
	© <i>ISO New England Inc. 2024</i>	<i>Procedure: Outage Coordination Reliability Analysis Tools</i>
	<i>Process Name: Capture and Evaluate Outage Requests</i>	
	<i>Procedure Number: OUTSCH.0030.0005</i>	<i>Revision Number: 5</i>
	<i>Procedure Owner: Maya Ault</i>	<i>Effective Date: July 31, 2024</i>
	<i>Approved By: Director, Operations Support Services</i>	<i>Valid Through: July 31, 2026</i>

SOP-OUTSCH.0030.0005 - Outage Coordination Reliability Analysis Tools


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1. Objective


The objective of this procedure is to document use of Outage Coordination analysis tools. This procedure provides guidance for TARA (Transmission Adequacy and Reliability Assessment), ORA (Outage Reliability Analysis), STOCM (Short-Term [OpCap] Operable Capacity Margin), TTC (Total Transfer Capability) Calculator and PROBE (Portfolio Ownership Bid Evaluation).

This procedure provides instructions for setting up and running the various reliability assessments with TARA, capacity assessments with STOCM, interface limit assessments with TTC Calculator, market simulations with PROBE and populating the ISO-NE Grid Risk Assessment report. As with any software analysis tool, the results of the various solutions require human interpretation and evaluation to be useful. This procedure does **not** document the business requirements or process flows for the outputs of these activities, only the steps necessary to produce solution data.

2. Background/Introduction

The marked increase in transmission maintenance has created challenges in assessing the reliability status of the Bulk Electrical System (BES). In addition to classical Energy Management System (EMS) reliability studies, the Outage Coordination group has identified software tools and methods to enhance the ability to evaluate reliability for a given Operating Day.

- The PowerGEM TARA application uses a bus/branch model, similar to Siemens PSS/E application, and can create hourly or daily basecases, including economic dispatch of Resources, for reliability evaluation. TARA has been customized by PowerGEM Corporation to perform reliability analysis supporting Forward Capacity Market (FCM) annual auction offers as well as monthly bilateral transactions and reconfigurations. Additionally, TARA has the ability to perform a sophisticated Outage Reliability Analysis, an N-1-1 solution, where Resources can be dispatched post 1st contingency in preparation for the second contingency, and NE-NY/NY-NE Transfer Limit analysis based on transmission topology.
- The STOCM tool was developed by the IT group in order to assess capacity margin which is necessary considering the FCM rules which allow Resources to offer a Capacity Supply Obligation (CSO) MW value which may be less than Seasonal Claimed Capacity (SCC).

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- The TTC Calculator uses PowerWorld Corporation’s simulator to calculate load shed values, Line/Generation (Line/Gen) and Line/Line limits for 2nd contingency interfaces. These limits are then populated into the Generator Requirements for Transmission (GRT) spreadsheet in order to determine proxy limits which are enforced in the Day Ahead (DA) market runs and supplied to the control room for information.

The PowerGEM PROBE application provides the capability to simulate a DA market solution. This solution can be used to predict the binding constraints associated with a given Operating Day transmission and Resource outages. This enables transmission coordination to address **not** only reliability issues but also market issues.

3. Responsibilities

1. The Outage Coordinators, as assigned, are responsible for performing these analyses and perform corrective actions to resolve discrepancies.


4. Controls

1. System Access

TARA, STOCM, PROBE TTC Calculator and Casebuilder access is required and obtainable through the Enterprise Access Management (EAM) database with the appropriate approvals.

2. Efficiency/Effectiveness


This procedure is periodically reviewed for best business practices and accuracy.

