The Costs of Doing Something Wrong
An Evidence-based Review
In the 1960’s, Calgary’s Prince’s Island Park (named after pioneer Peter Prince who ran a sawmill and small electrical power plant on the island) was proposed to be “An Island of Creativity” complete with theatre, concert hall, arts and crafts studios, an art museum and contemporary gallery. Someone remembered that the island often floods….

Too bad no one thought of that for St. George’s Island and the Calgary Zoo which, in the 2013 flood, had $50 million in losses, the deaths of dozens of animals and had to evacuate 160 animals under extreme conditions. Many animals had to be given away or temporarily housed elsewhere.

Cover Photos: 2013 aerial flood image from City of Calgary Police Service and excerpt of commemorative plaque at Prince’s Island Park (full image below).
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Introduction

The City of Calgary issued the new report “A Climate Program” on Feb. 20, 2017. The focus of this report is “climate change”.

We are often told there are costs to doing nothing. This report responds by examining “The Costs of Doing Something Wrong” and offers an evidence-based review of some current and past climate change initiatives of the City of Calgary.

The City of Calgary Climate Program report has several good ideas and intentions for mitigating and adapting to known natural disasters such as floods. Eight of the worst floods in Calgary’s history occurred prior to 1933, including two that had significantly greater flow than the recent 2013 flood that devastated Calgary’s downtown.

Disturbingly, the City of Calgary Climate Program authors attempt to tie flooding to climate change and human emissions of greenhouse gases.

The problem with tying everything to ‘climate change’ is that it results in a diversion of necessary funding and human resources to solve real problems that can be addressed by existing knowledge and technologies.

“Climate change” catastrophe hype focusses on computer simulated forecasts about theorized global warming....that bear no relation to reality. Even the Intergovernmental Panel on Climate Change (IPCC) does not foresee more extreme weather events due to human industrial emissions.

All too often, climate change policy becomes an expensive diversion of public funds away from practical adaptations or necessary infrastructure. This document presents evidence challenging many of the contentions of the Calgary Climate Change Program.
“The Costs of Doing Something Wrong - An Evidence-based Review”

"The cost of doing nothing is extraordinary," she said. "We can sit back and pretend the world isn't changing but that won't serve us very well."

-Druh Farrell, City of Calgary Councillor

“The last key area is the integrated long-term planning, what is referred to as the Climate Resilience Plan. It’s a strategy to guide decision-making with an adaptation, mitigation and implementation strategy. ... No dollar figure for the strategy has been estimated”.

For the past several years, The City of Calgary has been ranked as one of the cleanest cities in the world sometimes taking the top spot. Calgary can be rightly proud of many of its innovations and efforts to improve air, water and environmental quality, as well as the plethora of lush parks, modern vibrant architecture along with kilometers of nature/river walks and bike paths crisscrossing the busy city.

Climate change measures are frequently framed as urgent necessities to ward off human-caused global warming. Due to the desperate, existential framing of these claims, hyped by environmental groups like the Pembina Institute, David Suzuki Foundation and others, there is rarely any cost-benefit review, or even ‘climate accounting’ to see if claims about climate, temperature, greenhouse gas reduction or ‘free’ wind and solar power are true. Many ‘climate change mitigation’ projects have been very expensive for little benefit to the environment, with little or no constructive outcome for reducing the potential impact of human activity on global warming, and often with the outcome of only producing catchy memes for millions of dollars in subsidies for green crony capitalists.

Who is Friends of Science Society to comment on climate science, policy or energy matters?

Friends of Science Society is made up of earth, atmospheric, solar scientists, Professional Engineers, economists and business people. Several of our founders and members are Calgary residents and taxpayers. Friends of Science have been engaged in climate change science and policy review since 2002. Friends of Science Society does not represent any industry.

The first Friends of Science-related local public debate on the climate change matter focussed on the Kyoto Accord and was between Pembina Institute and two of Friends of Science Society’s subsequent scientific advisors. The debate was published by the Association of Professional Engineers and Geosciences of Alberta (APEG) in their professional journal, The Pegg. Pembina Institute argued their side in favor of Kyoto based on the computer simulated projections of the Intergovernmental Panel on Climate Change (IPCC) while scientists Dr. Sallie

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3 www.huffingtonpost.ca/2013/05/18/calgary-worlds-cleanest-city_n_3299545.html
4 www.miratelinc.com/blog/10-cleanest-cities-in-the-world/
5 www.theguardian.com/cities/2015/jun/15/cleanest-city-world-calgary-singapore
Baliunas, astrophysicist, Dr. Tim Patterson, paleo climatologist, and Allan McRae, Professional Engineer, argued the position based on scientific evidence that the sun was the direct and indirect driver of climate change and that human factors were nominal by comparison.

From our inception, Friends of Science Society has focussed on examining the evidence on climate change over the ideological claims made by the proponents of human-causation. This is the approach we will take in this document.

Dr. Tim Patterson, paleoclimatologist, on Calgary’s Breakfast Television on CITY-TV prior to Friends of Science Society’s 4th Annual Luncheon 2007

Calgary 2013 Flood – Weather or Climate?

This supposition that the 2013 flood was caused by ‘climate change’ is a theory popular with insurance companies who have a vested interest in risk avoidance. It is also popular with parties that have vested commercial interests in renewables industries through institutional investments. The alleged threat of more floods and wildfires causing global warming is a straight transference from early religious warnings of hellfire for bad behaviour – the indulgence to be paid? Carbon tax is just one. Ever more recycling bins and composting programs that lead to... mountains of unwanted glass, compost programs rejected by taxpaying citizens?"
The 2013 Calgary flood as ‘climate change’ is not supported by the evidence. Climate change happens over periods of 30, 50, 100 and millennial timescales. Single extreme events are not evidence of climate change.

The Weather Network\(^\text{11}\) explains the factors affecting the 2013 Calgary flood and illustrates previous floods with this simple table.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PEAK FLOW</th>
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<tr>
<td>1</td>
<td>1879</td>
</tr>
<tr>
<td>2</td>
<td>1897</td>
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<tr>
<td>3</td>
<td>2013</td>
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<td>1902</td>
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<td>5</td>
<td>1932</td>
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<td>6</td>
<td>1929</td>
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<td>1915</td>
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<td>1923</td>
</tr>
<tr>
<td>9</td>
<td>1916</td>
</tr>
<tr>
<td>10</td>
<td>2005</td>
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\textit{Source: Weather Network – Table showing relative peak flows of 10 worst floods in Calgary’s history}

Clearly, the vast climate changes that melted two-mile-deep glaciers, leaving rich fertile land, and that made this beautiful region what it is today were not caused by human emissions of greenhouse gases. And while it is true that present industrialized human activity, including deforestation, land use and water diversion affect regional climates, the claim that Calgarians engaging in greenhouse gas reductions will in anyway stop the global climate from changing is expensive, tax-funded, pet project hubris.

And sadly, despite repeated detailed studies about Calgary’s flood plain and risks, people are still talking about it decades after serious floods already ‘warned’ us of what may lie ahead. Instead of apply determination and appropriate funding to addressing the issue of flooding in Calgary, we are now spending billions on ‘climate change’ initiatives that are red herrings.

