

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Inverter Group

GADS Solar Training - Module 4

May 2024

RELIABILITY | RESILIENCE | SECURITY

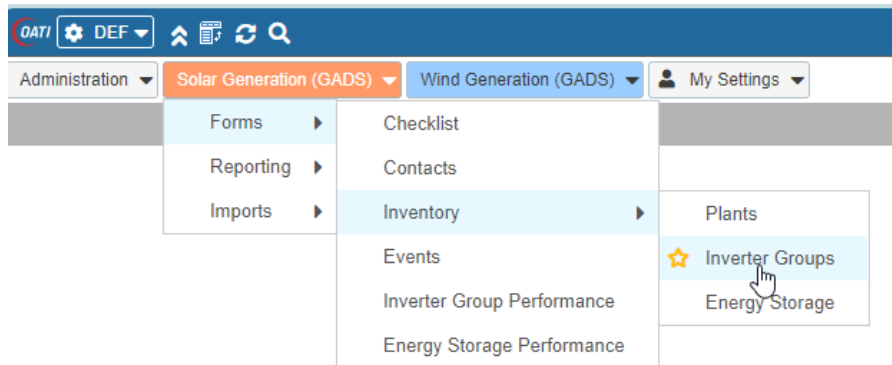


- Concepts
- Add Inverter Group
- Update
- Validations
- Export, and reimport
- Subgroup Import (Excel)
 - Append, Update, Full Replace

- All graphics (screen shots) in this presentation are courtesy of Open Access Technology International (OATI), Inc.

Inverter Group – User Interface

- Login to the NERC GADS OATI Wind and Solar Portal
- Click on Solar Generation (GADS)
- Hover over Forms and Inventory, then click on Inverter Groups



- A list of inverter groups (if any) will appear

Administration | Solar Generation (GADS) | Wind Generation (GADS) | My Settings

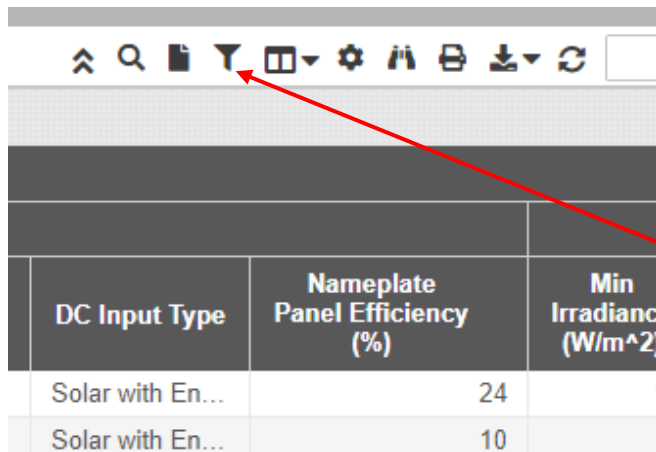
Inverter Groups

Inverter Groups

Filtered By: Company: NERC test (NCR99999 | NCR)

Company			Plant		Gene
Company Name	NERC ID	Region	Plant ID	Plant Name	Inverter Group ID
NERC test	NCR99999	OTHER	1000000	12345678901234567...	2000000
					2000001

- You can edit the inverter group information by clicking on an inverter group or you can create a new inverter group
- You may need to filter (top right of screen) for a certain company before adding an inverter group