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5. Instructions

5.1 TARA Activities

- 5.1.1 Create TARA Basecases**
1. CREATE a TARA study folder early each week in accordance with SOP.OUTSCH.0030.0020 - Perform Short Term Outage Coordination, section 5.1.2 Perform Economic Outage Coordinator Tasks
 2. CREATE input files for TARA using Attachment G - “Casebuilder Set-Up and Operation for TARA Studies”
 3. CREATE 14 daily, or 336 hourly, TARA basecases, as desired, using Attachment A - “Create TARA Basecases” for the following:
 - A. Automated Model Builder (AMB) cases with Resource and transmission outages *included*. These cases will be used for N-1-1, Transfer Limit and TTC Calculator studies.
 - B. ORA cases with Resource outages included but **no** transmission outages. These cases will be used for Outage Reliability Analysis only.
- 5.1.2 Perform TARA N-1-1 Analysis**
1. VERIFY that prerequisite from section 5.1.1 is complete
 2. PERFORM N-1-1 analysis using Attachment B - “Run TARA N-1-1 Solution” on the AMB basecases created in Step 5.1.1.3.A.
 3. REVIEW the results and filter only for contingencies (e.g., **no** basecase results) and >100% final loading.
 4. COPY results to an Excel file and then SEND to:
 - A. Short Term Outage Coordination management, as needed
 - B. OPER OSS Short Term Outage Coordination, as needed
 - C. Short Term Outage Coordination reports directory:
 \\rtsmb\oasis\Outage Coordination\Common\Short Term Economic Analysis\TARA N-1-1 results
- 5.1.3 Perform TARA ORA evaluation**
1. PERFORM an ORA analysis of outages scheduled for the next 14 days, using Attachment C - “Run TARA ORA Solution” on the ORA basecases created in step 5.1.1.3.B
 2. REVIEW Results and filter for only “Declined” outages

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3. SEND data and analysis results as needed to:

A. Short Term Outage Coordination management

B. Short Term Outage Coordination reports directory:

\\rtsmb\oasis\Outage Coordination\Common\Short Term Economic Analysis\ORA results

5.1.4 Perform TARA NE-NY and NY-NE Transfer Limit Determination

1. PERFORM NE-NY and NY-NE Transfer Limit analysis, using Attachment D - “Run NE-NY and NY-NE Transfer Limit Determination” for each AMB case created in Step 5.1.1.3.A

2. REVIEW results and highlight any significantly low limit

3. ANALYZE transmission outages causing any low limits to determine offending outages


4. SEND data and analysis as needed results to:

A. Short Term Outage Coordination management

B. Transmission Coordinator

C. Short Term Outage Coordination reports directory:

\\rtsmb\oasis\Common\Short Term Outage Group Reporting\NY Transfer Limits

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5.2 PROBE Activities

5.2.1 Run Weekly Market Simulations

1. As desired, after interface limits have been determined PERFORM market simulations for days in the following week using Attachment I – “PERFORM PROBE Market Simulations”.
2. COPY binding constraints and Locational Marginal Price (LMP) map for each day’s solution to an email and SEND to Operations Shift Supervisors and Senior System Operators, Market Administrators and Supervisor, Short Term Outage Coordination.
3. ARCHIVE each day’s input folder along with solution reports to the taraenfrd1 server PROBE Short Term

5.3 STOCM Activities


5.3.1 Determine Short Term Capacity Margin

1. PERFORM a capacity analysis for 14 days starting with the following Monday, using Attachment E - “Perform STOCM Capacity Analysis Margin Determination”
2. EXPORT results, in Excel format, to: \\iso-ne.com\shares\outage_coord\STOCM
3. HIGHLIGHT the System Results, and CT/SWCT/BOSTON Reserve Zone results, and PASTE to an email and send to: OPER OSS Short Term Outage Coordination and Resource Analyst.

5.4 TTC Calculator Activities

5.4.1 Determine Double Contingency Interface Limits

1. PERFORM TTC Calculator runs as many times as necessary each day, in order to determine double contingency interface limits supporting the daily GRT sheet presented to the DA Market Administrators
2. PERFORM TTC Calculator runs, as necessary, to determine interface limits in support of weekly PROBE market simulations
3. PERFORM TTC Calculator runs, as necessary, to support Long Term outage FCM Monthly Reconfiguration and Bilateral bid evaluation and for outage coordination processes
4. PERFORM TTC Calculator runs, monthly, to support Market Administration determination of interface limits for Financial Transmission Rights (FTR) auctions

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6. Performance Measures

1. This procedure is properly followed by Outage Coordinators to produce valid limit determinations and reliability analysis.

