Appendix C:

Disposition Tables of Responses to Comments Received from Federal Reviewers on Provincial Technical Reports

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Environment Canada. Environmental Protection Operations Division – Ontario. (Received March 9, 2009) Comments on the Air Quality Impact Assessment TEPA Report. *Air Quality and Climate Change Issues* And Environment Canada. Environmental Protection Operations Division – Ontario. (Received May 25, 2009)	**General** EC is generally supportive of the detailed and comprehensive approach taken to the assessment of air quality impacts for the Technically and Environmentally Preferred Alternative (TEPA) for the Detroit River International Crossing project. EC agrees with the important conclusion that the Windsor-Essex Parkway will mitigate future transportation related impacts within the study area relative to the future "No-Build" alternative. However EC has some outstanding concerns: 1. The design of stormwater management for the project should include consideration of the potential increase in extreme precipitation intensity and frequency over the lifetime of the project. 2. Options to reduce vehicle idling and associated emissions on the plaza such as block queuing should be considered. 3. The potential cumulative air impacts of Brighton Beach Power Plant, a major local source of air pollutants has not been incorporated into the assessment.	1. In consultation with ERCA, it was established that the regional storm for the study area is equivalent to the 100-year storm event. This represents the most significant foreseeable storm event. All storm sewer systems for freeway and all culvert crossings of the freeway are designed in accordance with the requirements of the Ministry of Transportation Drainage Manual and will be sized to convey the 100-year storm with no impacts. The watercourse crossings have all been designed to convey the 100-year storm without negatively impacting The Windsor-Essex Parkway, and will convey the Regional storm without increasing existing upstream floodlines. As details to the effects of climate change have not been finalized, the drainage features have been designed considering the most conservative rainfall events. However, in lieu of a formal design to account for potential climate change, designs for the major watercourse crossings and the stormwater management facilities with approximately 0.3m of freeboard account for storms in excess of the 100-year design storm. In addition, the crossing designs have been checked against the Hurricane Hazel storm, and berms provided where the access road may be susceptible to overtopping, particularly along the Wolfe/Cahill channel re-alignment. 2. Refer to response below (on page 6) for *Section 9.2.1 Layout of Plaza Facilities and Operations,* which relates to anti-idling options such as block queuing, Intelligent Transportation Systems and an off-site marshalling yard for the future plaza design phase. 3. They have been included as part of the 90th percentile background, see separate section below for more information on Brighton Beach.
	Section 2.1.6 Mixing Height Data - The approach taken to develop mixing heights for application within the dispersion model is described in this section. • EC requests access to the mean monthly minimum (morning) and maximum (afternoon) mixing heights that were used to create the hourly mixing heights used within CAL3QHCR. If this information is contained in one of the reports available on-line, then a link and page reference would be sufficient.	Mixing heights were calculated on a daily basis and provided as input to PCRAMMET. When mixing heights on a daily basis were unavailable, the monthly means were used in place of the daily mixing heights. The attached file includes the daily morning and afternoon mixing heights for the full year.
	Section 2.3.1.1 Existing Air Pollutant Concentrations in the Huron Church Rd / Highway 3 Corridor - Large differences were noted between the benzene observations from the DRIC stations versus the MOE stations for maximum, 90th percentile and average values. • EC requests that the project team clarify these differences.	Both the MOE and the DRIC stations used SUMA canisters for collection and analysis. Different laboratories were used for the analysis and there may be differences in the laboratory equipment that could lead to some of the differences. A conversation with Tom Dann from Environment Canada on March 31, 2009 indicates that the difference could be attributable to local industrial sources. There are no industries within the Windsor area that report emissions of benzene according to NPRI, however, the usage threshold is 10 tonnes and a 1% concentration and it is possible that most benzene usage is at less than 1% concentration quantities. There are four facilities in the Detroit area that report benzene emissions to the Toxics Release Inventory. The largest is Marathon Petroleum, which located approximately 5 km from the MOE monitoring station that releases approximately 2 tonnes of benzene per year. One facility on Zug Island also reports emissions but total emissions are less than 200 kg per year from that facility. The same criteria apply for both the US and Canadian reporting requirements and it is possible that there are industries that are not reporting benzene emissions due to the low concentrations of benzene within the process. It is not clear why the differences exist, however, the incremental change due to traffic as indicated in the TEPA report is very low and the background conditions are the major contributor to benzene concentrations even at very close distances to the roadway.
	Section 3.1.2 Meteorological Data - Table 2.2 in the AQIA – TEPA (as well as table 7.2 from the Environmental Assessment Report indicates that stability classes E (stable) and F (very stable) occurred 13% and 15% of the time respectively at Windsor airport during the 5 year period selected for meteorological inputs to the dispersion modelling. Stability classes E & F are adjusted under certain conditions for application in CAL3QHCR. • EC requests clarification of how stability classes E & F were handled for use within CAL3QHCR.	Stability classes are calculated through the U.S. EPA meteorological preprocessor PCRAMMET (**PCRAMMET USER'S GUIDE**, EPA-454/B-96-001, U.S.EPA June 1999). No adjustments were made to the stability classes beyond this guidance.

