January Sharing Sessions on Defining 'Net-Zero Emissions by 2050'

Meeting Minutes

On January 11 and 13, 2022, the EC4 held three public sharing sessions to understand how the 2021 Act on Climate's ultimate mandate of 'net-zero emissions by 2050' should be defined. This session was held via Zoom and a project webpage was first updated with notice of the sessions on December 20, 2022. The sessions were also noticed on the Secretary of State's website on January 5, 2022.

The project team, which is comprised of staff and leadership from the Office of Energy Resources (OER) and Department of Environmental Management (DEM) with guidance and input from the remaining EC4 agencies/offices, conducted outreach for the sharing session beginning January 5, 2022, with emailed announcements distributed to OER's and EC4's distribution lists, and announcements made at the Green Buildings Advisory Committee's public meeting on December 14.

Each session was run identically. Liz Stone, EC4 Coordinator for DEM, reviewed the Act on Climate's mandates related to the 2022 Update to the 2016 Greenhouse Gas Emissions Reduction Plan and reviewed guidelines and ground rules for participation. Dr. Carrie Gill, Chief Economic and Policy Analyst for OER, led participants in a facilitated discussion. Finally, Ms. Stone concluded the sharing session with next steps. The slide deck used for this session is anticipated to be available on www.climatechange.ri.gov/aoc on February 4, 2022.

The sharing session was attended by 102 people including Representative Carson, Representative and Karen Bradbury on behalf of Senator Whitehouse, as well as EC4 members DEM Acting Director Gray, State Energy Commissioner Ucci, and Rhode Island Infrastructure Bank Executive Director and CEO Jeff Diehl. State Administration representatives also included staff from OER, DEM, DOT, DOH, DSP, RIPTA, and Commerce. Several stakeholder groups were represented as well, including Acadia Center, Green Energy Consumers Alliance, Audubon Society, The Nature Conservancy, Environmental Council of Rhode Island, National Grid, Brown University, New England Convenience Store & Energy Marketers Association (NECSEMA), Climate Jobs RI, land trusts, and members of the clean energy industry.

Attendees were asked to complete surveys before and after the sharing session. Forty-nine (49) attendees (48%) completed the pre-session survey – while this response rate is higher than the response rate from the November sharing session, we continue to suggest the low number of completions should only be interpreted as being suggestive of general trends. According to the pre-session survey, 15% of respondents represented state government and 33% of respondents represented environmental organizations. While all respondents considered themselves at least familiar with what greenhouse gases are, 22% of respondents reported not being at all familiar with how greenhouse gases are inventoried.

- Recommendation: hold a workshop to provide an introductory overview of how greenhouse gas emissions are inventoried

