LS POWER GRID

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TRANSMISSION VEGETATION MANAGEMENT PROGRAM (TVMP) POLICY

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CONFIDENTIAL

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1.0 Introduction

Founded in 1990, LS Power (LSP) is a development and operating company focused on the power and energy infrastructure sector. LS Power Grid (LSPG) is LSP's power delivery division that operates and maintains LSPG's companies across the US. LS Power Grid owns and operates approximately 350+ miles of long-distance, high-voltage transmission infrastructure, and seven high-voltage substations in the United States. LS Power Grid currently operates in Texas, Delaware, and New York and continues to expand as new infrastructure is constructed and energized.

1.1 Purpose

The purpose of this document is to give a high level overview of LSPG's Transmission Vegetation Management Program (TVMP) which supports NERC FAC-003 and LSPG's business processes supporting right-of-way vegetation activities for all LSPG entities. The requirements specific to State or Regional laws are addressed separately in documents that are state specific.

1.2 Scope

The scope of the LSPGs TVMP policy explains at a high level how LSPG aims to maintain a reliable electric transmission system by using a defense-in-depth strategy to manage vegetation (namely incompatible woody plants) located in or adjacent to the ROW, thus managing the risk of vegetation-related outages and cascading events. The goal of LSPG's TVMP is to support the safe and reliable transmission of electrical power in an economically and environmentally sound manner.

1.3 Document Maintenance

The document owner is responsible for the maintenance of the document. Responsibilities include documenting reviews, revisions, and approvals. Five minor changes will be allowed without signatory approval. These changes may be for spelling, grammar, or correcting minor deficiencies. These changes shall be tracked by increasing the document version by a fractional point value. As an example, Rev 1.0 becomes Rev 1.1 indicating one minor revision from the signatory approval. Substantive or significant changes shall be reviewed and approved via signature. These changes shall be tracked by increasing the document version by a point value. As an example, Rev 1.0 becomes Rev 2.0.

2.0 Compliance

In our efforts to maintain safe and reliable transmission operations, LSPG aims to comply with the regulatory standards promulgated at all levels of governance. The North American Electric Reliability Corporation (NERC) was commissioned by The Federal Electric Reliability Commission (FERC) in 2005 to address the need for a more unified, reliable operating standard among the several largest transmission providers across the country. The original strategy put forth was titled "FAC-003-1", and contained actionable requirements designed to help minimize the risk of vegetation-related outages that could have unprecedented cascading effects on the larger bulk electric system, if unchecked. FAC-003 continues to evolve and govern the basic requirements for federal compliance related to the Transmission Vegetation Management Programs (TVMP) as a means of mitigating vegetation encroachments on or adjacent to transmission rights-of-way (ROW).

2.1 **Federal, State, Local, and Municipal Laws**

In addition to the aforementioned federal standards, Federal, State, Local, and Municipal laws may also apply to the general activities required to manage access, operations, and maintenance (O&M), and restoration of the transmission systems in question. As LSPG operates on various land types in multiple states, it is critical that all levels of governance are considered before work is performed. This ensures appropriate permitting and/or protocols are in place as the various types of work are performed. For this document, the work activities considered apply specifically to vegetation management (VM). Examples of the considerations made for work vary based on land ownership of the property where LSPG's assets reside and may include the following:

- State Laws/Regulations
- County Laws/Regulations
- City, Village, or Town Laws/Regulations
- School Districts Rules/Governance
- Special Districts Rules/Governance
    - Transportation Systems
    - Public Parks/Conservation
    - Port Authorities
    - Fire Protection or Regional Ambulatory Services
    - Airports
    - Irrigation and Water Supply
    - Sewage and Waste Treatment Facilities
    - Electric, Fiber Optic, or Natural Gas Utilities
    - Communication infrastructure
    - Railroad Crossings
    - Water Body Crossings
- Zoning and or Land Designations
- Private/Public Land Use Agreements
    - Permanent/Temporary land use agreements
    - Joint Use Agreements
    - Lease/Rental Agreements

It is important to note that VM work restrictions can vary greatly by state and locality. For example, some localities have enacted ordinances that provide direction for the maintenance of state and city-owned trees, for which responsibility typically lies with the corresponding municipality.

2.2 **Environmental Compliance**

LSPG's environmental compliance awareness procedures are designed to protect LSPG ROW and neighboring properties by observance of the laws, regulations, and codes that exist within the individual operating state districts. Considerations for the following standards and other requirements to maintain and operate LSPG electrical systems while not harming the environment include but are not limited to:

- Air quality
- Water quality
- Ground Disturbance

- Threatened/Endangered Species
- Land and Land use

LSPG accomplishes these efforts by creating an understanding of the environmental laws and regulations that apply to our various systems and developing environmental compliance plans that address known concerns.

3.0 Safety

Safety is a core value at LSPG. Safety is intentionally planned, discussed, and reviewed as part of our daily work scopes. Employees and contractors are encouraged to follow the guidelines of "If you see something, say something" and "if you say something, do something". Stop work authority is the right of all personnel working or observing work throughout the day. Employees and contractors are always encouraged to put safety first and address changing work plans with updated safety protocols that proactively incorporate safety into our work practices.

