

EQB Climate Calculator

**User Training Session – Calculator Overview** 



6/4/2025

# Agenda

- 1. Background
- 2. Getting Started
- 3. Calculator Overview
- 4. User Inputs
- 5. Calculator Outputs
- 6. Mitigation and Adaptation
- 7. Limitations
- 8. Additional Resources



# Background

## **Overview**

- Purpose ٠
  - Help project developers and RGUs assess the full GHG emissions impact potential of a project in Minnesota
  - Identify and implement mitigation and adaptation strategies
  - Answer EAW items #7 and #18 \*\*Not Required\*\*
- Scope
  - Quantifies impact from project construction and operation, including upstream and downstream emissions
  - Assesses GHG impact from 18 potential emission sources



## Scope



5



# **Getting Started**

# **Calculator Settings**

- Developed using Microsoft Excel for Microsoft 365
- Automatic calculation options
- Make a trusted file



OK

Cancel

Apply



# **Calculator Settings**

• Enable Macros

AutoSave Off																		₽ se																				6	<b>ð</b> -	
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# **Calculator Overview**

# **Calculator Structure**

Introduction	Provides background on the purpose, scope, and limitations of the tool.
User Guide	Provides instructions on using the calculator, a legend, and a table of contents.
Project Background	Users enter project background information and select applicable emissions source
User Inputs	Users enter data for emission sources that are applicable to their project.
Notes	Users enter assumptions and notes that are specific to their project.
Construction	Calculates emissions that occur during the construction phase of the project by em
Operation	Calculates emissions that occur during the operational phase of the project by emis
Results	Summarizes cumulative and annualized GHG emissions by emissions source.
Charts	Graphically summarizes cumulative and annualized GHG emissions by emissions so
Mitigation	Identifies potential mitigation measures to reduce GHG emissions from the propose
Adaptation	Identifies potential adaptation strategies by climate trend and project characteristic
Assumptions	Assumptions used to calculated construction and operation GHG emissions for eac
Constants	Constants and conversion factors used in calculations.

\*\*White tabs at the end of the calculator document raw data inputs and interim calculations used to de



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# Navigation

- Use the navigation arrows or tabs to navigate throughout the calculator •
- Select the green boxes at the top to navigate to specific sections of a tab •
- Select the **Return to Top** buttons at the bottom of tabs to navigate to the top of the tab •

Sele	ect the green boxes to						
nav	igate to the inputs for		Select this arrow to				
this	emission source.		navigate to the next	tab. 🔪			
	/			$\backslash$			
User Inputs (Step 2)	/			$\backslash$			
Enter data in the yellow cells for emission sources that are a Incomplete data are highlighted by the red x marks to the left Select 'Hide Sources Not Applicable' or 'Show All Sources to	plicable to your project (as identified in the Project Bac of each table. Default values are available for select in hide or view sources selected as not applicable on the	ckground tab). Inputs for emissic puts. Click the 'Apply Defaults' I e Project Background tab.	n sources identified as not applicable ar utton to populate the tool with default va	e blacked out. iues.			
Material Inputs	Building Energy Consumption	On-road venicies					
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Transportation of Material Inputs	Coal Production	Treatment of Was	te On-Site	Go to			
Transportation of Material Inputs Employee Commuting	Coal Production Natural Gas and Oil Products	Treatment of Was Treatment of Was	te On-Site tewater On-Site	Go to			
Transportation of Material Inputs Employee Commuting Construction Equipment	Coal Production Natural Gas and Oil Products Industrial Processes	Treatment of Was Treatment of Was Treatment of Was	te On-Site tewater On-Site te Off-Site	Go to			
Transportation of Material Inputs Employee Commuting Construction Equipment Land Use Change (Construction)	Coal Production Natural Gas and Oil Products Industrial Processes HFC Leakage	Treatment of Was Treatment of Was Treatment of Was Enteric Fermenta	te On-Site tewater On-Site te Off-Site iion	Go to			







# Formatting

• **Shading** is used to indicate:

1) where to enter data and 2) what the data represent

• Users may hide rows of not applicable sources by selecting the Hide Sources Not Applicable button



Legend	Criteria
	Yellow cells are <b>data input fields</b> .
	Blue cells are headings and are not editable.
	White cells are lists or constants and are not editable.
	Green cells are calculated fields and are not editable.
	Light green cells are <b>calculated fields</b> for interim calculations and are <b>not ed</b> i
	Gray cells are assumptions and are not editable.
	Black cells are for emissions sources that are not applicable and are not cal

Black dashed lines indicate this emission source was selected as not applicable on the Project Background, so no inputs are needed.

