

1. INTRODUCTION

The Utilities Element of the Comprehensive Plan covers utilities supplied by the private sector, including electrical, telecommunication, and natural gas. Utilities provided by the City, including water, sewer, and storm water, are included in the capital facilities element of the plan.

Policies related to utilities planning that are jointly adopted by Thurston County for the urban growth area are indicated by an asterisk, "*". Additional county policies related to utilities can be found in the Thurston County Comprehensive Plan.

2. GROWTH MANAGEMENT ACT

- A. Requirements** - The GMA requires that the Utilities Element must contain descriptions of locations and capacities of existing and proposed facilities. Specifically, the GMA states that each comprehensive plan shall include "a utilities element consisting of the general location, proposed location, and capacity of all existing and proposed utilities, including, but not limited to, electrical lines, telecommunication lines, and natural gas lines."

Section 15 of the GMA requires that the City "identify lands useful for public purposes such as utility corridors ..." The GMA also required Counties to adopt county-wide policies. The Thurston County County-Wide Planning Policies were adopted in 1992. Section II of the Policies relates to the promotion of contiguous and orderly development and provision of urban services. Goal 2.3.a. directs the City to ensure adequate capacity of private utilities to accommodate planned growth.

- B. Public Participation** - The GMA also states, under Section 14, that the City "shall establish procedures providing for early and continuous public participation in the development and amendment of comprehensive land use plans and development regulations implementing such plans."
- C. Other Regulations** -Utilities are regulated in the State of Washington under the authority of RCW80.01.010. This legislation created the Washington Utilities and Transportation Commission (WUTC) which is composed of three members appointed by the Governor. State law regulates the rates and charges, services, facilities and practices of the utilities. Any change in customer charges or service provision policy would require Commission approval.

The Federal Energy Regulatory Commission (FERC) is an independent five-member commission within the U.S. Department of Energy. FERC sets rates and charges for the transportation and sale of natural gas and for the transportation of oil by pipeline, for the transmission and sale of electricity, and the licensing of hydroelectric power projects.

3. SPECIFIC UTILITIES

A. Natural Gas Service - Puget Sound Energy (PSE) builds, operates, and maintains natural gas facilities serving the City of Lacey. PSE is an investor-owned utility serving nearly 652,000 customers in five western Washington counties including Thurston, King, Snohomish, Pierce, and Lewis. There are approximately 8,200 customers in the City of Lacey. A customer is a residence or building which uses metered natural gas, not a person.

(1) Utility of Convenience - Natural gas is considered a utility of convenience, not an essential public facility. The activities of PSE are regulated by both federal and state legislation. PSE is subject to the general regulations and oversight by the energy agencies, such as WUTC and FERC, as noted above. However, there is other legislation which has specific implications for the natural gas industry. These are as follows:

(2) Regulators - The National Gas Policy Act (NGPA) of 1978 encourages competition among fuels and suppliers across the United States. The NGPA contained incentives for developing new natural gas resources and a tiered pricing structure aimed at encouraging the development of nationwide transmission pipelines.

The Northwest Power Planning Council (NWPPC) focuses on the generation of electricity; however, its policies have implications for gas. NWPPC's recent Power Plan directs the region to develop cogeneration as an energy resource and hydro-firming as a power back-up system. Cogeneration is the use of heat, as a by-product of power generation, for industrial processes or for space and water heating. Natural gas is often used as a fuel source for cogeneration. Hydro-firming is the back-up of the region's intermittent excess spring hydrogeneration with gas-fired combustion turbines in the event that hydroelectric power is insufficient.

(3) Pipeline - Natural gas is supplied to the City of Lacey through gate stations along the William's Pipeline Corporation's route. At the gate station, the natural gas is metered and becomes the responsibility of PSE. There is a six inch main running east/west through Lacey on 14th Avenue SE, Lacey Boulevard, and Steilacoom, as shown on the map titled Natural Gas Main, City of Lacey. This line is capable of supplying 500,000 cubic feet per hour (cfh). An average house which uses natural gas for heating the house and hot water uses approximately 11.4 cfh. There are approximately 147 miles of gas main servicing the City of Lacey.

