

## APPENDIX A

### Utility System Descriptions

#### Electric Power Systems

Electric power systems include all of the installations and functions required to deliver electric power from source to customer. The principal features include:

1. **Generation Systems:** the source of electric energy produced by hydroelectric and thermal generating plants.
2. **Transmission Systems:** the circuits carrying bulk electric power from the source to one or more centers of distribution. Delivery points may be distribution substations or transmission switching substations where further delivery is made to subtransmission systems.
3. **Subtransmission Systems:** the circuits carrying bulk power from transmission switching and substations to the distribution system substations.
4. **Distribution Systems:** those elements of an electric power system between the transmission or subtransmission system and the customer's meter. Components of the distribution system include the following:
  - a. **Distribution Substation:** a facility where bulk power is reduced in voltage for distribution to a specific service area.
  - b. **Primary Distribution System:** a system of conductors serving distribution transformers from distribution substations.
  - c. **Distribution Transformers:** systems of transformers for the purpose of reducing primary distribution voltages to those acceptable for customers' services.
  - d. **Secondary Distribution System:** a system of conductors serving customers' premises from distribution transformers.

Although there is no uniform standard of voltages for the various elements of electric power systems, general practice and the requirement to interconnect systems have resulted in "preferred voltages," which have been adopted by the electric utility industry. Representative voltage ranges include:

1. Transmission--69KV and up
2. Sub-Transmission--34.5 to 69KV

3. Primary Distribution--2.4 to 34.5KV
4. Secondary Distribution--600 Volts

### Gas Systems

Gas systems include those installations and functions required to carry gas from source to customer. These systems normally utilize natural gas piped at considerable distances from well fields (e.g., Alaska Gas and Service Company pipes their gas from the Kenai). The primary elements of gas systems include:

1. Gathering system facilities, including processing and compression stations.
2. Transmission lines which transmit gas to one or more distribution centers. Transmission pipes are generally 12 to 36 inches in diameter.
3. Distribution systems which carry and control gas supply from distribution centers to the customers' meters. Distribution systems may be further defined as:
  - a. High or medium pressure, which operate at pressures higher than the standard service pressure delivered to customers. Pipe sizes range from 1 $\frac{1}{4}$  to 20 inches.
  - b. Low pressure, in which pressures are substantially the same as those required by customers' appliances, thus not requiring pressure regulations at customers' premises. Pipe sizes range from four to 24 inches.

### Water Systems

A water supply system consists of all the necessary installations required to obtain, treat, and distribute water to the eventual user. Principal features of water supply systems include:

1. Sources, including rivers, lakes, wells, and the facilities associated therewith.
2. Transmission mains, used to transmit water to treatment facilities and/or to distribution systems.
3. Treatment facilities, which improve the water quality when necessary.
4. Distribution systems, for conveying water to the customers' premises.

## Sewer Systems

A sewer system includes collection, treatment, and disposal functions. Sewer collection systems in urban areas are generally arranged in networks permitting gravity flow to treatment or disposal points. Grades of sewers are kept constant, depending on size and capacity, and are sufficient to provide velocities to transport solid materials. Pump stations are used when the grade is too steep. Features include:

1. Collection networks, which are dictated by topographical conditions. However, as in water supply systems, a grid pattern is associated with the street layout.
2. Sewer mains, which are generally installed ten feet from the center of the street, although there may be one on each side in high-density districts. The standard location for sewer lines is a minimum of ten feet east or north of the right-of-way center line. Due to topographical constraints, interceptors and laterals may be located outside of street rights-of-way.
3. Treatment plants, which vary in terms of the method used to treat sewage.

## Telephone and Other Wire Communications Systems

Telephone and other wire communications systems--including telegraph, fire, traffic signal control, and security service--are sufficiently similar to be considered collectively. The telephone system is by far the largest to be considered and will serve as the basis for discussion.

A telephone system is an assemblage of telephone stations, lines, channels, and switching arrangements for their interconnection, together with all accessories for providing telephone communication. The major features of the telephone system in an urban area include:

1. Central plant, consisting of switching gear located at central offices.
2. Outside plant, consisting of:
  - a. Intercity trunk circuits connecting central offices to central offices in other cities (Alaskan cities are connected by satellite).
  - b. Interoffice local trunk circuits connecting central offices.
  - c. Local customer loop circuits connecting each customer to a local central office.

