Urban Forest Protocol Revision Process

Workgroup Kick-off Meeting

May 29, 2013

Sacramento, CA

CLIMATE ACTION RESERVE

Welcome!

CLIMATE ACTION RESERVE

- Goals for the meeting:
  - Become familiar with one another
  - Highlight key principles of an offset protocol
  - Describe history of the Urban Forest Protocol
  - Present and discuss areas for improvement
  - Explain expectations for participation in workgroup
  - Develop structure to address areas for revision
  - Outline process and schedule for revision

Agenda

- Introductions
- Intro to the Climate Action Reserve
- Key principles of an offset protocol
- History of the Urban Forest Protocol
- Description of the Urban Forest Protocol
- Issues to address in this revision process
- Expectations of participation
- Next steps

Introductions

- Climate Action Reserve
  - John Nickerson, Director of Forestry
  - Emily Russell-Roy, Forest Program Manager
  - Heather Raven, Policy Coordinator
- U.S. Forest Service
  - Greg McPherson, PhD
- Workgroup Members

Workgroup

ArborVitae Environmental Services

Cal Dept. Forestry & Fire Prot.

California Urban Forests Council

City of Palo Alto, CA

City of San Jose, CA

Environmental Capital LLC

Environmental Conservation Alliance

Hillis Clark et al.

Sacramento Municipal Utility District

Sacramento Tree Foundation

SCS Global Services

The Nature Conservancy

UC Davis

University of Florida

UC Davis

US Forest Service

West Coast Arborists

CLIMATE ACTION RESERVE

CLIMATE ACTION RESERVE OVERVIEW

What We Do

CLIMATE ACTION RESERVE

- Mission: to promote the reduction of greenhouse gas emissions by pioneering credible market-based policies and solutions
- Development of high-quality, stakeholder-driven, standardized project protocols
- Accredited offset project registry under the California cap-and-trade program
- Serve compliance and voluntary carbon markets
- Reputation for integrity and experience in providing best-in-class registry services for voluntary and compliance offset markets

Separation of Roles

- Independent from the State of California
- Reserve does not fund or develop projects
- Does not take ownership of offsets
- Is not an exchange
- Is a 501(c)3 not-for-profit organization
- Independent from third-party verification
  - Consistent with international standards
  - ANSI accreditation, training by Reserve or ARB
  - Assiduous oversight of verifiers

