Exhibit 1 to Ordinance No. 2230
Redmond Comprehensive Plan Sections for Adoption

Utilities Element

Future Vision for Redmond – Utilities

The planning and placement of utilities in Redmond has supported the community's vision for the location and amount of growth. Utility planning for future annexation areas and higher growth areas such as Downtown and Overlake has advanced achievement of the vision. The City provides certain utilities in support of the desired location and pace of growth. For those utilities provided by private companies, the City has encouraged the necessary and desired services by allowing private companies to use public facilities, ensuring sufficient areas for placement of those facilities, and providing for a reasonable regulatory climate.

Utility planning has contributed to a high quality of life for Redmond residents and businesses by ensuring efficient utility delivery. Communications facilities are keeping up with changes in technology. Conservation and protection of existing resources has ensured a continued supply of clean water and energy.

Proper utility planning has also protected Redmond's natural environment and resources. Upgrades to the sewer system have eliminated many septic systems, thereby controlling contaminants released into the environment. The City has protected the natural environment by developing systems to prevent excess storm run-off, by designing and upgrading systems and plans to prevent damage to the environment, and by fostering conservation.

Organization of this Element

Introduction

A. General Utility Policies
B. Water
C. Sewer
D. Stormwater
E. Solid Waste
F. Non-City Managed Utilities
G. Electricity
H. Natural Gas
I. Telecommunications
J. Hazardous Liquid Pipelines

A. General Utility Policies

Adequacy and Phasing of Facilities

The City of Redmond provides a variety of utility services including water, sewer, and stormwater. Other investor-owned private utilities such as solid waste removal, cable, gas, electric, and telecommunications serve under franchise agreements with the City.

Availability of utilities is an important factor considered by developers when deciding where, when, or whether to build. Having adequate utilities is also very important to people who live or work in Redmond. Therefore, land use and utility policies can work together to help achieve Redmond's vision for the future of the community.

To encourage annexation, public utilities are generally not extended beyond the City limits. However, City services will be allowed outside the City limits to address health and safety issues or to serve areas where previous agreements include the area in the Redmond service area. If service is extended to rural lands due to service agreements, design of the systems must be rural in nature to prevent urban sprawl.

UT-1 Ensure that adequate public utilities and facilities are planned for, located, extended, and sized consistent with the planned growth described in the Vision and Goals, Annexation and Regional Planning, and Land Use Elements.

UT-2 Design public utility facilities to meet service standards identified in the Capital Facilities Element.

UT-3 Strongly support the development of innovative technologies such as alternative fuels and emergent telecommunications technology.

UT-4 Encourage the use of innovative technologies to:

- Provide and maintain utility services;
- Reduce the negative impacts of additional utility service demands;
- Improve the existing service; and
- Reduce, where appropriate, the overall demand on utility systems.

UT-5 Prevent extension of City-provided urban utilities to rural areas outside the Urban Growth Area except to meet State Department of Health or other applicable health, safety, and welfare codes. Design such extensions to rural standards and do not condition the extension with other urban development standards such as street widening, sidewalks, or street lighting.

UT-6 Follow the City's policy concerning extension of City utilities to urban unincorporated areas as expressed in the Annexation and Regional Planning Element of the Redmond Comprehensive Plan. If immediate annexation is not possible, condition any extensions

with an agreement to annex in a timely manner and an agreement to design to City development standards.

UT-7 Conduct City business in a manner that leads by example through activities such as recycling, water conservation, energy conservation, and low-impact development processes whenever possible.

Economic Considerations

In order to balance capital expenditures with revenues and still maintain established levels of service, new development will have to pay for the portion of facility improvements related to its level of demand on the system. The combining of development money with City funds allows for a more equitable distribution of costs and helps to keep utility rates lower.

There are cases where one development occurs prior to another and is not adjacent to existing infrastructure. The new development may extend transmission pipes across the frontage of non-developed properties and incur the cost of that extension in order to develop their parcel. Reimbursement agreements have been a method that Redmond has used to employ equitable cost sharing for development costs. These provide for a reimbursement to the original developer of costs associated with that portion of the line that is later used by another development. This is one way of maintaining the concept of fair share financing.

In limited cases, public utilities may be extended outside the City limits. However, it is more costly to provide long-term, low-density service. Public utilities presently fund improvements from revenues. If, in the future, general taxes were to be used to fund infrastructure, properties outside the City would benefit from the infrastructure without paying those taxes to fund it. Equity can be established through a differential rate structure or differential connection fees to ensure that City residents are not subsidizing the extension of services outside City boundaries.

Right-of-way acquisition and installation of facilities are also factors in the cost of utilities. Coordination of facility planning can reduce those costs in several ways. For instance, if utilities are notified of roadway construction and repairs, they may be able to place or upgrade lines or pipes at the same time. Or several utilities may be able to use the same trench. Right-of-way acquisition cost could be shared where such right-of-way would serve joint uses.

UT-8 Require development to pay for or construct the growth related portion of infrastructure needs.

UT-9 Create equity in financing of capital facilities among City residents and those outside the City by reflecting the full cost of providing service outside City limits.

UT-10 Promote the efficiency of utility placement both in cost and timing through methods such as the following:

- Co-locate public and private utilities in shared trenches or utility corridors, provided that such joint use is consistent with limitations as may be prescribed by applicable legal and safety considerations.

- Coordinate facility planning so that utilities may locate in transportation corridors and other dedicated rights-of-way.
- Provide timely notice to utilities or coordinate with them when the construction or repair of existing and new roadway, bridges, or sidewalks is anticipated.
- Provide a reasonable regulatory climate and expeditious permitting.
- Design new public infrastructure to allow for the projected future utilities that may be placed within those facilities at a later time.
- Encourage joint use of utility corridors for utilities and recreation.
- Install empty conduit to facilitate future undergrounding of aerial utilities.

UT-11 Determine utility infrastructure necessary for a given development concurrently with site plan entitlement.

Environmental Considerations

Redmond has many natural features, such as fish spawning creeks, open space, and forested areas. Minimizing utility intrusion into these areas is a means of protecting these important assets by preventing initial destruction of habitat for installation. When utilities are allowed to build in wetlands, periodic maintenance will require intrusion into sensitive areas and may disrupt wildlife during critical reproductive periods. Utility corridors often need to be free of vegetation for maintenance purposes. Similarly, sewage or stormwater lines that are not carefully located, designed, and constructed can create undesirable environmental impacts.

Placing utilities underground prevents the need to prune trees and shrubs, which can be detrimental to the plant and often result in oddly shaped plants. Undergrounding also can be more aesthetically pleasing, and can reduce the incidence of power and telecommunications loss during events such as storms and auto/utility pole accidents as well as protect the public from fallen lines. Above-ground facilities can be designed to be compatible with or to enhance an area. Examples include Well No. 4, the METRO York pump station at Willows and NE 124th Street, and the SE Redmond Water tank.

UT-12 Balance the need for provision of utilities at a reasonable cost with the need to protect the environment and natural resources.

UT-13 Design, locate, and construct facilities to reasonably minimize adverse impacts to the environment and to protect environmentally sensitive areas. Take into account both individual and cumulative impacts. Minimize impacts through actions such as:
- Locating sewer lines and use construction methods and materials to prevent or minimize the risk of spillage into watercourses and water bodies.
- Locating utility corridors in existing cleared areas.
- Locating utility facilities and corridors outside of wetlands.
- Minimizing crossings of fish-bearing water courses.
- Using bio-stabilization, rip-rap, or other engineering techniques to prevent erosion where lines may need to follow steep slopes.
- Minimizing corridor widths.

