

**WASCO COUNTY ENERGY CHAPTER UPDATE
TRANSMISSION 101
24 May 2010**

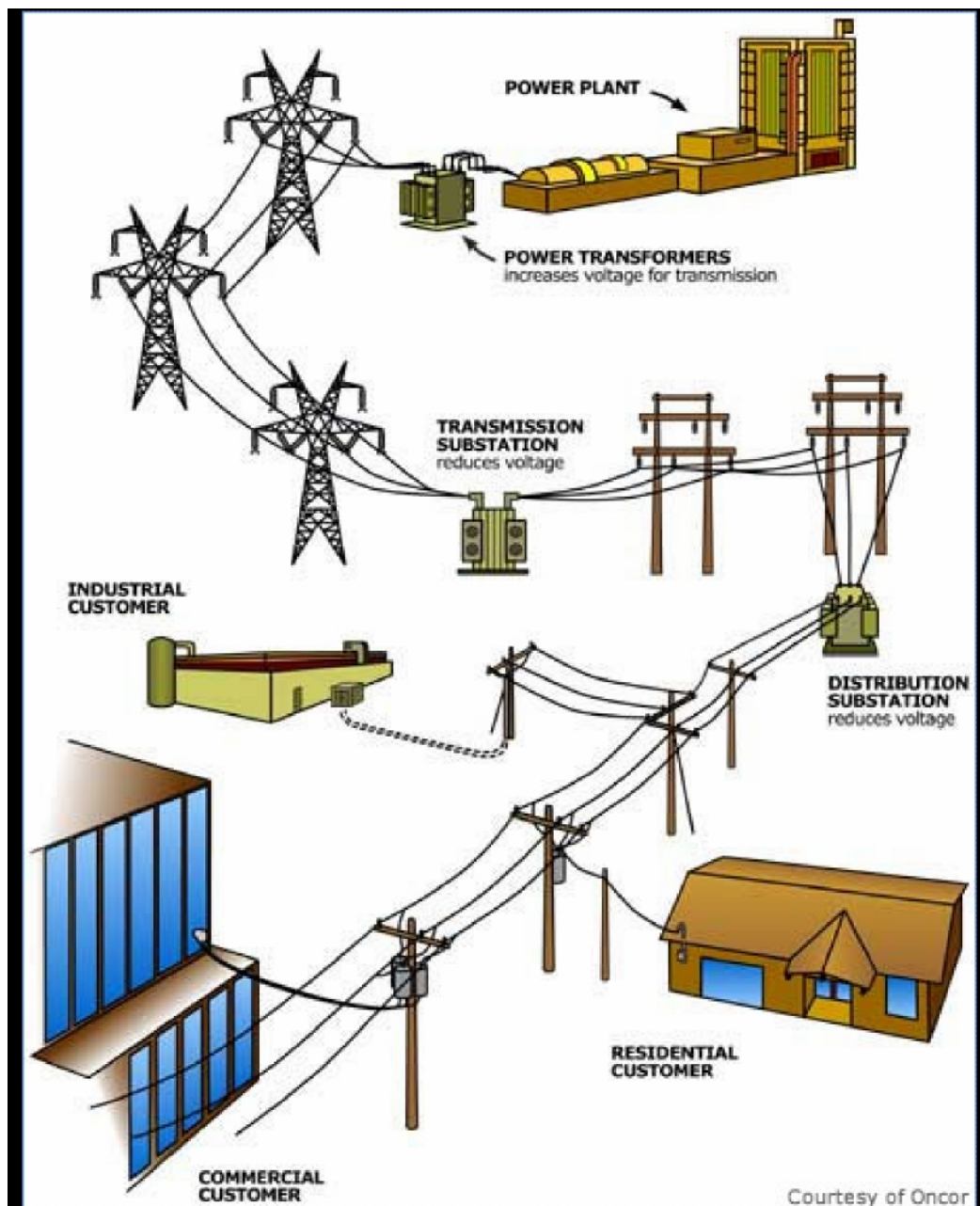
Transmission Diagrams & Explanations

The following was taken from the ONCOR website at <http://www.oncor.com> and the United States Department of Labor(OSHA)
http://www.osha.gov/SLTC/etools/electric_power/illustrated_glossary/

Production & Step Up

After electricity is made, devices called transformers increase the voltage to hundreds of thousands of volts for transmission – 345 kilovolts(kv) – an economical way of shipping large amounts of electricity from the point of production to key locations within the system.

