

Forest Carbon Opportunities: IFM & AC

Bluesource

**EOMF AGM
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San Francisco



Toronto



Calgary



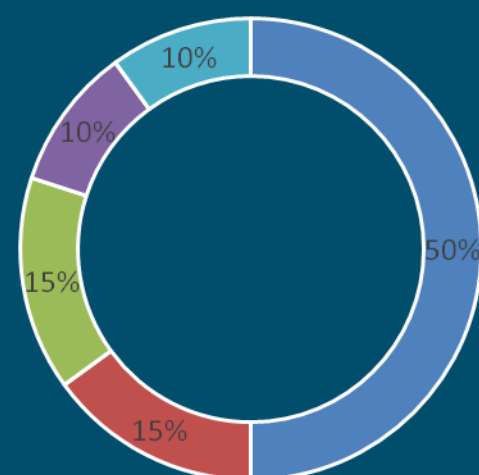
Salt Lake City



Carbon Offset Development and Marketing

- ✓ Over 200 carbon offset projects developed
- ✓ Offsets sold for 30 million tonnes CO₂e reduced
- ✓ 20 Project types
- ✓ Oldest and largest carbon offset developer in the N.America

Project Type



□ Forestry □ ODS □ Biomass □ Energy Efficiency □ Other

Services:

- ✓ Carbon opportunity assessment
- ✓ Feasibility confirmation
- ✓ GHG Inventory development
- ✓ Carbon growth and yield modeling
- ✓ Project design & documentation
- ✓ 3rd party verification
- ✓ Public registration
- ✓ Credit marketing, sales & contracting
- ✓ Continual Project support



Forest Carbon

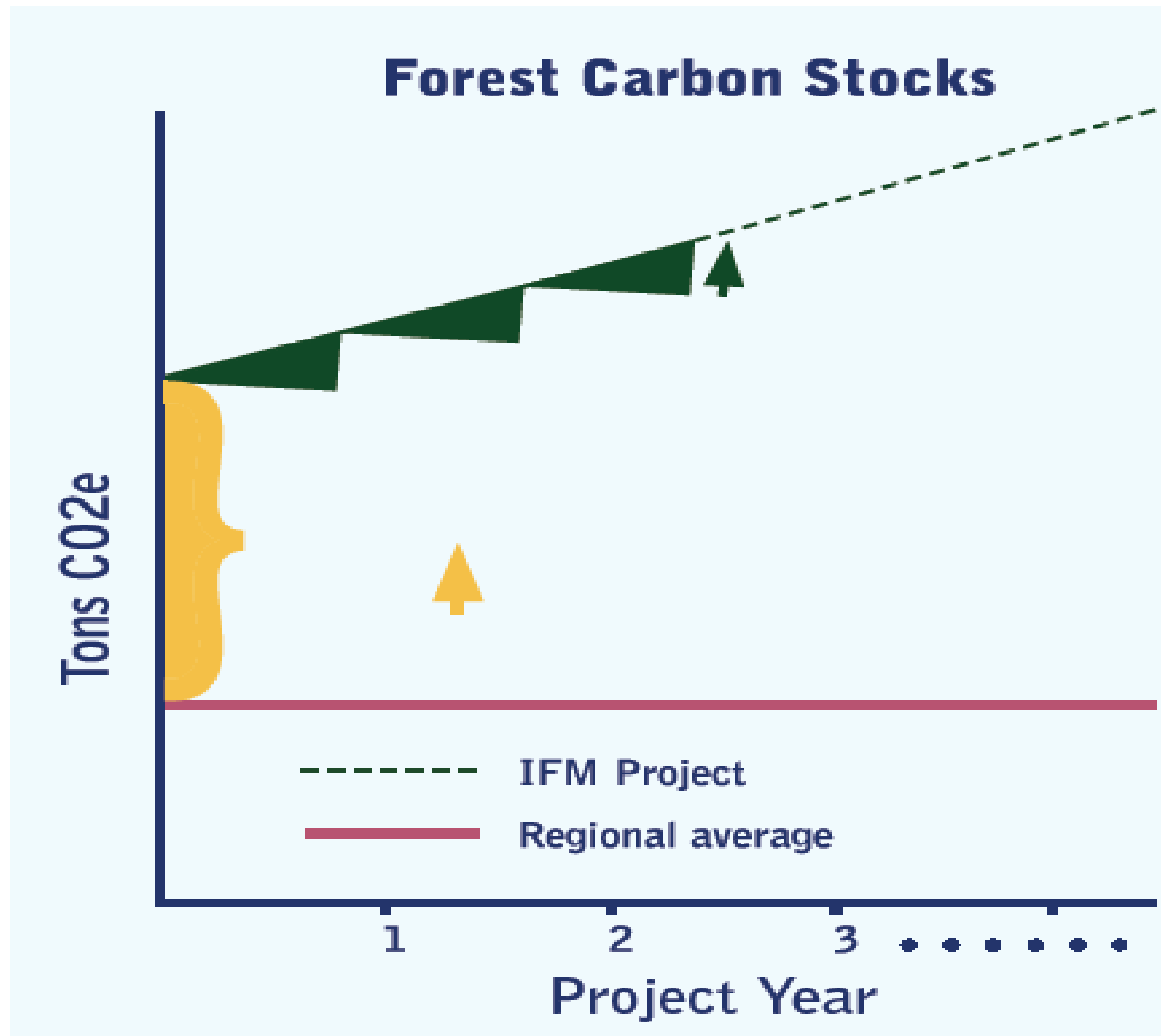
- ✓ **Only successful developer of both Improved Forest Management and Avoided Conversion projects**
- ✓ **Forestry Team: 10 person team includes in-house finance, marketing and legal experts plus 4 professional foresters with unparalleled forest carbon experience**
- ✓ **Forestry Projects: 11 projects completed – credits successfully verified, issued, sold and revenue delivered to landowners**
- ✓ **Contracted for sale of nearly 3,000,000 tons of forestry credits, valued at over \$25,000,000**

