

Delaware's Climate Action Plan Virtual Public Workshop Series

Workshop No. 1 – Minimizing Greenhouse Gas Emissions

September 15, 2020, 11:30 a.m. to 1 p.m. and September 17, 2020, 5:30 p.m. to 7 p.m.

Question and Answer Document

This document provides a list of questions that were submitted during the Climate Action Plan virtual public workshop sessions held via Zoom on September 15, 2020, 11:30 a.m. to 1 p.m. and on September 17, 2020, 5:30 p.m. to 7 p.m.

Unless otherwise noted, the questions in this document are worded "as submitted" by workshop participants. In some cases, DNREC staff either modified the wording of the questions for clarity or consolidated questions that were asked more than once into a single entry; any questions that fall into either of these categories are preceded by an asterisk () and changes are indicated in brackets, as applicable. DNREC aimed to maintain the integrity and spirit of all questions that were modified or consolidated.*

This document also provides answers to participant questions. These answers come from DNREC's Division of Climate, Coastal and Energy in consultation with technical experts from within DNREC and other state agencies.

A complete list of web links embedded in this document can be located on the last page.

Document Posting Date: November 6, 2020

Questions Related to Delaware's Greenhouse Gas Emissions and Emissions Reduction Goal

Q: *Why did Delaware select 2005 as [the] base year [to measure greenhouse gas emissions reductions for its emissions reduction goal]? Most places are using 1990.

A: It is true that other U.S. states, counties and municipalities use 1990 as the baseline year for measuring greenhouse gas emissions reductions. The 2005 base year that Delaware uses comes from the greenhouse gas emissions reduction goal that Governor John Carney adopted when [Delaware joined the U.S. Climate Alliance in 2017](#): 26-28% emissions reductions by 2025 from 2005 levels. This goal is the same commitment the U.S. made to the Paris Agreement.

As a reference, the U.S. Climate Alliance is a bipartisan coalition of governors committed to reducing greenhouse gas emissions consistent with the goals of the Paris Agreement. The Alliance was formed following President Donald Trump's announcement to withdraw the U.S. from the Paris Agreement.

Q: Is our current goal of 26-28% reduction in greenhouse gases the same or similar to our Renewable Portfolio Standard, which has a similar goal to convert to renewable electricity?

A: The similarity in percentage numbers and target years between the state's greenhouse gas reduction goal and the state's Renewable Portfolio Standard requirement may confuse people into thinking that they are the same thing; they are not

The state's 2025 goal of reducing greenhouse gas emissions by 26-28% from 2005 levels is an economy-wide goal. In other words, Delaware's goal is to reduce the state's total emissions by 26-28% by 2025. Emissions in Delaware come from many sources including transportation, electricity generation, industrial activities and landfills.

Separately, Delaware has a [Renewable Portfolio Standard](#), a state law that requires Delaware's utilities acquire an increasing percentage of their electricity from renewable resources. This law mandates that utilities derive 25% of their energy portfolios from renewable sources by 2025.

Renewable energy remains an important component for the state to meet its economy-wide, greenhouse gas emissions reduction goal by 2025. However, meeting the state's Renewable Energy Goal does not provide enough emission reductions to meet the economy-wide greenhouse gas emissions goal.

Q: *Why [were greenhouse gas emissions in] 2005 so high?

A: The greenhouse gas emissions in 2005 are fairly consistent with emissions levels between 1990 and 2005 (see [Delaware's Greenhouse Gas Emissions Inventory](#)). The trend of decreasing emissions in Delaware since 2005 can be generally attributed to current state policies and past energy trends, primarily due to a shift from coal- to natural gas-powered electricity.

Q: Why do emissions drop in 2008?

A: The drop in Delaware's greenhouse gas emissions around 2008 is correlated with two events: (1) the economic recession in 2008, and (2) the temporary shutdown of the Delaware City refinery in 2009 (which re-opened in 2011). It should be noted that the state does not believe or contend that economic downturn is necessary to reduce emissions. In fact, the [U.S. Climate Alliance's 2020 Annual Report](#) indicates that Alliance states (which includes Delaware) have collectively reduced emissions while increasing total and per capital economic output.