4.0 TVMP Policy Overview

LSPG's TVMP uses a defensive in-depth strategy to manage vegetation located on and adjacent to our transmission ROWs to minimize encroachments thereby precluding the risk of common vegetation-related outages. Encroachments are defined by NERC as the following:

- An encroachment into the Minimum Vegetation Clearance Distance (MVCD), observed in Real-time, absent a Sustained Outage,
- An encroachment due to a fall-in from inside the ROW that caused a vegetation-related Sustained Outage,
- An encroachment due to the blowing together of applicable lines and vegetation located inside the ROW that caused a vegetation-related Sustained Outage,
- An encroachment due to vegetation growth into the line MVCD that caused a vegetation-related Sustained Outage.

Control of vegetation-related encroachments is accomplished by routine inspections and maintenance on each transmission ROW which includes tree/woody plant removal via mechanical, manual, and herbicide applications. Inspection and maintenance objectives include:

- Public and worker safety
- Reliable electric service that allows for operational flexibility
- Compliance with regulatory and legal requirements
- Managing landowner land use and easement agreements/requirements
- Environmental stewardship and habitat enhancement
- Reducing treatment costs by replacing mechanical, manual, and herbicide control methods with biological and cultural control methods for the long-range management and removal of targeted vegetation and plant species that could impact public safety and line reliability

4.1 **Organizational Responsibility for ROW Management at LSPG**

Overall responsibilities for the TVMP program are overseen by the LSPG Operations and Maintenance organization. The Manager of Vegetation Management oversees company-wide policies, procedures,

techniques, supervision, and coordination for the implementation of the ROW management program. Other organizations act in support of the ROW management activities including:

- Environmental
- Engineering
- Legal/Real Property Management Services
- Supply Chain
- Accounting
- Human Resources
- Substations
- Operations
- Health Safety & Environmental

4.2 Key Positions in Vegetation Management Program

Vice President, Transmission Operations & Maintenance

- Provides oversight for general budgeting, department resource structure and work performed by the Manager of Vegetation Management.

Manager of Vegetation Management

- Responsible for all LSPG vegetation management activities and supervises the Regional Resources.
- Responsible for all LSPG transmission inspection and maintenance,
- Develops annual budgets, work specifications, performance standards, operational policies and procedures, and all transmission-related activities on LSPG systems.
- Performs planning, scheduling, initiation of work, real-time work monitoring, approval of quality controls, Think Power system administration, invoice approval, as well as items pertinent to contract and third-party oversight.

Arborist / ROW Inspector

- Support the Manager of Vegetation Management by executing annual plans, coordinating contractor activities, and the administration of the VM programs.

Maintenance Specialist

- Facilitates inspections as assigned. Oversees contractors in the field as directed.

Legal/Real Property Management Services

- Coordinates the review of legal documents, and defines legal requirements, and special terms and conditions. Assists with landowner interactions and damage claims.

Supply Chain

- Assists in the establishment of work orders, external contracts, and the issuance of purchase orders for contracted services, materials, and equipment.

Accounting

- Assists in the establishment of budgets and O&M or capital spend designations. Facilitates the management of the accounts payable function. Assists in addressing funding for unplanned or emergency work.

Contracted Services

- Various contracted services are utilized to support activities pertaining to the execution of work such as mechanical and herbicidal vegetation clearing, LIDAR and LIDAR interpretation, engineering parameter evaluation, consulting, and field inspections and training. These services provide expanded resource capabilities to LSPG.

All LSPG personnel directly involved in Transmission VM are trained and hold appropriate levels of qualifications/certifications to perform their specific duties. LSPG job descriptions, job titles, and organizational structure are subject to change. Refer to LSPG's internal human resource department for the latest information.

4.3 Minimum Vegetation Clearance Distances (MVCD)

Clearance standards established by LSPG conform to the following regulatory and industry guidelines:

Nominal AC System Voltage (kV)	MVCD at 1.0 Gap Factor (feet)														
	Sea Level up to 500 ft	Over 500 ft up to 1,000 ft	Over 1,000 ft up to 2,000 ft	Over 2,000 ft up to 3,000 ft	Over 3,000 ft up to 4,000 ft	Over 4,000 ft up to 5,000 ft	Over 5,000 ft up to 6,000 ft	Over 6,000 ft up to 7,000 ft	Over 7,000 ft up to 8,000 ft	Over 8,000 ft up to 9,000 ft	Over 9,000 ft up to 10,000 ft	Over 10,000 ft up to 11,000 ft	Over 11,000 ft up to 12,000 ft	Over 12,000 ft up to 13,000 ft	Over 13,000 ft up to 14,000 ft
765	11.6	11.7	11.9	12.1	12.2	12.4	12.6	12.8	13.0	13.1	13.3	13.5	13.7	13.9	14.0
500	7.0	7.1	7.2	7.4	7.5	7.6	7.8	7.9	8.1	8.2	8.3	8.5	8.6	8.8	8.9
345	4.3	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6
287	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.1	6.2	6.3	6.4	6.5	6.6	6.7
230	4.0	4.1	4.2	4.3	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3
161	2.7	2.7	2.8	2.9	2.9	3.0	3.0	3.1	3.2	3.3	3.3	3.4	3.5	3.6	3.6
138	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.7	2.7	2.8	2.8	2.9	3.0	3.0	3.1
115	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.5	2.5	2.6
88	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1
69	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5

Table 1 – Table of MVCD values at a 1.0 gap factor (in U.S. customary units)