We take a harsh view because many of our members are engaged in the sciences as registered professionals who have legal and ethical performance standards in their work. The unsubstantiated claims made on many climate change issues, the exaggerated data, the lack of evidence are an anathema to our team.

Calgary and Alberta are home to one of the largest concentrations of Professional Geoscientists and Professional Engineers in Canada, perhaps in the world.

Geoscientists have studied more than 4 billion years of climate change on earth. Astrophysicists study cosmic and orbital effects of extra-terrestrial bodies, which also impact

supply of bags is gone, you must buy expensive compostable paper bags to prevent a disgusting mess in your green cart.” calgaryherald.com/opinion/letters/your-letters-for-monday-may-29

\(^{11}\) www.theweathernetwork.com/news/articles/calgary-floods-it-could-happen-again/8295
earth’s climate. The diverse, interactive systems of our active planet and mysterious universe are not within our control.

Dr. Sallie Baliunas, astrophysicist, speaking on historic witch hunts against people for ‘weather cooking’ during the Little Ice Age. Dr. Baliunas was one of Friends of Science Society’s first scientific advisors and guest speaker at Friends of Science Society’s 2nd Annual Luncheon 2005

https://youtu.be/wcAy4sOcSSM

When present climate change hype, based on some 40 years of satellite records and about 150 years of spotty global temperature measurements are compared to the 4 billion years of changes in earth’s climate, it is clear the human influence on climate cannot be more significant than that of natural influences.

Thus “climate change” has become a money pit for special projects while real municipal infrastructure needs are ignored.

Can we improve air quality, mitigate flood damage, better manage wildfires, become more energy efficient on large scales? Yes. These are not climate change issues. These are practical improvements for our environment and adaptation to weather conditions and their occasional extremes.

Calgary’s Historic Roots in Going Green

In 1994, The City of Calgary was one of the first cities in the country to sign up for the Partners for Climate Protection (PCP) program. This program is a partnership between the Federation of Canadian Municipalities (FCM) and the International Council for Local Environmental Initiatives (ICLEI): Local Governments for Sustainability. It involves a network of Canadian municipal governments that are committed to developing both corporate and community greenhouse gas (GHG) reduction plans. In 2004, The City was the first municipality to submit their corporate action plan, which was updated in 2006 to the Calgary Climate Change Action Plan Target Minus 50. Since Target Minus 50, The City has been working with stakeholders on meeting the final milestone within the PCP program, a Community GHG Reduction Plan. This work began in “imagineCALGARY”, Calgary’s community sustainability planning process, and was reinforced as a Council priority for 2009 to 2011: “Develop a multi-stakeholder plan and implementation strategy to reduce community-wide GHG emissions in support of imagineCALGARY’s long-term community goals.”

In 2009, The City of Calgary signed the Calgary Climate Change Accord.1 This accord commits The City to corporate targets of a 20 per cent reduction by 2020 and an 80 per cent reduction by 2050 below 2005 levels, a commitment to pursue
parallel GHG reduction strategies with their communities, and the creation of a plan to reduce GHG emissions and promote low-carbon living. The Community GHG Reduction Plan contributes to fulfilling all The City’s previous commitments to take action on reducing GHG emissions.\textsuperscript{12}

Calgary has been committed to greenhouse gas reductions for some time. In 2010, Mayor Dave Bronconnier participated in Greener Cities, hosted by Sir Richard Branson during the Winter Olympics. The flamboyant Branson describes one of his solutions for cities in his book “Screw Business as Usual” (pg. 294) which was written in 2011:

“We convened a meeting of thirty mayors from some of the largest cities around the world (which I chaired with the Mayor of Vancouver) to find out what was stopping them from turning their cities green. Over 50 per cent of all carbon world-wide comes from inefficient buildings.

The answer was simple; lack of finance.

So our team at the Carbon War Room set out to develop a scheme for cities that would be a massive win-win for everyone and in particular for the environment. Jigar (Shah), Peter and operation head Murati Armouruster catalysed an innovative financing system that, simply put, gave lenders almost water tight security by having the loans for double-glazing, solar panels, etc. repaid out of slightly increased property taxes.” [emphasis added]

“...as a result, local governments worldwide can now tap private capital to finance renewable energy and efficiency improvements for residential and commercial properties. The owners of these buildings will dramatically reduce their energy bills.”

Where Are They Now?

“Jigar Shah launched SunEdison in 2003, basing his company on a business plan he developed in 1999 for a university class. The model smashed the decades-old assumption that if you wanted to use solar energy, you have to pay a huge up-front installation cost.”

According to Branson, SunEdison customers had no upfront costs; customers signed Power Purchase Agreements to buy electricity at a locked in price for at least 10 years... once Jigar had enough PPAs, he approached banks and private backers and revenue collected through PPAs repaid SunEdison’s investors, who earned tidy return.

\textsuperscript{12} www.pembina.org/reports/calgary-ghg-plan.pdf
“Solar is becoming a significant portion of the global energy portfolio already,” Jigar maintains. “It’ll be worth something like $100 billion next year.”

In fact, SunEdison is bankrupt. As of January 2017, Reuters was reporting that shareholders had no hope for payouts. SunEdison is not alone.  

The purpose in mentioning this is to illustrate that early thoughts of how simple, free, and affordable renewable wind and solar energy would be, have been shown to be wrong. While governments have provided hefty subsidies to renewable technologies for almost 40 years, badgered on by a bevy of green cheerleading celebrities from Al Gore to Leo DiCaprio and all their environmental group of friends, renewables are not the magical answer to energy needs.

According to the Swiss mergers and acquisitions firm “Finadvice” - Germany is spending 1,000 billion euros to get off coal – in the process creating 380,000 ‘green’ jobs...**subsidized at $57,000/per job (35,000 euro).**  

And Germany is still building coal plants.

Not to mention, every solar panel or wind turbine is produced through energy intensive mining for rare resources and requires vast quantities of oil, natural gas and coal to even exist. Worst of all, these devices are produced by and large in developing nations where there are few environmental regulations or human rights – just so that people in the west can pretend to be ‘green.’

Climate change activists like to set targets to control the temperature or to reduce greenhouse gas emissions, but they rarely have a good grasp of what such drastic reductions would mean to society.

At our recent 14th Annual Friends of Science Society event, Ottawa energy policy consultant, Robert Lyman, explained what current Canadian climate change policy targets would mean for the Canadian economy:

> How can we even begin to understand the magnitude of the changes being proposed? One way is to look at the sources of energy consumption and related emissions today. In 2005, Canadian emissions were 738 megatonnes of carbon dioxide equivalent. In 2014, after six years of the worst recession since the Great Depression, Canadians emitted less, 722 megatonnes. Twenty-six per cent of those emissions were from oil and gas production, 23 per cent were from transportation, and roughly equal portions of around 10 per cent were from electricity generation, buildings, industry and agriculture, with waste and other sources making up a residual 7 per cent. Assuming that emissions do not grow one bit over the next 32 years as a result of increased economic activity or increased population, achieving a 50 per cent emissions reduction from 2005 levels would mean reducing emissions to 369 megatonnes CO2 equivalent. That is comparable to completely eliminating the current emissions from oil and gas production, electricity generation, and all emissions-intensive industries like mining, petrochemicals, auto and parts manufacturing, iron, steel and cement. Gone. Achieving the aspirational goal of 80 per cent

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A reduction recommended by the IPCC would mean reducing emissions to 147 megatonnes CO2 equivalent. That would be comparable to reducing Canada’s per capita emissions and our energy economy to the current levels of Bolivia, Sudan or Iraq.

