



Integrated Work Plan Strategy

Alignment between 2013-2016 Vegetation Management & Hardening plans

9/04/13

Vegetation Management

CMC Storm Secure

Engineering & Technical Services

Business Services

Agenda



- **Background**
 - Integrated Work Plan Initiative
 - Current Vegetation Timeline, workflow, and work scopes
- **Proposed Vegetation/ Hardening Coordination Plan**
- **Proposed Coordination Window**
- **Proposed Vegetation Mileage Calculations**
- **Proposed Detailed Vegetation/Hardening Plan**
 - Workflow & timeline
 - Detailed design process
 - Process Controls
- **Next Steps**



With the additional funding provided to FPL, Distribution realizes the need to coordinate program/project work with the 3- year Hardening Plan to maximize system performance, gain cost efficiencies, and reduce rework

Background

- **In 2013, FPL received additional Funding to expand the Storm Secure Hardening Program**
- **A cross functional team was developed to help coordinate programs across ETS, CMC, Network Ops, Operations & Transmission/Substation**
- **Benefits to the Integrated Work Plan**
 - Standardize processes
 - Minimize operational & execution risk
 - Realize resource efficiencies
 - Reduce costs while maximizing investment
 - Minimize rework in design and construction

The end goal of the integrated work plan is to increase storm resiliency in a cost-effective manner



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3

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The vegetation cycle trim plan is one of several programs that are managed independently of the Hardening program

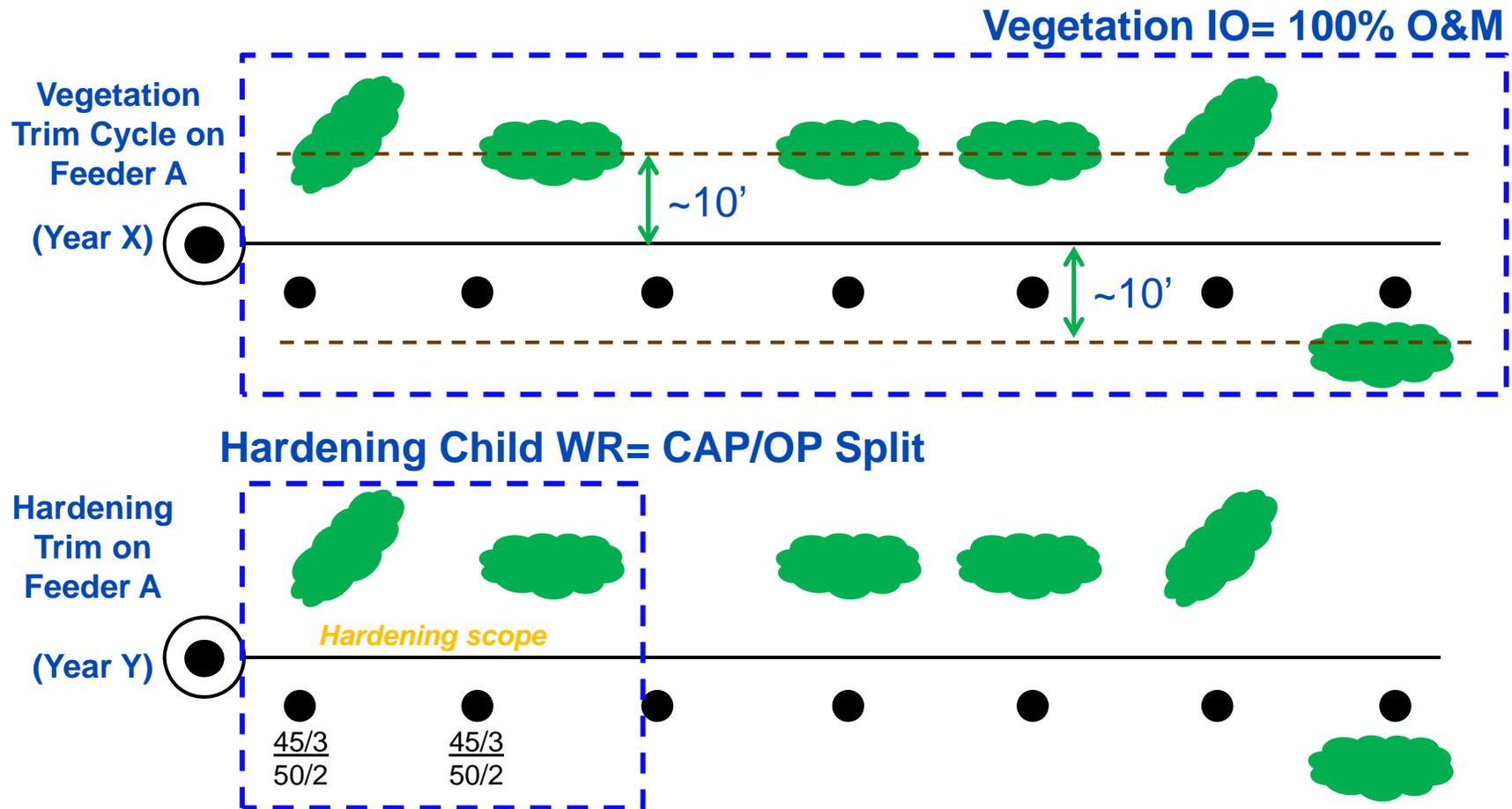
As-Is Workflow & Timeline (without Coordination)



