Second Affidavit of David Anthony Gooderham
No. VLC-S-S-183541
Vancouver Registry

IN THE SUPREME COURT OF BRITISH COLUMBIA

BETWEEN:

TRANS MOUNTAIN PIPELINE LLC

Plaintiff

AND:

DAVID MIVASAIR, BINA SALIMATH, MIA NISSEN, COREY SKINNER (AKA CORY SKINNER), UNI URCHIN (AKA JEAN ESCUETA), ARTHUR BROCINER (AKA ARTUR BROCINER), KARL PERRIN, YVON RAQUL, EARLE PEACH, SANDRA ANG, REUBEN GARBANZO (AKA ROBERT ARBESS), GORDON CORNWALL, THOMAS CHAN, LAUREL DYKSTRA, RUDI LEIBIK (AKA RUTH LEIBIK), JOHN DOE, JANE DOE, AND PERSONS UNKNOWN

Defendants

THE ATTORNEY GENERAL OF BRITISH COLUMBIA

Intervenor /Respondent

SECOND AFFIDAVIT OF DAVID ANTHONY GOODERHAM

I, David Gooderham, of 4609 West 11th Avenue in the City of Vancouver, make oath and say as follows: The matters hereinafter are true, save where they are stated to be based on information and belief, in which case I believe them to be true.

1 I was arrested on August 20, 2018, after I attended at the entrance to Westridge Marine Terminal in Burnaby where I sat on the roadway with the intention of blocking vehicle access for the purpose of attempting to stop or delay construction work on the Trans Mountain pipeline expansion, a project that had been authorized by an Order in Council dated November 29, 2016. I have been charged with criminal contempt for disobeying a court order.

2 I make this my affidavit in in support of an application for leave to raise the defence of necessity in answer to the charge of criminal contempt at my trial, and to call evidence at trial in support of that defence.

3 I was born in Vancouver in 1945. I attended the University of Toronto from 1963 to 1967 where I completed an honours degree in economics and political science, and an LLB from the University of Toronto Law School in 1970. I practiced law in Vancouver for thirty-five years in civil litigation, between 1975 and the end of 2012, in the firm of Alexander Holburn Beaudin & Lang.

Introduction

4 My purpose, when I attended at the entrance to Westridge Marine Terminal on August 20, 2018, was entirely related to my belief that allowing the construction of the Trans Mountain expansion to proceed, by directly facilitating the continued expansion of oil sands production in Alberta to 2040, would cause a very substantial rise in the annual level of oil sands emissions in Canada to 2030, which would preclude Canada from

meeting its commitment under the terms of the Paris Agreement, signed by Canada in December 2015 to reduce Canada's total emission to 517 Mt by 2030.

5 Projections of the growth in oil sands production and emissions between 2015 and 2030 published by the Government of Canada on December 29, 2013, in the *3rd Biennial Report* show that production will increase from 2.526 million barrels per day (bpd) in 2015 to 4.236 million bpd by 2030, accompanied by an increase in the annual level of emissions from 71 million tonnes (Mt) of CO_2eq in 2015 to 115 Mt by 2030, which I verily believe is a true estimate of the currently expected increase based on current policies and assumptions stated in that report about future global oil prices:

Oil sands emissions and production figures from *Canada's 3rd Biennial Report*

	2005	2015	2020	2030	change 2015-2030
Emissions	35	71	89	115	**+44 Mt CO_2eq**
Production	1.065	2.526	3.361	4.236	**+1.719 million bpd**

Source: *Canada's 3rd Biennial Report to UNFCCC* (December 29, 2017), Table 5.9

6 The question is whether the projected 44 Mt increase can be reconciled with Canada's commitment under the December 2015 Paris Agreement to reduce our total emissions 30% by 2030 below the 2005 level, down to 517 Mt. Under current policies, Canada's total emissions are projected to be 722 Mt by 2030. To meet the target, cuts of 200 Mt will have to be achieved within the next decade.

7 In addition, as a further element of my purpose, my actions were based on an informed belief and understanding that the annual level of global GHG emissions have now reached a point, in the context of the already accumulated atmospheric concentration of

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carbon and other GHG gases in the atmosphere, that if very substantial reductions of crude oil consumption on a global scale do not begin by about 2020, and if such deep reductions are not sustained thereafter over the next number of decades, the world will be unable to successfully keep the increase of average global surface temperature within a threshold of 2°C.

8 In addition, as a further element of my purpose, my actions were based on my belief that even if all countries that under the terms of the December 2015 Paris Agreement have made unconditional commitments to reduce their national emissions by 2030 (including Canada) in fact fully implement their promises and meet their promised national targets, the world is on a path to see warming exceed 3°C by the end of this century. My understanding was, and is, that parties to the December 2015 Paris Agreement have made commitments that would cut only about one third of the total emissions reductions required by 2030 to keep the world on track to limit the increase in average global surface warming to less than 2°C. My belief was, and is, that the additional commitments needed to meet the target, in the order of an additional 13 billion tonnes (Gt) of reductions in the annual level by 2030, almost certainly exceed the additional cuts that in reality can be achieved by 2030. I use the term "global emissions gap" in this my affidavit to refer to the 13 $GtCO_2eq$ shortfall in the emissions reductions required by 2030.

9 My actions in this matter, in particular on August 20, 2018, and more generally my activity during the past five years has been guided by my belief and understanding about the level and trend of greenhouse gas emissions in Canada and globally; by the available scientific evidence regarding the rise in the concentration of CO_2 and other greenhouse gases concentration in the atmosphere, and the continuing increase in the concentration

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level; the available scientific evidence about the relationship between that increase and the continuing rise in the earth's average surface temperature, measured against the pre-industrial level; and the impacts of the increase in average global surface temperature on human and natural systems which is now occurring, and the impacts over the coming decades that are projected to occur if the annual level of global emissions is not curbed and reduced.

10 My belief and understanding on the matters aforesaid has been grounded on my reading and careful consideration, over the past number of years, of the reports and data, scientific studies, and other material identified and described in the Outline of Proposed Evidence, which sets out a summary of the proposed evidence in this case.

11 The principal sources of the material evidence about Canada's greenhouse gas (GHG) emissions, and about Canada's projected emissions to 2030, are set out in Parts 1 to 7 of the Outline of Evidence, and in Appendices A to L The principal sources of material evidence about the current trend of global emissions, projected global emissions to 2030 and after, the rise in the atmospheric GHG concentration and causal relationship between that increase and the earth's warming, and the impacts of that warming on human and natural systems in set out in Parts 13 to Parts 18, and Appendices R to U.

12 In my concern about the trend of rising carbon emissions in Canada and globally, and in my own assessment of the urgency of addressing that increase, I have been guided by my understanding and belief about the atmospheric carbon concentration level, and the rate at which it is increasing, and the related consequences, and the mitigation scenarios, all based on the scientific evidence summarized in the Outline. Paragraphs 13 to 21 and

paragraphs 24 to 28 hereinafter describe in a summary way my belief and understanding about important findings and physical processes that explain the observed changes in the global climate system and why there is now extreme urgency to rapidly curb the further combustion of fossil fuels.

