TORONTO

STAFF REPORT
ACTION REQUIRED

Update on the Metrolinx Georgetown South Service Expansion and Union-Pearson Rail Link

Date:	November 2, 2009
To:	Board of Health
From:	Medical Officer of Health
Wards:	All
Reference Number:	

SUMMARY

Metrolinx is proposing a significant expansion of regional passenger rail service starting in 2015 and resulting in an almost ten-fold increase in the number of trains on the Georgetown South corridor and a separate Air-Rail Link between Pearson Airport and Union Station. The project has been subject to public review under Ontario's new Transit Project Assessment Process for the past six months.

Throughout this public review, the Medical Officer of Health (MOH) and many of the communities along the rail corridor have expressed concern over the adverse air quality and human health impacts that Metrolinx predicts will occur from this rail expansion. The MOH's recommendations have included further studies and using electric locomotives instead of diesel.

On October 5, 2009, Ontario Environment Minister John Gerretsen concluded the Transit Project Assessment Process by permitting Metrolinx to continue with the proposed project, under certain conditions, such as requiring certain locomotives to be compliant with American Tier 4 diesel standards.

The impact of the Minster's conditions on the predicted air quality and health impacts of the diesel rail expansion have not yet been determined. This report requests the Environment Minister to ask Metrolinx to defer purchasing diesel trains for the service expansion in the Georgetown South corridor until the further studies specified in the Minister's notice of conditions, as well as the proposed electrification study, have been completed and made available for full public consultation and review. Based on existing information, electrification of the proposed rail line continues to be the mitigation option

that most clearly addresses the predicted air quality and health impacts. Whether other mitigation options could reduce these air quality and health impacts to an acceptable level remains to be demonstrated.

RECOMMENDATIONS

The Medical Officer of Health recommends that:

1. the Board of Health request the Ontario Minister of the Environment to ask Metrolinx to defer purchasing diesel locomotives for any part of the proposed Georgetown South Expansion and Air-Rail Link until the following information is made available for public consideration and comment, and review by the Minister:

    a. all additional studies, analyses and public consultation related to the development of a revised mitigation plan to address risks to human health, and an ambient air monitoring and reporting plan, as required by the Ontario Minister of the Environment in his October 5, 2009 "Notice to proceed with transit project subject to conditions";
    b. a Health Impact Assessment as part of Condition 5 (to "conduct further studies and analyses in order to supplement the information contained in the Environmental Project Report (EPR) related to predicted human health risks"), conducted in consultation with the Medical Officer of Health, which examines the distribution in the community of risks and benefits from the proposed rail expansion, and takes into account pre-existing gradients in health status; and
    c. a monitoring program for ultrafine particulate matter ($PM_{0.1}$) that characterizes baseline concentrations and concentration gradients;

2. the Board of Health urge Metrolinx to strengthen the planned GO System Electrification Study by:

    a. developing a risk analysis framework for integrating the environmental, health, social and economic impacts associated with each train technology option that is explicit, and open to public review;
    b. broadening the assessment of health impacts associated with train technology options from the quantitative human health risk assessment (HHRA) approach used in the Georgetown South study to one that encompasses Health Impact Assessment (HIA) methods; and
    c. comparing the total cost of train expansion options between investing in electrification now versus use of Tier 4 compliant diesel technology as an interim strategy, with electrification later.

3. the Board of Health request the Ontario Minister of the Environment to put the following information on the Environmental Registry in order to increase

transparency and enforceability of the conditions specified in the Minister's October 5, 2009 Notice regarding Metrolinx' proposed train expansion:

a. the health assessment, air monitoring, air modelling studies and mitigation plans, required in conditions 5, 7, 8, 11, 13 and 16; and
b. the results of the GO System Electrification Study, given that condition 4 indicates that Metrolinx should make available to the public any consideration of the use of new technologies that become commercially available and that could reduce air emissions from the trains.

