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In the Matter of Alberta Utilities Commission
Application No. 1606609
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I. INTRODUCTION

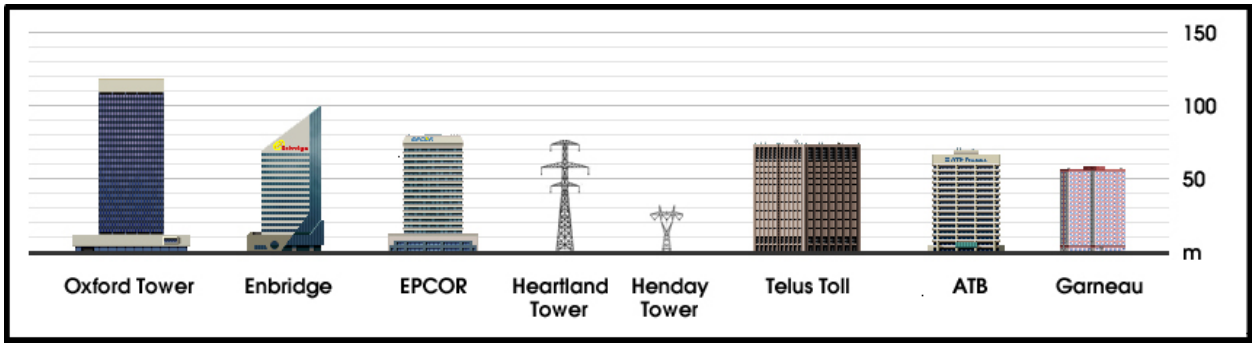
1) RETA whose membership includes approximately 8,000 individuals, along with the County of Strathcona and the City of Edmonton, is advocating that if the Heartland 500 kV Transmission Project is built in close proximity to homes, schools, daycares, hospitals and environmentally sensitive areas, the line must be buried.

2) The first 20 km - or roughly one third - of the Heartland 500 kV Transmission Project preferred route runs "adjacent to densely populated areas."[1]

3) AltaLink and EPCOR seek approval of a 500 kV Transmission Line spanning 66 km (on the East side of Edmonton) or 84 km (on the West side of Edmonton) for up to 239 towers at a maximum height of 75 meters and 55 meters in arm width (the "Heartland 500 kV Transmission Project").[2] Their preference is to build the Heartland 500 kV Transmission Project above ground, with lattice towers rather than underground.

4) To illustrate the size of the Heartland 500 kV Transmission Project, the illustration below depicts the Heartland towers relative to identifiable Edmonton skyscrapers and a more typical transmission tower in Edmonton:

Figure 1: Heartland Tower Relative to Edmonton Skyscrapers



5) In simple terms, AltaLink and EPCOR prefer to build around 200, 24 storey high transmission towers "adjacent to densely populated areas" rather than burying the line.

6) The size and voltage of this project, correlates directly to the scale of the social, economic and environmental impacts if the project is built above ground.

7) Given the unprecedented magnitude, and the significance of the consequences of the Heartland Project, **if the Heartland 500 kV Transmission Project runs "adjacent to densely populated areas" it is in the public interest to bury the line.**

[1] HTP Application, Part 1, Section 3 - Project Description, Paragraph 136 (page 30).
[2] The only reference to the number of towers that we could locate was in HTP Application, Appendix J: Environmental Evaluations section in Table 2-3 (page 2-12). The maximum height and arm width of the towers was located in of the in HTP Application, Appendix J: Environmental Evaluations Page 2-8.

II. DESCRIPTION OF INTERVENERS

8) RETA is an incorporated society whose full name is Responsible Electricity Transmission for Albertans Association. RETA's members are concerned about the Heartland 500 kV Transmission Project.

9) Since its inception, RETA sponsored and organized many public information meetings and rallies attended by well over 10,000 people in an effort to inform the public about the Heartland 500 kV Transmission Project ("HTP"). RETA also created a website consisting of extensive information about the Heartland 500 kV Transmission Project and supplementary information relating to high voltage transmission lines in an effort to the keep the general public informed (www.reta.ca).

10) RETA's membership stands at approximately 8,000 individuals and includes over 700 individuals who live within 800 meters of the proposed Heartland 500 kV Transmission Project routes (**Appendix A, Tab 4**).

11) In 2009, RETA was accepted as a signatory to the Porto Alegre Resolution signed in follow up to the "International Workshop on Non-Ionizing Radiation, Health and Environment", held in May 2009 in Porto Alegre, Brazil. The Resolution, signed by medical, scientific and electrical engineer experts from around the world, is based on the Precautionary Principle and the growing body of evidence linking EMF exposure to increased risks of cancer and other chronic diseases.

12) RETA's mission is to ensure that if new transmission lines run adjacent to schools, homes, daycares, hospitals and environmentally sensitive areas, they must be buried. The evidence presented by RETA will clearly show that the benefits of undergrounding outweigh the costs.

13) RETA does not advocate a NIMBY (Not In My Back Yard) position and its members are committed to the above principles regardless of where new transmission lines are proposed

14) Notwithstanding the above, RETA questions the need for high voltage power lines, and the size of some of the proposed overbuilds, especially in light of recently changed economic realities (please see letter from RETA President, Bruce Johnson, to Premier Ed Stelmach dated April 1, 2010, attached at **Appendix A, Tab 6**. As well, RETA does not support Alberta consumers paying for infrastructure that would transmit electricity to the United States.

15) If the Alberta Utilities Commission ("AUC") approves the Heartland 500kV Transmission Project above ground, landowners and business owners adjacent to the transmission lines, must have the option to sell their property at replacement value to AltaLink/EPCOR (the "Applicants") or to the Government of Alberta. In other words, landowners must be compensated such that they could build an equivalent home or business, in a substantially equivalent location.

