

Treasure Valley Municipal Parks Planting Project Project Design Document – Year 4

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INSTRUCTIONS

Project Operators must complete and submit this Project Design Document (PDD) to request credits after the third anniversary of the Credit Commencement Date. City Forest Credits then reviews this PDD as part of the validation process along with all other required project documents. An approved third-party verifier then does an independent check of all documents and compliance with the Protocol, known as verification. An updated PDD will need to be submitted for future verification at Year 6 and After Year 25.

Project Operators should enter data and supporting attachments starting on page 3 under Project Overview where you find "[Enter text here]" as thoroughly as possible and provide numbered attachments for maps and other documentation (ex: 1 – Regional Map). Keep all instructions in the document.

Below is a list of documents that are needed to complete a successful Year 4 Project Design Document:

For the Single Tree Planting Design:

- Carbon Quantification Year 4 Credit tool
- Tree Sampling Data
- Geocoded photos
- Project geospatial data, if there have been changes (KML file or shapefile)

For the Cluster Planting Design

- Project Area imaging from any telemetry, imaging, or remote sensing service
- i-Tree Canopy report
- i-Tree Canopy source data
- Project geospatial data, if there have been changes (KML file or shapefile)
- Carbon Quantification Year 4 Credit tool

For the Area Reforestation Planting Design (previously Canopy Design):

- Either:
 - Project Area imaging from any telemetry, imaging, or remote sensing service
 - i-Tree Canopy report
 - o i-Tree Canopy source data
- Or:
- Tree plot sampling data
- Project geospatial data, if there have been changes (KML file or shapefile)
- Carbon Quantification Year 4 Credit tool
- Summary of approach to quantifying the local CO₂ index

PROJECT OVERVIEW

Project Name: Treasure Valley Municipal Parks Planting
Project Number: 4
Project Type: Planting Project (under the Planting Protocol – version 9, dated February 7, 2021)
Project Start Date: June 9, 2021
Project Location: Boise, ID

Project Operator Name: Treasure Valley Canopy Network **Project Operator Contact Information:** Lance Davisson, 208-994-1135, director@tvcanopy.net

PROJECT AND PLANTING DESIGN UPDATES

Include information on changes to the project including tree survival, ownership, or other relevant updates.

The Treasure Valley Municipal Parks Planting Project is a partnership between the City of Boise and the Treasure Valley Canopy Network. This project planted 454 trees in 9 municipal parks throughout the Treasure Valley. This project used the single tree planting design.

There were no changes in ownership to the Project Site. The Project Site has been maintained and monitored by the City of Boise since the trees were planted.

Of the 167 trees sampled, trees a e died and a e not een epla ed and of these trees were replaced with the same species as originally planted.

CARBON QUANTIFICATION DOCUMENTATION (Section 12 and Appendix B)

Describe and summarize the planting design, sampling, and appropriate quantification/measurement method for the project – Single Tree, Clustered, or Area Reforestation. Include the project's climate zone and method of data collection. Outline the estimated total number of credits to be issued to the project over 25 years as well as the amount to be issued upon successful validation and verification in Year 4. Attach the quantification tool and appropriate sampling tool.

List of quantification Tools by planting method (CFC to provide guidance and resources):

- 1) Single Tree single tree quantification tool
- 2) Clustered cluster quantification tool
- 3) Area Reforestation quantification with CO₂ calculated per acre

To ensure performance of the credits, Project Operators must commit to the following at Year 4, with additional requirements at Year 6 and after Year 25 based on the appropriate quantification method.

- 1) Single Tree
 - a. <u>Year 4:</u> Project Operators must generate a random sample of project tree sites using the Single Tree Quantification Tool. Project Operators must visit those sampled tree sites and collect data on whether the sample contains a live tree, standing dead tree, or no tree.

Provide geocoded photos or imaging of a minimum sample of 20% of the trees. The tracking file includes a column where each tree is assigned a unique serial number to help with tracking each coordinate and tree picture or image.

- *i.* Based on this data, the number and species of project trees is adjusted and a new CO₂ projected amount by after Year 25 is generated.
- 2) Clustered
 - a. <u>Year 4</u>: Project Operators provide images of the Project Area from any telemetry, imaging, remote sensing, i-Tree Canopy, or UAV service, such as Google Earth and estimate the area in tree canopy cover (acres). Imaging from Google Earth with leaf-on may be used. Project Operators will calculate the percent of canopy cover from the Google Earth imaging. Projects can use i-Tree Canopy and point sampling to calculate canopy cover. Using i-Tree Canopy, continue adding points until the standard error of the estimate for both the tree and non-tree cover is less than 5%. i-Tree Canopy will supply you with the standard errors. If tree canopy cover is determined using another approach, such as image classification, a short description of the approach should be provided, as well as the QA/QC measures that were used. A tree cover classification accuracy assessment should be conducted, as with randomly placed points, and the percentage tree cover classification accuracy reported.
 - If the canopy coverage equals or exceeds 2.8% (400 trees per acre with an average canopy area of 3.14 square feet per tree (2-foot diameter of canopy) is 2.8% of an acre), then the credits projected in the Clustered Quantification Tool may be issued. If canopy coverage is below 2.8%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 2.8%.
- 3) Area Reforestation (formerly Canopy planting design)
 - a. <u>Year 4</u>: Project Operators must either conduct a physical tree count using plots or use imaging to determine canopy coverage at Year 4.
 - If the canopy coverage equals or exceeds 2.8% (400 trees per acre with an average canopy area of 3.14 square feet per tree (2-foot diameter of canopy) is 2.8% of an acre), then the credits projected in the Quantification Tool may be issued. If canopy coverage is below 2.8%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 2.8%.

Overview

The Project Operator planted 454 trees as part of this carbon project. The most common species include honeylocust, crabapple, and littleleaf linden. The Project Operator used the single tree planting method in the original design and quantification.

Data Collection

The City of Boise Forestry department collected survivorship data on the 167 randomly selected trees. CFC staff randomly selected the trees and City staff visited each tree, taking a geotagged photo and noting if the tree is alive, dead, missing, or replaced. Of the 167 trees sampled, 4 trees were dead and

have not been replaced. Three additional trees did die and have since been replaced. The overall tree mortality based on the sampling data is 2.4%. This is well below the 10% mortality deduction built into the original planting project.

Attachments: 2 TCVN Year 4_Quantification and data collection 3 TCVN Year 4 Geotagged Photos

Carbon Quantification

| Total number of trees planted | 454 |
|--|-----|
| Project area (acres), if applicable | NA |
| Total number of trees per acre, if applicable | NA |
| Credits attributed to the project (tCO2e) | 664 |
| Credits after mortality deduction (10% or insert observed mortality, if greater) | 598 |
| Contribution to Registry Reversal Pool Account (5%) (tCO2e) | 30 |
| Total credits to be issued to the Project Operator (tCO2e) | 568 |
| Total credits requested to be issued at Year 4 | 227 |

GHG Assertion:

Project Operator asserts that the Project results in GHG emissions mitigation of 568 tons CO_2e over the 25-year Project Duration. Project Operator asserts that, per Protocol guidelines, 40% of the Project GHG emissions mitigation is issued at Year 4, or 227 tons CO_2e .

The updated Projected CO_2 stored and credit issuance over 26 years is outlined below:

| Single Tree Plantings | Projection at Initial Crediting | Updated Projection at Year 4 |
|---|------------------------------------|---------------------------------|
| Total credits issued at Initial Crediting (10% CO2 (t)) | 57 | 57 |
| Total credits to be issued at Year 4 (40% CO2 (t)) | 227 | 227 |
| Total credits to be issued at Year 6 (30% CO2 (t)) | 170 | 170 |
| Total credits to be issued at Year 26 (20% CO2 (t)) | 114 | 114 |
| Total credits to be issued (tCO2e) | 568 | 568 |

Attachment: 2 TCVN Year 4_Quantification and data collection

CO-BENEFITS QUANTIFICATION DOCUMENTATION (Section 12 and Appendix A)

Summarize co-benefit quantification and provide supporting documentation. If necessary, update the CFC-provided Co-Benefits Quantification spreadsheet to calculate updated rainfall interception, reduction of certain air compounds, and energy savings.

| Ecosystem Services | Resource Units | Value |
|---------------------------------|----------------|-------------|
| Rainfall Interception (m3/yr) | 2,523.31 | \$5,199.38 |
| Air Quality (t/yr) | 0.0600 | \$1,445.61 |
| Cooling – Electricity (kWh/yr) | 84,571.85 | \$9,861.08 |
| Heating – Natural Gas (kBtu/yr) | 390,109.87 | \$4,854.67 |
| Grand Total (\$/yr) | | \$21,360.74 |

Attachment: 2 TCVN Year 4_Quantification and data collection

ADDITIONALITY (Section 4)

Complete and attach the Attestation of Additionality.

