Ecosystem Services Work Group Meeting #1



April 25, 2024 9am-12pm

Presented by: Theresa Keith

Agenda

9:00-9:15	**Welcome & understanding the proviso**	**Theresa Keith**
9:15-9:35	Introductions	Theresa Keith
9:35-10:30	Role of the work group Intro to DNR-managed lands Project Overview	Theresa Keith
10:30-10:40	Break	
10:40-11:40	Introduction to Greene Economics and the work plan	Bea Covington
11:00-11:50	Guided Discussion: Greene requesting feedback for first tech memo	Bea Covington
11:50-12:00	Questions and Calendar of upcoming Work Group meetings	Theresa Keith

Before we get started

- This is a public meeting and is being recorded.
- Only the Work Group members have access to the chat, not members of the public.
- We will have designated times to address questions throughout the meeting.
- Please keep cameras on.
- Please keep microphones off unless speaking.
- Materials, including the meeting recording, will be shared after the meeting and available on the Work Group website.

Welcome to Members of the Public

- Refer to the Work Group website for information about each meeting
- https://www.dnr.wa.gov/about/boards-and-councils/ecosystem-services-work-group

Ecosystem Services Work Group

DNR manages 5.6 million acres of state trust lands, aquatic lands, and natural areas that provide a suite of ecosystem services that include carbon sequestration, wildlife habitat, clean air and water, and many others. Emerging environmental markets, such as Washington State's carbon offset program (RCW 70A.65.170), provide new opportunities for the state to monetize these ecosystem services assets while reducing or removing greenhouse gasses and enhancing other ecosystem services. Ecosystem services can be monetized by generating carbon offset credits and other types of ecosystem service credits via projects.

In 2023, the Washington State Legislature directed DNR to conduct an ecosystem services asset inventory and develop an ecosystem services asset plan for DNR-managed lands. DNR will hire a technical consultant to assist with this work. The plan will outline how ecosystem services provided by DNR-managed lands can be monetized and marketed and will include recommendations for how to implement the plan. Specifically, the plan will include the following elements:

- An inventory of DNR-managed lands that can be used to generate carbon offset credits or other ecosystem services credits
- Potential options/markets for selling these credits
- A marginal cost abatement model to inform highest and best use of DNR assets in carbon markets and other ecosystem services markets
- A needs assessment and implementation plan for marketing ecosystem services

DNR is led by **Commissioner of Public Lands** Hilary Franz

What is the proviso

- Legislature directed DNR to conduct an ecosystem services asset inventory and asset management plan
- Proviso in 2023 Operating Budget
- Funded by Climate Commitment Act
- Final report to legislature

Problem Statement

DNR has been directed (2023 c 475 §310(12)) to develop an ecosystem services asset inventory and an ecosystem services asset plan for DNR-managed lands: inventorying ecosystem service assets on DNR managed lands, identifying opportunities for selling credits, and outlining a plan for how these services can potentially be monetized and marketed, prioritizing opportunities in the face of regulatory and policy limitations.



INTRODUCTIONS

DNR Staff

- Duane Emmons - Assistant Deputy Supervisor for State Uplands
- Csenka Favorini-Csorba – Policy Director
- Theresa Keith – Forestry Policy Advisor
- Micheal Kearney - Product Sales & Leasing Division Manager
- Cameron Crump - Forest Resources Division Manager
- Cynthia Catton - Aquatic Resources Scientific Advisor
- Sharon Lumbantobing - Projects & Planning Assistant Division Manager
- Denise Roush-Livingston – Environmental Planner

Greene Economics Team

External Work Group

BEA COVINGTON
Project Manager

HENRY MOONEY, PhD
Deputy Project Manager

- Greene Economics
- Pax Environmental
- Montrose
- Spatial informatics Group (SIG)

Inventory Leads	Value Leads	Markets Leads
Austin Troy, PhD Randy Mandel	Gretchen Greene, PhD Andrew Bechard, PhD	Bea Covington Austin Troy, PhD
Support	**Support**	**Support**
Thomas Buchholz, PhD Carl Rudeen Galen Peracca Rebecca Parsons Sabine Postma Brian Holly	Jeri Sawyer Rabia Ahmed Mark Rockel, PhD Mike Rockel Sabine Postma	Henry Mooney, PhD Randy Mandel Galen Peracca Carl Rudeen Jeri Sawyer

Contractor Team Members

Rabia Ahmed

Economist

Andrew Bechard, PhD

Economist

Thomas Buchholtz, PhD

Forest Carbon Specialist

Bea Covington

Economist

Gretchen Greene, PhD

Economist

Brian Holly

Ecosystem Management Biologist

Randy Mandel

Biodiversity& Restoration Ecologist

Law and Policy Analyst

Spatial Analyst

Forest Ecologist

Biologist

Economist

Financial Analyst

Spatial Analyst & Biologist

Economist

Forestry & Environmental Scientist

ES Work Group Members

Name		Organization	Title
Mark	Burrows	Stevens County	Commissioner / Chair
Brenda	Campbell	Snoqualmie Tribe	Climate Program Manager for Snoqualmie Tribe
Matt	Comisky	American Forest Resource Council	Washington Manager
Stephen	Donofrio	Ecosystems Marketplace	Managing Director
Julie Ann	Koehlinger	Hoh Indian Tribe	Director of Natural Resources
David	Onstad	Kitsap Environmental Coalition	President of the Kitsap Environmental Coalition
Mark	Ozias	Clallam County	Commissioner / Chair
Kasia	Patora	Department of Ecology	Lead Ecomomist
Russ	Pfeiffer-Hoyt	Mount Baker School District	School Board of Directors, Chair & WWSDA Trust Lands Advisory Committee, Chair
Mary Jean	Ryan	Center for Responsible Forestry	Board Member
Gareth	Waugh	Port Blakely	Director of Forestry
Jordan	Wildish	Department of Ecology	Cap and Invest Offsets Lead
Kathleen	Wolf	King County	Forest Carbon Manager
Rene	Zamora Cristales	Oregon State University	Faculty

Role of the Work Group

- Advise the technical contractor and DNR to guide the technical analyses and development of the ecosystem services asset plan
- Share relevant experiences and applicable expertise
- Provide counsel based on the interests and perspectives of the stakeholder group they represent
- Provide feedback to DNR pertaining to ecosystem services markets
- DNR has the final authority over the analyses, methods, and content of the legislative report

Our mission: *Manage, sustain, and protect the health and productivity of Washington's lands and waters to meet the needs of present and future generations.*

