

Tree Inventories and Community Forest Management Plans

NYS Department of Environmental Conservation

Urban and Community Forestry Grant Program (Round 16)

Guidelines for Awardees

Be sure to read General Guidelines for All Awardees in the Urban and Community Forestry (UCF) section of the Grantee Resources webpage. <https://dec.ny.gov/get-involved/grant-applications/lands-forests-grantee-resources>

UCF1 - Tree Inventories

The goal of inventory projects is to get a picture of the size, species, health, geographic distribution and maintenance needs of the urban forest. A complete inventory (on public property, i.e. street and park trees, managed by the applicant or municipality) provides information for individualized tree care, including risk tree identification.

A. **Understand the requirements for tree inventories from the Round 16 Request for Applications (RFA).** <https://dec.ny.gov/get-involved/grant-applications/lands-forests-grantee-resources>

Per the RFA page 8, The following information must be included in all tree inventory projects:

- Column headings and description of column content
- Measurement of tree DBH (diameter at breast height) in inches
- Tree species – genus/species AND common names
- Street address location
- GPS coordinates
- Location and size of empty and/or potential tree planting sites/stumps appropriate to applicant's current planting and removal patterns
- Crown condition and/or percentage of crown dieback (excellent to dead rating)
- Maintenance recommendation (prune, train, remove, etc.)
- I-Tree ECO Summary report of environmental benefits

A completed Tree Inventory from an ISA certified Arborist (usually a consultant) must include an i-Tree ECO environmental benefits analysis, and this should be delivered to the awardee and DEC with the inventory in an Excel sheet and GIS shape file formatted as outlined in Appendix A prior to inspection by DEC and prior to payment to consultant. Please don't begin on the Community Forest Management Plan (CFMP) before Tree Inventory deliverables are met.

- B. **Bidding/Contracting Tree Inventory Work**– Once the DEC-Awardee contract is executed, awardees are expected to request bids/estimates as per awardee’s standard procurement policies. Awardees are strongly encouraged to put the work out to bid to control costs and encourage contractor accountability. Tree inventories present unique contracting challenges because the quantity of trees is unknown at the outset.

In order to fairly bid out the work; to collect “apples to apples” quotes; to ensure that payment is based on the original quote; AND to ensure that only services delivered are paid for, please adhere to the following principles:

1. Estimate the number of trees and define areas to be inventoried before requesting bids.

Neither the contractor nor applicant are likely to know how many trees/stumps and vacant planting sites there are prior to a tree inventory. Contractors should give their closest estimate based on knowledge, regional expertise and awardee knowledge. Awardees could reach out to their highway personnel, department of public works (DPW), regional ReLeaf committee, tree boards and other knowledgeable people who may have an estimate of trees in the area to be inventoried. We suggest looking carefully at bids received for wide discrepancies in tree numbers. To get a rough idea of the number of street trees a community may have, you can take a sample. From the total number of street-miles in the project area, randomly select 5 or 10% of those miles. Count the number of trees in the right-of-way on both sides. Then multiply by either 20 for a 5% sample or 10 for a 10% sample. A 10% sample should be more accurate. The scope of work should be clearly defined and included in the request for bids. What trees are being counted (street, park cemetery, etc.)? Define right-of-way information especially if there is no sidewalk.

2. Be consistent in how bids/quotes/billing is described throughout all four major contracting phases:

- a. Preparing bid documents and announcing request for bids
- b. Accepting bids
- c. Reviewing and approving vendor contract language
- d. Issuing payment

Per-tree pricing is recommended beyond the 1st 1,000 trees. Don’t switch pricing type (i.e. from per-tree to lump sum) partway through the process.

3. Request per unit bids and billing structure, not lump sum. Contractors should provide a bid/estimate based on a per unit, actual number of trees/sites, and awardees should expect reimbursement based on an actual number of trees/sites inventoried. This enables the awardee to assess the bids/estimates fairly and evenly.

4. Allow for economies of scale before entering into contract with the consultant.

We do not want the contractors to underestimate the number of sites otherwise the

project may not be completed. However, if fewer sites are delivered, the Contractor may need to charge more per site. This can be accomplished in the bidding/contracting process by requesting contractor pricing as a flexible, variable cost structure based on economies of scale:

For example: less than 1,000 units - \$8.00 ea.; 1,000-2,000 units \$7.50 ea.; 2001-5,000 units \$4.50 ea.; 5,001-10,000 units \$4.00 etc. (these are not meant to be taken as accurate prices).

Tree Inventories under 1,000 sites may need to be a fixed price as they are not cost effective for the consultant.

