Reforesting Des Moines, Iowa - 2021
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:

<u>For the Single Tree Planting Design:</u>

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

<u>For the Cluster Planting Design</u>

- 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

<u>For the Area Reforestation Planting Design (previously Canopy Design)</u>:

- Either:
    - Project Area imaging from any telemetry, imaging, or remote sensing service
    - i-Tree Canopy report
    - 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 CO_2 index

PROJECT OVERVIEW

Project Name: Reforesting Des Moines, Iowa - 2021
Project Number: 016
Project Type: Planting Project (under the Planting Protocol – version 9, dated February 7, 2021)
Project Start Date: November 11, 2021
Project Location: Des Moines, Iowa

Project Operator Name: TreesForever
Project Operator Contact Information:
Megan Schneider
Director of Programs Des Moines Metro
515-776-0335
Mschneider@treesforever.org

PROJECT AND PLANTING DESIGN UPDATES

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

In 2020 and 2021, 1,772 trees were planted during spring and fall planting seasons. All trees were planted in public parks and right of ways within the City of Des Moines, IA.

There has been no change in ownership to the Project Site. Trees Forever has two-year maintenance period (watering, pruning, mulching) a one-year warranty on all trees planted within the City of Des Moines. A total of 40 trees were replaced following the one-year warranty period for these two years of planting. Of the 162 trees sampled, 15 sites were vacant and 4 trees were dead, leading to an 11.7% mortality rate.

The initial total number of trees planted was decreased by 27 to correct double counting issues between various projects.

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 CO_2 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. *Year 4: 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 CO_2 projected amount by after Year 25 is generated.*

2) *Clustered*
    a. *Year 4: 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.*
        i. *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. *Year 4: Project Operators must either conduct a physical tree count using plots or use imaging to determine canopy coverage at Year 4.*
        i. *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 used the single tree planting method to plant trees in City of Des Moines' parks and right of ways during the calendar years of 2020 and 2021. Trees Forever selects species based on

the City of Des Moines' Preferred Species List, which is updated annually. The top five species planted during these two years were London Planetree, Honeylocust, Elm, Northern Hackberry, and Kentucky Coffeetree.

Data Collection

Tree Forever staff collected data on the 162 tree random sample spanning the project area, as provided by City Forest Credits. The status of each tree was documented, along with a geotagged photo. After sampling was completed, the project has a current mortality status of 4 dead trees and 15 vacant trees.

The current mortality rate based on sampling is 11.7%, well below the allotted 20% threshold. No significant changes were made to the Project Area since the initial planting.

Attachments: *Des Moines 2021 Single Tree Credit Tool - Year 4*

Carbon Quantification

Total number of trees planted	1,772
Project area (acres), if applicable	N/A
Total number of trees per acre, if applicable	N/A
Credits attributed to the project (tCO2e)	5,702
Credits after mortality deduction (20% or insert observed mortality, if greater)	4,562
Contribution to Registry Reversal Pool Account (5%) (tCO2e)	228
Total credits to be issued to the Project Operator (tCO2e)	4,334
Total credits requested to be issued at Year 4	1,733

GHG Assertion:
Project Operator asserts that the Project results in GHG emissions mitigation of 4,334 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 1,733 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))	440	440
Total credits to be issued at Year 4 (40% CO2 (t))	1,759	1,773
Total credits to be issued at Year 6 (30% CO2 (t))	1,319	1,300
Total credits to be issued at Year 26 (20% CO2 (t))	879	861
Total credits to be issued (tCO2e)	**4,397**	**4,334**

Attachment: Des Moines 2021 Single Tree Credit Tool - Year 4

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)	10,979.53	$78,603.15
Air Quality (t/yr)	0.3302	$1,488.68.
Cooling – Electricity (kWh/yr)	324,882.74	$24,658.60
Heating – Natural Gas (kBtu/yr)	4,640,941.03	$45,178.32
Grand Total ($/yr)		**$149,928.75**

Attachment: Des Moines 2021 Single Tree Credit Tool - Year 4

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: Reforesting Des Moines, IA – 2021
Attestation of Additionality

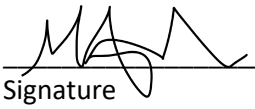
ADDITIONAL INFORMATION

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

There have been no changes to monitoring or reporting plans since the Initial Credit Phase.

SIGNATURE

Signed on September 29 in 2025, by Megan Schneider, Director of Programs Des Moines Metro, for Trees Forever.



Signature

Megan Schneider

Printed Name

515-776-0335

Phone

mschneider@treesforever.org

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
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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

    2 - i-Tree Canopy report
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- Or:
    1 - Tree plot sampling data

2 - Project geospatial data (KML file or shapefile)
3 - Carbon Quantification Year 4 Credit tool
4 - Summary of approach to quantifying the local CO_2 index