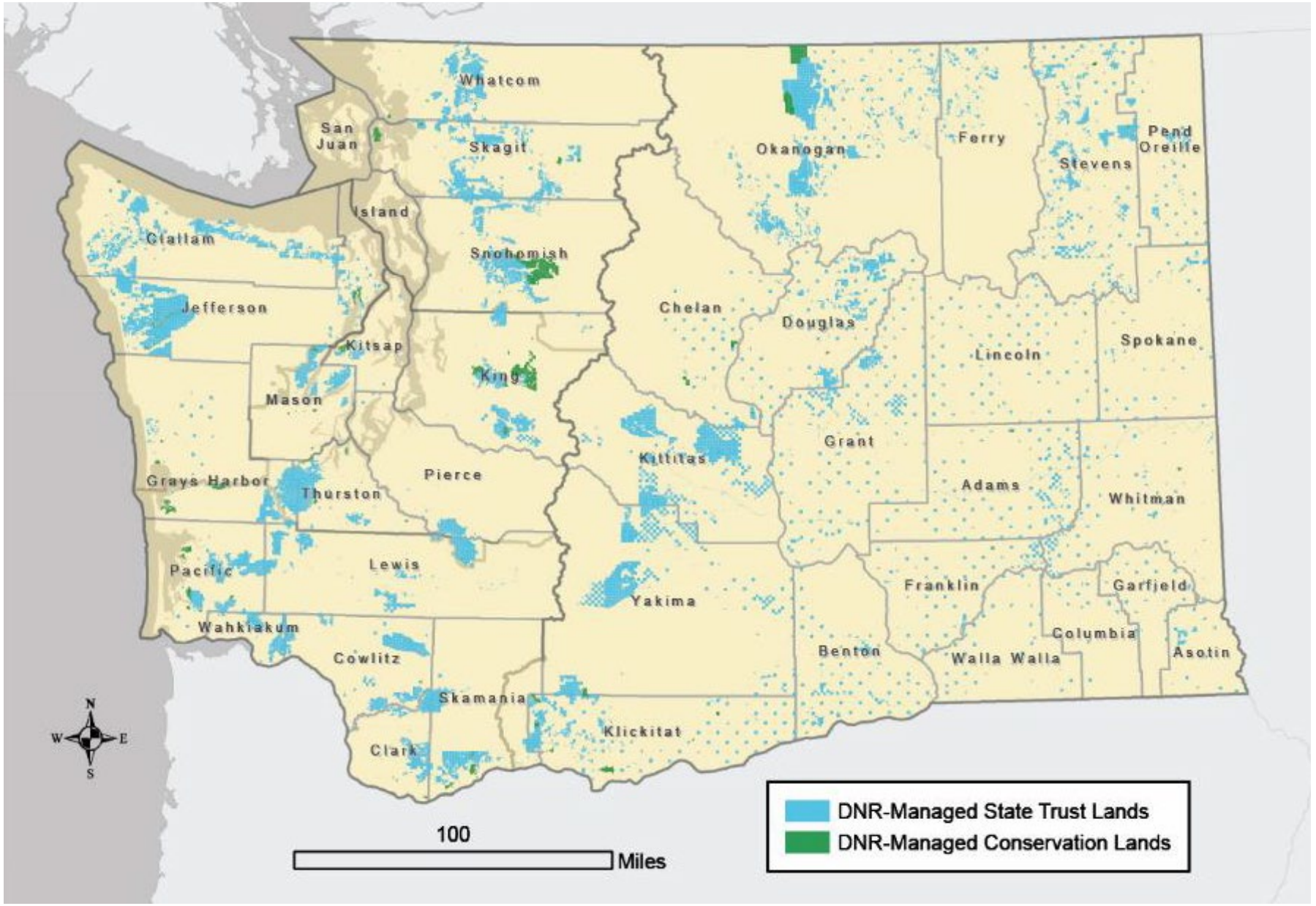
DNR-Managed Lands

- **Aquatic lands**
  - 2.6 million acres
- **Terrestrial lands**
  - **State trust lands**
    - 2.9 million acres
    - Managed to generate revenue for trust beneficiaries and provide other benefits to the people of Washington
    - 2.1 million acres are forested
  - **Natural Areas Program**
    - 0.5 million acres
    - Managed for conservation

Aquatic Lands

- 2.6 million acres of navigable lakes, rivers, streams, and marine waters
- 8 aquatic reserves
- Generate revenue by
  - Selling the rights to harvest wild geoducks and other shellfish
  - Leasing and licensing state-owned aquatic lands
- Restoration & invasive species control
- Aquatics Assessment and Monitoring Team (AAMT)

Terrestrial "Uplands"



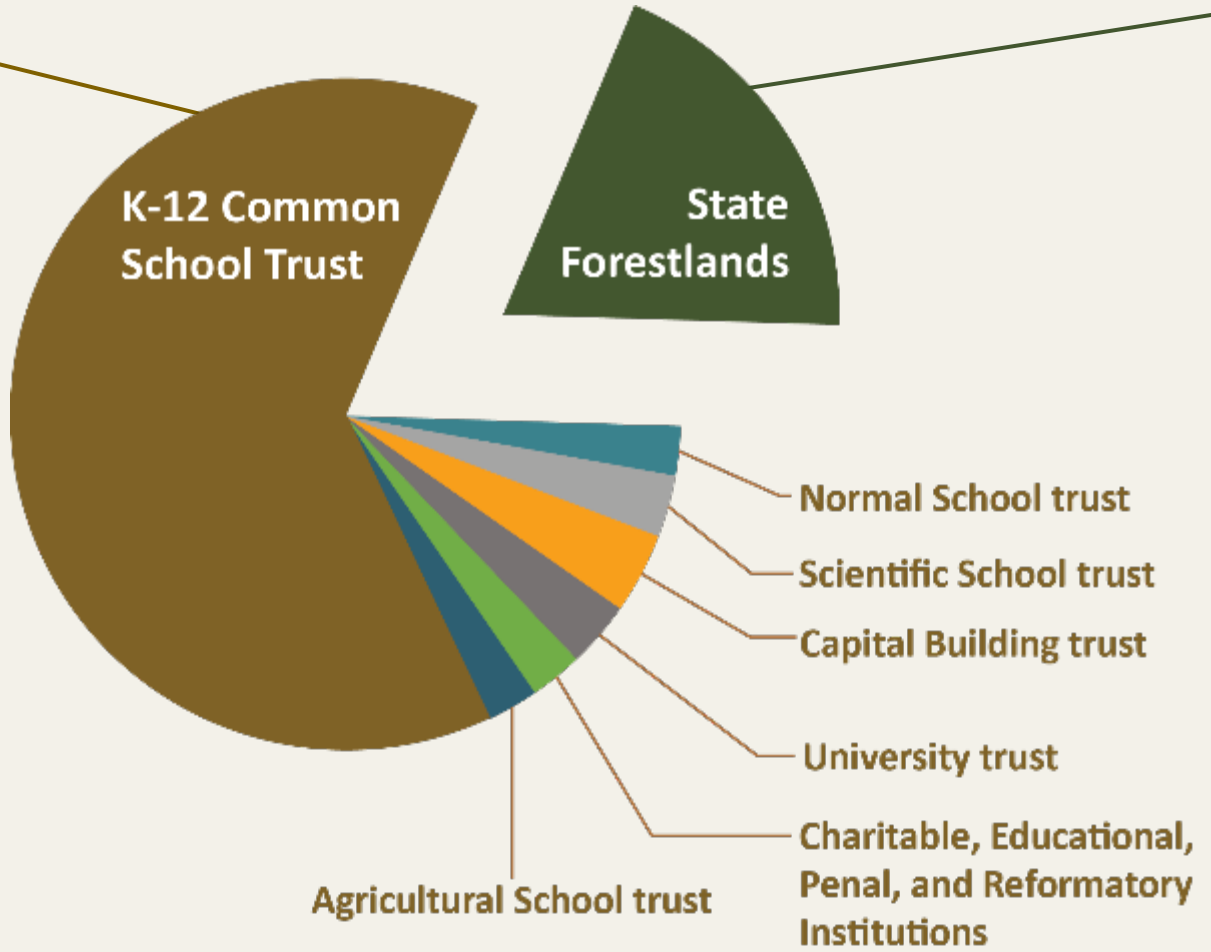


Types of State Trust Lands

State Lands

Federally granted lands

- Enabling Act (25 U.S. Statutes at Large, c 180 p. 676)
- State Constitution
- Revenue generated from a variety of sources
- Source of financial support, primarily for public schools and colleges