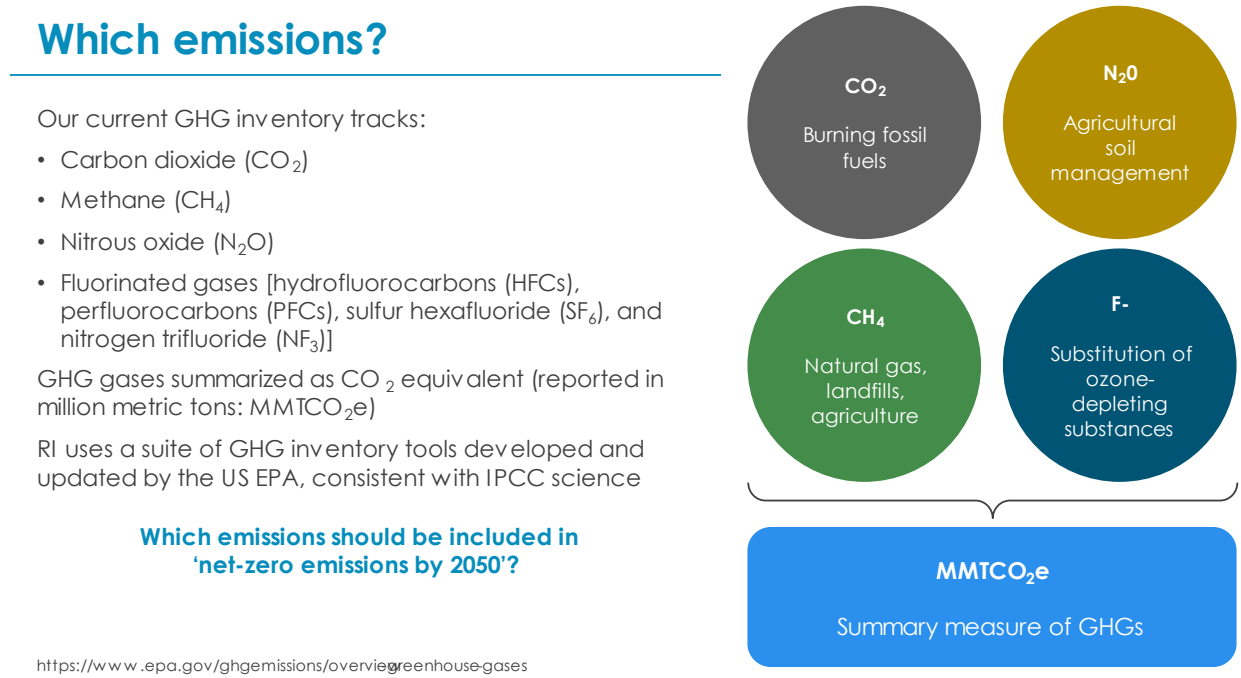
The majority of respondents learned about these sharing sessions from an EC4 newsletter or email, but some respondents reported new outreach channels, including through a Climate Action RI meeting. Seeing new outreach channels is encouraging because it suggests increased awareness of Act on Climate and EC4 events, which may lead to increased and more diverse participation.

- Recommendation: continue to ask about and monitor outreach channels used

The demographics of respondents skewed white and non-hispanic/latinx. While these data should not be interpreted as conclusive trends in participation, they do suggest likely underrepresentation of several communities across Rhode Island, including indigenous communities and people of color.

The facilitated discussion walked through three discussion prompts, all with the aim of reaching consensus on the scope of the 2022 Update. Each prompt began with a brief overview of background information needed to support discussion. Notes on comments were taken in real-time directly on shared slides; these slides were made available as notes online and are anticipated to be posted on the Secretary of State's website by February 4, 2022.

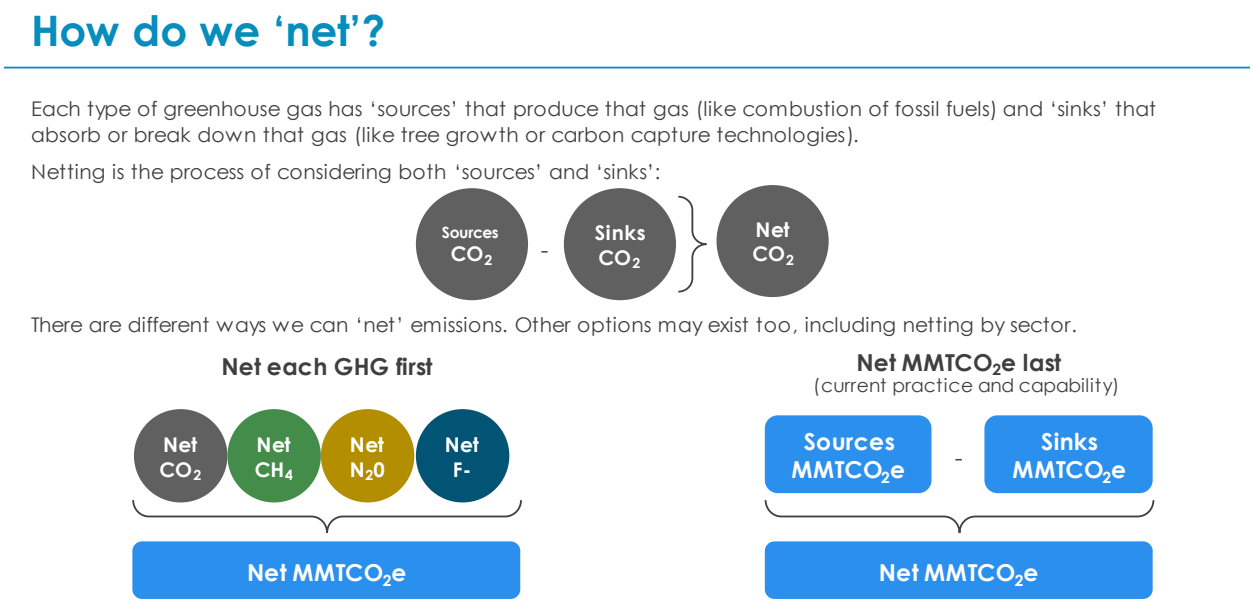
First, attendees were asked which emissions should be included when defining the term 'net-zero emissions by 2050'. Dr. Gill explained the four main types of greenhouse gas emissions identified and tracked by the IPCC and US EPA, and noted that Rhode Island currently uses a tool developed and maintained by the US EPA that tracks all four types of greenhouse gases.



