

BEFORE THE PUBLIC UTILITIES COMMISSION
OF OREGON
Docket No. PCN-2

In the Matter of Tillamook People’s Utility District’s Petition for Certificate of Public Convenience and Necessity (PCN-2))))	Oregon Coast Alliance’s Response Testimony
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Oregon Coast Alliance (ORCA) submits this responsive testimony in the above-captioned matter along with the following exhibits: Exhibit A (PGE power lines linked to wine country fires); Exhibit B (Quantifying the Economic Risk of Wildfires and Power lines in San Diego County); Exhibit C (Tillamook County Staff Report); Exhibit D (Transmission vs. distribution power lines); Exhibit E (Difference between Transmission and Distribution Line).

I. The project is not practicable.

Petitioner and Staff allege that the practicability standard – that the project is feasible and will be effectively and efficiently constructed – is satisfied. ORCA disagrees. Staff fails to take into account several variables that prevent the project from being effectively and efficiently constructed. First, the Petitioner’s land use application before the County cannot be approved as a matter of law, as demonstrated below, and, therefore, the project is not feasible.

Second, given that Petitioner is proposing to wield eminent domain across so many properties and against so many property owners, the legal process and cost for eminent domain will not be efficient. Petitioner and staff have not addressed why such dramatic use of eminent domain would be efficient.

Third, it can be hardly effective or efficient to create the possibility of significant fire hazards by proposing high-transmission lines where only distribution lines are permitted. The costs of a fire are extraordinary and the liability of Petitioner in the event of a fire caused by transmission lines would be significant. *See* Exhibit A (Article: “PG&E power lines linked to Wine Country Fire”); Exhibit B (Quantifying the Economic Risk of Wildfires and Power Lines in Sand Diego County). Neither Petitioner nor staff have attempted to quantify the possibility of fire in the community from the high-voltage transmission lines.

II. The project is not adequately justified

The standard for the “justification” of the project is that the petitioner must show sufficient reason for the project to be built and the Petitioner must consider the public benefits and costs of the project. Where possible, PUC will rely on benefits and costs that can be quantified in economic terms.

Staff’s and Petitioner’s allegation that the project is justified are mistaken because the costs outweigh the benefits and the public interest does not favor a finding that the project is justified. The costs recited by staff include (1) increase in customer rates, (2) impact to private property owners, (3) loss of land interests, (4) safety concerns, (5) possible loss of land value, (5) and related impacts, impact to natural areas, and (6)

construction impacts to the community. The alleged benefits are quantifiably fewer, including (1) increased reliability, (2) avoidance of safety hazards; (3) ensures power is available to future customers, (4) increases flexibility in system, and (5) reduces outages. Increasing reliability and reducing outages are essentially the same. And while a benefit is alleged to avoid safety hazards, the reality is that the introduction of high-voltage transmission lines (instead of the conditionally permitted distribution lines) into forested and resource land creates a significant fire hazard that has not been addressed. *See* Exhibits A and B. Less than a year ago, downed transmission lines in northern California resulted in a fire that lasted 22 days and burned across more than 70,000 acres, destroying 549 homes and killing two people. *Id.* Here, safety cannot be included as a benefit because it creates the potential for a serious disaster. In other words, by introducing high-voltage transmission lines (that are not even conditionally permitted in all zones subject to the project), the Petitioner is creating a significant safety risk that otherwise would not exist in the area. PG&E, the owner of the downed transmission lines from the Santa Rosa fire, is facing millions in fines and lawsuits. *See* Exhibit A. Therefore, the cost-benefit analysis does not favor a finding that the project is justified.

Moreover, the alleged increase in reliability and decrease in outages purport to benefit primarily Netarts and Oceanside. For those alleged benefits to small communities, the Petitioner is gambling with serious safety considerations outlined above and increasing rates across the board. As noted in other testimony, there are much more efficient and cost-effective ways of accomplishing what the Petitioner desires. Again, the cost-benefit analysis does not favor a finding that the project is justified.

Furthermore, affected landowners are overwhelmingly opposed to the project: “Staff is concerned by the lack of support from affected property owners for the proposed transmission line. It points to potential issues with public engagement and collaboration.” Staff Exhibit 100, Gibbens 15. Staff then dismisses this lack of support and lack of public interest because “after reviewing the process that TPUD underwent to work with the public, Staff believes that the utility has performed its due diligence.” *Id.* Justification, however, is not contingent upon due diligence. Staff asks a question at Exhibit 100, Gibbens 15 about due diligence but due diligence is not a component of the public interest or the justification of the project. Therefore, a rationale to find justification must be based on the standard, including whether the Project is justified in the public interest, not “due diligence.” There is a significant difference between attempting to minimize impacts – including employing eminent domain and creating serious fire risks – and actually minimizing those impacts. Again, the cost-benefit analysis does not favor a finding of justification.

ORS 758.015(2) requires an investigation but the integrity of that investigation is undermined by the Staff’s finding that there are “no issues or concerning items related to the safety of the proposed project.” Clearly, there are concerns about the placement of transmission lines – especially where only much lower voltage distribution lines are allowed for – in forest zones and other resource zones.

III. The project is inconsistent with the County’s land use regulations, comprehensive plan, and statewide goals

Staff found that the CAG “prioritized avoidance of residential and commercial areas within the City of Tillamook,” which necessarily biased the location of the route. That process, however, is inconsistent with the Tillamook County Comprehensive Plan. The Tillamook County Comprehensive Plan, Goal 16, 6.5(2) requires a particular prioritization when siting “new energy facilities and utilities”:

- “2. In selecting sites for development of new energy facilities and utilities, priorities are, from highest to lowest:
- a. non-shoreland sites;
 - b. shoreland sites;
 - c. Estuary Development (ED) zones;
 - d. Estuary Conservation 2 (EC2) zones;
 - e. Estuary Conservation 1 (EC1) zones;
 - f. Estuary Natural (EN) zones.”

Staff has not even addressed this criteria in its review, and from the statement about prioritizing “residential and commercial” areas from Staff’s alleged investigation, it appears that the Petitioner has acted contrary to this provision. Furthermore, failure to even address this plainly applicable provision casts significant doubt on staff’s “investigation” that is required under ORS 758.015(2).

Second, staff’s statement that the project is compatible the County’s land use regulations is incorrect because the project violates setback standards in the Forest (F) zone. Specifically, TCLUO 3.004(2) requires that the “minimum front, rear, and side yards shall all be 30 feet,” but the Project Petitioner concedes that three pole structures are located within the 30-foot setback. *See Exhibit C, County Staff Report at 15.*

Petitioner argues that “the three pole structures which are located within the 30-foot yard

setback are detached structures accessory to the primary use of the properties and are in conformance with the requirement of TCLUO Section 4.040(1)(b)¹.” *Id.* Petitioner’s argument that the poles – and apparently only these three poles – are accessory uses is incorrect because an accessory use must be accessory to and related to the primary use. There is simply nothing about forest use on the property that makes a utility pole an accessory use. Indeed, in a similar case, LUBA found that “it would be inconsistent with the rule for a county to allow as an outright permitted ‘accessory’ use a use or structure that the rule categorizes as a listed conditional use.”² *Central Oregon LandWatch v. Deschutes County*, 52 Or LUBA 582, 597 (2006). Here, Petitioner cannot waive applicable provisions in an attempt to characterize the utility poles as “accessory uses.”

Third, Petitioner’s land use application cannot be approved as a matter of law because the uses allowed in the Estuary Conservation Zone do not include electrical transmission lines, only distribution lines. *See* County Staff Report at 5. There is a significant difference between transmission and distribution lines. *See* Exhibits D and E. The former – sought here – carry a bulk electricity at higher voltages, whereas the latter carries a much lower voltage. *Id.* Thus, as a matter of law, the proposed use is not allowed in the Estuary zones.

¹ TCLUO section 4.040(1)(b) provides that “An accessory structure that is separate from the main building may be located in the required rear and side yard, except in the required street side yard of a corner lot, provided that it is at no point located closer than three feet to a property line.”

² This case addressed uses allowed under the administrative rules for forest zones but applies equally to the County’s land use regulations.

Fourth, Petitioner's land use application cannot be approved as a matter of law because the proposed use (transmission lines) is not similar enough to distribution lines for it to fall under the Estuary zone's conditional uses. Again, this argument ignores the differences between distribution and transmission lines that even the County recognizes. *See Exhibit C, County Staff Report at 4* ("It is fair to note that in addition to the higher voltage carried through transmission lines (important potential safety differences) and that the structures supporting the transmission lines are taller than those structures supporting distribution lines, the footprint of a transmission line structure is also generally larger."). Throughout the TCLUO, the County specifically uses transmission lines and distribution lines separately. So much so that in a particular zone, distribution lines may be allowed outright, whereas transmission lines are only allowed conditionally. The Petitioner cannot overcome that longstanding distinction through interpretation. Clearly, a distinction exists between the two that has been specifically recognized by the County and cannot be dismissed based on mere "similarity."

Fifth, the County's determination of a "similar use" is not discretionary is mistaken. *County Staff Report at 5 and 37*. The County's determination that a "transmission line" is similar to "distribution line" requires discretion, including legal and factual judgment and policy. A determination of "similar use" requires a separate Type II land use application because it requires the County exercise discretion. Therefore, the County has not employed the correct process.

Sixth, segments of the proposed transmission line, including estuary segments 38EC1 and 43EC1, are identified in the Comprehensive Plan as "[a]reas needed for

recreational and aesthetic uses.” Here, the transmission lines would be inconsistent these aesthetic – and even recreational – uses. The Comprehensive Plan requires that for the “Estuary conservation 1 (EC1) zones,” the County’s management objective is to “provide for the long-term maintenance of the aesthetic values of estuarine areas, in order to promote/enhance low intensity recreational use of estuarine areas which are adjacent to rural or agricultural shorelands.” Comprehensive Plan, Chapter 16, 5.2(2)(c) (management objective (3)).

IV. The project is not safe

As explained above, the project introduces a serious safety risk to the community like the disaster that recently happened in northern California. Staff noted that environmental impacts were reviewed, including “soils/vegetation, floodplains and wetlands, cultural resources, threatened and endangered species, fish and wildlife resources, air quality, water quality, aesthetics, among others.” Exhibit 200, Hanhan 5. Neither Staff nor petitioner have accounted for the possibility of increased fire risks as a result of placing the high-voltage transmission lines in forest and resource zones. This type of risk must be accounted for in determining whether the project is safe and in the public interest. Indeed, Staff’s analysis of safety does not appear to even contemplate the public interest.

V. The project is not necessary

The relevant necessity standard requires that Petitioner demonstrate that “Oregonians will forego something desirable and useful without” the project. Petitioner alleges that the project is necessary in order to “[i]ncrease reliability, accommodate load

growth, and help replace aging infrastructure.” Aging infrastructure can be addressed by upgrading existing, outdated infrastructure. Upgrading existing infrastructure can, in turn, also increase reliability accommodate future growth.

In response to the question of “[h]as Tillamook PUD’s system experienced growth,” Staff responds that Petitioner alleges that “it is expecting load growth,” not that it has experienced such growth. Exhibit 200, Hanhan 8. This demonstrates that the project is speculative, not necessary. Staff conflates actual growth for projected growth, but the two are not the same.

Next, Petitioner alleges that energy conservation efforts can reduce customer demand but do not address aging infrastructure or reliability issues. Both of these issues can be addressed by upgrading existing infrastructure. As such, the project is not necessary because it is not necessary that Oregonians forego something desirable or useful in the absence of the project because infrastructure and reliability can be addressed through upgrades.

VI. Conclusion

For the reasons above, the Staff’s determination that the project complies with the County’s comprehensive plan and land use regulations.

Respectfully Submitted,

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News > California News



PG&E power lines linked to Wine Country fires

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As the first reports came in Sunday night of numerous fires that would grow into one of the most destructive wildfire disasters in California history, emergency dispatchers in Sonoma County received multiple calls of power lines falling down and electrical transformers exploding.

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In all, according to a review of emergency radio traffic by the Bay Area News Group, Sonoma County dispatchers sent out fire crews to at least 10 different locations across the county over a 90-minute period starting at 9:22 pm to respond to 911 calls and other reports of sparking wires and problems with the county's electrical system amid high winds.

State fire officials said Tuesday that they are still investigating the cause of the blazes, which as of late Tuesday had killed 17 people and destroyed more than 2,000 homes in Sonoma, Napa and other Northern California counties.

But the reports of the power equipment failures began to turn the spotlight on PG&E, the giant San Francisco-based utility, raising questions about how well it maintained its equipment in the area and whether it adequately cut back trees from power lines to reduce fire risk — as required by state law.

ELECTRICAL PROBLEMS IN SONOMA COUNTY

Sonoma County dispatchers responded to numerous reports of fallen power lines, exploding electrical transformers and fire over a 90-minute period starting at 9:22 p.m. on Sunday. Emergency reports during that period:

PG&E officials issued a statement Tuesday evening, acknowledging the equipment troubles even as a company spokesman called the questions about maintenance “highly speculative.”

“The historic wind event that swept across PG&E service area late Sunday and early Monday packed hurricane-strength winds in excess of 75 mph in some cases,” said PG&E spokesman Matt Nauman.

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“These destructive winds, along with millions of trees weakened by years of drought and recent renewed vegetation growth from winter storms, all contributed to some trees, branches and debris impacting our electric lines across the North Bay,” he added. “In some cases, we have found instances of wires down, broken poles and impacted infrastructure. Where those have occurred, we have reported them to the CPUC and CalFire. Our thoughts are with all those individuals who were impacted by these devastating wildfires.”

PG&E and other large utilities in California have a long history of being found responsible for major wildfires because of inadequate maintenance of their power lines.

In April, the state Public Utilities Commission fined PG&E \$8.3 million for failing to maintain a power line that sparked the Butte Fire in Amador County in September 2015. That fire burned for 22 days, killing two people, destroying 549 homes and charring 70,868 acres.

CalFire announced last year that it will seek to force PG&E to pay \$90 million in firefighting costs. More than 1,000 lawsuits and claims are still pending against the utility.

“It was more than just a lack of maintenance. It was a complete disregard for their requirements of vegetation management in rural areas,” said Burlingame attorney Frank Pitre, who sued on behalf of the victims.

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Pitre said his law firm has already started fielding questions from Sonoma County residents who said they saw transformers exploding and downed wires sparking in their neighborhoods before they went up in flames. They wondered if the utility would be held liable, he said.

“This is very definitely on people’s radar of what caused a number of fires to break out all at once,” Pitre said.

“If downed wires are deemed the cause of the fire,” he added, “PG&E could be strictly liable for the cost of damages.”

In 1994, PG&E was found guilty of 739 counts of negligence and fined nearly \$30 million by state regulators when trees touched its high-voltage wires in Nevada County in the Sierra foothills, sparking a fire near the town of Rough and Ready that destroyed 12 homes and a 19th century schoolhouse. Afterward, prosecutors found that PG&E had diverted nearly \$80 million from its tree-cutting programs into profits.

State Sen. Jerry Hill, D-Redwood City, said he sees similarities in PG&E’s problems with maintaining its power lines to the utility’s failures to properly maintain its natural gas lines that led to the 2010 San Bruno explosion that killed eight people and destroyed 38 homes. PG&E was fined \$1.6 billion by the PUC, and a federal jury last year convicted the company on five charges of violating federal pipeline safety regulations and one charge of obstructing an official National Transportation Safety Board probe into the blast.

“If it turns out that PG&E is responsible for this fire and negligent for not putting in the resources or for diverting the resources,” Hill said, “then I will be the first one to stand up and say we need to dissolve PG&E as a private company and form a public utility. We would not have the confidence or trust in them in the future. Nor should we.”

Officials for the PUC did not provide a safety official to answer questions Tuesday about the wine country fires, or PG&E’s records in maintaining its power lines and tree-trimming responsibilities.

“It may take some time for fire officials or utilities to determine the possible cause of the fires,” said Terrie Prosper, a spokeswoman for the PUC, which regulates big power companies such as PG&E. “Once that occurs, if it appears that a utility line may have been involved, the PUC will investigate.”

For multiple fires to all start around the same time in the middle of the night, lightning or arson could also have been a cause. But Ken Pimlott, chief of the California Department of Forestry and Fire Protection, ruled out lightning at a news conference on Tuesday.

Pimlott did, however, note the high winds.

“When we have a wind event like this — 50 mph winds bearing down on areas — every fire that starts has a significant potential to grow into a large fire very quickly,” he said.

According to Sonoma County fire radio traffic, after the first vegetation fire at 310 Buckingham Drive in the heart of Santa Rosa was reported at 9:22 p.m. Sunday, an electrical call went out seconds later at 1047 Maverick Court about 10 miles north. The next minute firefighters were sent to a "possible transformer explosion" at Fulton Road at Old Redwood Highway more than two miles west.

By 9:25 p.m., trees began falling at Ida Clayton Road in Calistoga, about 17 miles north. The downed power lines and trees continued as firefighters raced to a rapidly increasing number of structure and vegetation fires.

Not only did arcing wires and transformer problems potentially spark new fires, quickly spread by fierce winds, the downed trees blocked firefighters and emergency personnel from responding quickly. At about 9:52 p.m., a firefighter reported that Highway 128, in the center of the battle to contain the flames, was completely blocked by trees and branches. And Highway 101 access through the heart of Santa Rosa was shut down because of downed wires.

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Frank Wolak, a professor of economics and an energy expert at Stanford University, said if PG&E's lines are responsible, there will be a vigorous debate in front of the PUC about financial liability.

"My guess is that they will say no one expected the winds to be this strong for that long," Wolak said. "If the PUC buys their story, then they aren't liable. But if the PUC finds they were negligent, then they could have liability and penalties. If I were PG&E, I'd be very hopeful that I'd done everything the PUC had told me to do up there."



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Quantifying the Economic Risk of Wildfires and Power Lines in San Diego County

By Jesse M. Johnson
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May 2014

*Master's project submitted in partial fulfillment of the requirements for the Master of Environmental Management and Master of Forestry degrees in the Nicholas School of the Environment of Duke University
2014*

Abstract

San Diego Gas & Electric Company has proposed retrofits to seven of its transmission lines to reduce the lines' potential for igniting fires and to increase their ability to withstand damage from wildfires. Since the company's ratepayers will ultimately pay for the cost of these retrofits through electricity rates, the benefit of the projects in terms of wildfire risk reduction is a matter of public policy interest. This study estimates the range of potential monetary losses that the company could incur due to wildfires and compares those losses to the costs of the transmission line retrofits as a means of evaluating their risk reduction benefit. The study uses a Monte Carlo simulation to estimate the losses for the company from wildfires in a given year. The model outputs the number of ignitions from the transmission lines, the acreage of the resulting wildfires, the property damage caused by those fires, the length of transmission line damaged by wildfires, and the costs of repairing those lines. The model is parameterized using empirical observations of transmission lines ignitions, wildfire sizes, and property values for San Diego County. Results suggest that although the expected value of losses is not large enough to justify the investment in the retrofits, the high risk of losses (driven by rare but extremely damaging events) may justify the investment. The transmission lines in closest proximity to populated areas are the best candidates for retrofits. The study provides a possible framework for regulators and electric utilities to discuss the public benefit of safety-related infrastructure investments as part of the regulatory process.

1.0 Introduction

Electric power infrastructure is vulnerable to disruption and damage from natural hazards, and disasters that strike electricity infrastructure can imperil public safety. High-profile events such as the catastrophic failure of the Fukushima Daiichi nuclear power plant following an earthquake and tsunami and widespread electrical outages in the northeastern United States following Hurricane Sandy have focused attention on the vulnerabilities of the electricity system and their consequences for both the public and utility companies. Disasters such as these are often followed by calls to strengthen the electricity system to withstand hazards and protect public safety. Efforts to increase the resiliency of electricity infrastructure can often entail significant costs, which can increase the price of energy paid by consumers. Policymakers responsible for approving resiliency measures must therefore balance the potential damages of a disaster against the costs of protection. For this reason, it is important to quantify the risks that natural hazards pose to energy infrastructure and compare those risks to the costs of resiliency measures.

This study looks at wildfires in San Diego County as a case study for evaluating the benefits of strengthening electricity infrastructure against natural hazards. This case was chosen because of the unique relationship between electricity infrastructure and the nature of the wildfire hazard: transmission lines have both ignited major fires and been destroyed by wildfires. Following major wildfires in 2007, the local electric utility, San Diego Gas & Electric Company (SDG&E), has undertaken multiple initiatives to reduce its exposure to wildfire risk. One of these initiatives involves fire-hardening transmission lines in high fire risk areas to reduce the potential for ignitions from the lines. This study evaluates the potential fire risks for the transmission lines proposed for fire-hardening retrofits and compares those risks to the costs of the retrofits to evaluate the net benefit to the company.

2.0 Background

The climate and ecology of San Diego County create a landscape that is prone to frequent, intense wildfires. The County has a dry, semi-arid climate characterized by mild winters and hot, dry summers, with most precipitation falling between October and April (Sugihara, van Wagendonk, Shaffer, Fites-Kaufman, & Thode, 2006). High summer temperatures and low summer precipitation contribute to wildfire risk by drying out available fuels (Sugihara et al, 2006). The County also experiences seasonal outbreaks of hot, powerful winds known as the Santa Ana winds that flow downslope from the interior deserts to the coasts (Sugihara et al, 2006). These winds often result in multiple outbreaks of highly destructive, fast-moving wildfires. Finally, periodic droughts exacerbate these existing conditions by causing vegetation die-back that contributes to a dry fuel load ready to burn (Keeley, 2009). The major vegetative cover types in the County support and in some cases depend upon periodic wildfires. Major fire-prone plant communities in the region include coastal sage scrub, chaparral, oak woodlands, and desert scrub (Minnich, 1988). Chaparral, consisting of woody evergreen shrubs 1-5 meters in height, is notoriously fire-prone (Minnich, 1988).

The wildfire regime of San Diego's natural ecosystems becomes a hazard when humans build in those wildfire-prone landscapes. Increasing human settlement in the wildland-urban interface, "the area where human developments meet or intermingle with undeveloped wildland," increases the potential for the wildfire hazard to become disasters that affect people and property (Grossi, 2008). San Diego County has experienced several major wildfire disasters over the past five decades, reflecting the growing amount of human development in the wildland-urban interface. Three of the twenty most destructive wildfires in California state history, measured by number of structures burned, occurred in San Diego County: the Cedar Fire of October 2003 (273,246 acres

burned, 2,820 structures destroyed, 15 deaths); the Witch Fire of October 2007 (197,990 acres burned, 1,650 structures destroyed, 2 deaths); and the Laguna Fire of September 1970 (175,425 acres burned, 382 structures destroyed, 5 deaths) (California Department of Forestry and Fire Prevention, 2011). Development in the wildland-urban interface is expected to escalate in the future, increasing the exposure of human life and property to wildfire hazard (Grossi, 2008).

One critical component of human development is the provision of utility service, specifically natural gas and electricity. In the San Diego area, the local electricity and gas utility is San Diego Gas & Electric Company (SDG&E), an investor-owned utility that serves 3.4 million customers in a service territory covering 4,100 square miles of San Diego County and southern Orange County (San Diego Gas & Electric Co, November 13, 2007). That service territory includes significant areas of wildfire-prone landscape. SDG&E's obligation to serve customers in the wildland-urban interface requires the company to extend power lines through high fire risk areas (San Diego Gas & Electric Company; Southern California Gas Company, January 5, 2012). As a result, the company incurs the risk of damage from wildfire and the risk of significant financial costs in the case that the company's infrastructure ignites a fire.

In October 2007, the local climate, human settlement of the wildland-urban interface, and SDG&E infrastructure interacted to create a devastating wildfire disaster. Low rainfall in the winter of 2006-2007, a mid-winter cold front that killed vegetation, and a dry summer led to a build-up of dead, dry fuels by the fall of 2007 (California Department of Forestry and Fire Protection, Governor's Office of Emergency Services, U.S. Forest Service, 2008). Between October 20 and 23, the County experienced a multi-day Santa Ana wind event with hot, dry winds of 20 to 40 miles per hour and gusts of up to 80 miles per hour (Cal Fire et al, 2008). The gusting winds damaged several transmission lines owned by SDG&E, leading to the ignition of three fires:

1. The **Witch Fire** was ignited on October 21 on SDG&E Tie Line 637, between the communities of Ramona and San Ysabel (Cal Fire et al, 2008). Two energized conductors on the 69-kV tie line made contact in the high winds (CPUC Consumer Protection & Safety Division, November 12, 2008). The resulting sparks ignited dry vegetation underneath the line, and the high winds caused the fire to quickly grow in size (California Department of Forestry and Fire Prevention, 2008). It eventually burned 197,990 acres, destroyed 1,624 structures, and led to 2 deaths (Cal Fire et al, 2008).
2. The **Guejito Fire** was ignited on October 22 in the San Pasqual Valley (Cal Fire et al, 2008). A lashing wire for a communications cable, co-located on SDG&E utility poles, made contact with an energized 12-kV conductor during high winds (CPUC CPSD, 2008). The fire eventually merged with the Witch Fire.
3. The **Rice Fire** was ignited on October 22 in northern San Diego County when a sycamore tree limb fell onto a SDG&E 12-kV conductor during high winds (CPUC CPSD, 2008). The fire eventually burned 9,472 acres and destroyed 248 structures (Cal Fire et al, 2008).

Firefighters had to contend with five additional fires in San Diego County during the same time period, further straining their resources (Cal Fire et al, 2008). In total, the 2007 fire siege in San Diego required the efforts of more than 6,200 firefighters, 100 aircraft, \$41 million in firefighting expenditures, and 18 days to bring under control (County of San Diego, 2008). Evacuation orders were issued for over half a million residents in San Diego County alone (County of San Diego, 2008). Total economic damages from the San Diego County fires exceeded \$1.5

billion (County of San Diego, 2008). SDG&E estimates that its total legal costs related to the fires will exceed \$2.4 billion (San Diego Gas & Electric Co., 2013).¹

In the aftermath of the 2007 wildfires, SDG&E initiated a suite of programs and projects to reduce its exposure to risk of both financial liability and infrastructure damages from wildfires. One of the most visible of these is a series of investments in the company's 69-kV transmission and 12-kV distribution lines to reduce the likelihood of the equipment igniting a fire and to reduce the potential damage resulting from wildfires (San Diego Gas & Electric Co., July 3, 2013). These projects, referred to as fire-hardening, replace wooden utility poles with steel poles, install heavier conductors, and make associated substation upgrades (SDG&E, 2013). Steel poles are generally stronger and thus better able to withstand extreme wind gusts associated with high fire risk Santa Ana wind conditions (SDG&E, 2013). Stronger steel poles can support a wider spacing of conductors, which, when combined with heavier conductors, lowers the likelihood of high winds causing contact between conductors that could result in line faults, sparking, and potential ignitions of ground vegetation (SDG&E, 2013). The installed steel poles are taller than the wooden poles they replace, so conductors are raised higher above potential ground fires which have the potential to damage line insulation or cause excessive line sag (SDG&E, 2013). Finally, steel poles are more resistant to damage from ground fires than wooden poles.

SDG&E has proposed to undertake a set of fire-hardening projects on 69-kV lines located in areas of its service territory identified as having a high fire risk (SDG&E, 2013). The total cost of these projects approaches \$500 million, and SDG&E has indicated that it will recover the costs of the projects through its rates charged to retail customers and in FERC-authorized electric transmission rates (San Diego Gas & Electric Company, 2012) (San Diego Gas & Electric Company, 2013). However, the public Applications to Construct filed with the California Public Utilities Commission (CPUC) lack information on the value of these projects in reducing wildfire risk (San Diego Gas & Electric Company, 2012). The applications contain a total cost for each project and a narrative description of the benefits, but they do not attempt to quantify the reduction in risk exposure that the company hopes to achieve through the projects. Since SDG&E uses public safety to justify the investments, and since the rate-paying public will ultimately pay for the project through their electric rates, the public should be provided with some estimation of the risk-reduction benefit of the projects.

Table 1. List of proposed SDG&E 69-kV fire hardening projects. Information comes from the Applications to Construct filed with the CPUC.

Project	Location	Length (miles)	Construction cost (millions)	Source
TL 637	Ramona	14.0	\$30 - \$50	SDG&E A.13-03-003
TL 6931	Boulevard	5.2	\$34	SDG&E A.12-12-007
TL 625	Cleveland N.F.	22.5	\$91.7 ± 5%	SDG&E A.12-10-009
TL 626	Cleveland N.F.	18.8	\$68.7 ± 5%	SDG&E A.12-10-009
TL 629	Cleveland N.F.	29.8	\$145.8 ± 5%	SDG&E A.12-10-009
TL 682	Cleveland N.F.	20.2	\$66.3 ± 5%	SDG&E A.12-10-009
TL 6923	Cleveland N.F.	13.4	\$46.0 ± 5%	SDG&E A.12-10-009

¹ Although SDG&E has settled hundreds of lawsuits related to the 2007 fires, it has not admitted liability for the fires in the settlement agreements (Jones & Lee, 2012). Similarly, the company has not admitted wrongdoing in its settlements with the CPUC regarding the role of its equipment in the fires.