State Forestlands

Two types: Transfer and Purchase

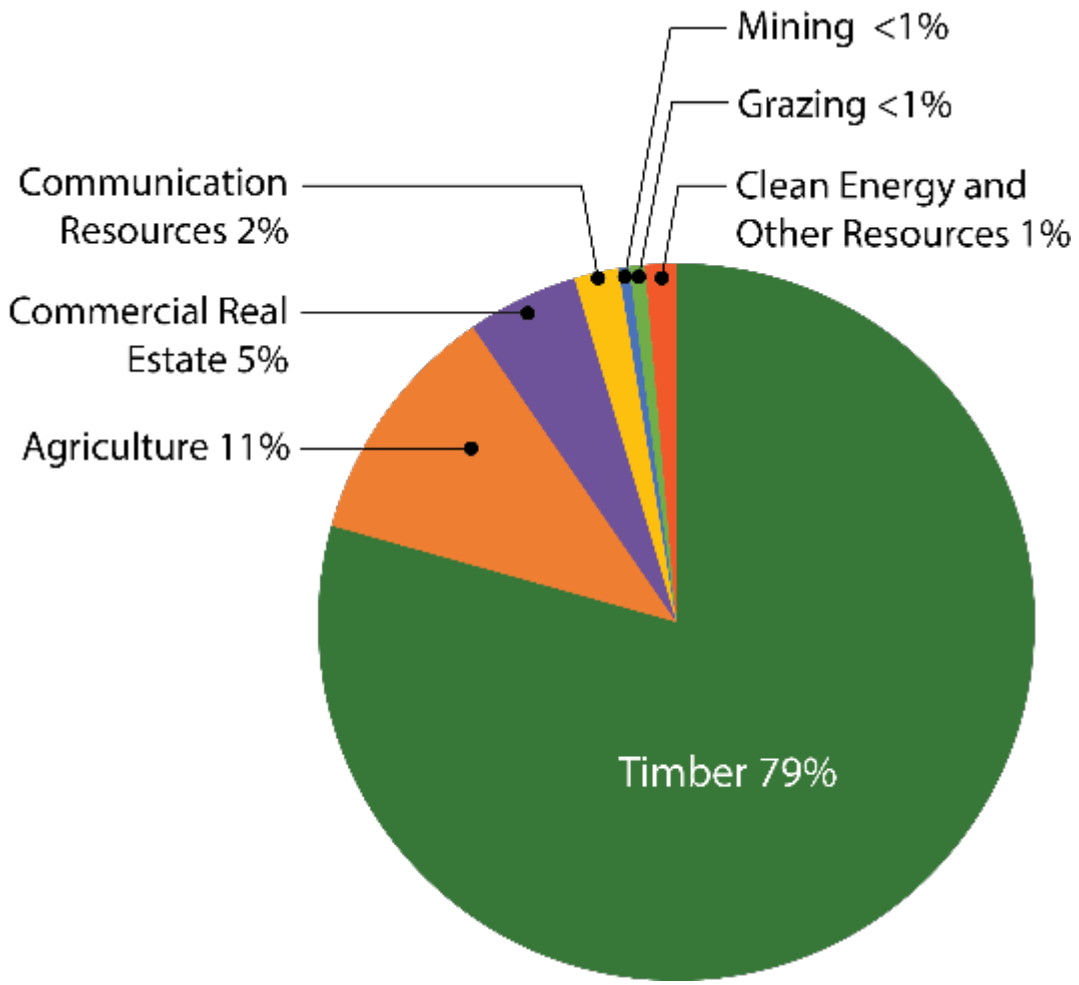
- > 617,000 acres*
- Acquired by counties through tax foreclosures, purchased, or deeded to state as gift.
- Statutory trusts
- Revenue helps fund county services, state schools, and junior taxing districts
- 21 counties
- Revenue goes to county in which it is generated

* Source : Deloitte Report 2020, Appendix D

DNR's Fiduciary Responsibility

- Generate revenue and other benefits for each trust, in perpetuity
- Preserve the corpus of the trust
- Exercise reasonable care and skill
- Act prudently to reduce the risk of loss for the trusts
- Maintain undivided loyalty to beneficiaries
- Act impartially with respect to current and future beneficiaries

Major Sources of Revenue








Project Understanding

- Carbon credit markets are maturing rapidly and are an increasingly important climate mitigation strategy especially in light of the Washington State Climate Commitment Act (CCA).
- Other market-based environmental management strategies such as water quality trading, habitat offsets, and blue bonds are also rapidly evolving.
- These emerging markets can be a source of revenue and DNR needs to prepare to enter the carbon credit and other ecosystem service markets.

Project Objective

- Explore ways DNR can generate revenue through carbon offset programs and other ecosystem services markets, while achieving greenhouse gas emission reductions and removal or enhancing other ecosystem services

Deliverables

- Inventory of ecosystem services assets on DNR-managed lands
- Asset management plan for ecosystem services assets
- Report to legislature

Requirements

- Need an **inventory of the current** ecosystem service **assets** on DNR-managed lands
- Need an **assessment** of the **future** ecosystem service **markets** that may be viable for DNR-managed lands
- Need to gain an understanding **what is needed to participate in** ecosystem service **markets** in the future
- Need to **identify policy obstacles and solutions** for DNR to enter these markets

Path forward

Understanding and Valuing Assets

- Parcel Level Ecosystem Service Asset Inventory
- System to Identify Most Promising Assets for Markets

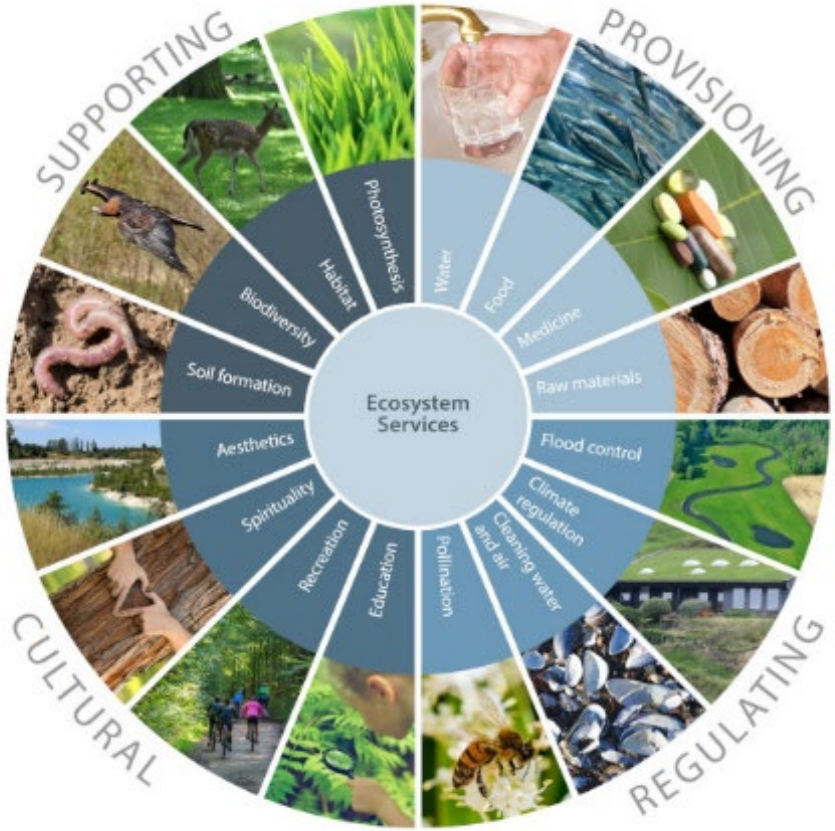
Understanding the Market Landscape

- Evaluate Offset Credit Programs and Market Opportunities
- Create Marginal Cost Abatement Curve
- Identify Most Feasible Markets for DNR Assets

