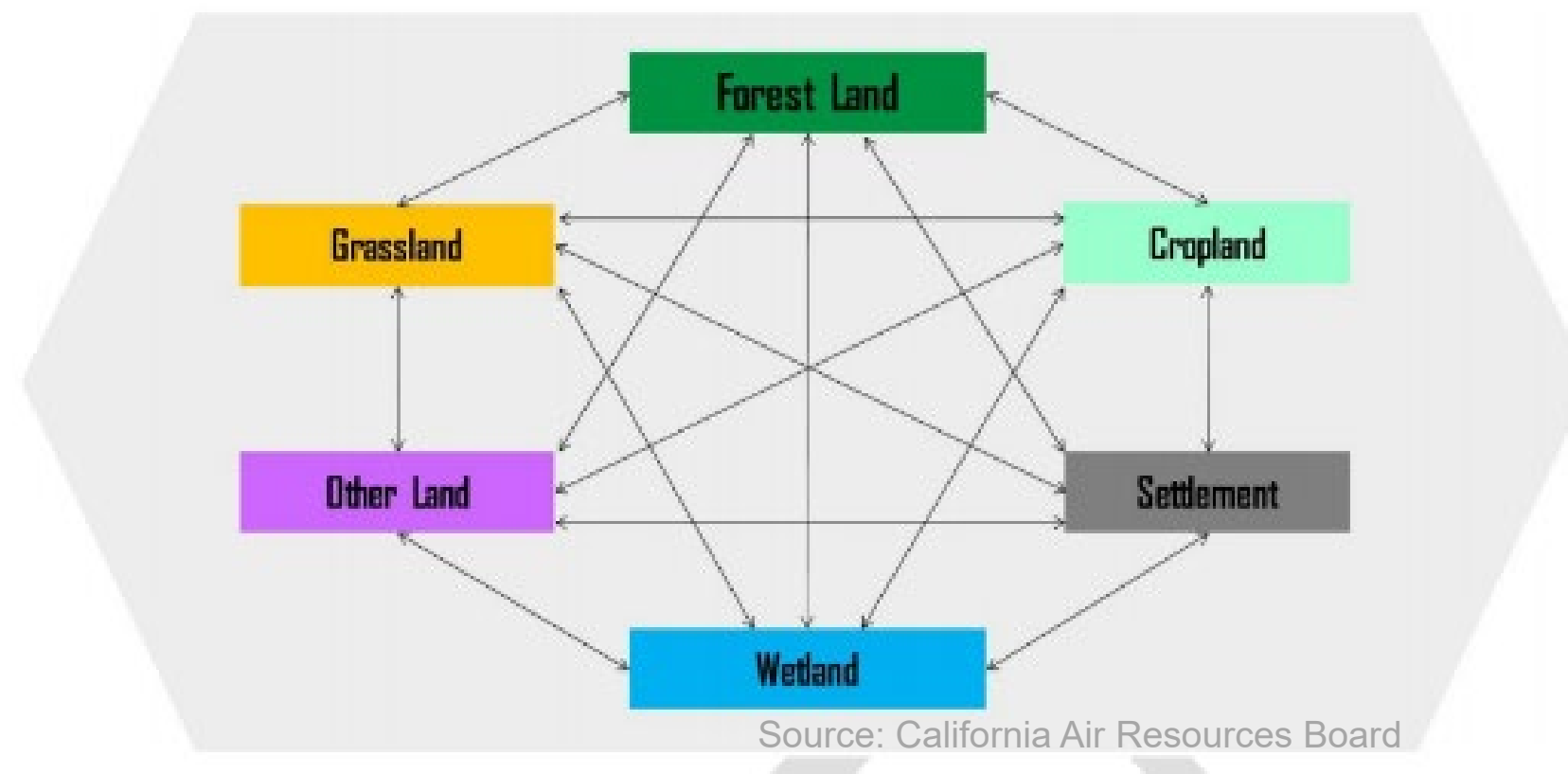- Arrange technical 'sub-groups' loosely by land use category