Thus, many of the climate change initiatives proposed in the City of Calgary Climate Program would literally do little but make taxpayers poor, and green crony capitalists rich.

So, let’s examine Calgary and climate change. For this discussion, imagine that natural influence is the main thing driving climate change, and that humans can focus on cleaning up pollution and human waste, as we have done in Canada for the past 50 years. Imagine that instead of putting billions into ineffective climate policies, we put billions into flood mitigation. After all, the biggest flood we know of was in 1879. It was triple the flow of the 2013 flood. You’d think someone would have made flood mitigation a priority by now.

Calgary Public Library has an excellent website documenting previous floods.
http://floodstory.com/floods/1883-flood
Climate Change is Real

Once Calgary and region were under two miles of ice. Massive glaciers pushed the Okotoks “Big Rock” – a sacred site of the Blackfoot Nation and the largest glacial erratic known in the world – from the region of modern-day Jasper, to its present spot some 400 km south west of Jasper to where it lies today ~45 km south of Calgary.

Then, CLIMATE CHANGED.

Within 10,000 years, those miles of ice receded, and a new, vibrant city sprang up on the banks of the Bow and Elbow rivers in the late 1800’s at a favored camping site of the various tribes of the Blackfoot nation. Colonel Macleod of the North West Mounted Police named the early fort “Calgary.” Today, some 1.4 million people live here.

Has Calgary’s Climate Changed?

The media and environmental non-governmental groups and charities frequently claim that “climate change is real” and that is certainly true. This is usually the argument in favor of doing ‘something now’ because future costs of climate change in a warmer world will be greater they say. Is that true?

The City of Calgary’s Climate Change\textsuperscript{15} website under the title “\textit{What does climate change mean for Calgary? Our climate is already changing}” that:

\textit{“Over the past century, Calgary’s average temperature has increased by 1.4°C, with most of that increase occurring since 1970.”}

\textsuperscript{15} www.calgary.ca/UEP/ESM/Pages/Energy-Savings/Climate-Change.aspx#2
The evidence does not support this statement.

Here is a plot of the mean maximum, mean minimum, and mean temperatures, of the Calgary Int’l Airport Temperatures from 1900 to 2016. The mean maximum temperature for a year is the average of the 12-monthly mean maximum temperatures, which is the average of the daily maximum temperatures of each month.

![Calgary Int'n Airport Temperatures](image)

The 116-year temperature trends from 1900 to 2016 are:

- Mean Max = 0.021°C per decade
- Mean = 0.076°C per decade
- Mean Min = 0.131°C per decade

Source: Calgary International Airport monthly temperatures [climate.weather.gc.ca](http://climate.weather.gc.ca)

The calculated 100-year trends from 1917 to 2016:

- Mean Max = 0.018°C per decade
- Mean Min = 0.158°C per decade
- Mean = 0.088°C per decade

The mean maximum 100-year trend is less than the 116-year trend, but the mean trend is greater.

This graph shows the July and August mean max temperature trends:

![Calgary Int'n Airport Temperatures](image)

Source: Calgary International Airport monthly temperatures [http://climate.weather.gc.ca](http://climate.weather.gc.ca)
The July mean maximum temperatures show a very significant downward trend of -0.108°C per decade. August shows a small negative trend of -0.016°C per decade.

In other words, the temperature data contradicts the claims of the City of Calgary Climate Program document.

Urban Heat Island Effect (UHIE)

Any nominal upward trends in urban temperature are often wrongly attributed by climate change policy activists as being the result of human-caused ‘global’ warming. Actually they are the result of the retained heat of human and industrial activity within cities which contribute to a higher temperature in urban areas. This is not associated with human-caused global warming and is a strictly local micro climate phenomenon.

100-year Calgary Temperature Data from YourEnvironment.ca

The following screenshots of the monthly 100-year record of average daytime highs for Calgary from monitoring Station 30301093 show very little fluctuation over the course of a century. Seasonal fluctuations show no discernable rising trend in temperature.
Phasing Out Electricity from Coal – Will Not Control Climatic Changes

*Emergency doctor Joe Vipond told the committee he came to [Calgary] council chambers after a night shift to speak on behalf of his young children.*

“Whatever you feel about the science behind climate change, there are youth out there that are going to be sincerely impacted by this,” he said.

Vipond said tackling climate change is needed both for the functionality and safety of the city, and for future generations.

*Calgary Sun, Feb. 22, 2017*

Dr. Vipond is best known for his work to phase out coal-fired power on behalf of the TIDES-funded Canadian Association of Physicians for the Environment.
In fact, three peer-reviewed environmental air quality studies in Alberta show that coal-fired power plant emissions are not an air quality issue in Alberta. A 1995 study by Waters & Gabos for Alberta Health that reviewed very long-term patient health and mortality records in the Industrial Heartland, just east of Edmonton and downwind of several coal-fired power plants that are just west of Edmonton revealed no concerns about air quality and health, this in a time prior to current emissions standards and found no increase in mortality or health issues. A study of six years of pediatric asthma emergency department visits in Alberta showed that rates of asthma ED visits in non-urban municipalities are double that of urban centers like Calgary and Edmonton, suggesting other causation (i.e. dust, agricultural fertilizer, pollens/spores). Calgary has no coal-fired power plants nearby; Edmonton has several. Though Red Deer’s air quality seems to be affected by pollutants, a detailed study reveals that coal-fired power plants are not the factor. Coal phase-out is costing Albertans billions.

The City of Calgary’s Climate Change Program plan calls for various forms of mitigation. One of them is ‘clean energy’ – represented on this City of Calgary Climate plan graphic by a wind turbine.

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16 Indoor and Outdoor Levels and Sources of Submicron Particles (PM1) at Homes in Edmonton, Canada. 