4. the Board of Health request the Environmental Commissioner of Ontario (ECO) to give consideration to making a special report to the Speaker of the Assembly on the public process employed by Metrolinx, and the environmental significance of technology choices such as diesel expansion versus electrification of the commuter rail system;

5. the Board of Health forward this report to:

a. the Clean Train Coalition, Environmental Health Association of Ontario, Mount Dennis Community Association and Weston Community Coalition;
b. the Medical Officers of Health for Halton and Peel Regions;
c. the Ontario Ministers of Health and Long Term Care, and Transportation
d. the Toronto District School Board and Toronto District Catholic School Board;
e. the Environmental Commissioner of Ontario;
f. the Premier of Ontario;
g. the Members of Parliament and Members of Provincial Parliament for the Metrolinx Study Area; and,
h. the Federal Ministers of the Environment and Transportation.

6. forward this report to the Parks and Environment Committee for information.

Financial Impact

There are no financial impacts of these recommendations.

DECISION HISTORY

At its meeting on January 27 and 28, 2009, City Council adopted the following motion regarding the Metrolinx Georgetown South/Air Rail Link Project:

1. *City Council oppose any road closures along the route.*
2. *City Council support the addition of new stops, including a stop in Weston.*

3. *Public transit alternatives in the Georgetown corridor and serving the airport be a component of any service improvements.*
4. *Metrolinx be requested to employ electric vehicles.*
5. *City Council reaffirm its strong interest in seeing the West-Toronto Railpath (bike trail) project accommodated adjacent to the tracks between Dundas Street West and Strachan Avenue.*

On June 15, 2009 the Medical Officer of Health (MOH) presented a staff report in response to separate requests from the Board of Health and the Parks and Environment Committee to study the health impacts of Metrolinx' proposed train service expansion on the Georgetown South Corridor ("Georgetown Expansion") and Union-Pearson Rail Link ("Air-Rail Link") http://www.toronto.ca/health/moh/pdf/metrolinx_report.pdf.

The Board of Health recommended improvements to Metrolinx' assessment of its proposed project, including a health impact assessment and changes in scope to better estimate exposure and health effects. The Board of Health also recommended that Metrolinx electrify the Georgetown South Service Expansion and the Union-Pearson Rail Link prior to implementing expanded service. The Board forwarded its recommendations to the Parks and Environment Committee, which unanimously endorsed the decision at its June 16, 2009 meeting.

This report updates the Board of Health on information that been has made available as part of Ontario's Transit Project Assessment Process. This report also comments on the October 5, 2009 decision by the provincial Environment Minister on the proposed Georgetown Expansion and Air-Rail Link, as well as the Terms of Reference for the GO System Electrification Study adopted by Metrolinx on October 20, 2009.

ISSUE BACKGROUND

The transit project proposed by Metrolinx consists of a number of changes to the GO Georgetown South corridor that will permit all-day, two-way express, as well as local train service. The project is first in a number of regional rail expansions planned by Metrolinx in the coming decades. The two main elements of this first project are:

- A Georgetown Expansion, which will accommodate increased rail traffic from the GO Barrie, Bolton, Georgetown and Milton lines; and
- A separate, private spur line to the airport, which will be used to provide the Air-Rail Link service between Pearson Airport and Union Station.

Expanded service on the Georgetown corridor and the Air-Rail Link is expected to begin in 2015. The Georgetown Expansion, Air-Rail Link, plus existing train traffic are projected to result in 301 to 464 diesel trains per day on the corridor in the long term. Currently, approximately 50 trains run on this corridor every day.

The environmental impact of the project is being assessed under Ontario's new Transit Project Assessment Process (TPAP). This is a streamlined process in which the assessment of environmental effects and decision-making can be completed within a six-month timeframe. The Metrolinx project is also being assessed under the Federal Environmental Assessment (EA) process. A Notice of Commencement for the Federal EA was posted on March 8, 2009. It appears that Metrolinx has not begun work on the Federal EA at this point. The project is also expected to be subject to additional permits and approvals from various agencies.

