

AESO ILF Software Application Manual

1. Running Simulation from Executable (.exe) Files

There are three separate applications (.exe) for the ILF process.

1. ILF State-1 (Initiating Gross Load Calculation Process and Initial State Process)
2. ILF State-2 (Initiating Redispatched State Process)
3. ILF Write Workbook (Writing results into the workbook)

1.1. ILF State-1

1.1.1. Gross Load Calculation

1. Run the application named "ILF State-1.exe". It will open up the progress terminal and the application side by side.
2. Select the Input files directory path by clicking the "Browse" button in the application.
3. Select Start Date, End Date and Year
4. Select "Range Selection" for preparing State-1 cases for a range of dates (and hours).
5. Select "Manual Selection" for adding dates one after one. This selection does not require End Date selection.
6. Click "Add Dates" and check the progress terminal for the selected dates.
7. Click "Clear Dates" to clear the date selection.
8. Select LF process "Module-C" or "Forecast" accordingly.
9. Click "Start Gross Load Calculation" button to start the Gross Load Calculation Process.
10. Provide path of the PTI folder containing PSSE program installed in the pop-up window appeared after selecting the "Start Gross Load Calculation" button.
11. Check the progress terminal to monitor the progress or errors.
12. Click "Exit" to close the application once the process is finished.
13. The monthly gross load files will be saved under the same directory where the "ILF State-1.exe" is kept.
14. The 12 monthly gross load files need to be saved inside the input file location under "Gross Load Data" directory before running the initial state simulation.

AESO ILF - Prepare State 1 Cases

AESO ILF (State-1)

Input Files Directory Path

Browse

Manually Select Last Solved Topology Case

Start State-1

Start Gross Load Calculation

Exit

Select Start Date

Select Month

Select Day

Select Hour

Select End Date

Select Month

Select Day

Select Hour

Select Year

Selection Option

☒ Manual Selection

☐ Range Selection

Add Dates

Clear Dates

Select LF Process

Figure 1: ILF State-1 Application

1.1.2. Initial State Simulation Process

1. Run the application named "ILF State-1.exe". It will open up the progress terminal and the application side by side.
2. Select the Input files directory path by clicking the "Browse" button in the application.
3. Select Start Date, End Date and Year
4. Select "Range Selection" for preparing State-1 cases for a range of dates (and hours).
5. Select "Manual Selection" for adding dates one after one. This selection does not require End Date selection.
6. Click "Add Dates" and check the progress terminal for the selected dates.
7. Click "Clear Dates" to clear the date selection.
8. Select LF process "Module-C" or "Forecast" accordingly.
9. Click "Start State-1" button to start the State-1 Process.
10. Provide path of the PTI folder containing PSSE program installed in the pop-up window appeared after selecting the "Start State-1" button.
11. Check the progress terminal to monitor the progress or errors.
12. Click "Exit" to close the application once the process is finished.
13. For interrupting the process during the simulation click the "X" button on the top right corner of the progress terminal.
14. The State-1 cases will be saved in the "Sate-1 Cases - XXX" directory located at the same directory where the program is running. "XXX" means the simulation start time.
15. Intermediate cases and progress files will be saved in "State-1 - XXX" Folder. "XXX" means the simulation start time.

AESO ILF - Prepare State 1 Cases

AESO ILF (State-1)