Attendees generally supported continuing to track all four types of greenhouse gases. Indeed, of the 18 respondents to the post-session survey, 94% suggested we include all four types of greenhouse gases in our definition. Concerns and considerations raised included timeframes used to calculate global warming potentials, biogenic versus anthropogenic emissions, assumptions and tracking for methane leakage from pipelines, how to best consider land use and land use changes, emissions from biodiesel and bioheat, the importance of consistency across state borders, importance of consistency with IPCC, the role of education and messaging, developing mitigation strategies tailored for each type of emission, and prioritizing action over accounting.

Second, attendees discussed how we should net emissions. Dr. Gill explained the concept of emissions sources and sinks, and how netting is the process of considering both sources and sinks. Dr. Gill provided

examples of two different methods for netting and noted other methods may be considered as well, before opening discussion for attendees.



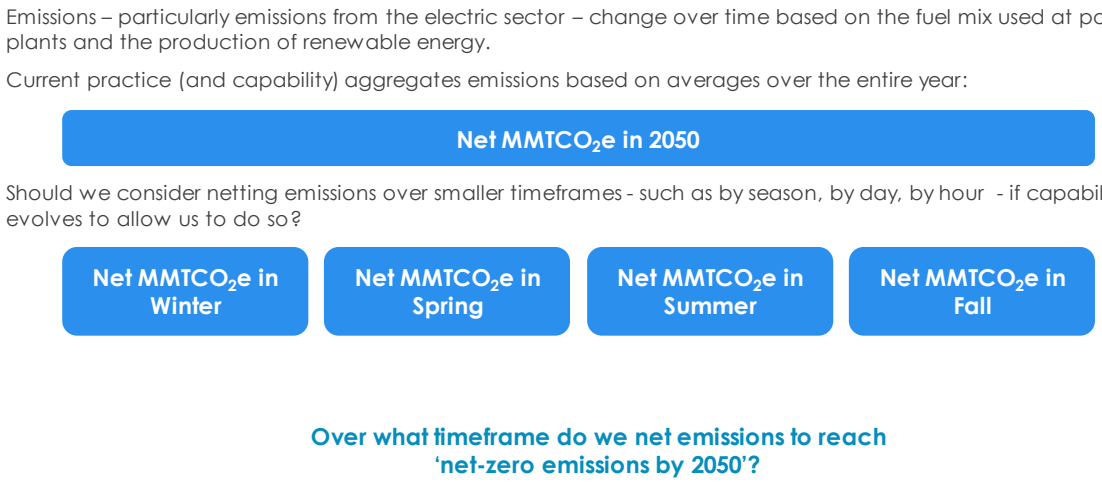
How should we 'net' emissions to reach 'net-zero emissions by 2050'?