16) The current executive of RETA consists of:

a) President – Bruce Johnson;
b) Secretary – Bryan Bradley;
c) Vice President, Technical – John Kristensen;
d) Vice President, West TUC – June McNeil;
e) Vice President, East Rural – Stan Norlander;
f) Vice President, West Rural – Michiel Verheul;
g) Vice President, Corporate – Kevin Melnyk;
h) Treasurer – Rob Parry; and
i) Block Captain Leader – Shirley Johnson.

17) The current Board of Directors also includes (alphabetically, by last name):

a) Connie Bradley;
b) Patricia Di Palma;
c) Lisa Doucet;
d) Bruce Hunt;
e) Bob Hutton;
f) Jason Jobs;
g) Gillian Jobs;
h) Wendy Meier;
i) Todd Oeming;
j) Rob Sproule; and
k) Ernst Tamm.

III. THE FACTS AND THE REASONS FOR UNDERGROUNDING

A. Costs

18) RETA will demonstrate that the difference in cost to bury the line "adjacent to populated areas" is modest and that the modest increase in capital construction cost far outweighs the social, environmental, and economic costs to landowners of an above ground option.

19) This view is supported by an independent survey prepared by Leger Marketing dated November. 2, 2009 (**Appendix A, Tab 5**), which states at page 13:

> Two-thirds (68%) of Albertans are willing to pay something on their monthly electricity bill to have power lines buried when they run close to people's home or schools.

i. Costs of Project

20) The cost to of a Heartland 500 kV Transmission Project that is buried "adjacent to populated areas" is not significantly higher than an entirely above ground line (for the full 66km),~~,~~ contrary to the representations made by the Applicants.

21) RETA submits that the Applicants did not present sufficient evidence on the underground alternative; consequently RETA obtained that information by retaining independent experts to review the Heartland 500 kV Transmission Project Application (the "HTP Application" or "Heartland Application").

22) RETA retained Simon Allen, an independent consultant, and Jason Hails of Meyers Norris Penny LLP, to assess the reasonableness of the undergrounding costs presented by the Applicants. Mr. Allen is an esteemed and highly experienced consultant, whose advisory work has been focused on the electricity transmission sector for the past ten years. Mr. Hails and his team from the Management Consulting, Valuations and Enterprise Risk Practices arm of Meyers Norris Penny LLP have much experience with electric utility operations and Alberta's regulatory process.

23) The reports of Mr. Allen and Mr. Hails collectively examine the reasonableness of the costs for undergrounding proposed by the applicant to the AUC (respectively located at **Appendix C**, **Tabs 1** and **6**).

24) RETA also agrees with the conclusions of Dr. Rittinghaus who prepared an expert report on the cable costs for the underground option and found that the true cable costs are significantly less than the costs estimated by the Applicants (**Appendix D, Tab 1**). Mr. Allen utilizes some of the information provided by Dr. Rittinghaus.

25) By examining and comparing existing underground transmission projects in Europe and other parts of the world, Mr. Allen concludes the Applicants' underground cost predictions are inflated due to choices and assumptions they have made including:

a) Averaging the cost of all eight cable designs rather than utilizing the most economic but safe design;

b) Utilizing ducting;

c) Overstating the width necessary for the trenching;

d) Overstating the width of the underground right-of-way (ROW), including the temporary work space ROW;

e) Blindly following the overhead line route rather than looking for a more optimal underground route;

f) Unnecessarily assuming horizontal drilling along 35 % of the route;

g) Oversizing the transition stations;

h) Overstating the costs of transition station equipment; and

i) Overstating the construction period.

26) He further concludes that there are less expensive alternate designs used in other jurisdictions that would provide the capacity planned to 2026 and beyond.

27) Mr. Hails and his team at Meyers Norris Penny first reviewed the numerical integrity of the Applicant's cost and economic information. He found a numerical integrity issue where the AFUDC amounts presented in the Application for the Monopole Option were significantly less than expected. This issue highlights a risk for either calculation errors in the Application or the Applicants' use of an AFUDC formula that results in unpredictable/inaccurate amounts.

28) Meyers Norris Penny then calculated a more realistic underground cost based on prices and variables provided by Mr. Allen and Dr. Rittinghaus in their respective reports. Using alternative base project costs alone without other factors Mr. Hails concluded that Underground Option total project costs could be reduced by $185.6 Million Dollars. Using the alternative design project costs provided by Mr. Allen without any other factors, Mr. Hails found that the Underground Option total project costs could be reduced by $304.6 Million Dollars.

29) However, when Meyers Norris Penny applied the same factors to those costs as the Applicant did in its analysis including: Contingency, Escalation and a revised project schedule as well as current IFRS accounting rules, the range of savings was between $363.8 Million Dollars and $459.5 Million Dollars. In other words, instead of $1.092 Billion Dollars for the total project including underground, it could be built for as low as $632.5 Million Dollars. This is only $51.5 Million Dollars more than the Applicant estimated for its lattice tower option.

30) Meyers Norris Penny further determined that the regression analysis used to calculate property losses by the Applicants was faulty and significantly underestimated the losses to property owners due to overhead transmission lines. RETA points out that months ago it conservatively estimated property value losses only to the Strathcona County communities adjacent to the preferred route to be $180 Million Dollars. This does not include property losses for the many Ellerslie communities in Edmonton adjacent to the preferred route.

