

Forest Management Plan Modeling Update

December 14, 2023 | Board of Forestry



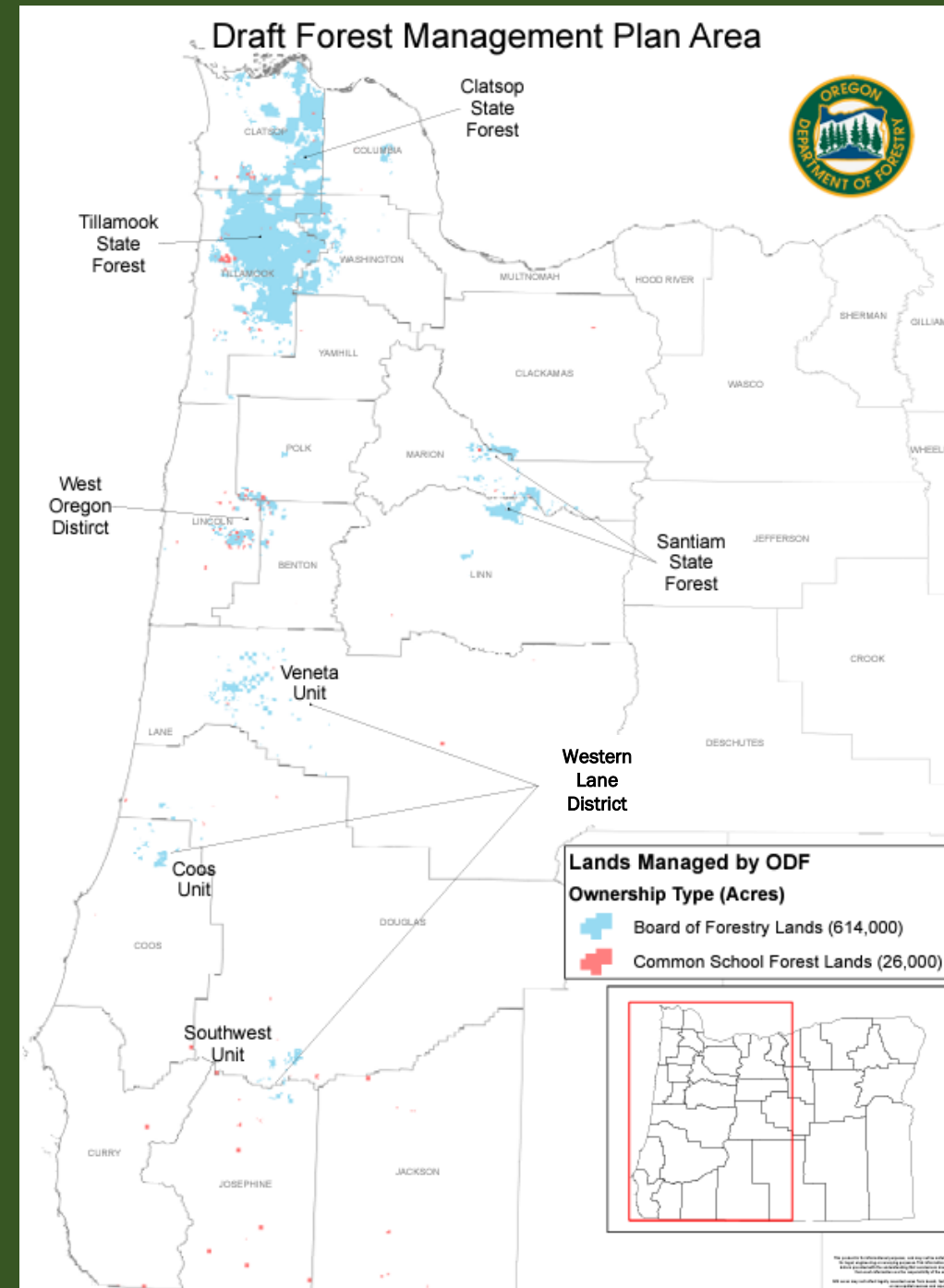
AGENDA

- Modeling Scope
- Model Updates
 - Yield Tables
 - Comparative Analysis
- Methods, Assumptions, Uncertainties
- Modeling Results
- Summary and Next Steps



Modeling Scope

- Geography
 - Western Oregon State Forests
 - 640,000 acres
 - 614,000 acres BOFL
 - 26,000 acres CSFL
- Timeframe
 - 150 years
 - Ensure sustainability beyond HCP/FMP
 - HCP conservation actions held constant



FMP MODELING

4 Different Harvest Scenarios

1. Maximum even flow of timber volume
2. #1 but with longer rotations
3. Maximum Net Present Value
(even flow of timber)
4. Maximum Net Present Value
(uneven flow of timber)

2 Different Geographic Scales

- District by District – current practice
- Geographic Regions
 - North Coast
 - Willamette
 - Southern Oregon



Model Updates

	HCP Comparative Analysis (2020)	FMP Modeling (Current)
Model Type	Linear programming – spatial limitations, optimization	Heuristic – spatially explicit, simulation
Forest Inventory	2017	2021 updated for completed, sold and planned management; incorporates Labor Day 2020 fires
HCA Management ¹	200 ac/yr hardwood treatments 500 ac/yr Swiss Needle Cast Conifer partial cuts	500 ac/yr hardwood treatments 500 ac/yr Swiss Needle Cast Conifer partial cut parameters updated
Goals outside of HCAs and RCAs	Target age class distribution used to estimate future landscape	Minimum dispersal habitat requirement Final age class determined by volume/NPV goal
Ending Inventory Target	Avg. 20 mbf/ac on operable acres	Non-declining inventory at 100 years on operable acres
Growth and Yield	FVS, 2013 calibration	FVS, additional calibration, update and review, incorporating FIA re-measurement data
Geographic Updates		Updated roads, harvest units and operationally limited areas
Forest Management		Updated prescriptions, reforestation zones, logging and transportation costs, and log prices