(4) Joint Trenching -

PSE is already working with the other utilities to coordinate joint trenching efforts in new construction, road widening projects, and LID's. The City needs to encourage the continued practice of this cooperative effort by providing the utilities with timely information regarding projects.

Utility corridors may provide enough space for more than one utility, and when this is the case, multiple use should be encouraged. However, there are times when multiple use is not practical due to the size of the corridor, the topography, or some other reason. Existing corridors should be protected, and their further use for new facilities should be encouraged. This would increase the efficiency of the use and possibly decrease the need for additional corridors. However, there will be a need for new corridors in the future, and in fact, the GMA requires that we plan for them.

There has been general agreement between jurisdictions and utility providers that joint use of utility corridors, for example, for recreational uses such as walking trails, is a good use of land when all uses are compatible. Corridors considered for multiple use would be those that do not lie adjacent to public rights-of-way, but instead go "cross country", the land in the corridor has already been cleared and an easement granted. There is a possibility that with some minor earth work a trail could be provided, thus utilizing the land to a greater extent. PSE has noted that they often have an easement only, not title to the land, and therefore could not grant the City use of the land. However, in a case like this the owner of the land could grant usage to the City if the proposed use were compatible with the existing use by the utility.

(5) Future Expansion - Future expansion of PSE facilities has been planned by using the forecast analysis zones (FAZ's) as established by the Puget Sound Council of Governments, in which a general area is identified and analyzed more closely as to what the future population and employment figures would be. The PSE Planning Department uses a saturation model which assumes all new households will use natural gas. Based on this, and the growth that occurred over the past 10 years, PSE anticipates serving 12,000 customers in Lacey by December 2014.

When a supply system such as the six inch main is installed, it is tested at the maximum allowable pressure; however, this maximum pressure is not used at first, but is instead held in reserve to provide room for growth. In addition to this room for growth in the existing system, tentative construction projects to accommodate growth are planned between now and the year 2014 and include: 1) Installing approximately 12 miles of 8" supply main from Fort Lewis to Lacey, 2) looping a 6" supply main with an 8" supply main from Olympia along the Yelm Highway and north to the eastern part of Lacey, and 3) installing about 4 5 miles of 8" 12" high pressure supply main to serve the north area of Lacey when demand justifies the cost. This will involve tying to the existing supply main located along Steilacoom Road, Pacific Avenue, Lacey Boulevard and 14th Avenue SE. The new 8" 12" supply main would extend across I-5 into the Hawks Prairie Planning Area.

(6) Conservation - PSE has a conservation plan which focuses on providing the most efficient energy to customers at the least cost.

(7) Conclusion - PSE currently meets the demand for gas service in the City of Lacey. Although PSE does not install gas lines prior to demand, it does anticipate being able to

meet future needs and is planning now to meet that demand within the City of Lacey in the next 20 years.

B. Electrical Service - The electrical service provider in the City of Lacey and its growth management area is Puget Sound Energy (PSE). PSE is an investor-owned private utility that serves 1,000,000 customers in nine Washington counties. It is the only provider of electricity in Lacey and Lacey's growth area. Puget Power gets 40% of its electricity from hydroelectric facilities, 25% from a coalstrip plant in Montana, and the rest from other coal, gas, and oil fired plants, and from cogeneration. Existing facilities in the City and the Growth Management Area are shown on Map 1, Electrical Transmission System, Existing Facilities.

(1) Duty to Serve - Electric service is considered a critical service. This utility has a "duty to serve" as outlined in RCW 80.28.110 and must "furnish to all persons and corporations who may apply therefore and be reasonably entitled thereto, suitable facilities for furnishing and to furnish all available ... electricity ... as demanded".

(2) Regulators - The Growth Management Act requires that the City provide a Comprehensive Plan which includes a utility element, as noted above.