UT-14 Require undergrounding of all new utility distribution lines, except where undergrounding would cause greater environmental harm than alternatives or where the Washington Utilities and Transportation Commission tariff structure is not consistent with this policy. Consider new technologies such as wireless transmission as they become available.

UT-15 Promote the undergrounding of existing utility lines by means such as:

- Requiring undergrounding of utility distribution lines or the provision for undergrounding as a condition for redevelopment projects.
- Undergrounding utility distribution lines or provide for future undergrounding as street projects occur.
- Funding undergrounding through a capital improvement program or through formation of a local improvement district.
- Requiring individual service lines to be undergrounded when significant site improvements are made.

UT-16 Require reasonable screening or architecturally compatible design of above-ground utility facilities. Promote high quality design of utility facilities through measures such as:

- Use of varied and interesting materials.
- Use of color.
- Additions of artwork.
- Superior landscape design.

B. Water

Sources of Supply

Redmond provides water service to most areas within the city limits, the Urban Planned Developments (UPDs) to the east, and to some properties outside the City and the UPDs. The City's water supply comes from its wells; the Cascade Water Alliance (CWA), a Washington nonprofit corporation organized by regional water suppliers; connections to Tolt pipeline No. 2 and Tolt tie-line; and indirectly through the water systems of the cities of Bellevue and Kirkland. The City also sells water to the Union Hill Water Association. A number of water purveyors service the areas surrounding the City.

Future water supply demands will be met by the City through wholesale purchases from CWA and from its wells. To meet the growing needs of its members, CWA will continue to pursue additional sources of water supply. As a member, the City will pursue future sources of supply through this organization. Redmond's well system will also provide part of the City's water supply. The well system draws from a shallow aquifer and is susceptible to contamination, especially as urbanization of the aquifer recharge zone continues. It is imperative to maintain the water quality of the well source. A Wellhead Protection Program can help to preserve that resource. In addition, reducing water use through conservation measures lessens the demand for the new supply.

The water service area is shown in the City's adopted Water System Plan together with an inventory of water facilities.

UT-17 Continue to utilize, protect, and sustain the Redmond well system to maximize the efficiency of the system as long as water quality is in accordance with or can be treated to meet state and federal drinking water regulations.

UT-18 Protect groundwater sources by maintaining and monitoring a Wellhead Protection Program which guides:

- Land use decisions;
- Development regulations;
- Stormwater facility requirements;
- Coordination with other agencies; and
- Other measures necessary to protect Redmond's well system.

UT-19 Participate with the Cascade Water Alliance to acquire additional sources of supply for future needs.

UT-20 Reduce average annual and peak day water use by supporting implementation strategies that are found in the Water System Plan, such as rate structures that encourage conservation.

Facilities

Standardization of design ensures facilities will be compatible and have a reasonable economic life. There are known and accepted system designs which may be less costly to build, less costly to operate or more reliable, such as looped systems and gravity feed systems. If the City maintains a set of standards, developers can be assured of knowing the standards prior to design and the public can be assured that the system is designed as an integrated whole. System inter-ties allow cooperation between systems other than Redmond's to provide adequate flow in emergency situations. This reduces the need to build larger and more expensive facilities. Defining service standards offers a way of measuring adequacy and safety performance against community standards.

UT-21 Design water delivery and storage systems to provide efficient and reliable service, to balance short and long term costs, and to comply with state and federal regulations through methods including but not limited to:

- Use of gravity feed whenever feasible.
- Development of a looped system.
- Standardization of transmission facilities sizing and materials.

UT-22 Require new development to construct water system improvements necessary to serve the development and to provide a reliable integrated distribution system.

UT-23 Maintain adequate storage facilities to meet equalizing and fire demand volume and emergency supply.

UT-24 Pursue the creation of emergency inter-ties with adjacent purveyors.

Redmond is dependent upon City wells to provide a water source. Preventing and reducing the penetration of the aquifer by numerous individual wells helps to ensure the integrity of those wells against both excessive draw and contamination.

UT-25 Prohibit the creation of new water systems within the City of Redmond to ensure that Redmond is the primary provider of water service. Facilitate the City being the sole provider by encouraging the connection to City water for those properties on existing private well systems.

UT-26 Require connection to the City water system for all new development permitted by the City.

UT-27 Require connection to the City water system for existing uses when redevelopment such as a short plat, subdivision or other significant land use action occurs to that property.

C. Sewer

Facilities

A majority of the City of Redmond is served by a sanitary sewer. However, there are still a few areas which have on-site disposal systems, such as septic tank systems. Most of the proposed annexation areas lacks sewer. A proliferation of septic systems can reduce the health and safety of the community. Therefore, Redmond should require or encourage connection to the sanitary sewer.

Redmond needs to ensure standardization of sewer facility design so that facilities will be compatible, less costly, and have a reasonable economic life. Standards which include system designs such as gravity flow are less costly and more reliable and therefore should be used. Defining service standards offers a way of measuring performance against community standards. Standardization of design and level of service standards also assists the developer in design and cost calculations.

Regional treatment facilities have replaced local ones in the Seattle Metropolitan area due to environmental reasons and economies of scale. Regional facilities have been able to ensure higher levels of treatment for sewage before release back into the environment. This system will likely be the system of choice for some time into the future. METROKC, which provides wastewater treatment facilities, currently has sufficient capacity to meet Redmond's present needs. Additional treatment facilities or facility upgrades will be necessary to meet long term future regional demand.

The sewer service area is shown in the City's adopted General Sewer Plan together with an inventory of sewer facilities.

UT-28 Ensure that the City of Redmond is the primary provider of wastewater service within the City limits and eventually eliminate septic systems.

UT-29 Require connection to the City wastewater system for all new development and for existing uses when redevelopment such as a short plat, subdivision, or other significant land use action occurs to that property. Extend a waiver in limited circumstances where the economic impact of connection is high and there is no public safety concern.

UT-30 Design wastewater systems to provide efficient and reliable service while balancing short- and long-term costs. Use gravity collection whenever feasible.

UT-31 Require development to construct sewer system improvements necessary to serve the development and to use design and construction standards for wastewater facilities that:

- Facilitate long-term operation and maintenance at the lowest reasonable cost;
- Meet or exceed the State Department of Ecology standards;
- Comply with State or Federal regulations; and
- Provide a reliable integrated collection system.

UT-32 Support a regional approach to wastewater treatment by contracting with METROKC for transmission and treatment of Redmond's wastewater.

UT-33 Adopt or allow new technologies for waste disposal if they prove equal or superior to existing methods.

Redmond presently has some areas served by septic or other on-site wastewater disposal systems. As urbanization continues, these systems are becoming less viable. Sometimes individuals do not properly pump and maintain their systems. To compensate for poor soil conditions, systems more frequently are incorporating mechanical pumps which require periodic maintenance and flow regulation. Some systems are located in aquifer recharge zones and pose potential contamination issues to Redmond's ground water supply. Generally, the soil types and saturation levels in this area are not particularly suitable to these systems. It is necessary to prevent the proliferation of new systems and to convert the existing on-site systems to sewer in order to protect the public health and safety.