As part of the TPAP, Metrolinx commissioned studies to examine the air quality and human health impacts of the proposed project within a study area that follows the train corridor from Bathurst and Queen Streets to Highway 427. The scope of these assessments is limited to the preferred design, and does not include any assessment of alternatives, such as electrification. Metrolinx released summary information on these air quality and human health studies on May 30, 2009.

Metrolinx' studies predicted adverse air quality and human health impacts from exposure to the exhaust from diesel locomotives. Specifically, they predicted that local air concentrations would increase as a result of the proposed diesel expansion, and that some pollutants would exceed their maximum threshold concentrations at some times in some locations. The studies also predicted increased risks of irritation (respiratory, eye or throat irritation) throughout the study area during peak air pollution events. These predictions mean that local residents who already experience coughing and wheezing on poor air quality days can be expected to experience these symptoms more often, and other local residents may begin to experience these symptoms.

The MOH expressed concerns about these predicted air quality and human health impacts in his June Board of Health report and subsequent comments under the Transit Project Approval Process. In addition to concerns about these short-term impacts, the MOH noted that diesel exhaust is identified as a probable human carcinogen by several agencies, including the International Agency of Research on Cancer[1].

Several community groups, including the Clean Train Coalition, the Environmental Health Association of Ontario, the Mount Dennis Community Association and the Weston Community Coalition, also expressed concerns over the proposed Georgetown Expansion and Air-Rail Link. The community is particularly concerned about the potential health impacts of diesel exhaust from increased train traffic through residential neighbourhoods and near sensitive receptors such as schools. Members of the community have called for electrification of the line to mitigate diesel emissions.

In addition to impacts on the residents living along the corridor, exhaust from diesel trains would impact users of the planned West Toronto Railpath. This path is envisioned as a bikeway running adjacent to the Georgetown South Corridor and connecting the Junction neighbourhood with downtown. Phase One of the rail path, stretching approximately 3 kilometres from Caribou Avenue to the Dundas Street and Landsdowne Avenue area, is currently under construction[2]. City Council has a strong interest in seeing

the West Toronto Railpath completed. However, the presence of a bikeway immediately adjacent to the Georgetown South Corridor raises concerns because the physical activity involved in bicycling is likely to result in an elevated respiratory rate and increased exposure for cyclists to diesel exhaust in ambient air. Increased exposure to diesel exhaust while using the rail path would likely result in increased frequency and severity of respiratory symptoms.

On July 30, 2009 Metrolinx completed its final Environmental Project Report[3] (EPR) as required under the approval process. The final EPR included additional detail on its studies, and predicted the same adverse air quality[4] and human health[5] impacts as indicated in early summary information. The EPR did not address the Board of Health's recommendations from its June 16, 2009 meeting. Consequently, the MOH wrote to Ontario's Environment Minister on August 19, 2009, objecting to the proposed rail expansion and requesting that he place conditions on the project requiring electrification, a baseline air monitoring program and a community liaison committee. Following Metrolinx' release of additional information in September, the MOH provided revised comments to the Minister which reflected the additional information but expressed continuing reiterated concern about health impacts.

As the last stage of the TPAP, the Ontario Minister of the Environment issued a decision on October 5, 2009. His notice (Attachment 1) allowed Metrolinx to proceed with the Georgetown expansion and Air-Rail Link, subject to a number of conditions.

COMMENTS

Current levels of air pollution in Toronto are responsible for approximately 1,700 premature deaths and 6,000 hospitalizations per year. Increases in air pollution emissions would likely increase these numbers. The MOH and the Board of Health have supported expanded public transit as a means to reduce individual vehicle traffic, but expressed concerns about the increased health risks and air quality impacts predicted to occur in adjacent communities with the use of diesel locomotives for the proposed Georgetown GO expansion and the Air-Rail Link.

Despite the views of the MOH and the Board of Health and the air quality and health impacts predicted in its own studies, between October 2nd and 5th Metrolinx distributed a leaflet throughout the community that contained the following text: "Will this expansion impact my health? No. The expansion of transit service on the Georgetown GO line can be operated safely without posing a risk to human health on a normal day"[6].