Additionality is demonstrated by Project Operators per the Protocol in the following ways and in the Attestation of Additionality. The Attestation of Additionality was not required to be signed in the Tree Planting Protocol Version 9, however Project Operator met the requirements and is submitting the Attestation with this Project Design Document update.

- Project trees are not required by law or ordinance to be planted (Protocol Section 2.2). See Attestation of Planting.
- The Project did not plant trees on sites that were forested and then cleared of trees within the prior ten years
- Project trees are additional based on a project specific baseline or the Performance Standard Baseline attached to this PDD.
- Project Operator has signed a Project Implementation Agreement with City Forest Credits for 25 years.
- The 25-year Project Duration commitment is additional to and longer than any commitment the Project Operator makes to non-carbon project tree plantings.
- Project Operator has signed the Attestation of Additionality.

Attachment: 4 TCVN Year 4_CFC Planting Attestation of Additionality

ADDITIONAL INFORMATION

Include additional information on changes to monitoring and reporting plans since the Initial Credit Planting Design Document was submitted.

No changes.

SIGNATURE

Signed on March 11th in 202 , by Lance Davisson, for Treasure Valley Canopy Network.

Lance Davisson

Signature

Lance Davisson
Printed Name

<u>208-994-1135</u> Phone

____director@tvcanopy.net_____ Email

ATTACHMENTS

For the Single Tree Planting Design:

- 1 Carbon Quantification Year 4 Credit tool
- 2 Tree Sampling Data
- 3 Geocoded photos
- 4 Project geospatial data (KML file or shapefile)

For the Cluster Planting Design

- 1 Project Area imaging from any telemetry, imaging, or remote sensing service
- 2 i-Tree Canopy report
- 3 i-Tree Canopy source data
- 4 Project geospatial data (KML file or shapefile)
- 5 Carbon Quantification Year 4 Credit tool

For the Area Reforestation Planting Design (previously Canopy Design):

- Either:
 - 1 Project Area imaging from any telemetry, imaging, or remote sensing service
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- 2 Project geospatial data (KML file or shapefile)
- 3 Carbon Quantification Year 4 Credit tool
- 4 Summary of approach to quantifying the local CO₂ index

Attachments

Single Tree

Carbon Quantification Year 4 Credit Tool – Single Tree & Sampling Data

Planting Attestation of Additionality

Geocoded Photos

Carbon Quantification Year 4 Credit Tool & Sampling Data – Single Tree

Directions

1) In Table 1 record the number of sites planted for each tree species.
2) if species are not listed, add them to the bottom of Table 1.

| Table 1. Planting List | | Tree-Type | No. Sites |
|---|---|--------------|-----------|
| Scientific Name | Common Name | Abbreviation | Planted |
| Tilia americana | American basswood | BDL | |
| Tilia americana | American basswood | BDL | |
| Castanea dentata | American chestnut | BDL | |
| Ulmus americana | American elm | BDL | |
| Ulmus americana | American elm | BDL | |
| llex opaca | American holly | BES | |
| Carpinus caroliniana Sorbus americana | American hornbeam American mountain ash | BDM BDS | - |
| Cotinus obovatus | American mountain asn American smoketree | BDS | |
| Platanus occidentalis | American sycamore | BDL | |
| Phellodendron amurense | Amur corktree | BDM | |
| Maackia amurensis | Amur maackia | BDM | |
| Acer ginnala | Amur maple | BDS | |
| Prunus armeniaca | apricot | BDS | |
| Fraxinus species | ash | BDL | |
| Cedrus atlantica | Atlas cedar | CEL | |
| Pinus nigra | Austrian pine | CEL | 3 |
| Taxodium distichum | bald cypress | BDL | |
| Taxodium distichum | bald cypress | BDL | |
| Populus balsamifera | balsam poplar | BDL | |
| Rosa banksiae | banksian rose; Lady Bank's rose | BDS | |
| Tilia species | basswood | BDL | |
| Fagus species | beech | BDL | |
| Populus grandidentata | bigtooth aspen | BDL | - |
| Acer grandidentatum | bigtooth maple | BDM | - |
| Betula species | birch black ash | BDM | - |
| Fraxinus nigra Populus trichocarpa | black ash black cottonwood | BDL BDL | |
| Populus tricnocarpa Robinia pseudoacacia | black locust | BDL | |
| Robinia pseudoacacia | black locust | BDL | |
| Acer nigrum | black maple | BDL | |
| Quercus velutina | black oak | BDL | |
| Quercus velutina | black oak | BDL | |
| Populus nigra | black poplar | BDL | |
| Picea mariana | black spruce | CEL | |
| luglans nigra | black walnut | BDL | |
| Salix nigra | black willow | BDM | |
| Salix nigra | black willow | BDM | _ |
| Viburnum prunifolium | blackhaw | BDS | - |
| Quercus marilandica | blackjack oak | BDM | - |
| Prunus blireiana Fraxinus quadrangulata | Blierana plum blue ash | BDS BDL | |
| Picea pungens | blue spruce | CEL | 2 |
| Acer negundo | boxelder | BDL | 2 |
| Broadleaf Deciduous Large Other | broadleaf deciduous large | BDL | |
| Broadleaf Deciduous Medium Other | | BDM | |
| Broadleaf Deciduous Small Other | broadleaf deciduous small | BDS | |
| Rhamnus species | buckthorn | BDS | |
| Quercus macrocarpa | bur oak | BDL | |
| Quercus macrocarpa | bur oak | BDL | |
| Sabal palmetto | cabbage palmetto | PEM | |
| Quercus kelloggii | California black oak | BDL | |
| Washingtonia filifera | California palm | PES | |
| Pyrus calleryana | Callery pear | BDM | |
| Populus x canadensis Gleditsia caspica | Carolina poplar Caspian locust | BDL BDM | |
| Fraxinus oxycarpa | Caucasian ash | BDM | |
| Cedrus species | cedar | CEL | - |
| Vitex agnus-castus | chaste tree | BDS | - |
| Prunus cerasifera | cherry plum | BDS | |
| Ulmus parvifolia | Chinese elm | BDL | |
| Ulmus parvifolia | Chinese elm | BDL | |
| Picea asperata | Chinese spruce | CEL | |
| Quercus muehlenbergii | chinkapin oak | BDL | |
| Quercus muehlenbergii | chinkapin oak | BDL | |
| Prunus virginiana | common chokecherry | BDS | 3 |
| Ptelea trifoliata | common hoptree | BDS | |
| Pyrus communis | common pear | BDM | _ |
| Diospyros virginiana | common persimmon | BDM | |
| Conifer Evergreen Large Other | conifer evergreen large other | CEL | |
| Conifer Evergreen Medium Other | conifer evergreen medium other | CEM CES | |
| Conifer Evergreen Small Other | conifer evergreen small other | BDS | |
| Salix matsudana Salix matsudana | corkscrew willow corkscrew willow | BDS | |
| Populus species | cottonwood | BDS | |
| Populus species Pinus coulteri | Coulter pine | CEL | |
| Malus species | crabapple | BDS | 5 |
| Magnolia acuminata | cucumber tree | BDL | |
| Cupressus species | cypress | CEL | |
| Cedrus deodara | deodar cedar | CEL | |
| Cornus species | dogwood | BDS | |
| Pseudotsuga menziesii | Douglas fir | CEL | |
| Amelanchier arborea | downy serviceberry | BDM | |
| Populus deltoides | eastern cottonwood | BDL | |
| Tsuga canadensis | eastern hemlock | CEL | |
| Tsuga canadensis | eastern hemlock | CEL | |
| luniperus virginiana | eastern red cedar | CEM | |
| Cercis canadensis | eastern redbud | BDS | _ |
| Pinus strobus | eastern white pine | CEL | - |
| JImus species | elm | BDL | |
| | elm | BDL | |
| | Engelmann engune | CEL | |
| Ulmus species Picea engelmannii Ulmus procera | Engelmann spruce English elm | CEL BDL | |