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	It was noted in section 2.1.5 of the AQIA – TEPA that calm winds occurred about 4% of the time at the Windsor airport from 2000-2004. • EC requests that the proponent clarify how the calm winds were handled for application within CAL3QHCR.	Calm wind conditions (<1m/s) are processed according to EPA guidance (Calms Processor (CALMPRO) User's Guide, EPA-901/9-84-001, U.S. EPA, 1984). When a calm wind condition exists, a calm wind flag is set, the hourly concentrations are set to 0.0, and the hourly ambient background concentration is not used in any calculations for that hour. The annual; or period average is calculated by summing each valid (non-calm) 1-hour average concentration and dividing by the total number of non-calm hours or 75 percent of the total number of hours in the period, whichever is greater.
	Section 3.3.2 Receptors - Sensitive receptors including schools, churches, parks and residential areas have been identified for the air quality modelling. However it is not clear whether all of the candidate facilities were identified and included as receptors. In addition, it is unclear how receptors in "residential areas" have been identified for inclusion. If a sensitive receptor was chosen from the middle of a residential area, the modelling would miss the larger impacts at the houses closer to the Parkway or Plaza. • EC requests that an explanation be provided of the criteria used to identify and select sensitive receptors for the dispersion modelling. It is not clear also whether all of the candidate facilities within 250m of the crossing, plaza and Parkway included in the analysis. • It is not clear to EC how the locations of residential area receptors were determined. Presumably representative residences were chosen from within residential areas. EC recommends that the closest residence to the Parkway or Plaza in each residential area be included as a sensitive receptor. • It is also not clear to EC whether all of the residences within 50m of the Parkway right-of-way were included as sensitive receptors. • EC requests that the above be clarified.	Due to the large amount of potential information that could be provided a list of sensitive receptors was chosen from the 2484 receptors modelled based on feedback from public meetings and community input. Parks, schools, and specific residential neighbourhoods were included in the tabular listings and were meant to be indicative of air quality within identified neighbourhoods. Due to the number of receptors, horizon years and contaminants it was not feasible to include all of this data in one report. However, results are available for all 2484 receptors. A large amount of modeling results were generated in the analysis as there are over 2400 receptors modelled for three horizon years, 12 contaminants, for both No Build and the TEPA. The DRIC study team provided this data to Environment Canada on December 5th, 2008. of all receptors modelled including within the ROW to allow for Environment Canada to examine the data of the full modelling exercise. Results at receptors within the ROW the roadway are presented in the Air Quality Impact Assessment Supplementary Documentation Section 5.
	Section 3.2.3.2 Vehicle Emission Estimates - Particulate emissions come not only from tailpipes but also from other sources including road abrasion / degradation, tire and break wear, as well as soil, mud and debris deposited on the surface of the roadway. Highway maintenance and cleaning routines will have an impact on particulate emissions from along the roadway. If highway cleaning efforts are less effective than assumed by the emissions factor module, then actual particulate emissions could exceed levels estimated for the project. • It is not clear to EC whether roadway maintenance and cleaning activities were assumed to support the particulate emission factors used for this project. It is also not clear to EC whether protocols would be in place to ensure that the assumed maintenance and cleaning standards will be met or exceeded. EC requests that any the foregoing be clarified and that any proposed protocols should be described.	No credit for mitigation was taken in the development of the emission factors for road dust and non tail-pipe emissions and emission factors were not reduced from those generated by the Mobile6 for tailpipe, brakes and tire wear. The road dust emission factors follow the USEPA AP 42 emission factor guidance. The inclusion of the 90th percentile background concentration is very conservative in calculating exceedance days and could be considered to encompass differences in roadway mitigation.
	Section 3.2.3.3 Customs / Inspections Plaza - During periods where capacity of the plaza is exceeded, EC expects that longer queues are likely to form back towards the plaza entrance. • EC requests that the proponent indicate how many total hours with these longer queues are expected by the year 2035.	The Canadian international customs plaza has been designed to accommodate projected border traffic to beyond the 2035 horizon year, and is much larger than the existing plazas at either the Ambassador Bridge or the Detroit-Windsor Tunnel. The design of the plaza has been completed through consultation with the Canada Border Services Agency (CBSA), with consideration to anticipated processing times, border processing improvements such as the NEXUS and FAST systems, anticipated staffing levels of the plaza, and the need for both primary and secondary inspection areas. U.S. authorities are equally committed to building the new border crossing and U.S. plaza to meet future travel demands. While it is recognized that rare delays at the plaza could occur as a result of significant unpredictable events, it is not possible to speculate on the magnitude and frequency of the potential effects of such events.
	Section 4.0 Overview of Model Results - In figure 4.1 the scale for $PM_{2.5}$ concentrations does not appear to be correct.	The contaminant listed in Figure 4.1 is PM, not $PM_{2.5}$. Scale is appropriate.
