



CARBON PLANNING GUIDANCE

DEFINITION AND PURPOSE

A carbon plan is a whole-farm conservation plan that when implemented will enhance soil health, increase carbon sequestration, and reduce greenhouse gas (GHG) emissions. The planner and client develop the carbon plan by addressing resource concerns with a focus on opportunities for carbon sequestration of the entire operation. Resource concerns on the farm, ranch, or forestland are, thus, addressed through the application of targeted, site-specific conservation practices with known and/or quantifiable greenhouse gas benefits. A carbon plan can include supporting conservation practices that do not necessarily have a direct benefit to soil health, carbon, or greenhouse gas, but are essential to the function of the plan.

The carbon plan contains all the elements of a conservation plan including an inventory and analysis of current resource conditions, on-farm carbon sequestration and GHG mitigation potential, and the client's decision regarding the implementation of a conservation system that will address the identified resource concerns. Reducing greenhouse gas emissions and enhancing carbon sequestration on these lands have numerous co-benefits that improve ecosystem function and health.

REQUIREMENTS FOR THE CARBON PLAN

Phase I: Collection and Analysis of Information

Identify Client's Objectives: Includes client's short and long term goals for operation including soil health, carbon sequestration and GHG emissions reduction.

Resource Inventory

A. Background and Site Information:

- Landowner information – name, address, operation type, size
- Location and plan map of parcel

B. Document Existing Conditions:

- Resource inventory map – boundaries, fields, surface waters, wetlands, fences, land uses, slope, elevation or aspect, Ecological Site map, etc.
- Soils map, appropriate soil descriptions, and interpretations.
- Current management activities, existing practices, and history.
- Identify all resource concerns that do not currently meet NRCS planning criteria. See Resource Concerns List in Section III of eFOTG at <https://efotg.sc.gov.usda.gov/#/details>.

Analysis of Data

A. Core resource concerns identified for each land use must be addressed in the plan. Many of the conservation practices have co-benefits to soil health, carbon sequestration, and greenhouse gas emission reduction. Thus, it is recommended to develop the plan as comprehensive as the client is willing and able. Also listed are related resource concerns for consideration.

1. Cropland

a. Address core resource concerns for:

- Soil quality: Soil organic matter depletion and available water holding capacity
- Insufficient water: Inefficient moisture management
- Air quality: Emissions of greenhouses gases (nitrous oxide, methane, and carbon dioxide)
- Water quality: Excess nutrients in surface and groundwater

b. Other resource concerns for consideration: soil erosion, soil compaction, plant condition, efficient energy use, and other resource concerns that do not currently meet planning criteria. See Resource Concerns List in Section III of eFOTG at <https://efotg.sc.egov.usda.gov/#/details>.

c. Meet the client's objectives.

d. Comply with federal, state, tribal, and local laws, regulations and permit requirements.

2. Rangeland

a. Address core resource concerns for:

- Soil quality: Soil organic matter depletion and available water holding capacity
- Insufficient water: Inefficient moisture management
- Air quality: Emissions of greenhouses gases (nitrous oxide, methane, and carbon dioxide)
- Degraded plant condition: Plant health and productivity
- Degraded plant condition: Inadequate structure and composition
- Degraded plant condition: Wildfire hazard and excessive biomass accumulation

b. Other resource concerns for consideration: soil erosion, soil compaction, efficient energy use, and other resource concerns that do not currently meet planning criteria. See Resource Concerns List in Section III of eFOTG at <https://efotg.sc.egov.usda.gov/#/details>.

c. Determine baseline animal unit month (AUM) and/or vegetation productivity.

d. Meet the client's objectives.

e. Comply with federal, state, tribal, and local laws, regulations and permit requirements.

3. Pastureland

- a. Address core resource concerns for:
 - Soil quality: Soil organic matter depletion and available water holding capacity
 - Insufficient water: Inefficient moisture management
 - Air quality: Emissions of greenhouses gases (nitrous oxide, methane, and carbon dioxide)
 - Degraded plant condition: Plant health and productivity
 - Degraded plant condition: Inadequate structure and composition
 - Degraded plant condition: Wildfire hazard and excessive biomass accumulation
- b. Other resource concerns for consideration: soil erosion, soil compaction, efficient energy use, and other resource concerns that do not currently meet planning criteria.
See Resource Concerns List in Section III of eFOTG at <https://efotg.sc.egov.usda.gov/#/details>.
- c. Determine baseline animal unit month (AUM) and/or vegetation productivity.
- d. Meet the client's objectives.
- e. Comply with federal, state, tribal, and local laws, regulations and permit requirements.