Table 2. Summary of Planting Sites

| Tree-Type Abbreviation | No. Sites Planted |
|------------------------|---|
| BDL | 184 |
| BDM | 59 |
| BDS | 90 |
| BEL | 0 |
| BEM | 0 |
| BES | 0 |
| CEL | 105 |
| CEM | 16 |
| CES | 0 |
| Total Sites Planted | 454 |
| | BDM BDS BEL BEM BES CEL CEM CES |

For black hills-densata spruce

For common chokecherry and common-canada red chokecherry

For crabapply, tschonoskii crabapple, and crabapple-spring snow

For serviceberry

For elm-prospector

| Quercus robur Iuglans regia | | | | |
|--|--|---|-------|--|
| | English oak English walnut | BDL BDL | | |
| Alnus glutinosa | European alder | BDL | | |
| raxinus excelsior | European ash | BDL | | |
| Fagus sylvatica | European beech | BDL | 1 | |
| Carpinus betulus | European hornbeam | BDM | 6 | |
| arix decidua | European larch | BDL | | |
| orbus aucuparia | European mountain ash | BDM | | |
| orbus aucuparia | European mountain ash | BDM | | |
| Betula pendula | European white birch | BDM | | |
| Abies species | fir | CEL | | |
| Forreya taxifolia Fraxinus ornus | Florida torreya flowering ash | CES BDM | | |
| Cornus florida | flowering dogwood | BDS | | |
| Prunus triloba | flowering plum | BDS | | |
| Sequoiadendron giganteum | giant sequoia | CEL | 10 | For dawn redwood |
| Ginkgo biloba | ginkgo | BDL | | |
| aburnum x watereri | golden chain tree | BDS | | |
| Coelreuteria paniculata | goldenrain tree | BDM | | |
| raxinus pennsylvanica | green ash | BDL | | |
| Crataegus viridis | green hawthorn | BDM | | |
| Eucommia ulmoides | hardy rubber tree | BDL | | |
| Crataegus species | hawthorn | BDS | 5 | For crusader-cruzam hawthorn and suksdorf's hawthorn |
| orylus species | hazelnut | BDS BDM | | |
| Acer campestre Carya species | hedge maple hickory | BDIM | | |
| inus wallichiana | Himalayan pine | CEM | | |
| ileditsia triacanthos | honeylocust | BDL | 54 | For honeylocust and shademaster honeylocust |
| lesculus hippocastanum | horsechestnut | BDL | 54 | |
| Inus cordata | Italian alder | BDM | 1 | |
| bies homolepis | Japanese fir | CEL | | |
| ophora japonica | Japanese pagoda tree | BDM | 9 | |
| ophora japonica | Japanese pagoda tree | BDM | | |
| tyrax japonicus | Japanese snowbell | BDS | | |
| yringa reticulata | Japanese tree lilac | BDM | | |
| Syringa reticulata | Japanese tree lilac | BDS | l | |
| Telkova serrata | Japanese zelkova | BDL | | |
| uniperus species | juniper | CEM | | |
| Cercidiphyllum japonicum Gymnocladus dioicus | katsura tree Kentucky coffeetree | BDM BDL | | |
| Pinus attenuata | knobcone pine | CEL | 4 | |
| Quercus glandulifera | Konara oak | BDM | | |
| Pyrus fauriei | Korean sun pear | BDS | | |
| Prunus serrulata | Kwanzan cherry | BDS | | |
| Quercus laurifolia | laurel oak | BDL | | |
| Cupressocyparis leylandii | Leyland cypress | CEL | 1 | |
| Syringa species | lilac | BDS | | |
| Pterostyrax corymbosa | little Epaulette tree | BDS | | |
| Tilia cordata | littleleaf linden | BDM | 35 | For american linden, american-redmond linden, littleleaf linden, and littleleaf-greenspir |
| Tilia cordata | littleleaf linden | BDM | | |
| Quercus virginiana | live oak | BDL | | |
| Quercus virginiana | live oak | BEL | | |
| Platanus acerifolia | London planetree | BDL BDM | 10 | For london planetree and london-bloodgood planetree |
| Magnolia species Fraxinus mandshurica | magnolia Manchurian ash | BDIM | | |
| Abies holophylla | Manchurian fir | CEL | | |
| Acer species | maple | BDL | 21 | For maple, crimson sunset maple, and pacific sunset maple |
| Washingtonia robusta | Mexican fan palm | PEM | 1 | |
| Albizia julibrissin | mimosa | BDM | | |
| Catalpa speciosa | northern catalpa | BDL | | |
| Celtis occidentalis | northern hackberry | BDL | 3 | For hackberry |
| Quercus rubra | northern red oak | BDL | | |
| Quercus rubra | northern red oak | BDL | 21 | |
| Thuja occidentalis | northern white cedar | CEL | | |
| Thuja occidentalis | northern white cedar | CEL | - | For New York, advances have a set to be a set of the second set of |
| Acer platanoides | Norway maple | BDM | 3 | For Norway-crimson king maple and norwegian sunset maple |
| Picea abies | Norway spruce | | | |
| Duercus species | | CEL | 3 | |
| | oak | BDL | 3 | |
| Aesculus glabra | oak Ohio buckeye | BDL BDL | 3 | |
| Aesculus glabra Crataegus monogyna | oak Ohio buckeye oneseed hawthorn | BDL BDL BDS | 3 | |
| Aesculus glabra Crataegus monogyna Picea orientalis | oak Ohio buckeye oneseed hawthorn Oriental spruce | BDL BDL BDS CEL | 3 | |
| Aesculus glabra Crataegus monogyna Picea orientalis Quercus aliena | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental white oak | BDL BDL BDS CEL BDL | 3 | |
| Aesculus glabra Crataegus monogyna Picea orientalis Quercus aliena Dther species | oak Ohio buckeye oneseed hawthorn Oriental spruce | BDL BDL BDS CEL | 3 | |
| Aesculus glabra Crataegus monogyna Dicea orientalis Quercus aliena Diter species Betula papyrifera | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental white oak other species paper birch | BDL BDL CEL BDL BDM BDL | | |
| Aesculus glabra Trataegus monogyna Trataegus monogyna Dicea orientalis Quercus aliena Dicher species Batula papyrifera Acer griseum | oak Ohio buckeye Oneseed hawthorn Oriental spruce Oriental white oak other species paper birch paper birch paperbark maple | BDL BDL BDS CEL BDL BDM | | |
| Aesculus glabra Irataegus monogyna Teceo orientalis Quercus aliena Dther species Betula papyrifera Acer griseum Malus pumila | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental white oak other species paper birch | BDL BDL BDS CEL BDL BDM BDL BDS | | |
| kesculus glabra Tataegus monogyna Tataegus monogyna Dicea orientalis Quercus aliena Dicher species Petula papyrifera Aetu griseum Malus pumila Trunus persica | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental white oak other species paper birch paperbark maple paradise apple | BDL BDL BDS CEL BDL BDM BDM BDL BDS BDM | | |
