

# Pacific Gas & Electric Enhanced Vegetation Management (Tree Removal) Project Fact Sheet, for Sierra Springs.

28 May 2020

**Purpose** This fact sheet seeks to present the reality of the utility tree work being conducted currently in Sierra Springs and address the nature of the project, regulatory authority for its implementation, expertise of the decisions being made, liabilities assumed by landowners, and clarify uncertainties that still exist. The following information was curated from research by Sierra Springs resident, ISA Certified Arborist & California Registered Professional Forester (RPF) James Scheid. It was greatly supplemented by interviews with fellow arborists, foresters, fire investigators, CAL FIRE personnel, a civil cost recovery agent, legal counsel, utility employees and contractors, the County of El Dorado, Sierra Springs Owners Association (SSOA) board members, the Sierra Springs Regional Fire Safe Council (SSRFSC), and local residents. It is intended to give homeowners guidance on best practices related to the project, dispel any rumors that have circulated, lessen confusion, and present timely information where none exists.

**Background** Tree work (mainly removal) currently being performed in Sierra Springs (SS) is part of Pacific Gas and Electric Company's (PG&E's) Enhanced Vegetation Management (EVM) program, which builds off their Routine Vegetation Work (RVW) conducted locally in the last couple of years following the devastating utility-caused wildfires in wine country in 2017 (Tubbs & Atlas Fires most notably) and, more recently in 2018, the devastating Camp Fire in Butte County. These wildfires, ignited by PG&E's infrastructure, resulted in dozens of deaths and billions of dollars in insured losses, not to mention the millions spent in suppression repair activities by emergency responders. Having been found guilty of numerous wildfire ignitions in recent years, and convicted of a swath of felonies, the company, which filed for bankruptcy in 2019, has sought to improve the reliability and safety of its infrastructure. Said improvements, as part of their Community Wildfire Safety Program, have included upgrades to the infrastructure itself, installing weather monitoring stations to preemptively shut off power ahead of expected inclement weather, and, perhaps most notably, increased maintenance of vegetation near their equipment.

Separately, El Dorado County's Department of Transportation (DOT) representative Dave Marino and Sierra Springs Regional Fire Safe Council's (SSRFSC) chairperson Kay Campbell were contacted to inquire if either organization had any involvement with the tree work being conducted and both claimed that they did not. The DOT stated that while they do have easements set back at varying distances along County roads (such as those in SS, with precise widths found by looking up the property parcel numbers at the County Assessor page in the link below), these right-of-way's

(ROW's) are typically only managed for brush removal or immediate hazards to the roadway, ditches, etc. Typically, this kind of work is done as part of a larger site-specific project, with none currently planned in SS. Both the SSRFSC as well as the SSOA have been named by both PG&E contractors and homeowners alike as having direction in the current tree work taking place. While no documentation has been produced to substantiate these claims, the volume and sources of these statements should not be overlooked provided a lack of official written clarity by either entity to involved parties outside of social media platforms.

**Issues** Trees, as a multi-beneficial resource, are being removed or are planned for removal, in mass throughout SS, and throughout many communities in California, as directed by PG&E. In doing so, neighborhoods will irreparably change in appearance and feel, disrupting natural ecosystems, reducing property values and home resale value, limiting privacy, contributing to seasonal erosion on hillsides, reducing interception of stormwater, reducing carbon sequestration, reducing shade and negatively affecting heating and cooling costs for trees located near homes. Individually, trees have an appraised monetary value related to many of the benefits listed, in addition to their timber values, that when combined, can translate to thousands of dollars per specimen. As an overall forest, the beauty and grandeur of the trees, and related ecosystems, in Sierra Springs and other locales motivate many to move or retire here. Pollock Pines is, after all, dubbed "Nature's Wonderland". The qualitative and quantitative benefits of our trees are too numerous to fully state here.

To the contrary, PG&E is focused with reducing their liability costs from potential tree failures that could result in additional powerline-caused wildfires. Challenged with not only limiting their own liability but having to routinely provide for reliable electricity to millions of customers, the company finds itself in a difficult situation, especially when considering the volatility of the energy provided in its current, and historically-unevolved, format overhead, exposed to the elements in very fire-prone landscapes.