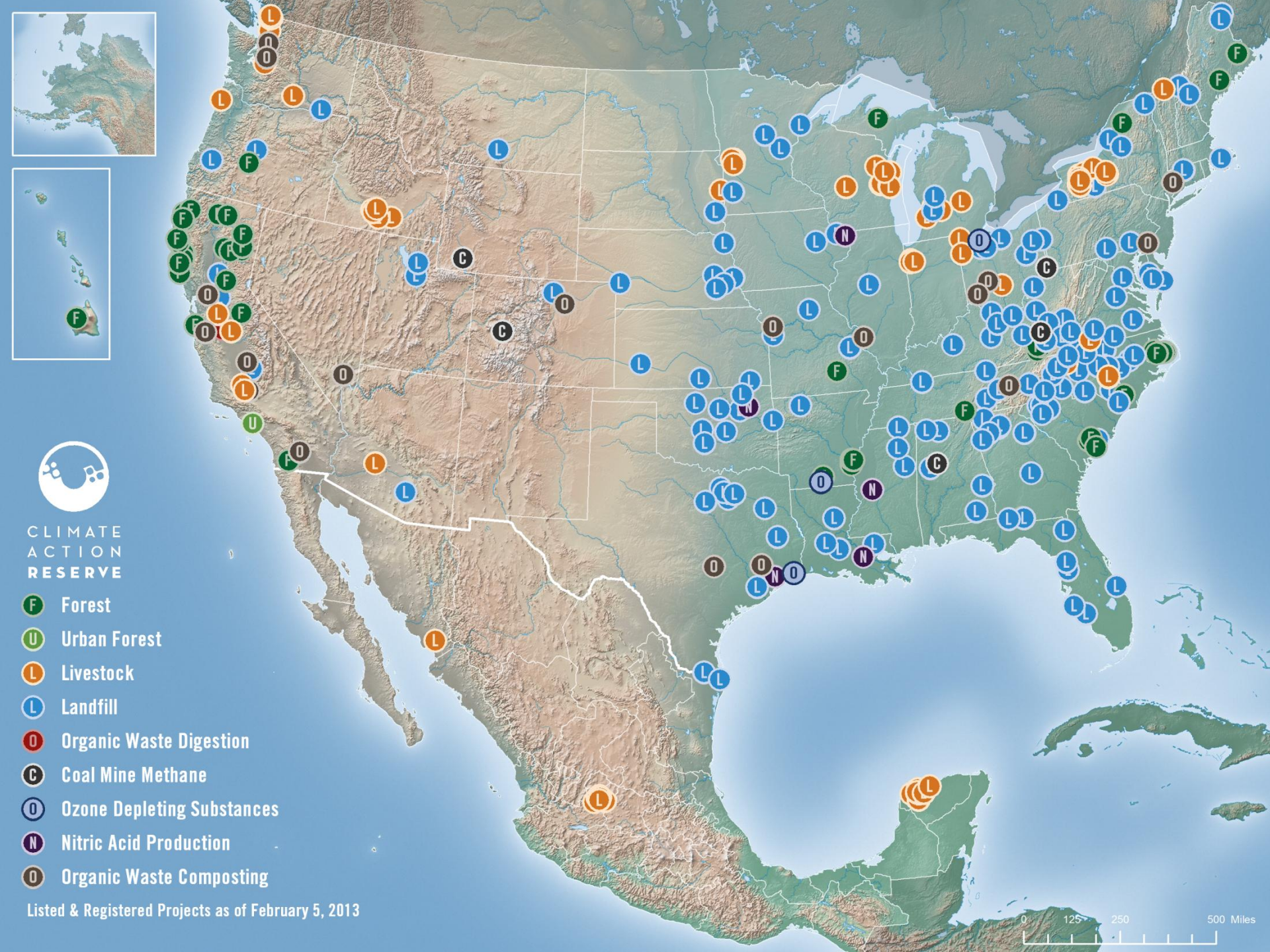
Reserve by the Numbers

CLIMATE ACTION RESERVE

CRTs registered	**31.8 million**
ARB-Eligible CRTs registered	*12.1 million*
CRTs retired	*5.7 million (~ 19%)*
Account holders	**354**
Projects submitted	**495**
New & Listed	*305*
Registered & Completed	*190*
U.S. States with Projects	**45**
Mexican States	*4*

Adopted Protocols

- **Forest (Reforestation, Improved Forest Management, Avoided Conversion)**
- **Livestock Manure Management (US** & Mexico)
- **Ozone Depleting Substances (US** & Article 5)
- ***Urban Forest***
- Coal Mine Methane
- Landfill Gas Capture (US & Mexico)
- Nitric Acid Production
- Nitrogen Management (currently corn in North Central Region only)
- Organic Waste Digestion
- Organic Waste Composting
- Rice Cultivation (currently CA only)


CLIMATE ACTION RESERVE
Forest
Urban Forest
Livestock
Landfill
Organic Waste Digestion
Coal Mine Methane
Ozone Depleting Substances
Nitric Acid Production
Organic Waste Composting
Listed & Registered Projects as of February 5, 2013
0
125
250
500 Miles

CLIMATE ACTION RESERVE

KEY PRINCIPLES OF AN OFFSET PROTOCOL

Offset Integrity

CLIMATE ACTION RESERVE

- **Real**
  - Can be measured to a high degree of accuracy
  - Is not an artifact of inaccurate or incomplete accounting
- **Additional**
  - Occurs outside of any regulatory requirement
  - Would not have occurred but for the incentive provided by a GHG market
- **Verifiable**
  - Can be (and has been) independently verified
- **Enforceable**
  - Ownership is undisputed and enforcement mechanisms exist to ensure all program rules are followed
- **Permanent**
  - Is removed from the atmosphere for a minimum of 100 years

Protocol Development

- Broad public input, sector-specific work groups
- Goal is to create a uniform standard that is widely recognized and builds on best practice
  - We incorporate the best elements of other protocols
  - We do not adopt methodologies from other sources (e.g. CDM, Gold Standard, VCS, project developers, etc.)
- Designed as step-by-step instructions on project implementation

