

American Carbon Registry Monitoring Report

Instructions: The American Carbon Registry (ACR) requires that a Project Monitoring Report be provided to the verification body at each Project verification. To facilitate this requirement, use of this monitoring report template is required. Please follow all instructions found within each section and provide all requested information. If a field is not applicable, mark it as “N/A”. Please save this Monitoring Report as a PDF prior to uploading to your Project page within the ACR registry system.

Section I: Report Completed By		
1	Name	Cakey Worthington
2	Title	Director of Implementation
3	Organization	Bluesource LLC
4	Phone	(317) 491-0524
5	Email	cworthington@bluesource.com
Section II: Offset Project Information		
1	Project name	Bluesource – Massachusetts Tri-City Improved Forest Management Project
2	ACR Project ID#	376
3	ACR account holder	Blue Source, LLC
4	Reporting period (MM/DD/YYYY–MM/DD/YYYY)	03/17/2017 – 09/15/2018
5	Project start date (MM/DD/YYYY)	03/17/2017
6	Current project crediting period (MM/DD/YYYY–MM/DD/YYYY)	03/17/2017 – 03/16/2037
7	ACR Standard Version at time of listing/initial submittal	ACR Standard Version 4.0
8	Relevant ACR Sector Standard(s) and Version(s)	ACR Forest Carbon Project Standard v.2.1
10	ACR-Approved Methodology Title and Version	Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands v.1.2
Section III: Project Details		
1	<p>Project Description</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> • Provide a brief project description • State the total GHG reductions or removals during the reporting period covered by this monitoring report <p>Project Description: The Bluesource – Massachusetts Tri-City Improved Forest Management Project is located on 13,536 acres of oak-hickory hardwoods with some pine-hemlock and spruce-fir stands in Southwestern Massachusetts. The project land use type is forested parcels owned by the cities of</p>	

	<p>Westfield, Holyoke and West Springfield (“The Cities”). The project activity represents a significant improvement in the carbon storage and conservation value than higher return, more aggressive management regimes of industrial private lands in the region, which are characterized by shorter, even-aged rotations. By committing to maintain forest CO₂ stocks above the regional baseline, the project will provide significant climate benefits through carbon sequestration.</p> <p>Total GHG reductions or removals during reporting period (without buffer deduction): 245,239 tCO₂e.</p>
<p>2</p>	<p>Program of Activities Project Implementation <i>Instructions:</i></p> <ul style="list-style-type: none"> • For a PoA, describe any new project instances, fields, producers, or facilities added during the reporting period • State whether the additional cohort(s) conform to the project boundaries and baseline criteria established in the initial GHG project plan • Provide the start date and crediting period for the additional cohort(s) • Define the roles and responsibilities for all personnel involved in the inclusion of the new cohort(s) • Describe procedures to avoid double counting as described in the ACR Standard • Provide all necessary information as stipulated in the validated project plan to ensure that leakage, additionality, baseline establishment, baseline emissions, and eligibility requirements are met by the additional cohort(s) • Provide a map of each new instance, field, producer, or facility added during the reporting period <p>N/A: No additional cohorts beyond those described in initial GHG plan have been added to the project.</p>
<p>3</p>	<p>Project Deviations <i>Instructions:</i></p> <ul style="list-style-type: none"> • ACR may permit project-specific deviations to an existing approved methodology where they do not negatively impact the conservativeness of an approved methodology’s approach to the quantification of GHG emissions reductions and removal enhancements. For instance, where alternate monitoring or measurement regimes are proposed, ACR may permit these changes provided they are conservative. ACR will not permit, on a project-specific basis, changes to requirements related to additionality assessment or baseline establishment. • State the deviation and rationale for the deviation; in the rationale, provide both the necessity of the deviation and demonstration that the deviation is conservative (i.e. will underestimate net GHG reductions/removals). • State whether ACR has formally approved the deviation <p>N/A: No project deviations have occurred in this reporting period.</p>
<p>4</p>	<p>Regulatory Compliance <i>Instructions:</i></p> <ul style="list-style-type: none"> • Projects must maintain material regulatory compliance. In order to maintain material regulatory compliance, a project must complete all regulatory requirements at required intervals. Project Proponents are required to provide a regulatory compliance attestation to a verification body at each verification. This attestation must disclose all violations or other instances of noncompliance with laws, regulations, or other legally binding mandates directly related to project activities. • State whether all regulatory requirements were completed at required intervals.