UT-34 Require existing development to connect to the City wastewater collection system when on-site systems have failed and sewer facilities are available.

UT-35 Encourage conversion from on-site wastewater disposal systems as sewer lines becomes available.

UT-36 Prohibit stormwater connections to the sanitary sewer system in new development and require disconnection of any existing stormwater connection to the sanitary sewer system when substantial improvements are made to a property, except in cases where the public health and safety calls for such connections.

UT-37 Require reconnection to the proper system when a sanitary sewer line has been connected incorrectly to the stormwater system.

D. Stormwater

Redmond's stormwater management programs focus on stormwater runoff, groundwater recharge, surface waters, and riparian (water-related) habitat. Programs address basic conveyance of runoff, flood hazard reduction, water quality issues, riparian habitat protection, and protection of groundwater quality. It is especially important that new development or significant redevelopment effectively manages stormwater with the appropriate facilities to ensure the public's protection.

UT-38 Maintain, use, and require development to use storm water design and construction standards that:

- Address rate of discharge, water quality, and method of storm drainage.
- Incorporate the principles of "Best Management Practices."
- Address methods to control runoff during construction to limit erosion, siltation, and stream channel scouring.
- Minimize adverse impacts to natural watercourses.

UT-39 Evaluate the feasibility of regional detention and treatment facilities and support their use where the concept proves feasible.

UT-40 Ensure that the design of storm water management facilities approximates pre-development levels of infiltration and that they are designed to provide recharge in those areas where recharge is appropriate.

UT-41 Encourage open channel drainage systems, natural or man-made, whenever feasible through retention of existing systems and the development of new ones.

Stormwater facilities can serve multiple purposes. They not only allow recharge and support plant life but they can be incorporated into the landscaping design as an aesthetically pleasing element. They can also provide a park amenity, comprise a part of a streetscape, and can lower building temperatures when incorporated into roof gardens. Allowing stormwater facilities to fulfill some of the open space requirement increases the land available for actual development, reducing the burden on the developer while still meeting the intent of open space requirements.

UT-42 Allow stormwater retention/detention facilities to qualify towards fulfilling open space requirements. Tie the percentage allowed to the intensity of use and density; a smaller percentage for low density residential graduating to a higher percentage for high density residential and non-residential.

UT-43 Encourage incorporation of natural systems into building designs to minimize run-off. Examples of such designs are sod roofs or rainwater capture to provide on-site landscape watering.

UT-44 Pursue the development of streetscapes that incorporate natural systems for detention and water quality improvements into the design of the streetscape. Examples of this are swales planted with native vegetation such as the "green street" project in Seattle. Offer incentives to developers for incorporating such streets into subdivisions.

There are a number of mandates for groundwater management plans. Even without these mandates, groundwater management is important for Redmond because the City relies on groundwater for a water supply source. Drainage basins extend across City limits and as such require cooperation to manage.

UT-45 Use the Western Washington Stormwater Management Manual, 2001 with adjustments to suit local conditions when conditioning development or designing systems.

UT-46 Cooperate and participate in groundwater management and basin plans with surrounding jurisdictions and implement policies where local action is feasible.

Private maintenance of storm water facilities such as private oil separators was not always performed, or performed properly. If these systems are not properly maintained, they become dysfunctional defeating the purpose of requiring such systems. Ground and surface water management must deal with this as well as with setting standards for storage, disposal, and accidental spillage of hazardous materials, and preparing for emergency responses to spills. Spill response involves police, fire, and transportation, as well as City maintenance or inspections crews. If these staff work together to develop standards and regulations for storage of hazardous materials and an emergency response plan to deal with contamination emergencies, staff time can be reduced by coordination, a wider range of expertise is available, and plans or regulations can address multiple needs.

UT-47 Maintain and enforce minimum operation and maintenance standards for public and privately owned stormwater systems as set forth in the Stormwater Plan and the Municipal Code.

UT-48 Coordinate public and privately owned stormwater system maintenance activities in accordance with established standards.

UT-49 Consider upgrading existing retention or detention facilities when new technologies prove more efficient or when upgrades such as attractive fencing or landscape materials can add amenity value to the neighborhoods.

UT-50 Develop and implement regulations and procedures concerning the storage and use of hazardous materials in coordination with other City departments.

UT-51 Develop and implement an emergency response plan for responding to surface and ground water contamination emergencies to protect Redmond wells, coordinating among affected City departments.

UT-52 Follow standards concerning street waste and decant facility management procedures found in the Redmond Storm Water Facility Plan and the Municipal Code.

E. Solid Waste

Inventory of Conditions and Future Needs

Solid waste disposal service is provided by a private company which also removes recyclables under a contract with the City. The garbage and recycling services are voluntary for both residential and commercial waste disposal. Whether pickup is by private carrier, individual, or is self-hauled by businesses, the waste stream portion is taken to a transfer station and then hauled to a regional landfill. The City also sponsors special recycling days for items which are not easily hauled with curbside service, but have recycle or reuse capability. King County sponsors special days for the collection of hazardous substances.

There is adequate landfill capacity as of 2004. Several factors make it difficult to predict future capacity for solid waste removal: the changing views of citizens with respect to waste, technologies of the solid waste industry, possible changes in state law to allow imposition of mandatory recycling or to deny the privilege of self-hauling, and the regional nature of landfill and recycling operations.

Waste Management

The State Solid Waste Reduction Act and the Hazardous Waste Management Act includes mandates on reduction of the waste stream, education, and recycling. As a community leader, City offices can serve as a good example to the community in waste reduction by both recycling and purchase of recycled goods.

UT-53 Provide solid waste and recycling collection services within the City using contract hauling or whichever method is most economical to the City for both residents and businesses.

UT-54 Support recycling through such means as:

- Placing disposal containers in convenient locations.
- Maintaining or developing systems for recycle pick-up for residents and commercial establishments.
- Using incentive programs to encourage recycling of materials.
- Providing public education programs.
- Purchasing city goods containing recycled materials.
- Encouraging procurement of recycled-content products by residents and businesses.

UT-55 Consider implementing mandatory programs if incentive programs fail to reach reasonable reductions in waste.

UT-56 Support public education programs on solid waste management, recycling, waste reduction, and the proper storage and disposal of hazardous wastes.

F. Non-City Managed Utilities

Availability of energy and communications can influence decisions of developers to locate particular land uses. Conversely, land use decisions may influence the need for energy or communications utilities to support the land use. It is important to link the provision of utilities with the land use plan.

The City can take steps to promote efficient use of energy resources. Examples of such steps include locating land uses to reduce car trips or encourage transit, using building codes to promote efficient heating/cooling, encouraging common wall construction, adding street trees which cool asphalt, or maintaining height codes which protect solar gain. Less conversion of fossil fuels to energy or use of cleaner, more-efficient fuels can also lead to cleaner air and reduced cost to individuals and society. It is also prudent to encourage conservation and efficient land uses to reduce the need for additional facilities which can result in higher utility costs.

Electrical energy and natural gas is provided to the City of Redmond and surrounding communities by Puget Sound Energy (PSE), a private company. Telecommunications are provided by numerous different companies.

UT-57 Ensure non-City-owned utilities facility plans reflect and support Redmond's Land Use Plan and work with those utilities to ensure that energy and telecommunications resources are available to support the proposed land use plan.

