

May 4th, 2010

Dear Stakeholder:

Re: Summary Report – GO Electrification Study Stakeholder Workshop #1

Attached please find the Summary Report from the first Electrification Study Workshop, held March 31st, 2010 at the International Living Learning Centre, Ryerson University.

We are distributing the report to both those who attended the workshop as well as all invitees to keep you informed about the Electrification Study and the feedback from the stakeholder engagement process.

We very much appreciate the input we received at the workshop on the Electrification Study approach and objectives. Workshop participants offered a number of suggestions to enhance stakeholder engagement in the study. In response, we are pleased to confirm that an additional stakeholder workshop will be added near the end of the study to discuss the study findings and conclusions. The study team is also considering opportunities to provide stakeholders with other study information – for review and/or comment – in between stakeholder workshops.

We look forward to your organization's participation as the Electrification Study continues. We anticipate that the next stakeholder workshop will be held in mid-late June, and will provide you with further details and an invitation to participate closer to the time.

In the meantime, we invite you to visit the Electrification Study website at: www.metrolinx.com/electrification/default.aspx. Or you can send an email to the study team at estudy@metrolinx.com.

Sincerely,



Karen Pitre
Project Director
Electrification Study
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416- 874-5910

ELECTRIFICATION STUDY

Workshop Summary Report Stakeholder Workshop #1

May 4, 2010

Prepared by:
Lura Consulting
Toronto, ON



This workshop summary report was prepared by Lura Consulting. Lura is providing third party facilitation services as part of the GO Transit Electrification Study. This summary report captures the key discussion points raised during Stakeholder Workshop #1. It is not intended as a verbatim transcript of comments received. If you have any questions or comments regarding the summary, please contact:

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1 About Stakeholder Workshop #1

The first stakeholder workshop for the GO Transit Electrification Study took place on Wednesday, March 31, 2010 from 6:00 – 9:00 p.m. at the International Living Learning Centre at Ryerson University, Toronto, Ontario. In total, 34 representatives of non-governmental organizations registered for the workshop, with 25 attending the March 31st session. A list of organizations invited to participate in the workshop, as well as those who attended the meeting, is included in Appendix E. As can be seen from the invitation list, effort was made to include a wide range of stakeholder organizations from across the Greater Toronto and Hamilton Area (GTHA) in the workshop, including organizations with an interest in land use and social planning, transportation, business and economics, environment and health, community, as well as academia.

The workshop was convened by Metrolinx with assistance from Lura Consulting who managed and facilitated the evening's events. The purpose of the workshop was to introduce the Electrification Study to non-governmental stakeholders and obtain their feedback on the study approach and objectives. In addition, the workshop provided the study team with an opportunity to engage in dialogue with stakeholder representatives from across the GTHA, enabling an increased understanding of stakeholder values and goals related to the Electrification Study.

Section 2 of this report provides an overview of the meeting format. Section 3 summarizes the presentations made at the workshop. Section 4 presents the feedback received throughout the meeting, and the project's next steps are summarized in Section 5. The appendices contain the workshop PowerPoint presentations, a sample worksheet used to elicit feedback, submitted breakout group worksheets, submitted individual worksheets, and the workshop invitation and attendance list.

2 Format of the Workshop

The workshop was facilitated by Mr. Dave Dilks of Lura Consulting. The session began with opening remarks from Leslie Woo, Vice President of Policy and Planning, Metrolinx, who outlined the context for the Electrification Study. A presentation by the Electrification Study Team then provided stakeholders with an overview of the study approach and objectives. The presentation was supplemented with PowerPoint slides that can be found in Appendix A. After the presentation, meeting attendees were invited to ask questions regarding the proposed study approach and objectives.

Following the presentation, the workshop attendees were divided into breakout groups to discuss the study approach (Working Session 1) and the proposed study objectives (Working Session 2). In their breakout groups, participants were asked to discuss the questions outlined on the workshop worksheet (see Appendix B for sample worksheet). The breakout groups were encouraged to capture their ideas in writing so that they could be accurately recorded and included in this workshop report. The groups were given 40 minutes to discuss the questions for each working session, and then share their feedback with the other workshop participants, the Electrification Study Team, and Metrolinx staff.

Workshop attendees were encouraged to share their ideas and comments throughout the evening by asking questions following the workshop presentation, participating in the breakout session discussions, speaking with study team members directly, and submitting their individual worksheets at the conclusion of the evening.

3 Presentation Highlights

3.1 Welcome and Overview

Mr. Dave Dilks opened the evening by welcoming workshop participants and introducing the members of the project team including Metrolinx staff and key members of the Delcan+Arup JV Study Team. This was followed by an outline of the evening's agenda and the introduction of Lura Consulting as the third party facilitators for the project. Mr. Dilks then discussed the importance of stakeholder feedback and confirmed that the purpose of the workshop was to introduce attendees to the study and to seek early feedback from representatives on the study approach and objectives. Workshop participants were invited to introduce themselves to the group, stating their name and organization which they represented.

3.2 Electrification of the GO Transit Rail Network

The PowerPoint presentation was delivered by representatives from Metrolinx and the Delcan+Arup JV Study Team. The presentation informed workshop participants about 'The Big Move' (the regional transportation plan developed by Metrolinx), the context for the Electrification Study, and the study approach and objectives. To view the presentation slides please refer to Appendix A.

The following is a summary of the main points made during the presentation:

3.2.1 Context for Electrification

Ms. Leslie Woo, Vice President of Policy and Planning, Metrolinx

- The former Study Community Advisory Committee (CAC) played a critical role in the study process by contributing to the development of the study's Terms of Reference;
- This study is of significant importance for Metrolinx and the Ontario Ministry of Transportation in that it will examine technology options for powering GO Transit's rail network on a system wide basis;
- The Big Move outlines a number of rail projects that could benefit from electrification to meet future growth requirements in the region;
- There is strong community interest in looking at new technology options – including electrification – as we move forward in order to address issues including air quality and climate change;
- For this study, emphasis has been placed on the importance of conducting a comprehensive analysis and looking at all potential options before any decisions are made;
- This is the first electrification study for the GO Transit rail network; and,
- Unlike former studies that were corridor specific, this is the first system wide, multi-variant study examining electrification of the entire GO Transit rail network.