WUTC regulates PSE, as noted above under II.C. WUTC determines if PSE is meeting its public service obligations. The Commission also requires PSE to develop plans for providing electric service in the future. These plans include conservation.

PSE is also regulated by FERC as noted in Section II.C. One of the hydroelectric projects regulated by FERC is the Snoqualmie Falls project, which is owned by PSE.

The U.S. Department of Energy regulates national and international energy transactions. An agency within this department is the Bonneville Power Administration (BPA). BPA does not directly regulate electric service providers, but it is a vendor of electricity and thus works with utilities to operate the northwest regional power grid.

Washington State has adopted a State Energy Code that establishes construction standards in new buildings to increase energy efficiency. This code is enforced by local jurisdictions throughout the State. In Lacey, the State Energy Code is enforced by the building inspectors.

The Energy Facility Site Evaluation Council (EFSEC) is a state council with authority to determine where stationary thermal power plants with a generating capacity of 250,000 kilowatts or more can be located. ~~However, the city may seek permission from the landowner if the proposed use is compatible with the existing use by the utility.~~

The Department of Labor and Industries (L&I) provides the minimum standards for construction, repair, and maintenance. For example, L&I inspectors check all new electrical service installations except where the local jurisdiction has the authority to do so. The City of Lacey has its own electrical inspector.

The City of Lacey has a Tree and Vegetation Preservation and Protection Ordinance which regulates the removal of trees and other vegetation throughout the City, including the public right-of-way. Thurston County has a Critical areas Ordinance that applies to the urban Growth Area and addresses utility location.

(3) Transmission of Electricity - Electricity is generated at a site, transmitted and distributed through lines, and then transformed into usable levels of energy. Electricity is generated by spinning turbines. Energy is required to spin the turbines, and this can be in the form of falling water or steam. The electricity thus generated is then transformed to a higher voltage (often 500,000 volts, 345,000 volts or 230,000 volts, so that it can be moved over long distances. This high voltage electricity is then moved through transmission lines (high voltage or high tension lines) to transmission substations located near major load centers. The substations lower the voltage (usually to 115 kV), then distribute the electricity to distribution substations. These substations lower the voltage again (to between 35 and 4 kV). A transformer between the distribution substation and the home or business again lowers the voltage (to 240 or 120 volts).

Power lines are looped where possible to provide for more options in distributing power and to insure reliability in cases where lines are damaged because of a storm, for example.

(4) Joint Trenching/Corridors - See section under natural gas.

(5) Future Expansion - PSE has calculated what future demand for electricity will be in the Lacey area by the year 2040~~30~~. These calculations are based on population and employment predictions by Thurston Regional Planning Council and contained in the 2007 "Profile" for Thurston County. Conservation and demand side management effects were taken into account when adding the expected demand from growth to the existing demand.

Plans for future facilities are shown in PSE's Thurston County GMA Electrical Facilities Plan dated March 1993. The Lacey area map used in this Utility Element incorporate corridors and infrastructure designed to implement this planning, and are shown in graphic form on Map 2, Electrical Transmission System, Proposed Facilities. The facilities planned for the City of Lacey are reasonably current. The following projects are currently being pursued in the 10-year planning window:

1. Provide 230 kV bulk power delivery at St. Clair Substation, which will include new 230 kV transmission lines and a new 230 kV transformer.

- ~~2. Add a second 115 kV transformer at the existing Lacey Substation.~~

- ~~3. Develop a new distribution substation (the Hawks Prairie Substation) at Meridian Campus with construction starting in 2004 (the Hawks Prairie Substation was identified~~

~~as the Durkin Substation in the 1993 Thurston County GMA Electrical Facilities Plan.~~

24. Convert all 55 kV lines to 115 kV in Olympia, Lacey, Tumwater and unincorporated Thurston County.

35. Upgrade Pleasant Glade distribution substation to transmission substation.

46. Construct the new Hoffman Switching Station in the east Olympia/west Lacey area.

57. Construct a new 115 kV line between Marvin Road and Pleasant Glade Substation.

~~8.~~ Construct a new 115 kV substation at the south end of Lacey.