UT-58 Reduce energy consumption and encourage conservation of energy resources through measures such as:

- Supporting trip-reducing or transit-oriented land use.
- Using alternative-fuel City vehicles.
- Requiring installation of street trees and parking landscape.
- Allowing clustering with common wall construction.
- Enforcing the energy code.
- Encouraging the use of "Green" roofs.
- Encouraging building design with natural solar gain for heating.

UT-59 Coordinate and seek to cooperate with other jurisdictions when transmission facility additions or improvements cross jurisdictional boundaries. Include efforts to achieve consistency between jurisdictions in permit timing.

UT-60 Negotiate aggressively franchise contract conditions that support the delivery of cost effective services desired by Redmond residents and businesses.

G. Electricity

Inventory of Conditions and Future Needs

Redmond is served by Puget Sound Energy (PSE), a private electrical utility whose operation and rates are governed by the Washington Utilities and Transportation Commission. PSE is part of a western regional system, which means electricity is produced elsewhere and transported to Redmond through high-voltage transmission lines. As electricity nears its point of destination, the voltage is reduced and redistributed through the use of transmission substations, distribution substations and transformers. Redmond has several high-voltage transmission lines running east-west and north-south. At present, it has one transmission substation and a number of smaller distribution substations.

Map **UT-1** shows the locations of major existing electrical facilities.

Map **UT-2** shows proposed major electrical facilities.

Planning for electrical production and distribution is done on a regional basis. Currently the majority of electricity in the region is from hydroelectric, gas or coal-fired plants. Future possibilities of demand reduction are also factored into the planning process through probable conservation factors. PSE is exploring the use of wind generated technology to meet future demand and expects additional conservation efforts to occur in the future. There is a possibility of biomass production (the burning of methane or organic products to produce energy), in the long-term future, however PSE's current energy planning does not account for using this source.

