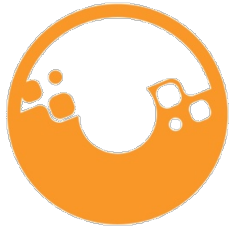


Forest Project Protocol v3.1 Using Appendix F



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John Nickerson

Webinar

February 2010



CAR's Forest Protocol (Version 3.0)

- **Two-year stakeholder process with public review process**
- **Protocols produce offsets that are real, additional, verifiable, and permanent**
- **Addresses eligibility, GHG assessment boundaries, co-benefits, monitoring and verification**
- **Project accounting is standardized and practical (to the extent possible)**



Forest Project Types

- **Improved Forest Management**
 - Activities that increase forest-based sequestration and/or decrease emissions
- **Reforestation**
 - Less than 10% canopy cover for at least 10 years, or following a significant natural disturbance that has removed at least 20% of the trees
- **Avoided Conversion**
 - Removing a significant conversion threat to non-forest use and dedicating the forest to continued forest cover.



Key Values in Appendix F

Appendix F of the FPP provides data, by Assessment Area, necessary to calibrate project accounting to geographies throughout US:

- Common Practice
- Diversity Index
- Fire Risk Rating
- Rotation Age
- Mill Efficiency
- Wood Product Classes



Defining an Assessment Area

Assessment Areas are:

- Forest communities within Ecosections and Supersections
 - Similar species
 - Similar economic drivers, management activity, and regulatory environment
- Based on the natural forest communities found within the Supersections rather than the presence of a single dominant species as in plantation management
- Not spatially explicit, since distribution of communities is affected by local environmental attributes

Spatial Units – Ecosections and Supersections



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- Ecosections are spatial units developed by the US Forest Service that have similar physical and biological components
- Supersections - a term coined for this project in order to stratify the plots into high site class and low site class (where possible) and maintain statistical reliability
- The combination of Ecosections into Supersections only occurred where adjacent Ecosections share similar environmental, economic, and regulatory attributes