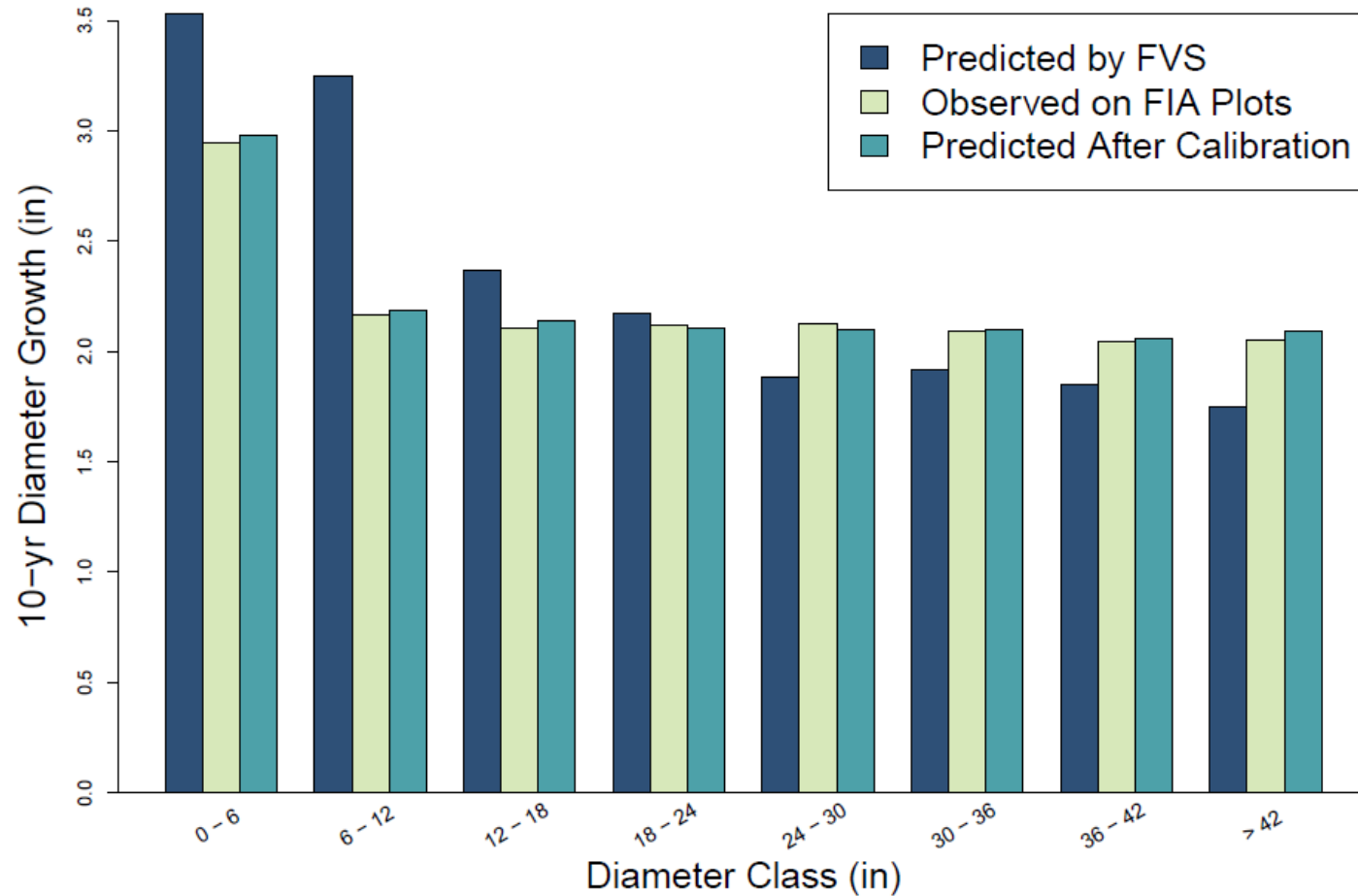
1. Treatments inside HCAs are not fully implemented under either model

Yield Table Updates

- Growth Model - Forest Vegetation Simulator
- Collaboration with Mason, Bruce and Girard
- Use Forest Inventory Assessment and Stand Level Inventory data
- Improved calibration