3.2.2 *Current Electrification Study*

Ms. Karen Pitre, Study Project Director, Metrolinx

- The CAC was formed to help develop the study terms of reference and Metrolinx is grateful for the valuable role they have played in the process;
- There are two studies currently underway that will inform the study process: a study examining track capacity at Union Station and a demand and opportunity study examining options for shifting passengers at key interceptor points;
- GO Transit is planning to expand service levels throughout the rail system through a series of infrastructure investments throughout the rail network; for the purposes of this study the project team will assume that these will be implemented in the future;
- The current width of the existing rail corridors in the GTHA is a constraint to both system expansion and to the option of electrification;
- The study team will develop a baseline case in order to understand the network limitations and different technologies that are available for the existing network;
- A sensitivity analysis will be conducted to understand the implications of various technology options for the future network;
- The study team has attempted to create a bottom up approach to the study and stakeholder feedback on the study approach and objectives will be used to develop the decision-making criteria;
- Further engagement with stakeholders will occur in June to discuss the evaluative/screening criteria and the preliminary technology options for the existing network; and,
- This is a complex project because the study is examining the entire GO Transit rail network.

3.2.3 *Study Approach and Objectives*

Mr. Roger Wood, Study Project Manager, Delcan+Arup JV

- As the representative from ARUP, Mr. Roger Wood brings over 30 years of international engineering and transportation infrastructure development experience;
- Marcela Diaz-Ruiz from Delcan is a major supporting team member;
- In response to the request for proposal (RFP) Delcan + ARUP JV put together a comprehensive team of local and international experts including Delcan, Arup, SDG, LTK, Lura, CANAC, RWDI, DPRA, EDR Group, InterVISTAS, Golder Associates, and LGL;
- The RFP outlined that the study team, and the electrification study, is required to be objective, comprehensive, inclusive, and evidence based;
- The goal of the study team is for all disciplines to have a voice at the table during the study;
- At the onset of the study, the study team needs to develop a comprehensive understanding of the existing rail network and study potential technology options available for the GTHA;

- To date, the team has prepared the baseline conditions for the study;
- The team is developing a list of various technology options and will begin to examine which technologies can be applied to the existing GO Transit rail network;
- The team is committed to engaging stakeholders throughout the study and as a result future stakeholder workshops will be undertaken at key points in the study;
- The team will also convene geographically based workshops in order to receive input from local community stakeholders;
- An interactive web based engagement process is also being initiated for the study;
- Meetings with representatives from all levels of government and “technical” organizations (e.g. VIA, CN, OPA, etc.) are underway and further communication between the study team and these organizations will continue throughout the study;
- The objectives for the study were confirmed by the Metrolinx board and derived from the terms of reference developed by the CAC;
- The underlying principles of the study seek to address the goals of the GO 2020 plan, The Big Move, and the Places to Grow Act; and,
- The study team would like workshop participants to consider the study approach and objectives and would welcome any feedback.

3.2.4 Questions and Answers

Question 1: Where does the air rail link connect to this study?

Answer: This study is looking at the whole system, including the Georgetown Line. We will have a better sense of how the study fits with the airport line once we get further into our methodology.

Question 2: Are there risks that you might not deliver by the December 31st deadline? Are there penalties in the contract if the year-end deadline is not met?

Answer: There are no penalties in the contract but we are fully committed to that deadline. However, meeting the deadline is contingent on us getting the right data in time in order to prepare and write the report. The expectation from GO Transit and Metrolinx is that decisions will be made in a timely fashion so we can continue to move forward. As well, we have weekly team meetings in order to assess the project schedule and ensure we meet our incremental deadlines.

Question 3: With respect to ridership projection data, have these data been refined over the past year since The Big Move was released?

Answer: Metrolinx is constantly updating the information and data that we use. With that said, I can say that the numbers for ridership have not changed but the detail behind the numbers is changing. We will share this information in future since we are still in process of refining these numbers.

Question 4: Ridership will affect expansion of Union Station, and you noted that it will expand regardless of which technology you choose, but will technology options affect how you can expand?

Answer: Yes, that is true. It is one of the key considerations.

Question 5: On slide 12 it mentioned that electric and diesel alternatives require more track lowering etc. That is happening now for diesel, why are grade separations also going to occur with electric trains on the GO network?

Answer: We still have a requirement to accommodate freight trains that may be double stacked containers; we need to accommodate others who will use the corridor. An overhead wire system will need to be thought out so wires don't get caught. Safety is a big issue.

Question 6: On slide 18 you have a flower diagram where you refer to cost benefit analysis. How broad will that be? What do you intent to include?

Answer: A benefit-cost analysis will be carried out. In addition we will consider impacts associated with other criteria such as social community, environment, health, etc, but we will not say one is more important than another. In addition, we will do an economic evaluation in terms of what the fiscal benefits will be.

Question 7: Regardless of how many stations you have to relieve Union, it will always be the key hub. What influence do you have on the TTC plans for Union, since what they are currently doing is inadequate?

Answer: Union Station is indeed the nexus of the GO Transit Rail network. We continue to work collaboratively with the City of Toronto to coordinate our efforts to ensure seamless customer service at Union Station.

Question 8: Why do you not commit to producing any recommendations? Unlike previous studies that were shelved, will this study be implemented?

Answer: The study findings and conclusions will inform the Metrolinx Board recommendations to the Province. A big part of our findings will relate to how and when we think technologies can be implemented. Electrification is very complicated and we need to phase it in over time and implement it in a way to make it successful.

4 Working Sessions

4.1 Overview

At the conclusion of the presentation, workshop participants broke into small groups and discussed the questions presented in the worksheet (see Appendix B). The groups were given 40 minutes to complete each working session. After each working session, the breakout groups shared their responses with the study team and each other.

4.2 Working Session 1: Study Approach

During the first working session, the workshop breakout groups were asked to discuss the study approach and consider the following two questions:

1. What feedback do you have on the proposed study approach?
2. Have we missed anything?

4.2.1 Common Themes presented by the Breakout Groups:

The following section provides a summary of the responses and questions raised by breakout groups for the two questions listed above. More detailed notes and responses from the breakout groups are included in Appendix C.