Attendees were more split in their preferences between netting each greenhouse gas first versus netting the summary measure MMTCO2e last. While the overall preference seemed to be for netting MMTCO2e last – Rhode Island's current practice and capability, as determined by tools developed and maintained by the US EPA – there was insightful discussion about the potential role of considering net emissions of each type of greenhouse gas and for all greenhouse gases by sector. Of 16 post-survey respondents, 44% preferred netting MMTCO2e last, 31% preferred netting each greenhouse gas first, and 25% suggested hybrid, mixed, or alternative methods of measure progress toward net-zero emissions.

Other considerations raised included the importance of action to mitigation emissions from all sources, the concern of over-reliance of as-yet-unproven emissions capture technology, the need for appropriate education and communications, understanding the difference between and consequences of offsets versus sinks, a preference for being overly conservative in our accounting, the role of transparency and climate dashboards, the need to ensure comprehensive accounting across state borders, and building flexibility into our methods, tools, and definitions to account for changes in technology and science, among others.

Third, attendees discussed the timeframe over which emissions should be netted. Dr. Gill described Rhode Island's current practice of estimating emissions on an annual timescale, meaning all sources of emissions throughout the year are estimated, from which all reductions in emissions from sinks over the course of the year are subtracted. Emissions may also be netted on smaller timeframes, such as seasonal, daily, or hourly, but Rhode Island doesn't currently have the capability to do so. If we were to consider smaller timeframes, that would require reaching net-zero emissions for each timeframe (e.g. reaching net-zero emissions in each season in 2050).

What timeframe?



Over what timeframe do we net emissions to reach 'net-zero emissions by 2050'?

Attendees engaged in really robust discussion about the tradeoffs between annual and sub-annual timeframes. Of the 15 post-session survey responses, roughly half of respondents supported using an annual timeframe (53%) and roughly half supported using a sub-annual or other timeframe (47%). There seemed to be an inclination across the three sharing sessions to maintain the annual timeframe, but attendees raised important considerations about the potential value in supplementing annual netting with sub-annual netting, weighing the incremental insights of more frequent netting with the costs of administration, being intentional about which sub-annual timeframe to use if appropriate, and considering the best timeframe for each type of greenhouse gas or sector.

Attendees were also given an opportunity to voice any other considerations about how we should define 'net-zero emissions by 2050'. Attendees stressed the need to prioritize action over accounting, focus on reaching short-term interim mandates, prioritize mitigating sources over pursuing sinks or offsets, considering non-quantitative metrics alongside emissions – including social and mental health impacts, highlighting case studies and success stories alongside quantitative metrics, and identifying the most impactful near-term actions.

Eighteen (18) attendees completed the post-session survey. Of those who did, respondents expressed general preference for afternoon meetings (33%). All respondents (100%) stated there was a sufficient opportunity to share their thoughts and 94% found the sharing session to be at least moderately helpful.

January Sharing Sessions on Defining 'Net-Zero Emissions by 2050'

Slides

RIEC4

Act on Climate Mandates

2022 Update: By 12-31-2022, the EC4 shall submit an update to the 2016 Greenhouse Gas Emissions Reduction Plan to Governor & General Assembly

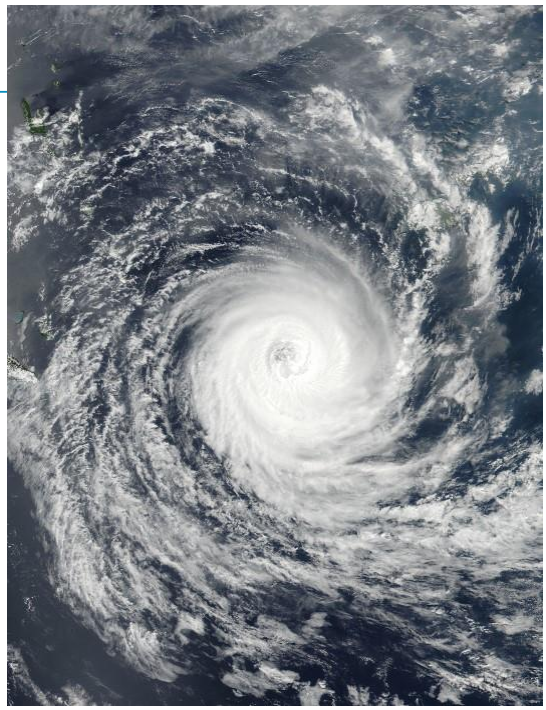
- For more information on the scope of the 2022 Update, visit www.climatechange.ri.gov/aoc/
- Today's discussion informs technical review and updating emissions reduction goals since 2016

