Critique of Canada's Climate Plan of December 2020

An open letter to Prime Minister Justin Trudeau

23 January, 2021

Prime Minister Justin Trudeau
House of Commons
Ottawa, Ontario
K1A 0A6

Dear Mr. Trudeau,

I commend you on finally submitting the December 2020 climate plan titled "A Healthy Environment and a Healthy Economy" as found at (https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview.html. Most of us in the climate field cheer the proposal to raise the carbon tax incrementally to $170/tonne by 2030. This is a good first step, IF you can successfully and promptly defend court challenges by Alberta and Saskatchewan. In theory, the tax will make people think twice at the gas pump, and start reducing their driving. In any event, most of us will be driving electric vehicles by 2030, and the production of new fossil fuel-driven cars should be banned by then.

As a retired atmospheric/climate scientist, I frequently give talks and short courses on the current and future impacts of global warming and potential solutions. My colleague on this letter is a retired health management expert, concerned about increasing pollution of our air, water, and soils. The same fossil fuels that increase greenhouse gases in the atmosphere, also increase air and water pollutants, hence our joint concerns. Our backgrounds in climate science and health provide us enough information to be scared as hell at the prospect of the future climate. Allow me to explain in some detail several shortcomings in the climate plan that are essential to correct if we truly care for our descendants.

SHORTCOMING # 1

The remainder of this plan unfortunately will not help solve the climate crisis. On p.58 of the above document, it indicates "*net-zero emissions by 2050*", just as other nations (China, the European Union, the UK, and the U.S.) have recently declared. Greta Thunberg commented on 'net-zero emissions' in a tweet last December that "*the 'net' in 'net-zero emissions' could be among the greatest – and most dangerous – loopholes ever created. The fact that our governments are using the same language as the world's most polluting fossil fuel companies really says it all*." I agree with Greta, and the following explains why.

Many people do not understand that nature ALWAYS acts to restore imbalances in natural processes. That's why there are weather systems, nature's response to excess heat and moisture converging over a region; it's why we have earthquakes, when underground tectonic forces are stressed too far; it's why we have volcanoes, when magma escaping from Earth's outer core can no longer be held in check; and it's why Arctic ice is melting, responding to higher temperatures in the Arctic. *Nature has ways to restore balance in all natural processes,* although not all of the restoration processes are gentle.

The way we interpret "*net-zero emissions by 2050*" is that it simply means no increase in Canada's emissions between your baseline year (which I believe is 2005) and 2050. In 2005, Canada's emissions were 730 MT according to ECCC (see Fig. 1). If all countries aim at a similar net-zero by 2050, then mankind is in serious trouble, for it means that atmospheric *carbon dioxide* (CO_2) will continue to rise exponentially as shown in Figure 2. You should know that this can only bring disaster to the world. At net-zero emission rates, we cannot possibly keep global warming below 2°C, much less 1.5°C. We will reach 1.5°C by or before 2030. Later, at some time on or before global mean temperatures reach 2°C, we could then see a sudden lurch upward in warming (the *tipping point*), so that the follow-up 1-3°C of warming will happen much more quickly as nature adjusts for the imbalance we have caused. This is analogous to a volcanic explosion, where balance is restored, but the system (the volcanic mountain) is changed forever. If nature rather than mankind restores equilibrium to our climate, it too will be changed forever (where forever means the foreseeable future). That tipping point could be reached in as little as a decade or two. We could then do nothing to reverse the warming. I could go on and speculate (based on known impacts with current warming of 1.3°C) what will happen with 4 or 5°C warming, but there would be nothing pleasant about it.

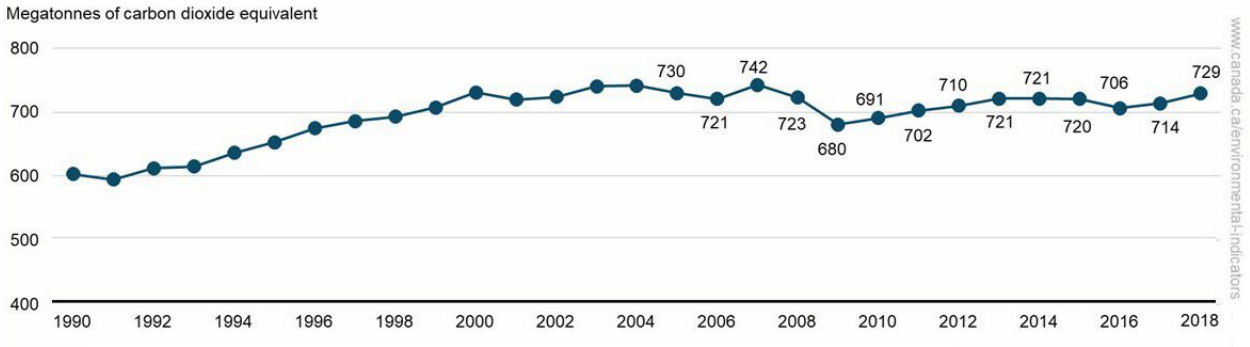

Fig. 1: Canada's GHG emissions, 2000-2018 (Source: Environment and Climate Change Canada (2020) National Inventory Report 1990-2018: Greenhouse Gas Sources and Sinks in Canada.).