3.0 Research Question

The goal of this analysis is to quantify the corporate benefit to SDG&E of seven fire-hardening projects by estimating the potential for these projects to reduce wildfire risk. Wildfire risk can be estimated from the probability of SDG&E equipment igniting a wildfire and the monetary damage to structures and property that result from wildfires. The analysis will define risks in terms of the monetary value of wildfire damage to human-built structures and will not consider the social costs of human health impacts or impacts on ecosystems from wildfires. This definition of risk in purely monetary terms is justified for the purposes of this analysis, which seeks to understand the investment decisions of a loss-minimizing corporate entity. The company's legal costs following the 2007 fires have included settlements related to public health and ecosystem damage (Jones J. H., 2013). For example, the City of San Diego sued SDG&E to recover damages related to emergency response expenses and ecological damage; the City and SDG&E later settled for \$27 million (Jones & Lee, 2012). However, the breakdown of SDG&E's settlement expenses by category (property damage, human health impacts, lost revenue, ecosystem damage, etc.) is not public information. For this reason the analysis considers risk only in terms of monetary damage to property because property values are publically available through the San Diego County Tax Assessor.

The analysis will examine two related questions regarding the potential risk reduction from SDG&E's fire-hardening projects:

1. What is the range of potential losses due to wildfires that the company could experience?
2. What is the optimal level of wildfire protection for SDG&E to purchase?

The answers to these questions can help policymakers and the general public make informed decisions about SDG&E's investments.

4.0 Approach

We characterize wildfire risk and the effectiveness of potential protection strategies using a probabilistic analysis informed by historical data. The financial risk resulting from liability² and damages is characterized with the probability distribution of losses that SDG&E would experience in a given year due to wildfires on the seven tie lines that are candidates for retrofits. The benefits of the potential risk-mitigation strategies are characterized through a fire cost minimization curve that compares the cost of each fire-hardening project to the reduction in expected losses resulting from the project. The probability distribution of losses is estimated through a Monte Carlo Simulation model that uses information on past wildfire events to estimate a range of damages for future wildfires.

4.1 Monte Carlo Analysis

A Monte Carlo simulation was created to estimate the probability distribution of potential losses from wildfires for a given year. From this probability distribution, the expected value and variance of annual wildfire losses can be estimated and compared to the costs of fire-hardening strategies. Figure 1 summarizes the Monte Carlo Model. Yellow circles represent random variables with probability distributions taken from historical data and geospatial analysis, as explained in section 5. Orange rectangles represent calculated costs for one iteration of the Monte Carlo simulation, based on independent random draws from each of the random variables.

² The term "liability" is used in this study not in its strict legal sense, but rather as a shorthand for the settlement costs SDG&E might bear should its equipment ignite fires. As discussed above, SDG&E has not admitted liability for the 2007 fires in its legal settlements.

The red rectangles represent the probability distribution of costs resulting from 10,000 iterations of the Monte Carlo simulation. The model is used for each of seven transmission lines, and the expected total losses are evaluated for each line and for the system as a whole.

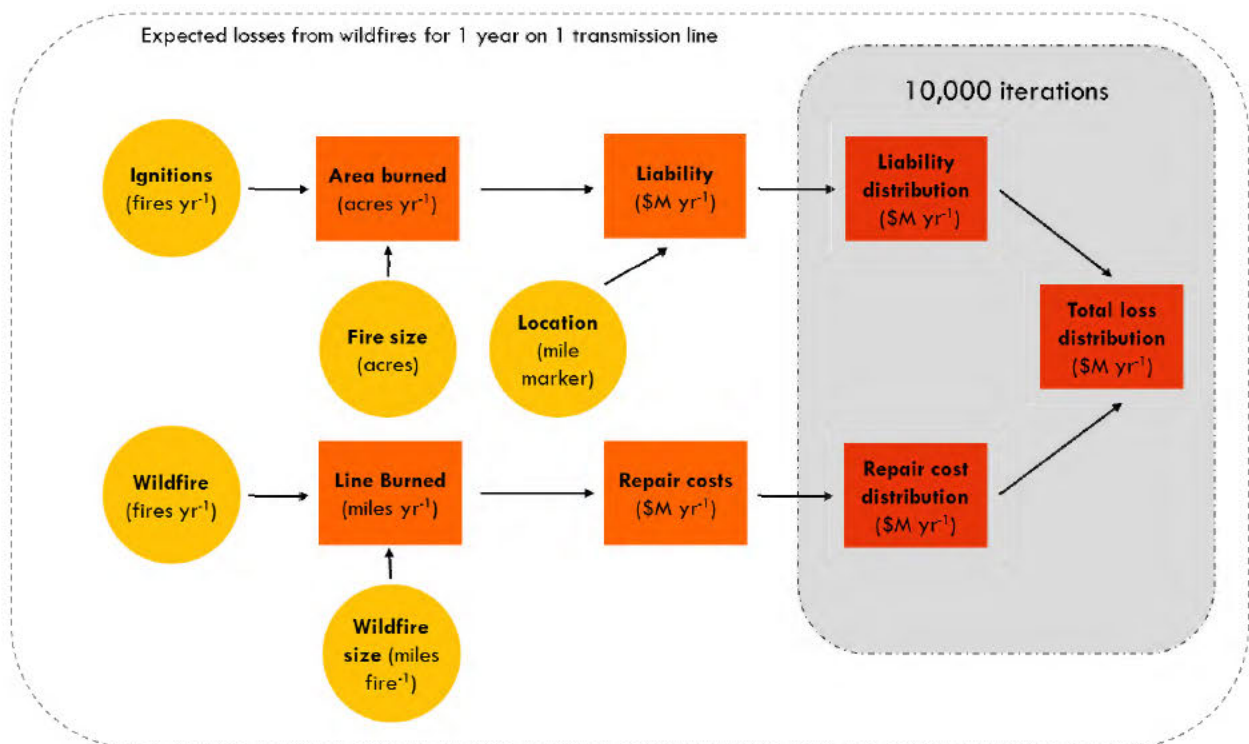


Figure 1. Monte Carlo model schematic. Yellow circles represent random variables; orange rectangles represent outputs for one iteration; red rectangles represent outputs over 10,000 iterations. The simulation is repeated for seven transmission lines. Each iteration represents the wildfire-related losses for a single year.

Total losses are the sum of liability costs and repair costs. The fire-related loss incurred by SDG&E on a given line in a given year is the sum of liability for fires ignited by that line and the costs of repairing that line from wildfire damage. Total losses for the company are found by summing the losses across all seven transmission lines. Total losses are given by:

$$Loss = \sum_{i=1}^7 [Liability_i + Replacement_i] \quad (\text{eq. 1})$$

where: *Loss* = total financial costs incurred by SDG&E in a given year, in dollars.

Liability = SDG&E liability for damage from fires caused by transmission lines, in dollars.

Repair = cost of replacing transmission lines damaged by wildfires, in dollars.

i = index of transmission lines considered for fire-hardening retrofits, 1 through 7.

The company's annual liability for fires on a given line is a function of whether a line ignites a fire, the size of the ignited fires, and the location at which the fire starts. Liability is given by:

$$Liability_i = F(Ignition_i, Fire Size_i, Location_i) \quad (\text{eq. 2})$$

where: *Ignition_i* = random variable representing whether or not an ignition occurs on line *i*. It follows a Bernoulli distribution (i.e. takes the values of either 0 or 1), as explained in section 5.1.1.

Fire size_i = random variable representing the area burned by a fire ignited by line *i*, in acres. It is assumed to follow an empirical distribution based on historic fire sizes, as explained in section 5.1.2.

Location_i = random variable representing the point along line *i* at which the fire ignites. It is assumed that the location refers to one of a finite set of points along the line spaced at 0.5 kilometer intervals, as explained in section 5.1.3.

To take one random draw of *Liability* for a particular line *i*, we first take a random draw from *Ignition*. Since *Ignition* has a Bernoulli distribution, no acres are burned if there is no ignition on that line (i.e. if *Ignition* takes a value of 0). If *Ignition* takes a value of 1, then a random draw from the *Fire size* distribution for line *i* is taken, along with a random draw for the *Location* random variable. The specific *Location* along the line, combined with information about the *Fire size*, allows the identification of the specific *Area burned* and permits estimating the *Liability* costs that fire event. Liability costs vary from line to line even for fires of the same size, because fires differ in their proximity to densely populated area. The data used to develop the probability distributions for the *Ignition*, *Fire size*, and *Location* random variables is discussed in Section 5.1.

The company's annual repair costs from wildfires on a given line is a function of whether a wildfire damages the line and how much of the line is damaged. Repair costs are given by:

$$Repair_i = Wildfire_i * Wildfire\ size_i * Repair\ rate \quad (eq. 3)$$

where: *Wildfire* = random variable representing whether or not a wildfire affects a given line. It follows a Bernoulli distribution (i.e. takes the values of either 0 or 1), as explained in section 5.1.4.

Wildfire size = random variable representing the length of line damaged by a given wildfire. It is assumed to follow an empirical distribution based on historical wildfires at the location of the lines, as explained in section 5.1.5.

Repair rate = a fixed per-mile repair and replacement cost, estimated to be \$1.92 million per mile of line.

To take one random draw of *Repair* for a particular line *i*, we first take a random draw from the *Wildfire* distribution. Since *Wildfire* has a Bernoulli distribution, no miles of line are burned if no wildfire occurs on that line. If *Wildfire* takes a value of 1, then a random draw from the *Wildfire size* distribution for that line is taken to determine the length of the *Line burned*, in miles. The length of *Line burned* is then multiplied by a flat repair rate to calculate *Repair* costs. This process is repeated for all line segments.

Table 2 below lists the elements of the Monte Carlo simulation. The data used to parameterize specific elements is discussed in more detail in Section 5.1.

Table 2. List of Monte Carlo simulation elements.

Random Variable	Description	Unit
Ignitions	Ignitions caused by power lines in a given year. Follows Bernoulli distribution $\{0,1\}$ for a given line.	Ignitions per year
Fire size	Area burned by a given fire. Drawn from historical fire size distribution. Indexed by cause (transmission line or not).	Acres
Location	Location along a given tie line at which a fire starts. Follows a uniform distribution with equal probability of occurring at each 0.5 km marker	Marker number
Wildfire	Wildfires affecting power lines in a given year. Follows Bernoulli distribution $\{0,1\}$ for a given line.	Wildfires per year
Wildfire size	Length of line burned by a given wildfire, drawn from an empirical probability distribution based on historical wildfires.	Miles
Output	Description	Unit
Area burned	Area burned by fires ignited by transmission line in a year.	Acres
Liability	Liability for burned area in a year.	\$M
Line burned	Length of line burned by wildfires in a year.	Miles
Repair	Cost of repairing and replacing transmission lines damaged by fire in a year.	\$M
Monte Carlo Output	Description	Unit
Expected liability	Expected liability and variance in expected liability for fires caused by transmission lines in a year, over 10,000 runs.	\$M
Expected repair	Expected replacement costs and variance in expected replacement costs for fires in a year, over 10,000 runs.	\$M
Expected total loss	Expected total costs [liability + replacement] and variance in expected total costs for all fires, over 10,000 runs.	\$M

4.2 Fire Cost Minimization Curve

Protection from wildfire damage, whether in the form of firefighting response capabilities, vegetative fuels treatment, or infrastructure hardening, carries obvious financial costs. SDG&E does not have a public mandate for unlimited spending on wildfire protection. For example, burying the seven 69-kV transmission lines underground would probably be more effective in reducing the risk of accidental ignitions than the proposed aboveground fire-hardening projects, but undergrounding would cost 4-5 times as much (based on transmission cost factors from Southern California Edison and published with CAISO). Finding the optimal level of fire protection requires balancing the costs of protection with the potential damage from wildfire.

The classic approach to finding the optimal level of wildfire protection, first described by Sparhawk in 1925, is to minimize the sum of protection costs and wildfire losses. The basic

premise is that increasing expenditures on wildfire protection reduces financial losses due to fires (Sparhawk, 1925). For example, hiring more fire crews and purchasing more equipment will allow firefighters to bring fires under control more quickly, thereby limiting the fires' geographical extent and damage to timber and buildings. At some level of protection, however, the costs of protection exceed the losses that could arise from the wildfire, and purchasing additional protection is not justified. For example, burying a transmission line at a cost of \$10 million to prevent the potential for fire that would cause at most \$1 million in damage over the lifetime of the line is a sub-optimal allocation of fire protection resources.

If the amount of losses after a given retrofit could be known with certainty, then this "cost plus losses" formulation could be applied to the analysis at hand to state that the economically efficient level of wildfire protection is that which minimizes the sum of fire-hardening retrofit costs plus the damages from fires following the retrofits:

$$\min \sum_{i=1}^7 (Retrofit_i + Reduced\ loss_i) \quad (\text{eq. 4})$$

where: *Retrofit* = the present-value cost of fire-hardening transmission line *i*; and

Reduced loss = the present value of losses following a retrofit of line *i* over the project life.

However, the amount of wildfire-related losses that SDG&E may incur after a retrofit is an uncertain variable. Therefore, to account for the impacts that a retrofit has in reducing the company's exposure to risk, we have chosen to compare the retrofit costs with a *Risk-weighted reduced loss* metric that accounts for both the average losses and the variability in losses after a retrofit:

$$Risk\ weighted\ reduced\ loss = ([1 - \alpha] * E[Loss]) + (\alpha * Std.Dev.\ of\ loss) \quad (\text{eq. 5})$$

where: *Risk weighted reduced loss* = a measure of the potential losses that could arise from line *i* after a retrofit;

Expected value of loss = expected value of annual total loss for line *i* after a retrofit;

Standard deviation of loss = standard deviation of annual total loss for line *i* after a retrofit; and

α = the risk premium, used to weight expected value of losses and variability in losses.

In this formulation we allow the risk premium α to take a value between 0 and 1. If $\alpha = 0$, the *risk weighted loss* reflects only the average loss. If $\alpha = 1$, the *risk weighted loss* reflects only the *standard deviation of loss* (i.e. the variability in potential losses). At intermediate values of α , risk weighted loss reflects both average losses and variability in losses. The specific risk premium used by decision-makers in the company is not known, so the analysis considers a range of risk premium values to demonstrate the sensitivity of results to the risk premium used. This formulation is a simplistic utility function based on a linear combination of expected value and standard deviation. There are many other functional forms for a utility function that better represent the risk preferences of a company or a regulator charged with protecting public safety. For details, see Christian Gollier's "The Economics of Risk and Time," MIT Press, 2001.

To estimate the expected value and standard deviation of losses after a retrofit, we take the probability distribution of losses generated by the Monte Carlo simulation described above and multiply by a parameter β that represents the effectiveness of a retrofit in reducing wildfire risk. The assumed risk reduction potential β takes a value from 0 to 1. If $\beta = 0$, the retrofit is assumed to have no effect on reducing potential losses over the project lifetime; if $\beta = 1$, the retrofit is

assumed to completely eliminate all potential losses over the project lifetime. Intermediate values of β reflect realistic risk reduction benefits of the retrofits.

$$E[\text{reduced loss}_i] = \beta * E[\text{losses before retrofit}_i] \quad (\text{eq. 6})$$

$$\text{Std. dev. of reduced loss}_i = \beta * \text{Std. dev. of losses before retrofit}_i \quad (\text{eq. 7})$$

where: *Reduced loss* = the present value of losses following a retrofit over the project life; and
 β = assumed risk reduction potential of the retrofit project.

Note that β is applied to financial losses only, not to the physical parameters contributing to losses (e.g. the rate at which transmission lines ignite fires, the area burned by fires, or the concentration of property value in proximity to the lines).³ In other words, the risk reduction potential β does not provide information on how the retrofits reduce losses (e.g. by reducing ignition rates or by reducing the occurrence of very large fires). A more realistic treatment of the *Reduced loss* variable would use information from mechanistic models that explain how retrofits reduce ignition rates and fire sizes. However, this information is not in the public domain, since the Applications to Construct the tie line fire-hardening retrofits do not include quantitative estimates of the reduction in fire risk achieved by the projects.

Because the Monte Carlo simulation estimates the distribution of annual losses, we can simulate such losses for each year but need to convert them to present-value costs. This conversion allows the comparison between annual potential losses that could occur in any given year and the up-front cost of a long-lived retrofit project. The *risk weighted loss* is converted into a present value:

$$P.V. \text{ risk weighted loss}_i = \text{Risk weighted loss}_i * \frac{[1-(1+r)^{-n}]}{r} \quad (\text{eq. 8})$$

where: *P.V. risk weighted loss* = the present-value of risk-weighted losses over 30 years for line i ;
Risk weighted loss = Linear combination of expected value and standard deviation of annual loss for line i ;
 r = the discount rate; and
 n = the asset useful life, in years.

The base value of the discount rate is 8.4%, which is the regulated rate of return for SDG&E investments in their Application to Construct for the tie line 637 fire-hardening project (SDG&E, A.13-03-003). The base value of the asset useful life is 30 years, taken from the SDG&E Application to Construct for the tie line 6931 fire-hardening and wind interconnection project (SDG&E, A.12-12-007).

Finally, the net benefit is calculated by subtracting the retrofit costs and the reduced losses from the present-value risk-weighted losses before retrofits:

$$\text{Net Benefit}_i = P.V. \text{ risk weighted loss}_i - \text{Retrofit}_i - \text{Reduced loss}_i \quad (\text{eq. 9})$$

³ It is possible that, even after retrofits, a transmission line could ignite a fire that grows to a very large size and destroys significant amounts of property, because the destructiveness of the fire is ultimately driven by local patterns in weather, fuel loads, and settlement that are not affected by the retrofits. This analysis assumes that, once a fire starts, its eventual size and destructiveness are not influenced by the retrofit.

A positive net benefit means that the retrofit project lowers overall present value costs to the company. A negative net benefit means that the retrofit project increases overall present value costs to the company. The results of this analysis will be discussed in Section 6.2 below.

5.0 Data and Methods

The following sections describe the data sources and methods used to estimate the main elements of the Monte Carlo simulation, the random variables *Ignitions*, *Fire size*, *Location*, *Wildfire*, and *Windfire size*, which are combined with fixed parameters to yield the main model outputs.

5.1 Parameter Estimation

5.1.1 Ignitions

The random variable *Ignitions* represents the possibility of SDG&E equipment igniting a fire. It is modeled as a function of a fixed “spark rate” and the length of transmission line segment. This methodology was adapted from the testimony of Dr. Joseph Mitchell of the Murray Grade Road Alliance in testimony before the CPUC on fire issues related to transmission lines, and data from SDG&E disclosed as part of the Sunrise Powerlink transmission permitting and approval process was used to parameterize *Ignitions* (Mitchell).

The spark rate was estimated based on SDG&E records of all fires started by the company’s equipment. The dataset covers March 16, 2004 to October 22, 2007 (the date of the Rice and Guejito fire ignitions) and includes 121 separate events, mostly caused by the company’s distribution and secondary line systems ($n = 98$). 16 events were attributed to the transmission system, of which 9 were attributed to wind or to equipment failure. In some cases, the voltage of the lines could be determined by cross-referencing with SDG&E records of faults on their system covering the same time period. Finally, the total length of SDG&E’s transmission lines at various voltages was gathered from its Form 1 filings with the Federal Energy Regulatory Commission. These data were combined to estimate the rate at which SDG&E power lines ignite fires, based on the formula:

$$\text{Spark rate} = \frac{\text{Number of fires}}{\text{System length} \times \text{time period}} \quad (\text{eq. 9})$$

The following table shows the estimated rates at which SDG&E power lines ignite wildfires, measured as number of fires per year per circuit-mile of line. In general, the transmission system ignites fires at a lower rate than the distribution and secondary system, probably because transmission lines have taller utility poles and wider conductor spacing. Possible avenues for ignitions include contact with tree limbs, large birds touching multiple conductors, and wind blowing conductors into each other, all of which would presumably happen less frequently with taller poles and wider spacing (San Diego Gas & Electric Co., July 3, 2013). The table also contains the estimated rate of fire ignitions from wind or other equipment failures on the transmission system, as opposed to fires caused by other agents (birds, mylar balloons, vandalism, or vehicle crashes, for example). This distinction could have potential ramifications for the company’s liability: it seems doubtful that the company would be held liable for a fire resulting from a vehicle collision with a utility pole, whereas it would be liable for a fire resulting from a failure to maintain equipment in good working order. Finally, in seven cases the voltage of the transmission line could be determined by cross-referencing with recorded system faults. Ignition rates were calculated by voltage from these seven incidents, although these rates should be considered the minimum ignition rate because nine transmission system-caused fires could not be tied to specific voltage levels. The transmission system ignition rate of 0.00244 fires mi-1 yr-1 was used as the spark rate in the model for the seven transmission lines considered.

Table 3. Fires caused by SDG&E power lines, March 2003 - October 2007.

System	Fires	Years	Circuit miles	Spark rate (fires yr ⁻¹ mi ⁻¹)
Distribution & secondary	98	3.6	6759	0.00403
Transmission, all	16	3.6	1820	0.00244
Transmission - wind/failure	9	3.6	1820	0.00137
Transmission - 69 kV	3	3.6	886	0.00094
Transmission - 138 kV	1	3.6	269	0.00103
Transmission - 230 kV	3	3.6	387	0.00215

The possibility of an ignition on a given transmission line segment is a function of the spark rate and the length of each transmission line. The expected number of ignitions was estimated by:

$$E[\text{Ignitions}_i] = \text{Spark rate} * \text{Line length}_i \quad (\text{eq. 10})$$

The expected number of ignitions was assumed to equal the expected value of a Bernoulli variable with values of {0,1}. Thus, the expected number of ignitions represents the probability of an ignition on a given line. For the Monte Carlo simulation, $\text{Ignitions} = 1$ if $p < E[\text{Ignitions}]$, 0 if $p > E[\text{Ignitions}]$, where p represents a random draw. The table below contains the line length and $E[\text{Ignitions}]$ for each of the seven transmission line segments.

Table 4. Expected ignitions per year for each transmission line.

Line Segment	Length (miles)	E[I] (expected ignitions/yr)
TL 6931	5.2	0.013
TL 637	14.0	0.034
TL 6923	13.4	0.033
TL 682	20.2	0.049
TL 626	18.8	0.046
TL 625	22.5	0.055
TL 629	29.8	0.073

5.1.2 Fire size

Once a fire is ignited, the next major function of the model is to estimate the ultimate size to which the fire grows, the random variable *Fire size*, measured in acres. To determine the range of sizes, geospatial data from historical wildfires were examined to define a set of plausible wildfire events. Cal FIRE provides a geospatial dataset of historical wildfire perimeters across the state of California, stretching back to 1879. All fire events from 1950 to the present located partially or fully within the borders of San Diego County were extracted from this dataset. The resulting dataset is summarized in the table below. As the table makes clear, the distribution of wildfire sizes has an extreme right-hand tail. The variance of fire burned area is also very large, as reflected in the high coefficient of variation (ratio of standard deviation to mean). Since Cal FIRE includes information on the initial cause of wildfires, when known, the subset of fires caused by power lines was extracted from the dataset. We determined that three fires initially not included in the list of fires caused by power lines did in fact belong to that set, based on CPUC testimony and Cal Fire summary statistics: the Laguna fire (1970), Witch fire (2007), and Rice fire (2007).

From the table and figure below, it is clear that fires caused by power lines tend to be much larger in size than average fires. One possible explanation for this finding is the contribution of high winds to both power line failures and to large fires. High winds can lead to power line failures that cause fires, as seen in the Witch, Rice, and Guejito fire ignitions. Fires that start in high wind conditions are harder to control. For example, attempts to control the Witch Fire by

dropping water from an air tanker were thwarted by high winds (Cal Fire et al, 2008). The high winds also contributed to the rapid spread of the fire through spotting, or small fires started by wind-borne embers carried up to ½ mile ahead of the main fire (Cal Fire et al, 2008).

Table 5. Fire size distributions for all fires and for power line-related fires.

	All fires	Power line fires
Count	984	12
Sum (acres)	2,130,802	426,957
Mean (acres)	2,165	35,580
Std. Dev. (acres)	12,939	61,659
Minimum (acres)	0	20
1st Quartile (acres)	60	152
Median (acres)	157	585
3rd Quartile (acres)	650	28,788
Maximum (acres)	270,685	174,161

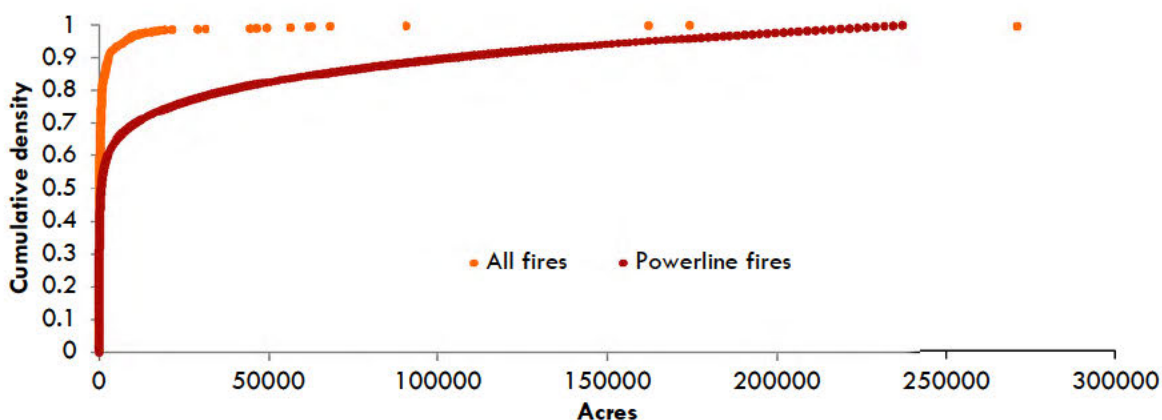


Figure 2. CDF of fire size for all fires is derived from empirical data. CDF of fire size for power line fires is approximated by a cubic regression of the empirical CDF on log-10 fire size.

The fire burned area data from Cal Fire was used to create a probability distribution of fire sizes. The fires were ranked in ascending order to calculate the cumulative probability of a fire reaching a certain size in acres and produce the cumulative density function (CDF) shown in Figure 2. This process was repeated for fires caused by power lines, although the small number of such fires ($n = 12$) means that drawing from the empirical distribution for the Monte Carlo simulation would result in dozens of iterations returning the exact same burned area. To increase the potential variation in burned area, continuous probability distributions were fit to the empirical data to allow for the prediction of values between and outside of the observed values. For all fires, a gamma distribution with shape parameter (k) of 8.8 and scale parameter (Θ) of 0.3 offered a good approximation of the log-base 10 transformed fire size distribution. For the power line fires, a cubic regression of empirical CDF on log-base 10 transformed fire size gave a good approximation of the CDF, with the form: $CDF = 0.0141 * size^3 - 0.148 * size^2 + 0.670 * size - 0.521$, truncated to include only values between 0 and 1. The distributions are shown in the figure above.

5.1.3 Location

The location at which a fire starts influences the quantity and value of property it eventually damages. Fires ignited in close proximity to dense human settlement have the potential to cause much more property damage than fires ignited in sparsely populated wildlands. To model the influence of geospatial location on fire destructiveness, a *Location* random variable was added to the Monte Carlo simulation model. First, potential ignition points were modeled along the transmission line routes at 0.5 kilometer spacing using ArcGIS. Next, the assessed improved value of each property (i.e. the value of the structure, separate from the land value) within 20 kilometers of the transmission lines was obtained from San Diego County GIS Services. For each property, the assessed improved value was then weighted by the wildfire threat index, as measured by Cal Fire, to create a potential damage value. This weighting process was used to avoid inflating damage estimates by including structures in very low risk areas, such as urban areas, that would be unlikely to burn in the event of a wildfire. Cal Fire’s assessed fire threat is based on the fire return interval (less than 100 years for most of the study area) and the flammability of the fuels. The weights used were: Little or no threat, 0,0; Moderate, 0.25; High, 0.5; Very high, 0.75; and Extreme, 1.0. The Cal Fire methodology for assessing fire threat is intended for state-wide application, not for the estimation of the potential for damage at a specific location, so the calculated potential damages should be considered rough estimates. Finally, the potential damage values within radii of 0 to 20 kilometers to the ignition points, corresponding to fire sizes of 0 to 300,000 acres, were summed. The resulting table contained the potential damage for a fire size of 0 to 300,000 acres for each of the 390 potential ignition points.

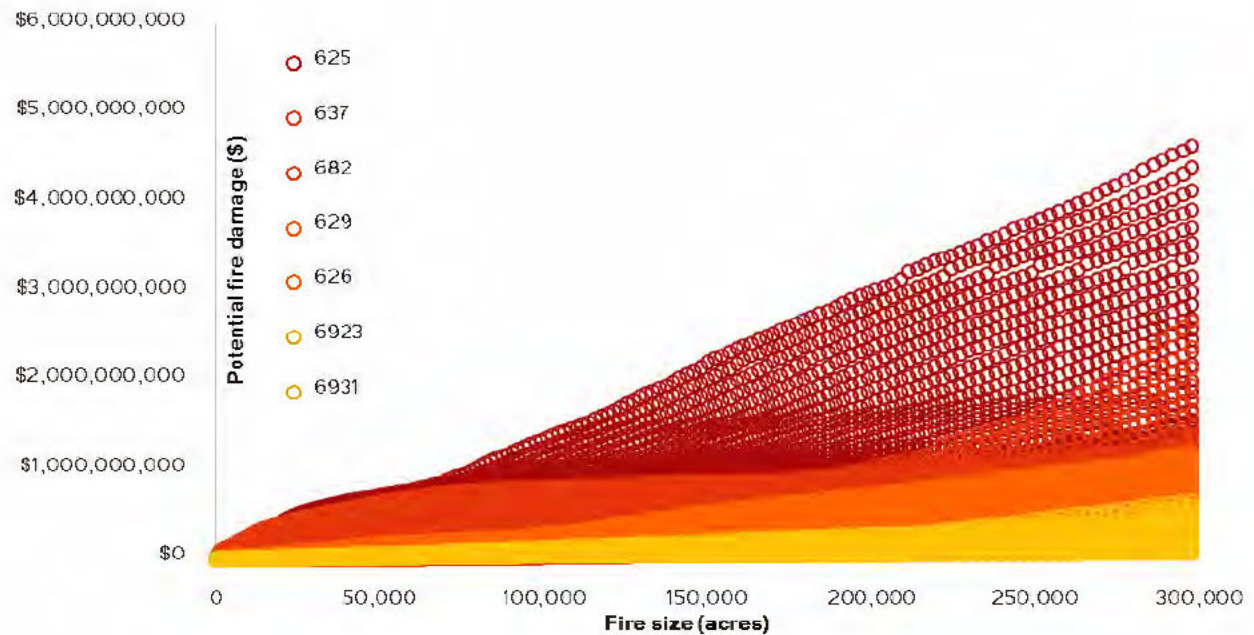


Figure 3. Potential property damage from fires ignited by transmission lines. Potential damages consist of the sum of building values within certain radii of ignition points along transmission lines. Building values are weighted by the fire threat assessed by Cal Fire for each building location.