The Act on Climate establishes economy-wide emissions reduction targets of:

- 10% below 1990 levels by 2020;
- 45% below 1990 levels by 2030;
- 80% below 1990 levels by 2040; and
- **Net-zero emissions by 2050**

How do we define 'net-zero emissions by 2050'?

1. Which emissions are we talking about?
2. How do we 'net' them?
3. Over what timeframe?



[Housekeeping and logistics slides omitted]

Facilitated Discussion

How do we define 'net-zero emissions by 2050'?

1. Which emissions are we talking about?
2. How do we 'net' them?
3. Over what timeframe?
4. Other factors

Which emissions?

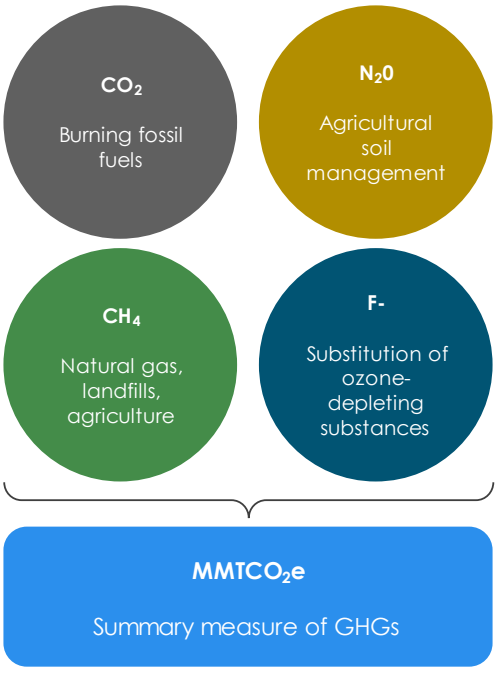
Our current GHG inventory tracks:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Fluorinated gases [hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3)]

GHG gases summarized as CO_2 equivalent (reported in million metric tons: $MMTCO_2e$)

RI uses a suite of GHG inventory tools developed and updated by the US EPA, consistent with IPCC science

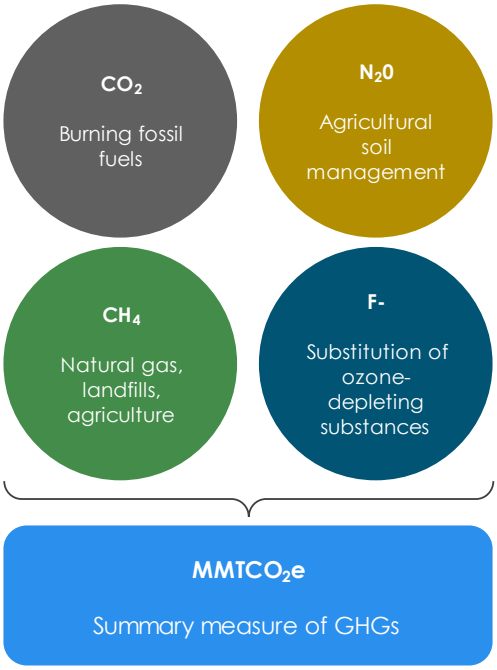
Which emissions should be included in 'net-zero emissions by 2050'?