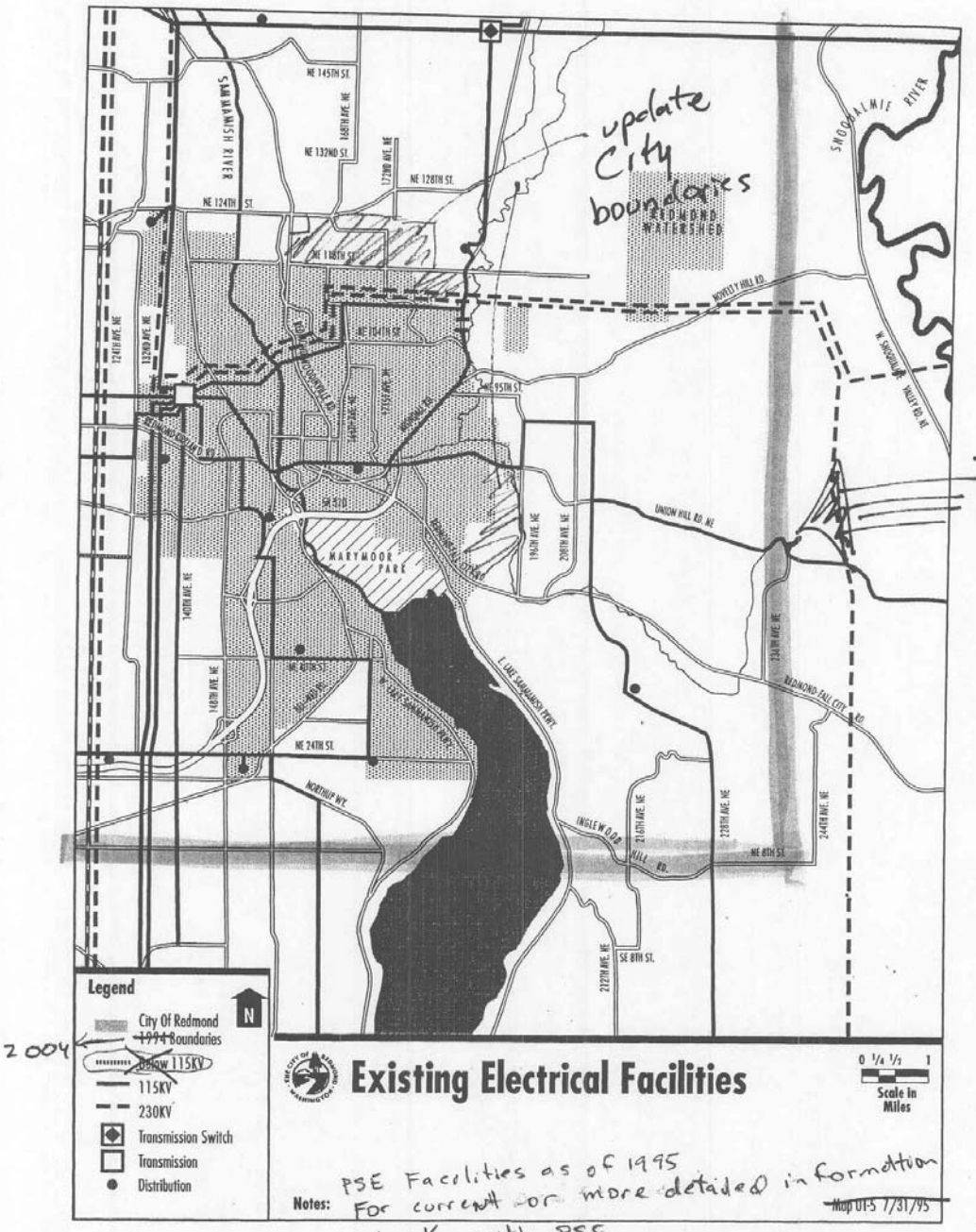
Electrical Facilities

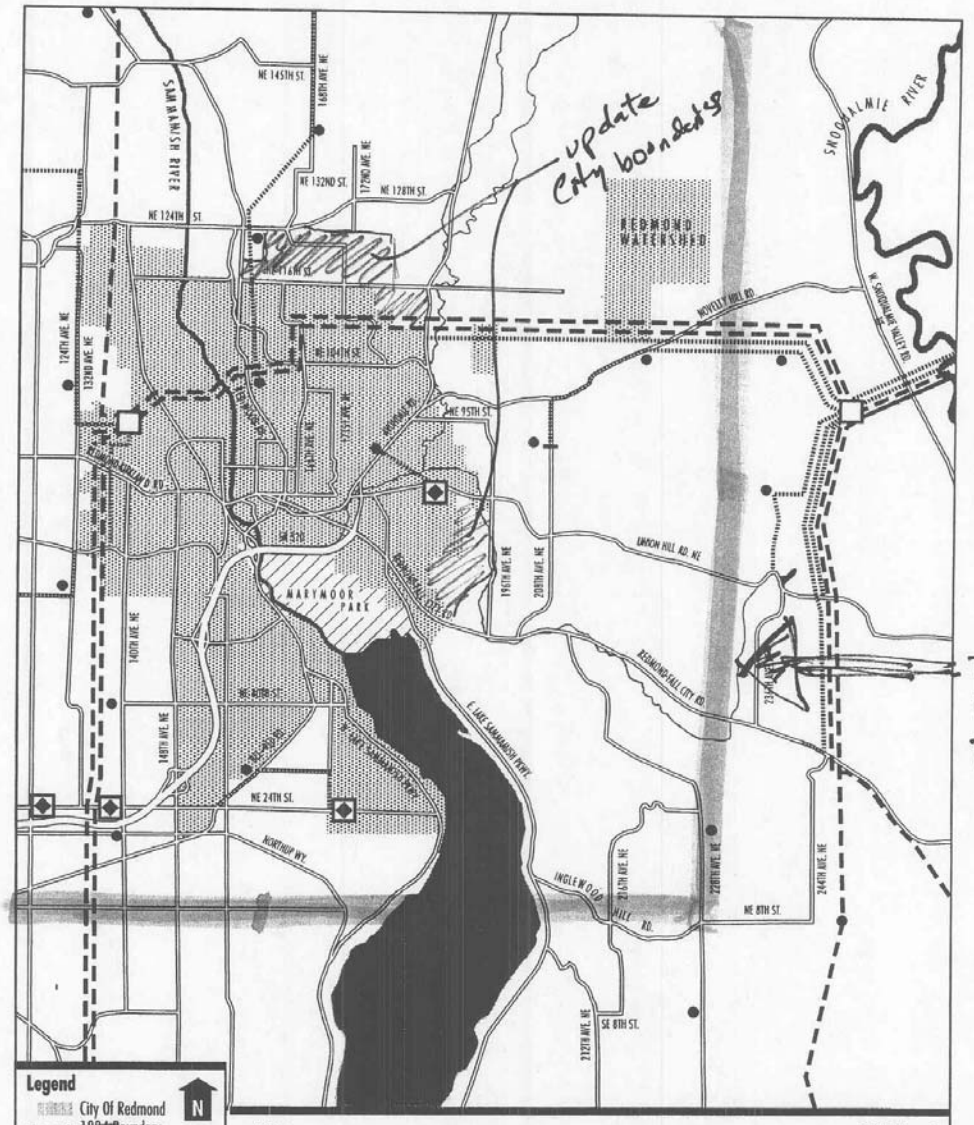
The electrical transmission system is a utility system that fills an essential public need. Therefore, zoning should allow the siting of major transmission lines at or above 115KV capacity and substation facilities in areas where it is reasonably necessary to provide efficient service. With coordination between the utility and the City in advance of the siting, problems of conflicting land uses may be reduced or avoided.

UT-61 Recognize the current Electrical Facilities Plan, authored by Puget Sound Energy as the facility plan for electrical utilities serving Redmond and the vicinity. Use this plan, where it is consistent with Redmond's land use goals, as a guide in identifying and preserving utility corridors and locating electrical facilities.

UT-62 Allow electrical distribution facilities as a permitted use where appropriate to ensure that land is available for the siting of electrical facilities.

Map UT-5 /


update City boundaries
Reduce Mapping Boundary
2004
Legend
City Of Redmond
~~1994~~ Boundaries
Below 115KV
115KV
230KV
Transmission Switch
Transmission
Distribution
N
Existing Electrical Facilities
0 1/4 1/2 1
Scale in Miles
Notes: PSE Facilities as of 1995
For current or more detailed information check with PSE.
~~Map UT-5 7/31/95~~
REDMOND WATERSHED
MARYMOOR PARK
SAMMAMISH RIVER
SNOQUALMIE RIVER
NE 145TH ST
NE 132ND ST
NE 128TH ST
NE 124TH ST
NE 116TH ST
NE 95TH ST
NE 24TH ST
NE 8TH ST
SE 8TH ST
NOVELTY HILL RD
UNION HILL RD. NE
REDMOND-FALL CITY RD
E. LAKE SAMMAMISH PKWY.
NORTHUP WY.
INGLEWOOD HILL RD.
W. LAKE SAMMAMISH PKWY.
124TH AVE. NE
132ND AVE. NE
140TH AVE. NE
148TH AVE. NE
172ND AVE. NE
196TH AVE. NE
200TH AVE. NE
212TH AVE. NE
216TH AVE. NE
228TH AVE. NE
234TH AVE. NE
244TH AVE. NE


update City boundary
Reduce Mapping Boundary
REDMOND WATERSHED
MARYMOOR PARK
SAMMAMISH RIVER
SNOQUALMIE RIVER
NE 145TH ST
NE 132ND ST
NE 128TH ST
NE 124TH ST
NE 116TH ST
NE 95TH ST
NE 85TH ST
NE 24TH ST
NE 8TH ST
SE 8TH ST
WOODINVILLE-REDMOND RD.
NOVELTY HILL RD.
UNION HILL RD. NE
REDMOND-FALL CITY RD.
E LAKE SAMMAMISH PKWY.
INGLEWOOD HILL RD.
NORTHUP WY
W SNOQUALMIE VALLEY RD.
E LAKE SAMMAMISH PKWY.
Legend
City Of Redmond
2004 1994 Boundary
115KV
230KV
500KV
Transmission Switch
Transmission
Distribution
N
Proposed Electrical Facilities
0 1/4 1/2 1
Scale in Miles
Identified upgrades may have been constructed. For details check with PSE.
Notes:
Map UT-6 7/31/95

UT-63 Coordinate with Puget Sound Energy or its successor when considering land use designations or new development in the vicinity of proposed facility locations that might affect the suitability of the designated areas for location of facilities.

Citizens have a high regard for maintaining the forested appearance of the City of Redmond. Professional arborists have expressed concern that excessive pruning around electrical lines can kill or weaken trees. While the City of Redmond values safe and reliable electrical power, which requires proper pruning and appropriate removal of vegetation, at the same time, care must be taken to minimize damage to and the loss of trees. It is preferable to reduce the use of herbicides to control such growth as this can contaminate surface and ground water.

UT-64 Encourage pruning of trees to direct growth away from overhead utility lines, education about proper placement and choice of landscape plants, and encourage phased replacement of vegetation located improperly in the right-of-way.

UT-65 Ensure that pruning of trees necessary for safe and reliable utility service is performed in an aesthetic manner to the greatest extent possible and performed according to professional arboricultural specifications and standards.

UT-66 Discourage the use of herbicides to control vegetative growth around utility facilities, encourage alternative methods such as mowing or selective treatment, and encourage more environmentally friendly herbicides.

There have been a number of studies that have examined possible health effects of extremely low frequency (ELF) electric and magnetic fields (EMF) which are generated by power lines, household wiring, and appliances. Many are statistical incidence studies, not controlled laboratory studies. Even with controlled laboratory studies, results have been mixed and do not clearly point to a connection between ELF/EMF and health effect. Since some evidence indicates there may be an effect on the body, but at present the effect is not sufficiently linked with a particular result, the risk remains undefined.

Facility siting and design standards, many of which are presently used by electrical utilities, can reduce exposure to ELF/EMF. Transmission line configurations affect field strength. Reverse phasing, a method of running current in opposite directions, may result in magnetic field reductions. Magnetic field strength also falls off dramatically as distance increases. Any of these known and acceptable low-cost methods can be used to reduce ELF/EMF exposure without placing an undue burden on the electrical provider.

UT-67 Require designs that incorporate known and accepted low-cost technological methods of reducing magnetic fields or the exposure to them when siting high-voltage electrical facilities until further research provides more information on the health effects of electromagnetic fields. Methods may include:

- Line configurations that reduce field strength.
- Sufficient right-of-way widths.
- Sufficient height of lines from the ground for high voltage transmission facilities.

UT-68 Periodically review the state of scientific research on ELF/EMF and modify policies and regulations, if warranted, by changing knowledge or if new state or federal regulation requires changes.

