4.6 ENERGY USE

4.6.1 Impacts of the Proposed Master Plan

Construction

During construction, energy would be consumed by demolition and reconstruction activities. During construction and renovation, energy would be required to build up to 1,100 housing units, community uses (up to 100,000 sq. ft.), and associated landscaping, utilities, and infrastructure. Activities that would consume energy include the manufacture of construction materials, transportation of construction materials to and from the construction site, and operation of machinery during demolition and construction.

The use of "built green" or low-impact design features would reduce the demand for energy, relative to traditional building practices. Where possible, construction activities would promote the use of recycled materials, eco-friendly building techniques, and energy conservation.

Operation

It is anticipated that new residences and community service buildings would be equipped with electricity and some residences would be equipped with gas. Electricity use would increase relative to the increase in the number of dwelling units (from the existing 569 units to up to 1,100 units) and building area of non-residential uses (up to 100,000 sq. ft.). Demand would be determined based on the allocation of electricity and gas energy to specific uses within a building (i.e., for cooking, heating, laundry).

Electricity use per unit would vary, depending on the size and number of bedrooms in each unit. Seattle City Light estimates the average electrical energy use for a single-family home in the Seattle area at 18,500 KWH per year. Annual use for existing units (one- to four-bedroom) is estimated to range between approximately 7,300 KWH and 21,098 KWH. Energy use per dwelling unit would likely be less for new units, however, as the age and condition of existing units contribute to inefficient use of electrical energy. In addition, the use of "built green" design principles in construction could improve energy efficiency.

Existing non-residential electrical energy use is estimated at 932.8 MWH per year for approximately 40,000 sq. ft. of building area. The proposed project would contain between 80,000 sq. ft. and 100,000 sq. ft. of non-residential and community service buildings. Future electricity use under the proposed project could increase proportionate to the increase in square footage. Newer buildings would likely be more energy efficient, however. Demand for energy could also be met through allocation of natural gas service to these buildings.

The existing capacity at the Duwamish Substation would be reduced as a result of redevelopment of the project site. However, enough capacity exists to accommodate the incremental increase in electricity demand that would result from the proposed project. The Duwamish Substation has capacity for approximately 10,800 additional homes (as estimated during the winter peak usage period).[1] The proposed project would result in the development of a maximum of 1,100 dwelling units (531 net new units), resulting in remaining capacity for an

[1] Smith, SCL, personal communication, 2003.

additional 10,269 homes. Development of 900 dwelling units (331 net new units) would result in a remaining capacity for 10,469 homes.

In order to meet the ongoing "load growth" of the entire area served by the Duwamish Substation, Seattle City Light plans to install a new transformer and substation bus by approximately 2008. These facilities upgrades have been planned independent of the electricity demand anticipated for the proposed project and are part of annual facilities planning (also referred to as the Substation Work Plan), which provides a 10-year plan for facilities improvements.[2]

Cumulative Impacts

Energy demand would increase as a result of redevelopment and growth in the general area, contributing to increases in local and regional energy consumption. To the extent that utility service agencies have planned for future service demands, as required by State law, no significant cumulative impacts are anticipated.

The location of community services, on-site recreation, and limited neighborhood-scale retail uses within the project site would provide convenient access to residents. This could increase pedestrian access to services, which could potentially reduce the consumption of petroleum associated with driving to such services elsewhere.

4.6.2 Impacts of the Alternatives

Design Alternative Master Plan

Construction

Energy requirements for demolition and construction activities would be similar to those described for the Proposed Master Plan. However, the Design Alternative Master Plan does not incorporate "built green" or low-impact design and would not promote the use of recycled building materials, eco-friendly building techniques, and energy conservation.

A larger portion of the site would be devoted to infrastructure (i.e., rights-of-way, storm drainage facilities), incrementally increasing the amount of energy required for development, maintenance and operation.

Operation

The Design Alternative Master Plan does not incorporate the "built green" or low-impact design features contained in the Proposed Master Plan. Fewer energy conservation features would result in increased demand for energy.

[2] Ibid.

No Action Alternative

Under the No Action Alternative, demolition and construction activities would not take place and associated energy consumption would not occur. Energy use would continue at existing levels. Energy inefficient conditions would continue at on-site buildings.

4.6.3 Mitigation Measures

To reduce demands for energy consumption, newly constructed buildings would incorporate energy conservation measures per current codes.

Coordinating the construction of structural, mechanical, and electrical systems in multi-family buildings could reduce the amount of material and effort needed to construct separate systems resulting in energy savings.

In addition to conforming with the building methods of the proposed project (i.e., with or without "built green" method), design and construction could conform with HUD energy consumption guidelines,[3] including, but not limited to: proper siting of structures (north/south) and placement of trees for shade or windbreak. Other measures could include computer controlled "smart" room thermostats and efficient placement of exterior and interior ambient lighting.

4.6.4 Significant Unavoidable Adverse Impacts

Additional energy would be consumed and would contribute to increases in demand associated with the growth and development of the region. It is anticipated that existing and planned infrastructure of affected energy utilities could accommodate these increases. Energy conservation features would be incorporated into building design. As such, no significant unavoidable adverse impacts to energy use are anticipated.

[3] *Environmental Review Guide for Community Block Grant Programs* – Title I, *Housing and Community Development Act of 1974.*