DELAWARE'S Climate Action Plan

Official Record of Written Public Input Submissions

Posting Date: November 1, 2020

This official record of public input submissions on Delaware's Climate Action Plan was compiled by staff from the Delaware Department of Natural Resources and Environmental Control's Division of Climate, Coastal and Energy

This document provides the official record of written public input submissions on Delaware's Climate Action Plan.

For a submission to have been considered official written public input, it must have been a written piece:

- submitted between February 1, 2020 and October 16, 2020; and
- provided to the Delaware Department of Natural Resources and Environmental Control's Division of Climate, Coastal and Energy using one of the following methods:
    - U.S. mail to the Division of Climate, Coastal and Energy;
    - in-person delivery to a DNREC Division of Climate, Coastal and Energy staff member, indicating that the submission was input on Delaware's Climate Action Plan;
    - email to a DNREC Division of Climate, Coastal and Energy staff member, indicating that the submission was input on Delaware's Climate Action Plan;
    - email to declimateplan@delaware.gov; or
    - starting March 1, 2020, submission via the "Submit a Comment" form on the official website of Delaware's Climate Action Plan (declimateplan.org).

Personal email addresses, phone numbers and physical addresses/locations were redacted from all submissions in this official record. General contact information for organizations, including information listed on company letterhead, was left intact.

Note: Members of the public also submitted input, ideas and questions on Delaware's Climate Action Plan via two rounds of public workshops held March 3 to 5, 2020, and September 15 to October 1, 2020, and via two online interactive surveys made available to the public on declimateplan.org from March 3 to May 1, 2020, and September 7 to October 16, 2020. Submissions provided via the public workshops or online interactive surveys are not captured in this record; instead, such input is captured separately in public workshop summary reports either currently available on declimateplan.org or to be made available by December 31, 2020.

All public submissions of input, ideas and questions, whether in this official record or in the public workshop summary reports, will be considered in the development of Delaware's Climate Action Plan, to be released in winter 2021.

The sciences that are not taught in schools, colleges and universities. The earth's sun is a dying star. As dying stars do, dying stars grow larger. Planet earth's sun is growing larger and larger every day which means that planet earth's sun is growing closer/getting closer to planet earth every day. At present planet earth's sun is in its yellow dwarf stage of growth. As planet earth's sun expands/grows closer to planet earth the hotter planet earth becomes. Soon, perhaps 150 years or so, planet earth's sun will grow close enough to planet earth so as to incinerate all life on planet earth. At some point in the near future planet earth's sun will engulf planet earth causing planet earth to become a blackened cinder/ember. Planet earth's sun will eventually collapse as a black-hole as all dying stars turn into black-holes. In the meantime all snow, ice, ice-burgs, and glaciers on planet earth will melt. There will be a zero rise in sea levels and a zero rise in ocean levels as water from the lakes, seas and oceans will evaporate into clouds that will encircle planet earth. Also 90 to 95% of planet earth's snow, ice, ice-burgs, glaciers and ice shelves are in planet earth's seas and oceans. Refer to ice-cubes in a glass of water. When the ice-cubes in a glass of water melt the water in the glass does NOT rise. When the snow, ice, ice-burgs, glaciers and ice shelves on planet earth melt, the seas and oceans of planet earth will NOT rise. Snow, ice, ice-burgs, glaciers and ice shelves on land will evaporate into clouds as will the water in the lakes, seas and oceans of planet earth. The seas and oceans on planet earth have NOT and will NOT flood Bangladesh. The seas and oceans of planet earth have NOT and will NOT flood the Mississippi delta and New Orleans. The city of New Orleans was and continues to be built on the silt of the Mississippi river. The city of New Orleans is sinking into the silt/mud of the Mississippi river. The sole cause/the only cause of global warming is the earth's sun. The sole cause/the only cause of climate change is the earth's sun. There is NO saving planet earth. Planet earth CANNOT be saved. Planet earth and all life on planet earth are doomed to extinction. The aforementioned is basic science. Refer to the sciences of climatology – meteorology – atmospheric science – stellar evolution – black-holes – gravity and displacement. I learned this in 8th grade science class (1963/64) in the Phillips School formerly located at 86 Essex street Salem Massachusetts 01970.

Doug Roberts

[redacted]

BOSTON MA 022

20 FEB 2020 PM 10 L

DEPARTMENT OF NATURAL RESOURCES AND
DIVISION OF CLIMATE, ENVIRONMENTAL COA
COASTAL & ENERGY
100 W WATER STREET
Dover Delaware

19904-672499

19904

Yue, Ian T. (DNREC)

From: Barbara Weiss [redacted]
Sent: Tuesday, March 03, 2020 10:20 AM
To: DEClimatePlan (MailBox Resources)
Subject: NCC Chamber
Attachments: NCC Chamber Ltr.pdf

I am writing on behalf of the President of the New Castle County Chamber of Commerce, Robert Chadwick. Attached please find a letter from the Chamber regarding the climate plan. If additional information is needed, Mr. Chadwick can be reached at [redacted] or [redacted]. Thank you.

Barbara Weiss
Executive Assistant
[redacted]
New Castle County Chamber of Commerce
920 Justison Street, Wilmington, DE 19801

New Castle County
CHAMBER
of Commerce
Accelerating Business Growth

March 3, 2020

The Honorable Sean M. Garvin
Secretary, DNREC
89 Kings Highway SW
Dover, DE 19901

RE: Climate Action Plan

Dear Mr. Secretary:

The New Castle County Chamber of Commerce supports the development of a science-based climate action plan which balances the very real need to plan for future exigencies arising from climate change, while taking marketplace realities into consideration. Sound, science-based solutions are often most successful when market forces aid in bringing them about.

Renewable energy is, and must be, a significant part of our nation's future. Prior efforts on the part of government, such as those during the Carter Administration, to introduce renewables beyond what the market would bear resulted in a predictable response in traditional energy (i.e. fossil fuel) energy markets.

Delaware, thanks to the leadership of policymakers such as Senator Harris McDowell, has made significant strides in setting and meeting renewable energy goals. We applaud that progress. We also acknowledge that such progress has come at an economic cost to Delaware businesses and households. We at the Chamber have heard consistently from our membership over the years that Delaware is a prominent outlier where energy costs are concerned. We have heard the same concern from economic development site selectors and prospects for location and expansion.

Among the ways in which we as a state can offset our already high energy costs, particularly for large employers, is to provide grants and tax credits which would encourage the use of renewable energy sources. Additionally, and perhaps more importantly, streamlining permitting for companies located in Delaware, or companies seeking to expand or locate here, would not only help offset energy costs, it would create efficiencies for permit applicants that would make Delaware a substantially more attractive jurisdiction for business location and expansion.

We look forward to working with you and your agency to foster a sustainable and prosperous Delaware. Thank you for your consideration

Respectfully,

Bob Chadwick
President

Victor Singer, P.E. (Retired)

[redacted]

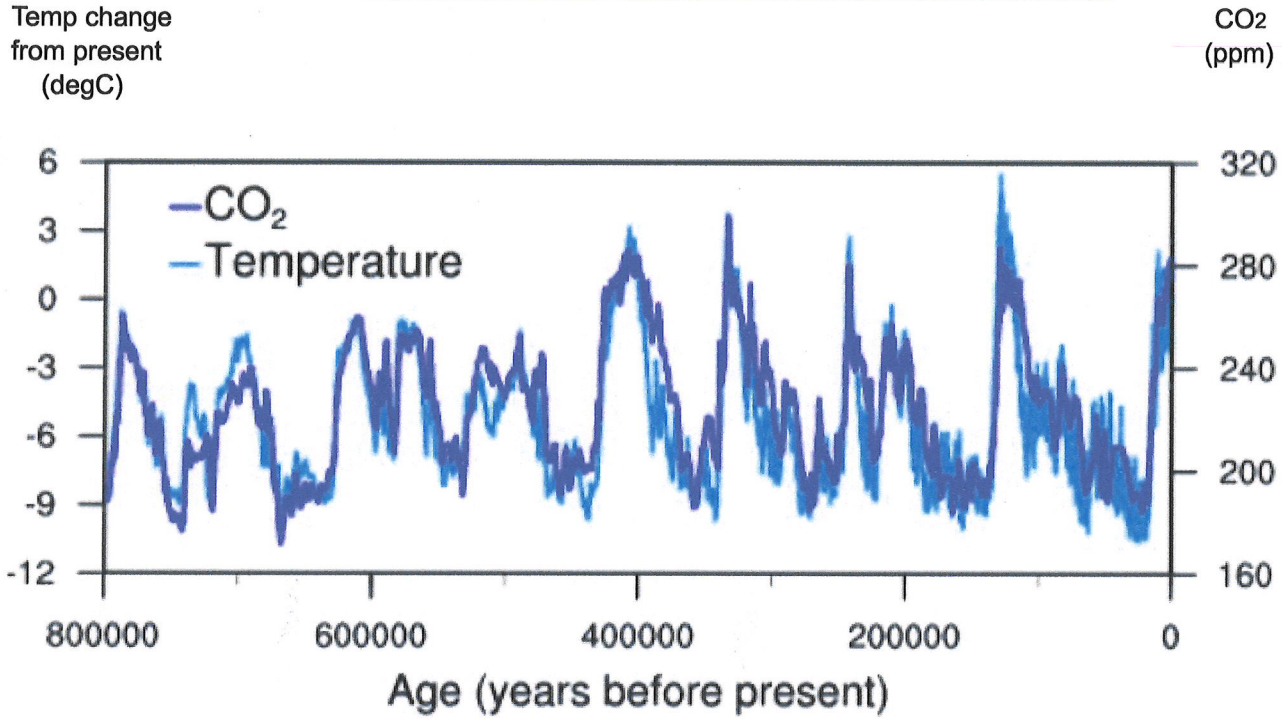
March 4, 2020

Folks

I learned of these DNREC public input sessions from a page 2A essay in the Feb 28 News Journal. Buried in the text is a "purpose" statement: "to provide an opportunity to learn more about how to reduce greenhouse gas emissions to better prepare for climate impacts."

Climate change is real and has been happening for a long time --- a VERY long time. The following, from the indicated NOAA address, shows the atmospheric CO_2 concentration (in dark blue) from Greenland, Antarctic, perhaps Vostok and other ice core measurements. The data for atmospheric temperature change from the present (in light blue) are from a source I haven't yet identified. The data are plotted against time in years going back from the present, right to left. Evidently the plot was prepared several years ago when CO_2 was at 280 ppm (at the right end); it's now over 400 ppm.

https://www.ncdc.noaa.gov/global-warming/temperature-change



The vertical scales for the data were obviously adjusted to show how closely CO_2 and temperature change plots track one another. Note that the plot goes back 800,000 years. And note that over those 800 millennia there have been about five cycles between extreme high and quite low CO_2 levels and perhaps five more cycles between local high and quite low CO_2 levels.

At another NOAA (Climate.gov) address --- https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide --- essentially the same CO_2 data are shown across the same 800 millennia as part of a Feb 20, 2020 essay that says: "***Carbon dioxide concentrations are rising mostly because of the fossil fuels that people are burning for energy. Fossil fuels like coal and oil contain carbon that plants pulled out of the atmosphere through photosynthesis over the span of many millions of years; we are returning that carbon to the atmosphere in just a few hundred years.***"

The notion that CO_2 emissions due to human activity are somehow to blame for climate change, is shared with the stated purpose of these DNREC public input sessions. I believe that DNREC owes us an explanation for its evident belief that

reducing greenhouse gas emissions will have a beneficial effect on climate change larger than baying at the moon. Perhaps DNREC should press NOAA for a critical review of its own data.

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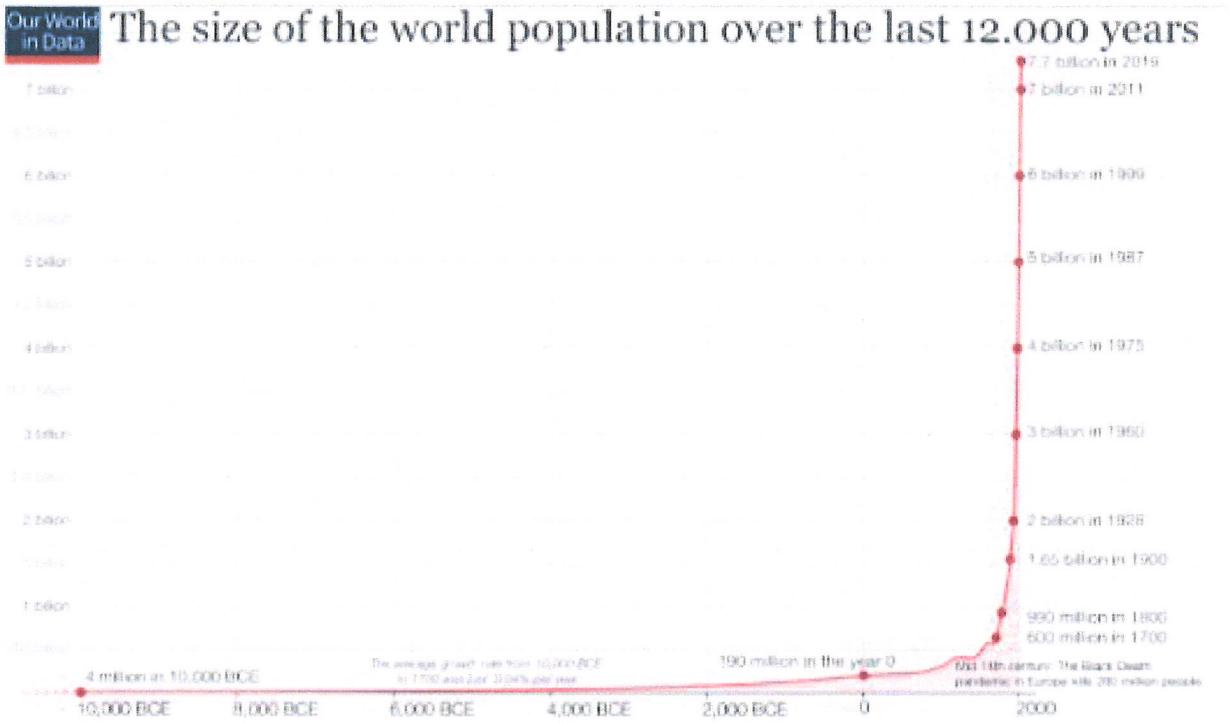
Now let's look at the growth of the Earth's human population over the last 12 millennia, as shown at https://ourworldindata.org/world-population-growth



Note that the estimated 2019 population is 7.7 billion, up from 800 million in 1800, and was 4 million about 12,000 years ago, about 0.05% of the 2019 population. According to the NOAA data, temperature and CO_2 levels started rising rapidly, from their lowest or nearly lowest levels in 800 millennia, between 15,000 and 20,000 years ago, and when the human population reached 0.05% of today's population 12 millennia ago, the CO_2 rise rate actually diminished.

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That alone disproves the notion that profligate combustion of carbonaceous material by mankind is the SOLE cause of the rising temperatures and the CO_2 levels we are now experiencing. But let's not stop there. The final two pages of this memo consist of an enlargement of the NOAA plot, above, showing two cycles of CO_2 and Temperature for the most recent 250 millennia. The last page of the copy I'm handing in is on transparent film.

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Sliding the film over the opaque next-to-last page, overlapping the currently ongoing sharp rise with the cycle about 120 millennia ago, shows that the sharp slopes are about the same. Indeed, the same overlay technique shows about the same sharp rises at all five cycles that reached extreme high levels and even at the cycles that only reached local high levels.

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This strongly suggests that the several causes of 800 millennia of cycling CO_2 and Temperature levels, INCLUDING THE PRESENT CYCLE, are still with us and still in balance. Obviously, other elements of causation besides human combustion of carbonaceous materials played major roles. Indeed, in light of the DECREASE in the rise rate of CO_2 since the human population passed 4 million about 12,000 years ago to nearly 8 billion today, and in light of the sharp drops of both CO_2 and Temperature when each of the five extreme high peaks were reached, it's reasonable to argue that higher CO_2 levels without or with human combustion of carbonaceous materials is BENEFICIAL.

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It's not difficult to hypothesize why this is credible. CO_2 is more appropriately regarded as a fertilizer rather than a poison. CO_2 is the fuel for photosynthesis, And higher temperatures augment growth when water is available. Photosynthesis produces Oxygen from CO_2. A recent hydroponic farming practice that has long been an environmental control practice for commercial greenhouses is to increase the CO_2 level to about 0.15%, or 1500 ppm, to accelerate plant growth. For example, see https://ggs-greenhouse.com/heating-systems/carbon-dioxide-co2-dosing and https://www.envirotech-

online.com/article/gas-detection/8/sbh4-gmbh/carbon-dioxide-dosing-in-commercial-greenhouses-ndashbr-gas-sensors-for-optimal-control-of-growth-conditions-and-safety/2492

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The earth has been very lucky that each time (at least over the most recent 800 millennia) the CO_2 level got close to 0.03%, 300 ppm, and the temperature increased a few degrees, there was already enough greenery in place to quickly reverse the temp and CO_2 rises. Venus, at 96.5% or 965.000 ppm of CO_2 and no plant growth, didn't share the earth's good luck.

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Sincerely,

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Victor Singer

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POST SCRIPT

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About 30 years ago I met Professor John Byrne of the University of Delaware, a strong advocate of the "Global Warming Is Man Made" notion. Dr. Byrne was the "cost of money" expert for Artesian Water Company in a rate proceeding before the Public Service Commission. I was an intervenor in that proceeding. I had discovered some accounting irregularities relating to capital plant that had been paid for in total by the ratepayers. But contrary to Delaware's laws for regulating investor-owned public utilities, which I had co-authored in the early 1970's, it had been this utility's practice to charge ratepayers about $200,000 annually for depreciation on customer-funded capital plant. That practice ended with my discovery.

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No, I'm not a lawyer or legislator. I'm a structural engineer with a half century of rocket propulsion design and fabrication experience. But my hobby has long been and still is meddling with government. As an intervenor in a PSC rate proceeding, I had the opportunity to cross-examine Dr. Byrne on matters he had testified to, NOT depreciation charges. Both he and the Company survived.

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Long after that, I became aware of Dr. Byrne's global warming interests. I pointed out to him in casual conversation that nearly two dozen rocket motors in whose design I had been a key participant, had been used for soft landings on Mars on July 4, 1997, Jan 3, 2003 and Jan 23, 2004, and that thereafter, melting of one of the Martian polar ice caps has been observed and verified. Rocket motors that I held in my hands before we shipped them put greenhouse gases into the Martian atmosphere. Is the Martian polar ice cap melting MY FAULT ??? (See, for instance, https://skepticalscience.com/global-warming-on-mars.htm)

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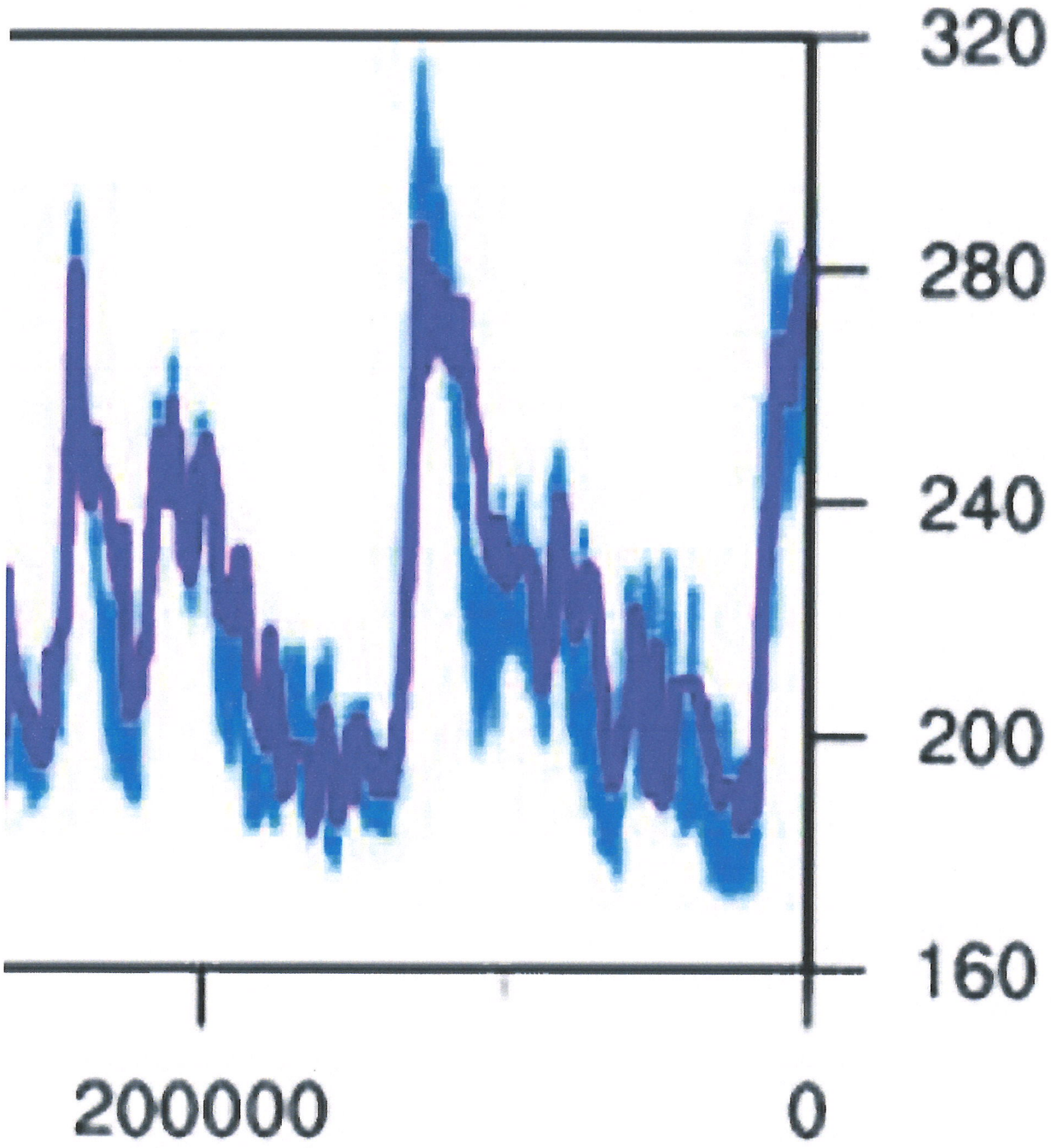
Dr. Byrne just laughed it off as the joke it was intended to be. But on the reasoning I've described above, I regard the "Global Warming Is Man-Made" notion as just as much a joke. I regard as a DNREC responsibility showing what is wrong with my reasoning, or altering what DNREC says and does to reflect that reasoning. Kill it or buy it.

PLOT OF THE MOST RECENT 250 MILLENNIA
SHOWING TWO CYCLES OF CO2 AND TEMPERATURE LEVELS

(ENLARGED FROM NOAA 800 MILLENNIA PLOT)



March 3, 2020

Secretary Shawn Garvin
DNREC
89 Kings Highway
Dover, DE 19901

Dear Secretary Garvin:

The Central Delaware Chamber of Commerce (CDCC) understands the importance for Delaware to develop a Climate Action Plan. We very much appreciate the public sessions allowing input into the plan.

As a business advocacy organization, we want to be certain that we all understand that energy costs are not only an environmental factor, but they are also an economic development factor. The CDCC hears from members on a regular basis about the high cost of energy in our region. When our businesses are part of a larger organizations such as manufacturers, large retailers or restaurants, we are often told that our energy costs surpass many of their other locations. Again, it is important for us to remember that our businesses must be able to remain competitive in order to maintain their operations here, in Delaware. Losing companies means losing jobs.

In light of the cost issue, businesses want to have all energy options. We support wise and measured steps that work towards low and no carbon solutions that can match our members' needs to have low and stable energy costs, consistent supply, and multiple options for energy choices based on their unique and specific needs. Our efforts to supply energy should not be detrimental to economic development. Our members care about our communities and they continuously work to improve them by actively supporting efforts such as ride sharing, working from home remotely, supporting energy efficiency initiatives, and volunteering within our communities for environmental programs, just to name a few.

We would like to see Delaware explore expanded support for grants and streamlined permitting for distributed generation projects that would reduce energy costs, improve emissions and provide for resiliency in the face of large storms. Also, grants to support fleets of diesel trucks and vehicles switching to natural gas will benefit emissions but also support economic development initiatives to expand manufacturing and warehousing throughout the State.

We ask that you keep us informed of your plans and progress. We look forward to working together to identify solutions that will continuously improve our communities.

Thank you.

Sincerely,

Judy Diogo
President, CDCC

City of Dover Lic.# 5696

State of DE Lic.# 104519

Dover Grasscutting

3-5-20

Dear DNREC,

Enclosed is my initial idea for shoring up receding coastlines; after "sleeping on it" & realized it could only work in certain areas, mostly remote spots where no beaches, tourism, or population who would not want to see (or hear) the installation day in and day out.

So trying to "wall off" the ocean to save current shorelines probably not good 75-80% of locations; but it's a possibility where it could work. The aesthetics value would be a big factor -- even in non-tourism locations, the concept would rob the natural vision of the coast, flooded or not, cost-savings or not.

I don't want to use the word "retreat" because it sounds weak; but it seems the best response to rising coastal waters is simply to move further away, inland or higher ground, continuing to respect and enjoy the natural evolution of our planet.

Eric O'Brien

[redacted]

Eric O'Brien

[redacted]

City of Dover Lic.# 5696

State of DE Lic.# 104519

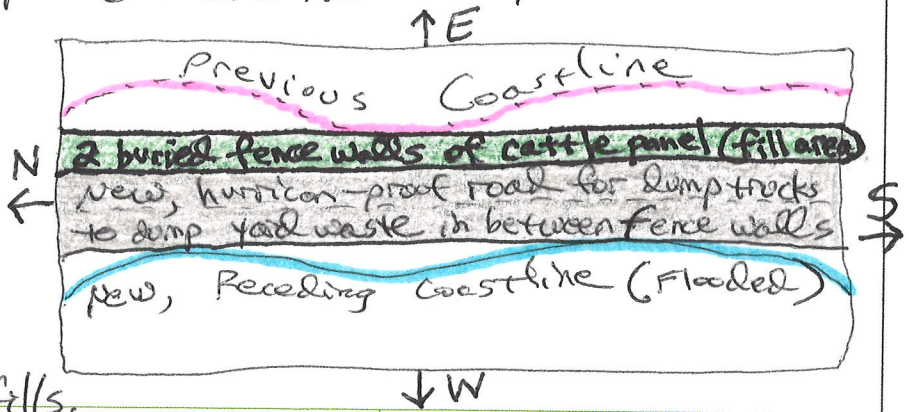
Dover Grasscutting

3-5-20

Dear DNREC,

I can't make the input session tonight, but wanted to submit my idea regarding receding coastlines. I do yard work for a living, so always see the huge amounts of yard waste both picked up by The City and County and at Transfer Stations, as well as all that is deposited @ landfills.

Over the last several years of reported inland flooding and losing coastline, esp. in marshy, low-lying areas like Prime Hook, I always thought why not dump yard waste there to help build up land and fill in low spots. So the following simple diagram is an example of one method;



This idea might be a lot less expensive than re-locating homes, people and whole neighborhoods to newly-built communities further inland; plus it's a good use of yard waste, and keeps out of landfills.

-Eric O'Brien

Eric O'Brien

[redacted]

[redacted]

2/12/20 D. Post

Public sessions March 3-5 on state's climate action plan

DNREC's Division of Climate, Coastal, & Energy will hold three public input sessions the first week of March seeking input on development of the state's climate action plan.

The sessions will be held in each of the three counties from 4:30-7:30 p.m., on the following dates:

Tuesday, March 3, CHEER Community Center, 20520 Sand Hill Road, Georgetown,

Wednesday, March 4, Wilmington Public Library, 10 East 10th St., Wilmington,

Thursday, March 5, Delaware Technical Community College, Terry Campus, 100 Campus Drive, Dover.

Delaware has committed to reducing the state's greenhouse gas emissions 26-28 percent from 2005 levels by 2025. The climate plan will serve as a roadmap toward achieving that goal, outlining specific actions to meet the 2025 commitment, and identifying strategies to further reduce emissions in the years beyond. The plan will also examine what's being done to reduce the impacts of climate change that the state already is experiencing, such as sea level rise and increased flooding in some areas, and will identify strategies to help those communities.

The workshops will provide an opportunity for residents to learn more about how to reduce greenhouse gas emissions and better prepare the state for climate impacts.

Workshop attendees will also have a chance to provide their thoughts on choices the state can make to more effectively take action on climate change.

Yue, Ian T. (DNREC)

From: Love, Susan E. (DNREC)
Sent: Sunday, July 26, 2020 5:00 PM
To: Lee, James (DNREC)
Cc: Yue, Ian T. (DNREC); Pletta, Margaret K. (DNREC)
Subject: Fw: Considering private and public sector risk taking in anticipating future development in Delaware

Jim -- this should be considered a comment and logged with our climate action plan comments. I'm not sure if he directed it through the website

thx
s

Susan E. Love, AICP
Administrator, Climate & Sustainability Programs
DNREC Division of Climate, Coastal, and Energy
100 W. Water Street, Suite 10B
Dover, DE 19904
[redacted]
www.de.gov/climatecoastalenergy

From: Clem Dinsmore [redacted]
Sent: Tuesday, July 7, 2020 5:29 PM
To: Love, Susan E. (DNREC) [redacted]
Subject: Considering private and public sector risk taking in anticipating future development in Delaware

Dear Susan:
Chris Flavelle of the New York Times has written two articles in recent months regarding the response of private lenders to the increasing casualty risks associated with climate change. As a member of the Delaware Energy Efficiency Advisory Council I am reflecting upon the implications of these risks for State energy efficiency assistance to low income households. But, I think Chris's articles [which you can find by Googling him] are relevant to your work in fashioning a new iteration of the State's Climate Action Plan.

My takeaway from Chris Flavelle's articles is:

1. Sources of private capital are beginning to seek to protect themselves from risk of loss from climate change by dumping their risk of loss on Federal agencies or instrumentalities or changing the terms of their transactions; and
2. Sources of public capital [whether loans or grants and whether Federal, State or local] will need to: (a) recognize this movement of private capital away from sources of climate risk and (b) consider what public actions can be taken to mitigate the risk of loss TO THEM from climate change.

This will have many implications for public policy including:

1. Whether it makes sense to invest in structures that are exposed to high casualty risk from climate change;
2. The costs of enabling low income communities to relocate to areas subject to a lesser casualty risk; and
3. The costs of measures that might feasibly be taken to mitigate the risk of casualty loss to existing structures owned or occupied by low income households.

Let's recognize the reality that is emerging with climate change:

1. Those with capital have the means EITHER to assume greater risk of loss [and, therefore, remain exposed to high casualty risk of loss] OR move their capital to investments that have a lower risk exposure; and
2. Those with little or no capital lack this choice and, therefore, are more likely to remain located in areas subject to high hazard risk.
3. The analogy is to health insurance. Low income households with little or no health insurance have to live with higher risks of illness or death, as is happening with the pandemic. Government programs potentially can socialize their risk through a dramatically expanded public health insurance option. American taxpayers, who have greater resources, may be more supportive of expanded public health insurance than OVER TIME they may be to accepting the very high cost of socializing the casualty risk to ANY INCOME GROUP continuing to reside in high casualty risk areas.