The figure above shows the potential damage values for each ignition point, grouped by transmission line. The maximum potential damage from a very large fire is much higher for some lines (625, 637, 682) than others (6923, 6931). For example, the maximum potential damage for a fire ignited on line 625 is \$4.9 billion, while the maximum potential damage for a fire ignited

by line 6931 is only \$97 million. The western termini of lines 625 and 637 are located in densely-settled areas, the communities of Lakeside, Alpine, and Ramona, which explains the high potential for damage from fires ignited in those areas. However, even those lines pass through areas with much lower concentrations of property value where a fire might do much less damage. The minimum potential damage for a 300,000 acre fire on lines 637 and 625 is \$716 million and \$840 million, respectively – much lower than the potential for damage from a fire ignited on the western ends of the lines. For a 300,000 acre fire, total potential damages range from \$250 per acre to \$15,600 per acre. The total estimated liability for SDG&E for the 2007 fires (approximately \$11,600 per acre) lies near high end of this range, as do the per-acre insured loss estimates for three other major southern California fires, the Witch, Cedar, and Old fires (Insurance Information Institute, Inc, 2014).

The random variable *Location* allows the model to take into account variability in potential damages by location of ignition. We assume that every point on a transmission line is equally likely to ignite a fire, and hence assign to each point a probability of being the location of ignition:

$$Prob. \text{ of marker } k \text{ being ignition point on line } i = \frac{1}{\text{Total number of markers}_i} \quad (\text{eq. 11})$$

For each fire event (*Ignition* = 1), a random draw of *Location* is evaluated to determine the ignition point at which the fire starts. The potential damage table then provides the damage caused by that fire by indexing the ignition point and the expression of the *Fire Size* random variable.

5.1.4 Wildfire

The random variable *Wildfire* represents the incidence of naturally-occurring wildfires that damage transmission lines in a given year. It is modeled as a function of the annualized probability of a wildfire for each transmission line, based on the wildfire return interval (i.e. the average number of years between fires) for that line. The wildfire return interval for each section of line was estimated from historical observations using the Cal Fire wildfire perimeter dataset. The number of fires observed along the location of each segment of line was counted for the time period of 1950 - 2012. The length of line with different fire frequencies are shown in the figure below. Based on the historical record, certain lines (626 and 637) experience fires at a higher rate than others (6931, 629). It should be noted that this analysis is based solely on geospatial overlays of historical fire perimeters and the transmission line locations. The extent of damage to structures within the fire perimeters is not known. In other words, a transmission line could be within the perimeter of a historical fire but could escape damage.

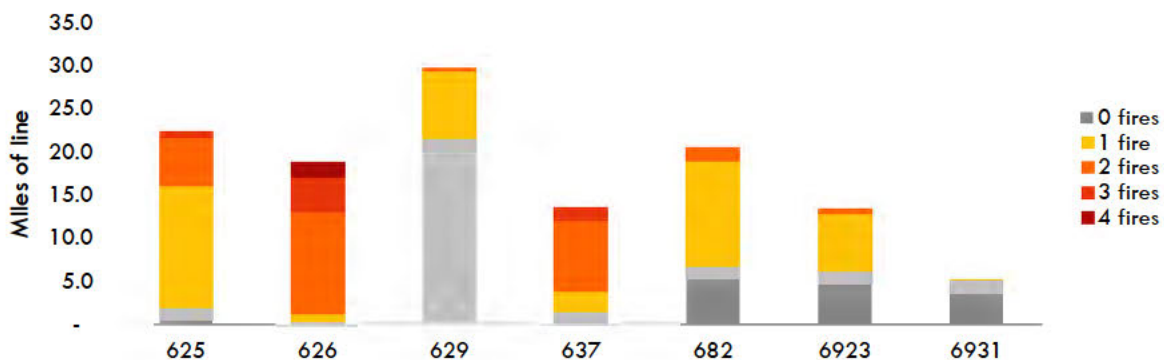


Figure 4. Fire frequency by length of transmission line, 1950 – 2012.

The historical incidence of fires along the transmission line routes was converted into a single annual probability of a wildfire occurring on the line. The probability of a wildfire is given by:

$$Wildfire_i = \sum_{j=0}^4 \left[\frac{Fires_j}{Years} * Length_j \right] / Total\ Length \quad (eq. 12)$$

where: *Wildfire* = the annual probability of a wildfire on line *i*;
Fires = the number of historic wildfires on segment *j* of line *i*;
Length = the length of segment *j*;
Years = the time period, in this case 62 years; and
Total length = the total length of line *i*.

The annualized probability of a wildfire for the entire line thus reflects the average number of fires experienced by the line over the time period (the basis of the fire return interval), weighted by length of line. For segments of line where no fires were observed over the time period, an annual fire probability of 1% was assumed, corresponding to a fire return interval of 100 years.

For each line, the occurrence of a wildfire is assumed to follow a Bernoulli distribution {0,1} with a probability equal to (1 - *Wildfire*). If a random draw from *Wildfire* exceeds this fire probability, a wildfire is assumed to affect that line. The table below shows the annual probability of wildfire for each of the line segments.

Table 6. Historic wildfires along transmission line routes, and estimated annual probability of wildfire for those lines.

Line	Length (miles)	Length, 0 fires	Length, 1 fire	Length, 2 fires	Length, 3 fires	Length, 4 fires	Weighted # of fires	Annual probability
625	22.4	2.0	14.0	5.7	0.7	-	1.23	2.07%
626	18.8	0.4	0.9	11.8	4.0	1.7	2.30	3.73%
629	29.7	21.5	7.8	0.4	-	-	0.29	1.19%
637	13.6	1.5	2.4	8.2	1.5	-	1.72	2.88%
682	20.4	6.6	12.2	1.6	-	-	0.75	1.54%
6923	13.4	6.2	6.5	0.6	-	-	0.58	1.40%
6931	5.2	5.2	0.1	-	-	-	0.01	1.01%

5.1.5 Wildfire size

The random variable *Wildfire size* represents the length of line affected by potential wildfires. It is modeled as a uniform random variable, with values drawn from empirical observations of the length of line that affected by historical fires. To develop this random variable, the individual perimeters of all fires that intersected the transmission lines were extracted from the Cal Fire dataset in ArcGIS. The transmission line routes experiences between 1 (TL 6931) and 12 (TL 625) separate fires over the time period of 1950 to 2012. Next, the length of line affected by each individual fire was calculated. Most fires affected only a small portion of the line routes (10% or less), although the most destructive fires affected 50% or more of the line length. Finally, each fire was ranked in ascending order of line affected to create a cumulative density function for the amount of line affected by each individual fire. The results are shown in the figure below.

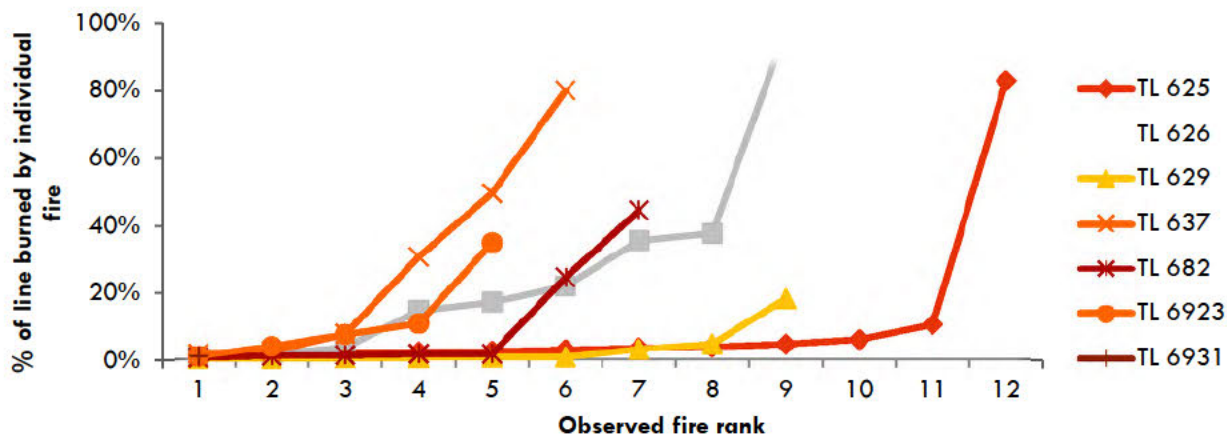


Figure 5. Portion of total line length affected by individual historical wildfire events.

The *Wildfire size* random variable draws from the empirical cumulative density function of wildfire size displayed above. *Wildfire size* is modeled as a uniform random variable such that, for each line, each level of observed fire damage is equally likely. Although this approach reflects the historical occurrence of fires on line routes, it does not capture the potential for future fires to damage greater portions of line than have past fires. For example, the model limits the maximum amount of damage sustained by line 6931 to 1% of the total length, reflecting the low incidence of wildfires in the past (i.e. the only fire to have affected that line route burned 1% of the total route). In reality, local fuel and weather conditions could lead to fires on that route burning much greater sections of line.

The company’s repair costs are estimated by multiplying the miles of transmission line damaged by wildfires by the repair rate. A flat repair rate of \$1.92 million per mile was used as a base. This value comes from SDG&E’s cost estimates for new 69 kV single-circuit transmission lines, published with CAISO. This value should be viewed as a worst-case scenario for repair costs. By comparison, after the 2003 Cedar Fire SDG&E repaired 45 miles of line at a cost of \$7 million, while after the 2007 firestorm the company repaired 56 miles at a cost of \$16 million (San Diego Gas & Electric Company, 2012). Those repairs cost approximately \$150,000 to \$300,000 per mile, much less than the cost of constructing new line as modeled in the Monte Carlo simulation.

6.0 Results

6.1 Monte Carlo Simulation Results

The Monte Carlo simulation was run with 10,000 iterations to estimate the range of potential losses that could result from fires, both system-wide and for each individual line. Total losses, including liability and repair costs, were calculated for each iteration. Liability was also calculated a second time for each iteration using the Fire Size distribution drawn from historical fires caused by powerlines; these results are denoted Liability – Extreme in the following discussion. Average Liability, Liability-Extreme, Repair costs, and Losses were calculated from the 10,000 iteration results, as was the standard deviation in those outputs.

The following figure shows a histogram of liability and liability-extreme results over the 10,000 simulation iterations. Iterations with liability or liability-extreme of \$1M or less are not shown on the diagram, but the vast majority of iterations had costs in this range: 92% of runs had liability less than \$1M, and 86% of runs had liability-extreme of less than \$1M. The histogram shows a

very long right-hand tail of extremely costly events with very low probabilities of occurring (e.g. only 10 iterations out of 10,000 had liability-extreme of \$1B or more).

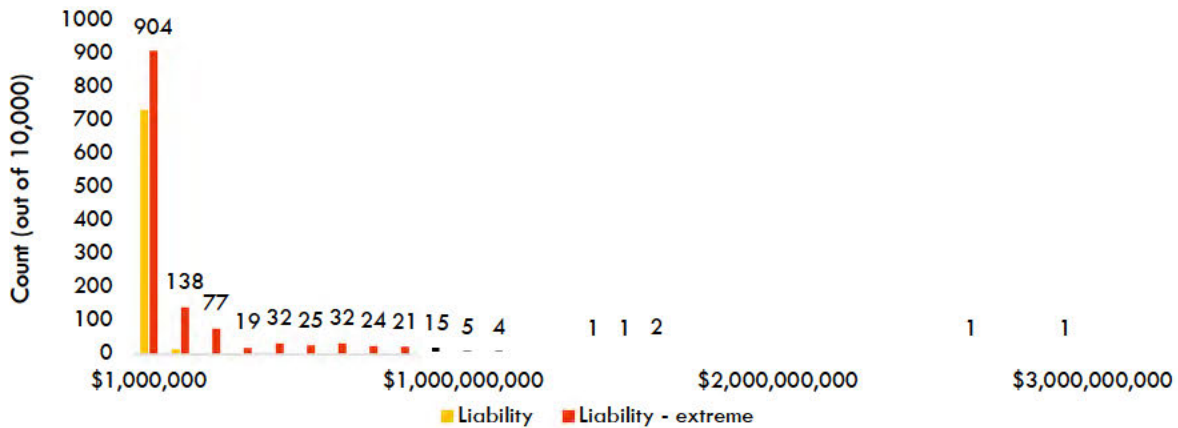


Figure 6. Histogram of liability and liability-extreme over 10,000 iteration runs. Results lower than \$1M were excluded for display purposes. 86% of runs had liability-extreme less than \$1M; 92% of runs had liability less than \$1M. Labels indicate the count of liability-extreme results in each range.

One useful tool for risk analysis is the exceedance probability curve, which shows the reciprocal of the cumulative probability distribution function (i.e. 1 – CDF) of losses (Grossi & Kunreither, Catastrophe Modeling: A New Approach to Managing Risk, 2005). Such exceedance probability curves portraying the annual probability of exceeding certain levels of liability-extreme, based on the results of the Monte Carlo simulation, are shown below. The results suggest an 80% chance of zero liability in a year, a 1% chance of liability greater than \$500M, a 0.1% chance of liability greater than \$1B, and a 0.02% chance of liability greater than \$1.5B in a year. In other words, the most damaging, worst-case fire events have a very low probability of occurrence.

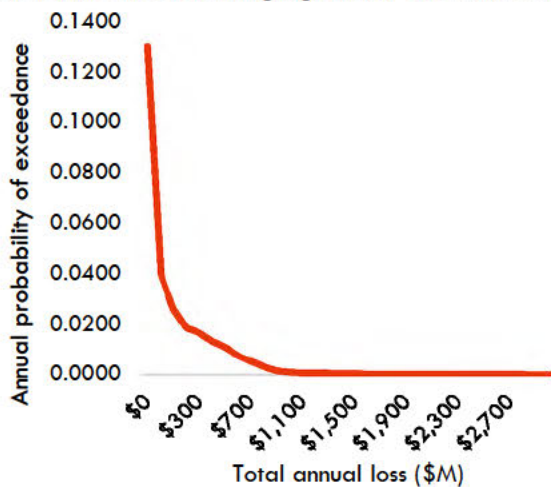


Figure 7. Exceedance probability curve for total liability-extreme in a year.

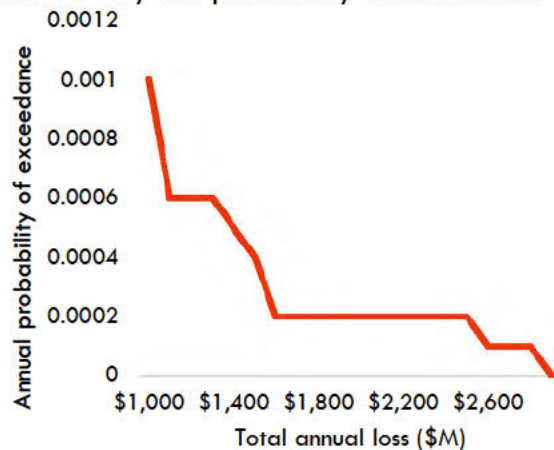


Figure 8. Exceedance probability curve for total liability-extreme in a year, focused on events greater than \$1B

The table below shows the annual liability, liability-extreme, repair cost, and losses. In this case, losses were calculated by summing the liability-extreme and repair cost for a given iteration. From the table, it is clear that average liability and repair costs are dwarfed by the average liability-extreme costs. Average liability and repair are relatively minor (\$2.5 M / year) given the scale of the proposed retrofit investments and SDG&E’s annual income. The liability-extreme costs are much higher than liability or repair costs, reflecting the fact that the fire size distribution

of powerline-related fires leads to much greater fire sizes and subsequent property damage. The other major finding from the table is the extreme variability in the results: the average values are dwarfed by the standard deviation (high coefficients of variation). This finding further highlights the role that very low probability, high-cost events have in driving potential losses.

Table 7. Average costs (liability, liability-extreme, repair, and losses) and standard deviation of costs.

	Liability	Liability - Extreme	Repair	Losses
Mean (\$M)	1.7	19.1	0.8	19.9
Std. Dev. (\$M)	20.1	106.3	3.7	106.5
Maximum (\$M)	807.7	2,975.0	43.7	2,975

Losses were calculated for each transmission line in addition to system-wide losses. The figures below show the average losses, standard deviation of losses, and maximum losses for each tie line. Losses were calculated by summing liability-extreme and repair costs. The results show considerable variability: the standard deviations in losses are much greater than the average losses and are in turn dwarfed by the maximum observed losses. All three measures vary greatly by transmission line, with the greatest losses arising from lines 625 and 637. The losses on other lines, especially 6931 and 6923, are relatively small, reflecting the low concentration of property value in proximity to these lines.

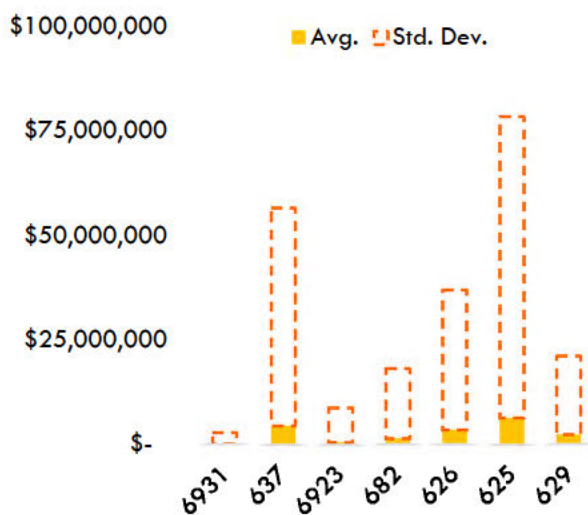


Figure 9. Average losses per line and standard deviation of losses per line. Losses are the sum of liability-extreme and repair costs.

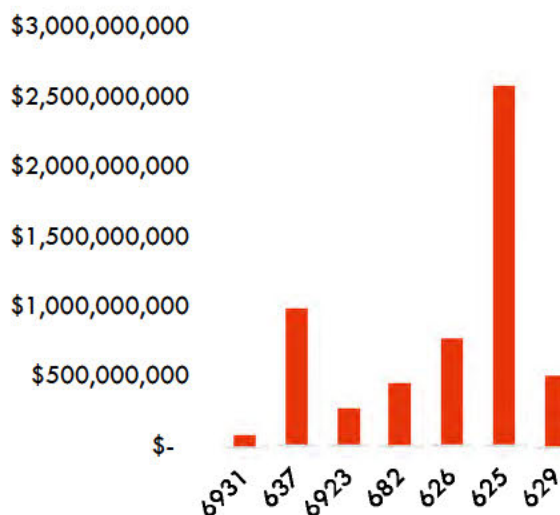


Figure 10. Maximum losses per line resulting from the Monte Carlo simulation. Losses are the sum of liability-extreme and repair costs.

The remainder of this analysis will focus only on total losses produced by the liability-extreme results, since these losses are generally large enough to warrant further analysis of retrofit cost-effectiveness.

6.2 Fire Cost Minimization Curve Results

The annual losses and variability in losses for each line segment were used to evaluate the cost-effectiveness of the retrofit projects using the fire cost minimization curve framework. First, annual expected losses were converted into present value risk-weighted losses using equations 5 and 6. For the initial analysis presented below, a risk premium of 10% was used to weight the variability in potential losses ($\alpha = 0.1$). Next, the retrofits were assumed to reduce the present value of risk-weighted losses by 75% ($\beta = 0.75$). The resulting reduced losses were then added to the costs of

each retrofit project. The difference between the risk-weighted loss and the sum of reduced loss and retrofit cost is the net benefit of the project.

The figure below shows the net benefit of the retrofit projects with a risk premium of 10% and retrofit effectiveness of 75%. Given these assumptions, retrofitting lines 625 and 637 has a positive net benefit. For the other lines, the retrofit costs exceed the expected losses, so retrofitting has a negative net benefit. For example, the costs of retrofitting line 629 are approximately 3 times larger than the present value of all potential losses on that line over 30 years, so the retrofit has a negative net benefit of more than \$100 million.

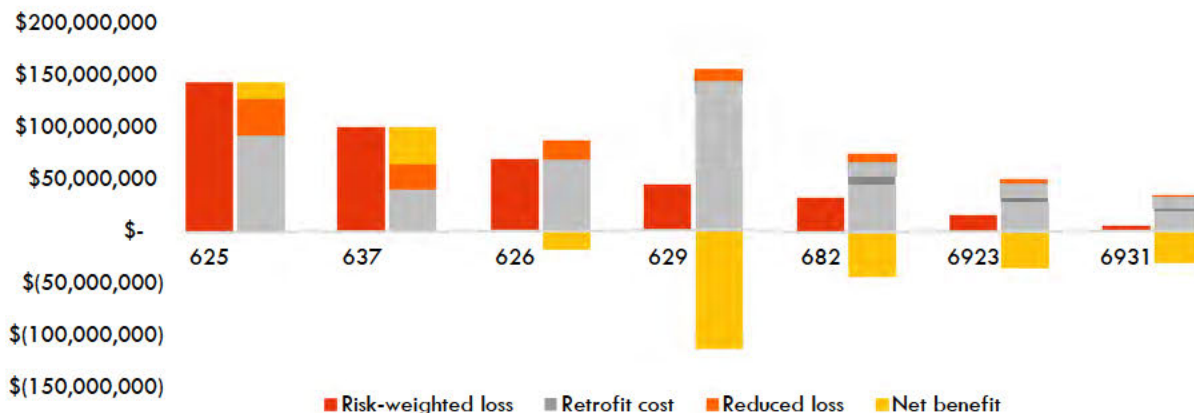


Figure 11. Net benefit of retrofit projects. Loss w/o retrofits represents the present value of risk-weighted loss with $\alpha = 0.1$. Loss w/ retrofit represents the reduced loss with $\beta = 0.75$. The net benefit is the change in present value associated with building the retrofit.

The components of the net benefit analysis are added on a cumulative basis to create the fire cost minimization curve, shown in the figure below.

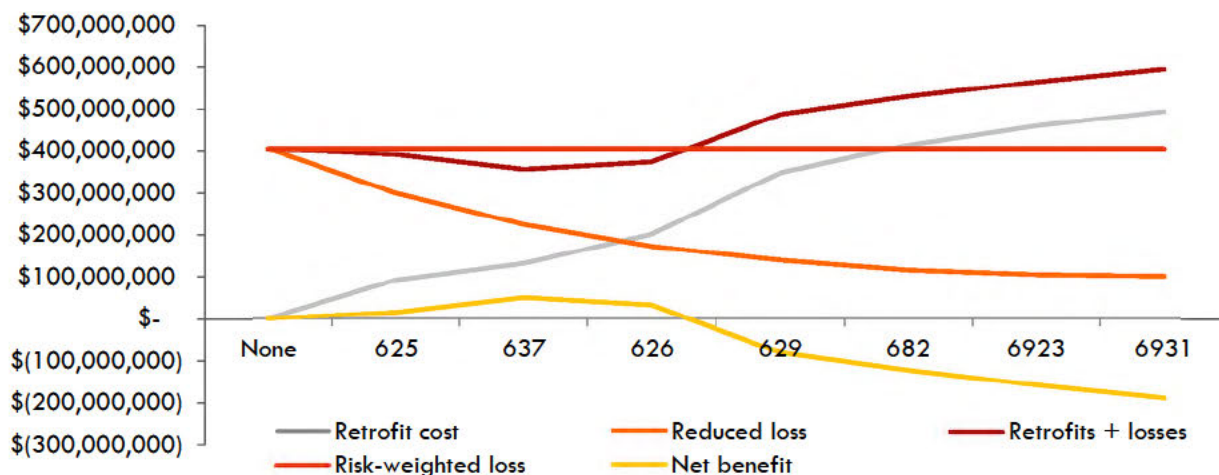


Figure 12. Fire cost minimization curve. The optimal level of fire protection is the minimum of the sum of retrofit costs and reduced losses (retrofits + losses, dark red). Under these assumptions ($\alpha = 0.1$, $\beta = 0.75$), the optimal level of protection is to retrofit lines 625 and 637; any further retrofit projects increase total costs.

The figure shows how system-wide costs (“Retrofits + losses”) decline with the first two retrofit projects on lines 625 and 637, but then begin to rise with each subsequent project. The cost-minimizing level of protection (or the maximum net benefit) occurs with the retrofit of these two

lines only. For transmission lines 629 and beyond, retrofits actually increase total system costs beyond the base level of risk-weighted losses with no retrofits. In other words, the retrofits are more costly than the risk-adjusted expectation of losses from fires themselves.

Assumptions about the effectiveness of fire-hardening retrofits and the risk premium of decision-makers are extremely influential in determining the cost-effectiveness of various fire-hardening projects. Assuming that retrofits reduce losses by 100% makes those retrofits more valuable than if they are assumed to reduce losses by only 50%. Similarly, assuming a higher risk premium will generally make the retrofits more attractive investments, since the average potential loss is much smaller than the variability in potential losses. The following figure shows the positive net benefit frontiers for each of the transmission lines. These frontiers show the minimum combinations of retrofit effectiveness and risk premium that are required to achieve a positive net benefit. For example, at a 50% effectiveness and 50% risk premium, lines 637, 625, and 626 have positive net benefits.

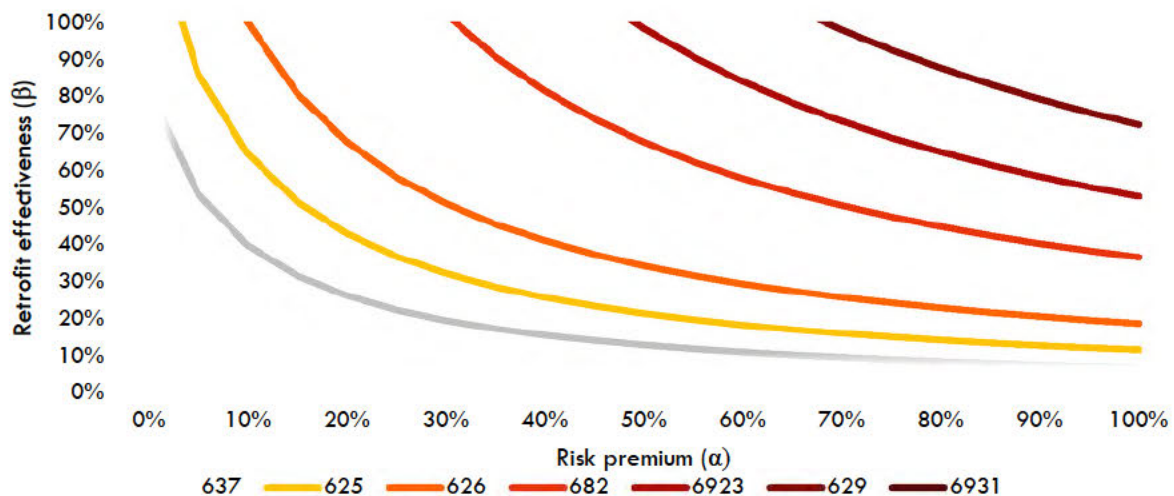


Figure 13. Positive net benefit frontiers for each transmission line. Each curve represents combinations of effectiveness and risk premium assumptions for which the retrofit has a net benefit of zero. The retrofit has a positive net benefit for all points above the curve. Line 6931 does not have a positive net benefit for any combination of risk premium and effectiveness.

7.0 Conclusions

This section summarizes the key findings of the analysis, describes potential refinements to the model and analytical approach, and suggests implications of the results for policymakers at the company and elsewhere.

7.1 Model findings

Five key insights from the analysis are discussed below.

1. **Wildfire risks are spatially dependent.** The geospatial analysis undertaken as part of this study showed clear spatial patterns in the distribution of both fire history and property values. In general, the greatest fire frequency is found in the Cuyamaca Mountains and Cleveland National Forest in the central portion of the County, with additional high-frequency pockets in the northwest on Camp Pendleton and southwest near Jamul. The transmission lines in these areas, notably 625, 626, and 637, experience frequent wildfires over most of their routes. The remaining lines in the study experience wildfire less frequently and only along isolated sections of their routes. The distribution of risk-

weighted property value also follow broad patterns, with the greatest concentrations of potential damage located in the communities to the west of Cleveland National Forest such as Alpine, Ramona, and Lakeside. The lines in closest proximity to those communities, especially 625 and 637, create a much greater exposure to liability than lines near less populated areas.