Questions Related to the Greenhouse Gas Emissions Modeling Analysis

Q: *Are the comparisons for greenhouse gas reduction potential [between the different strategies, as presented at the public workshop,] Delaware-specific?

A: Yes, all of the greenhouse gas emissions reduction potential values presented at the public workshop are Delaware-specific and are based on the results of the emissions modeling analysis that the state's consultants, ICF Incorporated, carried out. The report of results from this emissions modeling analysis is available at [declimateplan.org](#).

Q: Many states and countries are using 1990 as a baseline for reductions while we are using 2005. How does that difference affect the projected reductions?

A: Delaware's 2025 goal of 26% to 28% greenhouse gas emissions reductions from 2005 levels was adopted by Governor John Carney when Delaware joined the U.S. Climate Alliance in 2017; this is the same goal the U.S. made to the Paris Agreement. Based on information from [Delaware's Greenhouse Gas Emissions Inventory](#), the state's emissions were slightly higher in 1990 compared to 2005. Thus, for any state emissions reduction target — whether for our current emissions reduction goal or for any target set beyond 2025 — a 2005 baseline would be a more ambitious goal for Delaware than using a 1990 baseline for that same target value.

Q: In the graph illustrating the projected results of modeled actions by 2025/2050, emissions from industrial processes continue to increase. Why are there no targeted plans to reduce emissions from industrial sources (which typically are the most toxic to humans and can have greater environmental impact)?

A: It's helpful to clarify that the greenhouse gas emissions modeling analysis the state had ICF Incorporated carry out was simply intended to model the emissions reduction potential of 20 possible actions. We were limited to 20 actions based on available time and resources. As such, these 20 actions do not represent the only actions the state could take to reduce emissions.

We consulted DNREC's in-house industrial processes emissions expert on this question. He noted that the industrial processes sector is difficult to decarbonize with "general" emissions reduction actions (as opposed to "site-specific" actions at particular industrial sites). In our modeling exercise, three of the 20 "general" emissions reduction actions related to the industrial processes sector:

- High-GWP-2: Reduce Industrial High-Global Warming Potential Emissions
- NG-1: Methane Emission Reductions from Utility Gas Lines
- EE-5: Industrial Energy Efficiency Improvements (*Note: Some of the emissions reductions from this action were allocated to the electric power sector*)

While emissions reductions *are* achieved by these three "general" actions, our modeling assumptions (derived from the [U.S. Energy Information Administration's State Energy Data System](#)) project an increase in overall energy use and emissions in the industrial sector through 2050, likely due to population and economic growth. Based on our modeling, if Delaware were to implement the above three actions, total emissions in the industrial processes sector would start to decrease around 2025, level out around 2030, and start increasing again around 2035 — even *after* accounting for emissions reductions from the three modeled strategies.

Again, these three modeled actions are not the only actions that can be taken to reduce emissions in the industrial sector. However, another factor that must be considered is the fact that a large majority of industrial processes emissions in Delaware come from a very small number of locations, including sites where fossil fuel production or refining is a core part of their business. As such, "site-specific" actions could result in additional emissions reductions; however, we did not model any such actions.

Q: Steam and process heat generation (boiler or co-gen) appear to be missing in the modeling? This is a major consumer of natural gas in refining and chemical processes.

A: ICF did not model petroleum use reductions due to a lack of data on energy efficiency potential for petroleum in the industrial processes sector. This reality reflects the overall difficulty in modeling “general” emissions reduction measures without having more specific details on in-state industrial facilities (baseline data, reduction potentials, etc.).

DNREC had early discussions with ICF to potentially include combined heat and power (CHP) as a modeled emissions reduction strategy, but we ultimately moved away from selecting that strategy for modeling. Based on conversations with industry representatives, and low utilization of DNREC’s CHP grant programs, we determined that CHP likely has limited growth in Delaware. As such, we prioritized other actions for modeling that we felt had higher potential for emissions reductions in Delaware.

Q: Is the modeling for industrial sources of greenhouse gas and chemical sources in the full report online?

