

Section 4.14

Energy

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Acronyms and Abbreviations

BRT	Bus Rapid Transit
Btu	British Thermal Units
FTA	Federal Transit Administration
GBNRTC	Greater Buffalo Niagara Regional Transportation Council
LRT	Light Rail Transit
STOPS	Simplified-Trips-On-Projects Software
VMT	Vehicle Miles Traveled

4. Environmental Consequences

4.14 ENERGY

This section describes the existing energy consumption trends within New York State and discusses the regulations that require a review of any changes in energy needs due to the Project. In addition, projected year (2040) energy consumption estimates are presented, and mitigation measures are identified. Section 4.17, “Construction Effects,” describes the construction-related effects to energy consumption. Table 4.14-1 summarizes the energy effect findings. See Appendix D9, “Energy Supplemental Information” for an overview of the regulatory context, methodology, and existing conditions.

Table 4.14-1. Summary of Project Energy Effects

Alternative	Permanent Effects
No Build Alternative	No adverse effects
LRT Build Alternative	No adverse effects LRT Build Alternative operations and patronage benefits energy effects through a reduction in energy consumption
BRT Build Alternative	BRT Build Alternative operations would result in a net increase in direct energy consumption

4.14.1 No Build Alternative

Table 4.14-2 presents the change in direct energy use of the roadway network for the LRT Build Alternative and the BRT Build Alternative in 2040 compared to the No Build Alternative. Because there would be no transit improvements in the No Build Alternative, there would be no change in energy use.

4.14.2 Build Alternatives

The long-term effects of the LRT Build Alternative and the BRT Build Alternative are associated with the direct, or operational, energy effects. The direct energy effects resulting from the changes in Project corridor traffic between the No Build Alternative and the Build Alternatives were estimated by applying FTA guidelines. The energy benefits are computed based on the change in Vehicle Miles Traveled (VMT) resulting from implementation of the Project. Values for change in energy use have been established to not double count. Thus, the valuation of energy use reductions is based only on the economic cost of petroleum dependence identified in Brown, S. "New estimates of the security costs of U.S. oil consumption," Energy Policy, Elsevier, vol. 113(C), pages 171-192 (2018).¹

Forecasts of changes in VMT come from the use of the FTA STOPS model described in Chapter 3 of this Draft EIS. FTA guidance captures the benefit from reduced reliance on foreign fuels.

¹ Federal Transit Administration, Capital Investment Grants Policy Guidance, 2024

Thus, the change in energy use is only computed for modes that use petroleum fuel. The measure estimates the change in energy consumption rates for transit and automobile modes based on the forecasted change in VMT.²

Table 4.14-2. Change in Direct Energy Use of the Roadway Network

Condition	Daily VMT	Energy Use (MMBtu/day)	Energy Use (MMBtu/year)
LRT Build Alternative	-44,792	-193	-70,445
BRT Build Alternative	-2,938	-13	-4,745

Table 4.14-2 shows that the LRT Build Alternative and the BRT Build Alternative are predicted to decrease regional energy use from vehicles. The Project is expected to help reduce future traffic volumes and levels of congestion within the Project, as well as reduce traffic-related energy consumption. Table 4.14-3 shows that the additional energy needs for new transit vehicles and new transit facilities associated with the LRT Build Alternative and the BRT Build Alternative are predicted to increase regional energy use by 9,981 and 14,429 mmBtu/year, respectively.

Table 4.14-3. Transit Operations Energy Consumption

Build Alternative	Energy Consumption (mmBtu/year)
LRT Build Alternative	9,981
BRT Build Alternative	14,429

Although the LRT Build Alternative and BRT Build Alternative would increase absolute transit operations energy consumption compared to the No Build Alternative, net direct operational energy consumption is significantly different taking into consideration reduced VMT presented in Table 4-14.2. As shown in Table 4.14-4, the LRT Build Alternative would result in a net reduction of 60,464 mmBtu/year because the energy consumed by the LRT operations would be more than offset by energy saved by passenger vehicles shifting to transit. The BRT Build Alternative would result in a net increase of energy consumption by 9,684 mmBtu because the energy required to operate the BRT vehicles and facilities would be more than the energy saved by reducing VMT. There is no threshold to define at what level an increase in energy consumption is considered significant.

Table 4.14-4. Net Energy Consumption

Build Alternative	Roadway Network Energy Consumption ^a (mmBtu/year)	Transit Operations Energy Consumption (mmBtu/year)	Net Energy Consumption (mmBtu/year)
LRT Build Alternative	-70,445	9,981	-60,464 ^a
BRT Build Alternative	-4,745	14,429	9,684

^a Negative values indicate savings in energy consumption

² Federal Transit Administration, Capital Investment Grants Policy Guidance, 2024

Indirect effects to energy consumption include upstream activities related to energy production and the materials used to construct the LRT Build Alternative and the BRT Build Alternative, including raw materials extraction, raw materials transportation, materials production, and chemical reactions from materials production. Detailed information about quantities and sources of construction materials will be quantified during Project final design.

4.14.3 Potential Mitigation Strategies

The LRT Build Alternative would result in a net benefit because there is a projected decrease in direct energy consumption. The BRT Build Alternative would result in a net increase in direct energy consumption. However, there is no threshold to identify a significant impact. Therefore, no mitigation is warranted for either Build Alternative. Although there are no adverse effects to indirect energy needs, conservation of indirect energy could be achieved by using newer and more fuel-efficient construction equipment, recycling pavement and other hardware items, and employee carpooling to construction sites.