

Market Dynamics and an Overview of Developing Successful Forest Carbon Projects



ACES Workshop
Arlington, VA
December 8th, 2014



Blue Source™

Who is Blue Source?

- Oldest and largest carbon offset developer in the U.S.
- >200 Projects, >20 Project Types, >30M credits sold
- Forestry: 12 projects under development; 8 have already generated revenue, sales in process for remainder
- We've contracted for nearly 3,000,000 tons of forestry credits, valued at over \$25,000,000
- Only successful developer of both Improved Forest Management and Avoided Conversion projects



San Francisco



Salt Lake City



Calgary

Carbon Project Development Partners

Non-Forest Project Owners

- University of Alberta
- JB Hunt
- Schneider
- Simplot
- Tyson
- Giant Eagle
- Albertsons
- Dozens of Municipalities
(Landfill Methane)

Forest Project Owners

- National Audubon Society
- The Nature Conservancy
- The Forestland Group
- Forest Investment Associates
- Campbell Global
- Bethlehem Water Authority
- Lock Haven Water Authority
- Hunt Clubs
- Private Landowners

Carbon Sales History and Network (>30m credits sold)

Voluntary Market Buyers

- Google
- Microsoft
- Chevrolet
- Disney
- Bonneville Environmental Foundation
- JP Morgan
- Interface Carpets
- Port Authority
- Carbon Retailers / Brokers

**Excluding Canadian market buyers

CA Compliance Market Buyers

- Shell
- Oil & Gas Co. (confidential)
- Oil & Gas Co. (confidential)
- International Power Co. (confidential)
- International Power Co. (confidential/pending)
- CE2 Capital Partners
- Financial Investors (confidential)
- Carbon Brokers (confidential)

Other Factors

- Size/diversity of portfolio meets varied needs
- Track-record of successful "pre-sales"