5. Woodlands or unmaintained park areas with or without recreational trails cannot be included in an Urban Forest Tree Inventory in Round 16. If in doubt, please contact the DEC grants administrator prior to proceeding.

6. Planting Spaces – Awardees should request no more than **25%** of the total sites be tabulated as vacant planting sites when bidding. Within this boundary, awardees should estimate how many trees they can reasonably plant in the next 5 years. To identify 500-1000 planting spaces on a total of 5,000 sites is good if 100 trees can be planted each of the next 5 years. If the awardee usually plants 40 trees per year, it will be overwhelming information and not cost effective to identify a large number of potential planting sites. This grant does not cover planting space identification in parks but covers all street, ROW and municipal building areas. Awardees should prioritize the areas they want to plant in the future, for instance, Environmental Justice or low canopy areas. Planting sites should be identified in these areas first. Awardees and contractors should discuss minimum standards for an appropriate planting space, choosing the biggest, best sites first. Once a tree inventory has been completed, volunteers such as the Tree Board and DPW staff can identify more planting spaces, including those where trees have been removed. Some consultants offer a price for 500 planting spaces, and this should suffice for most awardees.

7. Use a bidding/quoting table. Tailor this table to your expected scope of work. The # of units provided here are for explanatory purposes. Please use the same pricing breakdown for the request for bids, consultant contract and other documents.

Item for Bid	Cost per Unit (Rate)	# of Units	Total Bid (Rate X # of Units)
Tree Inventory Startup (enter lump sum price for inventory of up to 2,000 trees)		1	
Additional Expected Trees (enter price per tree for inventory of 2,001 to 6,000 trees)		4,000	

Additional Expected Trees (enter price per tree for inventory of 6,001 to 10,000 trees). Add more boxes for higher number of trees		4,000	
Vacant Planting Spaces, (not to exceed 25% of total tree inventory and based on planting goals)		2,500	
Meetings - final public presentation		1	
Community Forest Management Plan (Basic)		1	
Community Forest Management Plan (e.g. Planting Plan, Storm Preparedness and Response). Add more boxes for extra plans and price each.		1	
CONTRACT TOTAL (MAX)	n/a	n/a	

8. Pay for work completed.

The Urban and Community Forestry grant will only cover units of work completed. If a bid says there are approximately 10,000 sites and the end result is 7,000 sites, the billing will need to reflect 7,000 sites. Sites include trees, stumps, and vacant planting spaces as per #6 above.

9. Tree Inventory Management Software.

Tree Inventory software can also be bid or listed as a separate item in a request for bids. Awardees should choose software that best fits the needs and capabilities of the field staff who will update the Tree Inventory and which they can maintain beyond grant funding. Each year, more awardees move to natural resource or local asset management systems for all DPW needs. DEC generally will not pay for tree inventory management software if the awardee has asset management software. For those who require management software for their tree inventory, please shop around and research products as there are vast differences in quality, functionality and price, so you purchase what your municipality or NFP will use for the long term. Make sure you will be able to access the data after the lease has ended. A list of current tree inventory programs we are aware of can be provided to awardees. Small inventories of 4,000 or fewer sites can easily be managed in an Excel spreadsheet.

10. Community Forest Management Plan

If a CFMP had not been applied for in the original project, include a basic CFMP in the request for bids, in case there are funds available after the Tree Inventory is complete.

UCF2 Community Forest Management Plans

During the DEC-Awardee contract building process, DEC and the awardee will decide on final components for the CFMP (planting plan, storm preparedness plan, etc.). Items to be built into the CFMP must be listed as eligible in the Round 16 RFA on page 9. Consultants are not responsible for outreach and education beyond the final public presentation. Ineligible items or plans will not be reimbursed. Awardees can contract for extra plans and ask for separate invoicing for non-grant-funded components. The CFMP is generally included in the same bid process as the Tree Inventory.

CFMPs should be *individualized* to the village, town, city or park that was inventoried. The closer the reference to the locality, the better it will be understood by the community. It is important that the goals and needs of the community are met and that they have clear and concise information to move forward. A well written plan will more likely garner support from community officials, buy-in from community residents and will be more successfully implemented.