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

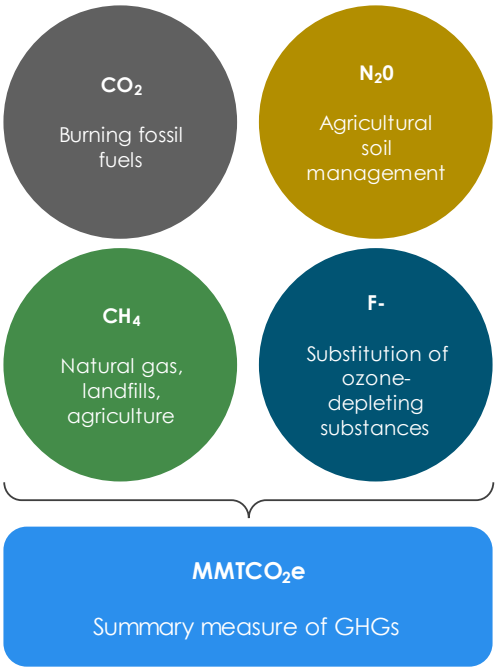
Which emissions? 1/11/22 @ noon

- Supportive of four-gas approach
- Consider timescale of GHG impacts (e.g. 100 v 20 years; AR5; NY example; shorter time frame may be appropriate)
- Methane fossil and non-fossil GWPs



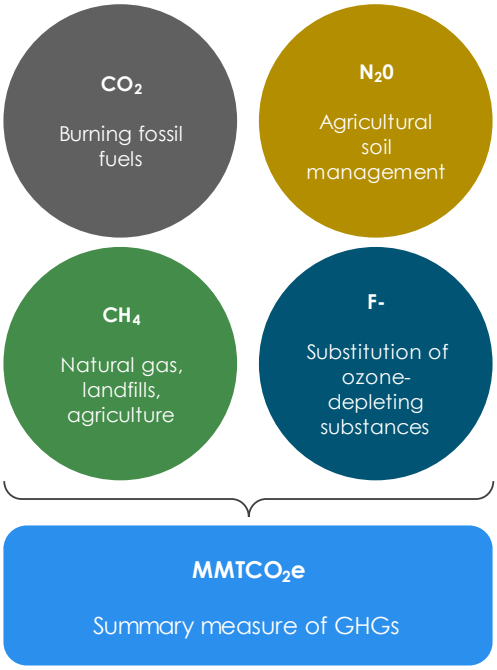
Which emissions? 1/13/22 @ noon

- Supportive of current tracking of all four type of GHGs +1+1+1+1
- Correct tracking of methane leakage from pipelines
- Anthropogenic versus biogenic: both should be accounted for; consider whether to define
- Consider land use and land use changes impact emissions in the inventory +1
- Tracking biogenic emissions may be difficult, first step should prioritize tracking anthropogenic emissions
- Tracking emissions of biodiesel and bioheat



Which emissions? 1/13/22 @ 6pm

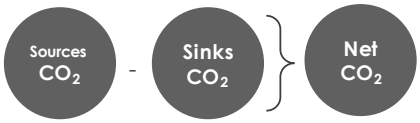
- Consistency with neighboring states is important
- Supportive of being comprehensive +1+1
- Give a consistent message about what GHGs are and which they included – public relations and education
- Important to strategize how to reduce each type of emission
- Consistent with IPCC +1
- Consider global warming potentials – "not all emissions are created equal"
- At the end of the day, "the atmosphere doesn't care about accounting" – prioritize action
- Control what we can
- Education what CO2e means



How do we 'net'?

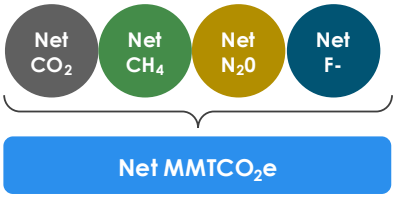
Each type of greenhouse gas has 'sources' that produce that gas (like combustion of fossil fuels) and 'sinks' that absorb or break down that gas (like tree growth or carbon capture technologies).

