

UNLOCKING POTENTIAL

How Colleges and Universities are Tackling the Skilled Labor Shortage in UVM

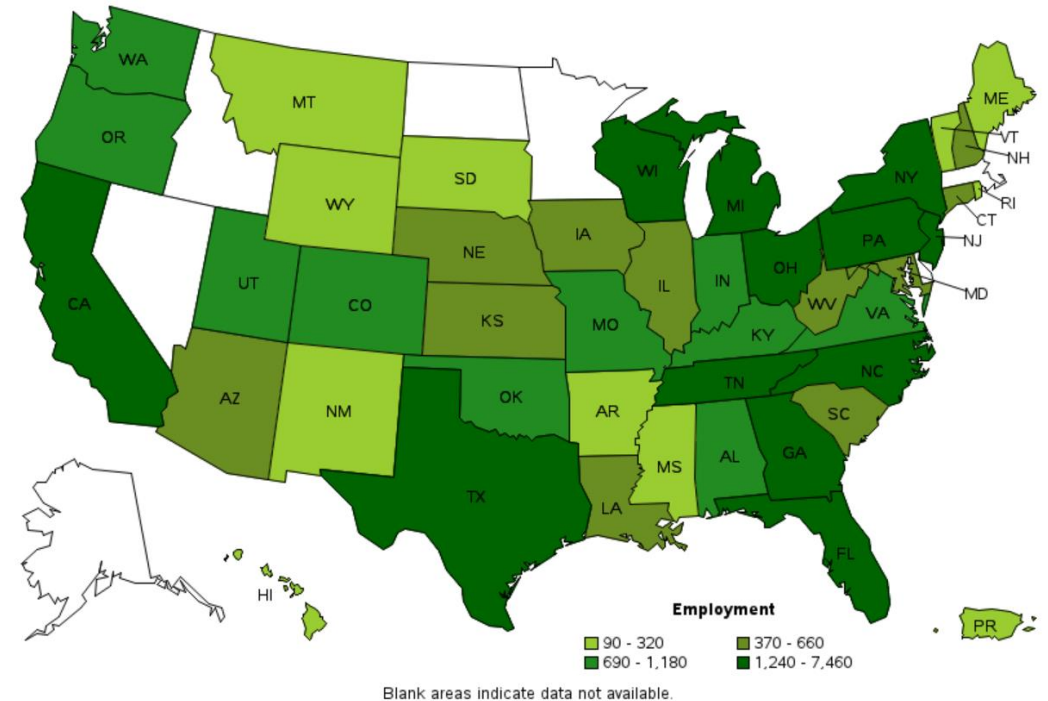
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Importance of UVM

- Across north America trees account for between 20-50% of all unplanned outages.
- Eversource reports that in New England >90% of outages are caused by trees.
<https://www.eversource.com/content/residential/about/doing-business-with-us/builders-contractors/tree-trimming-faqs>
- UVM is the largest portion of most Utility's annual O&M budgets
- Vegetation interacting with power lines have caused some of the most destructive wildfires in US history.

