

Generating New Revenue for Conservation from Ecosystem Services

An Introduction to California's Carbon Market

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Pacific Forest Trust:

Advocating for the Climate Benefits of America's Forests

- Co-evolving market and policy to build national recognition of climate benefits of forests
- Lead development of California's forest carbon project accounting protocol
- First carbon project registered
- Advisor to landowners, land trusts and project developers



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Developing new revenue for non-commodity values has been like pursuing the holy grail

- GHG reductions, watershed values, biodiversity . . .
- Creating a new product out of thin air isn't easy
- Carbon has emerged from experimental, wild west stage
- Now there are rigorous carbon standards for regulatory needs and many projects underway



Forests are a Leading Source of Global CO₂ Emissions

Forest loss currently contributes 15-17% of annual CO₂ emissions – not only in tropics



USDA finds our forests are an emissions sector and declining sink



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Forests are also the largest, most expandable carbon sink

- The climate crisis cannot be solved without increasing forest sequestration
- Low cost, long term banks for excess atmospheric carbon
- Great opportunities in temperate forests to leverage under-utilized biological capacity



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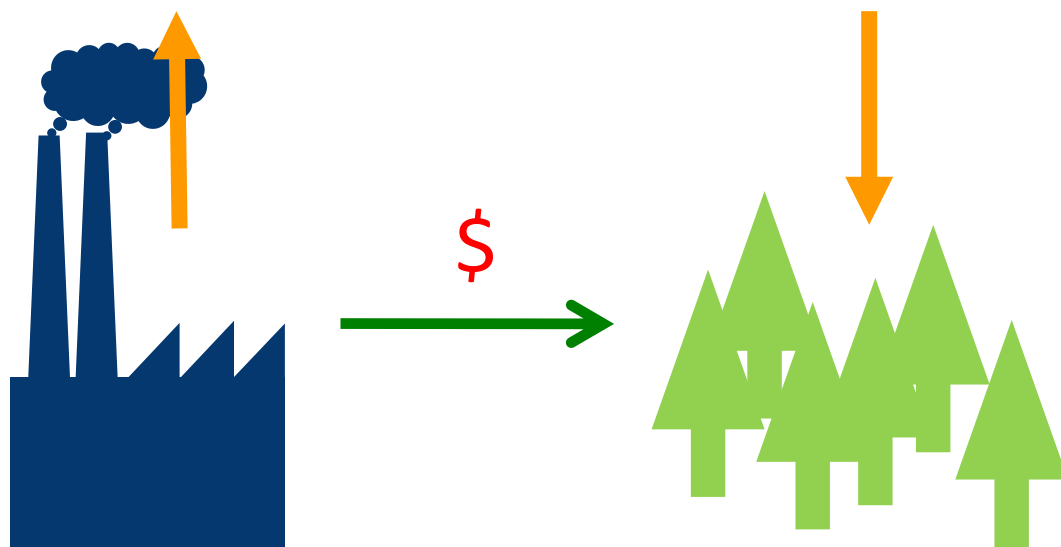
California Global Warming Solutions Act

- Requires reduction of GHG emissions of 15% from 2012 levels by 2020
- California Air Resources Board is lead agency
- Various methods including regulations
- Uses cap and trade with offsets
 - Capped sectors equal 85% of emissions
 - Allows forest offset projects from anywhere in the lower 48 states (private, non-federal lands)
- Allowances auctioned and revenue used for climate change mitigation and adaptation
 - Including new funding for conservation projects



What is a Carbon Offset?

A reduction in CO₂ emissions (or increase in sequestration) achieved to compensate for emissions somewhere else that would otherwise not be permitted



What is a Carbon Offset Project?

- A carbon project has site-specific activities that produce quantifiable climate benefits
- ARB approved: Forestry, Urban Forestry, ODS, Livestock Methane, Coal Mine Methane, Rice Cultivation
- A forest project either increases sequestration or decreases emissions



Key Offset Characteristics

Additional

Climate benefits are above and beyond “business as usual” baseline of reductions that would have happened anyway

Real, Measurable and Standardized

A project must be able to rigorously measure and carefully calculate climate benefits using best science

Verifiable

Accuracy can be confirmed by independent 3rd party

Permanent

The project reductions must be enduring and equivalent (to the atmosphere) to the emissions the project is offsetting