# itable.

lculated.



## **Data Quality and Completeness**

- Data Validations are built into user input fields
  - Examples include value ranges, drop-down lists, and formatting restrictions
- If you try to enter a nonvalid value, a pop-up message will appear
- Checker icons indicate if a field or table is correctly populated
  - = emission source is excluded from the calculations
  - 🕴 = emission source is applicable but required data inputs are missing
  - 💿 = emission source is applicable and all required inputs are provided
- Red text will display if inputs are entered incorrectly

3 Waste Treatment Practice	Percent of Waste	Default		
Recycled		0%	Apply Defaults	
Composted		0%	Depart Dutter	
Landfilled	99%	44%	Reset Button	
Combusted		56%		
Total:	99%	Values do not sun	n to 100%. Update to ensu	



osoft Excel			×
Enter a nor	n-negative num	ber.	
<u>R</u> etry	Cancel	<u>H</u> elp	

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# **Applying Defaults**

- **Default assumptions** are available for select user inputs
  - Displayed in gray cells
  - Linked to values on the Assumptions tab

- Select the Apply Defaults button to populate user input fields with default values
- The **Reset Button** clears the values from the fields where defaults can be applied

Industrial processes Enter the annual quantity of ir "Apply Defaults" button to the	ndustrial output by product type right of the table to populate th	e. Enter the emission the emission factors	ons factor for each a column with default	use the def factors sho cells. oplicable product type or se values.
Product Type	Quantity (tons/year)	Emission Factor (kgCO2e/ton)	Default Emission Factor	Apply Defaults
Cement			863.12	
Lime			1,162.63	Reset Button
Limestone Use			8.59	
Magnesium			16,178.31	1
Iron and Steel			1,326.60	Select Reset But
Ammonia			937.36	remove all value
			9 332 16	Emission Factor
Aluminum			3,332.10	Enhosion ractor

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## **Process Overview**

1. Fill out project background information and select applicable emission sources.



2. Enter data or select defaults for emission sources applicable to their project



3. Document assumptions and notes that are specific to the project and user inputs.

6. Select adaptation strategies that are relevant to applicable climate trends and project characteristics.



5. Identify mitigation measures to reduce GHG emissions from the proposed project.





4. Review the calculations and results. If desired, generate a PDF summary report.



# **User Inputs**

# **Project Information**

- User input cells are shaded yellow
- Inputs are required to calculate results and may impact more than one emissions source
- Select information is already required in the EAW
- Select cells for additional popup instructions
- Refer to the User Guide for additional guidance

## Project Background (Step 1)

## **Project Information**

Enter information into all yellow cells. Results may not calculate if fields are left blank, as highlighted by the red x marks. For building construction projects, select the Apply Defaults button to populate the Construction Duration with the default data from the grey cells.

Complete all required fields before proceeding to the User Inputs tab

Project Name	
Project Category (primary)	
Project Category (secondary)	
Location (County)	

	_						_	
Construction Start Date			×	Buildi	ng Construction Projec	t?		
Operational Year		Entert	he ar	ticinated	]			
Operational Lifetime (Years)		start da	ate of	f project	onstruction Stage	Duration (Days)		
		constru	uctio	n	ition			
Total Project Acreage		(mm/d	ld/yy	уу).	eparation			
Residential Building Area (sq ft)					g			
Commercial Building Area (sq ft)		•	×	Buildi	ng Construction			
Industrial Building Area (sq ft)		•	×	Archite	ectural Coatings			
Institutional Building Area (sq ft)			8	Paving	g and Landscaping			
Other Building Area (sq ft)			8	*Defaul	Its are dependent on total	project acreage and are	e only	
Electricity Provider	Grid A	werage						
Portion of Building Electricity Consumption to be Generated On-Site via Renewables or Supplied through the Purchase of Renewable Energy Credits (RECs)								
			_					