Forest Owner Partners:

- ✓ **Forestland Group**
- ✓ **Campbell Global**
- ✓ **Forest Investment Associates**
- ✓ **The Nature Conservancy**
- ✓ **Audubon Society**
- ✓ **Resource Land Holdings**



Improved Forest Management



Critical Factors

- ✓ Harvest less than common practice in region;
- ✓ Harvest less than growth rate;
- ✓ No legal requirements impeding greater harvesting.



Improved Forest Management

Recognized Forest Management Activities

- ✓ Increasing the overall age of the forest by increasing rotation ages;
- ✓ Increasing the forest productivity by thinning diseased and suppressed trees;
- ✓ Managing competing brush and short-lived forest species;
- ✓ Increasing the stocking of trees on understocked areas; and/or
- ✓ Maintaining stocks at a high level.



IFM Protocols and Markets

Market	Protocol	Consideration
Ontario Compliance	Pending IFM protocol in development	<ul style="list-style-type: none"> ▪ The potential will depend on the baseline method adopted by the protocol. ▪ 1st draft due in August, final protocol in Dec 2017 ▪ Likely in the \$14 to \$20/tCO₂e range at current market prices ▪ Likely a 25 yr crediting period
Tender for Ontario Government offset procurement	MOECC stated intent to use accepted voluntary protocols. Uncertain which project categories and what criteria will be used.	<ul style="list-style-type: none"> ▪ Intention is to procure high co-benefit offsets with a particular interest in forest carbon; ▪ Will potentially pay a premium to compliance offsets for co-benefits
Voluntary carbon credits for corporate offsetting	<ul style="list-style-type: none"> ▪ Verified Carbon Standard VM0034 ▪ American Carbon Registry-IFM (adapted) ▪ California Action Reserve Forest Carbon V3.3 ▪ BC Protocol for Forest Carbon (adapted) 	<ul style="list-style-type: none"> ▪ Market demand is weaker and this is reflected in pricing - \$5 to \$8 ▪ Potential for higher pricing if social and ecosystem benefits are valued. ▪ No crediting period specified.