ARB Forest Offset Project Types

Improved Forest Management

Conserving or growing older forests, increasing productivity

Reforestation

From converted farmland or after a fire

Avoided Conversion

Stopping the bull dozer in its tracks



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Forest carbon accounting made easy

- All forests store carbon
- But not all carbon is *additional*
- Little trees grow faster, but add few tons of carbon
- Big trees grow slower, but can add more tons
- Avoided loss of older forests = most credits soonest
- Allowing established forests to grow older = next most
- Replanting a forest = least tons soon but all are plus



Steps in Carbon Project Development

- Carbon inventory
- Baseline characterization and modeling
- Project activity characterization and projections
- Leakage assessment
- Environmental integrity and natural forest management terms
- Quantification of offsets
- Preparation of documentation
- Listing of project
- Verification and annual reports
- Registration and offset issuance
- 6 year on-site verification
- 12 year re-inventory



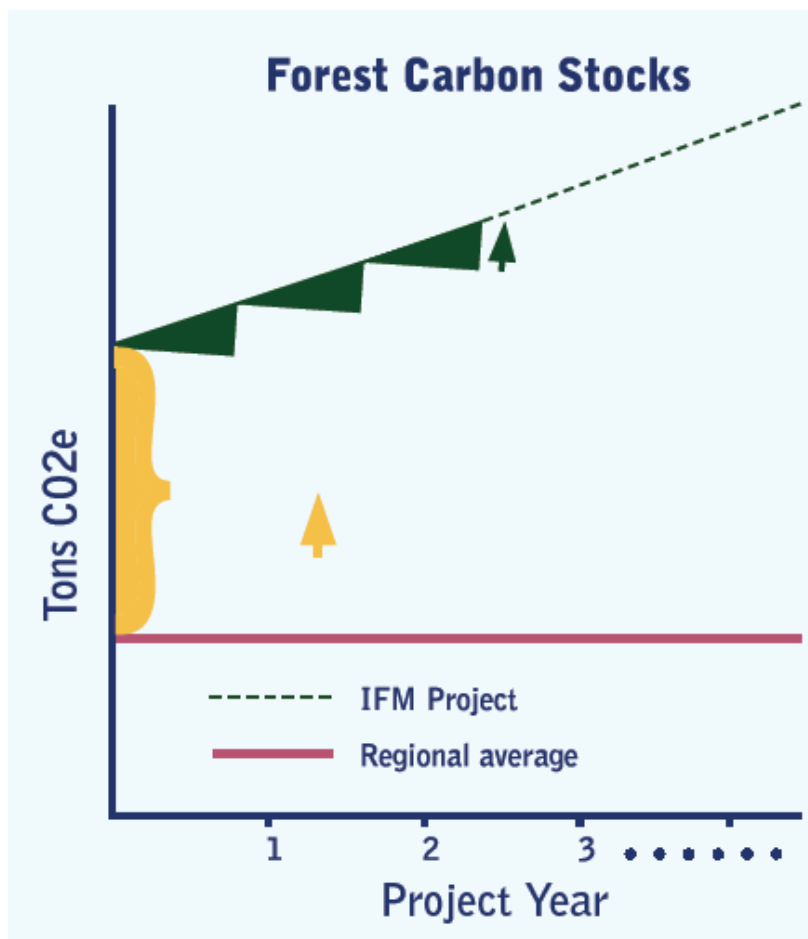
Conservation easements add value by reducing risk to permanence of C stocks



- Lower risk of financial failure, over-harvest, and conversion
- “Buffer pool” or ARB’s loss risk “premium” is lower compared to projects without CEs
- Need to start project within 1 year of recording easement



Improved Forest Management Example



	Pacific Northwest Fir	Northern Mixed Hardwood	Southern Pine
▲ Credits at project initiation	190,000	120,000	115,000
Revenue at project initiation (\$ millions)	\$1.9	\$1.2	\$1.2
▲ Annual credits from onsite and wood product carbon growth	8,000	5,000	7,000
Gross revenue in first project decade (\$ millions)	\$2.7	\$1.7	\$1.9

Assumes

- 10,000 acres
- Carbon stocks 20% over average
- 50% annual growth harvested
- \$10/ton carbon price