~~9.~~ At the Southwick Substation replace an existing transformer with a larger bank to support the growing load in surrounding areas.

6. New substation Britton Parkway and Carpenter Road.

The map submitted by PSE and utilized in this Utility Element to show proposed facilities (Lacey Area Map - Existing and Proposed Private Utilities Electric and Natural Gas) is not intended to indicate exactly where future facilities will be located. Density and load growth drive the need for new electrical lines. Generally, utility corridors follow roadways, and this should be encouraged. Inclusion of this map does not indicate approval of future facility sites, but is instead acknowledgement of planning being done by PSE to provide service for anticipated future growth. Of particular note on this map is the dashed diagonal line from Pleasant Glade to Marvin Road, indicating a proposed 115kV transmission line. This line does not follow any existing route, but is intended to show future connections that may be required. This route crosses an environmentally sensitive area and it cannot be assumed that any City approval would be given until a review of a specific proposal has been conducted. All other proposed lines appear to follow existing corridors.

PSE is currently in the process of coordinating resource acquisition strategy in parallel with the least cost planning process. PSE has identified resource deficit in the near and long-range time frame. Efforts are continuing to acquire existing or new resources to meet the need.

PSE has suggested that electric utility facilities be allowed in all zoning districts. At the present time, electric facilities such as substations are allowed under the Special Uses and Conditional Use Chapters of the Zoning Ordinance. These chapters outline what a special use consists of and provide the regulations for permitting them. A public hearing is required as part of the process. The public hearing process allows for public participation in decision making; therefore, no change in zoning requirements is recommended for siting electrical facilities.

(6) Extremely Low Frequency Electric and Magnetic Fields (ELF-EMFs) - Because of public interest in this topic pertaining to land use decisions this section has been

included in the Plan to provide some basic background. Information in this section was taken from a booklet published by the United States Environmental Protection Agency and the Office of Radiation and Indoor Air (booklet 402-r-92-008 dated December 1992) and a Report Published by the National Institute of Environmental Health Sciences (NIEHS), National Institute of Health (NIH) publication No. 99-4493. This information is intended to be informational, and does not set any standards.

An electric field results from an electric charge and a magnetic field results from a moving electric charge. Therefore, any electrical appliance which is plugged into a power source has an electric field. Until the appliance is actually operating so that the current is flowing, there is no magnetic field. The term "electromagnetic" assumes the interrelation of the two fields. At extremely low frequencies this relationship is not the same as it is in the higher frequency range. However, the terms "Electric and Magnetic Field" and "Electromagnetic Field" are commonly used interchangeably and abbreviated as "EMF".

Particular concern has been given to the impact of power lines, transformers, and substations on human health. Land use projects involving these activities often are opposed by the public because of health concerns. This concern is due to conflicting studies, some of which have indicated that some health impacts may be the result of EMF. A report published by NIEHS on "the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields" states that "the scientific evidence suggesting that ELF-EMF exposures pose any health risk is weak". It states that the strongest evidence comes from associations observed in human populations with two forms of cancer; childhood leukemia and chronic lymphocytic leukemia in occupationally exposed adults.

The NIEHS report states that while evidence of health effects from individual studies is weak, "the epidemiological studies demonstrate, for some methods of exposure, a fairly consistent pattern of a small, increased risk with increasing exposure..." The report concludes that "ELF-EMF exposure cannot be recognized at this time as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard." However, in the opinion of Kenneth Olden, Ph.D, the Director of the Department of Health and Human Services and who was responsible for publishing the report, "...the conclusions of this report are insufficient to warrant aggressive regulatory concern." It was noted that additional carefully designed, hypothesis-driven studies should continue.

Based upon the existing studies and regulatory issues, Federal legislation has pre-empted local government agencies from considering EMF impacts during land use decisions. Specific guidelines have been established that the power companies must maintain. Local jurisdictions may not vary from these federal standards.

