August 2022

Exercise #1

CLEER TOOL Exercise: Competitive Renewable Energy Auction

Instructions: The purpose of this exercise is to familiarize users with the CLEER tool by estimating the potential greenhouse gas (GHG) reductions of a renewable power project over the equipment lifetime. For this exercise, users should do the following:

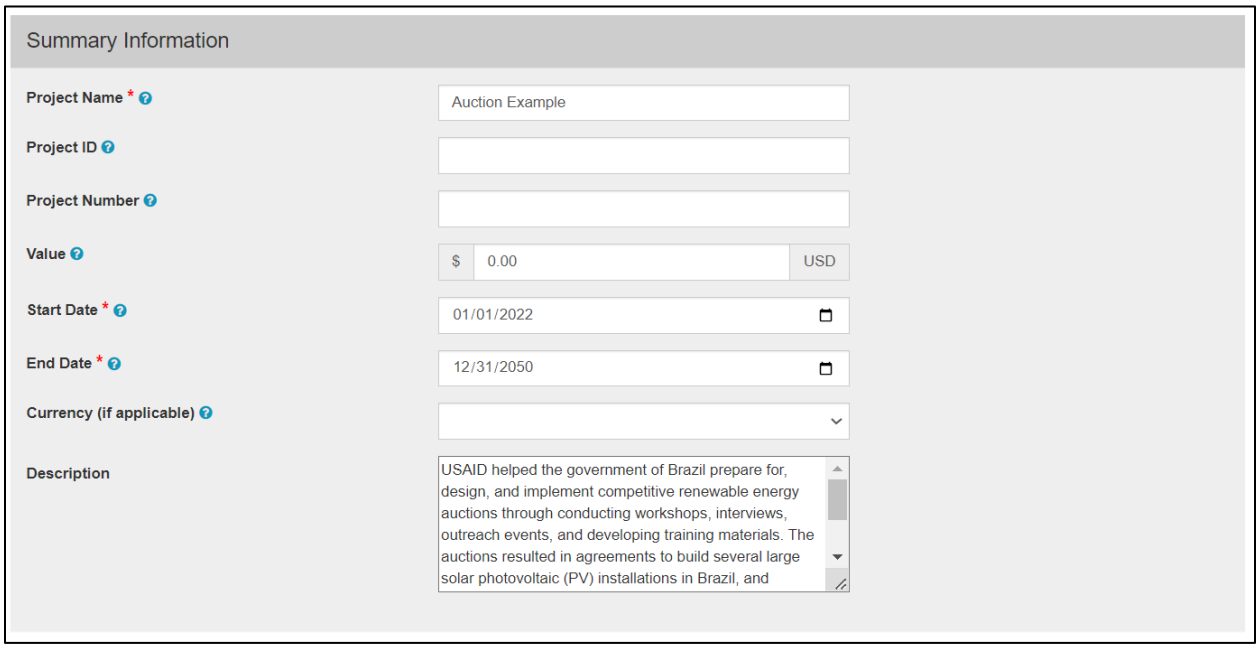
1. Read the project description.
2. Create a "Project" and "Action" in the CLEER Tool, following 7 steps below.
3. Compare your estimate of emissions avoided/reduced with the value at the end of this exercise.

Project Description: Starting in 2022, USAID helped the government of Brazil prepare for, design, and implement competitive renewable energy auctions through conducting workshops, interviews, outreach events, and developing training materials. The auctions resulted in agreements to build several large solar photovoltaic (PV) installations in Brazil, and USAID/Brazil is looking to estimate the projected GHG emissions avoided for the operational lifetime of the installations to report on USAID clean energy indicator EG.12-7.[1]

The project details are as follows: 2,000 MW of new solar PV that connects to the grid. The PV installations will be operational in 2023. The exact electricity generated, capacity factor, and grid emission factor are unknown.