I welcome your reaction to these reflections. My own assumption is the political leadership of Delaware and most other States as well as our Nation will be slow to alter their financial risk management in light of the aggravation of casualty risks associated with climate change. Ultimately, the behavior of private credit and insurance markets EITHER will force change in public fiscal management OR prompt a continuing but accelerated transfer of risk from the private sector to the public sector. The implications for the fiscal solvency of ALL levels of government are HUGE.

Regards,
Clem

Yue, Ian T. (DNREC)

From: Love, Susan E. (DNREC)
Sent: Wednesday, July 22, 2020 8:54 AM
To: Yue, Ian T. (DNREC); Lee, James (DNREC)
Subject: Fw: Public comment on Climate Action Plan
Attachments: Delaware climate action plan usues flawed assumptions 2.docx

ian and jim - this came in to me as a public comment. will you please add to the compilation of comments? we have all seen the content this week already....

s

Susan E. Love, AICP
Administrator, Climate & Sustainability Programs
DNREC Division of Climate, Coastal, and Energy
100 W. Water Street, Suite 10B
Dover, DE 19904
[redacted]
www.de.gov/climatecoastalenergy

From: [redacted]
Sent: Wednesday, July 8, 2020 1:29 PM
To: Love, Susan E. (DNREC) [redacted]
Subject: Public comment on Climate Action Plan

I tried to submit this through the comment portal but it wouldn't take the graphs and tables, so I am sending this attached copy to you for consideration. Thank you!

David T. Stevenson
Director, Center for Energy & Environmental Policy
Caesar Rodney Institute
[redacted]

Inside Energy

Published by the Caesar Rodney Institute
Center for Energy & Environment

RE: Delaware climate action plan uses flawed assumptions
DATE : 7/7/2020 **David T. Stevenson, Director**

The state has been developing a climate action plan, and is requesting public input. DNREC has provided documentation of the climate change issues with flawed assumptions. We discuss these flaws below, and request the flaws be corrected. Manmade emissions of carbon dioxide were insignificant before 1950, so where possible, we compare pre-1950 data to post-1950 data.

Claim: "Heat waves are projected to become longer and more frequent by 2050"
Fact: The EPA US Heat Wave Index, 1895-2015 (Figure 1) shows no trend change over the period despite about a 50% increase in ambient levels of CO_2 since 1950. Heat waves were about 8 times worse in the 1930's compared to the most recent decades.

Claim: "Annual temperatures have increased 2 °F since 1900, and are expected to increase 2.5 to 4.5 °F by 2050"
Fact: The increase in average temperatures since 1900 is split with 1°before 1950, and 1° since 1950 suggesting little impact from CO_2. The DNREC claim of future temperature increases is based on computer modeling. The average of over 100 computer model runs by various researchers predicted a temperature rise 2.7 times the rate of actual satellite and weather balloon data presented by JR Christy, University of Alabama for 1979 to 2015 (Figure 2). Actual temperatures have been increasing 0.25 °F per decade since 1979, so we might expect only a 0.75 °F rise by 2050, about a fifth the rise DNREC is forecasting.

Claim: "Sea levels at the Lewes tide gate have risen more than a foot over the last century, and are expected to rise an additional 9-23 inches by 2050"
Fact: It is well reported half the Lewes tide gauge increase is likely due to land subsidence, not increasing sea levels. The 9-23 inch forecast by 2050 is from the UN Intergovernmental Panel on Climate Change that actually lists that as its most likely forecast out to 2100, not 2050. The UN uses a study, "Sea Level Rise from Late 19th to early 21st Century" 1870-2010 (Figure 3), of hundreds of tide gauges from around the globe that shows a relatively steady rise of about 7 inches per century with essentially no change in the rate of sea level rise since 1925.

Claim: "Climate change can disrupt farming through crop losses, and reduced yields"
Fact: Dr. Craig Idso, Arizona State University, summarized 1,087 papers showing elevated CO_2 levels enhanced plant productivity up to 2.5 times when ambient CO_2 levels were raised up to 8 times the current atmospheric levels (Figure 4). The enhanced levels also were more resistant to high temperatures, and required less water. Greenhouse growers around the globe often pump in CO_2 at levels 2 to 4 times normal outdoor levels to boost production of vegetable crops. Crop production is likely to increase, not decrease.

Claim: "Increased summer temperatures will increase energy demand for cooling"
Fact: Much more energy is used for heating in the winter than for cooling in the summer. The DNREC comments ignore the reduced heating cost from higher winter temperatures.

Inside Energy
Published by the Caesar Rodney Institute
Center for Energy & Environment

Claim: Mitigation will include using more wind, solar, and electric vehicles, by banning certain refrigerants, and by partnering with other states
Fact: Delaware is requiring 20% of electric demand be met with renewable power this year, but only 2% will be generated in state (solar). The rest is Bloom Energy fuel cells powered with conventional natural gas, and out of state wind & solar projects. These projects are adding about 20% to the supply cost of power to Delmarva Power customers, about $150 a year for residential customers, and up to $1 million a year for some industrial customers. Current energy credit commitments total $1 billion in electric premiums through 2032, growing to $1.7 billion as more contracts are signed over the five years (Table 1).

Fact: Electric vehicles save almost no emissions as they emit a lot more in initial production and disposal, and recharge with electricity produced by coal, natural gas, and oil that also have transmission and charging losses. CO_2 savings over the life of the vehicle may only be 4 tons at a cost of almost $5,300/ton (Table 2). The electric vehicle has about a $21,000 purchase premium, so only the wealthy can buy electric vehicles.

Fact: A CRI Benefit Cost Analysis on the refrigerant ban showed $3 million in benefits compared to $26 million in costs to reduce global temperature 4 one-hundred thousandths of a degree, essentially zero.

Fact: Partnering with other states means joining carbon dioxide tax schemes for power plants and motor vehicles. The power plant program has been around for a decade, and has cost Delawareans $125 million so far with most of the money wasted, and could cost half a billion more dollars by 2030. In state generation of electricity dropped from 65% in 2008 to 47% in 2019, meaning we simply shifted emissions to other states adding extra emissions transmitting the power from further away. DNREC proposes joining a multi-state 25 cent per gallon gasoline tax that could cost Delaware families over $200 a year, and is unlikely to reduce driving, or emissions.

In summary, DNREC has both their supporting facts, and mitigation plans wrong. Regardless of any manmade increase in temperature, we will still have flooding during big storms, and gradually increasing sea levels. It makes sense to have a Resilient Infrastructure Plan without clouding the issue with exaggerated climate change claims, or using mitigation plans that don't work.

Inside Energy

Published by the Caesar Rodney Institute
Center for Energy & Environment

Figure 1:

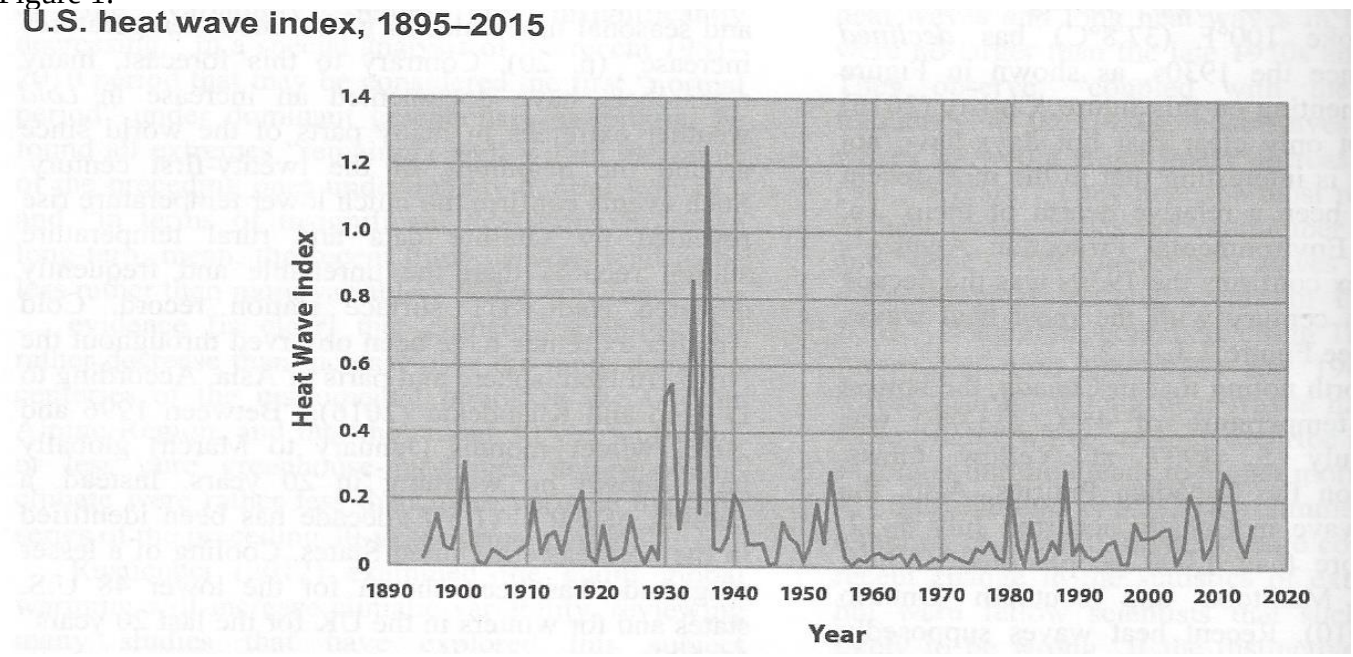


Figure 2:

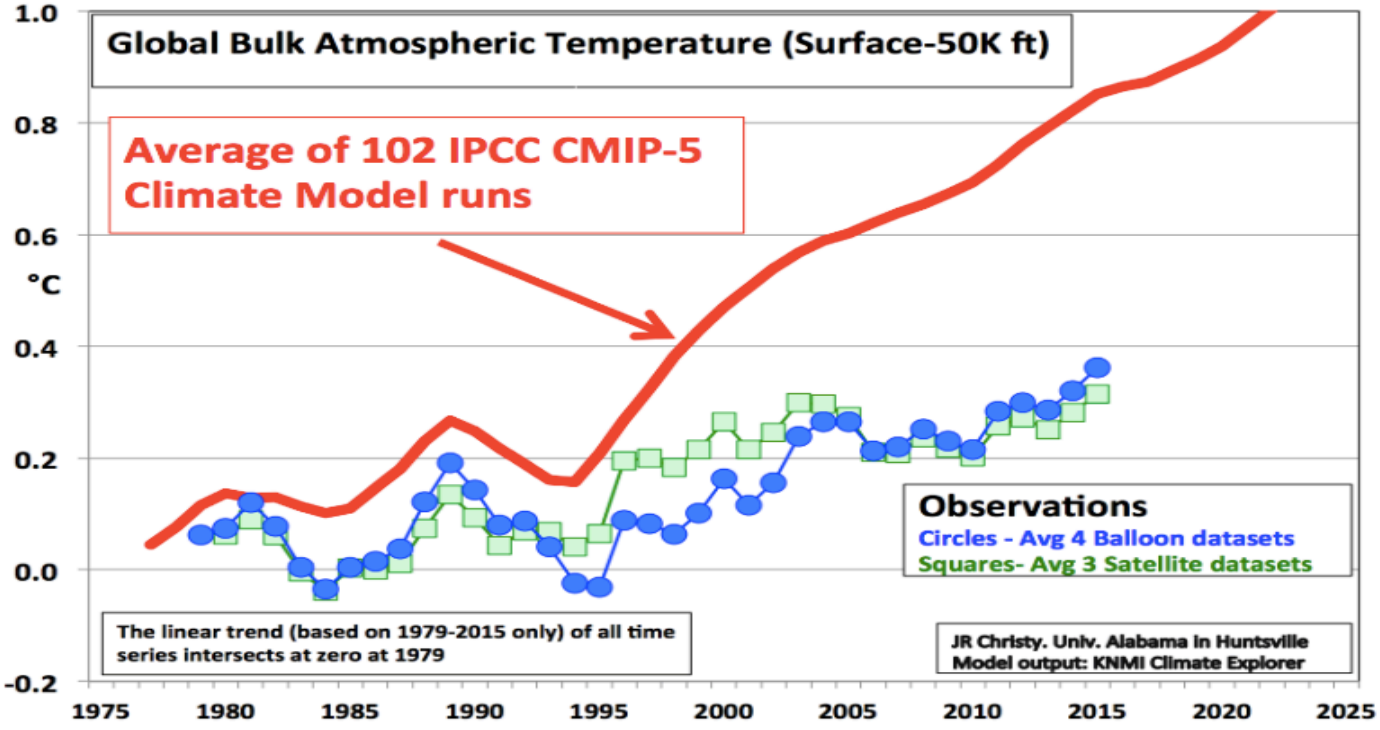
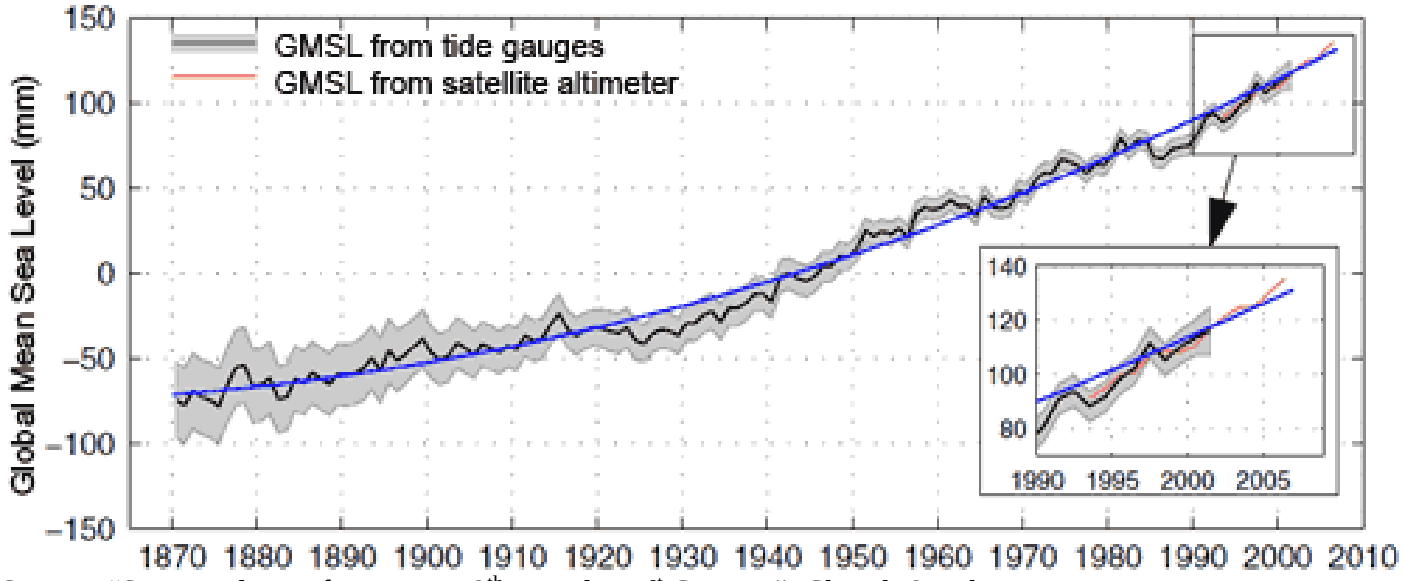
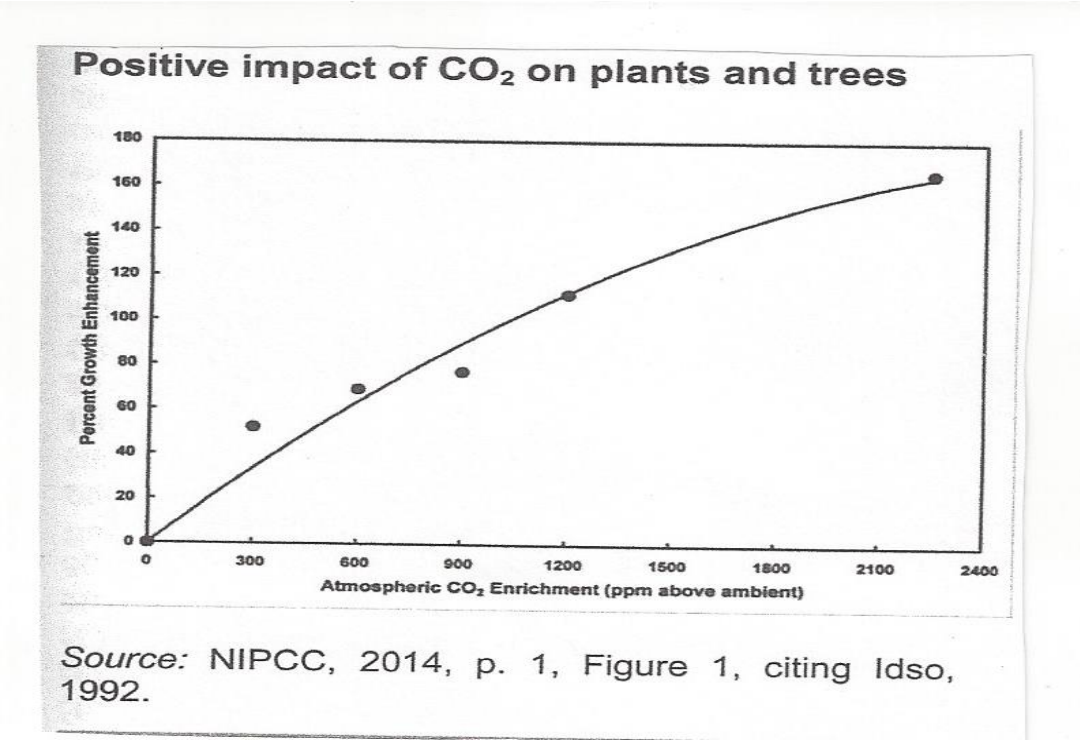


Figure 3:



Source: "Sea Level Rise from Late 19th to early 21st Century", Church & White

Figure 4:



Inside Energy
Published by the Caesar Rodney Institute
Center for Energy & Environment

Table 1:
Delmarva Power RPS Contract Cost 2012 to 2032 - $ millions

Contract	**Yearly Cost**	**End Date**	**Life Cost**
Bloom Fuel Cell	$35 first 15 years	2027	$525
Bloom Fuel Cell	$24 last 5 years	2032	$120
3 PA wind projects	$20 first 8 years	2020	$160
3 PA wind projects	$16 last 7 years	2027	$112
Dover Sun Park	$2.5	2032	$50
First SREC auction	$1.6	2032	$33
Total 2011 to 2012 contracts	$59	2032-2038	**$1,000**
2013-2019 SREC auctions	$5	2033 to 2039	$100
Spot market solar	$19	2032	$380
Spot market wind	$11	2032	$220
Total RPS thru 2032			**$1,700**

Note: spot market estimates, and long term cost of the Dover Sun Park, and three PA wind projects, are based roughly on the 2016 Delmarva IRP Table 8 and 9, page 73

Table 2: Cost differential of the Bolt EV and Fit ICE after 8 years

Cost Item	Bolt	Fit
Net Initial Cost	$36,620	$18,160
Finance Charge Difference	$2,292	
Fuel Cost	$3,972	$7,222
DMV Document Fee Difference	$833	
Engine oil, oil filter, air filter		$1,120
Resale Value	$200	($3,752)
Total Cost	$43,917	$22,750
Net Cost	$21,167	
Cost/Ton if 4 tons CO2 saved	$5,292/ton	

Source: Author Calculation

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Wednesday, July 08, 2020 3:08 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Flood risk assessment modeling for Delaware"

From: Clem Dinsmore [redacted]
Subject: Flood risk assessment modeling for Delaware

From "Submit a Comment" Form:

Message Body:
I commend to everyone the recent report on flood risk assessment issued by First Street Foundation [headquartered in Brooklyn, NY]. On June 29, 2020, the Foundation issued a press release with a link to its report which covers Delaware and all other States.
Notably, the Foundation's flood risk modeling TAKES ACCOUNT OF CLIMATE CHANGE, while FEMA's flood map modeling does NOT. As a result, the change in flood risk in Delaware between 2020 and 2050 is considerably more dramatic than what one would infer from FEMA's model.

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Wednesday, July 08, 2020 3:16 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Climate change is altering the behavior of mortgage lenders in flood risk areas"

From: Clem Dinsmore [redacted]
Subject: Climate change is altering the behavior of mortgage lenders in flood risk areas

From "Submit a Comment" Form:

Message Body:
I commend to everyone two articles written by Christopher Flavelle of the New York Times regarding how climate change is affecting the behavior of mortgage lenders. See his articles of September 27, 2019, and June 19, 2020. Simply Google "Christopher Flavelle on climate change and mortgage lending." The two key impacts are: (a) the socialization of private lender risk by lenders' transfer of risk to Fannie Mae and Freddie Mac and (2) the modification in terms of mortgage loans. All Delaware and U.S. taxpayers have a financial self-interest in understanding what is occurring.

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Friday, July 10, 2020 7:01 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Flood risk in Delaware and private lender/insurer behavior in light of climate change"

From: Clem Dinsmore [redacted]
Subject: Flood risk in Delaware and private lender/insurer behavior in light of climate change

From "Submit a Comment" Form:

Message Body:
Below is an outline of issues at least some of which I consider within the scope of DNREC's updating of the State Climate Action Plan.
POLICY IMPLICATIONS/ADVOCACY OPPORTUNITIES ASSOCIATED WITH ISSUES DISCUSSED BY CHRIS FLAVELLE AND FIRST STREET FOUNDTION [7/10/20 DRAFT]
[NOTE: THE FOLLOWING OUTLINE IS PROMPTED BY CONSIDERATION OF THE SEPTEMBER 27, 2019, AND JUNE 19, 2020, NEW YORK TIMES ARTICLES OF CHRISTOPHER FLAVELLE AND JUNE 29, 2020, "FIRST NATIONAL FLOOD RISK ASSESSMENT REPORT" ISSUED BY THE FIRST STREET FOUNDATION]

I.THE FLOOD RISK REPORT [which takes account of climate change, while the FEMA flood mapping modeling does NOT] A.POLICY/ADVOCACY ISSUES 1.NEED FOR COUNTIES AND MUNICIPAL GOVERNMENTS TO MODIFY THEIR LAND USE AND PUBLIC FACILITIES AND INFRASTRUCTURE INVESTMENT PLANS IN LIGHT OF HIGHER FLOOD RISK 2.NEED FOR STATE TO UPDATE MORE AGGRESSIVELY ITS CLIMATE ACTION PLAN IN LIGHT OF HIGHER FLOOD RISK 3.NEED FOR ALL LEVELS OF DELAWARE GOVERNMENT TO CONSIDER THE INCREASED FINANCIAL RISK TO THEIR ASSETS [INCLUDING FACILITIES, INFRASTRUCTURE AND FINANCIAL ASSETS INCLUDING FUTURE TAX CLAIMS] ASSOCIATED WITH THE HIGHER FLOOD RISK 4.NEED FOR ALL LEVELS OF DELAWARE GOVERNMENT TO CONSIDER THE IMPACT OF THE HIGHER FLOOD RISK ON THEIR ABILITY TO ATTRACT INVESTMENT OF ANY KIND [INCLUDING RESIDENTIAL, COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL] TO THEIR JURISDICTIONS 5.NEED FOR ALL LEVELS OF DELAWARE GOVERNMENT TO CONSIDER WHETHER AND HOW COMMUNITIES CAN RELOCATE TO OTHER AREAS OF THE STATE THAT ARE SUBJECT TO A LESSER FLOOD RISK 6.NEED FOR ALL LEVELS OF DELAWARE GOVERNMENT TO CONSIDER THE FINANCIAL, SOCIAL AND ENVIRONMENTAL FEASIBILITY OF SUSTAINING EXISTING COMMUNITIES LOCATED IN AREAS OF HIGH FLOOD RISK II.THE FLAVELLE ARTICLES [which describe how residential mortgage lenders either are transferring to Fannie Mae and Freddie Mac their risk of loss on properties within coastal zone/high flood risk areas or modifying the terms of such loans to reduce their risk of loss] A.POLICY/ADVOCACY ISSUES 1.NEED FOR STATE, COUNTIES AND COASTAL LOCAL GOVERNMENTS TO CONSIDER THE CONTINUING VIABILITY OF THE STATE'S TOURISM INDUSTRY 2.NEED FOR STATE, COUNTIES AND MUNICIPAL GOVERNMENTS TO ACCELERATE THEIR INITIATIVES/POLICIES TO MITIGATE CLIMATE CHANGE/CARBON EMISSIONS 3.NEED FOR STATE TO COOPERATE MORE AGGRESSIVELY WITH OTHER ATLANTIC COAST STATES IN IMPLEMENTING INITIATIVES/POLICIES TO MITIGATE CLIMATE CHANGE/CARBON EMISSIONS INCLUDING POLICIES TO FACILITATE THE RAPID DEVELOPMENT OF THE OFFSHORE WIND AND OCEAN ENERGY INDUSTRY 4.NEED FOR STATE TO MODIFY ITS PUBLIC UTILITY REGULATORY FRAMEWORK TO CONSIDER RENEWABLE ENERGY, ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT MORE FAVORABLY 5.NEED FOR STATE, COUNTIES AND MUNICIPAL GOVERNMENTS TO CONSIDER THE NEED TO MODIFY THE TERMS OF THEIR GRANT AND CREDIT PROGRAMS IN LIGHT OF CLIMATE RISK OF FINANCIAL LOSS 6.NEED FOR STATE, COUNTIES AND MUNICIPAL GOVERNMENTS TO CONSIDER MODIFYING THEIR FISCAL AND OTHER POLICIES AND PRACTICES REGARDING THE ACQUISITION OF LANDS AND EASEMENTS FOR CONSERVATION OF COASTAL AND HIGH FLOOD RISK AREAS 7.NEED FOR LOW, LOWER AND MIDDLE INCOME HOUSEHOLDS/TAXPAYERS IN THE STATE, WHO OWN THEIR RESIDENCES AND/OR SMALL BUSINESSES, TO

CONSIDER THE THREAT TO THEIR FINANCIAL SECURITY AND OPPORTUNITY FROM CHANGES IN MORTGAGE LOAN, OTHER CREDIT AND CASUALTY INSURANCE UNDERWRITING STANDARDS THAT TAKE ACCOUNT OF CLIMATE RISK OF LOSS 8.NEED FOR LOW, LOWER AND MIDDLE INCOME HOUSEHOLDS/TAXPAYERS IN THE STATE, WHO ASPIRE TO OWN OR EXPAND THEIR RESIDENCES AND/OR BUSINESSES, TO CONSIDER THE PROSPECT THAT MORE RIGOROUS LOAN AND CASUALTY INSURANCE UNDERWRITING STANDARDS THAT TAKE ACCOUNT OF CLIMATE RISK OF LOSS MAY PREVENT THEIR BEING ABLE TO DO SO 9.NEED FOR STATE, COUNTIES AND MUNICIPAL GOVERNMENTS TO CONSIDER THE PROBABLE DECLINE IN RESIDENTIAL, COMMERCIAL, INSTITUTIONAL AND OTHER BUILDING CONSTRUCTION AND REPAIR [AND ASSOCIATED JOBS], AS LENDERS AND CASUALTY INSURERS TAKE MORE RIGOROUS ACCOUNT OF THE RISK OF LOSS FROM CLIMATE CHANGE

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Tuesday, July 14, 2020 3:31 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Climate Initiative"

From: Daniel Falcone [redacted]
Subject: Climate Initiative

From "Submit a Comment" Form:

Message Body:
Please see attached Mass APS plan, which offers credits to distributors vs end user. Now it limits the type of feedstock to utilize and incentivize. But to make this effective for Maryland and other states we could include all renewables in the portfolio simply quantify them differently to have enough to serve the market to across state lines. Just a thought, I'm part of the Technical group working under the Providence Resolution.
FromSubjectReceivedSizeCategories
Daniel FalconeFwd: APS InformationWed 7/8764 KB

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Note from DNREC: The document referenced in this comment was not attached with the comment. Those interested in viewing more information about Massachusetts' Alternative Energy Portfolio Standard (APS) can visit https://www.mass.gov/alternative-energy-portfolio-standard.

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Wednesday, July 15, 2020 1:44 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Microgrid Development for Clean Energy Use and Energy Stability"

From: Tess Carella [redacted]
Subject: Microgrid Development for Clean Energy Use and Energy Stability

From "Submit a Comment" Form:

Message Body:
The US central energy grid was not designed for energy storage capabilities and is the limiting factor in clean energy usage. The infrastructure of the grid is also overdue for maintenance and is increasingly vulnerable to power outages especially with the increase in storms due to climate change. The development of a microgrid allows critical businesses to be protected from power outages and the ability to develop with the future in mind where energy storage can be built into the microgrid allowing the roll-out of renewable energy solutions (which often pose a risk to the electrical grid since renewables don't provide a steady state of energy generation b/c Ein=Eout unless renewable energy generators are shut down during a power surge). A microgrid generally operates while connected to the grid but can disconnect and operate in island mode on its own if there is a crisis such as a power outage or a major storm. The microgrid will then use its own local energy generation from renewable sources, fuel cells, batteries, or fossil fuels to supply power to the nearby buildings until the main grid is stable enough to reconnect.

The creation of a microgrid isn't a novel idea as states such as CT or NY (creating 80+ microgrids) and large scale data businesses like Google as well are in the process of developing microgrids. Developing a grid capable of energy storage and designed for renewable energy will enable DE to meet sustainability goals faster, sell excess energy back to the grid, protect critical businesses, and prevent against a loss of revenue due to increasing weather events. As utility companies trend towards maintenance companies rather than energy generators it is smart for DE to get ahead of the trend and address the limiting factor issue as our central grid becomes more and more outdated and at risk. Let's develop our infrastructure systematically for the future rather than trying to fit into the haphazard mess of a grid that we continue to string along.

As electric vehicles become more popular they also provide an amazing opportunity to solve the energy storage issue, since excess energy in the grid can be placed into charging electric vehicles (like scheduled city buses or parked cars at office buildings) and energy from these electric vehicles can also provide energy back into the grid during times of low light etc. A microgrid will enable the state the freedom to deploy these novel solutions as energy tech continues to develop and become popular.

I hope you consider this as a solution towards DE sustainable development action plan and thank you for providing a way to submit comments!

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Yue, Ian T. (DNREC)

From: linda nemes [redacted]
Sent: Thursday, July 16, 2020 8:12 AM
To: DEClimatePlan (MailBox Resources)
Subject: Comments

Sent from Mail for Windows 10
First, I do not necessarily deny that changes are occurring. What I do question is the "science" behind assumptions being made as to the causes and effects. In the 70's it was predicted that the earth was on the verge of another ice age? What happened to that science?