Attachments

Single Tree – Year 4

Carbon Quantification Year 4 Credit Tool – Single Tree

Attestation of Additionality

Carbon Quantification Year 4 Credit Tool – Single Tree

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1		**This copy assigned to TREES FOREVER. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.**															
2																	
3		**The Single Tree Initial Credit Tool for the Midwest Climate Zone**															
4		This document and all sheets ©City Forest Credits 2017-2021. All rights reserved															
5		The analyst can use this method to forecast the amount of CO2 (in metric tonnes, t) estimated to be stored by live project trees after 25 years for crediting. Credits based on the estimated CO2 storage can be issued at three points in time – 10% within one year after planting, 40% after year 3, and 30% after year 5, minus 5% that will go into a program-wide pool to insure against catastrophic loss of trees. At the end of the project, in year 25, Operators will receive credits for all CO2 stored, minus Credits already issued. Project Operators will follow the Steps listed below to obtain an initial forecast. Basic tree planting data on all trees planted needs to be collected at the time of planting. When a user wishes to seek Credits at one of the first points in time after planting, they will use this tool to calculate credit amounts and to supply verification data to the Registry. Users will submit this spreadsheet to the Registry with other documentation so the Registry can verify the planting. Sampled data will be used to obtain Credits at subsequent points in time.															
6																	
7		**Steps**															
8		1) Plant project trees and collect the following data on each planted tree using the data collection table included in this workbook: species, site id#, tree id# and location (latitude and longitude). We use the term “site” instead of “tree” because some planted trees may no longer be present in the sites where they were planted.															
9																	
10		2) Compile data on the numbers of trees planted by species to fill in the Planting List (Table 1).															
11		3) Enter data on the anticipted mortality rate (% of planted sites without trees in 25 years) into row 6 on the Credits sheet.															
12		4) Credits will be automatically calculated in Table 6, incorporating tree losses and the 5% buffer pool deduction.															
13		5) Table 4 automatically infers the amount of CO_2 stored after 25 years from the sample to the population of live trees.															
14		6) For planning purposes only, users can enter a low and high price of CO_2 ($ per t) in Table 5. Table 6 incorporates error estimates of ±15% to calculate low and high amounts of CO_2 stored.															
15		7) Table 7 automatically provides estimates of co-benefits for live trees after 25 years in Resource Units (e.g., kWh) per year and $ per year.															

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

Scientific Name	Common Name	Tree-Type Abbreviation	No. Sites Planted	
Platanus x acerifolia	planetree, London	BDL	184	
Ulmus americana	American elm	BDL	117	
Celtis occidentalis	northern hackberry	BDL	115	
Gymnocladus dioicus	Kentucky coffeetree	BDL	90	
Gleditsia triacanthos inermis	honeylocust, thornless	BDL	91	
Quercus rubra	northern red oak	BDL	81	
Liriodendron tulipifera	tulip tree	BDL	79	
Quercus macrocarpa	bur oak	BDL	76	
Cercis canadensis	eastern redbud	BDS	69	
Quercus bicolor	swamp white oak	BDL	68	
Gleditsia triacanthos	honeylocust	BDM	67	
Crataegus crusgalli	hawthorn, cockspur	BDS	61	
Tilia americana	American basswood	BDL	56	
Ostrya virginiana	eastern hophornbeam	BDM	54	
Quercus alba	white oak	BDL	46	
Populus deltoides	eastern cottonwood	BDL	44	
Malus spp.	crabapple, flowering	BDS	42	
Syringa reticulata	Japanese tree lilac	BDS	41	
Nyssa sylvatica	blackgum	BDM	39	
Tilia cordata	littleleaf linden	BDM	38	
Amelanchier spp.	serviceberry, spp.	BDS	33	Listed for serviceberry, spp. (Amelanchier spp.)
Betula nigra	river birch	BDM	23	
Taxodium distichum	Baldcypress	BDL	28	
Amelanchier laevis	serviceberry, Allegheny	BDM	30	Listed for serviceberry, downy (Amelanchier arborea)
Cladrastis kentukea	yellowwood	BDM	30	
Ulmus x	elm, hybrid	BDL	26	
Tilia species	basswood	BDL	21	
Cornus species	dogwood	BDS	18	
Crataegus viridis	hawthorn, green	BDM	12	
Platanus occidentalis	American sycamore	BDL	9	
Quercus palustris	pin oak	BDL	8	
Pinus strobus	eastern white pine	CEL	5	
Acer saccharum	sugar maple	BDL	3	
Cornus florida	flowering dogwood	BDS	3	Listed for dogwood, pagoda (Cornus alternifolia)
Juglans nigra	black walnut	BDL	1	
Acer ginnala	Amur maple	BDS		
Acer negundo	boxelder	BDM		
Acer nigrum	black maple	BDL		
Acer palmatum	Japanese maple	BDS		
Acer platanoides	Norway maple	BDL		
Acer rubrum	red maple	BDL		
Acer saccharinum	silver maple	BDL		
Acer species	maple	BDL		
Aesculus glabra	Ohio buckeye	BDL		
Albizia julibrissin	mimosa	BDS		
Alnus species	alder	BDM		
Amelanchier canadensis	serviceberry, shadblow	BDS		
Betula papyrifera	paper birch	BDL		
Betula species	birch	BDM		
Broadleaf Deciduous Large	broadleaf deciduous large	BDL		
Broadleaf Deciduous Medium	broadleaf deciduous medium	BDM		
Broadleaf Deciduous Small	broadleaf deciduous small	BDS		
Broadleaf Evergreen Large	broadleaf evergreen large	BEL		
Broadleaf Evergreen Medium	broadleaf evergreen medium	BEM		
Broadleaf Evergreen Small	broadleaf evergreen small	BES		
Carya species	hickory	BDL		
Castanea dentata	American chestnut	BDL		
Catalpa species	catalpa	BDL		
Catalpa speciosa	northern catalpa	BDL		
Cercidiphyllum japonicum	katsuratree	BDM		
Conifer Evergreen Large	conifer evergreen large	CEL		
Conifer Evergreen Medium	conifer evergreen medium	CEM		
Conifer Evergreen Small	conifer evergreen small	CES		
Crataegus spp.	hawthorn, spp.	BDS		
Fraxinus americana	white ash	BDL		
Fraxinus nigra	black ash	BDM		
Fraxinus pennsylvanica	green ash	BDL		
Fraxinus species	ash	BDM		
Ginkgo biloba	ginkgo	BDM		
Hibiscus syriacus	rose-of-sharon	BDS		
Ilex opaca	American holly	BES		
Ilex species	holly	BES		
Juniperus species	juniper	CEM		
Juniperus virginiana	eastern red cedar	CEM		
Liquidambar styraciflua	sweetgum	BDL		
Magnolia grandiflora	southern magnolia	BEM		
Magnolia virginiana	sweetbay	BEM		
Malus species	apple	BDS		
Morus alba	white mulberry	BDM		
Morus species	mulberry	BDM		
Parrotia persica	persian ironwood	BDS		
Phellodendron amurense	Amur corktree	BDM		
Picea abies	Norway spruce	CEL		
Picea mariana	black spruce	CEM		
Picea pungens	blue spruce	CEM		
Picea species	spruce	CEL		
Pinus contorta	Bolander beach pine	CES		
Pinus nigra	Austrian pine	CEM		
Pinus ponderosa	ponderosa pine	CEL		
Pinus resinosa	red pine	CEL		
Pinus sylvestris	Scotch pine	CEM		
Pinus virginiana	Virginia pine	CEM		
Populus nigra	black poplar	BDL		
Populus species	cottonwood	BDL		
Populus tremuloides	quaking aspen	BDL		
Prunus cerasifera	cherry plum	BDS		
Prunus serotina	black cherry	BDL		
Prunus serrulata	Kwanzan cherry	BDS		
Prunus species	plum	BDS		
Prunus virginiana	common chokecherry	BDS		
Pyrus calleryana	Callery pear	BDM		
Pyrus species	pear	BDM		
Quercus coccinea	scarlet oak	BDL		
Quercus ellipsoidalis	northern pin oak	BDL		
Quercus nigra	water oak	BEL		
Quercus species	oak	BDL		
Rhamnus species	buckthorn	BDS		
Rhus species	sumac	BDS		
Robinia pseudoacacia	black locust	BDL		
Salix discolor	pussy willow	BDS		
Salix species	willow	BDL		
Sorbus species	mountain ash	BDS		Listed for linden, silver (Tilia tomentosa)
Syringa species	lilac	BDS		
Thuja occidentalis	northern white cedar	CEL		
Tsuga canadensis	eastern hemlock	CEL		
Ulmus parvifolia	Chinese elm	BDL		
Ulmus pumila	Siberian elm	BDM		
Ulmus species	elm	BDL		
Ulmus thomasi	elm, rock	BDL		
Quercus muehlenbergii	Chinkapin Oak	BDL	50	
Maackia amurensis	Amur maackia	BDL	6	
Abies concolor	White fir	BDS	1	
Quercus imbricaria	Shingle oak	CEL	4	
Picea glauca	White spruce	CEL	3	
			1772	