31) The evidence clearly establishes that based on economics alone, the buried line option is superior.

ii. Cost to Ratepayers

32) The Applicants state in the HTP Application in response to questions by the City of Edmonton that:

> The Heartland Team explained that the construction and operation of transmission facilities is paid for by all Alberta ratepayers through their electricity bills. The Heartland Team explained that in Alberta, for every $100 million added to a transmission project's cost, the average monthly bill for each resident in Alberta would increase by approximately 10 cents.[3]

33) In response to AUC Information Request 50(a) for the assumptions and calculation that corresponded to the analysis that 10 cents would be equivalent to $100 million, the Applicants stated:

> The calculations are based on the AESO Fact Sheet that states "...residential customers can expect an increase of about $1 per month for every $1 billion spent…" on transmission system reinforcement projects. The $100 million example (10% of $1 billion) reflects the same proportionate cost impact on the average residential consumer bill of 10 cents (10% of one dollar).[4]

34) The Leger Marketing Public Opinion Survey dated November 9, 2009, found that:

> On average, Albertans are willing to pay $3.55 on their monthly power bill to have power lines buried in the province of Alberta; this figure increases significantly to $4.02 when asked how much they would be willing to pay to have lines buried close to their own home or child's school.[5]

35) RETA has calculated, based on Mr. Allen's and Mr. Hail's reports, the additional monthly costs of the underground option to range between $0.05 and $0.15 (five and fifteen cents) per month. Clearly this is a cost all Albertans can accommodate.

36) Using the figures provided by the Applicants, even the inflated underground costs are not prohibited by the costs that Albertans are willing to pay for the lines to be buried.

37) As outlined above, if the costs are not significantly different, and Albertans are willing to pay more to have the lines buried, then the only option is to bury the line.

iii. Correct Cost Balance

38) The Applicants conclude that their projection of an additional $511 million for the underground option outweighs:

[3] HTP Application, Part 1, Section 6 – Agency Consultation, Table 6-1.
[4] AUC.AML/EPCOR-050
[5] RETA Submission, Appendix A, Tab 5.

> … any potential benefit that it might have for adjacent stakeholders. As a result, the Heartland Team is recommending that the AUC approve Lattice Towers for the entire Preferred East TUC Route.[6]

39) Firstly, it is not the role of the Applicants (who are the proponents of the project and the entity to benefit from an approval) to determine whether the cost outweighs the benefits of the project – this is the role of the AUC.

40) Secondly, RETA submits that not only have the Applicants overestimated the cost for the underground option, but that they have also underestimated the negative impacts of the above ground transmission line and minimized the benefits of the underground option.

41) As stated above and as presented in Mr. Allen and Mr. Hails' reports, the Applicants have grossly overestimated the costs for the underground option.

42) With respect to alternate underground routes, Mr. Allen suggests the possibility of using the median of the Anthony Henday highway for part of the cable route. This route runs parallel for much of the 20km route, most of the median is wide enough for at least two cable trenches, and it has fewer obstructions which reduces the horizontal drilling costs.

43) RETA submits that the Applicants' ought to have provided the AUC with sufficient evidence in respect of the alternate underground routes to allow the Commission "to conclude that its preferred route is superior or stands out as the preferred route, given the various competing factors."[7]

44) The Alberta Energy and Utilities Board stated in EUB Decision 2007-037 at page 3:

> The Board considers that the onus is on ATCO Electric to demonstrate that its applied for route is superior or stands out as the preferred route, given the various competing factors, as compared to other potential routes. The onus is not on interveners to clearly demonstrate a superior alternative. However, even if a "no other best route" or "no clearly demonstrated superior alternative" test was to be used, the Board is not persuaded, based on the evidence presented, that these thresholds have been met. Similarly, the evidence on record relating to the other potential routes is not sufficient for the Board to assess whether or not the various potential routes are even 'pretty much the same.'

45) RETA submits that the Applicants have not provided the AUC with sufficient information on the underground option to adequately assess the social, economic and environmental considerations involved and weigh the public interest considerations involved in determining whether the applied for route should be approved or denied.

[6] HTP Application, Part 1, Section 10 – Underground Options, Paragraph 990.
[7] EUB Decision 2007-037: <http://www.auc.ab.ca/applications/decisions/Decisions/2007/2007-037.pdf>

46) The Applicants own documents support the claim that sufficient information with respect to true underground costing has not been completed in their letter dated February 23, 2011, requesting confidential treatment of certain costing information requested by RETA. Specifically the Applicants state that underground cost information is:

> …highly confidential due to its sensitivity to future project procurements. Many of the detailed cost line items requested pertain to major equipment, civil words and foundations, line and substation construction, and right-of way acquisition. The applicants have estimated the costs, but the final costs remain subject to future competitive bids. Vendor access to this information may result in effectively "settling" the market reference point(s) for these liens items, which may result in adverse consequences to Alberta ratepayers.

47) RETA retained independent experts to present their assessment of the negative impacts of the Heartland 500 kV Transmission Project running "adjacent to populated areas" with respect to pipelines risks, health, visual impact, property impact, noise and the environment.

48) RETA believes that the AUC, like the County of Strathcona and the City of Edmonton - two-thirds of Albertans polled- will find that the modest cost increase for an underground option is justified to mitigate the social, economic and environmental impacts of the project and is in the public interest.

B. Impact to Pipelines

49) A significant portion of the preferred route for the Heartland 500 kV Transmission Project runs through the Edmonton and Sherwood Park Greenbelts, a Restricted Development Area, or as it later became known, a Transportation and Utility Corridor. This corridor is adjacent to densely populated urban communities in Edmonton and Strathcona County and is inundated with pipelines as above ground development was restricted.

50) RETA engaged Mr. Robert Wakelin, a pipeline engineer specializing in corrosion assessment, to examine the potential risks and impacts to pipelines in the corridor resulting from the placement of 500 kV overhead transmission lines.(**Appendix C, Tab 9**).