The earth has gone through climate change throughout its history. Look at the geological evidence. The age of dinosaurs was warm etc. Then the ice age….. were cars etc there during this period? The earth has an ebb and flow beyond man's ability to control.

A few years ago, I visited Strawberry Banke, in New Hampshire. I walked on an area that was the docks for a port back in 1700's. It is totally dry. What happened there. No electricity, no cars etc. Sea level declined. I am sure that it has risen in other places. Sea levels rise and fall.

I do agree man needs to be a stewart of this wonderful planet that God created. Has anyone looked at the impact of rainforest destruction? I think that may be a better approach

25cents tax on gasoline? Has anyone looked at the economic impact on Delaware that really does not have a reliable and comprehensive transportation system? Has anyone considered the impact on families and those of us who have to work for a living? We know low income, state supported will be helped, but what about the rest?

Also, I have concerns about Bloomberg. Who makes up this company? What ties do any of the decisionmakers have with this organization. Who are the main principals within the company? These are questions that need to be publicly answered for Delawareans.

Linda Nemes
[redacted]

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, July 16, 2020 9:33 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Climate action plan"

From: Teresa DiDonato [redacted]
Subject: Climate action plan

From "Submit a Comment" Form:

Message Body:
How is it that DNREC can put forth information that is not factual. The state owes the public proper information so that we can be well-informed. Has this anything to do with the green new deal ? Because if that's the case count me out. When the state of Delaware can put out information that is accurate then I will listen but until then count me out

--
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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, July 16, 2020 10:05 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Climate Action Plan"

From: Ann Rave [redacted]
Subject: Climate Action Plan

From "Submit a Comment" Form:

Message Body:
Please do not consider the false climate change narrative that has been pushed for years in your Climate Action Plan. All the dire warnings have come to nothing. Most of the efforts to combat so-called global warning have made no impact and are useless.
Thank you,
Ann Rave

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, July 16, 2020 3:36 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: [SUSPECTED SPAM] Delaware Climate Action Plan Contact Form "climate action plan."

From: Carol Schofield [redacted]
Subject: climate action plan.

From "Submit a Comment" Form:

Message Body:
It is distrubing to see that no matter what it is the people want or how hard they try to show the truth...it is ignored while you continue to push the Agenda 2030 plan through that has nothing at all to do with climate or the good of the people.
Get a conscience and start standing up for what is good in the world instead of worrying about money and power over our citizens... This government body will be answering to God for these shenanigans.

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, July 23, 2020 10:25 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "New York Times article regarding lawsuit filed against Australian government regarding disclosure of climate risk"

From: Clem Dinsmore [redacted]
Subject: New York Times article regarding lawsuit filed against Australian government regarding disclosure of climate risk

From "Submit a Comment" Form:

Message Body:
I commend to others reading the following article, "Australian student sues government over financial risks of climate change." See
https://gcc02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.nytimes.com%2F2020%2F07%2F23%2Fworld%2FAustralia%2Flawsuit-climate-change-bonds.html%3Fsmid%3Dem-share&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C6a2c09e44b2d4e57de8a08d82f14517d%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637311112201363258&sdata=FLEOf3wsFjyIiAPMC7Pe1FG3A3HZ5yJTRqtAorFgafw%3D&reserved=0.
Residents of Delaware, who anticipated possibly purchasing State bonds or other credit instruments in a future sale of such bonds or credit instruments, could consider bringing a similar lawsuit against the State demanding disclosure of the financial risk to the State's fiscal condition from climate change.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C6a2c09e44b2d4e57de8a08d82f14517d%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637311112201363258&sdata=WLoBag5gq5Uujo6R%2BNqB8rFJiCgyOimjRM16KpvXV5A%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, July 23, 2020 10:40 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "New study regarding probable future global warming"

From: Clem Dinsmore [redacted]
Subject: New study regarding probable future global warming

From "Submit a Comment" Form:

Message Body:
I commend to everyone reading in today's [July 23rd] New York Times "How Much Will the Planet Warm if Carbon Dioxide Levels Double?"
See
https://gcc02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.nytimes.com%2F2020%2F07%2F22%2Fclimate%2Fglobal-warming-temperature-ranges.html%3Fsmid%3Dem-share&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C127b47cc81f44f590b1108d82f164618%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637311119997004137&sdata=VJ5MVQowMXHyQHgq3m%2Bv3t77RRj0F6Ef2%2FZlWDjUBdw%3D&reserved=0

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Monday, July 27, 2020 12:11 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Climate risk disclosure required of State and local municipal bond issuers"

From: Clem Dinsmore [redacted]
Subject: Climate risk disclosure required of State and local municipal bond issuers

From "Submit a Comment" Form:

Message Body:
I commend to all the following interview by faculty at Penn's Wharton School in Philadelphia:

https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Friskcenter.wharton.upenn.edu%2Flab-notes%2Fclimate-related-muni-bond-risk%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C7e5e0615e3984947704c08d83247ca22%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637314631212974503&sdata=3nti78x1hMtpH4pcqWmX%2FUjqq6jIZQZHdTT3TKOB2CM%3D&reserved=0

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Friday, July 31, 2020 12:40 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Coastal flooding risk"

From: Clem Dinsmore [redacted]
Subject: Coastal flooding risk

From "Submit a Comment" Form:

Message Body:
I recommend consideration of another, new study of flooding risk in coastal areas. The July 30, 2020, New York Times describes the study and its innovative methodology. See https://gcc02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.nytimes.com%2F2020%2F07%2F30%2Fclimate%2Fsea-level-inland-floods.html%3Fsmid%3Dem-share&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C395256c2224841f512b308d835707ccd%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637318105293204504&sdata=3wgBfF7%2Btdqgms%2BgYkESPMLO2AjCuDvmj01unPrr8gs%3D&reserved=0. The study is notable for taking account of wave energy in estimating the extent of flooding associated with sea level rise and high tides.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C395256c2224841f512b308d835707ccd%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637318105293204504&sdata=UXGXMYVWSRdMAuiJJ8IV9FH6is%2BDr9BrY0%2BDri9v93o%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Tuesday, August 18, 2020 10:07 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Global warming"

From: Tom [redacted]
Subject: Global warming

From "Submit a Comment" Form:

Message Body:
Why don't you read apocalypse never written by one of your own people. Their is nothing you need to do or can do to stop climate change. It is happening naturally. You expect me to believe that people who are only occupying 5 percent at most of the earth's surface are causing all the climate change. That is totally ridiculous and only the dumbest and least informed people would believe that garbage. Probably only about 2-1/2 percent of the earth's surface is populated by industrialized nations. There is no way we can have an effect on the whole earth. Believing that people can have an effect on the climate, is like believing that people can control the speed the of the earth's rotation. Who controls that? Maybe you should look to God to see who controls the climate and the earth's speed around the sun and the rotation. Wake up before it is to late.

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, August 27, 2020 11:17 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Relocation of communities affected by increased flooding"

From: Clem Dinsmore [redacted]
Subject: Relocation of communities affected by increased flooding

From "Submit a Comment" Form:

Message Body:
I commend your reading Christopher Flavelle's front page article in today's New York Times regarding the policies of the Corps of Engineers, FEMA and HUD regarding the relocation of communities from flood prone areas. See https://gcc02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.nytimes.com%2F2020%2F08%2F26%2Fclimate%2Fflooding-relocation-managed-retreat.html%3Fsmid%3Dem-share&data=02%7C01%7CDEClimatePlan%40delaware.gov%7Cb3a639c813e340c2ead208d84a9cf64e%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637341385314522716&sdata=sJFDQhVJ%2ByhXbT9RXibyqS4BPzuqG6vbqRRd1yE%2B9bs%3D&reserved=0. The policy is called "managed retreat." I call the issue prompting the policy "America's climate refugee crisis."

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, September 03, 2020 10:24 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Availability of casualty insurance as climate change events increase in frequency and extremity"

From: Clem Dinsmore [redacted]
Subject: Availability of casualty insurance as climate change events increase in frequency and extremity

From "Submit a Comment" Form:

Message Body:
I commend Christopher Flavelle's article in today's New York Times regarding the response of private casualty insurers to the extreme fire hazard in California. [https://gcc02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.nytimes.com%2F2020%2F09%2F02%2Fclimate%2Fwildfires-insurance.html%3Fsmid%3Dem-share&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C3a5dc67dfa8d4d73e80008d850798d82%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637347830287732222&sdata=sadfKFZZ5js%2FgSsVfoi9iPsosvegNRBtxOLS6IkkVT0%3D&reserved=0]. As extreme weather events increase in Delaware, similar issues of availability of private casualty insurance will become acute.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C3a5dc67dfa8d4d73e80008d850798d82%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637347830287732222&sdata=68d2FUAQUEmkEkQ%2BMIlXvEAyiFz7OgmBxtj0Ac701KU%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Wednesday, September 09, 2020 9:04 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Creating Policy Environment for Microgrid Development in Coastal Sussex County through Clean Action Plan and Sussex Comprehensive Plan"

From: Athena Bi [redacted]
Subject: Creating Policy Environment for Microgrid Development in Coastal Sussex County through Clean Action Plan and Sussex Comprehensive Plan

From "Submit a Comment" Form:

Message Body:
Dear Administrators,

As the Associate Program Manager at Delaware Sustainable Energy Utility and a Ph.D. in Energy and Environmental Policy from University of Delaware, I have followed our state clean energy development very closely. I would like share with you, Ms. Love and Mr. Lawson, about the great opportunities we now have for creating a policy environment that promote microgrid development in Coastal Sussex County.

Firstly, let us discuss why Coastal Sussex County calls for microgrid. They can serves these three main purposes: (1) to enhance grid resilience to more extreme weather and ensure power reliability; (2) to lower electricity prices and reduce peak power requirement; (3) to deploy more zero-emission electricity sources.

To maintain electricity services during nature disasters triggers a growing interest in microgrid. As part of the NYC Economic Development Corporation's "Rise NYC" program, developed post Sandy, a microgrid for small businesses in the coastal areas is being developed to provide future resiliency . Over the last decade, Maryland has been the site of several severe storms and prolonged power outages. Therefore, the state incentivizes microgrids to ensure greater electric reliability (Wood,2020). As a low-lying coastal state with significant population living along the shoreline, we are also vulnerable to climate change, especially sea level rise and increased flooding (Delaware Office of State Planning Coordination, p2 &p20). Coastal cities (as circled out in purple line in Fig.1) in Sussex County, given its fastest growing population in the state, shall incorporate climate change vulnerability when designing the grid in the development areas along the shoreline.

Microgrids can lower electricity prices and reduce peak power requirements by reducing or managing electricity demand and alleviating grid congestion, when sited strategically within the electricity system (Vine & Morsch, 2017). Microgrid can make use of energy that would otherwise be lost, such as line losses. Coastal Sussex County faces a high development pressure through the next 20 years. Making matter worse, it is also at the most Climate Change risk. Thus, offering reliable electricity services at an affordable price to the residents and businesses through microgrid shall be pursuit.

As stated in the California Public Utility's Distributed Energy Resources Action Plan, microgrids can support distributed energy resources, which include solar panels on people's roofs, energy efficiency, energy storage, electric vehicles and demand response technologies. As illustrated by Fig.2, microgrid can better manage local clean power generation by providing optimal control, dynamic stability, and balance demand and generation on a small but critical scale (Microgrid Knowledge, 2020). As Delaware joined the U.S. climate Alliances in 2017 and started drafting the Climate Action Plan, microgrid, as an economical enabler of renewable energy, deserve a place in our Climate Action Plan. Favorable

microgrid policy or incentives can fit right in Sussex County's Comprehensive Plan, given its capability to "encourage renewable energy sources from a utility level standpoint with a committed power company integration (Sussex County Council, 2019)".

In this memo, I also recommended exploring microgrid incentives for the coastal municipalities of Sussex County, where it would be most beneficial to deploy microgrid compared to conventional grid. By now, I hope to have convinced you the benefits for including microgrid enabling policy in the Clean Action Plan and Sussex County's Comprehensive Plan. This memo does not cover all the social and economic benefits offered by microgrids, such as creating jobs and supporting small businesses. It focused on the benefits that aligns with our geo-political landscape.

Designing microgrid policy will not be a blindfolded exercise. Many of our neighboring states can serve as examples and case-studies in the process. Maryland, New Jersey, New York, Connecticut, Massachusetts, Rhode Island, and Washington, D.C., have all introduced microgrid incentives . Most existing microgrid projects in the U.S. are concentrated in Alaska, California, Georgia, Maryland, New York, Oklahoma, and Texas . I would love to dive into the existing policy tools and find the best fit for our state.

Yours truly,
Athena Bi

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, September 10, 2020 3:41 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "CFTC ad hoc subcommittee report on Climate Risk and U.S. Financial System"

From: Clem Dinsmore [redacted]
Subject: CFTC ad hoc subcommittee report on Climate Risk and U.S. Financial System

From "Submit a Comment" Form:

Message Body:
I encourage your consideration of the September 10, 2020, report, "Managing Climate Risk in the U.S. Financial System," issued by the Climate-Related Market Risk Subcommittee of the Market Risk Advisory Committee of the U.S. Commodities Futures Trading Commission. Go to the website of the CFTC.

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, September 10, 2020 5:48 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Delaware leadership on climate change"

From: Paul Bechly [redacted]
Subject: Delaware leadership on climate change

From "Submit a Comment" Form:

Message Body:
The Division of Climate, Coastal, & Energy might be interested to know that I was recently selected as the 2020 recipient of the Mensa Foundation "Intellectual Benefits to Society Award" based upon my work at DuPont to help control global warming in the early 1990s. More information on this award is available here: https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.mensafoundation.org%2Fwhat-we-do%2Fawards-and-recognition%2Fintellectual-benefits-to-society-award%2Fintellectual-benefits-winners%2F2020-paul-bechly%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7Cd864794de1c8490c92e108d855d32a2c%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637353712728122942&sdata=v6Qyy58k2d5h9eRDKnhFyFC7%2BN7lzY3%2BswOX5xUjEBk%3D&reserved=0 . As climate change may create significant long-term risks for Delaware, it is good to know that the state is forward looking on this issue.

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Monday, September 14, 2020 7:08 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Attorney General's September 10 lawsuit against 30 oil and gas companies & the American Petroleum Institute"

From: Clem Dinsmore [redacted]
Subject: Attorney General's September 10 lawsuit against 30 oil and gas companies & the American Petroleum Institute

From "Submit a Comment" Form:

Message Body:
I recommend that in that portion of the updated State Climate Action Plan, where DNREC describes how climate change has degraded the environmental, social and economic conditions of the State, DNREC include a summary of the factual allegations by the State's Attorney General in her complaint filed on September 10, 2020, against 30 oil and gas companies and the American Petroleum Institute.

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Yue, Ian T. (DNREC)

From: Yue, Ian T. (DNREC)
Sent: Thursday, September 17, 2020 3:34 PM
To: DEClimatePlan (MailBox Resources)
Subject: Fw: A revised email

From: Love, Susan E. (DNREC) [redacted]
Sent: Thursday, September 17, 2020 3:32 PM
To: Yue, Ian T. (DNREC) [redacted]
Subject: Fw: A revised email

would you please register this as a comment for the CAP?

thx
s

Susan E. Love, AICP
Administrator, Climate & Sustainability Programs
DNREC Division of Climate, Coastal, and Energy
100 W. Water Street, Suite 10B
Dover, DE 19904
[redacted]
www.de.gov/climatecoastalenergy

From: Clem Dinsmore [redacted]
Sent: Monday, September 14, 2020 7:15 AM
To: Love, Susan E. (DNREC) [redacted]
Subject: A revised email

Dear Susan:
This reflects an edit of my earlier email. Consider this my intended communication:

In that portion of the State's updated Climate Action Plan, where you state how climate change has degraded the environmental, social and economic conditions of the State, I recommend you include a summary the factual allegations of the Attorney General in the complaint she filed on September 10, 2020, against 30 members of the fossil energy industry and the American Petroleum Institute.
For the moment I assume that the Attorney General relied upon DNREC in developing the factual record that provided the basis for the complaint's claims under State law.
Regards,
Clem

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Monday, September 14, 2020 10:29 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: [SUSPECTED SPAM] Delaware Climate Action Plan Contact Form "DE Climate Action Plan"

From: T. Rex [redacted]
Subject: DE Climate Action Plan

From "Submit a Comment" Form:

Message Body:
Where to even begin. First, if DE is so concerned with air quality, then why does it "sell off" air quality credits? Let me guess, it's a money maker for the state? So, by incorporating what is shown in this plan, then everything will magically get better? I'm all for air and water quality, but it really is ridiculous to think that if we as a state throw a bunch of money at these suggested programs, then "climate change" will disappear.?.? What about the rest of the world, US, and surrounding states? So we put forth massive effort and tax dollars to sell the idea that rising temperatures will decrease and the seas won't rise? The level of non-scientific ideas and the burden placed on tax payers is again astounding. Here is novel idea, how about DNREC actually enforce the laws and regulations on the books now? Instead of creating new problems and tax burdens, let the EPO's actually do enforcement. For water quality, don't we have stormwater and sediment laws/regulations? How many construction sites (developer, DelDOT, etc.) are releasing sediment into our waterways almost everyday and NOTHING is done about it aka no enforcement. Didn't our governor make a big todo about water quality? Again, actually enforce the laws and regulations you have now and quit cowering under the phrase of economic development or the h*** with environmental protection and get that road opened. There's a lot of things that could easily be done now for low cost, like actual enforcement, so start with those versus wasting time, effort, and money on things that are grandiose and won't make the changes you think they will.

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Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, September 17, 2020 7:09 PM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Eating lower on the food change."

From: Charlie Garlow [redacted]
Subject: Eating lower on the food change.

From "Submit a Comment" Form:

Message Body:
Many global warming activists recommend eating veggie or vegan as a means of reducing GHGs. You may wish to include that in coming webinars. That's in addition to farm cover crops, unless you think that eating vegetarian is part of that category on your slide.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7Ca68567a078084a71198e08d85b5ebb85%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637359809728237702&sdata=x2eODZOJD%2FmyDWWzxaH3YYePWIOjNbwBDCTUBQlPg3o%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Reid Rowlands [redacted]
Sent: Wednesday, September 23, 2020 7:49 AM
To: DEClimatePlan (MailBox Resources)
Subject: Climate Action Plan
Attachments: Bill20-24 - Amendment to 2018 IECC-final.pdf

I would like to offer the following to be considered official public input on the Official Climate Action Plan.

My name is Reid Rowlands and I am member of Newark's Green Code Committee that developed the cities “Stretch” code to amend the adopted 2018 IECC (International Energy Conservation code) After more than a year of technical meetings/discussions and reviews by the City Planning commission, City Council passed this amendment on September 14th, 2020. Attached is a copy of the code amendment. I would like to suggest that it be considered to be adopted by the state, county or other cities around Delaware in hole or revised as needed to suite each local.

This code was developed on the basis of the need for climate change mitigation. It’s a point system which is divided into into two sections - residential and commercial with each section having three categories with minimum required points - (Energy Conservation - minimum of 24 points required, Resource Conservation - minimum of 8 points required and Indoor Environmental quality - minimum of 8 points required. A total of 50 points are required in total with the minimums from each section. Each action item was awarded specific points with emphasis on how important that action was and how hard or expensive it would be to achieve it.

Thank you,
Reid Rowlands

Reid Rowlands - CPHB|CPHT|CPHC®

WorldClassSupply.com
High Performance Design & Supply Center
375 Wedgewood Road - Newark, DE 19711
302-737-1411 - worldclasssupply.com

BILL NO. 20-24
1st Reading: _____
2nd Reading: _____

CITY OF NEWARK
DELAWARE

ORDINANCE NO. 20-__

An Ordinance Amending Chapter 7, Building, and Chapter 32, Zoning, Code of the City of Newark, Delaware, By Updating Green Building Code Requirements

THE COUNCIL OF THE CITY OF NEWARK HEREBY ORDAINS:

That Chapter 7, Building, and Chapter 32, Zoning, Code of the City of Newark, Delaware, be hereby amended in the following respect:

AMENDMENT 1: Amend Sec. 7-8, Amendments made to the 2018 International Energy Conservation Code, by adding the underscored text and deleting the stricken text as follows to subsection (7):

"(7) The following additional energy conservation and efficiency standards shall apply to all ~~major~~ subdivisions which include buildings greater than 5,000 square feet or which include three or more proposed dwelling units, as defined in chapter 27, subdivisions, of this Code:

a. These additional energy conservation and efficiency standards shall be based on the practices and procedures established in this section. ~~most recently issued United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating system or equivalent standard approved by the planning and development department.~~

b. Projects shall be reviewed and evaluated ~~and~~ based on points ~~rewarded~~ awarded as established herein through the building permit process.

c. Required energy conservation efficiency standards shall be derived from known best management practices and these guidelines, ~~the specifications in the USGBC's LEED 2009 for New Construction and Major Renovations and LEED 2008 for Homes,~~ as subsequently revised and reissued, or a planning and development department approved alternative. ~~equivalent.~~ Other ~~LEED~~ publications or ~~and adopted~~ specifications may also be used as references or guides by the city as part of the energy conservation and efficiency standards review process.

d. Commercial, institutional, ~~high-rise~~ multi-family residential and industrial projects shall be required to earn ~~25~~ a minimum of 50 points as specified herein: ~~LEED 2009 For New Construction and~~

~~Major Renovations (page numbers below refer to said text; these numbers may change in future editions):~~

1. *Energy Conservation:* Projects shall earn a minimum of 24 points in this category.

   a. *Envelope*

      i. *EC-1 - High-Performance Windows & Doors 3 or 4 points*

         Area-weighted average U-value for fenestration is 15% lower than maximum allowed U-factors permitted by IECC table C402.4 3 points

         20% lower than maximum allowed U-factors permitted by IECC table C402.4 4 points

      ii. *EC-2 Exterior Projections 2 points*

         Provide permanent projections to shade at least 90% of the openings on the South, East, and West faces of the building. Projections must have an area-weighted average projection factor (ratio of the projection width to the projection height above the door threshold or windowsill) of not less than 0.5.

      iii. *EC-3 Automatic Shades 1 or 2 points*

         Provide automatic shading devices for a minimum of 90% of the building windows that provide a minimum of 90% coverage of the window in the closed position. A manual override must be available to building occupants that opens the shades for a maximum of four (4) hours.

         Interior shades 1 point
         Exterior shades 2 points

iv. *EC-4 Higher Insulation, Roof 1 or 2 points*

U-Value Method: Area-weighted U-value for roof assemblies is 10% lower than the maximum allowed U-factor specified in IECC table C402.1.4 -OR- R-Value Method: Provide roof insulation with an R-value that is a minimum of 10% higher than required by IECC table C402.1.3 1 point

OR

U-Value Method: Area-weighted U-value for roof assemblies is 20% lower than the maximum allowed U-factor specified in IECC table C402.1.4 -OR- R-Value Method: Provide roof insulation with an R-value that is a minimum of 20% higher than required by IECC table C402.1.3 2 points

v. *EC-5 Higher Insulation, Walls 1 or 2 points*

U-Value Method: Area-weighted U-value for wall assemblies is 10% lower than maximum allowed U-factor specified in IECC table C402.1.4 -OR- R-Value Method: Provide the minimum continuous exterior insulation specified by IECC table C402.1.3 and cavity insulation with an R-value that is a minimum of 5% higher than required by IECC table C402.1.3 1 point

OR

U-Value Method: Area-weighted U-value for wall assemblies is 20% lower than maximum allowed U-factor specified in IECC table C402.1.4 -OR- R-Value Method: Provide continuous

exterior insulation which is 5% higher than the minimum specified by IECC table C402.1.3 and cavity insulation with an R-value that is a minimum of 10% higher than required by IECC table C402.1.3 2 points

vi. *EC-6 Higher Insulation, Floors & Slabs 1 or 2 points*

U-Value Method: Area-weighted U-value for floor assemblies is 10% lower than maximum allowed U-factor from IECC table C402.1.4 -OR- R-Value Method: Provide insulation that has an R-value 10% higher than the minimum required by IECC table C402.1.3 1 point

OR

U-Value Method: Area-weighted U-value for floor assemblies is 20% lower than maximum allowed U-factor from IECC table C402.1.4 -OR- R-Value Method: Provide insulation that has an R-value 20% higher than the minimum required by IECC table C402.1.3 2 points

vii. *EC-7 Calculated Thermal Bridging 3 points*

Provide calculations and modeling that includes the impact of thermal bridging elements on the overall envelope performance requirements for each building component (Roofs, Above-Grade Walls, Floors, etc.) and documents that the adjusted building assemblies comply with the maximum U-factor permitted in IECC table C402.1.4.

All structural elements with cross-sectional area greater than four (4) square inches that provide a direct, uninsulated path to the building exterior shall be included as separate elements in the area-weighted average calculations of each envelope component or assembly.

Structural elements and building details to be considered in this calculation include, but aren't limited to: floor-to-wall interfaces, wall-to-corner interfaces, floor and slab edges, especially projecting balconies, structural supports, or railings, awnings, shades and other appurtenances.

viii. *EC-8 Reduced Building Envelope Air Leakage 3 points*

The Energy Recovery Ventilation credit is required for this credit. Measured air leakage of the building at 75 Pascals is no more than 0.40 cfm/ft2 of the building's exterior thermal envelope area.

b. *Mechanical Systems*

i. *EC-9 Energy Recovery Ventilation 3 points*

Provide an energy-recovery ventilator or a heat-recovery ventilator within the HVAC system sized to meet the recommended air flow rates.

ii. *EC-10 Commissioning of the HVAC systems 3 points*

HVAC system is commissioned by a third party.

iii. *EC-11 High-Efficiency HVAC Equipment (not including Boilers) 3 points*

All installed HVAC equipment meets the minimum efficiency requirements of International Green Construction Code Appendix B - Equipment Efficiency Tables

iv. *EC-12 High-Efficiency Boilers 2 points*

Provide boilers with a minimum AFUE of 94.5%

v. *EC-13 High-Efficiency Cooling Towers 3 points*

All open-circuit cooling towers serving condenser water loops which total 900 gpm or greater have an efficiency at least 80 gpm/hp.

vi. *EC-14 High-Efficiency HVAC Fans 1 point*

Provide fans for variable air volume systems that use 0.8 watts or less for each cfm of delivered air. Provide fans for constant volume systems that use 0.65 watts or less for each cfm of delivered air.

vii. *EC-15 No Continuous Fan Operation 1 point*

Fans in the HVAC system are controlled based on actual loads, occupancy sensors, or occupancy schedule rather than continuous uncontrolled operation.

viii. *EC-16 Reduced Heating and Cooling of Unoccupied Spaces 3 points*

Provide occupancy sensors and zoning controls that automatically adjust the temperature set point in unoccupied areas.

ix. *EC-17 Reduced Heating and Cooling of Unoccupied Hotel Rooms 2 points*

For Group R-1 buildings with 50 or more guestrooms, each guestroom shall be provided with controls complying with the provisions of IECC Sections C403.7.6.1 and C403.7.6.2 to provide temperature setpoint and ventilation controls in guestrooms.

c. *Service Water Heating*

i. *EC-18 High-Efficiency Hot Water Heaters 2 points*

Provide domestic hot-water heating equipment that meets the minimum efficiency requirements of International Green Construction Code Appendix B - Equipment Efficiency Tables.

ii. *EC-19 Reduced Water Supply Lengths 1 point*

The maximum piping length to the nearest source of heated water for all fixtures is 25% shorter than the maximum permitted distance in IECC table C404.5.1.

iii. *EC-20 On Demand Domestic Hot Water 2 points*

Provide either point of use water heating or a recirculation pump and piping which is activated by occupancy sensors or light activation.

iv. *EC-21 Preheat Incoming Cold Water 2 points*

40% of the domestic hot water heating load is met by a waste heat recovery system.

d. *Lighting and Lighting Controls*

i. *EC-22 Efficient Lighting Fixtures, Interior 1 point*

Installed lighting power density (W/ft2) for all interior lighting fixtures is at least 10% lower than the maximum allowed lighting power density required by IECC section C405.3.2.

ii. *EC-23 Daylight Responsive Controls 2 points*

A minimum of 35% of the building's conditioned floor area is within a daylight zone (as defined by the IECC). Controls are provided to adjust the lighting output within the daylight area to maintain desired illumination levels.

iii. *EC-24 Efficient Lighting Fixtures, Exterior 1 point*

Installed lighting power density (W/ft2) for all exterior lighting fixtures is at least 30% lower than the maximum allowed lighting power density required by IECC section C405.4.2.

e. *Electric Systems*

i. *EC-25 Occupancy Controls for Outlets 1 point*

50% of all standard (120-volt, 15- or 20-amp circuits) receptacles in all private offices, conference rooms, print & copy rooms, break rooms, classrooms, and individual workstations are controlled by a time clock or occupancy sensor. Controlled receptacles are clearly labeled and at least one controlled receptacle must be within 6 feet of an uncontrolled receptacle.

ii. *EC-26 Energy Star Certified Equipment – Commercial Kitchens 2 points*

Provide Energy Star certified commercial fryers, dishwashers, steam cookers, compartment steamers, and hot food holding cabinets.

f. *Renewable Energy*

i. *EC-27 Provide Future PV Solar Panel Capability 1 point*

Provide conduits from roof/attic to electric panels for future connection of photo-voltaic panels and construct roof structures designed to support the potential additional structural load of PV solar panels (cannot be combined with Provide PV Panels credit).

ii. *EC-28 Provide PV Solar Panels up to 10 points*

First 15 kW of installed capacity 4 points

1 point for each additional five (5) kW of installed capacity (maximum six (6) points)

iii. *EC-29 Purchase Green Power 2 points*

Sign up for Green Power Plan through the City for a minimum of five (5) years.

g. *Energy Conservation Stretch Performance Option 30 or 40 points*

This option allows the applicant to substitute documented energy performance that is 20% better than is required by the 2018 International Energy Conservation Code. Projects which opt to use either Stretch Performance Option EC-30 or EC-31 to satisfy the Energy Conservation

category point requirements are still required to earn a minimum of 50 points in total but they shall only be required to earn a minimum of four (4) points in each of the Resource Conservation and Indoor Environmental Quality categories.

i. *EC-30 Certified Performance 20% Better Than Code 30 points*

Using calculations and modeling acceptable to the building official, or their designee, that documents estimated energy usage which is 20% less than the standard reference design building and has been performed by, or under the supervision of, signed and sealed by a State of Delaware licensed design professional.

ii. *EC-31 Certified Performance 40% Better Than Code 40 points*

Using calculations and modeling acceptable to the Building Official, or their designee, that documents estimated energy usage which is 40% less than the standard reference design building and has been performed by, or under the supervision of, signed and sealed by a State of Delaware licensed design professional.

2. *Resource Conservation, Efficiency and Features* - Projects shall earn a minimum of eight (8) points in this category, unless using Energy Conservation Stretch Performance Option.

a. *Conservation and Efficiency*

i. *RC-1 Divert materials away from landfills 2 or 3 points*

50% of the construction waste, by weight, has been diverted from landfills 2 points

75% of the construction waste, by weight, has been diverted 3 points

ii. *RC-2 Donation of Deconstructed Materials to Reseller up to 5 points*

Donate materials to an approved charitable organization (one that that provides building materials or housing).