On October 5, 2009, the Minister of the Environment issued a Notice to Metrolinx allowing them to proceed with the Georgetown Expansion and Air-Rail Link, subject to 18 conditions. Generally, the conditions require Metrolinx to:

- use locomotives that are compliant with United States Environmental Protection Agency (US EPA) Tier 4 diesel emission standards, for GO trains that travel to, from and through Georgetown and for Air-Rail Link trains;

- conduct human health studies of the impacts of using Tier 4 technology, and develop a mitigation strategy to address any remaining health impacts that are predicted; and,
- develop an air monitoring and reporting program that will track pollutants along the rail corridor.

Comments on the Environment Minister's Decision

Diesel locomotives emit significant quantities of diesel exhaust, which is a probable carcinogen[7], and is associated with other non-cancer health impacts such as asthma symptoms and cardiovascular effects. The use of diesel locomotives for regional passenger rail service is becoming less common around the world as many cities invest in high-speed, electric rail service. Electric locomotives are an established and proven technology. Electric trains do not produce any direct air pollution emissions, in contrast to diesel trains which emit pollution all along the rail corridor. The emissions associated with generating electricity through the combustion of fossil fuels does have the potential to cause adverse health impacts in the communities downwind of these power plants, however, green energy sources, such as wind and solar power, would not result in such impacts on health. Electric locomotives also offer other advantages in that they are capable of greater speeds, faster acceleration and greater energy efficiency than diesel locomotives[8]. Many cities are planning, adopting or have long-standing electrified regional rail lines (see Table 1).

Table 1: Some Major Cities with Electric Regional Rail Lines

Existing Lines	Recent or Planned Expansions
Amsterdam	Auckland
Barcelona	Beijing
Brussels	Buenos Aires
Berlin	Casablanca
Helsinki	Istanbul
London	Jeddah, Saudi Arabia
Montreal	Rome
New York	San Francisco
Paris	Vancouver
Portland	
Seoul	
Sydney	
Zurich	

The Minister is acting to protect human health by setting conditions to minimize the environmental and health impacts of the Metrolinx project. However, the requirements may not adequately address these impacts, for the following reasons:

a) The Minister requires only some trains to meet Tier 4 requirements

In his October 5, 2009 covering letter to the MOH (see Attachment 1), the Minister communicated that his conditions required "all GO Transit and Union-Pearson Rail Link trains running in the Georgetown South Corridor use the highest emission standards