Fine particulate matter (PM$_{2.5}$) in Edmonton, Canada: Source apportionment and potential risk for human health

Concentrations, sources and human health risk of inhalation exposure to air toxics in Edmonton, Canada


18 [www.cambridge.org/core/services/aop-cambridge-core/content/view/S1481803500012434](www.cambridge.org/core/services/aop-cambridge-core/content/view/S1481803500012434)

19 [cpans.org/download/2017-02-10_Air-Quality-Sources-Affecting-PM2.5-Levels.pdf](cpans.org/download/2017-02-10_Air-Quality-Sources-Affecting-PM2.5-Levels.pdf)
Wind energy has long been touted as a means to ‘green the grid,’ particularly by Pembina Institute which has provided consultation to the City of Calgary and the Province of Alberta on this matter, and which has issued several anti-coal reports, generously funded by the offshore Oak Foundation.\textsuperscript{20}

Despite nearly four decades of wind/solar advocates claiming that ‘renewables’ are clean, green and free, the evidence\textsuperscript{21} shows that wind and solar are extremely expensive, they require vast amounts of rare mineral resources and energy for the production of turbines and panels, are produced under conditions of near-slavery with no environmental management in developing countries, and the energy return on energy invested is nominal. Further, wind and solar require 24/7 conventional back-up, typically ‘peaking’ natural gas plants which can smoothly ramp up and down to meet the erratic and unpredictable nature of wind and solar.

Far from free, this means power prices skyrocket.

A case in point is Calgary’s LRT/C-Train which is said that it “Runs on the Wind.”

If it did, the C-Train would be sitting in the station

The bar graph above shows the generation capacity of the different forms of power generation in Alberta. By far the largest is coal.

Although the Alberta government is proposing to replace coal 30% with wind and solar, there is nowhere in the world with that volume of successful generation from intermittent sources

\textsuperscript{20} \url{www.pembina.org/reports/greeningthegrid-report.pdf} and \url{http://www.pembina.org/pub/2424}

\textsuperscript{21} \url{http://acadeuro.b.uib.no/files/2014/11/PoserH-et al-Finadvice_lessons_learned_from_germany.pdf}
like wind and solar. Likewise, one can see from the graph that as wind is added in capacity, there must be substantial Combined Cycle natural gas added to back up the intermittent wind.

This raises power prices for consumers in several ways.

Peaking plants (Combined Cycle) have the power to quickly ramp up and down, rather like a gas stove at home, in order to respond to the dips and surges of intermittent wind (and solar – presently not a significant part of the Alberta power grid). The market prices paid to the owners of peaking plants is the highest of all generation. That is one way that ‘free’ wind power costs Calgarians/Albertans more. Another way is that adding wind requires about $1 Million/MW to integrate wind to the power grid. Another requirement is new transmission lines. To access the power from the wind farms in Southern Alberta, a new 500 kV (kilovolt) transmission line had to be built. This cost $2.2 billion. Then to be able to back-up the wind farms erratic power and maintain grid stability, Enmax had to build the new Shepard Energy Center for $1.4 Billion. For these billions, wind power only provides 7% of Alberta’s power generation (2015) and only when the wind blows just right.

![Alberta Wind Power Q1-2015](image)

Source: AESO – graph shows historical record of erratic fluctuation of wind energy that must be compensated by conventional power to provide smooth, reliable, qualitative electrical energy.

Sudden bumps and surges in energy supply can cause serious damage to precision equipment and on network scales, can lead to regional blackouts.

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It is self-evident that Alberta is being powered by coal and natural gas.

However, perhaps this nominal contribution by wind reduces carbon dioxide emissions and thus meets an objective of the Climate Program?

According to Ontario Professional Engineers, additional wind leads to an increase in carbon dioxide emissions, due to the rapid ramping up and down of the natural gas peaking plants.

Likewise, this leads to an increase in costs for consumers and industry.
Though the fee structure for power generation in Alberta is different than that of Ontario’s, the addition of wind caused power prices to rise in virtually all jurisdictions we have reviewed. Ontario phased out coal – but it only had about 28% power generation from coal and did not have its own coal reserves. Ontario has large hydro and nuclear power resources. By contrast, some ~60% of power generation in Alberta comes from coal. We have limited hydro. Alberta has centuries of high quality (low sulphur) coal that is surfaced mined, that we, the people of Alberta own, and utility operators have low emissions, high-efficiency modern coal-fired power plants with another 40 years of useful life.
Alberta’s early coal phase-out has led to additional costs that will be born by the consumer including billions in compensation to coal-fired power plant operators, the $2 billion Power Purchase Agreement law suit, the on-going losses at the Balancing Pool, and support for the 30 communities and 7,000 coal industry workers who will be devastated by the loss of this industry.

Calgary alone is facing a $6 million penalty in terms of carbon tax – reportedly a potential 0.5% rise in property taxes.  

We are further informed by power generation experts that the Alberta government’s proposal to add such significant amounts of wind to the grid will create problems for the peaking power plants.

According to industry experts, the problem with wind is its randomness; wind is completely uncorrelated with demand. If the Alberta government adds another 5,000 MW as proposed, then the total wind capacity would be 6,500 MW. Typically, this amount of wind would randomly experience 80% or higher ramps one or more times per week. This would be the equivalent of ramping 6.5 Shepard plants from off to full to off again. These plants are unable to do this over the long term. The operators may end up having to put in simple cycle natural gas units instead which, from a CO₂ perspective, would pretty much defeat the purpose of adding wind to ‘reduce emissions.’

It should also be kept in mind that natural gas is a market commodity, subject to wild swings in price. Though this is presently not an issue with a glut of natural gas on the market, in the event of approval of an LNG facility or related international trade agreement, prices could skyrocket. Alberta’s generation will be virtually hostage to a natural gas monopoly once coal is phased-out. The chart below from 2013 illustrates the planned, balanced future mix of generation in Alberta the Alberta Electrical System Operator (AESO) had planned. Now, imagine all segments presently marked as ‘coal’ as natural gas.

![From Coal to Gas](image)

A further issue is that the Alberta government has recently moved to a ‘capacity’ model for payment for power generation. This means the operator will be paid for the potential to produce, not the actual production. Wind farms in Alberta rarely produce more than 30% of their capacity – the operators will be paid for 100% capacity! One industry expert believes that subsidies of some $900 million per year will have to be paid to make wind and solar attractive to investors.²⁵

Electricity retailers are concerned that the capacity model will lead to power price rises or will force some players out of the market, reducing competition, though the Alberta government has placed a cap on power prices for the next two years.²⁶

Unfortunately, as was the case in the EU and Ontario, the cascading costly effects of these many similar changes to the power system were not immediately apparent; by the time they became so, thousands of citizens had already been forced into ‘heat-or-eat poverty.’²⁷

> Ann Robinson of uSwitch, said: “It's unacceptable that people should feel forced to gamble with their health to try and cope with sky-high energy bills.”

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²⁶ [calgaryherald.com/business/energy/retailers-outraged-over-changes-to-albertas-power-market](http://calgaryherald.com/business/energy/retailers-outraged-over-changes-to-albertas-power-market)

It would be one thing if every country in the world were phasing out coal – in fact some >2,000 coal-fired power plants are being built and major ‘green’ countries like Denmark and Germany still run mostly on coal. Alberta’s ‘contribution’ to reducing carbon dioxide emissions by closing our six modern coal plant is purely sacrificial.

![Coal fired power stations map](image1)

Coal plants planned or under construction. Coal is the affordable choice world-wide.