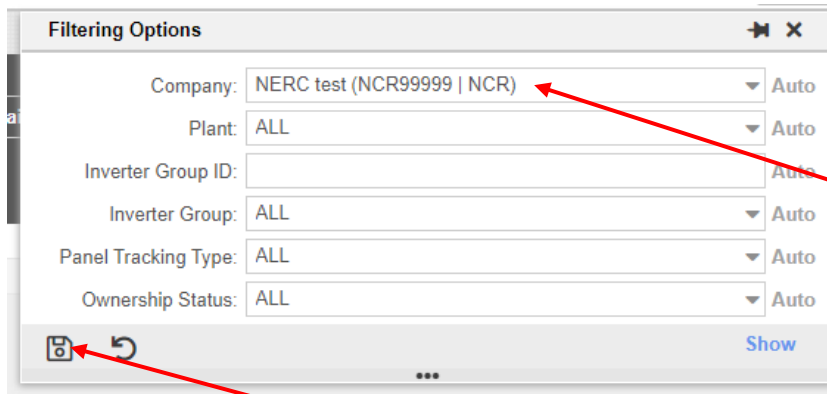


The screenshot shows a web application interface with a toolbar at the top containing various icons. A red arrow points to the filter icon (a funnel) in the toolbar. Below the toolbar is a table with the following data:

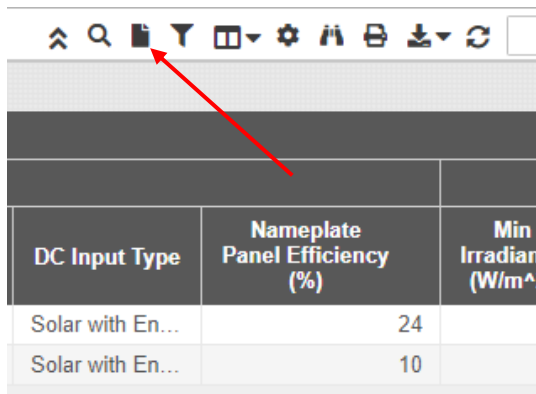
DC Input Type	Nameplate Panel Efficiency (%)	Min Irradiance (W/m ²)
Solar with En...	24	1
Solar with En...	10	

- Click the filter icon to select a company

- Select a company from the filter and click the floppy disk icon to filter



- Select the new icon to create a new inverter group



- The following screen will appear
- Let's look closer at each section

Inverter Groups

Entity **Data Reporter**

NERC ID: NCR99999 Name: Leeth DePriest
Company: NERC test Email: leeth.depriest@nerc.net
Region: Non North America Phone Number:
Submission Date: 03/18/2024

Inverter Group

Plant ID: Commissioning Date:
Plant Name: Inverter Ownership Status:
Inverter Group ID: Effective Date:
Inverter Group Name: Last Updated:

Inverter Group Capacity

Total Number of Inverters:
Single Inverter System Capacity:
Installed Capacity:

Inverter Details

Inverter Manufacturer: DC Input Type:
Inverter Model: DC to AC Capacity Ratio:
Single Inverter AC Nameplate:

Solar Panel Details

Nameplate Panel Efficiency: Minimal Operating Temperature:
Panel Tracking: Maximum Operating Temperature:
Panel Tilt Angle: Temperature Coefficient:
Stowing Wind Speed: Minimum Irradiance (W/m²):

SCADA Info

SCADA Manufacturer: SCADA Model:

Reporting Periods

2024 **Default** Reporting Status:
 2023
 2022
 2021
 Default
 Everything

- The entity (company) data is filled in because the company has already been created

Entity	Data Reporter
NERC ID: NCR99997	Name: Leeth DePriest
Company: NERC 3 Test	Email: leeth.depriest@nerc.net
Region: Other	Phone Number:
	Submission Date: 03/18/2024

- This part of the screen is for inverter group information entry

The screenshot shows a form titled "Inverter Group" with the following fields and callouts:

- Plant ID:** A dropdown menu with "Please select one..." and a red box labeled "1" around the dropdown arrow.
- Plant Name:** A dropdown menu with "Please select one..." and a red box labeled "2" around the dropdown arrow.
- Inverter Group ID:** A text input field.
- Inverter Group Name:** A text input field with a red box labeled "3" around the field.
- Commissioning Date:** A date picker field with a red box labeled "4" around the input area.
- Inverter Ownership Status:** A dropdown menu with "ID Request" selected and a red box labeled "5" around the dropdown arrow.
- Effective Date:** A date picker field with a red box labeled "6" around the input area.
- Last Updated:** A text input field.