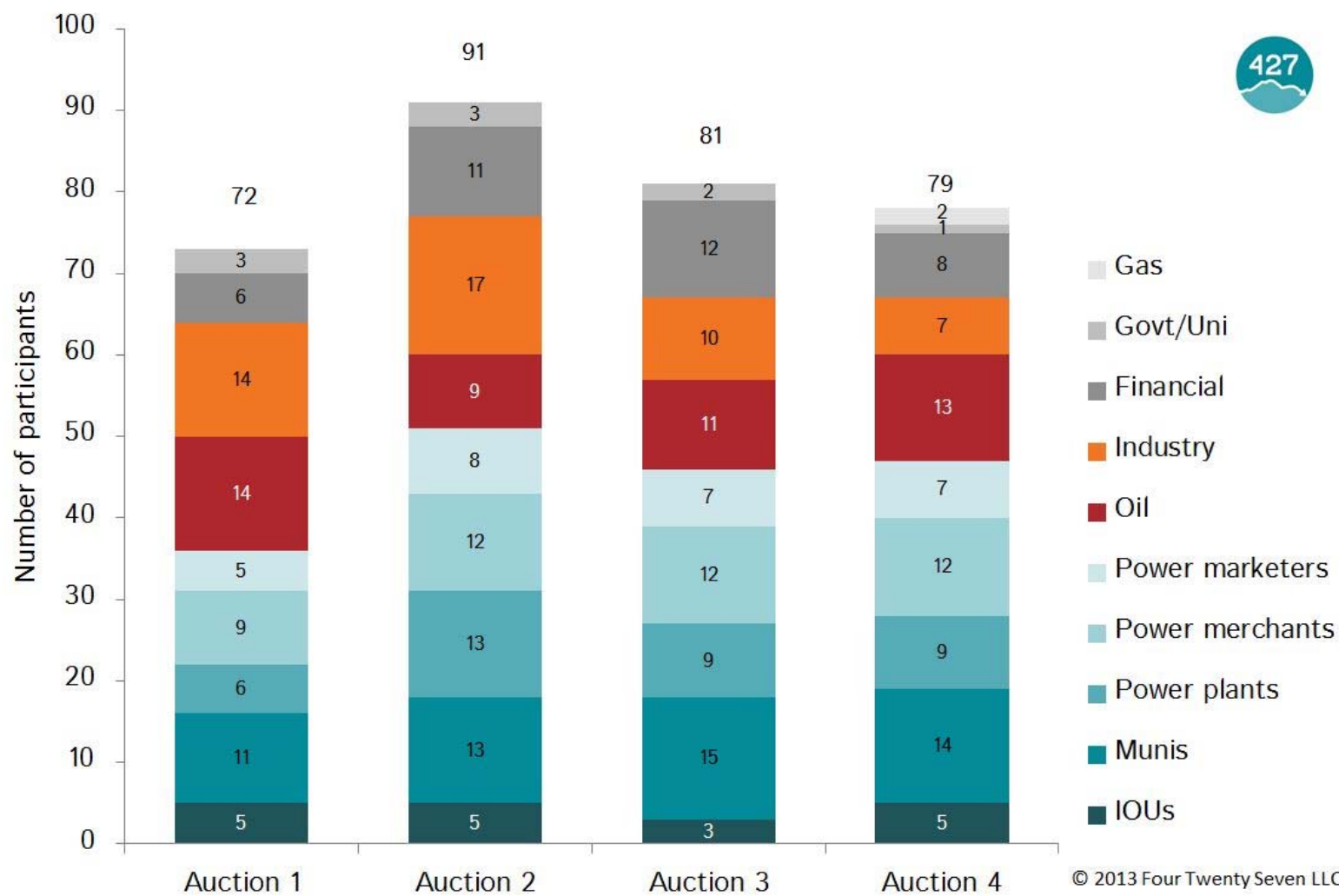
California Carbon Demand and Pricing

Allowance Pricing:

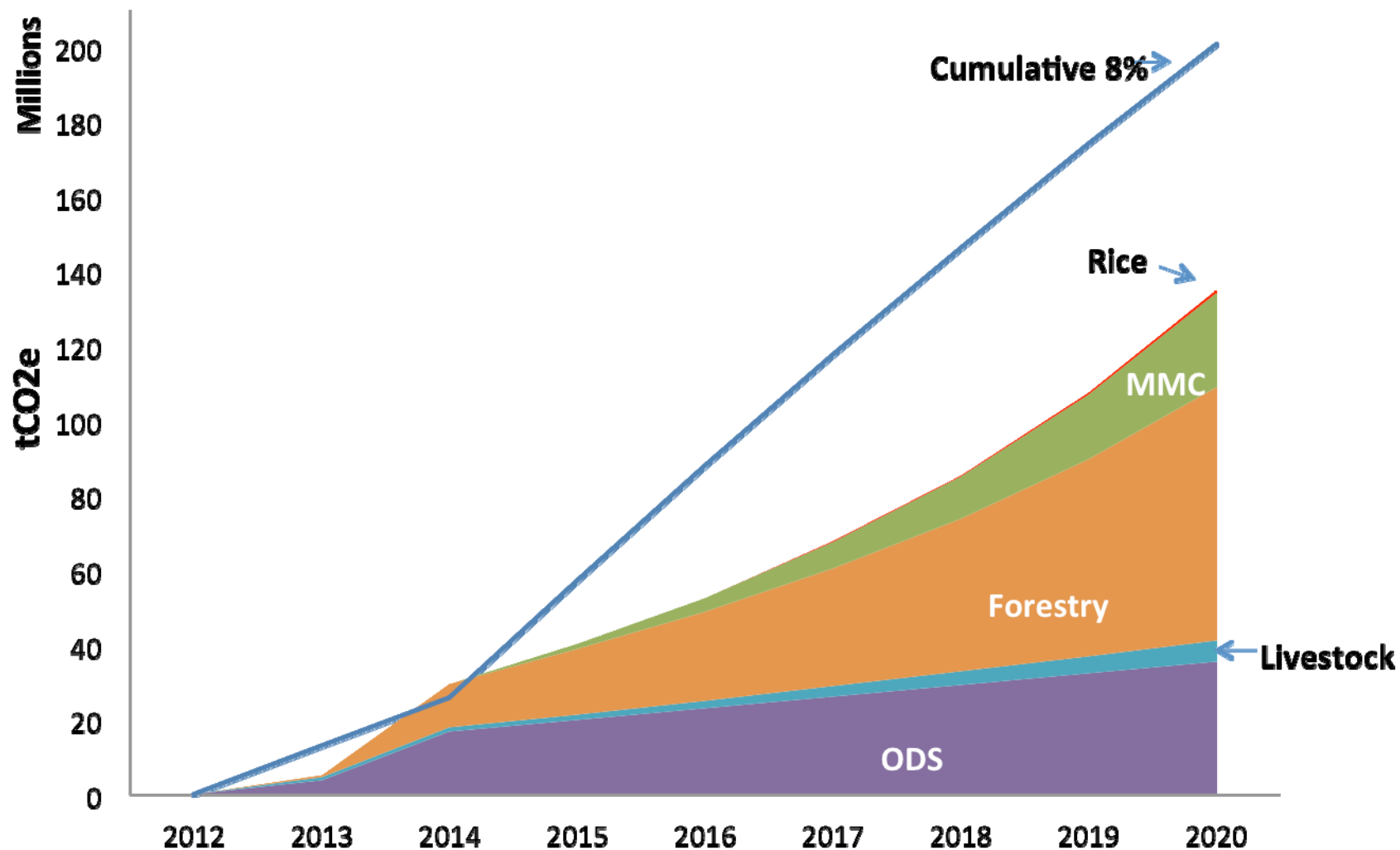
Auctions	Auction Price/Floor	Trading Price (prior to auctions)
Q4-12	\$10.09/ \$10.00	\$12.00-12.50
Q1-13	\$13.62/ \$10.71	\$13.25-13.75
Q2-13	\$14.00/ \$10.71	\$13.75-14.25
Q3-13	\$12.22/ \$10.71	\$13.00-13.50
Q4-13	\$11.48/ \$10.71	\$11.90-12.20
Q1-14	\$11.48/ \$11.34	\$11.80-12.00
Q2-14	\$11.50/ \$11.34	\$11.80-12.00
Q3-14	\$11.50/ \$11.34	\$11.80-12.00

- “Boring” in a good way: stable clearing price slightly above floor price
- Q3-13 Auction passed \$1 Billion milestone = political support
- Offset Discount to Allowances: ~10-25%; offset pricing has ranged from \$8.50-\$12

Who's Buying?