Land Use Categories
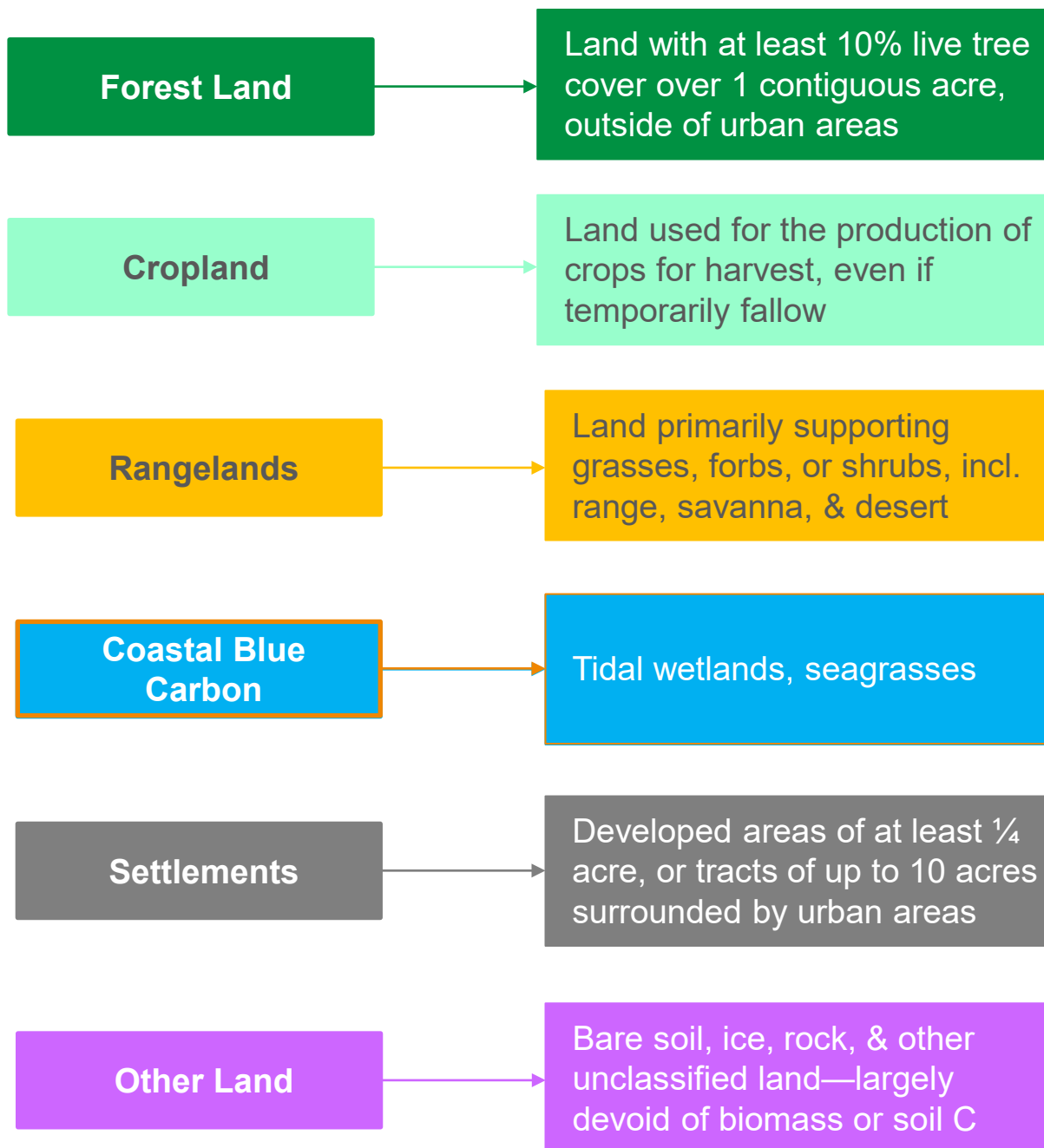
Oregon specific land use category definitions being developed. Will be informed by IPCC guidelines/standardized definitions.