Stakeholder Engagement:

- The number of stakeholder workshops should be increased; add another stakeholder workshop closer to the end of the study between phases three and four
- The study team should provide stakeholders with progress reports or study “products” electronically in between meetings to avoid information overload at stakeholder workshops
- Study team attendance at the workshops should be broadened to include other sub-consultants so they can answer questions related to their specialized role in the project
- The study team should report back to the stakeholders regarding how their concerns were integrated into the study
- Stakeholders would like to be consulted well before decisions are made (e.g., screening out of technology options) by the study team
- Stakeholders are interested in opportunities to interact with the Metrolinx Board as the study progresses and reaches conclusions

Decision Making Framework:

- Health and environmental factors should be quantified where possible and included in the study’s cost-benefit analysis
- The decision-making framework must be flexible and be able to adapt to changing conditions (e.g., availability of new data) in the region as required

- A sensitivity analysis should be conducted during the study in order to ensure that changes to network conditions are reflected in the assessment of various technology options
- Stakeholders emphasized the importance of using accurate, up-to-date data when assessing baseline conditions for the study (e.g. updated transit ridership data)

Parallel Studies

- The proposed Airport Rail Link should be included in the Electrification Study; it should be considered for one of the first electrification projects
- The findings and conclusions of ongoing Metrolinx studies should be integrated into the Electrification Study (e.g. Union Station capacity study)

Study Outcomes

- Stakeholders want affirmation that the Electrification Study will lead to meaningful results that can be implemented; concerns were raised that previous electrification studies have “sat on the shelf”

4.3 Working Session 2: Study Objectives

The following six categories of objectives are proposed by the study team to guide the Electrification Study process (to review the detailed list of the study objectives within each category please refer to the workshop presentation in Appendix A):

1. User Benefits
2. Environment and Health
3. Social Community
4. Economic
5. Financial
6. Deliverability

During the second working session, participants were asked to discuss the following two questions:

1. What feedback do you have on the proposed objectives?
2. Have we missed any objectives?

4.3.1 Common Themes presented by the Breakout Groups:

Varied feedback was obtained related to the study objectives from workshop participants – feedback that is both relevant to the Electrification Study and other GO Transit and Metrolinx studies or initiatives. The following provides a summary of the responses and questions raised by breakout groups.

User Benefits:

- Increase and improve both local and regional public transit in the GTHA
- Examine the entire GO Transit rail network
- Ensure that the future rail system is accessible for all users (e.g. family friendly and wheelchair accessible)
- Increase local stops and connections to local transit networks

Environment and Health:

- Prioritize increasing the use of renewable sources of energy, rather than the proposed objective to decrease the use of non-renewable sources of energy
- Conclusions made related to human health implications should be evidence based rather than general statements
- Address the health implications that various technology options have for vulnerable groups in society (e.g. elderly, pregnant women, children, and chronically ill)

Social Community:

- Ensure there is a safe interface between the public and proposed rail networks (e.g. safe railway crossings)
- Examine both the hard and soft social and health costs associated with proposed technology options (e.g. sleep interference due to noise, overall quality of life, etc.)

Economic:

- Social and health implications should be incorporated into the financial assessment of various train technology options
- Priority should be placed on local job creation
- Preference should be given to technology options that increase regional infrastructure investment and transit oriented development around rail stations and tracks
- Examine the impact that various train technologies will have on community development and other associated benefits for neighbourhoods and communities in the GTHA (e.g. increases to land market values)

Deliverability:

- Train technologies must be able to operate in extreme climates

Other:

- Integrate the results of ongoing environmental assessments in the electrification study
- Focus on the feasibility of electrifying the entire GO Transit system not just the Georgetown South line

4.4 Feedback on Priority Objectives

At the conclusion of the breakout discussion, stakeholders were given an opportunity to indicate the most important objectives for the study. Each participant was given six dots and invited to post them on wall-sized charts listing the objectives proposed by the study team. A full list of proposed objectives for the study can be found in the workshop presentation in Appendix A.

The following is a list of the most important objectives identified in the “dotmocracy” exercise in order of importance according to the workshop participants:

- Implemented in a manner that encourages transit-supportive densities, visionary community developments and enhanced community facilities (e.g. bike paths) **(21)**
- Improved connection and service within the GTHA **(16)**
- Provide appropriate land development opportunities **(13)**
- Net improvement to human health in adjacent communities **(12)**
- Minimize adverse community/social impact including aesthetic impacts and impacts from noise and vibration **(12)**
- Contribute to improved air quality **(11)**
- Facilitate faster, more frequent and less crowded transit **(8)**
- Significant contribution to the achievement of transportation related GHG reduction targets of GO Green: Ontario’s Action Plan for Climate Change **(7)**
- Improved transit reliability **(6)**
- Decrease the use of non-renewable resources **(6)**
- Encourage environmentally sustainable operations **(4)**
- Optimize opportunities to provide positive economic benefits to local, regional, and national economies **(4)**
- Cost-effective financing solutions **(4)**
- Provide value associated with all relevant and material hard and soft system capital costs, operating costs, and lifecycle maintenance costs **(3)**
- Proven in comparable climatic setting **(3)**
- Minimize adverse heritage and archaeological impacts **(2)**

5 Next Steps

The next steps for the project were presented by Metrolinx Project Director Ms. Karen Pitre, and include:

- Fine-tuning the study approach and objectives based on input received by stakeholders;
- Updating the project website and obtaining feedback from the broader public through e-consultation;
- Continuing to develop technology options and preparing for the second stakeholder workshop in late June or early July 2010.

Ms. Pitre thanked participants for their participation and feedback and noted that a report on the workshop results would be prepared by Lura and circulated to stakeholders following the meeting.

APPENDIX A:

“Electrification of the GO Transit Rail Network” PowerPoint Presentation



METROLINX

Electrification of the GO Transit Rail Network

Stakeholder Workshop # 1



Metrolinx is an agency of the Government of Ontario

Workshop Purpose

- Introduce stakeholder group representatives to the study
- Seek early feedback on study approach & objectives



Stakeholder Workshop Agenda

- Welcome
- Opening Remarks (Metrolinx)
- Presentation: Study Approach & Objectives (Delcan+Arup JV)
- Working Session #1: Study Approach (Lura)
- *Break*
- Working Session #2: Proposed Study Objectives (Lura)
- Closing Remarks and Next Steps (Metrolinx)
- Adjourn



