

November 4th, 2013

Kathy Haley - President UP Express
Union Pearson Express
97 Front Street West
Toronto,
ON M5J 1E6

Dear Ms Haley

**SUBJECT: PROPOSAL TO CONDUCT DUE DILLIGENCE AUDIT OF UNION PEARSON EXPRESS RIDERSHIP
FORECASTS**

Halcrow, A CH2M HILL Company¹, is pleased to submit this letter proposal to conduct an independent due diligence audit of the most recent ridership forecasts for the Union Pearson Express (UP Express). This audit would consist of the following key tasks as further described in the Scope of Work:

1. Review of data and reports (to be provided by UP Express);
2. Review model inputs and assumptions;
3. Benchmark ridership with comparators;
4. Assess model outputs and forecast ridership;
5. Assess impacts of marketing initiatives on ridership and ramp up;
6. Conduct risk and sensitivity analysis; and
7. Document findings.

This letter proposal outlines the project team, a description of the proposed tasks, associated fees and schedule to conduct the peer review work to assess forecast ridership levels.

PROJECT TEAM

We have partnered with David F. Crowley & Associates Ltd to conduct this due diligence audit. David Crowley was involved in previous peer reviews of UP Express ridership while working with Halcrow. The proposed team has global experience with transit systems and ridership forecasting. In particular, we provided ridership forecasting services for the Millennium Line, Canada Line (which includes an airport link), Evergreen Line, Vancouver Streetcar and for a wide range of major infrastructure projects (e.g., Port

¹ The global Halcrow Group was acquired by CH2M HILL in November 2011.

Mann/Highway 1, South Fraser Perimeter Road, Golden Ears Bridge, Sea to Sky Highway). More recently, the project team has provided independent peer reviews for both the proposed UBC Rapid Transit Line, and the proposed Surrey Rapid Transit Line in Greater Vancouver, as well as for a proposed new passenger ferry service in BC. This previous review experience will ensure that we are able to quickly and thoroughly review and assess the UP Express ridership estimates and forecasts.

The following individuals will provide peer review and forecasting services for this assignment:

Name	Role	Designation
Karoly Krajczar	Senior Advisor/ Reviewer	P. Eng (BC), M.A.Sc.
Basse Clement	Project Manager	P. Eng. (BC), M.A.Sc.
David Crowley	Senior Advisor/Local Context	M.E.S
Nai Chiu Chan	Transportation Engineer	E.I.T., B.A.Sc.

A brief bio for each team member is provided as follows:

Karoly Krajczar– Karoly Krajczar has 25 years of experience in demand and revenue forecasting (auto, truck, and rail) for planning- and investment-grade studies for the public and private sectors. He possesses extensive transportation model development experience (and peer review of models/forecasts), as well as expertise in traffic and travel surveys and market research. His public sector experience included the maintenance and update of the GVRD Regional Transportation Model, major household travel surveys and market research, strategic transportation planning, demand management studies, freight and truck modelling, and greenhouse gas and emissions modelling. As a consultant, Karoly continues to focus on these areas, providing services to clients throughout North America. He is the Halcrow - CH2MHILL North American lead for demand and revenue forecasting business, which provides investment-grade traffic and patronage forecasts to the public and private sector. Recent experience includes ridership forecasting and rebasing for the Canada Line (which includes an airport link), and Lead Advisor for Investment Grade Traffic and Revenue forecasts for DDOT. Karoly will act as senior advisor, providing inputs on approach, benchmarking, sensitivity analysis, impacts of marketing initiatives and reviewing the study outputs prior to finalization.