Electrically powered busses and cars exist currently on the market. There is a potential for individual autos and delivery truck/van fleets to be electrically powered as battery technology is rapidly advancing. These vehicles cause no emissions harmful to air quality at the point of vehicle usage, although there may be increased environmental effects at the location where the electrical energy is generated. The change in technology or the use of existing electric vehicle systems will result in infrastructure changes. Redmond should seek to assist the change in technology as conditions warrant.

UT-69 Facilitate efforts to develop an electric recharging infrastructure for electrically powered vehicles. This may include:

- Updating regulations to deal with the new technology.
- Taking a lead in or cooperating with other jurisdictions in converting to electrically powered government vehicles.

UT-70 Consider allowing development of an electrical bus/trolley infrastructure as a method to improve air quality.

H. Natural Gas

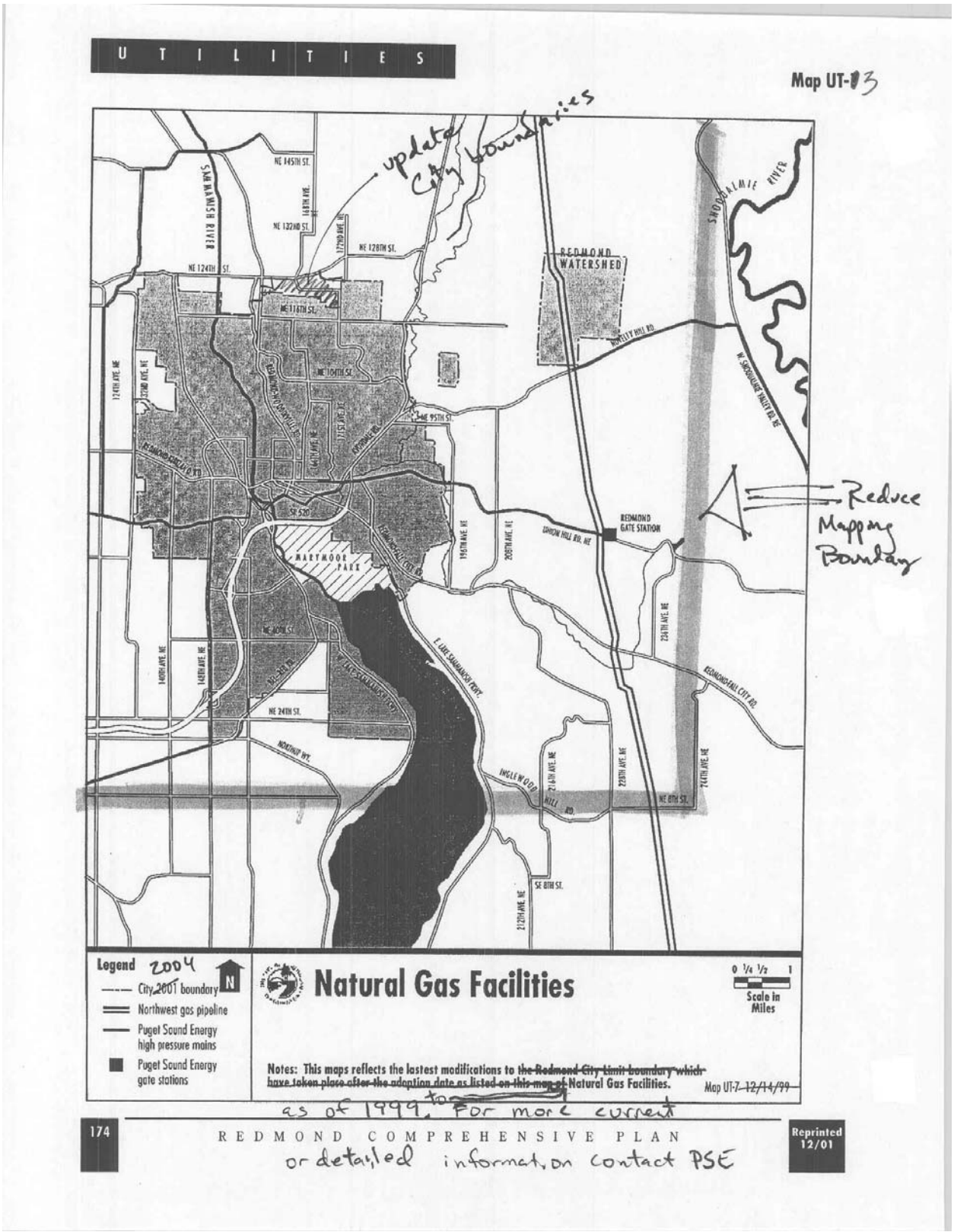
Inventory of Conditions and Future Needs

Puget Sound Energy, a private utility providing natural gas service to five counties within the Puget Sound region, is the provider of natural gas within the City of Redmond and the surrounding annexation area. Puget Sound Energy purchases gas from a number of sources and pipes it to this area via a high pressure pipe system, the Northwest Pipeline. As the natural gas reaches its destination, it enters the Redmond Gate Station. The pressure is reduced, an odorant is added for safety, and the gas is metered. The pressure is further reduced at limiting stations, district regulators, and at individual meters. Present delivery systems within the City of Redmond have enough capacity to meet current demand.

Map UT-3 shows the location of natural gas facilities.

Facilities

Direct heating by natural gas is more efficient than certain types of electrical heating because there is a loss of energy during both production and transmission of electricity. Redmond can encourage energy efficiency by facilitating conversion to natural gas through such efforts as a timely and simplified permit processing and reasonable permitting fees.



Some individual and mass transportation vehicles are designed to be fueled by natural gas and there is a potential for conversion of others to natural gas. These vehicles give off substantially cleaner emissions and their use would improve air quality. In addition, natural gas delivery

technologies do not use underground storage tanks, thus avoiding an environmental concern associated with gasoline-powered vehicles.

Present technologies are producing and using methane from sewage treatment and landfills. A greater percentage of the natural gas source may come from renewable resources as technology advances the use of biomass production.

UT-71 Encourage and provide opportunities to convert existing homes or businesses from oil and electric space and water heating to natural gas.

UT-72 Facilitate efforts to develop a natural gas fuel infrastructure. This may include:

- Updating regulations to deal with the new technology.
- Cooperating with the training of fire and police to deal with the technology.
- Taking a lead in or cooperating with other jurisdictions in building a fueling facility for government vehicles.
- Allowing areas for the potential siting of biomass production facility.

I. Telecommunications

Inventory of Conditions and Future Needs

Telephone service for Redmond as of 2004 is provided by Verizon and wireless phones service by any number of different providers. As of 2004, cable services are provided by Comcast. Telephone facilities consist of transmission lines and switching facilities. Cellular facilities consist of switching offices and low-powered antennae which transmit and receive radio signals. Cable facilities consist of microwave relay sites and a branching trunk system of overhead and buried cable.

Presently Verizon has facilities in place to provide land line service to all Redmond households and businesses. Future capacity is more demand-driven in nature due to regulations governing investment recovery. Cellular technology planning is demand-driven, also. The capacity to serve is presently governed by the ability to finance and place new infrastructure, primarily antennae, often associated with large poles.