First $1,000 in value donated 1 point

1 point for each additional $5,000 in donated value (maximum four (4) points)

iii. *RC-3 Recycled Content Materials up to 9 points*

Provide building materials which are derived or produced from recycled materials. A product qualifies as meeting the recycled content criteria if it contains a minimum of 25% postconsumer recycled content or 50% preconsumer recycled content. Provide recycled content materials based on percentage of all materials in each category in accordance with the following schedule:

Minimum of 75% of all installed carpeting and flooring 1 point

Minimum of 90% of all installed decking 1 point

All installed sheathing 1 point

Minimum of 90% of all installed siding 1 point

Minimum of 90% of all installed roofing 1 point

All acoustic ceiling tiles and a minimum of 50% of all installed ceilings 1 point

Minimum of 90% of all metal interior framing 1 point

All concrete used, excluding pavers, pervious concrete and countertops, contains either 30% fly ash or slag and 50% recycled content or reclaimed aggregate, OR 90% recycled content or reclaimed aggregate 1 point

All cavity insulation 1 point

iv. *RC-4 Regional Materials 1 or 2 points*

10% of materials (calculated as a percentage of total cost of materials) were extracted, processed, or manufactured within 500 miles of the project site 1 point

20% of materials (calculated as a percentage of total cost of materials) 2 points

v. *RC-5 Rapidly Renewable Materials / Biobased Materials 1 point*

2.5% of materials (calculated as a percentage of total cost of materials) comply with ASTM Test Method D6866 and were legally harvested.

vi. *RC-6 Certified Wood 1 point*

50% of the wood products provided (calculated as a percentage of total cost of wood products) are FSC certified.

vii. *RC-7 Durable Exterior Decking 1 point*

Framing and decking materials are naturally decay-resistant. Not to be combined with RC-3 Recycled Content Materials.

viii. *RC-8 Optimal Value Engineering Framing Techniques 2 points*

Framing plans use Optimum Value Engineering techniques as defined by the U.S. Department of Energy.

ix. *RC-9 Prefabricated Components up to 4 points*

90% of the wall assemblies use precut or preassembled components (such as trusses) or panelized assemblies 2 points

90% of the floor assemblies use precut or preassembled components (such as trusses) or panelized assemblies 1 point

90% of the roof assemblies use precut or preassembled components (such as trusses) or panelized assemblies 1 point

x. *RC-10 Engineered Lumber 1 point*

All joists, beams, girders, headers and rafters greater than eight (8) inches nominal width are engineered lumber.

xi. *RC-11 Water Efficient Landscaping 2 points*

Either no irrigation is installed OR the landscaping uses native and drought-tolerant plants (as approved by City

Horticulturist) with a subsequent reduction in installed irrigation.

xii. *RC-12 Irrigation Design 2 points*

The irrigation system is zoned to provide appropriate amounts of water to the different landscape materials, sprinklers are not located where they will spray water onto the building or paved areas, and the irrigation system is controlled by a smart controller that will shut off the irrigation system based on soil moisture.

xiii. *RC-13 Rainwater or Graywater Reuse System 2 points*

Provide storage for the capture and controlled reuse of rainwater and/or graywater that provides at least 50% of the irrigation demands (system must be designed by a professional certified by the American Rainwater Catchment Systems Association).

xiv. *RC-14 Efficient HVAC Water Use 1 point*

Chillers and cooling towers do not use once-through cooling with potable water.

xv. *RC-15 Reduced Water Use 1 point*

Lavatories, shower heads, water closets, and sinks have a maximum flow rate that is 20% less than maximum flow rate in the IPC.

b. *Site Selection and Facilities*

i. *RC-16 Flood Zones 1 point*

Applicable only to a site that includes an area classified as floodplain. All site

disturbance and development of undeveloped land must be a minimum of five (5) feet of elevation above the 100-year flood elevation.

ii. *RC-17 Protect or Restore Native Plants 1 point*

Retain a minimum of 20% of the on-site native plants.

iii. *RC-18 Wildlife Habitat 3 points*

A minimum of 5% of the site is designed, landscaped, and certified as a wildlife habitat.

iv. *RC-19 Increase Tree Cover up to 5 points*

Plant more trees than required by Chapter 32, Article XXV of the City of Newark Municipal Code. One (1) point for every two (2) additional trees per acre of site for a maximum of five (5) points.

v. *RC-20 Maximize Open Space 2 points*

Total open space is 10% greater than the minimum required by Code. A minimum of 25% of the open space must be vegetated and not lawn.

vi. *RC-21 Access to Quality Transit 2 points*

Each functional entry of the project is within 1/4-mile walking distance of an existing or planned bus stop, or rideshare stop OR within 1/2-mile walking distance of an existing commuter rail station. Transit routes serving the stops must have paired service (outbound and inbound) and

service at all the stops in aggregate must provide a minimum of 72 weekday trips and 40 weekend trips.

vii. *RC-22 Bicycle Storage & Shower Rooms: Medical and dental offices; Business, governmental and professional offices; Public and private schools 2 points*

Provide two (2) long-term bicycle storage units. Provide an additional unit for every additional ten (10) regular employees or staff or fraction thereof above 40. Provide at least one (1) on-site shower with changing facility for the first five (5) storage units and one (1) additional shower for every seven (7) additional storage units.

viii. *RC-23 Bicycle Storage & Shower Rooms: Dwelling: garden apartment, high-rise apartment, or group housing 1 point*

For buildings without individual garages for each dwelling unit: provide one (1) long-term bicycle storage unit for at least 30% of the residents but no fewer than one (1) storage unit for each dwelling unit.

ix. *RC-24 Bicycle Storage & Shower Rooms: Retail 1 point*

Provide two (2) long-term bicycle storage units. Provide an additional unit for every additional ten (10) regular employees or fraction thereof above 40. Provide at least one (1) on-site shower with changing facility for the first five (5) storage units and one (1) additional shower for every seven (7) additional storage units.

x. *RC-25 Bicycle Racks 1 point*

Provide twice as many City Code required bicycle spaces.

xi. *RC-26 Electric Vehicle Charging Facilities 3 points*

Provide electrical vehicle charging equipment at 2% of all parking spaces but no fewer than two (2). Reserve these spaces for the sole use of plug-in electric vehicles.

xii. *RC-27 Site Infiltration 5 points*

Design the site to have 100% site infiltration with no storm water entering the receiving system OR make 50% of the total roof surfaces a vegetated roof AND
Ensure that the downstream conveyance system can adequately handle the anticipated storm water from the site. Perform or provide funding for any necessary repairs as directed to the receiving system.

xiii. *RC-28 Site Filtration 3 points*

Provide water quality treatment via filtration best practices for the design storm event.

xiv. *RC-29 Heat Island Reduction, Nonroof 1 or 2 points*

Use either permeable paving units or exterior paving units with a minimum Solar Reflectance Index (SRI) of 29 or concrete with a minimum SRI of 35 for the hardscape areas on the site.

50-75% of all hardscape areas 1 point

More than 75% of all hardscaped areas 2 points

xv. *RC-30 Heat Island Reduction, Roof 2 points*

75% of the roof surfaces have a minimum SRI of 64 (for flat roofs) and 25 (for sloped roofs) OR 75% of the roof surfaces are vegetated.

3. *Indoor Environmental Quality* Projects shall earn a minimum of eight (8) points in this category, unless using Energy Conservation Stretch Performance option.

a. *IQ-1 Ventilation Controls for Densely Populated Spaces 1 point*

Provide Demand Control Ventilation for spaces with an occupant load greater than 25 people / 100 SF designed in compliance with ASHRAE 62.1.

b. *IQ-2 Increased Ventilation 1 point*

Ensure that mechanically ventilated spaces are getting the minimum outdoor air intake flow rate based on the Ventilation Rate Procedure from ASHRAE 62.1.

c. *IQ-3 Removal of Contaminants 2 points*

Provide spot exhaust at sources of air contamination (e.g. kitchen and toilet room exhausts) using Energy Star rated fans.

d. *IQ-4 High-Efficiency Air Filtering 1 point*

Install air filters with a minimum MERV rating of eight (8) or higher.

e. *IQ-5 UV Air Cleaning 1 point*

Install duct-mounted germicidal UV lights on both the coil and return air duct. Must be combined with IQ-4 High-Efficiency Air Filtering.

f. *IQ-6 Construction Indoor Air Quality Management Plan 3 points*

During construction perform all of the following:

Meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction.

Protect absorptive materials stored on site from moisture damage.

Don't operate permanently installed air-handler equipment during construction unless filtration media is in place.

Replace all filtration media immediately prior to occupancy.

Prohibit the use of tobacco products inside the building.

OR

Before Occupancy: Flush the building with at least 14,000 CF of outside air for each square foot of gross floor area.

g. *IQ-7 Low-Emitting Materials 5 points*

100% of products used within the waterproofing envelope comply with International Green Construction Code section 801.4.2. Applies to all adhesives and sealants; paints and coatings; flooring systems; composite wood; and insulation in ceilings and walls.

h. *IQ-8 Low-Emitting Materials, Furniture 1 point*

A minimum of 90% of furniture products, by cost, comply with International Green Construction Code section 801.4.2.5.

i. *IQ-9 Prefinished Materials 1 point*

A minimum of 90% materials used for trim, millwork and exterior finishes are prefinished.

j. *IQ-10 Composite Wood Materials 1 point*

All composite wood products are certified low formaldehyde.

k. *IQ-11 Controllability of Systems, Lighting 1 point*

For individual occupant spaces provide lighting controls with a minimum of three lighting levels. Controls must be installed in at least 90% of the individual occupant spaces.

For multi-occupant spaces provide lighting controls with a minimum of three lighting levels. Lighting for any presentation or projection wall must be separately controlled, and controls must have a direct line of sight to the controlled fixtures.

l. *IQ-12 Controllability of Systems, Thermal Comfort 1 point*

For non-residential projects: provide individual thermal controls for at least 50% of individual occupant spaces. Provide group thermal controls for all shared multi-occupant spaces.

m. *IQ-13 Thermal Comfort, Design 1 point*

Design heating, ventilating, and air-conditioning systems and the building envelope to meet the requirements of ASHRAE Standard 55-2010, Thermal Comfort Conditions for Human Occupancy.

n. *IQ-14 Daylight and Views, Daylight 1 or 2 points*

Provide daylight-only illuminance levels within 75% of the regularly occupied floor area

between 300 lux and 3,000 lux at 9:00 a.m. and 3:00 p.m. on a clear-sky day at the equinox 1 point

For 90% of the regularly occupied floor area 2 points

o. *IQ-15 Daylight and Views, Views 1 point*

Provide direct line of sight to the outdoors for 75% of all regularly occupied floor area.

4. *Alternative Compliance Path*

a. *AP-1 Established Rating System 50 points*

Projects which meet this requirement shall not be required to comply with subsections 1-3 of this section.

Minimize the environmental impact of the building by incorporating additional sustainable design and construction measures that have tangible and demonstrable benefits beyond Code by submitting certification as LEED Gold or higher LEED designation; Passive House Certified; International Green Building Code Compliant, or designed and built to be a Zero Energy Building as defined by the U.S. Department of Energy.

~~LEED FOR NEW CONSTRUCTION~~	~~LEED PAGE~~	~~POINTS~~
~~1) Site Selection~~	~~2~~	~~4~~
~~2) Development Density and Community Connectivity~~	~~3~~	~~5~~
~~3) Alternative Transportation—Public Transportation Access~~	~~6~~	~~6~~
~~4) Water Efficient Landscaping~~	~~23~~	~~4~~

~~LEED FOR NEW CONSTRUCTION~~	~~LEED PAGE~~	~~POINTS~~
~~5) Optimize Energy Performance~~	~~35~~	~~2~~
~~6) Enhanced Commissioning~~	~~39~~	~~2~~
~~7) Enhanced Refrigerant Management~~	~~41~~	~~2~~
~~8) Green Power~~	~~45~~	~~2~~
~~9) Construction Waste Management~~	~~50~~	~~2~~
~~10) Regional Materials~~	~~53~~	~~2~~
~~11) Certified Wood~~	~~55~~	~~1~~
~~12) Outdoor Air Delivery Monitoring~~	~~60~~	~~1~~
~~13) Increased Ventilation~~	~~61~~	~~1~~
~~14) Construction Indoor Air Quality Management Plan—Before Occupancy~~	~~64~~	~~1~~
~~15) Low Emitting Materials—Adhesive and Sealants~~	~~66~~	~~1~~
~~16) Low Emitting Materials—Paints and Coatings~~	~~68~~	~~1~~
~~17) Low Emitting Materials—Flooring~~	~~69~~	~~1~~
~~18) Indoor Chemical and Pollutant~~	~~72~~	~~1~~

~~LEED FOR NEW CONSTRUCTION~~	~~LEED PAGE~~	~~POINTS~~
~~Source Control~~		
~~19) Controllability of Systems—Lighting~~	~~73~~	~~1~~
~~20) Thermal Comfort Design~~	~~75~~	~~1~~
~~21) Daylight and Views—Daylight~~	~~77~~	~~1~~
~~22) Daylight and Views—Views~~	~~81~~	~~1~~
~~23) LEED Accredited Professional~~	~~84~~	~~1~~

e. Residential ~~(non high-rise)~~ single-family dwelling subdivision, ~~projects~~ which include three or more dwelling units shall be required to earn ~~25~~ a minimum of 50 points as specified herein: ~~LEED (2008) For Homes, (page numbers below refer to this text; these numbers may change in the future editions):~~

1. *Energy Conservation* - Projects shall earn a minimum of 24 points in this category.

a. *Envelope*

i. *EC-1 High-Performance Windows & Doors 2 or 3 points*

Area-weighted average U-value for fenestration is 15% lower than maximum allowed U-factors permitted by IECC table R402.1.4 2 points

20% lower than maximum allowed U-factors permitted by IECC table R402.1.4 3 points

ii. *EC-2 High Performance Skylights 2 or 3 points*

Area-weighted average U-value for skylights and tubular daylighting devices is 15% lower than the maximum allowed U-factors permitted by IECC table R402.1.4 2 points

20% lower than the maximum allowed U-factors permitted by IECC table R402.1.4 3 points

iii. *EC-3 Exterior Projections 2 points*

Provide permanent projections to shade at least 90% of the openings on the South, East, and West faces of the building. Projections must have an area-weighted average projection factor (ratio of the projection width to the projection height above the door threshold or windowsill) of not less than 0.5.

iv. *EC-4 Higher Insulation, Ceilings 1 or 2 points*

U-Value Method: Area-weighted U-value for ceiling assemblies is 10% lower than the maximum allowed U-factor specified in IECC table R402.1.4 -OR- R-Value Method: Provide ceiling insulation with an R-value that is a minimum of 10% higher than required by IECC table R402.1.2 1 point

OR

U-Value Method: Area-weighted U-value for ceiling assemblies is 20% lower than the maximum allowed U-factor specified in IECC table R402.1.4 -OR- R-Value Method: Provide ceiling insulation with an R-value that is a minimum of 20% higher than required by IECC table R402.1.2 2 points

v. *EC-5 Higher Insulation, Walls 1 or 2 points*

U-Value Method: Area-weighted U-value for wall assemblies is 10% lower than the maximum allowed U-factors specified in IECC table R402.1.4 -OR- R-Value Method: Provide minimum continuous exterior insulation specified by IECC table R402.1.2 and cavity insulation with an R-value that is a minimum of 5% higher than required b IECC table R402.1.2 1 points

OR

U-Value Method: Area-weighted U-value for wall assemblies is 20% lower than maximum allowed U-value specified in in IECC table R402.1.4 -OR- R-Value Method: Provide continuous exterior insulation which is 5% higher than the minimum specified by IECC table R402.1.2 and cavity insulation with an R-value that is a minimum of 10% higher than required by IECC table C402.1.2 2 points

vi. *EC-6 Higher Insulation, Floors & Slabs 1 or 2 points*

U value method: Area-weighted U-value for floor assemblies is 10% lower than maximum allowed U-value from IECC Table R402.1.4, -OR- R-Value Method: Provide insulation that has an R-value 10% higher than the minimum required by IECC table R402.1.2 1 point

OR

U value method: Area-weighted U-value for floor assemblies is 20% lower than

maximum allowed U-value from IECC Table R402.1.4, -OR- R-Value Method: Provide insulation that has an R-value 20% higher than the minimum required by IECC table R402.1.2 2 points

vii. *EC-7 Above Grade Mass Wall Systems 2 points*

A minimum of 50% of the above grade exterior walls are constructed as mass walls, as defined by the International Residential Code.

viii. *EC-8 Reduced Building Envelope Air Leakage 3, 5 or 7 points*

When tested in accordance with IECC section R402.4 points shall be awarded as follows based on the documented air leakage testing report. Must be combined with EC-11 Energy Recovery Ventilation.

Measured air changes per hour (ACH) of the building at 50 pascals is 1 or less 7 points

Measured ACH at 50 pascals is more than 1 and less than or equal to 1.5 5 points

Measured ACH at 50 pascals is more than 1.5 and less than or equal to 2 3 points

b. *Mechanical Systems*

i. *EC-9 Energy Recovery Ventilation 5 points*

Provide an energy-recovery ventilator or a heat-recovery ventilator within the HVAC system sized to meet the recommended air flow rates.

ii. *EC-10 No HVAC Ductwork – Heating 1 point*

Space heating provided by system that does not include air ducts.

iii. *EC-11 No HVAC Ductwork, Cooling 1 point*

Space cooling provided by system that does not include air ducts.

iv. *EC-12 Effective Ductwork Location 3 points*

All heating and cooling ducts and mechanical equipment are installed entirely within the thermal envelope and air barrier of the building.

v. *EC-13 HVAC Zoning 1 to 3 points*

HVAC system is a two-stage or variable-capacity system with no bypass ducts, serving at least two zones in the building.

First two zones 1 point

1 point for each additional zone (up to a total of four zones) (maximum of 2 points)

vi. *EC-14 High-Efficiency HVAC Equipment, Boilers, Furnaces and Heat Pumps up to 5 points*

Provide boilers or heat pumps with the following minimum efficiencies:

For central AC units or air source heat pumps:

SEER >= 15 1 point

SEER >= 17 3 points

SEER >= 19 5 points

For gas engine-driven heat pump cooling:

COP >= 1.2 @ 95 deg F 1 point

For ground-source heat pumps using an open loop:

EER >= 17.8 1 point

EER >= 19.4 2 points

For ground-source heat pump using a closed loop:

EER >= 15.5 1 point

EER >= 17 2 points

For a ground-source heat pump using direct expansion:

EER >= 16.5 1 point

EER >= 18 2 points

For a natural gas, propane or oil boiler:

AFUE >= 87 1 point

AFUE > 90 2 points

For a natural gas or propane furnace:

AFUE >= 92 1 point

AFUE >= 94 2 points

vii. *EC-15 Radiant Floor Heat 2 points*

A minimum of 50% of the habitable space of the building is heated with radiant floor heat.

c. *Service Water Heating*

i. *EC-16 High-Efficiency Hot Water Heaters 4 points*

For storage gas water heaters with an input rate less than or equal to 30,000 Btu/h:

EF greater than 0.8 1 point

For storage gas water heaters with input rate greater than 30,000 Btu/h or instantaneous gas water heaters with input rate greater than 150,000 Btu/h:

Thermal Efficiency >= .90 2 points

Thermal Efficiency >= .95 3 points

For electric storage water heaters:

Thermal Efficiency >= 0.95 1 point

For electric instantaneous water heaters:

Thermal Efficiency >= 0.97 2 points

For heat pump storage water heaters:

EF between 1.5 and 2 2 points

EF between 2 and 2.2 3 points

EF >= 2.2 4 points

ii. *EC-17 Hot Water Pipe Insulation 1 point*

Provide minimum R-4 pipe insulation on all domestic hot water piping, including sub slab pipes. Insulation on all piping elbows and tees must adequately insulate changes in direction.

iii. *EC-18 On Demand Hot Water Recirculation System 2 points*

Provide either point of use water heating, or a recirculation pump and piping, which is activated by occupancy sensors or lighting activation.

d. *Lighting and Lighting Controls*

i. *EC-19 Efficient Lighting Fixtures, Interior 1 point*

All permanently installed lighting fixtures shall contain high efficacy lamps. All lamps over 40 watts shall have an efficiency not less than 70 lumens per watt.

e. *Electric Systems*

i. *EC-20 Energy Star qualified appliances 1 point*

All installed appliances are Energy Star rated.

ii. *EC-21 Energy Star qualified ceiling fans 1 point*

Energy Star rated ceiling fans installed in all sleeping rooms and primary living areas.

f. *Renewable Energy*

i. *EC-22 Provide Future PV Solar Panel Capability 1 point*

Provide conduits from roof/attic to electric panels for future connection of photo-voltaic panels and construct roof structures designed to support the potential additional structural load of PV solar panels (cannot be combined with Provide PV Panels credit).

ii. *EC-23 Provide PV Solar Panels up to 10 points*

Per each dwelling unit:

First two (2) kW of installed capacity 4 points

1 point for each additional one (1) kW of installed capacity (maximum six (6) points)

iii. *EC-24 Purchase Green Power 2 points*

Sign up for Green Power Plan through the City for all dwelling units for a minimum of five (5) years.

iv. *EC-25 Passive Solar Potential & Solar Space Heating 3 points*

Design the building using passive solar design principles, which include an exterior wall with a minimum 30% window area within 30° of true south with a thermal mass which has a darkened surface for absorption and a means to distribute the heat by either convection, conduction and/or air circulation. The collection windows shall be provided with permanent means to be shaded or otherwise protected during the summer months.

g. *Energy Conservation Stretch Performance Option 30 or 40 points*

This option allows the applicant to substitute documented energy performance that is 20% better than is required by the 2018 International Energy Conservation Code. Projects which opt to use either Stretch Performance Option EC-26 or EC-27 to satisfy the Energy Conservation category point requirements are still required to earn a minimum of 50 points total but they shall

only be required to earn a minimum of four (4) points in each of the Resource Conservation and Indoor Environmental Quality categories.

i. *EC-26 Certified Performance 20% Better Than Code 30 points*

Using calculations and modeling acceptable to the Building Official, or their designee, that documents estimated energy usage which is 20% less than the standard reference design building and has been performed by, or under the supervision of, signed, and sealed by a State of Delaware licensed design professional.

ii. *EC-2 Certified Performance 40% Better Than Code 40 points*

Using calculations and modeling acceptable to the Building Official, or their designee that documents estimated energy usage which is 40% less than the standard reference design building and has been performed by, or under the supervision of, signed, and sealed by a State of Delaware licensed design professional.

2. *Resource Conservation* - Projects shall earn a minimum of eight (8) points in this category unless using the Energy Conservation Stretch Performance option.

a. *Conservation and Efficiency*

1. *RC-1 Divert Materials Away From Landfills 2 or 3 points*

50% of the construction waste, by weight, has been diverted 2 points

75% of the construction waste, by weight, has been diverted 3 points

2. *RC-2 Donation of Deconstructed Materials up to 5 points*

Donate materials to an approved charitable organization (one that that provides building materials or housing).

First $1,000 in value donated 1 point

1 point for each additional $5,000 in donated value (maximum four (4) points)

3. *RC-3 Reuse of Existing Building Materials 1 or 2 points*

A minimum of 5% of the building's materials (by cost) were reused or salvaged from off-site or on-site - such as structural materials, enclosure materials, and permanently installed elements and materials 1 point

A minimum of 10% reused or salvaged 2 points

4. *RC-4 Building Reuse 1 to 6 points*

200 square feet of floor area reused 1 point

1 point for each additional 200 square feet of building area reused (maximum five (5) points)

5. *RC-5 Recycled Content Materials 1 to 6 points*

Provide building materials which are derived or produced from recycled materials. A product qualifies as meeting the recycled content criteria if it contains a minimum of 25% postconsumer recycled content or 50% preconsumer recycled content. Provide

recycled content materials based on percentage of all materials in each category in accordance with the following schedule:

Minimum of 75% of all installed flooring 1 point

Minimum of 90% of all installed decking 1 point

All installed sheathing 1 point

Minimum of 90% of all installed siding 1 point

Minimum of 90% of all installed roofing 1 point

All cavity insulation 1 point

6. *RC-6 Regional Materials 1 or 2 points*

10% of materials (calculated as a percentage of total cost of materials) were extracted, processed, or manufactured within 500 miles of the project site 1 points

20% of materials (calculated as a percentage of total cost of materials) 2 points

7. *RC-7 Certified Wood 1 point*

50% of the wood products provided (calculated as a percentage of total cost of wood products) are FSC certified.

8. *RC-8 Durable Exterior Decking 1 point*

Framing and decking materials are naturally decay-resistant. Not to be

combined with RC-5 Recycled Content Materials.

9. *RC-9 Optimal Value Engineering Framing Techniques 2 points*

Framing plans use Optimum Value Engineering techniques as defined by the U.S. Department of Energy.

10. *RC-10 Prefabricated Components 1 to 4 points*

90% of the wall assemblies use precut or preassembled components (such as trusses) or panelized assemblies 2 points

90% of the floor assemblies use precut or preassembled components (such as trusses) or panelized assemblies 1 point

90% of the roof assemblies use precut or preassembled components (such as trusses) or panelized assemblies 1 point

11. *RC-11 Engineered Lumber 1 point*

All joists, beams, girders, headers and rafters greater than eight (8) inches nominal are engineered lumber.

12. *RC-12 Improved Moisture Management 3 points*

Exterior of building has a rain screen wall system designed with a minimum 1/4" air space outside of the water resistive barrier, vented at the top and bottom of the wall, and integrated with wall flashing.

13. *RC-13 Improved Flashing 3 points*

Install the following building flashing:

Pan flashing at sills of all exterior windows and doors.

All window and door head and jamb flashing is liquid applied flashing.

Through-wall flashing is installed at all transitions between wall cladding materials or wall construction types.

Seamless, preformed kick out flashing or prefabricated metal with soldered seams is provided at all roof-to-wall intersections.

14. *RC-14 Covered Exterior Doors 1 point*

Provide either a storm door or a covering with a minimum projection factor (width to height) of 0.375.

15. *RC-15 Roof Water Discharge 1 point*

All roof water is conducted at least five (5) feet from the perimeter of the building and exterior grade is sloped away from building.

16. *RC-16 Irrigation Design 1 or 2 points*

Sprinkler nozzles have a max precipitation rate of 1.20 inches per hour and are located where they will not spray water onto the building or paved areas 1 point

Drip irrigation is installed in all landscape beds 1 point

17. *RC-17 Native Landscaping 2 points*

Provide only approved (per City Horticulturist) native plants.

18. *RC-18 Rainwater or Graywater Reuse System 1 to 3 points*

Provide storage for the capture and controlled reuse of rainwater and/or graywater.

50% of system demand provided by storage capacity 1 point

75% of system demand provided by storage capacity 2 points

100% of system demand provided by storage capacity 3 points

19. *RC-19 Reduced Water Use 1 point*

Lavatories, shower heads, toilets, and sinks have a maximum flow rate that is 20% less than the maximum flow rate permitted in the International Residential Code.

b. *Site Selection and Facilities*

1. *RC-20 Flood Zones 1 point*

Applicable only to a site that includes an area classified as floodplain. All site disturbance and development of undeveloped land must be a minimum of five feet of elevation above the 100-year flood elevation.

2. *RC-21 Reduced Soil Disturbance 1 point*

Provide an alternative foundation system that reduce site disturbance, such as slab on grade, helical piers, or piers.

3. *RC-22 Minimal Slope Disturbance 1 point*

No soil disturbance of areas of the site which exceed a 1:10 slope.

4. *RC-23 Minimal Soil Disturbance and Erosion 1 point*

Total soil disturbance is less than 125% of the building area.

5. *RC-24 Increase Tree Cover 3 points*

Plant twice as many shade trees than required by Chapter 32, Article XXV Landscape Screening and Treatment of the City of Newark Municipal Code.

6. *RC-25 Maximize Open Space 2 points*

Total open space is 10% greater than the minimum required by Code. A minimum of 25% of the open space must be vegetated and not lawn.

7. *RC-26 Compact Development 1 to 3 points*

Site density (dwelling unit per acre of buildable area) is >= 7 1 point

Site density is >= 12 2 points

Site density is >= 20 3 points

8. *RC-27 Compact Homes 1 to 5 points*

One (1) point for every 4% decrease from the Energy Star version 3 reference home size (maximum five (5) points).

9. *RC-28 Reduced Parking 1 point*

Provide one (1) dedicated off–street parking space and one (1) shared common off–street parking space per dwelling unit, within 200 feet of the dwelling.

10. *RC-29 Access to Quality Transit 2 points*

Each functional entry of the project is within 1/4-mile walking distance of an existing or planned bus stop, or rideshare stop OR within 1/2-mile walking distance of an existing commuter rail station. Transit routes serving the stops must have paired service (outbound and inbound) and service at all the stops in aggregate must provide a minimum of 72 weekday trips and 40 weekend trips.

11. *RC-30 Site Infiltration 3 points*

Design the site to have 100% site infiltration with no storm water entering the receiving system OR make 50% of the total roof surfaces a vegetated roof

AND

Ensure that the downstream conveyance system can adequately handle the anticipated storm water runoff from the site. Perform or provide funding for any necessary repairs as directed to the receiving system.

12. *RC-31 Site Filtration 3 points*

Provide water quality treatment via filtration best practices for the design storm event.

13. *RC-32 Heat Island Reduction, Nonroof, Shading 1 or 2 points*

50% - 75% of all hardscape areas are shaded by trees or other plantings, calculated at noon based on 10 years of estimated growth 1 point

More than 75% of all hardscape areas are shaded by trees or other plantings, calculated at noon based on 10 years of estimated growth 2 points

14. *RC-33 Heat Island Reduction, Nonroof, Materials 1 or 2 points*

Use either permeable paving units or exterior paving units with a minimum Solar Reflectance Index (SRI) of 29 or concrete with a minimum SRI of 35 for the hardscape areas on the site.

50- 75% of all hardscaped areas 1 point

More than 75% of all hardscaped areas 2 points

15. *RC-34 Heat Island Reduction, Roof 1 or 2 points*

90% of the roof area has a minimum SRI of 78 for roofs flatter than 2:12 or a minimum SRI of 29 for roofs steeper than 2:12 or 90% of roofing products are Energy Star Cool Roof certified products 1 point

75% of the roof surfaces are vegetated 2 points

16. *RC-35 Homeowner or Tenant Education 2 points*

Maintain the performance of the home by providing educational materials for the occupants (i.e., the homeowner or tenant) about the operation and maintenance of the home's efficiency features and equipment with a Handbook which details all features and maintenance requirements.