Forest Land	Land with at least 10% live tree cover over 1 contiguous acre, outside of urban areas
Cropland	Land used for the production of crops for harvest, even if temporarily fallow
Rangelands	Land primarily supporting grasses, forbs, or shrubs, incl. range, savanna, & desert
Coastal Blue Carbon	Tidal wetlands, seagrasses
Settlements	Developed areas of at least ¼ acre, or tracts of up to 10 acres surrounded by urban areas
Other Land	Bare soil, ice, rock, & other unclassified land—largely devoid of biomass or soil C

NWL inventories typically include GHG fluxes for each of the six land use categories on the left. The IPCC provides standardized definitions for what each category includes in GHG inventories. An inventory also includes GHG fluxes derived from year-to-year changes in land use, reported separately for each of the axes in the figure below (e.g., Forest Land converted to Cropland).

Categories of land use change

Source: California Air Resources Board

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Credit: World Resources Institute, Natural & Working Lands Inventory Improvements: A Guide for States

Technical Work Group Focus

Activity-Based Metrics

**Goal:** Develop activity-based metrics and a baseline of these activities for Oregon's NWL.

1. What are the recommended activities to capture and store more carbon and reduce GHGs in Oregon's NWL sector? Which should be included in this effort?

2. What method should be used to develop a baseline for these activities and track implementation through time?

    How much is occurring and how much has happened in the past? How much would occur following 'business-as-usual'?

3. How do we best measure or estimate the amount of carbon that is captured and stored by implementing the activities?

Potential Activities – EXAMPLE
Oregon NWL Activity list to be developed with Technical Work Group

Land or Ecosystem Type	Conservation, restoration, and management activities
Cultivated lands	Soil conservation practices including cover cropping, reduced-till, no-till, mulching and compost application; riparian area restoration; conversion to herbaceous or woody cover
Rangelands	Compost amendment; prescribed grazing; riparian area restoration
Forests	Fuel reduction; understory treatment; prescribed burning; less-intensive forest management; partial cut (thinning); reforestation; enhanced biomass utilization
Coastal areas	Coastal marsh restoration; seagrass restoration;
Urban areas	Urban forest expansion; urban greening
All land types	Protection of land from conversion
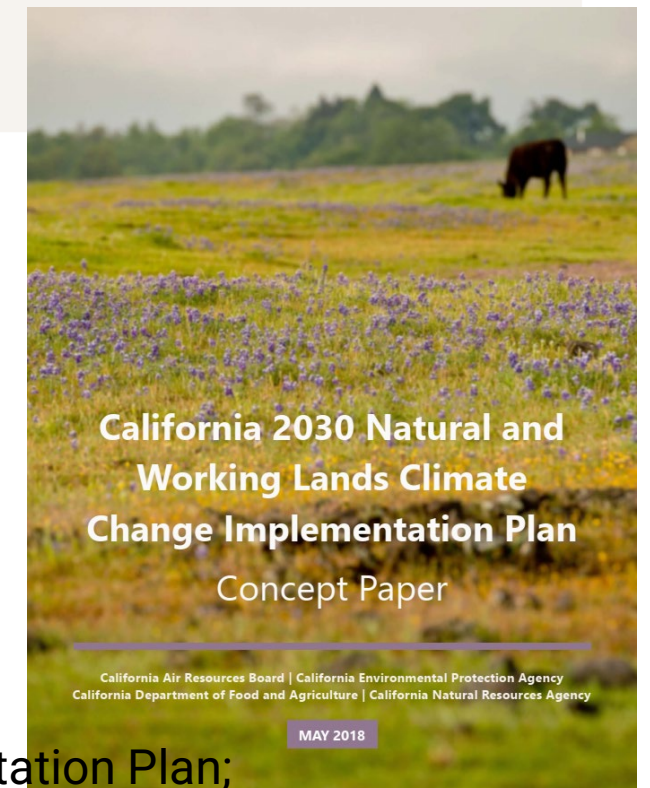
Example of activities adapted from the California Natural and Working Lands Implementation Plan;
https://ww2.arb.ca.gov/sites/default/files/2020-10/nwl-implementation-plan-concept-paper.pdf