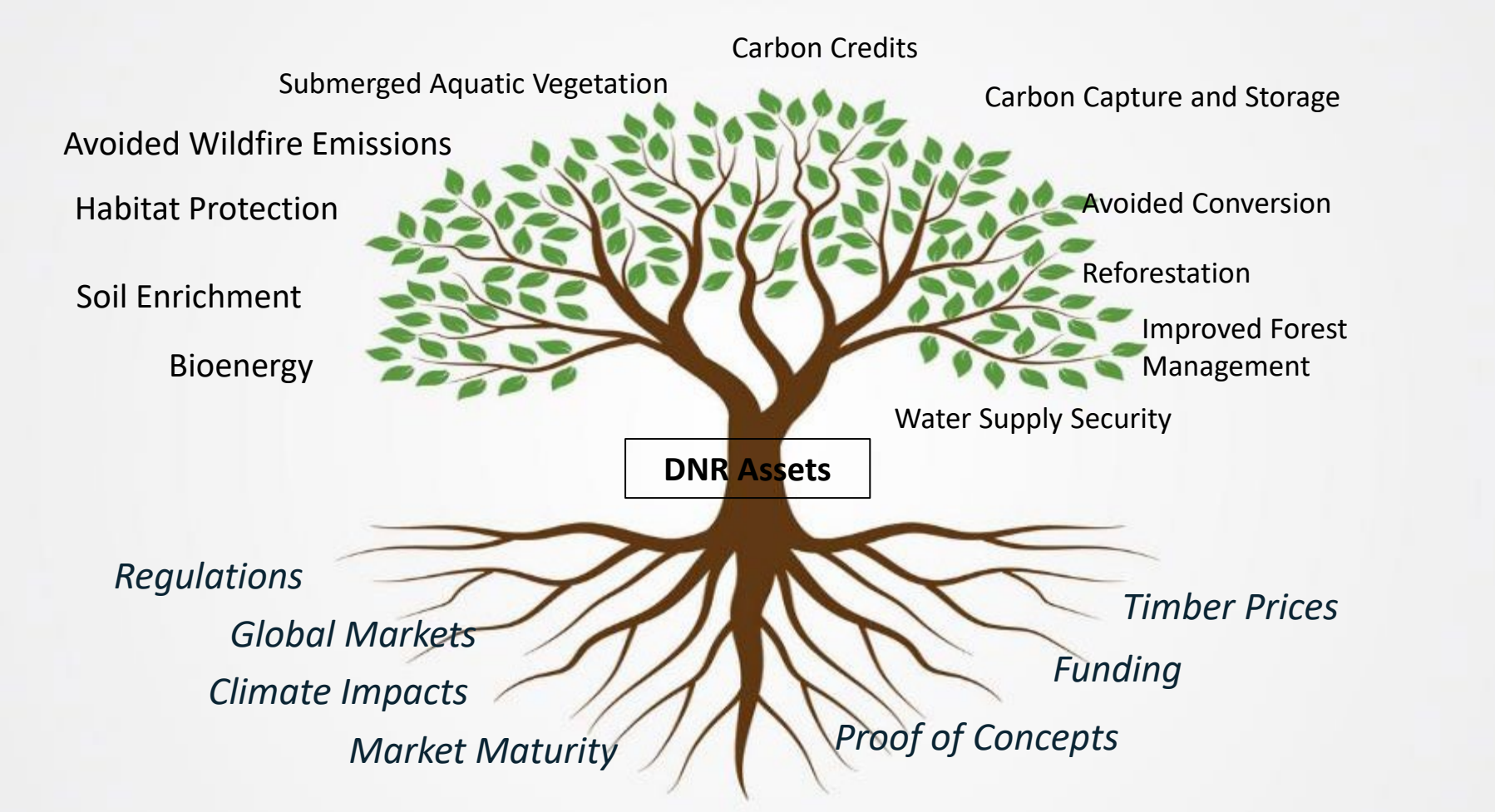
Getting Ready to Market

- Needs Assessment and Marketing Plan
- Policy/Regulatory Needs
- Dashboard Design

What are ecosystem services?