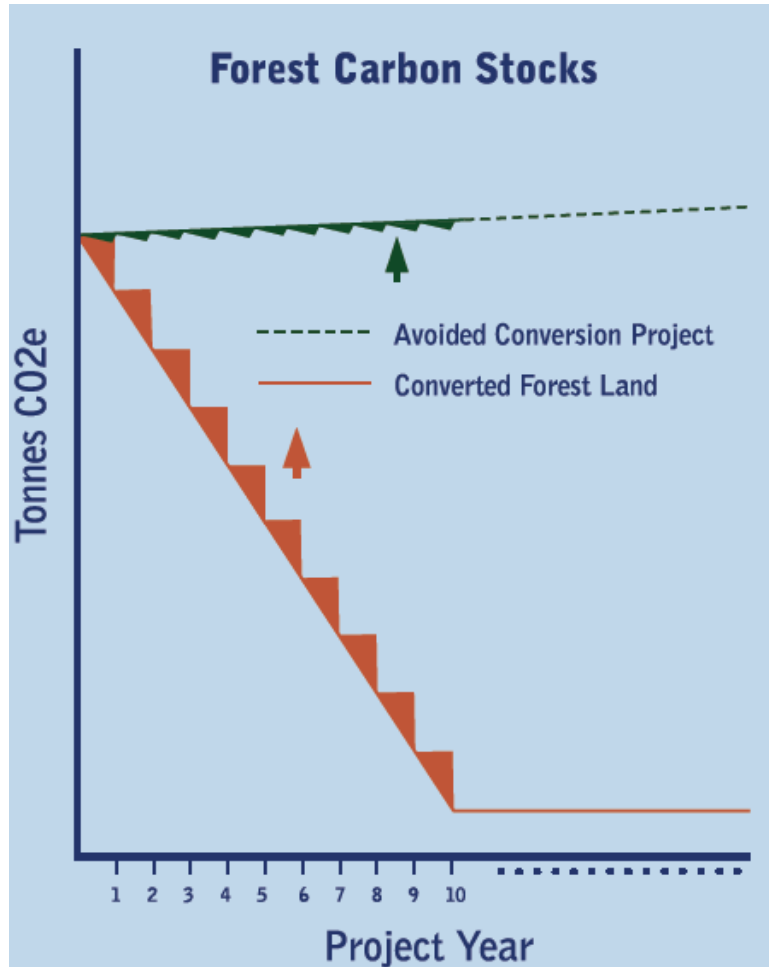
Source: Blue Source



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Avoided Conversion Example



	Pacific Northwest Fir	Northern Mixed Hardwood	Southern Pine
Annual Credits generated from conversion avoidance	28,000	18,000	16,000
Annual credit generation from continued CO ₂ stock accumulation	2,200	1,400	2,800
Gross revenue in first project decade (\$ millions)	\$3.0	\$1.9	\$1.9

Assumes

- 2,500 acres
- 3 acre residential development avoided
- Carbon stocks 20% over average stock
- 50% annual growth harvested
- \$10/ton carbon price

Source: Blue Source



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ARB Forest Projects and Pipeline

- 34 projects in total registered with 21.5 M carbon tons
- \$200,000,000+ in value so far
- 155 projects “listed” and in process of verification for credit issuance
- 20 states - California, Michigan, No. Carolina, So. Carolina, Virginia and Maine lead the way
- 2,000,000+ acres in carbon conservation over all



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Who is doing these Offset Projects?

- Variety of ownerships:
Families, TIMOs, REITs,
industrials, tribes,
communities
- Conservation organizations
on preserves or other lands
 - Appalachian Mtn. Club, TNC,
Audubon, Conservation Fund
- Shannondale Tree Farm –
oldest tree farm in Missouri



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GHG polluter pays: an alternative source of conservation finance

- Opportunities are growing
- There are costs and benefits
- Can be combined with other funding strategies – *either with CEs or not*
- Not all forest conservation projects will yield offsets
- Landowners and land trusts may need new expertise



Fascinating easement appraisal – and policy – questions

- Can payments for carbon projects and conservation easements tools be layered or is this “double dipping”?
- What rights and revenues are affected?
- If the CE provides financial benefits as well as reduces others, must these be netted out?
- Market data is sparse and developing
- *Answer: Maybe -- It depends!*



Issues – some with answers and others to be figured out

- Do you have clear title to the carbon credits?
- How do you fund out-year expenses?
- How are the project commitments enforced?
- What about “invalidation risk”?
- How are fires dealt with?
- Can you get out of a project?



Thank you!

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