Planning in silos limits Distribution's ability to efficiently manage vegetation costs



Historically, there has been duplication of efforts between Hardening and Vegetation Cycle trimming



Current status:

- Cycle trim achieves ~10' clearance for the entire feeder backbone (includes OCR circuits)
- Vendor Rate is a firm price per mile = forecast certainty (100% O&M)
- Hardening scope prescribed by arborists and paid using hourly T&M rates



The cross-functional Integrated Plan project team would like to propose the following Vegetation/ Hardening Coordination Plan

Proposed Vegetation/ Hardening Coordination Plan

- **Align the Hardening plan with the 3-year Vegetation Trim Cycle plan**
 - Utilizing a reasonable coordination window
- **Properly account for the vegetation on Hardening WRs and Cycle Trim IOs**
 - Mileage calculated by adding one span on either direction of the asset
- **Accurately capitalize the vegetation trim mileage that facilitates the installation, removal or replacement of an asset**
 - Previous year average will be used for estimates
 - Calculated mileage will be trued-up during asbuilt

Upon approval of this plan, the team will finalize the detailed design plan, control plan and payment plan



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6

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The team conducted detailed analysis to validate key assumptions that were made in the Vegetation/Hardening Coordination proposal

Proposed Coordination Window Analysis

Reliability

- How long do reliability improvements last after a circuit has been trimmed?

Contract

- What are FPL's expectations for vegetation cycle trimming?

Growth Rate

- What is the typical re-growth rate for trees within FPL's service territory?