IFM Commitments

Commitment	Compliance Standard	Voluntary Standard
Detailed carbon inventory conducted at project commencement	Yes	Yes
Carbon inventory resampling	12 yrs	10 yrs
Forest stocking must be maintained or increase annually (exceptions for natural disturbance)	Yes	Yes
Annual monitoring documentation submittal (minimal work required)	Yes	Yes
Project stocking verification (i.e. site audit)	Every 6 yrs	Every 5 yrs
Must have forest certification (FSC, SFI, Tree Farm) if commercial harvests take place	Yes	Yes
Total project length	100 yrs	20 to 100 yrs
Penalty for intentional reversals	Replace all credits with 1.4 x multiplier. Applies to 100% of project area.	Replace with voluntary credits on 1 to 1 basis or no requirement at all. Potential for small changes to project area.
Restriction on even-aged management	< 40 acres	

IFM Benefits

Project economics on a project Bluesource developed in Great Lakes St. Lawrence 9,000 Ha forest.

- ❖ Offset credit issuance in first year: 288,000 tCO₂e
- ❖ Total credit issuance over 10 year crediting period: 425,000 tCO₂e
- ❖ Current offset price: 12.2 \$/tCO₂e
- ❖ Total Project Revenues in first year: \$3.5 M *
- ❖ Total Project Revenues in 10 year crediting period: \$5.2 M
- ❖ Project costs of \$300 to \$600k must be deducted

* Project revenues for any given project could be significantly below or above this example depending on baseline and price.



GHG Reductions from Avoided Conversion

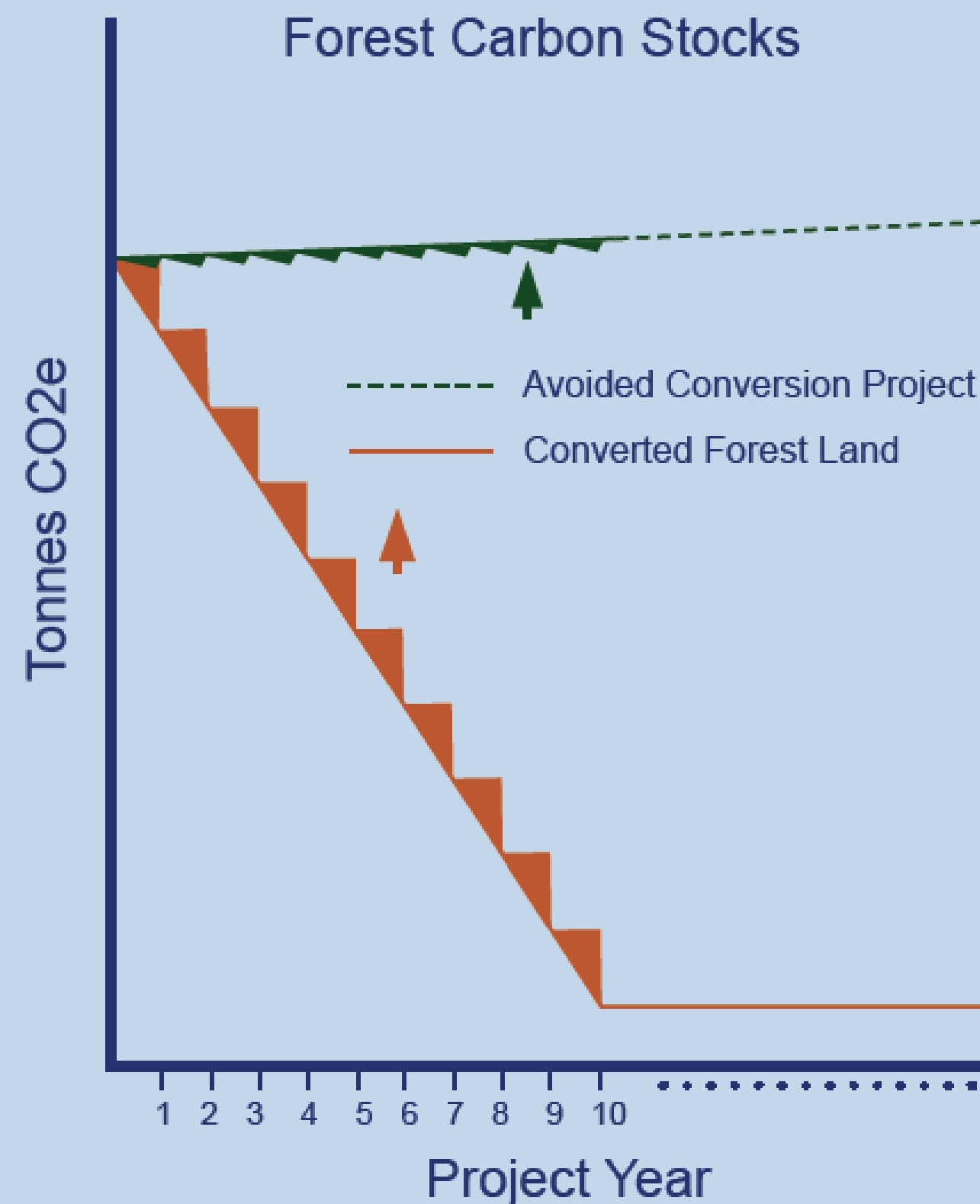
Generating Carbon Offset Credits through Avoided Conversion (AC) Projects