Think of the CFMP as a document that can be filed in the local library for reference and community interest, as the downtown revitalization, comprehensive plans and waterfront plans are intended to be. The community should provide the following information to incorporate into the plan:

- Local and urban forestry history
- Historic and current photos (The community should provide photos for the plan and choose the cover photo. Talk to the consultant about very good and very bad trees that should be represented in the plan. Provide photos showing community trees in different areas being inventoried. Find out from the consultant what resolution is needed for photos.)
- Information about significant trees, planting initiatives or other noteworthy activities

After completion of the inventory and before work begins on the CFMP, a second meeting can be held. Participants could include the awardee, partners such as the tree board, the consultant, DEC urban forester and anyone else working on the CFMP. Once again, the community should discuss their needs, goals and objectives for the CFMP. At this point the consultant will have a good feel for the inventoried area and be able to discuss details or specifics that should come into play in the CFMP. Some examples that may come up in the conversation:

- Are there budget opportunities/ strategies that might help build capacity for tree care?
- Are there large major planting areas that could be addressed first (biggest/ best sites)?
- Are there obvious areas for rain gardens, bioswales or other small projects that could be undertaken by the DPW and volunteers?
- Are there historic trees that should have special treatment?
- Are there invasive species that should be treated or managed?

Spend time with the consultant, ask questions, determine needs, develop a reasonable plan

for the future and the CFMP will be much more useful.

Per the RFA, page 9 - CFMPs must be supervised by an ISA Certified Arborist and include the following information customized to each community:

- A vision, goals and objectives for the long-term community forest and a strategy for how to care for the community trees.
- Use of the tree inventory which identifies management needs i.e. pruning rotations, removal implementation, and prioritization of workload.
- The development of budgets and work plans, including timelines and tasks, to meet that vision.
- I-Tree ECO environmental benefit analysis of environmental issues such as: water quality, air quality, reduce urban heat island effect, energy efficiencies, storm water management, and health (including i-Tree narrative).
- Basic in-house training/meeting of responsible staff by the contracted consultant that provides guidance to all those involved with ongoing maintenance of the Tree Inventory, and implementation of the Management Plan. Follow up by consultant in the second or third year is also available to ensure positive long-term support.

Recommended inclusion:

- Existing Municipal Tree ordinance – if the awardee has a tree ordinance it should be included in the CFMP. Give the consultant a copy at the kick off meeting for inclusion; it can be an appendix
- An action item could be the creation and/or use of a community tree board if approved in the application. Their roles and activities would be designated and explained. This CFMP chapter should be discussed with the consultant and the regional DEC urban forester but can be written by the Tree Board, CAC, Forestry Board or volunteer entity and include quotes, goals, references and names of local people, pictures of Arbor Day or other tree celebrations. The consultant can assist or write this with community input.

Optional additional plans for the awardee:

- Operational plan based on the community's current budget which includes budget strategies to help build capacity and move awardee toward being able to complete the work in the CFMP.
- Storm preparedness and response planning
- Planting plan to address the unique characteristics of the project location, such as: species diversity, understory plantings, erosion control, and brownfields that could be impacted with planting and would address local needs
- Waste wood utilization plan to reduce disposal costs.

The consultant should present the final plan to the community at a public meeting. This will count as an outreach activity. Invite the press and DEC urban forester. Once finalized, a copy of the plan will be sent to DEC.

APPENDIX A

NYS Urban Tree Inventory Shapefile Data Collection Attributes Requirements*- Upon completion of the project, an electronic copy of the final tree inventory must be submitted as a shapefile or .csv by the awardee. In order to make sure the data collected statewide by various consultants is able to be combined into one statewide database, we ask that the shapefile data fields provided to the DEC UFC team be setup as follows:

Field Name	Description	Field format; example
ADDRESS	Use Park name or street if no address number is available	Numeric; 291 Text; Prospect Park
STREET	Street name	Text; Middleline Road
SIDE	Side of address that tree is located on (Front, Rear, Median, etc)	Text; Front
SPECIES_CO	Common name; all lowercase, unless a proper noun is included (e.g., sugar maple, Norway spruce, eastern white pine, sweetgum, Japanese tree lilac)	Text; Norway spruce
SPECIES_BO	Scientific/Latin name; Genus capitalized, and species lowercase (e.g., Acer saccharum, Picea abies, Pinus strobus); do not include cultivar with Latin name *If a species name, common or botanical, is unknown, then provide whichever name is known. If only a genus is known, enter the genus followed by "sp" in the SPECIES_BO column. * If the tree is a subspecies of another, put "subsp" before the subspecies name (e.g., <i>Genus species subsp subspecies</i>) * If the tree is a hybrid of two species, place "x" after the genus (e.g., <i>Genus x OR Genus x hybridspeciesname</i>)	Text; Picea abies
CULTIVAR	Cultivar/variety name -first letter of each word capitalized	Text; Autumn Blaze
MULTISTEM	Number of stems that separate below 4.5ft	Numeric; 4