Table 2. Summary of Planting Sites

Tree-Type	Tree-Type Abbreviation	No. Sites Planted
Brdlf Decid Large (>50 ft)	**BDL**	1199
Brdlf Decid Med (30-50 ft)	**BDM**	293
Brdlf Decid Small (<30 ft)	**BDS**	268
Brdlf Evgrn Large (>50 ft)	**BEL**	0
Brdlf Evgrn Med (30-50 ft)	**BEM**	0
Brdlf Evgrn Small (<30 ft)	**BES**	0
Conif Evgrn Large (>50 ft)	**CEL**	12
Conif Evgrn Med (30-50 ft)	**CEM**	0
Conif Evgrn Small (<30 ft)	**CES**	0
	Total Sites Planted	1772

Directions

Create a data sheet with the same fields seen in the example below.

At the time of data collection soon after planting, record the following information:

- -Date of data collection.
- -Names of the crew that collected that data.

At the time of data collection soon after planting record the following information on each tree:

- -Date planted
- -Tree ID#, the unique number that coincides with each tree that was planted at the site. When each tree has just been planted, and there are not any dead or missing trees, the tree IDs will all be the same as the siteIs. As trees get replaced, the list of tree IDs will increase. In the example below, siteI 1 has a replacement tree planted in it, therefore what was originally tree #1 is now tree #4. If tree #4 is the next one at the project that gets replaced, that new tree will then be tree #5.
- -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 where 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 site.
- -Image#2, the unique number for the second image of this 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 site).
- -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 helpful to take a copy of your original data sheets along for reference when attempting to locate each tree.

