NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Inverter Group Performance

GADS Solar Training - Module 7

May 2024

RELIABILITY | RESILIENCE | SECURITY




Inverter Group Performance

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

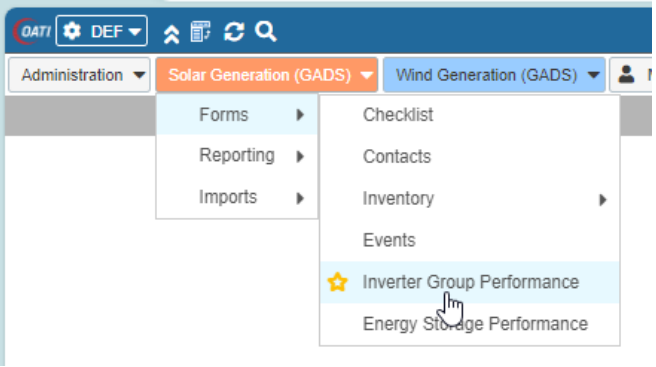
Acknowledgement

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

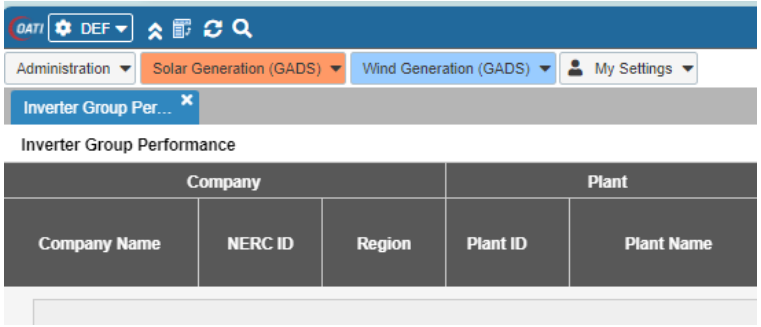
Inverter Group Performance – User Interface

Adding Inverter Group Performance

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

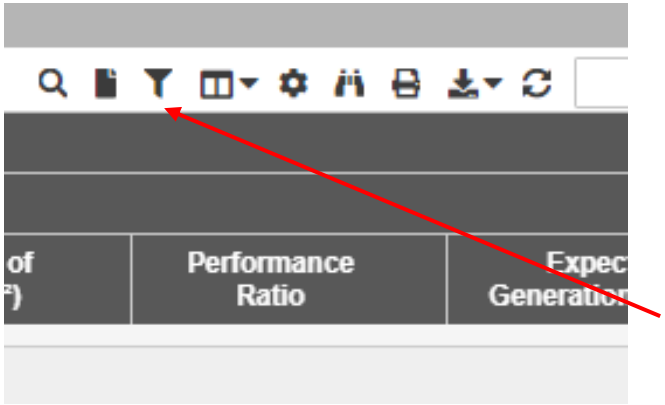


- A list of Inverter Group performance records (if any) will appear



Adding Inverter Group Performance

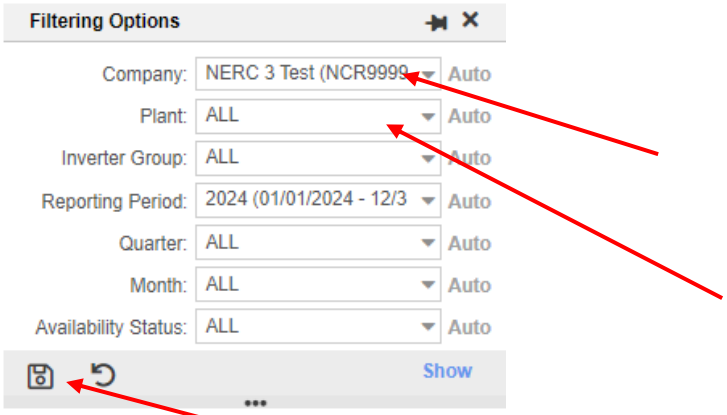
- You can edit the existing inverter group performance information by clicking on an inverter group performance record or you can create a new record
- You may need to filter (top right of screen) for a certain company and plant before adding a new event



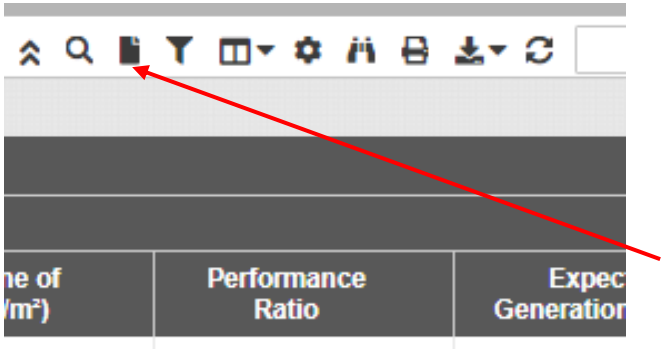
- Click the filter icon to select a company and plant