Create Your Practice Project and Action

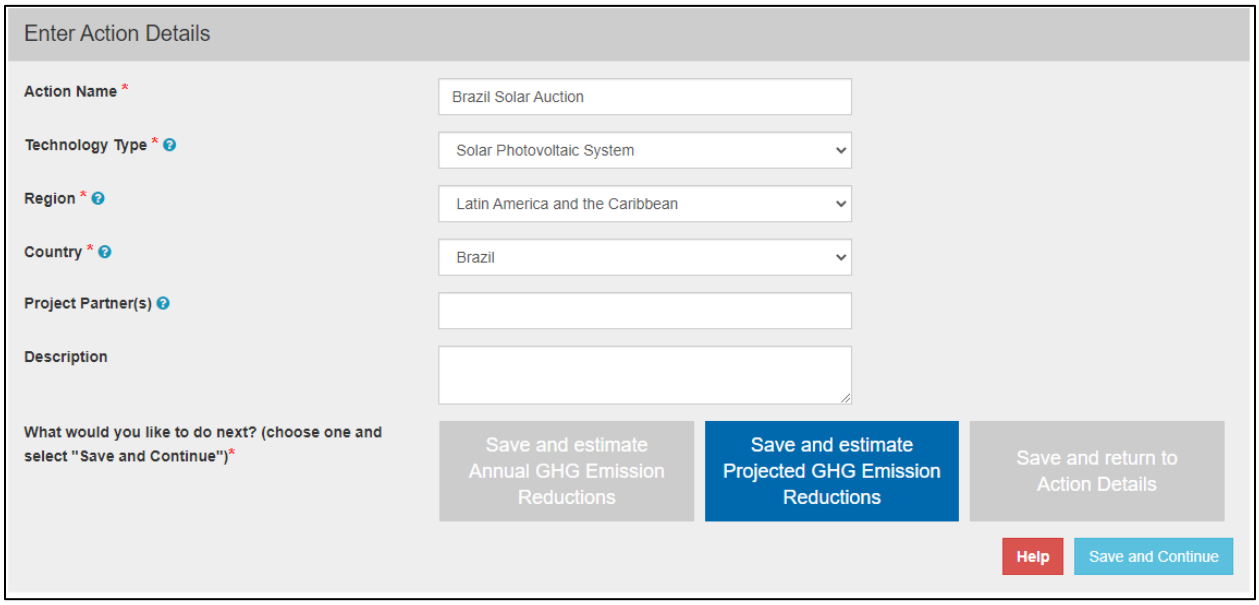
STEP 1: On your dashboard, navigate to "**My Projects**", and select + Create Project to create a new project.
Fill in the Project information and click Save and View Summary to navigate to the Project dashboard.



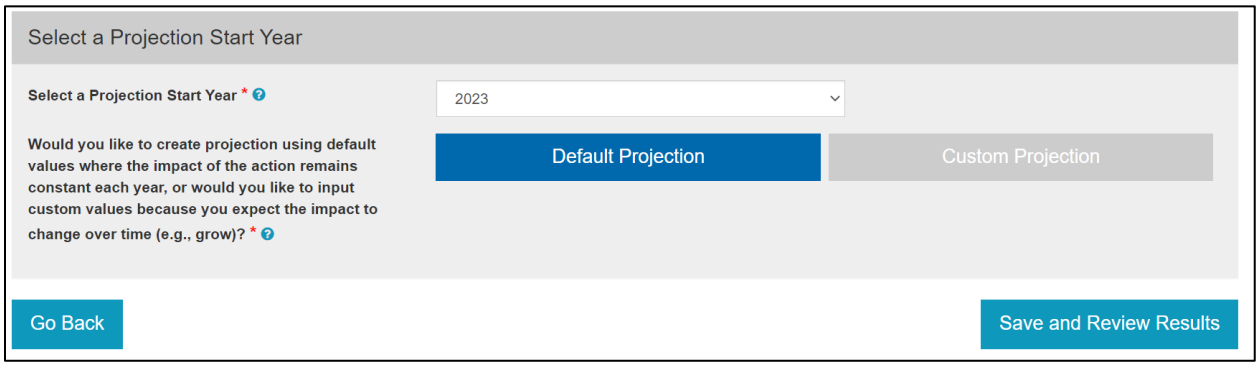
[1] Projected greenhouse gas emissions reduced or avoided from adopted laws, policies, regulations, or technologies related to clean energy as supported by USG assistance.