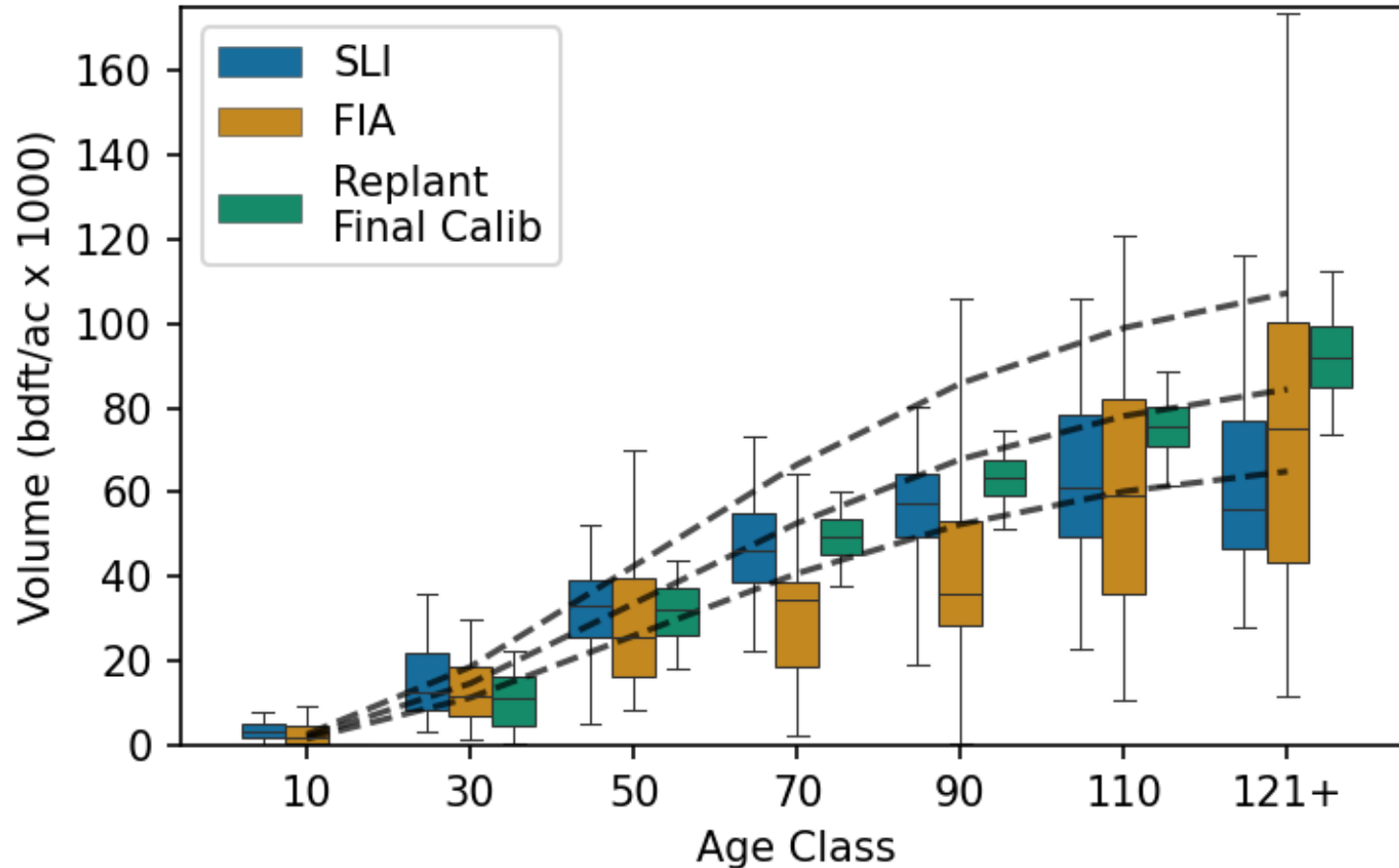


Growth Model Calibration



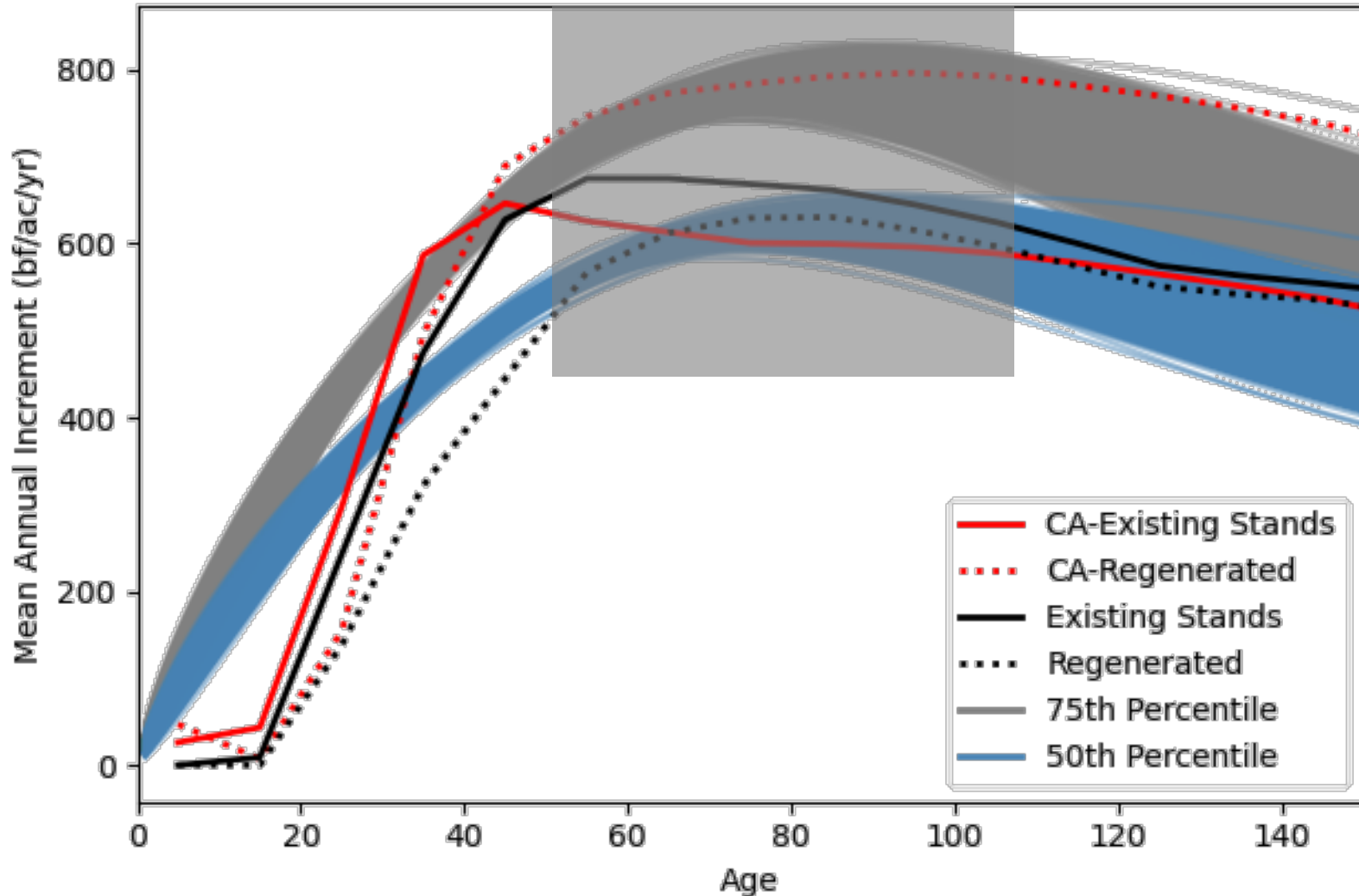
Growth Model Calibration

Gross Scribner Volume



Yield Uncertainty

Operable Area Yield and Empirical Uncertainty



Planning Model Methods

Spatially-Explicit:

- Tactical forest management model (harvest model)
 - Volume
 - Revenue
 - Stand age
- Three habitat suitability indices
 - northern spotted owl
 - marbled murrelet
 - red tree vole
 - relative habitat conditions
 - current and future locations of suitable habitat



Planning Model Methods

- Timber prices and costs
 - Prices based on 10-year average (2012-2022)
 - Costs – district review (2023)
- No changed or additional standards in FMP, outside of HCP
- No large-scale disturbances
- No chronic stressors (e.g. climate change)
- No stochasticity



Assumptions and Uncertainties

- Available Acres
- Disturbance, Climate change
- Inventory
- Natural regeneration, improved seed, improved silviculture
- Changes in markets or costs
- Changes in management standards
- Changes in Board direction
- Incorrect assumptions



Goals and Constraints

- Even-flow of volume
 - Predictable and sustainable harvest
 - Reduces flexibility of periodic harvest
 - Carry excess inventory into future harvest periods
- Ending inventory
 - Helps to ensure long-term productivity
 - Limits the rate and type of harvest
- Net Present Value v. Max Volume
 - Different preference/objective function
 - NPV constrained by even-flow
- HCP
 - Stay-ahead
 - NSO Dispersal