Input Files Directory Path

\\Input Files\

Browse

Manually Select Last Solved Topology Case

Start State-1

Start Gross Load Calculation

Exit

Select Start Date

January

1

0

Select End Date

January

31

23

2019

Selection Option

☐ Manual Selection

☒ Range Selection

Add Dates

Clear Dates

Forecast

Figure 2: ILF State-1 Application with Date selection

```
C:\Users\sdn\Desktop\ILF Software Executable Files\Exe Files\lffmain_state1.exe
['Z:\6148 AESO 2019 LF Estimate Project\Teshmont Data\02-2019 ILF Recalculation-3\1-Input Files_2019 Recalculation-3\TSS Data\TSS Volumes_January.xlsx']
['Z:\6148 AESO 2019 LF Estimate Project\Teshmont Data\02-2019 ILF Recalculation-3\1-Input Files_2019 Recalculation-3\Gross Load Data\Gross Load - January.xlsx']
Simulation Start Time : 12Jul2019-13-34
=====
Initializing PSSE .....

PSS(R)E Version 33
Copyright (c) 1976-2019
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Power Technologies International (PTI)
This program is a confidential unpublished work created and first
licensed in 1976. It is a trade secret which is the property of PTI.
All use, disclosure, and/or reproduction not specifically authorized
by PTI is prohibited. This program is protected under copyright
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treaties. All Rights Reserved Under The Copyright Laws.

SIEMENS POWER TECHNOLOGIES INTERNATIONAL

100000 BUS POWER SYSTEM SIMULATOR--PSS(R)E-33.12.0

INITIATED ON FRI, JUL 12 2019 13:34
=====
Selecting Month Gen Mapping ....
Reading Gen Mapping .....
Selecting Monthly Topology Case ...
Reading Load Mapping File ....
Reading Monthly EMMO .....
```

Figure 3: ILF State-1 Application Progress Terminal

1.2. ILF State-2

1. Run the application named "ILF State-2.exe". It will open up the progress terminal and the application side by side.
2. Select the Input files directory path by clicking the "Browse" button in the application.
3. Select the State-1 case(s) (prepared from the "ILF State-1" application) to start State-2 process.
4. Select the Log File(s) (prepared from the "ILF State-1" application).
5. Click "Start State-2" button to start the State-2 Process.
6. Provide path of the PTI folder containing PSSE program installed in the pop-up window appeared after selecting the "Start State-2" button.
7. Check the progress terminal to monitor the progress or errors.
8. Click "Exit" to close the application once the process is finished.
9. For interrupting the process during the simulation click the "X" button on the top right corner of the progress terminal.
10. The State-1 cases will be saved in the "State-1 Cases" directory located at the same directory where the program is running.
11. A folder named "State-2 – XXX" will be created at the same directory where the "ILF State-2.exe" application is kept. "XXX" is the simulation start time.
12. Intermediate cases and progress files will be saved in Outputs folders named by the hours inside the "State-2 - XXX" directory. The hourly state-2 results spreadsheets (.xls) will be saved in the "State-2 Results" folder under the "State-2 - XXX" directory.
13. All the hourly State-2 results spreadsheets will be required in the "Write Workbook" phase to generate the result workbook.