(7) Conservation - PSE has an ongoing commitment to conservation which includes: Information to residential customers regarding conservation measures they can implement; and, reducing demand at peak time, especially by commercial customers. There is also the Washington State Energy Code, which regulates new construction, and

is aimed at reducing heat loss.

(8) **Vegetation Management** - The City's Tree and Vegetation Preservation and Protection Ordinance regulates tree and vegetation removal within the City. As stated in Section 14.32.020.B. of the ordinance, a purpose of the ordinance is "To preserve and enhance the city's physical and aesthetic character by preventing indiscriminate removal or destruction of trees and ground cover". Section 14.32.020.F. states, in part, "certain factors may require the removal of certain trees and ground cover for things such as... interference with utility services". Therefore, the ordinance reflects the fact that the City wants to preserve trees as much as possible, while allowing for their removal under certain circumstances such as interference with utility services.

However, no tree removal may take place in the City, on the public right-of-way or on private property, without either a Land clearing Permit or other permit which includes approval for land clearing, or an Exemption from the permit, all of which require administrative review. The only exception to this is an emergency situation.

In an effort to eliminate tree related emergencies in the future, City staff will review projects for possible conflicts between existing or required vegetation and existing or proposed power lines.

In the Urban Growth Area, Thurston County development regulations and the Critical Areas Ordinance govern clearing and utility placement.

(9) **Conclusion** - PSE currently meets the need for electric service in the City of Lacey and is planning now to meet anticipated needs in the future. Those plans are based on information provided by Thurston Regional Planning Council for predicted population and employment growth.

C. Telephone Service - The main provider of standard telephone service in Lacey and its Urban Growth Area is Qwest. Qwest is an investor owned corporation. In addition to Qwest, there are some 13 companies listed in the phone directory that offer some form of local service. Generally, these other carriers have purchase agreements through Qwest. Qwest is also a long distance carrier.

Standard telephone service is considered a necessity; therefore, Qwest must provide phone facilities on demand. It is regulated by the WUTC.

Telecommunications is a competitive business. Because of this, maps of existing and proposed facilities or specific information on the system are not available. However, Qwest does work with the other utilities on joint trenching.

D. Cellular Phone Service - There are a number of Federal Communications Commission (FCC) licensed cellular phone providers: Cellular phones are considered to be a utility of convenience and therefore, are not required to provide service on demand.

The need for cellular towers to provide service to the Lacey area and the increasing number of applications for cellular towers resulted in specific zoning code amendments in the late 1990s to deal with new wireless communication land use issues. Zoning provisions that require co-location of facilities and demonstrated need for new towers were developed and adopted to control the un-necessary location of towers. In addition, stealth technology and screening and buffering techniques are required to be utilized to minimize land use conflicts with adjacent uses. These provisions should be maintained and updated as necessary to keep up with this new technology.

Thurston County has adopted specific development regulations for telecommunications towers for the Lacey growth Area.

E. Cable Service - There are two cable companies listed in the local telephone book for providing cable TV to Lacey and its Urban Growth Area. Currently, cable companies are not regulated by the state as a private utility. However, cable service is regulated by the City and by the FCC. Comcast participates in joint trenching with the other utilities.

F. Satellite Service - In recent years satellite TV, through several companies, has become more popular due to the clarity provided by digital signals and relatively low cost. When this technology was new the size of the "dish" antenna required for reception was significant, commonly 8 to 10 feet in diameter. The cost for the big dish antennas was expensive compared to cable and location of dishes was generally limited to rural areas and areas without cable service.

When located in urban areas the large size and required orientation for reception often make aesthetic and screening issues important to local jurisdictions. In such cases, consideration of location and screening standards should be considered as a design issue. However, as the technology has progressed, individual home dishes have become smaller and are now commonly 12 inches in diameter and can be located any number of areas that produce little or no aesthetic impact to adjacent properties. This has made regulation of the location and sighting of the dishes less critical considering neighborhood aesthetics.