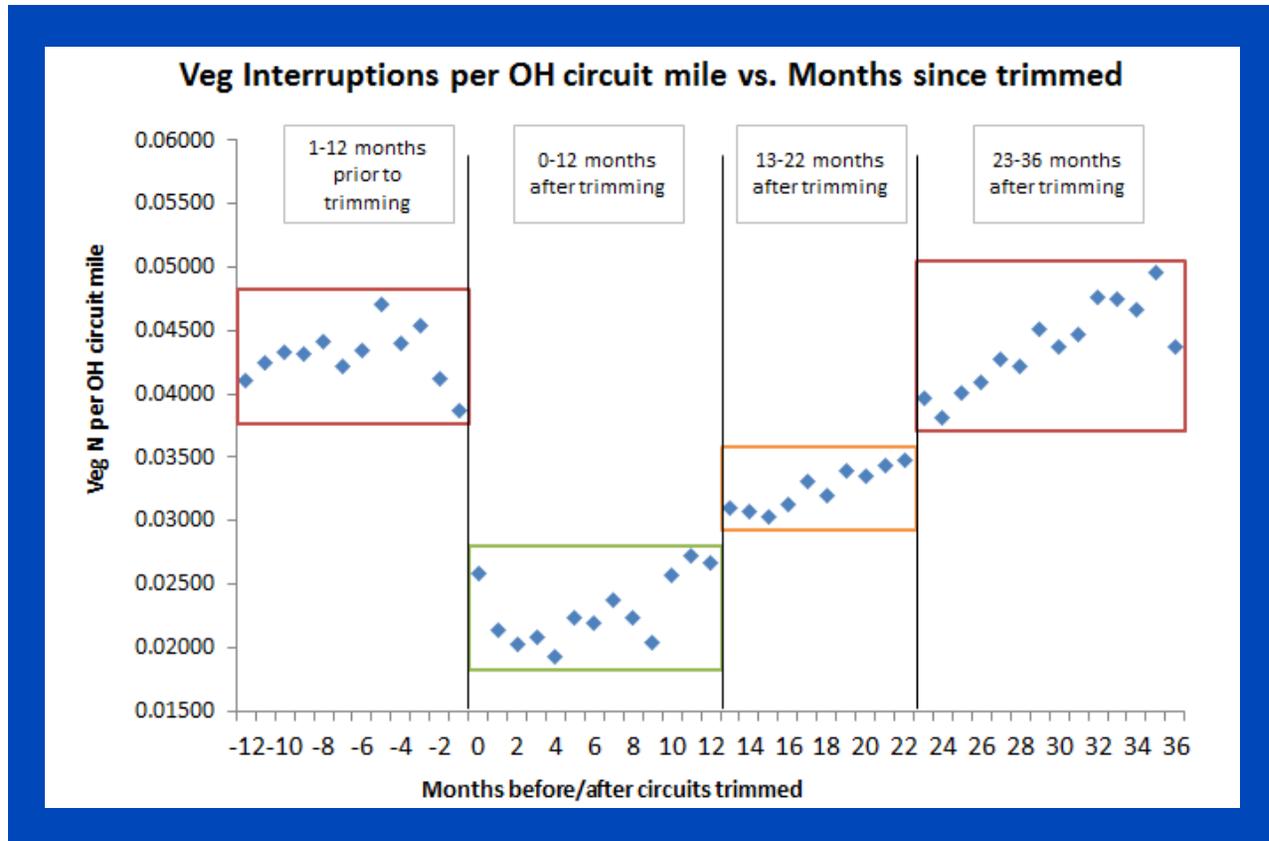
Understanding reliability impacts, negotiated vendor contracts, and average tree growth was key in the analysis



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Reliability Results

How long do reliability improvements last after circuit has been trimmed?



- Number of interruptions per line mile trimmed used to measure trim effectiveness
- Reliability data represents circuits trimmed between 2001-2013
- Data includes 12 months prior to trimming through 36 months after trimming is completed

On average, circuit performance after trimming remains relatively flat through the first 12 months



Vendor Contract Result (*excerpts from 2013 vendor contract*)

What are FPL's expectations for vegetation cycle trimming?

Line Clearing Vendor Contract:

Clearance is not a predetermined distance from the conductor. Each individual tree will dictate, through its' form, growth rate and proximity to facilities where pruning cuts will be made to comply with A-300 standards. Understand the suggested ranges mentioned below are not one size fits all. An individual species may allow A-300 standards to be met with less than 8 feet of clearance, while other species may require more than 12 feet of clearance to provide reliability on primary lines.

Line Clearing Scope of Work:

25. Reliability Warranty

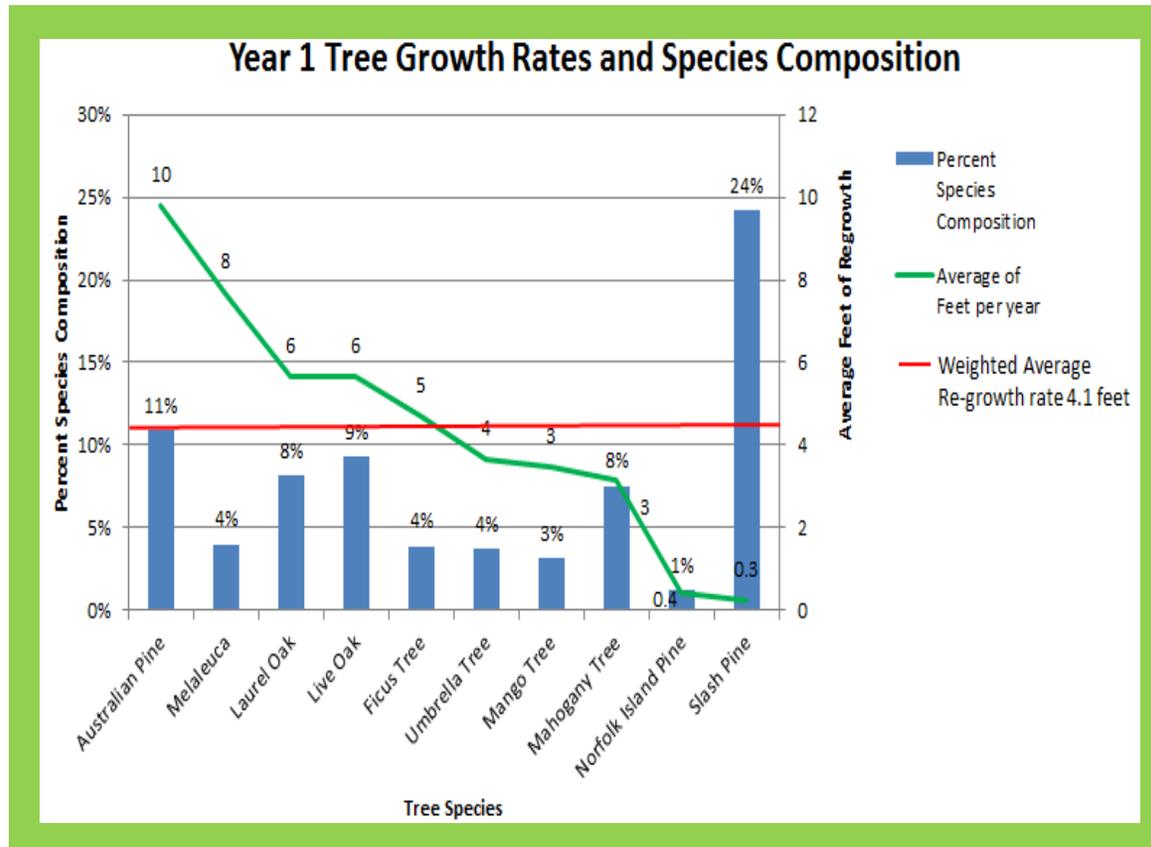
An FPL representative will investigate Distribution Tree-related "Feeder" interruptions. Contractor shall be subject to \$1000 in liquidated damages for any preventable interruptions, at the discretion of FPL, feeder interruptions on work units completed in the 12 months preceding the interruption.

The Vegetation contract helps to ensure that vegetation clearances can be maintained for a minimum 12-months after trimming regardless of species



Tree Growth Analysis (FPL Territory)

What is the typical re-growth rate for the trees within FPL territory?



- Weighted Average rate of growth is 4.1 feet in the first year after trimming (Red line)
- Species specific average growth rate in the first year after trimming (Green line)
- Palm trees were excluded from analysis because vegetation policy is to remove them

Average cycle trim distance is 10.3 feet minus average regrowth of 4.1 feet leaves a minimum 6.2 feet of clearance after the first 12-months following trimming



Agenda

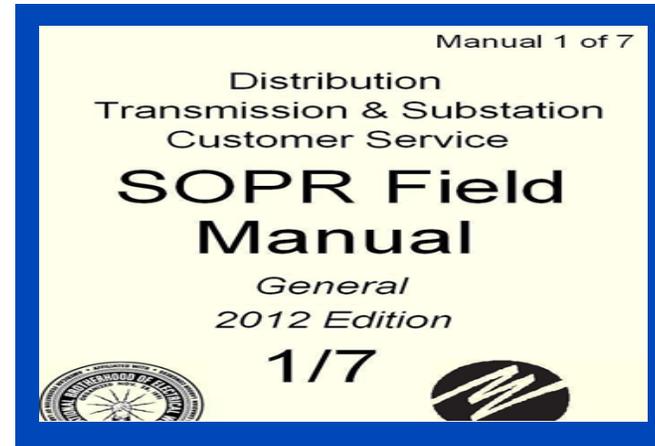
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FPLs safety standards helped validate the minimum tree requirements needed to facilitate asset installation, removal and replacement

