Institute for Agriculture and Trade Policy Comments on Recommendations for Integrating Climate Information into MEPA Program Requirements

The Institute for Agriculture and Trade Policy (IATP) thanks the Environmental Quality Board (EQB) for the opportunity to comment on the draft recommendations for integrating climate change information into Minnesota Environmental Policy Act (MEPA) program requirements.
IATP is a 35-year-old organization based in Minneapolis. We work at the local, state, national and international levels to create fair and sustainable agriculture and trade systems. IATP was born in response to the family farm crisis of the 1980s, and we continue to pursue policy solutions that benefit family farmers, rural communities and the climate.

The Environmental Protection Agency (EPA) reports that agriculture accounts for 10% of the country's greenhouse gas (GHG) emissions,[1] and a 2019 MPCA report says that agriculture accounts for approximately one-quarter of Minnesota's GHG emissions.[2] As one of the largest agricultural states in the country, Minnesota must take action to reduce agriculture's climate footprint. The EQB's effort to integrate climate change into environmental review is one of the first in the country and can set an important precedent for how state governments respond to agriculture's contribution to the climate crisis.

We want to thank the EQB for this process and for putting forth these proposed changes to require all projects to consider climate change as part of Environmental Review. They are critical to guide state agencies and future climate policy in the state. And essential if the state is going to meet its climate goals.

Minnesota is missing the mark on the Next Generation Energy Act

Minnesota's Next Generation Energy Act requires the state to reduce GHGs by 80% between 2005 and 2050. Minnesota missed the Act's goal of a 15% reduction by 2015 and is far off-track from meeting the 2025 goal of reducing emissions by 30%. Since 2005, Minnesota's emissions have only reduced 8%. Worse, emissions since 2016 actually have been increasing, signaling that strong and additional efforts are needed to reduce Minnesota's GHG emissions.

While most other sectors, like electricity, are reducing emissions, agriculture and forestry emissions (the state combines the two) are flat and in recent years have risen. Agriculture is the highest source in the state of two potent GHGs, methane and nitrous oxide. In MPCA's January report to the state legislature updating data on the state's GHGs, the agency reported that since 2005 methane emissions from animal agriculture have increased 15% in the state, and nitrous oxide emissions related to both manure and synthetic fertilizer use have increased 12%.[3] The MPCA reports that methane and nitrous oxide emissions sourced to feedlots, fertilizers linked to feed production, manure, manure soil application, ruminants

[1] https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

[2] https://www.pca.state.mn.us/sites/default/files/p-gen4-19.pdf

[3] https://www.pca.state.mn.us/sites/default/files/lraq-1sy21.pdf

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and runoff all increased from 2005 to 2018.[4] Much of this increase in emissions is linked to the state's continued approval of permits for new and expanding feedlots.

Over the last several decades, Minnesota has seen significant losses in the number of pork, dairy and beef producers — even as the number of animals has increased. According to the latest USDA Agriculture Census, Minnesota lost 130 hog producers from 2012 to 2017, but the annual number of hogs produced in the state grew by 850,000.[5] The state lost 16% of its dairy farms from 2016-2019, while dairy herd size grew 16% over the same period, according to the Minnesota Department of Agriculture (MDA).[6] The shift toward large-scale confined operations has steadily reduced the number of farmers, while taking animals off pasture. Since 2012, Minnesota experienced a 27% loss of pasture land.

The shift toward large-scale feedlots and rising GHG emissions in Minnesota mirrors national trends. The U.S. Environmental Protection Agency (EPA)'s latest Greenhouse Gas Inventory documents this trend.[7] The EPA reported that methane emissions from manure management nationally has risen 68% since 1990. The agency concluded that, "The majority of this increase is due to swine and dairy cow manure, where emissions increased 49 and 119 percent, respectively." The EPA goes on to explain, "The shift toward larger dairy cattle and swine facilities since 1990 has translated into an increasing use of liquid manure management systems, which have higher potential CH4 (methane) emissions than dry systems."