STEP 2: On your project dashboard, navigate to the "**Actions**" button and select **+ Add Action**

STEP 3: On the **Create an Action** page, start by entering the name of the Action (example below), technology type, and the geographic details. Choose "**Save and estimate Projected GHG Emission Reductions**", and then click "**Save and Continue**" to navigate to the data input page.

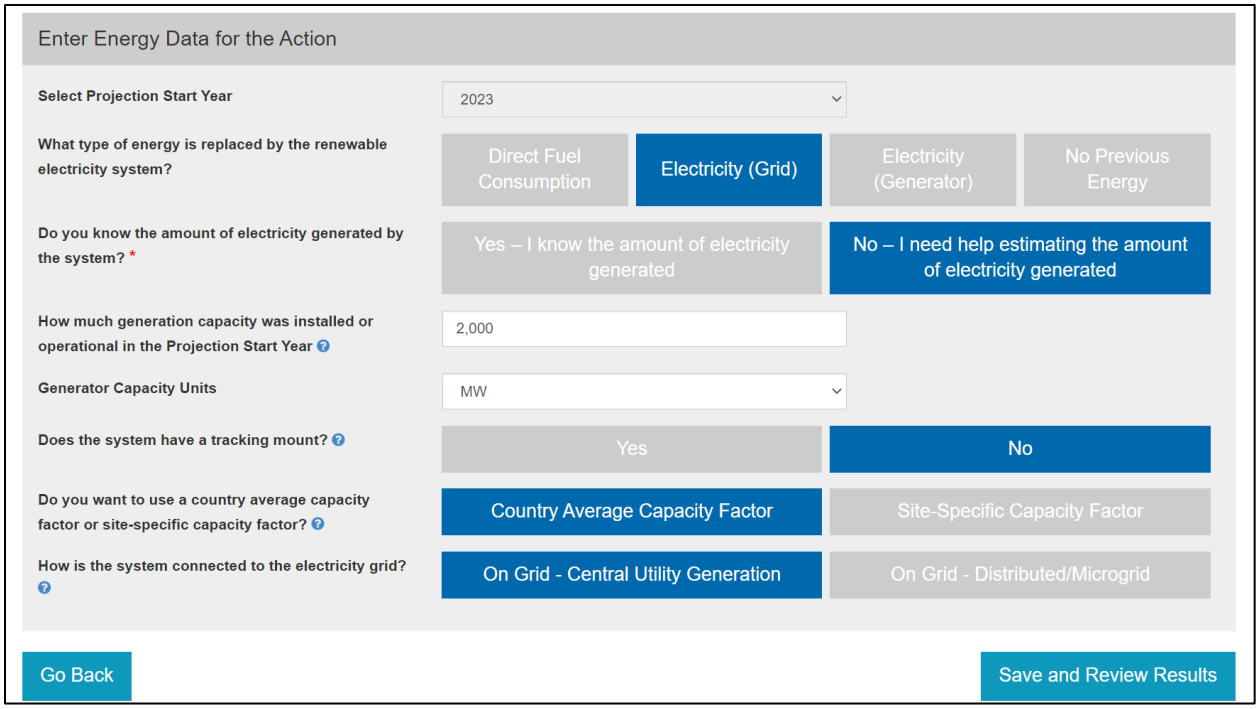


STEP 4: On the first **Data Input** page, enter the projection start year. You also have the option to make specific changes in the project's assumptions by selecting "Custom Projection." To continue with the default factors and assumptions, select "Default Projection," and then click **Save and Review Results** to navigate to the next page.



Fill in Your Data Input Responses

STEP 5: On the second **Data Input** page, enter the details of the project using the ones provided below to see how to estimate GHG emission reductions for this solar project. Note that many of the questions will not appear until you have answered the previous question.