Currently, LSPG has identified applicable MVCDs for lines operating in three distinct regions with differing voltage parameters. The following MVCDs do not address clearance for all rated electrical operating conditions. The identified MVCDs according to the operating parameters are as follows:

- Texas Panhandle Region (345kV at 3,000 up to 4,000 ft. elevation) – 4.6-foot radial clearance

- College Station Region (345kV at 500 up to 1,000 ft. elevation) – 4.3-foot radial clearance
- Delaware Region (230kV at 0 up to 500 ft. elevation) – 4.0-foot radial clearance
- New York Region (345kV at 1,800 up to 4,000 ft. elevation) – 4.6-foot radial clearance

LSPG elects to utilize the most stringent MVCD from the four operating regions rather than manage varying standards for clearances. Therefore, the Texas Panhandle and New York regions serve as the baseline elevation for determining the MVCD for the TVMP associated with all lines operated and maintained by LSPG. This strategy enforces the most conservative criterion since LSPG transmission lines operated in the other two regions are at lower altitudes and/or voltages.

Certain climate conditions can alter the physical properties of conductors so much so that they behave in a way that calls for increased clearance. For example, strong winds, heavy ice loads, heavy power loads, and high-temperature environments can all cause energized lines to sag and sway several feet under certain operating conditions. LSPG works with engineering professionals to determine the specific radial clearances being maintained between vegetation and conductors under all rated electrical operating conditions. The following MVCD measure can be used in real time observations to evaluate flashover risk by including sag and sway between vegetation and conductors unless otherwise stated by specific span related inspection criteria.

LSPG Minimum Radial Clearance Distance	
Voltage	**Radial Clearance (feet)**
345kV & Below	15

While vegetation must be maintained to a minimum distance of 4.6 feet in real-time conditions, the 15-foot clearance can be used as a conservative measure to evaluate clearances under all rated conditions. Additionally, a 21-foot clearance is established as a standard for maintenance activities to facilitate a safe working environment for the overhead lines, crews, and equipment utilized to perform arboriculture services. During routine inspections, LSPG personnel and subcontractors performing arboriculture work should consider the tree species, growing environment, growth rates, potential conductor position, etc. to determine the amount of clearance required. These factors help optimize scheduling of treatments to maintain MVCD requirements.

4.4 **Encroachment Threat Evaluations and Vegetation Priority Rating (VPR)**

Vegetation Priority Ratings (VPRs) are utilized to assign initial assessment priorities for vegetation compatibility for each structure and its leading span of conductor. VPR assignment is based on the MVCD clearance requirements related to real-time, real-time with movement, and long-range clearances as compared to the 4.6, 15, and 21-foot standards. VPRs are used to assess wire zone, border zone, and offROW grow-in, fall-in, and hazard tree threats present at the time of an inspection.

It is important to note that initial assessments in most cases are performed in a condition where detailed measurement tools may not be available. Employees and contractors are trained and deemed qualified to assess MVCD under all conditions including the absence of measurement equipment. The initial VPR may be updated at the time of the detailed ground inspection when the appropriate measurement tools are available to accurately identify an assessed threat. Proper records will be maintained in the event of a change of any priority assignment.

VPRs initiate a detailed evaluation process that corresponds to the real-time observation assignments of the following priority classes:

- Priority 1 (VPR1): Vegetation is assessed as an encroachment at less than 4.6 feet from any conductor. Priority 1 designations will be assigned a high urgency and must be reported immediately and inspected within a 24-hour timeframe following initial discovery. These observations may result in a real-time encroachment as defined by FAC-003. These observations may also be subject to the Outage & Imminent Threat Reporting protocols and can lead to immediate treatments including emergency line outages.
- Priority 2 (VPR2): Vegetation is assessed at less than 15 feet from any conductor. Priority 2 designations will be assigned a medium urgency and inspected within a 5 to 30-day timeframe following initial discovery. If the threat is confirmed to be within the 15-foot clearance, the vegetation should be removed as designated by the detailed ground inspection recommendation for priority.
- Priority 3 (VPR3): Vegetation is assessed at less than 21 feet from any conductor with the potential of reaching the 15-foot inspection limit. Priority 3 designations will be assigned a low urgency and inspected within an eighteen-month timeframe following initial discovery. At the time of a detailed inspection, a target date for treatment will be identified if the vegetation requires removal.
- Priority 4 (VPR4): Vegetation is assessed at greater than 21 feet of any conductor. Priority 4 designations will be assigned a very low urgency and inspected within a thirty-six-month timeframe following initial discovery. At the time of a detailed inspection, a target date for treatment will be identified if the vegetation requires removal.

4.5 **Imminent Threat Reporting**

As defined in LSPG-ADM-FAC003TVMP sections 6.1, LSPG personnel and contractors should report any real-time observed vegetation-related threats/encroachments (P1 or P2 findings) that may cause an outage to the following people:

1. Manager of Vegetation Management
2. Transmission System Operations
3. VP of Operations and Maintenance or Designee

Appropriate actions will be taken based on the assessed severity of the threat and the likelihood that the threat will cause a temporary or sustained outage.

4.6 **Outage Investigation and Reporting**

All unplanned system outages are reported to the Operations and Maintenance departments to facilitate condition assessments of the associated assets. Until all assets are deemed safe, clear, and in good working condition, the system will not be re-energized. If vegetation is designated as the root cause of any outage, investigations will be conducted to determine the cause of contact.

