



Seattle City Light

Principles of Ecological Vegetation Management for Utility Rights-of-Way

Problem: Rights-of-way (ROWs) impact habitat primarily through fragmentation and edge effects and also act as vectors for invasive species (weeds). Other potential environmental impacts from ROWs include increased erosion, impacts to stream morphology, etc.

Vegetation management can often create conditions that favor weeds and trees!

However, **ROWs also have the potential to benefit habitat** as some plant and animal species need the open areas offered by ROWs and thrive in the edge habitat.

8 principles for improving habitat on ROWs:

1) Biodiversity matters! –

- Native plants are the trophic basis for the food chain and all biodiversity! Plants have evolved excellent chemical defenses and herbivores have co-evolved tolerances for those defenses (e.g. Monarch butterflies need Milkweed)
- Identify and fix any physical constraints (e.g. soil compaction, erosion, altered hydrology) that limit diversity
- Promote microtopographic variation where possible. Uneven and irregular soil surfaces can offer microsites that promote plant diversity and increase resiliency to climatic variability.

2) Encourage a diverse mix of native shrubs and forbs

- to suppress unwanted weeds and trees
- If possible, identify adjacent or nearby, appropriate, diverse native plant communities as a reference for selecting plant species. Look for sites with similar growing conditions. In urban areas or other areas where appropriate nearby plant communities don't exist, consult written descriptions of habitats from the same ecoregion (Level IV).

- Promote a mosaic of plant communities and habitat types based on growing conditions (i.e. soil type, soil moisture, sunlight)
- Use multiple layers and combinations of plant functional types to create defensive (Phalanx) and offensive (Guerilla) strategies (e.g. clonal shrubs mixed with arborescent shrubs)



Caltrans

- Maintain limiting factors (e.g. lack of soil moisture, relative amount of soil nitrogen, exposure to sun, open soil). The less limiting factors, the more likely a site is to become dominated by a monoculture or invaded by weeds or trees.

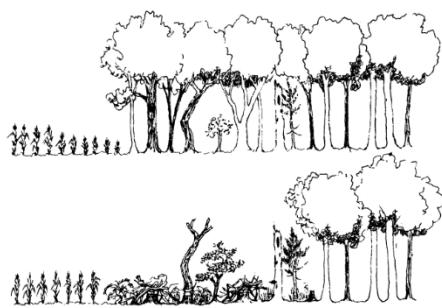
- Match vegetation management methods and frequency to desired plant community (e.g. fall mowing to encourage grass and forb dominated communities, spot spray or inject trees to encourage native shrubs and forbs). Some plant species may benefit from disturbance types (e.g. fire) that may be inappropriate for the ROW. However, a combination of surrogate disturbances (e.g. mowing, thatching and hay removal) may be used to provide a similar benefit.

3) Minimize soil disturbance and plan for weeds

- Appropriately treat weed infestations existing on the site prior to ground disturbance
- Limit the area having vegetation or topsoil removed, turned over and/or compacted
- Mulch and/or Seed with appropriate native annual and perennial grasses and forbs as soon as possible after any soil disturbance

4) Blend your edges

- Forest edges often support greater plant and animal diversity
- Where possible, maximize the value of the edge by maximizing edge width and tapering height. This can also help protect adjacent forest from edge effects.



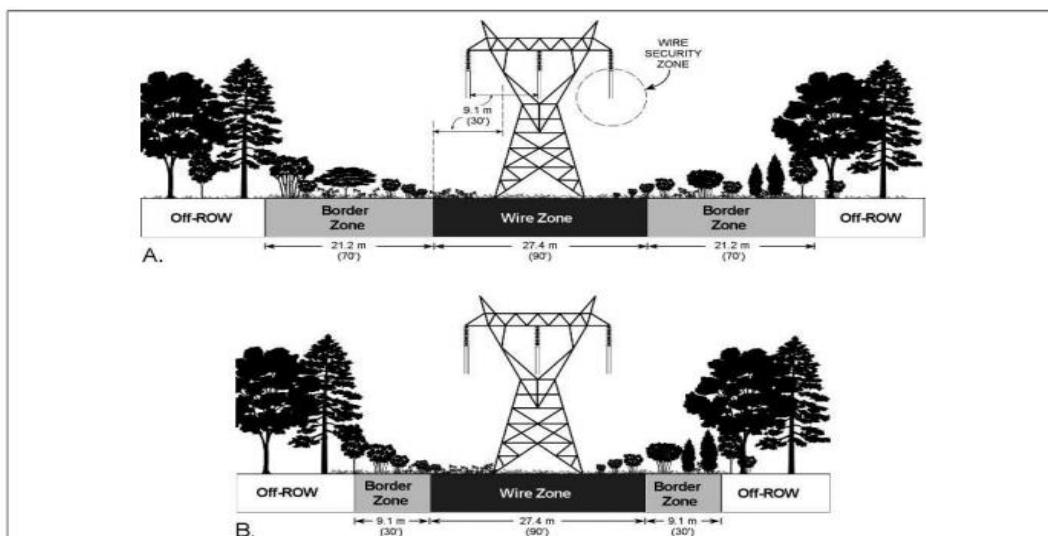
Top- edge has hard edge and less diversity

