

A FORESTER'S GUIDE TO THE FAMILY FOREST CARBON PROGRAM

Introduction

The Family Forest Carbon Program (FFCP) is an opportunity for private landowners to take advantage of financial assistance available through carbon markets by managing their forests in a way that helps mitigate climate change. The program is designed to help landowners meet their forest management goals including recreation, creating wildlife habitat, and producing sustainable forest products. The FFCP is a partnership between the American Forest Foundation and The Nature Conservancy and is administered by the Family Forest Impact Foundation, LLC, which is an affiliate of AFF.

The FFCP represents an opportunity to engage forest landowners with new types of incentives, helping contribute to the cost of forest management practices and offering opportunities for income. Landowners interested in this program will work with a professional forester that will provide technical assistance and professional guidance to landowners on the best options for their forests.

Practice-Based Approach

Traditional carbon programs are based on the measured carbon stocks at the project or property level. Most landowners have historically been restricted from accessing these programs because of the high costs associated with measurement, monitoring and verification of carbon stocks.

The FFCP is different. It incentivizes specific forest management practices which have been scientifically demonstrated to enhance carbon sequestration, improve forest health, and provide other important ecosystem benefits. Carbon gain is tied to specific forestry practices and calculations are done per practice instead of per property. The amount of carbon sequestered through these practices is verified through on-the-ground monitoring of a random sampling of properties. By using the random sampling approach, the FFCP opens the door for smaller family forest owners to benefit.

Landowner Engagement and Enrollment

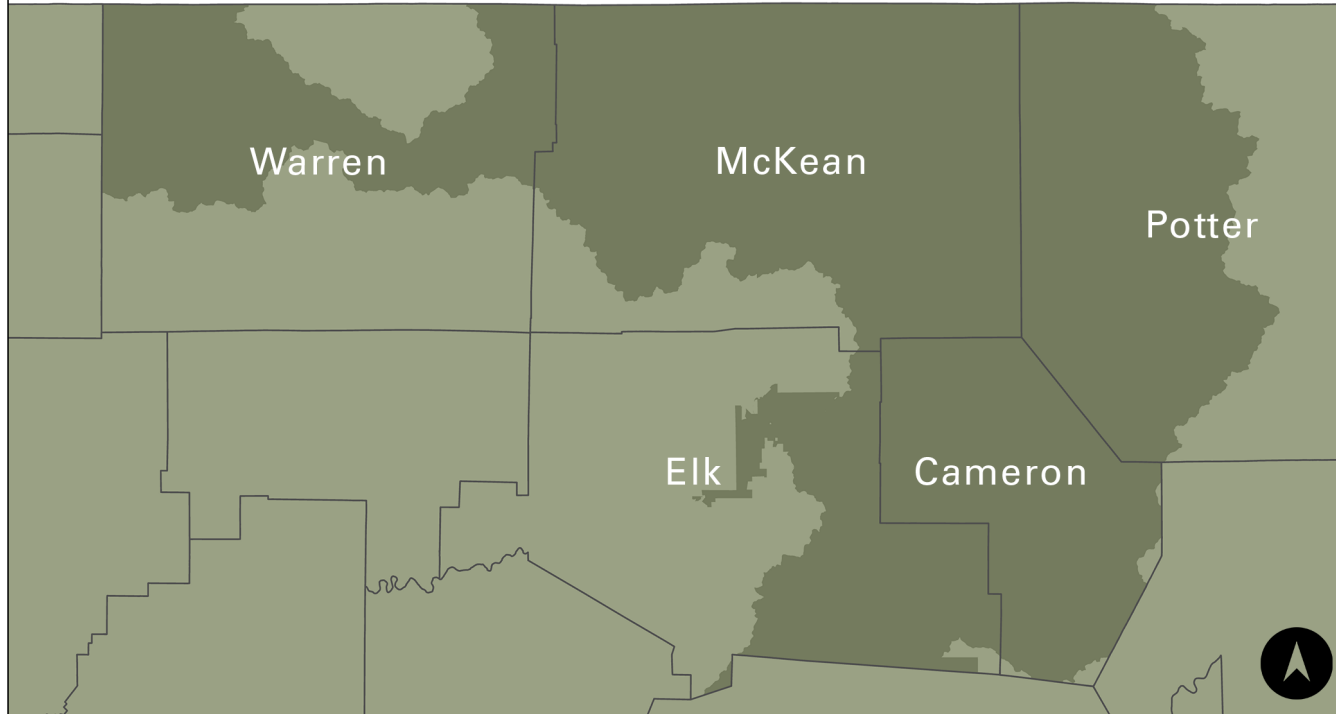
Landowner Eligibility

To be eligible for enrollment in the FFCP, the following criteria must be met at the **PROPERTY** level:

1. The property is within the eligible project areas (see maps below)
2. The property is between 30 and 2,400 acres of non-industrial private forestland
3. The property is not subject to any existing legal encumbrance (e.g. conservation easement or state/local restrictions) that excludes timber harvest activity (e.g. riparian buffers, designated reserves or no harvest areas)

Additional eligibility criteria may be required at the **PROJECT** level for certain forestry practices. Those additional criteria are listed below with the corresponding practice.

FAMILY FOREST CARBON PROGRAM PENNSYLVANIA PILOT: NORTHWEST GEOGRAPHY



Northwest geography

State and county data was sourced from the United States Census Bureau in 2019. Northwest geography was generated from data from Audubon Pennsylvania in 2019.

Last updated: Jan. 10, 2020, by Lynn Riley, lriley@forestfoundation.org



FAMILY FOREST CARBON PROGRAM PENNSYLVANIA PILOT: CENTRAL GEOGRAPHY



■ Central geography

State and county data was sourced from the United States Census Bureau in 2019. Central geography was generated from data from The Nature Conservancy in 2019.

Last updated: Jan. 10, 2020, by Lynn Riley, lriley@forestfoundation.org



Landowner Outreach

The FFCP has several strategies for recruiting forest landowners to the program. The program will build on existing landowner and forester networks by utilizing the American Tree Farm System, Pennsylvania Forest Stewardship Program, Woodlands Owners Associations, Consulting Foresters, and Bureau of Forestry Service Foresters. Foresters are encouraged to talk to their clients about FFCP to see if the program aligns with their management objectives.

The FFCP will also utilize new technology to recruit forest landowners who are new to forest management and conservation. WoodsCamp is a free online tool designed to help family forest owners connect with programs, services, and professionals that help them care for their land. By leveraging the best available mapping data, WoodsCamp creates a free personalized report highlighting opportunities matched to the landowners' goals and the condition in their forest. It is a tool that will more efficiently pinpoint forest owners who might be a good fit for conservation projects in specific areas, including FFCP.

The goal of the FFCP is to work with many landowners that do not have an existing relationship with a Consulting Forester. The FFCP will utilize Consulting Foresters as part of the of the project process and encourages long-term collaboration between the landowner and forester. Consulting Foresters that participate with FFCP can utilize the program to meet new landowners and build their client base.

The Role of Foresters

Planning A Project

Landowners interested in the FFCP will work with a forester to delineate a project area and collect basic forest stand data. Most of the time this will require a joint site visit between the landowner and forester to discuss the landowner's forest management goals and tour the property together to identify potential project locations. The forester will need to delineate the project area and provide this to FFCP staff in the form of a shapefile (preferred), series of GPS points, or delineated on an accurate map. The forester will also have to collect basic forest inventory data depending on the selected practice as described below.

A property tour may not be necessary if a landowner has a forest management plan less than 10 years old with accurate stand delineations and forest inventory data that can be used to plan the project. Existing plans must have up to date information and reflect current conditions of the proposed FFCP project area.

Participating and Approved Foresters

The FFCP will work with foresters to ensure they are prepared to work with landowners who are interested in the program. The FFCP also expects foresters who are working with landowners to carry out FFCP practices to promptly share information with FFCP staff.

The FFCP will rely on two categories of foresters to plan projects: FFCP-Participating Foresters and FFCP-Approved Foresters. An FFCP-Participating Forester is one who will be sent prospective landowners from FFCP to conduct landowner visits and project planning. FFCP-Approved Foresters may plan FFCP projects on existing clients' woodlands but will not be sent new landowners from FFCP. Information on both categories is included in the "Requirements and Standards for Participating Consulting Foresters" section of this manual. The FFCP will maintain a list of approved and participating foresters.

