A NEW PATH TO A STRONGER REGION

PEACE BRIDGE
EXPANSION PROJECT

Draft Design Report
Draft Environmental Impact Statement
Draft Section 4(f) Evaluation
Draft Section 6(f) Evaluation

Appendix S – Final Scoping Document/Alternative Screening Report including Addendums #1 and #2

Peace Bridge Expansion Project

Capacity Improvements to the Peace Bridge, Plazas and Connecting Roadways

City of Buffalo, Erie County, NY
Town of Fort Erie, Ontario Canada

PIN 5753.58

September 2007

CROSSING PATHS BUILDING FUTURES
THE PEACE BRIDGE

Buffalo and Fort Erie
Public Bridge Authority

U.S. Department of Transportation
Federal Highway Administration

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
Eliot Spitzer, Governor Astrid C. Glynn, Commissioner

Railroad in that order, followed by alternatives near Niagara Falls or across Lake Erie that ranked at the bottom of the list.

The workshop rankings clearly showed that alternatives at the Peace Bridge location had the best potential to achieve the goals and objectives. The next ranked location was South of Grand Island, where the sensitive river environment and the width of the river would substantially drive up the cost and difficulty of those alternatives. Therefore the Project Consultant Team focused their efforts on further development of alternatives and bridge types at the existing Peace Bridge location.

Collaborative Workshop #3 was essentially an informational workshop, where a variety of potential bridge types and detailed plaza layouts were presented. Many comments about the bridge types were given during the open comment period.

The ***Technical Analysis Report*** was prepared and distributed, which included a technical discussion of each alternative, and listed the technical issues that should be considered in evaluating whether they had potential of achieving the goals and objectives. The Technical Recommendations, which included the Consultant Team's recommendations of alternatives to be retained for further study, were released the day before Workshop #4 and were explained in the technical presentation at Workshop #4.

The purpose of **Collaborative Workshop #4** was to consider the ***Technical Analysis Report*** and the ***Technical Recommendations***, and confirm the list of alternatives that should be retained for further development. To simplify the rating process, in response to complaints from some who attended Workshop #2, participants were asked to select 5 alternatives that they felt had the best chance of achieving the project goals and objectives. Workshop #4 had the largest attendance by far of any of the previous public meetings. More than half of the workshop participants were Grand Island residents, many of whom were opposed to any alternatives that would be near or would cross Grand Island.

There was also a presentation given at the workshop by Dr. Jamson Lwebuga-Mukasa, a local public health research scientist. This presentation was included in the workshop agenda as public input to the BNIEP in response to a 5 December 2002 request by Dr. Mukasa and US Congressman LaFalce from the local District. Dr. Mukasa presented research which he believes shows that heavy traffic at the Peace Bridge is linked to poor respiratory health of the west side of Buffalo and the surrounding community. Dr. Mukasa suggested that public health would be protected by providing additional cross border capacity at another location and to not allow trucks to cross at the Peace Bridge. The Project Consultant Team has not endorsed Dr. Mukasa's conclusions since his research is independent of the Project Consultant Team.

The alternative rankings from Workshop #4 showed a large shift in preference toward the International Railroad Location, particularly for one alternative that included a new highway connector to I-290 along a rail corridor from the International Railroad crossing. It is likely that the large turnout from Grand Island and the presentation by Dr. Mukasa were important factors that contributed to this. This workshop pointed out the effect that

8.h. Technical Recommendations

8.h.1. Alternatives to be Retained

Based on the Technical Evaluations in **Section 8.d** and the Technical Analysis of Retained Alternatives in **Section 8.g**, the Project Consultant Team finds the following alternatives to have the reasonable potential to achieve the project's coals and objectives and recommends they be retained for **Preliminary Design/Draft EIS/ESR** development:

Null Alternative

A "Null" or "No Action" alternative must be considered and evaluated according to both NYS SEQRA and US NEPA regulations. **Section 1.0** details the long-standing need to expand capacity and improve the layout of the Peace Bridge and its US plaza. The PBA is making other programmatic and minor physical improvements separate from the Peace Bridge Capacity Expansion Project, such as installation of EZPASS automated toll collection technology, one-way and axle-based tolling, and other similar improvements intended to relieve short-term congestion problems. However, these short-term measures will not fully eliminate existing problems let alone handle anticipated future traffic increases. The existing facility processes heavy commercial truck traffic adjacent to a densely populated residential neighborhood, presenting significant noise and air quality concerns and negatively affecting waterfront, commercial and residential land uses from Porter Avenue north along Niagara Street to Massachusetts Avenue.