Opening Remarks



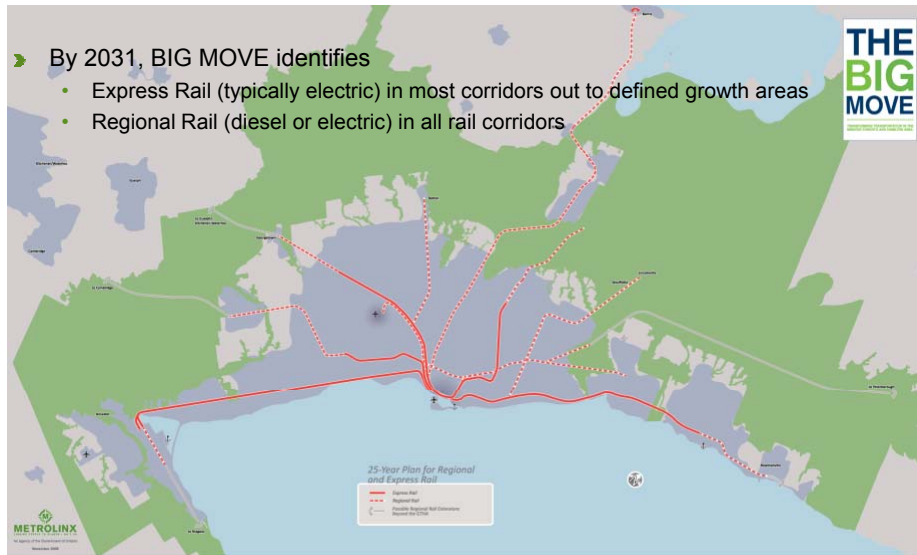
The Context

- The Big Move calls for Express Rail and Regional Rail to achieve the “triple bottom line” (Social, Environmental and Economic)
- Heightened community interest in alternate energy sources for rail
- Global interest in climate change and cleaner technologies
- GO Electrification Study announced May 2009



Regional Transportation Plan

- By 2031, BIG MOVE identifies
 - Express Rail (typically electric) in most corridors out to defined growth areas
 - Regional Rail (diesel or electric) in all rail corridors



Previous GO Studies

- GO has previously undertaken studies of electrification
- Studies were undertaken due to:
 - Rising fuel costs
 - Availability of fuel
 - Improved performance
 - (acceleration/deceleration)
 - Improved reliability
- Electrification was not pursued
 - Benefits did not match investment
 - Same amount of money spent on current system – “better bang for the buck”



Current Study

Karen Pitre
Study Project Director
Metrolinx



Current Electrification Study

- **Community Advisory Committee named to assist with Terms of Reference**
- **First Electrification Study to consider entire GO network**
- **Comprehensive:**
 - Capacity and Service Impacts, including reliability of service;
 - Environment and Health Impacts;
 - Community and Land Use Impacts;
 - Economic Impacts; and
 - System Costs, Funding, Financing and Delivery.
- **Delcan+Arup JV successful proponents**
- **Project start-up January 2010, completed December 2010**



Parallel Metrolinx Studies

➤ Union Station Capacity Study

- February to October 2010



➤ Proposed Demand and Opportunity (Interceptor) Study

- April to December 2010



Short term

Mid term

Long term

Business Today

Have to Do
REGARDLESS

- UNION STATION EXPANSION
- SIGNALS
- MORE TRACK
- BRIDGE WIDENINGS
- MORE SERVICE

STUDY ASSUMPTIONS

STUDY FOCUS

Have to Do for
ELECTRIC & ALTERNATIVES

- ROLLING STOCK
- SIGNALS
- ADD CATENARY
- ADD SUB STATIONS
- MORE GRADE SEPARATIONS
- BRIDGE RAISINGS OR TRACK LOWERINGS

➔ **T4 Locomotives**

Have to Do for
BIG MOVE 2031

- RE-VISIT CN/CP/VIA SHARING
- EXPROPRIATION
- TUNNELLING OR ELEVATING
- LOCAL TRANSIT EXPANSION
- IMPLEMENT:
 - ❖ INTEGRATED FARE STRUCTURE
 - ❖ TDM PROGRAMMES
 - ❖ ACTIVE TRANSPORTATION INFRA
 - ❖ INTELLIGENT TRANSPO SYSTEMS
 - ❖ AUTO TECHNOLOGY & FUEL ADVANCE
 - ❖ URBAN FREIGHT RATIONALIZATION



Study Approach

Roger Wood
Study Project Manager
Delcan+ARUP JV



Delcan



ARUP



Delcan+Arup JV Team

Delcan	project management, quality oversight, infrastructure scoping, operations and maintenance costing, funding and financing
ARUP	project management, infrastructure scoping, capital cost estimating
SDG	decision-making framework, modeling
LTK	technology assessment, energy modeling
Lura	stakeholder engagement & consultation
CANAC operational	modeling
RWDI	noise and air quality assessment
DPRA social	community assessment
EDR Group economic	impact assessment
InterVISTAS	risk assessment
Golder Associates	contamination and geotechnical
LGL natural	environment assessment

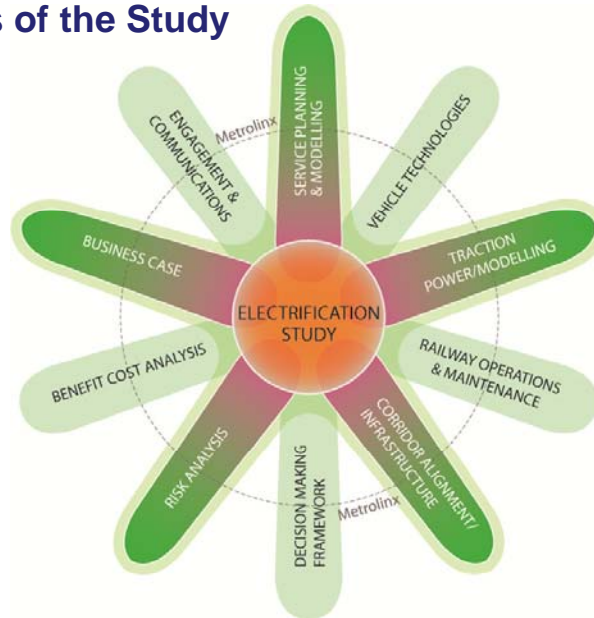


Electrification Study Principles

- Objective
- Comprehensive
- Inclusive
- Evidence Based



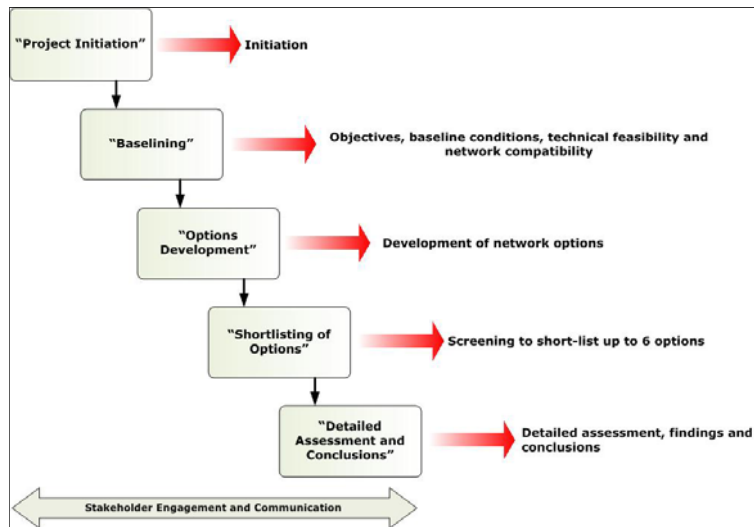
Elements of the Study







Study Approach Overview



Study Timeline

Study Phase	Timeline											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1 - Project Initiation	■	■										
Phase 2 - Baselineing	■	■	■	■	■	■	■					
Phase 3 - Options Development				■	■	■	■	■	■			
Phase 4 - Shortlisting of Options							■	■	■	■	■	■
Phase 5 - Detailed Assessment, Findings and Conclusions									■	■	■	■