Example Data Collection Table

Data Collection Dates: Crew:

Date Planted	Tree ID #	Species	Site ID #	Lat	Long	Address	Status	Replacement Tracker	Date Removed	Date Replaced	Notes
5/5/2021		*Amur maackia (Maackia amurensis)*	17041	41.62956646	-93.62858585	1800 8th Pl	Alive				
5/5/2021		*Amur maackia (Maackia amurensis)*	144273	41.62954118	-93.63388663	1139 Douglas Ave	Alive				
5/14/2021		*Amur maackia (Maackia amurensis)*	51880	41.59647208	-93.66792066	3714 Kingman Blvd	Alive	Replaced #1			Yellowood
10/30/2020		*baldcypress, common (Taxodium distichum)*	141428	41.58501816	-93.6338773	1305 Locust St	Alive				
6/3/2021		*baldcypress, common (Taxodium distichum)*	144700	41.60743111	-93.66592362	3517 Witmer Pkwy	Alive				
10/29/2020		*baldcypress, common (Taxodium distichum)*	143685	41.62238048	-93.62804327	710 Corning Ave	Alive				
10/29/2020		*baldcypress, common (Taxodium distichum)*	143678	41.62229928	-93.62790514	710 Corning Ave	Alive				
9/25/2020		*birch, river (Betula nigra)*	143264	41.57419564	-93.6161532	8 Dunham Ave	Alive				
9/26/2020		*birch, river (Betula nigra)*	143252	41.52307656	-93.56348937	6812 Sweetwater Dr	Alive				
5/1/2021		*blackgum (Nyssa sylvatica)*	21223	41.59934045	-93.60291378	1300 Fremont St	Alive				
11/5/2020		*crabapple, flowering (Malus spp.)*	143041	41.60600489	-93.62945561	1501 9th St	Alive				
5/1/2021		*crabapple, flowering (Malus spp.)*	21153	41.59680261	-93.60321443	1200 Walker St	Alive				
5/1/2021		*crabapple, flowering (Malus spp.)*	144194	41.59694089	-93.60256648	1218 Walker St	Alive				
9/24/2021		*crabapple, flowering (Malus spp.)*	145459	41.6182941	-93.62467393	2701 Omhank Dr	Alive				
4/29/2021		*dogwood, pagoda (Cornus alternifolia)*	144055	41.57475461	-93.61360104	106 E Granger Ave	Alive				
4/29/2021		*dogwood, pagoda (Cornus alternifolia)*	144038	41.57372023	-93.60891522	344 E Granger Ave	Alive			4	
6/16/2020		*elm, American (Ulmus americana)*	49580	41.59654581	-93.662790208	3401 Kingman Blvd	Alive				
6/24/2021		*elm, American (Ulmus americana)*	144158	41.59186194	-93.61146576	508 Des Moines St	Alive				
6/3/2021		*elm, American (Ulmus americana)*	16984	41.63113571	-93.63089991	3846 10th St	Alive				
9/18/2021		*elm, American (Ulmus americana)*	145321	41.59907357	-93.65207001	1141 26th St	Alive				
6/5/2021		*elm, American (Ulmus americana)*	36047	41.6068117	-93.67907082	1524 45th St	Alive				
6/5/2021		*elm, American (Ulmus americana)*	36230	41.60768269	-93.67989304	1601 46th St	Alive				
5/15/2021		*elm, American (Ulmus americana)*	144148	41.58831225	-93.60764228	215 E 7th St	Alive				
9/28/2021		*elm, American (Ulmus americana)*	145517	41.5956469	-93.58636878	1805 Hubbell Ave	Alive				
10/17/2021		*elm, American (Ulmus americana)*	52103	41.58444971	-93.67199603	4006 Grand Ave	Alive				
10/17/2021		*elm, American (Ulmus americana)*	141179	41.58445401	-93.67302691	4100 Grand Ave	Alive				
10/10/2020		*elm, American (Ulmus americana)*	143421	41.54360851	-93.58468423	1881 Swan Lake Cir	Alive				
10/10/2020		*elm, American (Ulmus americana)*	143400	41.54583284	-93.58701645	4260 Indianola Ave	Alive				
10/10/2020		*elm, American (Ulmus americana)*	143440	41.54276398	-93.58419858	4660 Indianola Ave	Alive				
11/4/2020		*elm, hybrid (Ulmus sf*	143619	41.59836252	-93.66814717	3800 Cottage Grove Ave	Alive				
10/30/2020		*hackberry, common (Celtis occidentalis)*	132161	41.58473835	-93.63448793	1312 Locust St	Alive				
11/11/2021		*hackberry, common (Celtis occidentalis)*	146206	41.5893087	-93.6615773	677 33rd St	Alive				
9/29/2021		*hackberry, common (Celtis occidentalis)*	1881	41.59538737	-93.66358115	3410 School St	Alive				
10/26/2021		*hackberry, common (Celtis occidentalis)*	146031	41.60503163	-93.59014691	1401 E CT-17	Alive				
10/9/2021		*hackberry, common (Celtis occidentalis)*	145879	41.53933929	-93.5804003	5100 Indianola Ave	Alive				
10/9/2021		*hackberry, common (Celtis occidentalis)*	145876	41.53954607	-93.58062284	5100 Indianola Ave	Alive				
10/28/2020		*hackberry, common (Celtis occidentalis)*	1378	41.59664754	-93.65322555	2621 Kingman Blvd	Alive				
10/30/2021		*hawthorn, cockspur (Crataegus crusgalli)*	146162	41.60493736	-93.58843935	1755 Cleveland Ave	Alive				
10/23/2021		*hawthorn, cockspur (Crataegus crusgalli)*	146042	41.6267481	-93.63281894	1117 Oak Park Ave	Alive				
6/5/2021		*hawthorn, green (Crataegus viridis)*	144498	41.60758905	-93.67808495	1601 45th St	Alive				
9/25/2020		*honeylocust (Gleditsia triacanthos)*	143315	41.57333931	-93.61579582	8 E Edison Ave	Alive				
10/10/2020		*honeylocust (Gleditsia triacanthos)*	143416	41.54399195	-93.58507986	1831 Swan Lake Cir	Alive				
10/17/2021		*honeylocust (Gleditsia triacanthos)*	146085	41.59664564	-93.67234644	4057 Kingman Blvd	Alive				
5/15/2021		*honeylocust, thornless (Gleditsia triacanthos inermis)*	144161	41.59067939	-93.61173935	502 E Grand Ave	Alive				
11/6/2021		*honeylocust, thornless (Gleditsia triacanthos inermis)*	146187	41.62765161	-93.51041719	3608 Brook Ridge Ct	Alive				
11/6/2021		*honeylocust, thornless (Gleditsia triacanthos inermis)*	12927	41.62783323	-93.51004925	3619 Brook Ridge Ct	Alive				
11/6/2021		*honeylocust, thornless (Gleditsia triacanthos inermis)*	17659	41.62646945	-93.51110876	3521 Brook View Dr	Alive				