Netting is the process of considering both 'sources' and 'sinks':

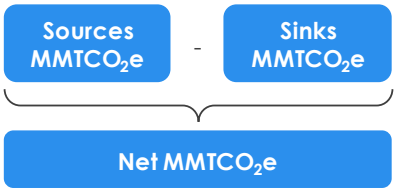


There are different ways we can 'net' emissions. Other options may exist too, including netting by sector.

Net each GHG first



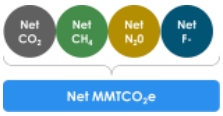
Net $MMTCO_2e$ last
(current practice and capability)



How should we 'net' emissions to reach 'net-zero emissions by 2050'?

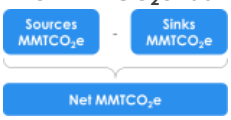
How do we 'net'? 1/11/22 @ noon

Net each GHG first



- Tree cover and land use may not be as reliable as sinks as climate changes
- Consider requiring zero emissions in sources
- Consider methane leakage from natural gas distribution systems – accurate accounting is critical (e.g. leakage rate, compare to MA)
- Interpretation as zeroing out each gas
- Offset v. sinks: reduction of emissions sources is the priority and must reach net-zero as quickly as possible
- Action is priority over arithmetic
- Consider marine permaculture role as a carbon sink

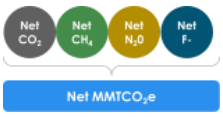
Net $MMTCO_2e$ last



- Inherent lifecycle GHG in production and consumption of goods in state
- Production- v. consumption-based accounting
- Be clear in accounting about interpretation and what that means for GHGs in the atmosphere
- Consider holistic accounting across neighboring states, etc. to make sure all GHG are accounted for somewhere: upstream and downstream impacts

How do we 'net'? 1/13/22 @ noon

Net each GHG first



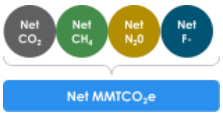
- Make sure to capture relative impact of the different GHGs
- Account land use and land use change
- May be impossible to net each gas to zero
- Importance of building flexibility into tools to account for changes in technology and modeling, etc.
- Consider secondary strategies in our inventory (e.g. adding kelp to cow feed to reduce methane emissions) – beyond technology
- Consider assumptions in modeling and inventorying (e.g. timescale over which global warming potentials are considered) – suggestion to shift to shorter timescales and/or show both short and long-term results

Net $MMTCO_2e$ last

- Space for notes

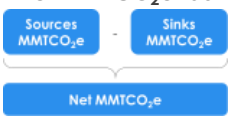
How do we 'net'? 1/13/22 @ 6pm

Net each GHG first



- Rely on mitigation first (priority) rather than sinks or GHG capture technologies
- Maximize mitigation
- Importance of land/forest preservation
- Netting each GHG first might provide additional insights about how effective our strategies and actions are; netting MMTCO2e last may obscure insights about progress
- Transparency is important; Build out climate dashboard
- Education is important; transparency and education is a mitigation strategy
- Consulting with first nations

Net MMTCO$_2$e last



- Confusion between sinks and offsets; clarify geographical boundaries for our inventory
- Ensure proper monitoring and accurate quality data
- Interpretation of findings is important
- Concern over reporting net emissions by each gas specifically – could be misinterpreted or conveyed as being smaller problem
- Other options: net at state (long-term), municipal, or individual level: may improve transparency, feedback, evaluation of strategies
- Conservative accounting
- Priority: protect people and animals; social considerations of climate change

What timeframe?

Emissions – particularly emissions from the electric sector – change over time based on the fuel mix used at power plants and the production of renewable energy.

Current practice (and capability) aggregates emissions based on averages over the entire year:

Net MMTCO$_2$e in 2050

Should we consider netting emissions over smaller timeframes - such as by season, by day, by hour - if capability evolves to allow us to do so?