Adding Inverter Group Performance

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

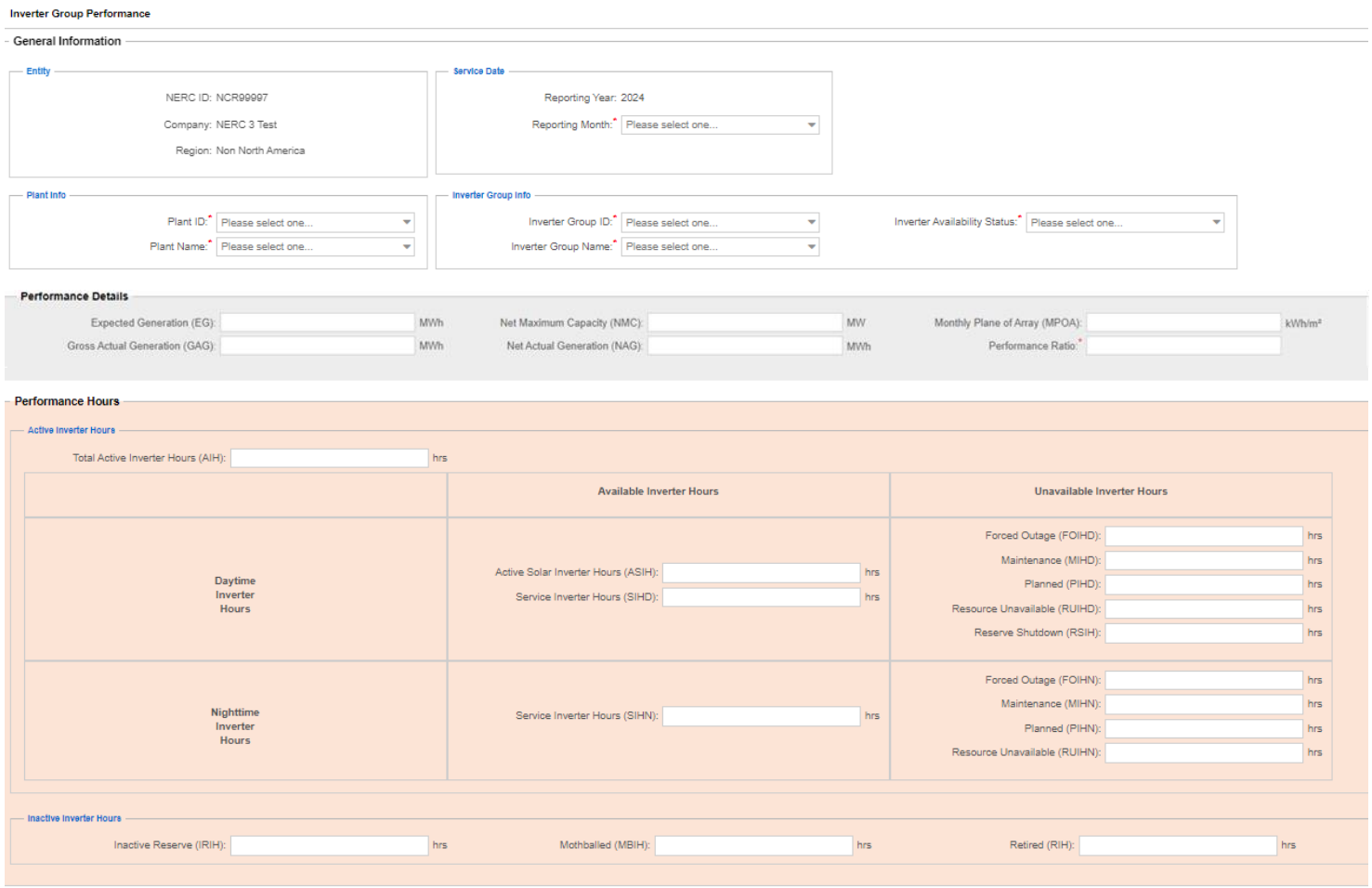


- Select the new icon to create a new plant



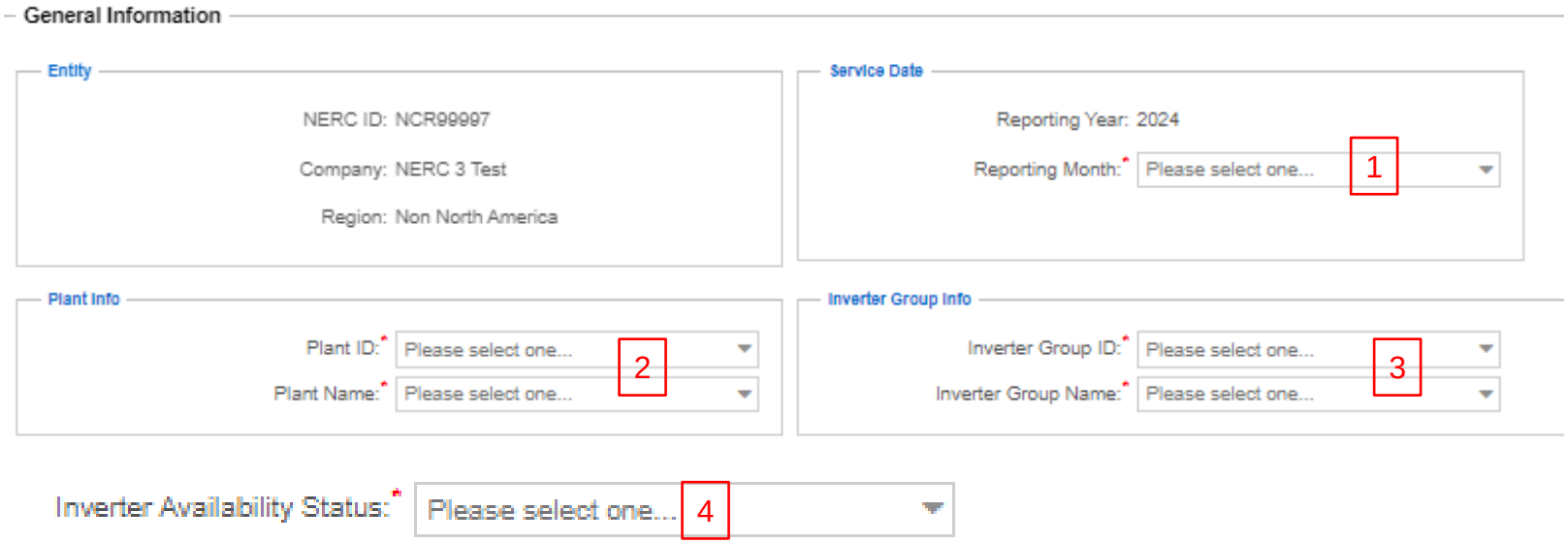
Adding Inverter Group Performance

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



Adding Inverter Group Performance

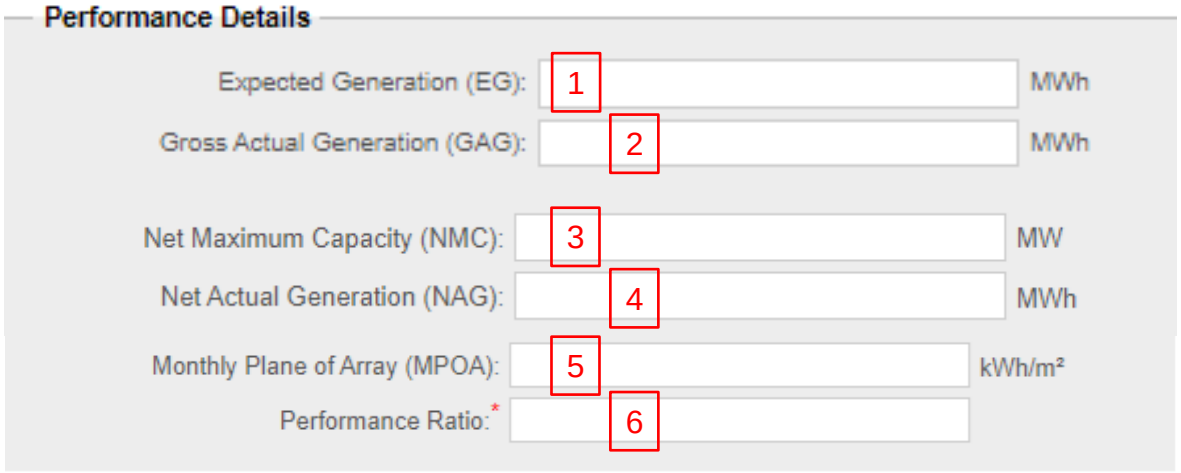
- The NERC ID, company, and region are populated because this company was chosen in the filter