LSPG reports outages to respective regional entities quarterly. The outage information provided by LSPG to the regional entity includes the name of the circuit(s), outage date, time and duration of the outage, a description of the cause of the outage, other pertinent information or comments, and any countermeasures taken by LSPG. The VP of O&M or designee reports all vegetation related outages, with the associated information to the Director of Compliance, or their designee. The compliance team reports all outage(s) to the applicable Regional Entity.

4.7 **Annual Work Planning**

The Manager of Vegetation Management, or Designee, shall update this procedure to identify in scope assets as new transmission systems are energized. The following schedule of line assets represents systems that will be included in all annual planning and budgeting:

Line Name by Endpoints	Voltage Rating (kV)	Length (miles)
Gray – Alibates	345	41.9 (double circuit)
Gray – Tesla	345	108.9 (double circuit)
Tule Canyon – Cross	345	34.9 (double circuit)
Cross – Tesla	345	52.7 (double circuit)
Gray – Allen Creek	345	24.3 (single circuit)
Limestone – Gibbons Creek 18 – 50	345	27.9 (double circuit)
Hope Creek – Silver Run	230	5.5 (single circuit)
Edic – Gordon Road 14	345	5.2 (single circuit)
Princetown – Gordon Road 371	345	5.2 (single circuit)
Gordon Road to Rotterdam 30 Tie Line	230	.08 (single circuit)
Gordon Road to Rotterdam 31 Tie Line	230	.04 (single circuit)
Princetown – New Scotland 55	345	6.6 (single circuit)
Princetown – New Scotland 361 – 362	345	20.4 (double circuit)
Edic – Princetown 351 – 352	345	19.3 (double circuit)

For the above systems, an annual plan will be produced and maintained that includes the following activities:

- 100 % of each line will be inspected each calendar year not to exceed 18 months between each inspection
- Identified detailed ground inspections are performed based on priority/target date
- Planned treatments are addressed based on assessed target dates
- Post treatment quality and next step assessments are timely

Work will be performed so that plan target dates are not exceeded. Exceptions to this requirement are permissible when planned activities are interrupted by natural disasters, such as severe storms, floods, etc. However, LSPG will reassess work requirements in the affected segments to ensure the related work is performed timely, to prevent threatening conditions that may lead to outages. The annual work plan will be updated to reflect these changes. The appropriate inspection will be conducted to ensure these changes do not affect reliability.

4.8 **Annual Budgeting**

A supporting budget will be produced annually in advance of the operational term (year) to ensure funds are available to support the necessary activities identified in the annual work plan. If workloads and budgets conflict, the annual work plan or budget will be amended to address the shortfall in either plan. Appropriate actions will be pursued to document these changes. Budgeting will address the requirements for the following aspects of work:

- Staffing and/or contract resources to facilitate annual inspection requirements
- Foreseeable vegetation removal/treatment activities
- Internal or contracted services required to address training and program management oversight
- Internal or contracted services required to address permitting, access, and/or regulatory requirements
- Upkeep and replacement of field-related tools, equipment, and PPE
- Travel related to remote work and/or training
- Software and systems utilized to manage daily work activities

Budgets will be planned independently by state or state and region depending on company requirements and needs. Storm-related costs can be addressed per event and added to annual budgets based on system reliability requirements.

4.9 **Inspections of Energized Systems**

LS Power implements an automated workflow process monitoring system, which assesses structures and their line-ahead-spans to ensure that all lines at or above 200kV (or lines designated as high-risk assets) are free from vegetation related line clearance issues in all foreseeable conditions. Utilizing a combined office and field inspection tool (developed by Think Power) the following activities are managed:

- Initial discovery and prioritization (annual Inspections)
- Follow-up detailed ground inspection
- Evaluation of work requirements/scope of work development
- Treatment protocols and target dates
- Post treatment quality and next steps assessments
- Site re-treat, quality assessments, and eventual closeout

All inspections performed via the Think Power tool incorporate information related to the activities in progress and allow for each line-ahead-span to be assessed based on the current VM work plan. This ensures that work requirements are tracked, and conditions do not escalate in a way that would require expedited response times.

Annual line-ahead-span inspections generally focus on the system's health and designated line inspection criteria resulting in a priority assignment of VPR1 to VPR4. This determines if follow-up inspections are required. Because these annual health assessments include visibility to a line-ahead-span's current status, the resulting inspection confirms the viability of the existing planned work as well as looking at the near-term predictable defects that may affect the reliability of the system until the next inspection.

Detailed ground inspections are a follow up inspection to the annual inspections and assess priority designations from the highest to the lowest urgency and occur before VPR target dates expire. Priorities are assigned based on a consideration of the growth rates of the identified vegetation and its current proximity to conductors. Detailed ground inspections confirm the previous VPR assessments and consider the following criteria utilizing the appropriate tools:

- Current and predictable MVCD clearances
- Integrated Vegetation Management (IVM) practices
- Wire Zone and Border Zone Concepts
- Wildfire Mitigation factors
- Individual line-ahead-span characteristics including site conditions and topography
- Tree species, growth rates, growth parameters, and re-growth characteristics
- Off ROW tree inspections for danger and hazard tree identification

With the above information, LSPG employees can validate the initial priority designation or document adjustments as needed. LSPG employees can determine a path forward with time-specific actions for a line-ahead-span that addresses these conditions before they can create a threat to the reliability of the transmission system. The result of a detailed ground inspection will always include a plan for next steps and estimated target dates for work so that conductor clearances are managed before known threats can develop which could lead to an outage. The next steps are generally identified in one of five general work activities:

- No action required, inspect next annual inspection
- Additional detailed ground inspection recommended
- Large scope mechanical work recommended
- Small scope mechanical work recommended
- Herbicidal scope application recommended

4.10 **Planned Vegetation Treatment**

Annual work plans include all known work for all known priority levels (target dates) and work scope designations. This means that annual work plans are being updated to include work identified throughout the year as well as the work previously known. This work is then managed to address the most urgent work first (based on target dates) so that budgetary funds are always focused on the most critical aspects of work as it relates to each system's safety and reliability needs.