Forester – Landowner Working Relationship

In the Northwest Pennsylvania Pilot Geography, the FFIF will contract with foresters to provide visit and project planning so that the services are offered at no cost to the landowner.

In the Central Pennsylvania Geography, the FFIF will refer landowners to FFCP-participating foresters at an agreed-upon rate by the forester and landowner.

In addition, all landowners are encouraged to work with a consulting forester to fulfill the recommendations in their forest management plan. Doing so will likely include practices in addition to those contracted through FFCP. Foresters and landowners linked together through FFCP may continue working together on additional projects such as sustainable timber sales if both parties wish to do so.

FFCP Practices

The FFCP is based on forest management practices which have been scientifically demonstrated to enhance carbon sequestration and improve forest health. The forester and landowner should work together to determine which practices are appropriate for different forest stands based on the landowner's management goals and forest conditions. The FFCP practices for the Appalachian region include "Growing Mature Forests" and "Enhancing the Future Forest."

Growing Mature Forests

This practice is intended to avoid unsustainable timber harvesting in sawtimber-sized forest stands. To be eligible for this practice, the project area must average at least 2,000 board feet per acre and the payment to the landowner will be based on the estimated timber volume in the project area.

In this practice, a landowner agrees to a 20-year commitment of increasing post-harvest forest stocking and quality. GMF is ideal for forested stands where no regeneration harvests are planned. Plantations are ineligible for this practice.

Foresters planning a Growing Mature Forests practice will need to complete a basic forest inventory to assess forest stand condition and estimate the average timber volume per acre. The inventory should be conducted using variable radius plots (i.e. prism or angle gauge plots). Tree species, quality, DBH, timber product, and merchantable height will be recorded for each "in" tree. More information on these criteria are included in the attached Inventory and Planning Guide. The locations of plots should be well distributed, unbiased, and located within representative conditions for the forest stand. The forester will record the GPS coordinates of each plot, mark plot center with paint or flagging, and provide the plot coordinates to FFCP staff. The minimum sampling intensity will be as follows:

Acres	Plots
10-30	6
30 - 70	7
70 – 150	9
150 +	10 plots plus 1 plot for every 50 acres above 150 (ex. 350 acres = 13 plots)

Foresters are encouraged to install more plots if higher accuracy is desired by the forester and/or landowner, the project area covers multiple forest stands, or the forest condition is highly variable. Foresters will calculate the estimated timber volume for the project in International $\frac{1}{4}$ " using appropriate

log rules for the project area and provide the estimates to FFCP along with an Excel file or similar spreadsheet of the raw inventory data. Existing inventory data will suffice if the inventory reflects current forest conditions, planned project acreage, and minimum sampling intensity.

Forest Management Plans

Within 1 year after their agreement is signed, landowners enrolling in the “Growing Mature Forests” practice must submit to FFCP a property-wide forest management plan that is less than 10 years old or regularly updated. Landowners may use their existing forest management plans if the existing plan aligns with the [“Forest Stewardship Plan”](#) guidelines and is approved by FFCP. For existing plan approval, landowners will provide FFCP with a digital copy of the plan. The FFCP provides funding to landowners that enroll in FFCP to help cover the cost of a new forest management plan as well as a template that foresters may use if desired.

Timber Harvests

Commercial timber harvests and non-commercial tree cutting are allowed through the Growing Mature Forests practice but must meet the following criteria to ensure that the cutting is sustainable and meets program goals.

- i. Tree removals will remove no greater than 35% (THIRTY-FIVE) of the current basal area as determined by the most recent forest inventory. The basal area includes both dead and live trees.
- ii. No high grading (i.e. thin from above) will be conducted during the Agreement Term. High grading is defined here as a reduction in average stand diameter of more than 10% (TEN) from the pre-harvest condition, as determined by the most recent forest inventory, and over the Agreement Term, as determined by the initial forest inventory.
- iii. If multiple harvests occur during the Agreement Term, the cumulative percentage of basal area removed shall not exceed 35% of the basal area existing at the time of enrollment as determined by the initial forest inventory.
- iv. No commercial removal of dead wood from the project area except for where dead wood creates a threat to human safety and health. Landowners may remove dead wood for personal use.
- v. Tree removals are prohibited within 50 feet of intermittent and perennial streams with defined banks, spring seeps, lakes, ponds, and vernal pools.