	Section 4.4.8 PM_{10} - Large numbers of PM_{10} exceedance days are projected for numerous grid and sensitive receptors. Twenty of the 64 sensitive receptors in Table 4.19 were projected to have PM_{10} exceedances on more than 50 days per year. • EC requests that the study team evaluate mitigation options to reduce the projected PM_{10} exceedances. We note that some reduction in exceedances will result from the modifications outlined in the Recommended Plan Analysis.	Elevated exceedances are due to the assumption of the 90th percentile background concentrations occurring for 365 days of the year. See Air Quality Impact Assessment Supplementary Documentation Section 4 for a detailed discussion on elevated exceedances. When a more representative background choice is used, exceedances are primarily driven by background conditions. Mitigation options will consider EC recommendations MTO has approved

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		standards and guidelines that consider Best Management Practices for air emissions for new roadways. These guidelines will be applied to the design of The Windsor-Essex Parkway, the inspection plaza, and the crossing. Such construction-related mitigation measures include: ▪ Periodic watering of unpaved (unvegetated) areas. ▪ Periodic watering of stockpiles. ▪ Limiting speed of vehicular travel. ▪ Use of water sprays during the loading, unloading of materials. ▪ Sweeping and/or water flushing of the entrances to the construction zones. ▪ Use of calcium chloride. In addition, during construction, the Contractor is required to implement dust suppression measures to reduce the potential for airborne particulate matter resulting from construction activities. These suppression measures are commonly in the form of water as a first choice on exposed soils to prevent dust from becoming airborne, or chemical applications if required where water is ineffectual. The Contractor is required to take steps as necessary to control dust resulting from the Contractor's operations, or by public traffic where temporary roads are maintained by the Contractor through work zones, such that dust does not affect traffic, enter surface waters or escape beyond the right-of-way to create a nuisance to residents, businesses or utilities. Standard dust suppression requirements dictated by the construction contract will comply with local Municipal By-Laws for such activities. Examples of other best practices for dust control, which are sometimes required during construction include: ▪ Avoiding site preparation, excavation and construction during windy and prolonged dry periods. ▪ Minimizing vehicle traffic on exposed soils. ▪ Stabilizing soil and other material storage piles against wind erosion. ▪ Covering and containing fine particulate materials during transportation to and from the site. Install a tarpaulin on material stockpiles and haulage trucks, as appropriate. ▪ Use of new or well-maintained heavy equipment and machinery, fitted with fully functional emission control systems/ muffler/ exhaust system baffles and engine covers
	Section 4.4.9 $PM_{2.5}$ - Some important results from the MOE Windsor Traffic Study (2004) were not included in the discussion in this section. The MOE Study examined the impact of highway emissions on $PM_{2.5}$ concentrations over 10 days. Downwind concentration increases of 5-15 µg/m^3 within 25m of the edge of the highway and 2-10 µg/m^3 from 25-100m from the highway (page 25) were reported. The authors point out that the results reflect a limited number of meteorological and traffic conditions. Presumably instances of even higher $PM_{2.5}$ downwind increases would have been observed had the sample size been extended to a full year.	The MOE Windsor Traffic Study (2004) states that the impacts are negligible during free-flow conditions and that conditions where these elevated concentrations are expected to occur are during congestion. The results presented in the report focus on events where significant queuing of traffic occurred throughout the day. The maps in question are indicative of concentrations that could occur under congested traffic conditions. $PM_{2.5}$ increments predicted by the modelling for the TEPA project are consistent with the $PM_{2.5}$ concentrations shown in the Air Quality Impact Assessment Supplementary Documentation Section 5.3 and show increments of up to 10 µg/m^3.
	The data discussion in this section, including Table 4-20 is somewhat cryptic. It is not clear to EC whether Table 4.20 presents the maximum $PM_{2.5}$ concentration (dispersion model output plus background concentration) from all project grid and sensitive receptors. EC requests that this be clarified. It is somewhat surprising that there are no modelled exceedances of the Canada-wide Standard for $PM_{2.5}$ at any project receptor.	SENES has confirmed that there are no exceedances of $PM_{2.5}$ predicted for sensitive receptors beyond the Right of Way using a 90th percentile background of 21 µg/m^3. While there are instances of elevated concentrations that are currently occurring using the MOE monitoring information, these are not driven by the road impacts and would be driven by background and transboundary conditions. See the Air Quality Impact Assessment Supplementary Documentation Section 5.3 for a more detailed discussion of $PM_{2.5}$ exceedances within the ROW. The difference between the TEPA and Practical Alternatives report $PM_{2.5}$ methodology for modelling is discussed in the Air Quality Impact Assessment Supplementary Documentation Section 2 and Appendix A.
	Section 4.5.2 Concentrations at Tunnel Portals - Modelled concentrations at tunnel portals are reported for NO_X and $PM_{2.5}$ in Table 4.2.3. • EC requests that the separation distance used from the tunnel portals to the portal receptors be provided.	See the Air Quality Impact Assessment Supplementary Documentation Section 5 for a more detailed discussion of contaminant concentrations within the ROW. Distances are provided below:

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		64 South Portal Bethlehem Labelle Tunnel 7 m 72 Centre of Pulford Tunnel 50 m 82 South Portal Reddock Tunnel 8 m 395 North Portal Spring Garden Tunnel 50 m 675 Centre of Huron Church Tunnel 75 m 676 South Portal Huron Church Tunnel located on road, 25 m from tunnel portal, overly conservative choice and should probably not have been used as indicator
	Section 5.1 Mitigation - Towards the end of this section it is noted that "road sweeping practices in accordance with maintenance standards will be employed to reduce silt loading on the Windsor-Essex Parkway". This point is somewhat confusing as it appears to apply to the operations phase but has been presented in the context of construction mitigation measures. EC requests that the project team verify whether the "road sweeping practices…" mitigation measure applies to the operational phase of the project. The team is requested to be more specific about the maintenance standards that would apply. This comment also ties into the issue of emission factors and roadway maintenance identified in TEPA section 3.2.3.2.	The mitigation measures for "road sweeping" are for identified for the operations phase. Road sweeping practices in accordance with maintenance standards will be employed to reduce silt loading on The Windsor-Essex Parkway. Also, MTO has approved standards and guidelines that consider Best Management Practices for air emissions for new roadways. These guidelines will be applied to the design of The Windsor-Essex Parkway, the inspection plaza, and the crossing and are noted in the previous response above.