10/30/2021		*honeylocust, thornless (Gleditsia triacanthos inermis)*	41865	41.60504189	-93.58862355	1755 Cleveland Ave	Alive				
10/21/2021		*honeylocust, thornless (Gleditsia triacanthos inermis)*	146113	41.55460919	-91.6018148	3219 SE 8th St	Alive				Replaced by Hophornbeam
9/25/2021		*honeylocust, thornless (Gleditsia triacanthos inermis)*	145508	41.60314626	-93.561518791	2820 Garfield Ave	Alive				
4/24/2021		*hophornbeam, American (Ostrya virginiana)*	144126	41.60986283	-93.68139451	1728 47th St	Alive				
5/5/2021		*hophornbeam, American (Ostrya virginiana)*	144262	41.62945397	-93.61275474	1120 Douglas Ave	Alive				
11/7/2020		*hophornbeam, American (Ostrya virginiana)*	143552	41.56740157	-93.61599564	2144 S Union St	Alive				
10/21/2021		*hophornbeam, American (Ostrya virginiana)*	146124	41.55540302	-93.60307008	723 E Park Ave	Alive				
6/16/2020		*Kentucky coffeetree (Gymnocladus dioicus)*	142843	41.59653294	-93.66202094	3306 Kingman Blvd	Alive				
5/5/2021		*Kentucky coffeetree (Gymnocladus dioicus)*	144252	41.6296475	-93.63095432	3800 10th St	Alive				
4/22/2021		*Kentucky coffeetree (Gymnocladus dioicus)*	144077	41.59616314	-93.59311909	613 E 16th St	Alive				
4/22/2021		*Kentucky coffeetree (Gymnocladus dioicus)*	144081	41.59587429	-93.59316603	1554 Des Moines St	Alive				
5/25/2021		*Kentucky coffeetree (Gymnocladus dioicus)*	19170	41.55338438	-93.57817356	2135 E Hughes Ave	Alive				
5/25/2021		*Kentucky coffeetree (Gymnocladus dioicus)*	12617	41.63401224	-93.60935538	700 Jerlynn Ave	Alive				
11/4/2020		*lilac, Japanese tree (Syringa reticulata)*	143612	41.59822312	-93.66682752	3650 Cottage Grove Ave	Alive				
5/5/2021		*lilac, Japanese tree (Syringa reticulata)*	144229	41.6294625	-93.6279966	808 Douglas Ave	Alive				
5/5/2021		*lilac, Japanese tree (Syringa reticulata)*	144246	41.62946049	-93.63104686	1006 Douglas Ave	Alive				
5/5/2021		*lilac, Japanese tree (Syringa reticulata)*	144267	41.62945197	-93.63309002	1120 Douglas Ave	Alive				
5/1/2021		*lilac, Japanese tree (Syringa reticulata)*	144197	41.59685865	-93.60296613	1204 Walker St	Alive				
4/29/2021		*lilac, Japanese tree (Syringa reticulata)*	144026	41.57344433	-93.60747622	436 E Granger Ave	Alive				
10/7/2020		*lilac, Japanese tree (Syringa reticulata)*	143349	41.60401713	-93.63641731	1400 Forest Ave	Alive				
10/7/2020		*lilac, Japanese tree (Syringa reticulata)*	143343	41.60401312	-93.63537393	1326 Forest Ave	Alive				
6/5/2021		*linden, American (Tilia americana)*	35965	41.6076789	-93.67819729	1600 44th St	Alive				
6/5/2021		*linden, American (Tilia americana)*	144506	41.60570584	-93.67893502	1447 45th St	Alive				
11/7/2021		*linden, American (Tilia americana)*	10657	41.57757636	-93.66320774	4 34th St	Alive				
6/5/2021		*linden, silver (Tilia tomentosa)*	35949	41.60578324	-93.67893826	1447 45th St	Alive				
10/17/2021		*maple, sugar (Acer saccharum)*	146013	41.5809533	-93.63188692	1350 W Martin Luther King Jr Pkwy	Alive				
5/21/2020		*oak, bur (Quercus macrocarpa)*	142769	41.59467675	-93.64419773	2103 Cottage Grove Ave	Alive				
5/19/2020		*oak, bur (Quercus macrocarpa)*	142746	41.59475177	-93.64398873	2103 Cottage Grove Ave	Alive				
11/5/2020		*oak, bur (Quercus macrocarpa)*	37657	41.60667026	-93.65724801	1522 29th St	Alive				
5/23/2021		*oak, bur (Quercus macrocarpa)*	144315	41.60094895	-93.67433637	1215 42nd St	Alive				
6/3/2021		*oak, bur (Quercus macrocarpa)*	2071	41.62855031	-93.67550142	3700 42nd St	Alive				
4/22/2021		*oak, bur (Quercus macrocarpa)*	144110	41.59384357	-93.59107899	1626 Capitol Ave	Alive				
4/24/2021		*oak, chinkapin (Quercus muehlenbergii)*	144007	41.63127055	-93.62705298	3845 8th St	Alive				
10/31/2020		*oak, chinkapin (Quercus muehlenbergii)*	143579	41.59130372	-93.5659416	2629 Dean Ave	Alive				
5/22/2021		*oak, chinkapin (Quercus muehlenbergii)*	144334	41.57395883	-93.60534526	1600 SE 6th St	Alive				
5/22/2021		*oak, chinkapin (Quercus muehlenbergii)*	144335	41.5738866	-93.60534392	1600 SE 6th St	Alive				
5/22/2021		*oak, chinkapin (Quercus muehlenbergii)*	144342	41.57264252	-93.60536403	602 E Dunham Ave	Alive				
4/17/2021		*oak, northern red (Quercus rubra)*	1898	41.59569663	-93.66150726	1003 1/2 33rd St	Alive				
5/23/2021		*oak, northern red (Quercus rubra)*	32392	41.60314844	-93.67451162	1328 42nd St	Alive				
4/17/2021		*oak, northern red (Quercus rubra)*	143974	41.59538133	-93.66309054	3402 School St	Alive				
10/17/2021		*oak, northern red (Quercus rubra)*	146016	41.58118805	-93.63231608	1350 W Martin Luther King Jr Pkwy	Alive				
5/1/2021		*oak, northern red (Quercus rubra)*	144188	41.59709534	-93.60247528	1220 Walker St	Alive				
6/3/2020		*oak, swamp white (Quercus bicolor)*	142985	41.62164994	-93.62807557	701 Corning Ave	Alive				
11/5/2020		*oak, swamp white (Quercus bicolor)*	11680	41.63368346	-93.67402768	4014 41st St	Alive	Replaced #1			Basswood
11/12/2020		*oak, swamp white (Quercus bicolor)*	143510	41.6146947	-93.60412832	2219 E 12th St	Alive				
10/21/2021		*oak, swamp white (Quercus bicolor)*	146141	41.55532574	-93.60462039	611 E Park Ave	Alive				Hackberry
10/31/2020		*oak, white (Quercus alba)*	143580	41.59130372	-93.5658212	2629 Dean Ave	Alive				
10/31/2020		*oak, white (Quercus alba)*	143590	41.59132478	-93.56374084	2736 Dean Ave	Alive				