American Carbon Registry – CA Offset Supply Forecast

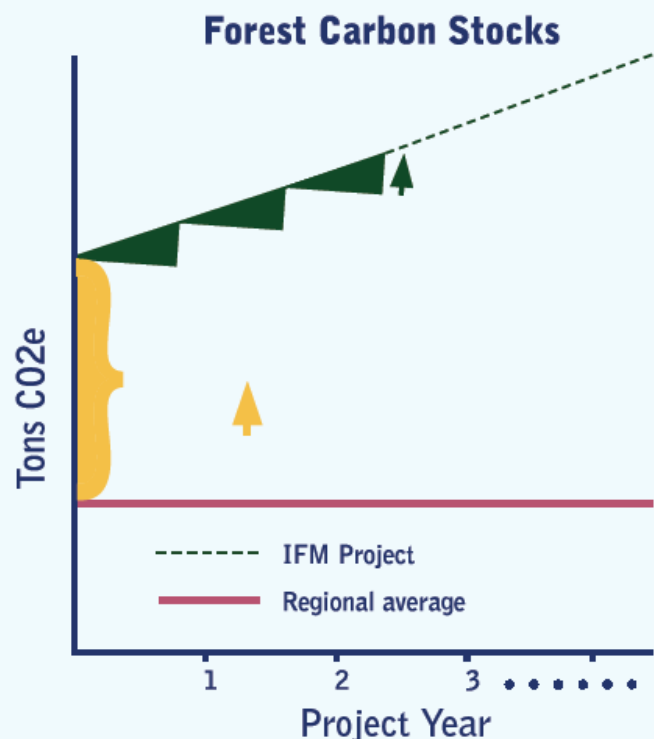


CCO Offset Credits Issued (November 26th, 2014)

Project Type	Forest	ODS	Livestock	
Compliance	3,378,928	1,645,536	72,831	
Early Action	2,848,442	5,015,753	606,656	
Total	6,227,370	6,661,289	679,487	13,568,146
% Market Total	46%	49%	5%	
# Projects	11	43	26	
Avg Volume Per Project	566,125	154,914	26,134	

- Total = 13.5 million CCOs from 80 projects registered to date
- 11 forestry projects registered (more verified and pending ARB review)
- 46% Forestry; 49% ODS; 5% Livestock (by volume)
- Blue Source is a leading source of supply:
 - Largest carbon project registered (The Forestland Group, ~2.2M tons)
 - Largest Early Action forest project outside CA (Audubon, 570k tons)
 - Most forest carbon credits registered (44% of market total)

Improved Forest Management Project Structure and Potential

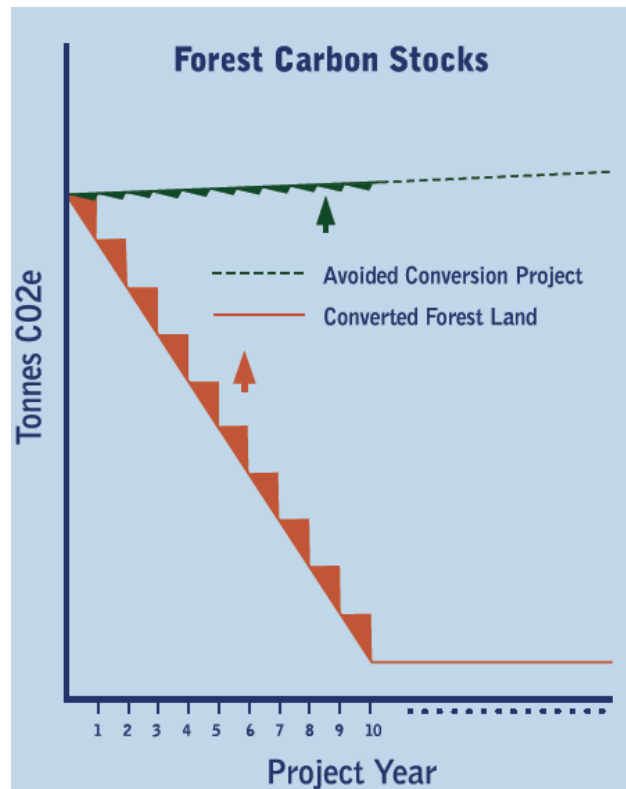


	Pacific Northwest Fir	Northern Mixed Hardwood	Southern Pine
Credits at project initiation	190,000	120,000	115,000
Revenue at project initiation	\$1.9	\$1.2	\$1.2
Annual credit generation from continued CO ₂ stock accumulation	8,000	5,000	7,000
Gross revenue in first project decade	\$2.7	\$1.7	\$1.9
Gross revenue per acre in first project decade	\$270	\$170	\$185

Assumes

- 10,000 acres
- Carbon stocks 20% over average stock
- 50% annual growth harvested
- \$10/ton carbon price
- 10 year crediting (25-100 year possible)

Avoided Conversion Project Structure and Potential



	Pacific Northwest Fir	Northern Mixed Hardwood	Southern Pine
<div>↑</div> Annual Credits generated from conversion avoidance	28,000	18,000	16,000
<div>▲</div> 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
Gross revenue per acre in first project decade	\$1,208	\$776	\$752