With that thought in mind, please take careful note of Figures 2 and 3. Atmospheric CO_2 (Fig. 2) has been moving towards an imbalance since first readings at Mauna Loa in 1957, and 100% because of our excess burning of fossil fuels. Prior to the industrial revolution, burning fossil fuels comprised small fires (mostly wood) created by humans for heating and cooking, and occasional large forest fires caused mostly by lightning strikes. Forest fires are a normal way for nature to restore the land for fresh growth, and it could easily handle atmospheric CO_2 from these wood-fire sources. In fact, these were necessary for the photosynthesis process, which combines CO_2, water, and soil nutrients to create plant growth, and to provide oxygen for animals and humans. Once we started burning coal and oil, and atmospheric CO_2 got out of balance, nature adjusted through additional CO_2 absorption by the oceans. CO_2 mixed with water, however, creates carbonic acid, which breaks down the calcium carbonates of corals, shellfish, and other fish. Our oceans became more acidic by the early 1900s, slowly at first, then more rapid until scientists noted it in the 1990s. Now nature can no longer restore the balance of atmospheric CO_2 through sequestration by plants and the oceans.

Figure 3 shows the incremental increases in our global mean temperatures from 1880 to 2020. We note how the temperature trend correlates well with the CO_2 trend, although glacial ice cores tell us that temperature changes lag the CO_2 trend by decades. The key point is that neither of these trends is natural; they are both out of balance with Earth's larger ecosystem, and nature will not allow them to go much further out of balance before it reacts. Humans caused this imbalance, but we also have the

capability to restore it, simply by rapidly reducing our output of CO_2 (and other GHGs into the atmosphere). Only human greed for using fossil fuels has prevented us from starting this. But nature will eventually take over and restore the imbalance of the temperature trend by shifting our climate upward to a new level over a period of a few decades. The point at which this can occur is called a *tipping point*, and it is analogous to the tipping point that a volcano reaches just before exploding.

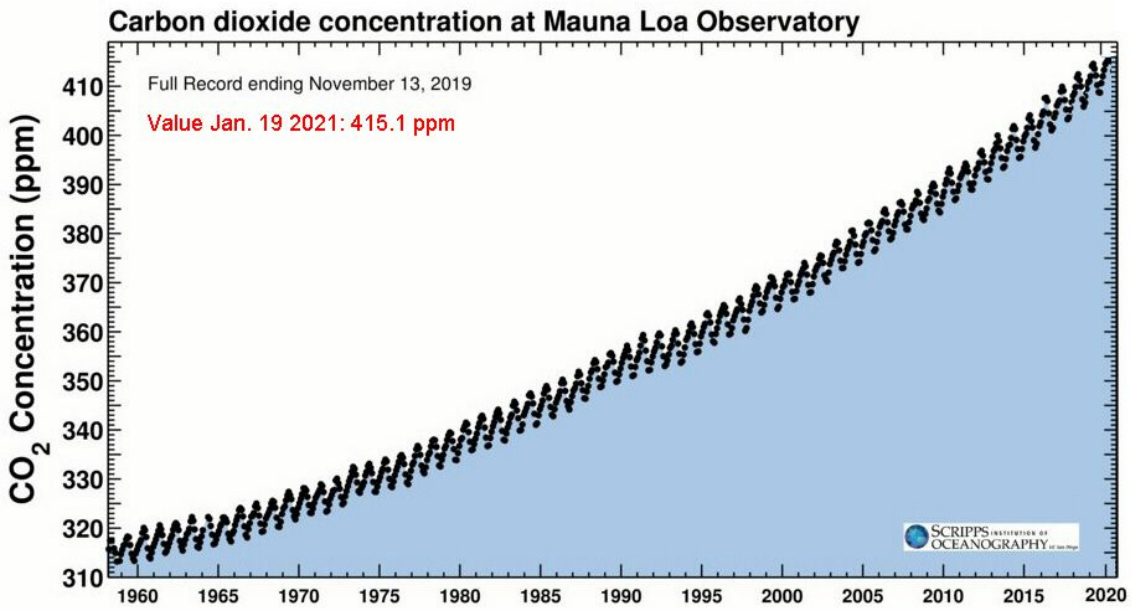

Fig. 2: *Atmospheric CO_2 concentration (ppm) at Mauna Loa research site, 1957-2020 (from https://www.co2.earth/daily-co2).*