10/31/2020		*oak, white (Quercus alba)*	143598	41.5913629	-93.56177479	2829 Dean Ave	Alive				
5/8/2021		*pine, eastern white (Pinus strobus)*	144292	41.59488487	-93.61935645	971 2nd Ave	Alive				
6/3/2021		*pine, eastern white (Pinus strobus)*	144695	41.60773194	-93.66641446	1602 37th St	Alive				
6/16/2020		*planetree, London (Platanus x acerifolia)*	142829	41.59653964	-93.65709003	2903 Kingman Blvd	Alive				
6/29/2020		*planetree, London (Platanus x acerifolia)*	143006	41.62185303	-93.62933914	710 Corning Ave	Alive				
6/29/2020		*planetree, London (Platanus x acerifolia)*	143003	41.62155519	-93.62935601	710 Corning Ave	Alive				
6/29/2020		*planetree, London (Platanus x acerifolia)*	142981	41.62194743	-93.62791634	701 Corning Ave	Alive				
11/16/2020		*planetree, London (Platanus x acerifolia)*	47574	41.53485636	-93.56449914	2706 E Cutler Ave	Alive				
5/8/2021		*planetree, London (Platanus x acerifolia)*	144288	41.59434427	-93.61884146	971 2nd Ave	Alive				
5/5/2021		*planetree, London (Platanus x acerifolia)*	144254	41.62956374	-93.63126412	3800 10th St	Alive				
11/7/2021		*planetree, London (Platanus x acerifolia)*	146197	41.59159924	-93.63886279	1521 Center St	Alive				
10/2/2021		*planetree, London (Platanus x acerifolia)*	145931	41.6286512	-93.6270712	718 Clinton Ave	Alive				
10/17/2020		*planetree, London (Platanus x acerifolia)*	52328	41.5946887	-93.64513538	2103 Cottage Grove Ave	Alive				
9/25/2021		*planetree, London (Platanus x acerifolia)*	145485	41.60313122	-93.56575399	1300 E 27th St	Alive				
4/29/2021		*planetree, London (Platanus x acerifolia)*	8504	41.57418782	-93.61172891	227 E Granger Ave	Alive				
10/17/2021		*planetree, London (Platanus x acerifolia)*	141130	41.5844624	-93.67392837	4142 Grand Ave	Alive				
10/9/2021		*planetree, London (Platanus x acerifolia)*	145851	41.54391679	-93.58518762	1831 Swan Lake Cir	Alive				
10/10/2020		*planetree, London (Platanus x acerifolia)*	143449	41.54348969	-93.58493887	1831 Swan Lake Cir	Alive				
10/17/2020		*planetree, London (Platanus x acerifolia)*	143626	41.59402282	-93.64391375	2000 Cottage Grove Ave	Alive				
10/17/2020		*planetree, London (Platanus x acerifolia)*	143625	41.59406394	-93.64399019	2000 Cottage Grove Ave	Alive				
10/17/2020		*planetree, London (Platanus x acerifolia)*	143624	41.59410005	-93.64405859	2000 Cottage Grove Ave	Alive				
10/17/2020		*planetree, London (Platanus x acerifolia)*	142751	41.59441799	-93.64417091	2103 Cottage Grove Ave	Alive				
11/5/2020		*redbud, eastern (Cercis canadensis)*	35081	41.60592635	-93.62964585	1502 9th St	Alive				
11/11/2021		*redbud, eastern (Cercis canadensis)*	146209	41.58985736	-93.66142421	693 33rd St	Alive				
9/16/2021		*redbud, eastern (Cercis canadensis)*	145210	41.60493821	-93.59255313	1653 Cleveland Ave	Alive				
10/30/2021		*redbud, eastern (Cercis canadensis)*	42030	41.60493611	-93.58872988	1755 Cleveland Ave	Alive				
11/4/2020		*redbud, eastern (Cercis canadensis)*	143608	41.59839461	-93.66683021	3701 Cottage Grove Ave	Alive				
10/31/2020		*redbud, eastern (Cercis canadensis)*	143574	41.59124554	-93.56932923	2520 Dean Ave	Alive				
10/31/2020		*redbud, eastern (Cercis canadensis)*	143569	41.59123351	-93.56998905	2500 1/2 Dean Ave	Alive				
10/30/2021		*redbud, eastern (Cercis canadensis)*	146165	41.60494137	-93.58672542	1371 E 18th St	Alive				
10/21/2021		*redbud, eastern (Cercis canadensis)*	146128	41.55540703	-93.60459491	614 E Park Ave	Alive				
10/7/2020		*redbud, eastern (Cercis canadensis)*	143350	41.60401713	-93.63651253	1400 Forest Ave	Alive				
9/16/2021		*redbud, eastern (Cercis canadensis)*	145214	41.60493419	-93.59404176	1348 McCormick St	Alive				
9/16/2021		*serviceberry, Allegheny (Amelanchier laevis)*	145226	41.60492717	-93.59553443	1368 E 16th St	Alive				
9/16/2021		*serviceberry, Allegheny (Amelanchier laevis)*	145229	41.60492417	-93.5959582	1401 Hutton St	Alive	Replaced #1			Lilac
9/16/2021		*serviceberry, Allegheny (Amelanchier laevis)*	145216	41.6049352	-93.59421342	1610 Cleveland Ave	Alive				
5/5/2021		*serviceberry, downy (Amelanchier arborea)*	144213	41.6294651	-93.62547859	614 Douglas Ave	Alive				
9/18/2021		*tuliptree (Liriodendron tulipifera)*	145317	41.59860723	-93.65223899	1113 26th St	Alive				
10/1/2021		*tuliptree (Liriodendron tulipifera)*	145897	41.62864514	-93.63076282	927 Clinton Ave	Alive				
9/16/2021		*tuliptree (Liriodendron tulipifera)*	145196	41.60503046	-93.59057098	1400 E CT-17	Alive				
10/9/2021		*tuliptree (Liriodendron tulipifera)*	145872	41.53981108	-93.5808991	4785 Indianola Ave	Alive				
10/9/2021		*tuliptree (Liriodendron tulipifera)*	145852	41.54386058	-93.58513129	1831 Swan Lake Cir	Alive				
9/25/2020		*tuliptree (Liriodendron tulipifera)*	143271	41.57377827	-93.61599629	1807 S Union St	Alive				
9/18/2021		*tuliptree (Liriodendron tulipifera)*	145325	41.59987087	-93.65340039	1166 27th St	Alive				
6/3/2021		*yellowwood (Cladrastis kentukea)*	144996	41.59777593	-93.68019421	1071 46th St	Alive				
5/5/2021		*yellowwood (Cladrastis kentukea)*	144228	41.62956475	-93.62809106	821 Douglas Ave	Alive				
5/5/2021		*yellowwood (Cladrastis kentukea)*	144239	41.62956876	-93.63008394	909 Douglas Ave	Alive				
5/25/2021		*yellowwood (Cladrastis kentukea)*	47383	41.53576923	-93.55582689	5405 SE 31st St	Alive				