Feedlots with over 1,000 animal units require environmental review in Minnesota. As the EQB integrates climate considerations into environmental review, it is important that the emissions of all feedlots going through environmental review are fully counted. It is equally critical that mitigation and adaption actions are fully considered and reasons for selection are clearly spelled out. Finally, these operations must explain clearly how they will help the state meet the climate goals of the Next Generation Energy Act.

Ensure an accurate, full lifecycle GHG quantification

We support the requirement that every project quantify its GHG emissions. As the ERIS acknowledges, "all GHG emissions contribute to cumulative climate change impacts on a global scale."[8] To account for the GHG emissions of feedlots fully and accurately, the EQB should require a lifecycle analysis. The calculators listed in Table 6 of Appendix B1 that are relevant to agriculture do not require lifecycle analyses for agriculture. The suggested calculators include: the MPCA feedlot tool, Cool Farm Tool and COMET-Planner.

The MPCA feedlot tool only covers direct emissions from feedlot livestock, manure storage and treatment, and manure land application. This leaves out many important GHG emissions sources, which are outlined below.

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[4] https://www.pca.state.mn.us/air/greenhouse-gas-emissions-data

[5] https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_0012_0012.pdf

[6] https://wrl.mnpals.net/islandora/object/WRLrepository%3A3609/datastream/PDF/view

[7] https://www.epa.gov/ghgemissions/draft-inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019

[8] https://www.eqb.state.mn.us/sites/default/files/documents/DRAFT%20Recommendations%20-%20Integrating%20Climate%20Information%20into%20MEPA%20Program%20Requirements_0.pdf

The Cool Farm Tool bases livestock calculations on herd size, manure management, and feed and energy use. Although this is more comprehensive than the MPCA feedlot tool, it is still not a full lifecycle analysis. The Cool Farm Tool website explicitly acknowledges, "We recognize the potential benefits that exist from taking a whole farm perspective, but these are not readily modeled to allow simple user data entry."[9] While the Cool Farm Tool is a useful calculator to generate GHG estimates, it should not be used as a comprehensive calculator and is not designed to be one.

Similarly, COMET-Planner is a fantastic tool to gather information and generate GHG estimates, but it does not yield a lifecycle analysis of a farm's GHG emissions. A report detailing COMET-Planner says, "Carbon sequestration and greenhouse gas emission reduction values provided in this report and generated in www.comet-planner.com are intended to provide generalized estimates of the greenhouse gas impacts of conservation practices for initial planning purposes. Site-specific conditions are required for more detailed assessments of greenhouse gas dynamics on farms."[10]

The scientific literature outlines the necessity of using a lifecycle analysis to provide a valid comparison of different livestock production systems.[11] In one evaluation of GHG emissions from the national supply chain of milk, 72% of the emissions occurred in processes prior to the milk leaving the farm.[12] Without performing a lifecycle analysis of a farm's GHG emissions, the review will be incomplete and inherently flawed.

There is guidance on what should be included in a lifecycle analysis of a livestock operation. According to a 2019 report by the National Sustainable Agriculture Coalition,[13] some of these factors include:

- Enteric fermentation
- Manure storage
- Embodied energy in fertilizers and pesticides for growing feed grain
- Energy use for heating, cooling and ventilation
- Soil organic carbon balance in pasture versus cropland for feed grains
- Nitrous oxide emissions from fertilized fields versus pasture
- GHG impacts of manure overapplication to surrounding acreages

A lifecycle analysis should also include the impact of using cropland to grow feed grains and the production of fertilizers and pesticides needed to grow those feed grains. According to the Food and Agriculture Organization of the United Nations (FAO),[14] feed production and processing is the main source of emissions from livestock production. Emissions associated with feed production could be mitigated through different systems of livestock production, namely pasture-based livestock production.