1. Select the reporting month from the picklist
2. Select the plant ID from the picklist or select the plant name from the picklist
3. Select the inverter group ID from the picklist or select the inverter group name from the picklist
4. Select the inverter group status from the picklist

Adding Inverter Group Performance

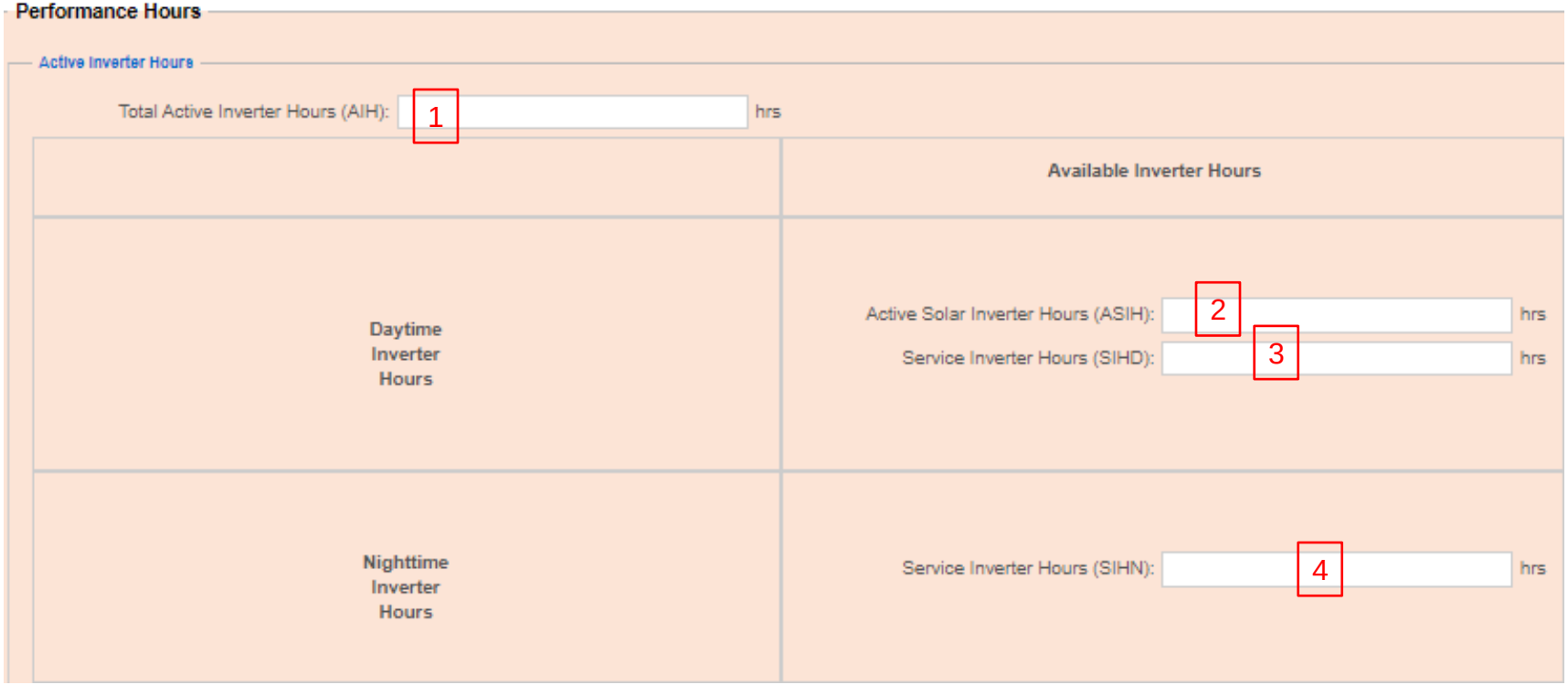
- This part of the screen is for performance details entry