These specifications may be waived in salvage situations if a waiver is received from FFIF.

Salvage harvests are allowed if tree mortality occurs from extreme weather events, forest fire, or forest pest or pathogen outbreak. Salvage harvests do **not** need to meet the above specifications; however, a waiver is required prior to harvest and the salvage may trigger an unintentional reversal of the contract.

Enhancing the Future Forest

Competing vegetation is a major hinderance to forest regeneration in the Appalachian region. The “Enhancing the Future Forest” practice provides landowners with financial incentives to control competing vegetation less than 5” DBH on forest stands being regenerated. Both native and non-native competing vegetation hinders the growth of young trees, reducing the diversity and carbon sequestration potential of the future forest. Eligible project areas are those that have at least 30% coverage of competing vegetation **and** where the landowner has conducted a regeneration harvest (i.e. overstory removal, shelterwood, group selection) in the past 10 years or intends to conduct a regeneration harvest

within the next 10 years. Competing vegetation includes: all non-native invasive plants, hay-scented fern, New York Fern, bracken fern, striped maple, American Beech, black birch, mountain laurel, and grapevine. The program restricts timber harvests on areas within 50 feet of surface water, so the project area shall not be within 50 feet of intermittent and perennial streams with defined banks, spring seeps, lakes, ponds, and vernal pools.

Data on the extent of the competing vegetation must be collected prior to contracting this practice. Foresters will record visual estimates of the percent coverage (in 5% increments) and height (for woody species only) of the competing vegetation within a 26-foot radius plot. The locations of plots should be well distributed, unbiased, and located within representative conditions for the forest stand. The forester will record the GPS coordinates of each plot, mark plot center with paint or flagging, and provide the plot coordinates to FFCP staff. The minimum sampling intensity will be as follows:

Acres	Plots
10 – 30	5
30 - 70	6
70 – 150	8
150 +	10 plots plus 1 plot for every 50 acres above 150 (ex. 350 acres = 13 plots)

Foresters are encouraged to install more plots if higher accuracy is desired by the forester and/or landowner, the project area covers multiple forest stands, or the forest condition is highly variable. The forester will provide FFCP with an excel file or similar spreadsheet with the percent coverage and height of the competing vegetation in each of the plots.

Competing vegetation can be in either the forest understory or midstory and be controlled with scientifically proven chemical or mechanical means. For native woody species, only stems less than 5 inches DBH are to be controlled through this practice. Broadcast (i.e. Mist-blower) applications of herbicide are only allowed where desirable regeneration is non-existent or protected by utilizing either a selective herbicide or application method.

The control measures must kill at least 85% of the competing vegetation for the practice to be considered successful. The landowner has 4 years after contract signing to achieve this. Specifically, the initial treatment must occur within 2 years of signing the contract, followed by an additional 2 years to verify the effectiveness of the treatment or to re-treat if necessary.

All state and local regulations must be followed, and if herbicides are used, a chemical use log must be provided to FFCP that lists the date, spray mix components, volume of spray applied, and acreage treated. Mechanical control methods must be conducted in a manner that prevents the re-sprouting of competing vegetation.

FAMILY FOREST CARBON PROGRAM FOREST INVENTORY AND PLANNING GUIDE

Foresters and other natural resource professionals should utilize this guide to plan forestry practices through the Family Forest Carbon Program (FFCP). The steps included in the project include forest stand delineation, project area selection, data collection, and data summarizing and reporting.

Stand Delineation

The forester will need to delineate the project area and provide this to FFCP staff in the form of a shapefile (preferred), series of GPS points, or delineated on an accurate map. The practice area should align with forest stands identified in a property's forest management plan as appropriate.

Data Collection

Additional data on the forest conditions must be collected on stands where an FFCP practice is prescribed. The required data depends on the practice. The forester will record the GPS coordinates of each plot, mark plot center with paint or flagging, and provide the plot coordinates to FFCP staff.

Enhancing the Future Forest (EFF): Visual estimate of competing vegetation coverage (in 5% increments) and height within a 26-foot radius plot. Competing vegetation includes all non-native plants, hay-scented fern, New York Fern, bracken fern, striped maple, American Beech, mountain laurel, and grapevine. For woody species only stems less than 5" DBH shall be counted. List all invasive plants noted within the project area. Minimum sampling intensity listed below.