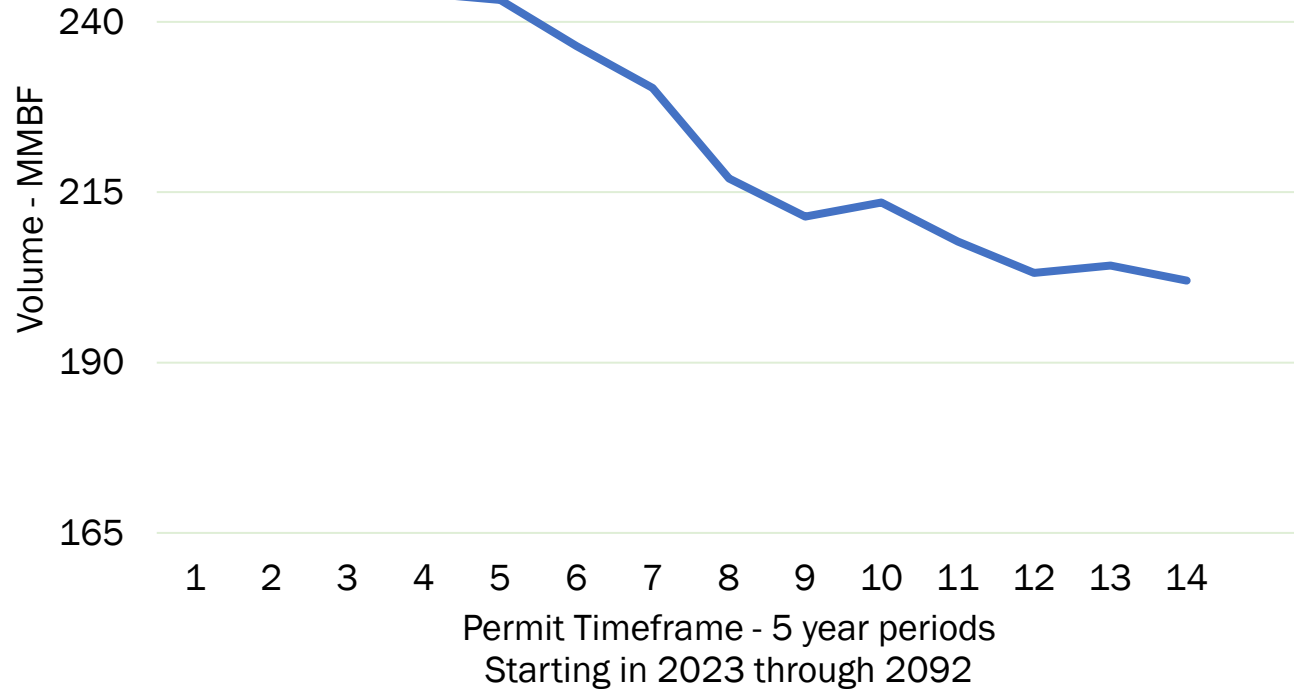


Modeling Outcomes

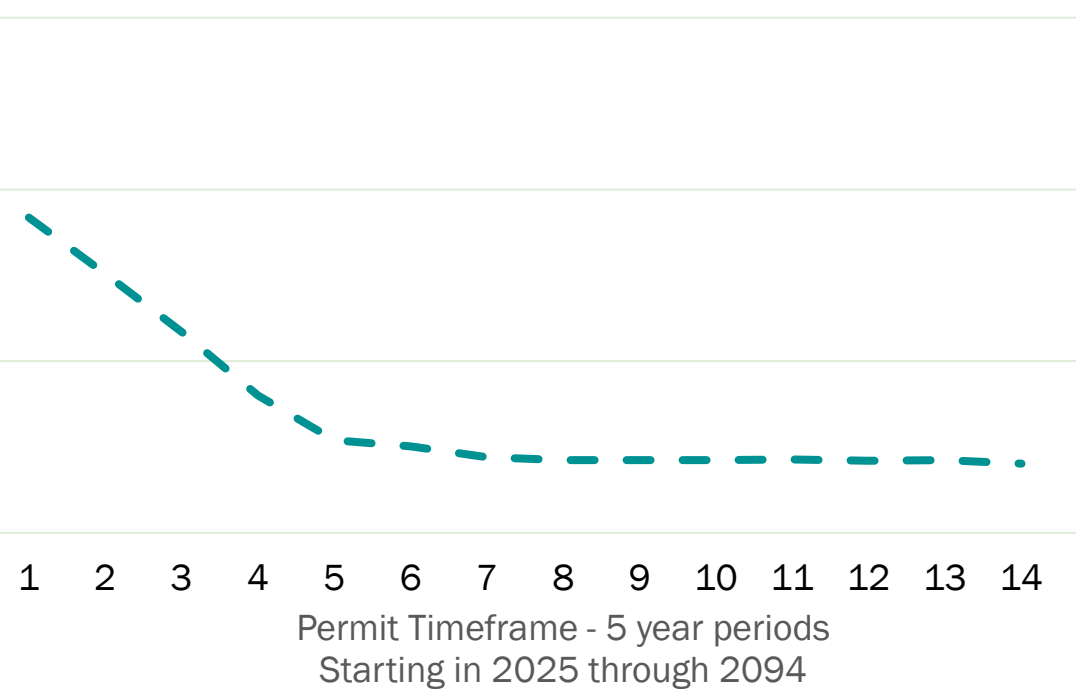
	Variable	Units of Measure
Conservation	Quality and Quantity of Terrestrial Habitat (Covered Species)	Acres of suitable habitat
	Quality and Quantity of Non-Covered Species Habitat	Acres by stand age and qualitative metrics
Economic	Area Available for Harvest	Acres
	Annual Harvest Volume	MMBF (million board-feet)
	Annual Timber Revenue	Dollars
	Timber Management Costs	Dollars
	Timber Inventory	MMBF (million board-feet)
Social	Carbon Storage	Tons of carbon. In live trees & harvested wood products