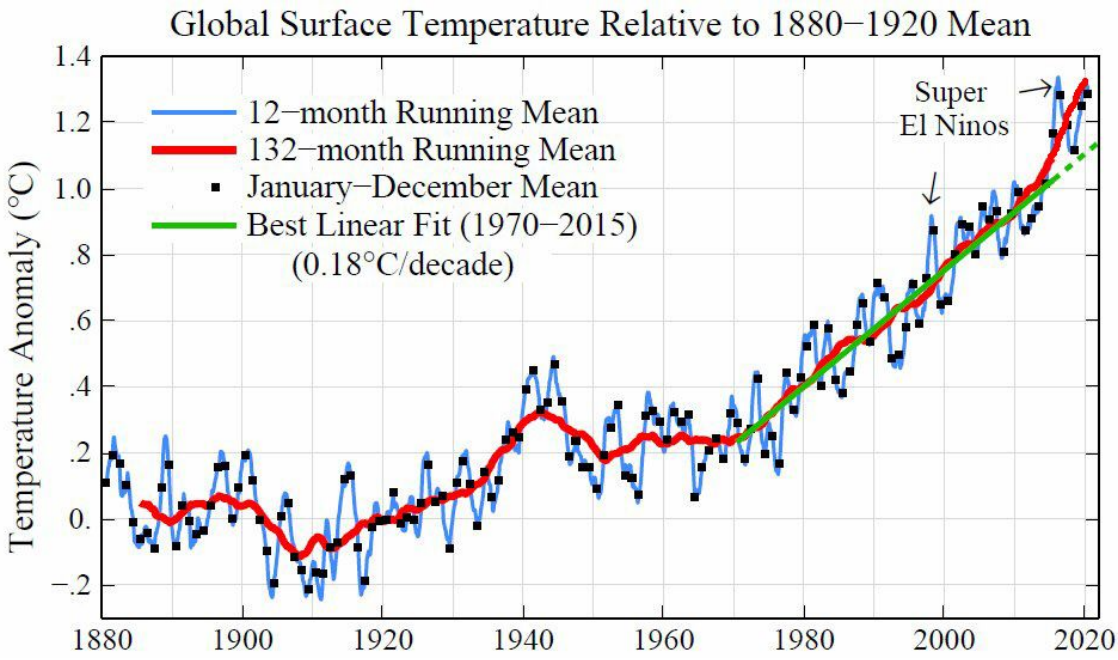

Fig. 3: *Global mean surface temperatures, 1880-2020 relative to the 1880-1920 average (from Hansen et al., Jan. 14, 2021).*

If this tipping point occurs, our warming won't stop at 2°C. It will jump by several degrees in a matter of a few decades. This is not being predicted specifically by climate models because the process is *stochastic* (unpredictable random processes) where dynamics forces are then not controlling it. Our climate will have gone from *dynamic* into *metastable* (unpredictable) *equilibrium*. This has the added advantage to nature (not to mankind or other species) of restoring the imbalance in CO_2 by removing the cause, mankind. We can survive 2°C warming, but not 5°C or more because of the socio-economic factors that would follow.

The IPCC warned us in October 2018 that we had at most 12 years to lower emissions significantly. They did not mention 'tipping point' by name, but that was clearly in their thinking. Unfortunately, IPCC reports have been on the conservative side, for good reason. As part of the United Nations (UN), each report must be vetted by all member countries, just as other declarations must be vetted in the UN. The reports thus get toned downward to avoid panic, and thus the warning was ignored. The bottom line here, and <u>we cannot emphasize this too much</u>, is that keeping a 'net-0 balance' in emissions effectively results in continued increases in atmospheric GHGs (Fig. 2) and global temperatures (Fig. 3). Assuming all countries do likewise, as many have declared, this will guarantee that we will reach 2°C, and then go beyond. I won't detail the impacts that will follow from all this, but I'll just mention *frequent storms of extreme intensity, deadly heat waves, prolonged droughts, water shortages, wildfires, sea level rise, ocean acidification*, and *migrations of hundreds of millions of climate refugees*. You have merely to consider the social, economic, and pandemic problems that have already occurred worldwide with just 1.3°C warming to date. Anything beyond 3°C warming is unthinkable. The social upheavals to civilization would be unmanageable. *Apocalypse* is truly possible, and it can occur within the lifetime of our children. What a legacy to leave our descendants!

SHORTCOMING # 2

As if the above scenario is not enough, this climate plan gets even weaker, for it states: (Quote, p. 58) "*Through the 2017 Greening Government Strategy, the Government set an ambitious target to reduce greenhouse gas emissions from federal facilities and conventional fleets by 40% below 2005 levels by 2030*." (Unquote) **This plan talks about reducing emissions <u>from federal facilities and conventional fleets</u>, and nothing was said about reductions by industry and the rest of society.** One must wonder whether our present government may no more serious about combating climate change than the previous Conservative government under Mr. Harper. Government appears to be anxious not to make demands on industry, as shown by its purchase of the trans-mountain pipeline and approval of the new pipeline, backward steps on climate change if there ever were. This kind of reverse action and plan will guarantee a bad outcome. I cannot believe that elected officials want to see this occur. Stop the madness and procrastinations now, and get Canada on a war footing to help reverse the danger that all mankind faces, for nothing but a full-scale war effort will resolve this now. Do not doubt for an instant that this is a war against the burning of fossil fuels, for we cannot win a war against nature. We have no choice; we must start now, in 2021. And <u>we MUST have government leadership</u> on this so that the public will respond appropriately. Government must set emission standards along with penalties for any corporation or individual that does not abide by them.