Developing Supersections

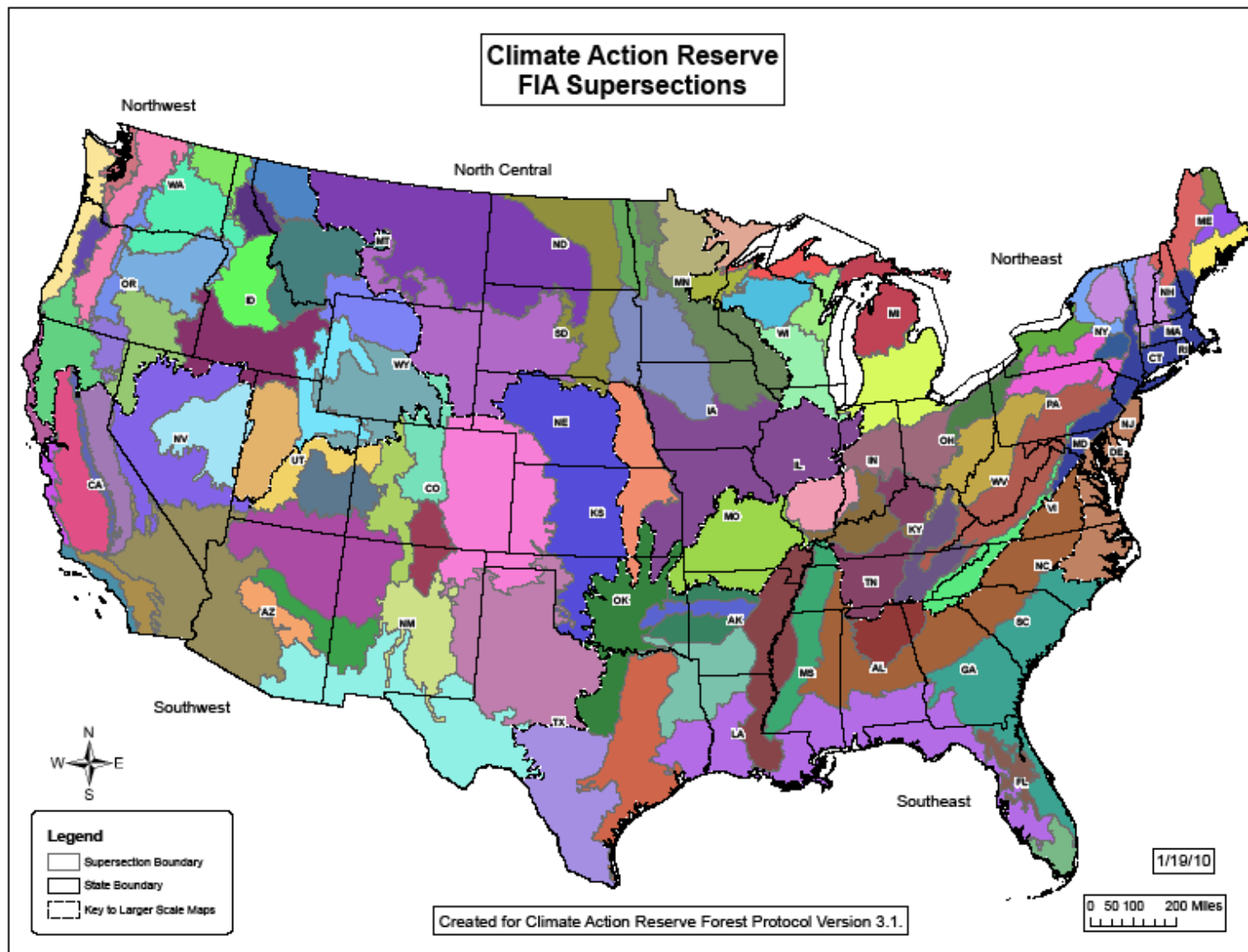
Ecosections are combined into Supersections if:

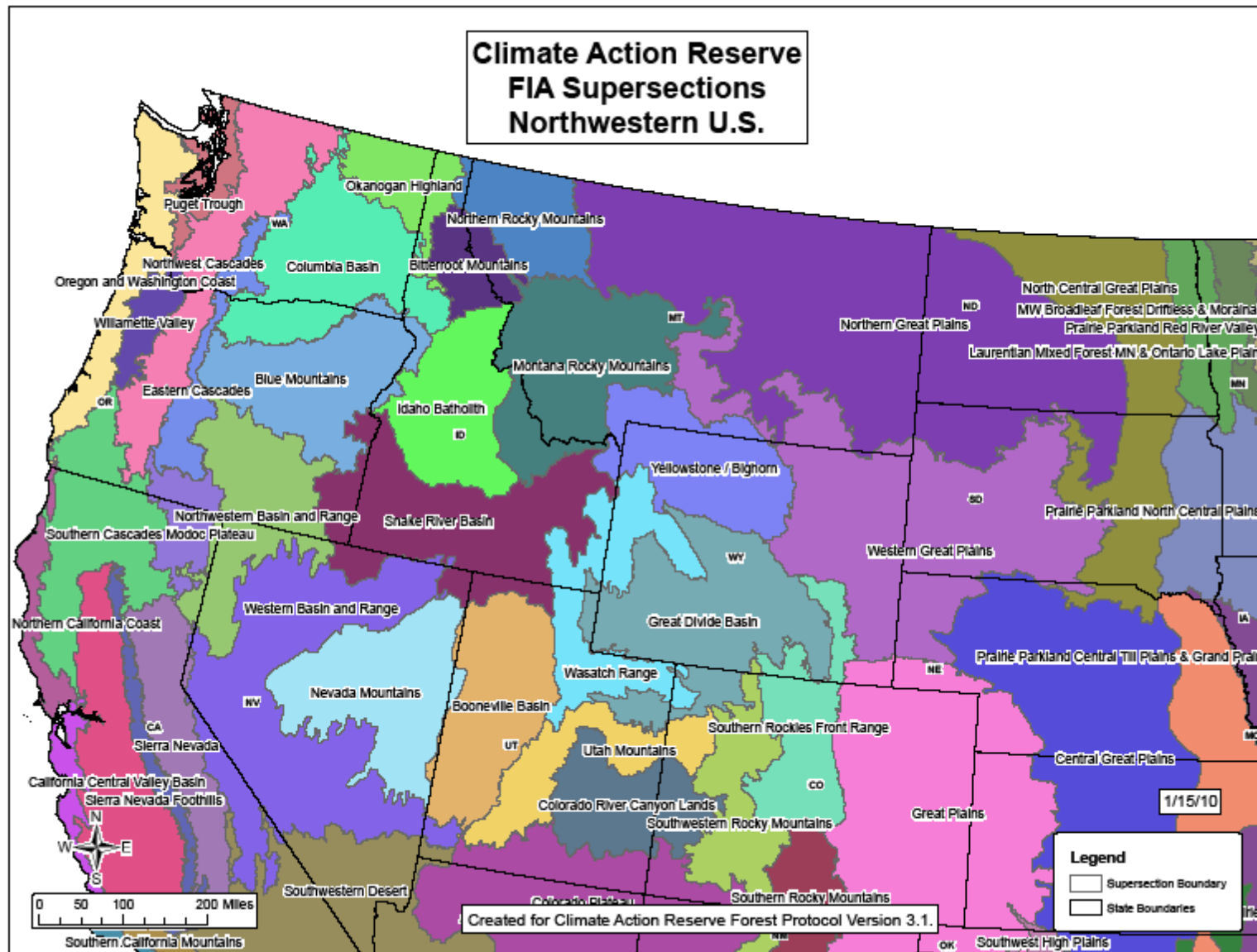
- The Ecosections are adjacent to each other
- They exhibit a commonality in environmental factors between them, as evidenced by similar distribution species
- The economics of forest management are similar between the Ecosections.
- Regulations between Ecosections are similar

Averages were compared for independent Ecosections and Supersections to ensure values (carbon tonnes) were within 10% of each other. Otherwise Supersections were separated into component Ecosections



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Using Appendix F – Determining Supersections



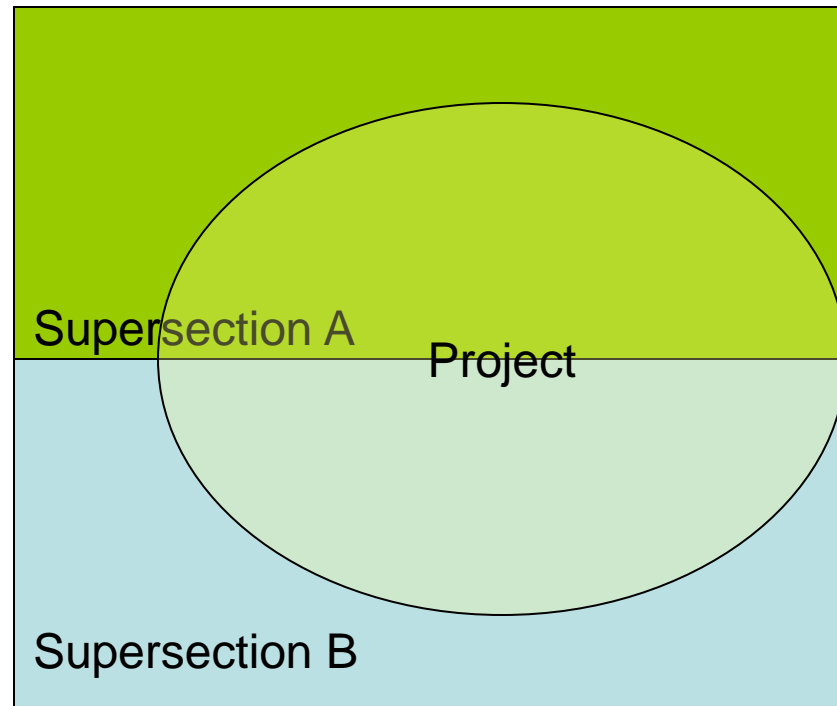
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Supersection