Belief relating to warming and global emissions

13 Global mean surface temperature for the decade 2006-2015 was 1.0°C higher than the average between the 1850-1900 period. The dominant cause of the observed warming is emissions caused by fossil fuel burning. Estimated global warming caused by human activity is now increasing at 0.2°C per decade.

14 More than two thirds of the total surface warming has occurred since 1970.

15 The total annual level of emissions released into the atmosphere globally includes both carbon emissions from fossil fuel burning as well as other greenhouse gases (methane, nitrous oxide and others) and also emissions from human activities relating to land use, deforestation, and land use change. In 2016, the annual level of all global emissions is estimated to have reached **53.4 billion tonnes** (Gt) of CO_2eq. The share of the total emissions in 2016 from burning fossil fuels is estimated to have been 36.2 $GtCO_2$, almost 70% of the annual total. The annual level is still increasing.

16 In December 2015, under the terms of the Paris Agreement, Canada and other countries agreed to reduce their emissions. The magnitude of each country's commitment is voluntary. There is no mechanism to impose larger commitments, or to enforce compliance.

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17 Under the terms of the Paris Agreement, Canada and 195 other countries also committed to "holding the increase in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5°C." Those thresholds reflect the conclusion of the scientific evidence that warming exceeding 1.5°C will have grave impacts on human settlements, livelihoods and on biodiversity and ecosystems, and that the risks of more destructive outcomes markedly increase as warming approaches or exceeds 2°C.

18 A carbon concentration level of 450 parts per million (ppm) correlates with a rise in global surface temperature of 2°C.

19 The rising atmospheric carbon concentration shows a linear relationship with the observed warming of global surface temperature. The carbon concentration level reached an annual average of 405 ppm in 2017, a rise of 2.3 ppm above the previous year. Sixty years ago, it was 315 ppm. The rise in global CO_2 concentration since 2000 is about 20 ppm per decade. The proposed evidence at trial will show that my understanding about the rise of the carbon concentration is reasonably grounded in the scientific evidence which is summarized in Part 15 of the Outline of Proposed Evidence (Exhibit "A" to my first affidavit sworn November 21, 2018), and also in Appendix S and in Part 16 at paragraphs 16.20 to 16.23.

20 Also guiding my actions on August 20, 2018, and through at least the past decade, is my belief that the accumulating level of CO_2 in the atmosphere is irreversible. My understanding is that an unusual characteristic of CO_2, unlike methane and other significant greenhouse gases, is that once the gas is released into the upper atmosphere it

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does not break down. It is only removed from the atmosphere when it is absorbed by the earth's surface – by dissolving into the upper ocean (and slowly into the deep ocean) or by biological uptake into forests and plants. The atmospheric carbon concentration level continues to rise as we keep releasing more CO_2 into the atmosphere every year. The incremental increases in the atmospheric concentration will only cease once the world's major economies stop massive fossil fuel burning.

21 The level will decline slowly – but only over many decades and centuries. From the perspective of the time that concerns us, the accumulated level by 2030 will be irreversible. A summary of the proposed evidence at trial showing that my belief with respect to the irreversibility of the accumulating carbon concentration in the atmosphere is reasonably grounded, and its implications, is set out in Part 15 of the **Outline of Proposed Evidence**.

22 In following the available scientific information about the increase in the atmospheric carbon concentration, I became aware, for example, in April 2013 that the Mauna Loa Observatory in Hawaii showed for the first time a daily average reading of 400 ppm. A year later, on May 16, 2014, I noted that the daily average of the entire month of April of that year was 401.33, indicating that on average each day in April had a reading above 400 ppm.

23 Since at least 2013, my understanding of the continuing rise in the atmospheric carbon concentration level, grounded on the available scientific evidence described above, has been a dominant consideration guiding my attempts, through participation in the political process and in public actions with other people, to challenge policy decisions by the

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Federal government to continue the expansion of emissions-intensive oil sands production, and also, in B.C., policy decisions by the provincial government to develop the liquid natural gas (LNG) industry.

Belief relating to mitigation and the global emissions gap

24 I have also been guided in my belief and actions by my understanding of the global emissions "gap". According to scientific information that I have relied on, by 2030, global GHG emissions from all human-induced sources must not exceed 41.8 $GtCO_2eq$, if the 2°C target is to be attained with higher than a 66% chance of success.

25 According to that information, even assuming all of the nationally determined contributions (NDCs) made by signatories to the Paris Agreement are fully implemented and achieved over the next decade (including Canada's promised 30% reduction, which represents approximately 0.215 $GtCO_2eq$), total global emissions (51.9 $GtCO_2eq$ in 2016) are projected to rise to 55.2 $GtCO_2eq$ by 2030.

26 Implementation of all the NDCs will not be enough to offset the growth of emissions in other countries, which are projected to substantially increase over the next decade and to achieve the deep cuts required to meet the 41.8 $GtCO_2eq$ target.

27 In order to meet the 2030 reduction target (to allow a 66% chance to keep future warming of global the average surface temperature within the 2°C threshold), the world's leading economies would have to find an additional 13.5 $GtCO_2eq$ of reductions, according to the scientific information that I have relied on. Some of the sources of the evidence that has informed and guided my understanding on the significance and magnitude of the global

emissions gap are set out in Part 17 of the Outline of Proposed Evidence and in Appendix T.

28 The existing NDCs (including Canada's pledge) represent only one third of the total reductions needed to meet the 2°C reduction target. I have closely followed the progression of the carbon concentration level during the past six years by accessing the data available on the website of the U.S. National Oceanic Atmospheric Administration (NOAA), Earth Systems Research Laboratory, Global Monitoring Division.

29 For the past six years I have taken every step available to me through existing political process that appeared to offer any realistic prospect of contributing effectively to a reconsideration of the decision to proceed with Canada's declared plan to continue the substantial expansion of oil sands production.

The National Energy Board (NEB)

30 The National Energy Board (NEB) was charged with conducting an environmental review of the Trans Mountain project. The review commenced in early 2014 and concluded when the NEB released its report on May 19, 2016, recommending that the project be approved.

31 On December 19, 2013, the NEB released a report recommending that the Northern Gateway project be approved. During the Northern Gateway inquiry, the NEB had refused to admit or consider evidence relating to the GHG emissions associated with the expected increase of bitumen production facilitated by that project, and refused to admit scientific evidence about the impact of increased emissions and climate change.

32 I carefully reviewed the NEB Northern Gateway report within days of its release. My particular interest was to examine the reasoning of the Board about why it declined to consider evidence about upstream emissions and the relationship between GHG emissions and climate change. Attached hereto as Exhibit "A" to this my affidavit is a true copy of an extract from a draft paper I prepared which sets out the reasons offered by the panel about its decision to exclude that evidence, and my concerns about the approach taken by the Board. I originally prepared these notes on January 10, 2014, and subsequently revised them and expanded them. The attached extract is from a revised text written by me on April 12, 2016. It truly expresses the deep concerns I had then, and still have, about the limited scope of the environmental inquiry conducted by the NEB.