THERE ARE no QUICK FIXES

One last caution: There are some groups claiming that our climate problem can be fixed solely through processes that sequester CO_2 out of the atmosphere. One such group is the **Drawdown[1] Project**. They are well meaning, and the 80 different processes they describe will help, but Drawdown appears to ignore the fact that **the solution to the climate crisis is a TWO-STEP PROCESS: First**, a rapid, significant reduction in emissions, which Drawdown does not discuss. Then the **second** process of reducing GHGs in the atmosphere, as per Drawdown, would help restore the climate over a period of many decades. It took us two centuries to create this problem. We cannot correct it overnight with simple fixes while allowing *business as usual* with fossil fuels.

SUMMARY

We want our grandchildren to realize that, while our generation inadvertently helped create this horrible problem, that we then recognized the risks and did everything possible to reverse the damage. As 16-year old Greta Thunberg told world leaders at the COP-21 meeting in Davos, Switzerland in 2017: *"I am here to say, our house is on fire. I don't want you to be hopeful, I want you to panic. I want you to feel the fear I feel every day and then I want you to act."* As a scientist, I share Greta's fear, and I want you to act. Canada is not responding in an effective way at either the federal or provincial levels. Many municipal governments are doing much better, but cannot do it alone. We must not fail future generations. It's time for the gloves to come off! We must have government leadership at the national level that supports the science and denounces conspiracy theories on climate.

Sincerely,

Dr. Geoff Strong
Atmospheric/Climate Scientist, ret.
Cowichan Bay, BC

Garth Mihalcheon
Health Management Consultant
Duncan, BC

cc:
- All federal MPs
- Annamie Paul, Leader of the Green Party of Canada
- Jagmeet Singh, leader of New Democratic Party of Canada
- Sonia Furstenau, Leader of the Green Party of BC
- John Horgan, Leader of NDP of BC
- Greta Thunberg, Youth Climate Activist, Sweden
- Sierra Club Canada Foundation
- David Suzuki Foundation
- Greenpeace
- Pembina Institute
- Cathy Orlando, Canadian Citizens Climate Lobby
- **Local Cowichan Valley environmental groups**

[1] Drawdown (https://drawdown.org/the-book) draws on humanity's collective wisdom about the practices and technologies that can begin to reverse the buildup of atmospheric carbon, but not by mid-century as they claim.

APR 0 9 2021

Geoff Strong
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Garth Mihalcheon
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Dear Geoff Strong and Garth Mihalcheon:

On behalf of the Honourable Jonathan Wilkinson, Minister of Environment and Climate Change, I am responding to your email message of January 23, 2021, concerning the Government of Canada's action on climate change. The Office of the Prime Minister has also forwarded your correspondence on this issue, and I regret the delay in replying.

First, Environment and Climate Change Canada hopes that you and your loved ones are healthy as Canada continues to fight the rapidly evolving challenge of the COVID-19 pandemic. Please be assured that the Government of Canada will continue to do whatever it takes to help Canadians through this crisis.

I appreciate your feedback on Canada's strengthened climate plan, *A Healthy Environment and a Healthy Economy*. Please be assured that the federal government recognizes the significant impact that climate change has on Canadians, and understands that as we emerge from the pandemic, we have an opportunity, and an obligation, to "build back better." This plan includes federal policies, programs and $15 billion in investments to accelerate the fight against climate change, create good new jobs, make life more affordable for households, and build a better future. The plan includes steps to

- make the places Canadians live and gather more affordable by cutting energy waste;
- continue to ensure that pollution is not free and that households get more money back;
- make clean, affordable transportation and power available in every Canadian community;
- build Canada's clean industrial advantage; and
- embrace the power of nature to support healthier families and more resilient communities.

A Healthy Environment and a Healthy Economy builds on the important achievements and work under way to implement the 2016 *Pan-Canadian Framework on Clean Growth and Climate Change*, in collaboration with

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provinces, territories, and Indigenous Peoples. Like the Pan-Canadian Framework, this plan is not an endpoint. The transition to a cleaner, more prosperous economy needs to be both an immediate priority and a sustained effort over the years and decades ahead. With the measures in the Pan-Canadian Framework and the strengthened climate plan, and in partnership with provinces and territories, the private sector and others, the Government of Canada believes that Canada can strive to reduce greenhouse gas emissions to 32 to 40 percent below 2005 levels, exceeding the country's current Paris Agreement target. This ambitious goal applies to emissions from Canada as a nation, and not from federal government operations alone.

As you know, the science is clear: global emissions must reach carbon neutrality by 2050 to limit warming to 1.5 degrees Celsius. The Government of Canada recognizes these findings, and on November 19, 2020, Minister Wilkinson tabled the proposed Canadian Net-Zero Emissions Accountability Act that formalizes Canada's target of net-zero emissions by the year 2050, and will establish a legally binding process to achieve this goal. This process will ensure greater accountability and public transparency. It includes requirements for setting emissions reduction targets at five-year intervals, developing plans and reports relating to those targets. With regards to your concern about how the Government of Canada interprets net-zero emissions by 2050, achieving net-zero emissions means the economy either emits no greenhouse gas emissions or offsets any emissions, for example, through actions such as tree planting or employing technologies that can capture carbon before it is released into the air.