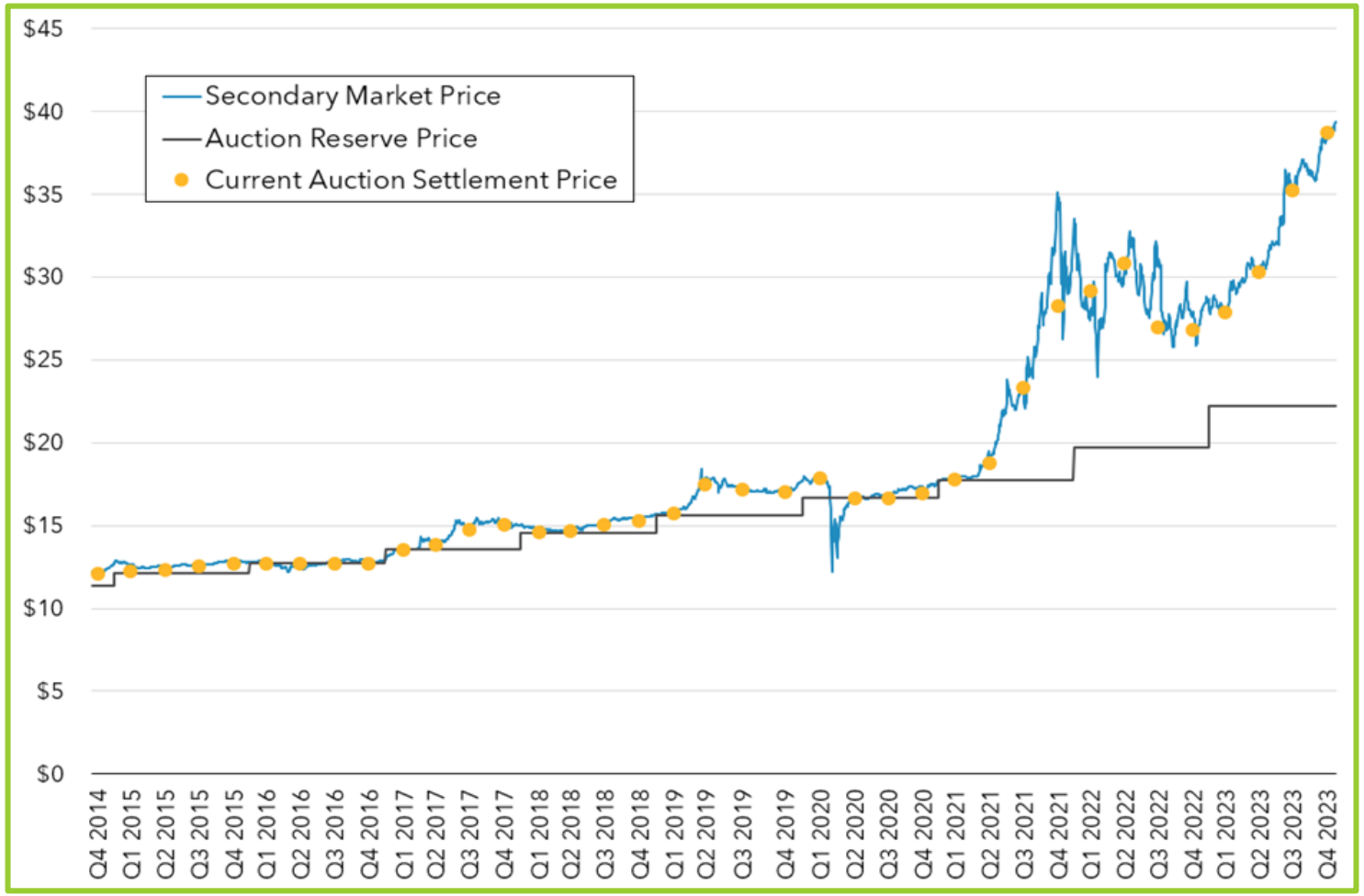


DNR Ecosystem Service Asset Valuation Opportunities



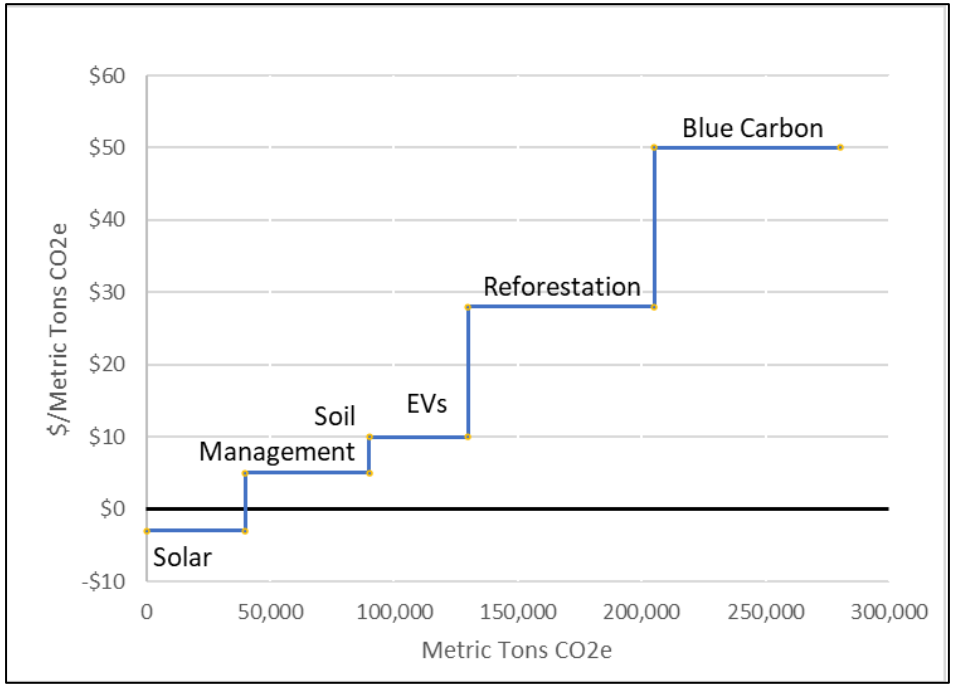
Understanding the Market Landscape

- Supply/Demand
- Prices
- Policies (CCA, Global)
- Timing
- Limitations
  - Leakage
  - Supply constraints
  - Staff capacity
  - Funding



Developing a Strategy

- Literature Review
- Marginal Cost Abatement Strategy
- Opportunity Costs
- Priority Parcels
- Internal Workshop
- ES work group/DNR Workshop



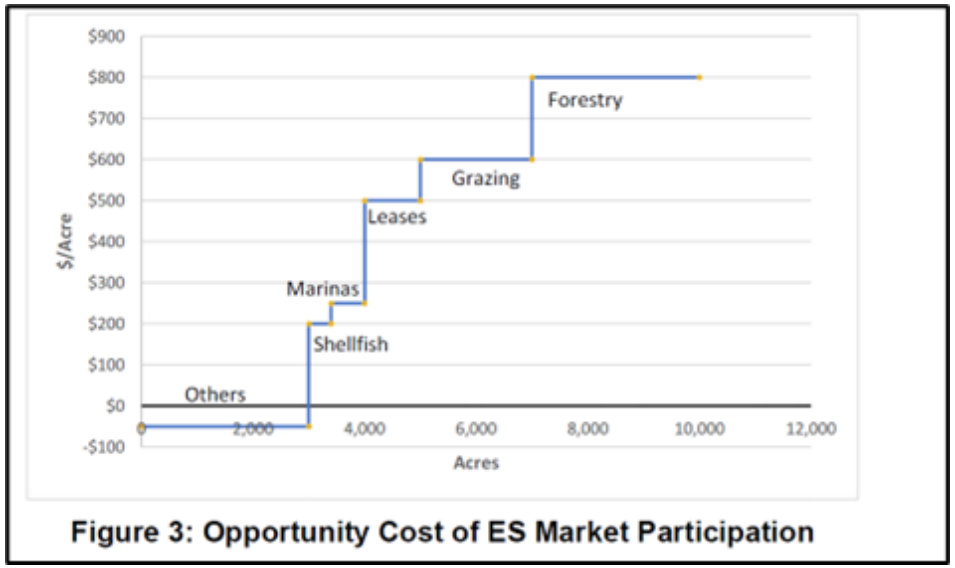
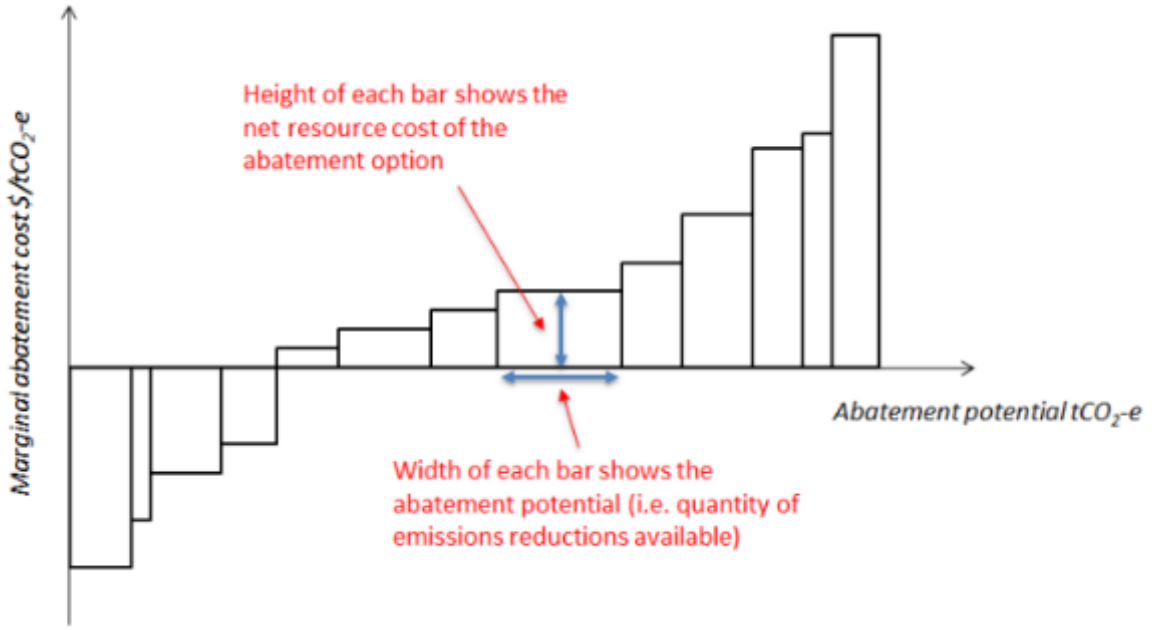