**Authority** Lacking detail in their own public outreach materials, on their website or from their hotline representatives, it is found that the earlier RVW conducted locally in the last couple of years, as well as the current EVM program *to an extent*, are authorized under a State of California Public/Private Utility Right-Of-Way Exemption as approved by the California Department of Forestry & Fire Protection (CAL FIRE), and specifically their Forest Practice First Review team. An exemption exempts the applicant from having to submit standard timber harvest documentation for commercialization of timber products but does not exempt them from abiding by California Environmental Quality Act (CEQA) Rules, such as providing for erosional mitigations and protections of watercourses, archaeological and other sensitive features. The current exemption that affects the bulk of SS properties (and numerous others throughout the county) is document #4-19EX-00814-ELD, which can be reviewed in full at the link provided in the Resources section below and which expired on May 15, 2020 (now replaced by #4-20EX-00740-ELD). As governed by California Code of

Regulations and the California Forest Practice Rules (FPR), the exemption language (found on FPR pages 286-291 in the link provided below) allows the company to maintain or remove vegetation to ensure reliability of their infrastructure within certain established distances. For most distribution lines (that are typically 33kv or less in size), the right-of-way widths for vegetation clearance are a total of 20 feet, (or 10' on either side of the line). This distance would increase for higher voltage lines and other types of facilities. 10' is also the clearance allowed around all utility poles. Unlike standard timber harvest projects governed by the State, no restocking or replanting requirements exist to mitigate lost benefits of removed trees.

Outside of the right-of-way widths, any tree can be marked for removal or pruning if its deemed a "Danger Tree" per the following FPR definition found on page 11 of the FPR's:

***Danger Tree*** means any tree located on or adjacent to a utility right-of-way or facility that could damage utility facilities should it fall where: the tree leans toward the right-of-way, or (2) the tree is defective because of any cause, such as: heart or root rot, shallow roots, excavation, bad crotch, dead or with dead top, deformity, cracks or splits, or any other reason that could result in the tree or a main lateral of the tree falling. See Chapter VII, Hazardous Tree Identification, Powerline Fire Prevention Field Guide-1977, A Joint Publication of the California Department of Forestry and Fire Protection, U.S. Forest Service, and U.S. Bureau of Land Management.

The problem with the definition above is that (besides referring to an outdated version of the field guide - see most recently published edition in link below), the rationale or credentials needed for determination of said tree are not clarified. However, in discussion of harvesting "large old trees" or trees that are a "hazard" in the same utility exemption section of the FPR's (page 291), the rules state the determinations shall be made by an RPF (Registered Professional Forester) or "professionally certified arborist".

The language found in the utility exemption section of the FPR's builds off the rules updated in recent years by the California Public Utilities Commission (CPUC) related to PG&E's earlier RVW, which, for standard distribution lines, allows a maximum of 4' of clearance with a *recommendation* of up to 12'. As was noted by many residents at the time of the earlier work, representatives for the company performing the work were claiming that 12' was the required clearance distance when it in fact was not. SS Regional Fire Safe Council has also erroneously claimed this same misrepresentation as rule in their past meeting notes.

***Credentials for Tree Assessments*** Industry best practices for determining tree health, pest and disease diagnosis, and tree hazard assessment recommend that only an International Society of Arboriculture (ISA) Certified Arborist and, preferably, one that is Tree Risk Assessment Qualified

(TRAQ) make determinations about such matters and recommended remedies or treatments. Additional credentials that may substitute for these are American Society of Consulting Arborists Registered Consulting Arborists (who can also typically provide appraised value for trees), ISA Board Certified Master Arborists and, to a lesser degree depending, California Registered Professional Foresters. Even lesser attributes that might be considered problematic, such as tree lean and structure, should not be left to amateurs or inexperienced assessors. Considering not only the monetary value of many of our area's large- statured trees, let alone the dynamic nature of their health and overall risk, it would be foolish to let related determinations or diagnosis be made by someone lacking this refined skill set, akin to medical professionals evaluating human health.