1. Enter the expected generation (MWh) expected at the data point level and rolled up to the inverter group
2. Enter the gross actual generation (MWh) for the inverter group. This is the sum of the AC inverter outputs for the group. Gross generation can be zero (0) but cannot be negative.
3. Enter the net maximum AC generating capacity (MW) at the inverter group boundary.
4. Enter the net actual generation (MWh) recorded at the inverter group boundary (usually the revenue meter). Net generation can be negative.
5. Enter the monthly plane of array value of solar radiation (MWh/square meter)
6. Enter the performance ratio for the month. See the Solar GADS Data Reporting Instructions Table 4.2.

Adding Inverter Group Performance

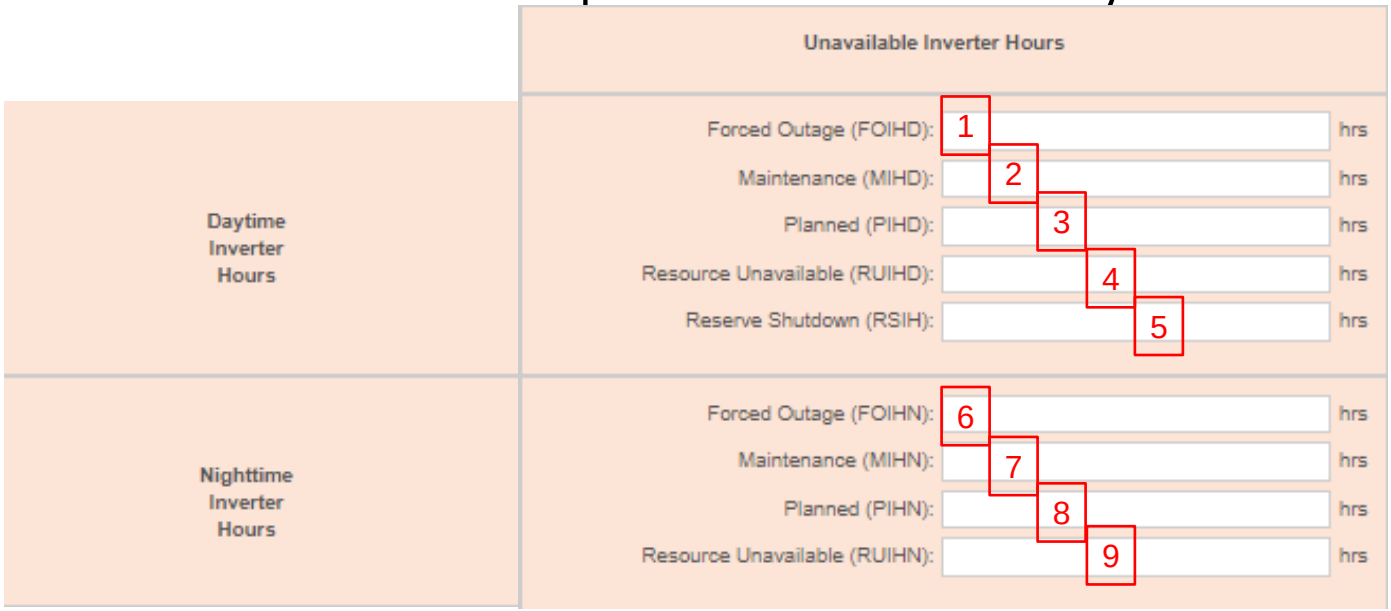
- This part of the screen is for active performance hours entry



1. Enter the total active solar inverter hours
2. Enter the active solar inverter hours daytime
3. Enter service inverter hours daytime
4. Enter the service inverter hours nighttime