Basse Clement – Basse has over 16 years of strategic transportation planning experience both in the public and private sectors. During his employment with TransLink, Basse was involved in the technical development of multi-modal transportation plans and project plans throughout the Metro Vancouver region, including the development and upkeep of the Metro Vancouver regional transportation EMME model. Basse has worked in a consulting capacity for the last 6 years, where his clients have included BC Ministry of Transportation and Infrastructure (BC MoT), TransLink, Metro Vancouver municipalities, Transport Canada, Port Metro Vancouver and private sector clients. He led the development of investment-grade traffic forecasts for the Sea-to-Sky corridor as well as updated ridership forecasts for the Canada Line

Rapid Transit project. He led peer reviews for the UBC Rapid Transit Line for the City of Vancouver and the Surrey Rapid Transit Line for the City of Surrey, as well as a peer review of ridership and revenue for a private sector promoter of a proposed passenger ferry service. Basse will act as project manager for this project, responsible for leading the individual tasks and drafting the report.

Nai Chiu Chan – Nai Chiu is a Transportation Analyst with 5 years experience which includes analysis of travel data (including the TransLink Regional Trip Diary Survey and Bluetooth Origin/Destination Surveys) for the purpose of calibrating and validating travel demand models. Nai Chiu has played a significant role in the development of several travel demand models in Metro Vancouver, including the Metro Vancouver Regional Travel Demand EMME model, the City of Vancouver Sub-area model, Coquitlam sub-area model, Evergreen Line Ridership model, and Roberts Bank Rail Corridor model. As part of a peer review of traffic and revenue forecasts for a proposed passenger ferry service, Nai Chiu undertook the analysis of Origin-Destination and Stated Preference survey data for the purpose of estimating the travel demand for different markets. Recently, Nai Chiu was responsible for calibrating and validating a stage 2 traffic and revenue travel demand model using Bluetooth Origins/Destinations survey data for a major highway corridor in Washington, DC. Likewise, he has forecasted future traffic and revenue for different scenarios. Nai Chiu will be responsible for data review and analysis, assembly of benchmark data as well as for the review of model outputs.

David Crowley – David Crowley is a senior transportation planner with over 40 years experience, specializing in travel market research, demand forecasting (for tolls roads and rapid transit projects), transit service planning, and transportation policy analysis. He was a Vice President with Halcrow Consulting Inc., from June 2006 to July 2011. Since then he has worked as an independent consultant. While with Cansult Limited, David worked with the Halcrow traffic and revenue team on the Pearson – Union Rail Link Investment Grade Ridership & Revenue Study (Transport Canada) as far back as 2002. This project estimated future ridership and revenues for the proposed rail link from Lester B. Pearson International Airport to Union Station annually from 2005 to 2035. As Deputy Project Manager, David had provided local day-to-day project management and coordinated the activities of the North American component of the team. He was specifically responsible for coordinating data collection, including stated preference surveys of GTAA air passengers, and for the development of forecasts of potential rail link demands by GTAA workers and persons doing business at the airport. During David's time with Halcrow Consulting Inc, he managed traffic and revenues studies for planned toll roads in the Montreal area (Autoroutes 25 and 30) in 2006 and 2007-2008 for a private client. He also worked with multi-national Halcrow teams on peer reviews of investment grade demand forecasts for the Union-Pearson rail link (for a private client in 2009, the planned Highway 407 East Extensions (for private clients in 2007), and re-assessments of future demands and revenues on Highway 407 (in 2009 and 2010) for private clients. He also served as an advisor to the GTAA during its negotiations with Metrolinx in 2011 on airport access fees. During David's time at Halcrow, he managed a number of major studies for Metrolinx including the following: Barrie Corridor Planning Study (2011-12), Union Station 2031 Passenger Demand Study (2011), Benefits Case Analyses for 5 GO Transit Service Improvement Proposals (2009), and Fare Integration & Service Coordination studies

(2007-2009). David will provide inputs in respect of local context (particularly in relations to recent changes/developments which might affect the ridership estimates), modelling assumptions and methodology, as well as benchmarking.