2. **Risk exposure is driven by extreme events.** The distribution of annual losses generated by the Monte Carlo simulation has a very long right-hand tail of very low probability, very high impact events. For 80% of the model iterations, total losses were zero, implying no ignitions, no land burned, and no wildfires that damage lines. In iterations in which fires cause losses for the company, losses are generally minor compared to the company's annual revenues or to its liability for the 2007 fires. Only in a small number of cases (0.1%) do total losses exceed \$1 billion. The discussion of the cost-effectiveness of the retrofit projects should reflect the importance of these low-probability, high-loss events.
3. **Liability exposure dwarfs repair costs.** Liability costs, not repair costs, were the main drivers of total losses. The maximum system-wide liability in a single year observed over 10,000 simulation runs was \$2.97 billion, whereas the maximum system-wide repair cost in a single year was \$44 million. Similarly, the expected value of liability costs was \$19.2 million, versus an expected value of repair costs \$0.79 million, over the 10,000 iterations. This result broadly reflects the financial impact to SDG&E of the 2007 fires, in which liability (an estimated \$2.4 billion to settle all claims) dwarfed the costs of repairing lines (\$16 million to repair 56 miles of line) by orders of magnitude. Although the costs of repairing fire-damaged lines are mentioned in Applications to Construct as justifications for retrofits, the results of this analysis indicate that expected repair costs alone are not sufficient grounds for retrofitting the lines.
4. **The fire size distribution matters.** As discussed in Section 5.1.2, fires ignited by power lines appear to burn larger areas than fires ignited by other causes. The analysis investigated this dynamic by comparing liability generated from draws from the "all fires" size distribution with liability-extreme generated from draws from the "power line fires" size distribution. In general, the losses resulting from the "all fires" distribution are not large enough to justify retrofits: the expected annual value of losses is only \$1.7 million, with a standard deviation of \$20 million and maximum observed loss of \$808 million. Retrofits can be justified under certain risk tolerance and effectiveness assumptions if we expect the fires ignited by the transmission lines to follow the power line fire size distribution, i.e. to attain much greater sizes. This finding could provide justification for retrofits that address wind-related line failures (i.e. heavier conductors, wider conductor spacing, etc.) due to the nexus between wind speeds, line failures, and large fires.
5. **Risk tolerance and effectiveness assumptions determine net benefits.** The net benefit of retrofitting a given line depends on assumptions about risk tolerance and retrofit effectiveness. For a risk-neutral investor (i.e. risk premium $\alpha = 0$), only the retrofit of line 637 could be justified, and only then under assuming that the retrofit reduces losses by 80% or more. As the risk premium and assumed effectiveness increase, more retrofit projects have a positive net benefit. If the actual risk premium used by SDG&E decision-makers were known, or the actual effectiveness of the retrofits in reducing losses, this framework could be used to determine which retrofits have positive net benefits. Even without these values, however, the analysis provides a framework for prioritizing retrofit projects from most to least cost effective, with the most effective projects requiring the lowest risk premiums and effectiveness assumptions to be justified.

7.2 Potential refinements

This study examined the risk of wildfires using a probabilistic approach based largely on past fires. The decision to use this probabilistic approach was driven largely by the availability of data in the public domain with which to conduct the analysis. With additional time and data, the analysis could be expanded and refined to more accurately model the dynamics at play. Three potential refinements are discussed below.

1. **Multi-year time horizon.** The Monte Carlo Simulation is formulated to provide the wildfire-related losses in a single year, so the probability distributions of the random variables are the same for each model iteration. This formulation does not capture the change in fire risk over time. For example, the growth of chaparral vegetation might increase the probability of a fire over time as fuel loads build up on the landscape. Explicitly modeling a multi-year period could capture this dynamic. Similarly, the probability of future fires is conditional on past events due to changes in fuel loads and vegetative cover following a fire. If a fire burns all available fuels, fire risk would be reduced below the pre-event baseline for several subsequent years while vegetation regrows. Conversely, if a fire leads to the replacement of native chaparral vegetation with invasive grasses, the fire risk for that area could be elevated above the pre-event baseline for future years. In addition, human settlement of the wildland-urban interface is expected to continue in the future, which will change the concentrations of property values in proximity to the transmission lines. Expanding the analysis to explicitly model a multi-year time horizon that extends through and beyond the useful life of the retrofits could allow for better representation of these changing risks and their impact on potential losses over the project life. A multi-year analysis could also provide a framework for examining the potential impacts of climate change on fire risk.
2. **Geophysical fire spread models.** The model does not consider local terrain or vegetation when evaluating the area burned by a fire ignited by power lines. Instead, the fire is represented as a circle centered on a marker point along the transmission line, and the amount of area burned is determined by a draw from the fire size distribution. In reality, the local terrain and fuel conditions at each potential ignition point would influence how large a fire grows and what specific locations it burns. For example, the Witch Fire burned westward and southward from its initial ignition point due to winds, topography (it burned downslope and down canyons), and fuel availability (Cal Fire After Action). A fire spread model could consider terrain and vegetation cover in determining where a fire is likely to burn after initial ignition, how large a size it is likely to attain, and which properties it is likely to threaten. Incorporating such a model into the analysis would provide a more detailed and realistic estimation of the potential liability for fires ignited along different portions of the transmission lines. It might also reveal particular segments of the line with very high fire risk that would benefit from targeted mitigation actions, such as vegetation management, that reduce risk without requiring retrofits.
3. **Additional fire costs.** This study only considered damage to property in evaluating the potential financial losses from fires ignited by transmission lines. SDG&E's public 10-K filings do not disclose the extent to which non-property costs contribute to the company's overall liability and legal defense costs related to the 2007 fires, so these costs were not included in the model. In reality, the social costs of wildfires include many more components beyond structure damage. Possible costs that could be included in the analysis include firefighting expenses, liability for human injuries or deaths, evacuation and disaster response costs, lost economic output, costs of electrical service disruption, costs of ecological damage, and fines and penalties. Adding estimates of these costs to the model

would provide a more realistic estimate of the social costs of fires beyond the liability faced by the company. Potential ecological damages from wildfire (e.g. sedimentation in burned watersheds, replacement of native vegetation with invasive species, loss of critical habitat, etc.) in particular could be added to geospatial fire spread modeling to improve understanding of the spatial variability in fire costs. Adding these costs to the model would allow decision-makers to consider costs borne by society, not the company, which might influence the evaluation of the retrofits' benefit to ratepayers.

7.3 Policy implications

The confluence of fire-prone chaparral vegetation, widespread settlement in the wildland-urban interface, and intense Santa Ana winds creates a significant wildfire hazard in San Diego County. For this reason alone, wildfire risks should have particular salience for managers at SDG&E. The company's experiences in the aftermath of the 2007 fires, including major legal costs, scrutiny by regulators, and negative publicity, have spurred SDG&E to make wildfire risk mitigation a major priority of the company (San Diego Gas & Electric Co., July 3, 2013). The 2007 fires also spurred the CPUC to initiate a major rulemaking to examine and revise its safety regulations related to wildfires, Order Instituting Rulemaking I.08-11-005. Both regulator and regulated entity clearly have an interest in reducing wildfire risk for the benefit of the public and the company.

Quantification of wildfire risks and the risk reduction potential of mitigation projects could help both regulators and SDG&E evaluate protection options. As this study has shown, different transmission lines contribute differently to the company's overall risk exposure. Decision-makers therefore need information on those risks in order to prioritize between different fire-hardening projects and between fire-hardening and other fire mitigation options. From the regulator's perspective, requiring risk quantification data and analysis in applications for project approval could help ensure that investments in fire-hardening are cost-effective in reducing fire risk. From the company's perspective, quantification could help target investments at the elements of its infrastructure with the greatest risk of fire.

A related issue is the need for discussion about the level of residual risk acceptable to the company, the regulator, and the public. This analysis shows how the net benefit of retrofits is sensitive to the risk premium used to estimate the utility function for losses. However, different decision-makers might weight risks differently (for example, by placing greater weight on the maximum possible loss or a different moment from the loss distribution). Because of these different risk weightings, different parties could look at the same set of mitigation projects and arrive at divergent conclusions on the projects' benefits. The discussion of project benefits in a regulatory context could benefit from dialogue on the different risk tolerances of the public and company.

Finally, policymakers should consider the social equity implications of fire protection projects. Utilities have an obligation to serve customers in high-hazard areas, which exposes their infrastructure to hazards, but the costs of mitigating those risks or restoring service post-disaster are generally borne by the utilities' broader customer base. An alternative approach might include efforts to apportion the costs of fire protection to the customers whose choice to live in high fire threat areas drives the company's risk exposure. This approach might take the form of a fire risk surcharge added to monthly bills for rural customers. Rather than spreading the costs of fire risk (both protection measures and realized losses) across all customers in the service territory, including those living in low-hazard areas, this approach would push those costs onto customers whose choice to live in high-hazard areas contributes most to those risks.

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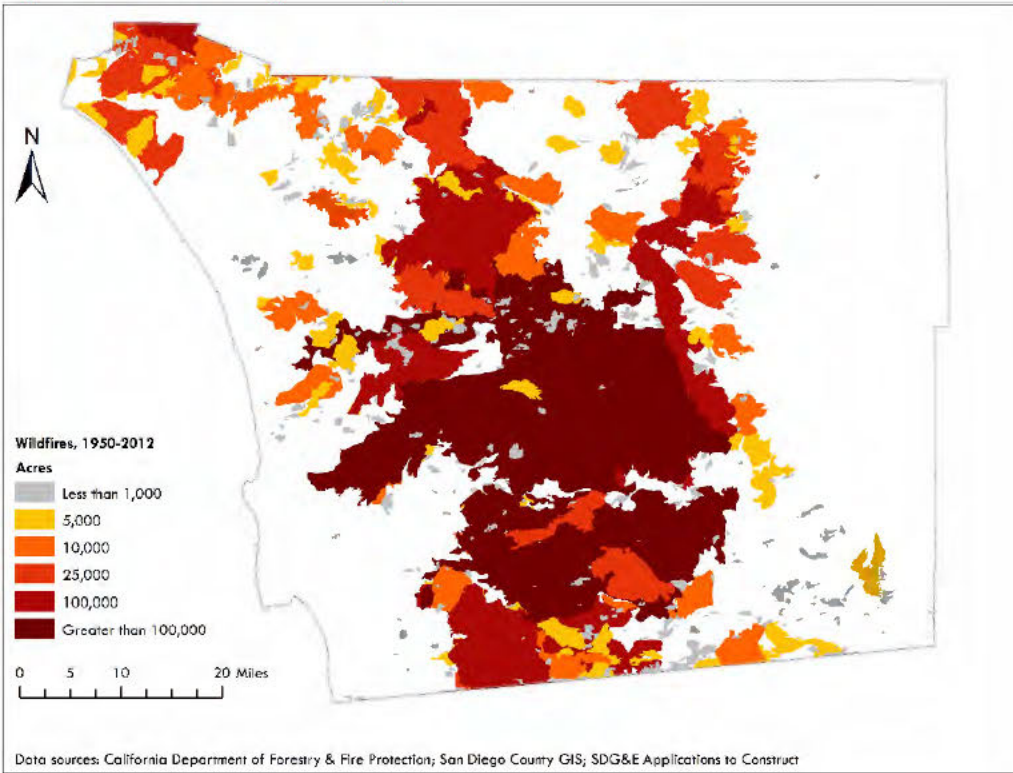
San Diego Gas & Electric Company. "Proposed 2013 SDG&E Generator Interconnection Unit Cost Guide." 10 September 2013. CAISO Participating transmission owner per unit costs. Accessed 24 January 2014.

<http://www.caiso.com/informed/Pages/StakeholderProcesses/ParticipatingTransmissionOwnerPerUnitCosts.aspx>

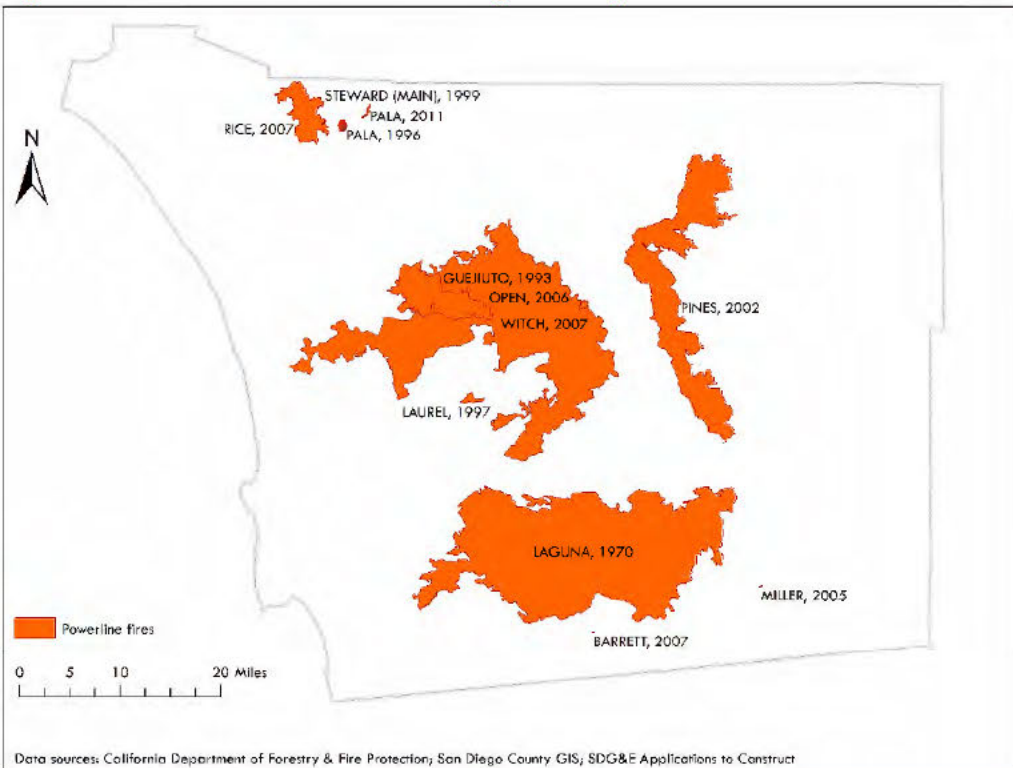
Southern California Edison. "2013 Proposed SCE Generator Interconnection Unit Cost Guide." 10 September 2013. CAISO Participating transmission owner per unit costs. Accessed 24 January 2014. <http://www.caiso.com/informed/Pages/StakeholderProcesses/ParticipatingTransmissionOwnerPerUnitCosts.aspx>

10.0 Appendix

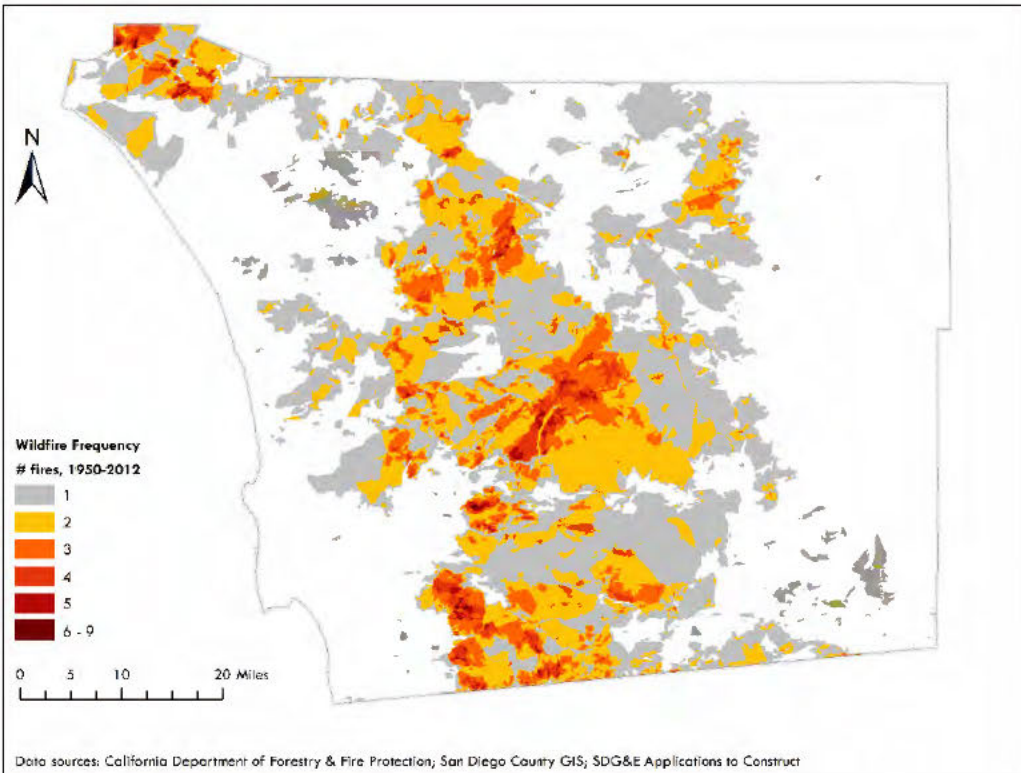
Map 1: Fires in San Diego County, 1950 - 2012



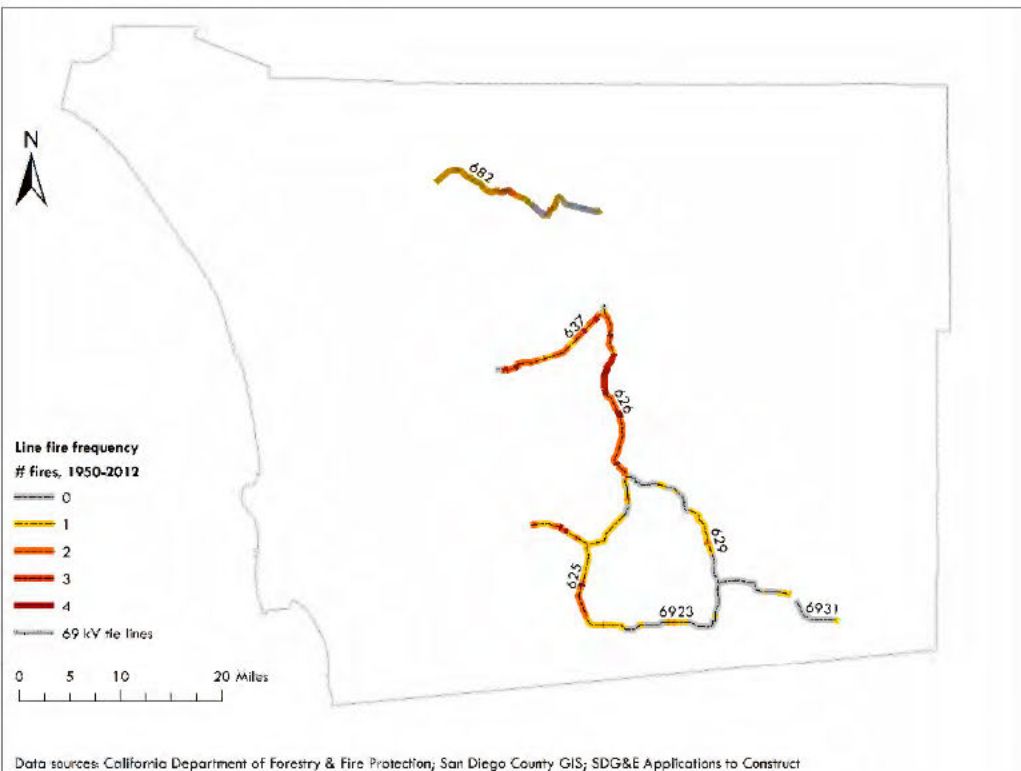
Map 2: Power line related fires in San Diego County, 1950 - 2012



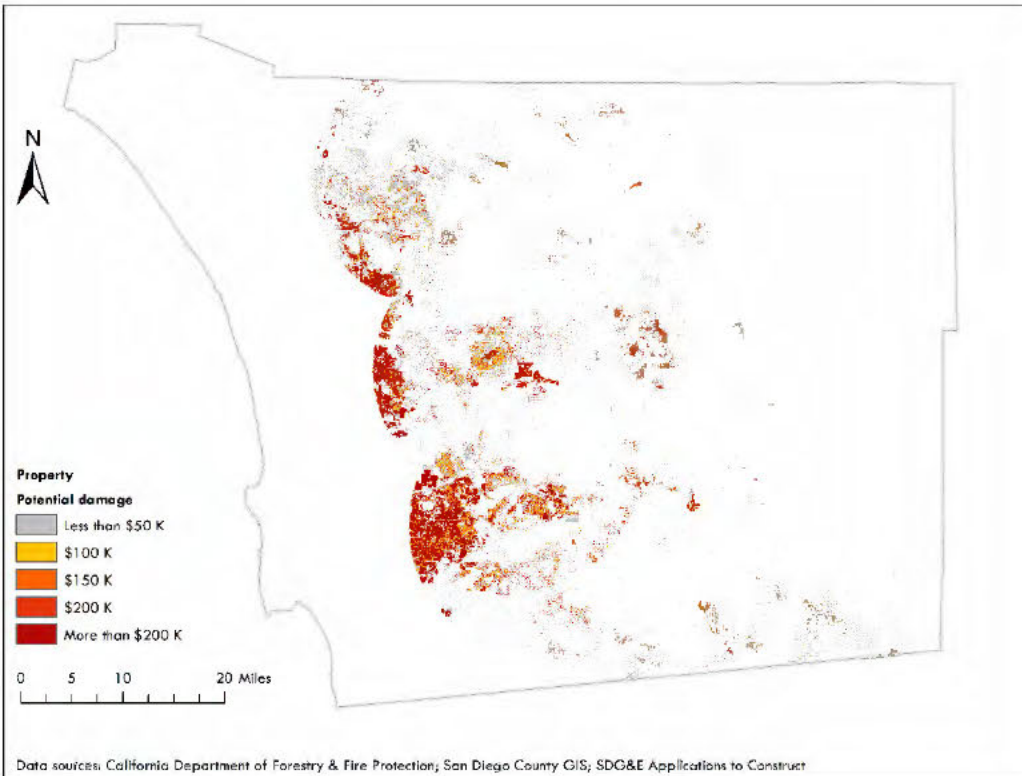
Map 3: Fire frequency in San Diego County



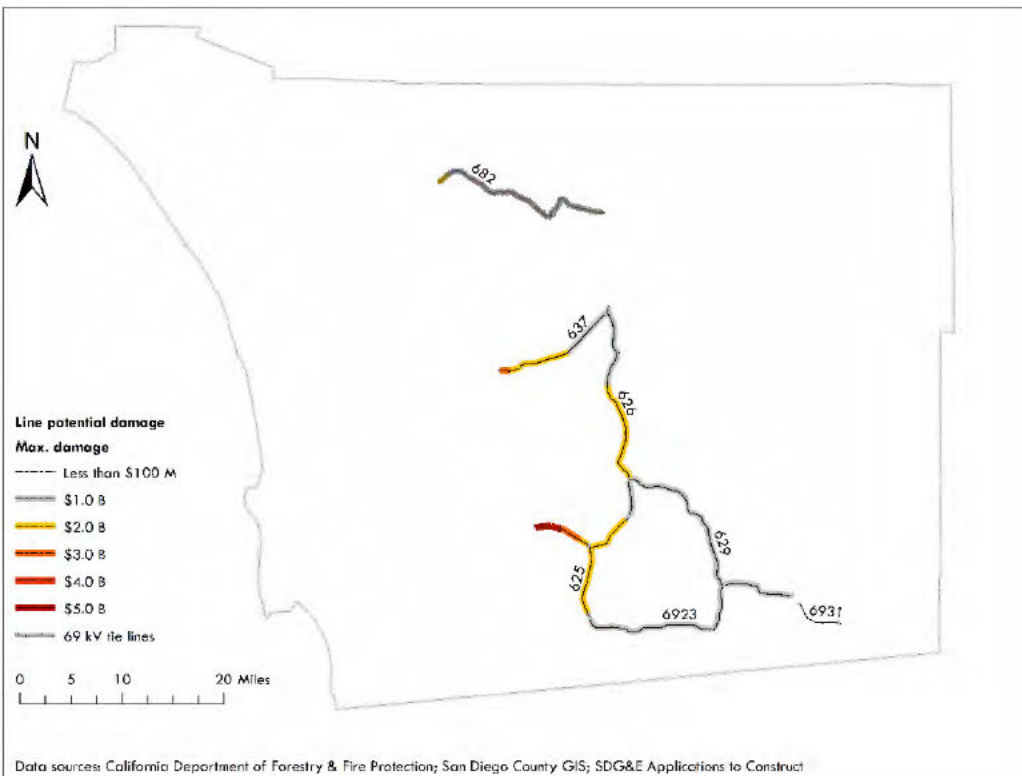
Map 4: Fire frequency on 69-kV transmission lines



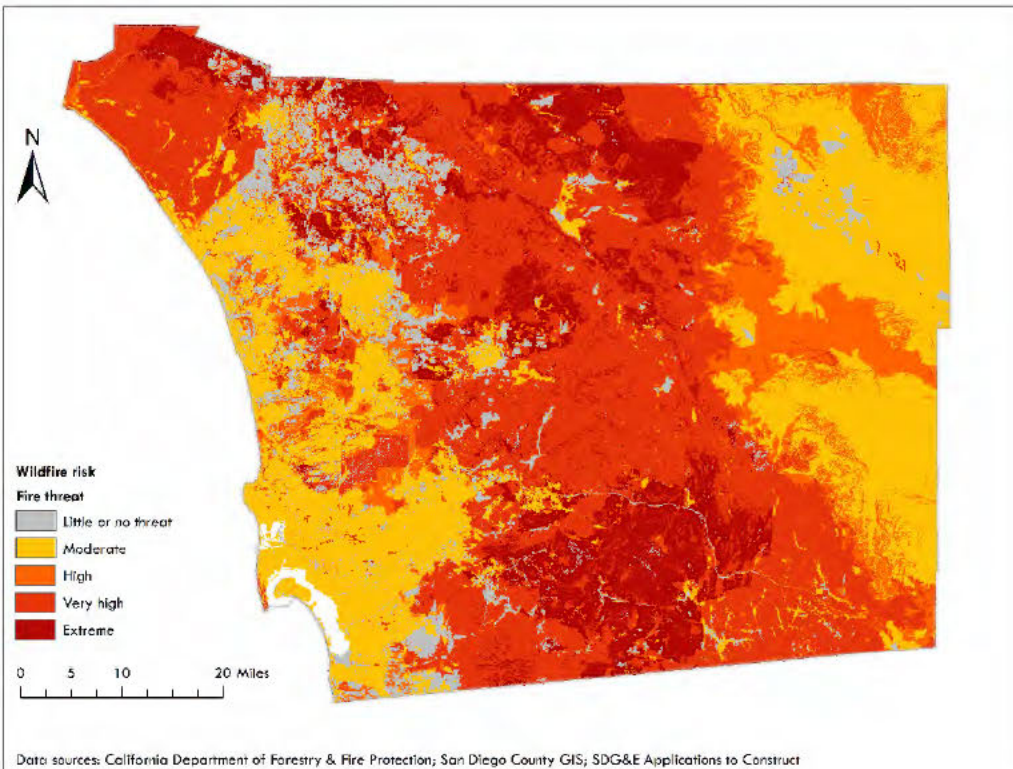
Map 5: Potential property damage within 20 km of fire-hardening transmission lines



Map 6: Maximum potential damage for fires ignited by 69-kV transmission lines

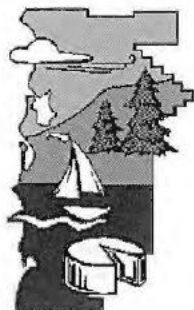


Map 7: Fire threat assessed by Cal Fire



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Tillamook County



DEPARTMENT OF COMMUNITY DEVELOPMENT
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**CONSOLIDATED REVIEW OF CONDITIONAL USE REQUEST (851-17-000448-PLNG-01),
FLOODWAY/ESTUARY/FLOODPLAIN DEVELOPMENT PERMIT REQUEST(851-17-000448-PLNG),
and ADMINISTRATIVE REVIEW REQUEST (851-17-000448-PLNG-02):
TILLAMOOK-OCEANSIDE 115kV TRANSMISSION LINE**

STAFF REPORT
Date: February 1, 2018

(This is not Building or Placement Permit Approval)

Report Prepared by: Hilary Foote, Planner and Sarah Absher, CFM, Director

I. GENERAL INFORMATION:

- Request:** The Consolidated Review of Conditional Use (851-17-000448-PLNG-01), Floodway/Estuary/Floodplain Development Permit (851-17-000448-PLNG), and Administrative Review (851-17-000448-PLNG-02) requests for the proposed Tillamook-Oceanside 115kV Transmission Line Project (Exhibit B).
- Location:** The proposed project spans multiple properties within Township 1 South, Range 9 West and Township 1 South, Range 10 West of the Willamette Meridian, Tillamook County, Oregon. Exhibit A to the Staff Report contains a map and a list of impacted properties.
- Zone:** Segments of the proposed transmission line project are located within the Farm (F-1) zone, the Forest (F) zone, the Estuary Natural (EN) zone, the Estuary Conservation (EC1) zone, the Rural Residential 2-Acre (RR-2) zone and the Rural Commercial (RC) zone.
- Applicant:** The Tillamook People’s Utility District,
- Property Owner:** Exhibit A to the Staff Report contains a map and a list of impacted properties and ownership information.