Once the electricity is given enough push (voltage) to go a long distance, it's ready to begin its journey along conductors. Conductors are cables made up of many strands of wire. A continuous system of conductors through which electricity flows is called a circuit.



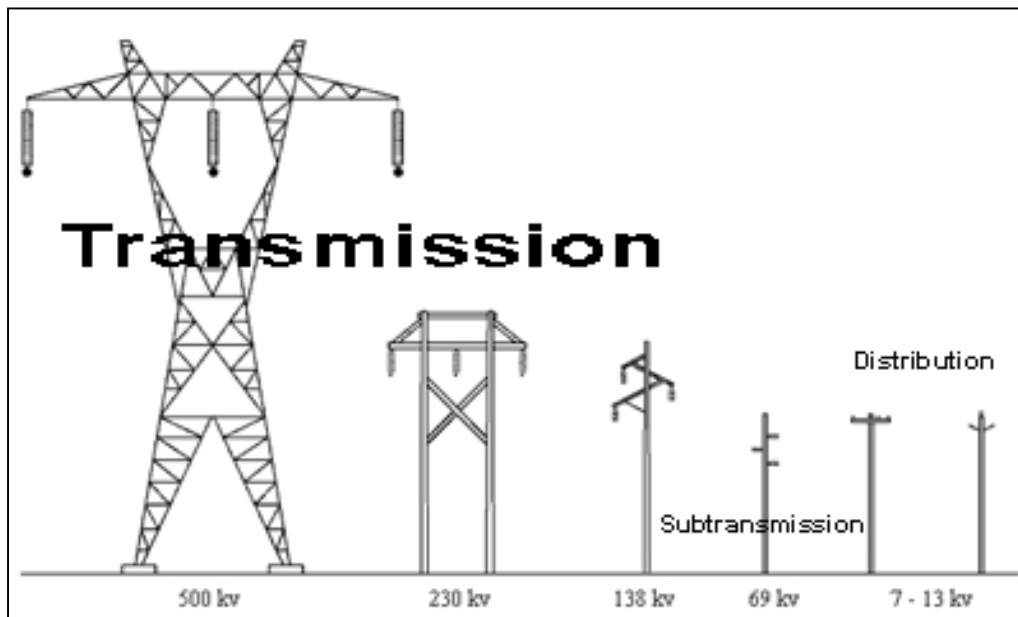
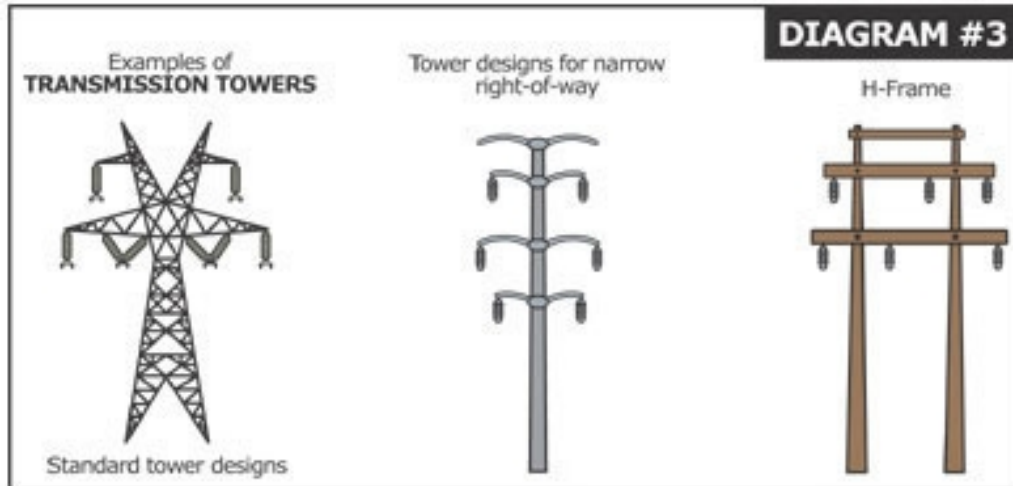
Transmission

High-voltage electricity is moved over distance through the transmission system.