SCOPE OF WORK

The intent of this project is to conduct an independent peer review of input data and assumptions as well as modelling methodology used to determine forecast ridership on the UP Express rail line. Furthermore, it is proposed to conduct a sensitivity and risk analysis as part of this audit, in order to better understand the range of possibilities for future ridership. It is assumed that any model runs required as part of the audit will be conducted by the client's ridership forecasting consultant, whom it is proposed to contract as a sub-consultant. The following tasks are required to carry out the peer review work and document the results.

Task 1 – Review of Data and Reports

The project team will review all relevant reports and studies that have been previously published and synthesize any related data and results that could impact the peer review. The project team will also use this opportunity to familiarize themselves with data sources including traffic counts, travel data, previous reports and any other relevant information that may be available related to land use trends and competing transportation options (such as alternative futures for the Billy Bishop Toronto City Airport). Further, we will conduct a literature review of relevant studies and research reports that may be deemed useful in informing the peer review, ensuring that best practices have been reviewed and considered.

Task 2 – Review Model Inputs and Assumptions

We will review the traffic model calibration and validation report to assess how well the model replicates actual conditions and the reasonableness of the model elasticities (e.g., how well does the model predict changes in demand due to changes in transit fares, parking charges, road congestion, etc.). Next we will review the input assumptions used to develop the forecasts (e.g., land use, GDP growth, growth in airport passengers, value of time, etc.) to assess their reasonableness. This task will likely involve communication with the original forecasting team to discuss various modelling-related issues. It is assumed that our project team will have access to these individuals for a prescribed number of hours, and that this will be facilitated by the client.

Task 3 – Benchmark Ridership with Comparators

The first component of this task will feature a review of transit systems currently in operation in similar settings to the UP Express. Our review will focus on up to 8 similar systems and provide information on the physical, operational and demand characteristics of each. This might include: vehicle/ technology type, vehicle capacity, fleet size, accessibility, station platforms, access to the City Centre, line length, number of stations, frequency/headways, line time, travel time advantages, daily/annual boardings, hours of operation, traffic management, fare prices, quality of connections to the airport, product positioning/ marketing, ramp up period etc. and the rail mode share of each system for airport related trips. The specifics relating to criteria and systems will be confirmed with the client and will depend on data availability limitations. Potential systems for consideration might include a mix of North American and leading global examples of air rail links in order to provide both comparable context and comparable service

to UP Express. Examples may include: Canada Line (Vancouver, Canada); Bay Area Rapid Transit (San Francisco); Air Train (JFK, New York); Yellow Line (Washington DC); L Train (Chicago); as well as Heathrow Express (London UK); GauTrain (Johannesburg, South Africa); MTR Airport Express (Chep Lap Kok, Hong Kong); Narita Express (Tokyo, Japan); Arlanda Express (Stockholm) ; and KLIA Express (Kuala Lumpur).

Based on the information from similar systems, we will develop an independent non-model ridership forecast for the proposed UP Express rail line. Simple regression models based on similar lines can be developed that predict rides per station and rides per line kilometre based on variables such as fares, corridor densities, car ownership and average traffic speeds. These models will be used to generate a ridership range (e.g., low, central and high) that can be used to confirm and reconcile the model-based forecasts.

Task 4 – Assess Model Outputs and Forecast Ridership

Ridership and revenue forecasts will be assessed first in the context of the benchmark forecast range developed in Task 3. We will then review each of the key input assumptions to confirm a central case set of assumptions. If these differ from those used by the original forecasting consultant we may request additional model runs to assess the impact on the horizon year forecasts. We will assess the magnitude of the various markets against available data sources and the associated capture rates produced by the model. Based on these activities we will either confirm the original central forecast or develop a revised central forecast.