California 2030 Natural and Working Lands Climate Change Implementation Plan
Concept Paper

California Air Resources Board | California Environmental Protection Agency
California Department of Food and Agriculture | California Natural Resources Agency

MAY 2018

Natural & Working Lands (NWL) Inventory

Goal: Create a tiered proposal for a greenhouse gas inventory for Oregon's NWL sector.
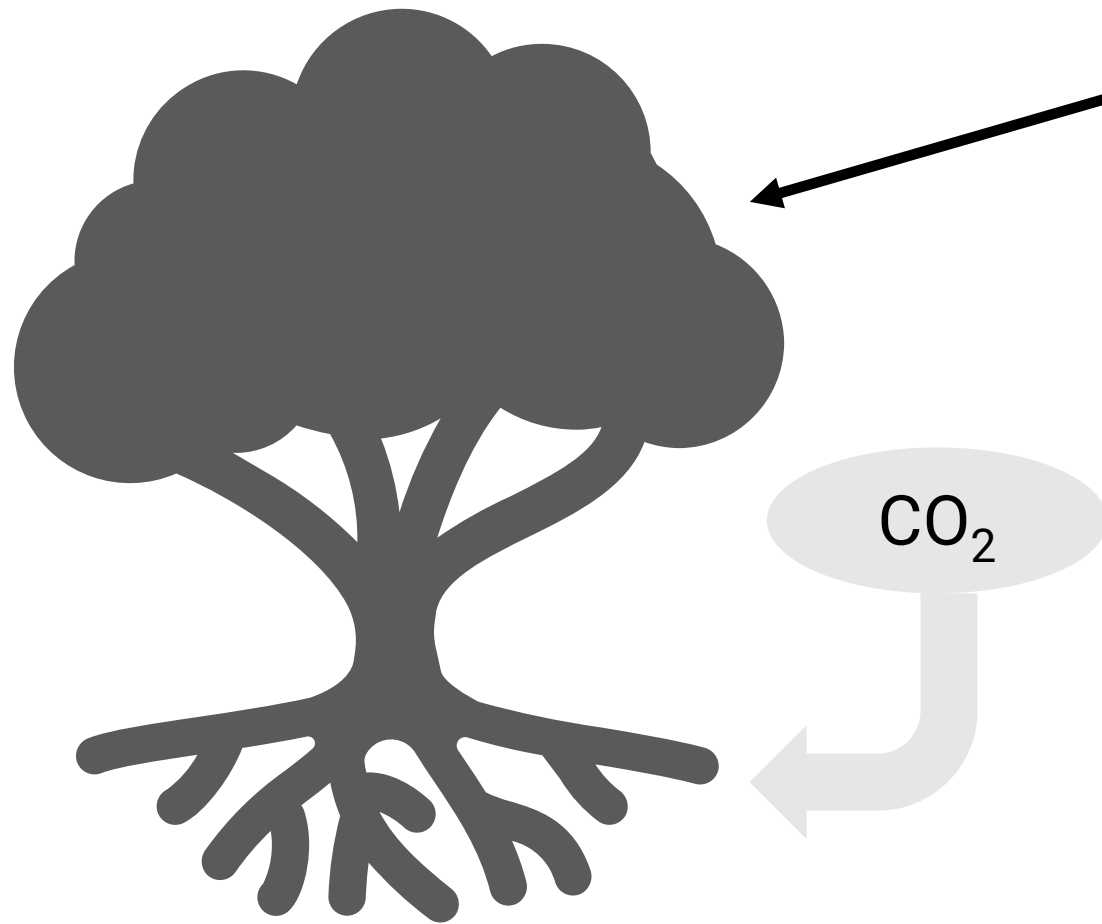
What are the recommended methods to determine:

1. The current carbon stocks and net sequestration in Oregon's NWL?
2. How carbon stocks, emissions, and sequestration in Oregon's NWL change through time?
3. The causes of these changes?
4. How we track these differences?