Employment of tree trimmers and pruners, by state, May 2023

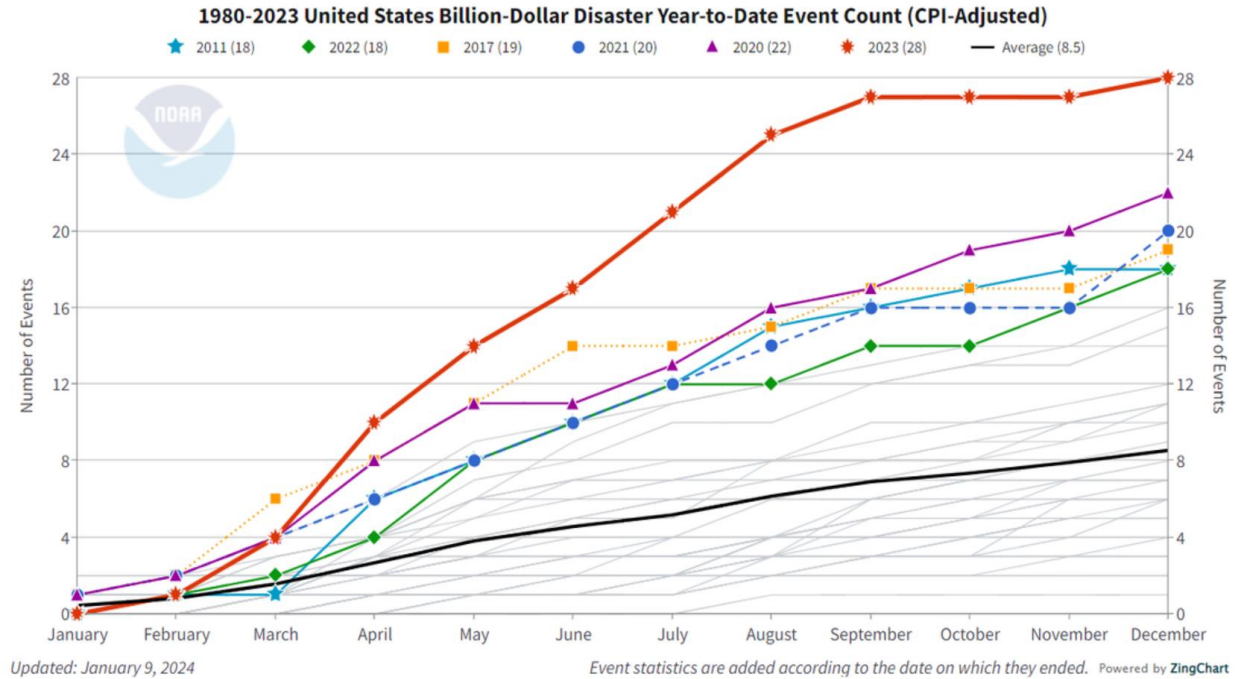


Bureau of Labor Statistics 2023



The Coming UVM Challenge

- The American power grid currently consists of over 500,000 miles of transmission and more than 6 million miles of distribution (ASCE 2024)
- The USDOE projects a 128% increase in transmission line miles will be needed by 2035 to reach net-zero carbon emissions by midcentury
- Major storm events are becoming more numerous and more destructive



Meeting the Challenge Will Require Investment

- Currently, North American Utilities collectively spend more than eight billion dollars annually on UVM (Harris Williams 2022)
- Market analysis suggests that UVM costs have been rising at a rate of 7% annually.
- To achieve net-zero carbon emissions by 2050 will require utilities to double their investment in transmission lines and other infrastructure by 2030 (Barth et al., 2024)
- Decarbonizing the US electrical grid is estimated to cost between \$330 and \$740 billion dollars (Denholm, et al. 2022)
- Much of that investment will go to UVM providers to hire, plan, manage, and execute vegetation treatments for utilities.



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Who Will Do The Work?

- Before the pandemic 92% of green industry businesses reported moderate to extreme difficulty finding qualified applicants.
- In 2018 PG&E stated in a CPUC filing that *“The most significant challenge to the Enhanced VM program schedule is the limited availability of qualified work force. . .”*
- As of 2024, 71% of utilities are unable to find suitable employees for job vacancies (Manpower Group 2024)
- The website *Indeed* currently lists over 500 job vacancies in Utility Vegetation Management



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Challenges in Addressing the Labor Shortage

- **Aging Workforce**
 - Many workers in UVM are approaching retirement age, leading to a shrinking labor pool and a need for successional planning
- **Remote Locations**
 - Utility vegetation management work often takes place in remote or rural areas, which can make it difficult to attract workers who prefer to live in urban areas.
- **Competition for Talent**
 - Stiff competition from other industries (construction) for skilled workers, makes it difficult to attract and retain employees.
- **Increasing Demand for Talent**
 - Decarbonization of the of the electric grid will require more line miles to maintain and increasing severity of storms will require more workers for timely restoration of service
- **Utility vegetation management requires specialized skills and training**
 - Traditionally there have been limited opportunities for training and professional development in the utility vegetation management industry



Role of Colleges and Universities



Promote the UVM profession as a viable and rewarding career path.



Provide comprehensive education and training programs that equip students with the necessary skills and knowledge to excel in this field



Collaborate with industry to stay informed about the latest trends and developments and to tailor their curriculum to meet the specific needs of employers and provide students with a competitive edge in the job market.