Adirondacks & Green
Mountains

A project must determine which Supersection(s) its boundaries are within

Maps are available on the Reserve's website both in hard copy and GIS shapefiles



Using Appendix F – Determining Assessment Areas



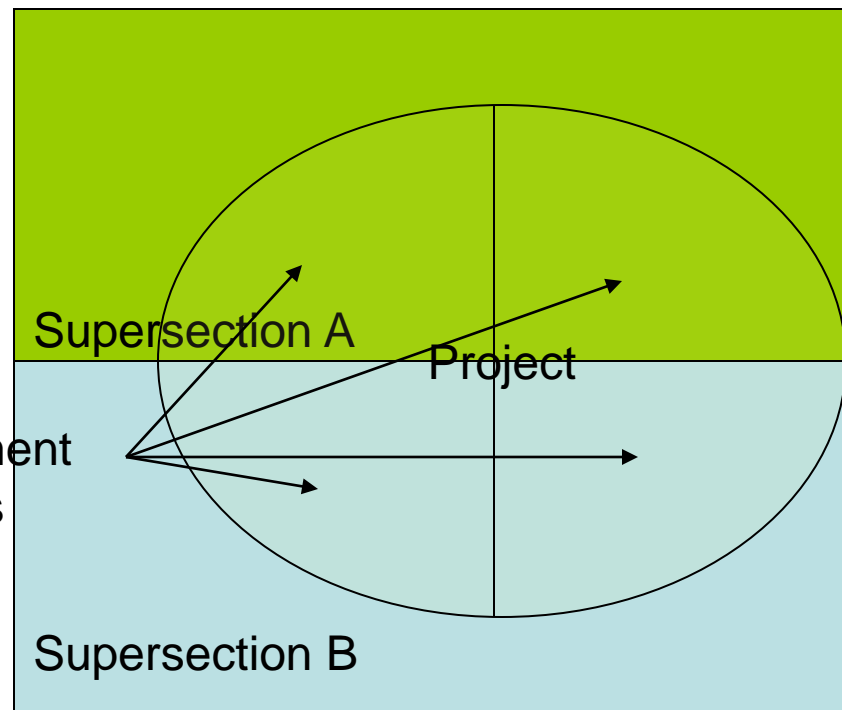
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Assessment Area	Associated Species
Adirondacks & Green Mountains Northeast Conifers	Aspen, balsam fir, black spruce, eastern hemlock, eastern white pine, northern red oak, white ash, gray birch, northern white-cedar, Norway spruce, paper birch, red pine, red spruce, Scotch pine, tamarack, white, red, jack pine, white spruce
Adirondacks & Green Mountains Northern Hardwood	Balsam poplar, black ash, american elm, red maple, black cherry, cherry, white ash, yellow poplar, maple, basswood, maple, beech, birch group, mixed upland hardwoods, northern red oak, post oak, blackjack oak, lowland, oak, upland, scarlet oak, silver maple, sugar maple, yellow birch, sugarberry, hackberry, elm, green ash, sweetbay, swamp tupelo, sycamore, pecan, white oak, red oak, hickory, willow

Each project must use the species list to stratify the project's area into Assessment Areas

– Mapping resolution is 20 acres

Assessment Areas



Using Appendix F – Determining Site Classes



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Site Class
Low
High
High
Low

- Each project must stratify the project area into high and low site class for each Assessment Area
- High site class is defined as Site Class I and II
- Low site class is defined as Site Class III, IV, and V
- Justification through soils data or site measurements. Where justification not conducted, project must use high site data
 - Minimum mapping resolution is 1000 acres