| Aesculus glabra Crataegus monogyna Neea orientalis Quercus aliena Dither species Betula papyrifera Aeter griseum Molus pumila Prunus persica Quercus palustris Quercus palustris | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental white oak other species paper birch paperbark maple paradise apple peach | BDL BDL BDS CEL BDL BDL BDL BDL BDL BDL BDL BDL BDL BDS BDL BDL BDL BDS BDL BDL | | |
| Aesculus glabra Irataegus manogyna Ireca orientalis Dither species Betula papyrifera Acer griseum Malus pumila "ununs persica Duercus palustris Quercus palustris Quercus palustris | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental white oak other species paper birch paperbark maple paradise apple peach pin oak pin oak pin e | BDL BDL BDS CEL BDM BDS BDM BDS BDL BDS BDL BDL BDS BDL BDL BDL BDS BDL BDL CEL | | For bosnian pine and limber pine |
| Duercus species Aesculus glabra Cretategus monogyna Dicea orientalis Duercus aliena Dauercus aliena Dether species Betula papyrifera Acer griseum Malus pumila Acer griseum Malus pumila Quercus polustris Duercus polustris Dirus species Pinus species | oak Ohio buckeye Onio seved hawthorn Oriental spruce Oriental white oak other species paper birch pagerbark maple paradise apple peach pin oak pin oak pine pinyon pine | BDL BDL BDS CEL BDL BDL BDM BDS BDM BDS BDL BDL CEL CEL CEL CEL CEL CEL CEL CES | | For bosnian pine and limber pine |
| Aesculus globra Crataegus monogyna Crataegus monogyna Nieceo orientolis Quercus aliena Others species Betula papyrifera Acer griseum Molus pumila Prunus persico Quercus polustris Quercus polustris Pinus species Pinus edulis | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental white oak other species paper birch paperbark maple paradise apple peach pin oak pin oak pin e pinyon pine plurm | BDL BDL BDS BDL BDM BDL BDS BDL BDL BDS BDL BDL BDL BDS BDL BDL BDL BDS BDL BDL BDL BDL BDL BDL BDL BDL | | For bosnian pine and limber pine |
| Aesculus glabra Irataegus manogyna Irataegus manogyna Ireca orientalis Dither species Setula papyrifera Acer griseum Malus pumila Tunus persica Quercus palustris Quercus palustris Pinus species Pinus dulis Prunus pecies | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental white oak other species paper birch paperbark maple paradise apple peach pin oak pin oak pin oak pine pinyen pine plum pond pine | BDL BDL BDS BDL BDL BDM BDM BDL CEL CEL CES BDS CEL CEL | | For bosnian pine and limber pine |
| Lesculus glabra Trataegus monogyna Trataegus monogyna Cirea orientalis Quercus olieno Dither species Evelua papyrifera Acter griseum Adus gumila Prunus persica Quercus palustris Quercus palustris Quercus palustris Quercus palustris Quercus palustris Pinus species Pinus serotina Tinus panderosa | oak Ohio buckeye oneseed hawthorn Oriental spruce Oriental spruce other species paper birch paperbark maple paradise apple peach pin oak pin oak pine pinyan pine plum pond pine ponderosa pine | BDL BDL BDS BDL BDL BDS BDL BDS BDL BDL CEL CEL CEL CES BDS CEL CEL CEL CEL CEL CEL CEL CEL CEL | | For bosnian pine and limber pine |
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| lesculus glabra rataegus monogyna rataegus monogyna rataegus monogyna ricea orientalis Juercus aliena Sther species telula papyrifera Lecer griseum Adus pumilo Trunus persica Juercus palustris Duercus palustris Duercus palustris Trunus persica Juercus palustris Duercus palustris Trunus persica Juercus palustris Trunus persica Juercus secolis Trunus exertina Trunus tellata duercus stellata duercus stellata duercus stellata duercus stellata duerus stellata duerus stellata duerus stellata duerus stellata duerus stellata duerus stellata dues in sis Leer trunctum Adrus rubra tetula nigra uniperus scopulorum alia graciistylo assafras aibidum erenoa repens | oak Ohio buckeye Ohio buckeye Oneseed hawthorn Oriental spruce Oriental spruce paper birch paper birch paradise apple paradise apple peach pin oak pin oak pin oak pine ponderosa pine post oak porterabapple purgleblow maple quaking aspen red maple red maple red maple red mulberry Kussian olive Sargent cherry Sassafras Saw palmetto | BDL BDL BDS BDM BDL BDS BDL BDL BDL BDL BDL CEL CEL CEL CEL CEL BDS BDL BDS BDL BDS CEL CEL CEL DDL BDS BDS BDS BDL BDS BDL BDL BDL BDL BDL BDL BDS BDL BDL BDS BDS BDL | | |
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| Aesculus glabra Crataegus monogyna Crataegus monogyna Crataegus monogyna Crataegus monogyna Dether species Betula papyrifera Aeer griseum Malus pumila Trunus persica Quercus palustris Quercus palustris Quercus palustris Quercus palustris Quercus dulis Trunus species Pinus secotina Pinus secotina Pinus secotina Quercus stellota Malus ioensis Acer truncatum Quercus stellota Martus ioensis Acer truncatum Quercus stellota Martus Construito Sasafras albidum Elaeagnus argentii Elaeagnus acutissima Quercus scopilolus Elaeagnus cautissima Quercus scopilolus Elaeagnus cautissima Quercus scopilolus Elaeagnus quertina Elaeagnus acutissima Quercus cocinea Pinus sylvestris Picea omorika Quercus Martuna Hitto acutian Construita Picea omorika Duercus Acutandii | oak Ohio buckeye Ohio buckeye Oriental spruce Oriental spruce oriental white oak other species paper birch paradise apple peach pin oak pin oak pine pinyon pine pond gradie pond gradie port gradie purpleblow maple quaking aspen red maple red maple red maple red maple red maple red maple says on the set of t | BDL BDL BDS BDM BDL BDM BDL BDS BDL CEL BDS BDL CEM BDL CEM BDL | | |
| Aesculus globra Cratoegus monogyna Dreca orientalis Quercus aliena Dther species Betula papyrifera Acer griseum Malus pumila Prunus persica Quercus polustris Diaces polustris Pinus species Mus seduis | oak Ohio buckeye Ohio buckeye Oriental spruce Oriental spruce Oriental spruce Oriental spruce other species paper birch paperbark maple paradise apple peach pin oak pine pin oak pine pin oak pine ponderosa pine post oak prairie crabapple purpleblow maple quaking aspen red maple red maple red maple red maple Roscy Mountaln juniper rosegold pussy willow Russian oliwe Sargent cherry sassafras Saw palmetto Sawtooth oak Scotch pine Scota, pine Sawtooth oak Scotch pine Scota, | BDL BDL BDS BDL BDM BDL BDM BDL BDS BDL BDS BDL CEL BDS BDL BDS BDL CEL CEL CEL BDS BDL BDS BDL BDL BDL CEM BDS BDL BDL BDL PES BDM BDL CEM CEM CEM CEM | | |