Vegetation Mileage Calculation

- **Hardening vegetation mileage will be conducted based on footage between spans**
 - One Span Either Direction of Asset
- **Vegetation mileage calculation is in line with FPL's construction safety guidelines**
 - Visibility to adjacent equipment/facilities
 - Removes switching obstructions caused by vegetation
- **SOPR Field Manual**
 - Section 1.24 Requires Written Hazard Assessment sheets completed before start of work for each job



4. WORK PROCEDURES INVOLVED IN THE JOB		Grounds Used	
<input type="checkbox"/> Discuss who does which job tasks	<input type="checkbox"/> Explain how the job will be done	<input type="checkbox"/> Hot	<input type="checkbox"/> Grounding Procedures
<input type="checkbox"/> Hot	<input type="checkbox"/> Grounding Procedures	<input type="checkbox"/> Gloving	<input type="checkbox"/> Stick Method
<input type="checkbox"/> Excavating	<input type="checkbox"/> Trenching	On _____	Off/Not Protected _____
Gloving Observer Name: _____		PHC _____	PIC _____
<i>Use 2 line communication when transitioning from de-energized to energized and installation/removal of grounds</i>			
5. HAZARDS ASSOCIATED WITH THE JOB		Actions to Minimize Hazards	
List And Discuss Hazards		_____	
Examples: falling objects, animals/insects		_____	
sharp objects/materials, meter can/blocks		_____	

6. SPECIAL PRECAUTIONS (Did we miss anything?)			
N/A	<input checked="" type="checkbox"/>	Examples	
Coordination with other crews	<input type="checkbox"/>	contractors, tree crews, stand by's	
Adjacent equipment/facilities	<input type="checkbox"/>	condition of pole, insulators, etc	
Terrain and working surfaces	<input type="checkbox"/>	holes, trenches, uneven or wet/sloppy surfaces	
Rigging	<input type="checkbox"/>	weight, lifting, rating of rings, clevis, tools	
Ladder	<input type="checkbox"/>	proper size and use, secured, type, condition	
Vehicle	<input type="checkbox"/>	operator, unfamiliar equipment, outages/blocks	
Environment/Weather	<input type="checkbox"/>	sunscreen, hydration, insect protection, wind, lightning	
Confined space / below grade entry	<input type="checkbox"/>	gas testing, hot compounds, etc	
Vault & manhole work	<input type="checkbox"/>	suppression blankets, manhole ring	
Switching obstructions	<input type="checkbox"/>	vegetation, fences/walls, etc	
Underground locales	<input type="checkbox"/>	electric, telephone, gas, water, etc	
Public safety/protection of property	<input type="checkbox"/>	pedestrian traffic, use of track mats, environmental issues, (ex. spills)	
Trenching/excavation	<input type="checkbox"/>	shoring, shoring	
Other special precautions	<input type="checkbox"/>		
7. PERSONAL/PORTABLE PROTECTIVE EQUIPMENT			
N/A	<input checked="" type="checkbox"/>	Have you field tested your rubber gloves today?	
N/A	<input checked="" type="checkbox"/>	Are required equipment and tools available, inspected and in good repair?	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eye protection	<input type="checkbox"/>	Hard hat, FR shirt, EHI footwear	<input type="checkbox"/>
Work gloves	<input type="checkbox"/>	Jewelry removed	<input type="checkbox"/>
Rubber goods inspected	<input type="checkbox"/>	Hearing protection	<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
Are further actions/comments required for any of the hazards found? 1888A / UPR needed?			
_____		_____	
*Crew Member Initials Required		LJASC Follow-up YES ___ NO ___	
Person in Charge (Initial)	Production Lead (Initial)		
*Crew Members 1)	2)	3)	4)
		5)	6)



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By coordinating both plans, Vegetation can become more proactive with the vegetation trim, therefore reducing the re-trim from WMS WRs

Workflow & Timeline (with Coordination)