Using Appendix F – Determining Common Practice



Per Acre				
Board Feet	Basal Area (Square Feet per Acre)	Common Practice - Above Ground Carbon Mean (Metric Tonnes)	Carbon Standard Error (Metric Tonnes)	Carbon Standard Error Percent
6,285	129	23	0.87	3%
8,015	137	25	1.41	5%
5,153	120	27	0.66	2%
4,225	103	23	0.54	2%

- Improved Forest Management Projects must identify the Common Practice statistic (above-ground portion of live trees on private lands) as part of the project's baseline
- It is the extent to which projects can receive credit for avoided emissions
- FIA data used because of:
 - Wide application
 - Unbiased and objective
 - standardized
- Other statistics (board foot volume, basal area, and standard error) are presented for informative purposes only

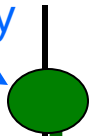
Improved Forest Management Baseline



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Initial
Project
Inventory

Standing Live Carbon



Baseline, provided there are no legal encumbrances to harvest to the FIA average and it makes economic sense to do so

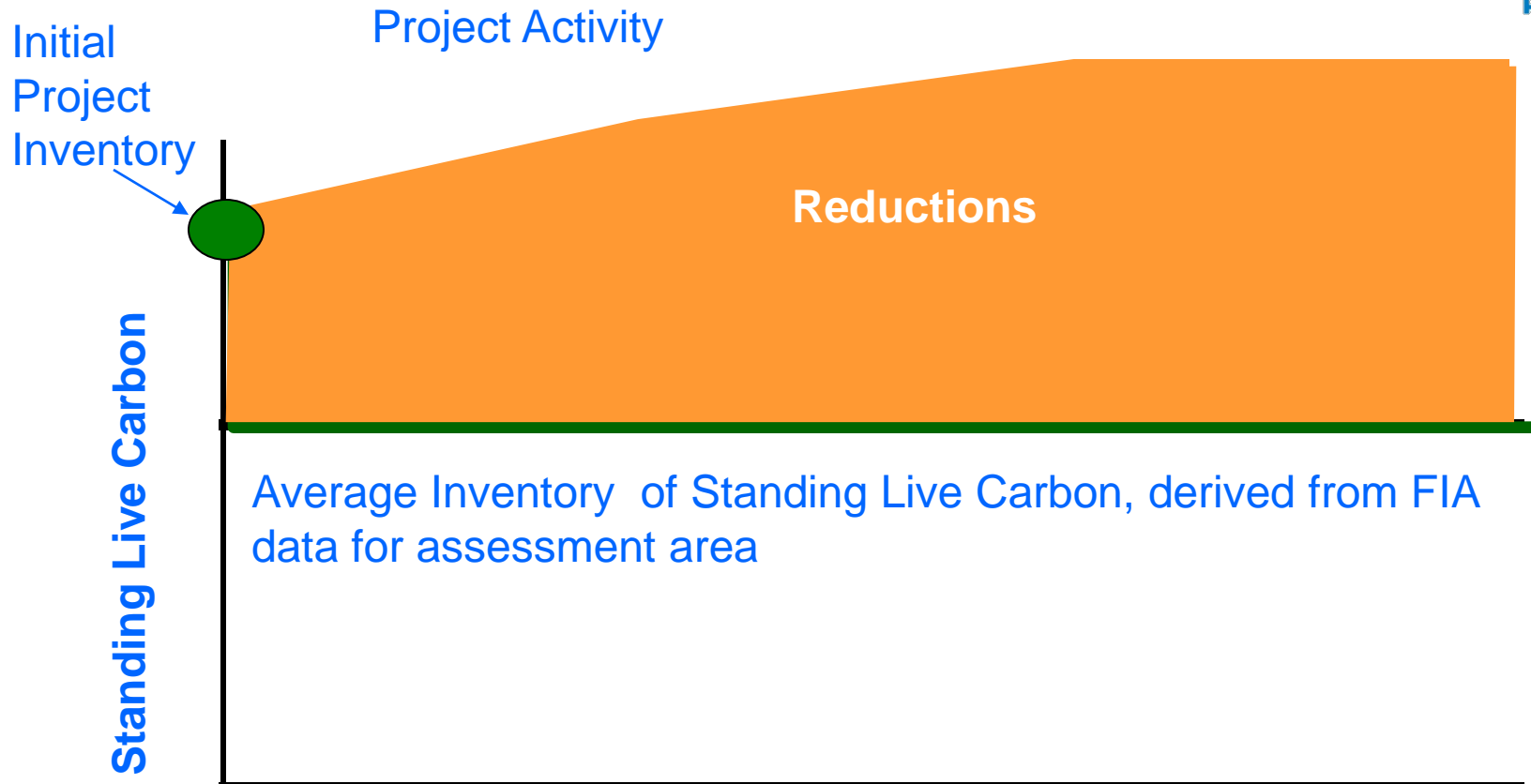
Average Inventory of Standing Live Carbon, derived from FIA data for assessment area