AC projects reward landowners for preventing the conversion of forestland to non-forest uses, thereby avoiding the emission of carbon sequestered in forest materials. While an easement dedicating AC lands to continuous forest cover is required, forests participating in AC can continue to manage and harvest timber.

AC project carbon credits are generated in two ways:

AC projects assume project land will be converted to non-forest use within one decade of the project start date. Therefore, projects are annually awarded 1/10th of the total credits generated by conversion avoidance for the first ten project years.



Projects also generate credits by increasing onsite and wood product carbon stocks above the levels present at project initiation. Credits generated in this manner continue to accumulate throughout the life of the project.



GHG Reductions from Avoided Conversion

While stocking around the country varies greatly, all forest types can offer attractive AC opportunities.

The table displays the 10 year volume and revenue potential for an AC project assuming 100% conversion of 2,500 forest acres, stocks 20% over common practice, 50% of annual forest growth harvested every year, and a carbon credit price of \$10 per tonne.

	Pacific Northwest Fir	Northern Mixed Hardwood	Southern Pine
 Annual Credits from conversion avoidance in first decade	28,000	18,000	16,000
 Annual credit generation from continued CO2 stock accumulation	2,200	1,400	2,800
Gross revenue in first project decade (\$ millions)	\$3.0	\$1.9	\$1.9



Project Aggregation

- ❖ One successful IFM aggregation in Arcata, Mexico using the American Carbon Registry voluntary standard.
- ❖ Difficulties associated with making joint 100 year commitments, establishing revenue sharing, and establishing monitoring requirements.
- ❖ The Ontario Government is working on an aggregation mechanism to enable small projects, it remains to be seen the extent to which it will allow for statistical sampling in order to reduce transaction costs.



Project Aggregation

California Action Reserve (CAR) has set guidelines for aggregation of forestry projects:

- ❖ Upper size threshold of 10,000 Ha;
- ❖ Each project owner must register with CAR individually;
- ❖ Each project owner signs an individual implementation agreement with CAR and liability for reversals rests with project owner;
- ❖ Aggregators will select common verification services and coordinate schedules, develop project documentation and manage monitoring.
- ❖ Fewer sample plots are required for inventory for any given owner, and project development and verification costs benefit from economies of scale.



Bluesource Project Partnership Model

Our model gives landowners full participation in carbon market upside without upfront time, cost, risk.



Net-back model

- Developed and proven across industries and decades
- Blue Source takes responsibility for all upfront costs, risks, effort
- Share net revenues with owner
- We are not rewarded unless/until landowner is rewarded
- Skin in game
 - Not a “buy-low/sell high” model
 - Not a “first-out” model

Benefits

- Minimizes landowner time, expense, risk in unknown market
- Concentrates risk where it belongs (Blue Source)
- Maintains landowner participation in market upside
- Full alignment of incentives (high volume, low cost, high price)
- Eliminates need for expensive sales contracting



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