Coal projections and forecasts world-wide. 28

Aside from citizens suffering from the prohibitive cost of wind/solar on the grid, that is not the end of the story. Industry is also affected as are conventional power providers. Dr. Benny Peiser of the Global Warming Policy Foundation testified to the US Senate Dec. 2, 2014 on the UK experience with coal phase-out, renewables and carbon taxes. He describes the devastating effect on the economy and the upside-down cascading subsidy arrangements:

> On costly green energy policies “Europe made the wrong bet”, the Financial Times warned on Friday. “There are no energy-intensive investments taking place in Europe now,” the FT quoted Dieter Helm, professor of energy policy at the University of Oxford. “Why would you locate a new investment in a place with both high labour costs and high energy costs, many of which are self-inflicted?”

The EU’s unilateral climate policy is absurd: first consumers are forced to pay ever increasing subsidies for costly wind and solar energy; secondly they are asked to subsidise nuclear energy too; then, thirdly, they are forced to pay increasingly uneconomic coal and gas plants to back up power needed by intermittent wind and solar energy; fourthly, consumers are additionally hit by multi-billion subsidies that become necessary to upgrade the national grids; fifthly, the cost of power is made even more expensive by adding a unilateral Emissions Trading Scheme. Finally, because Europe has created

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such a foolish scheme that is crippling its heavy industries, consumers are forced to pay even more billions in subsidising almost the entire manufacturing sector.

- Dr. Benny Peiser

Calgary and Alberta claim they want to diversify their economic and industrial base; it cannot be done if power prices will not be competitive, especially not in a landlocked province where additional costs of getting raw materials in for production and value-added products shipped out make us less competitive to begin with.

Insurance

Much of the focus of the City of Calgary Climate Program plan purports to address rising insurance costs, such as those related to the 2013 flood. However, no consideration is given to the insurance issues related to having additional wind/solar on the grid.

Allianz issued a report in which they discuss the challenges of having significant amounts of wind/solar on the grid, volatility concerns as an insurance risk, and the costs of blackout.

Indeed, in Australia, we have recently seen devastating blackouts, in part due to wind volatility (combined with an exceptional force storm) and lack of access to conventional, stable, reliable coal-fired power.

3.2.2. WHAT ARE THE CAUSES OF BLACKOUTS?

![Diagram of potential causes of power blackouts]

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29 [www.thegwpf.com/content/uploads/2014/12/Peiser-Senate-Testimony-2.pdf](www.thegwpf.com/content/uploads/2014/12/Peiser-Senate-Testimony-2.pdf)
Excerpt:

A downside of renewable energy particularly, wind and solar technologies, is the volatile supply of power. Not only may a scarcity of electricity result in a power blackout, but an oversupply can also lead to grid instabilities as they alter the frequency within the network. For example, wind energy in East Germany during strong wind conditions can provide up to 12 GW, which is more than all German coal and gas fired power plants considered together. This is not critical as long as there is enough electricity demand, but may lead to grid instabilities in cases of insufficient demand as there is not enough electricity storage capacity available. To get rid of excess electricity, transmission system operators (TSOs) often have to pay an extra fee to the electricity market (EEX – European Energy Exchange, Leipzig). Otherwise wind park operators have to be convinced to stop the wind turbines immediately in order to prevent grid instabilities and blackouts. Conversely wind turbines must be stopped due to safety reasons if the wind speed exceeds 30 m/sec. This scenario may cause, within one hour, power gaps equal to the performance of two nuclear power plants. In such cases conventional reserve power plants are required to step in instantly.

In addition, the location of e.g. windfarms (onshore and offshore) is often far away from the centres of demand. Electricity has to be transported from sparsely populated regions to large electricity consumers in metropolitan areas. Therefore, new energy infrastructure (new high voltage transmission lines, transformers and energy storage capacities such as pumped-storage hydropower plants or thermal storage facilities) are needed.

Grids need to become much “smarter” to handle these enormous technical challenges. Therefore a large-scale smart grid is needed that integrates and automatically and efficiently coordinates the activities of all players both on the electricity supply and the demand side.

<table>
<thead>
<tr>
<th>Industry typical financial loss</th>
<th>per event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semiconductor production</td>
<td>EUR 3,800,000</td>
</tr>
<tr>
<td>Financial trading</td>
<td>EUR 6,000,000 per hour</td>
</tr>
<tr>
<td>Computer centre</td>
<td>EUR 750,000</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>EUR 30,000 per minute</td>
</tr>
<tr>
<td>Steel works</td>
<td>EUR 350,000</td>
</tr>
<tr>
<td>Glass industry</td>
<td>EUR 250,000</td>
</tr>
</tbody>
</table>

Source: Allianz “Power Blackout Risks” General estimates of industry costs for blackouts.

As discussed in the previous section, we are spending billions of dollars to put the city and province at greater risk of grid instability, potential blackouts, which will be more damaging to industry and may also raise insurance costs. How does this provide any greater resiliency, cost-efficiency or greenhouse gas reduction?

Further, though the excerpt suggests that pumped storage or batteries can ‘solve’ the intermittency problem, Euan Mearns and energy expert colleagues discuss the vast scope of the problem of ‘decarbonization’ – solutions like battery or pumped storage are presently just a ‘Holy Grail’.33

Cambridge professor of engineering goes further and says that the continued focus on wind and solar are ‘making things worse’ and that wind and solar do not provide sufficient energy

33 euanmearns.com/electricity-and-energy-in-the-g20/
return on energy invested to support a basic society, let alone one of high culture and aviation.\textsuperscript{34}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure2.png}
\caption{The energy return on energy invested for various forms of energy generation with the threshold for supporting a modern economy indicated across the bottom.\textsuperscript{23} The advantages of fossil fuels and nuclear energy are very clear. Reprinted from Ref. 23, with permission from Elsevier.}
\end{figure}

Extract of Professor Kelly’s “Lessons Learned from Technology” paper compares the relative energy return from various power sources vis à vis the economical threshold.

Electric Vehicles

The City of Calgary Climate Program plan also has an electric vehicle (EV) initiative. Again, the stated objective is to reduce greenhouse gas emissions.\textsuperscript{35}

\textit{Excerpt:} “Electric vehicles emit only two-thirds of emissions of the average gasoline-powered car in Alberta today, which will further improve as coal is removed from the provincial electricity system. As EVs become more affordable to the general public and more are purchased, we could see a 10-40\% reduction in GHG emissions by 2040. When combined with The City’s other strategies, EVs create the potential to reduce Calgary’s GHG emissions from transportation.”

However, all electric cars run on power. Recharging power must be generated ... somehow. Even if you are in a place like BC with lots of hydro, using more power to charge cars means running the risk of emptying the reservoir, a serious problem in a drought or El Nino year, which is how many of the recent problems that have beset Venezuela began.\textsuperscript{36} As we have outlined above, with Alberta moving to natural gas, power will be generated by fossil fuels and

\textsuperscript{34} [www.cambridge.org/core/journals/mrs-energy-and-sustainability/article/lessons-from-technology-development-for-energy-and-sustainability/2D40F35844FEEFC37FDC62499DDBD4DC/core-reader]
\textsuperscript{35} [www.calgary.ca/Transportation/TP/Pages/Strategy/Electric-vehicle-strategy.aspx]
\textsuperscript{36} [www.newyorker.com/tech/elements/the-electricity-crisis-in-venezuela-a-cautionary-tale]
with the addition of wind and solar power, more emissions will be produced due to the erratic nature of wind and solar, despite going to electric vehicles.