Proposal Description: The Tillamook Electric Utility District (Applicant) is proposing to develop approximately 354 miles of new 115 kV High Voltage (HV) above ground transmission lines between the Bonneville River Administration Tillamook Substation located on the east side of the City of Tillamook Oregon and the Goodland new substation (Decatur Substation) near the community of Decatur (FBIID). Applicant has provided the detailed submittal which includes detailed description of the proposed use and development during construction and operations phases, a variety of maps and supports including a farm and forest impact assessment, a floodway, Wetlands Analysis, ACOE Region 4 Hazard Technical Memorandum, and a Biological Resources Report (FBIID115).

This project spans several underlying zones (Farm (F1)) zone, the Forest (F) zone, the Estuary/Natural (EN) zone, the Estuary/Conservation (EC) zone, the Rural Residential Zone (RR-2) zone and the Rural Commercial (RC) zone) as well as several overlay zones (Flood Hazard Overlay, Agricultural Overlay, Forest/Wetlands Overlay). The proposed use is allowed under conditions of a conditional use permit depending on what zones certain segments of the proposed transmission line are located in. Applicant has requested a conditional review of the Conditional Use Request, Administrative Review and Floodway/Estuary/Tributary Development Permit applications required to support this proposed development. The criteria and standards for each of these reviews are addressed below in this staff report.

III. APPLICABLE CODES AND OVERLAYS WITHIN THE SUBJECT AREA:

The criteria used is governed through the following sections of the Tillamook County Land Use Ordinance (TCUO): The suitability of the proposed use, in light of the criteria is discussed in Section III of this report:

III.C. SECTION 30000, ARTICLE 17, TILLAMOOK COUNTY ORDINANCE 1740048-1150-01

- AA. TCUO Section 31021: Rural Commercial (RC) Zone?
- BB. TCUO Section 31001: Rural Residential Zone (RR-2) Zone?
- CC. TCUO Section 1000: Ordinance Interpretations?
- DD. TCUO Section 31022: Estuary/Natural (EN) Zone?
- EE. TCUO Section 31020: Review of Regulatory Activities?
- FF. TCUO Section 31440: Estuary/Development Standards?
- GG. TCUO Section 31300: Flood Hazard Overlay (FH) Zone?
- HH. TCUO Section 31445: Agricultural Overlay?
- II. TCUO Section 31350: Forest/Wetlands Overlay?
- JJ. TCUO Section 4130: Development Requirements for Geologic Hazard Areas?
- KK. TCUO Section 4140: Requirements for Protection of Water Quality and Stream Bank Stabilization?
- LL. TCUO Section 4100: Protection of Archeological Sites?
- NW. TCUO Section 31041: Forest (F) Zone?
- NN. TCUO Article 3W1: Conditional Use Procedures and Criteria?

III.V. SECTION 30000, ARTICLE 17, TILLAMOOK COUNTY ORDINANCE 1740048-1150-02

- AA. TCUO Section 31300: Rural Residential (RR) Zone?

III.W. SECTION 30000, ARTICLE 17, TILLAMOOK COUNTY ORDINANCE 1740048-1150-03

- AA. TCUO Section 31022: Farm (F1) Zone?
- BB. TCUO Section 1000: Ordinance Interpretations?
- CC. TCUO Section 31001: Estuary/Conservation (EC) Zone?
- DD. TCUO Section 31020: Review of Regulatory Activities?
- FF. TCUO Section 31440: Estuary/Development Standards?
- FF. TCUO Section 31300: Flood Hazard Overlay (FH) Zone?

- (G). TCUDCO Section 2045; "Structural (Overly)"
- (H). TCUDCO Section 2050; "Restrictive Wetlands (Overly)"
- (I). TCUDCO Section 4114; "Requirements for Fontation of Water Quality and Streambank Rehabilitation"
- (J). TCUDCO Section 4100; "Transition of Wetland Designates"

III. APPLICABLE TCUDCO REGULATIONS UNDER CODES 18.27.000 AND 18.27.010:

AA. TCUDCO Section 2020; "Bural Commercial (B-C) Zone"

TCUDCO Section 2020(1) PURPOSE: *The purpose of this B-C zone is to permit a moderate level of commercial activities to co-exist with the commercial uses of adjacent uses, and to encourage commercial uses in the B-C zone to provide goods and services that would be supplied by mass transit facilities in the area, until they have a relatively few impacts on nearby drinking waters....*

TCUDCO Section 2020(2)(a): *Uses Permitted (Conditionally):* *Use of utility, substations and power transmission lines as a use is permitted conditionally in the Bural Commercial zone subject to the provisions of Article IV and the requirements of all applicable application regulations contained in ordinance.*

Findings: *Applicant is proposing to develop a 115KV transmission line (Exhibit 2). Staff finds that the proposed use is allowed conditionally in the Bural Commercial zone subject to satisfaction of the conditional use review criteria set forth in TCUDCO Article 6 which are addressed below and conformance with applicable development standards.*

TCUDCO Section 2020(4) STANDARDS: *Standards and development in the B-C zone shall conform with the following standards, unless more restrictive application regulations apply:*

-
- (f) *Minimum yards for any structure or facility or paved lot adjacent to a residential zone shall be 50 feet on the side adjacent to the residential zone, and 100 feet on the front yard. No rear yard is required.*
-

Findings: *Applicant states that two poles will be located in the Bural Commercial zone and both locations comply with the required setback (Exhibit 2). Staff finds that the proposed pole locations conform with the development standards of the zone.*

BB. TCUDCO Section 2100; "Bural Residential 2A (B-2A) Zone"

TCUDCO Section 2100(1) PURPOSE: *The purpose of the B-2A zone is to provide for the creation and use of off-multiple residential lots. Land uses suitable for Bural Residential use have limited value for off farm or forest use; it is physically applicable following standards and uses of off farm or forest use; it can be utilized for residential purposes with a transfer of the use; off-sun and progress zones and properties for resource protection purposes....*

TCUDCO Section 2100(2)(a): *Uses Permitted (Conditionally):* *Use of utility facilities, including, substations and transmission lines as a use is permitted conditionally in the Bural Commercial zone subject to the provisions of Article IV and the requirements of all applicable application regulations contained in ordinance.*

Findings: *Applicant is proposing to develop a 115KV transmission line (Exhibit 2). Staff finds that the proposed use is allowed conditionally in the Bural Residential 2A zone subject to satisfaction of the conditional use review criteria set forth in TCUDCO Article 6 which are addressed below and conformance with applicable development standards.*

~~TRC 1002 Section 15.02(1)(4) shall be amended to read as follows in the 2022 and 2023 zones shall be in compliance with all zoning standards, and all zoning codes and regulations apply:~~

- ~~(A) The minimum front yard shall be 20 feet.~~
- ~~(B) The minimum side yard shall be 5 feet, and the street set back for a corner lot shall be no less than 5 feet.~~
- ~~(C) The minimum rear yard shall be 20 feet, and a corner lot shall be no less than 5 feet.~~

~~Findings: Applicant states that the proposed location in the 2022 zones is in compliance with the County's right-of-way on Wilson River Road. Applicant's work will be from the easement in zone 2022 within the stated notification of Wilson River Road. Based on the proposed pole location (Exhibit C). Applicant states that they maintain a utility easement agreement with the Hillbrook County Public Works Department for use of County right-of-way and have received the County permit for utility facilities within the Public Right-of-way for the proposed transmission line and structures located within the County right-of-way along Wilson River Road. Permit number 2022-0231.~~

C. TRC 1002 Section 10(6), Ordinance Interpretation:

~~(A) Authorization of similar uses within a proposed use zone is not precluded by the Ordinance, and the Ordinance is not a barrier to what the use is allowed in the special use zone. The Director may find the use is a similar use and the use is allowed if permitted by a valid conditional use application in the applicable zone and apply the Ordinance accordingly. However, uses and activities that this Ordinance precludes by prohibition in the special use zone, and uses and activities that the Director finds are similar to those that are prohibited, are not allowed. Similar uses and things that require the creation of the special use County officials shall be precluded by the TRC 1002 provisions of Article 10. The Director may refer a request for similar use to determine if the Planning Commission finds it is a similar use.~~

- ~~(B) Ordinance Interpretation Process: Requests for Ordinance Interpretation, including but not limited to similar use determinations, shall be made in writing to the Director and shall be processed as follows:~~
 - ~~(a) The Director, within 100 days of the inquiry, shall advise the person making the inquiry in writing as to whether the County will make a formal interpretation.~~
 - ~~(b) When an interpretation does not involve the exercise of jurisdiction, the Director shall advise the person making the inquiry of his or her decision within a reasonable time, or, if without public notice.~~

~~Director Findings & Determination: In review of the Utility Rate Department of Idaho, Occupational Health and Safety Labor website: <https://www.osh.gov/OSHA/OSHA-3090-2017-transmission.html>, Classification of the Effects of Power Generation, Transmission, and Distribution Standards 29(CFR) 1910.226, it is noted that the distinction between transmission and distribution systems; however the language recognizes that important practical safety issues exist between them... Transmission and distribution are normally thought of as high power and are used for long distance transmission and distribution lines and equipment. Substations are considered to be both transmission and distribution facilities in 29 CFR 1910.226.~~

~~It is noted that in addition to the high voltage carried through transmission lines (important practical safety difference) and that the structures supporting the transmission lines are all the same. These structures supporting distribution lines, the equipment of the transmission lines and the structures (generally) are.~~

The review of the uses permitted with standards and conditions contained in each outcome zone identified in the Tillamook County Land Use Ordinance (TCLOO), electrical distribution lines and electrical support structures and their uses permitted with standards as a use defined conditionally in all outcome zones with exception to the Energy Conservation/Aquaculture Zone, subject to the procedures of Section 23.020, Regulations/Activities and Impact Assessments, Section 23.400, Estuary Development Standards and Activities, Conditional Use Procedures and Certificates applied to. While transmission lines are specifically mentioned in both the outcome zone language, TCLOO Section 23.240, Estuary Development Standards, Subsection (c)(1)(b) and standards for energy facilities and utilities identifies identified identification lines and electrical support structures as "identified or unannounced transmission lines" with the latter language or guidance that would be required to identify and differentiate types of energy facilities and utilities.

Because Section 23.400, provides standards for *identified transmission lines*, the Director finds that the proposed transmission lines of the same general character of electrical distribution lines and that the determination is consistent with the identification and identification of TCLOO 23.240. The proposed use remains subject to the development standards and conditions in TCLOO Section 23.200, Section 23.400 and Article 23.

For the reasons outlined above, it was determined by the Director that the interpretation of that it involved the exercise of discretion and the applicant was advised of this determination during the pre-application meeting within the required reasonable timeframe and without public notice as per TCLOO Section 10.06(2)(b).

21. TCLOO Section 23.02, "Estuary/Natural (EN) Zone"

(c) PURPOSES AND REGULATIONS: The purpose of the EN Zone is to provide for preservation and protection of riparian habitat and wildlife habitat and other areas which makes an exception to minimum lot size and other provisions of the general preservation ordinance.

Except where a special exception has been determined by the Tillamook County Comprehensive Plan, the EN Zone shall include the following areas:

(a) Development and Conservation Estuaries: Wetlands as defined in the state and federal agencies and regulations. The minimum lot size determination shall be through a commission of all riparian habitat from section 23.240, minimum lot size, section 23.240, section 23.240.

(b) Natural Features: The EN Zone shall include all estuarine wetlands, intertidal zones, estuarine riparian habitat and other areas within 100 feet.

(c) USES PERMITTED WITH CONDITIONS: The following uses may be permitted subject to the procedures of Section 23.020 and Article 23 and the standards in Section 23.400.

(i) Electrical distribution lines and electrical support structures.

Findings: A similar use determination is outlined in this report. The proposed use of inter-estuarine transmission lines spans across the Estuary/Natural (EN) zones as depicted in Exhibit 21. The proposed use in the EN zone is subject to the procedures of Section 23.020, the standards in Section 23.400 and Article 23, Conditional Use Procedures and Certificates and the TCLOO. These sections are addressed in the staff report.

TCLOO 23.02(c)(3), "Estuary/Natural (EN) Zone" identifies "identified identification lines and electrical support structures" as uses allowed conditionally in the EN zone. The Director has made a similar use determination in accordance with TCLOO Section 23.400 that the proposed EN transmission lines are similar in character and impact to *identified identification lines and electrical support structures*.

III. REGULATORY REVIEW OF REGULATED ACTIVITIES

(1) PURPOSE: The purpose of this section is to provide a consistent process and criteria for local review and comment on State and Federal permit applications which could potentially affect the integrity of the estuarine ecosystem.

(2) REGULATED ACTIVITIES: Regulatory activities are those activities which require State and/or Federal permits and include the following:

- (a) All activities in excess of 50,000 cubic feet of fill or dredge, which require a Section 109 or Section 404 permit (federal or US Army Corps of Engineers).
- (b) Filling of bays or tidal flats.

Findings: Significant degradation or destruction of estuarine natural resources defined in the Estuarine Program (Code 16) of the Tillamook County Comprehensive Plan include discharge of fill, air water structure, riprap, log storage, application of pesticides and herbicides, flow line or disposal of dredged material, water intake or withdrawal and effluent discharge, and other activities which will cause significant adverse impacts determined by an impact assessment.

As depicted in the applicant's submitted, the proposed transmission line will span across areas zoned E-2 Heavy Rural (E-2) and E-3 Conservation I (E-3I). The criteria for review of the regulated activities identified above include the review of the proposed activity against the requirements of the zone(s) in which the proposed activity is to be located. The criteria set forth in the section 109/404 Section 1040) and impact assessment consideration of requirements for degradation or destruction of estuarine natural water resources applicable and consideration of comments from State and Federal agencies having responsibility for permit review.

If included in the applicant's submitted documentation of both state and federal permits (Exhibit 10), the proposed use is allowed permitted with standards in the E-2 Heavy Rural (E-2) zone and allowed as a permitted condition in the E-3 Heavy Rural (E-3) zone. The proposed transmission line in addition to the standards will be in the E-3 Heavy Rural (E-3) zone area. The address in this report.

With the assistance of Federal, State and Federal agencies, and in conjunction with review of state and federal permits required for the proposed the following considerations are required to be addressed:

- (a) The type and extent of filtration equipment.
- (b) The type of resources (e.g. off-road machinery, haul trucks, etc.) used in the activity and their impact on vegetation, water quality and wildlife habitat.
- (c) The expected extent of impacts of the proposed activities on water quality and the physical characteristics of the estuary, living resources, recreation and aesthetics, navigation and the existing and potential uses of the estuary.
- (d) The methods which could be employed to avoid, minimize or compensate impacts.

The Applicant has provided a **Final Grading Recommendations Report** for the Tillamook Estuary. The transmission line project was part of the submitted which describes the conditions with the proposed transmission line route across, potential water bodies with riparian buffers regulated by RCWD 44400. While the proposed development will require the placement of six poles and the removal of some existing trees within the riparian buffers, all improvements associated with the project will span across the estuary zone and areas within riparian buffers and other riparian activities will take place within the estuarine areas. All ground disturbance for development of the transmission line and associated structures, improvements and associated activities of estuarine zones are (Exhibit 10).

The Applicant has reviewed the proposed transmission project development and vegetation management activities required for the proposed development within riparian buffers areas with the Oregon

Applicant shall take all necessary steps to avoid existing and planned public access areas and will not provide the public from using estuarine areas within the FDU and FDU zones. The presence of the Project will not interfere with public use and access to Tillamook Bay estuary in general.

III. Water Position FDU, Estuary Development Standards

(A) NEW ENERGY FACILITIES AND UTILITIES Siting, design, construction, maintenance or expansion of new energy facilities and utilities in estuarine zones shall be subject to the following standards:

(i) When new energy facilities and utilities are proposed within estuarine waters, intertidal areas, or tidal wetlands, evidence shall be provided by the applicant and findings made by the County that:

(1) the need for the facilities (public benefits) exists and the use of the estuarine area is not unreasonably interfered with public uses and rights;

(2) the facilities are a public benefit and will be of net benefit;

(3) the design, siting and other development practices are consistent with the standards.

(B) Facilities for communication transmission lines shall be located in intertidal areas and wetlands only if necessary for economic or public use.

(C) When expansion of facilities and utilities is proposed in the estuarine waters, intertidal areas, or tidal wetlands, evidence shall be provided by the applicant and findings made by the County that the proposed use is consistent with the resource capabilities of the area and the proposed facility:

(1) When expansion of facilities and utilities is proposed within estuarine waters, intertidal areas, or tidal wetlands, the following standards shall apply:

(a) When facilities are proposed in estuarine waters, intertidal areas, or tidal wetlands from an energy facility, the applicant shall meet the FDU and FDU standards, and shall not provide a net negative impact on the estuarine waters which would allow a diverse impact on aquatic life. Water Quality standards shall apply.

(b) When new energy facilities and utilities are proposed in FDU areas, evidence shall be provided by the applicant and findings made by the County that the proposed use is consistent with the resource capabilities of the area and the proposed facility:

(1) When storm water and sewer facilities are proposed in FDU and FDU zones, evidence shall be provided by the applicant and findings made by the County that the proposed use is consistent with the resource capabilities of the area and the long-term use of the water resources and does not cause a net negative impact on the estuary.

(2) When new energy facilities and utilities are proposed in Estuarine Development (FDU) zones, evidence shall be provided by the applicant and findings made by the County that the proposed facility will not provide a net negative impact on maintenance of navigational and other public, commercial and industrial water dependent uses.

(3) When water and sewer facilities shall grant a net benefit to the area with siting will be adequate and shall not negatively impact the intertidal wetlands adjacent to the facility.

(4) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(5) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(6) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(7) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(8) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(9) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(10) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(11) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(12) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

(13) When the facility shall be consistent with the standards and will not require a net negative impact on the estuarine development.

Findings: As stated previously in this report, the Applicant has stated that its proposed (abstracted) public benefit) and the proposed transmission line does not unreasonably interfere with public trust rights. That there are no feasible alternative upland locations, and the adverse impacts are minimized by spanning the transmission line improvements across the estuarine areas and avoiding any ground disturbance. The Applicant also states that no temporary access roads would be required to pulling and tensioning sites will be located within the Estuary Natural (EN) and Estuary Conservation (EC) Zones (Exhibit B). The review of the proposed route and estuary maps, alternative route options are considered impractical.

The applicant is proposing to install the transmission lines above ground and within the estuarine areas. There are no existing rights-of-way. Staff will not identify corridors with existing lines and crossings in the estuarine areas. Review of the application indicates there are no plans to discharge water into estuarine areas, in total discharge and discharge. The Applicant states they will obtain approval for necessary permit prior to construction and will continue to work with relevant regulatory agencies regarding the timing of construction (Exhibit B). Staff of the Planning Commission awaits approval of this project, staff recommends Condition of Approval be made to require compliance with DEQ and DEP standards, including compliance with any water quality policies.

The applicant is proposing to install new energy facilities and utilities in the Estuary Natural (EN) and Estuary Conservation (EC) Zones. The Applicant's response to the standard outlined in TCUDC Section 2140 and the findings 2141 through 2142 of the criteria included in Exhibit B.

Findings by the County staff confirm the proposed use is consistent with the resource capabilities of the area and its preservation of these resources in relation to; preservation of natural heritage and the areas follows:

- ⇒ The applicant is proposing minimal disturbance within the Estuary Natural and Estuary Conservation Zones by limiting development within these areas by only spanning the transmission line improvements across the estuary zones.
- ⇒ The applicant has provided a Biological Resources Report for the Tillamook County's DEQ-Advisory Commission (the report) that includes a main protection plan.
- ⇒ The comment was received from state and federal agencies to indicate no cancellable proposed the overall adverse environmental effect on the director's site habitat, animals present or significant biological functions of the identified estuary management units.

There are no stormwater and sewer outfall proposed and no new energy facilities and utilities are proposed in the Estuary Development (ED) Zone. No utility proposed or planned within the identified estuary zones areas. No structural or non-structural mitigation are proposed (Exhibit B).

C. TCUDC Section 2140, Flood Hazard Overlay (FHO) Zone?
 (Consistent with the requirements of TCUDC 2140), Flood Hazard Overlay (FHO) Zone: is addressed in Floodway/Estuary/Habitat Development Permit Request (FSD 17-100046) (TCUDC) below.

D. TCUDC Section 2144, Shoreland Overlay?
 In the vicinity of the proposed project, the Code 17-36000 of the Tillamook County Comprehensive Plan identifies land uses on the boundary formed by State Highway 101 from its junction in Seaside with Whiskey Creek Road to its junction with the Oregon Coast Highway 101 near Tillamook, and all areas within 100 feet of estuarine and 50 feet of coastal lakes within the Shorelands Boundary, which may be subject to the provisions of TCUDC 2144, "Shoreland Overlay". TCUDC 2144 identifies the areas within the Shoreland Boundary, include within the Shoreland Overlay Zone. Related to the proposed development, TCUDC 2144(2) identifies areas within 50 feet of estuarine areas included in the Shoreland Overlay zone.

Findings: Staff finds that segments of the proposed development are located within the 330-ohm B-field boundary as identified in the Class II/III element of the Williamson County Comprehensive Plan. Staff has reviewed the proposed development and determined that these areas within the 330-ohm boundary along the proposed transmission line route are categorized as "Rural B-field lands" as described in RCUD 2007-33(3) and are subject to the use limitations identified in RCUD 2007-33(4)(a)(i) and (ii) and standards identified in RCUD 2007-33(5). Applicant has identified proposed development within the 330-ohm B-field boundary as an existing utility power pole location (address: 554#247, #4 and #9) which are all located on the figure 4 maps included in Appendix A to the Applicant's submittal (Exhibit 12). Additional Rural B-field lands will be expanded by the transmission line and include an area around the location of Douglas, 1001 and 1000 Mission Springs, 1001 Park and 1000 Williamson (see Exhibit 12) (Exhibit 12).

Staff has reviewed the significant chemical inventory contained in the Class II/III element of the Comprehensive Plan and has concluded that the proposed transmission route does not present significant chemical risks. Therefore, the chemical risk assessment identified in the Williamson County Comprehensive Plan will be used to determine the B-field boundary for the proposed B-field.

RCUD Section 2007-33(4) USES PERMITTED: Uses authorized by the underlying zoning ordinance are permitted, except at locations identified in (a) above.

(i) Rural B-field lands in general:

(ii) Rural B-field lands uses are limited to:

- (a) Farms;
- (b) Proppagating and other horticultural uses consistent with the Organic Forest Practices Act;
- (c) Aquaculture;
- (d) Wholesale food processing and distribution;
- (e) Retail food processing and distribution;
- (f) Other uses are allowed only upon approval by the County that such uses satisfy a need within a community or community development project at the location, except in the following cases:

Findings: Section 2007-33(4) Energy, Facilities and Utilities in Rural B-field lands in the Class II/III element of the Williamson County Comprehensive Plan provides findings that identify areas that provide for "essential services, energy facilities and utilities within rural areas" and states that "the need for essential services, energy facilities and utilities within rural areas" is a recognized need. Staff finds that it would be impractical to map an area between the 330-ohm B-field boundary and the Williamson County boundary and the area surrounding the 330-ohm B-field boundary as a "B-field boundary" (Exhibit 12). Staff finds that the proposed transmission line route will be consistent with any alternative plan location.

RCUD Section 2007-33(4) STANDARDS: Uses within the 330-ohm B-field boundary are subject to the provisions and standards of the underlying zoning ordinance and of the resolution. Where the standards of the 330-ohm B-field boundary are not applicable, the more restrictive provisions shall apply.

- (a) Riparian vegetation shall be protected and retained according to the provisions outlined in Section 4010, REQUIREMENTS FOR PROTECTION OF WATER QUALITY AND STREAM CHANNELS.
- (b) Development in flood hazard areas shall meet the requirements of Section 2007-33(1)(C) and 2007-33(2).

(g) Development in the subunit lines and other geologic hazard areas and in the easements of Section 2065, UTAUT 1974 AND 1975, and Section #130, TOWNSHIP OF BROWN COUNTY, WISCONSIN.

Findings: The requirements of UTAUT Section #114), 2065) and #130) are addressed below.

(g) The practicality of resources land on Grand Shoreland shall be considered when determining the location of "Other Uses" within agricultural parcels in the P-1, UTAUT 1974 and 2065) zones. "Other Uses" within these zones shall be located so that the practicality of resources land is maintained.

Findings: Applicant has identified proposed development within Grand Shoreland areas consisting of eight power pole locations (plates 75, 88, 89, 406, 418 and 419) which are all located on the 100' x 100' maps included in Appendix A to the Applicant's submittal (Exhibit B). Within Grand Shoreland areas will be examined by the transmission line and facilities survey and subsequent Regulatory Field and Transmission Study of the area and UTAUT 1975 and 2065) shall be followed (Exhibit B).

Applicant has provided a Harm and Forest Impact Assessment as Appendix C to their submittal which contains characteristics of resources land and the soil's capability class. It describes current uses and future uses, potential impacts related to the proposed development (Exhibit B).

Applicant provides a description of the route selection process including a narrative assessment and states that the proposed project route was approved by the Applicant and the Civilian Advisory Group in which the route selection process "will do its utmost to avoid and minimize impacts to agricultural land and natural resources as compared to other alternatives". Applicant states: "The proposed project route will have reduced impacts on agricultural land resources through coordination with existing linear developments within the County" (Exhibit B). Staff finds that the proposed route of resource land was considered in determining the location of the transmission line.

Applicant states that: "With responsible power pole locations there should be no long property lines and from the edge of fields to minimize the impact on current farming activities" and states that approximately 77% require forest resources land within Grand Shoreland will be subject to permanent impacts (Exhibit B). Minimum forest resource land (practically) is 100' in length in minimum state key 10051-1, 7740064842ENR434075 below.

III. UTAUT Section 2065): "Criteria for Wetlands Overlay"

(a) UTAUT 2065) AND 2065) AND 2065) AND 2065) The purpose of this zone is to protect significant areas of freshwater wetlands, marshes and swamps from filling, drainage or other alteration which would destroy or reduce their biological value. The activities in this zone are:

- (a) Significant Wetlands: wetlands identified as "Significant" in the Civilian Advisory Group's Comprehensive Plan;
- (b) Wetland Wetlands: wetlands shown on the Statewide Wetland Inventory (discussed in the Civilian Advisory Group's Comprehensive Plan) which are in the wetland or water bodies shall be considered in conjunction with the proposed project and the Oregon Division of State Lands.

Findings: Staff conducted a review of UTAUT 2065) provisions and determined that the proposed development does not cause any significant Civil Wetlands Applicant

(a) UTAUT 2065) AND 2065) AND 2065) AND 2065)

(b) Notification Wetlands:

(d) uses permitted outside of the zone conditionally in the utility zone and the permitted activity is to be approved by the Oregon Division of State Lands.

(e) **STAYDOWN**. The following standards shall be imposed in addition to the standards of the utility zone:

(f) **Use of riparian activities, permits, and land use decisions affecting use of riparian Wetland** shall require certification of the Division of State Lands, and use shall be subject to compliance with any requirements of that agency. The applicant shall be responsible for obtaining approval from the Division of State Lands for activities in or on a riparian Wetland.

Findings: Staff conducted a review of the proposed activities and determined that the proposed development does not cause any significant adverse effects.

Applicant has provided a wetland delineation report of the riparian wetlands identified on the site and the riparian wetlands were identified within a 100-foot buffer around all on-lot proposed transmission line route and will be identified by Applicant's consultant as potentially subject to federal and state jurisdiction (Section 10). Applicant states that they have submitted their wetland delineation report to the DEQ and OSWDL for review and approval in accordance with OSWDL 140-000-0005 (through 140-000-0007) and by the OSWDL Riparian Delineation (Section 10). Wetland Delineation (Oregon Department of State Lands) Aquatic Resource Coordinator for Tillamook County confirmed that the Oregon Department of State Lands has reviewed the application from the Applicant for the proposed project and it is currently under review (Section 10).

III. **CONCLUSIONS Section 140-000-0007 Development Requirements for Utility Cables**

(a) The following are the standards that shall be applied in this section:

(b) **Use of landfills, landfills, and other development activities identified in the 140-000-0007 and 140-000-0008 where development is not permitted:**

(c) **Other development activities identified in the 140-000-0007 and 140-000-0008 where development is not permitted:**

Findings: Applicant's submission contains a Utility Cables Work and Construction Standards Manual (Section 10). Applicant states that an approximately 600-foot segment of the proposed line for crossing an existing landfills and other development identified in the 140-000-0007 and 140-000-0008 parcel (Section 10). Applicant states that the transmission line will cross across all documents identified in the standards and comes in close proximity to the identified landfills described in 140-000-0007 and 140-000-0008. Applicant states that power poles will be located to avoid crossing the known historic landfills and that the power poles and foundations will be set back by the required distance. The proposed engineering will support the transmission line and maintain the overall integrity of the Project (Section 10).

(d) **Use of riparian wetlands (OSWDL 140-000-0007) are subject to the following standards:**

(i) **The riparian wetland shall be the minimum necessary to be approved for use.**

(ii) **The riparian wetland shall be the minimum necessary to be approved for use.**

(iii) **The riparian wetland shall be the minimum necessary to be approved for use.**

(iv) **Stormwater shall be collected in a rain garden with adequate capacity for runoff adjacent to the riparian wetland. The riparian wetland shall be protected by a riparian wetland.**

(g) Additional requirements contained in a Conditional Report required by this Section shall be fulfilled.