Intercity and local interoffice trunk circuits have a defined pattern, seeking primarily the shortest distance between central offices. Telephone and other communication systems use cable less than three inches in diameter to transmit. The cable has traditionally been hung on existing electrical poles. However, there is a trend towards placing these lines underground.

## APPENDIX B

### Plan Amendment Process

The plan amendment process shall include the following considerations, which shall be documented within a report submitted to the Planning and Zoning Commission at least four weeks prior to the public hearing or the proposed plan amendment. Alternatively, a utility that has developed a detailed engineering and environmental study which evaluates the need for, and routing of, particular facilities, may use this analysis in fulfillment of the subsequent information requirements, providing alternative routings are evaluated and the same scope of information is provided. These studies must, however, include consideration of the preferred routing identified in the UCP.

#### Alternatives to be Considered

A range of alternative utility transmission line corridors must be submitted which identifies:

1. the utility's preferred route;
2. a route within an already identified corridor on the UCP map;
3. at least one other alternative route; and
4. the impacts of a "do-nothing" alternative.

#### Alternative Description

For each of these alternatives requiring amendment to the UCP, information on the following factors must be submitted: both a narrative and graphic description of the route is required, accompanied by route maps for both plan and profile views at a scale of 1"=500' or larger. Engineering design detail and representative cross sections should be provided.

#### Impacts

The effects of each alternative upon the community must be evaluated. The information required for this evaluation shall consist of, but not necessarily be limited to, the following items:

1. Environmental: the project effects upon eco-systems must be quantified. The environmental criteria contained in the UCP, particularly those criteria pertaining to sensitive lands, should be consulted. The policies, criteria, and guidance described in the Coastal Zone Management Plan, the Wetlands Management Plan, and the Comprehensive Plan should be analyzed.
2. Costs: all costs of land easement acquisition, both public and private, must be fully detailed and described. The costs

of a do-nothing alternative must be addressed along with the costs of an alternative route within an already identified corridor on the UCP map.

3. **Community/Land Use:** the project's effects on neighborhoods and the community as a whole in terms of constraints or opportunities for both growth and amenity must be articulated. A description of how each alternative serves projected community growth patterns is required. For the preferred route, a description is needed of how the wider public interest is served in granting this plan amendment.
4. **Visual Impacts:** the impacts of a proposed electrical transmission facility upon the views of adjacent affected properties and upon the predominant scenic resources of an area shall be evaluated. The utility shall submit analyses of the view impacts of a proposed facility from such properties and upon these scenic vistas. The applicant shall consult with the Department of Economic Development and Planning to determine both the location of significant scenic resources and affected properties, and the type of methodology to be used in the visual assessment.

#### Coordination

The plan amendment report shall document the process of consultation and coordination with municipal land use plans and state and federal programs and policies. Consistency with the comprehensive plan and the criteria and recommendations of the UCP will be a key review criterion.

#### Mitigation

Information on how the impacts for each alternative above can be minimized or eliminated is required. This information should provide the detail on what specific steps are necessary to reduce these impacts.

## APPENDIX C

### Specific Corridor Descriptions

This appendix provides additional clarification as to the location and design characteristics of certain facilities depicted in the recommended plan maps.

- Map 4-2: The alignment of the proposed water line depicted on Map 4-2 between Huffman Road and Goldenview Drive shall be re-evaluated prior to the installation of this facility. Departure from the alignment shown on Map 4-2 shall be based upon the results of this study, consistent with the possible need to provide water service throughout the South Anchorage area.
- Map 4-1: The utility corridor map does not identify an alignment for a possible 230KV electrical transmission facility originating from Bradley Lake in the southern Kenai Peninsula. It was determined that the installation of this facility within the South Anchorage area generally east and northeast of Potter Marsh would have a significant impact upon the visual resources of this area. These impacts would occur regardless of the alternative corridor location chosen since each possible alignment affects residences and the area's scenic resources. For this reason, and since the feasibility of this line is uncertain at this time, this facility is not included in the plan map. The development of this facility will require the amendment of this map, following the procedures in Appendix B.