At the bottom of the page, select Save and Review Results to review your data inputs and results.

Check Your Results!

STEP 6: On the Review Inputs and Results page, at the bottom of the **Calculator Summary** box, you will see the GHG reduction estimate for year 1 of this action along with the energy saved or generated highlighted in green. Select Review Projection Summary to view a chart and table projecting the reductions to 2050. Over time, emission reductions decrease due to the assumption that the panels degrade slightly each year.

Click Download to export results for each year to Excel. From this spreadsheet, you can sum the GHGs reduced annually over the required number of years to produce the result for EG.12-7.

Summary of Data Input

What type of energy is replaced by the renewable electricity system?	Electricity (Grid)
How much generation capacity was installed or operational in the Reporting Year in MW?	2,000.00
Do you know the amount of electricity generated by the system?	No – I need help estimating the amount of electricity generated or fuel replaced
How is the system connected to the electricity grid?	On Grid - Central Utility Generation
Does the system have a tracking mount?	No
Do you want to use a country average capacity factor or site-specific capacity factor?	Country average capacity factor

Calculator Summary

	Default Values	Alternate Values
Emission Factor – (gCO_2e/kWh) About Factors	298.10	
Line Loss Savings – %:	0.00	
Capacity Factor – %:	15.95	
Operational Days Per Year – (Days):	365	

Recalculate

Action Emissions Reduction Estimate: 832,793.75 tCO_2e
Energy Saved or Generated: 3,068,246,895.24 kWh

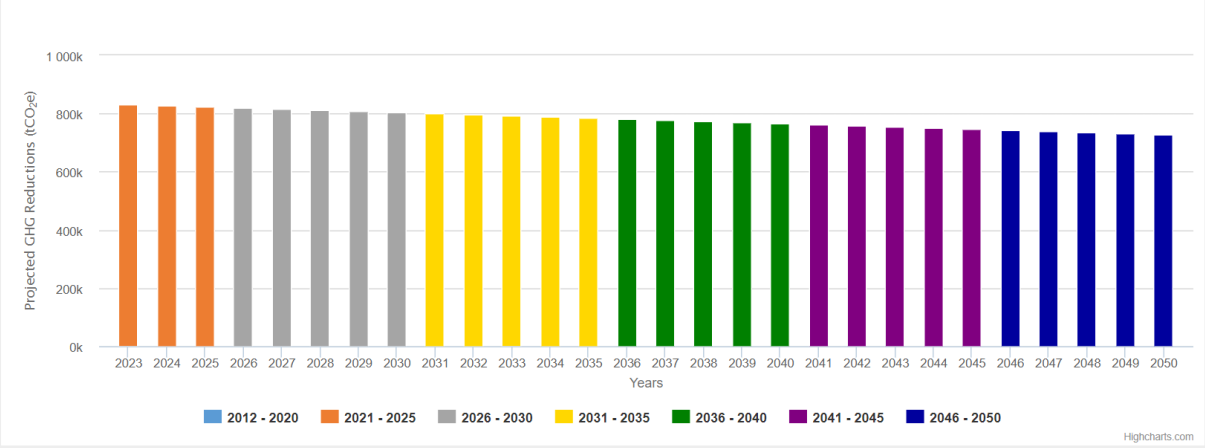
Data Assumptions

Document all assumptions, data sources, or comments regarding the action or any of the data used for the estimation.