TSD: Air Quality Impact Assessment – Recommended Plan Analysis (Air Quality Report RPA) The proposed changes and additional analysis in this report are acceptable. And Environment Canada. Environmental Protection Operations Division – Ontario. (Received May 25, 2009)	N/A	N/A
Consideration of Air Quality Issues in the Environmental Assessment Report, Individual Environmental Assessment (EA Report) And Environment Canada. Environmental Protection Operations Division – Ontario. (Received May 25, 2009)	**Section 4.1 Air Quality -** Much of the data in this section is several years out of date, making reference to observations from 2003 as the most-recent available. This is disconnected from the Air Quality Report which includes ambient monitoring data from the MOE stations through 2006 (see section 2.3.1).	The information provided in Chapter 4.0 of the Detroit River International Crossing Environmental Assessment Report (December 2008) is intended to document the existing conditions within the Preliminary Analysis Area (PAA). The obtained existing conditions information was utilized in the generation, assessment and evaluation of the illustrative access road, plaza, and crossing alternatives within the PAA. Subsequent to the evaluation of the illustrative plaza, crossing and access road alternatives, the study team identified an Area of Continued Analysis (ACA), and a more detailed review of existing environmental conditions within this more focused area was undertaken. Specifically, practical alternatives for the access road, plaza and crossing were developed within the ACA and the impacts were assessed in the Practical Alternatives Evaluation Working Paper, Air Quality Impact Assessment, May 2008. Subsequent to the evaluation of the practical plaza, crossing and access road alternatives, the Technically and Environmentally Preferred Alternative (TEPA) emerged. The air quality impact assessment of the TEPA is documented in the Air Quality Impact Assessment – Technically and Environmentally Preferred Alternative Report (December 2008), as well, it follows the assessment protocol established in the Air Quality Work Plan, February 2006. The assessment is

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		a comparative assessment and considers the air quality impacts of existing conditions projected into the future (No Build) and of the TEPA. Thus, some information provided in the Air Quality Impact Assessment – Technically and Environmentally Preferred Alternative Report (December 2008) may be more current as the findings documented in the report correspond to the TEPA, which was developed and presented to stakeholders in June 2008. In summary, as the DRIC study progressed, additional information was gathered for further assessment of the TEPA, however, the intent of Chapters 4 and 7 of the Detroit River International Crossing Environmental Assessment Report (December 2008) is to provide an overview of the existing conditions within the PAA and ACA.
	Section 7.1 Description of the Area of Continued Analysis, Air Quality - The meteorological and climatological data used as input to the dispersion model are presented in this section. EC's comments about the meteorological data and its application to the project dispersion modelling may be found under sections 2 & 3 of the Air Quality Report. There is a discrepancy between the $PM_{2.5}$ background concentration proposed in section 7.1 and the data presented in the Air Quality Report (see Tables 2.6 and 2.16). EC recommends that the background $PM_{2.5}$ concentration for use in the dispersion modelling be based on the 90^{th} percentile concentrations from the most representative background observations, which in this case are the two MOE stations. The appropriate value is 21µg/m^3	The $PM_{2.5}$ data presented in Section 7.1 of the *Detroit River International Crossing Environmental Assessment Report* (December 2008) outlines the information collected from the detailed review of existing environmental conditions that was conducted within the Area of Continued Analysis. Specifically, practical alternatives for the access road, plaza and crossing were developed within the ACA and the impacts were assessed in the *Practical Alternatives Evaluation Working Paper, Air Quality Impact Assessment* (May 2008). Subsequent to the evaluation of the practical plaza, crossing and access road alternatives, the Technically and Environmentally Preferred Alternative (TEPA) emerged. The air quality impact assessment of the TEPA is documented in the Air Quality Impact Assessment – Technically and Environmentally Preferred Alternative Report (December 2008), as well, it follows the assessment protocol established in the Air Quality Work Plan, February 2006. The assessment is a comparative assessment and considers the air quality impacts of existing conditions projected into the future (No Build) and of the TEPA. Thus, some information provided in the Air Quality Impact Assessment – Technically and Environmentally Preferred Alternative Report (December 2008) may be more current as the findings documented in the report correspond to the TEPA, which was developed and presented to stakeholders in June 2008. In summary, as the DRIC study progressed, additional information was gathered for further assessment of the TEPA, however, the intent of Chapters 4 and 7 of the Detroit River International Crossing Environmental Assessment Report (December 2008) is to provide an overview of the existing conditions within the PAA and ACA.