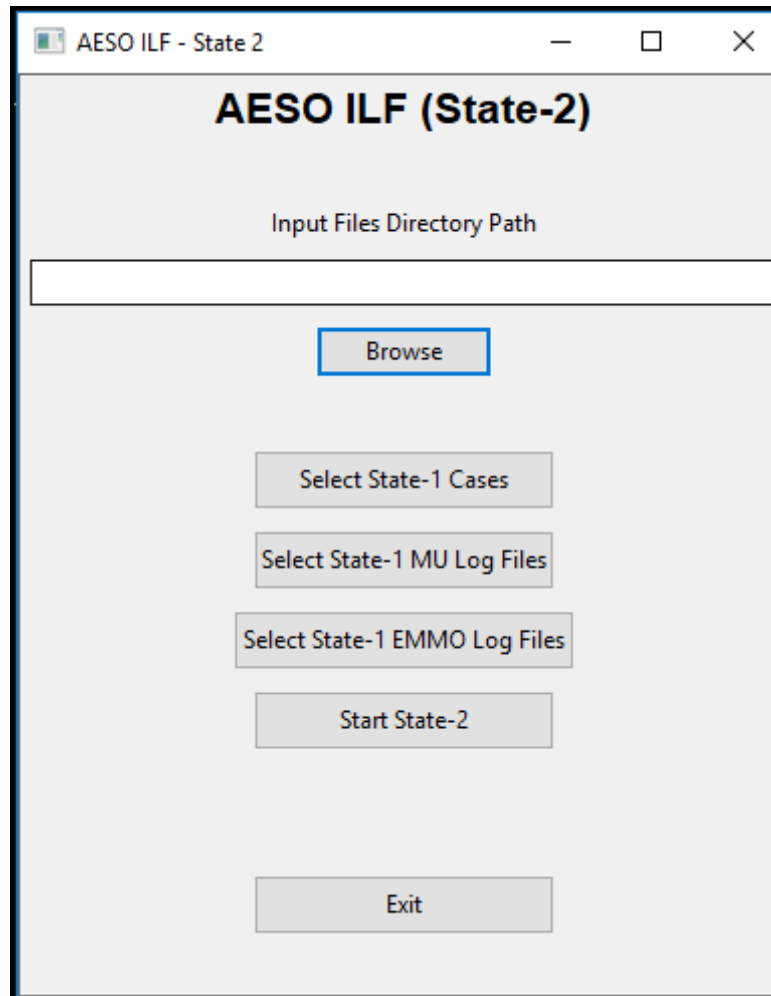


Figure 4: ILF State-2 Application

1.3. ILF Write Workbook

1. Execute the application named "ILF Write Workbook.exe". It will open up the progress terminal and the application side by side.
2. Keep all the State-2 results spreadsheets (.xls) in a folder and select that folder path by clicking the "Browse" button in the application.
3. Select "State-1 Error Log Files Directory" path
4. Select the range of months, e.g. "Jan –Apr", "May – Aug" or "Sep – Dec" for which the preliminary workbook will be created.
5. Select the "Year" of LF calculation.
6. Select the "LF Results Template.xlsx". This is the template for the output workbook.
7. Specify the max number of rows in the workbook template. This may vary year to year depending on the number of Loss factor locations in the master LF location list.
8. Click "Generate Workbook" button to start the writing process.
9. Check the progress terminal to monitor the progress or errors.
10. Click "Exit" to close the application once the process is finished.
11. For interrupting the process during the simulation click the "X" button on the top right corner of the progress terminal.
12. The workbook will be generated in folder where the "ILF Write Workbook.exe" is kept.
13. This workbook will write the results in the following four sheets:
 - I. 8(4) Initial Volumes (MW)
 - II. 8(4) Initial Losses (MW)
 - III. 8(5) Redispatched Volumes (MW)
 - IV. 8(5) Redispatched Losses (MW)

The contents of these sheets will be transferred to the final workbook.

AESO ILF - State 2

AESO ILF (Write Workbook)

State-2 Results Directory Path

Browse

State-1 Error Log Files Directory Path

Browse

Select Range of Months ▼

Select Year ▼

LF Results Template

Enter Max Row Number (135 Default)

Generate Workbook

Exit

Figure 5: ILF Write Workbook Application

Please note, the software assumes the PSSE application is installed under the following directory in the user computer:

C:\Program Files (x86)

2. Running Simulation from Source Python Scripts (.py)

Please follow the steps below to run from the python scripts:

1. Keep all the python scripts in the same folder.
2. Open the command prompt in windows.
3. Type "python **xxx.py**" in the command prompt and hit enter to run the appropriate script where "**xxx**" stands for one of the following scripts:
 - a) ilfmain_state1
 - b) ilfmain_state2
 - c) ilfmain_WriteWorkbook
4. This will open the corresponding application
5. Follow the steps mentioned in the "Run from .EXE File" section
6. To run the program from the python scripts one may need to install python modules used in the scripts if they are not already installed. Running from the .exe files should not require doing so as they are standalone files. The only requirement will be the PSSE software.

3. Organization of the Input Files to the Software

The program requires the following input files to be kept under a single folder (Input files directory path) but into their own respective directories with the following names. ILF State-1 and ILF State-2 applications require the directory path of the

1. "EMMO" – This folder will contain monthly EMMO files.
2. "Historical EMMO" - This folder will contain historical monthly EMMO files for forecast year LF calculation. For Module C calculation there will be no existence of this folder.
3. "Load Data" - This folder will have the monthly Load files
4. "TSS Data" - This folder will have the monthly TSS files
5. "Mapping Information" - This folder will have the monthly files containing the mapping formation of the generating MPIDs and Load MPIDs.
6. "Cases" - This folder will have the monthly topology PSS/E cases (.sav)
7. "Gross Load Data" - This folder will have the monthly gross load files created from Gross Load Calculation.