- In this scenario, the project will generate credits for both stock retention and growth

Improved Forest Management Baseline



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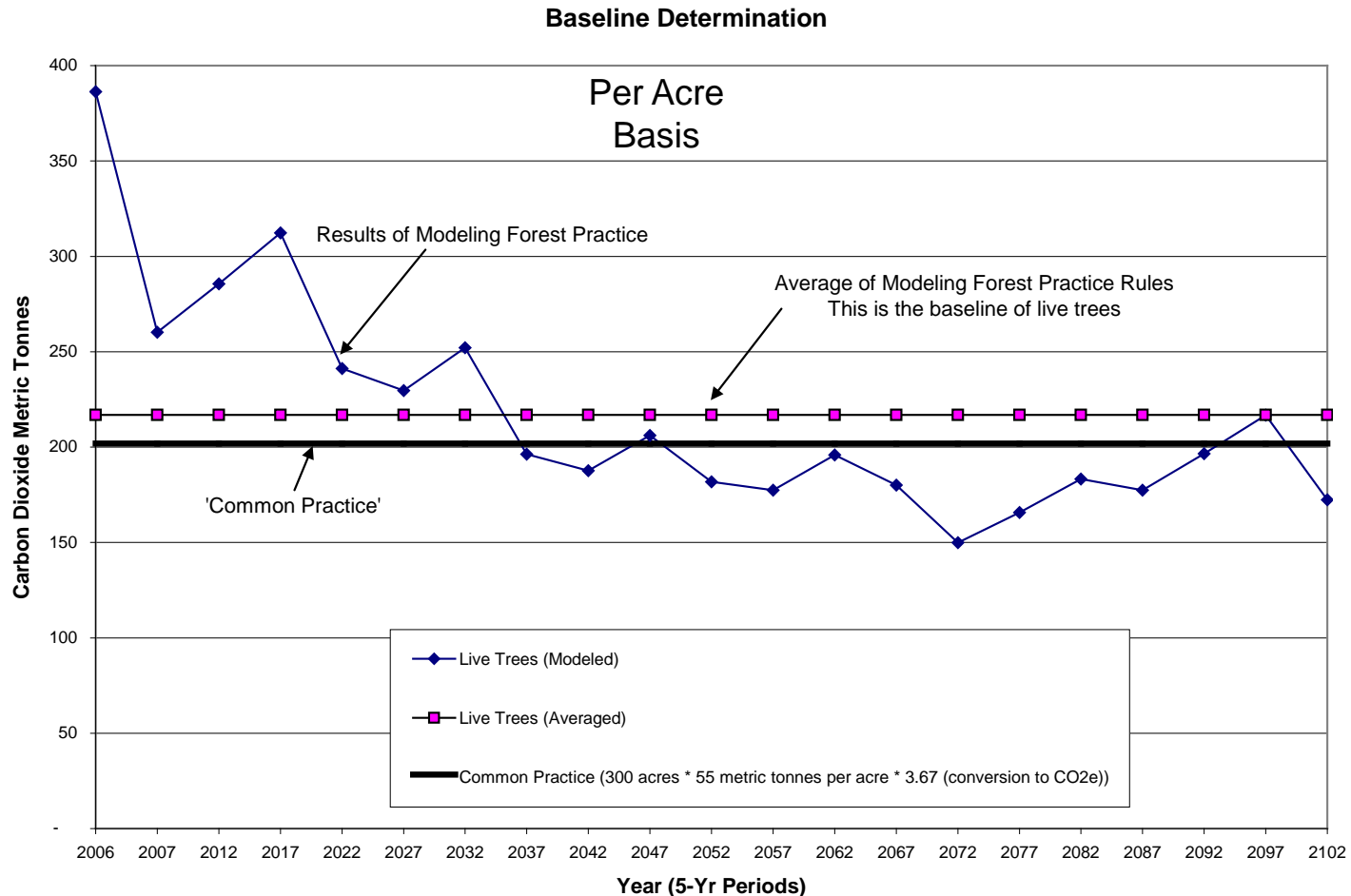


