



eProjectBuilder

Using The ePB GHG Calculation Tool



New ePB GHG Calculation Tool: Schedule 4g

- New Schedule 4g worksheet in the ePB Excel-based data upload template
 - Enables comparison of estimated GHG reductions for different projects or scenarios
 - Automatically calculates the GHG emissions from each of the ECMs that are part of the ESPC
 - Automatically indicates whether emissions are Scope 1 (combusted on site - e.g. natural gas) or Scope 2 (combusted offsite, e.g., electricity generation)
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GHG Emissions Data Sources

- ePB GHG tool uses the same methodology to estimate emissions as the *Annual Energy Management Data Report* (version 13-1 for FY 2022 reporting)
 - <https://www.energy.gov/eere/femp/articles/annual-energy-management-data-report>
 - Reporting instrument used by top-tier Federal departments and agencies for reporting aggregated data for comprehensive reporting of energy use, costs, square footage, etc.
- The *Data Report* workbook converts energy consumption reported in native units to Btu and uses coefficients from EPA and other sources to estimate emissions of:
 - Carbon dioxide (CO₂), Global Warming Potential (GWP) = 1
 - Methane (CH₄), GWP = 25x = carbon dioxide equivalent (CO₂e)
 - Nitrous Oxide (N₂O), GWP = 298x = CO₂e (in kilograms or metric tons)
- Follows CEQ's *Federal Greenhouse Gas Accounting and Reporting Guidance*
 - https://www.sustainability.gov/pdfs/federal_ghg%20accounting_reporting_guidance.pdf
 - References EPA's GHG Emission Factors Hub (<https://www.epa.gov/climateleadership/ghg-emission-factors-hub>)
- Electricity factors in ePB tool are static (do not account for future grid decarbonization)
 - Emissions & Generation Resource Integrated Database (eGRID) (<https://www.epa.gov/egrid>)
 - ePB tools uses eGRID2020 baseload factors for regional electricity generation (released January 27, 2022)



Overview of Using the ePB GHG Tool: Schedule 4g

- Tool can be used with either the ePB calculating or non-calculating template
 - Calculating template: enter ECM-level information and receive more accurate ECM-specific GHG estimates
 - Non-calculating template: you may choose to enter project-level information only; the tool will provide project-level GHG estimates for one eGrid region
- Key template inputs required
 - ECM technology type and title (Schedule 2a)
 - Other fuel types if applicable (Escalation Rates Schedule)
 - Annual estimated energy savings by resource (Schedule 4)
 - eGrid Region (Schedule 4g – the GHG tool)



GHG Tool Inputs

- Required inputs for using the GHG tool
 - Escalation rates schedule: indicate “other” fuel types *if applicable*
 - Schedule 2a: enter each ECM technology category and description
 - Schedule 4: enter estimated annual resource savings for each ECM
 - Schedule 4g: Choose eGrid region for each ECM

ANNUAL DOLLAR SAVINGS ESCALATION RATES								
Performance Period (year)	Electric Energy	Electric Demand	Natural Gas	Other Savings Type 1: Other	Other Savings Type 2: Other	Water	O&M	Other Non-Energy Savings
Implementation start through first year								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

IMPORTANT INFORMATION:

(1) "Implementation start through first year" reflects cumulative escalation occurring during the length of the implementation period through the first year of savings. This may represent an annual escalation figure that is compounded or another formulation (e.g., actual forecasts from utility companies).

(2) All estimated cost savings numbers reported in Schedule 4 ("First year estimated cost savings by ECM") are assumed to have already incorporated the "Implementation start through first year" escalation rates reported above.

(3) Please select other savings types from dropdown menu provided above, if applicable.

ADDITIONAL NOTES:

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09262022

Annual Escalation Rates

Template Guide | Summary Schedule | Annual Escalation Rates | Sch1-Ann Cost Sav & Pymts



GHG Tool Inputs

- Required inputs for using the GHG tool
 - Escalation rates schedule: Indicate "other" fuel types if applicable
 - Schedule 2a: enter each ECM technology category and description – you do not need to enter ECM costs to use the tool**
 - Schedule 4: enter estimated annual resource savings for each ECM
 - Schedule 4g: Choose eGrid region for each ECM

SCHEDULE #2a								
IMPLEMENTATION PRICE BY ENERGY CONSERVATION MEASURE								
ECM - Technology Category*	ECM No.	Not Applicable	ECM Description - Title*	ECM Size	ECM Coverage (%)	Location/Facility ID	M&V Expense (\$)	(a) Cost of Good Services (E Constructi
Project Development Price (PDP)-Technical Energy Audit and Project Proposal								

Complete for each ECM

Complete for each ECM



GHG Tool Inputs

- Required inputs for using the GHG tool
 - Escalation rates schedule:
Indicate “other” fuel types if applicable
 - **Schedule 2a: enter each ECM technology category and description**
 - **Schedule 4: enter estimated annual resource savings for each ECM***
 - Schedule 4g: Choose eGrid region for each ECM