Assumes:

- 2,500 acres
- 3 acre residential development avoided
- Carbon stocks 20% over average stock
- 50% annual growth harvested
- \$10/ton carbon price
- 10 year crediting (25-100 year possible)

Key Considerations

- Minimum Size (Blue Source): 1,000 acres for Avoided Conversion and 3,000 acres for IFM
- 100 year commitment
 - Similarities to a conservation easement
 - Can change ownership but new owner needs to adhere to the requirements of the ARB program (no reversals)
 - Near term revenue 'endowment' set aside to pay out year expenses
 - Can exit if market is not performing
- Invalidity risk (now buyer is liable)
 - Either 3 or 8 years
 - If volume difference > 5%, need to make the program whole
 - Low probability of invalidation
- Clear title/ownership of carbon credits
- Lower 48 states (HI / AK in progress)

Blue Source Project Investment and Development 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)

Project Development Roles

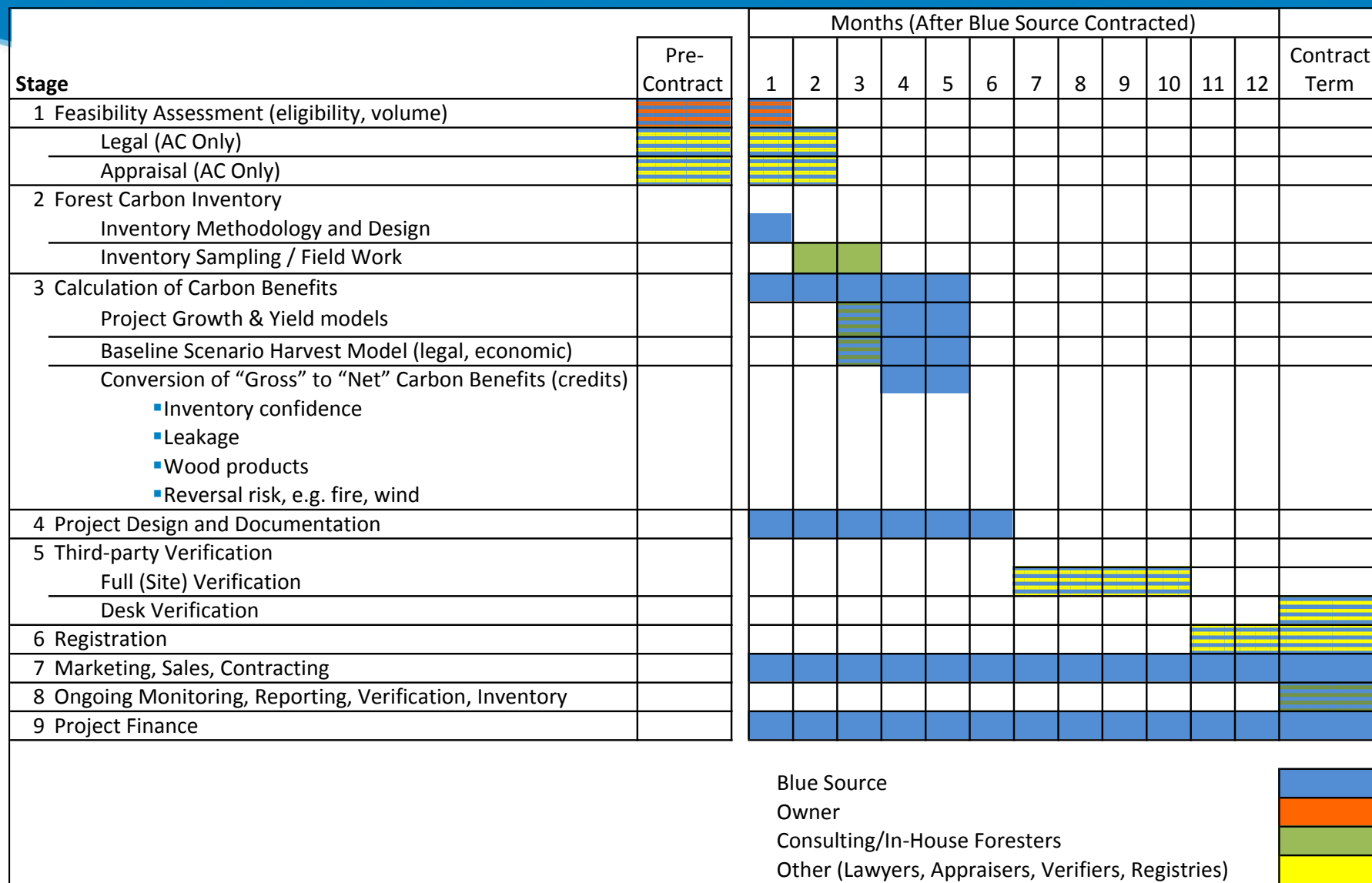
Stage

Feasibility Assessment (eligibility, volume)
Legal (AC Only)
Appraisal (AC Only)
Forest Carbon Inventory
Inventory Methodology and Design
Inventory Sampling / Field Work
Calculation of Carbon Benefits
Project Growth & Yield models
Baseline Scenario Harvest Model (legal, economic)
Conversion of "Gross" to "Net" Carbon Benefits (credits)
<ul style="list-style-type: none"> Inventory confidence Leakage Wood products Reversal risk, e.g. fire, wind
Project Design and Documentation
Third-party Verification
Full (Site) Verification
Desk Verification
Registration
Marketing, Sales, Contracting
Ongoing Monitoring, Reporting, Verification, Inventory
Project Finance

Primary Actors

Blue Source	Owner	Consulting /In-house Foresters	Verifier	Registry	Appraiser	Outside Counsel
⊙	⊙	•				