	<ul style="list-style-type: none"> State whether the required regulatory compliance attestation has or will be provided to the Project's verification body. <p>Blue Source – Massachusetts Tri-City IFM project is not a required project by any law, regulation, or legally binding mandate. The project is in compliance with all local, state, and federal timber laws. An attestation has been provided to affirm these statements.</p>															
Section IV: AFOLU Projects																
<p>1</p>	<p>Reversals (Please note that reversals must be reported to ACR as soon as they are discovered per the ACR Risk Mitigation Agreement)</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> State whether there have been any intentional or unintentional reversals during the reporting period If a reversal has occurred, describe the reversal in this section <p>N/A: No reversals have occurred.</p>															
<p>2</p>	<p>Carbon Pools</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> Populate the below table with the total tCO_{2e} for each applicable carbon pool as specified (add rows for any additional relevant carbon pools) <table border="1" data-bbox="264 1037 1425 1224"> <thead> <tr> <th>Carbon Pool</th> <th>Previous (total tCO_{2e})</th> <th>Current (total tCO_{2e})</th> </tr> </thead> <tbody> <tr> <td>Live Tree CO₂</td> <td></td> <td>2,472,304</td> </tr> <tr> <td>Standing Dead</td> <td></td> <td>79,895</td> </tr> <tr> <td>Soil</td> <td></td> <td>n/a</td> </tr> <tr> <td>Harvested Wood Products</td> <td></td> <td>5</td> </tr> </tbody> </table>	Carbon Pool	Previous (total tCO _{2e})	Current (total tCO _{2e})	Live Tree CO ₂		2,472,304	Standing Dead		79,895	Soil		n/a	Harvested Wood Products		5
Carbon Pool	Previous (total tCO _{2e})	Current (total tCO _{2e})														
Live Tree CO ₂		2,472,304														
Standing Dead		79,895														
Soil		n/a														
Harvested Wood Products		5														
<p>3</p>	<p>Inventory</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> State whether the project is using the original inventory Describe any changes to the original inventory methodology since the last verification, if applicable For new inventory plots that were re-measured, list the updated confidence statistic and deduction percentage, if applicable 															

	<ul style="list-style-type: none"> If new plots were added to inventory, please provide an updated map showing plot locations and describe how plot locations were determined. <p>No changes to the inventory methodology or plots were made.</p>
--	--

Section V: Project Monitoring

1	<p>Parameters Monitored/Modeled</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> Populate the following tables with all parameters monitored during the reporting period adding tables, as necessary (report all validated modeled parameters using the below tables as well)
----------	---

Parameter	A ₁
Units	Acres
Description	Area of IFM Project
Methodology Section	Strata area figures adjusted based on stocking levels and species distribution projected in modeling and verified through inventory updates
Equation #(s)	
Source of Data	GIS shape file derived from GPS coordinates
Measurement	

Parameter	T
Units	Year
Description	Number of years between monitoring time t and t1 ($T = t2 - t1$)
Methodology	
Equation #(s)	
Source of Data	Monitoring reports
Measurement	Subtraction

Parameter	Diameter at breast height of tree
Units	Inches (to 1/10 th an inch)
Description	Tree diameter measure 4.5 feet above ground
Methodology	Measured with Loggers Tape or calipers
Equation #(s)	
Source of Data	Field measurement
Measurement	

Parameter	H
Units	Feet
Description	Height of tree
Methodology	Measured with clinometer or hypsometer
Equation #(s)	
Source of Data	Field measurement
Measurement	

Parameter	Decay Class
Units	
Description	Qualitative degree of decomposition
Methodology Section	Qualitative assessment of dead tree into 1 of 4 decay classes based on class descriptions
Equation #(s)	
Source of Data	Field measurement
Measurement	

Parameter	Tree Live/Dead Status
Units	
Description	Live or Dead
Methodology	Measured per the SIG_Tri-City_Forest_Inventory_Manual_v20170503
Equation #(s)	
Source of Data	Field measurement
Measurement	

