CITY FOREST CREDITS

Appendix D

Permanence, Timing of Crediting, and Performance Standard Methodology

Version 8

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The Planting Protocol required careful analysis and application of three particular protocol principles – project duration (or permanence), timing of the issuance of credits (ex post versus ex ante credits), and additionality as it relates to a project-specific baseline or a performance standard baseline methodology, legal requirements tests, and requiring duration commitments additional to any of those currently practiced. This Appendix D summarizes key elements of the Drafting Group's analysis and discussion of these three protocol elements.

The Drafting Group developed specific elements to address these three protocol elements. It also developed the Performance Guarantee of a retired ACR or Verra credit for each City Forest Carbon+ Credit as a supplemental way to address these three protocol elements beyond the specific requirements imposed by the Planting Protocol on city forest planting projects. The retired ACR or Verra credit provides the atmospheric reduction of an offset credit that meets standards of permanence, ex post crediting, and additionality.

As noted in the introduction to the Protocol, the Drafting Group was highly aware that the two prior urban forest protocols have had no applicants. Four members of our Drafting Group served on the 2013 CAR work group. The Drafting Group had little interest in a protocol that could not be implemented, particularly in light of the urban forest as a public resource that delivers climate action far beyond carbon dioxide storage. It has never more important to develop a protocol that meets consensus standards and ICROA standards and is also workable. The Drafting Group describes below its analysis of these issues.

1. Permanence

The Protocol Drafting Group was unanimous in believing that the longest possible project duration commitment that could be made by planting project operators would be 25 years. Elected and agency officials in cities as well as local non-profit tree organizations simply do not have the money and will not take the risk of a longer commitment for expensive planting projects.[1] Given that almost all planting projects will be done on public property like park land, it is highly likely that these public project trees will remain long past 25 years. But city officials and non-profit tree organizations will not be willing to enter into planting projects with a duration commitment longer than 25 years.

A 25-year project duration period could be defended for the following reasons:

- The urgency contained within the scientific conclusions of the IPCC, 2018: Global warming of 1.5°C is likely to occur by 2030 without immediate action that goes beyond any current efforts
- The scientific and policy considerations that recognize the many environmental, social, and economic benefits of city forests
- The fact that city forests are essentially public resources
- The fact that most city forest projects will be on public property and thus will likely last beyond 25 years

[1] Note that cities and counties will commit to 40 and even 100 year easements and recorded encumbrances for preservation projects, in contrast to planting projects. When a city or county preserves forested urban land, it usually does so with a recorded encumbrance and has made the commitment financially to preserve that land for public accessibility, as a park for example.

- Project operators have every incentive to maintain city forest projects after 25 years. City trees are not grown for harvest, so there is no monetization for city trees other than through carbon or ecosystem credits. Project Operators are thus highly motivated to obtain credits for additional growth beyond 25 years. In addition, most project costs are expended in planting and early survival, so those costs are sunk by year 25. Carbon revenues after year 25 are not eroded by the high costs of planting and early maintenance

- The "permanence" standard has shown a malleability not entirely consistent with the finality implied in the word "permanence" itself. Voluntary forest standards have evolved from 100 years in CAR's protocols to a variety of methods that essentially reduce that period or make it possible to meet a "permanence" requirement through various risk assessments and other mechanisms.

But rather than stake the credibility of the Planting Protocol on an extended defense of a 25-year project duration, the Drafting Group developed the Performance Guarantee program. At any buyer's request, each CFC Credit contains an ACR or Verra credit that has already removed one ton of CO2e from the atmosphere and meets a full permanence standard, as well as all other ICROA standards for crediting set out in ICROA Offset Standard Review Criteria, Essential Criteria, Section 5 (2017). The buyer obtains a City Forest Carbon+ Credit, including both the ACR/Verra credit and the quantified CO2 reduction and quantified co-benefits issued under and subject to all of the criteria, standards, and requirements of the City Forest Planting Protocol.

2. Timing of Credit Issuance (ex post and ex ante crediting)

The Drafting Group was also aware that almost all planting projects in cities require up-front or early funding. Projects cannot wait for 25 years to receive funding, and there are no realistic financing mechanisms to fund planting and early maintenance. Yet, as noted in the protocol and in the White Paper, there are extremely strong practical and policy reasons in favor of encouraging city forest projects. And because public funding is pervasively inadequate, any revenue from carbon credits is a significant benefit.