Adding Inverter Group Performance

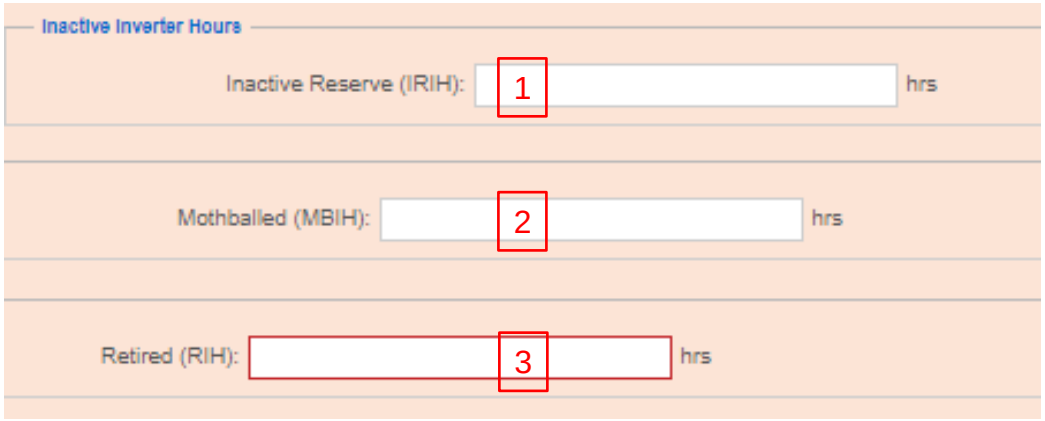
- This part of the screen is for active performance hours entry



1. Enter the forced outage inverter hours daylight
2. Enter the maintenance outage inverter hours daylight
3. Enter the planned outage inverter hours daylight
4. Enter the resource unavailable inverter hours daylight
5. Enter the reserve shutdown inverter hours
6. Enter the forced outage inverter hours nighttime
7. Enter the maintenance outage inverter hours nighttime
8. Enter the planned outage inverter hours nighttime
9. Enter the resource unavailable inverter hours nighttime

Adding Inverter Group Performance

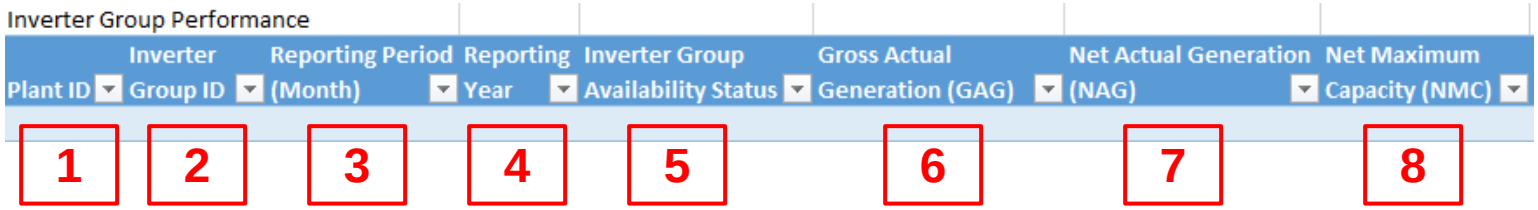
- This part of the screen is for inactive performance hours entry



1. Enter the inactive reserve inverter hours
2. Enter the mothballed inverter hours
3. Enter the retired inverter hours
4. Press the save button (floppy disk icon) on the bottom left of screen when all information has been entered

Inverter Group Performance – Excel Template

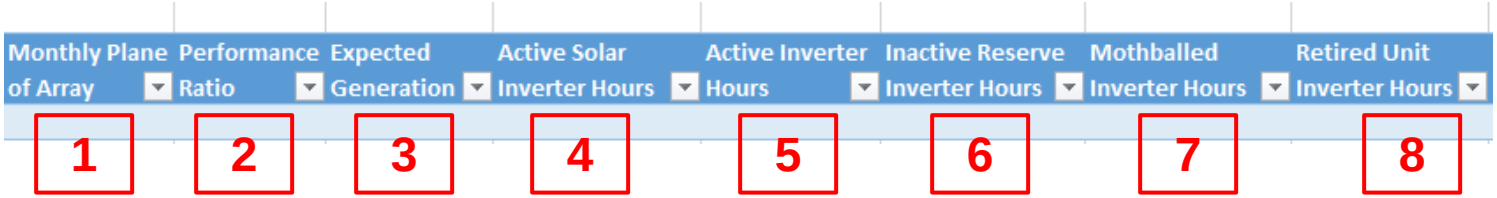
Inverter Group Performance Record



- *Remember the pop-up windows provide helpful information*

1. Enter your assigned plant ID
2. Enter your assigned inverter group ID
3. Enter the number of the month
4. Enter the reporting year
5. Select the inverter group availability status from the picklist
6. Enter the gross generation for the inverter group. This is the sum of the AC inverter outputs for the group. Gross generation can be zero (0) but cannot be negative.
7. Enter the net generation recorded at the inverter group boundary (usually the revenue meter). Net generation can be negative.
8. Enter the maximum AC generating capacity at the inverter group boundary.