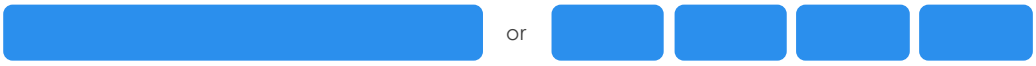
Net MMTCO$_2$e in Winter | **Net MMTCO$_2$e in Spring** | **Net MMTCO$_2$e in Summer** | **Net MMTCO$_2$e in Fall**

Over what timeframe do we net emissions to reach 'net-zero emissions by 2050'?

What timeframe? 1/11/22 @ noon

- Arguments for both sides
- Seasonal suggested
- Depends on type of emissions: annual good for understanding totality; seasonal good for understanding things like end uses (heating versus cooling, seasonal transportation)

What timeframe? 1/13/22 @ noon



- Tracking seasonally can help impact behavior and encourage behavior changes
- Shorten lag between emissions and reporting as technology, data, modeling, etc. advances
- Consider near-real-time reporting of emissions from the electric sector, when capability is there
- Consider how sub-annual timescales might show progress that isn't there; annual may show more sustainable/durable/long-lasting emissions levels
- Important to understand consequences of our assumptions
- Consider economic efficiency of building out renewable energy systems, asset buildout, etc. – net zero each minute may not be optimal (we are not saying investment in renewables is not valuable– building out renewables is critical to meeting climate mandates)
- Value to looking at both annual and sub-annual timeframes
- Be intentional about the timeframe and explore different options to understand value

What timeframe? 1/13/22 @ 6pm

- Support for annual – the system is large and volatility is present – netting over shorter timeframes may provide spurious insights (don't confuse climate and weather!) +1 too!
- Support for sub-annual – may capture insights about behavior, provide feedback and insights on mitigation strategies, and provide more real-time feedback on progress +1
- Consider balance of both, tradeoffs, and interpretation – not "or" but "and"
- Consider different needs of different industries and sectors
- Consider data availability and reporting effort – is additional reporting worth the incremental benefit and additional cost/burden?
- If seasonal is better, then why not monthly– daily – hourly? Supportive of being intentional on timeframe if more frequent than annual

Are there other factors we should consider in 'net-zero emissions by 2050'? 1/11/22 @ noon

- Standardization across states
- Concern that net-zero relies too heavily on unproven carbon capture technologies; should not rely on those technologies in our actions/strategies
- Climate Action Tracker suggested for best practices
- When is discussion of how we meet 45% reduction by 2030 and interim targets? Priority conversation – don't want a 2050 goal to delay action today

Are there other factors we should consider in 'net-zero emissions by 2050'? 1/13/22 @ noon

- No additional notes on this question

Are there other factors we should consider in 'net-zero emissions by 2050'? 1/13/22 @ 6pm

- Relationship of 2022 update to 2025 climate strategy – make sure this is clear
- Prioritize largest mitigation strategies first; meeting interim goals is also critical! Immediate big actions- address urgent public health issues
- Mental health impacts of climate change need to be factored in
- Should hold a discussion with young people to understand perspectives, impacts, priority outcomes
- Supportive of success stories: anecdotes and exemplars are just as important as numbers and metrics and can give hopes
- Life-cycle assessment as a tool to understand emissions impacts of products, industries, services
- Lifestyle changes (e.g. food choice)
- State and public procurements that encourage/value net-zero
- Importance of local and individual action
- Consider how solutions can help people effectively, which industries pose urgent threats/immediate danger to frontline communities?

Next Steps

January

- 1/14 Please submit comments on scope of 2022 Update
- 1/28 Please submit additional comments on definition of 'net-zero emissions by 2050'

February

- 2/9 Update to EC4: draft 2022 Update chapter on definition of 'net-zero emissions by 2050'
- 2/23 Please submit additional comments on draft 2022 Update chapter on definition of 'net-zero emissions by 2050'

March

- Revised 2022 Update chapter on definition of 'net-zero emissions by 2050' available
- Sharing Session #3: Reviewing the 1990 baseline
- Updated RI Greenhouse Gas Emissions Inventory released

To be scheduled in Q1: presentation on federal climate work

More info & comment form: www.climatechange.ri.gov/aoc