Alternative 1 - Maximize Use of Existing US Plaza

The alternative to maximize use of the existing US Plaza footprint (Alternative Plan EBXP-1) should be retained for preliminary design review for the following reasons:

- *This alternative has a reasonable potential to achieve the project's goals and objectives;*
- *Workshop's #2 and #4 consistently rated this alternative high;*
- *There is a reasonable likelihood that the project could be funded;*
- *The PBA has the jurisdiction to build in this location;*
- *Property:*
    - *It is reasonably likely that the PBA would obtain the means to acquire the necessary property;*
    - *The necessary property is available;*
    - *The cost of the necessary property is reasonable;*
- *Minimizes the number of properties required and associated displacements;*
- *Has a reasonable implementation schedule;*

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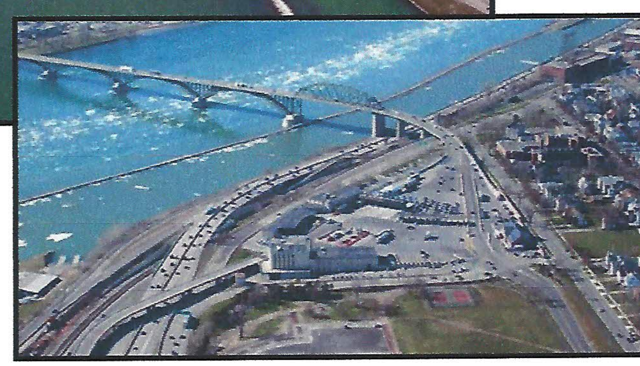
Appendix A – Air Quality Analysis (US)



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on the east side of I-190. The 1-hour NAAQS standard of 35 ppm and the 8-hour standard of 9 ppm are not exceeded for any of the alternatives.

5.2 PM_{10} Level II Analysis

A Level II analysis was conducted for the Existing Year, the No Build Alternative, and each Build Alternative. In the Level II analysis, CAL3QHCR was used to predict 24-hour PM_{10} concentrations at each receptor. As mentioned previously, the annual PM_{10} NAAQS was revoked by the EPA in 2006; therefore, analysis of annual PM_{10} was not considered. A summary of the maximum 24-hour PM_{10} impacts predicted under the Level II analysis is presented in Table 5-1.

The highest critical year 24-hour PM_{10} impact occurred with the Alternative 3, option 23B-R1 at Receptor 271, and a maximum concentration of 12.54 $\mu g/m^3$. This receptor is located directly along the west side of I-190, about 300 meters south of the beginning of Ramp N. The difference between the No Build alternative and maximum build impact is 0.77 $\mu g/m^3$, which is less than the NYSDOT Potential Impact Threshold of 5.0 $\mu g/m^3$ for 24-hour PM_{10} impacts.

5.3 $PM_{2.5}$ Level II Analysis

A Level II analysis was conducted for the Existing Year, the No Build Alternative, and each Build Alternative. In the Level II analysis, CAL3QHCR was used to predict 24-hour and annual average $PM_{2.5}$ concentrations at each receptor. A summary of the maximum 24-hour and annual $PM_{2.5}$ impacts predicted under the Level II analysis is presented in Table 5-1.

The highest critical year 24-hour $PM_{2.5}$ impact occurred with the Alternative 3 - Option 23B-R1 at Receptor 271, and a maximum concentration of 7.47 $\mu g/m^3$. This receptor is located directly along the west side of I-190, about 300 meters south of the beginning of Ramp N. The difference between the No Build alternative and maximum build impact is 0.42 $\mu g/m^3$, which is less than the NYSDOT Potential Impact Threshold of 5.0 $\mu g/m^3$ for 24-hour $PM_{2.5}$ impacts.

The highest critical year annual $PM_{2.5}$ impact was for the No Build Alternative and occurred at Receptor 174 with a predicted impact of 2.30 $\mu g/m^3$. This receptor is located at the intersection of the Riverwalk bike path and I-190, immediately east of I-190. As the predicted impacts for the Build Alternatives are all lower than for the No Build Alternative, the results are below the NYSDOT $PM_{2.5}$ potential impact thresholds.

