United States Department of Agriculture
Natural Resources Conservation Service

Resilient Forestry Practices

Practice	Goal(s)	Climate Mitigation Rationale	Forest Resilience Rationale	Evidence for Impact	Additional Considerations	Primary vs Secondary
Pre-Commercial Thinning -- Hardwood with Hand Tools (NRCS CPS-666)	- Sustain fundamental ecological functions (e.g., reduce competition for moisture, light, nutrients) - Enhance Forest recovery following a disturbance (e.g., guide spp. composition at early stages to meet expected future conditions)	- Thinning young trees allows increases stand level carbon sequestration & long-term carbon storage capacity by providing more space and resources for residual trees to grow	- A well maintained cohort of young trees is more tolerant of certain natural disturbances (e.g., wind) - Favors more resilient/adaptable species - Allocates resources to residual trees, increasing their health & vigor	- NIACS Forest Carbon Mgt. Menu (Strategies 2.5, 4.4) - NRCS approved climate smart practice FY24	- Capacity to cut by hand - Access to hand tools such as chain saws, brush saws, loppers, machetes - Herbivory pressure	Primary
Thinning for Health & Wildlife (NRCS CPS-666)	- Sustains fundamental ecological functions - Reduces carbon losses from natural disturbances - Maintains or enhances existing carbon stocks while retaining or	- Alters forest structure or composition to reduce the risk, severity, or extent of wind & ice damage - Allows residual trees to maximize their growth and carbon storage potential	- Can promote healthy seed stocking of genetically superior specimens - Promotes spp. biodiversity, a key component of withstanding and recovering an array of natural disturbances and stand level climate change impacts	- NIACS Forest Carbon Mgt. Menu (Strategies 2.5, 3.5, 6.5, 6.6) - NRCS approved climate smart practice FY24	- Must consider site conditions, presence of invasive species, access & operability, and silvicultural prescriptions as detailed in FMP	Primary

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Creating Small Patch Clearcuts (NRCS CPS-666)	- Adjusts stocking & density; increases stand complexity, structure, & diversity - Enhance or maintain sequestration capacity through forest alterations	- Increases stand level carbon sequestration - Distributes stand level carbon stocks to a healthier cohort of trees - Promotes species & structural diversity to enhance carbon capture and storage efficiency - Can promote species with enhanced carbon density in woody biomass	- Enhances structural complexity and spp. diversity, promoting opportunity for multiple recovery pathways following a natural disturbance - Removing weak, diseased, degraded or over-mature stocking reduces vulnerabilities to disturbance - Can favor existing spp. or genotypes that are better adapted to future conditions	- NIACS Forest Carbon Mgt. Menu (Strategies 6.4, 6.5, 6.6, 7.1, 7.2, 7.3) - NRCS approved climate smart practice FY24	- Must consider site conditions, presence of invasive species, access & operability, and silvicultural prescriptions as detailed in FMP	Primary
Crop/Mast Tree Release (NRCS CPS-666)	- Sustains fundamental ecological functions - Enhances or maintains sequestration capacity through significant forest alterations	- Favors existing species or genotypes that are better adapted to future conditions - Alters forest composition or structure to maximize long-term carbon stocks - Promotes species with enhanced carbon density in wood biomass	- Favoring genetically superior specimens for seed sources improves the ability of forests to resist pests & pathogens	- NIACS Forest Carbon Mgt. Menu (Strategies 2.4, 7.1, 7.2, 7.3) - NRCS approved climate smart practice FY24	- Site conditions - Masting years/high seed production - Spp. conditions/timing of germination - Herbivory pressure	Primary
Shrub Planting (NRCS CPS-612)	- Enhances forest recovery following disturbance	- Guiding shrub spp. composition to meet expected	- Promptly revegetating sites after disturbance ensures habitat quality is	- NIACS Forest Carbon Mgt. Menu (Strategies 4.1, 4.2, 4.4, 6.2, 6.4,	- Site conditions - Spp. selection - Shrub pot/root	Primary

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	- Maintains or enhances existing carbon stocks while retaining forest character - Enhances or maintains sequestration capacity through significant forest alterations	future conditions - Planting shrubs increases woody biomass and carbon stocking - The shrub selection process can disfavor shrubs that are distinctly maladapted or invasive while ensuring spp. with wide moisture and temperature tolerances - Promotes spp. & structural diversity to enhance carbon capture & storage efficiency - Can use genetic material from across a greater geographic range - Can reduce rate of rain infiltration and promote soil health & water quality	maintained and enhances forest recovery capacity - Depending on shrub selection, restoring disturbed sites with shrub plantings can establish species that are adapted to future conditions - Shrub establishment & continuity benefits wildlife/biodiversity, stabilizes soil & reduces erosion/sedimentation, maintains soil moisture - Can introduce spp. that are expected to be adapted to future conditions	6.5, 6.6, 6.7, 7.4) - NRCS approved climate smart practice FY24	size - Nursery stocking & seed sources - Pest & pathogen vulnerability - Long-term maintenance of planting shelters - Watering needs - Planting tools, materials, skill	
Conifer Seeding/Hand Planting/Tree Protection (NRCS CPS-612)	- Maintains or increases extent of forest ecosystems - Enhances forest recovery following a disturbance - Maintains or enhances	- Guides spp. composition at early stages of development to meet expected future conditions - Increases	- Can function to restore disturbed sites with conifer spp. that are adapted to future conditions & to guide spp. composition at early stages of devel.	- NIACS Forest Carbon Mgt. Menu (Strategies 1.2, 1.4, 4.1, 4.2, 4.3, 4.4, 6.2, 6.4, 6.5, 6.6, 6.7, 7.2, 7.4)	- Site conditions - Nursery stocking & seed sources - Pest & pathogen vulnerability - Long-term maintenance of	Primary