3. *Indoor Environmental Quality* - Projects shall earn a minimum of eight (8) points in this category unless using the Energy Conservation Stretch Performance option.

a. *IQ-1 Improved Ventilation 2 points*

Use EPA Indoor airPLUS standards to design the HVAC system.

b. *IQ-2 Removal of Contaminants 2 points*

Provide spot exhaust at sources of contamination using Energy Star rated fans. Provide make up air for hood exhausts greater than 400 CF/min. All exhaust fans in bathrooms with a shower, tub, or spa must be controlled by either an occupancy sensor, an automatic humidistat sensor, a continuously operating exhaust fan, or delay timer that operates the fan for 20 minutes.

c. *IQ-3 Balanced Heating and Cooling System 1 point*

Test flow rates within each room using a flow hood per RESNET. Document that flow rates are within 20% +/- of Manual J calculations.

d. *IQ-4 Combustion Venting for Equipment 1 point*

Provide a utility space which is sealed smoke-tight from the habitable space of the dwelling for any fuel burning appliances used for heating or water heating.

e. *IQ-5 Enhanced Garage Pollutant Protection 1 point*

No ducts are located in garage. Air seal any shared walls between living spaces and garages.

f. *IQ-6 High-Efficiency Air Filtering 1 point*

Install air filters with a minimum MERV rating of eight (8) or higher.

g. *IQ-7 UV Air Cleaning 1 point*

Install duct-mounted germicidal UV lights on both the coil and return air duct. Must be combined with IQ-7 High-Efficiency Air Filtering.

h. *IQ-8 Construction Indoor Air Quality Management Plan 3 points*

During construction do all of the following:

Meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction.

Protect absorptive materials stored on site from moisture damage.

Don't operate permanently installed air-handler equipment during construction unless filtration media is in place.

Replace all filtration media immediately prior to occupancy.

Prohibit the use of tobacco products inside the building.

OR

Before Occupancy: Flush the building with at least 14,000 CF of outside air for each square foot of gross floor area.

i. *IQ-9 Low-Emitting Materials 5 points*

100% of products used within the waterproofing envelope comply with International Green Construction Code section 801.4.2. Applies to all adhesives and sealants; paints and coatings; flooring systems; composite wood; and insulation in ceilings and walls.

j. *IQ-10 Prefinished Materials 1 point*

A minimum of 90% materials used for trim, millwork and exterior finishes are prefinished.

k. *IQ-11 Composite Wood Materials 1 point*

All composite wood products are certified low formaldehyde.

l. *IQ-12 Moisture Management 1 point*

All cold-water pipes located in unconditioned spaces have a minimum of R-4 insulation OR no piping located in unconditioned spaces.

m. *IQ-13 Nontoxic Pest Control 1 point*

Use features that minimize the need for poisons for control of insects, rodents, and other pests such as physical barriers, treated materials, and inspection zones.

4. *Alternative Compliance Path*

a. *AP-1 Established Rating System 50 points*

Projects which meet this requirement shall not be required to comply with subsections 1-3 of this section.

Minimize the environmental impact of the home by incorporating additional sustainable design and construction measures that have tangible and demonstrable benefits beyond Code by submitting certification as LEED Residential Gold or higher LEED designation; Passive House Certified; 2015 National Green Building Standard Silver Level, or designed to be a Zero Energy building as defined by the U. S. Department of Energy.

~~LEED FOR HOMES~~	~~LEED PAGE~~	~~POINTS~~
~~1) Integrated Project Planning~~	~~19/20~~	~~2~~

~~LEED FOR HOMES~~	~~LEED PAGE~~	~~POINTS~~
~~2) LEED Accredited Professional~~	~~20~~	~~1~~
~~3) Landscaping~~	~~35/36~~	~~7~~
~~4) Optimize Energy Performance OR Substitute A Through G~~	~~55/56~~	~~11~~
~~a) Enhanced Insulation~~	~~58~~	~~2~~
~~b) Air Infiltration~~	~~61~~	~~2~~
~~c) Windows~~	~~62~~	~~2~~
~~d) Heating and Cooling Distribution System~~	~~64~~	~~2~~
~~e) Heating and Cooling Equipment~~	~~66~~	~~2~~
~~f) Water Heating~~	~~68~~	~~1~~
~~g) Lighting~~	~~71~~	~~1~~
~~5) Environmentally Preferable Products~~	~~79/80~~	~~2~~
~~6) Construction Waste Management (Table 27)~~	~~83/84~~	~~2~~
~~7) Local Exhaust~~	~~92~~	~~2~~
~~8) Contaminant Control~~	~~96~~	~~1~~
~~9) Garage Pollutant Protection~~	~~98~~	~~3~~

f. Unless a waiver is granted for special circumstances of practical difficulties by the planning and development department director through the building permit review process, all interior common area hallways in commercial, institutional and industrial buildings reviewed under ~~LEED~~ these requirements shall be required to include interior lighting occupancy daylight or motion detectors sensors that operate such indoor lighting.

g. Except as otherwise indicated herein, waivers from these requirements shall be approved as per the specifications in Section 112, Board of Building Appeals.

h. This subsection (7) shall not apply to subdivision and/or construction in which building permits have been approved before the adoption of this subsection."

AMENDMENT 2: Amend Sec. 32-97, Purpose, by adding the underscored text and deleting the stricken text as follows to subsection (a)(6):

"(6) Energy conservation by earning an additional 10 points from section 7-8(7) of this code. ~~defined as site and/or construction design that the building department has certified meets or exceeds the 'certified' level as stipulated in the LEED (Leadership in Energy and Environmental Design) United States Green Building Council Program or a comparable building department approved energy conservation program.~~"

MOTION for Acceptance as First Reading on _____, 2020

by Council Member _____.

Second Reading and Final Passage on _____, 2020.

VOTE: __ to __.

_____
Mayor

Attest:

_____
City Secretary

Approved as to Legality & Form:

_____
City Solicitor

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, September 24, 2020 11:16 AM
To: DEClimatePlan (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "2025 goal"

From: Bob Pritchard [redacted]
Subject: 2025 goal

From "Submit a Comment" Form:

Message Body:
25.4% seems just fine!

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C7e74240306e247943a6008d8609d33df%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637365575592731772&sdata=TLsiV5SJgSCFVEJbjfYraJxWJQm5AFI%2B3ecQefKnSvs%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Wednesday, October 07, 2020 9:18 AM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Issues to consider in plan"

From: Clem Dinsmore [redacted]
Subject: Issues to consider in plan

From "Submit a Comment" Form:

Message Body:
ISSUE ONE: ENHANCING THE RESILIENCE OF THE ELECTRIC POWER DISTRIBUTION INFRASTRUCTURE IN DELAWARE
COMMENT: There appears to be an emerging consensus in the State and nationally that climate mitigation requires transforming our economy to one reliant upon electricity ultimately generated from renewable resources. Transformation of auto and light truck transportation to electric vehicles is well under way. Transformation of heavy trucks and buses to electric and hydrogen fuel celled vehicles is beginning.
In the meanwhile the electric power delivery system in the State remains a centralized grid with the distribution infrastructure above ground wires on poles. Extreme weather events associated with climate change threaten this system as illustrated by the recent Hurricane Isaias and follow on storm, which wreaked havoc to Delmarva Power's electric power distribution infrastructure in New Castle County.
The above ground delivery of electricity is an Achilles Heel of the current centralized power grid system. Material disruption of economic activity in the State is occurring and will occur with greater frequency. An alternative system design needs to be considered.

ISSUE TWO: ACCOUNTING BY THE STATE AND ITS POLITICAL SUBDIVISIONS FOR IMPAIRMENT OF ITS ASSETS
COMMENT: Accounting principles issued by the Governmental Accounting Standards Board [GASB] apply to the State and its political subdivisions. GASB principle #42 governs the reporting of asset impairments. In her complaint filed on September 10 against many members of the fossil fuel industry the State's Attorney General alleged many past instances of severe harms and losses to physical facilities and other assets controlled by the State or its agencies and instrumentalities. The damages sought by the Attorney General include those associated with these asset impairments. The issue the Attorney General's complaint raises is whether in the years during which the harms to its assets occurred the State discussed in its annual financial statements the related asset impairments. Such disclosure would have been relevant and of interest to members of the General Assembly, the State's taxpayers and purchasers of bonds issued by the State.
The question is: did the State include in its financial statements for the relevant years the discussion required by GASB principle #42?

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C11f149e07044458adb6f08d86ac37bb4%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637376735124726811&sdata=OBx1fKjR0sz24c7mfB8U4NtYa2WeHuH%2FF8s0tqtUcqw%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Yue, Ian T. (DNREC)
Sent: Monday, October 19, 2020 4:15 PM
To: ClimatePlan, DE (MailBox Resources)
Subject: Fw: Follow up
Attachments: MEMO TO DE GEN'L ASSEMBLY.docx

From: Clem Dinsmore [redacted]
Sent: Friday, October 2, 2020 11:04 AM
To: Love, Susan E. (DNREC) [redacted]
Subject: Follow up

Susan:
I will reflect further on the four virtual workshops and share further comment next week.
In the meanwhile I share with you the attached statement of two issues that I am attempting to discuss with individuals, who are likely members of the General Assembly next session.

Here I share with you how the two issues I am pursuing bear on the interests of low income and African-American and Latino communities in Delaware.
In a nutshell, what I am recommending in issue one requires legislative hearings and logically leads to a SERIOUS undertaking by the State [by one means or another] to consider how to redesign the energy generation and delivery system, so that it: (a) relies more upon renewables, (2) minimizes the need for extensive distribution lines and (3), as is being pursued in New York State, includes consideration of reduction in demand for power through a variety of means/technologies. This is a subject that probably will NOT appeal either to electric utilities in Delaware [probably especially Delmarva Power] or the Pubic Service Commission [or on its own initiative it would have undertaken the necessary study].
Other Atlantic Coast States—most notably New York—have bitten the bullet and marshaled the intellectual and political resources/energy to do that which I believe is necessary to ATTEMPT to achieve greater resiliency for Delaware's electric power distribution infrastructure.
My second issue is one that affects all State agencies and is designed as a catalyst for the State to address more urgently climate change mitigation and intelligent adaptation. This is an issue I am working on with several UD faculty, who are expert in government accounting principles. We are pursuing a research project that is designed to prompt the Governmental Accounting Standards Board to issue guidance regarding the circumstances that require disclosure of the impairment of assets owned or controlled by the State OR its political subdivisions. Obviously, as climate change degrades the economic and environmental conditions of Delaware, impairment of government assets is occurring and will continue to occur. The State Attorney General's factual allegations in her recently filed lawsuit against prominent members of the oil and gas industry clearly describe circumstances that meet the definition of asset impairment.
Both of my issues MATERIALLY affect low income and African-American and Latino communities. Like all other ratepayers they bear the INCREASING costs of restoring power after severe weather events, and their household and economic lives are disrupted by the interruption of electric power delivery that occurs with storm damage to the electric power distribution infrastructure. The second issue affects low income and African-American and Latino communities, as the degradation/impairment of assets of State and local governments impairs the utility/benefit to such communities of these assets and wastes their hard earned contributions to the State and local taxes that fund these assets.
Susan, I welcome speaking with you regarding these two issues. The first issue relates to a larger issue I perceive within the State's government: that all State agencies are NOT on the same team. Currently I am most focused on how the General Assembly has failed to amend the Public Service Commission's enabling law to bring the PSC onto the team that includes DNREC. But, the second issue probably illustrates my point as well, as I wonder whether in developing her complaint the Attorney General conferred closely with the Secretary of Finance regarding the implications of her factual allegations. I assume the defendants in her lawsuit will undertake diligent discovery that will show that the State's financial statements for prior years do not reflect the Attorney General's factual allegations.
Regards,
Clem

Yue, Ian T. (DNREC)

From: John E Greer Jr [redacted]
Sent: Thursday, October 08, 2020 5:05 AM
To: ClimatePlan, DE (MailBox Resources)
Subject: Comments on Delaware's Climate Action Plan
Attachments: Comments Charts and CO2 Data on Delaware.pdf

To Delaware Climate Action Plan:

I attended the virtual Workshops and reviewed the online material.

Attached are my comments on Delaware's Climate Plan in a pdf file.

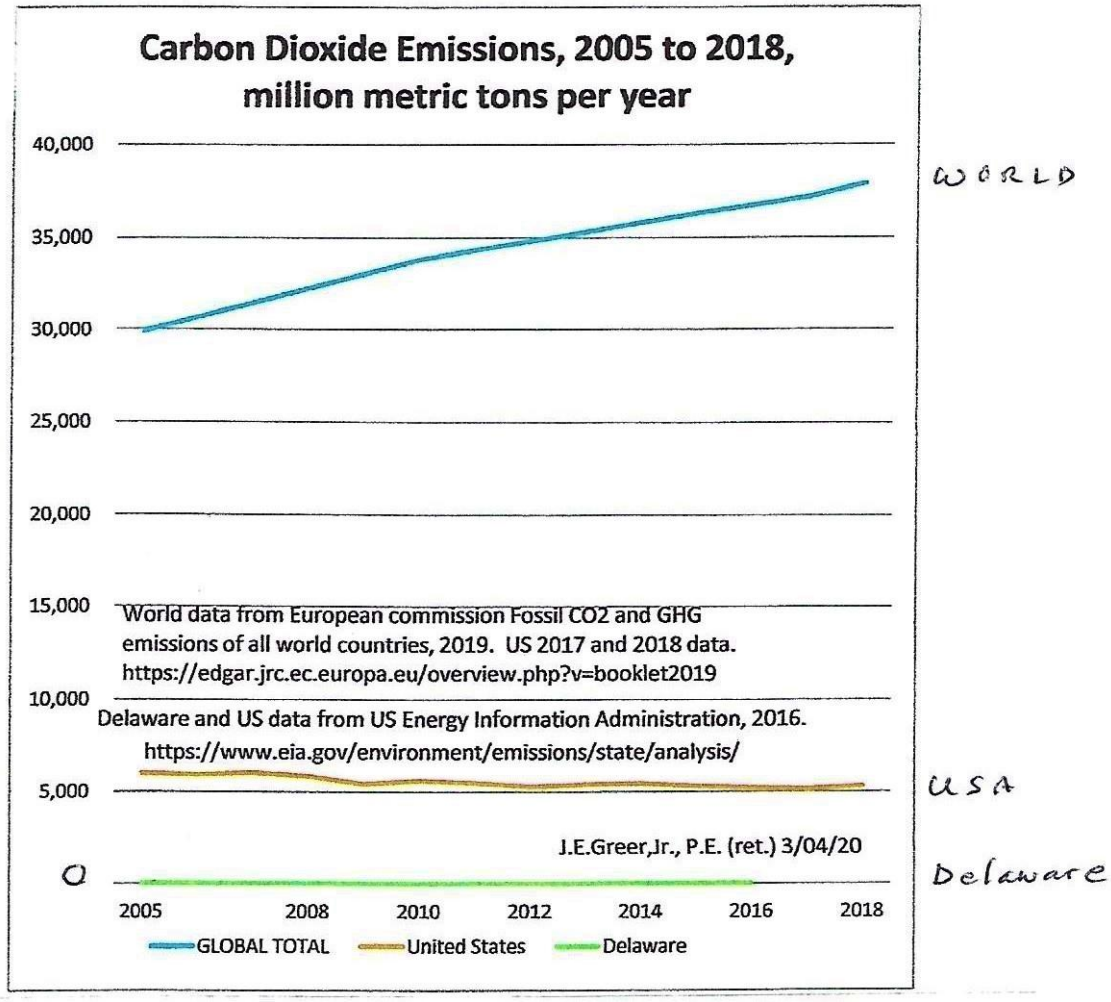
John E. Greer, Jr., P.E.(ret.)
[redacted]

Comments on Delaware's Climate Action Plan

Thank you for hosting the virtual workshops. I participated in all and have reviewed the ICF DCAP Supporting Technical Greenhouse Gas Mitigation Analysis Report. **Some essential information was not covered**.

GREENHOUSE GAS (GHG) REDUCTIONS

Before committing to expensive GHG reduction measures, mainly CO2, Delawareans should be made aware of basic facts on World, US, and Delaware CO2 emissions shown on the following chart and tables.



Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GLOBAL TOTAL	29,912					33,836					36,312		37,180	37,887
United States	5,992	5,912	6,005	5,815	5,396	5,591	5,454	5,243	5,372	5,419	5,274	5,189	5,128	5,275
Delaware	17.1	16.0	16.8	15.9	12.2	11.4	12.4	13.6	13.3	12.9	13.0	13.4		

	World, US, Rest of World, and Delware Annual CO2 Emissions, Millions of Metric Tons per year, (MMT)				
			Change, MMT	Change, %	
	2005 (MMT)	2018 (MMT)	2018- 2005 (MMT)	2018 vs. 2005 (% Change)	2018 % of World
World	29,912	37,887	7,975	27%	100%
US	5,992	5,275	-717	-12%	14%
Rest of World	23,920	32,612	8,692	36%	86%
Delaware	17	13	-4	-24%	0.03%

- **Global Climate Change caused by greenhouse gases, mainly CO2, must depend on Total World emissions, not just Delaware emissions.**
- **Delaware emissions are a minute 0.03 % of World CO2 emissions and by themselves could have no effect on Global Climate.**
- Rest of World CO2 emissions have increased greatly since 2005, far exceeding US and Delaware cuts, and total US emissions, despite the Paris Climate Change Accord and all previous agreements,.
- Most all the Rest of World countries signed the Paris Accord but they did not agree to reduce emissions because their priorities are developing their economies and reducing poverty, not climate change.
- The Paris Accord exempts all "developing countries" including China, India, and many others from making any emission cuts. They were promised money just to sign, so they signed.
- **The Delaware Action Plan has ideas to reduce Delaware emissions but these would cost $ Billions with no effect on Global climate.**
- **Delaware should instead use their resources to prepare for and recover from storms, which always happen, and whatever climate change does occur.**

John E. Greer, Jr., P.E. (ret.),10-7-20[redacted]

Yue, Ian T. (DNREC)

From: John E Greer Jr [redacted]
Sent: Sunday, October 11, 2020 10:34 AM
To: ClimatePlan, DE (MailBox Resources)
Subject: Comments on Delaware's Climate Action Plan, Oct. 11, 2020
Attachments: COMMENTS ON DELAWRE CLIMATE ACTION PLAN OCT 11, 2020.pdf

Comments on Delaware's Climate Action Plan, Oct. 11, 2020

To Delaware Climate Action Plan:

I attended the virtual Workshops and reviewed online material.

Attached are comments on Delaware's Climate Plan in a pdf file.

Thank you,

John E. Greer, Jr., P.E.(ret.)
[redacted]

COMMENTS ON DELAWRE'S CLIMATE ACTION PLAN, OCT. 11, 2020

At the recent virtual Workshops which I attended, participants were asked what actions they would most favor but were not given any information about the cost or effectiveness of the various possible actions to make a rational decision. If participants knew the high cost and small effect of these actions they might choose differently.

Consulting firm IFC International produced a 50-page report "Delaware Climate Action Plan Supporting Technical GHG Mitigation Analysis Report" available online with estimated costs and greenhouse gas reductions for various actions.

IFC estimated costs of $3.583 Billion for four main actions which would reduce Delaware annual CO2 emissions by 8 million metric tonnes (MMT) by 2050. But these emission cuts by Delaware would equal only 0.02% of World CO2 emissions of 37,887 MMT in 2018, too small to possibly effect Global climate.

It would be wrong to spend so much money for no effect. Better to use our resources to prepare for and respond to storms which are the real and present coastal hazard.

From 2005, the base year for the Paris Accord, to 2018, Delaware emissions fell 4 MMT and USA emissions fell 717 MMT, but the Rest of the World rose 8,692 MMT - more than 2,000 times Delaware cuts.

It is quite apparent from the chart and data below that, despite any agreements or promises, the Rest of the World is growing emissions, not cutting.

Below are IFC estimates for the four actions. Costs are Net Present Value costs after deducting any savings and use a 2.4% discount rate:

$1,138 million Expanded Renewable Energy On-site. Assumes putting solar panels on 25% of homes, 14% commercial buildings. Reduces CO2 emissions by 0.027 MMT (million metric tons) in 2050. Very large cost, very small CO2 reduction.

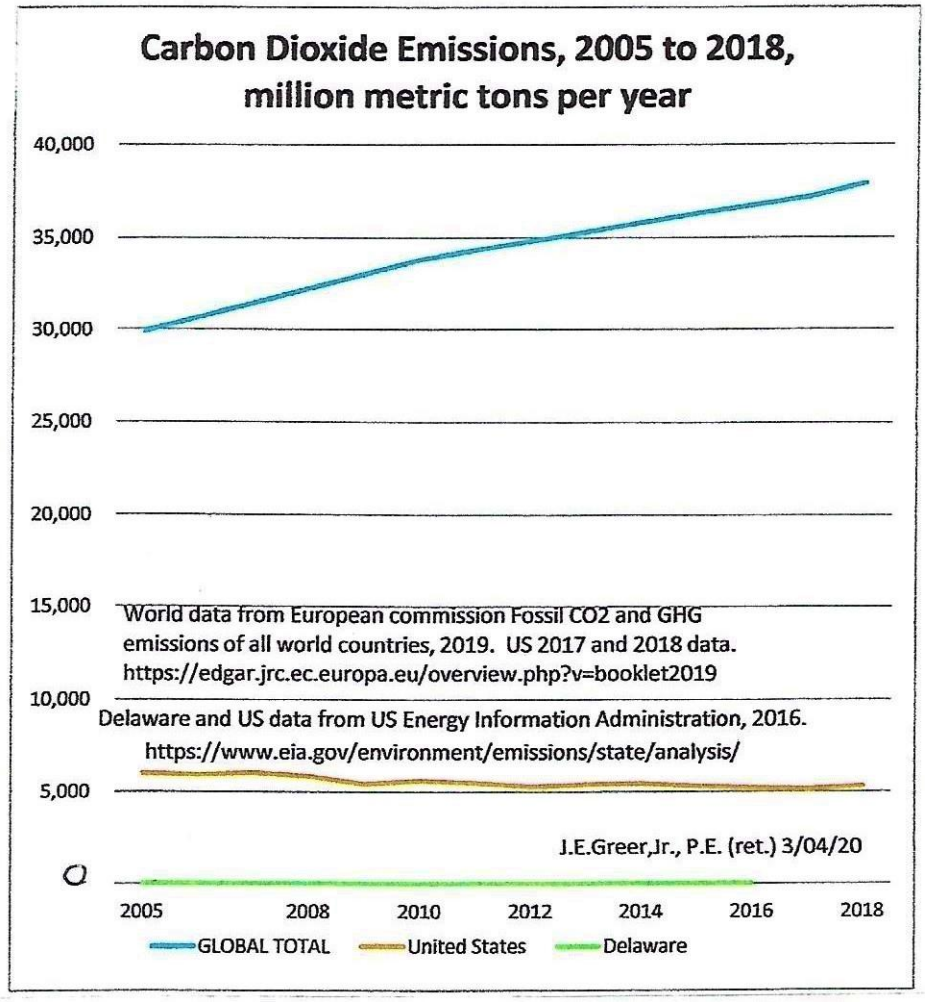
$ 933 million Expanded Renewable Portfolio Standards. This was estimated to reduce CO2 by 4.3 MMT by going to 100% renewable electricity by 2050: 50% offshore wind and 50% utility-scale solar.

$ 902 million Consumer Electric Vehicle (EV) Adoption Incentives. Includes electric vehicle purchase incentives, charging stations, and other programs to have 20% EV's by 2030 and 70% by 2050. Reduce emissions by 1.07 MMT by 2050.

$ 610 million Building Electrification. Assumes 25% of existing residential and 40% of commercial buildings would be converted to all electric and 90% of all new buildings would be all electric. Reduce CO2 0.55 MMT in 2050.

There are two other items not listed estimated to save money but only small amounts of CO2. If they would really save money, those items should be done but not the others.

John E. Greer, Jr., P.E. (ret.),Oct.11, 2020 [redacted]



Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GLOBAL TOTAL	29,912					33,836					36,312		37,180	37,887
United States	5,992	5,912	6,005	5,815	5,396	5,591	5,454	5,243	5,372	5,419	5,274	5,189	5,128	5,275
Delaware	17.1	16.0	16.8	15.9	12.2	11.4	12.4	13.6	13.3	12.9	13.0	13.4		

	World, US, Rest of World, and Delware Annual CO2 Emissions, Millions of Metric Tons per year, (MMT)				
			Change, MMT	Change, %	
	2005 (MMT)	2018 (MMT)	2018- 2005 (MMT)	2018 vs. 2005 (% Change)	2018 % of World
World	29,912	37,887	7,975	27%	100%
US	5,992	5,275	-717	-12%	14%
Rest of World	23,920	32,612	8,692	36%	86%
Delaware	17	13	-4	-24%	0.03%

John E. Greer, Jr., P.E. (ret.),Oct.11, 2020 [redacted]

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Sunday, October 11, 2020 12:02 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Recommended creation of a Climate Action Council"

From: Clem Dinsmore [redacted]
Subject: Recommended creation of a Climate Action Council

From "Submit a Comment" Form:

Message Body:
As the General Assembly is a part-time body, while the Governor and his administration is a full-time, functioning government, I recommend that you include in the updated Climate Action Plan a recommendation that the Governor convene an inter-agency, CONTINUING council [“The State Climate Action Council” or “Council"] that includes appropriate representatives of:

(1) those Cabinet agencies most directly involved in considering the adverse economic, social and environmental impacts of climate change upon the State, its citizens, its business organizations, its non-profit institutions, its political subdivisions and its non-human populations;
(2) non-Cabinet agencies notably including the Public Service Commission, whose jurisdiction, policies, actions or inactions are likely to affect the economic, social and environmental impacts of climate change upon State and any or all of the other entities noted in category (1);
(3) each of the State’s counties, and
(4) representatives on a rotating basis of several of the State’s municipalities.

The purposes of the Council are to advise the Governor regarding:
(1) administrative policies that the Governor can direct any agency of the State to consider pursuant to its applicable policy and rule making procedures that facilitate the State's more effective, efficient and timely mitigation and intelligent adaptation to climate change;
(2) legislative initiatives that the Governor can recommend to the relevant committees and leaders of the General Assembly to consider as a means of facilitating the State’s more effective, efficient and timely mitigation and intelligent adaptation to climate change; and
(3) cooperative policy-making and other actions that the State can undertake in cooperation with its counties and other political subdivisions to realize the purposes and goals of the Council.

The Council would have no term limit. Its goals are to help prompt a sense of urgency and effective, efficient and timely cooperation among agencies of the State AND among those agencies and the State’s counties and other political subdivisions in formulating policies and undertaking actions that:
(a) address climate change,
(b) attempt to mitigate the economic, social and environmental degradation within the State associated with climate change, and
(c) seek to enhance the economic opportunities and security of the State’s citizens, the economic opportunities of employers within the State, the social welfare of the State’s citizens and the environmental conditions of the State.

I leave to the Governor and the relevant agencies of the State, its counties and its other political subdivisions to determine how to staff the Council most effectively and efficiently.
I look forward to discussing this recommendation with you.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7Cc8d41fdd1c1e4e0277a808d86dff143b%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637380289612385186&sdata=KwyLB2iNGPDzeoHtZoFlMjs5f9zUcglqphJLLhPzlLs%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Monday, October 12, 2020 3:30 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Delaware's Climate Action Plan"

From: William Whipple III [redacted]
Subject: Delaware's Climate Action Plan

From "Submit a Comment" Form:

Message Body:
I would respectfully submit that a much better explanation of this plan will be required than has been offered to date. Proponents might begin by answering the following questions.

1.Who is ICF, and why were they chosen to conduct this survey?

2.Isn't it true that the primary greenhouse gas (GHG) in the atmosphere is water vapor, which comprises some 3-5% of the atmosphere (versus less than .05% of the atmosphere for CO2)? Is water vapor included in the GHGs that it is proposed to reduce; if not, why not?

3.What is the scientific basis for believing that CO2 emissions resulting from human activity (which are considerably smaller than CO2 emissions from natural sources) have become the prime driver for global climate, superseding fluctuations in solar activity and other natural factors that have driven the Earth's constantly changing climate over the past 4+ billion years?

4.Based on NOAA's heat wave index data, it was hotter during the 1930s "dust bowl" era than it is today? Is that correct, and if not what's wrong with the NOAA data?
https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fourworldindata.org%2Fgrapher%2Fheat-wave-index-usa&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C947c671880644e61556808d86ee55d1e%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637381278677164410&sdata=agClydCQReY5XFutBYrXmm5Y%2B1OIUjVRq9bFoH9MmpA%3D&reserved=0

5.Assuming it would be advantageous to reduce human-caused CO2 emissions by decarbonizing power generation, what alternative energy sources should be used? Why do environmental advocates typically favor wind and solar power versus, say, nuclear fission, nuclear fusion, hydroelectric or geothermal power? Would a cost increase be involved, and if so who would be expected to cover it? If there would be no cost increase, why should government intervention be required?

6.Due to their intermittency, wind and solar power couldn't be used to drive the power grid on the 24/7 basis that consumers need. If fossil fuels were eliminated, what reliable energy sources would be used to drive the grid?

7.Have the environmental drawbacks of wind and solar power been considered, e.g., use of vast areas of the natural environment, bird kills, pollution resulting from the production of rare earth minerals, etc.?

8.Given that the entire United States only emits about 15% of global human-caused CO2 emissions and our country's share of the global total is declining, what possible reason is there for worrying about the amount of CO2 emissions from Delaware?

William Whipple III [redacted]

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7C947c671880644e61556808d86ee55d1e%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637381278677164410&sdata=jqO8rLXKaRDcHyKi1clBe%2F%2B4vzdQNX8maDzP1QHc3NA%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Monday, October 12, 2020 7:48 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Delaware's Climate Action Plan"

From: Nick Wasileski [redacted]
Subject: Delaware's Climate Action Plan

From "Submit a Comment" Form:

Message Body:
The urgency to address climate change in Delaware would be enhance by establishing a Climate Action Council. The Council would include representatives from state agencies, Delaware citizens, business organization, non profits, and municipalities.
The Council would advise the Governor regarding climate action plan policies and procedures, as well as appropriate legislative initiatives.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=02%7C01%7CDEClimatePlan%40delaware.gov%7Cc86141e9f24b473ffcfb08d86f0939ce%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637381432720423039&sdata=oIvavZAEqGv1DWADKhqHRSftbBF0Hdn7SWfniGDm2Ww%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Douglas Cox [redacted]
Sent: Monday, October 12, 2020 9:27 PM
To: ClimatePlan, DE (MailBox Resources)
Subject: Comments

This plan is a cost Delaware can not afford and will have no impact . Typical government bureaucracy in action. Reminds me of "Cash for Clunkers". An equally useless program.
Douglas Cox [redacted]

Yue, Ian T. (DNREC)

From: Patti Breg [redacted]
Sent: Wednesday, October 14, 2020 9:30 AM
To: ClimatePlan, DE (MailBox Resources)
Subject: Climate action Plan

I want to comment about using wind energy in the ocean which is going to be located off the Delaware coastline. It is too expensive. There are other alternative energy sources that are available like nuclear power and right now, there is no way to store renewable energy. Governor Carney is pushing wind power which is going to be a huge mistake. He is invested in this, but at the expense of taxpayers. He tried to put the substations in the Fenwick Island State Park. What was he thinking? Listen to Caesar Rodney Institute for guidance, and stop making mistakes that cost taxpayers and line the pockets of politicians. Do the right thing.