To strengthen the rigor and stringency of credit issuance, the Drafting Group developed a process for credit issuance that provides for credits to be issued upon certain survival milestones and after sampling, quantification, and verification. See Section 9 of the Protocol.

Specifically, the credits are based on survival and on estimated carbon storage over a 25-year project duration, minus deductions for a buffer pool, deductions for project mortality of 20% at initial crediting, deductions for actual mortality at two intervals, and for a retainage of 20% of credits until the end of the 25-year project duration.

Despite these multiple safeguards, the Drafting Group recognized that some of these credits will be issued before the end of the project and thus would be viewed as ex ante credits. Notwithstanding some movement toward ex ante or "forward" crediting, as in CAR's Climate Forward program, the Drafting group understands the disfavor of ex ante credits, no matter the value of city forests or their decline. Accordingly, the Drafting Group developed its program for Ex Post Performance Guarantee for the City Forest Carbon+ Credits. The retired ACR or Verra credit provides the ex post atmospheric reduction of CO_2e. The CO_2 stored and the quantified rainfall interception, air quality, and energy savings of the City Forest

Carbon+ Credit are all in addition to the atmospheric benefit of the retired ACR or Verra credit.

Some commentators have asked how the City Forest Carbon+ Credit can afford to include a retired ACR or Verra credit. The answer to that question is that Project Operators are not offering City Forest Carbon+ Credits to compete on price with other credits. The City Forest Carbon+ Credits are extremely valuable to buyers as well as to cities. The quantified co-benefits alone are worth far more in dollar value of avoided costs than the carbon at current carbon prices in the voluntary market. In addition, Carbon+ Credits offer many other environmental, social, and economic benefits, with all of the benefits being delivered in cities and towns, where people live and work. The media value to buyers is very high, because urban populations have high numbers of customers, employees, and voters. And many entities, from the City of Austin to private-sector companies, seek a locally sourced credit. So, Project Operators are offering the City Forest Credits as premium credits, with room in the pricing to include a retired ACR or Verra credit.

3. Additionality and the Performance Standard Baseline per WRI GHG Protocol

Additionality is often applied only on a project-specific basis, with the specific project being required to show that it reduced emissions (or removed them from the atmosphere) beyond its business-as-usual practices.

In the urban forest context, this produces immediate anomalies:

- Organizations that plant trees on a regular basis and who begin carbon projects would get far fewer carbon credits than entities with no historical commitment to urban trees. To use the language of baselines, the baseline of

entities that plant trees would be the trees they have annually planted, while the baseline of entities that plant no trees would be zero.

  - The City of Los Angeles has launched its Million Tree LA initiative (now CityPlants). These voluntarily planted trees would generate no carbon credits for LA, whereas a city like Bakersfield, which plants few to no trees, would get carbon credits for every tree it planted.

  - The same anomaly would occur for an entity like the Sacramento Municipal Utility District, which voluntarily plants thousands of trees per year.

- If additionality is applied inflexibly on a project-specific basis, then entities that plant trees now would have the perverse incentive to stop their planting, even temporarily, to bring their own business-as-usual baseline to zero.

- Governments with progressive tree ordinances or land use regulations that seek to increase canopy cover, would get fewer carbon credits because trees planted per their regulations would be part of their baseline and thus not eligible for crediting. Inflexible application of this "legal requirements" test leads to the perverse incentive for cities to leave their trees unregulated and unprotected.

Performance Standard Methodology

But there is a second additionality methodology set out in the WRI GHG Protocol guidelines – the Performance Standard methodology. This Performance Standard essentially allows the project developer, or in our case, the developers of the protocol, to create a performance standard baseline using the data from similar activities over geographic and temporal ranges.
We understand that a common perception, particularly in the United States, is that projects must meet a project specific test. Project-specific additionality is easy to grasp conceptually. The 2014 Climate Action Reserve urban forest protocol essentially uses project-specific requirements and methods.

However, the WRI GHG Protocol clearly states that either a project-specific test or a performance standard baseline is acceptable.[2] One key reason for this is that regional or national data can give a more accurate picture of existing activity than a narrow focus on one project or organization.

Narrowing the lens of additionality to one project or one tree-planting entity can give excellent data on that project or entity, which data can also be compared to other projects or entities (common practice). But plucking one project or entity out of its regional or national context ignores all comparable regional or national data. And that regional or national data may give a more accurate standard than data from one project or entity.