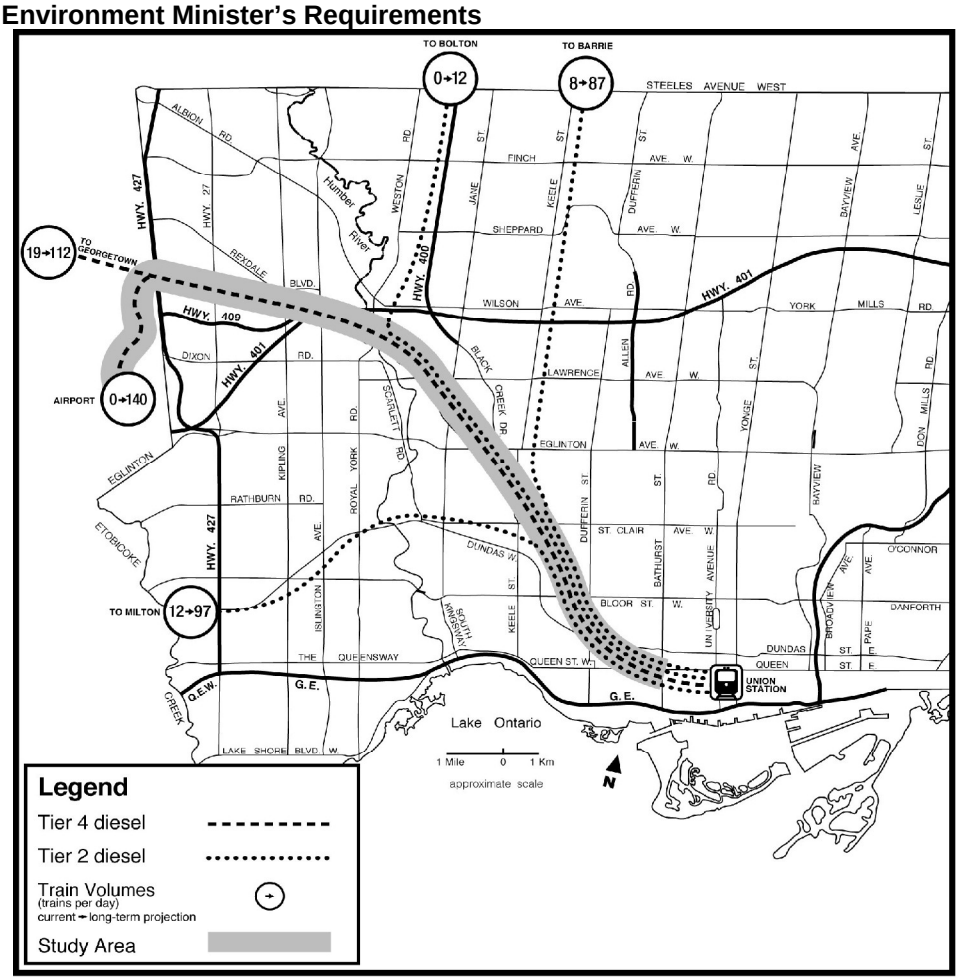
available when the expanded service begins". This is not, however, the case, as confirmed by the Minister's staff.

The Minister's emissions technology conditions require only some of the trains to run with Tier 4 locomotives:

- 112 GO Georgetown trains (assuming that all of the long-range projected trains on the GO Georgetown service will continue all the way to Georgetown, instead of short-turning at Bramalea or Brampton as approximately half of the service currently does); and,
- 140 Air-Rail Link trains.

The remaining train volume projected for the corridor, including the 196 trains projected to operate on the GO Barrie, Milton and Bolton lines, is not required to use Tier 4 technology. These Tier 2 trains travelling along the Georgetown corridor will make up approximately half of the total projected traffic between Union Station and Bloor Street, and 5-10% of the projected traffic between Bloor Street and Highway 427 (see Figure 1).

Figure 1: Projected Diesel Train Traffic for Georgetown Expansion and Air-Rail Link Under Environment Minister's Requirements



Metrolinx recently indicated that it would need to rebuild its existing fleet of locomotives "around 2017", and at that time it intends to retrofit them to meet Tier 4 requirements[9]. It is not known what it would cost Metrolinx to upgrade Tier 2 trains to meet Tier 4 emissions standards, or if the technology will be available. Although Metrolinx has expressed this intention, it is not required under the Environment Minister's notice.

b) Tier 4 diesel technology is not currently available

The Environment Minister has required that Metrolinx use locomotives that meet the US EPA's more stringent and health protective Tier 4 emission standards, which represent state of the art emissions reduction technologies that must be in use on all new line-haul locomotives in the US by 2015[10]. However, the technology to meet Tier 4 emissions standards has not yet been developed[11].

Although such technology is required in the US by 2015, it is not clear exactly when it will become available, nor is it clear how costly and difficult it will be to obtain once it is available. The US EPA has stated that it will be a considerable challenge for manufacturers to design locomotives to meet the Tier 4 standards by 2015 with the high levels of performance and reliability demanded by the railroad industry[12].

c) Air pollution emissions and health concerns will remain even with Tier 4 trains

Various emission control technologies can be applied to diesel locomotives to partly control emissions of individual components of diesel exhaust. Canada and Ontario do not have emissions standards for locomotives, and although the US EPA's standards do not legally apply to Canadian rail, the Railway Association of Canada have committed to buy and refurbish locomotives to meet applicable US EPA emissions standards[13].