5.4 Mobile Source Air Toxics (MSAT)

This section presents a qualitative analysis of MSATs that would be emitted from highway vehicles and non-road equipment for each of the project alternatives. This analysis was conducted in accordance with the Federal Highway Administration's (FHWA's) *Interim Guidance on Air Toxic Analysis in NEPA Documents*

(FHWA 2006). The six priority MSATs are benzene, formaldehyde, acetaldehyde, diesel PM/diesel exhaust organic gases, acrolein, and 1,3-butadiene.

5.4.1 Regulatory Setting

The EPA is the lead federal agency responsible for the establishment of NAAQS, national guidance and guidelines for a uniform and scientifically reliable study of air pollutants. To date, neither NAAQS for MSATs nor national project-level guidelines or guidance to study MSATs under various climatic and geographic conditions have been developed. The lack of specific guidance makes the quantitative study of MSAT concentrations, exposures, and health impacts difficult and uncertain; thus, only a qualitative analysis of these air toxics is currently feasible.

MSATs are a subset of the 188 air toxics defined by the CAA. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil and gasoline.

The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources in 66 FR 17229 (March 29, 2001). This rule was issued under the authority in Section 202 of the CAA. In its rule, the EPA examined the impacts of existing and newly promulgated mobile-source control programs, including its reformulated gasoline program, its national low-emission vehicle standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy-duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, the FHWA projects that even with a 64% increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57% to 65% and will reduce on-highway diesel PM emissions by 87%.

As a result, the EPA has concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The EPA issued a final ruling under the authority of CAA Section 202(l), *Control of Hazardous Air Pollutants from Mobile Sources: Final Rule* on February 26, 2007. This rule will reduce MSATs through the following measures:

- Lowering the benzene content in gasoline;
- Reducing exhaust emissions from passenger vehicles operated at cold temperatures (under 24°C or 75°F); and
- Reducing emissions that evaporate from and permeate through, portable fuel containers.

5.4.2 Rationale for Qualitative Analysis

This section includes a basic analysis of the likely MSAT emission impacts of the proposed project alternatives. A lack of technical tools precludes the prediction of project-specific health impacts as a result of emission changes associated with the project alternatives. Because of these limitations, the following discussion is included in accordance with Council on Environmental Quality (CEQ) regulations (40 CFR 1502.22(b)).

5.4.2.1 Limitations of a Project-Specific MSAT Impact Analysis

Evaluating the environmental and health impacts from MSATs on a proposed transportation project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings and/or scientific uncertainties that prevent a more complete determination of the MSAT-related health impacts of this project.

The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables for determining emissions of MSATs in the context of transportation projects. While the MOBILE6.2 emission factor model is used to predict emissions at a regional level, it has limited applicability at the project level, especially for MSATs. MOBILE6.2 is a trip-based model—emission factors are projected based on a typical trip of 7.5 miles and on average speeds for this typical trip. This means that MOBILE6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and it cannot adequately capture emissions effects of smaller projects. For PM, the model results are not sensitive to average trip speed, although the other MSAT emission rates produced by MOBILE6.2 do change with changes in trip speed. In addition, the emissions rates used in MOBILE6.2 for both PM and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, the EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends and relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of CO to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific transportation project locations across an urban area to assess potential health risks. The National Cooperative Highway Research Program is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, the FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

5.4.2.2 Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types, a variety of studies show that some MSATS are either statistically associated with adverse health outcomes (through epidemiological studies often based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the EPA conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or state level. The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA

Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris.

The following toxicity information for the six prioritized MSATs was taken from the IRIS database "Weight of Evidence Characterization" summaries. This information is taken verbatim from the EPA's IRIS database and represents the agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- Benzene is characterized as a known human carcinogen.
- The potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- Formaldehyde is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- 1,3-butadiene is characterized as carcinogenic to humans by inhalation.
- Acetaldehyde is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- Diesel exhaust is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel PM and diesel exhaust organic gases.

Diesel exhaust also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by the EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes—particularly respiratory problems. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, the studies do not provide information that would be useful in alleviat-