★ Stakeholder Workshop



Engagement

- Key Stakeholders
 - Former CAC members
 - Representatives from across GTHA: environment/health, community, land use and social planning, transportation, commuter groups, business, economic, development, academic
 - Stakeholder workshops (March, June, October)
 - Geographically-based workshops
- General Public
 - Web based consultation
 - E-newsletter
- Government
 - Municipal, Provincial, Federal
- Technical
 - Rail (CN/CP/Via)
 - Electrical – supply and distribution organizations (e.g. OPA, OPG, Hydro One, Local Distributors)



Study Objectives



Terms of Reference

Study must address...

1. Technology, Capacity and Transit Service Impacts
2. Environment and Health
3. Community and Land Use
4. Economic
5. System Costs, Funding, Financing and Delivery



User Benefits

(Technology, Capacity and Transit Service Impacts)

- Facilitate faster, more frequent and less crowded transit
- Improve transit reliability
- Improved connections and service within the GTHA



Environment and Health

- Net improvement to human health in adjacent communities
- Contribute to improved air quality
- Significant contribution to the achievement of transportation related GHG reduction targets of GO Green: Ontario's Action Plan for Climate Change
- Minimize negative impacts on agricultural and natural systems
- Decrease the use of non-renewable resources
- Encourage environmentally sustainable operations



Social Community

(Community and Land Use)

- Implemented in a manner that encourages transit-supportive densities, visionary community developments and enhanced community facilities (e.g. bike paths)
- Minimize the need to acquire property to accommodate associated infrastructure
- Minimize adverse community/social impacts including aesthetic impacts and impacts from noise and vibration
- Minimize adverse heritage and archaeological impacts



Economic

- Optimize opportunities to provide positive economic benefits to the local, regional and national economies
- Provide appropriate land development opportunities



Financial

(System Costs, Funding, Financing and Delivery)

- Cost-effective financing solutions
- Provide value associated with all relevant and material hard and soft system capital costs, operating costs, and lifecycle maintenance costs



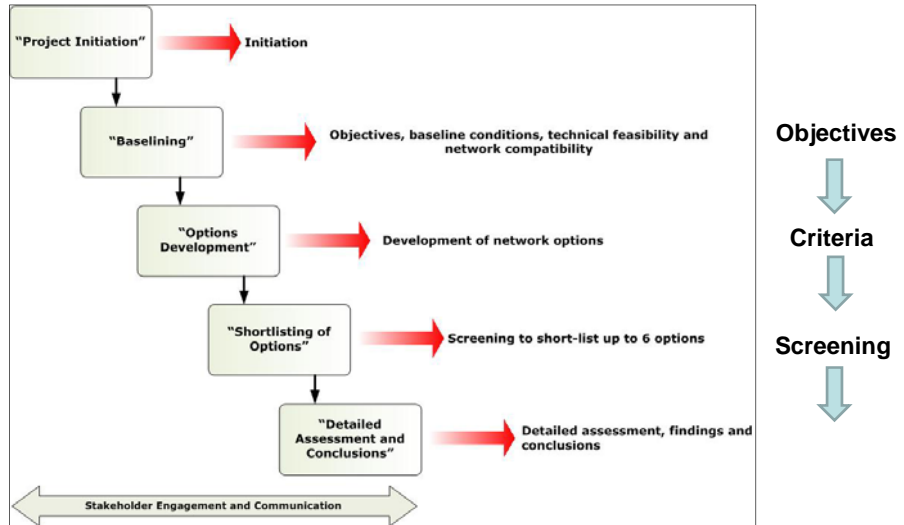
Deliverability

(System Costs, Funding, Financing and Delivery)

- Proven in a comparable climatic setting.
- Minimize impact on other rail services (e.g. CN/CP/VIA)



Study Approach Overview



Working Session # 1

Study Approach



Study Approach Discussion

- What feedback do you have on the proposed study approach?
- Have we missed anything?



Break



Working Session # 2

Study Objectives



Study Objectives Discussion

- Looking at each category of objectives
 - What are the most important objectives in each category?
 - Have we missed any?



Closing Remarks



Next Steps

- Next Stakeholder Workshop - end of June early July



Thank you!

Contact us at:

estudy@metrolinx.com

Website

<http://www.metrolinx.com/electrification/default.aspx>



APPENDIX B:

Sample Worksheet



**GO Transit Electrification Study
Stakeholder Workshop #1**

WORKSHEET

Please Print

Name (optional)

Email (optional)

Address (optional)

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

2. Have we missed anything?

Working Session 2: Proposed Study Objectives

1. *What feedback do you have on the proposed objectives?*

2. *Have we missed any objectives?*

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

APPENDIX C:

Submitted Group Worksheets

Group 1 - Breakout Discussion Worksheet

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Concern - this has been done before and "shelved".
- Misgivings re: lack of assurance of implementation on timely basis.
- Misgivings re: Metrolinx alone being "gatekeeper" of results.
- Misgivings re: need for transparency - how much will be public?
- Misgivings re: results will affect MILLIONS - are our rates being well used?
- How and by whom will decisions be made?
- Land use as key variable.
- What system is basis of analysis? Today's?
- Guelph/KW/Niagara.
- Role of airport link - electrify? If not, why not?

2. Have we missed anything?

- Compatibility to local transit.
- Union Station capacity/transfer/pedestrian pass-thru problems
- How will stakeholder concerns be reflected in study process?

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Airport link must be in "the system".
- Seamless network with ARL a must.

