## FINAL LICENSE APPLICATION EXHIBIT E

## **APPENDIX R**

**VEGETATION MANAGEMENT PLAN** 

# VEGETATION MANAGEMENT PLAN ANNOTATED OUTLINE

## SKAGIT RIVER HYDROELECTRIC PROJECT FERC NO. 553

Seattle City Light

April 2023

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#### List of Acronyms and Abbreviations

BMP	.Best Management Practices
City Light	.Seattle City Light
EPA	.Environmental Protection Agency
FERC	.Federal Energy Regulatory Commission
HPMP	Historic Properties Management Plan.
IVM	.Integrated Vegetation Management
NERC	North American Electric Reliability Corporation
O&M	.Operation and Maintenance
Project	.Skagit River Hydroelectric Project
ROW	.Right-of-Way
SOP	.Standard Operating Practice
SRCC	.Skagit Resource Coordinating Committee

## **1.0 INTRODUCTION**

This document describes Seattle City Light's (City Light) proposed Vegetation Management Plan for the Skagit River Hydroelectric Project (Project or Skagit River Project), Federal Energy Regulatory Commission (FERC) No. 553. This Vegetation Management Plan will provide guidance for the management of vegetation within the Project Boundary. The goal of this plan is to minimize direct and indirect impacts from routine Project operations and management (O&M) and vegetation management activities. Information obtained through the implementation of the Vegetation Management Plan will be used to inform decision-making regarding vegetation management in an adaptive management context.

City Light will coordinate the efforts required under this Vegetation Management Plan with other license article obligations, including other Project resource management plans included in the new license.

## 2.0 PURPOSE AND SCOPE OF THE PLAN

The Vegetation Management Plan provides best management practices (BMP) and procedures for the management of vegetation within the transmission line right-of-way (ROW), and in other areas within the FERC Boundary around Project facilities. The goal of this Vegetation Management Plan is to enhance habitat, reduce erosion, protect visitor aesthetic experience, and minimize potential effects from vegetation management while fully complying with North American Electric Reliability Corporation (NERC) clearance requirements, reduce wildfire fuel loads, where needed, minimize potential for ignition,<sup>1</sup> and maintain safe accesses along Project roadways and around facilities.

This plan will be effective for the term of the new license and is subject to periodic five (5) year review and updates in consultation with the Skagit Resource Coordinating Committee (SRCC).<sup>2</sup>

City Light will coordinate the efforts required under this Vegetation Management Plan with other Project resource efforts and resource management plans included in the new license.

#### 2.1 Goals and Objectives

This section will establish goals and objectives for managing vegetation. The primary goals of this Vegetation Management Plan are as follows:

- **Goal** Protect and enhance natural and cultural resources while fully complying with other requirements (e.g., NERC clearance requirements), reduce wildfire fuel loads where needed, minimize potential for wildfire ignition, and maintain safe accesses along Project roadways and around facilities.
- Goal Minimize direct and indirect impacts from routine Project O&M and vegetation management activities.
  - **Objective** Minimize conditions that promote the establishment or spread of invasive plants and reduce potential erosion.
- **Goal** Enhance and maintain species diversity and structural complexity of plant communities and fish, wildlife, and pollinator habitat.
  - **Objective** Utilize monitoring to assess changes in vegetation composition and structure and inform adaptive management.
- **Goal** Protect cultural resources in coordination with City Light's Historic Properties Management Plan (HPMP; City Light 2023a), including considerations for historic landscape considerations at Diablo and Newhalem townsites.
- **Goal** Protect visitors' aesthetic experience (e.g., viewshed from key locations on State Route 20).

<sup>&</sup>lt;sup>1</sup> While vegetation management in the transmission line ROW includes the reduction of fuel loading and maintenance of clearance requirements to prevent fire ignition, City Light will continue to collaborate with the National Park Service on wildfire management actions.

<sup>&</sup>lt;sup>2</sup> The SRCC includes agency representatives that will collaborate regarding implementation and monitoring of this Vegetation Management Plan and contribute to adaptive management decisions.

• **Goal** - Reduce indirect impacts (e.g., erosion due to ground disturbance or introduction of invasive plant species) due to unauthorized off-road motorized vehicles and other unauthorized public activities of City Light's transmission line ROW.

