Urban Tree Planting → *Expanded Tree Cover*

For this BMP, we are proposing to change the name and definition to more directly address what will improve water quality—tree cover. We always needed to show that the practice represented a net gain in tree or canopy cover. Tree cover improves water quality in the following ways: interception, infiltration, and evapo-transpiration. All of these reduce stormwater volume; infiltration also reduces concentration of pollutants.

Current Urban Tree Planting Definition: *Planting trees in an urban or residential environment, with the intent to increase and sustain the tree canopy. Planting 100 trees is equivalent to converting one acre of urban land to forest. Tree replacement may need to occur but cannot be "counted" as an additional planting.*

Proposed Expanded Tree Cover Definition: *Increase area of tree cover within a reporting jurisdiction. The primary strategies for expanding tree cover include 1) conserving existing tree cover as much as possible, 2) planting trees, and 3) allowing for natural regeneration. Credit is applied according to the number of new acres intended for tree cover (# 2 or 3 above). Planting 100 trees is equivalent to one acre of new tree cover (#2). Area of intended tree canopy via natural regeneration should be a minimum of ¼ acre (or adjoin to existing forest) and maintained such that after 3 years there is a density of at least 100 tree stems/acre, not counting invasive species.*

There are two steps needed to implement this practice to its fullest potential:
1) Report acres of new tree cover annually; and
2) Periodically verify that overall tree cover is maintained or is increasing.

Expanded Tree Cover BMP Principle

Ensure that any new acreage of tree cover represents a ***net gain*** in overall tree cover for a reporting jurisdiction:

- Laws or ordinances exist that encourage conservation of existing tree cover
- Monitoring and maintenance occurs on all acres of tree cover, whether new or existing (e.g., all community street trees are watered thoroughly during periods

of drought or when less than 1 inch of rain falls within a 10-day period). New plantings are validated by a professional.

- Some analysis of loss of tree cover within the reporting jurisdiction is used to adjust what would otherwise be reported as new acres of tree cover.
- Landowner education of tree care and placement (instruct about trees being planted in the proper location, e.g., avoid planting large trees under utility lines, and avoid planting trees that are not salt-tolerant along roadways.)

Protocol 1: **Urban forestry programmatic support**

A. The local jurisdiction that has an urban forestry program (a.k.a. partner or staff) that is trusted by the state forestry agency, and is likely to satisfy the above 4 principle bullets, would receive ***full credit*** (100%) for the expanded tree cover practice as reported.

> **Definition of "trusted urban forestry partner"**—Local government staff or non-governmental partner detailed to ensure the health and expansion of the jurisdiction's tree cover. The state should establish a roster of jurisdictions with trusted forestry partner to assure practice is implemented effectively.

B. Jurisdictions without a trusted urban forestry partner/staff would be discounted 40% for uncertainty of survival/net gain in tree cover.

C. An additional discount (70%) is applied if a proxy for trees "trees sold" or simply a website submission is used and trees were neither monitored nor otherwise validated by a professional.

Suggested Credit Based on Likelihood to Attain a Net Gain in Tree Cover		
Category A	Urban forest partner and evidence of net gain	Full credit (100%) for practice as reported
Category B	No urban forest partner or no evidence of net gain	60% credit for practice as reported
Category C	None of the above and using a proxy for trees planted	30% credit for practice as reported

Protocol 2: Data Collection

A. Maintain database at local level of each new planting or regeneration area.

1. **For new plantings,** data to be recorded includes: acres of planting (if appropriate), dates, number and stature of trees (large, medium, small), whether planting was designed or engineered to receive stormwater run-off (e.g., continuous tree pits, notched curbs, etc.), type of planting (e.g., whether trees will be open grown with no forest understory, whether they will be allowed to develop a forest understory, or are adjoining an existing forest). These factors can make a difference in the pollution-reducing efficiency of the practice.
2. **For natural regeneration acres**, data to be recorded includes: acres of treatment, date started, and whether the regeneration area adjoins existing forest.

B. Produce annual report to appropriate state forestry contact for timely entry into NEIEN.

Protocol 3: Monitoring

A. For new plantings in groups, monitor and maintain annually for three years. Maintenance is usually by mowing or other form of weed suppression. Density of surviving trees at 3 years should be a minimum of 80 stems/acre. For new street tree or container box plantings, ensure survival after 3 years or replace.

B. For natural regeneration areas, monitor and maintain will at least twice/year to ensure weedy species are not suppressing desirable tree growth. Monitor and maintain for 5 years or until a minimum density of 100 tree stems/acre, not counting invasive species, is reached.