A: Our greenhouse gas emissions modeling analysis looked at “general” actions to reduce emissions in the industrial processes sector. Such actions include reducing emissions from the use of industrial high-global warming potential chemicals (primarily hydrofluorocarbons, which are used as refrigerants and extinguishing agents), from methane leaks in utility gas lines and through energy efficiency improvements. Information on these strategies are described in the emissions modeling analysis report, available at declimateplan.org.

Q: *One of your [greenhouse gas reduction] categories was the electricity sector. What is left in that after you take out all the reductions for the transportation [sector] (electrify vehicles) and [electrifying] buildings?

A: Decarbonizing the electric grid (i.e., having Delaware’s utilities acquire more of their electricity supply from renewable resources) is a key strategy for reducing greenhouse gas emissions in the electric power sector. In fact, the results from our emissions modeling analysis show that renewable energy has the greatest emissions reduction potential for Delaware in the long term. Additionally, our emissions modeling analysis shows that for the electrification of transportation and buildings to be fully effective in reducing emissions, we must also decarbonize the electric grid. This is because decarbonizing the electric grid means we use low- or no-carbon electricity in our transportation and buildings.

Q: *The modeling results reference an economic sector called LULUCF? What is that?

A: LULUCF stands for “Land Use, Land Use Change and Forestry.” Activities in this sector include land use and forestry activities (e.g., land development, deforestation, reforestation), where carbon is either captured (i.e., natural areas “soak up” carbon from the atmosphere and store it in plants, trees and soil) or released, depending on the land use.

Q: Is a 60% reduction target for 2050 adequate when a net-zero (or 80% minimum reduction) target for 2050 is thought to be essential to maintain temperature rise below 2 degrees Celsius?

A: The 60% value (or, more accurately, 59.7%) comes from our greenhouse gas emissions modeling analysis, which shows the emissions reduction potential of 20 modeled strategies in 2050 compared to 2005. This 59.7% value is not a target that the state has set at this time; it is simply the result of our emissions modeling analysis. In fact, the state does not currently have an emissions reduction target beyond 2025. However, the state aims to use the emissions modeling analysis results (including the 59.7% value) to inform emissions reduction actions going forward.

Questions Related to Climate Change Policy and Action in Delaware

Q: How will Delaware's Climate Action Plan be used? What legislative or executive order impact will it have?

A: Delaware's Climate Action Plan does not, in and of itself, create new mandates or requirements, but it will provide data, information and strategies that state leaders, including the governor and General Assembly, can use for decision-making.

Q: All strategies are interconnected. How does the plan account for these interconnections?

A: Greenhouse gas emissions reduction strategies are indeed interconnected; they all contribute towards lowering the state's emissions, oftentimes in tandem. For instance, as noted in an answer to an earlier question, our emissions modeling analysis indicates that there will be greater emissions reductions when the electrification of buildings and the transportation sector are linked with adding more renewable energy to the electricity grid. Our emissions modeling analysis gave us a deeper understanding of these interconnections; as such, Delaware's Climate Action Plan will put forth numerous actions, knowing they work together to reduce emissions.

Q: *How will the state consider costs, capacity and other potential negative impacts of climate action?

A: Delaware's Climate Action Plan will not include a comprehensive cost-benefit analysis of climate action. However, the greenhouse gas emissions modeling analysis that ICF Incorporated carried out for the state includes estimates for both the net present value (i.e., current economic value of all future costs and benefits) and the cumulative cost (or benefit) per metric ton of carbon dioxide equivalent reduced for certain modeled actions (see the emissions modeling analysis report at declimateplan.org). Additionally, DNREC is currently working with consultants to estimate the cost of climate change impacts to various sectors in the state should no further climate action be taken (the report is set to be released in 2021). All this information can be utilized by state leaders for decision-making on climate action. Moreover, implementation of Delaware's Climate Action plan will require further coordination and engagement with stakeholders, including discussions and considerations surrounding costs, capacity and other economic impacts of proposed actions.

Q: Where does grid-scale renewable energy fit? How do we incentivize the various electric companies in the state to switch to installing grid scale?