Figure 3: Opportunity Cost of ES Market Participation

Ecosystem Services Asset Plan

- Identify options for selling ecosystem services credits and carbon offset credits
- Marginal cost abatement modeling – to inform highest and best use of ecosystem services assets on DNR-managed land



https://environment.govt.nz/assets/Publications/Files/marginal-abatement-cost-curves-analysis_0.pdf



10 min break

Example ecosystem services with flow type

Provisioning

- Food: hunting, fishing, gathering
- Fuels: firewood
- Raw materials: forest products
- Fresh water provision

Cultural

- Recreation
- Aesthetics and amenity
- Spiritual, religious

Regulating

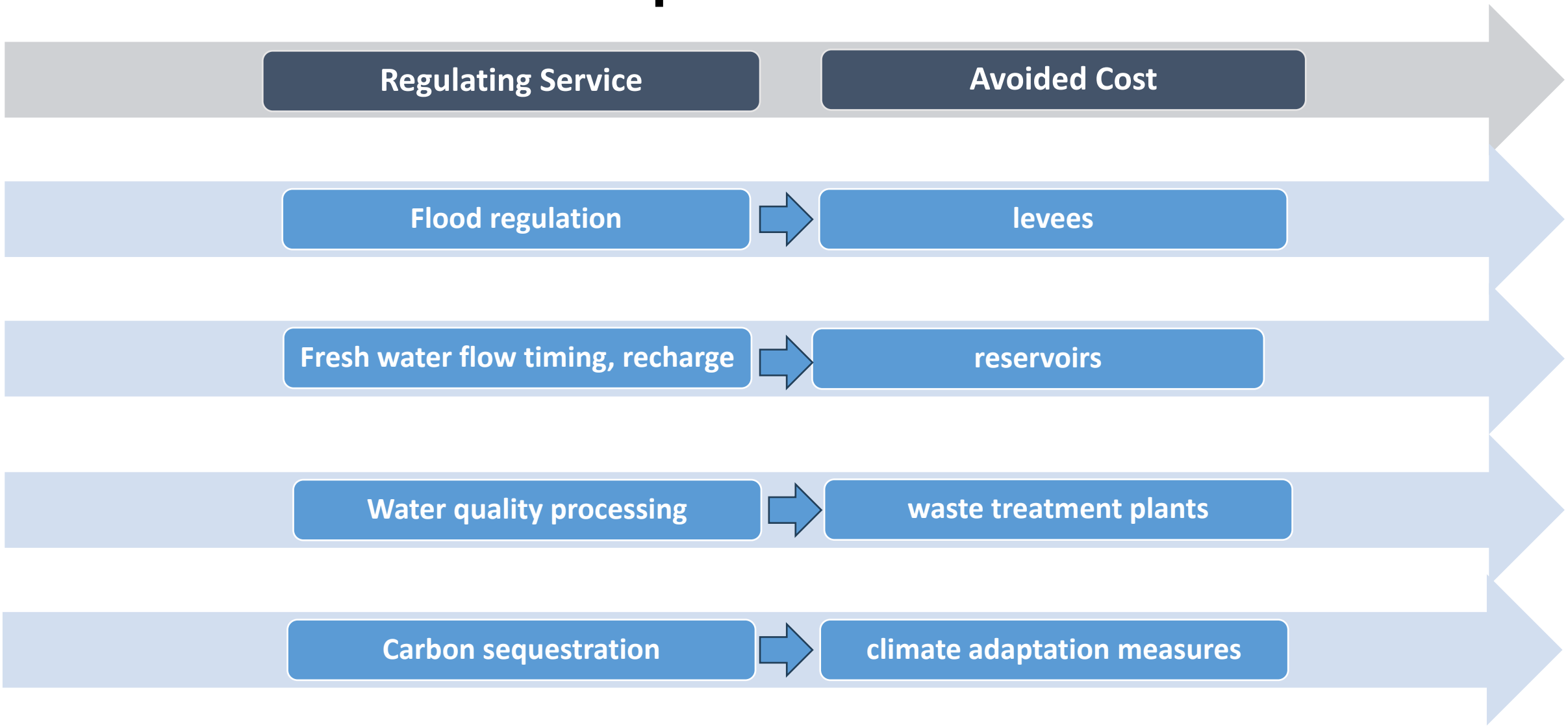
- Flood regulation
- Greenhouse gas sequestration
- Fresh water supply timing
- Water quality and waste assimilation
- Agricultural crop productivity