APPENDIX D

Submitted by: Chairman of the Assembly  
at the Request of the Mayor  
Prepared by: Department of Economic  
Development and Planning  
For reading: February 27, 1990

ANCHORAGE, ALASKA  
AO NO. 90-13(S)

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4 AN ORDINANCE AMENDING SECTION 21.80.050 OF THE ANCHORAGE MUNI-  
5 CIPAL CODE PERTAINING TO THE DEDICATION OF UTILITY EASEMENTS  
6 ENACTING A NEW SECTION 21.80.400 PERTAINING TO UTILITY DESIGN IN  
7 SUBDIVISIONS, ENACTING A NEW SECTION 21.05.030 PERTAINING TO THE  
8 COMPREHENSIVE PLAN, AND ENACTING A NEW SECTION 21.45.240 PERTAIN-  
9 ING TO SETBACKS FROM PROJECTED UTILITY ALIGNMENTS.

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12 THE ANCHORAGE ASSEMBLY ORDAINS:

13           Section 1. Section 21.80.050 of the Anchorage Municipal  
14 Code is amended to read as follows:

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17           21.80.050 Dedication -- Utility Easements

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19           The Platting Authority may require a dedication of utility  
20 easements when a utility company demonstrates a specific need  
21 for them or an easement is needed to accommodate the routing  
22 included in the Utility Corridor Plan.

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24           Whenever possible, utilities shall be placed in dedicated  
25 rights-of-way except where that placement conflicts with a  
26 Municipal or State transportation project identified in the  
27 Long-Range Transportation Plan. Utility easements along rear  
28 lot lines shall be at least 10 feet wide, or a total of 20  
29 feet wide along adjoining rear lots. Utility easements along  
30 side lot lines shall be 5 feet wide, or a total of 10 feet  
31 wide along adjoining side lots. Where a front-yard easement  
32 is needed to accommodate a transmission utility, which is  
33 included in the Utility Corridor Plan, the easement shall  
34 generally be 10 feet wide. The Platting Authority may  
35 require wider utility easements along the rear lot lines of  
36 hillside lots. (Adapted from GAAB 21.10.040C, H, AMC  
37 21.80.075A, .175, am A083-142.)  
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40           Section 2. The Anchorage Municipal Code is Amended by  
41 the addition of a new subsection to read as follows:

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43           21.80.400 Design - Electrical and Telecommunication  
44 Utilities  
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The width and alignment of transmission easements within subdivisions shall conform to the Utility Corridor Plan. The Platting Authority shall preclude structures or uses of land within or beneath areas of electrical or telecommunications ground or aerial easements that are incompatible with electrical distribution or transmission facilities.

Section 3. Section 21.05.030 of the Anchorage Municipal Code is amended to read as follows:

21.05.030 Comprehensive Plan--Elements

The Comprehensive Plan consists of the following elements, which are incorporated in this chapter by reference:

. . . . .

P. Utility Corridor Plan.

. . . . .

Section 4. The Anchorage Municipal Code is amended by the addition of a subsection to read as follows:

21.45.270. Setbacks from Projected Utility Alignments

A. No new structural or land development activity requiring a building or land use permit shall be permitted within the minimum area stated in the Utility Corridor Plan for planned electrical or telecommunication transmission facilities for which there is a projected easement or right-of-way, except as allowed under subsection B.

B. The following uses and activities are permitted, with written acknowledgement of coordination with the affected utility(ies), within the setbacks described in Subsection A of this Section.

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1. sidewalks and pathways;
  2. trails and bicycle paths;
  3. bus shelters and bus turnouts;
  4. kiosks and seating units;
  5. utilities, utility easements, and utility-related structures;
  6. landscaping required by Chapters 21.40, 21.50, and 21.80, and consisting of ground cover, shrubs, and/or understory trees whose maximum height does not exceed 30 feet;
  7. parking required under AMC 21.45.080;
  8. temporary parking as described in Subsection D of AMC 21.45.140.
  9. additional parking to that required by this Title;
  10. open space and usable yards;
  11. fences and signs;
  12. retaining walls;
  13. remodeling of or addition to structures existing as of (date this ordinance is enacted), so long as it does not further intrude within the setback area after that date; and
  14. driveways and vehicular access points.
- C. Applicable yard requirements stated elsewhere in this Title may include the area of setback for electrical transmission facilities.

Section 5. This ordinance becomes effective upon passage and approval.


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PASSED AND APPROVED by the Anchorage Assembly this

27<sup>th</sup> day of February, 1990.

  
Chairman

ATTEST:

  
Municipal Clerk

Note: The Assembly amended the Corridor Plan by the addition of Figure 1-2, Figure 1-5, and Figure 1-6 all dated 2/20/90.