Task 5 – Assess Impacts of Marketing Initiatives on Ridership and Ramp Up

We understand that a marketing consultant was retained to develop a detailed marketing strategy (series of marketing tactics) that might be expected to both reduce the ramp up period and attract increased ridership, over and above that estimated in the SDG forecasts. We understand that the marketing and demand forecasting methodologies are different and that further analysis is required to assess the magnitude of potential incremental ridership benefits associated with various marketing tactics. These tactics are aimed at market segments that were not explicitly assessed in SDG's forecasts, which focussed on business travellers to Downtown Toronto.

We propose to review the information provided by the marketing consultant, assess this against the assumptions included in the most recent ridership forecast, and compare this against benchmark ridership data from other airport rail systems which have employed marketing tactics (to the extent that these data are available).

The benefits of marketing during the ramp up phase and on incremental ridership will be assessed, taking into account the potential impacts that marketing tactics may have on new markets that were not accounted for in the SDG forecasts. For example, ongoing population and/ or employment changes in areas such as "The Junction" centred on the Bloor GO Station/ Dundas West Subway station, King West Village and Liberty Village will be considered in assessing the demand assumptions and forecasts in the marketing strategy.

Task 6 – Conduct Risk and Sensitivity Analysis

All forecasts are inherently subject to a level of risk. The risks associated with ridership forecasts can be ascribed to three main sources:

- Risks associated with the independent assumptions input to the forecasting models or factors that are directly applied to the model generated traffic/ridership or revenue estimates (such as assumptions for land-use developments, changes to other transport infrastructure or transport policies, background traffic growth, ramp-up profiles, etc);
- Risks associated with the processes or parameters within the forecasting models which in turn affect their outputs (such as methodological and processing issues, choice of model parameters, modeling errors, etc);
- Risks associated with the base data from which the base year models are derived (such as data omissions, low sampling or other inadequacies, actual data errors, etc).

Given that some degree of uncertainty will always be present, it is useful to quantify this uncertainty in order to identify the range in which ridership levels are most likely to occur. This allows the risk associated with the forecast ridership to be determined and judged. Proper risk assessment procedures take into account the principal causes of variation in ridership levels, and produce a probability distribution that indicates the complete range of possible outcomes and the associated level of certainty. As it is very unlikely that all of the down side, or all of the upside risks would occur simultaneously, the project risk is not the sum of all the risks, but a function of their probability of occurrence. The Monte Carlo risk model, through use of the individual risk probability distribution functions and the prescribed individual risk ranges is used to simulate the probability of all the risks occurring to different degrees at the same time.

We propose, through application of the UP Express Ridership Model, to conduct a high level sensitivity and risk analysis to better understand the range of future potential ridership. We have assumed that the actual model runs will be undertaken by the UP Express ridership consultant who is in possession of the model, who will be sub-contracted to CH2M HILL. A budget contingency has been included to allow for this. (Please note that we have not yet approached SDG to secure a fee and agreement, and would require client support in initiating contact with the correct person within SDG, and in backing up our request for sub-consulting services. Client agreement would be sought to the scope of services and to utilization of the contingency prior to entering an agreement with SDG.)

Task 7 – Prepare Draft and Final Report

A draft report will be prepared summarizing our findings for each of the above tasks. Following a review by the client, we will incorporate a single set of comments and deliver a final report.

Task 8 – Meetings and Presentations

Time has been included in the fee estimate to present findings and discuss results with UP Express staff.