Patti Breger

[redacted]

Yue, Ian T. (DNREC)

From: Yue, Ian T. (DNREC)
Sent: Wednesday, October 14, 2020 11:30 AM
To: ClimatePlan, DE (MailBox Resources)
Subject: Delaware's Climate Action Plan--reduce GHG 50% by 2030 and 100% by 2045 (probably no longer safe science to push it to 2050)

From: John Mateyko [redacted]
Sent: Wednesday, October 14, 2020 11:08 AM
To: Lee, James (DNREC) [redacted]
Subject: Re: Delaware's Climate Action Plan--reduce GHG 50% by 2030 and 100% by 2045 (probably no longer safe science to push it to 2050)
Dear Sir,

Thank you for all your important--really, vital-- work on a DE Climate Action Plan.
I would like to add some comments:

CURRENT SCIENCE
The plan must be science-based, ie based on the current science findings.

TEMPORAL DIMENSION
Current science reports the following: **reduce GHG 50% by 2030** and **100% by 2045** (science reports it is probably no longer safe [given a 66% confidence criteria] to push it to 2050).
Tag GHG reduction to dated milestones. Explain the "cumulative" impact of accumulating GHG over time. Please but strong emphasis on the temporal dimension of solving this. Stress "EXTREME URGENCY".

ECOSYSTEM CHANGE INTERACTIVE WITH CLIMATE CHANGE
Also we face a two-part crisis, not just a "climate crisis" alone, but rather a interrelated climate and ecosystem crisis: both in total impacts, adaptation, mitigation, behavior change, priority of values both climate and ecosystem have to be addressed in tandom. I look for this content , in what may better be termed an integrated **dual action plan on climate and ecosystem change in Delaware.**

Again thank you for all you great work,

John Mateyko
[redacted]

-----Original Message-----
From: Delaware Division of Climate, Coastal and Energy [redacted]
To: [redacted]
Sent: Wed, Oct 14, 2020 9:04 am
Subject: Last chance to comment on Delaware's Climate Action Plan

Greetings,

Did you miss our virtual workshop series on minimizing greenhouse gas emissions and maximizing resilience to climate change impacts? You can still provide your input to Delaware's Climate Action Plan by taking our online survey or submitting your comments. But you need to do it soon.

The online survey and comment period for Delaware's Climate Action Plan closes Friday, October 16.

Please pass along this news to your friends, family and other networks. We want to hear from you.

Sincerely,

Delaware's Climate Action Plan Team
Website

DNREC Division of Climate, Coastal and Energy | Website

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Thursday, October 15, 2020 7:01 AM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "air quality and climate change"

From: John and Regina Timmons [redacted]
Subject: air quality and climate change

From "Submit a Comment" Form:

Message Body:
During hot and humid says of August it is hard for us to breath outside due to poor air quality. I attribute this to vehicle exhaust, exhaust from poultry operations to name a few. Between my residence and the tree line 3/4 mile away, you can actually see the "smog" distorting the view of the tree line.

In 2020 the main rainfall we received was from the left over tropical depressions. Summers have become drier and hotter.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=04%7C01%7CDEClimatePlan%40delaware.gov%7Ccf31b060aa794eaa70ac08d870f9fece%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637383566305461385%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=Qv65T2zoPmkOIB1DXB6OEHL0BSTwzaEuO2XYvbhXzbw%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Friday, October 16, 2020 9:23 AM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Renewable energy"

From: Erin Day-Lewis [redacted]
Subject: Renewable energy

From "Submit a Comment" Form:

Message Body:
Let's stop using fossil fuels as soon as possible. They're totally unnecessary. The technology and science are available to establish and use renewable resources (solar, wind, geothermal). Put money into it now, create jobs, spend less money down the road on climate disaster clean ups. For example, require new builds to include solar panels. Also help people transition from fossil fuel jobs to renewable energy jobs by paying for their training and committing to years on the new job. We need action now, not in 10 or 15 years when it's too late.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=04%7C01%7CDEClimatePlan%40delaware.gov%7C0796aa75410d429a8df708d871d6c2bc%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637384514486626804%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=e88cIAtCdtkzylVfY6OeqBsUv5RH9rj4VVykQYZlO%2FE%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Julia Rege [redacted]
Sent: Friday, October 16, 2020 12:31 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: Love, Susan E. (DNREC) [redacted]
Subject: Climate Action Plan Comments
Attachments: Ext. Comm. - Comments - 2020 - 10-16 DE Climate Change Plan (ID 3599).pdf

Please find attached comments from the Alliance for Automotive Innovation regarding Delaware's Climate Action Plan. Thank you for your consideration of our comments.

Best, Julia

Julia M. Rege
Vice President, Energy & Environment
[redacted]
Alliance for Automotive Innovation
1050 K Street, NW - Suite 650, Washington, DC 20001
autosinnovate.org - twitter - linkedin

October 16, 2020

Submitted electronically to declimateplan@delaware.gov

Susan Love
Climate and Sustainability Section Administrator
Delaware Department of Natural Resources and Environmental Control
89 Kings Highway
Dover, DE 19901

To: Ms. Love

RE: Delaware Climate Action Plan

The Alliance for Automotive Innovation[1] (Auto Innovators) appreciates the opportunity to provide feedback on the *Delaware Climate Action Plan* and *Delaware Climate Action Plan Supporting Technical Greenhouse Gas Mitigation Analysis Report* ("Technical Report").[2] As states look to reduce the impact of climate change and implement longer term goals to reduce greenhouse gas (GHG) emissions, it is important and necessary to have a full assessment and plan for options and funding to obtain such goals.

Auto Innovators represents the leading voice of the automotive industry and has been engaged with regulators and policymakers to evaluate ways to reduce the carbon intensity of transportation and the fuels it uses. Our member companies are committed to providing ongoing improvements in GHG emissions and fuel economy and bringing to market the safest and cleanest vehicle technologies.

Today, light-duty vehicles are near zero-emitting, reducing smog-forming emissions 99% since the 1960s, and further reducing them through 2025 under state and federal emissions standards.[3] In addition, vehicle economy has increased 30% since 2004, with ongoing improvements required through 2025.[4] The new vehicle fleet now achieves a record high fuel economy average of 25.1 mpg. More than 90 models achieve better than 40 mpg, and there are over 40 models of electric vehicles offered

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[1] Formed in 2020, the Alliance for Automotive Innovation is the singular, authoritative and respected voice of the automotive industry. Focused on creating a safe and transformative path for sustainable industry growth, the Alliance for Automotive Innovation represents the manufacturers producing nearly 99 percent of cars and light trucks sold in the U.S. The organization, a combination of the Association of Global Automakers and the Alliance of Automobile Manufacturers, is directly involved in regulatory and policy matters impacting the light-duty vehicle market across the country. Members include motor vehicle manufacturers, original equipment suppliers, technology and other automotive-related companies and trade associations. The Alliance for Automotive Innovation is headquartered in Washington, DC, with offices in Detroit, MI and Sacramento, CA. For more information, visit our website http://www.autosinnovate.org.

[2] https://declimateplan.org/wp-content/uploads/2020/09/DNREC-Technical-Report_FINAL-9-3-20-CLEAN.pdf.

[3] EPA, *Green Vehicle* Guide. https://www.epa.gov/greenvehicles/light-duty-vehicle-emissions.

[4] EPA, *Automotive Trends Report*. 2020, page ES4. https://www.epa.gov/automotive-trends/download-automotive-trends-report.

for sale.[5] Automakers are doing their part, and we estimate that in the next five years, the number of electric vehicles offered will grow to around 130 models available in the U.S.[6]

Thus, Delaware's efforts to plan and evaluate ways to promote sector-wide improvements comes at an opportune time. Understanding the state's role, and funding needs, in helping to create the right policy mechanisms and to support business as they work to achieve the state's goals is the first step. Working with all sectors and policymakers to see through these goals will require a coordinated approach and strong leadership from the Governor, legislature, and state agencies.

Auto Innovators supports the approach to identify sources, model impact, and evaluate feasible actions to reduce GHG emissions in the state. Comments specific to the Action Plan follow in the attachment, and we welcome the opportunity to discuss any of these further.

Sincerely,

Julia M. Rege
Vice President, Energy & Environment

[5] Fuel Economy.gov

[6] Lienert, Paul. "Outside of Tesla, Future EV Sales in U.S. May be Thin for Most Brands: Study." Reuters. 29 May 2019. https://www.reuters.com/article/us-autos-electric-forecast/outside-of-tesla-future-ev-sales-in-u-s-may-be-thin-for-most-brands-study-idUSKCN1SZ20I.

Attachment

Auto Innovators Comments on the *Delaware Climate Action Plan Supporting Technical Greenhouse Gas Mitigation Analysis Report*

In general, Auto Innovators agrees with the sector-wide approach used throughout the ***Delaware Climate Action Plan Supporting Technical Greenhouse Gas Mitigation Analysis Report*** (Technical Report) to evaluate the various options and opportunities to further greenhouse gas (GHG) emissions reductions. All sectors must do their part, and as any future requirements or targets may require, the challenges and costs of doing so should not be unique to any single sector. Nonetheless, the following comments will be primarily limited to topics directly, or indirectly, related to the light-duty vehicle portion of the transportation sector.

Decarbonization of the Electric Grid and Expanded Renewable Portfolio Standard

As automakers increase the number of electric vehicles – plug-in hybrid, battery, and fuel cell electric vehicles – offered in the United States, it will be increasingly important that the electricity grid is reducing carbon intensity at the same time. Battery electric vehicles, which rely on the ability to recharge the battery using electricity, do not produce any tailpipe emission onboard the vehicle. Plug-in hybrid electric vehicles also use the electrical grid to power their all-electric operation, but these vehicles also have a gasoline engine onboard to provide extended range if/when charging is not readily available. Therefore, the emissions impact of these vehicles is tied to the energy source used to generate the electricity. An electric grid that supplies clean, renewable energy will result in a lower GHG emissions impact of electric vehicles than one that relies on carbon-intensive energy sources. As the state seeks to increase the renewability of its grid, we encourage a process that will ensure grid resiliency and that tracks the impact on consumer costs, whether to power their home or car. Additional efforts to address time of use rates, off-peak power times, and finding ways to convey this information easily and quickly to customers is necessary as we seek to increase customer interest in electric vehicles.

Expanded Building Energy Codes

Auto Innovators' focus here is on the provision to require EV-friendly building codes. While it is possible the addition of EV-ready building codes may increase a building's energy use, the fact of the matter is that more EV charging is necessary and critical to expanding electric vehicles in the state. At a minimum, the requirement that all new buildings and their parking structures be EV-ready – meaning have the necessary electrical wiring and grid management system in place to install chargers – is a relatively low-cost and effective way to ensure more chargers can be installed at locations consistently used by drivers, workers, tourists, etc. Adding these same requirements for buildings undergoing major renovations will also be important to expanding the ability to install chargers. In addition, issuing grants that encourage EV chargers to be installed at the same time as the building is made EV-ready would be a bonus in preparing the market for more electric vehicles.

Consistent with this approach, and not directly housed in the report's mitigation options, is increasing the role of utilities in ensuring cost-effective charging rates for EVs, assisting in streamlined permitting and installation of home charging, and developing pilot programs to test innovative ways of offering charging at multi-unit dwellings. Similarly, utilities' roles become increasingly important to manage demand charging, fleet-based charging, and other electric vehicle demands on the grid as we expand electrification into more passenger vehicles, as well as heavier utility and transportation based options, like tracker-trailers, buses, port equipment, etc.

Low Carbon Fuel Standard

Auto Innovators strongly supports implementation of a Low Carbon Fuel Standard (or "LCFS") in Delaware. This program provides necessary and complementary reductions in the carbon intensity of fuels. In addition, while full electrification of transportation appears to be emerging as a top policy option to reduce GHG emissions through 2050, the reality is that this transition will take time, and that petroleum-fueled vehicles will likely remain in the fleet through 2050. As a result, implementing mechanisms, such as LCFS, ensure that the carbon intensity of all fuels is reduced and that the cleanest fuels are available to those vehicles that rely on them.

Further, the LCFS as designed in California provides an opportunity to reinvest program revenues into funding mechanisms that support the transition to electrification. Specifically, California's LCFS revenue will fund a new point-of-sale rebate for battery and plug-in hybrid electric vehicles and help balance profitability and demand for fast chargers and hydrogen fueling stations at this time. This opportunity should be pursued by Delaware, and addition of the Transportation Climate Initiatives' *Cap and Invest* concept can provide similar value through a regional approach. Either way, Delaware would be taking the right steps to further reduce the carbon intensity of fuels used in the state.

Light-Duty Vehicle Travel Demand Management and Land Use Strategies

Reducing vehicle miles travel ("VMT") can be an important strategy for states looking to further reduce GHG emissions, but also represents a challenge, as it relies on localities, city planning, transit planning, and citizens to fully realize the benefits. We encourage the state to pursue realistic ways to reduce travel consistent with the state's tourism destinations, community planning efforts, and options to increase transit. Other commuting based efforts may also be appropriate, including bicycle lanes, carpooling, electric scooters, etc., but seasonal considerations may also be necessary for some of these options, resulting in less consistency with the amount of emissions reduction that can be attributed to them.

Vehicle Manufacturing Regulations

California's Zero Emissions Vehicle (ZEV) program is consistently one of the first options raised by environmentalists and EV enthusiasts as a way to decrease transportation carbon. The premise of the ZEV program since its inception over 20 years ago was to require electric vehicle technologies ahead of mass market acceptance. By doing so, it was California's goal to push technology advancements and economies of scale ahead of the market in preparation for the role these technologies could play in furthering criteria and GHG emissions reductions. As a result, the ZEV program remains the most expensive form of vehicle regulation, because it requires selling technology ahead of demand and does not, at this time, provide any additional emissions benefits over or above the fleet average standards required by the Low Emission Vehicle criteria and GHG standards, as further explained below.

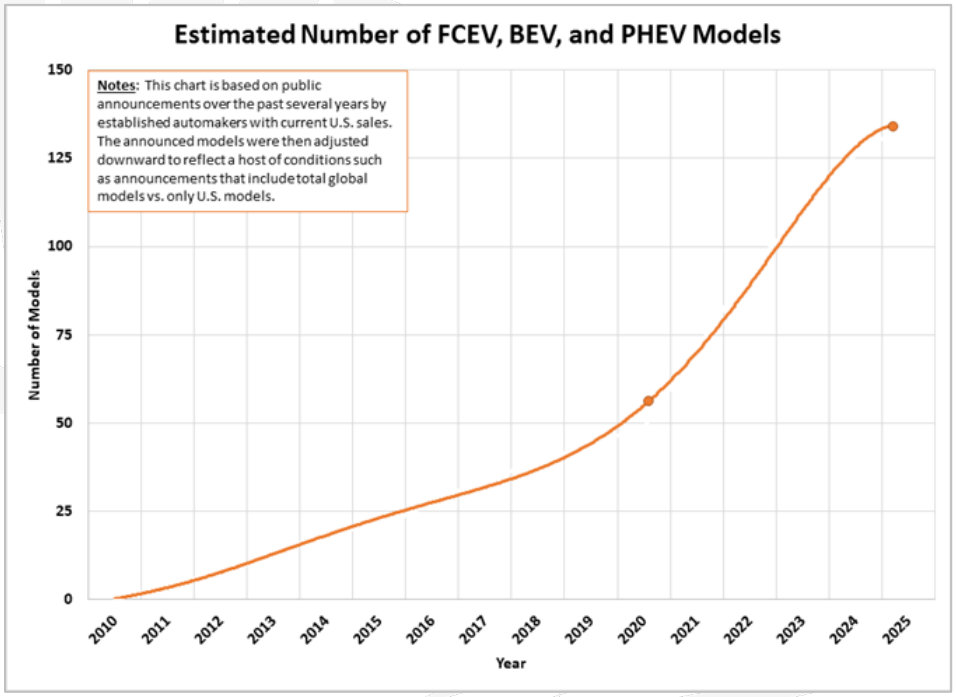
In addition to California, nine other states currently have programs underway. Colorado's program officially starts with MY 2023, and the state of Washington plans to implement these regulations but has yet to undertake a rulemaking to do so. Other states are also considering adoption of California's ZEV mandate. We are concerned, however, that many of these states are placing too much weight on the ability of the ZEV mandate to create a market and develop consumer demand for these vehicles; the mandate will do neither. Enthusiasts believe that a requirement to sell the vehicles equates to a healthy (profitable) market, customer demand, and vehicle availability. This is not the case, and states have a significant role to play in creating customer demand and preparing the market for zero-emission technologies. Incentives and infrastructure development are two of the key factors to increasing demand, but there are also many additional factors a state must consider, as explained in the following.

Nevertheless, the auto industry is undergoing a significant transformation. Considering the shift to electrification along with other technology advancements, like connectivity and shared ownership, the

auto industry needs a supportive market to roll out its vehicles and to transition today's vehicles on the road to cleaner, affordable, and more efficient options. There is no single solution or opportunity that works for every company, or potentially every state. Thus, Auto Innovators advocates for public policies that support all electric vehicles in all vehicle types (car, truck, SUV, etc.), sizes (small, large, family, etc.), price points, utility, and more, to make sure that we are building a sustainable and comprehensive electric vehicle fleet to meet the full gamut of customers' needs.

State of the ZEV Market

The "best" markets for electric vehicles do not necessarily have anything to do with the mandate. Auto Innovators' member companies are committed to the transition to electric vehicles. Today, over 40 electric vehicles are offered for sale. Each company is actively planning the best course to develop, offer, and sustain electric vehicles as part of their portfolio, but this planning is specific to each company's individual product lines, resources, customer bases, etc. These estimates show that the auto industry is committed to an electric future, and is not turning back. Estimates from IHS Markit suggest that by 2025, over 130 electrified models will be available, and similar efforts to review automakers' public announcements (as shown in the chart below) reaffirm that approximately 130 electric vehicles, including battery, plug-in hybrid, and fuel cell electric vehicles, are estimated to be available in the next five years:[1]



Source: Publicly Available Automaker Announcements on EV Plans

In addition, new electric vehicle sales vary widely state-by-state. The table below includes states that currently have ZEV rules in place, and some of the highest U.S. sales rates of EVs (but are not necessarily states with ZEV requirements). While Delaware's EV sales (1.7%) in 2019 are less than the national average (2.0%), they are consistent and aligned with many of the northeast and mid-Atlantic ZEV states (ranging from 1.4-2.3%).

[1] Lienert, Paul. "Outside of Tesla, Future EV Sales in U.S. May be Thin for Most Brands: Study." *Reuters*. 29 May 2019. https://www.reuters.com/article/us-autos-electric-forecast/outside-of-tesla-future-ev-sales-in-u-s-may-be-thin-for-most-brands-study-idUSKCN1SZ20I.

Further, a number of the higher EVs sales rates are in states that do not have a ZEV mandate in place – Colorado, DC, Hawaii, and Washington. California and Oregon are the only ZEV states with sales well above the national average. A mandate is not needed to be an electric vehicle leader. This sales disparity between ZEV and non-ZEV states demonstrates that the issue is more complex than adoption of a draconian public policy that requires specified types and volumes of electric vehicles to be sold in a state.

This sales disparity can, in part, be explained by the assumption that electric vehicles go to markets with the most supportive conditions. Further, the mandate does nothing to increase or ensure consumer demand. It only requires automakers to increase electric vehicles volumes available for sale. Lacking enough customer demand and incentives, automakers must offer their own incentives, which result in advantageous pricing for the customer but can be at a loss for the automakers, a deterrent for increasing sales. The right state-level policies and incentives are far more effective at moving the market, generating customer demand, and ultimately supporting any state's climate goals.

2019 ZEV Registrations as a Percent of Light-Duty Vehicles

State	% New ZEV Sales	ZEV Regulations
CALIFORNIA	7.9%	Y
COLORADO	3.1%	MY23
CONNECTICUT	2.0%	Y
DELAWARE	1.7%	N
DISTRICT OF COLUMBIA	4.9%	N
HAWAII	3.2%	N
MAINE	1.4%	Y
MARYLAND	2.1%	Y
MASSACHUSETTS	2.2%	Y
NEW JERSEY	1.6%	Y
NEW YORK	1.4%	Y
OREGON	4.1%	Y
RHODE ISLAND	1.3%	Y
VERMONT	2.3%	Y
WASHINGTON	4.3%	Adoption expected
TOTAL US	2.0%	N/A

Source: IHS Markit, Vehicle Registration Data for Calendar Year 2019

Delaware has a number of unique factors that must be carefully assessed, including, but not limited to, cold weather conditions that can significantly degrade electric vehicle range and place more emphasis on having a robust network of electric charging stations, rural areas, beach and tourism destinations, population density distribution, and the need for increased statewide efforts to address consumer interest.

Another important consideration is the vehicle purchasing preferences in the state. For example, Delaware's purchasing preferences include 75% trucks but only 25% cars each year, versus

California's 58% truck and 42% car purchasing.[2] Another example is that about 60% of the new vehicles purchased in Delaware have all-wheel drive, compared to about 30% in California.[3] Thus, not only do we need to view Delaware's market status as an important factor in the necessary enforcement mechanisms, but more importantly, Delaware should consider whether a program designed for a warm-weathered, population dense state of California is appropriate for its citizens.

A ZEV mandate, therefore, does not ensure a robust or growing market for ZEV sales, and it does not allow a state to tailor the regulations to its unique situations. It also does not ensure customer demand. Thus, the inclusion of a mandate in a modeling exercise may seem appropriate for evaluating the benefits of such a program, but, the feasibility of such a program is greatly miscalculated by such an approach.

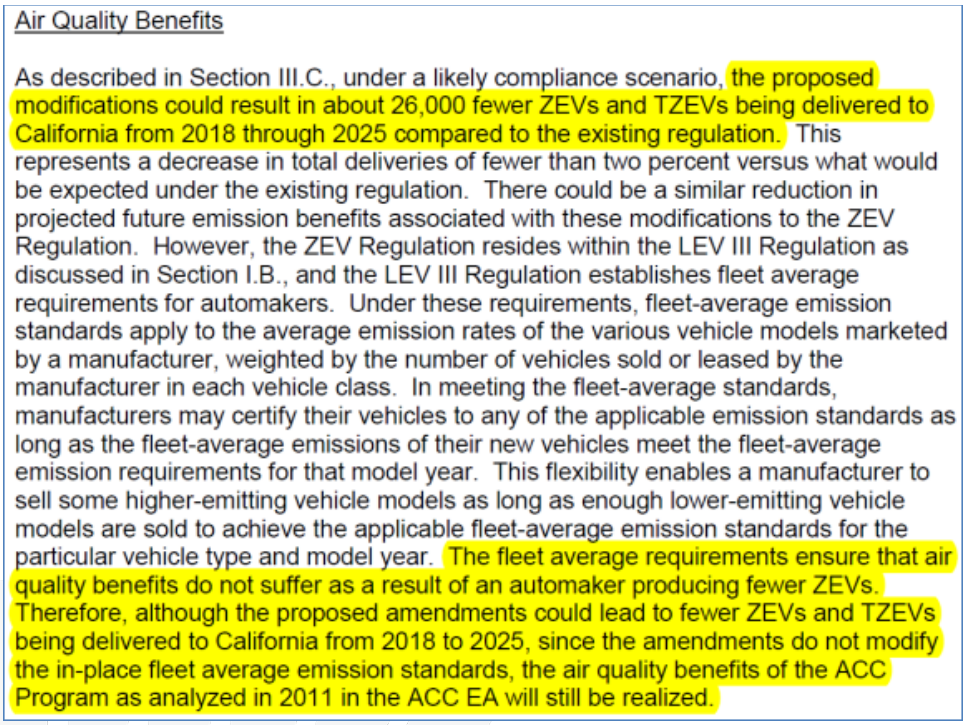
ZEV Air Quality and Greenhouse Gas Benefits Minimized

Contrary to the modeling for the Technical Report, it should be noted that the ZEV mandate will likely not provide air quality or GHG emission benefits for the state through 2025. This is because both the criteria and GHG emissions standards, whether under the California programs or separately under the federal program, are based on fleet averaged results. Electric vehicles' inclusion in stringent fleet average programs for criteria and, separately, GHG emissions means those vehicles can be used to offset higher emissions of other vehicles in the fleet. Thus, there is no guarantee that the proposed ZEV Program would result in lower criteria or lower GHG emissions on a fleet-wide basis.

California has acknowledged this outcome as well, noting that the purpose of the ZEV standard is to advance commercialization of the technology. As explained in the following California Air Resources Board exert, due to the fleet average criteria emission and GHG emission standards, electric vehicles will not result in reduced fleet emissions at this time:

[2] IHS Markit, Vehicle Registration Data for Calendar Year 2019.

[3] IHS Markit, Vehicle Registration Data for Calendar Year 2019.



Air Quality Benefits

As described in Section III.C., under a likely compliance scenario, the proposed modifications could result in about 26,000 fewer ZEVs and TZEVs being delivered to California from 2018 through 2025 compared to the existing regulation. This represents a decrease in total deliveries of fewer than two percent versus what would be expected under the existing regulation. There could be a similar reduction in projected future emission benefits associated with these modifications to the ZEV Regulation. However, the ZEV Regulation resides within the LEV III Regulation as discussed in Section I.B., and the LEV III Regulation establishes fleet average requirements for automakers. Under these requirements, fleet-average emission standards apply to the average emission rates of the various vehicle models marketed by a manufacturer, weighted by the number of vehicles sold or leased by the manufacturer in each vehicle class. In meeting the fleet-average standards, manufacturers may certify their vehicles to any of the applicable emission standards as long as the fleet-average emissions of their new vehicles meet the fleet-average emission requirements for that model year. This flexibility enables a manufacturer to sell some higher-emitting vehicle models as long as enough lower-emitting vehicle models are sold to achieve the applicable fleet-average emission standards for the particular vehicle type and model year. The fleet average requirements ensure that air quality benefits do not suffer as a result of an automaker producing fewer ZEVs. Therefore, although the proposed amendments could lead to fewer ZEVs and TZEVs being delivered to California from 2018 to 2025, since the amendments do not modify the in-place fleet average emission standards, the air quality benefits of the ACC Program as analyzed in 2011 in the ACC EA will still be realized.

Source: California Air Resources Board's September 2, 2014 Initial Statement of Reasons (highlighting added)

This California Air Resources Board text, shown above, explains that one of the 2014 proposed regulatory changes would reduce the number of ZEVs from intermediate volume manufacturers (e.g., Mitsubishi, Volvo, Jaguar Land Rover, Subaru, and Mazda) by 26,000 ZEVs and transitional-ZEVs. It further explains that even though there will be fewer ZEVs sold, as a result of this regulatory change, there will be no impact on air quality, because criteria and GHG emissions are controlled using fleet averages that operate regardless of whether more or fewer ZEVs/TZEVs are sold. Consequently, to the extent there are benefits associated with the ZEV standard, these benefits primarily accrue because of lower liquid fuel distribution emissions associated with shifting from liquid fuels (gasoline and diesel) to electricity.

Another important consideration is where Delaware's electricity comes from, since plug-in electric vehicles' emissions are inherently tied to the cleanliness, efficiency, and renewability of the state's grid.

Complementary Policies Needed to Grow Electric Vehicles Sales

If Delaware wants to increase electric vehicle sales, then it needs to commit a minimum of $89 million[4] to grow its electric vehicle market – for plug-in hybrid, battery and fuel cell electric vehicles –

[4] This spending level is comparative with California's state-dedicated spending expected by 2025, based on the size of Delaware's new vehicle market. These funds need to be appropriated by the legislature and need to happen well in advance of any mandate. A conservative estimate of California's financial commitment to the ZEV market is roughly $3.5 billion based on nearly $1 billion over the past 10 years to grow its electric vehicle market (over $570 million in vehicle rebates, over $35 million in additional rebates for low income residents, $135 million for hydrogen refueling infrastructure, $80 million for charging stations, and other electrification projects) and commitment of another $2.5 billion dollars for incentives and infrastructure to support the rollout of five million electric vehicles by 2030. This estimate of California funding/spending does not include additional money spent and resources expended by agencies to create, implement, and further the programs and development necessary to support activities; nearly $200 million in approved projects under separate utility efforts in California to build out infrastructure, address social equity, and develop consumer programs; Electrify America funding; or California's separately managed consumer education program, *Veloz*.

over the next five years. This spending would be consistent, based on a comparison of vehicle market sizes, with California's state-dedicated spending expected by 2025. These funds do not automatically appear along with a ZEV rule; they will need to be appropriated by the legislature and need to happen well in advance of any goals to increase electric vehicles. Regardless of a ZEV program, Delaware needs to pursue a suite of complementary public policies that (1) increase consumer awareness and interest, (2) develop a network of charging and hydrogen refueling infrastructure, and (3) encourage consumers to buy electric cars. Some initial suggestions for achieving these goals include:

- **Funding and developing a network of electric charging and hydrogen refueling infrastructure**. Infrastructure development is critical to supporting electric vehicles and ultimately to growing awareness among customers.

  First, Delaware needs a roadmap (plan) for developing infrastructure, including along roadways/highways, fast recharging, and critical needs for other public charging. This plan is critical to understanding Delaware's needs related to public (urban and rural), highway, and private charging needs, both to support electric vehicle volumes on the roads today and but also to prepare to support any goals for increasing future electric vehicle volumes. Additional engagement from utilities is critical here as well to address home charging (especially at multi-unit dwellings), grid updates, and charging rates and ensure a transition to renewable electricity sources. Infrastructure incentives and grants should be evaluated for helping to increase charger available. In addition, using the 15% allotment of VW Settlement Funds to fund development of infrastructure is highly recommended.

  Second, Delaware does not have any fueling infrastructure for fuel cell electric vehicles, which are an important option for ensuring consumers' needs are met with the widest array of electric vehicle options. Fuel cell electric vehicles offer a zero-tailpipe, all-electric option with longer range, utility and usage patterns, that may be more appropriate to customers in truck-centric, cold weather, and/or rural areas.

- **Sustaining purchase incentives and implementing other policies that encourage customers to consider electric vehicles**. Electric vehicle purchase incentives should be supported because of their positive consumer-based and environmental impact. Recent data suggests that electric vehicles cost, on average, $12,000 more than conventional vehicles.[5] Recent, publicly available studies suggest battery technology costs will continue to reduce and be at $100 per kWh in 2025 (the price often associated with cost parity between electric and gasoline vehicles). While Auto Innovators agrees that battery costs are reducing, the price per kWh is only part of the story. Power electronics remain costly, and the unique engineering required for electric vehicles is high compared to the high-volume, mass-market and profitable conventional vehicles. Plus, from a consumer perspective there are a suite of factors that impact decision-making, everything from all-electric range to utility to cost-to-operate to performance to refueling convenience. This point suggests that even if technology costs lower and range increases, additional efforts to support the electric vehicle market will still be needed. Therefore, a combination of federal, state, automaker, and other purchase incentives (i.e. utilities) are critical to reducing electric vehicle costs and for persuading customers to buy electric vehicles.

[5] Baik, Yeon, et. al. "Making Electric Vehicles Profitable." *McKinsey & Company*. https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/making-electric-vehicles-profitable.