| Tilia tomentosa | silver linden | BDM | |
|-------------------------------|--------------------------|-----|----|
| Acer saccharinum | silver maple | BDL | |
| Ulmus rubra | slippery elm | BDL | |
| Cotinus coggygria | smoke tree | BDS | |
| Crataegus laevigata | smooth hawthorn | BDS | |
| Catalpa bignonioides | southern catalpa | BDM | |
| Quercus falcata | southern red oak | BDL | |
| Picea species | spruce | CEL | 1 |
| Pinus glabra | spruce pine | CEL | |
| Rhus typhina | staghorn sumac | BDS | |
| Acer saccharum | sugar maple | BDL | 3 |
| Rhus species | sumac | BDS | |
| Rhus species | sumac | BDS | |
| Quercus michauxii | swamp chestnut oak | BDL | |
| Quercus bicolor | swamp white oak | BDL | 5 |
| Pinus mugo | sweet mountain pine | CES | |
| Liquidambar styraciflua | sweetgum | BDL | 7 |
| Pinus cembra | Swiss stone pine | CEL | |
| Acer pseudoplatanus | sycamore maple | BDL | |
| Sapium sebiferum | tallowtree | BDM | |
| Ailanthus altissima | tree of heaven | BDM | |
| Liriodendron tulipifera | tulip tree | BDL | 24 |
| Nyssa sylvatica | Tupelo tree | BDM | |
| Corylus colurna | Turkish hazelnut | BDL | |
| Sciadopitys verticillata | umbrella pine | CEM | |
| Shrub | unknown shrub | BDS | |
| Unknown | unknown tree | BDM | |
| Viburnum species | viburnum | BDS | |
| Crataegus phaenopyrum | Washington hawthorn | BDM | |
| Quercus nigra | water oak | BEL | |
| Thuja plicata | western red cedar | CEL | |
| Thuja plicata | western red cedar | CEL | |
| Pinus monticola | western white pine | CEL | |
| Fraxinus americana | white ash | BDL | 5 |
| Abies concolor | white fir | CEL | - |
| Morus alba | white mulberry | BDM | |
| Quercus alba | white oak | BDL | |
| Populus alba | white poplar | BDL | |
| Picea glauca | white spruce | CEL | 23 |
| Salix species | willow | BDL | 8 |
| Salix species | willow | BDL | 0 |
| Quercus phellos | willow oak | BDL | |
| Quercus phellos | willow oak | BDL | |
| Ulmus alata | winged elm | BDL | |
| Salix x pendulina Wenderoth | Wisconsin weeping willow | BDL | |
| Ulmus glabra | Wych elm | BDL | |
| Cladrastis lutea | yellowwood | BDM | |
| Yucca species | yucca | PES | |
| Pinus flexilis 'Vanderwolf's' | Vanderwolf Pine | CEM | 3 |
| | | | - |
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For white ash and white-autumn purple ash

For willow, weeping willow, and weeping or peking-pendula willow

For Limber-Vanderwolfs Pyramid Pine

454

| Table 3. Sar | nple Size Calculator | |
|--------------|---|-------|
| Description | | Value |
| 1) | Margin of Error (15% required) | 15% |
| 2) | Confidence level (95% required) | 95% |
| 3) | Total number of project sites | 454 |
| 4) | Mean stored CO ₂ per tree (kg) | 765 |
| 5) | Standard deviation of stored CO ₂ (kg) | 725 |
| 6) | Expected proportion of tree survival (75% required) | 75% |
| | Calculated sample size | 167 |

Use the Sample Size Calculator that we provide to determine the number of sites to sample. We use the term "site" instead of "tree" because some planted trees may no longer be present in the sites where they were planted.

Directions

| Directions | |
|------------|---|
| | Margin of error, the default value of 15% is used. |
| | Confidence level, the default value of 95% is used. |
| | The total number of original sites is automatically filled in from the Planting List tab. |
| | 4) Mean stored CO_2 for all tree types 25 years after planting is automatically filled in from Table 4 below. |
| | Standard deviation of the average CO₂ stored for all tree types 25 years after planting is automatically filled in from the Table 4. |
| | Expected proportion of tree survival – for sampling purposes we conservatively estimate that 75% of |

the planted trees are expected to survive. This value is used as the default in the Sample Size Calculator.

| Age | BDL | BDM | BDS | BEL | BEM | BES | CEL | CEM | CES | Avg. | Std. Dev |
|-----|-------|-------|-------|--------|-------|-------|-------|-------|-----|------|----------|
| 5 | 22 | 70 | 20 | 148 | 50 | 13 | 1 | 11 | 15 | | |
| 10 | 331 | 203 | 99 | 505 | 169 | 60 | 15 | 53 | 33 | | |
| 15 | 939 | 432 | 239 | 1,200 | 396 | 150 | 76 | 133 | 60 | | |
| 20 | 1,725 | 769 | 429 | 2,336 | 765 | 288 | 219 | 256 | 98 | | |
| 25 | 2,587 | 1,224 | 659 | 3,985 | 1,318 | 478 | 472 | 422 | 148 | 765 | 725 |
| 30 | 3,452 | 1,797 | 913 | 6,178 | 2,099 | 725 | 857 | 629 | 211 | | |
| 35 | 4,275 | 2,481 | 1,177 | 8,893 | 3,160 | 1,031 | 1,390 | 876 | 288 | | |
| 40 | 5,037 | 3,260 | 1,437 | 12,051 | 4,555 | 1,400 | 2,083 | 1,157 | 380 | | |

| Directions | |
|--|--|
| | |
| At the time of data collection soon after planting, record the fo | lowing information: |
| -Date of data collection. | |
| Names of the crew that collected that data. | |
| At the time of data collection soon after planting record the fol | lowing information on each tree: |
| -Date planted | |
| dead or missing trees, the tree id#s will all be the same a | ee that was planted at the site. When each tree has just been planted, and there are not any s the site#s. As trees get replaced, the list of tree id#s will increase. In the example below, site# 1 originally tree #1 is now tree #4. If tree #4 is the next one at the project that gets replaced, that |
| -Site Id#, a unique number assigned to each spot a tree is | planted at. |
| -Species name (botanical name) | |
| -Latitude and Longitude (or x and y coordinates) of wher | e each tree is located. These data are used to accurately locate the site for remeasurement. |
| -Image#1, the unique number for the first image of this s | ite. |
| -Image#2, the unique number for the second image of the | is site taken at 90 degrees to the first. |
| To request Forward Credits, draw a random sample and record | these additional data on each tree site sampled. |
| -If the tree is alive, record if it is the original one planted | (original) or a replacement (replace#1, replace#2). |
| -Record if the tree is dead (standing) or missing (vacant s | ite). |
| -Date removed, the date when the tree was removed. | |
| -Date replaced, the date when the replacement tree was | planted. |
| -Notes, information concerning tree status, health, etc. | |
| During subsequent field sampling sessions you may find it help each tree. | ful to take a copy of your original data sheets along for reference when attempting to locate |

Data Collection Dates: Crew: Standing Live (Orig/Replace Date Date Tree ID # Image #1 Image #2 Dead or Notes Species #1/Replace #2) Removed Replaced Vacant Site FRAN-TR-P-80139 Chokecherry, Common ive FRAN-TR-P-80144 Oak, Northern Red Live FRAN-TR-P-80147 Chokecherry, Common Live FRAN-TR-P-80152 Maple, Crimson Sunset Live FRAN-TR-P-80155 Crabapple-Spring Snow Y Live FRAN-TR-P-80156 Crabapple-Spring Snow Live FRAN-TR-P-80157 Maple, Red Live FRAN-TR-P-80161 Pear, Callery or Flowering Live FRAN-TR-P-80162 Maple, Crimson Sunset Live FRAN-TR-P-80163 Crabapple-Spring Snow Live FRAN-TR-P-80164 Maple, Crimson Sunset Live MARI-TR-P-81254 inden, American-Redmond Replaced #1 - same species MARI-TR-P-81255 Linden, American-Redmond Live PIGR-TR-P-82057 Maple, Pacific Sunset Live Y PIGR-TR-P-82058 Linden, Littleleaf Live PIGR-TR-P-82059 Linden, Littleleaf Live PIGR-TR-P-82063 Honeylocust Live PIGR-TR-P-82064 Linden, Littleleaf Live PIGR-TR-P-82068 Honeylocust dead Х PIGR-TR-P-82071 Live Honeylocust PIGR-TR-P-82073 Honeylocust Live PIGR-TR-P-82074 Honeylocust Live PIGR-TR-P-82081 Spruce, Colorado or Blue Live PIGR-TR-P-82092 Chokecherry, Common-Canad Live PIGR-TR-P-82093 Chokecherry, Common-Canada Live PIGR-TR-P-82097 Chokecherry, Common-Canada Live PIGR-TR-P-82100 Honeylocust х Live BEQU-TR-P-82106 Oak, Northern Red Live BEQU-TR-P-82107 Oak, Northern Red Live BEQU-TR-P-82108 Oak, Northern Red Live BEQU-TR-P-82112 Serviceberry Х Live BEQU-TR-P-82114 Hawthorn, Suksdorf's Live BEQU-TR-P-82118 Hawthorn, Crusader-Cruzam Live BEQU-TR-P-82119 Willow, Weeping or Peking-Pe Live BEQU-TR-P-82121 Planetree, London-Bloodgood Live BEQU-TR-P-82125 Honeylocust, Shademaster Live BEQU-TR-P-82126 Honeylocust, Shademaster х Live BEQU-TR-P-82127 Honeylocust, Shademaster Live BEQU-TR-P-82128 Honeylocust, Shademaster Live BEOU-TR-P-82130 Honeylocust, Shademaster Live BEQU-TR-P-82133 Pagodatree, Japanese Live BEQU-TR-P-82136 Pagodatree, Japanese Live BEQU-TR-P-82142 Tuliptree Live BEQU-TR-P-82147 Birch Clump, Heritage River-C Live BEQU-TR-P-82148 Birch Clump, Heritage River-C ive MAGN-TR-P-82246 Crabapple ive MAGN-TR-P-82247 Crabapple Y Live MAGN-TR-P-82248 Crabapple v Live MAGN-TR-P-82251 Crabapple Live MAGN-TR-P-82252 Crabapple Live