	Section 8.0 Practical Alternatives for Crossings, Plazas and Access Roads - EC provided comments on the Practical Alternatives Evaluation – Air Quality Impact Assessment in July 2008 along with follow-up responses in February 2009. As such, we will not provide further comments on the alternatives analysis within the environmental assessment.	N/A
	Section 9.1.5 Stormwater Management (also sections 9.2.6, 9.3.7 and10.4.9) - Stormwater management is addressed in separate sections for the bridge (9.1.5) for the plaza (9.2.6) and for the Windsor-Essex Parkway (9.3.7). Stormwater environmental effects and mitigation are addressed in section 10.4.9 and in the table in section 10.7, ID# 16.0 on page 10-40). The bridge has a design lifetime of 75 years and the plaza and Parkway are expected to have corresponding operational time horizons. Substantial change in several climate parameters such as extreme rainfall could occur over the operational lifetime of the project. Climate modelling experiments point to a potential increase in the frequency and intensity of extreme precipitation events under a changed climate (Kharin *et al.* Changes in Temperature and Precipitation Extremes in the IPCC Ensemble of Global Coupled Model Simulations, *Journal of Climate*, vol 20, 2007 pp. 1419-1444). This study, found that 20-year return period rainfalls (24-hour) would increase in intensity by 10-20% by 2081-2100. For North America, extreme precipitation events now occurring every 20 years are projected to occur once every 8-9 years near the end of this century. Applying these specific adjustments directly to longer (e.g. 50-100 year) return period events is less reliable because the short sampling periods greatly increase the uncertainty associated with rare events. • EC recommends that the design of the stormwater management for the bridge, plaza and Windsor-Essex Parkway include consideration of the potential increases in extreme precipitation from peer-reviewed climate modelling experiments. Since there is still considerable uncertainty associated with the modelling of extreme events, it may be more cost effective to adaptively manage (i.e. iterative adjustments as additional data becomes available) project elements that may be modified relatively inexpensively. However, for stormwater management features that are	In consultation with ERCA, it was established that the regional storm for the study area is equivalent to the 100-year storm event. This represents the most significant foreseeable storm event. All storm sewer systems for freeway and all culvert crossings of the freeway are designed in accordance with the requirements of the Ministry of Transportation Drainage Manual and will be sized to convey the 100-year storm with no impacts. The watercourse crossings have all been designed to convey the 100-year storm without negatively impacting The Windsor-Essex Parkway, and will convey the Regional storm without increasing existing upstream floodlines. As details to the effects of climate change have not been finalized, the drainage features have been designed considering the most conservative rainfall events. However, in lieu of a formal design to account for potential climate change, designs for the major watercourse crossings and the stormwater management facilities with approximately 0.3m of freeboard account for storms in excess of the 100-year design storm. In addition, the crossing designs have been checked against the Hurricane Hazel storm, and berms provided where the access road may be susceptible to overtopping, particularly along the Wolfe/Cahill channel re-alignment. Overall, the designs of all crossing structures and channels related to the Windsor-Essex Parkway have been conducted to convey the 100-year storm and include a freeboard following the MTO design parameters. This freeboard will provide protection for peak flows greater than

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	challenging or expensive to revamp or retrofit, EC recommends that current margins of safety be evaluated to determine whether they are robust enough to accommodate an increase in 24-hour extreme rainfall intensity of 10-20% by the end of this century without resulting in adverse impacts on the environment.	the 100-year storm. This information will be documented as part of the design process. The checks against the Hurricane Hazel storm were to confirm that there were no negative impacts to either the existing floodlines or for the proposed Windsor-Essex Parkway. The level of safety considered with the analysis shows that the proposed design will convey storms without negatively impacting the upstream area, including storms greater than the 100-year storm.
