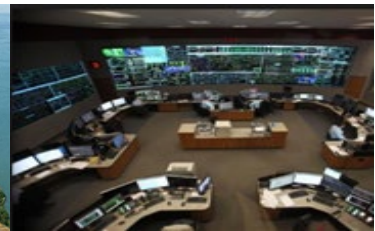


Vegetation Management Update

Thomas Teafatiller, Principal Engineer, Protection, RF
Beth Rettig, Technical Auditor, Operations & Planning, RF
September 2021 Technical Talk with RF

PUBLIC

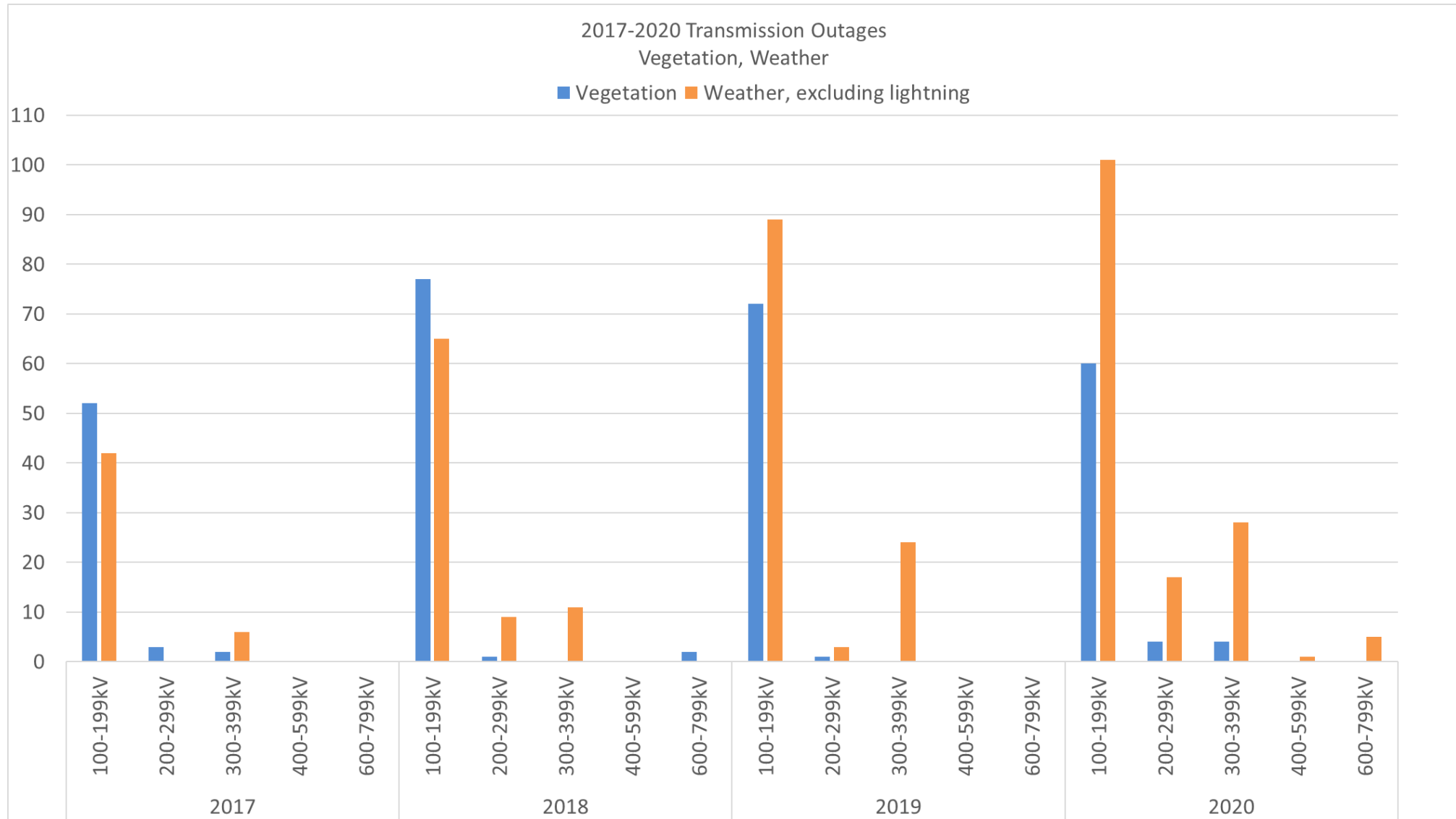


Agenda

- Overall vegetation outage trends in RF
- Overview of vegetation outreach RF performed with Entities
- Recognition of vegetation management challenges
- Observed vegetation management best practices
- RF Vegetation Community of Practice
- FAC-003 R5 Guidance



RF Vegetation Trend – Below 200 kV



Vegetation Management Outreach

Goal: Reach out to a wide variety of entities to determine challenges, best practices and lessons learned

RF conducted one-on-one outreach with 26 Entities

- Includes a wide range of performers
- Include small (18) and medium/large Entities (8)



Vegetation Management Challenges

Emerald Ash Borer

- Started causing problems around decade ago
- Some trees look healthy but have internal damage

Effective inspection methods

- Hazard tree assessments
- Aerial inspections of lines
- LiDAR

Effective maintenance approaches

- Herbicide



Vegetation Management Operational Challenges (cont'd)

Landowners

- Understanding standard tree work
- Additional education is the key

Other emergent issues

- Crew/contractor availability
- Unanticipated high priority work (large capital push, storm/mutual aid, etc.)

Are there new/different challenges below 200 kV?