2. Have we missed any objectives?

- Urban footprint & intensification.
- Noise & vibration.
- Energy source(s).
- Safety.
- Local employment & urban [illegible].
- Parking.
- Different sizes & widths of loads & trains.
- Hybrid option.
- User costs.
- Stageability.

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Group 2 - Breakout Discussion Worksheet

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Economies of health and environment should clearly be part of the cost-benefit analysis
- Increase the number of stakeholder meetings
- Community advisory committees involvement at some stage
- Take the approach of how to shift away from diesel in a phased replacement
- Include a focus on Air Rail Link to take advantage

2. Have we missed anything?

N/A

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- User benefits: increase access to network with technological ability to start and stop quickly
- Environment & health: decrease use of non-renewable resources and increase use on a renewable resource (i.e., tap into green infrastructure)
- FIT: feed-in tariffs
- Implement safe interface with public
- Social community: divide: objective of adverse community/social impacts and noise & vibration
- Economic: create possibility for local job opportunities

2. Have we missed any objectives?

N/A

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Group 3 - Breakout Discussion Worksheet

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Importance of DPRA to be engaged in stakeholder meetings; not present at this meeting
- Significant input required throughout process
- Website updates; feedback mechanism; in ADDITION to meaningful stakeholder input
- Moratorium on current construction through neighbourhoods - with no consultation
- Serve Bloor St on all lines
- Team Values - study team take public transit for all study business... whether "convenient" to them or not

2. Have we missed anything?

- See 1 above!
- Include service scenario/demand model as part of study
- Commit to non-partisan, cross-jurisdictional dialogue (vs. City meeting on Trains = Transit City funding pulled days later)

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

User benefit:

- Transit in both directions
- Stops at Bloor; Exhibition Place; other
- Define users - recreational - Niagara Falls, Muskoka, weekends to malls/fishing/hiking etc.
- Local connections; not huge car parks
- "Local transit expansion"

Health & Environment:

- Quantify/cost health costs; enjoyment of property; noise (key)
- This "is" the point
- Address overlapping EAs, not separate (e.g., Georgetown and Barrie lines)

Social Community:

- KEY e.g.: grade separations; dividing neighbourhoods

2. Have we missed any objectives?

Economic:

- Needs to be studied very closely with social/community
- Optics: investing in soon-to-be obsolete technology

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Group 4 - Breakout Discussion Worksheet

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- (i) Presenting the vision/imagining of the future case (Big Move, 20/20) in the study context
- (ii) How are the decisions between the options development and the short listing going to be made?

2. Have we missed anything?

- Recommend to have a stakeholder feedback session between options development and short listing, in case missed (i) option; (ii) objective, baseline condition, etc.
- How does this approach coincide with the Union Station study?

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

2. Have we missed any objectives?

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Group 5 - Breakout Discussion Worksheet

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Is Union (Station) capacity part of this study? Why not? How will results of other studies blend with these results?
- Weighting of factors not specified in presentation
- How will the consultant shortlist the options?
- No obvious consulting with municipalities and their transit and transportation systems
- Integrating electrification of GO with other transit systems (i.e., Pearson link)
- Ensure consultation with Via/CN/CP

2. Have we missed anything?

- Make sure that most up-to-date transit ridership is used as part of analysis
- study approach needs to be flexible and adjustable if new conditions or new data come forward halfway through the study
- Who on team will examine the land development opportunities?
- Non-public wiki for input/project report/progress/status updates

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Land development opportunities should be done in conjunction with infrastructure changes
- Use private developers to pay for part of costs in exchange for benefit of denser developments in corridor
- Should be separate category entitled "feasibility"; make it explicit, not implied
- Integrated fare systems & connections with local transit
- How transit oriented development can be captured in evaluation of alternatives
- Try to quantify how the choice of motive power (technology) affects the land development type and livability of location

2. Have we missed any objectives?

- Human health objectives need to be clarified and be more specific and accurate; supported by evidence rather than broader general statements about human and environmental health effects
- Will need baseline to compare health benefits
- Understand overall framework for energy/electricity production
- Don't let the impact on other rail services affect the decision on technology
- Don't underestimate the climatic conditions! We get some pretty heavy ice & snow storms from the east
- Will service be sustainable during off-peak times; opportunities for trips that are not just work-based

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

APPENDIX D:

Submitted Individual Worksheets

*** Note: Personal information submitted on worksheets was removed***

Individual Worksheet 1

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Study principles are good, but objectivity might be compromised if Metrolinx is the gatekeeper of info (website, final report, etc.)
- Transparency should be added as a principle
- We need a clear definition of the same case. What are we talking about? Does it include the ARL?

2. Have we missed anything?

- There should be more steps after the detailed findings
- What happens next? What are the timelines?
- Stakeholders should engage at some point, directly with the board and other decision-makers

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Add accessibility to user benefits
- Add possibilities for local economic development and employment

2. Have we missed any objectives?

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

- The Clean Train Coalition has serious reservations about the value of this study if it does not include the ARL and if it will not produce results that could shape the plans for the Georgetown corridor

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Individual Worksheet 2

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Community Adv. Committee should be re-established and given responsibility to renew and shape final report
- A track of the study should include review of electrification of ARL as a Quick Start project by 2015 to take advantage of intergovernmental alignment on PANAM transit
- Financial should include the shift of resources from current plan for diesel system into electrification, i.e., selling Tier 2 diesels rather than upgrading them

2. Have we missed anything?

N/A

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Economic development; potential to build local/regional electric transit manufacturing & service sector
- Opportunity to create local employment in green jobs

2. Have we missed any objectives?

N/A

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Individual Worksheet 3

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

-How will freight demands be balanced with competing demands of regional rail or express rail where the corridor is narrow and traffic volumes are high?

(E.g. CP is abandoning its chalk river corridor, which routes all traffic for CP through Toronto)

2. Have we missed anything?

-Impact of variable of high-speed rail in Quebec-Windsor corridor at Union Station

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

-Emphasis on land use integration during capital infrastructure expansion to share some costs with private sector, and opportunities for transformative benefits to areas along/near the infrastructure

2. Have we missed any objectives?

-More local stops to encourage higher volumes of shorter trips, particularly in the off-peak and reverse-peak services, and improving local service connections to GO

-Wane GO's reliance on parking, replace (although no eliminate parking) with community developments & transit-oriented development

-Use land developments as a revenue generating tool for Metrolinx (as landlord?)

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

-Can the fleet be harmonized to any degree through the transition?