The Standardized Approach

CLIMATE ACTION RESERVE

Benefits to a top-down approach:

- Low up-front costs to project developers
- Efficient review and approval of projects
- Transparency and consistency
- Same approach applies across projects
- Prescriptive guidance to eliminate judgment calls

*But…*high initial resource investment to program

Project Protocol Components

- Define the GHG reduction project
- Define eligibility (including additionality)
- Establish GHG Assessment Boundary
- Quantify GHG reductions or removal enhancements
  - Baseline emissions
  - Project emissions
- Monitor eligibility and quantification parameters
- Verify project performance

CLIMATE ACTION RESERVE

HISTORY OF THE URBAN FOREST PROTOCOL

Protocol Versions

- Version 1.0 of the protocol adopted on August 12, 2008
- Version 1.1 released on March 10, 2010
  - Includes programmatic updates only

CLIMATE ACTION RESERVE

DESCRIPTION OF THE URBAN FOREST PROTOCOL

Project Protocol Components

CLIMATE ACTION RESERVE

GHG Reduction Project (Definition)	Section 2
Eligibility	Section 3
Project Boundary	Section 4
GHG Assessment Boundary	Section 5
GHG Reduction Calculation Methods	Section 6
Permanence	Section 7
Co-benefits and Negative Impacts	Section 8
Monitoring Requirements	Section 9
Reporting Parameters	Section 10
Verification Guidance	Section 11
Glossary of Terms	Section 12

Project Definition *(Section 2.1)*

- Planned set of tree planting and maintenance activities permanently increasing carbon storage & accounting for associated GHG emissions
- Tree sites are the primary unit of analysis and contain one tree at a time
- 3 project types: project undertaken
  - (1) in municipalities, (2) on educational institutions, and (3) by utilities
- Project Crediting Period *(Section 3.3)*
  - PDs eligible to register GHG reductions for a period of 100 years following the project's start date

Project Developer *(Section 2.2)*

- Must be eligible entity:
  - Municipality
  - Education institution
  - Utility
- Must hold account on Reserve
- Must have clear ownership of the project's GHG reductions
- Project developer may contract tree planting, care, and maintenance, but is ultimately responsible for all project reporting

Exclusions

- Urban Forestry projects outside of eligible entity boundaries
- Urban Forestry projects undertaken by non-eligible entities (unless partnered with an eligible entity)
- Forest management and conservation activities that occur on large forested tracts within cities (≥ 100 acres contiguously forested)
- No credits for indirect emission reductions
  - Guidance given to quantify indirect GHG reductions due to energy conservation from tree shading and biomass energy using tree residues.
  - Co-benefits may be voluntarily reported

Eligibility *(Section 3)*

Eligibility Rule I: Location →	U.S. – Within Entity boundary
Eligibility Rule II: Project Operation Start Date →	Within 6 months prior to project submission
Eligibility Rule III: Additionality →	Meet Performance Standard
→	Exceed Regulatory Requirements

Legal Requirement Test
(Section 3.4.1)

- Must exceed federal, state, or local regulations or other legally binding mandates, such as:
  - Municipal ordinances requiring street, park, and parking lot tree planting or local mitigation requirements
  - Local codes, covenants, and restrictions requiring tree planting
  - State laws prescribing minimum levels of tree planting

– Project Developers must sign an Attestation of Voluntary Implementation

Performance Standard
(Section 3.4.2)

CLIMATE ACTION RESERVE

- Must meet a **Performance Standard Threshold** representing "*better than Business as Usual*"
  - For Municipalities and Educational Campuses:
    - Must demonstrate an entity-wide **Net Tree Gain** of at least 0 (a stable Urban Forest)
    - All trees planted are additional if NTG > 0 is maintained.
  - For Utilities:
    - All planted trees are additional
- Performance Standard based on evaluation of urban forest programs at municipalities, campuses, and utilities across U.S.