Transmission lines are interconnected to form a network. Should one line fail, another will take over the electric load. Transmission lines can be overhead or underground.

All transmission lines carry three-phase current, or three separate streams of electricity traveling along three separate conductors (see diagram #3).

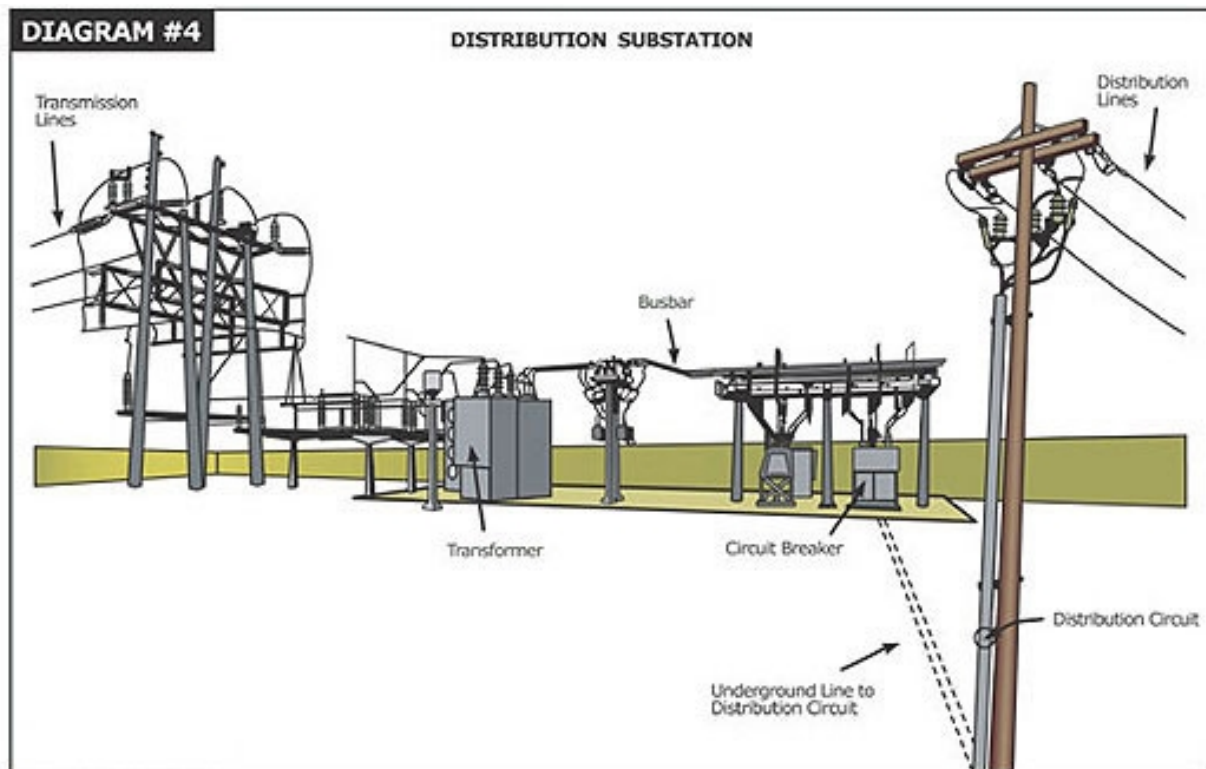
The transmission system is interconnected with transmission systems of other electric utility companies in the state.



Distribution & Distribution Substation

Before electricity can be delivered to consumers, it must travel through a distribution substation. Distribution substations, located near where electricity will be used.