51) Using a computer model to predict the impacts of the interaction of overhead transmission lines and a single pipeline within the corridor, Mr. Wakelin found that electrical interference from the power line could have the following detrimental impacts:

a) During conditions of both normal and emergency loading, steady-state induced AC pipeline voltages would exceed the 15 V safe limit specified in CSA Standard 22.3 Nº 6-M91, resulting in electrical shock hazards.

b) AC current densities at coating holidays would exceed the 100 A/m2 threshold at which AC corrosion is generally expected to occur.

c) In the event of a line-to-ground fault, coating stress voltages would exceed the 2 kV to 3 kV limit recommended in NACE Standard Nº SP0177-2007, which could lead to coating damage and disbondment, and subsequently, related problems such as corrosion due to cathodic protection shielding.

d) During a line-to-ground fault, pipeline voltages could rise to more than 5000 V, which greatly exceeds the maximum allowable touch potential of 300 V, thereby presenting a serious shock hazard.

e) The recommended pipeline-to-powerline safe separation distance of 41 m (CEA Report Nº 239T817) does not appear to be met where the pipeline passes by Tower Nº 53, possibly presenting a situation where a line-to-ground fault could produce a sustained arc to the pipeline's surface that could damage the pipe wall.

52) Mr. Wakelin then assessed whether mitigation could be reasonably achieved. He found that while some mitigation measures appear to reduce the stated risks, there remains uncertainty because: of the high number of pipelines and numbers of pipeline routes within the corridor, the effects of existing powerlines, the accuracy of the soil resistivity data, the proximity of other pipelines to transmission towers, and the locations of cathodic bonds. In addition, pipeline electrical isolation devices are not rated to withstand high voltages and therefore cannot be relied upon to prevent the transmission of hazardous voltages to electrically isolated pipelines during fault conditions.

53) RETA's view is that running a powerline of this magnitude alongside numerous pipelines carrying dangerous substances adjacent to residential communities does not make a lot of sense, however, many of the pipeline hazards associated with above ground powerline installations can be eliminated or significantly reduced through undergrounding.

54) If the AUC determines that the Applicant's preferred route is in the public interest then RETA submits that it is similarly in the public interest to reduce the risks associated with adjacent pipelines by placing the line underground.

C. Community Health Effects

55) RETA retained Dr. John Dennis to provide a report on the overall health impact, risk management and risk communication with respect to the Heartland 500 kV Transmission Project (**Appendix C, Tab 4**).

56) Dr. Dennis found that the degree of stress imposed on an individual, family, group or neighborhood from an outside threat is in part dependent on whether that outside threat is under voluntary or involuntary control. The less control an individual has over a

threat or an exposure, the greater the stress. This negative stress has and will continue to contribute to ill health in a variety of ways.

57) He went on to say that communication between the Applicants, the governments and the public plays a large role in managing the stress impacts of the proposed development. He concluded that the Applicants did not employ an effective communication strategy and effectively contributed to increased stress and fear in the local community over the health impacts. Increased fears and stress will have contributed to a heightened overall sense of hopelessness.

58) This finding was reinforced in a number of the RETA Member Statements (**Appendix A, Tabs 1** and **2**) and is made clear in the following statement:

> We are two little people that in our spare time are trying to protect our sanity from attack by a well organized professional system that has no end of financial resources and manpower. We get the feeling that this is going to be shoved down our throats regardless of what we think or do and feel extremely helpless to protect ourselves.[8]

59) Dr. Dennis concludes by stating that:

> the precautionary principal implies that when a health risk is suspected the exposure potential should be eliminated if possible, and if not, then reduced as a precaution. One option repeatedly requested by residential stakeholders living adjacent to the proposed HTP route is to bury the cable. Residents have stated individually (Table 1) and collectively through RETA (RETA 2011) that burying the cable would greatly reduce fears of health impacts, eliminate the visual and noise impacts, and reduce the negative impact on property values, compared to an above ground transmission line.

60) This type of approach has been seen implemented in the United States. In Camas, Washington, Ordinance No. 2030 was passed by Camas City Council which reads:

> 8.52.010. D. Overhead electric transmission lines may negatively impact real property values due to both undesirable aesthetic effects and to public concerns over health-related risks associated with electrical transmission lines. [9]

61) Given the uncertainty of the risk compounded with the real stress experienced by the public of the Heartland 500 kV Transmission Project, it is in the public interest to take action and bury the line.

[8] RETA Member Statements, Appendix A, Tab 2 – Bryan & Connie Bradley.
[9] Camas City Council does not archive their ordinances prior to 2000. However, this regulation is quoted Nadine Wu paper entitled Regulating Power Line EMF Exposure: International Precedents" dated April 22, 2005 (Appendix D, Tab 18).

D. EMF Health Effects

62) There have been hundreds of medical and scientific studies that show links and causal correlations between many serious health conditions and prolonged exposure to the EMF (Electromagnetic Fields) and air pollutants charged by corona ions that emanate from overhead high voltage transmission lines.

63) The Applicants state that there is no proof that there are adverse health effects, however, RETA notes that no governing body, health authority or regulatory body has stated with 100% certainty that there are no health risks associated with high voltage line EMFs.

64) In fact a number of jurisdictions have imposed legislation regarding EMF emissions.

65) In Camas, Washington[10] and California,[11] child intensive locations include setbacks as follows:

i. 50kv -133kv lines: 100 feet (30.48 m) from edge of easement
ii. 220kv-230kv lines: 150 feet (45.72 m) from edge of easement
iii. 500kv- 550kv lines: 350 feet (106.68 m) from edge of easement

66) In Austria[12] and Germany[13] legislation was passed which states that to protect public interest transmission lines with a rated voltage greater than 110 kV may in future be installed in sensitive areas only as buried cable on sections where it is technically and economically efficient to do so. Sensitive areas are deemed to be areas 400 m between an overhead line and buildings and 200 m between an overhead line and individual buildings in permanent residential use.