1. Select the Plant ID from the picklist or select the plant name from the picklist
2. Enter the inverter group name
3. Enter the commissioning date
4. Select the ownership status from the picklist - Select **ID Request** for a new inverter group
5. Enter the effective date as the commissioning date of the new inverter group
 - For updates to an existing inverter group, enter the date the change became effective

- This part of the screen is for inverter group capacity entry

Inverter Group Capacity

Total Number of Inverters: * 1

Single Inverter System Capacity: * 2

Installed Capacity: *

1. Enter the number of physical inverters in the inverter group
2. Enter the system rating of a single inverter. This includes temperature setpoints and other inverter limits as the site is set up.
 - The installed capacity will be calculated

- This part of the screen is for inverter details entry

Inverter Details

Inverter Manufacturer:* 1

Inverter Model:* 2

Single Inverter AC Nameplate:* 3

DC Input Type:* 4

DC to AC Capacity Ratio:* 5

1. Select the inverter manufacturer from the picklist
2. Enter the inverter model for inverters in this group
3. Enter the AC nameplate capacity assigned to a single inverter in the inverter group by the manufacturer
4. Select the DC Input Type for the inverter group from the picklist
5. Enter the average DC to AC capacity for individual inverters in the group

- This part of the screen is for solar panel detail entry

Solar Panel Details

Nameplate Panel Efficiency: * 1

Panel Tracking: * Please select one... 2

Panel Tilt Angle: * 3

Stowing Wind Speed: * 4

Minimal Operating Temperature: * 5

Maximum Operating Temperature: * 6

Temperature Coefficient: * 7

Minimum Irradiance (W/m²): * 8

1. Enter the average nameplate efficiency of all the panels in the inverter group
2. Select the panel tracking type from the picklist
3. Enter the panel tilt angle in whole degrees for fixed or single axis panels
4. Enter the wind speed at which the positioning mechanism sets the panel to a safe position. Not required for fixed panels.
5. Enter the manufacturer's minimum operating temperature in degrees Celsius (C)
6. Enter the manufacturer's maximum operating temperature in degrees Celsius (C)
7. Enter the temperature coefficient. This is the percent temperature output adjustment from the manufacturer's standard condition panel output in %/degree C.
8. Enter the minimum irradiance that will cause a single inverter to start producing

- This part of the screen is for SCADA information entry

SCADA Info

SCADA Manufacturer: * 1

SCADA Model: * 2

1. Select the SCADA manufacturer from the picklist
2. Enter the model of the SCADA system

- This part of the screen is for Reporting Period data entry

Reporting Periods

2024	— Default	Reporting Status: Please select one... 1
2023		
2022		
2021		
Default		
Everything		

1. Select the Reporting Status from the picklist
 - Press the save button (floppy disk icon) on the bottom left of screen when all information has been entered

Inverter Group – Excel Template

Inverter Group Inventory Design Data

Inverter			Commercial	Number of Inverters	Single Inverter	Single Inverter	
Entity ID	Plant ID	Group ID	Inverter Group Name	Date	for Inverter Group	System Capacity	AC Nameplate
1	2	3	4	5	6	7	8

- Remember the pop-up windows provide helpful information

1. Enter the company NCR (NERC Compliance Registry) number or voluntary reporting ID (Entity ID)
2. Enter the plant ID assigned by the GADS Solar application.
3. Enter the inverter group ID assigned by the GADS Solar application. Leave blank for new inverter group.
4. Enter the inverter group name. This will not be assigned by NERC or the GADS Solar application.
5. Enter the date the inverter group was commissioned (mm/dd/yyyy)
6. Enter the number of physical inverters in the inverter group
7. Enter the system rating of a single inverter. This includes temperature setpoints and other inverter limits as the site is set up.
8. Enter the AC nameplate capacity assigned to a single inverter in the inverter group by the manufacturer