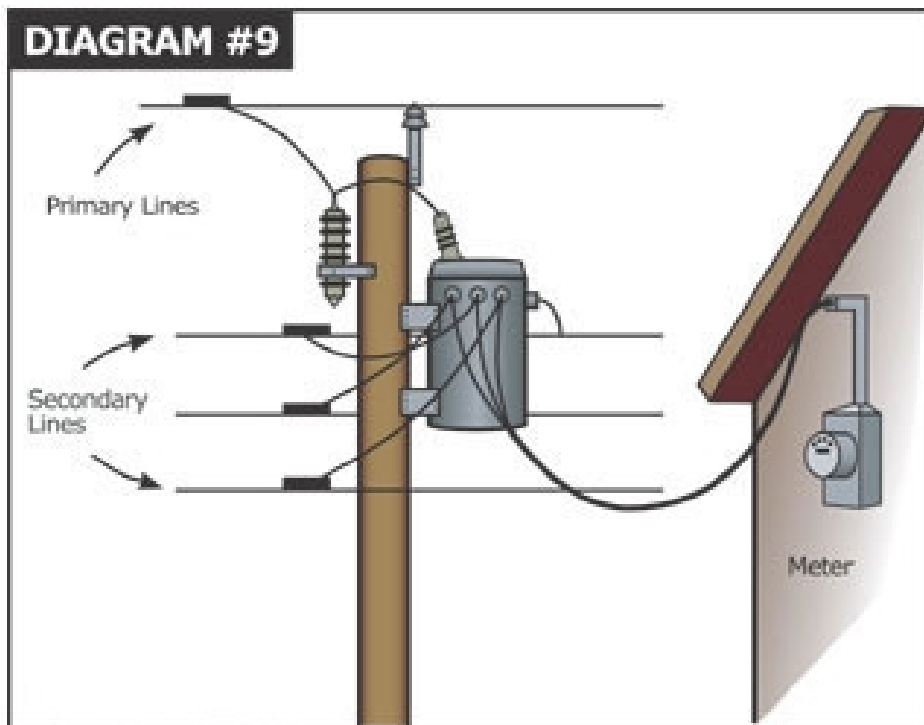
Substations are fenced-in yards containing switches, transformers and other electrical equipment. The main purpose of distribution substations is to lower transmission voltage to 24,900 volts or less to feed the distribution system.



Consumer (Private Utility Service Lines)

There are two kinds of electric lines on the distribution system: three-phase or single-phase. Consumers who need large amounts of electricity to run heavy machinery require three-phase service. Residential consumers use single-phase service (see diagram #9).

Electricity is delivered to consumers through either overhead or underground lines. In underground service, distribution transformers are installed at or below ground level. Those mounted in steel boxes are called padmounts while those installed in underground vaults are called underground transformers. Transformers and other equipment in the overhead system are mounted on poles or other supporting structures.



Categories of Transmission

1. Private Utility Service Lines (Consumer) – Electrical power lines that connect the consumer/customer to the utility facility service lines (distribution).

Existing Criteria Location: Chapter 10, Section 10.130(B(4))

Utilities: If your private utility service lines are not underground will the utilities be:

- a. Kept clear along their route?
- b. Have a single point of access to the building?

Do all new buildings and structures served by electricity include a clearly marked power disconnect switch at the pole or off-grid power source?

Existing Review Process: Self certification requirement associated with development application.

Potential Changes Associated with Chapter 19 Update:

- Cross reference to Chapter 10 standards if deemed necessary.
- Create definition for “Private Utility Facility Service Lines.
- Create use in each zone if deemed necessary. This doesn’t exist now.

2. Utility Facility Service Lines (Distribution):

Existing Criteria Location:

- WCLUDO 1.090 (Definitions), 3.210(B)(10) (A-1 zone),
- ORS 215.283(1)(u),
- OAR 660-033-0130(32)

Utility lines and accessory facilities or structures that end at the point where the utility service is received by the customer and that are located on one or more of the following.

- a. A public right of way;
- b. Land immediately adjacent to a public right of way, provided the written consent of all adjacent property owners has been obtained; or
- c. The property to be served by the utility.