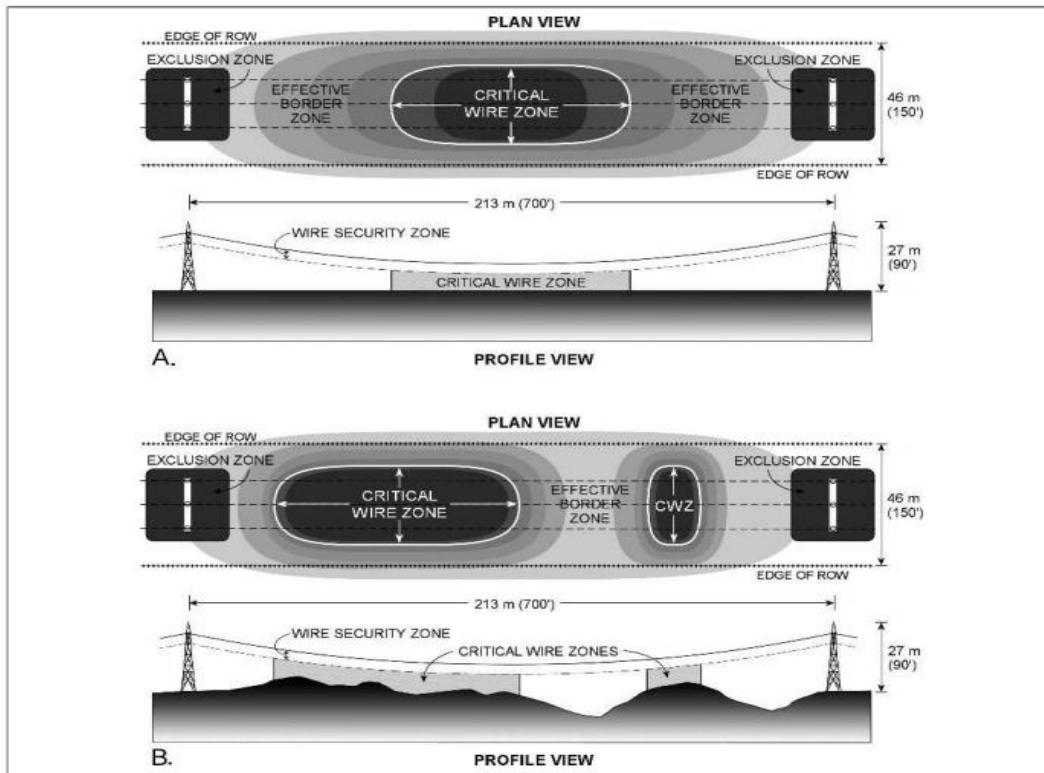
Bottom- edge is wide and tapers up to forest and has greater diversity

- Retain slower-growing tree species to suppress fast-growing tree species, when possible. In the Pacific Northwest, slower-growing, young conifers can often be allowed to grow while still maintaining clearances between management actions. This can suppress faster-growing deciduous species (e.g. Black Cottonwood) that quickly conflict with electrical lines. In addition, most conifers will not regenerate (sucker) when cut down or girdled.

5) Follow the Modified Wire/Border Approach to vegetation management (See diagrams).

- Applied correctly, this approach will maintain structural heterogeneity and complexity which is important for habitat and prioritize work to promote transmission reliability.
- Match your management to your target plant community (e.g. mow only after native forbs have gone to seed to maintain a native prairie community)





Ballard, B.D. 2007

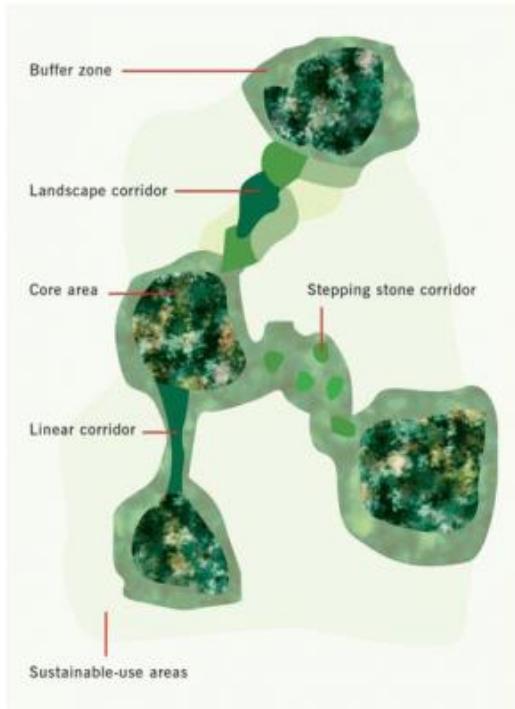
This approach can be adapted for other ROW types by identifying zones where different vegetation heights will be promoted based on the ROW use



6) Wood is good!

- Snags, logs, and tall stumps in or adjacent to ROWs provide unique habitat opportunities for insects, birds, and bats, and decompose to provide nutrients to the soils
- Supplement with bird/bat boxes and brush piles

WDFW



7) Connect habitat fragments

- Use native plant species in ROW that are also found in adjacent or nearby fragments where possible
- Provide cover for animals to use while traveling in ROW
- Even “stepping stones” (close but non-connected fragments) can help many species (e.g. birds, insects)

8) Use Adaptive management

- Monitor and track your site to assess changes, adjust management or goals as needed
- Adapt to change (e.g. new weeds, climate change, new tools)
- Learn from your mistakes and new obstacles

