Chapter 13: Energy and Climate Change

13-1 INTRODUCTION

The effect of the Tappan Zee Hudson River Crossing Project's operation on greenhouse gas emissions and energy use is assessed in this chapter. The project's operation would not substantially affect energy use and greenhouse gas emissions, and no quantified analysis is required. Energy use and greenhouse gas emissions associated with construction are analyzed in Chapter 18, "Construction Impacts," which also includes a description of the regulatory context and analysis methodology.

13-2 ENVIRONMENTAL EFFECTS

13-2-1 NO BUILD ALTERNATIVE

The No Build Alternative would not change energy use or greenhouse gas emissions. Vehicles using the facility would continue to do so, with emissions per vehicle declining in future years (due to federal regulation of emissions and fuel economy for new vehicles) and total vehicle miles increasing (due to growth), potentially outpacing the emission reductions. Bridge maintenance would continue to require materials and energy use resulting in greenhouse gas emissions. The New York State Thruway Authority (NYSTA) estimates that it would spend $1.3 billion to maintain and repair over the next decade. Major work activities would include seismic upgrades to portions of the bridge, navigational safety improvements, steel and concrete repairs, and other miscellaneous work to continue to keep the bridge safe for the traveling public. Furthermore, heavy congestion occurring due to vehicle accidents and breakdowns on the bridge, where no shoulder is available to clear the roadway, would persist, resulting in avoidable fuel consumption and greenhouse gas emissions.

13-2-2 REPLACEMENT BRIDGE ALTERNATIVE

As compared to the No Build Alternative, the Replacement Bridge Alternative would not increase traffic volumes or reduce vehicle speeds (see Chapter 4, "Transportation"). Therefore, fuel consumption and greenhouse gas emissions would be largely unaffected by the Replacement Bridge Alternative. However, a few features of the Replacement Bridge Alternative would result in some energy and greenhouse gas benefit as compared to the No Build Alternative:

- There are frequent accidents on the existing bridge, which can result in substantial vehicle delays, as described in Chapter 1, "Purpose and Need." The existing bridge has lanes that range in width from 11 feet, 2 inches to 12 feet. All of the traffic lanes on the bridge would be 12 feet wide, improving safety on the bridge. The bridge would also include wide shoulders for vehicles involved in accidents and breakdown incidents and for emergency vehicle access, improving the traffic flow and reducing the substantial delays that these incidents cause. Overall, the improvement in lane

widths and the addition of shoulders would substantially improve incident management and reduce the propensity for substantial vehicle delays.

- The introduction of three highway-speed E-ZPass lanes allowing vehicles to proceed at 65 mph through the lanes (replacing the two existing 35 mph lanes) would reduce fuel consumption associated with congestion and idling vehicles at the toll plaza.
- The bridge would have four lanes in each direction, eliminating the need to move the median barriers twice daily (currently accomplished using a specialized diesel engine, which takes approximately half an hour for each switch) and improving traffic flow during those times.

13-3 MEASURES TO REDUCE GREENHOUSE GAS EMISSIONS

The operation of the Replacement Bridge Alternative would result in some local reduction in traffic congestion on the bridge. The net GHG emissions associated with the Replacement Bridge Alternative would include construction emissions presented in Chapter 18, "Construction", which would not be offset by these operational benefits. However, consistent with New York State policies aimed at increasing energy efficiency and the use of renewable energy, designed to reduce statewide GHG emissions to 80 percent lower than 1990 levels by 2050, the following energy efficiency and renewable energy components would be included in the project design where practicable:

- ***Heat Exchange Pumps*:** Concrete can be an efficient platform for heat exchange. Systems embedded in concrete in the bridge and landing area on the Westchester County side could supply renewable heating and cooling for facilities in the toll plaza area. The construction contract bid documents will require proposals to include options for efficient and renewable energy design for the toll plaza facilities, and will include them where found to be practicable.
- ***Efficient Lighting:*** As with most new facilities, the bridge will incorporate efficient lights. To increase lighting efficiency, daylight sensor switching systems could be incorporated throughout the bridge. Using independent switching throughout the bridge would not only reduce energy consumption by operating lights only at times when they are needed, but would also reduce the need for considerable wiring to connect lights throughout the bridge with centralized switching and timer systems. This would further reduce both direct energy consumption and indirect emissions associated with production of electrical wiring and systems.

In addition, NYSTA and the New York State Department of Transportation (NYSDOT) will consider options to incorporate renewable energy production to support operations associated with the replacement bridge. As design progresses, the feasibility of these measures would be explored and incorporated where practicable.

Overall, given the efforts to reduce GHG emissions throughout the lifetime of the replacement bridge (during both construction and operation of the project), the project would be consistent with all state policies aimed at reducing GHG emissions.

13-4 MITIGATION

Since the operation of the Replacement Bridge Alternative would have no adverse impact on energy use and greenhouse gas emissions, mitigation would not be required.