By analogy: one pixel on a screen may be dark. If all you look at is the dark pixel, you see darkness. But the rest of screen may consist of white pixels and be white. Similarly, one active tree-planting organization does not mean its trees are

[2] WRI GHG Protocol, Chapter 2.14 at 16 and Chapter 3.2 at 19.

additional on a regional basis. If the region is losing trees, the baseline of activity may be negative regardless of what one active project or entity is doing.

Here is the methodology described in the WRI GHG Protocol to determine a Performance Standard baseline, together with the application of each factor to urban forestry:

Table 2.1 Performance Standard Factors

WRI Perf. Standard Factor	**As Applied to Urban Forestry**
Describe the project activity	Increase in urban trees
Identify the types of candidates	Cities and towns, quasi-governmental entities like utilities, watersheds, and educational institutions, and private property owners
Set the geographic scope (a national scope is explicitly approved as the starting point)	Could use national data for urban forestry, or regional data
Set the temporal scope (start with 5-7 years and justify longer or shorter)	Use 4-7 years for urban forestry
Identify a list of multiple baseline candidates	Many urban areas, which could be blended mathematically to produce a performance standard baseline

The Performance Standard methodology approves of the use of data from many different baseline candidates. In the case of urban forestry, those baseline candidates are other urban areas.[3]

As stated above, the project activity defined is obtaining an increase in urban trees. The best data to show the increase in urban trees via urban forest project activities is national or regional data on tree canopy in urban areas. National or regional data will give a more comprehensive picture of the relevant activity (increase in urban trees) than data from one city, in the same way that a satellite photo of a city shows a more accurate picture of tree canopy in a city than an aerial photo of one neighborhood. Tree canopy data measures the tree cover in urban areas, so it includes multiple baseline candidates such as city governments and private property owners. Tree canopy data, over time, would show the increase or decrease in tree cover.

Data on Tree Canopy Change over Time in Urban Areas

Our quantitative team determined that there were data on urban tree canopy cover with a temporal range of four to six years available from four geographic regions. The data are set forth below:

[3] See Nowak, et al. *"Tree and Impervious Cover Change in U.S. Cities,"* Urban Forestry and Urban Greening, 11 (2012), 21-30

Table 2.2 Changes in Urban Tree Canopy (UTC) by Region (from Nowak and Greenfield, 2012, see footnote 7)

City	Abs Change UTC (%)	Relative Change UTC (%)	Ann. Rate (ha UTC/yr)	Ann. Rate (m2 UTC/cap/yr)	Data Years
EAST					
Baltimore, MD	-1.9	-6.3	-100	-1.5	(2001–2005)
Boston, MA	-0.9	-3.2	-20	-0.3	(2003–2008)
New York, NY	-1.2	-5.5	-180	-0.2	(2004–2009)
Pittsburgh, PA	-0.3	-0.8	-10	-0.3	(2004–2008)
Syracuse, NY	1.0	4.0	10	0.7	(2003–2009)
Mean changes	-0.7	-2.4	-60.0	-0.3	
Std Error	0.5	1.9	35.4	0.3	
SOUTH					
Atlanta, GA	-1.8	-3.4	-150	-3.1	(2005–2009)
Houston, TX	-3.0	-9.8	–890	-4.3	(2004–2009)
Miami, FL	-1.7	-7.1	-30	-0.8	(2003–2009)
Nashville, TN	-1.2	-2.4	-300	-5.3	(2003–2008)
New Orleans, LA	-9.6	-29.2	–1120	-24.6	(2005-2009)
Mean changes	-3.5	-10.4	-160.0	-7.6	

City	Abs Change UTC (%)	Relative Change UTC (%)	Ann. Rate (ha UTC/yr)	Ann. Rate (m2 UTC/cap/yr)	Data Years
Std Error	1.6	4.9	60.5	4.3	
MIDWEST					
Chicago, IL	-0.5	-2.7	-70	-0.2	(2005–2009)
Detroit, MI	-0.7	-3.0	-60	-0.7	(2005–2009)
Kansas City, MO	-1.2	-4.2	-160	-3.5	(2003–2009)
Minneapolis, MN	-1.1	-3.1	-30	-0.8	(2003–2008)
Mean changes	-0.9	-3.3	-80.0	-1.3	
Std Error	0.2	0.3	28.0	0.7	
WEST					
Albuquerque, NM	-2.7	-6.6	-420	-8.3	(2006–2009)
Denver, CO	-0.3	-3.1	-30	-0.5	(2005–2009)
Los Angeles, CA	-0.9	-4.2	-270	-0.7	(2005–2009)
Portland, OR	-0.6	-1.9	-50	-0.9	(2005–2009)
Spokane, WA	-0.6	-2.5	-20	-1.0	(2002–2007)
Tacoma, WA	-1.4	-5.8	-50	-2.6	(2001–2005)
Mean changes	-1.1	-4.0	-140.0	-2.3	
Std Error	0.4	0.8	67.8	1.2	