- Prioritization
- Easement challenges
- Customer Service Metrics

What can industry do to reduce the trend of the increased sub-200 kV vegetation outages?



Vegetation Management – Entity Requests

- Increased education in TADS
- Overview of various Federal/State requirements
- Guidance on obtaining leadership support and funding
- Stay informed on ERO Enterprise Guidelines and Lessons Learned
- Overview of various work management tools



Best Practices

- Share internal Best Practices/Lessons Learned
- Utilize performance metrics and cost/benefit to justify funding
- Establish long-term contracts with contractors
- Education of property owners
- Proactively expanding ROW or easements widths based on risk
- Utilization of work management tool/risk ranking tool
- Consistent work practices/tools across organization
- Utilization of Cycle, T&M Management, and IVM maintenance types
- Well versed on Federal/State/Local regulations



RF Vegetation Management Community of Practice

Community of Practice (CoP)

Group of people who share an interest or passion for something they do and learn how to do it better as they interact regularly with other colleagues in their field of expertise.

Intended Audience

Vegetation Management professionals from RF and ERO Entities

Logistics

- RF staff will facilitate the meetings
- Discuss the topics of choice in a round table and free-form format
- No meeting minutes (take your own notes)
- RF staff will maintain a roster to notify everyone of the meeting dates and times and will provide an email group address to make sending group emails easier
- “Las Vegas” rules apply!

What We Hope to Accomplish

Strive to help vegetation management experts **to share and learn from each other to help improve** their own asset management, internal controls, procedures and practices.

FAC-003 R5



Standard and Requirement Detail

R5. When an applicable Transmission Owner and an applicable Generator Owner are **constrained from performing vegetation work on an applicable line operating within its Rating and all Rated Electrical Operating Conditions**, and the constraint may lead to a vegetation encroachment into the MVCD prior to the implementation of the next annual work plan, then the applicable Transmission Owner or applicable Generator Owner **shall take corrective action** to ensure continued vegetation management to **prevent encroachments** [Violation Risk Factor: Medium] [Time Horizon: Operations Planning].

M5. Each applicable Transmission Owner and applicable Generator Owner **has evidence of the corrective action taken** for each constraint where an applicable transmission line was put at potential risk. Examples of acceptable forms of evidence may include **initially-planned work orders, documentation of constraints from landowners, court orders, inspection records of increased monitoring, documentation of the de-rating of lines, revised work orders, invoices, or evidence that the line was de-energized.**



*Photo: Electrical Contractor Magazine

Standards Guidance

- R5 is a **risk-based requirement**
- The intent is to capture situations where planned vegetation management work cannot take place within the planned calendar year, **document and track the assigned corrective actions**
 - Legal injunctions
 - Easement stipulations
 - Narrow ROW
 - Prohibited Ingress/Egress
 - Land use agreements
 - Environmental restrictions
 - Long standing refusal locations
- This requirement is **not** intended to address situations **where the transmission line is not at potential risk and the work event can be rescheduled or re-planned using an alternate work methodology.**



*Photo: Canadian Wildlife Federation



Documented Restriction Example

Line Name	Voltage	Initial Date	ROW Width	Restricted Width	Restriction	Structure #	Species	Owner Name	Owner Address	Forester/Arborist	Comments	Mitigation Plan	Status/Inspection
Apple-Blossom	500	5/21/1982	400	150	No ingress/egress-notify prior to entering property; No Herbicide; manual cut only	123-131	willow, poplar, ailanthus	Willie Mays Hayes		Dan D	Must contact owner prior to accessing property; will set dogs free without notification; enter property from neighbors	Monitor 2 times per year; especially brush on creek banks; mitigate with removal of woody stems as needed; no herbicide allowed	04/20/2021- aerial patrol; follow up required- remove brush on steep bank 9/01/2021 ground patrol- no issues
Citrus- Orange	345	11/3/2001	300	100	Ok with work on full 300 ft outside of hunting season; notify first	49C-49K		Pedro Cerrano		Jim C		Monitor for property owner change	
Banana- Peel	230	7/5/2016	150	100	Tower line constructed off center- south side has only 30ft clearance to tree line; tree line off ROW- no easement rights	4148-4163	spruce row, mixed hardwoods	Lou Brown		Sarah H		Monitor 2 times per year; south side row clearance; trim as needed. No easement rights for removal.	9/01/2016- ground patrol- no issues; 04/10/2017- aerial patrol- no issues; 9/12/2017- side trimmed to ROW edge; 4/6/2018 aerial patrol- no issues
Vine-Grape	230	4/15/2019	150	75	Limited easement; hedgerow located just off of easement; used for buffer to grapes; do not remove- trim only	456-489	cedars, pines	Jake Taylor		Ann S	Call prior to work	Patrol annually for hazard trees; ok to remove with prior permission and notification	4/6/2020- no work needed
Grape-Raison	500	9/1/2021	400	200	Easement rights 100' from centerline only; no herbicide; do not drive outside ROW; property owner must be present while maintenance work is completed	798-812	Mixed hardwoods	Harry Doyle		Rick S	Property owner known for patrolling property armed. Proceed with caution; no prior threats made	Patrol annually for side clearance; trim as needed	Full maintenance completed 9/1/2021



Interrelated Requirements

- R5 is intertwined with inspections (R6) and Annual Plan Documentation (R7)
- Year end reviews should include sanity checking each location against R5, R6 and R7 documentation
- Field walk downs will cross examine documentation against field conditions
 - More thorough discussion of field walk down expectations during the **October Tech Talk with RF**. Encourage SME's to be in attendance.



Questions & Answers

Forward Together  **ReliabilityFirst**