67) RETA retained Dr. Martin Blank to report on the health impacts of EMF (**Appendix C, Tab 3**). Dr. Blank stated that the molecular biology research on EMF shows that biological systems are adversely affected at levels of EMF that are widely considered safe. In addition, epidemiology studies indicate that EMF levels associated with power lines pose a significant risk to health.

68) Based on his review of the available data, Dr. Blank stresses the need to employ all reasonable methods to bring EMF exposure as low as possible. Dr. Blank, like Dr. Dennis, advocates that a prudent approach is to adopt the Precautionary Principle as a result of growing concerns about health risks associated with EMF exposure and of attempts to protect exposed populations.

[10] Camas, Washington, Ordinance No. 2030
[11] Appendix D, Tab 15 -California Department of Education - Power Line Setback Exemption Guidance, May 2006
[12] Appendix D, Tab 16: Salzburg, Austria Law Translation. National Grid EMF. 2009 translation of Section 54a: Underground Cabling
[13] Appendix D, Tab 17: Energy Line Extension Act Translation, Germany. National Grid EMF. 2009.

69) Dr. Blank submits that an alternative such as running cables underground is a reasonable option for reducing EMF exposure as the electric fields would be largely insulated by the earth.

70) The negative impacts from electromagnetic fields (EMF) will be minimized or completely eliminated if the 500kv Transmission Line is buried. In the public interest of the health of Albertans, the line must be buried

E. Visual Impacts

71) In respect to visual impacts, RETA retained Bernie Amell of Riparia Ltd. to prepare a visual assessment impact report (**Appendix C, Tab 2**).

72) Mr. Amell found that given the scale of the visual impact of this project and the location of the project, the cumulative visual impact is likely to become an iconic character-setting force affecting the entire region.

73) With respect to the information presented by the Applicant's to the public, Mr. Amell found that they omitted or erred with a number of common visual impact assessment tools which included, but are not limited to:

a) Did not perform a thorough consideration of sensitive observer locations and characteristics. Some obvious and well-known locations were not acknowledged or assessed.

b) Did not provide due consideration of observer population concentrations.

c) Did no verification of visual impacts by trained unbiased observers or by normal observers.

d) Did not reference visual impacts to the larger aesthetic and cultural context.

e) Did not perform a cumulative or threshold impact assessment.

f) Did not provide any consideration of landscape character that will form the visible context of the powerline.

74) The effect of the errors and omission include misrepresentative photos of the proposed project. For example, the Applicants include in the application a photo depicting the proposed powerlines as follows:

75) Using the correct visual impact assessment techniques, Mr. Amell produces the following image depicting the proposed transmission towers more realistically:

76) The negative visual impacts from the Heartland 500 kV Transmission Project will be completely eliminated if the line is buried. In the public interest of preserving the natural landscape and beauty of this part Alberta, the line must be buried.

F. Property Value

77) Brian Gettel, an experienced and accredited property appraiser estimated that the values of property neighboring power lines are generally negatively affected 10% to 20% (**Appendix C, Tab 6**). He further stated that for properties with high value luxury homes the impacts may be even more significant.

78) RETA is aware of and will place in evidence examples of properties that have been negatively impacted to the tune of hundreds of thousands of dollars due to the mere prospect of the Heartland Transmission line. RETA believes property value losses due to proximity of overhead 500kV lines could extend to hundreds of millions of dollars.

79) It should be noted that these are not losses to the Alberta public but rather to private individuals. These individuals, most of whom have spent or will spend a good portion of their lives paying for their single largest investment, their home, will unfairly bear the brunt of electricity transmission to the Heartland should the line not be buried.

80) The Applicant has understated the impact of an overhead line. If the power line is constructed underground property values will not be impacted.

81) One RETA member described the impact in respect of property value as follows:

> Much love, labour and treasure has gone into our home. It is irreplaceable for us and will be for many years. It is also the major source of our retirement funding; loss of property value would be devastating.[14]

82) The negative impact to the property values of Albertan's adjacent to the 500 kV Transmission Line will be mitigated or completely eliminated if the line is buried.

83) In the public interest of protecting the value of several thousand homes and properties and preserving the prosperity of those Albertans who would be directly and adversely impacted by an above ground 500 kV transmission line, RETA submits the line must be buried.

G. Noise

84) In an effort to determine the noise impacts of the proposed Heartland 500 kV Transmission Projects, RETA retained James Farquharson, an independent and experienced acoustical consultant who has testified on many occasions before various regulatory bodies in Alberta (**Appendix C, Tab 5**).

85) Mr. Farquharson found the Heartland Application to be lacking in several regards, most significantly, he found that the noise impact assessment completed for these was only completed in summary form. While the Applicants may content that completing the

[14] RETA Member Statements, Appendix A, Tab 3 - Debbie Weizenbach.

summary form is sufficient to meet the requirements of the AUC, RETA contends that this is not acceptable for a project of this magnitude that runs "adjacent to densely populated areas."

86) Given that the noise impact assessment was only completed in summary fashion, some of the omission or errors noted by Mr. Farquahrson include that the sound readings were not completed in all weather conditions, a cumulative impact assessment was not completed, and that the impact of wind on the proposed above ground transmission lines and structural components were not considered.

87) Mr. Farquharson concluded that in order to get an accurate understanding of the current noise environment, a comprehensive noise survey must be completed with representative conditions and following that requirement may necessitate an extension to the duration of the survey to ensure that conditions that favoured the transmission of sound from the Project site to each receptor location were captured.