G. Land Resources for Utility Improvements - Land resources necessary to serve urban development needs to be considered at the earliest possible time. This should occur during the planning stages of development. Often it is difficult for utility companies to find suitable property for location of substations and other improvements to serve new development. Specific development may trigger the need for utility upgrades and improvements but not take responsibility for considering land resource needs for these improvements. It makes sense to require this consideration early on, and to budget land resources for these needs within new developments. This will avoid the need of utility companies to search for suitable property off site or even out of the growth area to serve new urban development.

4. GOALS AND POLICIES

*** A. Encourage coordination and cooperation among local jurisdictions regarding**

**utility
planning.**

Policies:

- (1) Coordinate with Thurston County, Olympia, and Tumwater to achieve consistency in regulations and long-range plans.
- * (2) Cooperate in the planning of multi-jurisdictional additions and improvements.

B. Encourage coordination and cooperation between the City and the various private utilities.

Policies:

- (1) The City and the utilities should share information regarding development plans, population growth projections, and other information relative to growth and the accompanying demand for services.
- (2) The City shall process permits in a timely manner.
- (3) The City should incorporate input from utilities in developing ordinances or resolutions regarding permits for street excavation within the public right-of-way.

C. Designate utility corridors.

Policies:

- (1) The City and the utilities shall work together to designate utility corridors.
- (2) Whenever feasible, utility corridors shall be included in public rights-of-way.
- (3) Alternative corridors should be designated to provide flexibility for development in the future.

D. Encourage joint trenching of utilities.

Policies:

- (1) The City shall provide the utilities with timely and pertinent information necessary to plan for joint trenching, including plats, LID's, and road construction projects.
- (2) The utilities shall coordinate joint trenching.

E. Underground utilities.

Policies:

- (1) Require the undergrounding of all new electrical distribution and communication lines where it is a logical course of action, balancing the cost, health considerations, and the benefits.

- (2) Encourage the undergrounding of all existing electrical distribution and communication lines where it is a logical course of action, balancing the cost, health considerations, and the benefits.

***F. Require compatibility of utility development with existing and planned land uses.**

Policies:

- * (1) Require screening and/or architecturally compatible integration of all new substations.

***G. Encourage public participation during planning for siting of utilities.**

Policies:

- *(1) Provide for community input on the siting of proposed utility facilities.

H. Regulate vegetation management by utilities.

Policies:

- (1) Except in an emergency situation, approval shall be obtained from the City prior to spraying, trimming, or removing vegetation within the public right-of-way. Also, approval shall be obtained from the City prior to vegetation removal on private property. After approval and prior to the work being done, affected property owners shall be notified.
- (2) In an emergency situation, necessary work shall be performed, and notification given to the City immediately thereafter explaining what has been done.
- (3) Trimming and removing vegetation shall be performed in an environmentally sensitive and aesthetically acceptable manner and according to professional arboricultural specifications and standards.
- (4) Trees planted under power lines shall be species that will not grow to interfere with the lines, or become potential hazard trees to the lines because of size.

I. Limit exposure to electromagnetic fields.

Policies:

- (1) Periodically review the state of scientific research on EMF's and make changes to policies if the situation warrants such changes.
- (2) Rely on federal standards to ensure a reasonable balance between any identified potential health effects of exposure to EMF's and the cost and impacts of mitigation of such exposure.

***J. Encourage conservation of energy resources.**

Policies:

- (1) Encourage development of cost-effective and environmentally sensitive alternative technologies and energy sources.
- (2) Encourage conservation of energy in City facilities.
- (3) Encourage conservation of energy.

***K. Encourage provision of land resources for utilities.**

* Policies:

(1) As new development projects are planned and developed encourage early consideration of land resources for utility substations and improvements necessary to serve these developments.

*(2) Where possible accommodate land resources for utility substations and improvements within the developments that necessitate the utility improvements.

*(3) Utility substations and utility improvements necessary to serve urban growth should be located within the urban growth management boundaries.