-Seriously compare EMUs to other loco-hauled options and operating impacts

-Improve existing connections between local services & GO where problems are known if high frequencies of service will be operated by GO at that connection

Individual Worksheet 4

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- New environmental category: human health objectives
- Localized pollution examination: geomedical data is particularly relevant to Dundas West/Bloor terminus & parks such as Sorauren/MacGregor
- Concerns about diesel buffer zones around stations
- Film on TEDMED: Google it
- Geomedical input: case studies and data from new discipline considering cumulative impact on air quality at transfer points and whether this enables transit-oriented development
- Does this data support electrification immediately due to density of population and terminus?

2. Have we missed anything?

- Participatory persistent input process: not funnelled through Metrolinx
- A non-public Wiki where participants can continue discussions and upload information: it is called "Base Camp", and costs ~ \$50/month

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

N/A

2. Have we missed any objectives?

N/A

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Individual Worksheet 5

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Generally seems comprehensive, reasonably set-up
- Consultation okay, could be further expanded

2. Have we missed anything?

N/A

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Appears to be Toronto-centric - what about the Region? Think about Regional City. Assess impact on new communities, development at edges where most new development is happening!
- Make sure you address properly land use/development value in assessment and you have appropriate team members try to capture "marketability"
- Assess/measure increase in "liveability"; increase in quality of life; marketability of transit: "Regional City"
- Key element/objective to play major role in a comprehensive transportation/transit system including regional/local systems & two-way/complex system

2. Have we missed any objectives?

- Not really, just more nuances, details
- Future relationship with high speed rail?

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

- Great initiative; never too late...

Individual Worksheet 6

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- A value needs to be placed on health and environmental impacts, not just on the economy
- Air rail link could be a great pilot of non-diesel technology
- Future scenarios and modelling should be looked at what are the costs of not electrifying now? How much will it cost in 20 years?
- How are the other consultants that are involved approach this study?

2. Have we missed anything?

- Assurance that the study will be paid attention to, even if the costs to electrify cost too much money

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Is there baseline data related to human health to measure improvement?
- Pilot solar or wind powered electric trains
- Take advantage of F.I.T to finance electrification

2. Have we missed any objectives?

- Disingenuous to frame electrification vs. diesel as a train vs. Car argument. It is wrong to transfer pollution from one community to another.

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

- Electrification will be more expensive so we also need to address to fund it. This needs to include road tolls and congestion taxes.

Individual Worksheet 7

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

-DPRA

-Involvement in options development partway through another stakeholder meeting during short listing

-Need to know input has been addressed

-Question about numbers of trains on the Georgetown need sound scenario include in consultation when it happens

-Sensitivity to demand frequency fuel/energy costs

-Energy costs in construction

-Operational scenarios for express regional rail

2. Have we missed anything?

N/A

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

-What users – reverse commuting, other destinations, tourist use

-Will need local transit expansion

-Continuity of capacity

-Cost of health impacts

-Include noise effects – differentiate between technology

-Need to look at rush hour of noise/emission impacts

-EAs need to look at comprehensive

-Grade separations and frequency of service

-Avoid creating barriers through communities

-Need to look at impacts from local perspective

2. Have we missed any objectives?

N/A

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Individual Worksheet 8

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Baseline is key
- Concern about short list – how things get removed from the list
- Hard to understand
- Consultation with public and stakeholders is key
- Baseline should include vision

2. Have we missed anything?

- Add feedback after options development and before short listing options
- Then tell us the short list options – consultation
- More consultation / keep us informed
- Get proper material out to people ahead of time
- One page summary of Big Move
- Improve consultation = informed feedback
- Sell the idea

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- User benefits – more family friendly, accessible (strollers, wheelchairs)
- Not just a commuter system –open for tourists, needs to be appropriate for all users
- Prospective users not just current users
- Service to PANAM Games and one day Olympics
- Ease of use – scheduling is not appropriate, no evening trains, weekend and holidays
- Make it easy for people to get out of their cars
- Other hubs apart from Union Station
- Economic → electric with infrastructure = stores, restaurants, etc.

2. Have we missed any objectives?

What is the difference between financial and deliverability

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Individual Worksheet 9

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Implementation POV is good
- Who other than Metrolinx will know the options?

2. Have we missed anything?

- Consulting each municipality and their transit system and planning departments (land use)

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

-N/A

2. Have we missed any objectives?

What is the difference between financial and deliverability

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Individual Worksheet 10

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- The way that options are formulated and then eliminated or retained is critical, but not clear
- more detail on this aspect of the approach is a good idea

2. Have we missed anything?

N/A

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- The objectives on human health need to be very much clarified and made more accurate
- In many respects you will not be able to measure or predict a net improvement to human health because the epidemiological data you would need to do this do not exist. Rather you may be able to make predictions about human exposure, or to quantify potential health risks when toxicological data are available.
- Also, with respect to improving air quality it will be critical to distinguish between targets that are compliance-based and reference levels that are specifically or exclusively health-based

2. Have we missed any objectives?

N/A

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

@ † Sheet 11

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Give a context to the outsider of Vision 2020 and Big Move before making the presentations
- Be clear about the boundaries for discussion for the economy

2. Have we missed anything?

N/A

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- User Benefits: a public system for all – not a commuter system; better system integration between municipalities; more family friendly system – buggies; more accessible for disabled and the elderly
- Health: sensitivity receptors – pregnant women, infants, children, chronically ill, elderly
- Economic: build destinations and hubs to encourage new economic infrastructure – shops, recreation

2. Have we missed any objectives?

- Deliverability – engage with CN and VIA

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

Individual Worksheet 12

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Base case needs to be clearly defined geographic service limits, ARL, etc.
- Report must be made public is a transparent process
- Clearly state the assumptions on which each of the 6 final options are based

2. Have we missed anything?

- Transparency
- How will conclusions be used and by whom
- Metrolinx Board should be engaged with stakeholders
- Ensure that the external costs for environment and health are taken into account for both scenario (electrified and not electrified)
- Note that no electricity in this province need to be generated by hydrocarbon fuels and that dispatchable hydro –electricity can be used – if any doubts contact me as this is my area of research at Ryerson

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Social -parking can be reduced by better connections with other modes; eliminate level crossing with grade separations
- Economic – encourage higher density near stations; local job opportunities; use hubs for developing economic infrastructure
- User Benefits: accessibility; two-way service; how does choice of technology affect development
- Environment: Decrease noise and less vibration; consider energy source; safe interface with public (grade crossing, etc.)
- Financial: need long term financing; are you consider PPPs?
- Deliverability: construct in stages, one line at time, feasibility assessment?