Provide hands-on training opportunities, such as internships, fieldwork, and practicum experiences, that allow students to gain real-world experience and develop practical skills



Opportunities for Training and Certification



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Opportunities for Training and Certification

- **Utility Tree Trimmer**
 - One-year technical certificate embedded in their Arborist Technician associate degree
 - Nine courses currently being offered
 1. Arboricultural Operations
 2. Arborist Skills Introduction
 3. Chainsaw Safety and Operation
 4. Electrical Systems & Safety in Arboricultural Operations
 5. Landscape Plant Identification
 6. Plant Health Care Applicator
 7. Pruning for Structure
 8. Tree Biology
 9. Workplace Communication in Arboriculture



Opportunities for Training and Certification



- Offers a one-year Utility Arborist Line Clearance certificate program
 - 13 courses offered
 1. Industrial Safety
 2. Introduction to Botany
 3. Workplace First Aid
 4. Speech Communication
 5. Climbing
 6. Tools & Equipment
 7. Climbing Elevated Work Sites
 8. Electrical Studies For Trades
 9. Technical Math
 10. Tree Felling
 11. Pesticide Application
 12. System Design & Operation
 13. Equipment Vehicle Operation



Opportunities for Training and Certification



- Utility Line Clearance Arborist certificate program (5-week 200-hr.)
 1. Safety & Introduction to Ground Worker Responsibilities
 2. Mobile Equipment Operations & Electrical Hazard Awareness
 3. Chainsaw Operations
 4. Basic Climbing & Pruning Techniques
 5. Human Performance Improvement & Skill Assessments
- Utility Vegetation Management Level 1 Pre-Inspector Certificate (2-week, 80-hr.)
 - Intro to UVM
 - Tree Biology
 - Tree and Site Defects
 - Customer Service
 - Communication
 - Data Collection
 - Hazard Tree Assessment
 - Tree Identification
 - Field Practice



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- **Professional UVM Program**
 - Work began in 2014 with UVMA and UAA and Olds College.
 - By 2016 a pilot program began at Southern Alberta Institute of Technology (SAIT)
 - By 2018 the first slate of 9 students had graduated from the program.
 - 2020 Program moved to the University of Wisconsin—Stevens Point (UWSP)



Opportunities for Training and Certification



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Professional UVM Credential (30)

Advanced UVM Certificate (42)

Foundations of UVM Certificate (151)



Opportunities for Training and Certification



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1. North American Electrical Systems (5 wks.)
2. Utility Arboriculture (5 wks.)
3. Leadership and Organizations (4 wks.)
4. Program and Project Management (5 wks.)
5. Integrated Vegetation Management (3 wks.)



Foundations of UVM Certificate



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6. UVM Compliance and Stakeholder Management (10 wks.)
7. UVM Scope, Cost, and Procurement Management (10 wks.)
8. UVM Safety, Risk, and Quality Management (10 wks.)

Advanced UVM Certificate

Foundations of UVM Certificate



Opportunities for Training and Certification



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9. Professional UVM Credentialing
Prep Course (10 wks.)

Professional UVM Credential

Advanced UVM Certificate

Foundations of UVM Certificate



Beyond Certification

- The UAA and UWSP are currently discussing moving beyond an industry certificate to a program providing college credit for UVM coursework.
 - Opens the door to scholarship opportunities from the utility industry
 - Allows federal funding for scholarships for those on the GI bill.
 - Exposes a whole new generation of forestry degree-seeking students to the abundant career opportunities in UVM

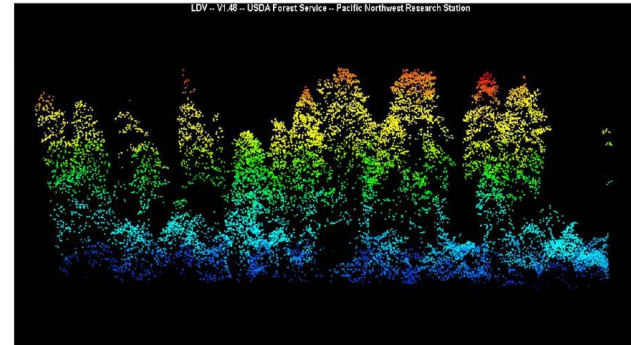
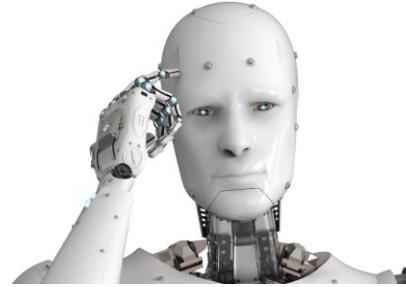


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Beyond Certification

- Technological advances like LiDAR, high altitude imagery, and artificial intelligence (AI) are all poised to fundamentally change our approach to UVM.
- These technologies will not replace Utility Vegetation Managers. They will empower them, resulting in an increased demand for new skillsets.
- Currently these new job skills are not available as “on the job training”.
- Universities are in a unique position to provide this type of foundational training for the future.