Supporting

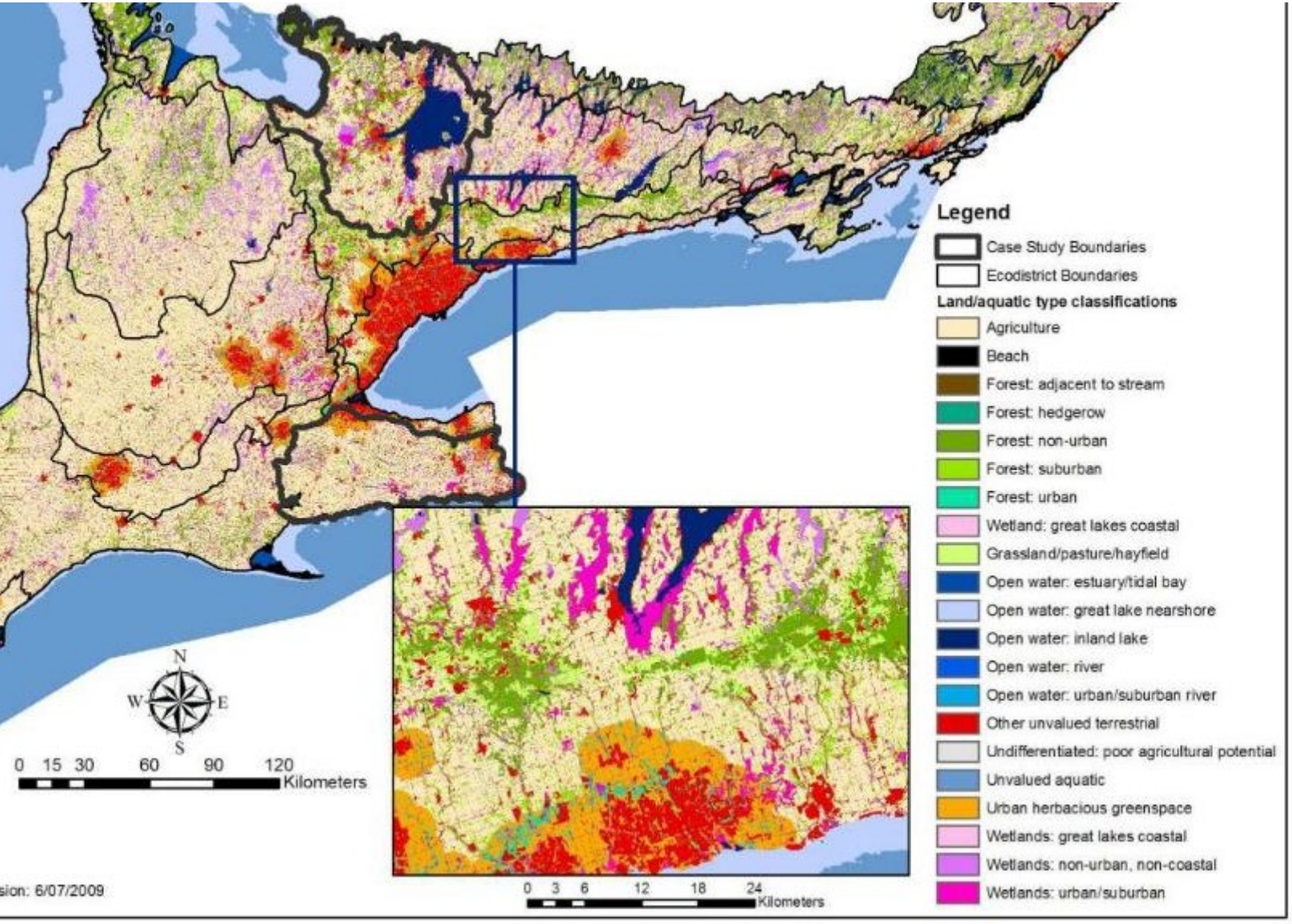
- Habitat provision
- species diversity
- Nutrient cycling

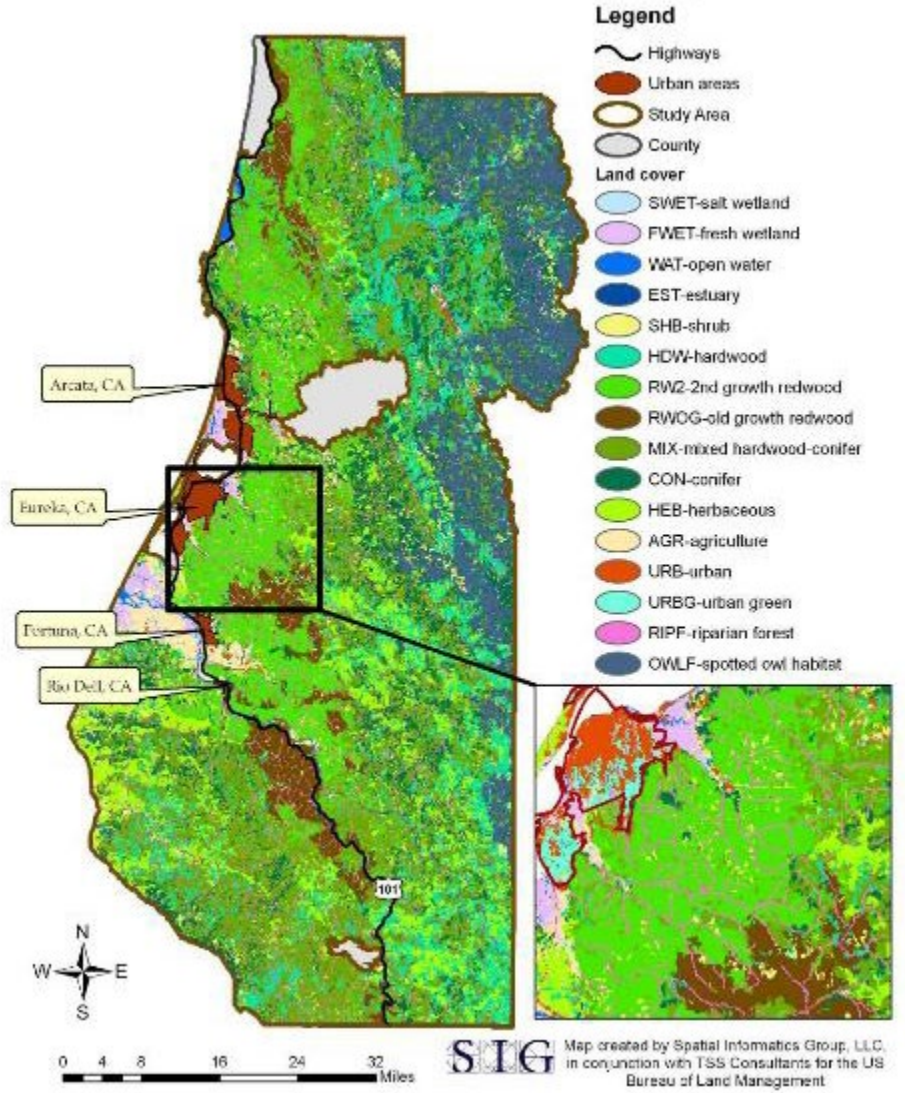
In situ | Proximal | Channelized | Diffusive | Global | More indirect benefit