As part of the annual work planning processes, the following aspects of work are evaluated and addressed through the scope of work design, scheduling, and work assignment:

- Work type and contractor qualifications
- Work timing
- Landowner considerations
    - Land use
    - Easement requirements
    - Access conditions
    - Notification
- Shared use conditions
- State and local regulatory considerations/permitting
- Environmental aspects such as:
    - Endangered species habitat/restrictions
    - Presence of water and waterways
    - Compatible vegetation species
- Integrated Vegetation Management (IVM) practices
- Tree Species and long-range density/re-growth management

It should be noted that because trees grow based on unpredictable weather conditions, identified tree removals, cutting, and/or spraying activities are being evaluated with our annual inspection efforts to ensure conditions and prioritizations have not changed since the initial assessment.

4.11 **Quality and Next Steps Assessment**

Quality and next steps inspections are assigned/performed after vegetation removal, pruning, and/or herbicide treatments are complete. While scopes of work may vary drastically, the post treatment report is designed to evaluate the quality of work performed based on the various defined scopes of work. It is also utilized to evaluate sites for next steps in treatment as LSPG works with landowners to manage land use and overhead conductor clearance.

4.12 **Storm Response & Emergency Work**

Unplanned work related to storms, accidents, or unforeseen circumstances is supplemental to the planned budget and work plan and may impact the resources available to perform work as planned. This circumstance will be addressed based on the planned work priority system and the safety and reliability requirements of the affected system. Pre-planning activities may not always be followed for unplanned work to be reasonably addressed, but safety and compliance with system requirements will always be the primary consideration before work is executed.

5.0 Recordkeeping

LSPG uses a workflow application developed by Think Power for field activity data collection, work prioritization, and work history creation. While this tool is utilized to manage active workflows including inspections, treatments, landowner information, access notes, and quality assessments; the documents produced are our primary source of evidence for work performed annually to support this program. While supplemental reports and summaries of activities are regularly created and reported, specific activity related to any given line-ahead-span can be found in this tool or an alternate historical storage location. Document retention practices will support audit and compliance standards addressed outside of this document.

6.0 Qualifications and Training for Contracted Services and Staff

Various types of contractors are utilized for various scopes of work to augment internal staffing requirements and manage the fluctuation of work that exists to address seasonal activities. Contractors working for LSPG are evaluated and assigned to work based on their demonstrated skill sets, and contracts are reviewed and executed by various levels of the business before contractors are released to work. Additionally, specific scopes of work are developed identifying critical aspects of work and performance to ensure that contractors for LSPG can address LSPG's long-range vision as it relates to VM. Contractors should ensure that the following high-level aspects of work are addressed for each scope of work assigned:

- An authorized scope of work with the associated purchase order is obtained
- Appropriately trained resources are assigned to address the identified activities in the scope of work
- Notifications to the designated LSPG personnel are communicated as it relates to the work activities and schedule
- Permitting, environmental, and landowner notifications are addressed
- Access and land rights are understood before mobilization (if required)
- Traffic controls are planned and communicated (if required)
- The appropriate reporting is in place to document daily, weekly, monthly, or periodic milestone activities
- Safety concerns are addressed daily

6.1 Training Provided to Contracted Service Providers

LSPG will ensure that contractors are trained on LSPG processes that support access, tools, and safety on LSPG systems. Training provided will address aspects of work related to information that is managed or controlled by LSPG staff or processes. This information may include but is not limited to:

- LSPG daily safety planning and reporting policies
- LSPG access requirements related to:
    - LSPG owned facilities
    - LSPG ROW's
    - LSPG systems and specifications
    - LSPG reporting and document retention policies
    - LSPG Emergency communication protocols and requirements

6.2 Training for LSPG Staff

LSPG will ensure that staff members are appropriately trained on LSPG processes that support the TVMP processes. Training provided will address aspects of TVMP processes supported by the assigned resource. LSPG staff members will participate in class and field related training designed to support the established processes and systems managed to ensure the reliability and safety of LSPG assets. This training will be documented in accordance with LSPG training protocols not contained in this document.

7.0 Contacts

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8.0 Glossary

Action Threshold or Vegetation Priority Rating (VPR) – A level of incompatible plant pressure (e.g. species, density, height, location or condition) at which vegetation management treatments may occur if needed to prevent conditions reaching the tolerance levels. LSPG uses these terms interchangeably.

Aerial Assessment/Inspection – Inspection done via aircraft/drone to asses Action Thresholds or VPR's of vegetation. Aerial inspections can be used to facilitate annul VPR assessments.