The United Nations has described the climate challenge as "daunting." However, the Government of Canada is optimistic that, together, Canadians can create real and lasting emissions reductions while sharing and exporting Canada's climate solutions to the world, and support the workers and communities affected by the global transition toward a low-carbon future.

For more information on Canada's climate plan, its progress and federal investments, please visit *www.canada.ca/en/services/environment/weather/climatechange.html*.

Environment and Climate Change Canada appreciates your support for this important issue. Please accept my best regards.

Sincerely,

Iwan Chan
Director General
Corporate Secretariat

4366 Jim's Crescent
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04 February, 2022

Prime Minister Justin Trudeau
House of Commons
Ottawa, Ontario, K1A 0A6

Subject: Improving Canada's Climate Plan

Dear Mr. Trudeau:

I am a retired climate scientist. I have dedicated most of the past 20 years and the rest of my life to fighting the climate crisis, using whatever means are available to me. Those include teaching environmental courses, writing articles/books, and giving invited talks, all focussed toward educating the public on climate change. I am writing to you today because the federal Climate Plan (*A Healthy Environment and a Healthy Economy*) is doomed to failure, a situation that you would not want to see happen. I wish to suggest alternatives that could give truth to the title of the plan.

I wrote to you on Jan. 23, 2021, and the then Environment Minister, Mr. Wilkinson replied several weeks later on April 9. One of my key questions to you and Mr. Wilkinson was "*How do you hope to achieve 'zero emissions' by 2050?*". His response was "*Excess emissions would be offset by tree planting and direct carbon capture*;" that is, through carbon sequestration actions. That response highlights three problems in the plan:

- **A.** Applying **carbon sequestration processes**, both natural and technological, to counter current emissions, including 'planting millions of trees'.
- **B.** Inadequate recognition of the amount of **carbon dioxide (CO_2) already in the atmosphere** (420 ppm), which alone has the potential to warm the globe a further 3-5 °C, regardless of further emissions.
- **C.** The concept of using ***'net-zero carbon emissions by 2050',*** which is frequently misinterpreted by the general public and media as being '*carbon-neutral*' by 2050.

The reasons why these three problems will cause failure are detailed (with data) in the attached Appendix to this letter. I invite your experts to check their validity and comment as necessary.

In short, there are three carbon sequestration processes (A) typically considered. These are (1) the natural sequestration of carbon through planting millions of trees; the two still-unproven technologies of (2) Direct Atmospheric Carbon Capture (DAC) or drawdown of CO_2 from the atmosphere; and (3) Carbon Capture and Storage at Source (CCS), meaning filtering carbon out before it leaves an industry source, then piping it underground for permanent storage. It is wrongly assumed that carbon sequestrations will counter continued emissions through to 2050. However, **sequestration of CO_2 CANNOT POSSIBLY counter continued emissions** in less the than three decades that we have left to correct the climate crisis; neither can they draw significant amounts of CO_2 from the atmosphere in that short time period. I refer you once again to the appendix for the explanation of why this is so.

The climate plan adds additional confusion by stating (p. 58) that we "*will reduce greenhouse gas emissions from federal facilities and conventional fleets by 40% below 2005 levels by 2030.*" Federal facilities and fleets are but a tiny part of the emissions problem, with industry being the major emitter by far, so that the proposed emission reductions are grossly over-stated. The incremental carbon tax in the plan is positive, while transportation will be mostly electric by 2030-35. Those can replace 20% of current carbon emission rates. However, the most important step yet needs to be stressed, namely **a rapid conversion of fossil fuel energy to renewable energy** sources. That conversion is occurring, but not nearly fast enough. We virtually need to be on a war footing to accomplish this in time, but it is still possible.

An excellent analogy to this was how fast our country converted industry from producing peacetime materials (cars, appliances, etc.) to war materials at the start of WWII in 1939 (under the leadership of C.D. Howe). It was achieved by government invoking the War Measures Act (much as your father did when confronted by the

October Crisis in 1970). The UK was fighting the war alone with Europe being overrun by Germany, but they could not manufacture all their needs. The rapid conversion by Canadian industry was accomplished within months, and was an important factor in the eventual allied victory over Germany. Now we're in another war, against the climate crisis and nature needs our help, but **time is of the essence**. It can be done; it must be done!

A quote from Shakespeare's *Julius Caesar* is very applicable to this climate crisis:

> *There is a tide in the affairs of men, which taken at the flood, leads on to fortune. Omitted, all the voyage of their life is bound in shallows and in miseries. On such a full sea are we now afloat. And we must take the current when it serves, or lose our ventures.*

The climate crisis is now in full flight, and it must be tackled immediately, not in 10 or even 5 years' time. If we could promote a rapid conversion of fossil fuel energy over to renewables within this decade, the industry and jobs developed would more than make up for losses from the down-turn in fossil fuels. Further benefits could be achieved by involving provinces directly. For example, British Columbia is in a quandary over the Site-C hydroelectric development. They planned to provide massive energy to northern LNG developments, while selling remaining electricity to the U.S via the usual north-south grid. Canada needs to develop a west-east electric grid, and Site-C provides an excellent opportunity to develop that, allowing Alberta and Saskatchewan to shut down remaining coal-fired electric plants.