PG&E employs multiple contract companies to provide assessments of trees within and outside of their ROW's to determine their need for removal and, to a lesser extent, pruning. Such contract company employees, like an individual met from Pride Contracting performing such work, related the nature of their determinations. Using a tree risk assessment matrix of unknown nature (which replaces the former Hazard Tree Rating System), contractors, via tablet, answer a set of dropdown questions for each tree in their survey area, recorded via the Collector and Survey 123 GIS-based applications to produce work orders. Certain attributes assessed include defects, diseases, lean, height, species amongst others. From a former PG&E employee engaged in similar work until mid-2019 before leaving the company, many tree removal decisions were determined by species alone as it related to historic tree failure profiles. Species alone, by industry best practices, does not warrant removal.

While the exact details of the assessment criteria utilized by PG&E contractors is not fully known, what is known is that the majority of individuals engaged in making such high-level decisions, especially on private property, are not owners of any of the credentials listed earlier in this paper. When pressed for further detail from the Pride employee, he stated that he was only recently hired having no relative background experience. This is quite likely given the high number of utility forestry jobs being advertised in recent months and the urgency practiced by the utility companies to manage their vegetation. He also noted that his training for the assessment work he is doing (and for the majority of those engaged in this work), consisted of only a 3-day session conducted by PG&E themselves. Court documents found in the resources section below corroborate this, noting PG&E's support of ISA certification but not requiring it. This is likely due to the greater experience needed to take and pass the exam.

It was said that crew leaders, that oversee these 8-10 employee assessment teams, are supposedly Certified Arborists but this has not been verified. Further information was requested on this, as well as the criteria and data collected for marked trees, through PG&E's wildfire safety hotline, but none could be divulged. Additional attempts were made to find a reputable PG&E contact/forester/arborist through CAL FIRE's Forest Practice office, SS Regional Fire Safe Council as well as a former PG&E

employee, but no connections have developed yet.

The Pride employee did mention however that the work to be done on affected trees, which is largely full removal, is slated to occur soon now that most trees have been assessed within Sierra Springs. This is identified visually with yellow spray-painted "x's" noted on each tree accompanied by a number which represents the diameter at breast height (i.e. "28", meaning a tree whose trunk was measured as 28 inches across at 4.5 feet above the ground). Currently, it appears that tree fallers and heavy equipment operations are moving from lower to upper Sierra Springs removing marked trees. They seem to be preceded by feller bunchers or mechanized equipment that can remove smaller diameter trees located closer to the roadsides via an oscillating sawhead/grapple combination located on the end of a boom. Once work is completed in Sierra Springs, it was stated that it is believed that similar work will continue north on Sly Park Road and into Pollock Pines proper.

In any case, PG&E is supposed to contact all property owners before entering their property, according to both the hotline rep. as well as the Pride employee. If a property owner is unclear on the nature of the trees marked for removal or pruning, they should seek clarification by a credentialed professional, first through PG&E's channels and, if disagreeing with their determination, seek an outside 3<sup>rd</sup>-party through the resources listed below. A reputable arborist will create a report of their findings, often for a fee, to include a narrative, pictures, diagrams and recommendations. Some may give a more basic estimate for free. Should cost be a concern, multiple homeowners could band together to retain services, as usually deals are cut by arborists if working on larger projects involving more trees. Somewhat similarly, homeowners can have their own ISA Certified Tree Workers conduct any tree work near power lines, although fees are naturally incurred if going this route. In the meantime, the affected property owner should kindly refuse the work to be done and state as much via the PG&E hotline at 1-800-295-4949 to ensure the request is properly recorded. Even still, it is further suggested that the yellow markings on the refused trees be removed or painted over in dark paint or similar unharmed dressing as it has been known that the workers that follow the assessors are removing trees recorded as refused simply because the markings still exist.

For those that agree to the work prescribed on their property, the PG&E representative is supposed to generate a Vegetation Management Request for Wood Management and Removal form (WM-0109081) which indicates the number of trees marked for work, what will become of the removed wood as well as cleanup. This is to be signed by the property owner as well as the PG&E rep. prior to work occurring. From what has been researched, while many removed trees are of merchantable size, tree workers typically buck the sections into smaller unmerchantable sizes for easier removal and transportation. Most wood is then transported to various contractor yards, such as Mountain Enterprises' Lotus facility, to be chipped and acquired by biomass facilities who then sell that energy back to PG&E. Nothing indicates however that the contractors nor the property owners cannot sell the wood products themselves to similar facilities or sawmills provided they print out a copy of the

related utility exemption mentioned earlier and linked below.