KEY CONCEPT

Measuring carbon stocks vs. carbon flux

Carbon stock = the total amount of carbon stored in biomass and soil

- Carbon stocks are relatively stable over time, barring significant disturbances like wildfire or land use change
- Estimated as a function of tree diameter and height (equal to ~½ of tree biomass) or soil bulk density
- Usually a large value for a state NWL inventory with a proportionally small margin of error

Carbon flux = the *change* in carbon storage from one year to the next

- Carbon fluxes are highly variable across space and time as a function of biomass growth, soil management, disturbances, etc.
- Can be estimated using the stock-change method (the difference in carbon stock measured from year to year) or the gain-loss method (estimated carbon gain minus estimated carbon loss, as calculated from proxy measurements like land use change or soil management)
- *GHG flux* also includes emissions of non-CO2 gases like methane and nitrous oxide
- Usually a small number for a state NWL inventory with a proportionally large margin of error

CO_2

*A NWL inventory may report both **carbon stocks** and **carbon fluxes**, but **carbon fluxes** are most relevant to goal-setting and policymaking for NWL.*

Natural & Working Lands (NWL) Inventory

Goal: Create a tiered proposal for a greenhouse gas inventory for Oregon's NWL sector.

Tiered proposal is consistent with the IPCC framework of Tier 1, 2, & 3 GHG inventory methodologies.

- Tier 1: Simplest approach; uses basic land category mapping, spatially coarse activity data, and default emissions factors provided by IPCC or EPA.

- Tier 2: Uses more advanced methods to apply a stock change approach. Higher resolution activity data and regionally-specific data/emission factors are used.

- Tier 3: Uses detailed state-specific data and models, advanced methods driven by high-resolution activity data and disaggregated to fine grid scales. Provides greater certainty than lower tiers and have closer link to ecosystem dynamics.

IPCC guidelines for GHG inventories

What is it? The 2019 Refinement to the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National GHG Inventories provides the most up-to-date internationally agreed-upon methodologies for countries to estimate their GHG emissions and removals.

What does it do? The IPCC guidelines outline methodologies for:
- Collecting data
- Characterizing and quantifying uncertainty
- Identifying key categories for inventory
- Maintaining time series consistency
- Verifying inventory quality
- Including emissions of non-CO_2 gases
- Reporting GHG emissions and removals