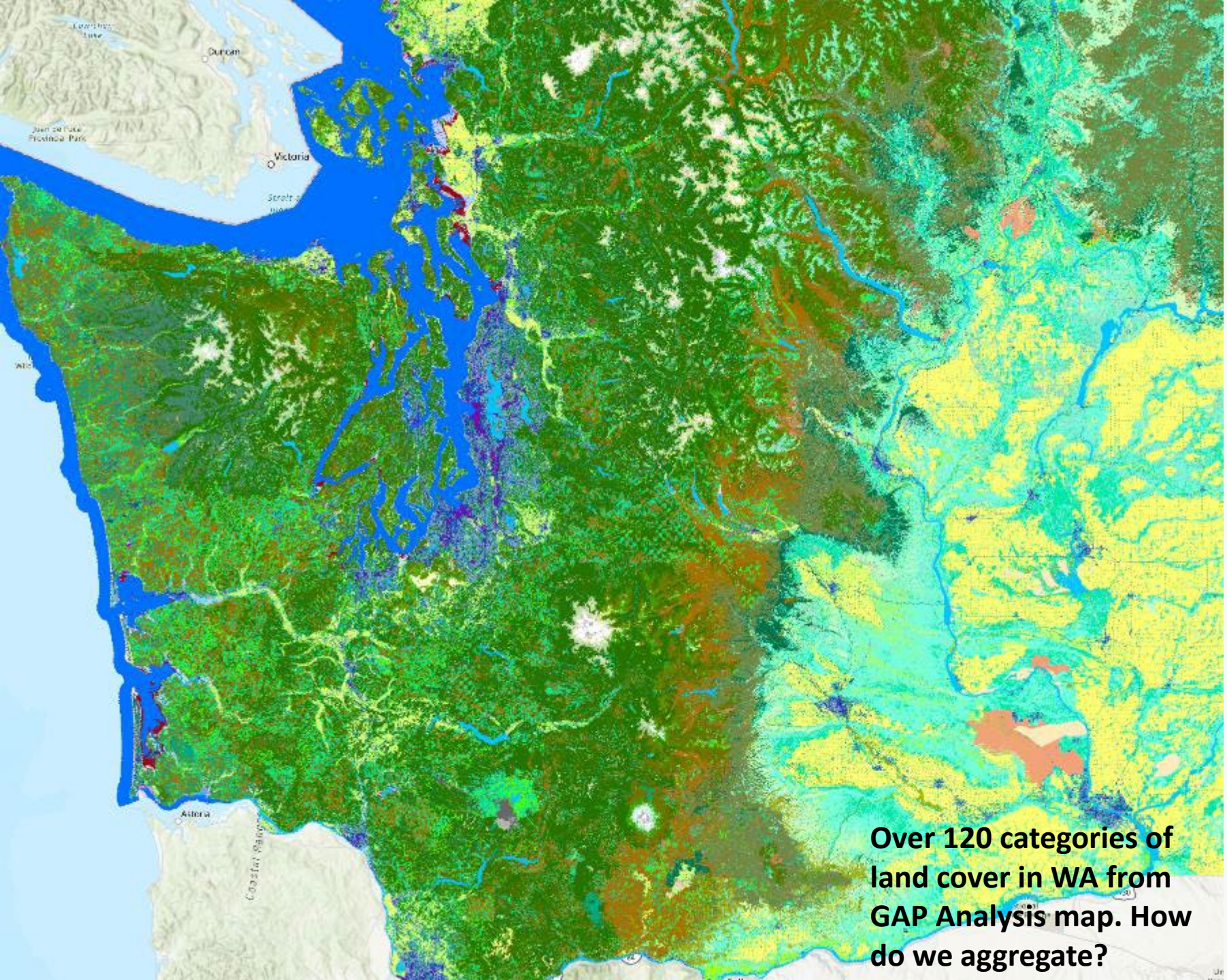
Examples of regulating services of forests with associated avoided/replacement costs



Examples of past land cover typologies for ES mapping







East Cascades Oak-Ponderosa Pine Forest and Woodland",
North Pacific Dry Douglas-fir-(Madrone) Forest and Woodland",
North Pacific Oak Woodland"
East Cascades Mesic Montane Mixed-Conifer Forest and Woodland"
Middle Rocky Mountain Montane Douglas-fir Forest and Woodland
Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest
Northern Rocky Mountain Mesic Montane Mixed Conifer Forest
Northern Rocky Mountain Ponderosa Pine Woodland and Savanna"
Northern Rocky Mountain Western Larch Savanna",
Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland
Northern Rocky Mountain Subalpine Woodland and Parkland
Rocky Mountain Aspen Forest and Woodland
Rocky Mountain Lodgepole Pine Forest
Rocky Mountain Poor-Site Lodgepole Pine Forest",
Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland"
Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland
North Pacific Broadleaf Landslide Forest and Shrubland
North Pacific Dry-Mesic Silver Fir-Western Hemlock-Douglas-fir Forest
North Pacific Hypermaritime Sitka Spruce Forest
North Pacific Hypermaritime Western Red-cedar-Western Hemlock Forest
North Pacific Lowland Mixed Hardwood-Conifer Forest and Woodland
North Pacific Maritime Dry-Mesic Douglas-fir-Western Hemlock Forest
North Pacific Maritime Mesic-Wet Douglas-fir-Western Hemlock Forest
North Pacific Mesic Western Hemlock-Silver Fir Forest
North Pacific Wooded Volcanic Flowage
North Pacific Maritime Mesic Subalpine Parkland
North Pacific Mountain Hemlock Forest
Columbia Plateau Western Juniper Woodland and Savanna
Inter-Mountain Basins Curl-leaf Mountain Mahogany Woodland and Shr...
East Gulf Coastal Plain Near-Coast Pine Flatwoods - Open Understory M...
Columbia Basin Foothill Riparian Woodland and Shrubland
Great Basin Foothill and Lower Montane Riparian Woodland and Shrubl...
Northern Rocky Mountain Conifer Swamp
Northern Rocky Mountain Lower Montane Riparian Woodland and Shru...
Rocky Mountain Lower Montane Riparian Woodland and Shrubland
Rocky Mountain Subalpine-Montane Riparian Woodland
North Pacific Hardwood-Conifer Swamp
North Pacific Lowland Riparian Forest and Shrubland
North Pacific Montane Riparian Woodland and Shrubland
North Pacific Shrub Swamp
Columbia Basin Foothill and Canyon Dry Grassland

Over 120 categories of land cover in WA from GAP Analysis map. How do we aggregate?

Discussion

- From the presentation above, which types of ecosystem services do you find most interesting to explore further?

- Which of these ecosystem services are your familiar with (from projects or from your own life), and which are new to think about?

Discussion continued

- For those who have worked on ecosystem services projects, which services were included, and what were the benefits of including those? Or the challenges of quantifying those?
- Based on what we explained about DNR lands, which ecosystem services from the presentation jumped out at you as particularly relevant or important to understand?

Topic 1

Recreation and cultural services are important ecosystem services but are inherently difficult to quantify because different communities may view or value things differently.

- What are your thoughts on how to go about understanding and valuing cultural services? Recreational services? How do we incorporate things like the value of recreation opportunities or amenities?

Topic 2

There are numerous services associated with water. (ex. Ground water, flood protection, drinking water)

How should we think about all of these aspects?

Should they be combined under water provisioning services, or separate?

Do some seem more relevant than others?

Topic 3

This inventory is focused on what is present on DNR lands. However, sometimes events that happen outside of DNR lands (for instance fires in nearby forests, or floods in nearby rivers) can have an impact on the ecosystem services available within the boundary of DNR lands.

How could we go about including this potential factor in the analysis? Are there certain nearby impacts (such as fires) that we should pay specific attention to, when assessing how DNR lands are affected?

Topic 4

One possible way to assign a value to the "provisioning" service of wildlife is by monetizing access to this service through the purchase of hunting or fishing licenses.

Do these licenses accurately reflect the value of this service? Are there other ways to go about valuing this service?

Wrap Up

- What are you most looking forward to learning as a result of this inventory assessment?
- What are you particularly curious about?



Questions?

Work Group Meetings

- Held via zoom

Meeting	Date	Time	Topic
1	April 25th, 2024	9am-12pm	Introductions & project overview
2	June 27th, 2024	9am-12pm	Inventory & preliminary market landscape
3	August 29th, 2024	9am-12pm	Market opportunities and challenges
4	October 17th, 2024	9am-12pm	Marginal cost abatement modeling
5	November 7th, 2024	1pm-3pm	Draft roadmap, inventory, and dashboard
6	January 23rd, 2025	9am-12pm	Review legislature progress report
7	March 13th, 2025	9am-12pm	Review draft asset plan and inventory