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[9] https://coolfarmtool.org/coolfarmtool/frequently-asked-questions/
[10] https://www.marincarbonproject.org/document.doc?id=114
[11] https://www.sciencedirect.com/science/article/abs/pii/S1462901109000173
[12] https://www.journalofdairyscience.org/article/S0022-0302(17)31069-X/fulltext
[13] https://sustainableagriculture.net/wp-content/uploads/2019/11/NSAC-Climate-Change-Policy-Position_paper-112019_WEB.pdf
[14] http://www.fao.org/news/story/en/item/197623/icode

In addition to requiring a full lifecycle analysis of a concentrated animal feeding operation (CAFO)'s GHG emissions, the EQB should require the calculation of methane using a global warming potential of 84, which is higher than the global warming potential of 25 outlined in the draft recommendations. The draft recommendations count methane emissions on a 100-year timeframe, which underestimates a farm's climate impact. Methane has a shorter atmospheric lifetime than carbon dioxide, persisting in the atmosphere for only 12.4 years. By comparison, carbon dioxide persists in the atmosphere for hundreds of years.[15] Given its shorter lifetime and the extreme urgency of climate change, methane should be compared to carbon dioxide over a 20-year timeframe, not a 100-year timeframe. When calculated on this shorter timeframe, methane has a global warming potential of 84,[16] which is considerably higher than the draft recommendation's estimated global warming potential for methane of 25.

Minnesota Rule 4410.1700 should specifically define "significant environmental effect"

MR 4410.1700 determines whether a project needs to prepare an Environmental Impact Statement (EIS). Subpart 1 of the rule states, "An EIS shall be ordered for projects that have the potential for significant environmental effects." Subpart 7 of the rule defines the factors that must be considered, including the "reversibility of environmental effects" and the "cumulative potential effects of related or anticipated future projects."

The EQB's draft recommendations explicitly state that "Most GHG emissions are not reversible; and all GHG emissions contribute to cumulative climate change impacts on a global scale." This should mean that projects with considerable GHG emissions should trigger an EIS. The proposed changes outlined in CA 2 and CA 3 differentiate the level of reporting through an EAW depending on whether the project is below or above the 25,000 TY CO2e. But the proposed changes do not set an emissions threshold that should trigger an EIS, failing to clearly identify what emissions level constitutes "significant environmental effects." We urge the EQB to set a threshold that would trigger an EIS. Such a threshold would benefit state agencies, project developers and the general public.

Offsets should not be included

The draft recommendations allow projects to use terrestrial carbon sequestration and renewable energy credits to offset their emissions. Appendix B1 of the draft recommendations says, "Carbon removals from the atmosphere act to offset emissions of CO2 to the atmosphere." This statement is misleading; offsets do not reduce GHG emissions of a project and should not be allowed in emissions accounting during environmental review.

Frequently, offsets are not permanent, thereby failing to meaningfully reduce GHG emissions while allowing polluters to pollute at higher levels. Appendix B1 of the draft recommendation states, "Given the atmosphere's continued retention of CO2 after emission, to fully offset a ton of emitted CO2, carbon removed from the atmosphere through terrestrial sequestration must remain in terrestrial storage for about 50 years." However, carbon remains in the atmosphere for 300-1,000 years, so 50 years of terrestrial storage is not nearly enough.[17] Furthermore, any carbon sequestered in the soil can be released

[15] https://www.epa.gov/ghgemissions/overview-greenhouse-gases

[16] https://www.ipcc.ch/report/ar5/syr/

[17] https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide/

through severe weather events. As climate change worsens, it will become increasingly more difficult to ensure that carbon remains in the soil.

The tools to measure soil carbon to the degree of accuracy and reliability that a land-based offset would require do not currently exist. A recent study showed that three commonly-used measurement tools for soil carbon all yielded different results.[18] Other studies show that focusing on the top 6 to 12 inches of the soil profile may overestimate the amount of carbon sequestered through no-till.[19] Another challenge is how much soil carbon stocks differ geographically. Even in apparently uniform fields, soil carbon content may vary by as much as fivefold.[20] Without measurement tools that are accurate, quantifying soil carbon to use in an offset market is a guessing game and does not guarantee actual emissions reductions.