7. References


TARA user's guide

LTOCM/STOCM user's guide

TTC Calculator user's guide

8. Revision History

Rev. No.	Date	Reason	Contact
0	02/03/14	Initial release of new procedure.	Norm Sproehnle
0.1	04/29/15	Correct typos in the title on the title page and in the Revision History date for Rev 0;	Norm Sproehnle
1	07/13/15	Biennial review by procedure owner; Deleted Section 5.5. System Risk report is no longer performed;	Norm Sproehnle
1.1	05/15/17	Periodic review completed by procedure owner requiring no changes; Made administrative changes required to publish a Minor Revision (Added required corporate document identity to all page footers);	Norm Sproehnle
2	05/01/19	Periodic review completed by procedure owner. Defined all acronyms with first use; Updated to reflected current business practices	Norm Sproehnle
3	08/04/20	Removed every Thursday in the STOCM activities to reflect current practices; Clarified how to update the Reserve Zone in the STOCM tool; Added Figure 5	Maya Ault
4	08/02/22	Updated Employee Access Rights to Enterprise Access Management; Updated directory; Moved Note in ATTE from step 12 to step 6; Updated procedure owner; Clarified location of limits for STOCM process (Step 13); Changed Procedure Owner	Maya Ault
5	07/31/24	Periodic review completed by procedure owner; Administrative changes throughout; Updated TTC calculator images;	Maya Ault

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9. Attachments

Attachment A - Create TARA Basecases

Attachment B - Perform TARA N-1-1 Solution

Attachment C - Perform TARA ORA Solution

Attachment D - Perform NE-NY and NY-NE Transfer Limit Determination

Attachment E - Perform STOCM Capacity Margin Determination

Attachment F - Perform TTC Calculator Interface Limit Determination


Attachment G - Casebuilder Set-up and Operation for TARA Studies

Attachment H - Casebuilder Set-up and Operation for PROBE Studies

Attachment I - Perform PROBE Market Simulations

Attachment J - PROBE Look Ahead Study Options Set-Up

Attachment K - PROBE Batch Mode Set-Up and Operation

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Attachment A - Create TARA Basecases

1. If desired, EXPORT an EMS breaker-node model and contingency database into PowerWorld bus-branch .aux format as follows:
 - a. LOAD all-lines-in basecase to EMS powerflow and RUN the solution.
 - b. CLICK “Data Retrieval” and ENTER the appropriate Savecase Title that includes the network model number and date (e.g., ALI_2.3.15_Jan26).
 - c. CLICK “Model File” to generate the PowerWorld Model file (the letters “model_pf_pwrflow” are automatically appended).
 - d. COPY the “EMS all-lines-in basecase” into STCA and RUN the solution
 - e. CLICK “Data Retrieval” and enter appropriate Savecase Title to include the network model number and date (e.g., ALI_2.3.15_Jan26).
 - f. CLICK “Generate PowerWorld Contingency File” (the letters “ctgs_stca_stca” are automatically appended).
2. LOGIN to the TARAENFPRD1 or TARAENFINT1 servers, as desired, using Windows “Remote Desktop Connection”. Then NAVIGATE to individual study directory.
3. CREATE a TARA study folder. COPY the “Copy this folder”. PASTE and RENAME the folder appropriately for the study week.
4. RUN “Casebuilder” application, using Attachment G - “Casebuilder Set-up and Operation for TARA Studies” to create input files for TARA analysis.
5. COPY the resulting files to the “INPUT_FILES” folder in the case directory created in STEP 3, above.
6. START TARA viewer by double-clicking “TARAvierw.....xlsb” from the study folder. The TARA excel workbook will open and the TARA main menu will display.


NOTE

Any time it is desired to enter the TARA main menu, right click anywhere in the TARA Excel workbook and select “TARA main menu”

7. CLICK “Import Options File” and NAVIGATE to the current study folder. SELECT the appropriate options file for the version of TARA in use (this will bring up all default settings and options).
8. From TARA main menu, SELECT “ContAnalysis + TARA Screen” at the top of the screen.