Modeling Outcomes

HCP CA Modeling - 2020



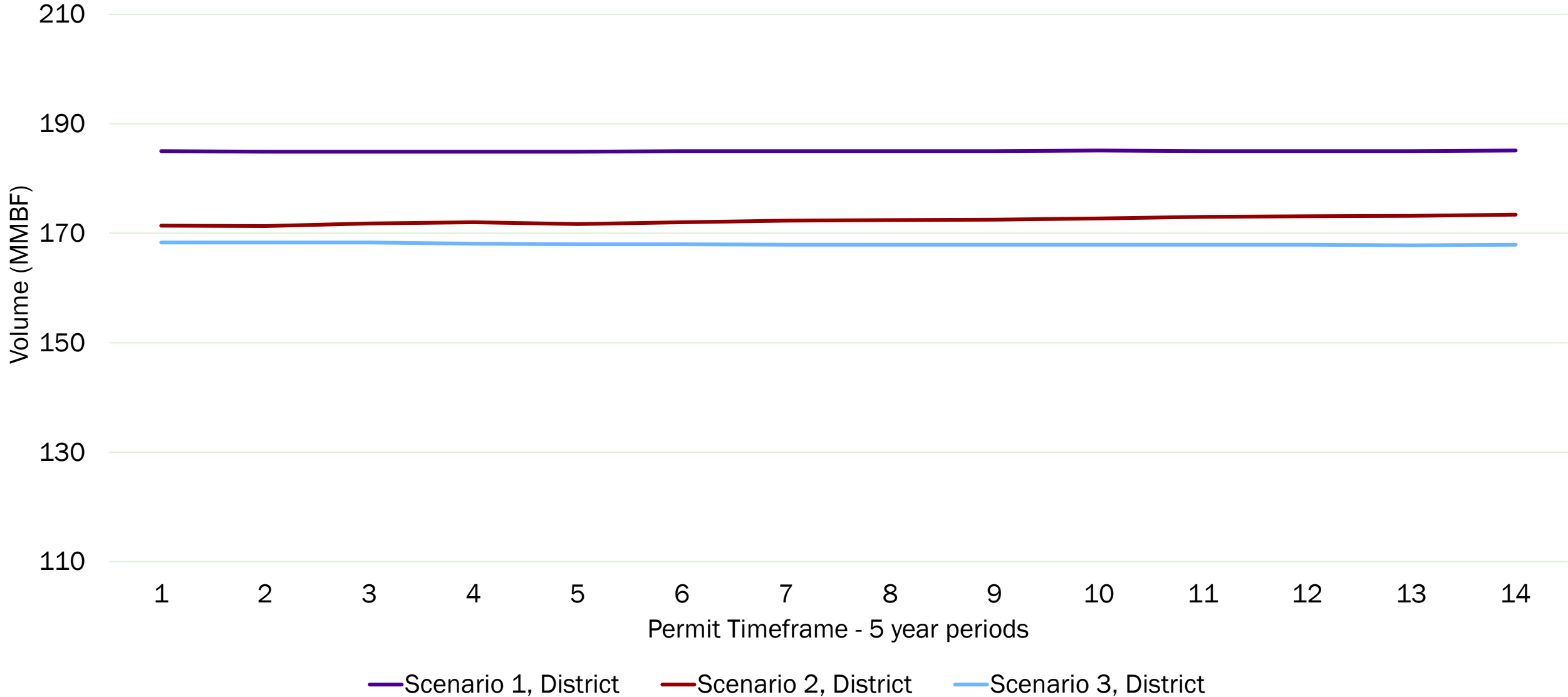
WO FMP/HCP Modeling 2023



Modeling Outcomes

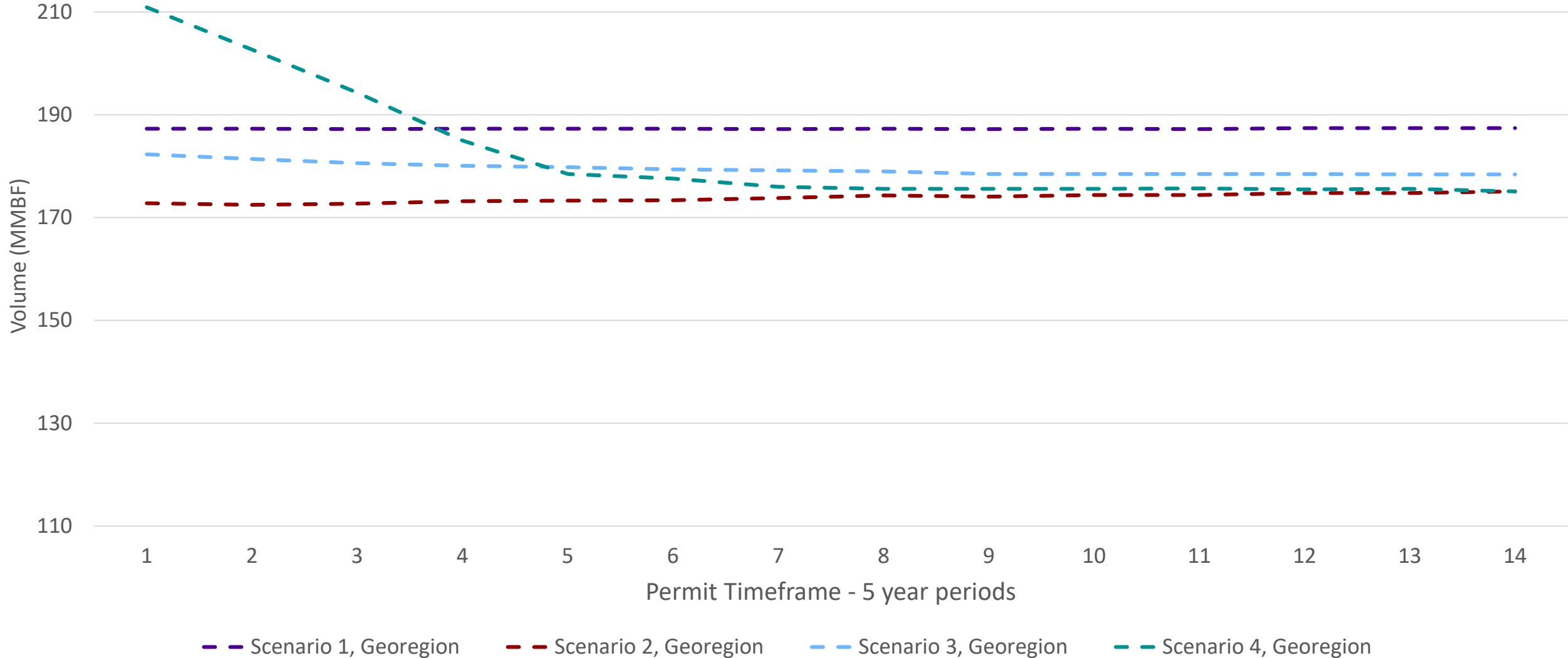
	Georegion Scale				District Scale		
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3
Total Average Annual Harvest Volume (Inside and Outside of HCAs)	187.3	173.8	179.5	182	185	172.3	168
Total Average Annual Revenue	\$83.1	\$77.1	\$80.6	\$80.8	\$82.6	\$76.9	\$75.6
Average Annual Harvest Volume – Outside HCA**	149.8	133.5	143.8	152.2	149.7	132	134
Inside HCAs**	37.5	39.5	36.9	39.4	35.2	39.7	34.2
Average Rotation Age (years)	80	92*	77	76	80	92*	75

Total Volume – District Scale

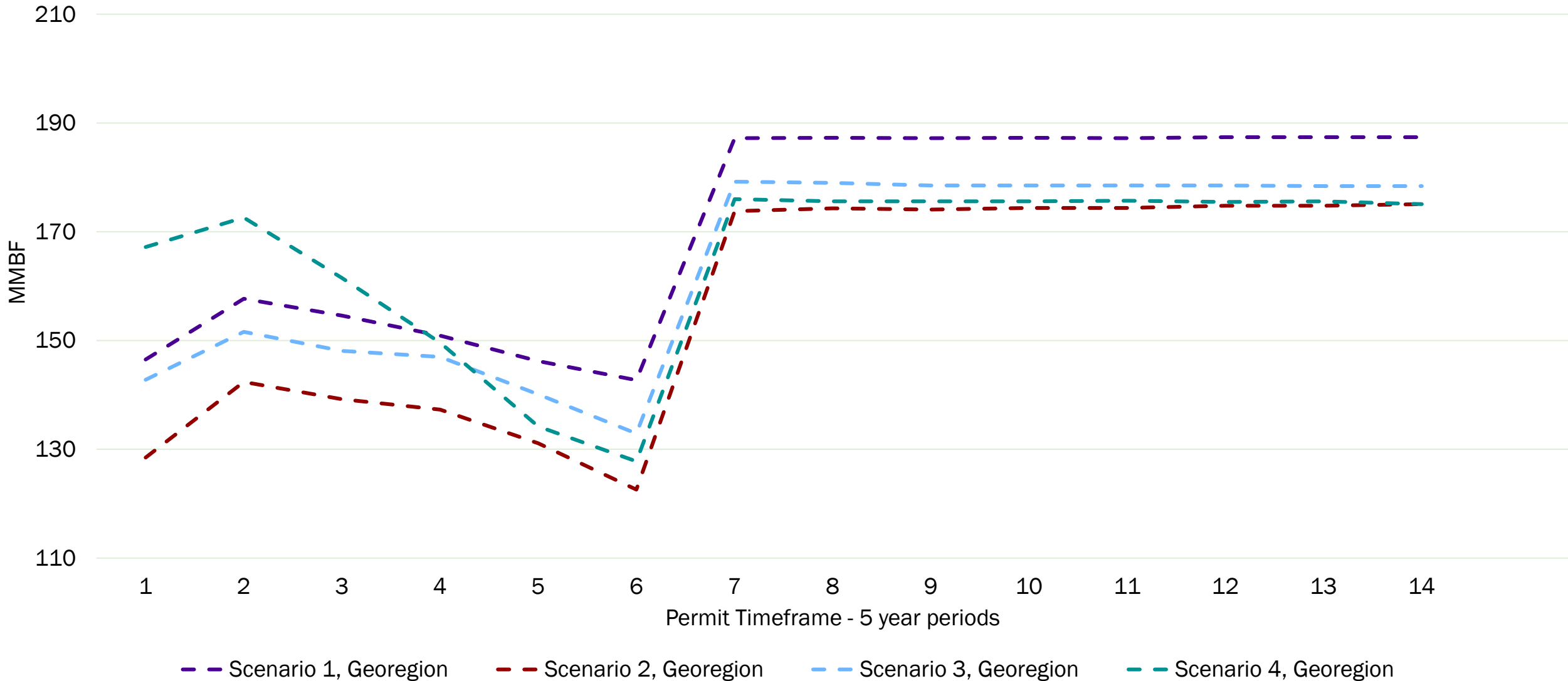


Total Volume – Georegion Scale

WO FMP/HCP - 2023
Total Volume - Georegion Scale



Volume Outside HCAs – Georegion Scale



County Volumes (avg. mmbf/yr)