33 At that time, I wished to make any effort I could to ensure that the issue of upstream emissions from the planned expansion of oil sands production in Alberta and the related issues of their impact on Canada's total emission and global emissions would be considered by the NEB in the course of the pending Trans Mountain expansion project inquiry. At that time, no other body or agency under provincial or federal was addressing those issues.

34 The rules governing the NEB process effectively barred Canadian citizens, or groups of citizens, from participating in the Trans Mountain inquiry with the right to call evidence and question the merits of the proponent's Project, unless they could establish that they were directly affected by the project.

35 In December 2013, I learned that a motion had been put forward to the City of Vancouver Council that would authorize the City to apply to intervene in NEB Trans Mountain

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inquiry and seek leave to call evidence at the inquiry concerning the increased upstream greenhouse gas emissions that would be associated with the expanded oil sands production facilitated by the proposed pipeline expansion, and to call evidence on climate change and the implications of the project on Canada's emissions and global emissions.

36 Accordingly, the proposed intervention by the City of Vancouver offered a lawful avenue for residents of Vancouver to put forward their concerns that the NEB address the emissions and climate issues, and to do that in a reasoned and informed way by calling evidence on those issues. A large number of Vancouver residents attended the City Council meeting and spoke publicly in the Council Chamber in support of the motion to intervene.

37 I made an oral submission to Vancouver City Council on December 18, 2013, to elected Councillors urging Council to support a motion authorizing the City of Vancouver to intervene in the pending NEB inquiry for the Trans Mountain expansion project with the express purpose that the City would apply, as an intervenor, to ensure that the NEB inquiry would consider the upstream emissions associated with the planned expansion, the impact of that expansion on Canada's cumulative emissions, and related issues based on climate science.

38 On December 18, 2013, the City of Vancouver voted to intervene in the NEB hearing for the Trans Mountain Project, pursuant to a Council motion stating that one of the specific purposes of the intervention by the City was to seek a ruling that the pipeline inquiry should include an assessment of the emissions implications of the project, including the climate impact of the expansion of oil sands production facilitated by the project.

39 On April 2, 2014, when it issued the Hearing Order for the Trans Mountain Project which included the List of Issues, the NEB excluded from the List of Issues the environmental impacts associated with the upstream activities and development of the oil sands, including greenhouse gas emissions. The City of Vancouver applied for an order expanding the List to include those issues.

40 In a ruling on July 23, 2014, the NEB rejected an application by the City of Vancouver to expand the List of Issues, which would have permitted the City and other intervenors to call expert evidence about emissions and climate change. I read the Ruling shortly after it was released:

> *The Project does not include upstream production and is not dependent on any particular upstream development and, therefore, any link to environmental changes caused by such upstream production is indirect and not necessarily incidental to Project approval.*
>
> — NEB Ruling 25, July 23, 2014, p. 3

41 On October 24, 2014, the Federal Court of Appeal dismissed an application by the City of Vancouver for leave to appeal that ruling. On October 11, 2014, following an appeal from a substantially identical ruling concerning a different pipeline project designed to transport bitumen, the Federal Court of Appeal upheld the ruling by the NEB that excluded all evidence relating to climate change and emissions.

42 In and around that time, in the summer and fall of 2014, some public discussion, including intervention by many of Canada's leading energy economists and climate

scientists, publicly challenged the prudence of excluding consideration of emissions and climate science from the NEB approval process. On May 26, 2014, three leading scientists from U.B.C. and S.F.U. published an open letter, co-signed by 300 scientists from universities across Canada, with leading American climate scientists, expressing grave concern that the panel in the Northern Gateway case did not look at the increase in global greenhouse gas emissions that would result from the projected expansion of oil sands production.

43 On June 10, 2014, 110 senior scientists and researchers from across North America signed a public statement calling for a moratorium on proceeding with any new infrastructure projects, including pipelines, explaining that the continued expansion of oil sands production would be inconsistent with Canada's commitments to reduce CO_2 emissions. Seven of the signatories, including a leading energy economist and climate scientists knowledgeable about the pace and impact of rising global GHG emissions, published an article on June 24, 2014, in the journal *Nature*, warning that the existing approval process failed to look at the cumulative impact of resource development projects. I reviewed the statement issued by the scientists as well as the journal article. I recognized the names of many of the signatories as authoritative experts on climate policy and the implications of the continuing expansion fossil fuel use.

44 On June 17, 2014, the Government of Canada gave final approval to the Northern Gateway (Enbridge) pipeline. On June 19, 2014, Members of Parliament had an opportunity to publicly question government ministers about the pipeline decision and about the adequacy of the inquiry process. I was concerned at that time that elected political figures in the two main opposition parties (the NDP and the Liberal Party of

Canada) appeared to be unwilling to publicly raise questions about the wisdom of approving major pipeline projects aimed to facilitate the expansion of Alberta's oil sands industry without an environmental inquiry into the emissions implications of that expansion. I examined the Hansard report of the June 19, 2014 parliamentary debate. Both opposition parties had expressed strong opposition to the government's approval of the project.

45 Thomas Mulclair, then leader of the Opposition, began with a series of five questions to Prime Minister Harper. After that, Justin Trudeau, leader of the Liberal Party, directed three questions to the Prime Minister. Then five NDP members, all except one from communities in British Columbia, directed their questions to the Minister of Natural Resources. There were about seventeen questions altogether. The opposition questions focused almost entirely on the risk of oil spills. Some questions pointed to the opposition by Aboriginal communities in B.C. and the government's failure to adequately consult with them. Not a single question touched on the connection between the pipeline and the expansion of oil sands production in Alberta, or on carbon emissions, or on Canada's commitment to cut emissions, or on the fact that the NEB inquiry had excluded any consideration of the emissions implications of the project. No question uttered the word "carbon" or the word "climate".

46 By the fall of 2014 all lawful avenues to raise questions concerning the emissions and climate implications of the proposed Trans Mountain expansion project by participating in the NEB inquiry process appeared to be effectively closed.

47 Through the summer and fall of 2015, I participated as a volunteer in door-to-door canvassing in the new created Granville constituency in the City of Vancouver in an attempt to encourage electors to consider climate policy and the position of candidates with respect to reform of the NEB pipeline inquiry process to ensure it would address the emissions implications of proposed pipeline projects.

48 When the NEB ultimately issued its report on May 19, 2016, recommending approval of the Trans Mountain Project, the document did not consider the emissions implications of expanding oil sands production and excluded any discussion of the scientific evidence about the impact of emissions on the climate system.

Interim measures for pipeline reviews: the March 19, 2016 notice

49 Following the federal election held in October 2015, the Government of Canada announced on January 27, 2016, what it described as "interim measures for Pipeline Reviews". The new government declared that the ongoing NEB inquiries into the Trans Mountain, Line 3, and Energy East pipeline projects would continue unchanged. In the case of the Trans Mountain expansion, the creation of a new process was announced that would "assess the upstream greenhouse gas emissions associated with this project and make this information public".