The US EPA Tier 2 emission standards for locomotives represent currently available technologies to reduce particulate matter (PM) and nitrogen oxides emissions[14] (see Table 2). Although Tier 4 will represent significant technological advancements over current technology, these locomotives will continue to emit 30 per cent of the particulate matter, 34 per cent of the nitrogen oxides, 47 per cent of the hydrocarbons and 100 per cent of the carbon monoxide of an equivalent Tier 2 locomotive. Given the projected almost ten-fold increase in train volumes on the corridor over time, these residual emissions are of considerable concern for air quality and health.

Table 2: US EPA 2008 Tier 2 / 3 and 4 Emissions Standards for Line-haul Locomotives[a]

Tier	Emission Standards (g/bhp-hr)[b]			
	Particulate Matter	Nitrogen Oxides	Hydrocarbons	Carbon Monoxide
2 or 3[c]	0.10	5.5	0.30	1.5
4[c]	0.03	1.3	0.14	1.5

a Line-haul locomotives are those used to move trains long distances along rail lines. In setting emissions standards, US EPA distinguishes between line-haul locomotives and switcher locomotives, which are used in train yards to shunt trains over short distances.
b Emissions standards for locomotives are expressed in units of grams per brake horsepower-hour.
c Tier 2 and Tier 3 emissions standards are essentially the same, except that Tier 2 applies to locomotives remanufactured using certified remanufacture systems, while Tier 3 and 4 emissions standards apply to newly built locomotives.
Source: [15]

d) The approach to assessing heath impacts is not sufficiently comprehensive
The Minister's conditions requiring an enhanced distribution analysis of the predicted and background air concentrations at the receptor locations, and air modelling to determine source apportionment of area emissions, do not reflect the availability of a more comprehensive assessment tool known as Health Impact Assessment (HIA).

Metrolinx has used a traditional quantitative risk assessment approach to consider the potential human health risks of the Georgetown Expansion and Air-Rail Link. By comparison, HIA[16,17] is distinguished as being broader than a traditional risk assessment approach in that it focuses on assessing potential health impacts through examination of the social and economic determinants of health, and places particular concern on identifying and addressing potential health inequalities that might arise as a result of a given project. HIAs are also distinct in their involvement of stakeholders, intersectoral partners and the affected community in decisions on how to prevent unfavourable health outcomes or to support positive health benefits of a project.

An HIA that examines the distribution in the community of risks and benefits from the proposed rail expansion, and takes into account pre-existing gradients in health status should be used to evaluate the Georgetown Expansion and Air-Rail Link. The HIA approach is needed for this project because it will affect several lower socioeconomic status communities. As described in Toronto Public Health's 2008 report, *The Unequal City: Income and Health Inequalities in Toronto*[18], socioeconomic status has a profound effect on health. Poverty is not just associated with a higher likelihood of exposure to environmental contaminants, but also with increased susceptibility to harm from a given level of exposure to contaminants. People living with low income experience more illness, higher rates of disease and death at an earlier age. For example, admissions data for Toronto hospitals between 1996 and 1999 show that children between 0 and 14 years of age living in the poorest areas of Toronto were twice as likely to be hospitalized for respiratory problems, such as asthma, as children in the highest income neighbourhoods.[19] Metrolinx' traditional health risk assessment does not account for the compromised health conditions that already exist in some of the communities along the rail corridor.

e) The air monitoring program should include ultrafine particulate matter:
In June, the BOH recommended that Metrolinx undertake an ultrafine particulate matter ($PM_{0.1}$) monitoring program to characterize baseline concentrations and concentration gradients, in collaboration with Toronto Public Health. The Minister's conditions require Metrolinx to develop and implement an ambient air monitoring and reporting plan for fine particulate matter ($PM_{2.5}$), nitrogen oxides, sulphur dioxide, total suspended particulate, polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs), but this does not consider emerging health concerns with ultrafine particles.