Aerial Imagery – Images captured from above (via satellite or other aerial device) that can provide an additional view of vegetation conditions.

American National Standards Institute (ANSI) – In the United States, a non-profit organization responsible for promulgating the industry-wide consensus and minimum standards for compliance.

ANSI Z133 – Standards put forth to ensure safe work processes while conducting tree care activities.

ANSI A300 – Standards put forth for the Arboriculture industry-accepted best management practices regarding tree care and management.

Annual Work Plan – Centralized documents detailing the vegetation management work required prior to the start of the next calendar or fiscal year. Annual work plans are prepared but may not be finalized until the end of Q1 of the year the work is planned. Annual work plans may include visibility to work planned in future years.

Annual Inspection – Think Power report or VPR assessment assigning target dates for follow-up assessment on each line ahead span determining the current and foreseeable health of the MVCD for each span including grow-in and fall-in considering the sag, sway, and movement of the conductor and vegetation.

Arboriculture – The practice and study of the care of trees and other woody plants.

Arborist – A professional who possesses the technical competence gained through experience and training to provide for or supervise the management of trees and other woody plants in residential, commercial and public landscapes.

Basal Herbicide Application – A method of localized herbicide treatment. Herbicide is applied at the base of a plant (the bark or stem from the ground) up to knee height. The herbicide is usually mixed with an oil carrier to enhance penetration through the bark. These treatments can be done during the dormant season or active growing season.

Best Management Practice (BMP) – Best available industry-recognized courses of action, in consideration of the various associated ecological and socioeconomic benefits and limitations, based on scientific research and current knowledge and standards.

Biological Control – Management of vegetation by the establishment and facilitation of compatible, stable plant communities using various natural ecological agents such as competition, allopathy, animals, insects, or pathogens.

Blow-Out (Conductor Sway) – The movement of conductor swinging left or right of center creating a potential for contact with adjacent vegetation or materials.

Border Zone – Area that begins at the outside edge of the wire zone and extends to the edge of the easement or clearing limit. The border zone many contain additional low-growing woody plants and trees that do not exhibit grow-in or fall-in characteristics as conductors are not directly overhead.

Cascading Outage – The uncontrolled successive loss of power transmission triggered by an incident at any location. Cascading could result in widespread electric service interruptions that can sequentially spread beyond the initial area of effect.

Chemical Control methods – Management of vegetation through the use of herbicides or plant growth regulators.

Clearing Limit – Engineered clearing limits less than the easement boundary. Clearing limits have engineering measures that define MVCD based on the Sag and Sway of the conductor and the distance to the defined boundary to the existing vegetation wall.

Compatible Vegetation – Vegetation on or near a specific ROW site that has growth characteristics which allow it to thrive over the course of its lifetime without posing an encroachment risk to overhead facilities at that site. Compatible vegetation is not defined by species, it is defined by predictable line clearance in a specific line-ahead-span. Because vegetation will grow to its established environmental conditions; and lines have variable sag and sway clearance profiles, all vegetation will be evaluated based on predictable measures and left in place if the appropriate line clearances exist regardless of the species of the plant.

Conductor Sag – The vertical difference in level between points of support (most commonly transmission towers) and the lowest point of the conductor. The calculation of sag and tension in a transmission line depends on the span of the overhead conductor.

Conductor Max Sag – The vertical difference in level between points of support (most commonly transmission towers) and the lowest point of the conductor under elevated loading conditions. Ambient temperature, loading temperatures, and ice can increase the sag between two points. Engineers design each line based on predictable loading criteria to estimate sag under maximum loading conditions and create minimum ground clearances that must be achieved during the construction phases. These sagging conditions can generally be found in the design criteria documents and are sometimes reflected in the plans and profile drawings.

Critical Clearance Zone (Conductor Security Zone) – The immediate space around phase wires defined by the radial distance in feet in all directions from the conductor, as determined by voltage; including sag and sway. LSPG identified this limit as 15 feet and results in escalated action thresholds. 15 feet is currently used on all voltages between 200kv and 345kv.

Danger Tree – Vegetation within striking distance of electrical facilities and equipment. Danger trees do not exhibit obvious defects that would cause the vegetation to fall under normal (non-storm) weather conditions. All danger trees inside of clearing limits or easement boundaries will be assessed and addressed appropriately. Danger trees outside of clearing limits and easement boundaries will be evaluated for obvious defects and classified as Hazard Trees when necessary.

Detailed "Ground Inspecting" – Think Power report to follow-up an assigned VPR utilizing advanced measurement tools and documenting conditions to properly assess/track the following attributes for any given line ahead span: landowner contact/interactions, access requirement/limitations, vegetation species/growth characteristics, conductor clearance, findings summary next steps, photos.

Easement – A legal document defining the collective right to access or use someone else's land for a specified purpose.

Easement Boundary – The legally defined boundary or edge ahead on line left and right of the center of the transmission line overhead. Easements are generally measured from center but can be irregular in shape. Easement boundaries and rights need to be understood for access and work-related activities.

Electrical Conductor (Wire) – Any overhead or underground electrical device capable of carrying an electrical current including communication wires and uninsulated power lines and other such fixtures or apparatus. MVCD is measure from individual conductors.

Encroachment – Vegetation-related conditions that warrant a response resulting from vegetation that is near the MVCD including grow-in and fall-in conditions. See FAC-003-4 R1 1.1, 1.2, 1.3, and 1.4 and R2 2.1, 2.2, 2.3, and 2.4 for detailed definitions of the critical encroachments types.