4. Forestland

- a. Meet the requirements of a Forest Management Plan (FMP) for forestland land use.
 - b. Additionally, address the following core resource concerns if they were not addressed in the FMP:
 - Soil quality: Soil organic matter depletion and available water holding capacity
 - Soil quality: Compaction
 - Insufficient water: Insufficient moisture management
 - Air quality: Emissions of greenhouses gases (nitrous oxide, methane, and carbon dioxide)
 - Degraded plant condition: Plant health and productivity
 - Degraded plant condition: Excessive plant pest pressure
 - Degraded plant condition: Wildfire hazard and excessive biomass accumulation
 - c. Meet the client's objectives.
 - d. Comply with federal, state, tribal, and local laws, regulations and permit requirements.
- B. Resource assessments including the results of all appropriate tools such as COMET-Planner and COMET-Farm, Soil Conditioning Index, Soil Health Field Assessment Worksheet, Rangeland Health tools, Pasture Condition Score, and other NRCS approved methodologies.

Phase II: Formulating and Evaluating Alternatives for Client to Make Decision

Develop and evaluate alternatives for the client that includes the following:

- Evaluate the alternatives to determine their effects in addressing the identified resource concerns and whether they meet the client's objectives. Look at short-term and long-term impacts.
- Practices considered may be beneficial for certain resources but have adverse effects on others. Additional practices and management measures may be needed to mitigate potential adverse effects.

Based on the alternatives selected, develop the carbon plan that includes the following:

- A record of the conservation practices that have been selected to address the identified resource concerns.
- Any necessary specifications and maintenance requirements to implement the practices.
- A schedule of planned practice implementation.
- A plan map showing the record of the client's decisions and location(s) of planned conservation practices. Map includes boundaries, fields, scale, north arrow, appropriate map symbols for existing and planned conservation practices, land use designations, and other features such as streams, surface water, and sensitive areas.
- Quantify the amount of greenhouse gas reduction and/or enhanced carbon sequestration using COMET-Farm, COMET-Planner or other approved NRCS quantification tools.

Following is a list of conservation practices that may be useful in a carbon plan. In some situations other practices may also enhance carbon sequestration and/or reduce GHG emissions. Planning is location-specific and the following list of conservation practices are also recognized to have quantifiable benefits and support the USDA Secretary of Agriculture's Climate Mitigation Building Blocks. A list of all NRCS Conservation Practices is located in the "Introduction, Practice Index and Lifespan" folder in Section IV of the eFOTG, <https://efotg.sc.egov.usda.gov/#/details>.

Code	Practice Name
366	Anaerobic Digester
672	Building Envelope Improvement
327	Conservation Cover
328	Conservation Crop Rotation
332	Contour Buffer Strips
330	Contour Farming
340	Cover Crop
342	Critical Area Planting
374	Farmstead Energy Improvement
386	Field Border
393	Filter Strip
512	Forage and Biomass Planting
666	Forest Stand Improvement
412	Grassed Waterway
422	Hedgerow Planting

Code	Practice Name
603	Herbaceous Wind Barriers
670	Lighting System Improvement
590	Nutrient Management
528	Prescribed Grazing
550	Range Planting
329	Residue and Tillage Management, No-Till
345	Residue and Tillage Management, Reduced Till
391	Riparian Forest Buffer
390	Riparian Herbaceous Cover
381	Silvopasture Establishment
585	Stripcropping
612	Tree/Shrub Establishment
645	Upland Wildlife Habitat Management
601	Vegetative Barrier
650	Windbreak/Shelterbelt Renovation
380	Windbreak/Shelterbelt Establishment

Phase III: Implementation and Evaluation of the Plan

Practices must be monitored and maintained so the benefits of soil health, carbon storage, and greenhouse gas reduction will continue to be realized.

DELIVERABLES FOR THE CLIENT

A hard copy and electronic copy of the plan that includes:

- Cover page – name, address, phone of client and Technical Service Provide (TSP); NRCS conservation practices including planned implementation dates for selected alternative by client; total acres of the plan, signature blocks for the TSP, client, and a signature block for the NRCS acceptance.
- Plan map – boundaries, fields, scale, north arrow, appropriate map symbols for existing and planned conservation practices, land use designations, and other features such as streams, surface water, and sensitive areas.
- Soils map and appropriate soil descriptions. The Web Soil Survey can provide the needed information: <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>
- All resource assessments as indicated in previous sections, including copy of COMET-Planner and/or COMET-FARM report(s) for the final selected alternatives.
- Implementation requirements and maintenance requirements of selected practices.

DELIVERABLES FOR NRCS FIELD OFFICE

Complete hard copy and electronic copy of the client's plan as described in previous section.