Existing Review Process:

-A-1 Zone

-Under 200’ permitted without review.

-Over 200’ CUP (It is really silent about greater than 200’ in height. Would this ever occur?)

-Other Zones are silent about this.

Potential Changes Associated with Chapter 19 Update:

- Specify this use is allowed in every zone.
 - Less than 200' allowed without review?
 - Greater than 200' a CUP (Are distribution lines ever going to exceed 200' in height?)
 - Create a regulatory process and criteria for these? If yes than possible criteria include:
 - Co-location
 - Undergrounding
 - Practicable alternatives

3. Transmission Facility (Transmission):

Existing Criteria

-Transmission Facility Definition – WCLUDO Section 1.090 (Definitions)

The conductors, lines, structures, buildings, corridor, and construction staging and assembly areas associated with the transmission of electricity from major power sources to the regional power grid and from the regional power grid to the local power distribution system. Such a facility operates at a current of 230 kilovolts (230kV) or less. Such a facility does not include electric power substations, switching stations, or generating facilities.

Potential Changes Associated with Chapter 19 Update:

-Is this the correct definition? Why wouldn't this definition be applicable to a 345KV or a 500KV line? Should there be any other changes such as cross referencing the "Related and Supporting Facilities to a Commercial Energy Facility".

-Utility facilities necessary for public service; criteria; rules; mitigating impact of facility.

- ORS 215.275
- WCLUDO 3.210(J)(8) (A-1 Zone)

- (1) A utility facility established under ORS 215.213 (1)(c) or 215.283 (1)(c) is necessary for public service if the facility must be sited in an exclusive farm use zone in order to provide the service.
- (2) To demonstrate that a utility facility is necessary, an applicant for approval under ORS 215.213 (1)(c) or 215.283 (1)(c) must show that reasonable alternatives have been considered and that the facility must be sited in an exclusive farm use zone due to one or more of the following factors:
 - (a) Technical and engineering feasibility;
 - (b) The proposed facility is locationally dependent. A utility facility is locationally dependent if it must cross land in one or more areas zoned for exclusive farm use in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands;

- (c) Lack of available urban and nonresource lands;
 - (d) Availability of existing rights of way;
 - (e) Public health and safety; and
 - (f) Other requirements of state or federal agencies.
- (3) Costs associated with any of the factors listed in subsection (2) of this section may be considered, but cost alone may not be the only consideration in determining that a utility facility is necessary for public service. Land costs shall not be included when considering alternative locations for substantially similar utility facilities. The Land Conservation and Development Commission shall determine by rule how land costs may be considered when evaluating the siting of utility facilities that are not substantially similar.
 - (4) The owner of a utility facility approved under ORS 215.213 (1)(c) or 215.283 (1)(c) shall be responsible for restoring, as nearly as possible, to its former condition any agricultural land and associated improvements that are damaged or otherwise disturbed by the siting, maintenance, repair or reconstruction of the facility. Nothing in this section shall prevent the owner of the utility facility from requiring a bond or other security from a contractor or otherwise imposing on a contractor the responsibility for restoration.
 - (5) The governing body of the county or its designee shall impose clear and objective conditions on an application for utility facility siting under ORS 215.213 (1)(c) or 215.283 (1)(c) to mitigate and minimize the impacts of the proposed facility, if any, on surrounding lands devoted to farm use in order to prevent a significant change in accepted farm practices or a significant increase in the cost of farm practices on the surrounding farmlands.
 - (6) The provisions of subsections (2) to (5) of this section do not apply to interstate natural gas pipelines and associated facilities authorized by and subject to regulation by the Federal Energy Regulatory Commission. [1999 c.816 §3; 2009 c.850 §9]

Potential Changes Associated with Chapter 19 Update:

-This is only applicable in the A-1 zone. Should this be applicable in other zones as well? If so the language needs to be included in Chapter 19.