C. For existing tree cover within reporting area, monitor at least every 5 years using aerial imagery to ensure no overall loss. This should be done if data of tree loss is not directly tracked on an annual basis. An aerial assessment of change in tree cover can be done by comparing a recent aerial image to one from 3-5 years ago (could use rapid assessment tools such as iTree Canopy (v 5) or Land Image Analyst). If a state is monitoring tree cover for jurisdiction, 20% of reporting jurisdictions should be sampled annually using the mentioned tools or similar ones. Another aerial monitoring method is to compare existing tree cover to a previously established baseline Urban Tree Canopy assessment map. Whatever tool is being used, enough points should be sampled to reach a 90% confidence interval that tree canopy is stable or increasing in a reporting jurisdiction.

D. Projects not monitored as described should be discounted 40% as specified in Protocol 1 above.

Urban Riparian Forest Buffers

Verification of this practice is similar to the Expanded Tree Cover practice that was just discussed; both practices would share principles and protocols. Software tools and available aerial imagery have become prevalent and sophisticated enough to isolate urban riparian forests and determine a practice baseline for a reporting area. Urban riparian forest buffers are any riparian buffer not in agriculture or forest setting-- it must be on developed land. There are slight changes for this practice in Protocol 2 for Data Collection:

Maintain database at local level of each new planting or regeneration area.

1. **For new plantings,** data to be recorded includes: acres of planting (if appropriate), dates, width of planting, density of planting, and whether they will be allowed to develop a forest understory.
2. **For natural regeneration acres**, data to be recorded includes: acres of treatment, width, and date started.

Agricultural Riparian Forest Buffer and Tree Planting BMP Principle

Ensure that any new acreage of riparian forest buffer represents a ***net gain*** in overall buffer for a county or watershed segment:

- Laws or ordinances exist that encourage conservation of existing buffers
- Monitoring and maintenance occurs on USDA cost share projects and non-cost share alike.
- Some analysis of agricultural riparian buffer loss should be used to adjust what would otherwise be reported as a gain.

Protocol 1: Data Collection.

a. Review data reported as cost-share practice to ensure proper design and no double-counting.
b. Capture width of buffer in reporting documentation (not just acres of practice). Narrower buffers (>35' and <100') could eventually be discounted. (Could NRCS/FSA begin tracking buffer length or width?)
c. State forestry agency reviews cost-share project data from USDA/USGS prior to NEIEN input. This should include both riparian forest buffers and tree planting.
d. Work to establish a unique identifier for each project to avoid duplicate records (USDA or USGS).
e. Need to differentiate re-enrolled CREP acres from new CREP acres (USDA action).

f. Details of non-cost shared buffers should be reported to the state by the primary partner to a degree similar to cost-share practice (i.e., acres, date, width, who planted, location).

Protocol 2: Monitor new plantings or regeneration areas, as well as loss or gain of existing riparian buffers.

a. For existing buffers, ascertain buffer baseline for a given area (watershed segment or hydrogeomorphic region) using high resolution imagery (Land Image Analyst or other tool). State should re-sample 20% of the area every 5 years to verify there has been a net gain in those watershed segments (or counties) reporting such. (Question about whether the state-level is the appropriate scale to show maintenance of buffer cover/have conservation policies in place.)
b. For new plantings, revisit 10% of new, non-cost share RFB installations after one year (in keeping with USDA cost-share practice).
c. Revisit at least 10% of projects every 5 years and 50% every 10-15 years to see that there is adequate survival (see "d" below) and proper sheet flow (no channelization through buffer) –see VA example. Remove practice from database/model if it is no longer there
d. Buffers to be maintained at no more than 80% canopy closure to encourage vertical structure (or basal area 60-80 ft2/acre) OR assess healthy condition of understory. Must have minimum 60% survival for re-enrollment.

Forest Harvesting BMP Protocol

Forest harvest acres need to tracked annually, and rate of BMP implementation need to be determined every 5-10 years by state (e.g., sampling or survey method is OK).

a. Need to distinguish forest harvesting from development (including shale gas). Sometimes developers claim a clearing is a forest harvest. One way to differentiate is to look for road development soon after "harvest".
b. Focus should be on those forest harvesting BMPs that are most important to water quality.
c. If states have information on forest harvesting (both public and private land), they can submit actual acres, overriding the 1% harvest rate assumption. States that don't track private land harvest should take further discount of forest harvest BMP from sampled rate.
d. States with regulations and monitoring programs in place should use the actual implementation of forest harvest BMPs in lieu of a sampling rate. Some states have more than one agency tracking/permitting. Could establish a field checklist for forest harvest site visits
e. To assure performance/effectiveness of practice, incorporate BMP monitoring to determine if a practice worked (WV example, and USFS BMP Monitoring protocol).