Portion of Building Natural Gas Consumption to be Supplied from Renewable Sources





## **Calculator Preferences**

- Users can specify their preferred unit in which to present emissions in the Results tab
  - Tons (short tons)
  - MT (metric tons)
  - Kg (kilograms)

Calculatio	n Preferences	
Please specify t	the preferred unit in w	hich to present emissions in the Results tab.
Unit	tons	



## **Applicable Emission Sources**

- Potentially applicable emission sources are identified based on the primary and secondary project category selected in the Project Information section
- Select Apply Defaults button to populate yellow fields or select each individually using the drop-down menus
  - Defaults may be changed after they are applied
- A selection is required for each emissions source
- For excluded emissions sources, fields will be shaded gray with black dashed lines and/or hidden in subsequent tabs of the calculator

## **Applicable Emission Sources**

Information is provided below on emission sources potentially applicable to your project depending on the project category selected in the section above. Select the 'Apply Defaults' button to include all applicable sources, or manually select "Yes" or "No" to indicate which emission sources to estimate GHG emissions for in this tool. The red x mark will appear until a selection is made for all emission sources.

Complete the table to identify whic	h emission sources to quantif	fy before proceeding to	o the User Inputs t
-------------------------------------	-------------------------------	-------------------------	---------------------

Project Phase	Emission Source	Include Emission Source?	Appl Project
Construction	Material inputs	Van	
Construction	Transportation of material inputs	Tes	
Construction	Employee commuting		-
Construction	Construction equipment	Yes	
Construction	Land use change (construction)	No	1
Construction	Construction waste		
Operation	Building energy consumption		
Operation	Coal production		
Operation	Natural gas and oil products		
Operation	Industrial processes		
Operation	HFC leakage		
Operation	Land use change (operations)		
Operation	On-road vehicles		
Operation	Treatment of waste on-site		
Operation	Treatment of wastewater on-site		
Operation	Treatment of waste off-site		
Operation	Enteric fermentation		
Operation	Manure management		





## **User Inputs**

- User input cells are **shaded yellow** 
  - Not applicable fields are shaded gray with black dashed lines
- Populate using **best available data** or assumptions
- **Default assumptions** are provided in gray cells
  - Accessed using buttons or dropdowns
- Refer to the User Guide for additional guidance
- Input values can be reset at the top of the tab or for individual sources by selecting reset buttons

## **User Inputs (Step 2)**

Enter data in the yellow cells for emission sources that are applicable to your project (as identified in the Project Background tab). Inputs for emission sources identified as not applicable are blacked out. Incomplete data are highlighted by the red x marks to the left of each table. Default values are available for select inputs. Click the 'Apply Defaults' button to populate the tool with default values. Select 'Hide Sources Not Applicable' or 'Show All Sources' to hide or view sources selected as not applicable on the Project Background tab.

Material Inputs	Building Energy Consumption	On-road Vehicles
Transportation of Material Inputs	Coal Production	Treatment of Waste On-Site
Employee Commuting	Natural Gas and Oil Products	Treatment of Wastewater On-Sit
Construction Equipment	Industrial Processes	Treatment of Waste Off-Site
Land Use Change (Construction)	HFC Leakage	Enteric Fermentation
Construction Waste	Land Use Change (Operations)	Manure management
Construction Phase	Sources Not Show All Sources	

## Material inputs

Enter the total amount of material (in short tons) that will be used during the construction phase of your project. Concrete and wood products may instead be entered in cubic yards while insulation may be entered in square feet. Use the dropdown to select an alternate unit if data are not provided in short tons. Additionally, select the source of each material (i.e., domestic or imported). Select "Unknown" if you do not know the source of the material.