| MAGN-TR-P-82254 MAGN-TR-P-82258 | | | | | | |
|--|---|---|---|--------|---|--|
| | Maple, Red | Х | Live | | | |
| MAGN-111-02230 | Spruce, White | X | Live | | | |
| | | | | | - | |
| MAGN-TR-P-82259 | Sweetgum | X | Live | | | |
| MAGN-TR-P-82270 | Spruce, White | X | Live | | | |
| MAGN-TR-P-82271 | Planetree, London | Х | Live | | | |
| MAGN-TR-P-82279 | Maple, Crimson Sunset | Х | Live | | | |
| MAGN-TR-P-82280 | Maple, Crimson Sunset | Х | Live | | | |
| MAGN-TR-P-82281 | Maple, Crimson Sunset | X | Live | | | |
| | | | | | | |
| MAGN-TR-P-82282 | Pine, Scotch or Scots | Х | Live | | | |
| MAGN-TR-P-82288 | Sweetgum | X | Live | | | |
| MAGN-TR-P-82292 | Linden, Littleleaf | Х | Replaced #1 - same s | pecies | | |
| MAGN-TR-P-82294 | Oak, Northern Red | Х | Live | | | |
| MAGN-TR-P-82295 | Spruce, White | Х | Live | | | |
| MAGN-TR-P-82298 | Birch Clump, Heritage River-Ci | X | Live | | | |
| | | | | | | |
| MAGN-TR-P-82301 | Birch Clump, Heritage River-Cl | X | Live | | | |
| MAGN-TR-P-82303 | Pine, Austrian | X | Live | | | |
| MAGN-TR-P-82306 | Pine, Austrian | Х | Live | | | |
| MAGN-TR-P-82307 | Pine, Austrian | Х | Live | | | |
| MAGN-TR-P-82310 | Spruce, Norway | Х | Live | | | |
| MAGN-TR-P-82314 | Oak, Northern Red | х | Live | | | |
| | | x | | | | |
| MAGN-TR-P-82315 | Pagodatree, Japanese | | Live | | | |
| MAGN-TR-P-82317 | Chokecherry, Common-Canada | Х | Live | | | |
| MAGN-TR-P-82320 | Linden, Littleleaf | Х | Live | | | |
| MAGN-TR-P-82325 | Tuliptree | Х | Live | | | |
| MAGN-TR-P-82327 | Pine, Austrian | Х | Live | | | |
| MAGN-TR-P-82330 | Chokecherry, Common-Canada | х | Live | | | |
| MAGN-TR-P-82335 | Crabapple | X | Live | | | |
| | Oak, Northern Red | × | | | | |
| MAGN-TR-P-82337 | | | Live | | | |
| MAGN-TR-P-82338 | Redwood, Dawn | X | Live | | | |
| MAGN-TR-P-82339 | Linden, Littleleaf | Х | Live | | | |
| MAGN-TR-P-82343 | Spruce, White | Х | Live | | | |
| MAGN-TR-P-82345 | Sweetgum | Х | Live | | | |
| MAGN-TR-P-82358 | Linden, Littleleaf | X | Live | | | |
| MAGN-TR-P-82356 MAGN-TR-P-82360 | | x | | | | |
| | Ash, White-Autumn Purple | X | Live | | | |
| MAGN-TR-P-82361 | Ash, White-Autumn Purple | | | vacant | | |
| MAGN-TR-P-82364 | Pagodatree, Japanese | Х | Live | | | |
| MAGN-TR-P-82366 | Spruce, White | Х | Live | | | |
| MAGN-TR-P-82370 | Crabapple | Х | Live | | | |
| MAGN-TR-P-82371 | Crabapple | X | Live | | | |
| | | | | | | |
| HYHI-TR-P-82480 | Honeylocust | Х | Live | | | |
| HYHI-TR-P-82481 | Honeylocust | X | Live | | | |
| HYHI-TR-P-82483 | Linden, Littleleaf | Х | Live | | | |
| HYHI-TR-P-82484 | Linden, Littleleaf | Х | Live | | | |
| HYHI-TR-P-82489 | Linden, Littleleaf | Х | Live | | | |
| HYHI-TR-P-82490 | Linden, Littleleaf | Х | Live | | | |
| HYHI-TR-P-82491 | Honeylocust | X | Live | | | |
| | | | | | | |
| HYHI-TR-P-82492 | Honeylocust | Х | Live | | | |
| HIHO-TR-P-82972 | Hackberry | Х | Live | | | |
| HIHO-TR-P-82976 | Honeylocust, Shademaster | Х | Live | | | |
| HIHO-TR-P-82978 | Honeylocust, Shademaster | Х | Live | | | |
| HIHO-TR-P-82979 | Linden, Littleleaf-Greenspire | | | vacant | | |
| HIHO-TR-P-82980 | Linden, Littleleaf-Greenspire | Х | Live | | | |
| | | | | | | |
| | Spruce, Colorado or Blue | | Livo | | | |
| MARI-TR-P-82984 | Spruce, Colorado or Blue | x | Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 | Pine, Austrian | x x | Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 | Pine, Austrian Spruce, White | X X X | Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 | Pine, Austrian Spruce, White Pine, Austrian | x x x x x | Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 | Pine, Austrian Spruce, White | X X X | Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 | Pine, Austrian Spruce, White Pine, Austrian | x x x x x | Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar | x x x x x | Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red | x x x x x x x x x x | Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82097 MARI-TR-P-83004 MARI-TR-P-83007 MARI-TR-P-83007 MARI-TR-P-83008 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82997 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83009 MARI-TR-P-83009 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83008 MARI-TR-P-83009 MARI-TR-P-83009 MARI-TR-P-83010 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83000 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83011 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83008 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83016 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83000 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83011 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83008 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83016 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83008 MARI-TR-P-83008 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83016 MARI-TR-P-83013 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83005 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83011 MARI-TR-P-83018 MARI-TR-P-83018 MARI-TR-P-83018 MARI-TR-P-83023 MARI-TR-P-83026 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83007 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83016 MARI-TR-P-83018 MARI-TR-P-83023 MARI-TR-P-83023 MARI-TR-P-83029 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83018 MARI-TR-P-83018 MARI-TR-P-83023 MARI-TR-P-83026 MARI-TR-P-83026 MARI-TR-P-83050 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Sotch or Scots | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83010 MARI-TR-P-83016 MARI-TR-P-83018 MARI-TR-P-83023 MARI-TR-P-83028 MARI-TR-P-83049 MARI-TR-P-83058 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Scotch or Scots Willow, Weeping | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83005 MARI-TR-P-83008 MARI-TR-P-83008 MARI-TR-P-83010 MARI-TR-P-83010 MARI-TR-P-83018 MARI-TR-P-83018 MARI-TR-P-83023 MARI-TR-P-83026 MARI-TR-P-83050 MARI-TR-P-83050 MARI-TR-P-83052 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Socth or Socts Willow, Weeping Pine, Austrian | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83010 MARI-TR-P-83016 MARI-TR-P-83018 MARI-TR-P-83023 MARI-TR-P-83028 MARI-TR-P-83049 MARI-TR-P-83058 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Scotch or Scots Willow, Weeping | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83005 MARI-TR-P-83008 MARI-TR-P-83008 MARI-TR-P-83010 MARI-TR-P-83010 MARI-TR-P-83018 MARI-TR-P-83018 MARI-TR-P-83023 MARI-TR-P-83026 MARI-TR-P-83050 MARI-TR-P-83050 MARI-TR-P-83052 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Socth or Socts Willow, Weeping Pine, Austrian | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 MARI-TR-P-82997 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83018 MARI-TR-P-83018 MARI-TR-P-83020 MARI-TR-P-83050 MARI-TR-P-83050 MARI-TR-P-83062 MARI-TR-P-83062 MARI-TR-P-83062 MARI-TR-P-83066 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Sucth or Scots Willow, Weeping Pine, Austrian Pine, Austrian Pine, Austrian | x x x x x x x x x x x x x x x x x x x | Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83000 MARI-TR-P-83010 MARI-TR-P-83010 MARI-TR-P-83016 MARI-TR-P-83016 MARI-TR-P-83026 MARI-TR-P-83050 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83058 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Scotch or Scots Willow, Weeping Pine, Austrian Pine, Austrian Pine, Austrian Linden, Littleleaf | x x x x x x x x x x x x x x x x x x x | Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83005 MARI-TR-P-83008 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83016 MARI-TR-P-83018 MARI-TR-P-83023 MARI-TR-P-83026 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83062 MARI-TR-P-83106 MARI-TR-P-83108 MARI-TR-P-83108 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Austrian Pine, Austrian Pine, Austrian Pine, Austrian Linden, Littleleaf Linden, Littleleaf Pine, Limber | x x x x x x x x x x x x x x x x x x x | Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83007 MARI-TR-P-83009 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83011 MARI-TR-P-83018 MARI-TR-P-83026 MARI-TR-P-83026 MARI-TR-P-83026 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83063 MARI-TR-P-83106 MARI-TR-P-83108 MARI-TR-P-83112 MARI-TR-P-83117 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Scotch or Scots Willow, Weeping Pine, Austrian Pine, Austrian Pine, Austrian Linden, Littleleaf Linden, Littleleaf Birch Clump, Heritage River-Co | x x x x x x x x x x x x x x x x x x x | Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-82997 MARI-TR-P-82997 MARI-TR-P-82097 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83006 MARI-TR-P-83007 MARI-TR-P-83008 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83018 MARI-TR-P-83018 MARI-TR-P-83018 MARI-TR-P-83026 MARI-TR-P-83050 MARI-TR-P-83050 MARI-TR-P-83062 MARI-TR-P-83016 MARI-TR-P-83106 MARI-TR-P-83112 MARI-TR-P-83112 MARI-TR-P-83118 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Sotch or Scots Willow, Weeping Pine, Sucth or Scots Willow, Weeping Pine, Austrian Pine, Austrian Pine, Austrian Linden, Littleleaf Linden, Littleleaf Pine, Limber Birch Clump, Heritage River-Ct Planetree, London | x x x x x x x x x x x x x x x x x x x | Live Live Live Live Live Live Live Live | | | |
| MARI-TR-P-82984 MARI-TR-P-82990 MARI-TR-P-82991 MARI-TR-P-83004 MARI-TR-P-83005 MARI-TR-P-83007 MARI-TR-P-83007 MARI-TR-P-83009 MARI-TR-P-83009 MARI-TR-P-83010 MARI-TR-P-83011 MARI-TR-P-83011 MARI-TR-P-83018 MARI-TR-P-83026 MARI-TR-P-83026 MARI-TR-P-83026 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83058 MARI-TR-P-83063 MARI-TR-P-83106 MARI-TR-P-83108 MARI-TR-P-83112 MARI-TR-P-83117 | Pine, Austrian Spruce, White Pine, Austrian Maple, Sugar Oak, Northern Red Maple, Norway-Crimson King Pine, Austrian Pine, Austrian Pine, Austrian Spruce, White Crabapple Crabapple Crabapple Redwood, Dawn Oak, Swamp White Willow, Weeping Pine, Scotch or Scots Willow, Weeping Pine, Austrian Pine, Austrian Pine, Austrian Linden, Littleleaf Linden, Littleleaf Birch Clump, Heritage River-Co | x x x x x x x x x x x x x x x x x x x | Live | | | |
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| MARI-TR-P-83142 Oak, Swamp White X Live Image: Constraint of the state | | | | | | | |
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| CHBW-TR-P.83555 Crabaple-Spring Snow X Live Image: Charaphe Spring Snow X CHBW-TR-P.83556 Crabaple-Spring Snow X Live Image: Charaphe Spring Snow X CHBW-TR-P.83557 Crabaple-Spring Snow X Live Image: Charaphe Spring Snow X CHBW-TR-P.83560 Crabaple-Spring Snow X Live Image: Charaphe Spring Snow X CHBW-TR-P.83560 Crabaple-Spring Snow X Live Image: Charaphe Spring Snow X CHBW-TR-P.83567 Crabaple-Spring Snow X Live Image: Charaphe Spring Snow X CHBW-TR-P.83567 Crabaple-Spring Snow X Live Image: Charaphe Spring Snow X CHBW-TR-P.83572 Crabaple-Spring Snow X Live Image: Charaphe Spring Snow X CHBW-TR-P.83582 Tuliptree X Live Image: Charaphe Spring Snow X CHBW-TR-P.83582 Tuliptree X Live Image: Charaphe Spring Snow X CHBW-TR-P.83583 Tuliptree X Live | | | | | | | |
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Directions