These data have been updated by Nowak and Greenfield.[4] The 2012 data show that urban tree canopy is experiencing negative growth in all four regions. The 2018 data document continued loss of urban tree cover. Table 3 of the 2018 article shows data for all states, with a national loss of urban and community tree cover of 175,000 acres per year during the study years of 2009-2014.

To put this loss in perspective, the total land area of urban and community tree cover loss during the study years totals 1,367 square miles – equal to the combined land area of New York City, Atlanta, Philadelphia, Miami, Boston, Cleveland, Pittsburgh, St. Louis, Portland, OR, San Francisco, Seattle, and Boise.

Even though there may be individual tree planting activities that increase the number of urban trees within small geographic locations, the performance of activities to increase tree cover shows a negative baseline. The Drafting Group did not use negative baselines for the Tree Planting Protocol, but determined to use baselines of zero.

Our deployment of the Performance Standard baseline methodology for a City Forest Planting Protocol is supported by conclusions that make sense and are anchored in the real world:

- With the data showing that tree loss exceeds gains from planting, new plantings are justified as additional to that decreasing canopy baseline. In fact, the negative baseline would justify as additional any trees that are protected from removal.

[4] Nowak et al. 2018. "Declining Urban and Community Tree Cover in the United States," *Urban Forestry and Urban Greening,* 32, 32-55

- Because almost no urban trees are planted now with carbon as a decisive factor, urban tree planting done to sequester carbon is additional;

- Almost no urban trees are currently planted with a contractual commitment for monitoring. Maintenance of trees is universally an intention, one that is frequently reached when budgets are cut, as in the Covid-19 era. The 25-year commitment required by this Protocol is entirely additional to any practice in place in the U.S. and will result in substantial additional trees surviving to maturity;

- Because the urban forest is a public resource, and because public funding falls far short of maintaining tree cover and stocking, carbon revenues will result in additional trees planted or in maintenance that will result in additional trees surviving to maturity;

- Because virtually all new large-scale urban tree planting is conducted by governmental entities or non-profits, or by private property developers complying with governmental regulations (which would not be eligible for carbon credits under our protocol), and because any carbon revenues will defray only a portion of the costs of tree planting, there is little danger of unjust enrichment to developers of city forest carbon projects.

Last, The WRI GHG Protocol recognizes explicitly that the principles underlying carbon protocols need to be adapted to different types of projects. The WRI Protocol further approves of balancing the stringency of requirements with the need to encourage participation in desirable carbon projects:

Setting the stringency of additionality rules involves a balancing act. Additionality criteria that are too lenient and grant recognition for "non-additional" GHG reductions will undermine the GHG program's effectiveness. On the other hand, making the criteria for additionality too stringent could unnecessarily limit the number of recognized GHG reductions, in some cases excluding project activities that are truly additional and highly desirable. In practice, no approach to additionality can completely avoid these kinds of errors. Generally, reducing one type of error will result in an increase of the other. Ultimately, there is no technically correct level of stringency for additionality rules. GHG programs may decide based on their policy objectives that it is better to avoid one type of error than the other.[5]

The policy considerations weigh heavily in favor of "highly desirable" planting and preservation projects to reverse tree loss for the public resource of city forests. Additionality is satisfied through the three elements contained herein:

- the legal requirements test in Section 4.1,
- the performance standard method articulated in the WRI GHG Protocol as applied above, and
- the Performance Guarantee of an ACR or Verra credit retired for each City Forest Carbon+ Credit issued.

Additionality is strengthened by the following:

- Because almost no urban trees are currently planted with more than a 3-year commitment, the 25-year commitment required by this Protocol will result in substantial additional trees surviving to maturity;

[5] WRI GHG Protocol, Chapter 3.1 at 19.

- Because the urban forest is a public resource, and because public funding falls far short of maintaining tree cover and stocking, carbon revenues will result in additional trees planted or maintenance that will result in additional trees surviving to maturity.