3	Material Type	Quantity	Unit	Geographical Sourcing
	Aluminum		Tons	Unknown
	Asphalt		Tons	Domestic
- [	Brick		Tons	Unknown
[	Concrete		Tons	Domestic
	Glass		Tons	Unknown
- [	Insulation (residential)		Tons	Unknown
- [	nsulation (commercial)		Tons	Unknown
	Steel		Tons	Unknown
	Wood Products		Tons	Unknown

## Employee commuting

Enter the daily average number of employees that will commute to the construction site during each phase of construction. Enter the average one-way commuter distance and mode breakout or select the "Apply Defaults" button to the right of the table to populate these fields with default values.

8	Construction Stage	Daily Average Number of Employees Commuting	
	Demolition		
	Site Preparation		
l	Grading		
[	Building Construction		
[	Architectural Coatings		
	Paving and Landscaping		
8	Average One-Way Commute Length	Distance (miles)	13.2
	<u> </u>		
8	Transportation Mode	Percent of Employees	Default
[	Single Occupancy Vehicle		81.7%
[	Carpool		10.6%
[	Motorcycle		0.2%
[	Bus		1.9%
[	Transit Rail		2.2%
1	Biko/Malk		3 /10/

Total:

0%



## Notes

- Use of this tab is optional
- Can document assumptions, data sources, notes for reviewers, special circumstances, or other helpful information specific to your project
- Included in the generated summary report

# Notes (Step 3) Enter notes into the yellow cells below to document assumptions, data sources, notes for reviewers, special circumstances, or ot

nformation specific to your project, if desired.	
	Go to Construction



# **Calculator Outputs**

## **Interim Calculations**

- Shows detailed calculations by emissions source
- Draws on user inputs, assumptions, constants, and emission factors
- Fields are not editable
- Select headers for information on the source of the data
- Results are shown in kgCO<sub>2</sub>e

<b>Construction Emi</b>	ssions Calcula	ions (Step 4a)
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This tab calculates emissions that occur during the construction phase of the project based on user inputs and tool assumptions. The values on this tab may not be modified. Return to the Project Background and User Inputs tab to modify data inputs.

Material Inputs	Transportation of Material Inputs	Employee Commuting	Construction Equipment	Land Use Change	Construction Waste	Go to Operation
Material Inputs						
Material Type	Quantity tons	Em	ission Factor	GHG Emissions kgCO2e		
Aluminum	0.00	x	assumption, as summarized			
Asphalt	0.00	x	in the Assumptions tab. The	-		
Brick	0.00	х	values vary based on the	-		
Concrete	0.00	x	material, as specified by	-		
Glass	0.00	x	users in the User Input tab.	-		
Insulation (residential)	0.00	x	2,284.38 =	-		
Insulation (commercial)	0.00	x	2,284.38 =	-		
Steel	0.00	x	1,576.30 =	-		
Wood Products	0.00	x	335.29 =	-		
			Total	-		





## Results

## Cumulative emissions =

the sum of construction and operational emissions across operational lifespan of the project

- Annualized emissions = cumulative emissions divided by the project lifetime
- Project lifetime, which includes both construction and operation, is derived based on the construction start date, operational year, and operational lifetime

	Summary Results (Step 4b)		
Emission sources	Cumulative and annualized GHG emissions are shown for all app warming potentials and are shown in short tons, metric tons, or kill indicated as not applicable in the Project Background tab that are	licable emission so ograms based on th excluded from the c	urces in the table bel e unit selected in the calculations are listed
selected as not applicable and not shown in the results	Emission sources excluded from calculations and hidden below:		
table or charts are			
displayed in this box	Lifetime Emissions		
displayed in this box.	Units topo 04	1.	
×	Unit: tons Project Lifetime: 21		
		Cumulative CO2e	Annualized CO2e
	Phase	Emissions	Emissions
Displays units selected on	Construction	163,931.29	7,806.25
Project Background tab to	Material inputs	821.54	39.12
	Transportation of material inputs	18.51	0.88
be represented in the	Employee commuting	4,751.58	226.27
table below.	Construction equipment	158,326.94	7,539.38
	Land use change (construction)	11.63	0.55
	Construction waste	1.09	0.05
	Operation	31,122.93	1,482.04
	Building energy consumption	58.24	2.77
	Natural gas and oil products	3.19	0.15
	Industrial process emissions	19,807.84	943.23
	HFC leakage	1.95	0.09
	Land use change (operations)	8.37	0.40
	Treatment of weste on site	0.13	0.01
	Treatment of wastewater on site	639.34	30.44
	Treatment of waste off-site	4.40	0.21
	Enteric fermentation	5,731.80	2/2.94
	Manure management	2,039.33	06.52
	Total	195,054.22	9,288.30

table below. Results are calculated using AR5 global ed in the Project Background tab. Emission sources are listed below.