88) Finally, Mr. Farquharson reported that the underground option would eliminate corona noise and other line related noises along the length of the line buried. Mr. Farqharson further acknowledged that although the underground option would add additional surface facilities that would add to the noise environment near these facilities, mitigating these concerns would be easier to mitigate compared to reducing corona noise issues along the route of an overhead transmission line.

89) As described above, the negative impact from the noise emitted from the Heartland 500kV Transmission Line will be mitigated or completely eliminated if the line is buried.

H. Environment

90) The most knowledgeable person in Alberta in respect of the flora and fauna of the wetlands on the proposed Heartland routes is John Kristensen. Mr. Kristensen is a former Assistant Deputy Minister of Parks for Alberta. He is a biologist and natural historian who has been studying these particular wetlands for over thirty years. He has published a dozen papers on various aspects of those wetlands and has personally chronicled the occurrence and habits of hundreds of species within those wetlands.

91) Mr. Kristensen attempted on many occasions to supply the Applicant with baseline data for the Applicant's environmental assessment, however the Applicants failed to incorporate the information in its assessment. He has reviewed the environmental assessment presented in the Heartland Application and found it lacking in numerous respects including:

a) Very limited baseline data
b) Inadequate analysis of bird mortality due to collisions
c) Inadequate analysis of EMF, Corona effect and noise impacts on wildlife along the transmission route

d) Incorrect categorization of areas along the route as agricultural as opposed to natural grassland and woodland
e) Failure to identify environmentally sensitive areas.
f) Failure to identify the impacts of proposed herbicides as having an effect on vegetation
g) Collection of field data during the time when wetlands were at their driest point in several decades
h) Data interpretation bias
i) Exaggerated right of way and topsoil clearing requirements for the underground option
j) Inconsistency in soil risk analysis
k) Inconsistent consideration of hydrogeological constraints
l) Incomplete and misleading public consultation efforts

92) Mr. Kristensen states the underground option is preferable to above ground transmission lines in an effort to mitigate environmental damage for many reasons including:

a) Baseline natural resource data presented in his report indicate that several thousand waterbirds overnight on each of several large ponds in the preferred route landscape area, and that many bird species nest there.
b) Baseline data presented in his report indicate 34 bird species on the preferred route are of provincial and/or federal concern, ranging from "sensitive" to "threatened."

c) Baseline data presented in his report indicate two mammal species on the preferred route are of provincial concern.

d) The underground option affects the smallest area of wetland communities; in fact, the lattice tower option affects close to five times more wetland than the underground option

e) Wind erosion, compaction and water erosion risks are markedly higher for the lattice tower option than for the underground option.

f) The 75m-tall lattice tower option has significantly greater impact on bird collision mortality than the underground option. In fact the underground option will result in no bird deaths during the 50-year operation and maintenance phase.

g) The width of the ROW, including temporary workspaces, for the underground option appears to have been over-estimated by the Applicant, and can be reduced significantly (by at least 30m).

93) As described by Mr. Kristensen, the negative impact caused to the environment as a result of the 500kV Transmission Line will be mitigated or completely eliminated if the line is buried.

94) In light of the enumerated potential environmental impacts, it is in the public interest to bury the line.

I. Consultation

95) Attached at (**Appendix A, Tab 6)** is a record of correspondence between RETA, the Applicants and the Government of Alberta in respect of this project. RETA also attaches to this submission a list of 319 letters and news articles supporting RETA's "bury the lines" position or expressing concern about the above ground option (**Appendix A, Tab 8**).

96) Bruce Johnson, RETA President, also provides a description of RETA's efforts with the consultation process and the inadequacies of the processes that have been carried out to date (**Appendix A, Tab 1**). His impression of the Applicant's efforts is encapsulated in the following statement:

> As the saying goes, some people use data the way a drunk uses a lamppost – for support rather than illumination. We had many, many meetings with the AESO, AltaLink and EPCOR in which their behaviour could largely all be characterized in this manner, as a relentless effort to support their positions rather than consult and learn.

97) Attached at **Appendix A, Tabs 2 and 3** are statements received from over 100 RETA members expressing in detail their continued concerns with this project. A number of them describe their individual experiences with the Applicants consultation efforts in their statements. We also understand that a number of RETA members wrote directly to the Applicants, however, the letters to and from RETA members were not included in the HTP Application.

98) RETA members also voiced their concerns directly to the Government of Alberta. Of 1247 letters addressed to the Government of Alberta regarding the 500 kV Transmission line, 1244 were in support of RETA and burying the line (**Appendix E, Tabs 1 - 7)**.

J. Need

99) RETA recognizes that the terms of reference for this hearing purport to exempt a discussion of need. However, the socio-economic impact of a project is an inherent component of the public interest test and we would be remiss if we did not include questions and statements dealing with the requirement for the Heartland 500 kV line in either of the two routes.