**Liability Concerns** One of the repeated concerns voiced by property owners in ceding full authority to PG&E and its contractors to take private trees and vegetation is the threat of incurring liability for any damages or wildfire ignitions caused by private trees interfering with power lines. In talks with numerous consulting arborists, qualified tree risk assessors, wildfire investigators, lawyers, and State civil cost recovery personnel, as well as in doing research on rulings made in similar court cases, no cases exist in which individual homeowners were held liable. Typically, in these matters, the utility company is held to blame as they have the onus of keeping their infrastructure safe from any interference. This was proven in over a dozen such wildfire cases in recent years in California in which PG&E was found guilty and ordered to pay for damages and suppression costs. This same company was able to evade full repayment when all was said and done. If such entities with large financial holdings can walk away fairly unscathed, what rationale exists to come after homeowners who could not cover a fraction of such costs?

A State entity (who asked to be kept nameless) further elucidated that only proof of negligence or violation of the law will indict someone and hold them guilty. Thus, unless there is an obvious (to a layperson) defect or malady with a tree owned privately that causes a problem, or if there is a known record on file, such as a Certified Arborist's report divulged previously to the owner that verifies a hazard, a tree failure alone does not translate to guilt. Think, as examples, large basal cavities or missing or severed roots. If PG&E cannot confirm such an issue themselves through a credentialed individual, merely identifying a tree for work does not make that a known hazard.

In most large wildfires in the state, due to the difficulty in recovering fees from judged guilty parties (should these cases be solved at all), garnishment of wages has been known to take place in cases where the individual is found to have been negligent (i.e. – escaped debris burns, unpermitted campfires, sparks caused by faulty equipment or gunfire). While adhering to proper guidance on fire prevention and defensible space rules is indeed important (and likely of greater importance for purposes of homeowner's insurance), even in the most egregious of violations, guilty parties have only been known to typically pay a small fraction of fire costs. It is far more likely that the bulk of such costs are paid out through state or federal emergency funds, grants or similar assistance.

**Summary** Proper diagnosis, within legal authority, is the first step in determining tree work to be done by a utility company on privately-owned trees. Attributes such as multiple or co-dominant tops or leaders, lean, mistletoe or presence of insects do not equate directly to a high likelihood of failure without further symptoms. In many cases, these types of irregularities can be treated or pruned to ensure healthy performance of the tree. Such attributes, conveyed as rationale for removal by unqualified PG&E contractors, should be highly questioned and further illustrate why only credentialed 3<sup>rd</sup>-party professionals should be solicited to make such decisions.

Should the high volume of “health” issues exist in the marked trees as espoused by PG&E assessors currently, it would stand to reason that this would translate to similar risk rates amongst our community’s collective forest at large. Lacking revelation of this data by PG&E to confirm such findings, and coupled with low incidences of tree mortality as found by the state task force (see link below) or certified professional foresters or arborists recently, it seems probable that the serious issues being discussed privately with individual landowners are overblown and more likely being utilized to cede complicity. Does it not stand to reason that this degree of compromised forest would have been already known to the community aside from this project?

Lacking any written authoritative documentation to the contrary, highly risk-averse utility companies like PG&E are most certainly trying to reduce their perceived liabilities by removing as many trees as they can simply based on their species, height and distance from the power lines. As rationale for doing so, this does not and should not stand up alone. Given the company’s motivation for making such calls, and understanding the numerous complaints and confusion that exists by homeowners upset with reasons given for removal currently, it is in the best interest of the owner to refuse and delay work on their trees should they have any affection for them or suspicions of their ailments. Fear of incurred liability is additionally unfounded. Lacking a willingness to provide evidence to confirm their decisions, owners should seek their own counsel accordingly before approving of any work.

***Further Questions*** -Who is the qualified PG&E representative in charge of the project locally and what is their contact information? Who are their qualified field supervisors?

-Can copies be produced of written agreements or documentation that transfers liability of private property tree failures related to powerline-caused wildfire ignition to said owners, especially in cases where trees are not deemed hazardous by 3<sup>rd</sup> party arborists?