Growing Mature Forests (GMF): Variable radius plots at the minimum sampling intensity listed below. Record species, quality, DBH, timber product, and merchantable height for each tree. Dead trees shall be included in the inventory. Tree species should be recorded with any common name, FIA code, Plants symbol, Mnemonic, or local code that is compatible with the USFS SILVAH program. Quality shall be recorded as either Acceptable Growing Stock (AGS), Unacceptable Growing Stock (UGS), or Dead based on the forester's discretion. Diameter can be recorded in either 1" or 2" classes. Product shall be sawtimber, pulpwood, or non-commercial based on the forester's discretion. Merchantable heights can be recorded in feet or in 16-foot logs, including half logs (i.e. 1.5 logs = 24 feet).

Minimum Required Sampling Intensity

Acres	Plots	
	EFF	GMF
30 - 70	6	7
70 – 150	8	9
150 +	10 plots plus 1 plot for every 50 acres above 150 (ex. 350 acres = 13 plots)	

FFCP PRACTICE PLANNING INFORMATION FORM

ENHANCING THE FUTURE FOREST

Landowner Information

Name(s):

Mailing Address:

Phone Number:

Email:

Total Property Acreage:

Total Forested Acreage:

Comment [EV1]: Kevin will add guidance on estimating % coverage competing vegetation into this form

Comment [EV2]: Can we add total forested acreage?

Planner Information

Name(s):

Mailing Address:

Phone Number:

Email:

Project Information and Current Forest Condition

Project Area Acreage:

Forest Stand(s)/Management Unit(s) from Forest Management Plan:

Landowner Goals for Unit:

Forest Type:

Estimated Basal Area:

Year of regeneration harvest (if already implemented):

If regeneration harvest is not completed, does Landowner plan to complete one in the next 10 years?

Comment [EV3]: Suggest adding, "If regeneration harvest has not been completed, does the Landowner plan to complete one in the next 10 years?"

Comment [KY4R3]: I agree

Average % Coverage of Competing Vegetation, with breakdown by species:

Species	% Coverage

Average Height of Competing Woody Species, if applicable:

Description of Desirable Regeneration:

Recommended Treatment Method:

Forest Inventory

Foresters shall record visual estimates of the percent coverage (in 5% increments) and height (for woody species only) of the competing vegetation within a 26-foot radius plot. The locations of plots should be well distributed, unbiased, and located within representative conditions for the forest stand. The forester will record the GPS coordinates of each plot, mark plot center with paint or flagging, and provide the plot coordinates to FFCP staff.

Forest Inventory

Plot #	GPS Coordinates ¹	Comp. Veg Species	% Coverage of Comp. Veg ²	Woody Spp Height ³

¹ GPS Coordinates do not need to be provided if spatial data is provided to FFCP (preferred method).

² Percent coverage of competing vegetation in 5% increments

³ Average height woody competing species less than 5" DBH.

Corresponding maps or spatial data of the Project Area

FFCP PRACTICE PLANNING INFORMATION FORM

GROWING MATURE FORESTS

Landowner Information

Name(s):
Mailing Address:
Phone Number:
Email:
Total Property Acreage:
Total Forested Acreage:

Planner Information

Name(s):
Mailing Address:
Phone Number:
Email:

Project Information and Current Forest Condition

Project Area Acreage:
Forest Stand(s)/Management Unit(s) from Forest Management Plan:
Landowner Goals for Unit:
Does the Project Area have any legal restrictions that prohibit timber harvesting?

Forest Type:
Basal Area:
Average Stand / Quadratic Mean Diameter:
Estimated Sawtimber Volume (Board feet/acre, International ¼"):
Number of Inventory Plots:

Over the next 20 years, is the landowner interested in implementing the following practices in the proposed area?

- Conduct a commercial timber harvest?
- Conduct non-commercial tree removals (i.e. fuelwood cutting, timber stand improvement)?
- Control non-native invasive tree species (i.e. tree-of-heaven)?

Is any part of the proposed Project Area in an easement or under another restriction that legally prohibits harvesting?

Forest Inventory

Planners must provide FFCP with a spreadsheet of the inventory data as well as calculated volume reports. Reports should include the name of the software used (i.e. SILVAH, TwoDog, Forest Metrix, etc.). Required information for the inventory include tree species, quality, DBH, timber product, and merchantable height for each tree.