> Displays project lifetime that is calculated based on the construction start date, operational year, and operational lifetime from the Project Background tab and used for annualized emissions calculations.



## **Emissions Equivalencies**

- Equivalencies are summarized at the bottom of the Results tab for cumulative and  $\bullet$ annualized results
- Results are derived using equivalency factors from EPA's Greenhouse Gas Equivalency Calculator

Emissions Eq	uivalencies	
To contextualize emis measures for commu	sions, input emiss nication purposes.	tions data into the <u>EPA GHG Equivalencies Calculator</u> (using corresponding units) to convert emission . Below are some example equivalencies for both cumulative and annualized emissions.
Cumulative emission	is are equivalent to	)
Emissions from	18,896,049 835,619	miles driven by an average gasoline-powered passenger vehicle
Emissions avoided by	2,624	tons of waste recycled instead of landfilled
Annualized emission	s are equivalent to	L
Emissions from	157	gasoline-powered passenger vehicles driven for one year
Emissions from	91	homes' energy use for one year
Carbon sequestered by	675	acres of U.S. forests in one year

ns into equivalent



## Charts

- Results are also displayed graphically on the Charts tab
  - Lifetime emissions are represented as stacked bar charts
  - Emissions by project phase are represented as clustered column charts
- Non-applicable emission sources are automatically hidden





# **Summary Report**

- Includes background information, • cumulative and annualized emissions by source and phase, user inputs for each emissions source, and any user-provided notes entered on the Notes tab
- To generate a report, select Generate Summary Report on Results tab
- Generating a report is not required to • complete the EAW

## Summary Results (Step 4b) Cumulative and annualized GHG emissions are shown for all applicable emission sources in the table below. Results are calculated using AR5 global warming potentials and are shown in short tons, metric tons, or kilograms based on the unit selected in the Project Background tab. Emission sources indicated as not applicable in the Project Background tab that are excluded from the calculations are listed below. Go to Charts Emission sources excluded from culations and hidden below Generate Summary Repo

## Minnesota Climate Calculator: Project Summary Report

The results shown below were generated using the Minnesota Climate Calculator. The emissions quantified account for the full generated using the Advantation of a patential project throughout the construction and operational phases of the project. This includes emissions from project activities that occur on-site as well as emissions that occur upstream and downstream of the project. The results are based on user inputs and assumptions: actual project emissions may van

### **Background Information**

Project Name	Test Report
Project Category (primary)	Subp. 8, Transfer facilities
Project Category (secondary)	
Location (County)	Benton
Construction Start Date	1/1/2026
Operational Year	2027
Operational Lifetime (Years)	10
Electricity Provider	Grid Average

rtion of Building Electricity Consumption to be Generated On-Site via Renewables or Supplied through the Purchase of Renewable Energy Credits (RECs rtion of Building Natural Gas Consumption to be Supplied from Renewable Sources

ding Construction Project?	Yes	
		1

Construction Stage	Duration (Days)
Demolition	20
Site Preparation	10
Grading	20
Building Construction	230
Architectural Coatings	20
Paving and Landscaping	20