“We need about 3,000 feet of altitude, we need flat land, we need 300 days of sunlight, and we need to be near a gas pipe. Because for all of these big utility-scale solar plants – whether it’s wind or solar – everybody is looking at gas as the supplementary fuel. The plants that we’re building, the wind plants and the solar plants, are gas plants.”

Robert F. Kennedy, Jr. Environmental activist, Member of the board of Bright Source, developers of the Ivanpah Solar Station, Nevada, a 392 MW (peak) concentrated solar plant

The article referred to above is written by thorium advocates but demonstrates how natural gas will become the next target of environmental activists as the thing to ‘phase-out’ – indeed, in British Columbia, Vancouver council has voted to ban natural gas by 2050 and go all electric.

“For the average family, we’re talking about $1,400 a year or more just in the energy bills from shifting to electricity, let alone ripping out furnaces or water heaters. Restaurants are going to be hurt if they use natural gas and schools are facing a $3.5 million bill in higher energy costs if they’re forced to move off natural gas.”

- Jordan Bateman, B.C. director for the Canadian Taxpayers Federation,

Will this be the next stage of activist attacks on Alberta’s power generation? After billions of dollars in compensation and investment in moving from coal to natural gas? Indeed, anti-coal activist Dr. Vipond is now busy telling politicians that natural gas is not climate friendly.

Let us continue with a review of electric vehicles.

A popular theory is that electric vehicles will be recharged at night when the wind often blows but there is less demand. However, Blair King, who writes a climate change/energy blog under the name of “A Chemist in Langley” explains why that will not be the case in a two-part post.

Further, he explains that once there are one or two more electric vehicles on a city block,
the entire distribution grid must be upgraded to handle the additional load. Ultimately, this will cost billions.

Blair King shows that distances travelled by average users are far more than estimated by EV advocates, that recharge time/location would be a challenge, even if convenient locations were established and especially if such vehicles proliferated. King’s articles refer to the lower mainland of BC where temperatures are generally mild and overall distances are short. Calgary has a very large footprint compared to Vancouver (Vancouver = 115 km$^2$; Calgary-Land: 825 km$^2$ urban: 586 km$^2$) and our temperatures can be extremely cold ... or extremely hot.

Likewise, it turns out that EVs lose battery efficiency in cold weather ... and in hot weather. When is the weather ‘perfect’ in Calgary?

Most important, Blair King, debunks the ‘nominal’ increased electricity load forecast that many EV advocates have relied upon saying:

Now let’s start with the one number that has been sent my way more times than I would care to admit and has been used by everyone from the Pembina Institute to the President of the Vancouver Electric Vehicle Association to justify not needing to upgrade our electrical system to electrify our transportation system. As reported by the Pembina institute:

... according to BC Hydro, if all drivers in B.C. switched to electric vehicles today, the increase in electricity consumption would be approximately 15%, or 9,000 GWh per year.

Blair King recalculates and finds that in fact BC would need the equivalent of four Site C dams to supply the power to electrify only the passenger vehicle segment of transportation. This will not reduce but rather significantly increase power demand.

UK commentator Euan Mearns points out it would cost trillions of dollars to develop sufficient power and upgraded transmission to support an all-electric vehicle world... “To paraphrase Everett Dirksen, “a trillion here, a trillion there, and pretty soon you’re talking real money.”"
In terms of social justice, electric vehicles are subsidized by taxpayers at the manufacturing level, and in Canada in two provinces, meaning the poor are supporting the well-to-do.

As well, the proposed network of charging stations in the Calgary plan (above) may require additional infrastructure over and above that of any sub-contractor.

Blair King closes by saying: ... “the BC Hydro load forecast relied on by Pembina and the EV enthusiasts is so completely out to lunch that it needs to be carefully re-calculated. To have major policy decisions in BC influenced by a back-of-the-envelope calculation that was essentially a throw-away footnote in an old report is not how we should be making decisions. (bold emphasis added) BC Hydro needs to provide a realistic analysis of what it will take to decarbonize our energy system so we can have an informed energy discussion in our province.”

On a personal level, most important for Albertans, electric vehicles use battery power to generate heat for the passenger cabin in winter, unlike internal combustion vehicles which use the waste heat from the engine. This means that in extremely cold temperatures (when electric vehicle batteries generally have half their rated power or less) the battery would be rapidly drained. If someone got stuck in the snow, there would be little chance to warm the cabin by intermittently starting the car.

Despite the City of Calgary claiming: “As EVs become more affordable to the general public and more are purchased, we could see a 10-40% reduction in GHG emissions by 2040...” we should put the EV enthusiast’s numbers in perspective:

- Of 907 million personal vehicles (PV) on the road worldwide in 2014, 405,000 were EV’s. EVs constituted 0.04% of the PVs on the road globally.
- Sales of all-electric trucks and buses are negligible.

41 www.tesla.com/en_CA/support/incentives
• Of 88 million new vehicle sales in the world in 2014, 307,000 were EVs. That is, the EV share of new vehicle sales was 0.35%. In 2015, that probably rose to one half of one percent.
• To reach 60% of present PV sales by 2040, EV sales would have to increase to 120 times today’s level.
• The potential growth in total vehicle sales globally is immense, especially in Asia, the Middle East and Africa. The likelihood that EV sales will constitute 60% of the much-increased sales of all vehicles by 2040 approaches zero.
• **Internal combustion engines, powered by petroleum fuels, will be the dominant source of motive power for a very long time.**

**Bikes**

Part of Calgary’s Climate Program’s plans includes getting more Calgarians onto bikes or living in walkable neighbourhoods or on main transportation routes.

Recreational bike users certainly enjoy Calgary’s commitment to biking/walking paths. This is a great addition to the quality of life for all Calgarians.

> “Calgary communities, parks and natural areas are connected by an extensive network of multi-use pathways available for all Calgarians to enjoy, whether for walking, running, in-line skating or cycling. In fact, Calgary has the most extensive urban pathway and bikeway network in North America. The City of Calgary maintains approximately 580 km of regional pathways, 220 km of local pathways and 95 km of trails.”

But does that translate into a viable method of reducing greenhouse gas emissions by trying to encourage more people to bike to the office or for errands?

**Bike Lanes in Downtown Core**

The City of Calgary’s 2011 Bike Strategy document refers to Denmark as a model. No place in Denmark is farther than 52 km (32 mi) from the sea. It is a tiny, relatively flat place with a moderate climate compared to hilly Calgary, with its vast prairie footprint, wildly unpredictable weather and powerful Chinook winds. Copenhagen’s population density is 7,000 per km² – Calgary’s is 2,112 per km². Calgary covers a land area of 825 square kilometres with 1.4 million people.