Parameter	Defect
Units	%
Description	Qualitative percent of missing biomass
Methodology	Measured per the SIG_Tri-City_Forest_Inventory_Manual_v20170503
Equation #(s)	
Source of Data	Field measurement
Measurement	

Parameter	Species Composition
Units	%
Description	Spp composition as a percentage of basal area
Methodology	Derived from the basal area calculations in the inventory data.
Equation #(s)	
Source of Data	Calculation of project emissions.
Measurement	

Parameter	Harvest Wood Products
Units	Metrics tons CO ₂
Description	Carbon remaining in stored wood products 100 years after harvest for the project in year t.
Methodology Section	Wood volumes will be monitored by Wigmore Forest Resource Management.
Equation #(s)	
Source of Data	Field measurement
Measurement	

Parameter	Forest Carbon
Units	Metrics tons of CO ₂
Description	Carbon stores in above and below ground live trees at the beginning of the
Methodology	Consistent with SIG_Tri-City_Forest_Inventory_Manual_v20170503
Equation #(s)	
Source of Data	Calculation of project emissions.
Measurement	

2	<p>Monitoring Plan</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> • Provide the personnel names and roles/responsibilities for each party involved in monitoring the offset project • Provide a description of the GHG management system employed including: <ul style="list-style-type: none"> • The location and recordkeeping/retention requirements for all stored data • Methods used to generate data • Transfer points and methods of non-automated transfer of data • If applicable, describe any calibration procedures and the frequency with which calibration and other maintenance requirements are performed • Describe the internal audit and other quality assurance/quality control procedures • Sampling methods utilized and performed during the reporting period <p>See section D2. Monitoring Plan of the GHG Plan for a detailed outline of the reporting requirements.</p>
Section VI: GHG Emission Reductions and Removals	
1	<p>Baseline Emissions</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> • Provide a summary calculation of baseline emissions; attach as an appendix, a spreadsheet documenting baseline emissions quantification <p>Estimated total stock in live trees, dead trees, and wood products in September 2018, grown from the inventory data, is 2,069,532 t CO₂e (=Live Tree CO₂ baseline + standing dead CO₂ baseline + HWP baseline). See “MassCities_RP1_MonitoringCalcs.xlsx” documentation of baseline emissions quantification.</p>
2	<p>Project Emissions</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> • Provide a summary calculation of project emissions; attach as an appendix, a spreadsheet documenting project emissions quantification <p>Live tree carbon stocks in the with-project scenario were projected four growing seasons from the March 2017- September 2018 inventory. The projection was developed by deriving individual live tree annual diameter growth rates from one 10-year cycle model run of FVS-NE with no management (reflecting the lack of timber harvest or other forest management activities occurring in the actual case during the monitoring period). The process is detailed below (and in “MassCities_RP1_MonitoringCalcs.xlsx”) and matches the process used to degrow live tree stocks</p>

from March 2017- September 2018 inventory to the March 17, 2017 start date (see Mass Cities GHG Plan).

Carbon stock estimates for the end of the March 17, 2017 – September 15, 2018 monitoring period were modeled via FVS-NE from the inventory data via the approach outlined below.

1. March 2017 – September 2018 inventory data were entered into FVS-NE and grown for 5 years with no management
2. For each plot, the average annual CO₂ growth was calculated by dividing the difference between 2017 and 2022 stocks by 5, and then two growing seasons of growth was added to the start date plot CO₂ to get the end of reporting period stocks.

Estimated total stock in live and dead trees at the end of the reporting period, grown from the inventory data, is **2,552,199 tCO₂** (= 186.6 t CO₂/ac * 13,535.8 acres).

No burning of any kind took place in the project area. Thus, parameter BS_p equals zero and the outcome of equation 13 of the methodology, parameter GHG_p , equals zero.

Timber harvests, which generated 15.5 t CO₂e in harvested wood products, took place during the March 2017 – September 2018 monitoring period.