## Summary Results

		_				
Project Lifetime	11					
Unit	tons					
		-				C
Dhace		CO2e Emiss	sions		3 000	
Filase		Cumulative	Annualized		5,000	
Construction						
Material inputs		825.75	75.07			
Transportation of m	aterial inputs	18.22	1.66		3 500	
Employee commutir	ng	15.74	1.43		2,500	
Construction equipn	nent	548.21	49.84			
Land use change (co	nstruction)	50.82	4.62			
Construction waste		0.83	0.08		2 000	
Operation					2,000	
Building energy cons	sumption	26.86	2.44	02e		
Coal production		1,109.34	100.85	200		
Natural gas and oil p	roducts	NA	NA	tou	1 500	
Industrial process er	missions	NA	NA		2,500	
HFC leakage		3.39	0.31			
Land use change (op	erations)	NA	NA			
On-road vehicles		NA	NA		1 000	
Treatment of waste on-site		NA	NA		-,	
Treatment of wastewater on-site		NA	NA			
Treatment of waste off-site		109.28	9.93			
Enteric fermentation	n	NA	NA		500	
Manure managemer	nt	NA	NA		500	
Total		2,708.45	246.22			
Note: NA indicates tha	t emissions were not qu	antified and/or are not applicable.				





# **Mitigation and Adaptation**



## **Mitigation Measures**

- Identifies potential mitigation measures, categorized by the expected source of emission reductions
- Use **filters** to narrow the list of measures
- Use the drop-down menu to select measures you intend to implement
- Use Select All Unhidden Measures button to select "Yes" for all visible measures
- Rows are shaded gray when a measured is selected
- Select the Generate PDF button to print filtered list

ise the f elect G	itters in the table below enerate PDF button of	r to identify potence you've mad	mbal mitig le your de	ution measures to reduce GHG en sired selections	nissions from the proposed project. Use the column on the far left to select measures you plan to implement.
	Generate PDF				Select All Unhidden Measures Reset all Selected Measures
elect *	Emissions Source	• Phase	1D -	Measure Title *	Measure Description
	Material inputs	Construction	M-14-01	Use Sustainable Building Meterials	Ensure sustainable building materials comprise at least 20% of total construction materials by volume weight. Sustainable building materials have a less carbon-intensive production process compared to their non-sustainable opunterparts. This strategy could include the use of Environmental Product Declarations in bid decisions to ensure the most sustainable materials are procured. This strategy is general to any building materials. See 14 2 through 16 for measures specific to wood, pavement, and centert.
Yes	Muterial inputs	Construction	H-1A-02	Source Wood Materials from Urban Wood Re-Use Program	Source wood materials from urban wood re-use programs. In areas where removed trees are sent to landfills, they decompose and contribute to methane emusions. Wood is use programs extend a tree's lifetime by converting it into a range of products and prodonging the sequentration benefit Re-uses range from logs, lumber, woodchips, mulch, compost, blocher, entirelities, paper products, engineered wood, furniture, and cellutosic ethanol.
	Material inputs	Construction	M-14-03	Sustainable Pavements	Use lower-impact materials specially designed for roadway surfaces without compromising the pavement's ability to meet its engineering purposes. For example, warm-mix asphab (WHA) production methods use temperatures that are 30 to 120 degrees flahember lower than those of traditional hot mix asphab. Because less energy is needed to heat the asphalt mix, less flahe, is needed to produce WMA. Fuel consumption during WHA manufacturing is typically reduced by 20%. Sustainable pavements can also result in extended pavement life thereby reducing the need for energy interview maintenance.
	Material inputs	Construction	M-14-04	Purchase Cement from Manufacturers using Low Carbon Mix Design for Calcination	Purchase content from manufactures that use low-carbon mix design. Using a low-carbon mix design in addition to renewable power sources and carbon capture can significantly reduce emissions from calcuration. The seven most impactful low-carbon mix alternatives, listed from smallers to largest carbon footprint, are 1) granulated blast funnace sign 2] limestone calcured clay centent; 2] thy sets; 4) Portland limestone centent; 5) blocha 80 early stage carbon curring and 7) recycled concrete aggregate.
	Material inputs	Construction	M-1A-05	Purchase Cement from Efficient Cement Manufacturers	Purchase centern from manufacturers that have implemented measures to improve their production efficiency. Efficiency measures for centert manufacturing can reduce the demand for fuel by addressing the production process itself (such as switching from inefficient set kills to dry ones) or through technical and mechanical improvements (such as presentive maintenance to repar kills leaks).
	Material Inputs	Construction	M 1A 05	Purchase Cement from Manufacturers Using Alternative Fuels	Purchase centern from manufacturers that use abernative fuels in their production method. Indirect emissions from burning fossil fuels to heat the klin cart be reduced by switching to alternative fuels, including natural gas, biomass, and waste-derived fuels such as time, sewage sludge, and municipal solid westes.
	Matantal.imputts	Construction	H-14-07	Require Environmentally Responsible Purchasing	Implement an environmentally responsible purchasing plan. Examples of environmentally responsible purchases include but are not limited to purchasing products made from recycled materials or with sustainable packaging: purchasing post-consumer recycled paper, paper towels, and stationency purchasing and stocking communal Attchers with neurable defines and uternalis, choosing sustainable cleaning supplies; purchasing products from restaurants, farms, or nanchers that source materials or goods from locations that use soil conservation practices; and leaning equipment from neuralisticitums who will recycle the components at their end of life.
	Meterial inputs	Construction	H-1A-08	Use Recycled Apphalt Pavement	Use recycled concrete aggregate (RCA) or recycled asphalt powement (RAP) in place of traditional asphalt. RCA and RAP help reduce energy consumption and thus DHOs of a project by displacing the volume of new asphalt.