Using the information you provide and background data, the tool calculates the amount of Credits that could be issued at years 1 (10%), 3 (40%), and 5 (30%) after planting. A mortality deductions (% loss) is applied to account for anticipated tree losses (Cell D6). A 5% buffer pool deduction is applied that will go into a program-wide pool to insure against catastrophic loss of trees. This tool is used to determine credits issued after planting (Intial Crediting). A different tool is used for credit issuance in Years 4 and 6. The tool in those years requires calculation of a sample and collection of data on tree status in the sample sites.

| Mortality Deduction (%): | 10% |
|--------------------------|-----|
|--------------------------|-----|

Table 3. Credits are based on 10%, 40%, and 30% at Years 1, 3, and 5 after planting, respectively, of the projected CO₂ stored by live trees 25-years after planting. These values account for anticipated tree losses and the 5% buffer pool deduction.

| | | | | | | | 40% | 30% | 20% | |
|-----|-------------------|----------------|----------------------------|-------------------------------|---|-------------------------|-------------------------|-------------------------|-------------------------|--------|
| | No. Sites Planted | No. Live Trees | Mortality Deduction (%) | 25-yr CO₂ stored (kg/tree) | Tot. 25-yr CO ₂ stored w/ losses and 5% deduction (t) | 10% CO ₂ (t) | 40% CO ₂ (t) | 30% CO ₂ (t) | 20% CO ₂ (t) | |
| BDL | 184 | 166 | 0.10 | 2,587.18 | 407.0 | 40.70 | 162.81 | 122.10 | 81.40 | I |
| BDM | 59 | 53 | 0.10 | 1,224.19 | 61.8 | 6.18 | 24.70 | 18.53 | 12.35 | 4 |
| BDS | 90 | 81 | 0.10 | 658.91 | 50.7 | 5.07 | 20.28 | 15.21 | 10.14 | |
| BEL | 0 | 0 | 0.10 | 0.00 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | i i |
| BEM | 0 | 0 | 0.10 | 0.00 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| BES | 0 | 0 | 0.10 | 0.00 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| CEL | 105 | 95 | 0.10 | 472.49 | 42.4 | 4.24 | 16.97 | 12.73 | 8.48 | |
| CEM | 16 | 14 | 0.10 | 421.75 | 5.8 | 0.58 | 2.31 | 1.73 | 1.15 | 4 |
| CES | 0 | 0 | 0.10 | 0.00 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| | 454 | 409 | 0.10 | | 567.7 | 56.77 | 227.06 | 170.30 | 113.53 | I |
| | | | | | | | | | | sumche |
| | | | | Credits issued | 568 | 57 | 227 | 170 | 114 | 5 |