## 2.2 Geographic Area

The geographic scope includes lands within the Project Boundary where vegetation management is performed. This includes the transmission line ROW from Ross Dam to Bothell Substation, Project infrastructure and roads, townsites, reservoirs, materials storage, and enhancement areas other than the fish and wildlife mitigation lands (which will be managed pursuant to the Fish and Wildlife Mitigation Lands Management Plan [City Light 2023b]).

## **3.0 PLAN IMPLEMENTATION**

Upon approval by FERC, the Vegetation Management Plan will be implemented in consultation with the SRCC using an Integrated Vegetation Management (IVM)<sup>3</sup> approach for all Project-related vegetation management.

#### 3.1 Protections

This section will describe City Light's vegetation management approach near all electric lines and within the transmission line ROW, which is designed to prevent vegetation from contacting electric lines and reduce associated safety hazards.

#### 3.1.1 Transmission Line Clearance

This section will describe the NERC clearance requirements, which provide minimum distances between a conductor (e.g., electrical lines) and vegetation. Clearances are designed to prevent trees or tall shrubs from grounding or arcing, which reduces the potential for wildfire ignition. Standard clearances may need to be increased in areas where high wind conditions and maximum conductor sag and swag (conductor-to-ground distance will vary in time depending on air temperature and electrical load) are likely to occur. Vegetation may not need to be trimmed in areas where the terrain provides natural clearances, such as in a valley between transmission towers. This will be accomplished by:

- Selective removal of tall-growing species with as little impact as possible to the indigenous low-growing species;
- Removal of deciduous trees in such a manner as to prevent resprouting (e.g., time of year tree is cut, herbicide treatment); and/or
- Development of new vegetation communities by seeding/planting with compatible species.

#### 3.1.1.1 Methods

The following procedures are used to maintain vegetation in the transmission line ROW:

- Selective removal Cutting down individual trees. This method is the most common approach used by City Light. Trees are generally cut down before they grow within 20 feet of a transmission line. Depending on wire height and topography, this can range from trees less than 5 feet to greater than 100 feet tall.
- Topping Removing tops of individual trees. This practice is used minimally as it is difficult, can be more dangerous, and kills the tree in the long run. However, it can be useful when screening or some shading from the remaining tree is desired.

<sup>&</sup>lt;sup>3</sup> "IVM is generally defined as the practice of promoting desirable, stable, low-growing plant communities that will resist invasion by tall growing tree species through the use of appropriate, environmentally-sound, and cost-effective control methods. These methods can include a combination of chemical, biological, cultural, mechanical, and/or manual treatments" (EPA 2022).

- Girdling Removing a band of cambium from the entire circumference of the tree trunk to kill the tree. This method is only used on conifers when a snag is desired for either aesthetics or habitat value.
- Side trimming Pruning tree limbs growing in from areas adjacent to the transmission line ROW.
- Herbicide Utilizing several different selective herbicide application techniques, including spot spray, basal bark, EZ-ject, and cut and treat. Broadcast herbicide application (i.e., non-selective herbicide application to all vegetation) was used extensively before the City of Seattle adopted a pesticide-reduction program in 1999. This program was designed to reduce overall pesticide use, particularly pesticides with higher toxicity. Herbicides are now only selectively applied to fast-growing tree species (e.g., black cottonwood [*Populus trichocarpa*]) and invasive plants such as Scot's broom [*Cytisus scoparius*]).
- Brush cutting Using a side arm tractor-mounted flail mower to mow down woody vegetation. This approach was greatly increased after adoption of the pesticide reduction program to decrease herbicide use. However, based on independent research and City Light field work, City Light has concluded that annual brush cutting generally facilitates the spread of invasive plant species (e.g., common tansy [*Tanacetum vulgare*]) and is now limiting use to immediately along patrol roads/trails (within 3 feet of the roadway) and 20 feet around transmission line towers. Use of a reticulated arm allows vegetation to be cut at different heights. City Light plans to test the efficacy and effects of mowing Scot's broom and some tree species over lower-growing native species (e.g., salal [*Gaultheria shallon*]).
- Mowing Using a tractor-mounted rotary cutter (i.e., field deck) to mow herbaceous and small-diameter woody vegetation. There are several stream crossings (e.g., Montague Creek) where this method was commonly used. This method was used in relatively flat riparian areas below the Sauk crossing. However, this method has resulted in increased reed canarygrass (*Phalaris arundinacea*) and has been largely discontinued to allow appropriate native woody species to grow.