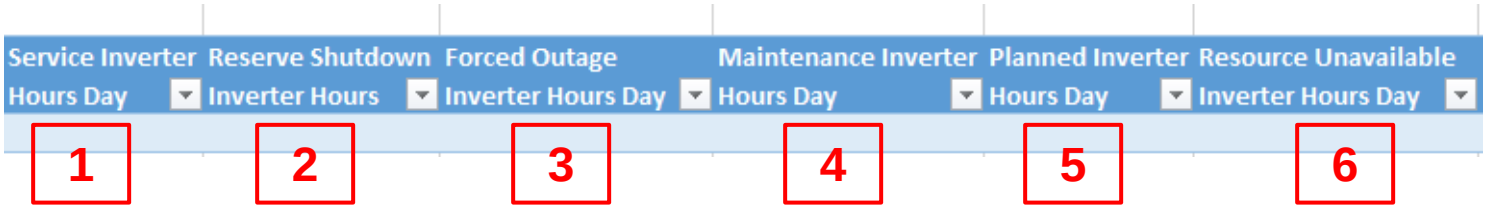
Inverter Group Performance Record



- *Remember the pop-up windows provide helpful information*

1. Enter the monthly plane of array value of solar radiation (MWh/square meter)
2. Enter the performance ratio for the month. See the Solar GADS DRI Table 4.2.
3. Enter the expected generation (MWh) expected at the data point level and rolled up to the inverter group
4. Enter the number of inverter-hours from sunrise to sunset for the month
5. Enter the number of inverter-hours that the inverter group was in an active state for the month
6. Enter the number of inverter-hours that the inverter group was in an inactive reserve state for the month being reported
7. Enter the number of inverter-hours that the inverter group was in a mothballed state for the month being reported
8. Enter the number of inverter-hours that the inverter group was in a retired state for the month being reported

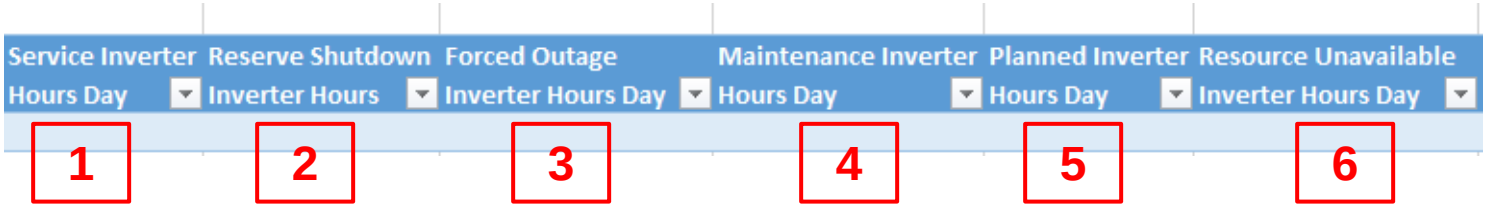
Inverter Group Performance Record



- *Remember the pop-up windows provide helpful information*

1. Enter the number of inverter-hours that the inverter group is synchronized to the grid during daylight hours for the month being reported
2. Enter the number of inverter-hours that the inverter group is off-line for economic reasons but available for service during daylight hours for the month being reported
3. Enter the number of inverter-hours that the inverter group is off-line for forced events during daylight hours for the month being reported
4. Enter the number of inverter-hours that the inverter group is off-line for maintenance events during daylight hours for the month being reported
5. Enter the number of inverter-hours that the inverter group is off-line for planned events during daylight hours for the month being reported
6. Enter the number of inverter-hours that the inverters are available but not producing electricity for environmental conditions outside the operating specification of the solar inverter during daylight hours.

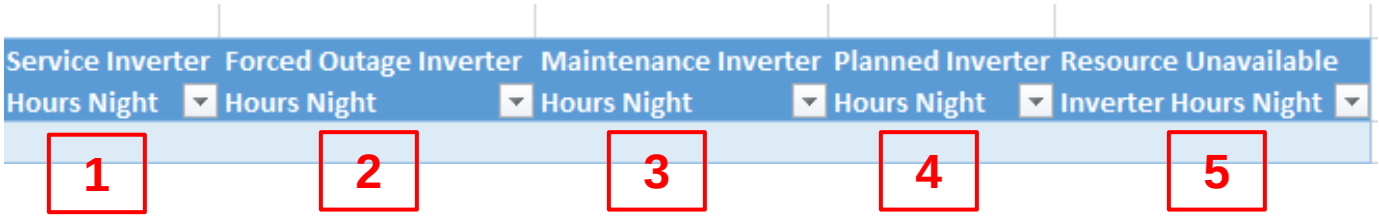
Inverter Group Performance Record



- *Remember the pop-up windows provide helpful information*

1. Enter the number of inverter-hours that the inverter group is synchronized to the grid during daylight hours for the month being reported
2. Enter the number of inverter-hours that the inverter group is off-line for economic reasons but available for service during daylight hours for the month being reported
3. Enter the number of inverter-hours that the inverter group is off-line for forced events during daylight hours for the month being reported
4. Enter the number of inverter-hours that the inverter group is off-line for maintenance events during daylight hours for the month being reported
5. Enter the number of inverter-hours that the inverter group is off-line for planned events during daylight hours for the month being reported
6. Enter the number of inverter-hours that the inverters are available but not producing electricity for environmental conditions outside the operating specification of the solar inverter during daylight hours.