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Project Development Timeline



Project Development Costs (representative, case-by-case)

Stage

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Inventory Sampling / Field Work
3 Calculation of Carbon Benefits
Project Growth & Yield models
Baseline Scenario Harvest Model (legal, economic)
Conversion of "Gross" to "Net" Carbon Benefits (credits)
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Full (Site) Verification
Desk Verification
6 Registration
7 Marketing, Sales, Contracting
8 Ongoing Monitoring, Reporting, Verification, Inventory
9 Project Finance

Estimated Costs		
Initial	Ongoing	Frequency
inc.	\$0	one time
\$0-20k	\$0	one time
\$5-20k	\$0	one time
inc.	\$0	one time
\$30-75k	TBD w/Owner	12 yrs min
inc.	TBD w/Owner	harvest years
inc.	\$0	one time
inc.	Inc.	annual
inc.	\$0	one time
\$40-75k	~70% Initial	6 years
\$0	\$7-10k	optional
~\$0.20/credit	~\$0.20/credit	when crediting
inc.	inc.	when crediting
\$0	see above	see above
n.a.	n.a.	n.a.

- Third Party Project Initiation (financed by Blue Source during term): \$100k-200k+
- 100 Year Monitoring, Verification, Inventory Endowment: \$100-200k

Thank You!



Roger Williams
President
Blue Source
P: 415.399.9101
E: rwilliams@bluesource.com

Bishop Points of Interest

- Largest project (by volume and acreage) in the CA compliance market
- Delta to baseline over large acreage
 - 70.48 vs 78.28 tonnes/acre
- Pre Sell: 500K to Shell
- Large TIMO; large compliance buyer
- Can harvest to baseline (taking into account easement constraints)

Bishop Points of Interest

- Beech mortality
- Old inventory grown forward; passed verifier field sampling
- Weather considerations
- 2 Month ARB Review
- Current status: CCO3 conversion in progress

Working hard to bring projects to market...