-What are the credentials or qualifications of individuals making prescriptions for tree health and related removal?

-Can arborist reports and collected tree data be shared?

-What directives or rating system is being used in tree surveys and what are its components?

-Are any mitigations being sought to replace removed trees and their associated benefits?

-What is becoming of removed wood products and debris?

-Why are many trees being revisited multiple times by assessors and tree workers (i.e. – trees previously topped now being removed less than two years later)?

-If work is done per PG&E's plan, how many trees (and what volume) will have been removed from Sierra Springs? What is the timeline for all work to be done? How many trees, and total volume, to be removed from entire PG&E project area in the state?

-Can weekly updates be provided, perhaps through SSRFSC, on local progress?

-Outside of the EVM website, is there any written publicity or guidance created around this project that can be shared? Perhaps a video tutorial or field demonstration with PG&E/contractors and local residents to understand assessment and tree work protocols?

-Is there a list of contracted companies/partners working in Sierra Springs and how to identify them and distinguish them from trespassers or would-be thieves?

-Given the perceived risk, why aren't any of the powerlines in the area being placed underground to improve safety? At the least why weren't any of the replaced poles upgraded to metal construction as previously stated by PG&E?

**Resources** ANSI A300 (Part 9) Tree Risk Assessment Standard –

<https://pnwisa.org/2017/12/ansi-tree-risk-assessment-standard-updated/>

ANSI A300 (Part 9b) Best Management Practices - Utility Tree Risk Assessment - <https://www.isa-arbor.com/store/product/4430/cid/117/>

American Society of Consulting Arborists (ASCA) Find a Consulting Arborist - <https://www.asca-consultants.org/search/custom.asp?id=3818>

ASCA Tree and Plant Appraisal Qualification (TPAQ) - <https://www.asca-consultants.org/page/TPAQ>

California Board of Forestry Forest Practice Rules (2020) – [https://bof.fire.ca.gov/media/9478/2020-forest-practice-rules-and-act\\_final\\_ada.pdf](https://bof.fire.ca.gov/media/9478/2020-forest-practice-rules-and-act_final_ada.pdf)

California Registered Professional Forester Directory – <https://bof.fire.ca.gov/projects-and-programs/professional-foresters-registration/rpfcrm-rosters/>

California Code of Regulations Public Resources Code 4291 (defensible space), 4292 (utility pole clearance), 4293 (utility line clearance), 4294 (tree removal), 4295 (land access by utilities) –



[http://leginfo.legislature.ca.gov/faces/codes\\_displaySection.xhtml?lawCode=PRC&sectionNum=4291](http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=4291).

CAL FIRE Power Line Fire Prevention Field Guide (2008 edition, *2020 edition in final draft state*) – <https://osfm.fire.ca.gov/media/8482/fppguidepdf126.pdf>

California Environmental Quality Act (CEQA) - <http://opr.ca.gov/ceqa/>

California Public Utilities Commission (CPUC) Utility Wildfire Mitigation Plans – <https://www.cpuc.ca.gov/sb901/>

CPUC Fire Threat Maps - <https://www.cpuc.ca.gov/FireThreatMaps/>

CPUC General Order (GO) 95 (Rules for Overhead Electric Line Construction) - <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M217/K418/217418779.pdf>

CPUC GO 95, Section III (vegetation management) - [https://www.cpuc.ca.gov/gos/GO95/go\\_95\\_rule\\_35.html](https://www.cpuc.ca.gov/gos/GO95/go_95_rule_35.html)

CPUC GO 95 Section III, Table (clearance widths) - [https://www.cpuc.ca.gov/gos/GO95/go\\_95\\_table\\_1.html](https://www.cpuc.ca.gov/gos/GO95/go_95_table_1.html)

CPUC GO 95, Appendix E (line widths) - [https://www.cpuc.ca.gov/gos/GO95/go\\_95\\_appendix\\_e-guidlines.html](https://www.cpuc.ca.gov/gos/GO95/go_95_appendix_e-guidlines.html)