Findings: Applicant states that they will comply with these standards (RMBH15). As the time of application for Zoning and Building Permit approval Applicant will be required to submit evidence demonstrating compliance with RC1100-413(2). Staff recommends that these standards be met through compliance with Conditions of Approval.

(39) **AGGRONOMIC PLANTING** report is required prior to approval of planned site development, on-site access, and divisions and partitions governed by the Land Use and Zoning Ordinance, building permits, multiple home permits, and mining occurring in areas identified in (2) with the following exception:

(a) For building or modification of home or manufacturing home permits in areas identified in (2)(b), reports are not required for less than 20,000 square feet or larger only where the proposed structure is to be situated on a slope greater than 29 percent or if (2)(b) applies.

Findings: Applicant states that their water engineering plan with special base design services and studies for electrical power systems will provide the design engineering for the proposed transmission lines and will work with the Applicant to create a transmission line power pole location plan and determine needed hardware and equipment and standards (RMBH15). Applicant states that the power pole types and foundations will be selected in a way to support the transmission lines and maintain the overall integrity of the project (RMBH15). Staff finds that a Condition of Approval can be added to require demonstration of compliance with RC1100-413(3) at the time of application for Zoning and Building Permit approval.

RC1100 Section 414: Requirements for Protection of Water Quality and Streambank Stabilization:

(1) The following areas of riparian vegetation are defined:

(a) **Riparian (R)** riparian trees and shrubs within a riparian corridor, wetlands, and the main stems of the following rivers where the river channel is more than 10 feet in width: Nachesa, Little, Nachesa, Chouse Rivers, Tallmoor, Trench, Wilcox, Little, William, Washburn and North and South Forks of the Elwha.

(b) **Stream (S)** riparian tall herbaceous and streams where the river or stream channel is greater than 10 feet in width.

(c) **Riparian (R)** riparian perennial water, small streams where the river or stream channel is 10 feet in width or less.

For all areas, all measurements are horizontal and topographic is from the mean high water line or the edge of home aquatic vegetation, whichever is most adverse. Vertical distance for rivers, streams, and the riparian trees shall be measured from the topographic elevation of the ordinary high water line.

Findings: Applicant has provided a **Final Good Resources Report** for the **William** as a side effect of the **Final Resource Management Plan** as part of their submitted which describes the **22** locations where the proposed transmission line route crosses perennial water bodies with riparian buffers regulated by RC1100-414.

(2) All development shall be located outside of areas listed in (2) above, unless:

(a) For a bridge crossing; or

(b) The structure is essential to the enjoyment with the water dependent use; or

(c) Because of natural features and its topographic position, a structure is functionally equivalent to a natural waterway; or

(d) Minimal amount of riparian vegetation is present and the structure development in the riparian

viamity significantly degrades riparian habitat values. Substantial mitigation is required under the provisions of (C) and (D) of this section if the threat of erosion will not increase and a minimum 20-foot setback is not maintained. The determination of habitat values will be made by the Oregon Department of Fish and Wildlife.

(4) All trees and all forest (D) present on the undeveloped site shall be retained within areas listed in (4) above, with the following exceptions:

Findings: Applicant states that the proposed development will require the placement of fence, poles and the removal of some existing trees within the riparian buffer (Section 3). Applicant has reviewed the scope of the proposed development and vegetation management activities required for the proposed development within riparian buffer areas with the Oregon Department of Fish and Wildlife (ODFW) and ODFW has provided the concurrence confirming that the proposed permanent pole locations meet the exception criteria outlined below in ODFW 4148(2)(c) or (d) and that proposed mitigation for riparian buffer crossing is sufficient for proposed tree removal (Section 4). Staff recommends the should the request be approved, a condition of approval be imposed requiring the excavation be provided to the Department of Fisheries and the mitigation requirements described in the better land (Section 2), 2007 from Robert W. Brady, ODFW District Fish Biologist, North Coast Watershed District.

VI. SECTION 4148, PROTECTION OF HISTORICAL SITES

(1) The Planning Department shall review whether permits and other land use actions that may affect known ARCHAEOLOGICAL SITES if it is determined that the proposed action may affect the integrity of an ARCHAEOLOGICAL SITE, the Planning Director shall consult with the State Historic Preservation Office on appropriate measures to preserve and protect the site and its contents. No permit shall be issued until either the State Historic Preservation Office determines if the proposed activity will not adversely affect the ARCHAEOLOGICAL SITE, or the State Historic Preservation Office has developed a program for the preservation or excavation of the site.

(2) Urban centers, groves, and other significant archeological resources uncovered during construction or excavations shall be preserved in place until a plan for their excavation or reinvestment has been developed by the State.

Findings: Applicant conducted a cultural resource study within the Project corridor and did not locate any significant historic or archeological or cultural resources that would be impacted by the proposed Project (Section 4). Applicant has committed to complying with the standards of SECTION 4148 (Section 4). No comments on this application were received from the State Historic Preservation Office.

VII. SECTION 3100, FOREST (F) ZONE

SECTION 3100(b) FOREST:

(a) The purpose of the Forest (F) Zone is to protect and maintain forest land by: (1) protecting and managing the use and forest use, consistent with existing and future needs for agricultural and forest products; (2) forest lands intended to allow other uses that are compatible with agricultural and forest activities; (3) protect scenic resources and fish and wildlife habitat; and (4) maintain and improve the quality of air, water and land resources of the county.

(b) The F-zone has been applied to lands designated as Forest in the Comprehensive Plan. The provisions of the F-zone affect the forest land policies of the Comprehensive Plan as well as the requirements of ORS Chapter 215 and ORS 260.005. The minimum parcel size and other standards are said to be set by the zone and intended to promote commercial forest operations.

10000 Section 7304(3); Use: Public; It shall be a use permitted in the Home zone as depicted with the general provisions, special conditions, additional restrictions and exceptions set forth in ordinance: "New wireless transmission facilities with height of up to 100 feet as specified in ORS 77222001 are deemed to be in the section as well as all wireless subject to the same of the conditional use as set forth in ORS 77222001 and in RCW 90A 0301.

Findings: Applicant states either the 100 foot or 120 foot will will be maintained (See Exhibit) (ORS 77222001 addresses right of entry and construction of the structure and reconstruction of the structure. A copy of ORS 77222001 has been included here as Exhibit B for the Staff Report.

Staff finds that the applicant is proposing a new wireless transmission facility within a right-of-way not to exceed 100 feet in width. Staff finds that the proposed use is allowed conditionally in the Home zone subject to satisfaction of the conditional use review criteria set forth in RCW 90A 0301 and in RCW 90A 0301 with the same additional findings.

RCW 90A Section 3109(3) USES PERMITTED IN HOME ZONES

(1) Land divisions and development in the Home zone shall conform with the following conditions, unless more restrictive supplemental regulations apply:

- 2. The minimum front, rear, and side yard setbacks shall be 20 feet.

Findings: Applicant states that the site is suitable for the proposed use as required by the zoning ordinance and that the Home zone (See Exhibit B). Applicant states that the three poles structures within the Home zone will be within the 100 foot height restriction but are necessary to the primary use of the properties and are in conformance with the requirements of RCW 90A 0301(3) which states "An accessory structure that is separate from the main building may be located in the required rear and side yard setback in the required setback yard if it is common to, provided that it is structurally located to be less than the effect of a proposed 100 foot (See Exhibit B). Staff finds that the proposed pole and substation locations conform with the development standards of the Home zone.

RCW 90A Section 3109(4) ADDITIONAL REGULATIONS FOR HOME ZONES

The following findings relate to the requirements that apply to the well findings and structures in forest zones. These are not to be construed to make such uses compatible with forest operations in minimum setback and height standards and to ensure all uses of the land in forest lands. The Commission shall consider the criteria in this section together with the requirements of Section (3) to identify the building site:

- (1) Well findings and structures shall be sited in the period of impact:
 - 1. The site shall be the least impact immediately adjacent to the forest lands;
 - 2. The site shall ensure that all uses of the forest operations and associated findings are compatible with the forest;
 - 3. The amount of findings shall be used to site access roads, service corridors, utility well findings and structures to be minimized; and
 - 4. The site shall be sited with well findings minimized.
- (2) Findings and structures shall be sited in the period of impact:
 - (a) Findings and structures shall be sited as far as possible from adjoining properties; and
 - (b) Findings and structures shall be sited in the period of impact and shall be sited in the period of impact as far as possible from adjoining properties.

Findings: Applicant states that the proposed use is a 40-mil portion of the proposed use. The poles and substation are proposed to be located in the Home zone (See Exhibit B). The applicant has provided

an Impact Assessment Appendix C and its submittal contained in Exhibit 2 of the Staff Report.

The applicant states that where possible, the proposed transmission line route through the County's Forest Zone is located directly adjacent to an existing private forest roads to minimize the impacts surrounding lands (Exhibit 2). Staff finds that siting the proposed transmission line adjacent to existing roads reduces the need for new access roads, minimizes the amount of forest land needed to site the proposed equipment and facilities, access for fire suppression purposes and other needs.

Applicant has indicated that they will continue with Green Grove Corporation and Shinson Lumber Company, the underlying property owners, to minimize impacts to forest operations during the construction phase (Exhibit 2). Applicant further states that all methods of timber harvesting and reforestation will be, and the equipment used by these activities, conform to standards surrounding the proposed development (Exhibit 2).

Potential impacts to forest practices and fire hazards are discussed further below in addressing the contents of RCW Section 90A.03.

RCW Section 90A.03(1)(ii) FIRE-SITING STANDARDS FOR WILDLIFE AND STRUCTURES. The following siting standards or their equivalents shall apply to all new development structures in a forest zone:

....
(i) The owners of the developed and structures shall maintain a primary fire-free habitat area surrounding all structures and obtain and maintain an secondary fire-free habitat area around any undeveloped land owned or controlled by the owner in accordance with the provisions in "Regulation for Fire Siting Standards for Developments and Structures and Fire Siting Design Standards for Roads" (last March 11, 1992), and updated by the Oregon Department of Forestry and shall be maintained in compliance with (b) and (c).

Findings: Applicant states that they will comply with the requirement to maintain fire-free habitat around the public structures, production and habitation (Exhibit 2). Applicant notes that NRSE, RCW and RCW have additional standards for the maintenance of forest lands (Exhibit 2). Applicant states that their consent for removal will be pending provisions addressing RCW's commitment to maintain transmission corridors free of potential fuel providing a fire break to help protect the adjacent forest fires (Exhibit 2).

Potential to minimize fire hazard areas is discussed further below in addressing the contents of RCW Section 90A.03.

RCW Section (b) RCW 90A.03(b)(1) USE OF LAND IN A FOREST ZONE. A use authorized as a conditional use under this chapter shall be allowed if it meets all the following requirements or their equivalent: These requirements are designed to make the use compatible with forest operations and agriculture and to conserve wildlife habitat in forest lands. Conditional uses are also subject to the definition of Section 90A.01.

11- The proposed use will not cause a significant change in, or significantly increase the cost of, a required fire fighting or fire protection services or fire protection.

Findings: The applicant has provided a formal fire impact Assessment Appendix C and their submittal contents in Exhibit 2 of the Staff Report. Forest zone property along the proposed transmission line route includes those owned by Shinson Lumber Company and Green Grove

Comparison and less primarily based on the management of timber stands and timber harvest (Exhibit A)). Firman Lumber and Green Crow Company provided the details of this application and have not provided the comments. Generally, forest operations are expected to include activities such as site preparation of (Greenland) road construction and maintenance; however, any additional forest operations, application of chemicals, and the possible (Exhibit (C) and (D) 0022(0) 00))

Application is to:

- ⇒ The objective has been to stabilize any existing roads to the extent possible, minimizing the need for new roads and construction and to stabilize the road for the reasonable life of the site, project (Exhibit B).
- ⇒ The proposed project is a 100-foot wide assessment runway, 7500 linear feet of road on Green Crow Company property and 17,000 linear feet on Firman Lumber Company property – a narrow, narrow, road, particularly in the context of the state-wide timber road management (Green Crow and Firman) in the area (Exhibit B).
- ⇒ Since most of the proposed development is located along existing logging roads and established maintenance routes, new road impacts to vegetation management practices and existing logging roads are anticipated to be minimal (Exhibit B).
- ⇒ The construction of the design provided 22 feet of clearance, 7 foot under clear height and 10 foot clearance within the sufficient to ensure logging equipment from one side of the line to the other (Exhibit B).
- ⇒ If the road is constructed to the 20-foot height, the road and tree fall line will be required and if the directional tree fall line is a common accepted forest harvest practice in the area (to a variety of conditions) (Exhibit B).
- ⇒ No significant impacts to aerial spraying operations are anticipated (Exhibit B).
- ⇒ The site will be subject to a permit for property development with sanitation utility facilities owned and operated by the State of Oregon, Sanitary Division (Exhibit B).

Project has no or minimal impacts on the surrounding area.

The applicant has proposed to use will have to be a significant impact on the surrounding area of the project. The project will have to be a significant impact on the surrounding area of the project. The project will have to be a significant impact on the surrounding area of the project.

22. The proposed use of... will significantly increase the risk of... suppression or loss of... (Exhibit B).

Findings: Since the application was provided to impact to suppression and site and the Oregon Department of Forestry. Comments received were from the Oregon Department of Forestry, requesting that Applicant to contract to comply with industrial fire protection rules with the state of Oregon (Exhibit B). Applicant's contract with the state of Oregon is (Exhibit B) that:

- ⇒ Project construction, operation, and maintenance will comply with applicable federal, state, and county laws, ordinances, rules, and regulations pertaining to fire protection, suppression, and suppression (Exhibit B).
- ⇒ During Project construction and operations, an Fire Protection Plan will be implemented in coordination with the local fire districts and the Oregon Department of Forestry and will demonstrate compliance with fire protection and suppression requirements under Oregon Revised Statute Chapter 477 and its associated administrative codes and the following (Exhibit B):
 - Provide fire suppression equipment on immediate
 - Limit the amount of fire suppression equipment to a minimum

- Provide fire fighting tools
- Provide water supplies and pumping equipment
- Provide fire watch personnel
- Suppress wildfires originating from construction activity
- Suppress wildfires in a specified manner
- Construct fire control to reduce liability for the fire cost of suppressing wildfires originating from construction activity

- ⇒ The TMI team will provide emergency response plan, fire certificate and procedures corresponding to incidents including fire related events. (Exhibit 15)
- ⇒ The TMI team will maintain the transmission lines and the forest from potential fire and TMI team will provide fire address will fire memorandum assessment agreements. (Exhibit 15)
- ⇒ The fire case (TMI) forest transmission lines assessment in the forest will provide fire address, firefighting and fire suppression plan. (Exhibit 15)

Staff find that the Applicant has committed to implementing fire prevention, fire suppression and suppression plan for the construction and operational phases of the proposed project in accordance with the local, state and country regulations. Staff find that the Planning Commission agree with these findings, this criteria could be met through compliance with a Condition of Approval requiring Applicant to provide letters from the improved fire prevention activities demonstrating the sufficiency of the fire prevention, suppression and suppression plan prepared by the construction contractor for the construction phase of the project and the sufficiency of the fire prevention, suppression and suppression plan prepared for the operational phase of the project.

38. A written statement recorded with the deed in written contract with the county or its equivalent is obtained from the landowner of the proposed site or rights of the adjacent landowner or a committee of forest operations consistent with the Forest Practices Act and Rules for use as authorized in (WAC 360-000-023(7)(b)).

Findings: Applicant states that they accept the requirement to acknowledge the right and liability of adjacent landowner and that forest operations consistent with the Forest Practices Act and Rules for use as authorized in (WAC 360-000-023(7)(b)) (Exhibit 15). The underlying property owner in this case are commercial timber companies engaged in forest operations and the Applicant will be obtaining property rights through easement rather than deed (Exhibit 15). Applicant states that this acknowledgment will be recorded as part of the easement obtained from the underlying property owner (Exhibit 15).

Staff find that this criterion can be satisfied through compliance with a Condition of Approval requiring demonstration of the fire on applying for zoning permit approval that the assessment agreements recorded between the Applicant and underlying property owner contain an acknowledgment by the Applicant recognizing the rights of adjacent landowner and liability of landowner to conduct forest operations consistent with the Forest Practices Act and Rules for use as authorized in (WAC 360-000-023(7)(b)). Staff assesses that this criterion can be met through compliance with the assessment Condition of Approval.

39. INCLUSION of WA "Conditional Use" Procedures and Criteria"

RCW 36.03 section 0401, "Review Criteria" requires that any Conditional Use authorized, according to RCW 36.03 article 04 shall be subject to the following criteria, where applicable:

(1) The use is consistent with the applicable codes and policies of the Comprehensive Plan.

Findings: As noted above, the proposed use is listed as a conditional use in the underlying zones as described in RCUD 300(1)(3); Forest (F) Zone; RCUD 300(4)(3)(i); Rural Residential Zone (R2-2); zone and RCUD 300(4)(3)(i); Rural Commercial (RC) Zone. As discussed above, RCUD 300(4)(3), "Rural Residential (R2) Zone" identifies "Utilities (distribution lines and line support structures)" as a use allowed conditionally in the R2 zone and the Director has made a similar use determination for the proposed 15kV transmission line's similar in character and impact.

The Conditional Use review criteria discussed below apply to the proposed development located in the Forest, Rural Residential Zone, Rural Commercial and Estuary Natural zones. The development standards relevant to proposed development located in the Farm and Estuary Conservation zones are addressed in Administrative Code 25A-177-000488-11300-402.

(2) The use is consistent with the applicable codes and policies of the Comprehensive Plan.

Findings: The Williamson County Use Ordinance is an implementing document of the Comprehensive Plan. In the absence of a direct contrary use allowed or conditionally permitted Use Ordinance, it is presumed to be consistent with the Comprehensive Plan.

The application submitted contains a description of the proposed development located in the Forest, Rural Residential Zone, Rural Commercial and Estuary Natural zones as consistent with the applicable codes of the Williamson County Comprehensive Plan (Article 17).

Staff finds that the proposed transmission line development is consistent with the Code 229-100-102-103, "Aesthetics" of the Comprehensive Plan.

= Williamson County Comprehensive Plan Code 17100-100-103
Summary: Code 17100-100-103 "Agricultural Land" "It shall require a permit to inventory, sell, lease and to "process and utilize in the following manner: 1. Build on the use allowed in the zone as of June 1, 2000." Code 17100-100-103 "Agricultural Land" "It shall require a permit to inventory, sell, lease and to "process and utilize in the following manner: 1. Build on the use allowed in the zone as of June 1, 2000."

Findings: The Williamson County Use Ordinance is an implementing document of the Comprehensive Plan and the use and development is a use allowed in Farm zoning as defined under RCUD 300(4)(3)(i)(3)(B). In compliance with the provisions of the proposed transmission line development in the Farm zone and the use is consistent with the Williamson County Use Ordinance as discussed below in Administrative Code 25A-177-000488-11300-402.

= Williamson County Comprehensive Plan Code 17100-100-103
Summary: This code defines the use of land and requires a permit to inventory, sell, lease and to "process and utilize in the following manner: 1. Build on the use allowed in the zone as of June 1, 2000."

Findings: The proposed transmission line development will be approximately 442 miles of commercial forest in the Forest zone located between the East and West. Applicant's proposed use (as defined in Article 17) Williamson County Comprehensive Plan Code 17100-100-103 requires that all land forest use proposed in the Forest zone will be reviewed by the County Planning Commission to ensure that they are compatible with the surrounding uses and the land and to ensure that the use is consistent with the use and the land as described in the zoning ordinance. The applicant's use requires the applicant to apply for the land use and use shall be authorized. Compatible with forest and farm uses and the applicant's proposed transmission line segment located in the Forest zone are addressed below in response to the criteria of RCUD 300(4)(3) and below in response to RCUD 300(4)(3)(B).

== Tillamook County/Comprehensive Plan Goal 17 Element: NATURAL RESOURCES

Summary: Goal 17 addresses mineral and geothermal and oil and gas resources, both as well as wildlife and wildlife habitat. It sets standards and approaches for both resources to be maintained and well-located if resources are to be used from both the significant and local government has three policy choices: preserve the resources, allow proposed uses that conform with it, or allow some sort of partial compliance with the resources until the uses that would be in violation.

Findings: Staff has not identified any Goal 17 protected resources along the segments of the proposed transmission line route located in the H, R2C, R3C2 or R3C zones. The Goal 17 element of the Tillamook County Comprehensive Plan does identify potential mineral and aggregate sites in the vicinity of the Willamette Valley in the R3C zones 28, 29, and 31, however county records indicate that Goal 17 protection has not been sought for these sites. Compatibility of the proposed development with existing quarry use in the R3C zones is addressed below.

== Tillamook County/Comprehensive Plan Goal 17 Element: AIR, WATER, AND CLIMATE RESOURCES QUALITY

Summary: This goal requires local comprehensive plans and implementing measures to be consistent with state and federal regulations on matters such as air and water pollution.

Findings: Staff finds that the proposed transmission line development will not reduce operations for resources and natural resources addressed in the Goal 17 element or violate requirements for satisfaction of development standards intended to address resource quality such as those contained in RCDDC 44040 "Requirements for Protection of Water Quality and Stream Bank Stabilization". Compliance with RCDDC Section 44040 is discussed above in this Staff Report. Applicant has obtained the Statewide Permit Verification Letter from the US Army Corps of Engineers and 401 Water Quality Certification approval from DRY (Exhibit 18). Staff would impose Conditions of Approval on development requiring Applicant to obtain all required Federal, State, and local permits and/or licenses and comply with applicable rules and regulations.

== Tillamook County/Comprehensive Plan Goal 17 Element: RIVERS

Summary: Goal 17 deals with development in places subject to natural hazards and includes flood control facilities. It requires that jurisdiction apply "appropriate safeguards" (flood plain zoning, for example) when planning for development there.

Findings: The Tillamook County Land Use Ordinance is an implementing document of the Comprehensive Plan and contains ordinance provisions addressing the identification of flood zones and requirements for development in identified flood zones. Segments of the proposed development located in the Special Flood Hazard Area (Exhibit A and B). Applicant has provided a Hydrological Study prepared by Northwest Engineering Consultants which is the subject of the roadway/Ferry Road drain development permit request #883417710048 (WTRW), addressed below (Exhibit 18). Segments of the proposed development are located within areas of flood risk topography as identified on DCO WAT-001-17 and compliance with the requirements of RCDDC Section 44010. Development requirements for Geographic Hazard Areas is addressed above (Exhibit A).

== Tillamook County/Comprehensive Plan Goal 17 Element: RESERVATIONS

Summary: This goal calls for each community to evaluate its assets and facilities for reservation and to develop plans to deal with the proposed demands for them. It also seeks for the identified land and to be applied to existing facilities that are assets.

Findings: The County shall have adopted special zoning designations to regulate proposed development of unique open space areas and to coordinate access to the river to preserve the natural and historic development. The designation (Neighborhood, Recreation, and Destination Development) zoning designations are well known processes. The existing zoning plan and Destination Designation Application proposed development is not consistent with special use zoning designations.

Millamook County Comprehensive Plan Goal 10: ECONOMIC DEVELOPMENT

Summary: Goal 10 calls for providing a diverse economy, increasing community vitality, increasing commercial and industrial land use, providing future needs for small land use, and providing a way for land to meet the needs.

Findings: The Goal 10 Element of the Comprehensive Plan summarizes information from several sources to address the economic growth of the community. The County and its population are economic change. The population characteristics are presented however the growth projections only extend to the year 2000. The development potential for the major sectors of the economy are then discussed in identifying special location and development potential for the various economic areas. A broad land use plan of the existing zones and knowing potential of the economic development. Findings and public use of the community organization, public services, industrial land use, and the result of the zoning application opportunities, a natural resources development and human resources development are outlined in the Goal 10 Element.

Application state that the proposed development is required to serve ongoing development and growth in the vicinity of the unincorporated communities of Oceanide and Oceanide and the central Millamook Valley across including the incorporated cities of Millamook and DeWitt (F-1000). These areas are a transition area for residential, commercial and some light industrial uses. This provision of the land use plan is a support for growth in the community and unincorporated communities areas is consistent with the Goal 10 Element of the Millamook County Comprehensive Plan.

Millamook County Comprehensive Plan Goal 11: UTILITIES

Summary: Goal 11 calls for providing planning of public services and utilities, water, sewer, and other services, and for the provision of the public services to build the infrastructure and services with the community needs and capabilities rather than to be forced to respond to development as a last resort.

Findings: The Goal 11 Element of the Comprehensive Plan requires public services and utilities in Millamook County, and requires local governments and special districts to plan and develop utilities, water and sewer services, and other services to serve the community and to provide for the development. The County is responsible for the development of the utilities and other services to serve the community and to provide for the development and to ensure that the utilities are not limited by the growth.

Comments have been received with questioning the compatibility of the proposed development with the water planning and sewerage (11)(6)(6). "All utility lines and facilities should be built on or adjacent to existing public sewerage rights-of-way to avoid utility crossing communities." Staff notes that the water planning and sewerage (11)(6)(6) is a general guideline for the County's water and sewer planning and sewerage facilities. The staff notes that the Goal 11 Element of the plan guidelines to the water and sewerage and to ensure that the utilities are not limited by the growth.

Applicant states that the proposed development is required to serve ongoing development and growth in the vicinity of the unincorporated communities of Oceanide and Oceanide and the central Millamook Valley across including the incorporated cities of Millamook and DeWitt (F-1000). Services and facilities within the area include public schools, transportation, water supply, sewerage disposal, solid waste disposal, public protection, fire protection, planning, zoning, and subdivision control, energy services, and communication services. These services that are primarily residential, commercial and some

light rail transit buses. Applicant has provided a statement describing the need for improved reliability and expanded bus services in order to meet projected growth in the bus area. Staff finds that the provision of expanded bus services is a critical bus service area with far-reaching mobility and development impacts consistent with the priorities of the final LDC Comprehensive Plan.

== Willamette County Comprehensive Plan Goal 14 Element: URBANIZATION

Summary: This goal requires that a substantial future growth and development of jobs and services be provided in the unincorporated areas within the urban growth boundaries. It seeks to reduce the "urban growth boundaries" (UGB) to "limit future development outside the boundary." It also seeks to encourage development within the UGB that is consistent with the purposes of the Comprehensive Plan.

Findings: The purpose of Goal 14 is to provide for an orderly and efficient transition from rural to urban land use; to accommodate urban population and urban employment inside urban growth boundaries; to ensure efficient use of land; and to provide efficient and efficient services to communities. In addition to addressing population and housing needs, the goal also seeks to ensure that development within urban growth boundaries and other priorities/sustainable development, such as quality of life, economic vitality and employment, are addressed in the goal element. From major areas of concern, the following goals and objectives are included in the final comprehensive plan: water quality; water availability; and impacts on resources.

Applicant is proposing to have an additional development to be proposed and growth in the vicinity of the unincorporated communities of Clatskanie and Clatskanie. These areas are currently rural, residential, commercial and some light industrial uses. The proposed development will provide support for growth in these municipalities and unincorporated communities, areas consistent with the Goal 14 Element of the Willamette County Comprehensive Plan.

== Willamette County Comprehensive Plan Goal 16 Element: ENVIRONMENTAL RESOURCES

Summary: This goal requires that government take necessary steps to protect and manage natural resources, including water, air, and land. It also seeks to ensure that development and growth are consistent with the purposes of the Comprehensive Plan.

Findings: Applicant states that the proposed development will be located in the FR zone; the proposed development will be compatible with the general use of the FR zone and that there will be no adverse impacts from the proposed project within the FR zone. The Willamette County Land Use Ordinance is an implementation of the Comprehensive Plan and the use and development of the unincorporated areas of Clatskanie and Clatskanie. The relevant statutory zone is the general use development standard contained in LUO 9.140.0 (Conformance of the regulations of the proposed development in the unincorporated areas subject to the zoning designation are addressed in the Staff Report).

== Willamette County Comprehensive Plan Goal 17 Element: CONSERVATION AND PROTECTION

Summary: This goal requires that government take necessary steps to protect and manage natural resources, including water, air, and land. It also seeks to ensure that development and growth are consistent with the purposes of the Comprehensive Plan.

Findings: As discussed above, segments of the proposed development are located within the R3 residential zoning district in the Goal 17 Element of the Willamette County Comprehensive Plan. Staff has reviewed the proposed development and determined that these areas within the R3 zoning district are consistent with the purposes of the Comprehensive Plan.

proposed transmission line route to be categorized as Rural Residential as described in 70010003576(2) and to be subject to the use limitations identified in 70010003576(4) and the standards identified in 70010003576(5). Staff has reviewed the significant standard inventory contained in the 2017 Edition of the Comprehensive Plan and the vertical file to proposed transmission route to not impact significant standards. The Tillamook County Land Use Ordinance is an implementing document of the Comprehensive Plan and the use and development of areas within the Standard Boundary is regulated by 70010003576, 'Standard Overlay' which has addressed in above. No significant Standard elements were identified in proximity to the proposed development.

(C) The project is a utility for the proposed use, on a building, its associated appurtenant, or adjacent: (d) improvements and natural features.

Findings: Applicant's submitted final design as Exhibit B contains a detailed description of the proposed development and the proposed route which is the transmission associated to proposed. The proposed project includes construction and operation of approximately 34 miles of 115KV distribution transmission line located within a 10000 feet wide easement corridor and a 115KV/100KV/40KV distribution substation (Exhibit B). Applicant states that the proposed route was established through a route sitting process which included the formation of a 44 member, volunteer Citizen Advisory Group who reviewed detailed analysis of potential alternative routes and provided recommendations for selection (Exhibit B). Applicant states that whatever proposed project proposed development has been routed adjacent to an established utility, thus facilities are established through a utility easement or a previously developed area (Exhibit B).