Relevance for NWL inventories: All countries use these guidelines to standardize their GHG emission reports to the UN Framework Convention on Climate Change (UNFCCC). The IPCC guidelines include both broad and sector-specific guidelines (including NWL) for developing GHG inventories. These guidelines are applied in the National GHG inventory and increasingly to state inventories.
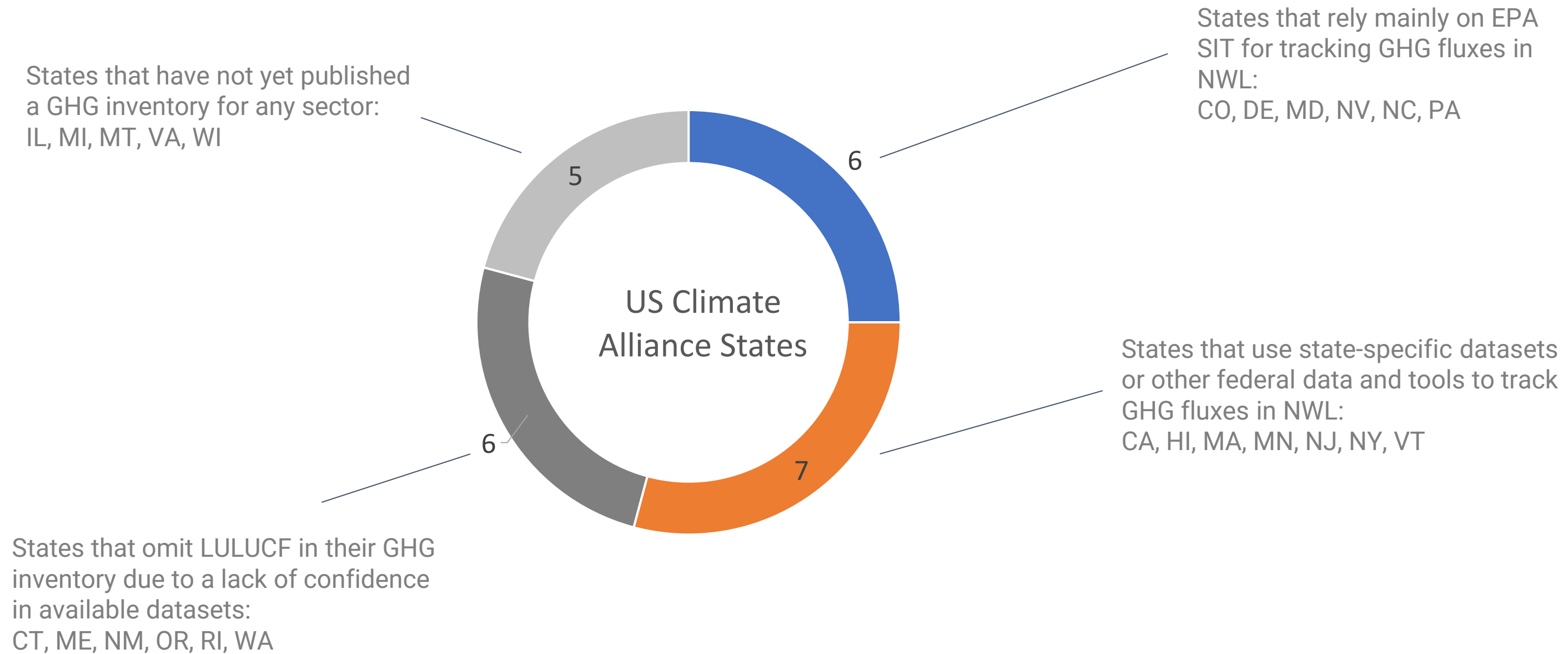
Limitations: The IPCC guidelines are designed for national inventories, and therefore do not cover some unique considerations for state inventories such as inventory boundaries, attribution of GHG fluxes, and emission leakage.

Resources: 2019 Refinement to the 2006 IPCC Guidelines for Agriculture, Forestry and Other Land Use; 2006 IPCC Guidelines for Agriculture, Forestry and Other Land Use; Application of 2006 IPCC Guidelines to Other Areas

How are US Climate Alliance states conducting NWL inventories?

States that have not yet published a GHG inventory for any sector:
IL, MI, MT, VA, WI

States that rely mainly on EPA SIT for tracking GHG fluxes in NWL:
CO, DE, MD, NV, NC, PA

US Climate Alliance States

States that use state-specific datasets or other federal data and tools to track GHG fluxes in NWL:
CA, HI, MA, MN, NJ, NY, VT

States that omit LULUCF in their GHG inventory due to a lack of confidence in available datasets:
CT, ME, NM, OR, RI, WA

RECOMMENDED READING

Natural & Working Lands Inventory Improvements: A Guide for States

Prepared by the World Resources Institute for US Climate Alliance states
September 2020 (UPDATED July 2022)

global warming potential

carbon equivalents

uncertainty

leakage additionality

DEFINITIONS

inventory sequestration

greenhouse baseline activity

biomass

REQUEST TO TECHNICAL EXPERTS

In the chat box, please inform us if you:

A) Have the time to and would like to participate in a process to help develop recommendations for inventory and metrics, or;

B) Have limited time, but would like to review and comment on recommendations.