Until recently, most research focussed on the health impacts of $PM_{2.5}$. These small particles cause lung irritation in healthy people, and exacerbate asthma and other respiratory illnesses in at-risk groups such as children, the elderly and those with pre-

existing illness. Strong evidence links $PM_{2.5}$ to cardiovascular and respiratory mortality and morbidity. Recent epidemiological evidence also suggests an association between exposure to smog pollutants such as fine particles, and increased mortality from lung cancer[20].

There is also increasing concern about the smallest particles in diesel emissions, $PM_{0.1}$ with a diameter of less than a millionth of a metre. Ultrafines make up 50-90% of the particles in diesel exhaust. A variety of substances can become attached to the exterior of the particles, including air toxics and metals that are linked to health outcomes such as cancer[21]. These substances can be inhaled deeply into the lungs along with the ultrafine particles.

Preliminary evidence suggests that these extremely small particles may be associated with many of the same types of health effects as larger particles (i.e., lung and cardiovascular effects). However, they seem to cause more inflammation and damage in the lungs than larger particles with the same chemical makeup. As well, because they are so small, they can easily move out of the lung and enter the bloodstream. This allows them to move to other parts of the body. Animal research suggests that these particles are able to move across important tissue barriers in the body, entering areas such as the brain and reproductive organs. The implications of this for human health are not yet well understood.

$PM_{0.1}$ monitoring equipment is commercially available, reliable and inexpensive. Information on baseline levels of $PM_{0.1}$ should be gathered now, and changes in ambient concentrations should be tracked as the amount of train traffic increases with the proposed expansion of diesel trains.

f) There should be greater Ministry oversight and public review

The conditions attached to the Environment Minister's Notice require Metrolinx to conduct the following additional studies and plans:

- further studies on the predicted human health risks from train traffic, including an enhanced distribution analysis of predicted and background air concentrations (condition 5);
- a revised mitigation plan that outlines mitigation measures to address outstanding risks to human health remaining after the change to Tier 4 compliant trains (condition 7);
- a final mitigation plan and record of public comments (condition 8);
- an ambient air monitoring and reporting plan (condition 11);
- air modelling to determine source apportionment of area emissions (condition 13); and
- a final ambient air monitoring and reporting plan (condition 16).

It is notable that there is no consistency in the degree to which the public must be consulted during the preparation and review of these additional studies, if at all. For example, Metrolinx is not required to release its additional health assessment to the

public – only submit it for approval to the Ministry. Regarding the mitigation plan, Metrolinx must post the plan on its website and host public meetings. The ambient air monitoring program is developed with community representation, but no consultation is required on the final plan itself, although the monitoring findings must be posted on the Metrolinx website. Although Metrolinx is encouraged to "consider all comments received from the public", there is no requirement to do so. It is of concern that the Environment Minister has only limited involvement overseeing the public consultation process.

In his June 2009 Board of Health report, the MOH noted that Metrolinx did not provide sufficient information early enough during the TPAP to enable adequate public review. During that process, Metrolinx made only summary information available in the early stages while detailed human health studies were released very close to the end of the public review period.

It is important that all of the additional studies and plans required of Metrolinx, and the new Electrification Study under development, be available for full public review and comment. The preferred vehicle for posting this information is Ontario's Environmental Registry process through the Bill of Rights (EBR). The Environmental Registry contains public notices about environmental matters proposed by government. The public notices may contain information about proposed new laws, regulations, policies and programs or about proposals to change or eliminate existing ones. The Environmental Registry process would ensure broader public access to the Metrolinx studies, as well as provide the opportunity for the public to send its comments directly to the Minister for his consideration during the review and approval of the new studies and plans.

The Environmental Commissioner of Ontario (ECO) is the province's independent environmental watchdog tasked with monitoring and reporting on the government's compliance with the Environmental Bill of Rights, so as to protect the natural environment. The ECO submits annual reports to the Speaker of the Assembly and has the authority to prepare special reports on topics of significant concern.