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9. POPULATE each indicated file on the TARA main menu, from the current study folder.
10. SELECT “Standard N-1” for the contingency analysis mode at the bottom of the screen.
TARA main menu selections should appear similar to the Fig.1 in Attachment B - “Perform
TARA N-1-1 Solution”.

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Attachment B - Perform TARA N-1-1 Solution

1. CREATE TARA input files as directed in Attachment G - “Casebuilder Set-up and Operation for TARA studies”.
2. PREPARE TARA basecases as directed in Attachment A - “Create TARA Basecases”.
3. START TARA program.
4. In the TARA Excel viewer, right-mouse click (RMC) anywhere in the spreadsheet to open the TARA menu. Select “TARA Main Menu”.
5. POPULATE the front page of the TARA main menu as follows (See Fig. 1):
 - a. CLICK “Import Options File” and select the file in your TARA folder that ends in options.csv.
 - b. RETURN to TARA main menu and ENSURE the radio button under “Select TARA Application” next “ContAnalysis + TARA Screen” is selected.

NOTE

All AMB basecases to be studied should be in the same folder

- c. CLICK the “...” next to the field under “Load Flow Case”, navigate to the first of the AMB basecases previously built.
- d. In the text of the field, DELETE all text between “Day_” and “.aux” and replace it with “***”. This should result in this line ending with “....\Day_***.aux”.
- e. ENSURE sure the “Multiple Case” check box is checked. The number of files indicated under “add cases” should equal the number of files in the folder you wish to study
- f. CLICK the “...” next to the field for “Study Data File”.
Select the “amb.sub” file located in your TARA study folder.
- g. CLICK the “...” next to the field for “Monitor File”. Select the “amb.mon” file located in your TARA study folder.
- h. ENSURE that “Do not read the Contingency File” is **not** checked, and that “Do not read the Exclude File” is checked.
- i. CLICK the “...” next to the field for “Contingency File”. Navigate to the INPUT_FILES folder then SELECT the desired reduced contingency set “.aux” file located in your TARA folder.
- j. SELECT “N-1-1 (or N1 + application)” under “Select Contingency Analysis Mode....”
Then CLICK the “...” button and navigate to the INPUT_FILES folder. SELECT the desired reduced contingency set “.aux” file located in your TARA folder.

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- k. CLICK “Change Initial Loading Options”. On the “TARA Options” page select the “Ratings” tab and under “Contingency Case Rating” select Rating C (which corresponds to STE limits) and input 95 into the “Rating Multiplier in %”.
- l. CLICK “Save Options” on TARA Options.
- m. VERIFY all fields on the front page of the TARA viewer; they should roughly match the screenshot below. CLICK “Load Input Files”. TARA will now execute the functions needed to load the input files. This may take up to a minute.