Here is an overview of several countries where biking and public transit are popular options – they are obviously also essential based on the densities, and doable based on temperatures.

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43 [www.calgary.ca/CSPS/Parks/Pages/Pathways/Pathways-in-Calgary.aspx](http://www.calgary.ca/CSPS/Parks/Pages/Pathways/Pathways-in-Calgary.aspx)
The Netherlands/Holland is also often cited as an example of how bikes can fill a transportation need. Holland has a population density of 488 people per km².

In Amsterdam, the population density is 4,439 per km² – it is a largely flat metropolitan area filled with alternate transportation routes on canals. With its 16,877,351 people, the Netherlands is the 65th largest country in the world by population. It is the 133rd largest country in the world by area with 41,543 square kilometers.

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
<th>Population Density</th>
<th>Avg Winter Temps</th>
<th>Geographic Size</th>
<th>Fits into Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>5,614,000</td>
<td>132/km²</td>
<td>-2° to 4°C</td>
<td>43,094 km²</td>
<td>231.6</td>
</tr>
<tr>
<td>Norway</td>
<td>5,080,000</td>
<td>14/km²</td>
<td>-10° to 16°C</td>
<td>385,178 km²</td>
<td>25.9</td>
</tr>
<tr>
<td>Germany</td>
<td>80,602,000</td>
<td>231/km²</td>
<td>-5° to 2°C</td>
<td>357,168 km²</td>
<td>27.9</td>
</tr>
<tr>
<td>Spain</td>
<td>47,207,000</td>
<td>94/km²</td>
<td>-2° to 9°C</td>
<td>504,645 km²</td>
<td>19.78</td>
</tr>
<tr>
<td>Sweden</td>
<td>9,644,864</td>
<td>24/km²</td>
<td>-4° to -5°C</td>
<td>449,964 km²</td>
<td>22.18</td>
</tr>
<tr>
<td>USA</td>
<td>318,900,000</td>
<td>35/km²</td>
<td>-16° to -8°C</td>
<td>9,857,306 km²</td>
<td>1.01</td>
</tr>
<tr>
<td>Canada</td>
<td>35,160,000</td>
<td>4/km²</td>
<td>-32° to -6°C</td>
<td>9,984,670 km²</td>
<td>N/A</td>
</tr>
<tr>
<td>India</td>
<td>1,252,000,000</td>
<td>421/km²</td>
<td>20° to 8°C</td>
<td>3,287,540 km²</td>
<td>3.03</td>
</tr>
<tr>
<td>China</td>
<td>1,350,000,000</td>
<td>145/km²</td>
<td>-1° to 9°C</td>
<td>9,596,961 km²</td>
<td>1.04</td>
</tr>
</tbody>
</table>

An estimated 800,000. 63% of Amsterdammers use their bike on a daily basis.

32% of traffic movement in the city is by bike compared to 22% by car and 16% by public transport. In the city centre, 48% of traffic movement is by bike.

Copenhagen, Denmark was founded in the 10th century; Amsterdam, Holland was founded in the 12th century and became one of the most important world Ports in the 17th century. Ancient port cities tend to be densely populated with a layout woven around port facilities and activities.

By contrast, other than nomadic Plains First Nations people and transient whiskey traders, Calgary saw the first European settlers in the form of the Mounted Police in 1870. The confluence of the Bow and Elbow Rivers became a cross point of trade and industry with the construction of the railway through the 1880s and as agriculture, coal, oil, and gas developed. Set in the river valley surrounded by high hills and deep coulees, the geography of Calgary does not lend itself to high density. Likewise, many of the early settlers had left crowded homelands, often places where they had no hope of owning a house or land, to have that option here in the wide-open west.
Calgary was incorporated shortly before the car proliferated, thus its layout has developed in keeping with the middle-class luxury of owning a house and lot in ‘suburbia’ within commuting distance of a downtown office job. This is reflected in its preferred modes of transportation.

Many people love living in Calgary because of its proximity to the great outdoors for skiing, hiking, off-road vehicles fun or summer camping, for which most families would say a car, SUV or truck are a necessity.

As outlined in our report by Ottawa energy policy consultant, Robert Lyman “You Can’t Get There from Here” it is unlikely that any large strides can be made in greenhouse gas emissions reductions in terms of pushing for more people to ride bicycles, though we agree bike riding can be a fun, healthy, efficient way to get around the city for those who enjoy it. This initiative will not affect climate change.

45 www.friendsofscience.org/assets/documents/You_cant_get_there_from_here_Lyman.pdf
Resilient City

Finally, there is some foreign-funded interference in many of Calgary’s and Alberta’s climate and energy policies, and elections. It is difficult to know what crony capitalists may benefit from foreign funded activists, but it is clear that these unelected, unaccountable activists have been advocating costly, ineffective policies for Calgarians and Albertans.

The City of Calgary has not done due diligence on their proposals and this has and will cost taxpayers billions of dollars.

One of these same offshore funds have now offered Calgary the chance to be part of their ‘resilient cities’ program – with Brad Stevens being appointed first Chief Resilience Officer. What exactly does that mean? No one knows.

"But resilience is more that just recovery from earthquakes, fires and floods, we’re told by 100 Resilient Cities, but encompasses other stresses that cities face such as high unemployment, overtaxed public transit systems, violence, food and water shortage "and, of course, the mother of all challenges, climate change". Indeed, so vague are the parameters of the job that it could include anything."

According to the Resilient Cities website:

100 Resilient Cities—Pioneered by The Rockefeller Foundation is financially supported by The Rockefeller Foundation and managed as a sponsored project by Rockefeller Philanthropy Advisors (RPA), an independent 501(c)(3) nonprofit organization that provides governance and operational infrastructure to its sponsored projects.

What we do know is that many ‘climate change’ policies have been promoted and adopted with no benefit to Calgarians. Finding WWF as a ‘partner for solutions’ in the Climate Resiliency roster is concerning as it was the WWF and Pembina Institute that pushed Ontario into the ghastly energy decisions that have cratered their economy.

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46 www.counterpunch.org/2013/10/16/how-tides-canada-controls-the-secret-north-american-tar-sands-coalition/  
53 vancouversun.com/opinion/editorials/editorial-resilience-the-new-buzzword-at-vancouvers-city-hall  
54 www.100resilientcities.org/about-us/#/
In 2004, Naomi Oreskes published the best-known ‘consensus’ article in Science Magazine.\(^5\) She had reviewed the abstracts of some 928 papers and claimed that 75% of them agreed with a consensus position that humans are causing climate change and that the other 25% did not disagree. Though it was not peer-reviewed, Al Gore made it famous in his shock-u-mentary “An Inconvenient Truth.”

Roger Pielke, Jr. challenged her assertion with a commentary quoted above.

Indeed, we have learned more. By 2002, many scientists and policy-makers were convinced a climate catastrophe was impending after some 20 years of rising carbon dioxide and temperatures in step, by 2013 the IPCC was reporting that, in fact for some 15 years there had been no statistically significant global warming.