Inverter Group Performance Record

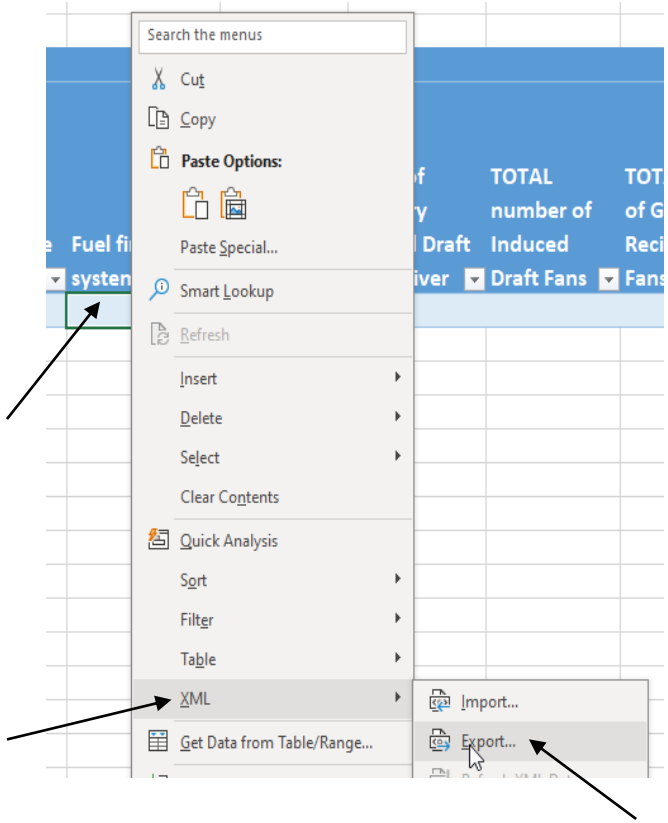


- *Remember the pop-up windows provide helpful information*

1. Enter the number of inverter hours that the inverter group is synchronized to the grid between sunset of the current day and sunrise of the next day for the month
2. Enter the number of inverter hours that the inverter group is off-line for forced events between sunset of the current day and sunrise of the next day for the month
3. Enter the number of inverter hours that the inverter group is off-line for maintenance events between sunset of the current day and sunrise of the next day for the month being reported
4. Enter the number of inverter hours that the inverter group is off-line for planned events between sunset of the current day and sunrise of the next day for the month
5. Resource Unavailable Inverter Hours Night are like Resource Unavailable Inverter hours Day except that it uses hours from sunset on the current day until sunrise on the next day as the period to find resource unavailable hours. See Table 4.2 in the GADS Solar Data Reporting Instructions.

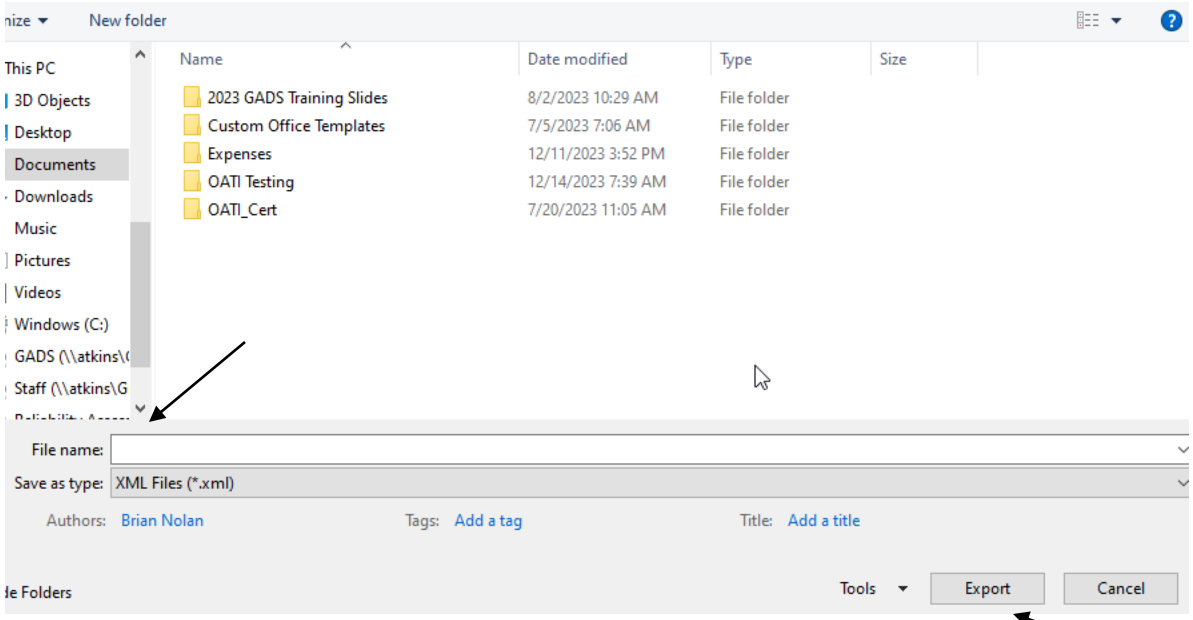
Inverter Group Performance Records

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



Inverter Group Performance Records

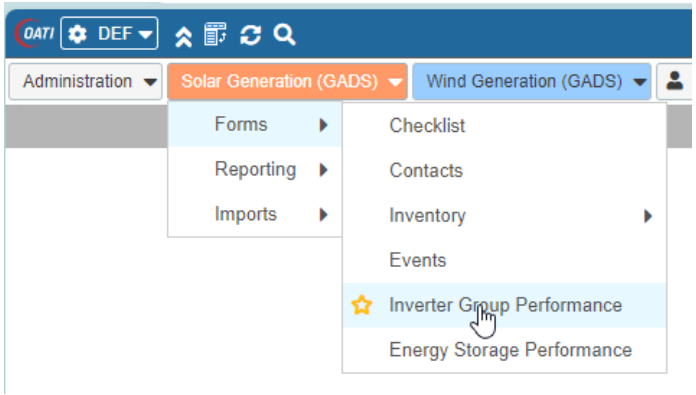
- Name the file, select where you want the file saved, and press the export button