50 On March 19, 2016, the Government of Canada published a notice containing details of the new emissions assessment procedure. Because I was closely following events to see what the proposed upstream emissions assessment would consist of, I quickly learned of the notice and read it on the *Canada Gazette* website, within a week of its release. The

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notice stated that the assessment would include "a discussion of the project's potential impact on Canadian and global emissions". The new process was officially called the *Review of Related Greenhouse Gas Emissions Estimates for the Trans Mountain Expansion project* (hereinafter the "upstream emissions review"). I attach hereto as Exhibit "B" to this my affidavit a true copy of the notice published online on March 19, 2016.

51 After carefully reviewing the March 19, 2016 notice, which is only about three pages in length, it was immediately clear to me that the proposed upstream emissions assessment was not designed to assess whether the expected growth in oil sands emissions associated with the projected expansion of oil sands production to 2030 would be consistent with Canada's emissions reduction commitments to 2030. My initial written analysis of the methodology governing the assessment procedure was completed shortly before June 20, 2016, and I included it in a document I sent to Environment Canada on that date. Attached hereto as Exhibit "C" to this my affidavit is a true copy of two extracts from a submission I made to Environment Canada on that date, titled *Comments on Draft Review of Related Upstream GHG Emissions for the Trans Mountain Expansion Project* (I refer to this document in more detail below at paragraphs 69 and 70). Pages 2 to 22 of Exhibit "C" set out my critique of the methodology used by the upstream emissions assessment. Pages 29 -31 are a true copy of my concluding comments about the failures of the assessment process, based on the draft report that became available on May 19, 2018.

52 The substance of my belief and concern by early April 2016 about the inadequacy of the upstream emissions assessment is also set out on pages 13 and 14 (paragraph 18) of a paper I subsequently submitted to the Ministerial Panel in August 2016. A true copy of

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my full written presentation to the Ministerial Panel dated August 31, 2016, is attached hereto as Exhibit "D" to this my affidavit. Based on my understanding of the methodology governing the upstream emissions assessment procedure, set out in Exhibit D, by early April 2016 I believed that the promised upstream emissions assessment would prove to be wholly inadequate.

53 The methodology was described in the notice published by the Liberal Government on March 19, 2016. It directed that the assessment should not count the increased amount of emissions that will be released during production of the expanded output that will be shipped by the new pipeline, *if the increased production could be economically transported by "an alternate mode of transport"*, which means rail.

54 The Kinder Morgan assessment was therefore required to evaluate whether rail transport would be an economically viable method to transport the expected increased bitumen production to market: explicit instructions are given that the assessment shall evaluate the "economic and technical potential" of the alternate mode of transport.

55 Rail transport is more expensive than pipelines (about US$10 more per barrel, according to the report). The question the assessment was directed to answer was whether long-term oil prices will be high enough to cover the extra cost of using rail transport, "in the absence of the proposed project."

56 If rail transport would be a viable alternative, then the assessment was obliged by the methodology to decide that the increased production that will be carried in the proposed pipeline *will be produced anyway, even if the pipeline were not built*. In that case, the assessment would be obliged to conclude that approval of the new pipeline will not make

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emissions any worse – because the increased production would still occur even if the new pipeline were not approved. For the reasons described in the paragraphs above, I had concluded by April 2016 that the upstream emissions assessment would be inadequate.

Question to applicant's Member of Parliament: April 30, 2016

57 On April 30, 2016, I attended a public event in the City of Vancouver which included a numbers of speakers, including my own Member of Parliament, Joyce Murray, MP for Vancouver Quadra. The topic was climate change and public policy. This was the first opportunity I had to raise my concern in a public way about the methodology that was being used to govern the upstream emissions assessment for the Trans Mountain expansion project.

58 By this time, in April 2016, the emissions assessment was already under way. As I indicate below, the assessment was not a public process. There was no public or media access. There was no avenue for a citizen to appear before the body of people who were conducting the process.

59 At the conclusion of the meeting on April 30, 2016, there was an opportunity for members of the public to ask questions. Like many other people attending, I stood in a long line and eventually had a very brief time to pose a question to Joyce Murray.

60 As briefly as I could, in my question to my Member of Parliament I referred to the Federal Government's upstream emissions assessment. I briefly explained that the methodology governing the procedure, published on March 19, 2016. I pointed out that, according to the methodology, if the review finds that the same amount of increased

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production can be economically transported by rail, the review will be bound to conclude that approving the construction of the Trans Mountain pipeline will not contribute to any increase in Canada's emissions. I stated that because of the way the assessment procedure was designed, this methodology had in effect "doomed" any prospect or chance that Canadians would be given a clear answer about whether expanding oil sands production to 2030 can be reconciled with our emissions reduction targets. In that way, I explicitly directed Ms. Murray's attention to the fact that I was expressing serious concerns about the adequacy and fairness of the upstream emissions assessment process.

61 Instead of answering my question, Ms. Murray took several more questions from other people. Before the end of the meeting, she responded to several of those other. She did not immediately respond to my question about the adequacy of the assessment procedure. Very close to the of the meeting, as she completed her responses to questions, Ms. Murray referred to my question about the adequacy of the emissions assessment procedure: she said simply that "there has been a lot of media talk about that', or words to that effect which made a reference to the media. She did not respond at all to my question, or provide any comment on the adequacy of the process.

Upstream emissions review

62 The draft report for the upstream emissions review was released on May 19, 2016, two months after the public notice describing the process and methodology (the NEB released its report recommending approval of the project on the same date). I examined the document within days of its release.

63 The draft upstream emissions assessment document reported that the oil sands production would increase from the 2014 level of 2.4 million bpd to 4.8 million bpd by 2040 – a doubling of production over the next twenty-five years. The draft report found that the volume of new production accounted for by the expanded capacity of the Trans Mountain pipeline would add 13.5 to 17 Mt of new emissions to Canada's annual total (representing a 20% to 25% increase to Canada's current level of oil sands emissions.)

64 The March 19, 2016 draft upstream emissions report did not consider, and did not answer whether that proposed expansion of oil sands production, and the oil sands emissions growth associated with the Trans Mountain project, was consistent with Canada's commitment under the Paris Agreement. The report did not address the impact of the pipeline project on Canada's cumulative emissions.

65 The draft report also failed to answer whether the proposed expansion of oil sands production to 2040 was consistent with Canada's commitment to holding the increase in global average temperature to well below 2°C. The draft report concluded that it was "unclear" whether the projected growth of oil sands production could be economically viable in a world that was committed to keep warming below 2°C.

66 The upstream emissions review was not a public inquiry. There was no public or media access. There was no record of its deliberations, or of the identity of the persons who wrote the documents, or with whom they discussed the evidence and their findings. There was no opportunity for citizens, or groups of citizens, to call evidence or to cross-examine or otherwise question the information adopted by the report. The notice published March 19, 2016, stipulated that "only publicly available data provided by the

proponent (the owner of the pipeline) will be used". Because it was not a juridical process, there was no opportunity for a citizen, or a group of citizens, to challenge the findings of the draft report, or challenge the methodology.