New Vegetation/Hardening Scope of Work

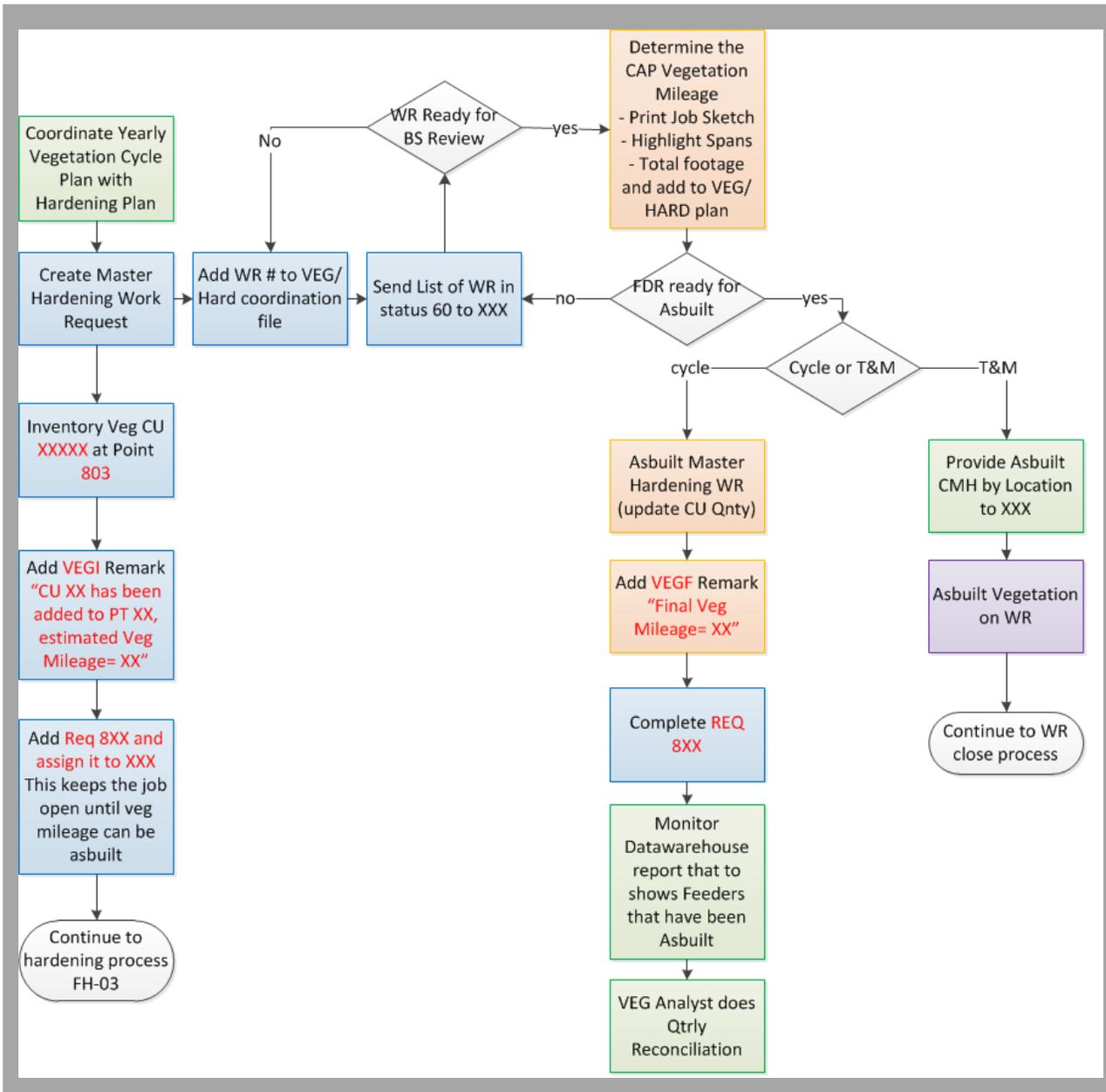
- Coordination between Hardening and Vegetation plans
 - 12 month rolling coordination window
- Standard line clearing to facilitate construction
 - 8-12 feet from primary conductor
 - greater 12 feet for fast growing trees
- Exception based vegetation driven by WMS Work Request
 - Hazardous tree conditions
 - Feeder line relocation
 - Access to construction site
- New Vegetation Asbuilt Process
 - Improved vegetation design and true-up