Rural Commercial Zone: Applicant is proposing a location approximately 0.1 mile segment of the proposed transmission line easement and two power poles (power pole 1 and 2) in the County of Tillamook Commercial (C2) zone on property owned by the Bonneville Power Administration and currently developed with the Tillamook Substation and on property owned by Tillamook RUP (Exhibit B). No original easements within the Special Use District are identified in this area (Exhibit B).

Staff finds that the properties subject to the proposed development in the Rural Commercial zone are zoned in a way that predominantly allows agricultural, holdings in hazard and are developed with utility facilities and currently developed utility easements (Exhibits A and B).

Rural Residential Zone: Applicant is requesting an approximately 0.05 mile for 100' of the proposed route and one pole are proposed to be located in the R2 zone within the public right of way of Wilson River Loop Road (Exhibit B). Applicant states that the proposed easement within the County of 100' has been established and no easement will be needed in the adjacent private R2 zone to be used to residential use (Exhibit B). County is sitting the driveway to regulate in abutting along the portion of Wilson River Loop Road (Exhibit A). Tillamook RUP as owner and operator an existing power distribution line in this area that runs along the north side of Wilson River Loop Road which would be utilized to the proposed easement and be along the easement of Wilson River Loop Road in order to minimize impacts on adjacent private properties in the R2 zone (Exhibit B). Tillamook RUP as owner of County permit in Utility facilities within a Utility Right of Way for the proposed transmission line and that easement located within the County right of way along Wilson River Loop Road, permit number 0193231 (Exhibit B). No original easements, within the Special Use District or other hazard are identified in this area (Exhibit B).

Staff finds that the property subject to the proposed development in the Rural Residential Zone zone is zoned in a way that predominantly allows agricultural, holdings in hazard and are developed with utility facilities and currently developed utility easements (Exhibits A and B).

Forest Zone: Applicant states that an approximately 445-mile portion of the proposed route, 75 poles and a new installation are proposed to be located in the Forest zone. (Exhibit B). The proposed transmission line easement in the Forest zone is 100 feet in width and is located to be compatible with existing logging roads. (Exhibit B). The properties subject to the design in the Forest zone are large, forested timber tracts managed for forest operations and quarry use, as well as best with logging access roads, and consist of terrain of varying types. (Exhibit B).

Segment of the portion of the proposed route across Coalinga Basin there is a utility easement. (Exhibit B). Staff finds that it would be desirable to route power lines across the easement and the vicinity by a road easement without crossing Forest zone property and without crossing areas of land use topography as identified in the USFS Plan in 74 and easement lands identified in the USFS Statewide Land Use Information Database for Oregon. (Exhibit B). Applicant states that they have worked with their engineering consultant, The West Engineering, to select transmission line power pole locations in the world across known or believed to be susceptible to landslides and areas of known geological hazards including landslides and wash bearing soils. (Exhibit B). Applicant states that transmission lines commonly are located in terrain of this type and that the hazard can be addressed through appropriate route design and engineering. (Exhibit B).

Other areas mapped with lands on the said Federal Forest are crossed by the segment of the proposed route located in the Forest zone. (Exhibit B). There are several riparian stream locations identified along the proposed route in the Forest zone as identified in Applicant's submittal and confirmed by the Oregon Department of Fish and Wildlife with the address below. (Exhibit B). Applicant states that the ODFW Category III habitat was identified in the proposed transmission corridor and the concern of the ODFW will have been expressed by ODFW staff. (Exhibit B and C).

Staff finds that Applicant is proposing a design segment of the proposed transmission line within the Forest zone in the appropriate small portion of low density timber tracts and generally adjacent to existing road improvements in the Forest zone in appropriate areas as shown above. Staff finds that the proposed pole locations in the Forest zone will not be located in riparian buffer areas and will not be located in areas known or believed to be susceptible to landslides or wash bearing soils and will not be on the wash located in areas of known hazards. Staff finds that the subject properties are currently devoted to forest use and industrial quarry use.

Estuary/Natural Zone: Applicant states that the proposed transmission line will be in the Estuary/Natural zone for 0.2 miles within a 500-foot easement area and is located on the north side of the proposed route. (Exhibit B). Applicant states that the Williamson River is a navigable waterway and the proposed crossing and requires a permit from the USACE under Section 10 of the Rivers and Harbors Act of 1899. (Exhibit B). The King, in fact, runs through the south west corner of the Estuary/Natural zone in this area and Applicant states that the underlying area is the wetland wetland. (Exhibit B and C). This section of Estuary is contained in Management Unit 995 and is categorized as a major tract of salmonid production by timber and forest agriculture. (Exhibit B). Similarly, the design permit for this zoning has permit and the requirements for design in the Estuary/Natural zone are discussed extensively above.

(*) The proposed use will not affect the character of the surrounding area in a manner which is substantially different from the use of the surrounding property for the permitted use as shown in the submitted zoning.

Applicant's submittal in Exhibit B contains a detailed description of the proposed design of the proposed use with the transmission easement proposed, and uses a detailed description in the areas surrounding these segments of the proposed transmission line subject to Condition 10.

new low-voltage applications for this proposed development was specifically outlined in the code book with existing lines facilities, to utilize existing right-of-way to the extent possible and to avoid existing structures and buildings as of the assessment corridor and transmission lines to the minimum impact or prevent use of this property as possible in these zones (Exhibit B).

Rural Commercial Zone: As noted above, the subject property in the Rural Commercial Zone area are developed with utility facilities and currently devoted to utility use, lines and around utility, as well as (Exhibit B).

If properties to the north of this proposed transmission line segment are zoned Farm (F-1) and include a large parcel with a farm or part of the farm tract (Exhibit A and B). High-voltage transmission lines are currently located on the east portion of this farm tract (Exhibit A and B). The farm tract is developed with a residential and various agricultural buildings and is a farm use (Exhibit A and B). Applicant has provided a detailed Farm and Forest Impact Assessment report that is submitted which contains information on uses and characteristics of the Farm zone as a result of the BUC-22 code segment of the proposed transmission line (Exhibit B). Staff notes that transmission lines under 200 feet in height are a use allowed to be sited subject to standards in the Farm zone. Compliance with these standards for segments of the transmission line proposed on property subject to Farm zone zoning is addressed in Administrative Code 88C.17.0004B.01(1)(b)2(b) of the code.

Applicant states that the transmission line corridor is located in a previously developed commercial area, is similar in character to existing residential transmission corridors and is located in the Rural Commercial Zone area and will not limit or prevent existing uses or surrounding properties or within the district area within the BUC zone.

Rural Residential Zone: Applicant states that in the BUC-22 zone one power pole will be placed within the public right-of-way or Wilson River Loop Road, and no poles will be placed on private BUC-22 zoned property (Exhibit B). If properties to the north of this proposed transmission line segment are zoned Rural Residential Zone, as a result of this segment, are developed with residential buildings and various structures and a commercial building developed or generally devoted to residential use (Exhibit A and B). Applicant states that the proposed assessment within the vicinity of plot #461 has been refused as the assessment will be located on the subject private BUC-22 land devoted to residential use (Exhibit B). Williamson River and operates an existing power distribution line in this area of the runs along the north side of Wilson River Loop Road which will be relocated to the proposed assessment corridor along the south side of Wilson River Loop Road in order to minimize impacts on adjacent private properties in the BUC-22 zone (Exhibit B).

If properties to the south of this proposed transmission line segment are zoned Farm (F-1) and include a substantial parcel improved with a residential dwelling and various larger parcels with a farm or part of the farm tract (Exhibit A and B). The farm tract is developed with a residential and various agricultural buildings and is a farm use (Exhibit A and B). High-voltage transmission lines are currently located on the south portion of this farm tract (Exhibit A and B). Applicant has provided a detailed Farm and Forest Impact Assessment report that is submitted which contains information on uses and characteristics of the Farm zone as a result of the BUC-22 code segment of the proposed transmission line (Exhibit B). Staff notes that transmission lines under 200 feet in height are a use allowed to be sited subject to standards in the Farm zone. Compliance with these standards is addressed in Administrative Code 88C.17.0004B.01(1)(b)2(b) of the code.

Applicant states that one power pole will be developed within the BUC zone, will be located within the right-of-way for Wilson River Loop Road, and this zone will have no limit or prevent permitted uses or surrounding properties (Exhibit B). Staff notes that applicant is proposing to develop an approximately 0.02 mile portion of the proposed route and one pole are proposed to be located in the BUC-22 zone within

the public right-of-way of William Street to be applied and that William Street Property Board be currently developed with its appropriate facilities and utility facilities.

Forest Zone: Applicant states that an approximately 400-metre portion of the proposed route, 300 metres and a new substation are proposed to be located in the Forest zone (Exhibit 12A). The proposed transmission line crosses into the Forest zone at 90/100m width and lines of best fit are also possible with existing logging roads. In accordance with Forest zone planning standards (Exhibit 12B), the properties surrounding the proposed transmission line development in the Forest zone are large, forested timber tracts managed for timber operations and quarry use and are actively planted with logging access roads (Exhibit 12C). The substation is proposed to be located adjacent to a Forest zone property developed with existing sanitation utility facilities owned and operated by the Kaitiaki District Council (Exhibits 12A and 12C). Impacts of the proposed transmission line and substation development on Forest zone properties, which generally include residential use, recreation of Forest land, residential construction and maintenance, harvesting of Forest tree species, application of fertilisers and tillage operations, are discussed in detail below. Applicant states that all methods of timber stand maintenance, harvesting and site restoration can occur in use on land surrounding the permanent easement for the proposed transmission line, and that the Forest substation and its facilities will not disturb the character of the surrounding area in accordance with its suitability limits. Impacts are presented below of surrounding properties for Forest use.

The **William Quarry** is located just north of proposed power pole 22 and is a existing access road to a track to 150/100/100/100 (Exhibits 12A and 12C). The quarry operates on a 100/100/100/100 site and the 200/100/100 site is located to the north of the proposed substation, and will be used for stockpiling with the William Quarry aggregate products in the East Hill area of the Composite Sites Plan (Exhibit 12D). All quarry operations are controlled by Green Group Corporation (Exhibit 12E). Applicant states that anticipated impacts on quarry operations are minimal and primarily consist of potential construction traffic impact which will be of limited duration (Exhibit 12E). Applicant states that they will coordinate with the nearby quarry owners to establish construction routes, potential disturbance to quarry operations, and surrounding land use limited to the greatest extent possible (Exhibit 12E).

The **Forest Conservation/ District Operated Treatment Plant** property directly west of proposed power pole 27 and north of the proposed Forest substation (Exhibit 12F). Applicant states that anticipated impacts on treatment plant operations are minimal and primarily consist of potential construction traffic impact which will be of limited duration (Exhibit 12E). Applicant states that operations and maintenance of the Forest Conservation/ District Plant will be improved by reducing the number and duration of off-road power requests that the plant is now being subject to (Exhibit 12F).

Esuary/ Wetland Zone: Applicant states that the proposed transmission line will span the Esuary/ Wetland zone of 10/20m lines within a 100/100m wide easement easement location over the William Street from the proposed route (Exhibit 12G). The general maintenance approach is to avoid and generally disturbance to fauna, habitat conservation and limited recreational use (Exhibit 12G).

The **area of the road and easement of the proposed transmission line segment within the Esuary/ Wetland zone is zoned Esuary/ Conservation (E1C1)** and the non-protected portions of the William Street (Exhibits 12A and 12G). A small portion of the easement on the south-west side of the segment is also zoned E1C1 (Exhibits 12A and 12G). Compliance with the development standards of the E1C1 zone are addressed in Administration of Council ASH-17/1004/17/1004/17/1004 below.

The **area of the road and easement of the proposed transmission line segment within the Esuary/ Wetland zone is primarily zoned E1C1 from (E1C1)** and consists of the road proposed to be owned by the Council. The road is proposed to be used for maintenance, primarily for utility purposes (Exhibits 12A and 12G). Applicant has provided detailed E1C1 and E1C2 assessment as part of their submitted which contains

information on use and other accessories of the Farm zone and lines south west of the FIB zone segment of the proposed transmission line (Exhibit B). Staff notes that transmission lines under 200 feet in height are not used to provide utility subject to easements in the Farm zone. Compliance with the standards and requirements of the transmission line proposal on property subject to Farm zone zoning is addressed in Administrative Review 157417400048 (11/16/12) below.

Applicant states that the Project was specifically routed to avoid existing and planned public easements and will not prohibit the public from using or using easements within the FIB zone, interfere with public use and access to the Williamson County easury in general, and will not unreasonably interfere with the public use and enjoyment of the Williamson County easury (Exhibit B).

(C) The proposed use will not have a detrimental effect on existing solar energy systems, wind energy conversion systems or wind mills.

Finding: Applicant states that no solar energy systems, wind energy conversion systems, or wind mills exist within the vicinity of the proposed Project where it could interfere with their operation (Exhibit B). Staff finds no County records that indicate the presence of such facilities in the vicinity. Staff finds that the proposed use will not have a detrimental effect on existing solar energy systems, wind energy conversion systems or wind mills.

(D) The proposed use is in full compliance with applicable codes and does not interfere with existing or planned fire hydrants or fire hydrant systems.

Applicant has provided a detailed description of the need for the proposed transmission lines and abatement in the submitted final draft of the Williamson County and states that the Project is necessary to:

- == "Increase the Applicant's system capacity in the central Williamson Valley by the amount of the FIB's recommended peak load capacity, allow for additional system capacity and growth in the central Williamson Valley, and increase the amount of capacity and allow for the efficient off-peak capacity between subdivisions to prevent additional line construction."
- == "Improve the reliability of service to approximately 1,500 customers in the Williamson Valley provided by the proposed Project and substantially reduce the number of customers affected by an outage and the length of the outage."
- == "Replace the failing infrastructure associated with the existing radial distribution lines that is over 50 years old in some of the North-Central area. Based on the age of the infrastructure, utility safety practices require that power is cut to the existing apparatus, which causes an outage and cuts power to approximately 1,500 customers during a maintenance event."

Rural Commercial Zone: Staff finds that existing road easements and the proposed use are available in these segments of the proposed transmission line located in the RC zone.

Rural Residential 22A or 22B Zone: Staff finds that existing road easements and the proposed use are available in these segments of the proposed transmission line located in the RR-22 zone.

Homes Zone: Staff finds that some new easements and infrastructure will be required to facilitate the proposed transmission line development, but that as described in Applicant's proposal, where possible, the proposed transmission line route has been located adjacent to or near existing private easements and the equipment for new road easements (Exhibit B). Staff finds that the Design Department of the County can provide the private easement to the proposed development located in the Homes zone and that they have not expressed significant concerns related to the proposed development (Exhibit B and C).

to use the standard zone staff in the standard zone, processing services provided in all these segments of the proposed transmission line located in the LFB zones and that access to these segments will not be located within the LFB zones.

IV. PURPOSES AND OBJECTIVES OF THE PROJECT WITH RESPECT TO THE PROPOSED TRANSMISSION LINE LOCATED IN THE LFB ZONES

(1) **PURPOSE.** It is the purpose of the LFB zone to promote the public health, safety and general welfare and to minimize public and private nuisances and to improve the quality of life and the environment.

- (a) To preserve human health;
- (b) To minimize exposure of the public to noise, vibration and other nuisances;
- (c) To minimize the need for excessive and unnecessary use of fire and general by and other structures and the exposure of the public;
- (d) To minimize private and public nuisances;
- (e) To minimize damage to public facilities and utilities, including water and sewer lines, electric, telephone, and other lines, and to minimize damage to the environment;
- (f) To provide a safe and healthy environment for the public and to provide a safe and healthy environment for the future;
- (g) To ensure that the proposed project does not result in a net loss of jobs or other economic benefits;
- (h) To ensure that the proposed project does not result in a net loss of jobs or other economic benefits.

(2) **GENERAL STANDARDS.** The standards of the proposed project shall be as follows:

- (a) All new construction and alterations to existing structures shall be an addition to the present structure and shall be of a higher standard than the present structure.
- (b) All new construction and alterations shall be of a higher standard than the present structure and shall be of a higher standard than the present structure.

CONSTRUCTION REQUIREMENTS AND METHODS

- (a) All new construction and alterations to existing structures shall be constructed with materials and utility equipment consistent with the standards.
- (b) All new construction and alterations shall be constructed using methods and practices that minimize the damage.
- (c) Efficient lighting, ventilation, plumbing, and air conditioning equipment and other services facilities shall be provided to prevent water from entering or accumulating within the components during or after the project in the LFB zones.

UTILITIES

- (C) The full use of minimum amount necessary to achieve the approved use;
- (D) No of these conditions shall be applied to the property;
- (E) The full use shall not impede or alter the use of the flow of water.

Findings: The Applicant is proposing the installation of transmission line improvements within the Roadway and easement regulated by the Millham County Land Use Ordinance. All required studies relating to transmission line installation has been provided by the Applicant, demonstrating that the power poles will have little or no effect on the flow of the water. (Exhibit B). The proposed installation of the transmission line and associated improvements is allowed as a use permitted with standards or a use permitted conditionally in the unclassified zoning area within a municipality as set forth in the zoning ordinance of the applicant. (Exhibit C). The applicant has outlined throughout this report and also outlined in the Applicant's submitted (Exhibit D). The Applicant states the proposed poles are necessary within the Roadway (Exhibit E).

Staff finds that the full use support the line (identified as conditions and poles) and be considered necessary for the proposed use in general terms and is necessary for the installation of the transmission line in both the Roadway and the Millham Zone. The Applicant states that the proposed size and location of the power poles within the Roadway is based on preliminary engineering performed on soil and hydrologic conditions, which will be confirmed during the detailed engineering phase of the project (Exhibit F).

The Applicant describes the process for review of alternate routes on page 23 of the narrative (Exhibit G). Each route was considered through public/citizen involvement efforts and examined against the set of established criteria such as permitability, ease of obtaining approval, access, constructibility, and access of other environmental factors. The Applicant states that the proposed route is the most suitable of the alternatives (Exhibit H).

The Applicant states that there are no feasible upland locations as the Roadway encroaches on significant areas of the existing Millham easement of the Roadway. The applicant has worked with routes crossing north of the City of Millham and down town area (Exhibit I). Based upon the Applicant's analysis, it could be determined that there are no feasible alternative upland locations for the placement of all courses of the Area of Special Flood Hazard, as defined by the Roadway and Millham Zone.

W. ARTICLE IV - LAND USE ZONING (Section 17-1000-48 to 17-1000-50)

AA. THE FARM ZONE (FZ) - Form (F-1) Zone

THE FARM ZONE (FZ) PURPOSE:

The purpose of the Farm Zone (FZ) is to protect and maintain agricultural lands for farm use, consistent with existing and future needs for agricultural products. The Farm Zone is also intended to allow other uses that are compatible with agricultural activities, to protect forests, scenic resources and other land with the intent to, and to maintain and improve the quality of air, water and land resources of the county. It is also the purpose of the Farm Zone to qualify farms for farm use valuation under the provisions of ORS Chapter 308.

The Farm Zone has been applied to lands designated as agricultural in the Comprehensive Plan. The provisions of the Farm Zone affect the agricultural purposes of the Comprehensive Plan as well as the requirements of ORS Chapter 215 and ORS 460.010. The minimum parcel size and other standards established by this zone are intended to promote commercial agricultural operations.

THE FARM ZONE (FZ) (17-1000-48): Use of the zone is permitted in the Farm Zone subject to the general provisions, special conditions, additional restrictions and exceptions set forth in the ordinance. "Nothing in this section shall be construed to prohibit any use of a transmission line as defined in ORS 460.010.

- = "If improved reliability of service to approximately 1,000 customers and substantially reduces the number of customers affected by voltage and lifted by the utility outage."
- = "If placed the existing infrastructure reasonably with the existing radial distribution line that is over 50 years old and is essential to the service of the rural area of the existing distribution, industry and by practices require that power is distributed in a timely manner, with the safety and outage and loss of power to approximately 1,000 customers."

Staff finds that Applicant has considered all alternatives to the proposed design to meet the identified need.

Applicant states that the proposed project is located in a rural area and that no all-terrain routes exist that can connect the existing and proposed substations without crossing hard zone of Farm (F-1) (F-1b)(1) and receiving zoning maps for the County. Staff notes that the proposed alternative route is a non-rural route between Wilkerson City and the area surrounding Occasinche without crossing hard zone of Farm (F-1) and Farm (F-1) (F-1b)(1). The City of Wilkerson is effectively surrounded by hard zone of Farm (F-1) and Farm (F-1) (F-1b)(1).

Applicant states that with respect to the proposed alternative route, it would be located with existing lines and easements within the County, including the Right of Way of Wilkerson, and the right of way from the substation north of Wilkerson to the proposed Wilkerson Loop Highway, along the right of way of the road and along various existing easements through private land in Wilkerson County (F-1b)(1). Staff finds that segments of the proposed right of way would be within the Farm (F-1) zone.

Staff finds that the Applicant can provide alternatives to the proposed route and that the facility must be sited in an area zoned for use as a site location and is dependent on that land is subject to Farm zoning. Disaggregation must be provided in order to connect the existing substation in the City of Wilkerson and the substation location in the vicinity of Occasinche and that no urban and non-residential areas are available to support an alternative route that does not cross and is subject to Farm zone designation.

The City is associated with any of the factors listed in subparagraph (b) of the paragraph may be considered but conditions may not be the only consideration in determining that a utility facility is necessary for public service. Land uses shall not be considered when considering alternatives that are from a substantially similar utility facility and the siting of utility facilities that are not substantially similar.

Findings: Applicant states that they did not consider easements and that the main factors in siting the route were proximity to the existing 33kV Wilkerson Substation and customer service as well as the proposed Occasinche Substation, collision with existing lines, right of way, and avoidance of the great and cultural resources (F-1b)(1). As noted above, the City of Wilkerson is surrounded by hard zone of Farm (F-1) zoning designation and it would impact the proposed route substantially as route between the City of Wilkerson and the vicinity of Occasinche without crossing hard zone of Farm (F-1) and Farm (F-1) (F-1b)(1).

or: The above utility facility approved under paragraph (b) shall be responsible for restoring, as much as possible, to the former condition any agricultural land and land resources affected by improvements that are damaged or otherwise affected by the siting, maintenance, regulation, reconstruction or of the facility. Siting of utility facilities shall present the same of the utility facility from regulatory and other associated from a non-rural to rural areas and proposed route of the proposed utility facility restoration.

Findings: Applicant is submitted to the same commitments for restoration of temporary disturbance as follows:

and the applicant will fully maintain the correct any measures that will be required to ensure the future (Fertility).

Comments have been received on this request concerning concerns related to potential impacts to agricultural operations including permanent removal of farm land from agricultural use, deterioration of soil spraying, the potential for the project to lead to urbanization, deterioration of the introduction of aerial technologies for crop monitoring and nutrient mapping, biosecurity measures, incompatibility of herbicides, introduction of new weeds, introduction of hazardous materials, liability impacts including infrastructure and landscape maintenance of farming in the structure, soil compaction, groundwater, siting, construction, disruption to cow-calf production during construction and inappropriate and disruptive construction practices including (Fertility).

Many of these potential impacts have been addressed below in Applicant's submitted as summarized below:

- ⇒ Applicant's submitted initial letter to Fertility addresses mitigation and contains a number of measures to be taken to temporarily disturb the area as follows:
 - Access disturbed during construction will be restricted and seeded and restricted to ensure appropriate conditions are established for soil health and for agricultural production.
 - The Applicant will restore all areas disturbed during construction to an appropriate condition of the project.
 - Reseeding will be done as soon as possible during the optimal period for construction and is necessary for the reseeded areas where necessary for germination. Where applicable, certified "no-weed seed" seed will be used to ensure no weeds.
 - Fencing and erosion control measures will be put in place prior to construction work previously in farm use.
 - New fencing vegetation will be allowed to grow through the construction.
 - Access to farm roads, tracks and other non-rural areas will be closed to the area approved by the County.
 - Efforts will be made to limit the project to the minimum disturbance to the surrounding community within the disturbed areas.
 - On agricultural lands that are used for pasture and/or other uses will be continued with the landowner as long as the appropriate conditions are met.

As noted above, reseeded areas will be established to meet the requirements of any agricultural land and associated improvements that are damaged or otherwise disturbed by the siting, mining, or other operations or construction of the facility. It is stated that this is required under (Fertility).

- ⇒ Applicant states that during construction, construction equipment, materials, and vehicles will be stored and activities will be construction will be contained within the construction yards. Beyond what is required by safety regulations, any signage areas will be contained within the limits of the site and signs will be removed or reduced in size of installation to suit the area and provide a transition to the surrounding area (Fertility).
- ⇒ Applicant states that during construction activities, Applicant will have qualified staff on site to control weeds as required (Fertility).
- ⇒ Applicant states that to meet, meet, and the quarry and any other road work will be allowed to construction roads as needed where necessary (Fertility). Applicant further states that any temporary construction roads will be used to transport materials from mining operations and maintenance will be conducted by the contractor and will be the responsibility of the contractor (Fertility).

- Applicant has submitted potential hybriding soil impacts through the provision of a Soil Use Analysis prepared by Northwest Hydrologic Consultants, which has been reviewed under Hydrology/Transect/Soil/Soil Management Permit #2014-07-000044-01000 and is addressed elsewhere in this Staff Report (Table B.5).

For the Planning Commission's consideration, Staff has provided the recommended set of Conditions of Approval intended to impose the standard of best practices to mitigate and minimize potential impacts of the proposed facility on surrounding lands located to the farm as follows:

- ii. During the construction of the proposed project, Applicant shall install erosion, siltation and/or siltation guardrails on construction access routes as necessary to ensure best practices during construction.
- iii. Applicant shall be responsible for ensuring, as nearly as possible to the former condition, any agricultural land and associated improvements subject to Farm (F-1) zoning designation that are damaged or otherwise disturbed by the existing maintenance, operation or construction of the proposed UFSM transmission facility. Restoring required aspects of restoration efforts will be done as soon as possible during the regular period of construction and successful restoration of seeding will be done where necessary for termination. Certified "noxious weed list" seed will be used to reseed the seedbed within the portion of the easements subject to Farm (F-1) zoning designation.
- iii. Applicant will ground all existing metal structures located within the proposed right-of-way path back to Farm (F-1) zoning designation.
- iv. During operations, should a any well log, etc. be susceptible to be caused by the proposed UFSM transmission line project, Applicant will implement corrective measures in accordance with good utility practices.
- v. Agricultural operations will be able to continue farming areas within the proposed transmission easement areas in the F-1 zone. Commercial farming will be conducted through the established easement and having that use.
- vii. Applicant will use an equalized concentration to control the odor associated with the transmission line easement areas adjacent to Farm (F-1) zoning designation.

The recommended Conditions of Approval are also included in Article VII below. Based on the criteria many received at the Planning Commission may wish to consider imposing additional mitigating measures.

16. ARTICLE Section 10.00: Ordinances Interpretation

(1) *With the exception of similar uses. Where a proposed use is not specifically identified by the Ordinance, one of the Ordinance's authorizers shall have the sole and exclusive right to determine if the use is similar to the use listed in the Ordinance and if the use is permitted in the zone and if the Ordinance applies to the use. However, uses and activities that the Ordinance specifically prohibits in the subject zones and uses and activities that the Ordinance specifically prohibits in the subject zones shall be prohibited. Similar uses will include those that require a discretionary permit from the County official to be granted. (2) The Board of Supervisors shall have the sole and exclusive right to determine if a use is similar to the use listed in the Ordinance and if the use is permitted in the zone and if the Ordinance applies to the use.*

(2) *Ordinance Interpretation Procedure: Requests for Ordinance interpretations (including but not limited to similar use determinations) shall be made in writing to the Director and shall be processed as follows:*

- (a) The Director will, in the absence of the inquiry, shall advise the person making the inquiry in writing as to what the Board will make of formal interpretation.
- (b) Where an interpretation is requested in writing, the Director shall advise the person making the inquiry of the date the decision will be made and the time and place and will not publish.

Section Findings & Recommendation: In a review of the Ontario Electric Department and other Occupational Health and Safety Board website: <https://www.ohsa.gov.on.ca/en/ohsa/ohsweb/powersystems/index.html>, Confirmation of the Electric Power Commission, Transmission, and Distribution Standard 299 (OTR) 1991/2001 does not make a distinction between transmission and distribution systems; however the language recognizes that important potential safety differences do exist between them. ... Transmission structures are normally high voltage multi-arc insulators and towers and distribution lines and poles and equipment. Structures are considered to be both transmission and distribution facilities in OTR 1991/2001.

The structure to be built in addition to the higher voltage carried through transmission lines (important potential safety differences) and the structures supporting the transmission lines are taller than those structures supporting distribution lines. The footprint of a transmission line structure is also generally larger.

In a review of the rules permitted with standards and conditionally contained in each safety zone as identified in the Bill (Municipal and Local Authorities (Zoning), Electrical Distribution Lines and Electrical Apparatus and Structures) it was permitted with standards as per a list conditionally in all safety zones with exception to the Energy Conservation Aquatic Zone, subject to the procedures of Section 2120 Regulation Activities and Impact Assessment, Section 2140 Energy Development Fundamentals and Zoning Conditions for activities and structures applied to. While transmission lines are subjectively under the utility safety zone language, OTR 1991/2001 Section 2140 Energy Development Fundamentals, Subsection (9)(b) under standards for energy facilities and utilities identifies electrical distribution lines and electrical support structures as "essential communication transmission lines" with the latter language originally intended to identify utility facilities of energy facilities and utilities.