In Table 4 the tool infers the amount of CO_2 stored after 25 years from the sample to the population of live trees. Values in column H account for anticipated tree losses and the 5% buffer pool deduction.

| Tree-Type | No. Sites Planted | Mortality Deduction (%) | Total Live Trees After Mortality | 25-yr CO ₂ stored (kg/tree) | CO ₂ Tot No Deductions (t) | Grand Total CO ₂ w/ Deductions (t) |
|----------------------------|-------------------|----------------------------|-------------------------------------|---|--|--|
| Brdlf Decid Large (>50 ft) | 184 | 0.10 | 166 | 2,587.18 | 476.0 | 407.0 |
| Brdlf Decid Med (30-50 ft) | 59 | 0.10 | 53 | 1,224.19 | 72.2 | 61.8 |
| Brdlf Decid Small (<30 ft) | 90 | 0.10 | 81 | 658.91 | 59.3 | 50.7 |
| Brdlf Evgrn Large (>50 ft) | 0 | 0.10 | 0 | 0.00 | 0.0 | 0.0 |
| Brdlf Evgrn Med (30-50 ft) | 0 | 0.10 | 0 | 0.00 | 0.0 | 0.0 |
| Brdlf Evgrn Small (<30 ft) | 0 | 0.10 | 0 | 0.00 | 0.0 | 0.0 |
| Conif Evgrn Large (>50 ft) | 105 | 0.10 | 95 | 472.49 | 49.6 | 42.4 |
| Conif Evgrn Med (30-50 ft) | 16 | 0.10 | 14 | 421.75 | 6.7 | 5.8 |
| Conif Evgrn Small (<30 ft) | 0 | 0.10 | 0 | 0.00 | 0.0 | 0.0 |
| | 454 | | 409 | | 663.9 | 567.7 |

Table 4. Grand Total CO₂ Stored after 25 years (all live trees, includes tree losses and buffer pool deduction)

Directions

In Table 5, enter the low and high price of CO_2 in \$ per tonne (t).

This table incorporates error estimates of $\pm 15\%$ to the high and low estimates of the total CO₂ (t) stored by the live tree population after 25 years. For planning purposes only, it calculates dollar values.

Table 5. CO₂ value

| | CO ₂ \$ per tonne |
|------|------------------------------|
| Low | \$19.00 |
| High | \$34.00 |

Table 6. Summary of CO₂ stored after 25 years (all live trees, includes tree losses)

| Tree-Type | Total CO ₂ (t) at 25 years | Low \$ value | High \$ value | |
|-----------------------------|--|--------------|---------------|--|
| Brdlf Decid | 519.5 | \$9,870.00 | \$17,662.10 | |
| Brdlf Evgrn | 0.0 | \$0.00 | \$0.00 | |
| Conif Evgrn | 48.2 | \$915.56 | \$1,638.37 | |
| Total | 567.7 | \$10,785.55 | \$19,300.47 | |
| | CO ₂ (t) | Total \$ | Total \$ | |
| Grand Total CO ₂ | | | | |
| (t) at 25 years: | 567.7 | \$10,785.55 | \$19,300.47 | |
| High Est. with | | | | |
| Error: | 652.8 | \$12,403.39 | \$22,195.54 | |
| Low Est. with | | | | |
| Error: | 482.5 | \$9,167.72 | \$9,167.72 | |
| ± 15% error = ± 10% | 6 formulaic ± 3% san | npling | | |
| ± 2% measurement | : | | | |

Using the information you provide and background data, the tool provides estimates of co-benefits after 25 years in Resource Units per year and \$ per year.

| | Resource Units | Resource | | |
|--|----------------|-----------|-------------|----------|
| Ecosystem Services | Totals | Unit/site | Total \$ | \$/site |
| Rainfall Interception (m3/yr) | 2,523.31 | 5.56 | \$5,199.38 | \$11.452 |
| CO ₂ Avoided (t, \$20/t/yr) | 2.43 | 0.01 | \$48.57 | \$0.107 |
| Air Quality (t/yr) | | | | |
| 03 | 0.1172 | 0.0003 | \$1,293.28 | \$2.849 |
| NOx | 0.0126 | 0.0000 | \$353.95 | \$0.780 |
| PM10 | 0.0500 | 0.0001 | \$1,037.52 | \$2.285 |
| Net VOCs | -0.1198 | -0.0003 | -\$1,239.13 | -\$2.729 |
| Air Quality Total | 0.0600 | 0.0001 | \$1,445.61 | \$3.18 |
| Energy (kWh/yr & kBtu/yr) | | | | |
| Cooling - Electricity | 84,571.85 | 186.28 | \$9,861.08 | \$21.72 |
| Heating - Natural Gas | 390,109.87 | 859.27 | \$4,854.67 | \$10.69 |
| Energy Total (\$/yr) | | | \$14,715.75 | \$32.41 |
| Grand Total (\$/yr) | | | \$21,409.31 | \$47.16 |

Table 7. Co-Benefits <u>PER YEAR</u> after 25 years (all live trees, includes tree losses)

\$535,232.87

Planting Attestation of Additionality



Treasure Valley Municipal Parks Planting Project Attestation of Additionality

I am the Executive Director of the Treasure Valley Canopy Network and make this attestation regarding additionality from this tree planting project, Treasure Valley Municipal Parks Planting Project.

- Project Description
 - o The Project that is the subject of this attestation is described more fully in both our Application and our Project Design Document (PDD), both of which are incorporated into this attestation.
- Legal Requirements Test (Protocol Section 1.8)
 - o Project trees are not required by law or ordinance to be planted (except for replacement trees planted in place of removed trees for specific reasons).
- The Project did not plant trees on sites that were converted out of a forest use or that were cleared of healthy, non-invasive trees and then planted with project trees (Protocol Section 1.9)
- Project-Specific Baseline or Performance Standard Baseline
- o Project trees are additional based on a project specific baseline. See PDD; or
- Project Implementation Agreement for Project Duration
 - o Treasure Valley Canopy Network has signed a Project Implementation Agreement with City Forest Credits for 26 years.
- The 26-year Project Duration commitment is additional to and longer than any commitment Treasure Valley Canopy Network makes to non-carbon project tree plantings.
- Financial Additionality
 - A successful afforestation carbon project goes beyond tree planting to ensure survival of the trees to a healthy maturity at 26 years after the Project start date. These Project Trees are at risk during all stages of this project. The Project Operator has no guaranteed source of long-term maintenance funding outside of the carbon revenues.
 - o The revenue from the sale of carbon credits will play a material role in the successful and durable storage of Project Trees' carbon stock by providing funding that will help ensure the establishment and long-term health of Project Trees.
- Prior Consideration: Treasure Valley Canopy Network investigated the opportunity to partner with City Forest Credits (CFC) in 2017/2018 following completion of the Treasure Valley Carbon Assessment in partnership with The Nature Conservancy in Idaho. As an early adopter in the CFC Program, we have learned a lot and there have been plenty of changes, but several years ago when our project was verified and we sold credits through the national sale, our investment finally paid off! We see this project with the City of Boise as a pilot to continue to learn and investigate the feasibility of growing this program throughout our service area in Idaho.

- In addition, many of the activities undertaken as part of the carbon project are beyond the Project Operator's common practice, including:
 - o Project design (species and planting selection) to maximize carbon storage
 - o Care through establishment phase (up to/through Year 3)
 - o Long-term maintenance
 - o Long-term monitoring and growth assessment
 - o Acceptance of reversal obligations
 - o Long-term legal commitment to the project

Signed on March 11th in 2025, by Lance Davisson, for Treasure Valley Canopy Network.

Lance Davisson

Signature

Lance Davisson Printed Name

208-994-1135

Phone

_____director@tvcanopy.net Email

Geocoded Photos

Can be provided in a zipped file by request.