67 In the case of the upstream emissions report, there was a procedure allowing for citizens to send written comments to Environment Canada about the adequacy of that report, with a deadline of June 20, 2016, for submissions.

68 In the case of the NEB report, there was no public avenue available to challenge the Board's report or its decision to exclude evidence about GHG emissions and climate science. All juridical avenues to question that decision had been exhausted by the Board's ruling made in 2014, and the decisions by the Federal Court of Appeal refusing leave to appeal those rulings. No right of judicial review lay against the Board's report recommending approval, because the Board was not a "decision maker". Further, ordinary citizens had no standing to appear in the NEB proceedings.

Submission to Environment Canada: June 20, 2016

69 After carefully examining the draft upstream emissions assessment report for the Trans Mountain expansion released May 19, 2016, I decided prepare a detailed written submission to Environment Canada. My submission pointed out that the draft report had failed to answer core questions about whether the projected expansion of oil sands emissions facilitated by the proposed pipeline could be reconciled with Canada's emissions reduction commitments for 2030, and also that the report had failed to

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determine if the planned expansion of oil production to 2040 was consistent with Canada's commitment to keep warming well below 2°C.

70 A true copy of my submission to Environment Canada dated June 20, 2016, is attached hereto as Exhibit "C".

Submission to the Ministerial Panel: August 17, 2016

71 I became aware in May 2016 that the Government of Canada was establishing a third process, called the Ministerial Panel on the Trans Mountain Pipeline. The Ministerial Panel was to provide a forum public for consultation, appointed by the Federal Minister of Natural. It did not have powers to call evidence, or make findings, or draw conclusions. The Ministerial Panel's only mandate was to listen to members of the public – which as it turned out, based on my reading of the Panel's report when it was released on November 1, 2016, included a number of Canada's leading experts on emissions who volunteered to make submissions.

72 People were permitted to attend a series of public meetings in Alberta and British Columbia during July and August 2016 to express their support for the project, or express their concerns about what issues and evidence they believed had been overlooked, or inadequately dealt with, during the previous two processes, namely the NEB inquiry and the upstream emissions assessment.

73 On August 17, 2016, I made an oral submission to a public meeting in Vancouver held by the Ministerial Panel, and delivered to the Panel a written report containing an analysis of the emissions implications of the proposed expansion of Alberta's oil sands production,

the impacts of projected oil sands emissions growth to 2030 on Canada's chances of meeting its emissions reduction target under the Paris Agreement, and an analysis of the draft upstream emissions assessment report demonstrating that the May 19, 2016 document had failed to answer whether the Trans Mountain project was consistent with Canada's emissions reduction commitments. A true copy of my written submission is attached hereto as Exhibit "D".

74 On November 1, 2016, the Ministerial Panel's report was publicly released. The Panel's report quoted substantial portions of my August 17, 2016 submission, and affirmed that the question "remains unanswered" whether the project could be reconciled with Canada's climate change commitments.

75 During the four weeks following the public release of the Ministerial Panel Report up to the announcement that the Federal Government had approved the Order in Council dated November 29, 2016, authorizing the project, the government issued no public comment in answer to the Panel's conclusion that a key question remained unanswered.

Public meeting of Liberal Members of Parliament: September 7, 2016

76 During September and October 2016, jointly with other people deeply concerned about the emissions and climate implications of the Trans Mountain expansion project, I participated in multiple public meetings and demonstrations, aimed to direct attention to the gravity of the emissions issue.

77 I also undertook strenuous efforts to engage with my own Member of Parliament, Joyce Murray, and other Liberal Members of Parliament in the Vancouver region, in the hope that they might engage in a candid public discussion of the issues.

78 In early September 2016, the Liberal Member of Parliament for the Burnaby North Seymour, Terry Beech, announced a public meeting to be held on September 7, 2016, to be attended by Liberal MPs in BC to discuss the issue of the Kinder Morgan (Trans Mountain) pipeline project. I learned that my own MP, Joyce Murray, would attend. At that point, there was a general expectation that the Federal Government would announce a final decision by about December 18, 2016. The upstream emissions assessment had not yet publicly released its final report. The Ministerial Panel had just completed it public consultation meetings, but had not yet published its report.

79 I anticipated (correctly) that this would probably be the last opportunity to engage by own Member of Parliament at a public meeting to raise the emissions implications of the project. I delivered a letter to her local office on September 6, 2016, a true copy of which is attached hereto as Exhibit "E". I felt that I had a serious obligation to raise directly with Murray the failures of the government's upstream emissions report to address the most important questions related to the emissions implications of the proposed pipeline project. I enclosed a copy of my written submission to the Ministerial Panel. Also on September 6, 2016, I delivered a letter to Terry Beech, MP for Burnaby-North Seymour, a true copy of which is attached hereto as Exhibit "F". Mr. Beech was the Liberal Member of Parliament who was organizing the meeting.

80 In my September 6, 2016 letter to Joyce Murray , I quoted a statement she had made in her Spring 2016 Newsletter to her constituents (including to myself):

> *In your Spring 2016 Newsletter, speaking about the accomplishments by the new Liberal Government since the election last October, you informed your constituents:*
>
> > *"Since then we [the Liberal Government] ... created a principled supplementary environmental review for pipeline projects rushed through the flawed National Energy Board process".*

81 In my letter to Murray, I provided her with this summary of my specific concerns:

> *A "principled" emissions review can only be one that provides Canadians with the essential information we need to make an informed decision – so that we fully understand the consequences of project approvals now that will increase our annual level of CO_2 emissions during the next fifteen years.*
>
> *There is no dispute about the consequences of the path we are currently on. The atmospheric carbon concentration level is 400 ppm; during the past four years it has increased by an average 2.4 ppm per year. The scientific evidence (which the Government of Canada says it accepts) tells us that a level of 450 ppm CO_2eq will take us above the 2°C threshold. The International Energy Agency warns us unequivocally in its 450 Scenario that absolute reductions in global oil production must start by 2020 if we are going to keep within the 2°C limit.*

DL.

The Kinder Morgan report affirms that oil sands production will continue to grow between now and 2040. The rationale for building new pipeline capacity is to enable that growth. The report has adopted the NEB's view that global oil consumption, especially in Asia, will remain strong for at least another twenty-five years. Based on that forecast of growing global oil demand, the report adopts the NEB's forecast that oil sands production will increase from the 2014 level of 2.4 million bpd to 4.8 million bpd by 2040 – a doubling of production over the next twenty-five years (see the Kinder Morgan assessment report, section B.2.1 at p. 15, "Canada's Oil Supply Growth").

The Kinder Morgan expansion, if built, will have the capacity to transport an additional 590,000 bpd, which is 25% of the proposed total expansion of oil sands production between now and 2040. This project is a major step down an unforgiving pathway.

The fundamental question we must ask before we go down that pathway is can we achieve a 30% cut in Canada's total emissions by 2030, down to 524 Mt, if emissions from expanding oil sands production keep rising. That is the question a principled assessment would be bound to answer.