## **Adaptation Strategies**

- Identifies potential adaptation strategies, which are mapped to a defined list of climate trends and project characteristics
- Select check boxes or use filters to narrow the list of strategies
- Use the drop-down menu to select strategies you intend to implement

Adaptation Strategies (Step 6)

- Use Select All Unhidden Measures button to select "Yes" for all visible measures
- Rows are shaded gray when a strategy is selected
- Select the Generate PDF button to print filtered list

p 1: Se	elect Clima	te Trends			Step	2: Select Project Characteristics
Heavi	ier, more d	amaging rain				Hazardous waste
Avera	age annual	precipitation incre	Heavier, more damaging	]		Agriculture
Avera	age annual	temperature incre	e rain refers to the increased			Livestock
Increa	asing risk o	f extreme heat ar	rainfall events over the next			Critical infrastructure
Early	thawing (c	old weather warn	several decades, which can lead to more flooding.			Waste management
harrow	acina rick a	f drought			-	New or upgended huiddens
increa	asing risk o	r drought				New or upgraded buildings
						Subsurface infrastructure
						Water management
Res	set Climate	Trends	Reset Project Characteri	stics		Construction
Res	set Climate	Trends	Reset Project Characteri	stics		Construction
Res	set Climate	Trends	Reset Project Characteri	stics		Construction Increased impervious surface
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Use the checkboxes below to identify adaptation strategies relevant to selected climate trends and project characteristics. The list of adaption strategies will filter to show strategies that align with both the climate trends and project characteristics selected. Ensure Macros are enabled for filters to work (see the User Guide tab for instructions on enabling macros). Use the column on the far

> Generate PD after a flood event are readily available and working for extreme events (e.g., lection / rotational strategies to address pests.

iter tiling to reduce erosion

# Limitations

## Limitations

- **Emission Source Exclusions:** Users should assess emissions from sources not covered by the calculator. lacksquare
- Highway Projects: This tool is not intended to estimate emissions for projects falling under Minn. Rule 4410.4300 lacksquaresubpart 22 (Highway projects). Emissions from highway projects should be estimated using the MICE Tool.
- **Feedlot Projects:** Mostly aligns with the Animal Feedlot GHG Calculator. Key differences:  $\bullet$ 
  - This calculator quantifies emissions from manure on pasture and indirect nitrous oxide emissions.
  - This calculator allows users to specify the portion of manure applied to land as a fertilizer.
  - This calculator does not quantify avoided emissions from alfalfa.
  - This calculator quantifies cumulative and annualized lifetime emissions rather than emissions for a single year.
- **Double Counting:** The inclusion of upstream and downstream impacts can lead to double counting of emissions (e.g., industrial process emission factors may account for emissions from building energy consumption), depending on the project and emission sources.
- Offsets: Refers to emissions that are avoided due to project activities (e.g., if landfill gas is collected and sold to replace natural gas). Offsets are not currently included as part of the quantification methodologies.
- Mitigation Quantification: The tool does not quantify potential GHG reductions achieved by user-selected measures. Users may quantify the impact of mitigation measures by using the calculator to run multiple scenarios and/or by using external resources.