Moreover, as past experiences demonstrate, it can be detrimental when incentives go away. We witnessed this firsthand in the state of Georgia, which repealed a $5,000 rebate in 2013 and at the same time implemented one of the most stringent additional registration fees for electric vehicles. Following the repeal, the Georgia electric vehicle market dropped from a high of three percent of total vehicle sales (nearly exceeding California's market at the time) to less than one-half of one percent; a 90 percent decrease in sales in the number two market at the time. Georgia's electric vehicle market has still not rebounded and remains well below the national average. Likewise, the potential loss of federal electric vehicle tax credits could significantly impact sales across the country and will put increasing pressure on states that want electric vehicles to develop well-funded and continued electric vehicle purchase incentives.

- **Implementing proven methods, like public-private partnerships, that lead to electric vehicle market growth and development**. One example of this type of partnership would be the state participating in and helping to fund the "Drive Change. Drive Electric." consumer awareness campaign, which is currently funded by six northeast and mid-Atlantic states and twelve automakers.[6]

- **Enacting and investing in a suite of complementary policies to grow awareness, demand, market readiness, and ultimately uptake of electric vehicles**. In addition to the items noted above, examples include, but are not limited to:
    - Implementing state programs aimed at overcoming electric vehicle barriers
    - Requiring public fleets to buy increasing volumes of electric vehicles
    - Working with private fleets to encourage adoption of electric vehicles
    - Coordinating with dealers and the vehicle repair industry
    - Supporting utility efforts to grow infrastructure, offer incentives, and educate customers
    - Supporting the transition to a cleaner, more renewable grid
    - Implementing a low carbon fuels program to make sure that all fuel sources continue to reduce carbon intensity, so that even the gasoline vehicles operating in the fleet are benefiting from fuel efficiency and fuel-related improvements
    - Exploring alternative funding sources, like revenue from a low carbon fuels program, to support electrification of the transportation network
    - Improving and streamlining building and permitting processes
    - Development of EV-ready building codes

Timing for Implementation

Finally, while many see the adoption of the ZEV regulations as the golden solution to reducing the carbon-intensity of transportation, the situation is far more complex than a regulation. While automakers are committed to bringing more electrified options to market, to meet more customers' needs and move the market forward, many customers have yet to fully embrace electric vehicles. As noted above, the state will need to double its efforts to support and the prepare the market regardless of a ZEV regulation. Thus, the ability of the state to expand upon existing and implement new and innovation complementary measures will be more telling of the state's ability to increase customer demand and be able to increase electric vehicle sales significantly enough to procure emission benefits above and beyond the caps set by the Low Emission criteria and GHG emissions standards.

[6] www.driveelectricus.com.

Further, taking a more realistic view of any timeline, the earliest that Delaware could undertake a regulatory action and implement a rule with required lead time under the Clean Air Act would be model year 2025; this would likely be an aggressive regulatory schedule for the state of Delaware to complete. As of now, California's ZEV regulations do not increase beyond model year 2025, though they do remain in place and active at the same level for model years beyond 2025. Recent actions in California, however, reinforce that California looks to substantially and significantly increase ZEV requirements beyond 2025. Based on a recent Executive Order from California's Governor, the state is directed to obtain 100% electric vehicle sales by 2035, thereby eliminating the sales of new gas-powered vehicles at the same time.[7] Even though California leads the market in electric vehicle sales – at about 8% in 2019 and tracking around 7% in 2020 – this goal will be a huge challenge for California. It is yet unclear how and if other states will be able to follow. Fundamentally states must be prepared to consider the full impact of going to all electric vehicles in 15 years.

Thus, while Delaware may see the ZEV program as an option for reducing GHG emissions, Auto Innovators recommends that the state hold on any action until we better understand California's next steps. We expect California to undertake a rulemaking process in 2021, and therefore, at its shortest, such a delay would only be a difference of one model year (2025 v. 2026) for implementation of California's program in Delaware. In addition, it gives the state of Delaware, its Governor, and legislature ample time to enact legislation that will prepare Delaware's electric vehicle market for increasing number of vehicles, ensure citizens in the state (and from out of state) can readily and easily charge their electric vehicles, put in place the foundation for hydrogen fueling stations, and commit to funding consumer awareness programs.

Consumer Incentives – Electric Vehicles and Fuel Efficient

Auto Innovators recommends that Delaware focus on implementation of expanded consumer incentives for electric vehicles, including plug-in hybrid, battery, and fuel cell electric vehicles. Adoption incentives are critical to increasing customer demand and preparing the market for expanded use of electric vehicles. All of the options contemplated in the Technical Report align with the various recommendations and ideas we have put forth in the sections above, and we encourage swift action by the state agencies, legislature, and various stakeholders to implement these measures. As noted above, these efforts will be more effective and impactful in growing a sustainable electric vehicle market with sufficient customer demand and therefore contributing to the state's GHG reduction goals.

We also support expanding fuel-efficient vehicles, as suggested in the report, but it is not clear how Delaware intends to achieve this goal. Under federal law, all vehicles are improving fuel economy and GHG emissions through 2025, making increased fuel efficiency a given for all customers. Even the used vehicle market is increasingly more efficient as customers buy the newest technologies coming from leases or otherwise sold into the secondary market. One area where the state may be able to provide the most value is through rebates or purchase incentives to lower income constituents, typically those who cannot afford the newest vehicles and may hold onto older vehicles longer. In this way, the state can encourage more fuel-efficient vehicles on the road, by taking the oldest, least efficient vehicles off the road. At the same, by removing older vehicles, the state will also be improving the

[7] Office of Governor Gavin Newsom, "Governor Newsom Announces California Will Phase Out Gasoline-Powered Cars & Drastically Reduce Demand for Fossil Fuel in California's Fight Against Climate Change." *Press Release*, Sept. 23, 2020. https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-drastically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/#:~:text=SACRAMENTO%20%E2%80%93%20Governor%20Gavin%20Newsom%20today,passenger%20vehicles%20to%20be%20zero%2D.

safety of its roads, because the same newer, more efficient vehicles will also be equipped with newer safety technologies.

State Fleet Electrification

State fleet requirements for electrification are a great way for a state to lead by example and should be encouraged to exceed the modeled amount of 20% electrification in state fleets by 2025. Incorporation of electric vehicles in fleets can be cost-effective for the state. It is also a great way to increase visibility of the technology and allow for "test driving" the technology by the eligible employees. In addition, given the centralized nature of state fleets, development of infrastructure to support employee travel patterns and home-base charging will ensure the vehicles are usable and well-used by employees. For further consideration in implementing state fleet electrification requirements, the state may need to reconsider allowable exemptions (to maximize the number of EVs in the fleet) and may also need to reevaluate purchasing capabilities, as a lease option may be useful going forward.

Other Transportation Mitigation Efforts

Other areas that the state should consider as part of its sector-wide approach to its Technical Report include private fleets and heavier vehicle applications. Electric vehicle fleet goals for private fleets could be covered by land use planning and VMT reduction requirements, but it seems that a separate mitigation item is warranted. A separate effort to work with taxis, shuttles, on-demand services, rental cars, etc. to encourage and provide incentives for increased electrification in those fleets may provide a high level of GHG benefits given the higher VMT impact of many of those fleets. While we understand the state's focus on light-duty transportation, there is also a need to consider other transportation sources in mitigation efforts. Many states have used VW Settlement Funds to incorporate electric buses into school districts and city fleets, and 15 states and the District of Columbia signed a joint memorandum of understanding (MOU) to advance and accelerate the market for electric medium- and heavy-duty vehicles, including large pickup trucks and vans, delivery trucks, box trucks, school and transit buses, and long-haul delivery trucks (big-rigs). Delaware should consider these efforts and their potential to supplement and provide further sector-wide emissions reductions impact as part of its mitigation strategy.

In summary, Auto Innovators believes that Delaware has identified many key considerations to mitigate GHG emissions across sectors going forward and appreciates the scientific, modeling approach used to evaluate options. All of these actions require a coordinated approach and direct engagement with stakeholders; many of these actions will require the legislature's commitment to enact and fund these efforts in order to achieve the modeled benefits. Auto Innovators and our member companies remain committed to a cleaner and safer future for transportation and stand reading to work with Delaware to design smart and efficient policies to reduce transportation emissions and provide value to the state, its citizens and the businesses that must implement these actions.

Yue, Ian T. (DNREC)

From: Williams, Brendan [redacted]
Sent: Friday, October 16, 2020 1:34 PM
To: ClimatePlan, DE (MailBox Resources)
Subject: PBF Comments re: Delaware's Climate Action Plan
Attachments: 20201016 PBF DE CAP Cmts FINAL.pdf

Attached are PBF Energy's comments on Delaware's Climate Action Plan. If someone can confirm receipt, it would be greatly appreciated. Please also do not hesitate to reach out to me if there are any questions or for any additional information.

Regards,

Brendan Williams
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October 16, 2020

Delaware Department of Natural Resources
and Environmental Control
Division of Climate, Coastal, & Energy
100 W. Water Street
Suite 10B
Dover, DE 19904

Submitted electronically via declimateplan@delaware.gov

Re: Comments on the Delaware Climate Action Plan

PBF Holding Company LLC, a subsidiary of PBF Energy Inc. ("PBF"), respectfully submits these comments in response to the draft Delaware Climate Action Plan ("CAP"). PBF is one of the largest independent petroleum refiners and suppliers of unbranded transportation fuels, heating oil, petrochemical feedstocks, lubricants and other petroleum products in the United States.

PBF subsidiaries currently own and operate six domestic oil refineries in five states, with two of our subsidiaries, Delaware City Refining Company and PBF Logistics, operating in the State of Delaware. The rest of our refineries are located in New Jersey, Ohio, Louisiana and California, with combined processing capacity of approximately 1,000,000 barrels per day.

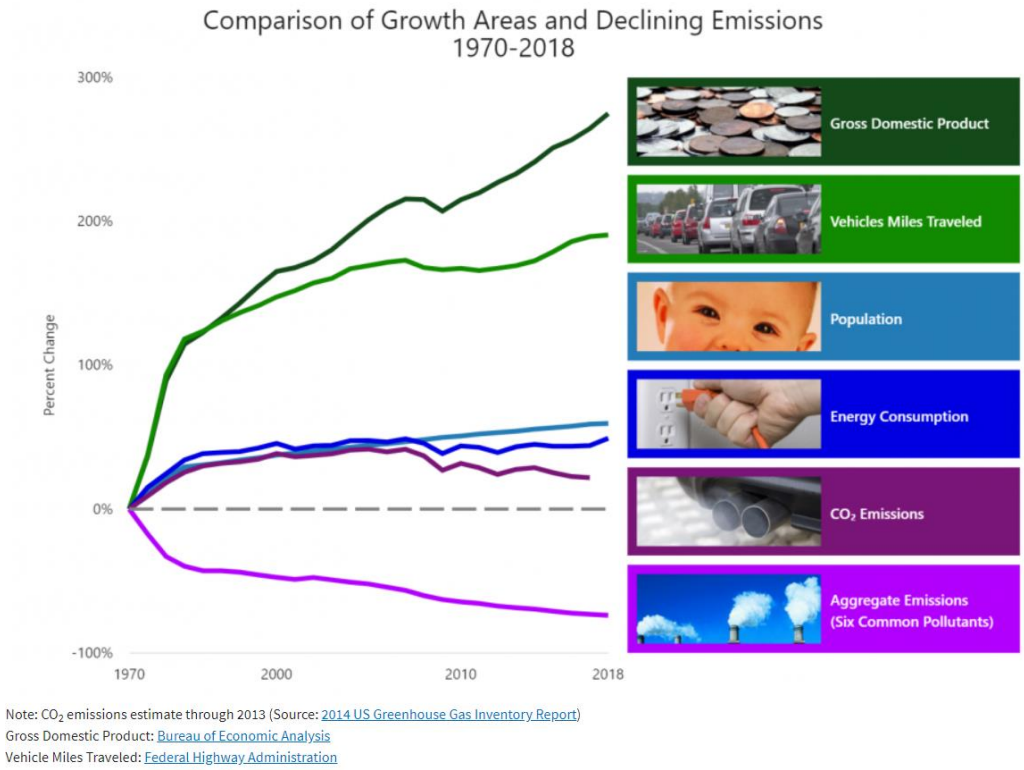
PBF employs almost 4,000 people nationally. As one of the largest U.S. merchant refiners - with the most East Coast refining capacity – poorly-crafted programs that raise the cost of manufacturing transportation fuels and create de facto mandates for expanding vehicle electrification could have a significant, negative impact on PBF, transportation fuel consumers in Delaware, refinery workers, contractors, vendors, and suppliers.

Specifically, the CAP analysis conducted for the Delaware Department of Natural Resources and Environmental Control (DNREC) recommends both a California-style Low Carbon Fuel Standard (LCFS), coupled with electric vehicle mandates. Such policies could significantly raise the cost of and diminish access to transportation for residents of Delaware, while also hampering the competitiveness of East Coast fuel manufacturers, which compete with foreign refiners that literally "dump" surplus gasoline in ports that serve Delawareans, including Wilmington, Philadelphia, and Baltimore.

I. Any new transportation greenhouse gas (GHG) program must recognize the extent of transportation emission reductions that have already been achieved – and will continue to progress - due to existing transportation-related GHG regulations.

A. Extensive federal emission regulations for the transportation sector will continue driving emission reductions.

Recent debates over reducing transportation sector emissions begin with the same flaw: Downplaying and/or ignoring existing regulations that have been and will continue driving emissions down in the transportation sector. U.S. Environmental Protection Agency (EPA) data shows that since 1970, all transportation sector emissions have decreased, despite significant increases in population, vehicle miles traveled (VMT) and Gross Domestic Product (GDP):[1]



Note: CO_2 emissions estimate through 2013 (Source: 2014 US Greenhouse Gas Inventory Report)
Gross Domestic Product: Bureau of Economic Analysis
Vehicle Miles Traveled: Federal Highway Administration

Source: Environmental Protection Agency

Several trends have contributed to such reductions, including federal regulations such as the combined National Highway Traffic Safety Administration (NHTSA) and EPA GHG tailpipe and Corporate Average Fuel Economy (CAFE) regulations. Federal and state gasoline taxes – which are carbon taxes – combined to add about 50 cents per gallon (cpg) of gasoline and nearly 56 cents per gallon of diesel fuel to prices at the pump on average.[2] Delaware's state gasoline tax

[1] U.S. Environmental Protection Agency. *History of Reducing Air Pollution from Transportation in the United States.* Available at: https://www.epa.gov/transportation-air-pollution-and-climate-change/accomplishments-and-success-air-pollution-transportation

[2] U.S. Energy Information Administration (EIA). Frequently Asked Questions. *How much tax do we pay on a gallon of gasoline and on a gallon of diesel fuel?* July 1, 2020. Available at: https://www.eia.gov/tools/faqs/faq.php?id=10&t=10

is 23 cpg[3], so motorists there are already paying about 73 cents in taxes per gallon for gasoline and about 79 cents for diesel fuel.

Additionally, the federal Renewable Fuel Standard (RFS) contains GHG requirements for compliant biofuel. While these regulations create their own challenges that Congress and the Administration need to address,[4] they are in part why the U.S. Energy Information Administration (EIA) projects continued decreases in gasoline consumption for the foreseeable future. As the agency's latest Annual Energy Outlook notes: "Increases in fuel economy standards drive the decrease in U.S. motor gasoline consumption, which declines by 19% through 2050."[5] EIA adds, "Motor gasoline and distillate fuel oil's combined share of total transportation energy consumption decreases from 84% in 2018 to 74% in 2050."[6]

Policymakers and regulators everywhere, including DNREC, need to start by acknowledging the continuing, forecasted decreases in transportation sector demand and, thus, emissions reductions that will occur by default, given the existing regulatory environment, when considering the extent and necessity of new, additional transportation sector GHG controls.

B. *The ICF analysis for DNREC acknowledges the state's numerous GHG control programs, coupled with EIA's projections, will result in the state nearly achieving its GHG reduction goals. However, the report fails to take into account additional reductions likely to occur as a result of permanent trends associated with the COVID19 epidemic.*

ICF notes Delaware already has at least six GHG reduction programs in place[7] and projects the state is on track to come within half a percentage point of meeting its 2025 GHG reductions goal of lowering emissions at least 26 percent from 2005 levels without any new regulations (e.g. its Business As Usual, or BAU, case).[8] Furthermore, the ICF ignores projections for additional, longer term fuel demand destruction resulting from the COVID19 pandemic, which many analysts have projected. Bearing this out, EIA has continuously adjusted its 2021 fuel demand projections downward throughout this year. The agency's latest Short Term Energy Outlook (STEO) states:

- EIA forecasts that global consumption of petroleum and liquid fuels will average 92.8 million b/d for all of 2020, down by 8.6 million b/d from 2019, before increasing by 6.3 million b/d in 2021.
- EIA's forecast for consumption growth in 2021 is 0.3 million b/d less than in the September STEO.

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[3] https://dmv.de.gov/TransServices/MFSF/index.shtml?dc=mfsfFAQ

[4] For example, many environmental organizations feel the conventional biofuel mandated in the RFS has had the unintended consequences of increasing GHG emissions above what would have occurred without the fuels' use. Additionally, declining gasoline consumption raises questions about how highway programs should be funded in the future.

[5] EIA. *Annual Energy Outlook 2020.* January 29, 2020. Available at: https://www.eia.gov/outlooks/aeo/

[6] Id.

[7] ICF. *Delaware Climate Action Plan*. p. 9.

[8] Id. p. 3.

Another significant COVID-related trend involves large employers allowing employees to work mostly or even completely remotely on a more permanent basis. Since commuting to work represents almost one third of gasoline consumption, persistent telework trends will almost certainly reduce demand by some amount beyond pre-pandemic and possibly current predictions. The longer-term impacts of COVID-related demand destruction will reduce emissions further than anticipated, but will also put additional American refining capacity at risk, as several domestic refineries have already been shut down due to demand destruction for motor fuels related to government lockdowns across the country.

II. Given the extensive GHG reductions that will occur without additional regulation, Delaware must carefully weigh the cost of incremental emissions reductions on consumers and the state's economy, against any potential incremental benefit of either a Low Carbon Fuel Standard (LCFS) or electric vehicle (EV) mandate.

A. Climate change is a global phenomenon. Unquestionably, Delaware's GHG emissions are insignificant on the world-wide scale. Consequently, potential incremental reductions from new transportation sector GHG emission regulations will essentially yield no benefit, yet increase prices to motorists in the state in both the LCFS and electrification scenarios being considered.

The state's 2016 GHG emission inventory, upon which the ICF analysis relies, specifically notes: "In 2016, Delaware's gross total GHG emissions were equivalent to 15.75 MmtCO2e, which represents approximately 0.2% of national gross GHG emissions (U.S. total was 6,511 MmtCO2e in 2016)."[9] In comparison, in 2016 global GHG emissions were 49,400 MmtCO2e (or 49.4 gigatons CO2 equivalent).[10] In simple terms, Delaware's annual emissions are equivalent to 0.0003% of global GHG emissions, so any additional GHG emission reductions by state residents will have essentially zero impact on global GHG concentrations.

This fact is particularly significant, in part because the Paris Accord enables China to essentially increase GHG emissions by more than 50 percent through 2030. In this context, Delaware-specific action will infinitesimally reduce GHG emissions, while emissions increase overseas and Delawareans are asked to pay more for vehicles or fuel.

B. A poorly-crafted LCFS could put Delaware fuel supplies and manufacturing jobs at a competitive disadvantage, particularly in light of the massive fuel demand destruction attributable to the COVID19 pandemic. As previously noted, demand destruction for motor fuels has resulted in several recent refinery closures, which are additive to the extensive plant closures the East Coast experienced in between 2009-2013.

The unprecedented fuel demand destruction due to mitigation measures taken in response to the COVID19 pandemic have led to massive losses in the domestic refining sector. Five U.S. refineries have closed within the last few months, with a total of seven closing within the past year,

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[9] Delaware Department of Natural Resources and Environmental Control (DNREC), Division of Air Quality. *Delaware's 2016 Greenhouse Gas Emissions Inventory.* July 2019. Available at: http://www.dnrec.delaware.gov/Air/Documents/2016-de-ghg-inventory.pdf

[10] https://www.wri.org/resources/data-visualizations/world-greenhouse-gas-emissions-2016

resulting in lost domestic refining capacity of 777,500 barrels per day, or over 4 percent of total U.S. refining capacity prior to the closures. When closures of Canadian refiners that supplied the U.S., as well as other domestic refiners that have idled with no announced plans to restart are taken into account, another 759,000 barrels per day of North American refining capacity is offline (or about double the lost capacity from permanent closures).

While COVID related demand destruction is the primary driver for the most recent closures, a poorly-crafted federal biofuel mandate is a contributing factor that created headwinds for the refining sector prior to the pandemic. News reports from the beginning of 2020 indicated that five percent of U.S. refining capacity was for sale, with little buyer interest. The high cost of the federal RFS was noted as a significant headwind, another factor in this equation.[11]

Owners of several shuttered refineries have announced plans to explore converting those plants to renewable diesel production to meet California's LCFS, along with federal RFS compliance. However, even if every facility that has indicated an interest in such a conversion goes through with its plans, total production from all these plants will only represent about 14 percent of the petroleum fuel volume previously produced at these facilities. Plus, renewable diesel plants also only require about a third of the workforce of a traditional refinery. In other words, even if closed refineries moved forward with their announced renewable diesel conversions, they will make over 10 billion gallons *less* fuel annually and still result in tens of thousands of direct and indirect job losses.

The RFS serves as an important example of a poorly-crafted fuel regulation, a symbol of well-intentioned legislators to enhance energy security that now requires imports to satisfy the regulation. The program places the point of obligation with refiners, regardless of their biofuel-blending capabilities. However, the RFS only allows compliance credits to become available for use when biofuel is blended into gasoline and diesel. As a result, the program advantages integrated oil companies that have the capability to blend more fuel than they refine over merchant refiners who are unable to control how much biofuel is blended into the gasoline they manufacture. This structure, combined with overly aggressive volume mandates, sent volatile RFS compliance credits – called Renewable Identification Numbers or RINS – skyrocketing just a few years ago and again this year. Runaway RIN cost was a key contributor to Philadelphia Energy Solutions' (PES) original bankruptcy filing in 2018. PES owned and operated the largest refining complex on the East Coast at the time. Press reports also indicate uncertainty over RIN costs prevented other companies from seeking to reopen the site as a refinery after closing permanently in the aftermath of a subsequent incident.[12]

Policymakers and regulators should be particularly concerned about any program structured in a manner that could further disadvantage merchant refiners, given how the existing economic environment is impacting American fuel manufacturers. East Coast refiners in particular have been facing significant headwinds for some years now. As an article about the PES closure noted:

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[11] Resnick-Ault, Jessica, and Sanicola, Laura. "U.S. refinery sales hit the brakes, with 5% of capacity on block." Reuters. January 10, 2020. Available at: https://www.reuters.com/article/us-usa-oil-refiner-sales-idUSKBN1Z90GN

[12] Id.

While the U.S. economy has been growing steadily for several years, oil refining employment has slipped as automation and the shuttering of plants has bit into the industry. Refining jobs are down by nearly 8% nationwide since 2009, according to BLS figures.[13]

EIA data also notes that the volume of fuel PES previously supplied to the region was mostly made up via foreign imports in aftermath of the facility's closure. Delaware should seek to avoid an LCFS program structure that would further threaten East Coast manufacturing jobs and regionally produced fuel supplies.

C. *California's refining sector is structurally different than the East Coast refining sector. California is also not trade exposed.*

There are 20 refineries on the West Coast (referred to as PADD 5), 15 of which are in California. These facilities make the region fairly self-sufficient in relation to meeting consumers' fuel needs. Additionally, California's boutique fuel regulations make supplying that state's market difficult for refiners outside the region.

In contrast, East Coast refiners face significantly more competitive challenges than those equipped to supply the California markets, because the East Coast can be supplied from the Gulf Coast via the Colonial Pipeline, as well as from foreign refiners that ship fuel into New York Harbor. Europe has historically been a large gasoline exporter to the U.S. East Coast, because the continent relies more on diesel fuel, so European refiners tend to make more gasoline than their markets demand. As a result, they ship the surplus gasoline into East Coast ports, as previously noted.

In 2000, the East Coast fuel supply distribution mix was about 50 percent indigenous refineries, 30 percent Colonial Pipeline, and 20 percent foreign imports. From 2009 to 2013, four domestic refineries on the East Coast were permanently shut down in Virginia, Pennsylvania, and New Jersey (2), with one each in Delaware and Pennsylvania shut down and then restarted. Additionally, the 650,000 barrel per day HOVENSA refinery was also shut down in St Croix, U.S. Virgin Islands. These permanent shutdowns amounted to a reduction of more than 1 million barrels of refining capacity.

Today, there are only four major indigenous, domestic refineries left between Maine and Florida – two in New Jersey, and one each in Pennsylvania and Delaware, with two much smaller refineries in western Pennsylvania. The Colonial Pipeline acts the largest East Coast refinery / fuel supplier, while the balance comes from imports from Canada, Europe, and other regions. Major reasons for diminishing East Coast refining capacity are crude supply challenges and the regulatory environment. There are no crude pipelines within 200 miles of any East Coast refinery, making the region's fuel manufacturers reliant on more costly rail and waterborne transportation for crude deliveries.

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[13] Kearney, Laila, and Kelly, Stephanie. "Laid-off Philadelphia refinery workers struggle with shrinking sector." Reuters. January 22, 2020. Available at: https://www.reuters.com/article/us-pes-bankruptcy-workers-idUSKBN1ZL2DA

Additionally, the federal Jones Act prevents cost-competitive American crude originating from Gulf Coast states from being affordably transported by ship to East Coast refineries. In response, American crude is routinely exported to foreign refineries, effectively making them more competitive than American refineries. Overseas refiners also typically face a less onerous regulatory environment. Further impacting domestic East Coast refiners, the foreign refiners can ship gasoline to the East Coast in a competitive manner. Historically, shipping costs to bring U.S. Gulf Coast crude to Europe or the UK, for example, and then ship gasoline back to the U.S. East Coast, is less than U.S. refiners on the East Coast would pay to ship crude from Texas to Delaware or New Jersey.

These structural and competitive challenges East Coast refiners face make them more susceptible to become even more disadvantaged to foreign and Gulf Coast refiners if they are saddled with disproportionate regulatory costs.

D. An LCFS and electric vehicle (EV) mandate could significantly raise consumer fuel and transportation costs.

The ICF analysis of the Delaware CAP failed to estimate the cost of an LCFS to Delawareans. Experience with the California program indicates an LCFS could significantly increase consumer fuel costs in Delaware. The California LCFS costs consumers almost 23 cents per gallon, [14] the equivalent to Delaware's existing gasoline tax that motorists pay today.[15] In other words, if the Delaware bases an LCFS on California's program, the state's existing gasoline tax could effectively double.

Delaware is also exploring participation in the Transportation & Climate Initiative of the Northeast and Mid-Atlantic States (TCI), which seeks to place transportation fuels under a cap-and-trade program. TCI's analysis concludes its transportation fuels cap-and-trade proposal will cost motorists in the region between 5 and 17 cents per gallon, or $1.4 to $5.6 billion dollars in aggregate, in the first year of the program alone. These costs escalate each year, potentially reaching over 35 cents per gallon in 2032.[16] Were Delaware to participate in TCI's cap-and-trade program and institute an LCFS, the cost could be equivalent to placing a 40 cent per gallon tax on consumers in initial years, increasing over time, and be additive to the 41 cents per gallon Delawareans already pay in state and federal motor fuel taxes. Of particular interest in terms of equity, history has shown high fuel taxes disproportionately impact lower income individuals.

Additionally, the ICF analysis of Delaware's CAP options recommends mandating 20 percent of new vehicles be EVs, plug-in electric hybrid (PHEV), or hydrogen, starting in 2025. The recommendation for consumer EV adoption also assumes 20 percent new vehicle EV market penetration in 2030. EIA and various auto industry estimates indicate that under very aggressive

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[14] California Energy Commission, Stillwater Associates. February, 2020.
[15] https://dmv.de.gov/TransServices/MFSF/index.shtml?dc=mfsfFAQ
[16] Transportation & Climate Initiative. *Webinar: Draft Memorandum of Understanding & 2019 Cap-and-Invest Modeling Results.* December 17, 2019. Available at: https://www.transportationandclimate.org/sites/default/files/TCI%20Public%20Webinar%20Slides_20191217.pdf

adoption scenarios, electric vehicles will represent only 5 to 10 percent of new vehicles sold in that year.[17]

If consumer acceptance of electric vehicles is more reflective of EIA and auto industry estimates, rather than the ICF estimates, and a TCI cap-and-trade and/or LCFS program are in place, allowance prices could be significantly higher than anticipated. Such a situation would raise consumer costs even further.

III. Policymakers should consider the potential unintended consequences of trying to unnaturally force massive amounts of electric vehicles on consumers. They should also recognize the economic and environmental benefits of petroleum transportation fuels.

A. Mass vehicle electrification could result in higher criteria pollutant emissions, without reducing GH emissions.

Much of the current debate assumes electric vehicles (EVs) are more environmentally friendly than internal combustion engine. However, a growing body of evidence indicates this may be inaccurate. Data from many studies indicates that the net environmental benefits from EVs often fails to accurately account for the source of electricity powering these vehicles or the GHG emissions associated with manufacturing and components. As one commentator noted before the Delaware Public Service Commission last year, "When all of these factors are considered carbon dioxide lifetime emissions savings may range between minus 3.2 and plus 3.8 tons, or an average of essentially zero savings."[18] These comments also note EV expansion could easily result in increased criteria pollutant emissions.

B. Mass vehicle electrification raises other natural resource supply and humanitarian issues.

Electric vehicles need significant quantities of cobalt. More than half the global supply of cobalt is located in the Democratic Republic of Congo, some of which is mined using child labor.[19] Policymakers should address the sustainability and humanitarian issues associated with cobalt supply before promoting overly aggressive EV targets. They should also assess the cost impacts on other consumer goods relying on cobalt, like cell phones, if significant quantities of the resource are reallocated to EV battery production.

In addition to cobalt, EVs require relatively large amounts of lithium. One study that explores meeting Europe's carbon reduction goals through mass EV penetration notes that, "The majority of lithium and cobalt is located in a few countries which is a potential risk for prices and

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[17] EIA. Annual Energy Outlook 2020. January 29, 2020. Available at: https://www.eia.gov/outlooks/aeo/
[18] Stevenson, David. CRI Rebuttal Comments on (DE) PSC Dockett 19-0377. October 23, 2019
[19] Nikolewski, Rob. "Electric vehicles' future relies on cobalt. It's often mined by children and is soaring in price." The Los Angeles Times. February 22, 2018. Available at: https://www.latimes.com/business/la-fi-electric-car-cobalt-battery-20180222-story.html

security of supply."[20] This study indicates the lithium that would be needed if EVs were used to simply meet Europe's carbon reduction goals would dwarf existing production levels of this scarce, mined resource. Ensuring security of lithium supply will be critical in any plan relying on massive vehicle electrification.