Because Section 2140 provides a standard for electrical transmission lines, the Director finds that the proposed transmission lines of the same general character of electrical distribution lines and facilities determination is consistent with the definition of utility in OTR 1991/2001. The proposed use remains subject to the development standards outlined in OTR 1991/2001 Section 2120, Section 2140 and Article 6.

For the reasons outlined above, it was also determined by the Director that this interpretation does not involve the exercise of discretion and the application was approved of this determination during the process applied to meeting within the required reasonable time frame and without public notice as per OTR 1991/2001 Section 108(2)(b).

CC: OTR 1991/2001 Section 2106, Energy Conservation (EC) Zone

(1) PERMITTED USES AND REGULATIONS: The purpose of the EC zone is to:

- (a) provide for long-term utilization of areas with support, and have the potential to be supported with the highest resources;
- (b) provide for long-term conservation and preservation of high quality productivity;
- (c) provide for the long-term maintenance of the aesthetic value of the area and the conservation of the natural resources and the historic resources of the area;
- (d) provide for the highest quality of the area and the conservation of the area and the preservation of the area and the preservation of the area and the preservation of the area;
- (e) provide for the highest quality of the area and the conservation of the area and the preservation of the area and the preservation of the area;
- (f) provide for the highest quality of the area and the conservation of the area and the preservation of the area and the preservation of the area;
- (g) provide for the highest quality of the area and the conservation of the area and the preservation of the area and the preservation of the area;
- (h) provide for the highest quality of the area and the conservation of the area and the preservation of the area and the preservation of the area;
- (i) provide for the highest quality of the area and the conservation of the area and the preservation of the area and the preservation of the area;

intended by the habitat management project. The resources discussed in this section are available to the habitat management project.

(1) The resources will be provided to the habitat management project (including the project's staff) in the following manner:

(A) The resources will be provided to the habitat management project (including the project's staff) in the following manner:

(1) The resources will be provided to the habitat management project (including the project's staff) in the following manner:

Findings: The habitat management project is a good example of a habitat management project. The project is a good example of a habitat management project. The project is a good example of a habitat management project.

2. HABITAT SECTION 3.00, "Review of the Habitat Management Project"

(1) **PURPOSE:** The purpose of this section is to provide an assessment process and criteria for the habitat management project and to provide a permit application with the following information:

(2) **REQUIREMENTS:** The permit application shall be submitted to the following:

(a) Fill (fill the fill in the area of the project) and (b) (fill the fill in the area of the project).

....

(3) The habitat management project.

Findings: The habitat management project is a good example of a habitat management project. The project is a good example of a habitat management project. The project is a good example of a habitat management project.

The habitat management project is a good example of a habitat management project. The project is a good example of a habitat management project. The project is a good example of a habitat management project.

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With the assistance of affected State and Federal agencies, and in conjunction with review of State and Federal permits required for the project, the following commitments are required to be addressed:

- (1) The project will be completed.
- (2) The project will be completed.
- (3) The project will be completed.

Communication (COW) was received primarily from the proposed applicants. The comments were received from the COW Fish & Wildlife Agency, the US Army Corps of Engineers, National Wildlife Federation, the Environmental Protection Agency and the Oregon Department of Land Conservation and Development.

The applicant has stated that to ensure safety, stability, and public health and the proposed transmission line routes are unnecessary in those areas with public utility lines, that the construction and installation of the proposed line, and related impacts are minimized by spanning the transmission line improvements across the sensitive area and leaving any ground disturbance. Specifically, the applicant states that, "The Project will not unnecessarily interfere with public utility lines of the County's sensitive areas within the BCL and BFL zones. The Project will be carefully designed and installed with a line of 0.03 ohm/ft. Water capacity for the aerial conductors, and only the 50-foot wide permanent easement will be established from certain types of vegetation and development consistent with BFLC, BFLS and Applicant standards for easement and use for the application and maintenance of the transmission line. The Project was specifically proposed to avoid existing and planned public easement areas and will not be installed in public easement areas within the BCL and BFL zones. The presence of the Project will not interfere with public use and access to the lands of the County in general..."

4F. CONDITIONS Section 7.040, Situation Development Standards

- (A) *When new energy facilities are constructed, maintenance or expansion of energy facilities and utilities in existing areas shall be established by following standards:*
 - (i) *When new energy facilities are proposed within sensitive waters, in established riparian habitat wetlands, wildlife shall be provided by the applicant and findings made by the County shall:*
 - (a) *be made (i.e. a standard habitat) exists and the area of the zone does not unreasonably interfere with public utilities;*
 - (b) *the maintenance and location are unworkable or impractical;*
 - (c) *the safety of the facility or other values are considered minimized;*
 - (ii) *Electric line communication transmission lines shall be located in designated riparian habitat wetlands or riparian habitat wetlands.*
 - (iii) *When a transmission line shall be located in the habitat or riparian wetland visual and other aesthetic standards of the area, the applicant shall provide a public access to the area and shall be minimized.*
 - (iv) *When a proposed transmission line shall be located in sensitive waters, in established riparian habitat wetlands and shall follow the same standards as established by lines and crossings;*
 - (v) *When a transmission line shall be located in sensitive waters, in established riparian habitat wetlands or riparian habitat wetlands shall be provided by the applicant and findings made by the County shall:*
 - (a) *be made (i.e. a standard habitat) exists and the area of the zone does not unreasonably interfere with public utilities;*
 - (b) *the maintenance and location are unworkable or impractical;*
 - (c) *the safety of the facility or other values are considered minimized;*
 - (vi) *When a transmission line shall be located in BCL and BFL zones, wildlife shall be provided by the applicant and findings made by the County shall:*
 - (a) *be made (i.e. a standard habitat) exists and the area of the zone does not unreasonably interfere with public utilities;*
 - (b) *the maintenance and location are unworkable or impractical;*
 - (c) *the safety of the facility or other values are considered minimized;*
 - (vii) *When a transmission line shall be located in BCL and BFL zones, wildlife shall be provided by the applicant and findings made by the County shall:*
 - (a) *be made (i.e. a standard habitat) exists and the area of the zone does not unreasonably interfere with public utilities;*
 - (b) *the maintenance and location are unworkable or impractical;*
 - (c) *the safety of the facility or other values are considered minimized;*
 - (viii) *When a transmission line shall be located in BCL and BFL zones, wildlife shall be provided by the applicant and findings made by the County shall:*
 - (a) *be made (i.e. a standard habitat) exists and the area of the zone does not unreasonably interfere with public utilities;*
 - (b) *the maintenance and location are unworkable or impractical;*
 - (c) *the safety of the facility or other values are considered minimized;*
 - (ix) *When a transmission line shall be located in BCL and BFL zones, wildlife shall be provided by the applicant and findings made by the County shall:*
 - (a) *be made (i.e. a standard habitat) exists and the area of the zone does not unreasonably interfere with public utilities;*
 - (b) *the maintenance and location are unworkable or impractical;*
 - (c) *the safety of the facility or other values are considered minimized;*
 - (x) *When a transmission line shall be located in BCL and BFL zones, wildlife shall be provided by the applicant and findings made by the County shall:*
 - (a) *be made (i.e. a standard habitat) exists and the area of the zone does not unreasonably interfere with public utilities;*
 - (b) *the maintenance and location are unworkable or impractical;*
 - (c) *the safety of the facility or other values are considered minimized;*

(f) In no event shall the applicant be required to install or maintain any water treatment devices;
(g) Stormwater and sewer outfalls shall be installed in accordance with the following:
will be adequate and shall not apply to the following activities:
from outfalls to meet DRC and EPA water quality standards. Water Quality
pollutes shall apply.

(h) Design of all stormwater and sewer outfalls shall be in accordance with
construction of the energy facilities shall be subject to the respective
standards for these activities.

(i) Design of all utility facilities shall be subject to the applicable standards will be required
structural design standards.

Findings: As stated previously, in its report, the Applicant has stated there is a need (substantial public
benefit) and the proposed transmission lines are not a reasonable interference with public trust rights. That
there are no feasible alternatives available and the proposed improvements are minimized by spanning the
transmission line improvements across the existing area and avoiding any ground disturbance. The
Applicant also states that no temporary access roads or construction paths and tensioning sites will be
located within the Estuary Natural (EN) and Estuary Conservation (EC) Zones (Appendix B). In review
of the proposed route and siting map, it is noted that the proposed route is a suitable location for a suitable improvement.

The applicant is proposing to install the transmission lines across and within the estuarine areas,
there are no existing rights-of-way. Part of the route will overlap with existing utility easements in
the estuarine areas. Review of the application indicates there are no plans to disturb adjacent utility
easements; intertidal areas will not be disturbed. The Applicant states they will obtain approval from
necessary permits prior to construction and will continue to work with relevant regulatory agencies
regarding the timing of construction (Appendix B). Should the Planning Commission consider approval
of this project, staff recommends a Condition of Approval be made to require compliance with EPA
and DCR standards including compliance with any water quality policies.

The applicant is proposing to install new energy facilities and utilities in the Estuary Natural (EN) and
Estuary Conservation (EC) Zones. The Applicant has proposed to the standards outlined in RCW
Section 9A.44.010 and the following pages 22-24 through 22-26 of the comments provided in Exhibit B.

Findings by the County that confirm the proposed use is consistent with the resources capabilities of the
area and the preservation of those resources for scientific, historic, or other significant values and benefits
follows:

- = The applicant is proposing minimal disturbance within the Estuary Natural and Estuary
Conservation Zones by limiting disturbance within these areas by only spanning the
transmission line improvements across the estuarine zones.
- = The applicant has provided a *Final Final Design Report for the William & Desai's 115-
Kilowatt Transmission Line Project* that includes an environmental protection plan.
- = No comments were received from state or federal agencies or indicate a reasonable alternative proposed
line would have a demonstrable effect on the characteristics, habitats, or natural processes or significant
biological limits from the identified estuarine management units.

The stormwater and sewer outfalls proposed and the new energy facilities and utilities are
proposed in the Estuary Development (ED) Zone. No utility is proposed to be placed within the identified
estuarine zones. No structural stabilization must be proposed (Appendix B).

57. RCW Section 9A.44.010; Estuary Natural (EN) Zone

Consistency with the requirements of RCW 9A.04.010, Rural Broadband Overlay (RBO) Zone, is addressed in the Highway Access/Right-of-Way Development Permit Request (RSD-17-000448-11000) above.

C. RCW 9A.04.010 Section 2345, Rural Broadband Overlay

In the vicinity of the proposed project, the Council 17/18 item of the Willamette County Comprehensive Plan identifies land west of the Junction Road by State Highway 121 from its junction in the state with Whitey Creek Road to its junction with the Oregon Coast Highway, 100 feet from the road, and all areas within 1,000 feet of easements and 500 feet of easement lines as within the Rural Broadband Overlay, which may be subject to the provisions of RCW 9A.04.010, Rural Broadband Overlay. RCW 9A.04.010 addresses these areas within the Rural Broadband Overlay included within the Rural Broadband Overlay Zone. Subsequent to the proposed development, RCW 9A.04.010(2) identifies areas within 50 feet of easements as areas included in the Rural Broadband Overlay zone.

Findings: Staff finds that segments of the proposed development are located within the Rural Broadband Overlay as identified in the Council 17/18 item of the Willamette County Comprehensive Plan. Staff has reviewed the proposed development and determined that those areas within 50 feet of easements along the proposed transmission line route are categorized as Rural Broadband as described in RCW 9A.04.010(2) and are subject to the conditions identified in RCW 9A.04.010(4)(a)(i) and the standards identified in RCW 9A.04.010(4)(b). Applicant has identified proposed development within these Rural Broadband areas consisting of eight pole locations (poles 75, 89, 97, 44, 45, and 46) which are illustrated in the figure 44 map included in Appendix A to the Applicant's submittal (Exhibit 12). Additional Rural Broadband areas will be opened by the transmission line and include areas around the location, Doughty, Hill and Tomlinson Ponds, the Frank and William Rivers and Hillwell Ditch (Exhibit 12).

Staff has reviewed the significant Rural Broadband inventory contained in the Council 17/18 item of the Comprehensive Plan and has verified that the proposed transmission route does not impact significant sites. The areas of Rural Broadband identified in the Rural Broadband Overlay which are located to the north and west of Council 17/18.

RCW 9A.04.010 Section 2345(4)(b) USES PERMITTED: Uses authorized by the rural broadband overlay zone are only if non-conditional uses are permitted, except at locations identified in (3) above.

- (a) Rural Broadband in Context;
- (b) Rural Broadband uses are limited to:
 - (i) Homes;
 - (ii) Preexisting and increasing; (j) existing uses consistent with the Oregon Forest Practices Act;
 - (k) Agriculture;
 - (l) Water-dependent, recreational, industrial and commercial uses;
 - (m) Regeneration, repair or improvement of existing state park facilities;
 - (n) Other uses are all those that apply in the County that are not uses that are prohibited with the same or be accommodated in any other manner at the location, except in the following cases:

Findings: Section 9A.04.010(4)(b) Energy, Facilities, and Utilities in Rural Broadband of the Council 17/18 item of the Willamette County Comprehensive Plan provides findings that identify areas to provide for non-municipal energy facilities and utilities services within rural Broadband and states that the need to accommodate locations within the areas identified above. The reviewing zoning maps. Staff finds that it would not be practical to map a route between the Homeville Power Administration Willamette Substation and the areas surrounding Occamside on upland areas - Broadband areas have to be created (Exhibit 13). Staff finds that the proposed transmission line cannot be accommodated in any other manner at the location.

~~THE FOLLOWING SECTION 3549(b) REQUIREMENTS shall be within the SCOPE OF THE CONSTRUCTION ARE SUBJECT TO THE PROVISIONS AND STANDARDS OF THE UNDEVELOPED ZONING DISTRICT. HOWEVER, THE STANDARDS OF THE UNDEVELOPED ZONING DISTRICT AND THE UNDEVELOPED ZONING DISTRICT'S PROVISIONS shall apply.~~

~~(a) All proposed station shall be proposed and located according to the provisions and standards of Section 40141, REQUIREMENTS FOR PROTECTION OF UNDERGROUND WATER QUANTITY AND SUBSTANTIVE QUALITY.~~

~~(b) Development in the catchment areas shall meet the requirements of Section 40142, PROTECTION OF UNDERGROUND QUANTITY.~~

~~(c) Development in the catchment areas and other adjacent catchment areas shall meet the requirements of Section 40143, UNDERGROUND WATER QUALITY PROTECTION, and Section 40144, UNDERGROUND WATER PROTECTION FOR OTHER LOGICALLY RELATED AREAS.~~

....

~~Findings: The requirements of SECTION 40140, 40141 and 40142 are satisfied by:~~

~~(a) The productivity of resources located in the proposed tanks shall be as stated in the determination of the location of "Other Uses" within a given land parcel in the 7-41 FT. and 7-11-20 Zones. "Other Uses" within these zones shall be located so that the productivity of existing lands is maintained.~~

~~Findings: Applicant has identified proposed development within Rural Estate and Areas as consisting of eight power pole locations (poles # 44, 45, 46, 47 and 48) which are illustrated in the figure 4 map attached in Appendix A of the Applicant's submittal (Exhibit 8). Additional Rural Estate and Areas will be spanned by the transmission lines and include areas around Equation, Dwight, and Caldwell Bonifas on Highway 16, Frank and Gilmore Streets and Hillview Drive (Exhibit 8).~~

~~Applicant has provided a Farm and Forest Impact Assessment as Appendix C to their submission which contains other criteria, other criteria and assumptions that shall have no applicability based on current uses and because potential impacts related to the proposed development (Exhibit 8).~~

~~Applicant provides a description of the route selection process including: it can be considered and states that the proposed project route was preferred by the Applicant and the Citizen Advisory Group in the final route selection. The applicant states "The route minimizes impacts to agricultural land and natural resources compared to other alternatives". Applicant states "The proposed project cannot further reduce impacts on agricultural and resource lands through coordination with existing future developments within the County (Exhibit 8)". Staff finds that the methodology of assessment that was considered in determining the location of the transmission lines.~~

~~Applicant states that "where possible, power pole locations have been selected on property lines and that the objective is to minimize the impact on current farming and other agricultural uses that approximate 777 square feet of resource lands within Rural Estate and Areas will be subject to permanent impacts (Exhibit 8)". Within resource lands productivity is discussed in Exhibit 8.~~

~~DE. PROPOSED SECTION 3550, Freshwater Wetlands Overlay~~

~~(b) FRESHWATER WETLANDS OVERLAY: The purpose of this zone is to protect significant areas of freshwater wetlands, manage and improve from filling, its occupancy for other uses and to restore wetlands that have been degraded or altered. Areas included in this zone are:~~

~~(a) Significant Small Wetlands: wetlands identified as "significant" in the Qualification of the Comprehensive Plan;~~

(b) Notification: Wetlands: wetlands shown on the Future Wetland Inventory (discussed in the final EA) are not eligible for the (Compensatory Action). When required, the verification of compliance shall be carried out in accordance with the appropriate provisions of Oregon Division of State Lands.

Findings: Staff conducted a review of local inventories and determined that the proposed development does not pose an impact any significant local wetlands. Applicant

(2) DEVELOPMENT:

-
- (b) Notification: Wetlands:
 - (1) was permitted to outgrow or conditionally limit the unit bying game and be permitted to be a unit approved by the Oregon Division of State Lands.
 - (2) ~~WETLANDS:~~ The following conditions shall be met in addition to the conditions of the unit bying game:

....

(b) Development activities permitted under the use shall be subject to the following conditions: (b) Notification: Wetlands: require notification of the Division of State Lands, and be allowed only upon compliance with any requirements of that agency. The applicant shall be responsible for obtaining approval from the Division of State Lands for activities on the Notification Wetlands.

Findings: Staff conducted a review of local inventories and determined that the proposed development does not pose an impact any significant local wetlands.

Applicant has provided the wetland delineation report as part of their application submitted and states that the wetlands were delineated within a 100-foot buffer around the proposed transmission line route. Item will be reviewed and approved by applicant's permit and agent and subject to the conditions set forth in (Exhibit B). Applicant states that they have submitted their wetland delineation report to DFL and ODFW for review and approval in accordance with OARs 640-009-0005 through 640-009-0055 and by the ODFW, Portland District (Exhibit C). While the Oregon Department of State Lands, Aquatic Resource Development for Tillamook County confirmed that the Oregon Department of State Lands has received an application from the applicant for the proposed project and is currently under review (Exhibit D).

II. PUBLIC Section 4040, "Requirements for Protection of Water Quality and Streambed Stabilization"

- (a) The following areas of special significance shall be:
 - (1) The riparian habitat and resources of the mainstem, estuary, and the mainstem of the following rivers where the river channel is more than 10 feet in width: Nestucca, Little Nestucca, Three Rivers, Tillamook, Coos, Willamette, Milam, Nehalem and South Fork Willamette River.
 - (2) The riparian habitat of the rivers and streams where the river channel is greater than 10 feet in width.
 - (3) The riparian habitat of the rivers and streams where the river channel is less than 10 feet in width or less.
- In accordance with the agreement and for the avoidance of doubt, the applicant shall be responsible for the riparian habitat mitigation, which shall be carried out in accordance with the proposed transmission line route as set forth in the water quality stabilization plan regulated by TCEQ (041140).

Findings: Applicant has provided the Riparian Resource Report from the Tillamook District DFL will be reviewed and approved by applicant's permit and agent submitted which has been issued. The condition will be the proposed transmission line route as set forth in the water quality stabilization plan regulated by TCEQ (041140).

(2) All live riparian fish will be located on site off of river banks within (b) above, unless:
 ((a) The reach being excavated;
 (b) The reach was excavated to require a dam in conjunction with the water right application; or
 (c) Absence of riparian fish habitat is justified by a current water right or water application filed in the riparian valley; or
 ((d) A minimum amount of riparian vegetation is present and the reach is not present in the riparian valley significantly degraded riparian habitat values.
 (3) The reach may be reached under the provisions of (b) and (c) above only if the reach is not present in the riparian valley and a minimum of 20% of the reach is maintained. The determination of habitat values will be made by the Oregon Department of Fish and Wildlife.

(4) All measures taken to riparian of the reach during excavation shall be retained within a reasonable limit (b) above, with the following exceptions:

Findings: Applicant states that the proposed development will require the placement of site roads and other non-riparian structures within the riparian buffer (Exhibit 10). Applicant has reviewed the scope of this proposed development and vegetation management activities required for this proposed development within riparian buffer areas with the Oregon Department of Fish and Wildlife (ODFW) and ODFW has provided a document in the confirming that this proposed permanent road locations meet the exception of criteria outlined above in RCW 9A.44.020(3) and that proposed mitigation for riparian buffer crossings is sufficient to proposed stream reach (Exhibit 11). Staff recommends that should this request for approval of the project be imposed requiring documentation of satisfaction of the mitigation requirements described in the letter dated October 20, 2017 from the Oregon Department of Fish and Wildlife, North Fork Willamette River, South-Central Watershed District, provided to the Department.

VI. HISTORIC PRESENTATION OF ARCHES IN GRAD RIVER?

(1) The Clatsop County Historical Society shall review and identify any and all historic and prehistoric sites that may affect the proposed project. If the proposed project location may affect the integrity of any ARCHAEOLOGICAL SITES, the Clatsop County Historical Society shall consult with the State Historic Preservation Office on appropriate measures to preserve any prehistoric site and its contents. No permit shall be issued until either the State Historic Preservation Office determines that the proposed activity will not adversely affect the ARCHAEOLOGICAL SITES or the State Historic Preservation Office develops a program for the preservation or excavation of the site.

(2) If it is determined, approved and other significant archaeological resources uncovered during construction or excavation shall be preserved in accordance with the excavation permit terms and conditions established by the State.

Findings: Applicant conducted a cultural resources study within the project area and identified historic and prehistoric sites and resources that would be impacted by the proposed project (Exhibit 12). Applicant has committed to complying with the standards of RCW 9A.44.020(4) and (5) (Exhibit 13). Staff recommends that this application was received from the State Historic Preservation Office.

VII. HISTORIC AND PRESENTATION OF ARCHES IN GRAD RIVER?

(6) The applicant/property owner shall obtain all required Federal, State, and local permits and/or licenses and will comply with applicable codes and regulations.

(7) The property owner shall obtain all necessary electrical, mechanical, and plumbing permits.

(8) At the time of applying for Zoning and Building Permit approval, Applicant will be required to submit the following:

(a) The following recommended Conditions of Approval as specified in Conditional Use Case 854177-00048-HEB0302:

- ii. At the time of applying for Zoning Permit approval, Applicant shall provide demonstration that the easement agreements recorded between the Applicant and land-owning property owners for the easements of the proposed development adjacent to forest zone zoning designation contain an acknowledgment by the Applicant recognizing the rights of adjacent land-owning land owners to exercise forest operations consistent with the Forest Practices Act and Rules for use and utilization in 02AC610-00-402(2)(a).
- iii. At the time of applying for Zoning and Building permit application, Applicant will provide letters from the impacted fire protection districts demonstrating the sufficiency of the fire protection, suppression, and suppression plans prepared by the contractor in connection with the construction phases of the project and the safety of the fire protection, suppression, and suppression plans proposed for the operation of phases of the project.
- iii. Applicant will provide a fire suppression annual basis for three years following completion of the transmission line construction from 000000 (the permit conditions described in the letter dated 06/16/2017 from Robert W. Bradley, 000000 District Fish Biologist, North Carolina Wildlife Department website).
- iv. Applicant will provide a demonstration of compliance with 02AC610-00-402(2) and (3) at the time of applying for Zoning Permit approval.

(7) The following recommended Conditions of Approval are specific to Roadway/Easement/Right-of-Way Permit Report 854177-00048-HEB0302:

ii. Any decision from the proposed development described herein within the Roadway/Easement/Right-of-Way permit process shall be subject to the amount of right-of-way needed to acquire a right-of-way easement.

(8) The following recommended Conditions of Approval are specific to Administrative Review Request 854177-00048-HEB0302:

- ii. During the construction of the proposed project, Applicant shall insure, guard, and protect the adjacent high construction easement areas necessary to ensure safety during construction.
- iii. Applicant shall be responsible for restoring easement areas to the condition any applicant finds and associated improvements shall be made to the easement by the filing, maintenance, repair or construction of the facility. Restoring requirements for construction of the will be done as soon as possible during the construction and shall be ascertained by the filing will be done when necessary for completion. Work applicant shall be certified "noxious weed-free" and will be used on easement facilities.
- iii. Applicant will ground all existing metal structures that exist within the proposed right-of-way.
- iv. During operations, should any violation be measured and determined to be caused by the proposed 000000 transmission line project, Applicant will implement corrective measures in accordance with good utility practices.
- v. Agricultural operations will be able to continue farming areas within the proposed transmission easement areas in the R-41 zone. Continued farm use will be ensured through establishment of easement allowing that use.



MENU



EMERGENCIES



POWER LINES & TREES

TRANSMISSION VS DISTRIBUTION POWER LINES



Transmission vs. distribution power lines



Transmission lines

- Carry electricity across the state

- Transport bulk electricity at high voltages ranging from 60 kV-500 kV
- Are usually supported on tall metal towers, but sometimes on wooden poles
- Have different vegetation standards than distribution lines due to the high voltages they carry
- Are managed using the utility industry's best-management practice of Wire Zone Border Zone
- Require only low-growing vegetation underneath—typically nothing taller than 10 feet at maturity

Our goal is to achieve a sustainable landscape that supports native plants and natural habitats. Trees near these lines can't be managed by pruning and often must be removed.



Distribution lines

- Deliver electricity to neighborhoods and communities over a shorter distance than transmission lines

- Are generally supported by wooden poles and not as high as transmission lines
- Are the final stage of electricity delivery to homes and businesses
- Carry lower voltage electricity that is still powerful enough to cause injury or death

Trees growing near these lines may be managed with directional pruning, but removal is often best. Tree height maximums are 25 feet or less at maturity.

Why Does PG&E Care about Keeping Trees Away from Transmission and Distribution

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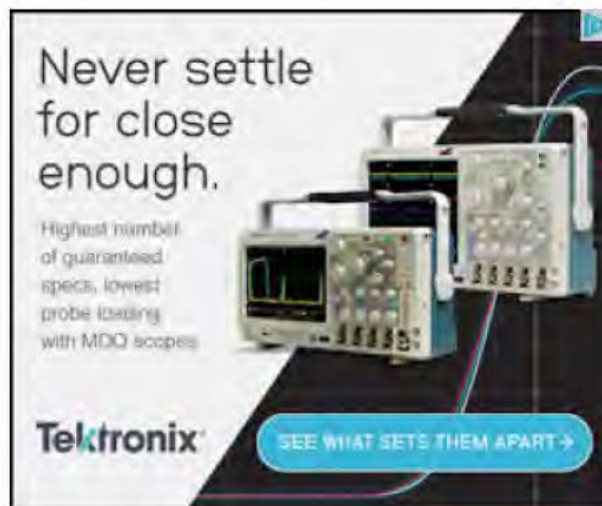
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Difference Between Transmission and Distribution Line

The **Transmission line** and **Distribution line** both are used to carry power or electricity from one place to the other. The difference between transmission and distribution line are explained on the basis of the factors like the basic usage of the transmission and distribution line, their working supply phase, voltage level and level of conduction.



The Difference Between Transmission and Distribution Line is given below in the tabulated form.

BASIS	TRANSMISSION LINE	DISTRIBUTION LINE
Usage	Transmission Line helps in the movement of electricity from power plant to the substations.	The Distribution line carries electricity from the substation to the consumer's end.
Phase	It is carried out electricity in three phase supply system.	It requires a single phase supply system for carrying electricity.
Voltage level	Carries electricity at a very high voltage. About 11000 volts.	Carries electricity at a very low and safe level of about 220 volts.
Current conduction level	They conduct current at 69 kV or more.	They conduct less than 69 kV
Thickness	Transmission lines are thick lines.	Distribution line are thin as compared to the transmission line.

Generation of electricity is a major factor, but how this electricity is transmitted from the power stations to the substations and finally to the consumers is also important. This process is done by transmission and distribution lines.

Transmission lines are a high voltage line that carries electricity from power plant to the substation from it is further distributed to various areas for different purposes. Distribution lines are low voltage lines that carry electricity from the substations to the end users for residential and commercial use.

The Difference Between Transmission and Distribution Line are as follows:-

- ✓ Transmission Line helps in the movement of electricity from a power plant or power station to the various substations whereas the distribution line carries electricity from the substation to the consumer's end. i.e, to the residential and commercial customers.
- ✓ Transmission line carries power or electricity in three phase supply system. Distribution system requires a single phase supply system for carrying electricity.
- ✓ Transmission line carries electricity at a very high voltage that is of about 11000 volts whereas Distribution lines carries electricity at a very low and safe value level that is about 220 volts.
- ✓ Transmission line, conducts current at 69 kilo volts or more, but distribution line conduct current at less than 69 kilo Volt.
- ✓ Distribution line are thin as compared to the transmission line.

Related Terms:

1. **Single Line Diagram of Power Supply System**
 2. **Power System**
 3. **Charging Current in Transmission Line**
 4. **Classification of Substations**
 5. **Difference Between Power Transformer and Distribution Transformer**
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