A: Grid-scale renewable energy in Delaware has historically been developed through the state's [Renewable Portfolio Standard](#), a state law that requires Delaware's utilities to acquire an increasing percentage of their electricity from renewable resources. Based on the results of the greenhouse gas emissions modeling analysis, a Renewable Portfolio Standard remains an important strategy for reducing emissions in the state using grid-scale renewable energy.

Q: When will Delaware get on the bandwagon with wind? We are the only state between Massachusetts and North Carolina with no wind.

A: Delaware's utilities continue to acquire a portion of its electricity from renewable resources, including wind energy sources. With regards to in-state wind generation, DNREC manages the state's [Green Energy Program](#), which provides incentives for renewable energy projects including wind. Additionally, DNREC is actively looking into issues related to wind energy in Delaware, including, most recently, transmission impacts of offshore wind to the state. Establishing larger scale in-state wind generation for the state will require the input and collaboration of numerous stakeholders including state government leaders (both executive and legislative), Delaware's public service commission, the state's utilities, labor organizations, environmental organizations and other affected communities and groups.

Q: What can a small state like Delaware do to capture technology innovation opportunities?

A: Smart climate action should consider ways to reduce greenhouse gas emissions while also taking advantage of new economic opportunities — including investments in low-carbon energy technologies. There are numerous case studies of how other jurisdictions, [including those in the U.S. Climate Alliance](#), have done this (and continue to do so). As such, Delaware's Climate Action Plan looks to highlight actionable, low-carbon economic opportunities for the state.

Q: How do we convince the building trades to understand that jobs will be created?

A: As indicated in our greenhouse gas emissions modeling analysis, there are a number of possible emissions reduction actions within the residential and commercial buildings sector. Implementing any of these actions will require close coordination with representatives from the buildings sector to address potential impacts, barriers and opportunities, including the effect on jobs in the industry.

Q: Curious if Delaware considered plant-based diets as an area to focus on for greenhouse gas reduction?

A: Due to limitations in time and resources, DNREC was only able to model 20 greenhouse gas emissions reduction actions in its emissions modeling analysis. Plant-based diets was not one of the actions modeled. However, Delaware's Climate Action Plan may consider other emissions reduction actions in addition to those that were modeled.

Q: Economists talk about a fee on carbon. Is that an option for Delaware?

A: The emission reduction or economic effects of an economy-wide fee on carbon was not analyzed as part of the greenhouse gas emissions modeling analysis. Robust information about the emission reduction potential and economic effects of a carbon fee would be necessary for Delaware to consider implementing this at a state scale.

Q: Will Delaware sign on to the Transportation and Climate Initiative?

A: Delaware is a founding member of the [Transportation and Climate Initiative](#), a multi-state collaborative of Northeast and Mid-Atlantic states working together to reduce emissions in the transportation sector. The Transportation and Climate Initiative is now engaged in a multi-year effort to develop a market-based program that would cap emissions from the combustion of transportation fuel in the region. Delaware staff are engaged at the table in the development of this program. No decision has yet been made whether to implement the program in Delaware.

Embedded Web Links

- Delaware joined the U.S. Climate Alliance in 2017: <https://news.delaware.gov/2017/06/05/delaware-joins-u-s-climate-alliance-to-uphold-goals-of-paris-agreement/>
- Renewable Portfolio Standard: <https://dnrec.alpha.delaware.gov/climate-coastal-energy/renewable/portfolio-standards/>
- Delaware’s Greenhouse Gas Emissions Inventory: <https://data.delaware.gov/Energy-and-Environment/Delaware-Greenhouse-Gas-GHG-Emissions-Inventory-19/w7vd-h5a8>
- U.S. Climate Alliance’s 2020 Annual Report: <http://www.usclimatealliance.org/annual-report>
- U.S. Energy Information Administration’s State Energy Data System: <https://www.eia.gov/state/seds/>
- Delaware’s Green Energy Program: <https://dnrec.alpha.delaware.gov/climate-coastal-energy/renewable/assistance/>
- Jurisdictions in the U.S. Climate Alliance: <http://www.usclimatealliance.org/state-climate-energy-policies>
- Transportation and Climate Initiative: <https://www.transportationandclimate.org/>