2. Have we missed any objectives?

- See points in other sections

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

- Whom do I contact at the Union Station Capacity study to pass on my ideas?

Individual Worksheet 13

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Needs to actually be implemented at end instead of being shelved like all others
- More transparency throughout study and afterwards – stakeholders must feel their efforts are of use and will be used by Metrolinx
- If study being done has no recommendations for Metrolinx to implement, then what is the purpose of spending \$4 million dollars, the study can be discounted, shelved.

2. Have we missed anything?

- The Air Rail Link is a key component in the discussion but is never mentioned; where does it fit in? will this study impact the ARL or only GO?; ARL is new infrastructure and should be given weight in discussion as it has a deadline for implementation

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Thank you for including heritage in discussion

2. Have we missed any objectives?

- How all of this connects with TTC and the objectives of Transit City if at all
- Creation of hubs, links between systems, etc.

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

- Please ensure that this study will reflect the ARL as it is a key component in the discussion and a major driving force behind why we are here. GO trains are just one piece of this puzzle.

Individual Worksheet 14

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Evaluate all projects (not just this one but all Metrolinx) based on identical objective indicators to easily compare. E.g. cost per ton of GHG across all transportation projects
- Link to QC-ON high speed rail study -could electrification be cost shared?
- Add steps to show decision-making process after conclusions shown – recommendations – investment decisions
- Separate transit planning from operations to show more objectivity.

2. Have we missed anything?

N/A

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

- Consider challenging FRA compliance requirements to reduce cost and increase flexibility
- Look at potential for reducing dependence on non-Ontario energy sources
- Consider impact on sprawl and achievement of letter and spirit of growth plan
- Look at phasing in certain lines with dual modes locomotives (electric and diesel)
- With faster trains and faster acceleration consider more station, including stations for intense development and other with parking but minimize stations that try to do both
- Seriously analyze cost of continuing to invest and a dead-end technology, e.g. High tech diesel locomotives when ultimately we will go to electric
- Show different fuel price escalation scenario
- Include well-to-wheel impact analysis of all fuel sources
- Really examine impact of technology on developability -build in close proximity to rail

2. Have we missed any objectives?

- How all of this connects with TTC and the objectives of Transit City if at all
- Creation of hubs, links between systems, etc.

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

- Please ensure that this study will reflect the ARL as it is a key component in the discussion and a major driving force behind why we are here. GO trains are just one piece of this puzzle.

Individual Worksheet 15

Working Session 1: Study Approach

1. What feedback do you have on the proposed study approach?

- Many electrification studies have already been done (up to five years ago)
- Misgivings about the assurance of action – multiple studies
- Metrolinx is the gate keeper
- Using our taxes to create something that will affect us all
- How are the decision to be made?
- Clarify if ARL is IN or OUT
- Long term uses needed
- Compatibility to local regional transit
- Land use implications

*Note: Some comments in this worksheet were omitted because they were not legible

2. Have we missed anything?

N/A

Working Session 2: Study Objectives

1. What feedback do you have on the proposed objectives?

N/A

2. Have we missed any objectives?

N/A

Do you have any additional comments or questions regarding the GO Transit Electrification Study?

N/A

APPENDIX E:

Workshop Invitation and Attendance List

GO Transit Electrification Study
Stakeholder Workshop #1 Invitation and Attendance List
Wednesday, March 31, 2010

* Bolded Organizations Attended Stakeholder Workshop #1

Environment & Health

Ontario Agency for Health Protection and Promotion
Clinton Climate Initiative
Environmental Health Association
CommunityAIR
ESEI Solar Foundation
Clean Air Partnership
Pollution Probe
Rouge Park Alliance
Ontario Healthy Communities Coalition
Ontario Clean Air Alliance
Wellesley Institute
Pembina Institute
Ontario Lung Association
Evergreen
Green Communities Canada
Air and Waste Management Association
Canadian Association of Physicians for the Environment
Conservation Council of Ontario
Friends of the Greenbelt Association
Ontario Public Health Association
Protect Our Water and Environmental Resources
Toronto Board of Health

Community

Weston Community Coalition
Mount Dennis Community Association
Canadian Federation of Students (Ontario)
Lakeview Ratepayers Association
Metroland Media Group
Member of GO Transit Community Advisory Committee
Centre for Social Innovation
Active Living Alliance for Canadians with a Disability
Center for Information and Community Services of Ontario
Community Living Ontario
Housing Action Now
Ontario Community Support Association
Ontario Council of Agencies Serving Immigrants
Safe Kids Canada
Ontario Heritage
Metrolinx Seniors Advisory Committee
Toronto City Summit Alliance

Land Use and Social Planning

People Plan Toronto
Sustainable Urban Development Association
Canadian Urban Institute
Ontario Smart Growth Network
Ontario Professional Planners' Institute
pAlliance
Ontario Association of Landscape Architects
Urban Land Institute
Building Industry and Land Development Association
Canadian Policy Research Networks
Ontario Association of Architects
Ontario Federation of Agriculture
Ontario Professional Engineers Association
Neptis Foundation

Transportation Advocacy and Commuter Groups

BA Group
Clean Train Coalition
GO Transit Customer Service Advisory Committee
Regional Transit Advocate (2)
Healthy Transport Consulting
Canadian Automobile Association (CAA)
Ontario Public Transit Association
Canadian Urban Transit Association
Transport 2000 Ontario
Smart Commute
Centre for Sustainable Transportation
Disabled and Aged Regional Transit
Canadian Institute of Transportation Engineers

Business and Economic Development

Greater Toronto Airports Authority (GTAA)
FRAM Building Group
The Warren Group
Green Tourism Association
Ontario Agri Business Association
Ontario BIA Association
Ontario Environmental Industry Association
Ontario Restaurant, Hotel, Motel Association
Ontario Tourism & Ontario Tourism Marketing Partnership
Retail Council of Canada
C.D. Howe Institute
The Institute for Competitiveness & Prosperity
BOMA Canada
Ontario Chamber of Commerce
Small Business Association - Canada
Canadian Youth Business Foundation (CYBF)
Toronto Board of Trade

Academic

McMaster University
Humber College (School of Applied Technology)
Mohawk College of Applied Arts and Technology
Sheridan College Institute of Technology and Advanced Learning
University of Toronto
Ryerson University, School of Urban & Regional Planning
Gage Occupational and Environmental Health
Ontario College of Art & Design
Seneca College of Applied Arts and Technology
University of Ontario Institute of Technology
University of Toronto at Scarborough
York University