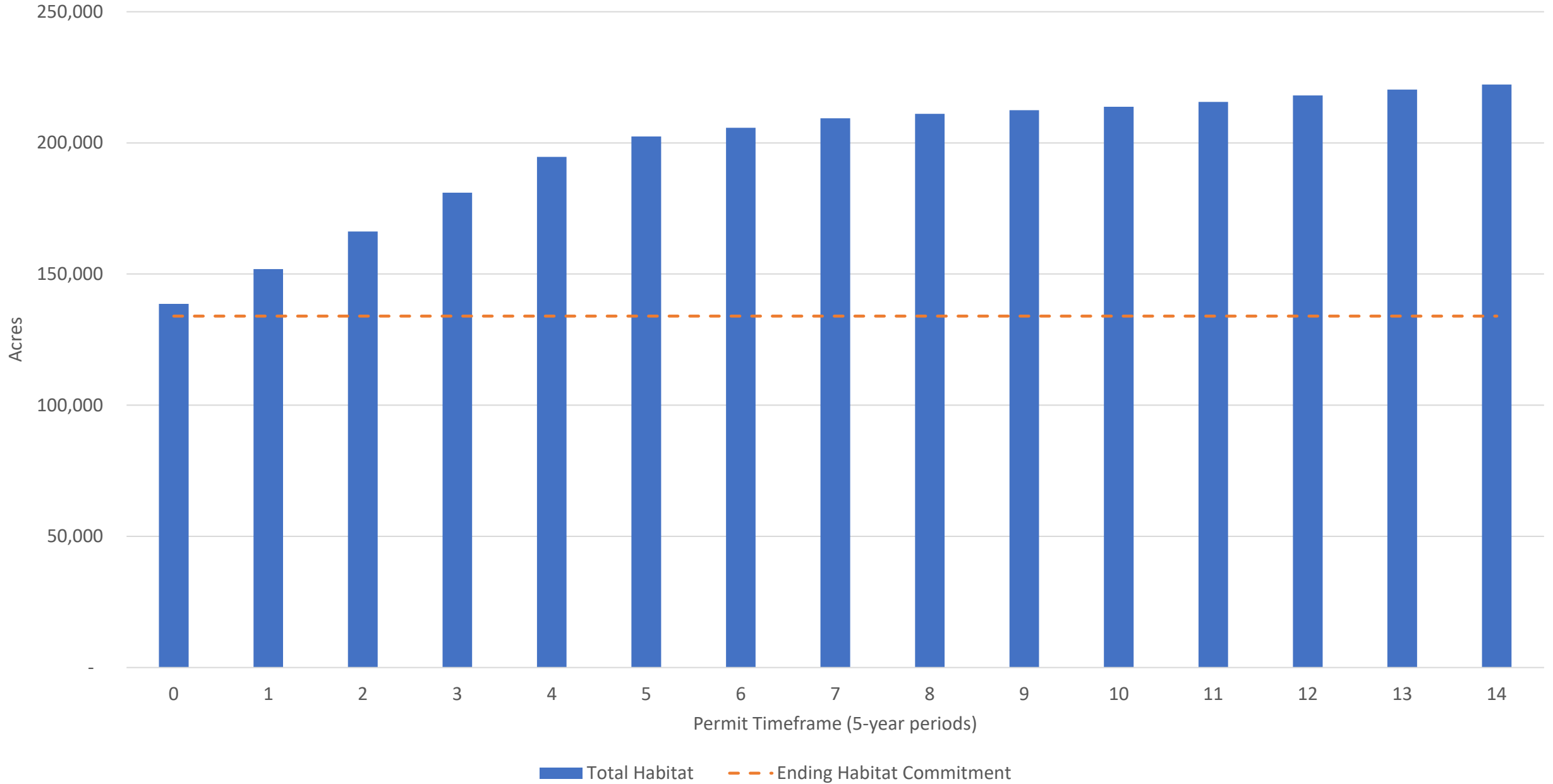
	Georegion Scale				District Scale		
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3
Total Volume	187.3	173.8	179.5	182	185	172.3	168
Benton	3.8	3.1	3.5	3.2	3.3	3.0	2.7
Clackamas	1.7	1.5	1.7	1.9	1.7	1.5	1.7
Clatsop	47.9	44.4	45.2	45.6	49.1	44.5	44.5
Columbia	4.0	3.9	3.8	3.8	4.5	4.2	3.5
Coos	1.4	1.5	1.5	1.4	1.4	1.5	1.5
Douglas	1.4	1.4	1.3	1.4	1.4	1.4	1.3
Josephine	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Lane	8.5	8.2	8.5	9.3	8.5	8.2	8.5
Lincoln	8.3	7.2	7.5	7.4	7.5	6.5	6.3
Linn	7.7	7.3	7.6	8.0	8.3	7.2	7.8
Marion	3.5	3.1	3.5	3.6	3.7	3.0	3.5
Polk	2.6	2.4	2.6	2.6	2.3	2.2	2.4
Tillamook	74.2	69.1	69.8	72.2	69.7	67.1	62.6
Washington	16.0	14.4	16.4	15.6	17.3	16.4	15.5

Environmental Outcomes

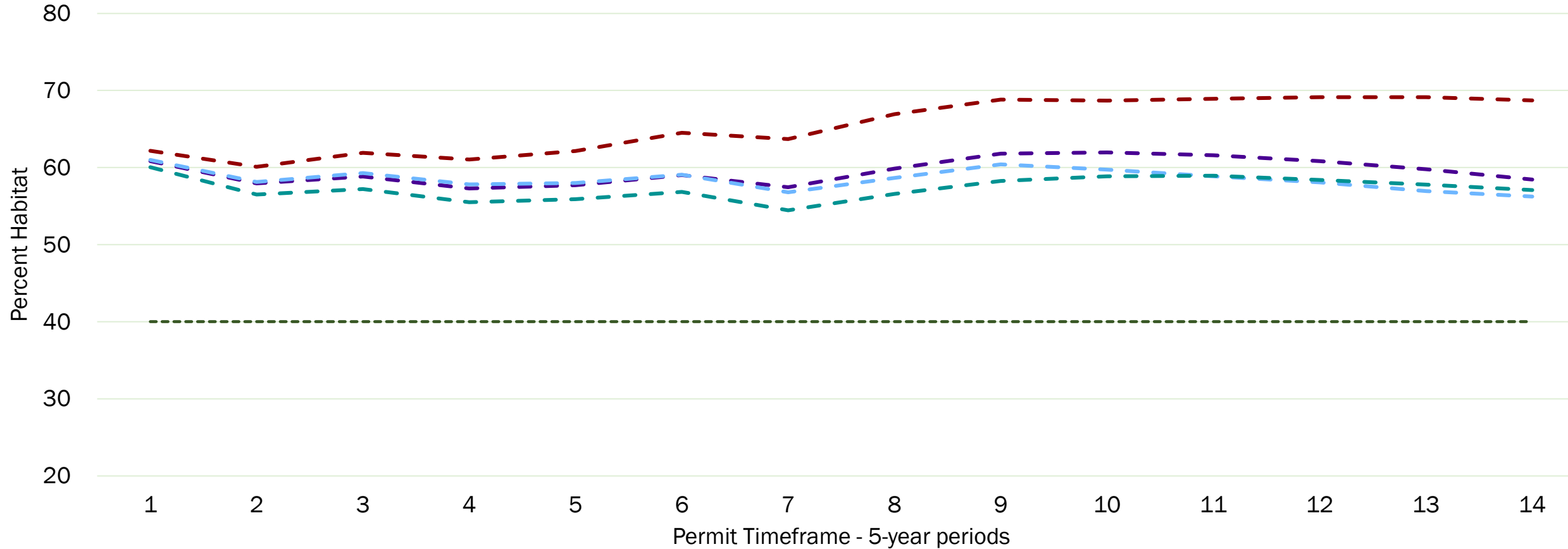
- Habitats
 - Northern Spotted Owl
 - Marbled Murrelet
 - Red Tree Vole
- Forest Age Class Distribution
- Carbon