Our atmosphere is veritably loaded with carbon dioxide and rivers of moisture, as BC discovered in 2021 with wildfires and massive floods. Our climate already has the potential to warm global temperatures a further 3-5 °C. The 3-5 °C potential is based on the fact that there is a lag between CO_2 increases and warming temperatures of about a century. This means that even if all emissions stopped today, our climate would continue to warm for many decades. Such warming would be catastrophic for humanity in the latter half of this century. If the world acts immediately, we can avoid the worst impacts and limit global warming to 2 °C – oh, did I mention that limiting warming to 1.5 °C is no longer possible. We are already there.

Mr. Prime Minister, we thank you for your commitment to our environment, but we are on a knife-edge of history. We cannot afford to procrastinate on the climate crisis for even another year. The battle must start now, in 2022. Under the current scenario, the lives of our grandchildren after 2050 will be miserable at best, and non-existent if the worst situation occurs with a 'tipping point' in our climate. A tipping point could occur when several positive feedbacks combine to force the climate into uncontrollable warming. Instead of being a 'Neville Chamberlain', you can earn your place in history by giving us a revised Climate Plan that involves much needed federal government leadership to obtain industry and public compliance, help create a future of unlimited potential, and make Canada a true leader on climate change. The alternative route is too painful to contemplate.

Sincerely yours,

Dr. Geoff Strong
Atmospheric/Climate Scientist, ret.
Cowichan Bay, BC

P.S. Make I make a further bold suggestion: that the TMX would be better served as a 'water pipeline', to bring water to drought-stricken communities in western Canada, from Saskatchewan to British Columbia. Western droughts are going to worsen, so simple branch lines to those communities would be essential. What a winner that would be among First Nations people and those involved in agriculture!

cc:
- Federal MPs
- Leaders of various parties
- Several environmental groups

APPENDIX

A Summary of Weaknesses in Canada's Current Climate Plan

A. Carbon Sequestration Methodologies:

1) Planting millions of trees – this is not a viable approach for either countering carbon emissions or for drawing down atmospheric CO_2 in the next couple of decades, mainly because most trees in Canada require more than 50 years to mature. New trees are 'seedlings', which sequester negligible CO_2 in their first 10-20 years. A 10-year maple, for example, barely captures 4 lb of carbon per year = 0.005 metric tonnes. A 30-year maple can capture 65 lb/yr, or 0.08 tonnes. Considering Canada's annual carbon emissions of ~ 730 MT (= 730,000,000 tonnes), then simply dividing this number by the weight of annual capture yields 9 trillion trees to counter our 730 MT, or 900 million to counter just 10% of annual emissions. A sobering truth here is the realization that there are presently only 3 trillion trees on all of Earth.

2) There are approximately 20 DAC facilities operating worldwide, capturing roughly 0.01 MT of CO2. The U.S. is hoping to build a single one-MT/yr facility (= 1,000,000 tonnes), although this over-ambitious plant is years away from construction and testing. Since global carbon emissions exceed 35 GT (= 35,000,000,000 tonnes) per year, the world would need 35,000 such facilities to absorb this.

3) There are presently 27 operational CCS facilities worldwide, capturing CO_2 at the industry source. The most successful of these has been the Sleipner Facility in the North Sea offshore Norway, which they claim can capture just under one million tonnes per year. The world would need 35,000 of these at major industrial sites to capture global emissions, or 3500 of them to capture just 10% of emissions.

It should be clear that these 'sequestration' techniques cannot counter even a small fraction of current carbon emissions. A recent report indicates that DAC and CCS facilities release more carbon to the atmosphere than they extract. CCS facilities might provide a minimal counter to emissions in one or two decades. But by then it would be too late to save the planet. That expense should logically go instead into converting to renewable energy. The fossil fuel industry is already poised to convert to renewables, including BP, Shell, Chevron, Total, Eni and Exxon (https://www.nsenergybusiness.com/features/oil-companies-renewable-energy/).

We really have **no alternative but to reduce carbon emissions**. The switch to electric vehicles for transportation is already happening, aided by the incrementally increasing carbon tax. This will counter most (about 20%) of our transportation emissions of 25% after 2030. Converting most other energy production to renewables needs to occur simultaneously. A reasonable goal would be to aim for 40% conversion by 2030, not just from 'from federal facilities and conventional fleets' as stated in the climate plan, but throughout the whole of Canada. An additional 30% reduction could then follow by 2050. The total 90% conversion by 2050 would bring emissions back to 1950 levels, assuming stable population levels.

B. Current Atmospheric CO_2 Concentration

Our climate plan must reflect the gravity of the atmospheric concentration of CO_2 (420 ppm). Many do not realize that the climate warming we experience today is due to carbon emissions of the past 50-100 years. Because the life cycle of CO_2 in the atmosphere is measured in hundreds of years, our climate would continue to warm for many decades, even if all emissions were terminated today. Current CO_2 has the potential to warm our climate by a further 3-5 °C. That's why sequestration techniques are important, not to counter existing emissions, but to draw down atmospheric CO_2 later, a process that will take hundreds of years.