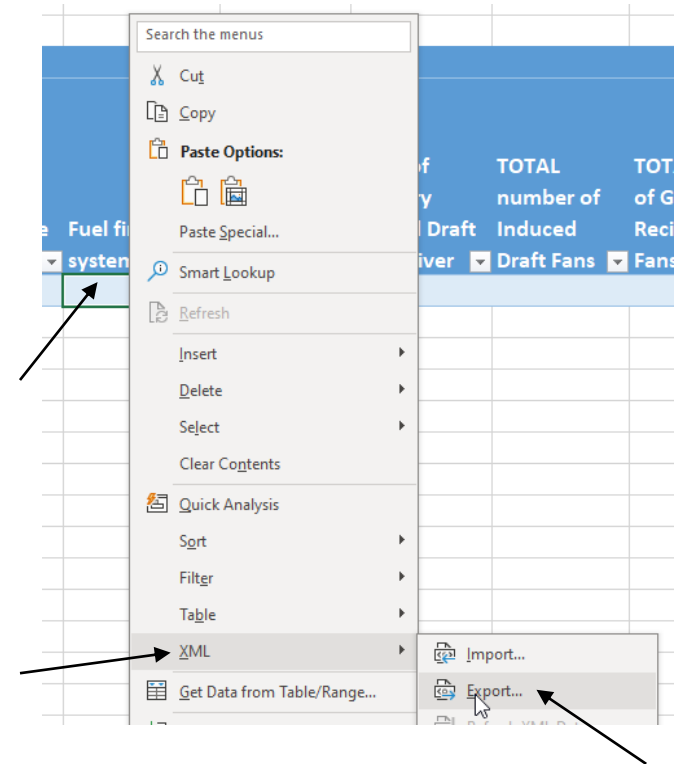
Inverter	SCADA	DC Input	Aggregate DC to AC	Panel Tracking	Panel Tilt	Minimum		
Manufacturer ▾	Inverter Model ▾	manufacturer ▾	SCADA Model ▾	Type ▾	Field Capacity Ratio ▾	Type ▾	Angle ▾	Irradiance ▾
1	2	3	4	5	6	7	8	9

- Remember the pop-up windows provide helpful information
1. Select the inverter manufacturer from the picklist. See table D.7 in the GADS Solar Data Reporting Instructions.
 2. Enter the inverter model for inverters in this group
 3. Select the SCADA manufacturer from the picklist
 4. Enter the model of the SCADA system
 5. Select the DC Input Type for the inverter group from the picklist
 6. Enter the average DC to AC capacity for individual inverters in the group
 7. Select the panel tracking type from the picklist
 8. Enter the panel tilt angle in whole degrees for fixed or single axis panels
 9. Enter the minimum irradiance that will cause a single inverter to start producing

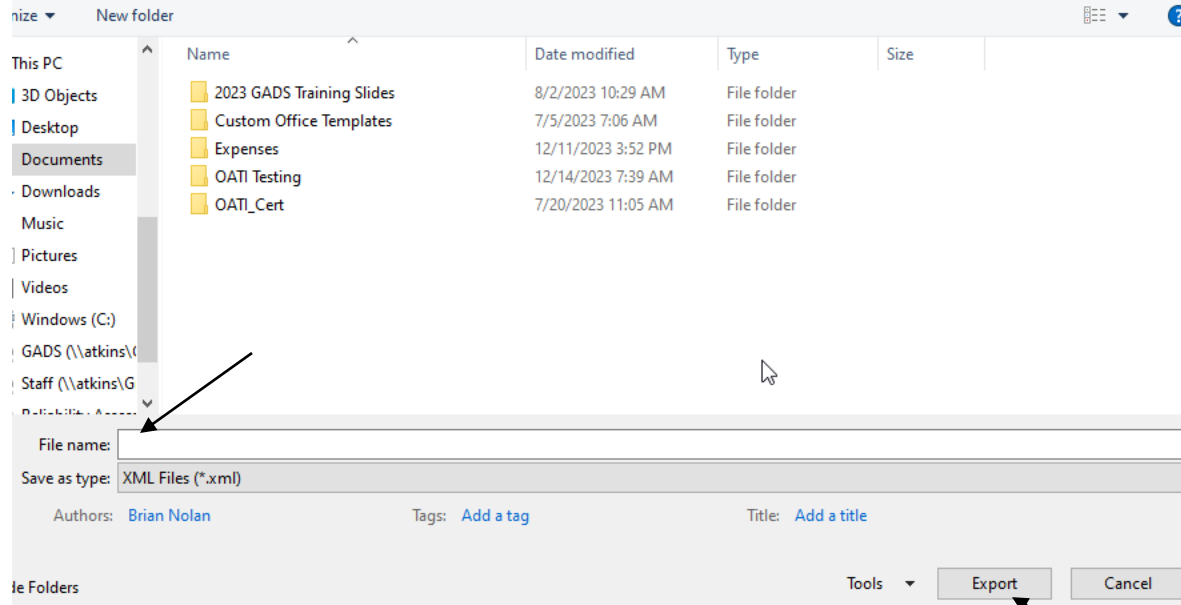
Stowing Wind Speed	Minimum Operating Temperature	Maximum Operating Temperature	Temperature Coefficient	Nameplate Panel Efficiency	Inverter Ownership Status	Effective Date
1	2	3	4	5	6	7