NSO Total Habitat - Inside HCAs

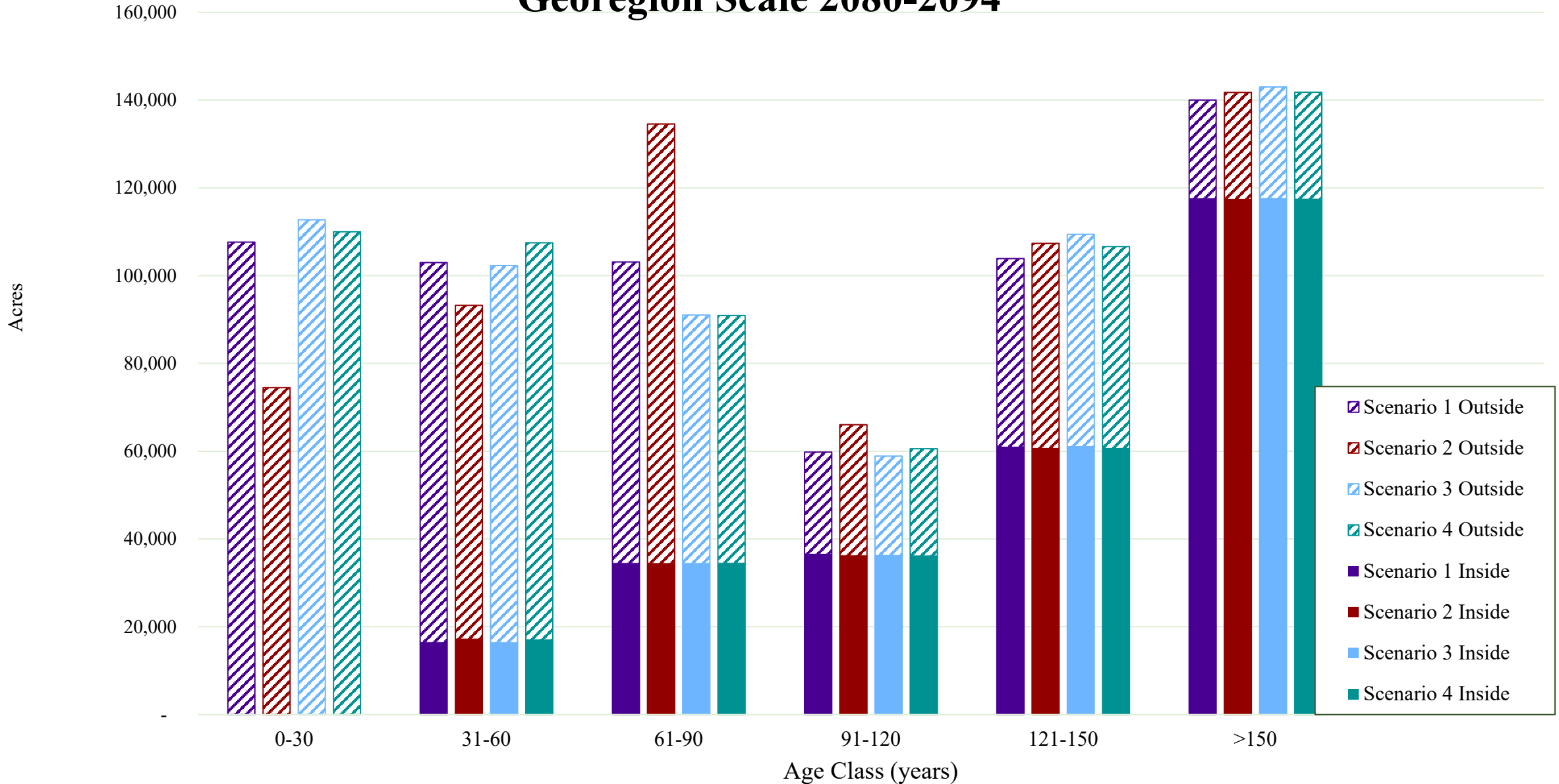


Northern Spotted Owl Dispersal Habitat Outside HCAs - Georegion Scale Runs

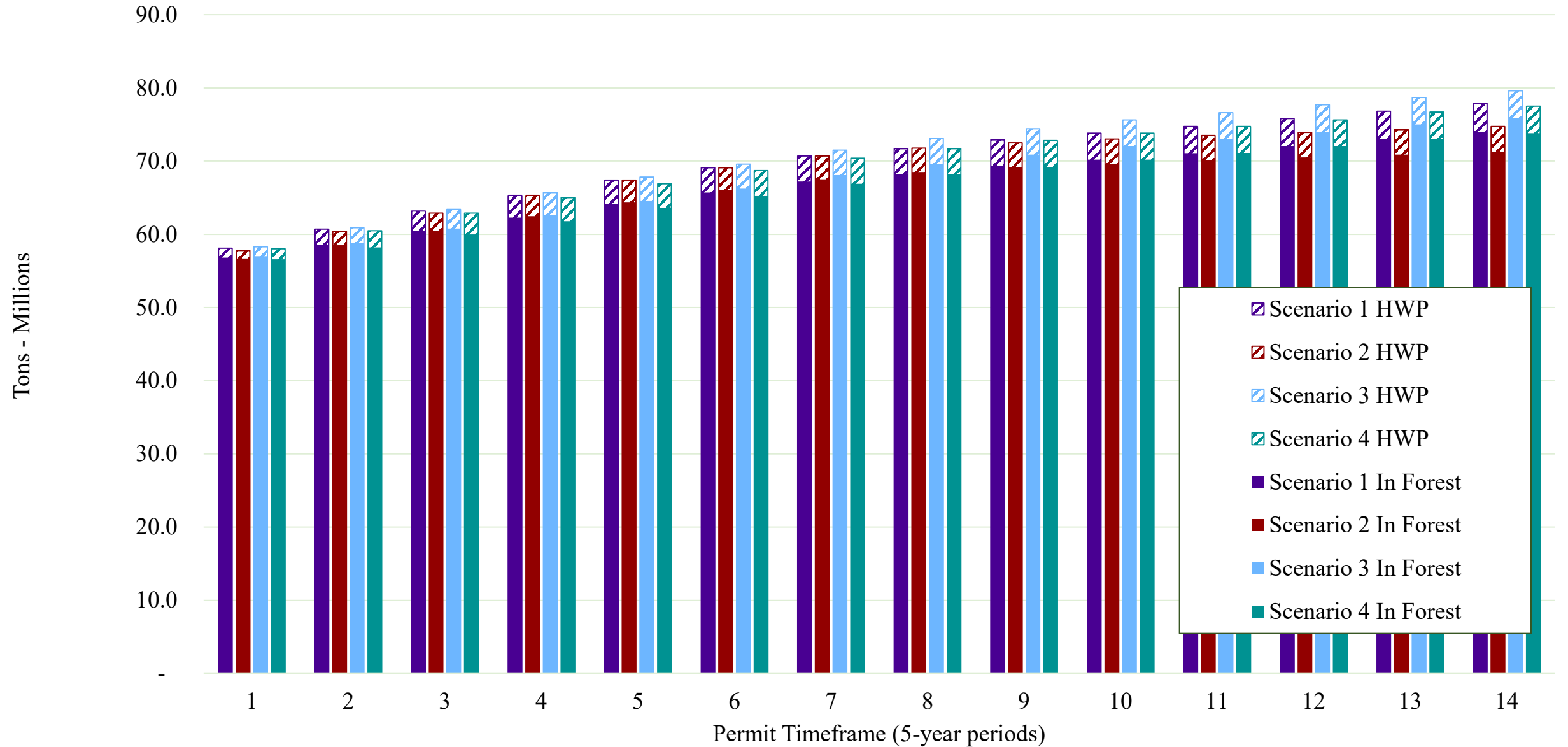


Scenario 1, Georegion Scale Scenario 2, Georegion Scale Scenario 3, Georegion Scale
Scenario 4, Georegion Scale Dispersal Habitat Commitment

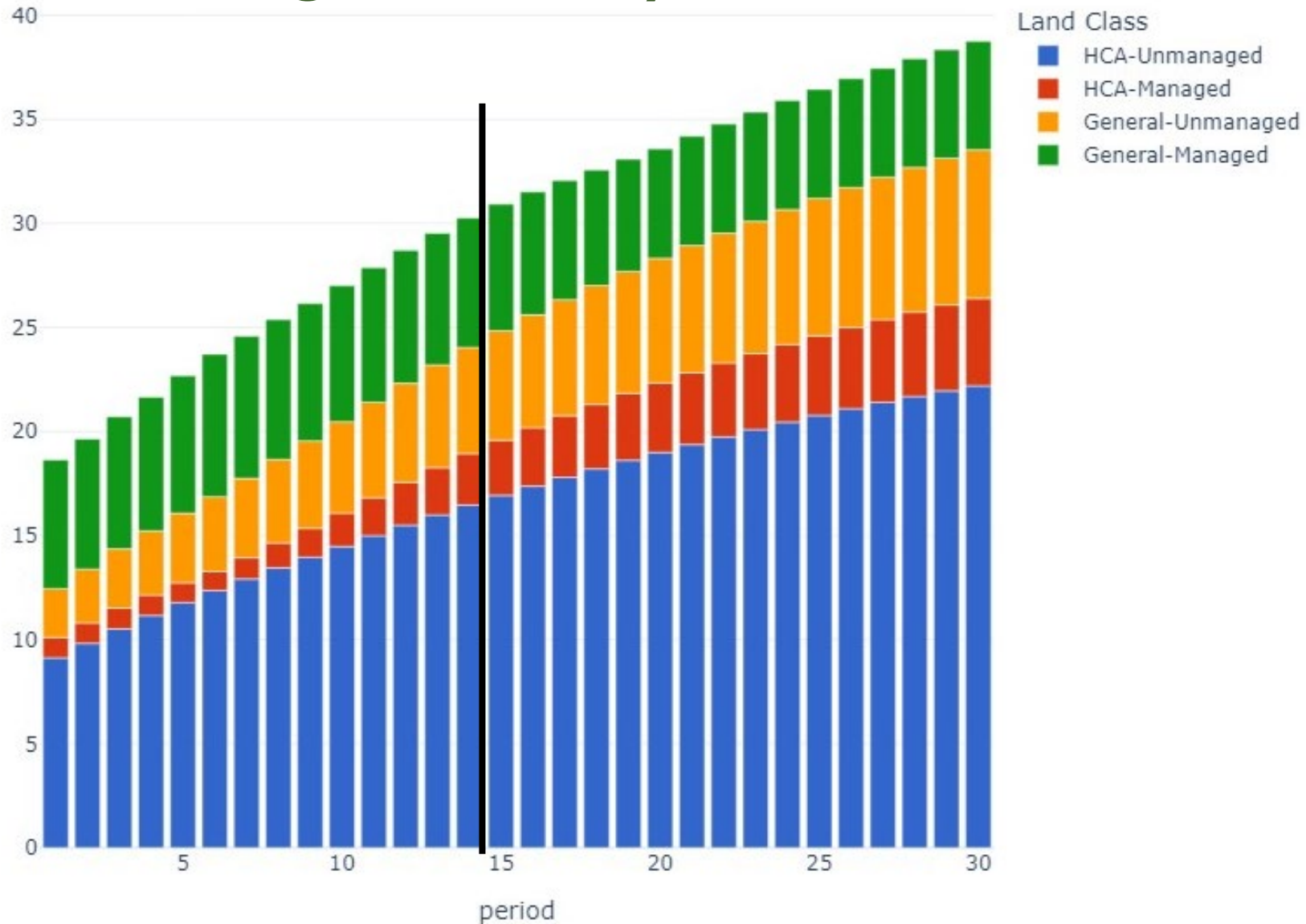
Average Forest Age Class Distribution Georegion Scale 2080-2094



Carbon Storage: Forest & Harvested Wood Products (HWP) - Georegion Scale



Ending Inventory



Questions



FTLAC and Board Discussion



Discussion Guidelines

- Stay on topic
- Seek to hear from everyone - share the air
- Focus on interest and values
- Assume and practice good intent
- Listen to understand
- Be hard on the problem, soft on the people
- Sit in each other's shoes and practice acknowledgement





Discussion Purpose

- To develop a common understanding of the modeling process, underlying data and results, utility and limitations.
- To allow time for the FTLAC to inform the Board as it considers options for moving forward with the FMP under the HCP, and to ask questions to help FTLAC members inform their testimony.
- To continue building a relationship between the FTLAC and the Board and consider how best to collaborate moving forward.

Discussion Questions

- Do you have any clarifying questions about the modeling results?
 - Specifically, do you have any questions about the assumptions made or why/how staff came to any of the results in the modeling?
- Are there any benefits or concerns that you would like to discuss related to the modeling results?



Discussion Questions

- The FMP with an HCP is a mechanism to mitigate legal risk and garner public support for the management of state forests. What is your perception of these risks?
- As the Board considers the modeling results and how to move forward with the draft FMP and draft HCP, how do you envision the counties collaborating with ODF, the Board, and stakeholders to find solutions that allow the agency to manage the public forest in the context of Greatest Permanent Value?
- Looking forward to FMP and HCP implementation, how can the Board and ODF support the counties in actions outside of the FMP to mitigate any potential impacts to the counties and local communities?



Thank you!