Endangered – A classification assigned to specific species; by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, to be in danger of extinction through all or a significant portion of a defined range. Species identified with range on LSPG systems will be protected during O&M activities based on the regulatory requirements. LSPG's environmental business unit defines the actions/restrictions and where they apply to LSPG transmission systems by State.

Endangered Species Act – The Endangered Species Act was codified in 1973 and provides a means to identify, list, and protect certain species whose low population numbers made them vulnerable to extinction.

FAC-003-4 – Set of standards promulgated by NERC/FERC to ensure transmission owners are operating within the realms of safety and compliance when conducting vegetation management operations ("4" is the current revision as of 6-2023 this may change and policies will be updated with those changes).

Fall-In – The potential for vegetation parts to fall towards electrical facilities and resulted in a fault or sustained outage. The occurrence of a fault or sustained outage as a result of falling vegetation. Fall-In is a condition that will not be allowed inside of ROW clearing limits and should only related to danger trees outside of clearing limits and easement boundaries.

Federal Energy Regulatory Commission (FERC) – The United States agency that regulates the transmission and wholesale sale of electricity and natural gas in interstate commerce and regulates the transportation of oil by pipeline in interstate commerce. LSPG is a transmission only company and fall under the regulator states in FERC that pertain to the transmission of power.

Geographic Information Systems (GIS) – Computer-based tools used to store, visualize, analyze, and interpret geographic data. Geographic data (also called spatial, or geospatial data) identifies the geographic location of features. Think Power uses this type of data to assist field working in identifying and tracking vegetation findings until the assessed threats can be resolved.

Grow-in – The potential for vegetation parts to grow into electrical facilities and resulted in a fault or sustained outage. The occurrence of a fault or sustained outage as a result of vegetation growing into electrical facilities. Grow-in should be assessed in all zones of a transmission ROW as vegetation can encroach a conductor vertically and horizontally.

Hazard Tree – Vegetation within striking distance with an obvious defect that could cause the vegetation to fall towards conductors. Hazard trees when identified will be monitored until rights are obtained and crews are scheduled for remediation efforts.

Herbicide – A chemical substance used to slow plant growth or kill a plant completely.

Imminent Threat – Observable condition which denotes that vegetation is posing an immediate threat to transmission system operation. Immediate Threats for LSPG represents a threat that is not reasonably predictable and demands a response within 24 hours of identification based on a VPR-1 designation.

Incompatible Vegetation – Vegetation on or near a specific ROW site that could reasonably create an encroachment threat to facilities at some point during its lifetime. Incompatible vegetation is not defined by species, it is defined by predictable line clearance in a specific line-ahead-span. Because vegetation will grow to its established environmental conditions; and lines have variable sag and sway clearance profiles, all vegetation will be evaluated based on predictable measures and left in place if the appropriate line clearances exist regardless of the species of the plant.

International Society of Arboriculture (ISA) – A paid membership association and credentialing organization that promotes the professional practice of arboriculture. The ISA focuses on providing research, technology, and education opportunities for tree care professionals to develop their arboricultural expertise.

Interconnecting Reliability Operating Limit (IROL) – A System Operating Limit that, if violated, could lead to instability, uncontrolled separation, or Cascading outages that adversely impact the reliability of the Bulk Electric System. IROL systems are specifically classified and identified for each electrical system in operation.

Line-Ahead-Span – A term utilized at LSPG to describe the segmentation of a transmission line's inspection zone for vegetation and the evaluation of MVCD and transmission line health. For each Transmission Line; with substations as endpoints, the line-ahead-span is defined by the following criteria:

- Beginning slightly behind the sequentially named Structure looking ahead on line for the length of conductor span,
- Extending to the back of the next sequentially named Structure looking back on line,
- For the width of the defined easement boundary,
- Including all off ROW trees for the length of the conductor evaluated to have potential fall-in risk.

Low-growing Plant Communities – A population of relatively short plants (e.g., grasses, shrubs, forbs, herbs) that can "outcompete" trees and tall-growing brush for sunlight and nutrients, thereby reducing the presence of trees.

Manual Control Methods – Management of vegetation using hand-operated tools such as chainsaws, handsaws and other small power tools.

Mechanical Control Methods – Management of vegetation using equipment-mounted saws, mowers, shredders or equipment with rubber tires or tracks.

Minimum Vegetation Clearance Distance (MVCD) – The calculated minimum distance stated in feet (meters) to prevent flash-over between conductors and vegetation, for various altitudes and operating voltages.

Natural disaster – Includes but is not limited to earthquakes, fires, tornados, hurricanes, landslides, wind shear, fresh gale, major storms as defined either by the applicable Transmission Owner or applicable Generator Owner or an applicable regulatory body, ice storms, and floods.

North American Electric Reliability Corporation (NERC) – A not-for-profit international regulatory authority whose mission is to assure the effective and efficient reduction of risks to the reliability and security of the electric grid.

New York State Department of Public Service (NYSDPS) – The Public Service Commission regulates electric, gas, steam, telecommunications/cable, and private water utilities in New York.

Ordinance – Legal document that defines a public municipal agency's authority, describes required conditions or response actions, establishes penalties for nonconformance, and identifies who is responsible for enforcement and oversight.