Go Back

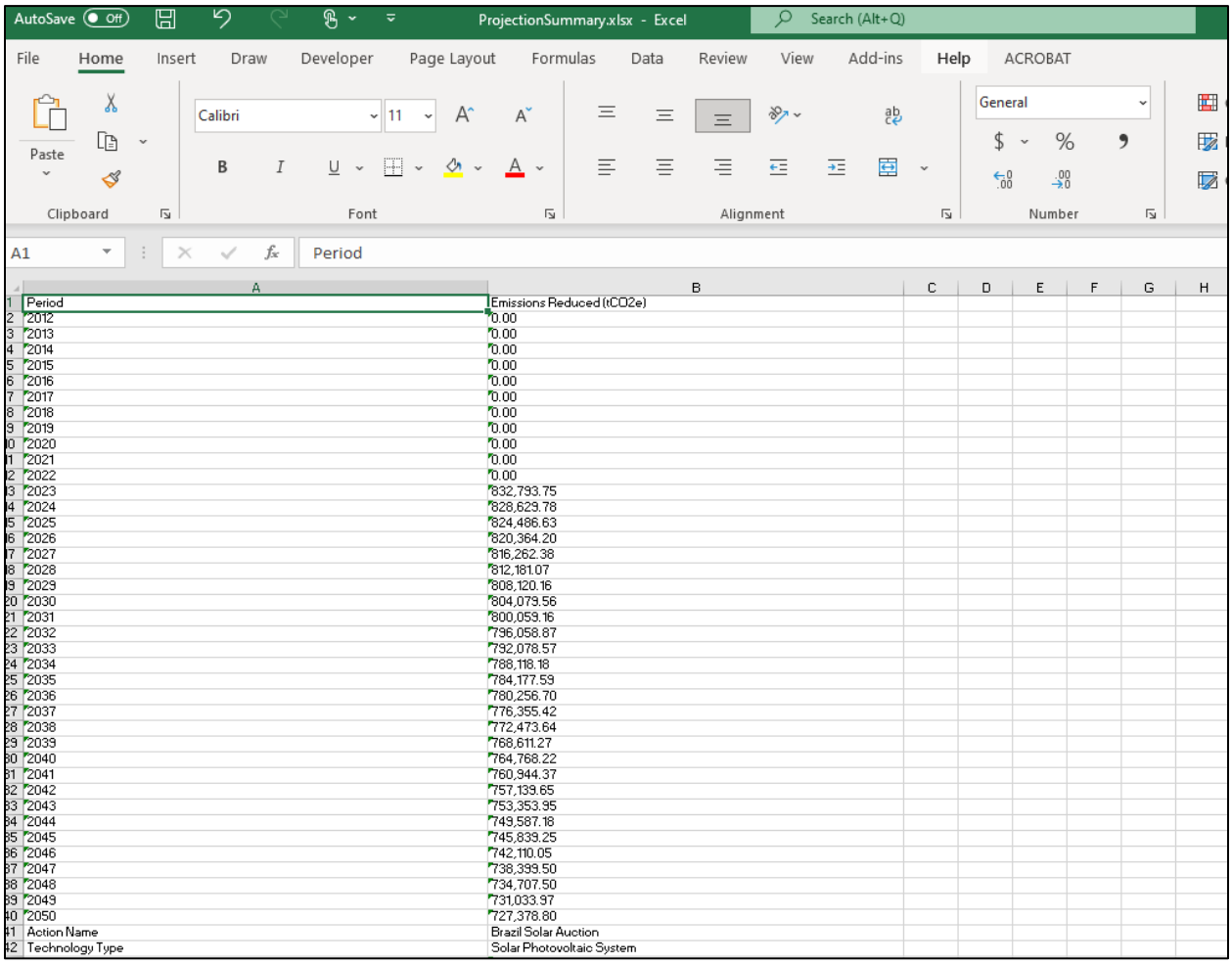
Review Projection Summary

Action Projected GHG Reductions



Projected GHG Emission Reductions

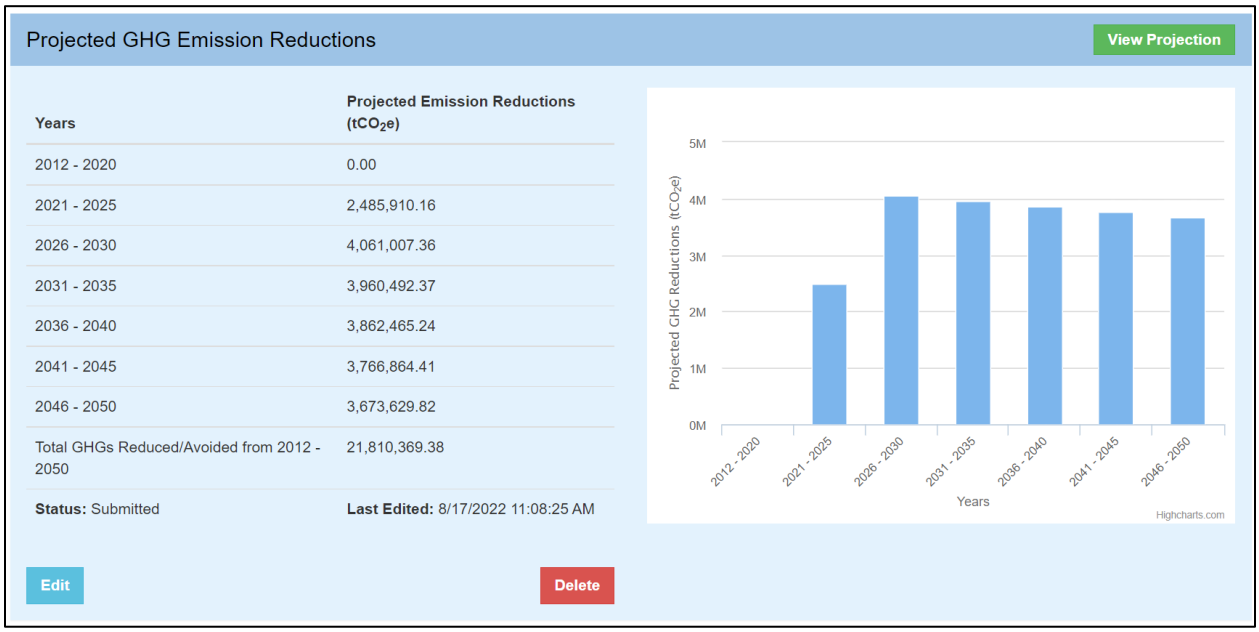
Period	Emissions Reductions (tCO_2e)
2012 - 2020	0.00
2021 - 2025	2,485,910.16
2026 - 2030	4,061,007.36
2031 - 2035	3,960,492.37
2036 - 2040	3,862,465.24
2041 - 2045	3,766,864.41
2046 - 2050	3,673,629.82
Total GHGs Reduced/Avoided from - 2050	**21,810,369.38**



	A	B
1	Period	Emissions Reduced (tCO2e)
2	2012	0.00
3	2013	0.00
4	2014	0.00
5	2015	0.00
6	2016	0.00
7	2017	0.00
8	2018	0.00
9	2019	0.00
10	2020	0.00
11	2021	0.00
12	2022	0.00
13	2023	832,793.75
14	2024	828,629.78
15	2025	824,486.63
16	2026	820,364.20
17	2027	816,262.38
18	2028	812,181.07
19	2029	808,120.16
20	2030	804,079.56
21	2031	800,059.16
22	2032	796,058.87
23	2033	792,078.57
24	2034	788,118.18
25	2035	784,177.59
26	2036	780,256.70
27	2037	776,355.42
28	2038	772,473.64
29	2039	768,611.27
30	2040	764,768.22
31	2041	760,944.37
32	2042	757,139.65
33	2043	753,353.95
34	2044	749,587.18
35	2045	745,839.25
36	2046	742,110.05
37	2047	738,399.50
38	2048	734,707.50
39	2049	731,033.97
40	2050	727,378.80
41	Action Name	Brazil Solar Auction
42	Technology Type	Solar Photovoltaic System

Finalize and Report Action Results

STEP 7: After finalizing the results, navigate to your **Action Home** by selecting "**Submit Projections for Approval**" or clicking on the Action name.



Additional Materials

For more information on CLEER and its capabilities, please visit the Support and Resources page. This page provides a user guide, the CLEER Protocol, a CLEER factsheet, Excel calculators, and more.