- Remember the pop-up windows provide helpful information
- Enter the wind speed at which the positioning mechanism sets the panel to a safe position. Not required for fixed panels.
 - Enter the manufacturer's minimum operating temperature in degrees Celsius (C)
 - Enter the manufacturer's maximum operating temperature in degrees Celsius (C)
 - Enter the temperature coefficient. This is the percent temperature output adjustment from the manufacturer's standard condition panel output in %/degree C.
 - Enter the average nameplate efficiency of all the panels in the inverter group
 - Select the inverter ownership status from the picklist
 - Enter the effective date of the inverter ownership status. Leave blank for new inverter groups.

- You are now ready to create XML from the Excel file in order to import to the OATI application
- Save your Excel template to a place of your choosing
- Next create the XML file for the Inverter Group configuration data
 - Make sure that you are on the “Group” worksheet tab
 - Right click a cell somewhere on a row of data on the “Group” worksheet
 - Select XML from the popup menu
 - Select export from the popup menu

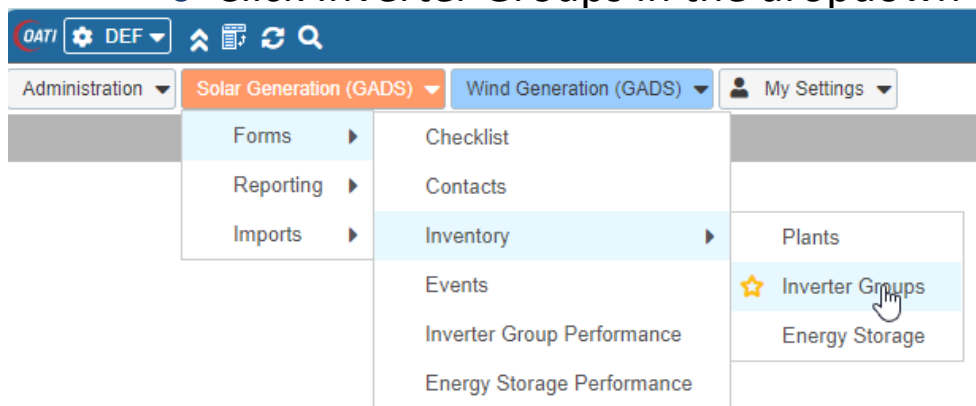


- Name the file, select where you want the file saved, and press the export button



- Make note of your file name and where you saved it

- Next import the XML file into the OATI system
 - Log into the OATI Solar GADS system
 - Navigate to the appropriate menu item in the Solar interface
 - Click on SOLAR Generation (GADS) on the top menu ribbon
 - Click Forms and then Inventory in the dropdown menu
 - Click Inverter Groups in the dropdown menu



The screenshot shows the 'Inverter Groups' table in the OATI Solar GADS interface. The table is filtered by 'Company: NERC Test 5ish or so (NCR9995 | NCR9995 _ WECC)'. The table has columns for 'Company Name', 'NERC ID', 'Region', 'Plant ID', 'Plant Name', and 'Inverter Group ID'. There is one entry in the table.