Post Treatment Inspection – Think Power report following up any treatment assessing quality aspects of the work performed and next steps needed to support long-term results. This report tracks quality and next steps related activities for a line-ahead-span including: landowner contact/interactions, access requirement/limitations, quality summary assessment notes, and next steps recommendations.

Pruning – Removal of branches (occasionally roots) from a tree or other plant, using approved practices, to achieve a specified objective. The intent of pruning is to leave the tree in place without defect. Pruning is a temporary solution and will require future action.

Qualified Person (for Electric Power Generation, Transmission and Distribution) – One knowledgeable in the construction and operation of the electric power generation, transmission, and distribution equipment involved, along with the associated hazards. Qualified employees shall be trained and competent in: (1) the skills and techniques necessary to distinguish exposed live parts from other parts of electrical equipment; (2) the skills and techniques necessary to determine the nominal voltage of exposed live parts; (3) the minimum approach distances corresponding to the voltages to which the qualified employee will be exposed; and (4) the proper use of precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment. An employee who is undergoing on-the-job training and who, in the course of that training, has demonstrated an ability to perform duties safely at his level of training and who is under the direct supervision of a qualified employee is considered to be a qualified employee for the performance of those duties.

Regrowth – Continued growth of vegetation after mechanical removal or cutting. Various plant species will respond to mechanical cutting by the re-sprouting of new stems from the remaining roots or exposed stems.

Right(s)-Of-Way (ROW) – A corridor of land used for a specific purpose such as an electric transmission line or pipeline.

Risk – The combination of the likelihood of an event and the severity of the potential consequences.

Structural Defect – Any naturally occurring or secondary conditions such as cavities, poor branch attachments, cracks or other abnormalities in the trunk, crown, or roots of the tree that may indicate an increased likelihood of structural failure.

Stump Treatment – A chemical method of spot treatment. Herbicide is manually applied to freshly cut stumps of broadleaf trees and shrubs to minimize or prevent re-sprouting.

Subcontractor – The person, partnership of corporation to whom a contract or work order is assigned.

Sustained outage – An interruption in power transmission lasting a minute or greater.

Think Power – Multi-use software program used to log and store vegetation-related inspection data.

Threatened Species – Threatened species are those designated to likely become endangered within the foreseeable future through all or a significant portion of their range.

Transmission system – A transmission line rated at a single voltage defined by its starting and ending point. Start and end may be defined by a structure, substation, or other line attribute. A transmission system may have multiple circuits and various structure configurations but will be in a singular ROW corridor. If the circuit splits between the starting and ending points, the line-ahead-spans are inspected and managed separately for those segments.

Treatment Report – Think Power report following up a detailed ground inspection or post treatment recommendation for a prescribed action. This report tracks work related activities for a line-ahead-span including: landowner contact/interactions, access requirement/limitations, crew members, equipment used, herbicide used, herbicide gallons used, herbicide application method, general activities results summary, and photos as found and as left.

Tree – Five inch or greater in diameter per stem, generally six feet+ tall. Trees over 5 inches in diameter should be addressed based on their full species grow potential and based on their species growth rates. Threats to overhead conductor should be considered with these parameters in mind.

Tree Mature – Ten inch or greater in diameter per stem, generally ten feet+ tall. Mature trees can be evaluated for environmental growth characteristics and may not reach their species potentials based on limiting factors such as scarcity of water, nutrients, exposure to wind, disease, and damage. At mature ages trees are more predictable and may require monitoring rather than removal.

Unqualified Employees – Must maintain the minimum approach distances from overhead power lines. Work practices for these employees are covered by, particularly 1910.333(c) (3) Subpart S. Section 1910.269 does not apply to tree trimming operations performed by unqualified employees.

Utility – A public or private entity that delivers a public service, such as electricity or communications.

Utility Arboriculture – Branch of arboriculture that provides services to utilities. Often requires specialized equipment and training of workers, and is subject to standards of practice that can vary from other areas of arboriculture. Frequently associated with electrical utilities, utility arboriculture services include but are not limited to utility line clearance pruning, right of way clearing and maintenance, and integrated vegetation management practices.

Vegetation – Live or dead plant material including trees, brush, shrubs and grasses. Vegetation that can encroach overhead electrical components are the focus of the VM programs at LSPG. Alternatively, LSPG considers all forms of vegetation and utilizes IVM practices to ensure that VM activities are beneficial to more than just the focused goal of keeping electrical systems safe and reliable.

Western Electricity Coordinating Council (WECC) Transfer Path – High voltage power links located at critical interconnection points in the North American electrical grid. These portions of the system connect major grid elements together, which can make outage impacts more severe in these areas. WECC systems are specifically classified and identified for each electrical system in operation.

Wire Zone – Area directly underneath the conductor(s). Desirable vegetation in the wire zone consists of low- growing forbs and grasses.

Woody Brush (Saplings) – Less than five inches in diameter per stem; woody plant species, typically less than six feet tall. Regardless of plant species all woody brush under five inches in stem diameter can commonly be sprayed or mowed in a universal manner. What will not be universal is how plant species will respond to either herbicide or mechanical removal. Species should be considered when the removal of densely populated woody plants is considered. The tree species of woody brush species should determine the plants growth potential for height and growth rate. Threats to overhead conductor should be considered with these parameters in mind. Woody brush species identified as compatible in a line-ahead-span should be evaluated and left in place during removal activities.