#### 3.1.1.2 Slash Management

The following procedures are used to maintain slash in the transmission line ROW:

- Lop and scatter Cutting slash wood into smaller segments and scattering pieces such that they are spread relatively homogenously and most wood is in contact with the ground. This technique generally promotes faster decomposition of woody debris but can also result in buildup of wildfire fuels.
- Brush pile Piling slash into small piles to provide habitat for wildlife and reduce contiguity of wildfire fuels.

#### 3.1.2 Modified Wire-Border Zone Approach

City Light will use a modified wire-border zone method to meet transmission line clearance standards while enhancing habitat and aesthetic value to the transmission line ROW. When properly managed, the wire-border zone method will protect electrical lines, reduce long-term maintenance, and enhance wildlife habitat, forest ecology, and aesthetic values. The wire zone is the section of the transmission line ROW directly under the wires and extending outward approximately 10 feet. It is managed to promote a low-growing plant community dominated by graminoids, herbs, and small shrubs. The border zone is the remainder of the transmission line ROW, managed to establish small trees and tall shrubs (NERC 2011).

Modification to the wire-border zone may include efforts to:

- Retain native small trees, where height zonation analysis and O&M considerations allow;
- Maximize well-vegetated buffers with native plant species along rivers, creeks, and wetlands;
- Replace invasive plants and non-compatible native plants with native plant species compatible with required clearances, based on height zonation and given underlying property ownership;
- Enhance vegetation structure and stratification of vegetation communities based on target habitat metrics developed in City Light's Avian Species Protection Plan and Wildlife Protection and Enhancement Plan (City Light 2023c, 2023d); and
- Manage higher clearances (e.g., lower trimming) on species with faster anticipated growth to accommodate City Light's routine maintenance schedule.

#### 3.1.3 Hazard Tree Management

This section will identify hazard trees and describe how they will be managed to minimize risk from falling trees to Project operations, structures, City Light staff, or visitors. A "hazard tree" is a tree near Project facilities, structures, and roads, or areas used by visitors that is likely to fall under natural conditions within the foreseeable future. Hazard trees pose a specific risk to electrical lines, as they may cause operational failure or fire. Components used to identify hazard trees include location of a tree relative to Project resources; the size, health, and age of a tree; the soil type, slope, and stability in which the tree occurs; and other facility factors, such as electric line sag and sway.

#### **3.1.4 Best Management Practices**

Vegetation management will be enacted following BMPs to protect sensitive areas and prevent the spread of invasive plants through implementation of the modified wire-border zone approach and IVM. City Light will apply the following BMPs to all vegetation management implementation measures:

- Continue to implement City Light's existing Pesticide Reduction Strategy (City Light undated) for the selection and minimization of herbicide application for invasive plant management and use of rodenticides, spill prevention, and other environmental compliance and management programs that prevent releases of hazardous materials and minimize environmental contamination risks.
- Review potential management methods and implications for habitat (e.g., mowing can simplify plant community structure, reduce diversity, and help spread invasives).
- Limit mowing and brush-cutting to defined zones near towers and road shoulders or where appropriate for habitat maintenance (e.g., meadow).
- Maximize retention of native plants consistent with modified wire-border zone approach, height zonation analysis, and O&M considerations.

- Maximize well-vegetated buffers with native plants along rivers, creeks, and wetlands.
- Reduce unauthorized motorized vehicle access where feasible, including the installation of gates and other physical impediments. If monitoring indicates a problem, trespassing issues may be addressed through adaptive management.
- Use IVM and modified wire-border zone approach to replace invasive plants and noncompatible native plants with native plant species compatible with required clearances, to the extent possible, given underlying property ownership. As part of this effort and in conjunction with other license implementation efforts, City Light will:
  - Monitor non-native invasive and non-compatible native species.
  - Use a two-part approach to encourage compatible native species: (1) targeting non-native invasive species and non-compatible native species, and (2) using IVM to create conditions which allow compatible native species to flourish and reduce dominance of non-native invasives and non-compatible natives.
  - Develop a toolbox, as part of BMPs, that promote IVM and follow City of Seattle pesticide policies.
  - Consider impacts of climate change and use of models (e.g., U.S. Forest Service Seedlot Selection Tool) to select plant material of appropriate provenance.
- Incorporate culturally important plants; wildlife habitat (e.g., elk forage, deer browse, bird nesting and foraging habitats, species beneficial to native pollinators).
- Maintain wildlife habitat features such as snags, stumps, and woody material, and habitat piles, where possible. This may include topping of trees where practicable.
- Monitor vegetation species composition and structure at managed sites relative to site-specific management objectives and targets. Linkage to Wildlife Protection and Enhancement Plan (City Light 2023d) elements will address wildlife use management sites.
- Implement fire protection measures, including (but not limited to) wildfire fuels management. Future wildfire fuels management rules and regulations may impact habitat management on transmission line ROW.
- Continue to implement City Light's Invasive Plants Management Plan (City Light 2023e) to prevent or minimize the establishment or spread of invasive plants.
- Follow City Light's Principles of Ecological Vegetation Management for Utility Rights-of-Way (City Light 2018).
- Implement vegetation management, mapping, and transmission line clearance surveillance and monitoring using available technology (including drones and other remote sensing methods), where applicable.