	Section 9.2.1 Layout of Plaza Facilities and Operations - Vehicles approaching the inspection area will spend some time in queues, creeping forward, alternating between stop-and-go and idling modes. The queue lengths and associated emissions will depend on a number of factors including crossing traffic volume and the numbers of operating inspection stations and toll booths. Limited NO_X exceedances are expected near the plaza associated with the significant amount of idling expected to occur with trucks at the Plaza (AQIA – TEPA, section 4.4.6). There are options to manage vehicle movements so that a substantial portion of queued vehicles can wait in signal-controlled lanes or areas with their engines off, reducing the stop-and-go and idling emissions from border queues. These include Intelligent Transportation Systems technologies, marshalling yards and block queuing (which divides waiting vehicles into active and engine-stopped queues). These approaches were examined in a report submitted to EC in July 2008: *Phase II feasibility Study for Anti-idling Options.* • EC recommends that the project team evaluate anti-idling options such as block queuing and Intelligent Transportation Systems and an off-site marshalling yard as part of the future plaza design phase, as a means to reduce air pollution emissions from plaza operations.	The analysis completed for both the Level 2 and Level 3 traffic operations analysis was based on a free-flow condition from the access road into the plaza, with no queues extending out of the plaza to the access road. The Canadian international customs plaza has been designed to accommodate projected border traffic to beyond the 2035 horizon year, and is much larger than the existing plazas at either the Ambassador Bridge or the Detroit-Windsor Tunnel. The design of the plaza has been completed through consultation with the Canada Border Services Agency (CBSA), with consideration to anticipated processing times, border processing improvements such as the NEXUS and FAST systems, anticipated staffing levels of the plaza, and the need for both primary and secondary inspection areas. The following information has been provided by Transport Canada on April 15th, 2009. An operations analysis of the plaza was completed by the CBSA using the CAN-SIM software program, revealing acceptable plaza operations. Both the Canadian and U.S. governments are committed to building the new plazas and border crossing to meet future travel demands, along with providing the necessary staffing to meet processing demands. While it is recognized that rare delays at the plaza could occur as a result of significant unpredictable events, it is not possible to speculate on the magnitude and frequency of the potential effects of such events. The entire corridor from London to Windsor, including the new border crossing will have Intelligent Transportation Systems (ITS) in place (portions have already been installed and are operating) to monitor traffic flow along Highway 401 as well as to provide information to travellers as to the state of the various border crossings. For example, at the Highway 401/402 split in London there is a large overhead ATMS sign that intends to provide real-time border wait times at the various crossings in Sarnia and Windsor. It allows traffic to be directed to crossings which are not experiencing major delays. In addition, there will be ATMS along the entire corridor at the major decision route points for international traffic. Such notifications could help to mitigate idling vehicles at the border as it would provide the traveller information to plan their trip accordingly. With regard to an off-site marshalling yard, it would have to be located outside of the City limits (a minimum of 8 km from the border), which would be impractical as international and local traffic could not be distinguished between. Furthermore, the use an off-site marshalling yard would require alterations to the design of the access road in order facilitate a system that is enforceable. For example, the flow of traffic would have to be diverted to the queuing site while impeding direct flow of traffic to the border. This would require a physical barrier as drivers may not be inclined to use the off-site marshalling area.
	Section 9.3.8 Traffic Operations (also section 3.2.3 of the Air Quality Report) - EC acknowledges that an apparently thorough job has been done on the traffic simulations for 2015, 2025 and 2035 using the powerful VISSIM model. However our department lacks the expertise to evaluate these simulations. The validity of the highway emissions projections rests, in large part, on the reliability of the traffic projections. • EC requests that the proponent clarify whether any agency or expert outside the project team has reviewed the traffic projections and simulations. If not, then our confidence in the magnitude of the projected air quality impacts is reduced.	Regarding the traffic projections that have been developed by the DRIC study team, the team acknowledges Environment Canada's concerns, but would note that the traffic projections have been developed and reviewed by traffic specialists from two industry leading consulting firms, each of which has implemented a stringent quality control process involving internal third party review of the findings. In addition an expert review team from the appropriate transportation authorities, including FHWA, MDOT, and MTO, performed a comprehensive review of the methodology, and found it acceptable. As such, the DRIC study team is confident that the traffic projections have been developed correctly, using appropriate methodologies.
	Section 10.1 Air Quality - EC is generally supportive of the air quality assessment approach that combines worst-case project modelled impacts of project emissions with a suitably conservative background concentration. However, this approach may be deficient if there is a major, independent source of one of the project pollutants in the immediate vicinity of the project. This is the case for the Brighton Beach Power Plant (BBPP) which emits substantial amounts of	It is important to note that modelled worst case air quality impacts of the Brighton Beach Power Plant (BBPP) in the vicinities of the Plazas are worst case predictions that occur once over the modelling period (5 years) and are not indicative of typical concentrations. As per a letter issued

