4.19.4 Mitigation

Positive benefits, including new employment opportunities and improved transportation and connectivity, could offset the impacts from displacements in Allegheny and Westmoreland counties and the City of Pittsburgh.

Displacements, noise impacts, and other impacts within minority and low-income block groups would be mitigated by:

- Offering all displaced persons relocation advisory assistance and monetary relocation benefits provided by law;
- Offering all displaced persons comparable, decent, safe, and sanitary housing that is within their financial means and in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970*;
- Developing noise mitigation if it is warranted, feasible, and reasonable;
- Maintaining safe pedestrian access during construction; and
- Coordinating with the other transportation service providers regarding existing and planned transit service access and operations through construction of the proposed project.

4.20 Energy

Maglev vehicles are electro-magnetically levitated and electrically propelled along the guide-way. Bulk electrical energy for the system would be provided by the 138 kV transmission systems operated by Duquesne Light and Allegheny Energy. Both companies currently provide service to the project area.

An evaluation of the adequacy of the project area electric supply system was conducted to identify any normal load or peak demand problems that could result from the project. An evaluation of overall net energy consumption was also conducted in comparing the projected maglev electrical energy supply consumption to the passenger vehicle energy expected to be saved.

4.20.1 Methodology

The electrical supply system analysis was conducted by comparing total projected annual maglev electrical demand in megawatt hours and peak demand in megawatts against the existing installed regional generating capacity.

The net energy consumption analysis for the project was conducted through an analysis of the energy required for motor vehicle travel within the project corridor, the annual energy to be consumed in the operation of the maglev system, the energy consumed by the power plants to produce the energy, and any savings in the reduction of vehicle miles traveled as a result of the build condition.

From the ridership estimates, projections of vehicle miles traveled in the corridor for the years 2008 and 2026 were developed. (Refer to Section 4.12.3.2 for a discussion on ridership.) The potential energy savings from reduced vehicle travel, in BTU equivalents, were calculated. Based upon the anticipated maglev ridership estimates, an operational energy savings projection was calculated. The savings are associated with the projected decrease in VMT within the

corridor. VMTs were converted to energy usage based upon average fuel efficiencies and energy consumption rates (BTUs), which were then compared to determine if energy savings or expenditures would result from the proposed project. VMT projections for the years 2008 and 2026 were utilized in this analysis.

4.20.2 Impact Analysis

4.20.2.1 Energy Consumption

The projected annual electrical energy required to operate the maglev system is 186,126.9 megawatt hours. Projections of VMT within the project corridor for 2008 and 2026 are shown in Table 4.20.2-1. The weekly VMT data were obtained from SPC. Ridership projections for the

Table 4.20.2-1 Projections of Vechile Miles Traveled

Year		Weekday VMT km (mi)	Weekday VMT Reduction km (mi)	Projected Annual VMT Reduction km (mi)
2008	No-Build	93,915,361 (58,356,300)	N/A	N/A
	Build	92,895,680 (57,722,700)	1,019,652 (633,600)	305,775,360 (190,000,000)
2026	No-Build	107,049,217 (66,517,300)	N/A	N/A
	Build	105,694,955 (65,675,800)	1,354,226 (841,500)	407,164,032 (253,000,000)

maglev system in 2008 and 2026 indicate a potential VMT reduction of 1,019,652 kilometers (633,600 miles) and 1,354,226 kilometers (841,500 miles), respectively, per weekday. The ridership analysis can be found in Section 4.12.3.2.

Potential energy savings resulting from reduced VMTs were converted to BTU equivalents. Average fuel efficiency for gasoline vehicles used was 7 kpl (17 mpg) and 8 kpl (18 mpg) in 2008 and 2026, respectively. Seventeen mpg was the average for 2003 for all motor vehicles, including passenger cars, trucks, vans, pickup trucks, sport utility vehicles, buses, and motorcycles. An increase in efficiency of 0.3 percent per year was used to calculate the 2026 average miles per gallon. The average miles per gallon data were obtained from the Energy Information Administration.

The expected annual increase in consumption of fossil fuel needed to generate the electricity to operate maglev is 68,403 tonnes (75,400 tons) of coal and 191.6 million standard cubic feet of natural gas. This amount of fuel consumption equates to approximately 2,079 billion BTUs annually.

The expected corresponding reduction in gasoline consumption attributable to maglev-related reductions in VMT is 42,325,355 liters (11,181,176 gallons) and 53,090,400 liters (14,025,000 gallons) in 2008 and 2026, respectively. The resulting reduction in energy consumption from the anticipated reduction in VMTs is approximately 763 billion BTUs and 1,118 billion BTUs per year in 2008 and 2026, respectively.

The energy consumed within the corridor for the no-build condition was obtained by adding the energy consumed within the corridor by VMT and power plants. The energy consumed within the corridor for the build condition accounted for the energy consumed by the

maglev system, and any reduction in VMT attributed to the implementation of maglev added to the no-build condition. Table 4.20.2-2 compares the energy consumed in the corridor for the years 2008 and 2026.

Table 4.20.2-2 Energy Consumed Annually in Corridor in Billion BTUs

Year	No-Build	Build	Energy Reduction
2008	130,807	130,044	-763
2026	140,658	139,540	-1,118

It is estimated that the implementation and operation of the maglev system in the corridor would result in a net decrease of 763 billion BTUs for the year 2008 and 1,118 billion BTUs for the year 2026.

4.20.2.2 Electrical Supply System

Pennsylvania's electric generating plants are currently being transitioned to a non-regulated merchant fleet status. As non-regulated generators, plants in western Pennsylvania will not have the traditional responsibility to serve maglev as a new customer located in their former service territory. However, additional merchant generation is expected to be developed in response to market demands. Based on traditional assessment procedures, the electric transmission, distribution, and generation capacity resources already in service and planned for the region would satisfy the East Central Area Coordination Region (ECAR) of the North American Electric Reliability Council (NERC) criterion for adequate reliability to serve currently projected electric demand and obligations.

The existing electric-generating plants within southwestern Pennsylvania are more than adequate to supply the projected annual consumption of approximately 186,126.9 megawatt hours needed to operate the maglev system. The energy needed to operate the maglev system represents less than one percent of the total projected energy consumption for the region in 2026. A comparison of the projected maglev instantaneous peak demand of approximately 51.7 megawatts against the 2000 installed regional generating capacity of 12,240 megawatts and instantaneous peak system demand of 10,730 megawatts also strongly supports the fact that adequate electric supply would be available to operate the maglev. Brownouts due to excessive electric energy consumption during hot summer months are not currently a problem in the Pittsburgh region. The excess generating capacity of the region's installed generating facilities would suggest that brownouts would not be anticipated as a result of the project.

No adverse impacts to the electrical generation and distribution systems of the project corridor are anticipated to occur as a result of the project.

4.20.3 Summary

The project would result in a small net energy reduction for the region. In addition, the existing and planned electrical generation and distribution system within the region would have sufficient capacity to supply the energy required to operate the maglev system.

4.20.4 Mitigation

No energy impacts are anticipated as a result of the project. Consequently, no mitigation measures are required.