82 I attended the September 7, 2016, meeting in Burnaby. The format involved a panel of experts, who would address the meeting. A large crowd of about five hundred people was present. My Member of Parliament, Joyce Murray, was seated at the head table, with Terry Beech the host of the meeting, and one or two other Liberal MPs.

DH.

83 At the beginning of the meeting, the crowd was informed that the Members of Parliament at the head table would not be answering any questions. We were instructed that our questions were to be directed to the panel members, described as "experts". We were told that the MPs were there to "listen".

84 The panel members took turns speaking. None of them spoke about carbon emissions and climate change, or about the projected increase in GHG emissions that would accompany the substantial expansion of oil sands production to 2040 or whether the planned expansion of oil sands production can be reconciled with any global effort to keep the increase in warming to less than 2°C above the pre-industrial level. None of the panelists was a climate scientist or expert in emissions reduction policy. There was no energy economist on the panel or person knowledgeable about oil sands emissions data, or about the prospects that Canada can obtain the required deep reduction from the other six economic sectors to offset the projected rise in the annual level of oil sands emissions to 2030. No member of the panel offered any comments on those subjects.

85 The only mention of carbon emissions was by a panel member who introduced himself as a local entrepreneur or businessman, who spoke about the business opportunities offered by the oil sands industry. He spoke about the potential opportunities offered to his own business, which he said was involved in developing carbon capture and storage (CCS) technology. In fact, in 2008 Alberta had announced an ambitious plan to adopt CCS technology on a very large scale in the oil sands industry to curb the growth of emission during the extraction and processing of bitumen. But that policy had been completely abandoned at the end of 20i4 by the Alberta government, on the grounds that the technology was too expensive (the proposed evidence at trial on the abandonment of CCS

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technology in Alberta is set out in **the Outline of Evidence**, in Appendix C). In any case, the panelist in question provided no information at all about the projected growth of oil sands emissions to 2015, or about whether, or to what extent, any new technology might be able to curb that emissions growth.

86 At the conclusion of the panel discussion, members of the audience were offered a chance to ask questions. Together with others, I was told to limit my question to two minutes.

87 I prefaced my question by noting that none of the panel members had addressed emissions or climate. I pointed out that the draft upstream emissions released on May 19, 2016, had not examined the question of whether growing emissions from the projected expansion of oil sands production could be consistent with Canada's commitments to reduce our emissions 30% by 2030. I then asked Joyce Murray or any other of the MPs to respond whether they thought the emissions assessment was "adequate", and whether she could assure the audience that the projected oil sands expansion and Canada's climate commitments were compatible.

88 Neither Joyce Murray of Terry Beech responded at all to my question. There was no response at all to my question.

89 No other questions were asked about emissions or climate. The questions were largely related to the risk of oil spills, and on other aspects related to the terminal in Burnaby.

90 Before the end of the meeting, both Terry Beech and Murray addressed the audience. A substantial part of the audience, but not all, appeared to be opposed to project, based on

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the questions and reactions of audience members. Apparently in response to that evident opposition, at one point during the meeting in remarks on stage, either Joyce Murray or Terry Beech, I cannot recall which of them, looked out over the audience and said: "We are not the ones who make the decision." The implication was that the final decision whether to proceed with the pipeline would be made by the cabinet. None of the MPs present were cabinet members.

91 On September 16, 2016, I sent a further letter to my Member of Parliament, Joyce Murray, a true copy of which is attached hereto as **Exhibit "G"**. I was deeply concerned that the local Liberal Members of Parliament, at a key public meeting just two or three months before the final decision, were apparently unwilling to discuss or publicly express their views on those questions. In my letter on that date, I related in detail what had occurred at the meeting in Burnaby on September 7. I set out below a portion of my letter, which I verily believe accurately states the substance of what occurred, and what was said:

> *We were told, at the start of the meeting, that you and the other Liberal Members of Parliament would not be answering questions. We were instructed that our questions were to be directed to the panel members, described as "experts". We were told that you and the other elected members were there to "listen".*
>
> *The entire meeting unfolded without any discussion at all, by you or by any of your colleagues, about the central issue of increasing CO_2 emissions from expanding oil sands production, or the impact the Kinder Morgan expansion will have on Canada's ability to achieve its commitment to reduce our total emissions*

DG.

to 524 Mt by 2030. Not one of the invited experts was qualified to speak on that subject or about the implication of continued emissions increases on the climate system.

One expert who spoke positively about the prospects of cleaning up oil spills in English Bay. Another, an expert on China, told us that China would be the most efficient market in the world to refine Alberta's oil sands bitumen.

A third, a businessman promoting carbon capture and storage technology (CCS), suggested that CCS will help reduce emissions in the oil sands (without any details of the timelines), but he omitted to mention that in 2014 the Alberta government under Jim Prentice abandoned Alberta's plan, originally announced in 2008, to achieve large-scale use of CCS technology to control the growth of oil sands emissions. Prentice declared that CCS was "not capable of achieving the reductions in emissions that are required", that it was "expensive", "quite unproven", and "a failed science experiment". The current NDP government in Alberta, elected in 2015, campaigned on a promise to end the "costly and ineffective CCS experiment". Any informed expert on CCS technology would have advised our meeting that – mainly for reasons of cost and economic viability – CCS is unlikely to play any significant role in reducing carbon emissions in the oil sands during the next fifteen years.

A fourth panel member, Robyn Allan, spoke informatively about the failures in the NEB's economic analysis of the case for building pipelines to export bitumen to

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Asia. But she did not touch on the emissions issue, and nor would we expect her to do so.

The fifth expert, a respected economist from UBC, spoke in philosophical terms about the need to ensure that economic calculations of the benefits of resource development do not leave out of account the costs of environmental destruction. But he did not touch at all on the question of rising emissions from oil sands production, or the consequences.

In the question period (which allotted each person two minutes to ask questions on these complex issues) I asked you a question, directed also to the other Liberal MPs present, about the recent Review of Related Greenhouse Gas Emissions Estimates for the Trans Mountain Expansion Project ("the Kinder Morgan report"), released on May 19, 2016. I pointed out that the Kinder Morgan report did not examine the question of whether the projected doubling of oil sands production from 2.4 million barrels per day (bpd) in 2014 to 4.8 million bpd by 2040 could be consistent with Canada's commitment to reduce our total emissions 30% by 2030. That projection of doubled production by 2040 was based on a forecast by the National Energy Board (NEB) published in January 2016 (Canada's Energy Future 2016: Energy Supply and Demand Projections to 2040), which was expressly adopted by the Kinder Morgan assessment report in section B.2.5. I asked you to explain if, in your view, the emissions assessment was "adequate", and whether you could assure us that the projected oil sands expansion and Canada's climate commitments are compatible.

You did not address the question at all. Nor did Mr. Beech. The meeting ended without any discussion about whether continued oil sands expansion is consistent with Canada meeting its emissions reduction target by 2030. None of you mentioned the Kinder Morgan report.