- In this scenario, the project will generate credits for both stock retention and growth

Improved Forest Management Baseline Modeling of Live Trees



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Inserting Data in Calculation Worksheet



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Worksheet to be available for download soon!

Actual Onsite Carbon Stocks (tonnes CO ₂ e)	386	390	394	398	402	406
Confidence Deduction	12%	12%	12%	12%	12%	12%
Adjusted Actual Onsite Carbon Stocks (adjusted for confidence deduction)	340	343	347	350	354	357
Annual Increment in Actual Onsite Carbon Stocks (tonnes CO ₂ e)	340	4	4	4	4	4
Baseline Onsite Carbon Stocks (tonnes CO ₂ e)	217	217	217	217	217	217
Annual Increment in Baseline Onsite Carbon Stocks (tonnes CO ₂ e)	217	-	-	-	-	-
Quantified GHG Reductions / Removals for Onsite Carbon Stocks (tonnes CO ₂ e)	123	4	4	4	4	4

Using Appendix F – Determining the Diversity Index



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Species Diversity Index
65%
65%
65%
65%

- Forest projects must manage for a diversity of native species. The value in Appendix F is the maximum amount (by carbon percentage) of any one native species allowed within a project. The species diversity requirement is based on natural diversity within the Assessment Area
- Each FIA plot is attributed with a species reference (Forest Type).
- Species diversity is determined calculating the maximum percentage of any one Forest Type (by plot number) within an Assessment Area.
 - Range of any one species within a project area is limited between 60% and 100%

Using Appendix F – Determining the Fire Risk Rating



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Fire Risk Rating
4%
4%
4%
4%

The Fire Risk Rating is an index representing the risk of reversal of project stocks associated with fire loss. Projects must contribute a portion of the credits generated into a buffer pool as an insurance mechanism.

- The value is 4% for all Assessment Areas until more detailed analysis can be completed

Using Appendix F – Determining Values for Reforestation Eligibility



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Rotation Age	Value of Harvest

- Reforestation projects must include a financial feasibility test to determine if the project meets additionality requirements
 - The values are used in the formula for eligibility in the protocol
 - Values to be updated in Appendix F soon

Appendix F- Determining Weighted Values



Project									
	Supersection A				Supersection B				Sum
	Assessment Area 1		Assessment Area 2		Assessment Area 1		Assessment Area 2		
	High Site	Low Site	High Site	Low Site	High Site	Low Site	High Site	Low Site	
Acres									
									Weighted Average
Common Practice									
Species Diversity Index									
Fire Risk Rating									
Rotation Age									
Value of Harvest									



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For Questions or Assistance

- Full Information Available on Our Website
 - www.climateactionreserve.org
- Contact the Reserve
 - Call the Programs Team at (213) 891-1444
 - Or email questions to:
programs@climateactionreserve.org