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Beyond Certification

- Build a UVM option into UWSP's forestry degree program
- Benefits not only the UVM industry but also those students seeking a meaningful career in forestry.
 - Producing a highly skilled, high-demand workforce
 - Data-driven decision-makers skilled in
 - ecosystem management
 - data analytics
 - project/program management, work planning, and budgeting
 - using technologies like AI, machine learning, and remote sensing



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UAA
UTILITY ARBORIST ASSOCIATION

UVMA
UTILITY VEGETATION MANAGEMENT
ASSOCIATION



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Benefits of an Educated Workforce

- Heightened awareness and appreciation of the disciplines involved in UVM
- Emphasizes effective communication skills
- Encourages a culture of cross-functional collaboration
- Promotes systems thinking
- Innovative problem solving



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In Summary

- Market analysis shows that the demand for a skilled UVM workforce will likely increase in the coming decades.
- New skillsets will be needed and a further reliance on technology will be necessary to meet the demand.
- Colleges and universities in collaboration with industry are in a unique position raise awareness about the career prospects in UVM and to provide the new skillsets for the next generation of utility vegetation managers.
- The industry needs to move beyond mere “on-the-job” training toward cultivating a workforce ready to meet the future challenges in UVM.

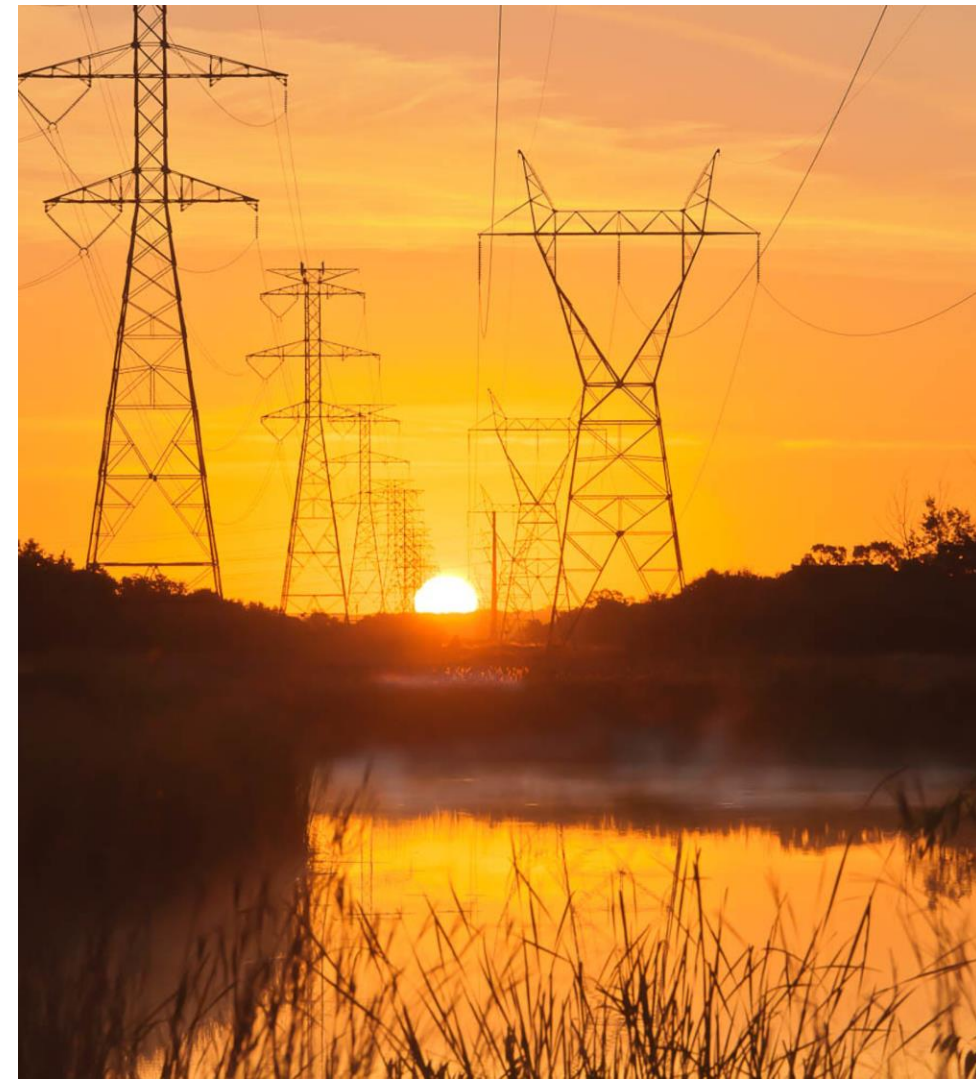


Photo by Jim Teske

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Acknowledgements