92 In the balance of my letter, I provided Murray with a summary of pipeline approval process during the previous six months, and showing, with detailed references to sections of the May 19, 2016 draft report, that the upstream emissions assessment had failed to answer the fundamental questions about whether the planned oil sands expansion was consistent with Canada's emissions reduction commitments. I concluded my September 16, 2016, letter with this request:

I ask that you to publicly address the unanswered question. And I ask that you do that within the next 15 days, because the Liberal Government – which you support – has arbitrarily set December 2016 as the deadline for making a final decision on the approval of the Kinder Morgan expansion. We have our own urgency. We have a right to be provided in a timely way with the essential information we need to make an informed decision – so that we fully understand the consequences of project approvals now that will increase our annual level of CO_2 emissions during the next fifteen years.

93 By the fall of 2016, it was clear that no public independent inquiry, indeed no inquiry of any kind by the Government of Canada, had answered either of the two fundamentally important questions, namely: could the projected increase of oil sands emissions to 2030 be reconciled with Canada 2030 emissions target, and was the planned expansion of

Canada's oil sands production to 2030 consistent with keeping the increase in global average surface temperature within the 2°C threshold?

Belief and grounds of belief about promised emissions reductions

94 A document called the *Pan-Canadian Framework on Climate Change*, described as the national climate plan", was published by the Government of Canada on December 9, 2016 – ten days after the government approved the Trans Mountain and Line 3 projects. It had never been the subject of any kind of public inquiry process.

95 At that time, the most recent publicly available projection of Canada's emissions to 2030 was a report called *Canada's Second Biennial Report*, published by Environment Canada in February 2016. It showed Canada's total emissions reaching 815 Mt by 2030. On January 5, 2017, Environment Canada released an updated report, showing that total emissions by 2030 would be 742 Mt by 2030 (*Canada's 2016 Greenhouse Gas Emissions Reference Case*). That 742 Mt number was based on "current policies", indicating measures that had been implemented or announced by November 2016.

96 The government's more recent projections, released December 29, 2017, show total emissions reduced to 722 Mt by 2030, based on current policies as of September 2017: *Canada's 3rd Biennial Report*, released December 29, 2017.

97 In the days and weeks after it was released in December 2016, I carefully examined the contents of the *Framework* document.

DG

98 The *Framework* document made the claim that taking into account promised future policies, Canada's total emissions would be reduced to meet the 523 Mt target by 2030 (subsequent adjustment of the number for Canada's total emissions in 2005, the target is now 517 Mt). The *Framework* document contained no discussion at all of whether Canada's projected expansion of oil sands production to 2040 could be consistent with our commitment to keep global warming" to well below 2 degrees C", let alone 1.5 degrees C. The issue was not mentioned in the document.

99 For the reasons set out in the Outline of Proposed Evidence, I concluded that the future measures promised in the *Pan-Canadian Framework* document offered Canadians no reasonable assurance, or no assurance at all, that future carbon reduction measures will be adopted by provincial government and by the Federal Government sufficient to meet the 2030 target.

100 I continued to examine the plausibility of the Framework promises through 2017, as I was able to review the actual or promised policy actions, or absence of policy actions, by provincial governments, including the B.C. government.

101 Since its initial public release on December 9, 2016, the *Framework* plan has been revised, and the new version was released on December 29, 2017, when it was published as part of *Canada's 3rd Biennial Report*. Based on my reading of the recent version, the plan promises essentially three kinds or categories of future reduction. The proposed evidence at trial, set out in Part 12 and in Appendix I of the Outline, will provide a full analysis of these promised future reductions.

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102 According to the December 29, 2017 report, the projection that Canada's total emissions will be 722 Mt by 2030 is based on "current policies", which means carbon-reduction policies already adopted up to September 2017. The first category of promised future reductions contained in the report consists of 79 Mt of additional cuts to certain economic sectors over the next decade (called "additional cuts"), but they depend on the promise of future policies not yet implemented and many of them highly uncertain – and many of them not yet developed at all and, in many cases, subject to future action, or non-action, by provincial government.

103 But even if the "additional measures" are all fully implemented, the remaining shortfall is still be about 119 Mt – more than all the cuts we have to make over the next twelve years.

104 According to the *Framework* plan, another 59 Mt of reductions will be accounted for by the purchase of "international allowances". Industrial emitters who are unwilling or unable to cut their own emissions in Canada will instead be permitted to purchase credits from California (where the reductions will occur) — allowing them to continue to emit CO_2 and other GHGs into the atmosphere unabated using their existing emissions-intensive technologies. They will be able to delay until after 2030 the kinds of technological innovation needed to reduce emissions. It is a scheme to *defer* almost one third of our needed cuts until some time after 2030. We are simply shifting the burden of making this 59 Mt reduction to the people in charge after 2030 (our children) – but it will be, for them, an additional 59 Mt burden, on top of the all the other reductions they will have to make. In the original version of the plan published December 9, 2016, carbon credits accounted for 55 Mt of the promised "reductions". The new version increases the carbon credits to 59 Mt of the total amount.

105 Based on Table 5.28 in the *3rd Biennial Report*, the combined "additional measures" (79 Mt) plus the "international allowances" (59) Mt will reduce Canada's total emissions down to a nominal 583 Mt by 2030 (from the currently projected 2030 level of 722 Mt). That still leaves a shortfall of over 60 Mt (which exceeds the projected 44 Mt increase of oil sands emissions between 2015 and 2030). This remaining 60 Mt of the shortfall is covered, according to the December 29, 2017 report, by promises that over the next decade we will lower the carbon-intensity of fossil fuels used in Canada, and by vague assurances about "investing in public transit, clean technology, and innovation..." (*Report,* Figure 5.6, p. 153), which means policies that do not yet exist or are so vague as to be unverifiable.

106 After reviewing the *3rd Biennial Report* in the early months of 2018, my belief was confirmed that Canadians have no reasonable assurance, or no assurance at all, that the projected substantial growth of emissions in the oil and gas sector between the reported figures for 2016 and 2030 can be offset by sufficient deep cuts in other sectors to meet our 517 Mt target. My belief is that Canadians are being promised future reductions based policies that in many cases do not yet exist, are not yet funded, and which over the next decade may prove to be politically unacceptable or not feasible for economic or technological reasons. The absence of any independent process that might have subjected the claims contained in the *Pan-Canadian Framework* to public scrutiny has deepened my belief that the plan is unreliable, and my belief that it is reckless to be guided by it.

M.

Belief and grounds of belief about the importance of halting the Trans Mountain project

107 By the end of July 2018, and over the course of the previous year and a half since December 2016, I had had concluded there remained no realistic prospect that the Government of Canada would be persuaded or induced to reconsider its decision to proceed with the construction of the Trans Mountain Project and the Line 3 expansion projects, which together will provide sufficient new pipeline capacity to transport about 50% of the total projected expansion of oil sands production between 2015 and 2040.

108 In reaching that conclusion, I took into account the announcement by the Government of Canada on May 29, 2018, that it would purchase the Kinder Morgan (Trans Mountain) pipeline from the project owner.