#### 3.1.5 Sensitive Management Areas

This section will provide the Standard Operating Practices (SOP), BMPs, and other processes by which City Light will protect sensitive areas from routine O&M, and from either direct or indirect impacts from visitors. Sensitive areas include locations with cultural resources, special-status plants, and plants that are culturally important to Indian Tribes and Canadian First Nations.

Sensitive habitats include healthy native plant communities that support richness of native species and meet functional ecological conditions in areas, such as wetland and riparian habitats.

#### 3.1.5.1 Special-status Plants and Native Vegetation Communities

This section will describe how City Light will minimize impacts to special-status plants and how native vegetation communities will be preserved to the extent possible within safety standards for clearance and safe access.

#### 3.1.5.2 Culturally Important Areas

This section will describe City Light's steps to identify measures to appropriately minimize impacts to culturally important plants or other resources or places that have cultural importance to Indian Tribes and Canadian First Nations. Development of this section will require ensuring that this section coordinates with the protocols and management measures in the HPMP.

#### 3.1.5.3 Riparian and Wetland Areas

This section will describe the protections for fish, wildlife, and avian habitats that City Light will implement to maintain the functional qualities of riparian areas. BMPs to protect riparian ecosystems and associated fish and wildlife include:

- Use hand labor for tree trimming or removal to limit ground disturbance and soil compaction;
- Maintain well-vegetated buffers as required by critical areas regulations; and
- Avoid ground disturbance in regulated buffers. If disturbance is necessary, use mulch (e.g., weed-free straw, wood chips) or other erosion control BMPs specified in Washington Department of Ecology's most current stormwater management manual.

#### **3.2 Project Roads, Facilities, and Townsites**

This section will describe City Light's management of vegetation near Project facilities and roads, and within the townsites of Newhalem and Diablo. City Light will routinely clear vegetation in the immediate vicinity of Project structures (e.g., powerhouses) and recreation facilities. Clearing will be performed by mechanical means (e.g., chainsaws, brush cutters and line trimmers), unless otherwise approved by the SRCC.

Along Project roadways, City Light will use machine mounted mechanical equipment (e.g. tractor mounted field-deck or side-arm brush-cutter) to mow 3 feet from road edge, as well as in a 20-foot radius around transmission towers. All vegetation management for trails, will be conducted by hand (loppers, pruners), except when larger diameter trees have fallen and block trail access. For townsite roads, City Light will use lawnmowers. Slash will be disposed of in one of three fashions: chipping, lopping and scattering/piling, or removal from the site. Branches may be cut into pieces then piled or lopped and scattered away from the site. Tree trunks may either be hauled away or cut into rounds and split.

#### **3.3 Enhancements**

This section will describe City Light's approach to implement strategies to additionally enhance habitats within the natural limitations of the landscape and safety requirements.

#### **3.3.1 Riparian Habitats**

This section will describe City Light's approach to enhancing riparian habitats.

#### **3.3.2 Culturally Important Plants**

This section will describe City Light's approach to enhancing culturally important plants in collaboration with Indian Tribes and Canadian First Nations. Communication regarding culturally important plants will be fully coordinated with the HPMP.

#### 3.3.3 Wildlife Habitat

This section will describe how City Light will use IVM as a tool to increase desired habitat for avian and non-avian wildlife. Vegetation enhancement targets will align with habitat enhancement targets outlined City Light's Avian Species Protection Plan and Wildlife Protection and Enhancement Plan (City Light 2023c, 2023d). Vegetation goals to meet habitat enhancement targets may incorporate:

- Functional diversity;
- Complexity indices;
- Habitat connectivity within and adjacent to the transmission line ROW;
- Structural heterogeneity;
- Incidence and cover of invasive plants;
- Occurrence of culturally important species;
- Species cover and heights of vegetation; and
- Inclusion of snags and logs important for target wildlife (e.g., elk and deer forage, riparian and upland birds).

