

## 13.0 Energy

### 13.1 Introduction

This memorandum identifies and assesses the potential effects on existing sources of energy for transportation in the Columbia Pike corridor by the Columbia Pike Transit Initiative. It also provides a preliminary assessment of the energy needs and potential savings for each of the project alternatives. Evaluation of energy requirements and conservation potential is required under 40 CFR 1502.16(e).

### 13.2 Methodology

For bus transit services, potential increased energy requirements were assessed qualitatively, as the proposed changes in the level of bus service under the project alternatives would be incremental compared to the existing overall level of bus service in the corridor.

For electric-powered streetcar transit services, potential increased energy requirements were assessed based on the operations plan for peak period service and project engineering studies of the traction power system. The assessment of the effect of the increased load on the corridor electrical grid was based on initial conversations with staff of the local electrical utility.

### 13.3 Existing Conditions

The transportation sector in Virginia accounts for 31 percent of the energy use in the Commonwealth, while in Arlington County, the transportation sector consumes 21 percent of the energy used within the county. The transportation sector uses primarily petroleum and compressed natural gas (CNG), although the Metrorail trains are powered using electricity.

Electric power in Arlington County and Fairfax County is provided by Dominion Virginia Power (“Dominion”). In 2010, 35 percent of the electricity provided by Dominion was produced using coal. Nuclear sources provided 29 percent of the electricity consumed, and natural gas provided seven percent. Only one percent of the electricity consumed within the Dominion service area came from renewable sources. However, it should be noted that this breakdown does not include the 24 percent of electricity purchased or contracted from other producers.

Demand within the Dominion service area is expected to grow 2.5 percent per year for the next 10 years. To meet this increased demand, the company’s Integrated Resource Plan includes plans and proposals to add 7,900 megawatts of generation capacity through 2025. Current peak loads within the Dominion service area, which includes portions of Virginia and North Carolina, are 19,510 megawatts in the summer and 17,054 megawatts in the winter.

## 13.4 Environmental Consequences

### 13.4.1 No Build Alternative

**No adverse impacts to energy are expected.** The No Build Alternative includes continuation of existing transit service along Columbia Pike. Therefore, transit service energy consumption would not be expected to change.

### 13.4.2 Transportation Systems Management 1 Alternative

**No adverse impacts to energy are expected.** The Transportation Systems Management (TSM) 1 Alternative would provide increased bus service along Columbia Pike. As a result, this alternative would be expected to increase transit service energy consumption slightly. Buses would continue to use CNG for fuel.

### 13.4.3 Transportation Systems Management 2 Alternative

**No adverse impacts to energy are expected.** The TSM 2 Alternative would provide increased bus service along Columbia Pike. As a result, this alternative would be expected to increase transit service energy consumption slightly. Buses would continue to use CNG for fuel.

### 13.4.4 Streetcar Build Alternative

The Streetcar Build Alternative would increase the electrical power requirements of transit services but would decrease the number of buses using CNG. Electricity would be supplied to the streetcar vehicles via an overhead contact system, which would be powered through a minimum of four new traction power substations (five locations are currently identified) spaced along the alignment at average intervals of approximately one mile. The peak power requirement for the streetcar vehicles is estimated to be 1,022 kilowatt hours (kWh). Initial conversations with Dominion Virginia Power indicate that there would be sufficient capacity in the corridor to supply power to the streetcar vehicles.

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