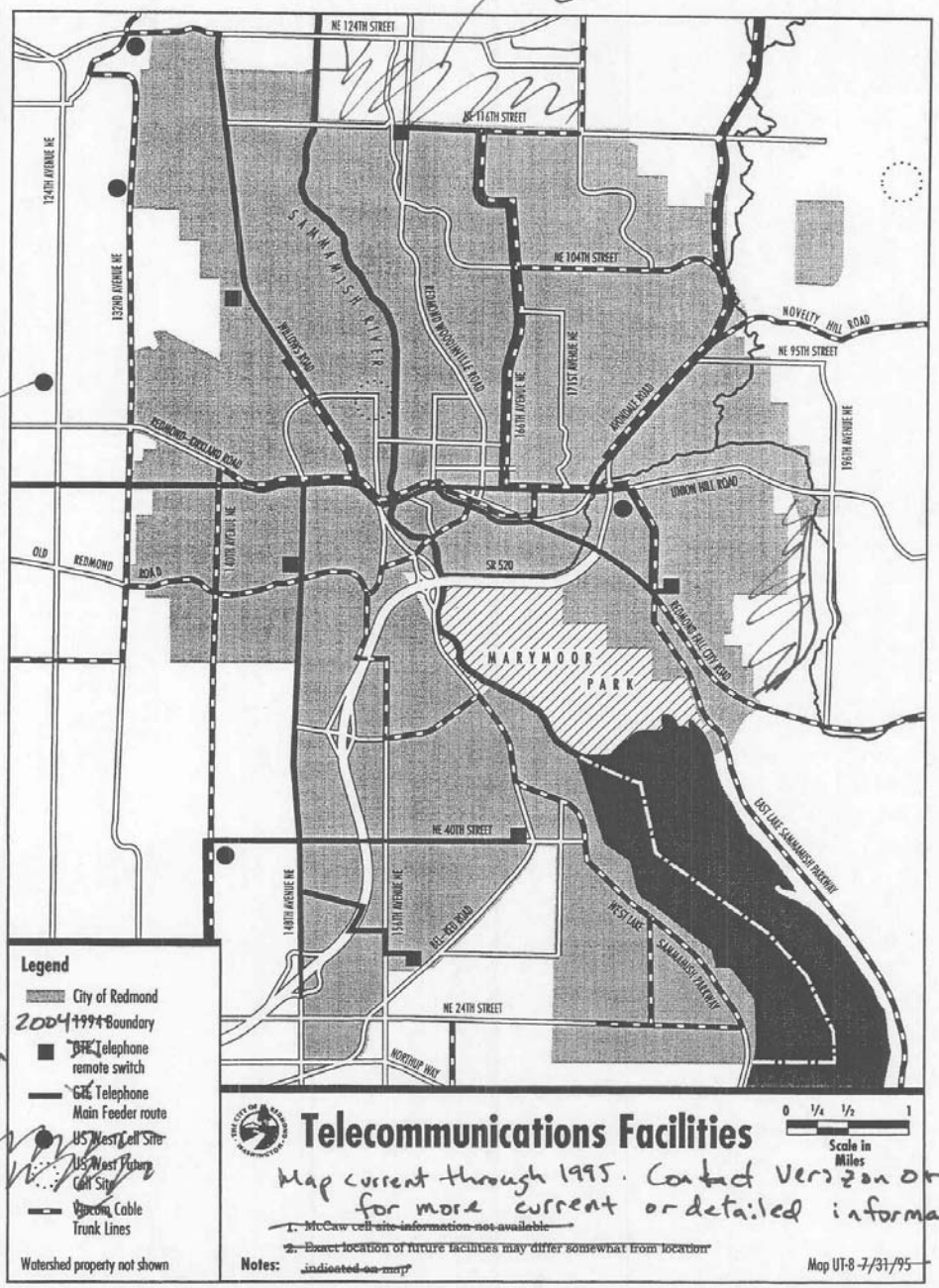
Map **UT-4** shows the location of telecommunications facilities.

Facilities

The telecommunications industry is changing rapidly, from fiber optics to digital technology. The distinction between phone service, data transmission, and video transmission has become blurred. For both residents and business, Redmond should encourage new technological advances while still considering the implications of continuing availability of basic communication services to all persons.

update City boundaries

Map UT-~~9~~ 4



eliminate cell site locations

Verizon

Comcast

UT-73 Promote a wide range of telecommunications options. This can include:

- Making City facilities available for placement of antennae.

- Treating attached cellular base antennae as other building or rooftop appurtenances.
- Support website communication between the City, its residents, and its customers.

UT-74 Reconsider and update, as appropriate, existing regulation of satellite dishes as newer technology leads to downsizing of the dish antennae.

The changing regulatory framework and rapidly advancing industry of cellular and pager communications have created new pressures to find appropriate locations for the placement of antennae. Because these systems operate on line of sight communications, it often necessitates mounting at the highest point in a given area, which often is the publicly owned water tank.

Antennae are also often be mounted on large telecommunications towers. These towers and antennae can become visual landmarks which are not aesthetically pleasing. To avoid the look of antennae farms, facilities can be encouraged to use existing structures, share facilities, or locate near existing similar facilities.

UT-75 Prioritize City emergency and operating communications over private telecommunications in the case where a private telecommunication service desires use of a public building or facility to avoid conflicts between signal interference and mounting space.

UT-76 Acknowledge the importance of citizen band and amateur radio services in potential emergency situations when considering regulatory changes that would affect the operational ability of such facilities.

UT-77 Avoid the proliferation of telecommunications towers and reduce the visual impact of telecommunications equipment through such means as:

- Requiring facilities to be mounted on existing high structures such as water towers if sites are available.
- Requiring telecommunications providers to share tower facilities except in cases where the location would not be feasible due to operating parameters.
- Using of paint colors or tower materials that blend with or compliments the nearby area.
- Encouraging individual taller towers over multiple shorter ones.
- Requiring removal of towers no longer needed.
- Using screening or architecturally compatible design of service boxes.

UT-78 Recognize the importance to businesses, residents, and visitors of access to the internet and support efforts to provide affordable, high speed wireless internet access citywide.

J. Hazardous Liquid Pipelines

Facilities, Inventory of Conditions and Future Needs

The Olympic Pipe Line Company operates a 400-mile long petroleum pipeline system from Ferndale, Washington to Portland, Oregon. Two parallel lines, 16-inch and 20-inch, pass through the west portion of Redmond generally along the Puget Sound Energy easement. The pipelines carry gasoline, diesel, and aviation fuel. Delivery lines carry products from this mainline to bulk terminals at Sea-Tac International Airport; Seattle, Tacoma, Olympia and Vancouver, Washington; and Linnton and Portland, Oregon.

The pipelines are hazardous liquid pipelines, as defined by State law. Liquid pipelines transport petroleum products much more efficiently and safely than is possible by truck. Pipeline facilities, if ruptured or damaged, can pose a significant risk to public safety and the environment due to the high operating pressure and the highly flammable, explosive, and toxic properties of the transported products.

The Federal Office of Pipeline Safety (OPS) is responsible for regulation of interstate pipeline facilities and addresses safety in design, construction, testing, operation, maintenance, and emergency response for pipeline facilities. The Washington State Utilities and Transportation Commission (UTC) has authority to act as an agent for OPS.

In 2000, Redmond's Fire Department established a response plan in the event of a pipeline failure. The Olympic Pipeline Response Plan includes technical information about the pipeline, potential hazards, a guide to hazardous-materials scene management, emergency response and evacuation plans, and contacts and other resources.