Comment [EV5]: Kevin: since this is being used for signing that they are eligible, do we need to put in a question of whether or not the Landowner is in an easement that legally prohibits harvesting within the proposed Project Area?

Comment [KY6R5]: It can, but that should come up in the initial screening along with property location, acreage, NIPF verification, etc.

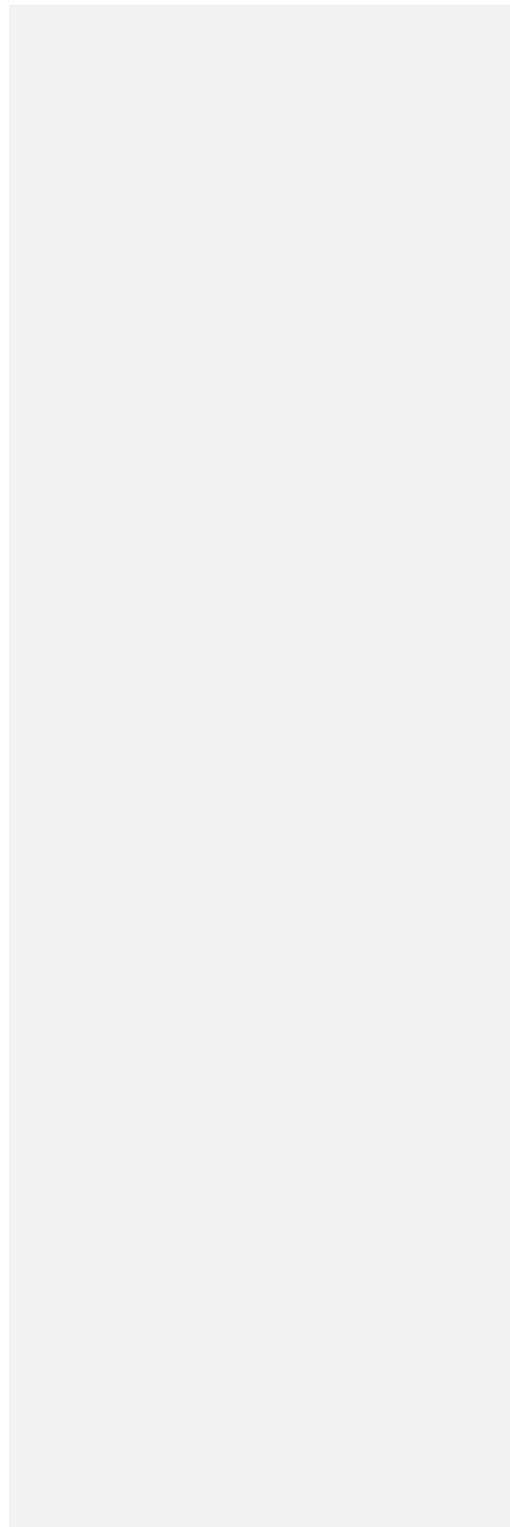
Comment [EV7]: Can we add total forested acreage?

Comment [EV8]: Can we easily calculate quadratic mean diameter from av. stand diameter?

Comment [KY9R8]: they're synonymous and it looks like we are consistently using avg stand diameter across contract docs. We may need to define avg stand diameter in the agreement or forester manual so that they do not simply use mean.

GPS coordinates of each plot location must be provided to FFCP, preferably in a shapefile or other spatial data.

Corresponding maps or spatial data of the Project Area



REQUIREMENTS AND STANDARDS FOR PARTICIPATING CONSULTING FORESTERS

There are **two different ways** that consulting foresters may be involved in the FFCP:

- FFCP-Participating Foresters: foresters that the FFCP may send new, previously unengaged landowners (client leads) to for visits and project planning; *including contracted foresters in the Northwest geography*¹
- FFCP-Approved Foresters: foresters who may plan FFCP projects on existing clients' woodlands but will not be sent new landowners²