The ECO has expressed concerns about the new streamlined Transit Project Assessment Process (TPAP) under Ontario Regulation 231/08 in his 2008-09 Annual Report. One concern is that all sizes of public transit projects are treated similarly, whether a project is large or small, complex or straightforward. This is problematic for large and complex projects like the Metrolinx diesel train expansion initiative because of time constraints in the public consultation and review process. Another concern with the TPAP is that is does not require an examination of alternative ways of enhancing and delivering public transit. The ECO states that "a requirement to consider alternatives is in the public interest, particularly when various transit options have differing impacts socially, economically and environmentally. A careful weighing of alternatives, with public scrutiny, can lead to better overall outcomes and a wiser use of scarce public resources[22]." Given the ECO's expressed concerns, he should consider making a special report to the Legislative Assembly on Metrolinx' consultative process for this project, and the environmental significance of different technology options for transit projects.

Comments on the GO System Electrification Study

Metrolinx has announced its intention to commission a study of the electrification of the GO Transit rail system as a future alternative to diesel trains currently in service[23]. The study is expected to be completed in December 2010.

A community advisory committee, made up of 16 invited individuals with interest or expertise in alternate energy and sustainability, urban planning, transportation, business, finance, environment and health, was formed to help define the scope of the GO System Electrification Study[24]. Metrolinx also held a two-hour workshop to obtain input from the broader community on the study terms of reference. On October 14, 2009, the community advisory committee submitted recommended terms of reference to Metrolinx for a study that will document net costs and benefits of diesel, electric and alternate technology options for the entire GO rail network[25]. On October 20, 2009 the Metrolinx Board approved the terms of reference for the Electrification Study.

The terms of reference for the Electrification Study are broad. The study will examine the entire GO rail system. The study is expected to "consider the economic, social, environmental, health and technological factors for conventional and future diesel and electric technologies under study." The study is to provide a comprehensive and detailed analysis of the net costs and benefits for each technology related to: (a) capacity and service impacts; (b) environmental and health impacts; (c) community and land use impacts; (d) economic impacts; and (e) system costs, funding, financing and delivery,

While the terms of reference for the proposed study have significant potential to clarify and inform decision-making on train technology choices, a number of areas should be strengthened before the study commences.

It is important that the method used during the risk analysis to integrate the different types of impacts (e.g. health, social, environmental, economic) for each train technology option be explicit, and open to public review. The study needs to identify a framework for how risks and benefits will be considered during the analysis, and how this framework affects the conclusions of the study. At issue, for example, is what weight will be given to cost factors versus human health and environmental factors in assessing integrated impacts.

Regarding the assessment of health impacts associated with train technology options, it is important to broaden the methodology from the quantitative human health risk assessment (HHRA) approach used in the Georgetown Expansion study, to one that encompasses health impact assessment (HIA) methods. HIA analysis can take into account existing differences in underlying health status along the train corridors, as well as the projected distribution in health burden in the community with each technology option.

Regarding the assessment of system costs, the study should examine how the total cost of train expansion options compares between investing in electrication now versus use of Tier 4 compliant diesel technology as an interim strategy, with electrification later. The

incremental cost of electric trains and associated infrastructure should be compared with the cost of purchasing new Tier 4 compliant trains and associated infrastructure.

The Study envisioned by the Community Advisory Committee will provide Metrolinx with new information that is needed to make an informed decision on whether to meet future service requirements using diesel, electric or alternate technology. Metrolinx' technology selection will have broad implications across the region, and this decision point represents a unique opportunity for Metrolinx to be innovative and visionary in the redevelopment of a rail system concept for GO.

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SIGNATURE

Dr. David McKeown
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ATTACHMENTS

Attachment 1: Letter from Minister of the Environment to Toronto Public Health's Medical Officer of Health (October 2009)

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[2] Metrolinx. 2009a. Georgetown South Service Expansion and Union-Pearson Rail Link Environmental Project Report. July 30, 2009. http://www.metrolinx.com/gsse/TPAP/EPR.aspx.

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[6] Metrolinx. 2009f. Flyer: Georgetown South Service Expansion and Union-Pearson Rail Link. “The best thing we can do for cleaner air and a healthy environment is get people out of cars and on to transit.”

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