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	NO_X and $PM_{2.5}$. Omitting this source will likely lead to an underestimate of the cumulative air quality impact on the receptors in the vicinity of Plaza B. The BBPP Environmental Review Report (2001) projected the maximum incremental annual average NO_X concentrations to occur within one kilometre both northeast and southwest of the BBPP. The two MOE ambient monitoring stations are located 2 km (College) and 4.5 km (University) from the BBPP. The incremental annual average modelled concentration near the MOE University Avenue station was roughly 1/3 of the concentrations within 1 km of the BBPP. EC has no comparable information on file for $PM_{2.5}$. • EC recommends the emissions from the Brighton Beach Power Plant be evaluated to determine if they could have a cumulative air quality impact in the vicinity of the project. One approach would be to secure the worst-case dispersion modelling results for the Brighton Beach facility. A second approach would be use BBPP emissions in combination with the meteorological data set for this project to model the BBPP impact at the receptors in the vicinity of Brighton Beach and Plaza B. The BBPP impacts would then be treated as one more component within the "model combinations" approach described in section 3.2.4 of the AQIA – TEPA. Any marked additional impact from the BBPP could increase the frequency of air quality exceedances for the receptors in the vicinity of Plaza B.	by Environment Canada to the Citizen's Alliance on August 7, 2002 in regard to the Brighton Beach Power Plant environmental review report, air impacts relating to the Brighton Beach Power project are expected to be low. As SENES conducted work on the Air Quality Impacts relating to the Brighton Beach project, we were able to review the concentrations presented in the publicly available Environmental Review Report December 2001. The concentrations presented are the maximums that occur once in five years. Table 4.3 of this assessment (shown below) indicates that the maximum increment relating to SO_2, CO, and the particulate matter fractions is very low relative to the applicable criteria, with maximum concentrations of 0.9 µg/m^3 for SO_2 on a 24 hour basis and 94 µg/m^3 for CO and 2 µg/m3 of the particulate matter fractions. These contaminant maximum concentrations are also low relative to ambient conditions. It should be noted that the NO_x concentrations predicted for Brighton Beach Power Plant assessment were conservative by a factor of two at double the manufacturer's guarantee to determine the impacts of equipment degradation (source testing undertaken since the plant was fully operational has shown the emissions to be below the manufacturer's' guarantee). In addition, the one hour maximum concentrations presented in the assessment were based on assuming a cold start condition was occurring every hour, in the day, 365 days per year for five years. As a cold start would only occur if the facility were completely shut down for a period of several days, it is unrealistic to expect that the hourly maximum concentration would occur concurrently with the maximum concentration at the plaza. For the 24 hour averages the assessment performed for BB assumed that the facility was operating for 24 hours per day. The BB facility is to be used as an intermittent facility and does not operate on the full 24 hours. Therefore the results presented in the BB assessment are very conservative. Predicted NO_x 24 hour averages for BB have a maximum increment of 20 µg/m^3 Maximum NO_x 24 hr concentrations at the Plaza are 138 µg/m^3 in 2025 assessed in the TEPA report (other concentrations away from the plaza would be lower). Even if the worst case once in five year day of Brighton Beach were to coincide with the worst case day of the TEPA, there would be no exceedance of the NO_x criteria. Up to 10 hours of exceedances per year are predicted for NO_x 1 hr near the Plaza with the TEPA. The maximum concentration for one hour in five years for Brighton Beach is 200 µg/m^3. It is extremely unlikely that the one hour maximum that would occur with the Brighton Beach project would coincide with the few hours of exceedances that are predicted to occur with the TEPA, particularly as the maximum concentrations for Brighton Beach are more than a factor of two conservative. The Air Quality Impact Assessment Supplementary Documentation provides more information on hourly concentrations near the Plaza and it can be seen that 99% of the time the impacts will be well below criteria for the TEPA and thus highlighting that exceedances would occur for NO_x 1 hr criteria only under extreme circumstances. NO_x concentration curves typically show extreme maximums and then decrease precipitously with 90th percentile values often lower than maximums by factors of 2 - 5 (one example is Figure 4.1 in the TEPA report). This is also highlighted in Table 4.9 of the TEPA report which shows that for receptors located near the plaza, the maximum values are in the order of 300 µg/m^3 for NO_x on a 24 hour basis for locations south of the plaza but by the 90th percentile (i.e., values are lower 90% of the time), the concentrations are approaching the background concentrations of 64 µg/m^3 with values in the 70 µg/m^3 range. Data from the BB facility was examined for 90th percentile concentrations and showed a similar trend. Maximum 1 hour BB increments under steady state conditions are between 40-80 µg/m^3 (does not include background) while 90th percentile BB increments are approximately 5-10 µg/m^3. Adding 10 µg/m^3 (the 90th percentile predicted from BB) along with the 90th percentile background to the maximum incremental concentrations predicted by the TEPA for north of the plaza area will not impact compliance status. In reality, since the emissions were doubled for the BB project for NOx, this increment of 10 µg/m^3 would be lower and would be closer to 5 µg/m^3. The maximum 24 hour increment for $PM_{2.5}$ and PM_{10} is 2 µg/m^3 according to the Brighton Beach report Table 4.3. Compared to a background increment of 21 µg/m3 for a 90th percentile concentration the additional 2 µg/m3 that only occur once in a five year period are unlikely to change the compliance status of the predicted concentrations. In addition, the day to day variability for both $PM_{2.5}$ and PM_{10} from ambient conditions often can be greater than 10 µg/m^3

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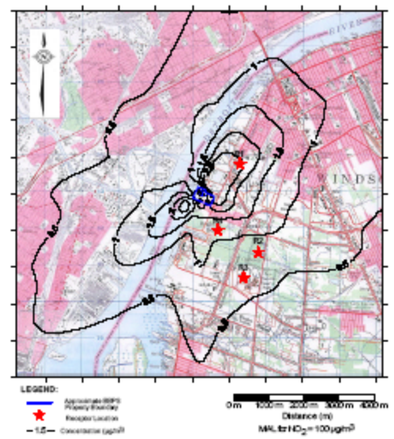
		and the maximum concentrations of $PM_{2.5}$ are not likely to be detectable from the daily background variability using conventional monitoring equipment. ▪ As stated in the BBPP report, *the predicted incremental concentrations of SO_2, CO, SPM, and PM_{10} are only a small fraction of the ambient concentrations measured in Windsor. For these constituents, no measurable increase in ambient concentrations should be experienced.* No additional modelling is required to determine the impacts. Figure 4.1 and Table 4.3 from Environmental Review Report for the Brighton Beach Power Station, December 2001. Information on Brighton Beach Power Plant has been added into ***Table 7.1 Identification of Other Projects and Activities*** in the CEA of the CEAA FIGURE 4.1 PREDICTED INCREMENTAL ANNUAL AVERAGE NO_2 CONCENTRATIONS  Report.