Performance Standard *(Continued)*

- Municipalities and Educational Campuses:
  - Net Tree Gain (NTG) = the number of trees planted by an entity minus the annual number removed
  - To pass test the NTG must be greater than zero
  - At project initiation, the project developer must demonstrate that it passes this test
    - Must use data from the last 5 years, can be an average or a single year, whichever is available
  - Each year of the project, the project developer must demonstrate it passes the test, based on a rolling average
    - If an entity reports a negative NTG no CRTs can be issued

Regulatory Compliance
(Section 3.5)

CLIMATE ACTION RESERVE

- At all times while claiming credit, the Forest Owner must be in material compliance with all pertinent regulations and permitting conditions
  - Satisfied every verification period by submitting the legally binding “Attestation of Regulatory Compliance”
  - No CRTs will be issued for GHG reductions that occurred during periods of non-compliance
    - Non-compliance solely due to administrative or reporting issues, or due to “acts of nature” will not affect CRT crediting

Project Boundary *(Section 4)*

CLIMATE ACTION RESERVE

- Boundary outlines components of project operations impacted by the project activity, including the physical area covered
  - (# of tree sites) and the equipment used by the project
- Tree sites must be located within the boundary of an entity, and if determined by the physical area, owned and/or controlled by the entity.
- Eligible trees must be planted:
  - Along streets, in parks, city golf courses, cemeteries, near city buildings, greenbelts, city parking lots, and other public open space, or on private property in municipalities
  - Along streets, near classrooms, dorms, office buildings, near recreational fields and other facilities, in parking lots, arboretums, and other open space on educational campuses
  - In parks, streets, parking lots, private property, and open spaces by utilities

GHG Assessment Boundary *(Section 5)*

CLIMATE ACTION RESERVE

SSRs considered significantly affected by project activity:

- **Required**
  - Carbon stored in standing trees
  - GHG emissions (CO_2) from motor vehicles related to tree planting and maintenance activities
  - GHG emissions (CO_2) from equipment related to tree planting and care
- **Optional**
  - Reduced GHG emissions from energy conservation
  - Displaced GHG emissions from bioenergy

Leakage *(Section 5.2)*

- Increase in GHG emissions or decrease in sequestration caused by the project, but not accounted for within project boundary
- Most likely form of leakage is the shifting of funds and maintenance from non-project trees to project trees within an entity
  - Annual expenditures examined to determine if there is leakage (using information from the Tree Maintenance Plan – Section 9.1).
  - If leakage is confirmed, no carbon reductions can be registered in that year
- Market leakage not considered

GHG Reduction Calculation Methods *(Section 6)*

- **Emissions and Removals Reported to the Reserve:**
  - Carbon storage in standing trees: *Annual Project CO2 Sequestration*
  - GHG emissions from motor vehicles related to tree planting, care, and monitoring: *Annual Vehicle CO2 Emissions*
  - GHG emissions from equipment related to tree planting and care: *Annual Equipment CO2 Emissions*
- *General Equation for determining annual project GHG reductions:*

Annual Project GHG Reductions =
Annual Project CO2 Sequestration minus Annual Vehicle CO2 Emissions minus Annual Equipment CO2 Emissions

Quantifying Project CO_2 Sequestration *(Section 6.1)*

- Each year the Project Developer estimates the amount of carbon stored in eligible trees and uses the data to calculate an annual incremental carbon stock change
- The annual change in carbon stocks is the basis for estimating carbon sequestration
- Reported in units of carbon dioxide equivalent (CO_2e)

Annual Project Sequestration =

CO_2 stock $_{\text{year x}}$ – CO_2 stock $_{\text{year x-1}}$

Quantifying Tree Carbon Stocks *(Section 6.1.1)*

CLIMATE ACTION RESERVE

- Direct measurement and approved models are basis for quantifying carbon stocks in eligible projects
- There are 3 approved methods for quantifying carbon stocks:
  1. All project trees measured in a single year at 10 year intervals
  2. All project trees measured every 10 years using a rolling sample
  3. Measure a sample of trees each year and extrapolate to the entire population
- Guidance on implementing these approaches can be found in Appendix B, C, D of the protocol

Quantifying Tree Carbon Stocks *(Continued)*

- The Tree Monitoring Plan should clearly describe the approach employed to quantify the project carbon stocks
- Minimum data required to quantify stocks:
  - Species
  - Diameter at Breast Height
  - Diameter at Root Collar
  - Tree Height
  - Remote Sending Crown Projection Area (CPA)
- If sampling is used carbon stock estimates must meet a minimum confidence level of 90%.
  - Sampling designs that result in lower levels of confidence must take a deduction