ECM			b1	b2	c1	c2	d1	d2	e1a	e2a	e1b	e2b	f = 0.003412*b1 + d1 + e1a + e1b
ECM Number	Short Description	Location/Facility ID	Electric energy savings (kWh/yr)	Electric energy savings (\$/yr)	Electric demand savings (kW/mo)	Electric demand savings (\$/yr)	Natural gas savings (MMBtu/yr)	Natural gas savings (\$/yr)	Other Savings Type 1: Other (MMBtu/yr)	Other Savings Type 1: Other (\$/yr)	Other Savings Type 2: Other (MMBtu/yr)	Other Savings Type 2: Other (\$/yr)	Total energy savings (MMBtu/yr)
Project Development Price (PDP)-Technical Energy Audit and Project Proposal													

* **NOTE: You can also calculate project-level GHG savings only by either entering your project-level savings in an ECM row on Schedule 4, or by using the non-calculating template and entering just the project-level savings in the “Totals” row at the bottom of Schedule 4**



GHG Tool Inputs

- Required inputs for using the GHG tool
 - Escalation rates schedule: Indicate “other” fuel types if applicable
 - **Schedule 2a: enter each ECM technology category and description**
 - Schedule 4: enter estimated annual resource savings for each ECM
 - **Schedule 4g: Choose eGrid region for each ECM**
 - **Optional: customize emissions factors for other savings types**

SCHEDULE #4g GHG EMISSIONS BY ENERGY CONSERVATION MEASURE														
ECM		b1	d1		e1a		e1b							
ECM Number	Short Description	eGrid State Region (Add a drop down showing the regions)	Electric energy savings (kWh/yr)	kg CO2e/MMBtu	Electric GHG (kg CO2e)	Natural gas savings (MMBtu/yr)	kg CO2e/MMBtu	Natural gas GHG (kg CO2e)	Other Savings Type 1: Other (MMBtu/yr)	kg CO2e/MMBtu	Other Savings Type 1: Other (kg CO2e)	Other Savings Type 2: Other (MMBtu/yr)	kg CO2e/MMBtu	Other Savings Type 2: Other (kg C)
	Project Development Price (PDP)-Technical Energy Audit and Project Proposal	Select Region	0	110	0	0	53	0	0	0	0	0	0	0
		Select Region												
		ASCC Alaska Grid												
		ASCC Miscellaneous												
		WECC Southwest												
		WECC California												
		ERCOT All												
		FRCC All												
		HICC Miscellaneous												
		HICC Oahu												
		MRO East												
		MRO West												
		NPCC New England												
		Select Region	0	110	0	0	53	0	0	0	0	0	0	0
		Select Region	0	110	0	0	53	0	0	0	0	0	0	0
		Select Region	0	110	0	0	53	0	0	0	0	0	0	0



ePB Template – GHG Tool – Schedule/Tab 4g

Grey cells are pre-populated based on the savings information entered on Schedule 4

Choose eGrid State Region to determine GHG emissions for electricity

CO₂(e)- kg/MMBtu includes CO₂, CH₄ and N₂O

Flexibility to enter custom CO₂(e)-kg/MMBtu for other resources

Calculates annual Scope 1, Scope 2 and total CO₂e reductions

SCHEDULE #4g GHG EMISSIONS BY ENERGY CONSERVATION MEASURE																				
ECM			b1		d1			e1a		e1b		f = 0.003412*b1+d1+e1a+e1b	h							
ECM Number	Short Description	eGrid State Region (Add a drop down showing the regions)	Electric energy savings (kWh/yr)	kg CO2e/Mmbtu	Electric GHG (kg CO2e)	Natural gas savings (MMBtu/yr)	kg CO2e/MMBtu	Natural gas GHG (kg CO2e)	Other Savings Type 1: Other (MMBtu/yr)	kg CO2e/MMBtu	Other Savings Type 1: Other (kg CO2e)	Other Savings Type 2: Other (MMBtu/yr)	kg CO2e/MMBtu	Other Savings Type 2: Other (kg CO2e)	Total energy savings (MMBtu/yr)	Water savings (Kgal/yr)	Annual Scope 1 CO2e Reductions (kg CO2e)	Annual Scope 2 CO2e Reductions (kg CO2e)	Annual Total CO2e Reductions (kg CO2e)	
Project Development Price (PDP)-Technical Energy Audit and Project Proposal																				
		Select Region	0	110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		ASCC Alaska Grid		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		ASCC Miscellaneous		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		WECC Southwest		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		WECC California		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		ERCOT All		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		FRCC All		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		HICC Miscellaneous		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	
		Select Region		110	0	0	53	0	0	0	0	0	0	0	-	0	0	0	0	

- Select Region
- ASCC Alaska Grid
- ASCC Miscellaneous
- WECC Southwest
- WECC California
- ERCOT All
- FRCC All
- HICC Miscellaneous