Vegetation Trim Cycle Scope of Work

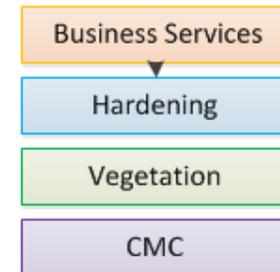
- Standard line clearing



Below is the proposed design and asbuilt detailed process plan



- Coordinated efforts between business units



- New Vegetation CU will ensure proper WMS estimates
- Improved audibility with WMS remarks
- Newly defined asbuilt process



Properly monitoring and controlling the Vegetation/Hardening Coordination Plan ensures that it operates at its full potential

Vegetation/Hardening Plan Controls

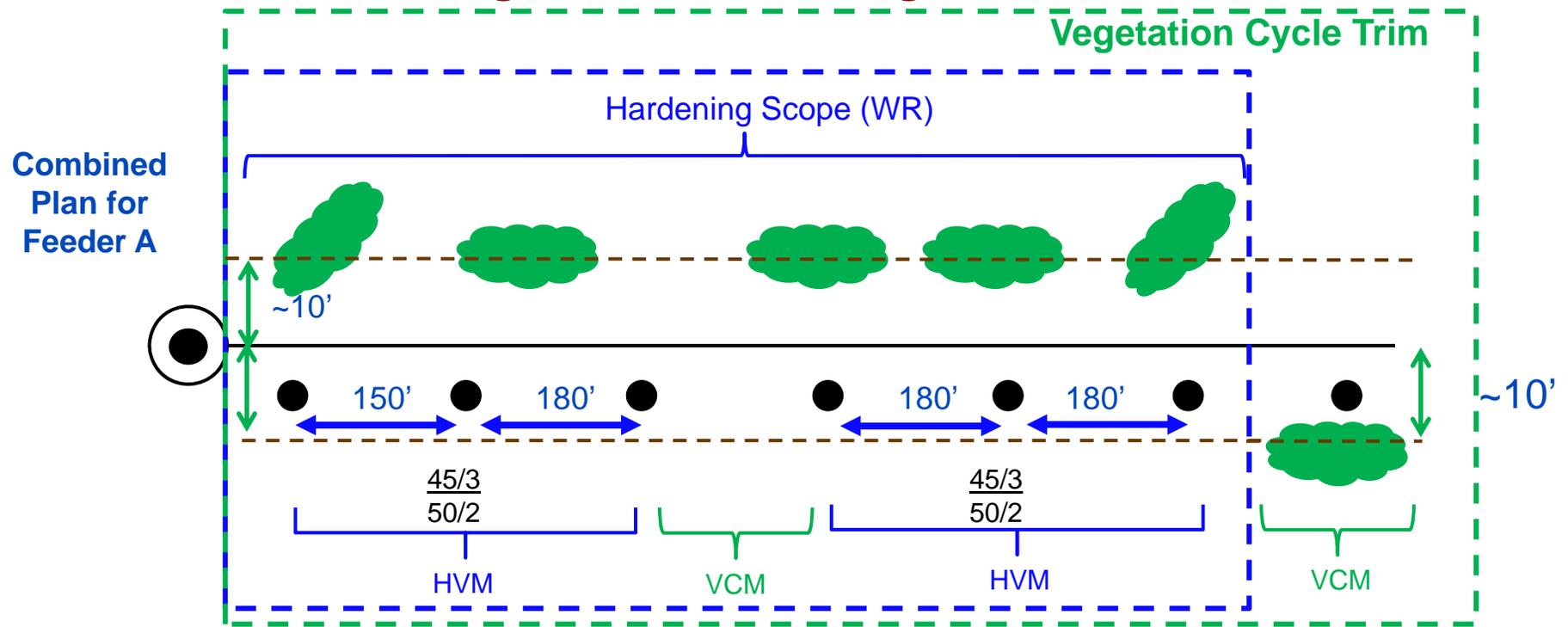
- **Yearly Review of Average Vegetation/Hardening Percentage**
 - 2013 Average determined to be 66%
- **Yearly Review of Vegetation Cycle Rates**
 - Add vegetation to existing rate reviews conducted by Business Services
- **Improved Audibility and Traceability through WMS and design changes**
 - New WMS Vegetation Remarks
 - Data Warehouse Reporting
 - Estimate to Asbuilt Validations
 - New Asbuilt True-up Process
 - Both Cycle and T&M Vegetation
- **Clearly defined roles and Responsibilities**
 - Unbiased Vegetation Review (Business Services)