C. 'NET-Zero Carbon Emissions by 2050'

Rather than 'NET-zero', we need to achieve "NEAR-zero emissions" (or at least 90% reduction as suggested above). This can be achieved mostly through industry and the public converting over to renewables (solar, wind, tidal, geothermal, even, if necessary, nuclear, although that needs to remain a last resort).

The world needs to drop the ‘net-zero’ term, which incidentally was devised by the fossil fuel industry in the 1990s. If emissions were kept at their current rate of 35 GT/year until 2050, which might please the fossil fuel industry, they could technically still claim a success of net-zero emissions, no change since 2022. And by then (2050), the world would be headed towards apocalypse! Emission reductions would also improve the health of both our atmosphere and citizens, reducing medical costs. M**eanwhile, we need Canada’s government to champion these concepts among IPCC member countries**.

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DEC 1 3 2022

Geoff S. Strong
4366 Jim's Crescent
Cowichan Bay BC V0R 1N2

Dear Geoff S. Strong:

On behalf of the Honourable Steven Guilbeault, Minister of Environment and Climate Change, I am responding to your letter of February 4, 2022, forwarded by the Office of the Prime Minister, concerning Canada's climate plan. I regret the delay in replying.

In the months following your letter, the Government of Canada published the first Emissions Reduction Plan (ERP), as required by the *Canadian Net-Zero Emissions Accountability Act*. This plan charts a path to achieving the Government's 2030 targets, as a milestone to achieving net-zero emissions by 2050. As you know, achieving net-zero emissions means either emitting no greenhouse gas emissions at all or offsetting them completely through actions that remove carbon dioxide and other climate warming gases from the atmosphere.

The 2030 ERP is designed to be evergreen—a comprehensive roadmap that reflects levels of ambition to guide emissions reduction efforts in each sector. It includes a suite of new mitigation measures and strategies, as well as $9.1 billion in new investments, and it builds on the foundation set by Canada's existing climate actions. As governments, businesses, non-profit organizations and communities across the country work together to reach these targets, they will identify, catalyze and respond to new opportunities. In addition, progress under this plan will be reviewed in progress reports produced in 2023, 2025, and 2027. Additional targets and plans will be developed for 2035 through to 2050.

The starting point of this plan is a recognition that the science is clear: accelerated efforts to reduce greenhouse gas emissions rapidly by 2030, and to achieve net-zero emissions by 2050, are necessary in order to avoid the worst impacts of climate change. The economics are also clear: to build a strong, resilient economy for generations to come, we must harness the power of a cleaner future. Over the past seven years, the Government of Canada has taken action and invested more than $120 billion to reduce emissions, protect the environment, spur clean technologies and innovation, and help Canadians and communities adapt to the impacts of climate change.

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In 2021, the Government of Canada committed to achieving an enhanced 2030 emissions reduction target of 40 to 45 percent below 2005 levels under the Paris Agreement, and adopted legislation to enshrine this nationally determined contribution, as well as the commitment to achieve net-zero emissions by 2050, in law. The *Canadian Net-Zero Emissions Accountability Act* provides a durable framework of accountability and transparency to deliver on this commitment. The Act requires the Minister of Environment and Climate Change to set subsequent targets for 2035, 2040, and 2045, at least ten years in advance. In addition, this act holds the federal government accountable as it charts Canada's path to achieve net-zero emissions by establishing a transparent process to plan, assess, and adjust the federal government's efforts to meet its national targets, based on the best scientific information available.

Achieving Canada's climate objectives demands that all sectors of the economy continue to decarbonize in a manner that makes cleaner alternatives more affordable and creates new sustainable job opportunities for workers.

Electrification of Canada's energy system is integral to achieving net-zero emissions by 2050. Transitioning from fossil fuels to a clean electricity supply—coupled with energy efficiency and a modern, resilient grid—offers significant opportunities for greenhouse gas emission reductions. Creating a clean electricity supply would also allow for broader decarbonization in other parts of the economy (e.g. using clean electricity instead of fossil fuels in vehicles, heating and industry). As the Government of Canada seeks to integrate more renewables into the country's system, emerging technologies will be needed to push the envelope even further.

At the 26th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, Prime Minister Justin Trudeau stated Canada's goal of establishing a net-zero emissions electricity grid by 2035.

The Clean Electricity Regulations would be part of a suite of federal measures to move Canada's electricity sector to net zero, as an enabler for broader decarbonization of the economy. The Regulations and complementary measures would encourage energy efficiency; demand side management, dynamic pricing; and a range of efficiency, abatement and non-emitting generating technologies such as carbon capture and storage, solar, wind and geothermal power, small modular nuclear reactors, hydroelectricity, distributed energy systems, interties and energy storage. It could also support bringing more clean power from Indigenous power producers to Canada's electricity systems.

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Environment and Climate Change Canada published its Proposed Frame for the Clean Electricity Regulations on July 26, 2022 (*www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/publications/proposed-frame-clean-electricity-regulations.html*). This document outlines the proposed key components of the Regulations and signals the next steps in the process for the Government of the Canada to work with key interested parties to design a rapid, regulated shift toward a net-zero electricity grid in ways that maintain system reliability and electricity affordability for all rate payers.