109 In the context of what any Canadian citizen can do to contribute to alleviating the further advance of the global peril, the most salient emitting activity in Canada is the projected expansion of oil sands production in Alberta to 2030 and 2040. The projected increase in the annual level of oil sands emissions between 2015 and 2030 is 44 Mt, which is projected to be the largest source of emissions growth in Canada over that period, compared to any other industry or any other economic sector. The material question is whether that increase can be reconciled with obtaining a 200 Mt reduction of Canada's total emissions over the next decade, which will have to be obtained from Canada's other economic sectors.

jh.

110 Canada's second largest emitting sector is transportation. Based on the Government of Canada's most recent projections, taking into account current policies implemented up to September 2017, total transportation sector emissions across Canada between 2015 and 2030 are expected to decline by only 18 Mt. Even if other "additional measures" promised under the government's most recent emissions reduction plan published on December 29, 2017, are fully implemented, the total projected reduction in the entire transportation sector will still be only 32 Mt by 2030, measured against the 2015 level. (The promised additional transportation measures are not yet implemented and in many cases have not yet been developed). Emissions growth in the oil sands sub-sector between 2015 and 2030 will negate all the emissions cuts that Canada hopes to achieve from the entire transportation sector across Canada, which includes all passenger cars, all road freight transport, rail, domestic aviation, and marine shipping.

111 In the global context, Canada's planned expansion of oil sands production to 2030 is gravely consequential. The available evidence is unequivocal that global oil consumption must start to decline by about 2020, and decline from the 2014 level of 90.6 million bpd to about 74 million bpd by 2040, or less, if surface warming is to be limited to less than 2°C above the pre-industrial level.

112 The International Energy Agency (IEA) projections show that under current policies (also referred to as business-as-usual projections) global oil consumption is expected to rise to 103.5 million bpd by 2040, a 12.9 million bpd increase above the 90.6 million bpd level in 2014. Only six or seven major oil producing countries have large enough oil reserves to satisfy that increase in demand. Canada is one of those suppliers.

DG.

113 To stay within the 2°C pathway, global suppliers would have to cut production levels by at least 30 million bpd by 2040, below the currently projected level for 2040.

114 The Government of Canada's recent projections show that oil sands production is expected to increase by 1.7 million bpd between 2015 and 2030, with additional growth during the following decade to 2040. That planned expansion is inconsistent with a 2°C world.

Means to halt the further substantial expansion of oil sands production

115 By the summer of 2018, I could not foresee any viable means to halt or delay the start of construction on the project, either through legal process or any remaining lawful avenue of political activity. I did not contemplate that an application to intervene in Trans Mountain's existing civil action to set aside or vary the injunction offered even a remote chance to achieve that purpose, particularly in the case of an applicant, myself, whose declared purpose is to interfere with the work at the site, to impede the project. I was also well aware, as a former lawyer, that even if the injunction were to be set aside, direct action to interfere with the pipeline construction, albeit entirely peaceful and however limited, would inevitably involve breaches of other provisions of the *Criminal Code* commonly used in the past in B.C. to sanction individuals who for reasons of conscience or to protect the natural systems have acted to stop projects of other kinds. It was clear to me that there was no avenue of direct action to halt or delay the project, or to attempt to do that, that did not involve disobedience of the law.

M.

116 In my view, direct peaceful action at the site would be efficacious. If sustained, and if sufficiently broadly based, it would signal to investors and others, in Canada and outside, that there is uncertainty about whether the project will ever proceed to completion in view of significant public resistance to it, evidenced in part by the action of individuals at the site who are attempting to halt the work, and in doing so are disobeying the law.

117 Decisions to proceed with individual new oil sands projects (that will expand production) are driven, and will continue to be driven, by the certainty (or deterred by uncertainty) about whether new pipelines will actually be completed, especially in the case of the oil sands industry where the future economic viability of new projects depends on the margin between future oil prices to 2040 and costs of production per barrel (which must take into account the cost of transporting bitumen to markets). The report of the upstream emissions assessment (*Review of Related Greenhouse Gas Emissions Estimates for the Trans Mountain Expansion Project*) acknowledged and affirmed that shipping bitumen by rail costs about US$10 more per barrel than pipelines.

118 The upstream emissions report examines in detail how the availability of sufficient new pipeline capacity will, as a matter of economics, facilitate expansion of oil sands production if global oil prices after 2020 are less than about US$80 per barrel. New bitumen projects take two to five years to complete, or longer. In the case of proposed new projects that are economically marginal, certainty that new pipeline capacity will be available by 2023, for example, will spur the development of new production now. That is why the start of construction on the Trans Mountain project in the late summer of 2018 would facilitate the expansion of oil sand expansion now. This was my belief and understanding and it guided my action on August 20, 2016.

Beliefs and grounds of belief about the peril

119 By the end of July 2018, and over approximately the two years before that, I had come to believe that there is no reasonable likelihood that global emissions can be reduced fast enough to keep the increase in global surface warming within the 2°C pathway. My belief is that while the 2°C commitment is still technologically and economically feasible if very stringent carbon reduction policies are rapidly developed and implemented in multiple countries, any estimation of that occurring is conjectural because it depends on evidence that does not exist.

120 The available evidence shows that even if all countries that have made commitments (NDCs) under the Paris Agreement fully implement all of their promised reductions, the world will still be on a pathway to a temperature increase exceeding 3°C. The existing NDCs account for only about one third of the reductions needed to stay within the 2°C pathway. The remaining emissions gap is 13.4 $GtCO_2$ of additional reductions. That additional amount is twice the magnitude of all the existing reduction commitments that have been given by the signatories to the Paris Agreement, including by the wealthiest and the most technologically advanced economies. There is no existing plan that explains how the 13.4 $GtCO_2eq$ emissions gap can be satisfied.

121 I believe that adequate emissions reduction cannot be achieved within the next twelve years to keep warming within the 1.5°C pathway.

122 My belief is that by 2030 the earth's climate system will be irrevocably committed to surface warming of at least 1.5°C, and that we have no assurance that by the end of the next decade we will not be committed to more than 2°C of warming. We will not know

the answer to the second question until well into the next decade, when we may see whether, and to what extent, emitting countries (including Canada) have taken any of the essential and exceptional steps required to address the emissions gap. Essential steps would include halting further growth of global oil consumption, and the beginning of a substantial decline in oil demand by about 2020.

123 The warming of the earth is already far advanced. The impacts are already degrading human and natural systems. The losses are irreversible. We know that, if we act to the full extent of our capacities now and during the next twelve years, we have it in our power to halt this unfolding peril and curb the losses. We will not be able to avoid the further losses that will be caused as surface warming increases from the current level of 1°C to 1.5°C, and we probably cannot curb the deepening losses that will occur as warming moves above 1.5°C to 2.0°C. But our opportunity is to at least limit the further loss and peril as warming moves significantly above 2°C. The scientific evidence is clear that the greatest losses and risks to human systems and natural systems will occur as warming approaches and then exceeds the 2°C. That is the immediate peril we can act to avoid.

SWORN BEFORE ME at Vancouver British Columbia this 21st day of November, 2018

A COMMISSIONER FOR TAKING AFFIDAVITS IN BRITISH COLUMBIA

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