DBH	Diameter at breast height (4.5ft) in inches, to the nearest 1-inch. Do not give ranges. Provide a DBH value to the nearest inch.	Numeric; 12
CROWN		Text; Good
CONDITION	Overall condition of tree (Dead, Critical, Poor, Fair, Good, or Very Good)	Text; Good
SITE_WIDTH	Width of planting site	Numeric; 12
NOTES	Other information about the tree that is deemed necessary or useful	Text; Concrete observed in cavity
OHUTIL/CLEARANCE	Overhead utilities present (Yes or No); if Yes, are utility lines and tree conflicting (Conflicting or Non-conflicting)	Text; Yes Non-conflicting
TREE_WORK_MAINTPRIM	Primary tree work that is recommended	Text; Removal
INSPECT	Additional inspection requested	Text; Level 3 assessment
RISKASSESS	Risk Assessment Conducted	Text; Yes
RESIDRISK	Residual Risk after mitigation	Text; Low
FAIL	Likelihood of Failure (Improbable, Possible, Probable, Imminent)	Text; Probable
TARGET	Likelihood of Impact on Target (Very Low, Low, Medium, High)	Text; Low
CONSEQ	Consequence of Failure (Negligible, Minor, Significant, Severe)	Text; Minor
LIKELIHOOD	Likelihood of Failure & Impact (Unlikely, Somewhat Likely, Likely, Very Likely)	Text; Likely
RATING	Risk Rating (Low, Moderate, High, Extreme)	Text; Low
INV_DATE	Month/Day/Year	Text; 01/18/2023
X	Each data point should be located using GIS and/or GPS equipment using NAD83	Numeric; 688109.7021
Y	Each data point should be located using GIS and/or GPS equipment using NAD83	Numeric; 1393727.845
LATITUDE	Each data point should be located using GIS and/or GPS equipment using NAD83	Numeric; 42.65669963
LONGITUDE	Each data point should be located using GIS and/or GPS equipment using NAD83	Numeric; -73.77145321
GEOM		
CITY	Name of city, village, or township in which inventory was conducted.	Text; Albany

*Minimum Data required is listed on page 8 of the RFA and should be provided in the format stated above.

Example File:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
OID	ADDRESS	STREET	SIDE	SPECIES_CO	SPECIES_BO	CULTVAR	MULTISTEM	DBH	CROWN	CONDITION	SITE_WIDTH	NOTES	IUTIL_C	TREE_WORK	INSPECT	RISKASSES
0	35	Willett St	Front	green ash	Fraxinus pennsylvanica		No	37	0	Fair		Possible EA	No	Prune	Insect/disease monitoring	Yes
1	35	Willett St	Front	green ash	Fraxinus pennsylvanica		No	35	0	Poor		possible gan	No	Remove	None	Yes
2	35	Willett St	Front	sugar maple	Acer saccharum		No	23	0	Poor		girdling roots	No	Remove	None	Yes
3	35	Willett St	Front	sweetgum	Liquidambar styraciflua	Silver King	No	1	0	Fair		remove hard	No	Train	None	Yes
4	35	Willett St	Front	green ash	Fraxinus pennsylvanica		No	38	0	Fair		deadwood	No	Prune	None	Yes
5	35	Willett St	Front	sugar maple	Acer saccharum		No	29	0	Poor		cavity or decay	No	Prune	Level 3 assessment	Yes
6	35	Willett St	Front	European beech	Fagus sylvatica		No	19	0	Fair			No	Routine Prune	None	Yes

Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
RISKASSES	RESIDRISK	FAIL	TARGET	CONSEQ	LIKELHOOD	RATING	INV_DATE	X	Y	LATITUDE	LONGITUDE	GEOM	City
Monitoring	Yes	Low	Probable	Medium	Somewhat Likely	Significant	Moderate	5/17/2021	688089.931	1393685.057	42.65689963	-73.77145321	Albany
	Yes	None	Possible	Medium	Unlikely	Severe	Low	44333	688109.7021	1393727.845	42.65681657	-73.77137834	Albany
	Yes	None	Probable	Medium	Somewhat Likely	Significant	Moderate	44333	688167.1242	1393719.549	42.65673245	-73.77116514	Albany
	Yes	Low	Possible	Low	Unlikely	Negligible	Low	44333	688248.5703	1393737.434	42.65683964	-73.77086923	Albany
	Yes	Low	Probable	Medium	Somewhat Likely	Minor	Low	44333	688198.3627	1393856.08	42.65716633	-73.77104484	Albany
	Yes	Low	Probable	Medium	Somewhat Likely	Significant	Moderate	44333	688233.2389	1393904.35	42.65729795	-73.77091344	Albany

End.
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