# **Additional Resources**

## Resources

- Visit EQB's Engagement Website: <u>https://engage.eqb.state.mn.us/ghgcalculator</u>
  - **Climate Calculator**
  - Factsheet
- Climate Calculator • **Report and User Guide** (coming soon)
- EAW Process: https://www.eqb.state.m n.us/environmentalreview/about/environme ntal-assessmentworksheet-eaw-process

## ENVIRONMENTAL REVIEW PROGRAM **CLIMATE CALCULATOR**

## Background

Minnesota's Environmental Review Program provides decision makers and the public with an understanding of the impact a proposed project will have on the environment. Recognizing that climate change is an important environmental issue, the Environmental Quality Board (EQB) added two climate-related questions to the environmental assessment worksheet (EAW) form in 2022.

Local governments, businesses, and the public are seeking reliable tools to evaluate how climate change affects their communities, economies, and ways of life. In 2023, the EQB received legislative funding to develop a climate calculator tool to support implementation of the climate-focused revisions to the EAW form. That work is now being completed, and the climate calculator will be available July 1, 2025.

## Goal

The goal of developing a climate calculator was to make climate assessment consistent, effective, and efficient. The tool is designed to ensure accuracy and consistency of the climate information provided on the EAW form while reducing the time and cost for project proposers to provide information and state and local government agencies to assess applicable climate information.

A reliable method for estimating a project's potential greenhouse gas (GHG) emissions is key to successfully filling out an EAW. EQB received broad input that responsible governmental units (RGUs) want a well-vetted tool that uses Minnesota-and sector-specific data for completing EAWs.

The climate calculator tool is now available to facilitate the gathering of climate information within the EAW. The calculator provides additional accuracy, transparency, and consistency in answering EAW items 7 and 18 while reducing the time, cost, and uncertainty for government units and project proposers.

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What does it do?

Estimates the GHG emissions for

a project's lifetime. Actual

Helps users answer the EAW

Uses Minnesota-focused data.

Estimates GHG mitigation and

Allows users to adjust to fit their

requirement when filling out an EAW

individual project needs.

climate adaptation.

Using the calculator is not a

and is not a change for EAW

Who can use it?

Government Project Members of

decision makers proposers the public

expectations

climate questions (items 7 and

emissions will vary.

18).

## **CLIMATE CALCULATOR**

## FAOs

## What is the calculator's scope?

- Accounts for the construction and operation for the project's life
- Includes direct and indirect emissions.
- Includes adjustable project inputs for project specific results.
- Provides qualitative mitigation options.
- Provides information for qualitative climate resiliency.

## Does the calculator change the current EAW climate guidance?

No, the calculator has not changed the process for answering Item 7 and 18. The calculator is an optional tool to support those filling out an EAW and is designed to be an inclusive of Minnesota-based data for most project types.

## What tools can I use when filling out the EAW climate questions?

The EQB offers guidance on frequently used tools, but no specific tool is required. The RGU has discretion in the methods used to fill out the EAW. The RGU and project proposer should be comfortable with the reliability of the estimates and information provided in their EAW.

## Can I still use the calculator if I don't have all the project information?

Yes! Many questions have default values and Minnesota-based averages that can be used in place of projectspecific information. For inputs without defaults, a best estimate is a reasonable choice.

## Where can I find information about using the calculator?

We'll have a step-by-step user guide on EQB's website, recorded trainings, and ongoing support provided by EQB staff. Please reach out to Stephanie Aho (stephanie.aho@state.mn.us) or the EQB environmental review inbox (env.review@state.mn.us) if help is needed.

## Climate calculator = consistent, efficient, and effective EAWs

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# ENVIRONMENTAL REVIEW PROGRAM





- Wednesday, June 11 @ 1pm Central Will include Q&A and Calculator Demonstration
- Thursday, June 12 @ 12pm Central Will include Q&A and Calculator Demonstration

Visit the engagement website for meeting details: <u>https://engage.eqb.state.mn.us/ghgcalculator</u>

# **Questions?** Please reach out!

Stephanie Aho Stephanie.Aho@state.mn.us

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# Thank you!