C. *Policymakers need to recognize that petroleum products make modern life possible and are the most efficient forms of transportation fuel.*

The cleanest, most reliable and most affordable transportation fuels will continue to come from petroleum-based gasoline and diesel for the foreseeable future. No other form of energy carries the same bang for the buck. Managing future emission will necessitate continuing to use petroleum based fuels more efficiently; particularly since affordable energy is essential to continued economic growth and prosperity. In discussing the benefits of petroleum fuels over other sources, EIA notes:

> *Energy density and the cost, weight, and size of onboard energy storage are important characteristics of fuels for transportation. Fuels that require large, heavy, or expensive storage can reduce the space available to convey people and freight, weigh down a vehicle (making it operate less efficiently), or make it too costly to operate, even after taking account of cheaper fuels. Compared to gasoline and diesel, other options may have more energy per unit weight, but none have more energy per unit volume.*[21]

Domestic refiners are making the cleanest transportation fuels in the world at costs affordable for Americans across the economic spectrum. Americans also continue to use these fuels more efficiently, in a manner that ensures continued health while advancing potential for upward economic mobility. Policymakers and regulators must recognize there are many sides to this story that they need to consider before imposing significant new costs and mandates on consumers and/or fuel manufacturers in a way that could damage Delaware's economy and the general welfare of its residents.

Sincerely,

Matthew Lucey
President

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[20] Powell, Nick, et. al. "Impact Analysis of Mass EV Adoption and Low Carbon Intensity Fuels Scenarios – Summary Report." Ricardo. August 24, 2018. Available at: https://www.fuelseurope.eu/wp-content/uploads/Summary-Report-Mass-EV-and-Low-Carbon-Fuels-Scenarios-1.pdf

[21] EIA. "Today In Energy." February 14, 2013. Available at: https://www.eia.gov/todayinenergy/detail.php?id=9991

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Friday, October 16, 2020 2:40 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Setting goals, net zero by 2050"

From: Sarah Buttner [redacted]
Subject: Setting goals, net zero by 2050

From "Submit a Comment" Form:

Message Body:
I ask that the plan include ambitious GHG reduction targets, hopefully net zero emissions by 2050, and provide for measurement and reporting of progress toward the goals. As we know, the Intergovernmental Panel on Climate Change (IPCC) calls for net zero CO2 emissions by 2050 to avoid the worst of climate change. I see that ICF's modeling of the effects of potential changes projects a significant reduction in GHG emissions versus business as usual. but does not get Delaware to net zero. I know it is a lot easier to call for net zero than to achieve it, but this threat is so serious that we should do all we can to reach it.

Thank you for this opportunity to comment.

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=04%7C01%7CDEClimatePlan%40delaware.gov%7Cb5351e5d9d2e4dbd39eb08d87202e8bc%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637384704107781023%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=4Bryht3o7Vmpi4%2BiVTa0W4BvBA0zL8BJTpgUdUCFrsU%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Friday, October 16, 2020 3:51 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Help from Architects (AIA Delaware)"

From: Toomas Idnurm, Associate AIA [redacted]
Subject: Help from Architects (AIA Delaware)

From "Submit a Comment" Form:

Message Body:
As the State develops Delaware's Climate Action Plan, the Delaware component of the American Institute of Architects (AIA Delaware), would like to participate with recommendations and guidance. The work of architects is essential to the well-being of Delaware's citizens. Our members embrace their moral and ethical obligation to uphold this public trust by designing buildings and communities that are safe, resilient, sustainable, accessible, and beautiful.

While we understand the plan will outline strategies to address the causes of climate change, the plan will also include strategies to address the consequences of climate change. This in an area where AIA Delaware members can offer relevant insight and expertise.

As the details begin to emerge for the plan, we encourage the incorporation of Complete Communities urban and rural planning concepts,
https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.completecommunitiesde.org%2F&data=04%7C01%7CDEClimatePlan%40delaware.gov%7C7ad812bf3c7d427e72aa08d8720ce2b3%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637384746952217020%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=yK0o0Ka906dGngwLyRk1OSrWMqyA3E1aP5ApPLkPDGQ%3D&reserved=0, as well as infrastructure design and planning support from our architect members.

We look forward to the opportunity to be actively engaged in the development of the Climate Action Plan. I look forward to hearing from you at your earliest convenience.

Toomas Idnurm, Associate AIA
[redacted]

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This e-mail was sent from a contact form on DE Climate Plan Website
(https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=04%7C01%7CDEClimatePlan%40delaware.gov%7C7ad812bf3c7d427e72aa08d8720ce2b3%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637384746952217020%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=ewQbEMv3vZMcdNl56BJ1jGK7KwoAfrMjSzJXFF76WPU%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Delaware Climate Action Plan <contact@declimateplan.org>
Sent: Friday, October 16, 2020 4:50 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Delaware Climate Action Plan Contact Form "Delaware Nature Comments on Action Plan"

From: Emily Knearl [redacted]
Subject: Delaware Nature Comments on Action Plan

From "Submit a Comment" Form:

Message Body:
October 16, 2020

Susan E. Love, AICP
Administrator, Climate & Sustainability Programs DNREC Division of Climate, Coastal, and Energy
100 W. Water Street, Suite 10B
Dover, DE 19904

Dear Ms. Love:

The Delaware Nature Society (DelNature) appreciates the opportunity to provide input on Delaware's First Climate Action Plan.

Climate change is a complex and challenging issue facing our society. It is no longer just a threat to future generations, but a modern-day challenge for people across the world, and right here in Delaware. We must act now and commit across our community to remediating and mitigating its impact on Delawareans and on our wildlife and lands. This is not DNREC's fight alone. The public and private sectors must work together, including all state agencies, federal and local governments, public health authorities, education institutions, businesses, nonprofits, community groups, faith-based organizations and many more.

The below climate change policy suggestions are broken into six categories and, when available, bill numbers from other states' legislation are included. While those bills might not be a perfect fit for Delaware; there are many good ideas we can adapt for the First State.

Education
A majority of Delawareans view climate change as a fact but knowledge varies significantly on what can be done about it. Individual choices matter and people should be empowered with that knowledge. We must more aggressively educate our children and our community on what they can do to fight climate change. We propose:

•Follow the New Jersey climate change school model and require climate education in every grade (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.nj.gov%2Feducation%2Fcccs%2F2020%2F&data=04%7C01%7CDEClimatePlan%40delaware.gov%7C71d6832fc3b04ea68b2008d872150d0a%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637384782023432410%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=zWuafH4DZbpxraUcGKABgfbpYX%2FSEiBXrt2cte8E%2BFw%3D&reserved=0). Invest in and strengthen education programs involving science, technology, engineering, and math (STEM) to enable future generations to better understand the changing environment and to provide strong problem-solving skills (see US HR 4979) •Sharply increase the education funding and outreach for what

individuals can do to fight climate change (e.g., how to reduce a home's carbon footprint, recycling, weatherization, shopping local, etc.).
•Increase children's appreciation and understanding of the natural world through more outdoor education and recreation programming across the community, prioritizing schools which qualify for free and reduced lunch (see WA HB 1677)

Individual and Business Incentives
Individual and business decisions have an enormous impact on climate change. Delaware has made a good start in incentivizing choices that protect our planet for today and tomorrow, but more must be done. We propose:

•Substantially increase cash rebates for the DNREC Clean Vehicle program for new Battery Electric Vehicles and Plug-In Hybrid Electric Vehicles to $3,500 each.
•Build upon existing Delaware Housing Authority and other weatherization home and rental property loan improvement programs aimed at low to moderate income households to address climate resiliency, energy efficiency and environmental remediation projects (See MD S 722) •Increase energy efficiency of government-subsidized existing affordable housing and increase the availability of energy-efficient single family and multifamily housing through tax incentives and technical assistance.
•Eliminate emissions from new state buildings by 2030 by requiring they follow net-zero-emission building codes •Use tax rebates to incentivize green building construction practices and encourage retrofits of commercial buildings •Create incentives for counties and cities to adopt net-zero building codes.
•Incentivize efforts by private landowners and business properties to protect and create native wildlife habitats
•Develop Extreme Heat & Community Resilience Program in vulnerable communities (see CA A 2441)

Government Planning: State Investments, Land Use and Construction State government plays an integral role in reducing the impact of climate change, but they are not the only ones. In addition to the ideas below, we suggest that Delaware explore federal additional funding opportunities and partnerships as they become available in 2021. We propose:

•Require that the state of Delaware not invest state retirement funds in any of the top 200 companies that have the largest reserves of fossil fuels (see NJ S 330 and VT H 352) •Require developers to mitigate any climate change issues identified (e.g. destruction of old forests, impact on wetlands, etc.) by the State Planning Office (SPO) to gain approval for large subdivision and land use plans, e.g., 2:1 replacement.
•Add new funding to grant program to support and incentivize municipalities to develop local climate action and sustainability plans, as well as to initiate local climate projects regarding mitigation and resiliency •Require local land use plans by developers include climate change hazard vulnerability assessment, accounting for sea level rise, drought, etc. (see NJ A 2785) as part of county and city approval process •Require all state agencies internally develop climate change sustainability goals and plans, such as installing solar panels, reducing employee vehicle mileage, etc. (see 2019 ME S 728) and require consideration of climate impacts in procurement and supply chains •Require that any given statewide climate resiliency plan be updated every 3 years to account for new findings, and that an assessment of climate-related financial risks be submitted (see CA A 839). The plan should be developed with the guidance of a newly created climate action council for the state, comprised of state and local individuals, such as the Secretary of Finance, and include non-government climate and environmental justice experts •Restrict future construction of nonrenewable-energy-producing facilities (see MN S 34) •Fully outlaw use of hydrofluorocarbons (HFCs) (see ME H 1505) •Continue to make grant funding available for Delaware research institutions to conduct high quality climate change analysis and the production of publicly accessible climate models, projections, and public health impacts •Require that all environmental assessment reports include climate change risk analysis to account for tangible climate threats (see NY S 8435)

Environmental Justice
Climate change is fundamentally an issue of environmental justice. Often those most vulnerable to its impact are low income and live in environmental justice (EJ) communities. We propose:

•Allocate funding to the construction of climate resilient affordable housing, and provide disaster relief in response to climate change (see CA S 795) •Establish a grant program that supports both clean energy projects in EJ communities

and sustainable businesses owned by underserved groups (see MD S 887) •Fund research on current clean energy incentives available to the most economically disadvantaged Delaware residents (see MA H 2874) and develop additional programming •Require that an environmental impact report be created for any significant projects within a mile of an EJ community, with subsequent public comment for any projects that would affect the community (see MA H 4264, NJ S 232) •Promote work projects and employment opportunities that help to resolve the present effects of climate change, with priority given to projects in areas of high unemployment (see NY A 10480) •Create an Environmental Justice Council to ensure that clean energy programs reach and benefit EJ communities (see NJ A 4185) •Establish job training programs directed toward lower income individuals in the production of green goods and services (see MN S 3143) •Require reports on the social costs of pollution and create an air pollution pricing fund that distributes financial support to EJ communities (see NY S 3616) •Provide financial assistance for well-water treatment for properties with contaminated wells, including for low-income families with private wells (see ME LD 1263) •Develop "managed retreat" policies to proactively facilitate the relocation of communities that are located within a floodplain. Often these communities are comprised of low-income individuals who may be more vulnerable to extreme weather events compared to wealthier communities.

Renewable Energy Emissions Goals
Increasing renewable energy use is the cornerstone of any work to address climate change. We must be bold and still build upon our existing strengths and local expertise. We propose:

•Pursue renewable energy portfolio legislation, including increasing Delaware's renewable energy portfolio requirement to 40% by 2032 and 100% by 2050.
•Establish a panel of technical experts knowledgeable about the offshore wind industry and markets, to define a fully informed wind procurement process. The group would build upon the work of the original Wind Power Task Force and help to answer the technical questions raised by that group.
•Create a state task force to study modern energy and energy conservation technologies to redesign the Delaware energy system. The redesign would move away from the current centralized grid system to one that includes, for example: (a) many micro-grids [including community solar] that use new energy sources like solar, geothermal and electric power from electric/hybrid electric/fuel cell electric vehicles and (b) energy efficiency/energy conservation/building design technologies/approaches that reduce power demand from the grid.
•Set a greenhouse gas emissions (GHG) reduction goal of reaching carbon neutrality (net zero emissions) by 2050; aim to maintain net negative GHG emissions thereafter. (see CA A 2832, CT S 354, MA H 832, NJ S 344, RI S 2165, VT H 462)
•Require all buses used for public transportation purchased in 2029 or later to be zero-emission (see NY S 7349)
•Continue expanding Delaware's electric vehicle charging network

Adaptation and Resiliency Strategies: Agriculture, Conservation, Clean Water and Wildlife Nature is adaptable but it is also under stresses like never before. Given we know that climate change is being felt already, here, today, we must do aggressive work to build programs that both adapts and increases resiliency to climate change. We propose:

•Create a grant program for developing resiliency strategies in the agricultural sector (see CA A 49) •Provide financial and technical assistance to farmers eager to deploy climate stewardship and regenerative agriculture practices •Increase investments to preserve farmland and open spaces from development and prevent the conversion of natural spaces to new agricultural or other kinds of development to maximize carbon sequestration •Increase funding for DE Coastal Program, including Resilient Communities grant partnership, for projects concerning coastal habitat restoration, sea level rise, flood and resource management, and non-point source pollution control (see RI H 7165) •Address climate adaptation and resilience strategies that pertain to the negative impacts of climate change on public health (see VT S 185) •Support aggressive reforestation policies, including planting new trees and additional state and local protections for existing mature forests.
•Create a Delaware Climate Change Wildlife Protection Plan that focuses on the mitigation of climate change impacts on wildlife and protection of existing habitats. The plan should be detailed, include strategies that protect native plant, animal and insect species, and build upon existing USDA resources and others.
•Support additional protections for Delaware wetlands and marshes and to the extent feasible plan for continual landward migration of coastal wetlands.

•Increase flood mitigation strategies, including MS4 stormwater permit requirements, and protections for clean water.

Finally, we are asking for urgent action on climate change, including state FY22 budget investments and legislative proposals. The plan development process is an important first step, but need the upcoming Governor's Legislative Agenda and Proposed Budget to reflect implementing the plan's recommendations. As part of that Agenda, we are requesting formation of a public and private statewide Climate Change Action Committee (including representatives from environmental justice communities) to move any recommendations to concrete actions.

We are glad to have the opportunity to comment today and look forward to additional conversations. Please do not hesitate to reach out if questions. Thank you.

Sincerely,

Emily Knearl
Director of Advocacy and External Affairs

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This e-mail was sent from a contact form on DE Climate Plan Website (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdelawarecap.wpengine.com%2F&data=04%7C01%7CDEClimatePlan%40delaware.gov%7C71d6832fc3b04ea68b2008d872150d0a%7C8c09e56951c54deeabb28b99c32a4396%7C0%7C0%7C637384782023432410%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=IS2TxBtrQQFVdrEh%2B%2BM7rW4S1pUDH51%2BIW2ZwGAqeGU%3D&reserved=0)

Yue, Ian T. (DNREC)

From: Peggy Schultz [redacted]
Sent: Friday, October 16, 2020 6:45 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: comments on Climate Action Plan
Attachments: Response to DNREC Climate Action Plan.docx

Comments are attached. Thanks to you all for your hard work on this project. I'm sure it will be the source of a lot of deep thinking and needed action to both mitigate and adapt to climate change.

Peggy Schultz

Peggy J. O. Schultz

COMMENTS ON DNREC'S CLIMATE ACTION PLAN, October 16, 2020
Peggy Schultz

Thank you for this opportunity to comment on Delaware's Climate Action Plan. Because I'm largely interested in mitigation, the majority of my remarks will be on that topic.

You all studied a number of factors involved in climate mitigation for Delaware and conclude that land use and reduction of vehicle miles traveled (VMT) should get fairly low priority. Having advocated for good land use and transportation policies over the years, I find this conclusion at variance with some of my understandings in the area.

The need to electrify Delaware's cars appears to get top priority in your plan. There are several problems with that. First of all, nationwide vehicle miles traveled are steadily increasing, so that the gains made by electrification are all but wiped out by the increase of VMT. Reid Ewing et al[1] corroborate this point. A Transportation Climate Initiative speaker in a webinar last month said that vehicle electrification alone wouldn't do the trick, that we need to simply not drive so much. Another negative issue associated with electric vehicles is the relatively large carbon footprint of electric car manufacture. Several studies show that electric car owners are much more affluent than the normal everyday car owner. With an electric vehicle-dominated mitigation plan, all citizens (including low income people) will be required to subsidize---through taxes or fees on fossil fuel products most likely---electric cars for richer folks.

It's not that we don't need electric vehicles. We do. We are in an "all hands on deck" mode, so we need anything that will help mitigate the causes of climate change. And there is indeed a small net gain with the use of electric vehicles.

There's a graphic associated with the report that appears to be problematic. It's here: https://declimateplan.org/wp-content/uploads/2020/09/DNREC-Technical-ES_FINAL-9-3-20-CLEAN.pdf The height of the columns suggests that electrifying vehicles is only slightly less effective than exchanging renewable fuels for fossil fuels, when, if you look at the numbers, you see that electric vehicles are only about 1/4 as effective.

[1] Ewing, Reid: Keith Bartholomew, Steve Winkelman, Jerry Walters, Don Chen, *Growing Cooler,* Urban Land Institute, 2008

Numerous researchers, in addition to Ewing, describe the advantages of reducing VMT.[2],[3] According to these academicians you can reduce VMT anywhere from 5 to 60% by utilizing compact development patterns. Two of the three studies show a reduction more toward the upper end of this range.

For many years California has been a leader in reducing GHG emissions, but they found that what they were doing was not enough to reach their climate change mitigation goals. Electric and hybrid vehicles made only a small dent in reducing harmful GHG emissions because people were driving more, according to the studies consulted by California officials. In 2013 California passed legislation, SB 743, mandating that VMT be used as a measure of transportation impact, rather than LOS (level of service). Development based on increased density, walkable, bike-able development, and access to transit was the alternative they chose to the traffic-inducing character of LOS. This dramatic policy change might have implications for what we do in Delaware to reduce CO_2 emissions.

I'm not sure why your study showed land use and transit so relatively ineffective in reducing CO_2 emissions, but state subsidies in this direction would at least have much greater benefit for the underserved. Transportation Climate Initiative says that at least 35% of the proceeds of its cap and invest program must go toward helping less affluent residents cut harmful GHG emissions. Shoring up our transit system and walking/biking infrastructure in poorer neighborhoods could then be a possibility.

I agree that an increase in renewable energy resources ought to be a major part of our Delaware adaptation strategy. Since industry causes so many CO_2 emissions, I would have been interested to know what we might do in that direction. The same goes for electrification of buildings. What can we do about that?

Just a quick note on the final three climate presentations. Unfortunately, though the people involved appeared to be accurate, the presentations were so esoteric and difficult to listen to, that I found it not easy to engage. Little stories are good. People speaking instead of reading is good. A poll where a range of desirability of options is presented is good. I hope that the Division of Climate, Coastal, and Energy can expand on those adaptation segments in the future, and make them seem more relevant, with real life examples and appropriate pictures and

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[2] Cambridge Systematics, Inc. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions.* Washington, D.C.: Urban Land Institute. 2009

[3] Transportation Research Board. *Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO_2 Emissions. Transportation Research Board Special Report 298.* Washington, D.C.: National Research Council, 2009.

graphics. You may want to consider delving a little more deeply into a smaller number of possibilities.

Thank you all for your amazing work. Don’t forget that you all have an army of citizens who are anxious to support the Division with efforts in both mitigation and adaptation of climate change. We’re just waiting to have a clear idea of what needs to be done, and we’ll do all we can to help Delaware and the planet.

Yue, Ian T. (DNREC)

From: Sherri Evans-Stanton [redacted]
Sent: Friday, October 16, 2020 7:28 PM
To: ClimatePlan, DE (MailBox Resources)
Cc: [redacted]
Subject: Sierra Club Delaware Chapter Comments on CAP
Attachments: Sierra Club CAP Comments 10-16-2020.pdf

To Whom It May Concern,

Thank you for the opportunity to provide comments on the Climate Action Plan. Attached please find the Sierra Club Delaware Chapter's comments.

Please contact me if you have any questions or comments.

Thanks very much.
Sherri

--
Sherri L. Evans-Stanton
Chapter Director
Delaware Chapter of the Sierra Club

SIERRA CLUB
DELAWARE CHAPTER

October 16, 2020

Climate Action Plan Comments Submitted on Behalf of the Sierra Club Delaware Chapter

The Sierra Club Delaware Chapter thanks the Dept. of Environment and Natural Resources for creating an open process organized by topic and with multiple opportunities for public input into the Climate Action Plan (CAP). The Sierra Club supports the development of a long-range CAP that sets the stage for aggressive policies necessary to meet the urgency of the ongoing climate crisis. DNREC should maximize its existing authority to coordinate with other state agencies including the Departments of Transportation and Energy in order to create one consolidated plan. In addition, we recommend that the State property fund DNREC staff and other agencies who are charged with implementing the CAP.

The final iteration of the plan should include specific actions, measures, and a timeline for completion of activities in each year. In order for the plan to be a blueprint for both the administration and state legislature, it is imperative that each specific action has a timeline in order to convey the importance of each measure. Each action should specify whether it may be accomplished administratively or whether it requires state legislation. The recommendations should not be limited to steps that DNREC can implement itself. We need a plan that is comprehensive and actually aims to meet the requirements of the climate emergency, including legislation. We believe that if these details are included in the CAP, the recommendations will be implemented. Our comments are organized by topics as follows:

Minimizing GHG emissions. The GHG mitigation analysis for the CAP found that the three main areas with the greatest potential for reducing GHG emissions are: 1) decarbonizing the electric grid; 2) electrification of transportation and buildings; and 3) energy efficiency. The Sierra Club recommends that the plan include the following:

1) **Decarbonizing the electric grid**
    a) Create aggressive targets for renewable energy (50% by 2032; 100% by 2040);

b) Support efforts to develop offshore wind potential;
c) Promote policies that support equitable and inclusive access to renewable energy including a funding mechanism for low to moderate income families without the means to utilize renewable energy;
d) Phase out all remaining coal-fired power plants in Delaware; and
e) Develop stronger emission standards as well as stiff penalties for businesses and industries for violations.

2) E**lectrification of transportation and buildings**
   a) Adopt the Zero Emission Vehicle standards;
   b) Expand EV infrastructure;
   c) Provide rebates for used and new EVs; and
   d) Provide financial assistance for electrification of buildings for low-income communities.

3) **Energy efficiency**
   a) Create and mandate comprehensive energy efficiency goals;
   b) Review and update energy efficiency regulations bi-annually;
   c) Require compliance with energy efficiency standards in all new residential and commercial buildings;
   d) Expand funding to include community outreach to describe available energy efficiency programs in low-income and minority communities; and
   e) Plan to allocate resources for an increasing need for energy efficiency retrofitting of existing housing and commercial buildings as temperatures rise and the climate change danger is widely accepted.

Maximizing resilience to climate change impacts. The Sierra Club agrees that DNREC should **r**eview and update shoreline regulations to reduce risk to coastal properties. In addition, we support the development of a comprehensive regulatory plan to protect and restore wetlands. Finally, the CAP should require wetlands protection, stormwater and flood controls, riparian and forested buffers, protection of environmentally sensitive areas, and strict building requirements (particularly on the coast). As necessary, the Governor should work with the state legislature to strengthen DNREC's environmental authority.

1) **Sea Level rise**
   a) Update Coastal Zone Act regulatory process to significantly reduce the impacts of sea level rise; and

b) Start planning for infrastructure protection where possible and redesign where required to prevent loss of services (e.g., electrical distribution networks, rail and roads at risk).

2) **Increased temperatures**
   a) Provide weatherization assistance for elderly and low income residents to ensure indoor temperatures are at safe levels; and
   b) Mandate standards to ensure rentals and new construction are capable of maintaining safe indoor temperatures.

3) **Heavy precipitation and flooding**
   a) Strengthen restrictions for building in floodplains;
   b) Mandate increased buffers and stormwater controls;
   c) Require anyone building in a floodplain to purchase flood insurance; and
   d) Create and use floodplain maps that accurately reflect the effects of increased precipitation and flooding.

4) **More frequent heavy winds causing storm damage: snow storms, tornadoes and hurricanes**
   a) Work with utilities to make the necessary changes to prevent loss of electrical service from downed wires. More electrification requires a higher level of reliability and redundancy to prevent outages. Food supply, health care, HVAC, and conducting normal business will increasingly require this; and
   b) Work to reconfigure the electrical grid to be more decentralized, ‘smarter’, and more resilient.

Yue, Ian T. (DNREC)

From: Yue, Ian T. (DNREC)
Sent: Monday, October 19, 2020 4:15 PM
To: ClimatePlan, DE (MailBox Resources)
Subject: Fw: Fw:
Attachments: CONTRIBUTIONS TO DE CLIMATE CHANGE ACTION PLAN1.docx

From: Chad Tolman [redacted]
Sent: Friday, October 16, 2020 11:53 PM
To: Love, Susan E. (DNREC) [redacted]
Subject:
Dear [redacted] Susan,

My contribution to the action plan was too large. Too send in one file, sos I'm sending 2.

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CONTRIBUTIONS TO DE CLIMATE CHANGE ACTION PLAN

By Chad Tolman. October 13, 2020

Reductions in GHG Emissions

An article in Scientific American, titled, **CO2 Emissions Reached an All-Time High in 2018**, said that world-wide emissions of CO2 must be cut to net zero by 2050 in order to keep the global average temperature increase to 1.5 degrees C. **"**The scientists project that fossil-fuel-related carbon dioxide emissions will hit a record high of 37.1 billion metric tons by the end of this year. And they estimate that total carbon dioxide concentrations in the atmosphere will also hit their highest level ever, at 407 parts per million—about 45 percent higher than their preindustrial levels."

"[Current] energy and climate policies are not sufficient to overcome the growth in economic activity or energy-use growth," said Glen Peters, research director at the Center for International Climate Research in Norway and a co-author of the new report. "So there's no other alternative but to ramp up policies, basically, otherwise emissions will keep rising."

"The projections come during a season of urgent international discussions about the action required to meet the targets of the Paris climate agreement."

"In October, the Intergovernmental Panel on Climate Change released a special report on the action that would be required to keep global temperatures within a 1.5 degrees Celsius target. The report noted that global carbon emissions would need to fall 50 percent by 2030 and reach net zero by 2050. The rate at which nations would need to reduce their emissions each year in order to reach those targets becomes steeper, and less attainable, every year that emissions continue to rise."

Since Delaware has only about one million residents, its GHG emissions are clearly only a very small fraction of the global total. Still, because of our great vulnerability, we should do our part in reducing our share of U.S. and global emissions.

The book, **Cooler-Smarter, Practical Steps for Low-Carbon Living**,[1] published in 2012 by authors from the Union of Concerned Scientists, says that the per capita CO2 emissions per year in the U.S. in 2007 was 21 tons – about four times as much as the global per capita average of 5.1 tons. The book has lots of suggestions for individuals and households. It shows how almost anyone can reduce their carbon emissions by 20% within a year.

Because of Delaware's small contribution to global ghg emissions, we are very dependent on global emissions and their resulting concentrations and effects. Our best hope is to replace the current administration, which has said that climate change is a hoax, and ask our senators and representative in Congress to oppose any efforts by the U.S. to withdraw from the Paris Climate Accord, and to support the development of improved renewable energy generation and storage systems.

Sea Level Rise

Delaware has the lowest average elevation of any state in the U.S. – only about 60 ft (20 meters)[2] As a member of the state Sea Level Rise Advisory Committee (SLRAC) in 2010-2013 I learned that one contributor to Delaware's apparent sea level rise is the sinking of the coastline as a result of the movement of tectonic plates caused by the melting of heavy ice that covered our area during the last ice age. However, that is a small contribution (about 5 inches during the past century), relative to the contribution of ice now melting on land. The largest contributor by far is the loss of ice supported by land near the poles – from Greenland in the far north and from Antarctica in the far south. Ice loss is the result of both melting and calving. Ice loss is accelerating – more from Greenland than from Antarctica. The reason for the difference is a positive feedback effect. As floating ice in the north melts, a highly reflective snow and ice surface is replaced by highly light absorbing deep blue sea – increasing the rates of water warming and ice melting.

That's why temperatures in the Arctic are increasing twice as fast as the global average. For the first time this past summer the temperature in a Siberian town north of the Arctic Circle was higher than 100 degrees F!

Probably the best thing to do about sea level rise is to plan for it, and warn those thinking of building or buying that beaches will be moving westward, but they can stay longer if they raise their buildings on poles.

One weakness of the scenarios considered by the SLRAC (SLR of 0.5, 1.0 or 1.5 m by 2100) was that they did not include the acceleration with time that we have now observed. Nor did they include the potential increase in water levels due to storm surge and large waves formed in strong winds. In his book, **Divine Wind – The History and Science of Hurricanes[3]**, MIT Professor Kerry Immanuel explains clearly how hurricanes work, and how warming water in a warming world is predicted to generate more of the most powerful Category 4 and 5 hurricanes and fewer of the weaker ones. Hurricane Sandy, which was supposed to make a direct hit on Delaware, instead made landfall on New Jersey and New York, where it flooded subways and shorted electrical circuits. The Battery tide gauge at the at the southern end of Manhattan showed that the storm surge had raised the water level there nine feet above the astronomical high tide.

Another weakness of the scenarios is that they only went as far as 2100. In his book, **The Long Thaw – How Humans Are Changing the Next 100,000 Years of Earth's Climate**,[4] the

paleoclimatologist David Archer shows the relationship between the global average temperature (degrees C) and sea level (meters), going back as far as 40 million years on page 138. The solid points represent equilibrium conditions (ie. enough time passed so that the CO2 concentration, sea level and temperature are no longer changing). The solid points fall close to a straight line with a slope of nearly 20 m/degree C. Since global average temperature has already risen more than 1 degree, it means that at some time in the future, even if all CO2 emissions stopped now, Delaware would be inundated to a depth of 20 m – its average elevation.

Rising Temperatures

As atmospheric concentrations of greenhouse gases (ghg's) increase, they trap more heat in the lower atmosphere and increase its temperatures. As in the case of sea level rise, the rise in temperatures is primarily dependent on global ghg emissions, so a global cooperative effort is required. We can however help our own inhabitants adapt in a variety of ways. One is by providing energy audits to identify where a building has air leaks where heat can be lost in winter, or admitted in summer. Better windows or insulation might be needed. Black rooftops can be painted white to reduce heat absorption.
Residents, especially those who are poor or elderly, can be warned of expected high heat events – by radio or TV - and told where there are cool places to go, like churches or libraries. I think Philadelphia does this.

Storms and Coastal Flooding

I didn't have time to do this part.

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[1] A Available in paperback from Amazon
[2] Rank Ordering of States by mean elevation. At
https://www.netstate.com/states/tables/state_elevation_mean.htm
[3] Available in paperback from Amazon.
[4] Available in paperback from Amazon.