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Improved coordination and detailed design and asbuilt processes help to ensure accurate vegetation accounting



- **Cycle Trim completed prior to Hardening construction**
 - Total Vegetation Cycle Mileage (VCM) = 1 mile
 - Hardening Vegetation Mileage (HVM) = .13 mile $(150' + 180' + 180' + 180' / 5208)$
- **Cost Reconciliation**
 - CAP Vegetation Cost (100% CAP) = HVM * Rate
 - $((0.13) * 3500) = \$455$
 - O&M Vegetation Cost (100% O&M) = (VCM - HVM) * Rate
 - $((1 - .13) * 3500) = \$3045$



Next Steps

- **Upon final approval from Property Accounting the team will move forward with the following**
 - Submit Quality and Technology Requests for:
 - New Vegetation CU
 - New Vegetation Remarks
 - New Data Warehouse Reports
 - Finalize all processes and control plans
- **Develop follow-up proposal to be presented to Property Accounting for the following exceptions:**
 - 2013 Design True-up Plan
 - WMS Estimates
 - 2013 Journal Entries
 - Identify additional exceptions



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OPC 007221
FPL RC-16



Appendix

Accounting for Vegetation: Capital Cost

Note: This document does not represent a change in our capitalization policy or a refinement to our PRUC catalog. This document is meant to clarify our vegetation practices and provide the correct accounting guidance for such transactions.

Capital Costs

In accordance with the FERC Code of Federal Regulations, FPL capitalizes costs associated the initial clearing of vegetation in connection with the installation of assets. Such costs include the removal of trees included within the right of way or easement, the removal of vegetation needed for access to the site and the trimming of vegetation that encroaches upon overhead conductor being installed.

Additionally, FPL also capitalizes the costs of vegetation work associated with the removal and replacement of an asset. Such allowed costs shall only be those vegetation costs necessary to properly and safely remove and install the asset being replaced.

Examples of allowed costs include:

- Vegetation work needed to remove and install a new pole. If the height of the new pole is higher than that of the previous pole, any such vegetation costs incurred needed to appropriately increase the roadway clearance of the conductor shall also be capitalized. If the roadway clearance is not affected, such costs of trimming around the conductor shall be expensed.
- Vegetation work needed to remove and replace an underground duct bank.
- Vegetation work performed in connection with line upgrades.
- Vegetation work needed to properly install new assets onto poles or conductor (i.e. automatic feeder switches).
- Vegetation work needed to expand an existing right of way to allow for access to remove/install assets.

-Provided by Property Accounting-



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Accounting for Vegetation: O&M Cost

O&M Costs

FPL expenses the costs associated with tree trimming and clearing brush, including costs associated with maintaining existing right of way and roadway clearances. Examples of expensed costs include:

- Routine tree trimming and brush clearing around existing assets
- Removal of trees without the corresponding installation of assets
- Widening of existing right of ways without the corresponding installation of assets
- Maintaining existing roadway clearance, including trimming trees at heights not previously trimmed

-Provided by Property Accounting-



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Additional Vegetation/Hardening Assumptions

Design Assumptions

- *One span on either side of asset being installed, removed or replaced*
- *New WMS CU will be created to properly capture cycle work*
- *Vegetation will be estimated/asbuilt on one WR*
- *Jobs will receive an initial estimate of 66%*
- *New Vegetation remarks will be created for auditing*

Plan Alignment Assumptions

- *Vegetation trimming can occur 12 months prior to completion of hardening work*
- *Hardening WR will be scheduled ahead of the construction work*
- *Vendor payments.....*

Constraints