The policies below supplement existing State regulations and the City's risk management/response plan by focusing primarily on land use measures that help minimize and prevent unnecessary risk to the public due to hazardous liquid pipelines, recognizing it is impossible to eliminate risk entirely. These policies address the risk by addressing the issues most likely to be safety concerns such as:

- Damage to hazardous liquid pipelines due to external forces such as construction equipment, the leading cause of pipeline accidents.
- Location of land uses with high on-site populations that are difficult to evacuate.
- Location of emergency facilities, and other land uses where the consequence of the loss in the event of a pipeline failure is high.

Other actions that can be taken to ensure a higher degree of safety include early detection of potential pipeline damage or failures through adequate maintenance of the hazardous liquid pipeline corridor, neighborhood education, and working with other governments and industry representatives to seek improvements in safety measures for hazardous liquid pipelines. Although many of these provisions by their nature address uses, individuals, class of individuals, or organizations located near the hazardous liquid pipeline, they are more broadly intended to protect the health, safety and welfare of the general public.

Policies to Minimize Pipeline Damage

The corridor for the hazardous liquid pipeline system through Redmond varies, but is typically about 50 feet wide and contains the pipelines and right-of-way or easements. The depth and location of the pipelines within the corridor also varies, although the lines are typically buried at a depth of less than five feet. The depth of cover over the pipelines may change over time due to erosion or other reasons. If not properly directed, on- or off-site stormwater discharge can erode soil cover over the pipelines, particularly where the pipeline is located in areas of steep slope, such as the Willows/Rose Hill Neighborhood.

External forces, accounting for 31 percent of all accidents, are the leading cause of reported pipeline releases according to (OPS) statistics. Damage from external forces such as construction equipment can produce an immediate release or a scratch on a coated-steel pipeline can lead to accelerated corrosion and failure at a later time.

During development review and construction for projects in the vicinity of the pipelines, setting requirements for avoidance of damage and coordination between Redmond and the pipeline operator, Olympic Pipe Line Company, or its successor can help avoid problems. The following actions can reduce the chance of an incidence:

- Identifying the location of the pipeline corridor on site plans, plats, or other construction drawings.
- Using the one-call locator service, particularly during construction on adjacent properties.
- Physically verifying pipeline locations as needed to minimize the likelihood of damage.
- Establishing and maintaining setback requirements from the hazardous liquid pipelines for new or expanded structures and other significant land disturbance.
- Monitoring land disturbance close to the pipeline by the pipeline operator or their representative.

UT-79 Require proposed developments, expansions of existing uses, and construction projects, both public and private, located near hazardous liquid pipeline to:

- Show the location of the liquid pipeline corridors in relation to proposed structures, utilities, or clearing and grading activities;
- Use techniques prior to and during construction to minimize the potential for disturbing the pipeline;
- Identify and mitigate potential erosion over pipelines from stormwater discharge;
- Use setbacks and other site design techniques to minimize the potential hazard; and
- Develop emergency plans as appropriate.

UT-80 Coordinate with the pipeline operator when developments are proposed near a hazardous liquid pipeline corridor to reduce the potential for problems. Methods include but are not limited to:

- Notify the pipeline operator of proposed development projects located within one-quarter mile of a pipeline corridor;
- Seek the pipeline operator's participation in pre-construction meetings for projects located within 150 feet of a pipeline corridor;
- Request the operator to determine if additional measures above the normal locating process, are necessary to physically verify pipeline locations before proceeding to develop; and
- Seek monitoring by the pipeline operator of development that involves land disturbance or other significant work within the pipeline corridor, or within 30 feet of a pipeline, whichever is greater.

Land Use Compatibility

Redmond can help reduce the risk of injury in the event of a pipeline failure by not allowing certain land uses to locate near hazardous liquid pipelines. Land uses with high-density on-site populations that cannot be readily evacuated or protected in the event of a pipeline failure are considered "high consequence land uses". Examples are schools and multifamily housing exclusively for elderly or handicapped people. Uses such as these carry a relatively higher risk and have higher potential consequences in the event of a pipeline failure and therefore are not as appropriate as other uses near pipelines. Facilities that serve critical "lifeline" or emergency functions, such as fire and police facilities or utilities that provide regional service, are also considered "high consequence land uses."

UT-81 Prohibit new high consequence land uses from locating near a hazardous liquid pipeline corridor. Design proposed expansions of existing high consequence land uses to, at a minimum, avoid increasing the level of risk in the event of a pipeline failure, and where feasible, to reduce the risk.

There are other developments, such as the businesses located along Willows Road and multifamily development in the Grass Lawn and Willows/Rose Hill Neighborhoods, that while not defined as high consequence land uses are located in the vicinity of the hazardous liquid pipelines. Because of this location, these developments warrant special consideration due to the number of occupants, characteristics of the development, or other factors and should have appropriate emergency procedures in place, such as an emergency guide or plan. New or expanded developments can use measures such as site planning that reflects anticipated flow paths for leaking hazardous materials and emergency procedures

UT-82 Require appropriate mitigation measures that help reduce adverse impacts in the event of a pipeline failure to be used by commercial, industrial, multifamily or other development which, because of proximity to a hazardous liquid pipeline corridor, poses safety concerns due to characteristics of the occupants, development, or site.

Pipeline Safety

The pipeline operator can help reduce the likelihood of accidental damage by adequately maintaining the pipeline corridor. Dense vegetation such as blackberry bushes can impede visibility and access. Instead, the pipeline corridor can be properly maintained with grass or other low growing vegetation that enables easy inspection while preventing erosion. Ensuring that the pipeline locations are marked and that missing markers are replaced is also important, as is periodic aerial inspection of the pipeline corridor to detect potential problems. Redmond can assist this effort when permits are necessary for inspections or repair with prompt processing of permits.

UT-83 Require, through a franchise agreement or other mechanisms, maintenance of the hazardous liquid pipeline corridor through activities including but limited to the following:

- Maintaining vegetation to enable visibility and access for inspection while ensuring that such maintenance does not contribute to soil erosion;
- Using plant species and plantings that prevent erosion;
- Ensuring that above and below grade pipeline markers contain information such as operator name and number and facility type are in place; and
- Conducting periodic visual inspections of the corridor.

UT-84 Expedite permits for the hazardous liquid pipeline company necessary for inspections and repairs.

People who live, own property, or work near the pipelines can play an important part in avoiding pipeline damage and identifying potential problems early on. Redmond and the Olympic Pipe Line Company or its successor can promote public safety through periodic neighborhood mailings and meetings. Important information should include facts about the pipelines, how to avoid damage, potential problems to watch out for such as unusual smells or suspicious construction activities, and how to respond in the event of a failure or other problem.

Working with other jurisdictions and agencies as part of a unified approach to addressing pipeline safety issues is also important. This unified approach can address issues such as maintaining a model franchise agreement, periodic review of the pipeline operator's safety action plan to identify any deficiencies, and advocacy of city and county concerns regarding pipeline safety regulation.

UT-85 Strive to establish, in cooperation with the pipeline operator, a neighborhood education program with a frequency of every two years for those who live or work within one quarter mile of the hazardous liquid pipeline to educate them and the general public about pipeline safety

UT-86 Continue to work with other jurisdictions, state and federal governments, and the pipeline operator to seek improvements in safety measures for hazardous liquid pipelines.