\(^{55}\) [science.sciencemag.org/content/306/5702/1686](http://science.sciencemag.org/content/306/5702/1686)
Dr. Roger Pielke, Jr. was a frequent commentator calling for reasoned debate and policies, excerpt of his 2013 US Senate testimony:

**Take-Home Points**

- It is misleading, and just plain incorrect, to claim that disasters associated with hurricanes, tornados, floods or droughts have increased on climate timescales either in the United States or globally. It is further incorrect to associate the increasing costs of disasters with the emission of greenhouse gases.
- Globally, weather-related losses (§) have not increased since 1990 as a proportion of GDP (they have actually decreased by about 25%) and insured catastrophe losses have not increased as a proportion of GDP since 1960.
- Hurricanes have not increased in the US in frequency, intensity or normalized damage since at least 1900. The same holds for tropical cyclones globally since at least 1970 (when data allows for a global perspective).
- Floods have not increased in the US in frequency or intensity since at least 1950. Flood losses as a percentage of US GDP have dropped by about 75% since 1940.
- Tornados have not increased in frequency, intensity or normalized damage since 1950, and there is some evidence to suggest that they have actually declined.
- Drought has “for the most part, become shorter, less frequent, and cover a smaller portion of the U. S. over the last century.” Globally, “there has been little change in drought over the past 60 years.”
- The absolute costs of disasters will increase significantly in coming years due to greater wealth and populations in locations exposed to extremes. Consequent, disasters will continue to be an important focus of policy, irrespective of the exact future course of climate change.

For his efforts to calm climate hysteria, Dr. Pielke, Jr. was driven out of the field of climate science policy through vicious character assassination financed by none-other than the influence of a ‘green’ billionaire – according to WikiLeaks.56

The theory of human-caused global warming is based on the premise that a doubling of CO₂ in the atmosphere would lead to a rise in temperature. That stopped happening about 1998 and none of the sophisticated climate models (computer simulations) used to project temperatures predicted that warming would pause. All climate change policies are based on integrated economic models that are tied to the projections of climate models. All these simulated temperature models predicted significant warming – global warming paused since ~1998. In 2016, a naturally driven El Nino Southern Oscillation caused a warming spike. Temperatures have dropped off dramatically since then.

Carbon tax policies are based on these faulty climate models.

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56 rogerpielkejr.com/2016/11/14/wikileaks-and-me/
Accordingly, Dr. Judith Curry testified to the US Senate on the Obama Clean Energy Plan saying that “the science of climate change is not settled, and evidence reported by the IPCC AR5 weakens the case for human factors dominating climate change in the 20th and early 21st centuries.”

Dr. Curry also said, in the same testimony, that:

“Motivated by the precautionary principle to avoid dangerous anthropogenic climate change, attempts to modify the climate through reducing CO2 emissions may turn out to be futile. The stagnation in greenhouse warming observed over the past 15+ years demonstrates that CO2 is not a control knob on climate variability on decadal time scales. Even if CO2 mitigation strategies are successful and climate model projections are correct, an impact on the climate would not be expected for a number of decades owing to the long lifetime of CO2 in the atmosphere and thermal inertia driven by the ocean [AR5 WG1 FAQ 12.3]; solar variability, volcanic eruptions and natural internal climate variability will continue to be sources of unpredictable climate surprises.”

57 curryja.files.wordpress.com/2014/01/curry-senatetestimony-2014-final.pdf
As shown in the foregoing graph, climate variability is a normal, if unpredictable part of life on earth. We should ‘be prepared’ for climate change because climate does change. In the early part of the 1300s in Europe and the UK, there were five years of non-stop rain. During the Little Ice Age (1300-1850) temperatures dropped, weather was extremely unpredictable and thousands of women were burnt at the stake as witches for the crime of ‘weather cooking.’ During the latter part of the 1700s there were many significant volcanos, notable the Laki eruption in Iceland led to clouds of poisonous gases reaching England and Europe – destroying crops and killing cattle and vulnerable people.

Yet people survived and created new ways of adapting to these cruel conditions.

The City of Calgary has a known challenge in the form of river valley flooding. Rather than frittering away billions of dollars on ‘climate change’ initiatives that are ineffective, let us put precious taxpayers’ money to work addressing things we can do something about – flood mitigation, pollution, congestion, economic development.

In Summary

Calgary is facing an economic downturn while extreme climate change policies and carbon taxes are making it ever harder and more expensive for business and individuals to operate.

Many proposed ‘climate change mitigation’ strategies are based on obsolete ‘catastrophe’ climate science and have been shown to be costly make-work projects that yield little in the way of actual results, other than benefitting green crony capitalists or making activists feel good.

- Wind farms that are backed up by natural gas do not substantially reduce GHG emissions and may increase some.
- Solar farms at this latitude are an ‘energy sink’ (use more energy in the making than they ever produce).
- Coal phase-out will cost billions and will likely raise health costs and limit services as all medical facilities rely on affordable, reliable energy; electricity prices will likely rise at least three-fold based on experience in other jurisdictions.
While taxpayers are persistently told that such ‘green’ measures will ‘reduce energy costs’ – costs and taxes keep rising – as does energy use as more and more appliances and electronic products are invented!

In most of the City of Calgary’s climate change proposals, they state that ‘stakeholders have been consulted’ and list numerous advocates of the policy, but never mentioned are the names of Canadian Taxpayers Federation, Calgary Chamber of Commerce or Canadian Federation of Independent Business. Of course, the electric vehicle owners will be in favor of an EV charging network – but what is the cost-benefit to taxpayers? And there may be a benefit – but it is unrelated to climate change, as we have shown.

Clearly these are regressive policies based on obsolete science and ... they are out of step with Canada’s largest trade partner, the United States, which is questioning climate change dogma and steadily rolling back climate change regulations (while focussing on practical, measurable environmental protections.) Indeed, a review of “Just the Facts” on the Paris Agreement shows it is an untenable form of extortion.58

The City of Calgary needs to take a hard look at costs and benefits to taxpayers and not pander to activist groups. The cost of doing nothing about climate change is much less than the cost of doing so many things wrong.

Friends of Science Society advocates for due diligence over claims of ‘resilience’59 and careful cost-benefit analysis.

We invite you to review our reports related to climate change policies and economics.

Respectfully,

FRIENDS OF SCIENCE SOCIETY

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58 [http://blog.friendsofscience.org/?s=just+the+facts](http://blog.friendsofscience.org/?s=just+the+facts)
Our reports related to climate change policies and economics:


Friends of Science Society’s blog features many excellent commentaries on energy policy, NEB reforms, Indigenous consultation, and the realities on renewables versus fossil fuel use in the world by people like Ottawa energy policy consultant Robert Lyman, former public servant of 27 years and prior to that a diplomat for 10 years: [http://blog.friendsofscience.org/](http://blog.friendsofscience.org/)

Friends of Science Society is open to the public for membership and donations.

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About

Friends of Science has spent over fourteen years reviewing a broad spectrum of literature on climate change and have concluded the sun is the main driver of climate change, not carbon dioxide (CO2). Friends of Science is made up of a growing group of earth, atmospheric and solar scientists, engineers, and citizens.

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