Habitat targets will also incorporate natural limitations of the landscape and facility or roadway safety requirements. These targets are anticipated to align with the specific land ownership and associated management goals and may be focused on habitats specific to wildlife species of management concern.

Locations for enhancements and the specific targets for vegetation will be determined collaboratively with the SRCC and will be included as a component of this Vegetation Management Plan. Enhancements will be monitored and measured against the specific targets identified by treatment areas.

#### **3.3.4** Aesthetic Enhancements

This section will describe vegetation prescriptions to reduce the visual impacts while maintaining vegetation management safety requirements. Vegetation management prescriptions will enhance the Project aesthetics by maintaining designated viewsheds and creating natural screening of Project infrastructure (e.g., maintenance areas, switchyards, transmission towers, etc.) and by incorporating historic landscapes at Newhalem and Diablo townsites.

## 4.0 MONITORING, REPORTING, AND COMMUNICATIONS

This section will describe the monitoring efforts that will be performed to document progress towards the Vegetation Management Plan goals and objectives. Monitoring is an extension of City Light's protection and enhancement implementation, with the aim to inform the effectiveness of protective measures, and to measure enhancements. Protection measures will be measured by metrics to be developed with the SRCC. The goals of monitoring are to determine the effectiveness of IVM to reduce the presence of invasive plants or non-compatible native plants and to measure progress toward meeting vegetation structure and composition targets. Specific monitoring activities are listed with the timeline in Table 4.0-1.

Timeline	Activity
Within 1-5 Year of License Issuance	Establish baseline habitat connectivity, vegetation structure, and composition, including condition of sensitive species and habitats.
Every five (5) years	Measure changes in habitat connectivity, vegetation structure, and composition, including condition of sensitive species and habitats.

 Table 4.0-1.
 Timeline of protection and enhancement activities.

## 4.1 Adaptive Management

This section will describe the application of adaptive management by which City Light will gather information, synthesize new and existing information, and assess the need to update management decisions outlined in this Vegetation Management Plan. Adaptive management will be applied to each implementation activity through monitoring and use of information gathered during City Light's relicensing study as a baseline. At five (5) year intervals, City Light will collaborate with the SRCC to evaluate monitoring information to determine if new best available science, BMPs, updates to IVM strategies, or changes in other management decisions would increase the success of the protection and enhancement measures included in this Vegetation Management Plan.

## 4.2 Reporting Schedule

This section will describe the schedule and method for regular communications with the SRCC and submittals to FERC. City Light will report annually on the status of vegetation management activities, progress in reaching target vegetation management goals associated with habitat enhancement, and other pertinent issues. Every five (5) years, City Light will file a report with FERC describing implementation and any proposed modifications to the Vegetation Management Plan based upon the results of monitoring and consultation with the SRCC.

## 4.3 Communications

This section will describe a process for making coordinated, timely, and informed decisions while implementing the Vegetation Management Plan, including how City Light will coordinate and communicate its implementation actions with the SRCC. Because of simultaneous implementation of multiple resource management plans (e.g., cultural, wildlife, fish and aquatics), cross-resource communication will be necessary. An important goal of this communication will be to achieve a balanced integration of resource goals in the Project Boundary. Coordination processes may include:

- Clarifying resource goals, objectives, and priorities;
- Ongoing consultation with relevant resource groups and other entities;
- Sharing information used to make resource decisions; and
- Solving problems and resolving issues.

#### 5.0 **REFERENCES**

- Environmental Protection Agency (EPA). 2022. Integrated Vegetation Management Fact Sheet. Online URL: <u>https://www.epa.gov/pesp/integrated-vegetation-management-fact-sheet</u>. Accessed March 2023.
- North American Electric Reliability Corporation (NERC). 2011. Transmission Vegetation Management: Standard FAC-003-2 Technical Reference. Prepared by the NERC Vegetation Management Standard Drafting Team for NERC Project 2007-07. September 30, 2011.
- Seattle City Light (City Light). Undated. City of Seattle Pesticide Use Reduction Strategy. Office of Environmental Management. [Online] URL: <u>https://www.seattle.gov/documents/Departments/ParksAndRecreation/PoliciesPlanning/p</u> <u>esticide%20reduction%20strategy.pdf</u>.
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