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## **Rights-of-Way (ROW) integrated vegetation management for reliable, safe, and affordable energy transmission and concurrent benefits to native wildlife habitat**

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Utility (gas/electric) and transportation rights-of-way (ROW) comprise approximately 38.5 million acres of land in the United States (utility ~ 21 million acres; roadsides ~ 17.5 million acres; EIA, FHWA, FEMA). For comparison, approximately 28 million acres are held in National Parks in the lower 48 states (NPS). Not all ROW acres are suited for habitat restoration, but a sizeable proportion (especially on federal lands) could be managed as native habitats that are compatible with safe, reliable, and affordable energy transmission. The best method for restoration is the process of Integrated Vegetation Management (IVM). IVM is a set of principles that combines several approaches (manual/mechanical, biological, chemical, cultural [grazing, fire]) for managing vegetation to achieve a desired condition/outcomes. In electric transmission line corridors, IVM may be used to selectively remove noncompatible/undesirable vegetation (e.g., invasive species, overstory tree species) while promoting native, low-growing plant species (<https://extension.psu.edu/integrated-forest-vegetation-management>).

Proper implementation of IVM can significantly reduce vegetation management costs over time, and greatly reduce wildfire risk and improve reliability. For example, several research papers indicate that IVM approaches can reduce management costs significantly (~ 60%) after only 3 years of implementation (Paschal, 2014, Goodfellow, 2018; Nguyen-Toups, 2024). In addition, by eliminating the reliance on yearly (or more frequent) mowing of noncompatible vegetation, emissions of carbon dioxide and other pollutants are reduced. Furthermore, IVM establishes native, early-successional plant communities that support a diverse assemblage of wildlife including game species, native pollinators, breeding birds, amphibians, reptiles, mammals, and ground beetles that, in turn, create stable, healthy functioning ecosystems (e.g., Russo et al., 2021). These ecosystems provide connective habitat that supports pollinator populations, minimizes the establishment of non-native species, and reduces catastrophic fire risk. In particular, areas that support healthy, native vegetation may reduce the probability of high-intensity fires in montane forests by 44% (Stockdale 2019). Areas dominated by native vegetation also provide increased resilience to wildfire than areas dominated by non-native, invasive plants in California (Hanson, 2019; Fig. 1).

The Pennsylvania State University has a 75+ year history of working with industry and state partners (e.g., Asplundh, Shell Energy, Corteva, FirstEnergy, PECO, Marathon, PennDOT, PA Game Commission) to better understand how IVM achieves the goals of safe, reliable, and affordable energy transmission while protecting and restoring biodiverse habitats and ecosystems (see: <https://sites.psu.edu/rightofway/>; Fig. 1). The promotion or requirement of IVM as a best practice on ROW, therefore, could provide a variety of societal benefits on a large scale. Implementation of the IVM approach requires up-front investment in natural resource expertise. However, after the establishment of stable, compatible habitat, costs decrease appreciably over time. For example, at research sites in central Pennsylvania, only 0.6 pints/acre of selective application of herbicide every 5 years was sufficient to control noncompatible woody vegetation on electric transmission corridors (Mahan et al., 2020). Therefore, IVM reduces both the cost of maintenance (less herbicide used over time) and the long-term release of herbicide in the environment.

The Rights of Way Stewardship Council (ROWSC) provides opportunities for accreditation of companies that use best management practices, including IVM, on energy transmission corridors (<https://rowstewardship.org/accreditation.php>). This independent and robust accreditation process is an appropriate avenue for companies to, perhaps, reduce environmental regulatory burdens associated with ROW siting, construction, and maintenance. From both a legislative and agency (e.g., EPA, USFWS, USFS, NPS, BLM) perspective, this approach to vegetation management provides multiple benefits as described above. In fact, federal agencies currently list IVM as an appropriate practice where invasive species control and habitat management is needed (see: [https://www.epa.gov/sites/default/files/2016-03/documents/ivm\\_fact\\_sheet.pdf](https://www.epa.gov/sites/default/files/2016-03/documents/ivm_fact_sheet.pdf); <https://www.blm.gov/programs/planning-and-nepa/plans-in-development/oregon-washington/ivm>). Practical, flexible, and science-based solutions to minimizing environmental impacts of ROW are achievable and could greatly benefit American landscapes and their inherent wildlife species while maintaining safe, reliable, and affordable energy transmission.

## References

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## IVM Treatments Plumas NF

### • Recipe -

- No Seeding
- Natural Seed Bank
- Precipitation & Sun Light
- UVM Experienced Licensed Professionals
- Targeted herbicide Low-Volume (backpack application)



**Figure 1.** [Left] Integrated vegetation management (IVM) project along an electric transmission line corridor, Plumas Nat'l Forest, Quincy, California - Native lupines dominate this section of corridor. [Right] Monarch butterfly begins its migration to Mexico after nectaring on native sunflowers (*Helianthus*). Photo taken along FirstEnergy/PECO electric transmission line corridor maintained using IVM, Pennsylvania. All species pictured germinated from the natural seed bank and were not planted.