vacant	15	0.092592593
dead standing	4	0.024691358
alive	143	0.882716049
	162	

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.

Anticipated Mortality Deduction (%) at Initial Crediting	20%
Observed Mortality (%) at Year 4	12%

Table 3. Credits are based on 10%, 40%, and 30% at Years 1, 3, and 5 after planting, respectively, of the projected CO_2 stored by live trees 25-years after planting. These values account for anticipated tree losses and the 5% buffer pool deduction.

						10%	40%	30%	20%
	No. Sites Planted	**No. Live Trees**	**Mortality Deduction (%)**	**25-yr CO_2 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	1199	959	0.20	3,978.85	3625.7	362.57	1450.27	1087.71	725.14
BDM	293	234	0.20	2,451.33	545.9	54.59	218.35	163.76	109.17
BDS	268	214	0.20	700.27	142.6	14.26	57.05	42.79	28.53
BEL	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
BEM	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
BES	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
CEL	12	10	0.20	2,144.53	19.6	1.96	7.82	5.87	3.91
CEM	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
CES	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
	1772	1418	0.20	9,275.0	4333.7	433.37	1733.50	1300.12	866.75

					sumcheck
Credits issued	4334	440	1733	1300	861	4334
Buffer Credits	228	23	91	68	47	229

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.