Quantifying GHG Emissions

(Section 6.2 – 6.4)

CLIMATE ACTION RESERVE

- Vehicle and equipment emissions associated with the project must be reported and deducted from carbon sequestered
- Motor vehicle emissions related to tree planting and care *(Section 6.2)*
  - $C_{vehicle\ emis} = (TC_g \times EF_g) + (TC_d \times EF_d)$
  - **TC** = total annual fuel consumption
  - **EF** = fuel emissions factor
- Fuel records may consist or bulk storage fuel purchases, collected fuel receipts, direct measurements (e.g. fuel logs)
- Default fuel emissions factors are found in the protocol
- If fuel use data is not available, it can be estimated from annual mileage

Quantifying GHG Emissions

(Continued)

- **Equipment emissions related to tree planting and care *(Section 6.3)***
  - Associated with back hoes used in planting, chain saws, aerial lifts, and chippers
  - If the amount of fuel used is known:
    - C equip emis = $(TC_g \times EF_g) + (TC_d \times EF_d)$
  - If equipment use is tracked in hours of use:
    - C equip emis = HRS x LF x HP x EF
    - HRS = hours used HP = maximum horsepower
    - LF = typical load factor EF = emissions factor

Quantifying GHG Emissions

(Continued)

- **Quantifying GHG Emissions from Vehicles and Equipment for Municipalities with Insufficient Data *(Section 6.4)***

  - Municipal projects may use a default EF equal to 4.17 kg CO2 per project tree per year to calculate the annual CO2 emissions from all, or a portion of, the tree planting and maintenance activities associated with a municipal urban forest project

Permanence *(Section 7)*

- 100 year standard for permanence (IPCC guidelines)
- To maximize likelihood that carbon is sequestered for at least 100 years. PDs must take these steps:
  - Report carbon stocks for 100 years.
  - Replace dead trees within 1 year
  - If reversals are not compensated for with replacement trees, CRTs must be retired in proportion to any reversals
- 3 main types of disturbances that influence the risk of future reversibility:
  - Land use change
  - Human disturbance
  - Natural disturbance
- Risks of reversibility should be carefully assessed and addressed in the initial project report

Co-Benefits and Negative Impacts *(Section 8)*

- Urban trees have GHG benefits in addition to those from sequestration.
- Co-benefits include:
  - GHG emissions reductions from energy conservation or bioenergy production
  - Air and stormwater quality improvement
  - Neighborhood revitalization
- **Co-benefits not credited**
- Negative impacts include:
  - Threats from invasive plants/pests/disease
  - Infrastructure damage

Project Monitoring
(Section 9)

- Monitoring requirements are divided into 3 categories:
  - Tree Maintenance Plan *(Section 9.1)* - used to assess leakage
  - Tree Monitoring Plan *(Section 9.2)* – used to verify GHG emissions and reductions
  - GHG Emissions and Sequestration Activity Data *(Section 9.3)* - used to verify GHG emissions and reductions

Reporting Parameters *(Section 10)*

- **Project Documentation Required for Project Registration**
  - Project Submittal form
  - Physical boundary map including anticipated tree sites, an outline of the entity boundary, and tree care facilities (i.e. location where vehicles and equipment are housed)
  - Tree monitoring plan
  - Tree maintenance plan
  - Signed Attestation of Title form
  - Signed Attestation of Regulatory Compliance form
  - Signed Attestation of Voluntary Implementation form
  - Verification Report
  - Verification Opinion
- **Project Documentation Required for Annual Monitoring**
  - Tree maintenance plan
  - Annual GHG reduction and removal calculation results

Reporting Parameters
(Continued)

CLIMATE ACTION RESERVE

- **Project Documentation Required for Ongoing Verification**
  - Tree monitoring plan
  - Tree maintenance plan
  - Signed Attestation of Title form
  - Signed Attestation of Regulatory Compliance form
  - Signed Attestation of Voluntary Implementation form
  - Verification Report
  - Verification Opinion