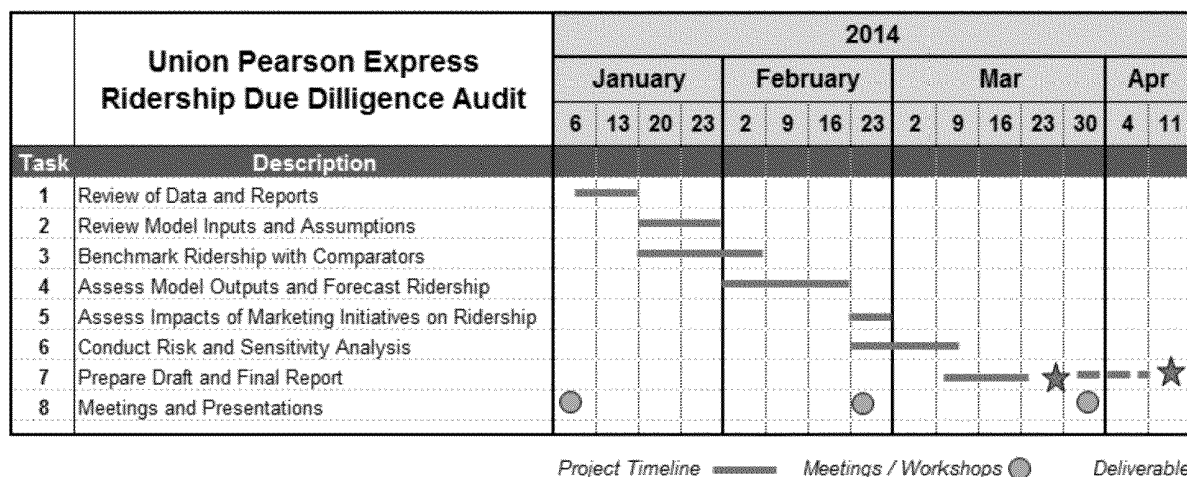
FEES AND SCHEDULE

Our proposed fixed fee to carry out the peer review of UP Express ridership is **\$103,000** exclusive of any applicable taxes, based on the breakdown of hours by task and person set out below. We propose the inclusion of a \$20,000 contingency in addition to the above, in order to cover the costs associated with model runs associated with the sensitivity testing to be undertaken by SDG (as sub-consultant to CH2M HILL). Thus the maximum proposed fee (including sub-consultant contingency) is **\$ 123,000** excluding taxes.

 A Division of METROLINX Union Pearson Express Ridership Due Dilligence Audit		CH2M Hill Resources			
		K. Krajczar	B. Clement	N.C. Chan	D. Crowley
Task		Commercially Sensitive Information			
1	Review of Data and Reports	8	12	4	12
2	Review Model Inputs and Assumptions	8	12	20	8
3	Benchmark Ridership with Comparators	8	24	60	10
4	Assess Model Outputs and Forecast Ridership	8	36	36	8
5	Assess Impacts of Marketing Initiatives on Ridership	12	16	24	16
6	Conduct Risk and Sensitivity Analysis	8	30	50	6
7	Prepare Draft and Final Report	4	16	12	8
8	Meetings and Presentations	4	24	12	16
Total Hours		60	170	218	84

As stated above, client agreement will be sought in order to access this contingency. We propose to invoice the client based on SDG's rate and hours utilized plus 5% for contract administration by CH2M HILL staff. Please note that we are flexible in our approach and are able to modify our tasks, fees and schedule in order to meet the client's specific requirements. We have assumed that Basse Clement and Karoly Krajczar will attend meetings via conference call rather than in person.

We would expect to complete this work within a 15 week period upon receipt of notice to proceed. We understand that UP Express would like to carry out this work in the first quarter of 2014 and we confirm that our resources are available. To lock in these resources we would request a notice to proceed by end November 2013. The following chart provides our estimated schedule to complete each of the tasks, assuming a notice to proceed at end November and a start date of 7 January 2014.



We are grateful for this opportunity to provide you with our proposed scope of work and fee. We would be pleased assist UP Express by undertaking this review and look forward to your response. We attach our standard provisions. Should you have any questions with respect to proposal or the terms and conditions

attached, please do not hesitate to contact the undersigned directly at 604-439-2385.

Sincerely,

Halcrow – A CH2M HILL Company

A handwritten signature in cursive script, reading "Basse Clement".

Basse Clement, P.Eng (BC), M.A.Sc.
Associate Transportation Planner

A handwritten signature in cursive script, reading "Peta Wolmarans".

Peta Wolmarans, MRTPI
Business Vice President