Table 4. Grand Total CO_2 Stored after 25 years (all live trees, includes tree losses and 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)	1199	0.20	959	3,978.85	4,770.6	3,625.7
Brdlf Decid Med (30-50 ft)	293	0.20	234	2,451.33	718.2	545.9
Brdlf Decid Small (<30 ft)	268	0.20	214	700.27	187.7	142.6
Brdlf Evgrn Large (>50 ft)	0	0.20	0	0.00	0.0	0.0
Brdlf Evgrn Med (30-50 ft)	0	0.20	0	0.00	0.0	0.0
Brdlf Evgrn Small (<30 ft)	0	0.20	0	0.00	0.0	0.0
Conif Evgrn Large (>50 ft)	12	0.20	10	2,144.53	25.7	19.6
Conif Evgrn Med (30-50 ft)	0	0.20	0	0.00	0.0	0.0
Conif Evgrn Small (<30 ft)	0	0.20	0	0.00	0.0	0.0
	1772		1418	9275	5,702.3	4,333.7

Directions

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

This table incorporates error estimates of ±15% to the high and low estimates of the total CO_2 (t) stored by the live tree population after 25 years. For planning purposes only, it calculates dollar values.

Table 5. CO_2 value

	CO_2 $ per tonne
Low	$20.00
High	$40.00

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	4314.2	$86,283.61	$172,567.23
Brdlf Evgrn	0.0	$0.00	$0.00
Conif Evgrn	19.6	$391.16	$782.33
Total	4333.7	$86,674.78	$173,349.55
	CO_2 (t)	**Total $**	**Total $**
Grand Total CO_2 (t) at 25 years:	4333.7	$86,674.78	$173,349.55
High Est. with Error:	4983.8	$99,675.99	$199,351.98
Low Est. with Error:	3683.7	$73,673.56	$73,673.56
± 15% error = ± 10% formulaic ± 3% sampling ± 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.

Table 7. Co-Benefits per year after 25 years (all live trees, includes tree losses)

Ecosystem Services	Resource Units Totals	Resource Unit/site	Total $	$/site
Rainfall Interception (m3/yr)	10,979.53	6.20	$78,603.15	$44.358
CO_2 Avoided (t, $20/t/yr)	247.18	0.14	$4,943.70	$2.790
Air Quality (t/yr)				
O3	0.1448	0.0001	$483.61	$0.273
NOx	0.0235	0.0000	$78.47	$0.044
PM10	0.0760	0.0000	$215.75	$0.122
Net VOCs	0.0860	0.0000	$710.85	$0.401
Air Quality Total	0.3302	0.0002	$1,488.68	$0.84
Energy (kWh/yr & kBtu/yr)				
Cooling - Electricity	324,882.74	183.34	$24,658.60	$13.92
Heating - Natural Gas	4,640,941.03	2,619.04	$45,178.32	$25.50
Energy Total ($/yr)			$69,836.92	$39.41
Grand Total ($/yr)			$154,872.45	$87.40

$3,871,811.18

Attestation of Additionality

Reforesting Des Moines, IA - 2021
Attestation of Additionality

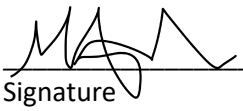
I am the Director of Programs Des Moines Metro of Trees Forever and make this attestation regarding additionality from this tree planting project, Reforesting Des Moines, Iowa – 2021.

- Project Description
    - 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)
    - 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
    - Project trees are additional based on a project specific baseline. See PDD; or
    - Project trees are additional based on the Performance Standard baseline; see attached baseline to the PDD. Project Operator has provided local canopy change data to support the use of the Performance Standard Baseline.
- Project Implementation Agreement for Project Duration
    - Trees Forever 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 Trees Forever 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. Through a public-private partnership with the City of Des Moines, Trees Forever is paid to plant and care for trees for two years, which includes two years of watering (20 weeks per year) and annual maintenance (mulching, pruning). All trees planted by Trees Forever have a one-year warranty; trees that do not survive the first year are replaced at Trees Forever's cost. Funding for tree planting is a combination of City of Des Moines funding and funding through corporations, organizations, and private individuals. The scale of plantings is dependent on available funding.
    - 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. Trees forever will

reinvest carbon revenues to plant and care for additional trees in the Des Moines metro area, which include two years of maintenance and care.

- Prior Consideration: Previous Director of Programs Leslie Berckes was introduced to Mark McPherson in 2018 when Microsoft was looking to fund projects. Trees Forever launched the Des Moines Growing Futures program in the spring of 2019 with funding from Microsoft. The City of Des Moines was and remains supportive of Trees Forever submitting all trees planted through the program for carbon crediting and reinvesting the proceeds back into the program. The first project submitted for credits was in 2019.
- In addition, many of the activities undertaken as part of the carbon project are beyond the Project Operator's common practice, including:
    - Care through establishment phase (up to/through Year 3)
    - Long-term maintenance
    - Long-term monitoring and growth assessment
    - Acceptance of reversal obligations
    - Long-term legal commitment to the project

Signed on August 19 in 2025, by Megan Schneider, Director of Programs Des Moines Metro, for Trees Forever.



Signature

Megan Schneider
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