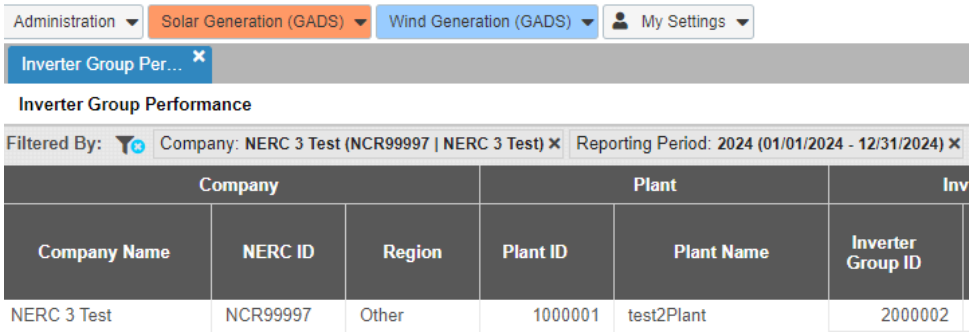


- Make note of your file name and where you saved it

Inverter Group Performance Records

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

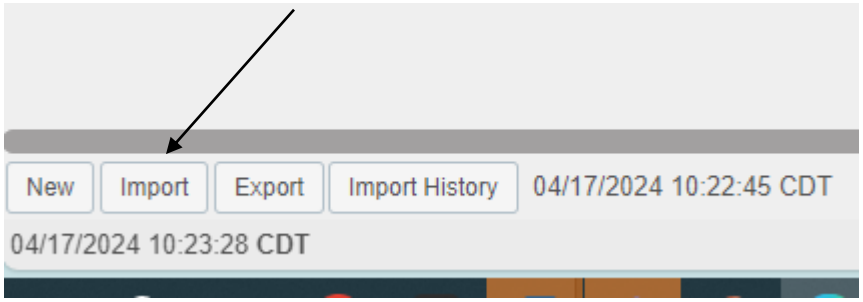




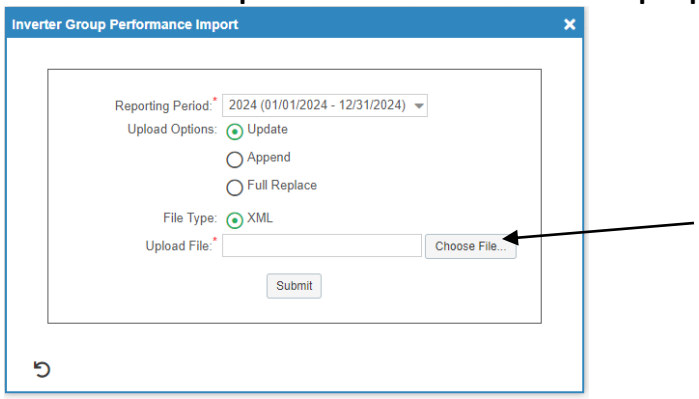
  - A list of previously created Inverter Group Performance Records (if any) will appear

Inverter Group Performance Records

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



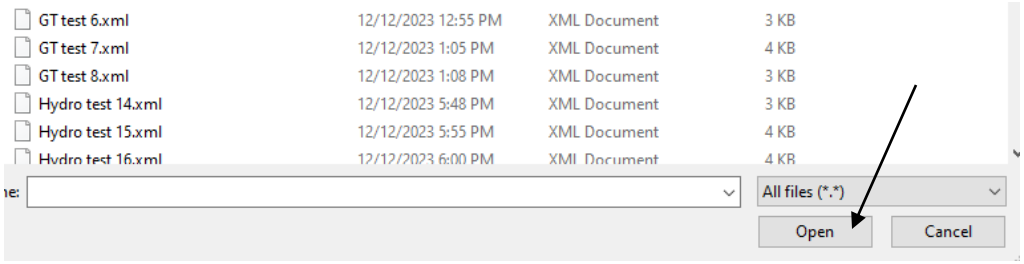
- Press the import button and the popup below will appear



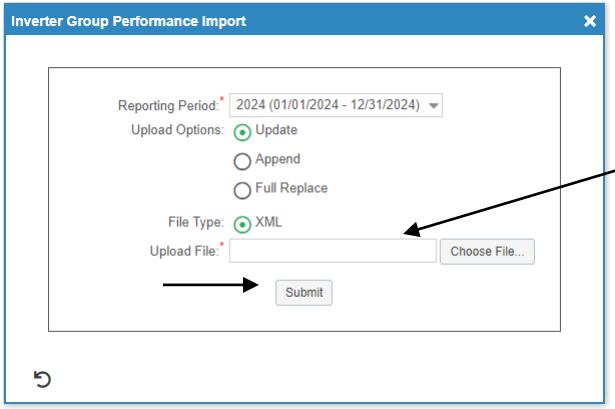
- Click the “Choose File” button on the Inverter Group Performance Import popup and navigate to where you saved your XML file

Inverter Group Performance Records

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



- Click the submit button on the Inverter Group Performance Import popup shown below



File chosen in previous step will appear here

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

Questions and Answers