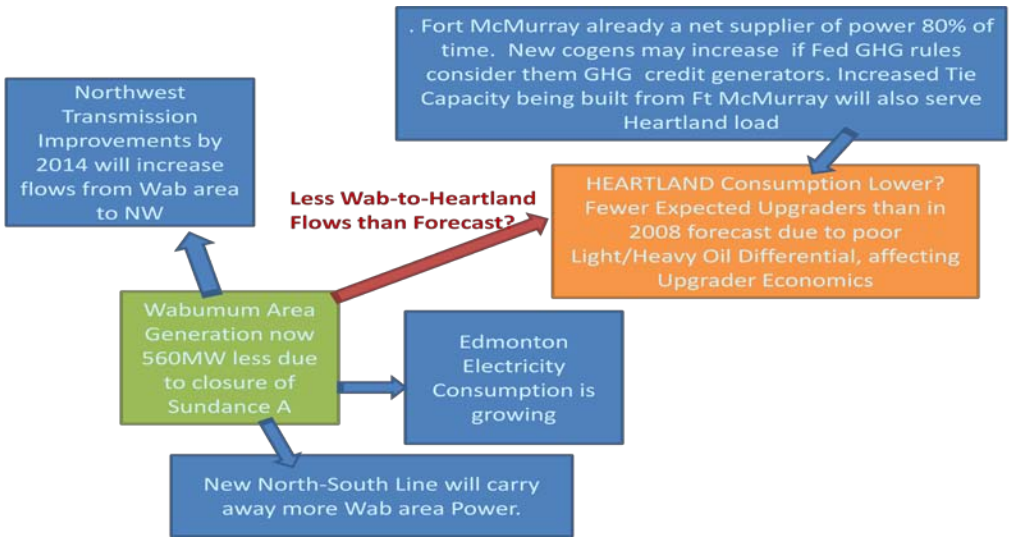
100) As RETA understands it, AESO's recommendations were reliant upon forecasts of supply, demand and transmission flows that were based on data from before the economic slowdown. We suggest a review of those forecasts compared to actual

demands over the intervening time would illustrate how out of step those forecasts are with reality.

101) Specific to the Heartland area, the number of upgraders may be significantly less than the number expected, since many upgrader projects have been shelved or deferred. For those new industrial projects in the Heartland area, many of them are candidates for cogeneration, further reducing the need for electricity transmission flows from west of Edmonton coal fired generators.

102) There have also been large changes, some very recent, in the supply of power from the Wabamum area, the western terminus of the transmission project. Most notably, as of February 8, 2011, Sundance A, previously generating 560 MW in total, may very well be closed permanently, reducing the amount of power even available in the Wabamum area to be shipped over those lines. That will soon be only partially replaced by the new Keephills generator, at 450 MW. The Keephills 3 generator may be equipped with a pilot Carbon Capture and Storage capability which will further reduce its output by up to 40% of its capacity.

Figure 2 – Changes in Supply and Demand Assumptions from 2008 Original Calculations



103) Furthermore, we expect that four major new or pending transmission developments may not have been reflected in the flow studies upon which the need was assessed. All of them move power to points other than the Heartland area, perhaps reducing the amount of Wabamum flows available to flow across the Heartland Project. First, the KEG (Keephills-Ellerslie-Genesee) line carries power away from the Wabamum area, some of that specifically designed to allow more and more efficient flow of power to southern Alberta and to export lines to BC and Saskatchewan. Secondly, the controversial North-South line is identified to be built as a Critical Transmission Infrastructure project. Pursuant to the government's same transmission policy and Bill 50, in the next few

years, probably before the Heartland line is commissioned, the export capacity is also required to be increased on a year-round basis, to the original nominal design capacity of the ties (1,200 MW to BC compared to the actual 700 it can now carry (and only intermittently, not year-round).

104) Most of this additional capacity will flow from the Edmonton area, leaving less to flow to the Heartland area from Wabamum. Third, according to the soon to be published Long Range Transmission Plan, additional lines to the Northwest are expected to be approved and in place and commissioned by 2014, carrying further amounts of Wabamum power to the Grande Prairie-Peace River area. Finally, two new lines are to be added to the Fort McMurray area, carrying away what is normally (80% of hours) a net outflow of power towards Edmonton, via Heartland. The Heartland flows from Wabumum will not be as previously forecast.

105) This all points to legitimate questions as to whether from a public interest perspective the Heartland 500 kV Transmission Project can be justified in the magnitude proposed by the Applicants or at all. Can the AUC fulfill its mandate to consider whether the application is in the public interest without considering these issues? RETA submits that it cannot.

IV. REQUESTED DISPOSITION

106) RETA submits that the Heartland 500 kV Transmission Project is not in the Public Interest, and therefore this application should be denied in accordance with Section 17(1) of the Alberta Utilities Commission Act.

107) To quote RETA President, Bruce Johnson:

> If approved, they will be a monument to Alberta's folly – a fitting symbol of expediency and lack of vision.[15]

108) RETA submits that the HTP Application should be denied because the Applicants have not provided the AUC with sufficient information on the underground option to enable the AUC to adequately assess the social, economic and environmental considerations involved.

109) RETA submits that if the AUC approves the Heartland 500 kV Transmission Project, where the route is in close proximity to homes, schools, daycares, hospitals and environmentally sensitive areas, the line must be buried in accordance with Section 19 of the Hydro and Electric Energy Act.

110) RETA asks that the Commission keep in mind the words of RETA member Patricia DiPalma, when making its decision:

[15] Appendix A, Tab 1.

> I realized then that it does not matter where this monstrosity goes. No one deserves to have it. No one deserves to have their health risked by living under these extremely high voltage lines. No one deserves to have to look from their back yard and see something that is industrial in nature and ugly and menacing in a wind storm. And no one deserves to have their home's value devastated due to something beyond their control like these gargantuan power lines, which were not a part of the picture when they bought the lot or the home.[16]

111) Finally, RETA submits that if the Heartland 500kV Transmission Project is approved above ground, adjacent landowners and business owners ought not to bear the financial burden of this infrastructure. RETA asks the Commission to ensure adjacent landowners and business owners have the option to sell their property at replacement value to the "Applicants or to the Government of Alberta and that such further compensation as to guarantee such persons are not out of pocket be made payable.

V. THE NATURE AND SCOPE OF RETA'S PARTICIPATION

112) RETA intends to fully participate in the hearing and will be presenting evidence through panels of RETA members and experts. RETA also asks for the opportunity to cross-examine witnesses put forth by the Applicant and other interveners, and requests notification of the Applicant's witness panel in advance of the hearing.