The 2030 ERP presents modelling of the most economically efficient pathway to meeting Canada's 2030 target. Drawing on that modelling, this plan projects that oil and gas sector emissions will reduce by 31 percent from 2005 levels by 2030 (or by 42 percent from 2019 levels). This will guide the federal government's work with industry, provinces, Indigenous partners, and civil society to define and implement the cap on oil and gas sector emissions.

The Government of Canada is committed to capping and cutting emissions from the oil and gas sector at the pace and scale needed to get to net zero by 2050. On July 18, 2022, the Government also published a discussion paper to launch formal engagement on two potential regulatory options to cap and reduce oil and gas sector greenhouse gas emissions. More than 20 000 submissions have been received in response to this discussion paper, and they are currently undergoing a careful review.

Core to either approach is the goal of lowering emissions at a pace and scale needed to achieve net-zero emissions by 2050 and make a meaningful contribution toward Canada's 2030 emissions reduction target. Core to either approach is also supporting investments in clean technologies to decarbonize the sector and create good, sustainable jobs.

Furthermore, on April 6, 2022, the Government of Canada announced plans to develop guidance that will require proponents of new oil and gas production projects subject to a federal impact assessment to demonstrate that they will have "best-in-class" low-emissions performance. The new guidance will explain how proponents of new oil and gas projects subject to a federal impact assessment should use the analysis required by the Government of Canada's strategic assessment of climate change to demonstrate that the project will be "best in class."

With regard to carbon capture, utilization and storage (CCUS), the global consensus is that related technologies have a major role to play in reaching emissions reductions and decarbonization targets. CCUS is a particularly

.../4

significant opportunity for Canada given its existing experience and expertise with these technologies. Projections show it will play a critical role in enabling a prosperous net-zero economy in Canada by 2050, but that will be one among many elements needed.

Canada is positioning its industries to be green and competitive. To meet Canada's 2030 emissions reduction target and reach net zero by 2050, the federal government is supporting the development of CCUS technologies and working to provide policy certainty to facilitate the development and deployment of these technologies. This includes developing a CCUS strategy; introducing an investment tax credit to incentivize the development and adoption of these important technologies; and investing $194 million to expand the Industrial Energy Management System to support ISO 50001 certification, energy managers, cohort-based training, audits, and energy efficiency-focused retrofits for key small-to-moderate projects.

The ongoing development of CCUS is a key component of a broad suite of measures that the Government of Canada is pursuing to meet its greenhouse gas emissions reduction targets.

Canada's transportation sector is the second-largest contributor to overall greenhouse gas emissions. According to data from the most recent National Inventory Report (2021), emissions from transportation were 186 megatonnes in 2019, accounting for 25 percent of total emissions in Canada. Currently, the majority of emissions come from light-duty passenger vehicles (e.g. cars, sport utility vehicles, and pickup trucks) and freight (e.g. heavy-duty vehicles) transport. This reflects a robust economy, high demand for goods and services, and the large and growing number of passenger vehicles on Canadian roads, which have been shifting over the past decade from cars to larger vehicles such as sport utility vehicles and light trucks. Regionally, transportation is the highest source of emissions in the majority of provinces and territories.

To meet Canada's 2030 target and lay the groundwork for net-zero emissions by 2050, the Government of Canada commits to accelerating the switch to zero-emission vehicles (ZEVs), including continued efforts to make these vehicles more affordable and accessible for all Canadians.

In support of these objectives, the following additional investments have been announced:

- $1.7 billion to extend the Incentives for Zero-Emission Vehicles Program for light-duty vehicles for three years. Budget 2022 will provide additional detail on the program's design.

.../5

- $400 million in additional funding for ZEV charging stations, in support of the Government's objective of adding 50 000 ZEV chargers to Canada's network.
- $500 million by the Canada Infrastructure Bank in large-scale ZEV charging and refueling infrastructure that is revenue generating and in the public interest.
- $547.5 million for a purchase incentive program for medium- and heavy-duty vehicles.
- $199.6 million to retrofit large trucks currently on the road.
- $33.8 million for hydrogen trucking demonstration projects that address barriers to long-haul zero-emission trucking commercialization, including technical, regulatory and standards challenges.
- $2.2 million to support Greening Government fleet electrification commitments.

The Government of Canada has also committed to supporting transit agencies and school boards in transitioning their bus fleets to zero-emission technology through planning, the purchase of at least 5 000 zero-emission buses, and the necessary supporting infrastructure that enable successful deployments.

For more information on Canada's climate plan, its progress and federal investments, please visit *www.canada.ca/en/services/environment/weather/climatechange.html*.

In closing, I want to assure you that the Government of Canada will continue to work tirelessly for the health and well-being of Canadians, and for a cleaner, more resilient, and prosperous world for this and future generations. I encourage you to have a look at the 2030 ERP, and invite you to share your thoughts with the Minister of Environment and Climate Change.

Environment and Climate Change Canada appreciates being made aware of your concerns and your considerable knowledge. A copy of your analysis has been shared with departmental officials. Please accept my best regards.

Sincerely,

Sylvie Poulin
Manager
Departmental Correspondence Unit