CALTREES Timber Harvest File Database (utility exemptions to harvest timber) - The exemption that covers most Sierra Springs properties is 4-19EX-00814-ELD (or 4-20EX-00740-ELD). The 70MB file size of the main exemption is too large to attach but is mainly comprised of maps and property owner information across a large swath of central and eastern El Dorado County. To view and download the documents, go to <https://caltreesplans.resources.ca.gov/caltrees/Default.aspx> . Use the search function to search for record number 4-19EX-00814-ELD. Click on the document number. Click on record info, then attachments. The document can be downloaded in the attachments. California Tree Mortality Working Group (including mortality map) - <https://fmtf.fire.ca.gov/working-groups/tree-mortality>

El Dorado County Vegetation Management and Defensible Space Ordinance (5101) - <https://www.edcgov.us/Government/CAO/VegetationManagement>

El Dorado County Assessor (property information and road easements) - <https://www.edcgov.us/Government/Assessor/online-property-information>

International Society of Arboriculture (ISA) Find an Arborist –  
<https://www.treesaregood.org/findanarborist>

ISA Basic Tree Risk Assessment Form - <https://www.isa-arbor.com/Portals/0/Assets/PDF/Certification-Applications/ISA-Basic-Tree-Risk-Assessment-Form-Instructions.pdf>

ISA Tree Risk Assessment Qualification information: <https://www.isa-arbor.com/Credentials/ISA-Tree-Risk-Assessment-Qualification>

National Tree Benefit Calculator - <http://www.treebenefits.com/calculator/>

Pacific Gas & Electric (PG&E) Community Wildfire Safety Program -  
[https://www.pge.com/en\\_US/safety/emergency-preparedness/natural-disaster/wildfires/community-wildfire-safety.page?WT.pgeac=Wildfire\\_CrossPromo-Community](https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/community-wildfire-safety.page?WT.pgeac=Wildfire_CrossPromo-Community)

PG&E Systems Inspection Program - [https://www.pge.com/en\\_US/safety/electrical-safety/safety-initiatives/system-inspections.page?WT.mc\\_id=Vanity\\_wildfireinspections](https://www.pge.com/en_US/safety/electrical-safety/safety-initiatives/system-inspections.page?WT.mc_id=Vanity_wildfireinspections)

PG&E Enhanced Vegetation Management (EVM) Program -  
[https://www.pge.com/en\\_US/safety/emergency-preparedness/natural-disaster/wildfires/vegetation-management.page](https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/vegetation-management.page)

PG&E – Vegetation Management Request For Wood Management and Removal -  
[https://www.pge.com/pge\\_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/PGE-Enhanced-Vegetation-Management-Request-for-Wood-Management.pdf](https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/PGE-Enhanced-Vegetation-Management-Request-for-Wood-Management.pdf)

PG&E Court Cases (to include EVM program description) –

- 1) <https://firejustice.com/wp-content/uploads/2019/01/956-1.pdf> 2)  
[http://s1.q4cdn.com/880135780/files/doc\\_downloads/2019/03/1022.Pitre-and-Campora's-Comments-on-Accuracy-of-PG-E's-Response-\(Part-1\).pdf](http://s1.q4cdn.com/880135780/files/doc_downloads/2019/03/1022.Pitre-and-Campora's-Comments-on-Accuracy-of-PG-E's-Response-(Part-1).pdf) 3)  
[http://s1.q4cdn.com/880135780/files/doc\\_downloads/wildfire\\_updates/1089.Monitor's-Letter-Report.pdf](http://s1.q4cdn.com/880135780/files/doc_downloads/wildfire_updates/1089.Monitor's-Letter-Report.pdf)

PG&E's multiple felony convictions and bankruptcy (AP article 2020) -  
<https://apnews.com/b9a1b0ea20a2f76307cafcc6c64000bc>

Senate Bill 901 (cost recovery for utility-caused wildfires, wildfire mitigation plans) -

[https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180SB901](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB901)

United States Forest Service Field Guide For Danger Tree Identification and Response (2008)-  
[https://www.fs.usda.gov/nfs/11558/www/nepa/98076\\_FSPLT3\\_1630753.pdf](https://www.fs.usda.gov/nfs/11558/www/nepa/98076_FSPLT3_1630753.pdf)

Western Tree Failure Database - <https://ucanr.edu/sites/treefail/>