I. Program Requirements:

1. Consultants must comply with all state forestry laws, including being licensed in the state(s) in which they are practicing, if applicable.
2. Consultant must meet one or more of the following requirements:
 - i. ATFS Tree Farm Inspector
 - ii. Association of Consulting Foresters Member
 - iii. Society of American Foresters Membership
 - iv. Certified Technical Service Provider (TSP)
 - v. Forest Stewards Guild Professional Member
 - vi. Hold a Bachelor's and/or post-graduate degree in wildlife biology, natural resource management, ecology, or forestry, with 3 year of work experience in forest ecosystems
3. Consultant must provide a list of counties and/or towns they are interested and committed to service. Project partners will only provide landowner leads to a forester based on these stated preferences.
 - i. NOTE: This requirement applies only to FFCP-Participating Foresters (i.e., foresters who the FFCP may send new landowners to for visits and project planning)
4. Consultant will accept or decline landowner leads within 1 week of receiving a lead from the project coordinator. If accepted, the consultant must contact and schedule a visit within 2 weeks of receiving a lead, and conduct a field visit within 30 days. If the consultant does not respond to the project coordinator within 1 week, the lead will be given to another participating forester.
 - i. NOTE: This requirement applies only to FFCP-Participating Foresters (i.e., foresters who the FFCP may send new landowners to for visits and project planning)
5. Consultants must agree to work cooperatively with our project partners (i.e. the Family Forest Impact Foundation, American Forest Foundation, The Nature Conservancy, and Audubon Pennsylvania, among others).

¹ Please see RFP issued 1/16/2020 for more details

² It is important to note that even if a landowner meets FFCP Project Eligibility Criteria, the project may not be approved due to budget constraints. Consultants are strongly encouraged to direct landowners to WoodsCamp or reach out to Elizabeth at evranas@familyforestimpact.org prior to project planning.

6. Consultants must participate in a training before they are accepted into the program as an FFCP-participating or FFCP-approved consultant. Trainings will include information on FFCP Practices, management recommendations for wildlife habitat, and project planning and reporting requirements.
7. Consultants must commit to following the [Society for American Foresters' Code of Ethics](#).
8. The forester will update the landowner status within 1 week when a visit has been completed, including what the results of the visit are (project planning completed, landowner no longer interested, or additional visits needed to complete project planning). They must submit any completed project planning documents with 2 weeks of the completed visits. Specifics regarding this reporting requirement will be covered in a brief training session, mentioned above.
9. In the case that the visit was put on hold or canceled, consultants must update the project coordinator using the online landowner data system within 1 week along with the reason why.
10. Consultant must agree to sign a written contract articulating these requirements and other project roles and responsibilities. Failure to follow contract terms could result in dismissal as an FFCP-approved consultant.
11. All FFCP-Approved Foresters and FFCP-Participating Foresters in the Central Geography will work with landowner to agree on reasonable payment rates prior to a site visit, as applicable. Foresters and landowners linked together through FFCP may continue working together on additional projects such as sustainable timber sales if both parties wish to do so.

II. Project Standards:

1. Landowners requesting a forester visit will be assigned a consultant on a rotating basis. Landowner assignments will be rotated through the cooperating consultant list, while simultaneously ensuring consultants are only assigned landowners in the preferential geographic radius.
2. The project coordinator will have an initial screening with landowner respondents, providing the cooperating consultant with as much background as possible to prepare for their visit. Additionally, this screening will also help the landowner understand the role of the consultant and the offering of the visit.
3. As part of the screening process, the project coordinator will find out if landowners have worked (or are working) with consulting foresters. In this case, project partners will try to service the landowner by working with his/her existing forester; however, if a consultant does go on one of these visits, he/she should be cognizant and respectful of prior consultant relationships.
4. In the Central Geography, the FFCP expects the landowner and the consulting forester to agree on reasonable payment rates prior to a site visit. In the Northeast Geography, the FFIF is contracting with FFCP-Participating foresters to provide the visit and project planning at no cost to landowners who come in through WoodsCamp. In both geographies, FFCP-Approved foresters who plan projects for their existing clients will be expected to agree on reasonable payment rates with their clients prior to project planning.
5. The hours spent on each property will be determined by property size, accessibility, etc. All landowners are encouraged to work with a consulting forester to fulfill the recommendations

in their forest management plan. Doing so will likely include practices in addition to those contracted through FFCP. Foresters and landowners linked together through FFCP may continue working together on additional projects such as sustainable timber sales if both parties wish to do so. Consultants should provide project partners information on future landowner actions, so on-the-ground impact can be tracked over time.