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		TABLE 4.3 **MODELLED CONVENTIONAL POLLUTANT MAXIMUM INCREMENTAL CONCENTRATIONS** **Contaminant** / **Averaging Time** / **MOE POI[1] and AAQC[2] (µg/m³)** / **Federal AQ Objectives MAL (µg/m³)** / **Calculated Maximum Incremental Concentration at Receptors (µg/m³)**: **R1 Residence**, **R2 Ojibway Prairie**, **R3 Raceway**, **R4 Black Oak** / **Existing Annual Conditions[3]** **NOx {as NO_2}**: ½h (POI) 500 - 162 220 239 103 n/a; 1 h 400 - 135 184 200 86 74 (NO_x); 24 h 200 - 20 11 11 18; annual - 100[4] 2.6 0.7 0.6 1.1 48 (NO_2) **SO_2**: ½h (POI) 830 - 3 5 5 3 n/a; 1 h 690 900 3 4 4 2 22; 24 h 275 300 0.9 0.5 0.5 0.8; annual 55 60 0.1 <0.1 <0.1 <0.1 **CO**: ½h (POI) 6000 - 112 153 167 72 n/a; 1 h - 35000 94 128 139 60 916; 8 h 36200 15000 12 10 11 9; 24 h 15700 - 7 4 4 6; annual - - 0.9 0.3 0.2 0.4 **SPM**: ½h (POI) 100 7 6 2 0.2 n/a; 24 h 120 120 2 0.9 0.9 1 62/53[5]; annual 60 60 0.2 <0.1 <0.1 <0.1 **PM_{10}**: 24 h 50 (interim) - 2 0.9 0.9 1 27 **$PM_{2.5}$**: 24 h - 30 (by 2010) 2 0.9 0.9 1 - Note: [1] ½h (POI) are O.Reg 3468 criteria for facility by itself (independent of background). [2] AAQC are applicable for ambient conditions (facility plus background). [3] annual average ambient concentrations (average of data presented in Section 3.2). [4] MAL (Maximum Acceptable Level) is for NO_2 – modelled results are for NO_x (NO_2 plus NO). [5] annual Windsor / site measurements.
	The construction of the project has the potential to affect the air quality in the vicinity of the crossing, plaza and Parkway, largely due to fugitive dust emissions and exhaust emissions from construction vehicles and equipment. Several controls have been proposed on page 10-4 and under ID# 1.0 in the table in section 10.7 on page 10-31. • EC recommends that project construction air emissions be controlled through the implementation of an air emissions management plan based on references such as Cheminfo Services Inc. *Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities*. March 2005. The document identifies technologies and practices geared to reduce PM and VOC emissions across the full spectrum of construction activities. The document is available for download from EC's web site: <http://www.ec.gc.ca/cppic/En/refView.cfm?refId=1863>	Acknowledged. The mitigation measures outlined below have been discussed in subsequent documents (i.e., the CEAA Report). MTO has approved standards and guidelines that consider Best Management Practices for air emissions for new roadways. These guidelines will be applied to the design of The Windsor-Essex Parkway, the inspection plaza, and the crossing. Such construction-related mitigation measures include: ▪ Periodic watering of unpaved (unvegetated) areas. ▪ Periodic watering of stockpiles. ▪ Limiting speed of vehicular travel. ▪ Use of water sprays during the loading, unloading of materials. ▪ Sweeping and/or water flushing of the entrances to the construction zones. ▪ Use of calcium chloride. In addition, during construction, the Contractor is required to implement dust suppression measures to reduce the potential for airborne particulate matter resulting from construction activities. These suppression measures are commonly in the form of water as a first choice on exposed soils to prevent dust from becoming airborne, or chemical applications if required where water is ineffectual. The Contractor is required to take steps as necessary to control dust resulting from the Contractor's operations, or by public traffic where temporary roads are maintained by the Contractor through work zones, such that dust does not affect traffic, enter surface waters or escape beyond the right-of-way to create a nuisance to residents, businesses or utilities. Standard dust suppression requirements dictated by the construction contract will comply with local Municipal By-Laws for such activities. Examples of other best practices for dust control, which are sometimes required during construction include:

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		▪ Avoiding site preparation, excavation and construction during windy and prolonged dry periods. ▪ Minimizing vehicle traffic on exposed soils. ▪ Stabilizing soil and other material storage piles against wind erosion. ▪ Covering and containing fine particulate materials during transportation to and from the site. Install a tarpaulin on material stockpiles and haulage trucks, as appropriate. ▪ Use of new or well-maintained heavy equipment and machinery, fitted with fully functional emission control systems/ muffler/ exhaust system baffles and engine covers. Mitigation measures for the predicted effects largely comprise of standard best management practices, and will be based on relevant standards and specifications, industry standards and protocols. Overall, with the implementation of these best management practices and mitigation measures, some residual effects from the project remain possible, however they are not expected to be significant. In some instances, elements of the project design will result in improvements to environmental quality relative to existing conditions. MTO will be responsible for implementing the mitigation measures required in relation to The Windsor-Essex Parkway. Transport Canada will be responsible for implementing mitigation measures required in the relation to the border inspection plaza and the international bridge crossing.