-Required consultation for transmission lines to be located on high-value farmland

-ORS 215.276

- (1) As used in this section:
 - (a) "Consult" means to make an effort to contact for purpose of notifying the record owner of the opportunity to meet.
 - (b) "High-value farmland" has the meaning given that term in ORS 195.300.
 - (c) "Transmission line" means a linear utility facility by which a utility provider transfers the utility product in bulk from a point of origin or generation, or between transfer stations, to the point at which the utility product is transferred to distribution lines for delivery to end users.
- (2) If the criteria described in ORS 215.275 for siting a utility facility on land zoned for exclusive farm use are met for a utility facility that is a transmission line, the utility

provider shall, after the route is approved by the siting authorities and before construction of the transmission line begins, consult the record owner of high-value farmland in the planned route for the purpose of locating and constructing the transmission line in a manner that minimizes the impact on farming operations on high-value farmland. If the record owner does not respond within two weeks after the first documented effort to consult the record owner, the utility provider shall notify the record owner by certified mail of the opportunity to consult. If the record owner does not respond within two weeks after the certified mail is sent, the utility provider has satisfied the provider's obligation to consult.

- (3) The requirement to consult under this section is in addition to and not in lieu of any other legally required consultation process. [2009 c.854 §1]

Potential Changes Associated with Chapter 19 Update:

-This criteria does not exist in the WCLUDO. This should either be added to Chapter 19 or to the A-1 zone criteria.

-Transmission Under 200' in Height

-WCLUDO Section 3.210(D)(13) (A-1 zone). This also references ORS 215.275 criteria located in the A-1 zone (3.210J(8)(a)(1)-(6)). Technically this is a utility facility necessary for public service (3.210(d)(12) & ORS 215.283(1)(d)) but we broke it out specifically to be clear.

Potential Changes Associated with Chapter 19 Update

-Determine what process is required for towers under 200 in each zone. STS like the A-1 zone or should it be a CUP?

-Transmission Towers Over 200' in Height

- ORS 215.283(2)(m)
- OAR 660-033-0130(5)
- WCLUDO Section 3.210(E)(9) (A-1 zone)

Transmission towers over 200 feet in height.

Potential Changes Associated with Chapter 19 Update:

This is currently only explicit in the A-1 zone. It needs to be clear in every zone this is a Cup review process.

-Reconstruction or Modification of a public road

- ORS 215.283(1)(i)
- WCUDO 3.210(B)(7) (A-1 zone)

Reconstruction or modification of public roads and highways, including the placement of utility facilities overhead and in the subsurface of public roads and highways along the public right of way, but not including the addition of travel lanes, where no removal or displacement of buildings would occur, or no new land parcels result.

Potential Changes Associated with Chapter 19 Update

Currently only the A-1 zone makes reference to this. The use is allowed without review. Should we allow it in other zones as well?

-Transmission towers; location; conditions.

-ORS 215.438

The governing body of a county or its designate may allow a transmission tower over 200 feet in height to be established in any zone subject to reasonable conditions imposed by the governing body or its designate. [1983 c.827 §23a]

Potential Changes Associated with Chapter 19 Update

Most zones are unclear about transmission. Each zone needs to clearly include what is allowed and how for transmission towers over 200' as well as under 200' in height.

EFU – Over 200' in height is a CUP and subject to applicable Chapter 19 criteria.
Under 200' in height is an STS subject to–

EFSC Authority Definitions

-ORS 469.300(11)(a)(C)

A high voltage transmission line of more than 10 miles in length with a capacity of 230,000 volts or more to be constructed in more than one city or county in this state, but excluding:

- (i) Lines proposed for construction entirely within 500 feet of an existing corridor occupied by high voltage transmission lines with a capacity of 230,000 volts or more; and
- (ii) Lines of 57,000 volts or more that are rebuilt and upgraded to 230,000 volts along the same right of way.

Potential Changes Associated with Chapter 19 Update

-ORS 469.300 is already proposed to be referenced in Chapter 19.

Other Potential Changes Associated with Chapter 19 Update

-Should there be any specific undergrounding requirements?

-How about Co-locating? Should part of our criteria be that transmission or distribution needs to be co-located if there is capacity? If yes how strict do we want to be with this standard?