There are environmental justice concerns that have frequently been voiced in opposition to offsetting, primarily because such carbon accounting tools allow polluters to continue, or even increase, emissions, thus shirking responsibilities to address localized impacts from pollution.[21] Many polluting industries are situated in or near low-income communities and communities of color, so the continuing or even increased pollution will harm those communities disproportionately.[22]

Appendix B1 says, "For most programs, a project proposer may choose how much to energy to purchase up to 100% of the proposer's energy usage." This loophole allows projects to buy their way out of polluting rather than deal with their own emissions directly. The EQB should require projects to report their own emissions and not obscure that reporting by not allowing offsets.

Mitigations must include alternative systems of animal management

The draft recommendations require projects to describe mitigations that the project considered and/or planned to reduce GHG emissions. We would add a requirement to explain in more detail why certain mitigation actions were chosen over others. Table 7 of Appendix B1 outlines some commonly used mitigation measures for GHG reduction. Several of the listed mitigations that are relevant to agriculture are not strong mitigative tools and threaten to undermine the usefulness of this reporting. Also, the mitigation list does not include consideration of managed, pasture-based production, where there is growing evidence that these systems can reduce animal agriculture's GHG footprint.[23]

We are concerned about the inclusion of offset credits and biogas production in Table 7 of Appendix B1. Offsets do not reduce overall GHG emissions for all the reasons described in

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[18] https://acsess.onlinelibrary.wiley.com/doi/abs/10.2136/sssaj2018.01.0015

[19] https://experts.umn.edu/en/publications/tillage-and-soil-carbon-sequestration-what-do-we-really-know

[20] https://www.researchgate.net/publication/335588860_Quantifying_carbon_for_agricultural_soil_management_from_the_current_status_toward_a_global_soil_information_system

[21] https://drive.google.com/file/d/18bfpaO4f8l4e9CmJPRL99FstaYqKthxV/view

[22] https://dornsife.usc.edu/assets/sites/242/docs/Climate_Equity_Brief_CA_Cap_and_Trade_Sept2016_FINAL2.pdf

[23] https://www.sciencedirect.com/science/article/pii/S0308521X17310338

the section above. Biogas production also presents a host of problems and should be discounted as a mitigation tool. CAFOs liquefy animal manure and store it in lagoons, which emit large amounts of methane. Digesters capture the methane released from the manure lagoons and turn it into biogas, but they also release carbon dioxide. Some digestors on large-scale dairy and hog operations are loading biogas into natural gas pipelines, allowing the natural gas industry to qualify as "renewable." In this way, biogas from large-scale animal operations prop up the polluting natural gas industry and create perverse incentives for these operations to expand manure production. Digester projects cost millions of dollars, particularly in cold weather climates, and only work for the largest farms; digester developers say that it takes 2,000 cows to support a digester.[24] Because digesters are so expensive, they are usually incentivized with public funding. This is especially true in California, where cap-and-trade revenue has funded digester construction.[25] Minnesota should not use its Environmental Review process to incentivize increased production of animal waste and prop up the natural gas industry when that waste could be avoided in the first place by investing in climate-friendly practices like pasture-based production.

Pasture-based animal production should be included on the suggested list of mitigations. Management-intensive grazing that is adapted to region, climate and the condition of the pasture has multiple benefits. These include:[26]

- Distributing manure evenly on the land
- Encouraging populations of beneficial soil organisms that enhance nutrient cycling
- Using little or no synthetic nitrogen or other agricultural inputs
- Eliminating or minimizing the need for manure storage facilities
- Maximizing soil organic carbon sequestration
- Providing opportunities to integrate crop and livestock production for enhanced nutrient cycling and uptake efficiency

In addition to improving soil health, reducing the need for chemical inputs and eliminating many of the emissions associated with manure management, pasture-based systems can also reduce emissions from enteric fermentation. Some studies show that emissions per cow are about 15% less for grazing operations than for confinement operations.[27] And because animals are primarily fed grass, grazing operations also minimize the need for purchased feed and the climate impacts of growing that feed.