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	existing carbon stocks while retaining forest cover	stocking and carbon storage capacity on well-stocked or understocked forest lands	- Promptly revegetating sites after disturbance ensures habitat quality is maintained		planting shelters - Watering needs - Planting tools, materials, skill	
Individual Hardwood Trees with Shelters (NRCS CPS-612)	- Maintains or increases extent of forest ecosystems - Enhances forest recovery following a disturbance - Maintains or enhances existing carbon stocks while retaining forest cover - Enhances or maintains sequestration capacity through significant forest alterations	- Guides spp. composition at early stages of development to meet expected future conditions - Increases stocking and carbon storage capacity on well-stocked or understocked forest lands - Protects seedlings & saplings from browse & mortality, ensuring carbon sequestration & storage potentials are met - Plantings stabilize soil, reducing soil erosion & sedimentation, maintaining water quality	- Can restore disturbed sites with conifer spp. that are adapted to future conditions & to guide spp. composition at early stages - Promptly revegetating sites after disturbance ensures habitat quality is maintained and enhances forest recovery capacity - Can plant genetic material from across a greater geographic range, increasing resilience to changing conditions while disfavoring maladapted spp. - Can function to alter forest composition or structure to maximize carbon stocks & biodiversity - Can function to introduce conifer spp. or genotypes that are expected to be adapted to future conditions	- NIACS Forest Carbon Mgt. Menu (Strategies 1.2, 1.4, 4.1, 4.2, 4.3, 4.4, 6.2, 6.4, 6.5, 6.6, 6.7, 7.2, 7.4) - NRCS approved climate smart practice FY24	- Site conditions - Nursery stocking & seed sources - Pest & pathogen vulnerability - Long-term maintenance of planting shelters - Wildlife needs - Watering needs - Planting tools, materials, skill	Primary

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Tree/Shrub Regeneration with Deer Protection (NRCS CPS-612)	- Maintains or increases extent of forest ecosystems - Enhances forest recovery following a disturbance - Maintains or enhances existing carbon stocks while retaining forest cover - Enhances or maintains sequestration capacity through significant forest alterations	- Guides spp. composition at early stages of development to meet expected future conditions - Increases stocking and carbon storage capacity on well-stocked or understocked forest lands - Protects seedlings & saplings from browse & mortality, ensuring carbon sequestration & storage potentials are met - Plantings stabilize soil, reducing soil erosion & sedimentation, maintaining water quality	- Can restore disturbed sites with conifer spp. that are adapted to future conditions & guide spp. composition at early stages - Promptly revegetating sites after disturbance ensures habitat quality is maintained and enhances forest recovery capacity - Can plant genetic material from across a greater geographic range, increasing resilience to changing conditions while disfavoring maladapted spp. - Can alter forest composition or structure to maximize carbon stocks & biodiversity - Can introduce conifer spp. or genotypes that are expected to be adapted to future conditions	- NIACS Forest Carbon Mgt. Menu (Strategies 1.2, 1.4, 4.1, 4.2, 4.3, 4.4, 6.2, 6.4, 6.5, 6.6, 6.7, 7.2, 7.4) - NRCS approved climate smart practice FY24	- Site conditions - Seed bank/seed stocking/parent tree masting & germination - Wildlife needs - Long-term maintenance of deer exclusions - Invasive plant establishment & potential spread	Primary
Restoration/ Conservation Treatment Following Catastrophic Events (NRCS CPS-384)	- Reduces carbon losses from natural disturbance - Prevents ignition of forest fire, reduces pests, improves stand conditions, and establishes a correct	- Removing fuels and diseased/infested woody materials promotes long term viability of carbon stocking by	- Alters forest structure or composition to reduce the risk, severity, or extent of wildfire - Alters forest structure or composition to reduce the risk, severity, or	- NIACS Forest Carbon Mgt. Menu (Strategies 3.2, 3.3, 3.5) - NRCS approved climate smart practice FY24	- Availability of equipment - Site conditions - Drought & weather conditions	**Primary** if it is the Restoration/Conservation Treatment Following Catastrophic