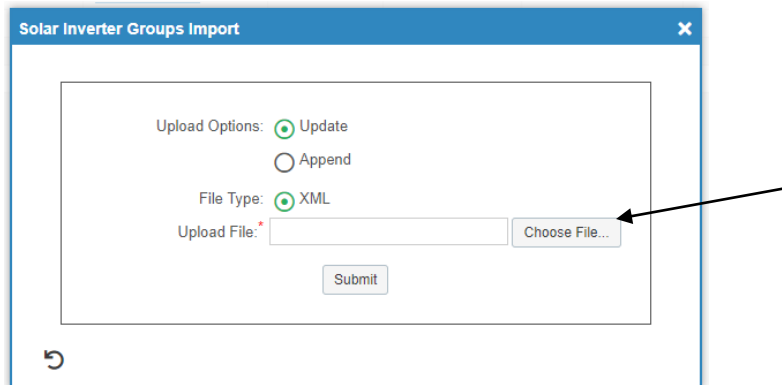
Company			Plant		Gener
Company Name	NERC ID	Region	Plant ID	Plant Name	Inverter Group ID
NERC Test 5ish or so	NCR9995	WECC	1000008	Leeth Test 1	2000010

- A list of previously created inverter groups (if any) will appear

- An Import button will appear on the bottom left of the screen

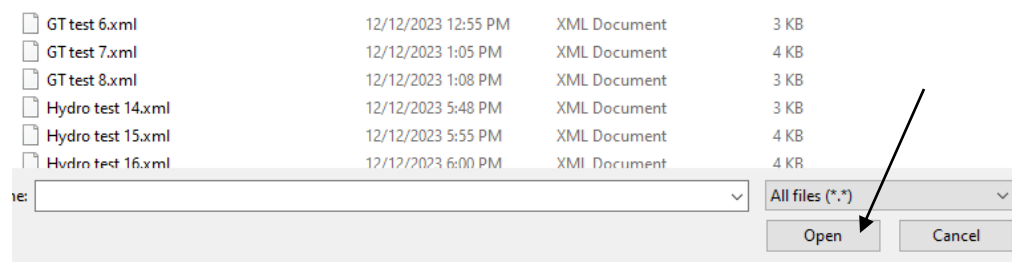


- Press the import button and the popup below will appear

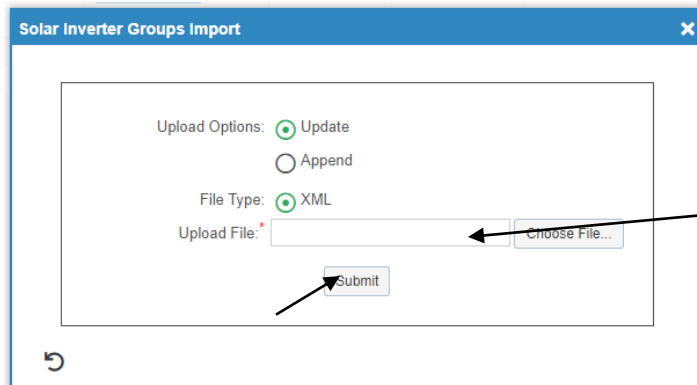


- Click the “Choose File” button on the Solar Inverter Groups Import popup and navigate to where you saved your XML file

- Select the file you just created and press the “Open” button



- Click the submit button on the Solar Inverter Groups Import popup shown below



File chosen in previous step will appear here

- If you correctly entered the data in your spreadsheet, your Inverter Group configuration data should load without issue and is complete.

A stylized map of North America is centered on the page. The map is divided into three horizontal sections by a prominent blue band. The top section, covering Canada, is a light purple color. The middle section, covering the United States, is the same dark blue as the band. The bottom section, covering Mexico, is a light grey color. The text "Questions and Answers" is overlaid on the blue band in a large, bold, black font.

Questions and Answers