This is a stark contrast to the CAFO model of production. According to the EPA's GHG inventory, manure deposited on pasture or rangelands "decompose[s] aerobically and produce[s] little or no methane." However, manure handled in liquid-based systems decomposes anaerobically and produces large amounts of methane. Methane emissions also increase when producers use long-term storage systems like lagoons, which can collect and hold liquefied manure for 10 to 15 years.[28] This demonstrates that pasture-based operations avoid many of the GHG emissions from manure management.

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[24] https://www.cobank.com/-/media/files/ked/dairy/interest-in-california-dairy-manure-methane-digesters-follows-the-money-aug2020.pdf?la=en&hash=DB502502E12672EF473AEB269AA523586B2A8C9A
[25] http://www.caclimateinvestments.ca.gov/dairy-digester
[26] https://sustainableagriculture.net/wp-content/uploads/2019/11/NSAC-Climate-Change-Policy-Position_paper-112019_WEB.pdf
[27] https://www.journalofdairyscience.org/article/S0022-0302(17)31069-X/fulltext
[28] https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

Feedlots and Climate Risk

As importantly, grazing and pasture-based systems boost the ability of a farm to adapt to climate change. In Minnesota, record snowfall and flooding in 2019 led to the latest planting on record. In addition, there were over 1 million acres of corn in the state that were "prevented plantings," or the failure to plant an insured crop.[29] These real-life impacts of climate change are making it difficult for many farmers to stay in business.

Many of the practices used on appropriately-scaled pasture-based operations boost soil health and make farms more resilient to climate impacts. Boosting soil health increases the water-holding capacity of soil, thereby increasing resilience to floods and drought. For example, "A typical degraded Midwest soil with 1% organic matter may hold less than 1" of rain before becoming saturated, at which point additional rain runs off, carrying chemicals, sediment and manure into nearby streams. The same soil restored to 5% soil organic matter may hold 3.5" of rain before becoming saturated."[30] Healthy soils also have better structure, making a farm more immune to erosion.[31]

In an extremely challenging farm economy, it is of the utmost importance that farms can withstand extreme precipitation, drought and storms. By using practices that build healthier soils, pasture-based operations will fare much better in weather extremes. This is critical to keep Minnesota agriculture viable and help farmers stay in business. For all these reasons, transitioning to pasture-based animal agriculture should be an encouraged mitigation.

Meeting Minnesota's Climate Goals

We support the proposal to include a discussion about the Next Generation Energy Act climate goals within the Environmental Review process. Each project that goes through the Environmental Review process should explain how it fits within those goals, including steps it has taken to reduce emissions and adapt to climate-related risk in the future. This lens is important for individual projects, but also for the EQB and state agencies as they consider the state's overall GHGs and the connection to permitted projects as we head towards the 2025 benchmark.

Conclusion

We appreciate the hard work the EQB has done to put this proposal together, and the steps the EQB has taken to solicit public input. This is a very important process not only for Minnesota but for other Midwest states to learn from. IATP thanks the EQB for the opportunity to comment.

Sincerely,

Ben Lilliston

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[29] https://www.fb.org/market-intel/prevent-plantings-set-record-in-2019-at-20-million-acres

[30] https://www.iwla.org/docs/default-source/conservation-docs/agriculture-documents/state-soil-health-policies.pdf?sfvrsn=2

[31] https://sustainableagriculture.net/wp-content/uploads/2019/11/NSAC-Climate-Change-Policy-Position_paper-112019_WEB.pdf

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