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	trajectory post disturbance for the subject stand	increasing the potential for healthy vegetation over the long term	extent of wind and ice damage			Events scenario. Otherwise, it would be a **secondary** practice that would need to be paired with something like CPS-666
Chipping & Hauling Off Site (NRCS CPS-384)	- Reduces carbon losses from natural disturbance by removing hazard fuels and reducing risk of pathogen spread	- Removing fuels and diseased/infested woody materials promotes long term viability of carbon stocking by increasing the potential for healthy vegetation over the long term	- Alters forest structure or composition to reduce the risk, severity, or extent of wildfire	- NIACS Forest Carbon Mgt. Menu (Strategies 3.2, 3.3, 3.5) - NRCS approved climate smart practice FY24	- Availability of equipment - Site conditions - Drought & weather conditions	**Primary** if it is the Restoration/Conservation Treatment Following Catastrophic Events scenario. Otherwise, it would be a **secondary** practice that would need to be paired with something like CPS-666
Forest Slash Treatment -- Med/Heavy (NRCS CPS-384)	- Reduces carbon losses from natural disturbance by reducing fuel loading, risk of pathogen spread, and retaining soil health	- Promotes soil health by recycling nutrients, stabilizing soil profile/structure, and reducing risk of erosion. This can	- Alters forest structure or composition to reduce the risk, severity, or extent of wildfire	- NIACS Forest Carbon Mgt. Menu (Strategies 3.2, 3.3, 3.5) - NRCS approved climate smart practice FY24	- Availability of equipment - Drought & weather conditions - Proximity to watercourses - Slope & aspect	**Primary** if it is the Restoration/Conservation Treatment Following Catastrophic

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		maintain or enhance carbon stored in organic matter and below ground.				Events scenario. Otherwise, it would be a **secondary** practice that would need to be paired with something like CPS-666
Medium Mechanical Invasive Control (NRCS CPS-314)	- Sustains fundamental ecological functions - Maintains or enhances existing carbon stocks while retaining forest character	- Removing invasive plant species increases the long term carbon storage capacity associated with trees that can establish and grow absent of invasive spp. competition - Removing invasive spp. reduces competition for moisture, nutrients, and light, allowing for trees to establish and grow more vigorously	- Removing invasive plant species allows for multiple pathways of recovery following a disturbance, increasing the likelihood of native spp. biodiversity and longevity following a disturbance	- NIACS Forest Carbon Mgt. Menu (Strategies 2.3, 2.5, 6.4) - NRCS approved climate smart practice FY24	- Size & extent of woody invasive plants: density and/or size is sufficient to warrant mechanical control to reduce biomass	Secondary (needs to be paired with something like CPS-666 or CPS-612)
Chemical Moderate Invasive Control (NRCS CPS-314)	- Sustains fundamental ecological functions - Maintains or enhances existing carbon stocks while retaining forest character	- Removing invasive plant species increases the long term carbon storage capacity associated	- Removing invasive plant species allows for multiple pathways of recovery following a disturbance, increasing the likelihood of native	- NIACS Forest Carbon Mgt. Menu (Strategies 2.3, 2.5, 6.4) - NRCS approved climate smart practice FY24	- Size & extent of woody invasive plants - Mix of spp. and chemical control options for each	Secondary (needs to be paired with something like CPS-666 or CPS-612)

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		with trees that can establish and grow absent of invasive spp. competition - Removing invasive spp. reduces competition for moisture, nutrients, and light, allowing for trees to establish and grow more vigorously	spp. biodiversity and longevity following a disturbance		spp. - Presence of wetlands & watercourses - Weather patterns at time of application/time of year	
Chemical Difficult Control Invasive (CPS-314)	- Sustains fundamental ecological functions - Maintains or enhances existing carbon stocks while retaining forest character	- Removing invasive plant species increases the long term carbon storage capacity associated with trees that can establish and grow absent of invasive spp. competition - Removing invasive spp. reduces competition for moisture, nutrients, and light, allowing for trees to establish and grow more vigorously	- Removing invasive plant species allows for multiple pathways of recovery following a disturbance, increasing the likelihood of native spp. biodiversity and longevity following a disturbance	- NIACS Forest Carbon Mgt. Menu (Strategies 2.3, 2.5, 6.4) - NRCS approved climate smart practice FY24	- Size & extent of woody invasive plants - Mix of spp. and chemical control options for each spp. - Presence of wetlands/watercourses - Weather patterns at time of application/time of year	Secondary (needs to be paired with something like CPS-666 or CPS-612)
Chemical Light Invasive Control (CPS-	- Sustains fundamental ecological functions - Maintains or enhances	- Removing invasive plant species increases	- Removing invasive plant species allows for multiple pathways of	- NIACS Forest Carbon Mgt. Menu (Strategies 2.3, 2.5, 6.4)	- Size & extent of woody invasive plants	Secondary (needs to be paired with something like

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314)	existing carbon stocks while retaining forest character	the long term carbon storage capacity associated with trees that can establish and grow absent of invasive spp. competition - Removing invasive spp. reduces competition for moisture, nutrients, and light, allowing for trees to establish and grow more vigorously	recovery following a disturbance, increasing the likelihood of native spp. biodiversity and longevity following a disturbance	- NRCS approved climate smart practice FY24	- Mix of spp. and chemical control options for each spp. - Presence of wetlands/watercourses - Weather patterns at time of application/time of year	CPS-666 or CPS-612)

*These practices are subject to change pending NRCS annual updates.