113) The RETA expert panel will consist of those persons whose C.V.'s are attached to this submission in Appendix B (Due to availability issues the expert associated with the Leger Marketing report has not been yet specifically identified. We will forward those particulars in due course.)

114) RETA advises that upon receipt of the Applicants' rebuttal submissions and upon receipt of the outstanding IR responses it may provide further evidence via written submission or oral testimony.

115) Some individual RETA members will participate through the above mentioned panels. Others may participate through the community hearings. RETA will advise the Commission of those members who will comprise its panels in due course.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

Responsible Electricity Transmission for Albertans

by their legal Counsel,

PROWSE CHOWNE LLP

Donald P. Mallon, Q.C.
Eva Chipiuk

[16] RETA Member Statements, Appendix A, Tab 2.

VI. APPENDICES

A. RETA Documents and Member Statements

TAB	APPENDIX A – RETA DOCUMENTS
1.	Bruce Johnson Statement
2.	RETA Member Statements (A-H)
3.	RETA Member Statements (J-Z)
4.	Member List of those within 800 m of HTP
5.	Leger Marketing Survey
6.	RETA letters to Applicants and Government of Alberta
7.	RETA Fact Sheets
8.	News Articles and Letters
9.	RETA Real Effects Video
10.	RETA We Are Engineers Video

B. Expert Curriculum Vitaes

TAB	APPENDIX B – EXPERT CURRICULUM VITAES
1.	Allen, Simon
2.	Amell, Bernie
3.	Blank, Dr. Martin
4.	Dennis, Dr. John
5.	Farquharson, James
6.	Gettel, Brian
7.	Hails, Jason
8.	Kristensen, John
9.	Wakelin, Rob

C. Expert Reports

TAB	AUTHOR	APPENDIX C EXPERT REPORTS
1.	Allen, Simon	Underground Cable Costs Report in relation to the Proposed Heartland 500kV Transmission Power Line
2.	Amell, Bernie	Heartland 500kV Powerline Application Visual Impact Assessment Submittal
3.	Blank, Martin Dr.	Health Impact Assessment of the Heartland 500kV Transmission Project
4.	Dennis, John Dr.	Report on Overall Health Impact, Risk Management and Risk Communication Concerning the Heartland Transmission Project
5.	Farquharson, James	Noise Impact Assessment Review
6.	Gettel, Brian	Value Impact Assessment of Overhead Transmission Lines on Residential Property Values
7.	Hails, Jason	Heartland Transmission Application Review
8.	Kristensen, John	Environmental Impacts of the Proposed Heartland Transmission Project
9.	Wakelin, Rob	Possible AC Interference Effects on Pipelines in TUC Corridor in East Edmonton Due to Proposed 500 kV Heartland Powerline

D. Other Documents

TAB	APPENDIX D – OTHER DOCUMENTS
1.	Considerations on Appropriate Designs and Costs of 500 kvac Underground Cables for use in the Edmonton Region of Alberta, Canada. Prepared by Dr. Rittinghaus on January 31, 2011.
2.	Biological effects of non-ionizing electromagnetic energy: A critical review of the reports by the US National Research Council and the US National Institute of Environmental Health Sciences as they relate to the broad realm of EMF bioeffects. Magda Havas. 1999.
3.	Electrical and Biological Effects of Transmission Lines: A Review. Jack M. Lee, Jr., Ph.D. December 1996.
4.	The European Confederation of Manufacturers & Associations of Manufacturers of Insulated Wires and Cables. EU Policy Update. February 24, 2011.
5.	Health Effects and Exposure Guidelines Related to Extremely Low Frequency Electric and Magnetic Fields – An Overview. Prepared by The ELF Working Group of The Federal-Provincial-Territorial Radiation Protection Committee – Canada. January 2005.
6.	Historical Evidence and Electrification Caused The 20th Century Epidemic of "Diseases of Civilization". Samuel Milham. 2009.
7.	Radiofrequency Exposure Near High Voltage Lines by Maurizio Vignati and Livio Giuliani. December 1997.
8.	Canadian Handbook on Health Impact Assessment: Volume 1: The Basics. Health Canada. 2004.
9.	Canadian Handbook on Health Impact Assessment: Volume 2: Approaches and Decision Making. Health Canada. 2004.
10.	Canadian Handbook on Health Impact Assessment: Volume 3: The Multidisciplinary Team. Health Canada. 2004.
11.	Canadian Handbook on Health Impact Assessment: Volume 4: Health Impacts by Industry Sector. Health Canada. 2004.

TAB	APPENDIX D – OTHER DOCUMENTS
12.	Establishing A Dialogue On Risks From Electromagnetic Fields. Radiation And Environmental Health Department Of Protection Of The Human Environment World Health Organization Geneva, Switzerland. 2002.
13.	The Environment, Cancer and You. The Canadian Cancer Society. January 2011.
14.	The Precautionary Principle and EMF. Dr Leeka I Kheifets of the World Health Organization.
15.	Power Line Setback Exemption Guidance. California Department of Education. May 2006.
16.	Salzburg, Austria Law Translation. National Grid EMF. 2009.
17.	Energy Line Extension Act Translation, Germany. National Grid EMF. 2009.
18.	Regulating Power Line EMF Exposure: International Precedents. By Nadine Wu. The Environmental Law Centre Society, Victoria, BC. Date Published: April 22, 2005.

E. FOIP Documents

TAB	APPENDIX E – FOIP DOCUMENTS
1.	FOIP Part 1
2.	FOIP Part 2
3.	FOIP Part 3
4.	FOIP Part 4
5.	FOIP Part 5
6.	FOIP Part 6
7.	FOIP Part 7