CLERK OF THE COUNCIL
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MEMORANDUM

TO: Whatcom County Council

FROM: Council Staff

RE: Transmission Line Voltage Maximum

DATE: September 30, 2024

History

In 1990, Initiative 4-90 was placed on the Whatcom County ballot asking voters, "Shall new high voltage power transmission lines over 115,000 volts be restricted to industrial zones?" Whatcom County residents voted (64.3% in favor) to enact the initiative, prompting the Whatcom County Council to pass Ordinance 1990-124 stating, "Except on land where such permits have already been granted or in those districts classified as industrial, no conditional use permit shall be granted for electrical power transmission lines carrying more than 115,000 volts." While the initial 1990 ordinance was codified, it was in fact illegal, as any ordinance proposed by initiative which would repeal a portion of county zoning ordinance is outside the scope of initiative power (See *Save Our State Park v. County Commissioners*, 74 Wn. App. 637, 74 Wash. App. 637, 875 P.2d 673 (Wash. Ct. App. 1994)).

Since 1990, the language of this particular code has changed several times. The most significant update was Ordinance 2004-041, which creates stricter requirements for maximum wattage of transmission lines in addition to voltage requirements. This ordinance, as well as Ordinance 2002-002 and Resolution 2003-051 (a resolution initiating an emergency amendment to WCC), cite various concerns over transmission lines, in particular the potential health impacts that electromagnetic fields (EMFs) may produce.

"Recently, Whatcom County's energy utility, Puget Sound Energy (PSE), has advocated for the increase of maximum voltage requirements in WCC 20.82.030(9)(a-c). This change would allow for up to 230,000 volts or 230 kilovolts (kV) electrical transmission lines outside of the industrial zone, aiding PSE in their ability to meet growing electricity demands."

Background

PSE follows a regulated electricity market structure, meaning it is a vertically integrated monopoly that is responsible for the generation, transmission, and distribution of energy within its region. In exchange for holding a monopoly over the market, investor owned utilities (IOUs), including PSE, are regulated by state Public Utility Commissions (PUCs). Washington's PUC, the Washington Utilities and Transportation Commission, uses specific rate-making formulas to determine a "fair" electricity price for PSE customers based on PSE's operating and investment costs.

Transmission lines are critical infrastructure that transport energy from where it is generated to where it is consumed. PSE owns and operates the transmission line infrastructure in their region. However, PSE's transmission business operates independently (separate from its generation/ distribution business). PSE's transmission business is regulated by the Federal Energy Regulatory Commission (FERC) through an Open Access Transmission Tariff (OATT). This is to ensure that fair rates are charged to anyone who needs access to the transmission lines, as it is not economical or sustainable for each separate entity to build their own transmission systems.

A transmission line's voltage is its potential to move electricity across distances. A higher voltage corresponds with the ability to move more electricity at faster speeds. Transmitting electricity at higher voltages also increases efficiency, as less energy is lost as heat. Electricity is generally generated at lower voltages and then increased as it travels long distances via transmission lines. After voltage is stepped-up using transformers, electricity is transported at that higher voltage until it is stepped-down upon delivery, ensuring consumers receive the appropriate amount of electricity.

Benefits

Amending WCC 20.82 would allow PSE the ability to upgrade existing transmission lines or build new lines at higher voltages to accommodate the transport of higher levels of electricity with greater efficiency. As demand continues to increase, higher capacity transmission infrastructure is necessary to meet the electricity needs of Whatcom County residents.

Renewable energy reduces the greenhouse gases being released into the air via carbon-based energy sources. However, most renewable energy sources produce electrical energy that requires infrastructure such as electrical power lines for transport. Increasing the potential capacity of transmission infrastructure will allow for a greater utilization of renewable energy sources. Further, updating the electrical grid is important for increasing safety, grid reliability, and climate resiliency by aiding PSE's ability to prevent and address power outages, especially during extreme weather.

Additionally, in 2019, the Washington State legislature passed Engrossed Second Substitute Senate Bill 5116, known as the Clean Energy Transformation Act (CETA), requiring all retail energy sales of electricity to be greenhouse gas neutral by 2030. To comply with CETA, PSE estimates that it will need an additional 6,700 megawatts of CETA-compliant energy by 2030. Higher voltage power lines will be needed to transport this added electricity to consumers. However, since Whatcom County is the only county in PSE's service area which prohibits 230 kV transmission lines, there is a disincentive for PSE to invest in new energy projects in Whatcom County. Amending the code to allow for higher voltage power lines will incentivize new industrial economic opportunities within Whatcom County, provide needed infrastructure in areas where heavy industry may expand, and ensure adequate energy infrastructure is planned for and can be sited appropriately. This will also allow Whatcom County to take advantage of state and federal investments in upgrading electrical transmission systems.

Concerns

Public concerns with building or upgrading transmission lines often include added cost for ratepayers, new and unwanted infrastructure, environmental or wildlife dangers, construction disturbances, falling lines and poles, devaluation of property, and potential health impacts from low frequency electromagnetic fields (EMFs).

In the past, Whatcom County residents have been concerned about EMFs resulting in Ordinance 2004-041. This Ordinance references studies that demonstrate a link between EMFs and cancers. However, the World Health Organization (WHO) states, "based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of

any health consequences from exposure to low level electromagnetic fields." Below are some additional resources on the health impacts of EMFs:

Electric and Magnetic Fields from Power Lines | US EPA

Radiation: Electromagnetic fields (who.int)

Next Steps

Amending WCC 20.82.030(9)(a-c) would allow PSE the flexibility to make long-term choices as it plans for grid modernization. This code change will likely not result in instant or large-scale changes due to the cost involved, but specific plans and timelines would be up to PSE. Ultimately, if PSE decides to invest in upgrading transmission lines, it will likely result in an increase in the rates consumers pay (again, as determined as "fair" by Washington's PUC). Increasing the voltage of transmission lines would help increase capacity and efficiency, but it would also require infrastructure investments and construction. However, PSE states that they can upgrade existing power line infrastructure from 115 kV to 230 kV without having to build new transmission infrastructure, which would reduce costs for PSE ratepayers, construction disturbances, and devaluation of property.