Carbon in all pools/sources/sinks in the with-project scenario for the March 17, 2017 – September 15, 2018 monitoring period are detailed in the table below. Note that live tree stocks projected to September 15, 2018 represent two seasons of growth from the March 2017 start date. Values for sources/sinks (harvested wood products and emissions due to burning logging slash) represent totals through the end of the first monitoring period.

Date	Live t CO ₂ /acre	Standing dead t CO ₂ /acre	Total Standing t CO ₂ /acre	total HWP t CO ₂ /acre	total GHG,P t CO ₂
March 17, 2017	179.7	4.9	184.6		
September 15, 2018	182.6	5.9	186.6	0.00	186.6

3 Leakage Emissions

Instructions:

- *If applicable, provide a summary calculation of leakage emissions; attach as an appendix, a spreadsheet documenting leakage emissions quantification*

Quantification of leakage is limited to market leakage, as no activity-shifting leakage is allowed by the methodology beyond *de minimis* levels. All forestlands owned by the cities are included in the carbon project, therefore there is no activity-shifting leakage. As determined in the project GHG Plan, the applicable market leakage factor through the first crediting period is 0.4.

4 Buffer Pool Contribution (For AFOLU and other sequestration projects only)

Instructions:

- Provide a summary calculation of the buffer pool calculation; attach as an appendix, a spreadsheet documenting buffer pool quantification

Buffer Pool contribution: GHG emissions without risk buffer deduction – GHG emissions with 16% buffer = 245,235 *.16 = 39,238

5 Net GHG Emission Reductions/Removals

Instructions:

- State the net GHG emission reductions; provide a summary calculation showing the net GHG emission reduction/removal calculation as required by the relevant methodology

Methodology calculations and estimates of net reductions and removals enhancements are detailed in the table below and in “MassCities_RP1_MonitoringCalcs.xlsx”.

Period Start Date	3/17/2017	9/15/2017	9/15/2018
ACR Acct Yr	0	1	2
Project Yr	Start Date	2017	2018
BASELINE			
LIVE TREE	2,432,609	2,207,557	1,982,506
DEAD TREE	65,791	67,890	69,990
HWPs	17,036	17,036	17,036
C BSL	2,515,436	2,292,484	2,069,532
ΔC BSL, tree, t		(225,052)	(225,052)
ΔC BSL, dead, t		2,100	2,100
\bar{c} BSL, HWP		17,036	17,036
C BSL, AVE		859,792	859,792
Year T	2,515,436	2,292,484	2,069,532
ΔC BSL, t		(205,916)	(205,916)
PROJECT			
LIVE TREE	2,432,609	2,452,457	2,472,304
DEAD TREE	65,791	72,843	79,895
HWPs	2.5	2.5	1,286.7
C Proj	2,498,402	2,525,302	2,553,485
ΔC Proj, tree, t		19,847	19,847
ΔC Proj, dead, t		7,052	7,052
ΔC Proj, t		26,902	28,186
Total Uncertainty		12.4%	12.5%
C ACR (gross),t		232,818	234,102
C ACR (deduct),t		130,049	130,873
Net ERTs Issued, t w/o buffer		122,344	122,892
Net ERTs Issued, t		102,769	103,229
Total Tradeable Balance		102,769	205,997

	Leakage Deduction		93,127.2	93,640.9
	Uncertainty Deduction		17,347.2	17,569.9
	Buffer Deduction		19,575.0	19,663.0
<p>See attached appendix for further details: “MassCities_RP1_MonitoringCalcs.xlsx”.</p> <p>Note: the total tradeable balance shows the amount net of 16% buffer, however as this credit amount will be supplied from a separate account, the full tradeable balance at time t (245,235) is the credit volume being requested to be issued.</p>				
Section VII: Verification				
1	<p>Verification</p> <p><i>Instructions:</i></p> <ul style="list-style-type: none"> • <i>State whether the project is undergoing a full site visit verification or a desk review</i> • <i>State the date of the last full site visit verification</i> • <i>Provide the name of the verification body for this reporting period</i> • <i>State the number of consecutive years the verification body has verified the project</i> <p>Verification Type: Desk Review Verification Start Date: October 30, 2018 Name of Verification Body: SCS Global Services No. of Consecutive Years Verifying Project: 1 year</p>			