Reporting Period and Verification Cycle *(Section 11)*

- PDs must report GHG reductions resulting from planned tree planting activities during each reporting period
- A reporting period cannot exceed 5 years, and no more than 60 months of data can be verified at once
- All projects must go through verification within 30 months of being submitted to the Reserve (initial verification)
- After a project is registered is must undergo verification with a site visit once every six years (ongoing verification)
- Projects can be verified through a desktop review in between site visits for CRT issuance

CLIMATE ACTION RESERVE

ISSUES TO ADDRESS IN THE REVISION PROCESS

Priority Issues to Address

- Updates to performance standard
- Inclusion of additional project activities
- Accounting for reversals
  - Buffer pool
- Monitoring efficiencies
- Ownership
- Aggregation
- Improving quantification
  - Updating inventory estimates
- Verification improvements and efficiencies
- Generally clarify language and remove ambiguity

CLIMATE ACTION RESERVE

EXPECTATIONS OF WORKGROUP PARTICIPATION

Open Development Process

- Transparency is an important principle
- We are striving for an open process:
  - The website will have meeting logistics and information
  - All agendas, presentations and other materials will be posted
  - Workgroup meetings will be open to the public in real time (listen-only)
  - After the meetings a video recording of webinars will be posted (if technically feasible)

http://www.climateactionreserve.org/how/protocols/urban-forest/rev/

Workgroup Member Role

- Participate in workgroup meetings
  - 3 or 4 in-person meetings
  - Monthly conference calls
- Participate in subcommittees
  - Calls approximately every week (as needed)
- Provide written comments on protocol drafts
- Serve as a resource to Reserve staff throughout process

Observer Role

- Listen in to workgroup meetings
- Provide written comments on protocol drafts
- Submit any questions or comments to:

  policy@climateactionreserve.org

Staff Role

- Ensure protocol meets Reserve's standards and is aligned with Reserve's principles
- Facilitate workgroup and subcommittee discussions
- Maintain transparent development process with workgroup and other stakeholders
- Oversee drafting of protocol revisions
- Respond to public comments on the protocol
- Integrate new protocol version into Reserve program
- Support implementation and feedback processes

Protocol Decision-Making

- Strive for workgroup consensus during decision-making
- Focus on priority issues identified for revision
- Climate Action Reserve has pre-defined program rules for certain protocol elements
  - Detailed in the Reserve Program & Verification Manuals

http://www.climateactionreserve.org/how/program/program-manual/

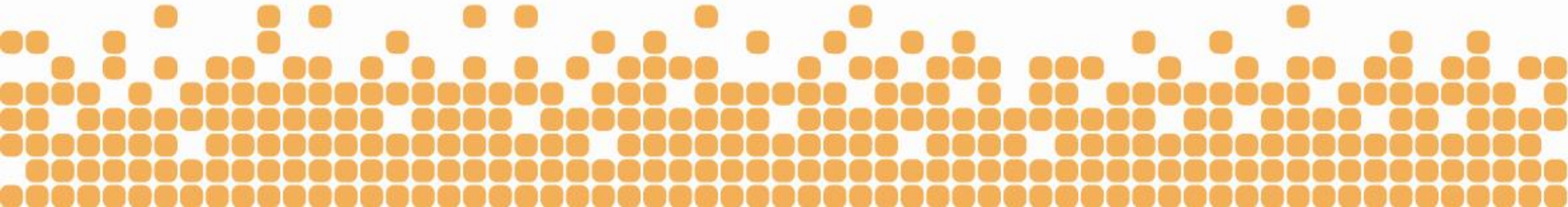
CLIMATE ACTION RESERVE

NEXT STEPS

Protocol Revision Timeline

CLIMATE ACTION RESERVE

Workgroup forms and meets	March – May, 2013
Develop First Draft	June – August, 2013
Review and Revise First Draft	September, 2013
Second In-person Workgroup Meeting	TBD
Develop Second Draft	October to December, 2013
Review and Revise Second Draft	January, 2014
Public Comment Period and Workshop	February, 2014
Third In-person Workgroup Meeting	TBD
Develop Final Draft	March, 2014
Final Draft to Reserve Board for Adoption	April, 2014



Subcommittees

- *Quantification* –to focus on efficient estimation of carbon inventories
- *Legal* – to focus on eligibility and ownership issues
- *Verification* - to develop verification language
- Others?

Critical Dates

- Next full workgroup meeting
- First subcommittee meetings
- Next in-person meeting