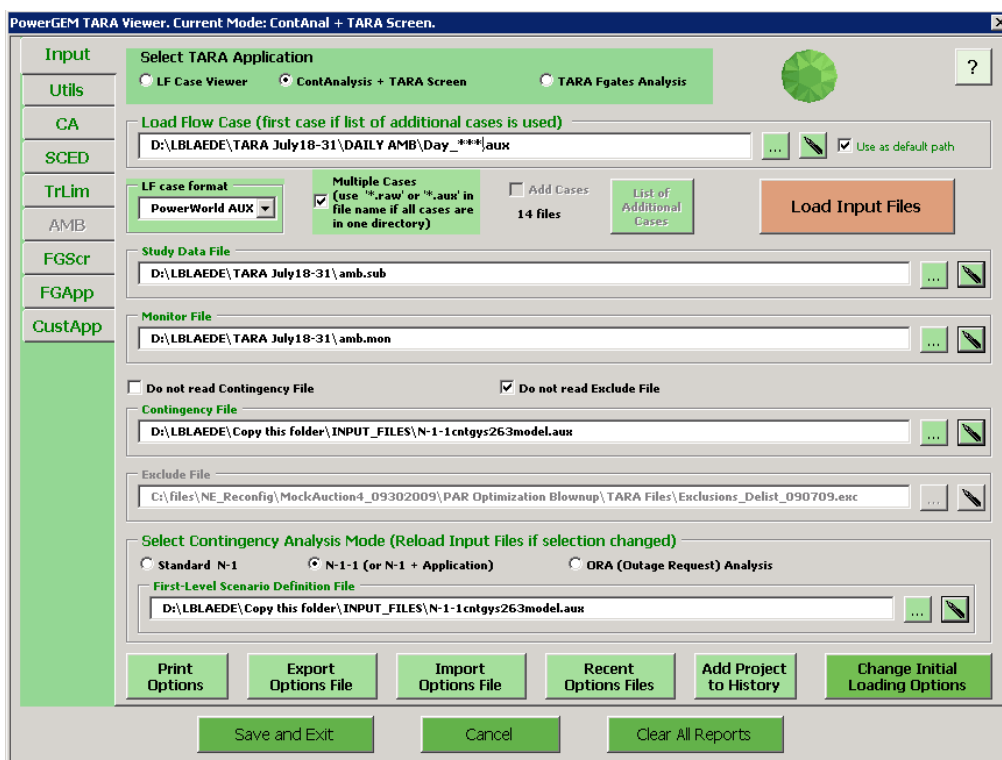



Fig. 1

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1. On the left-hand side of the TARA main menu, SELECT “SCED”.
2. While holding the “Control” key on your keyboard, SELECT “Binding constraints and shadow prices”, “adjusted bidders”, and “SCED Redispatch Summary”. (Example, Fig. 2, below).

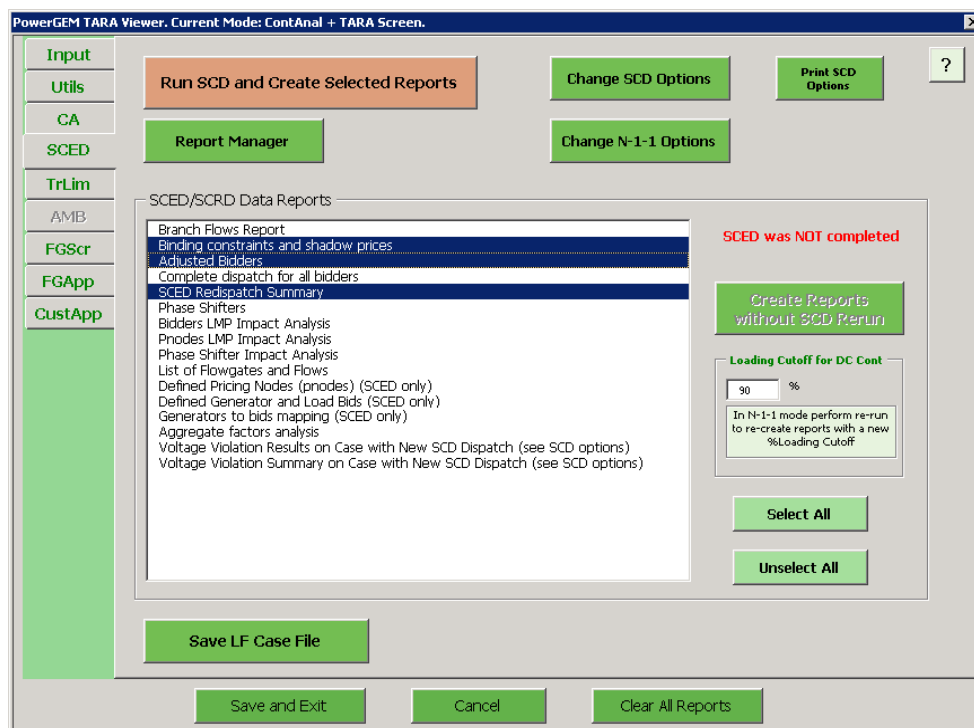




Fig. 2

1. SET “Loading Cut-Off for DC Cont” to 99%.
2. CLICK “Run SCD and Create Selected Reports” to execute the N-1-1 study. This will take some time to run during which the TARA Excel viewer will **not** respond. Results will display in the excel TARA Excel viewer.
3. REVIEW reports and investigate any issues using EMS powerflow.

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Attachment C - Perform TARA ORA Solution

1. CREATE TARA input files as directed in Attachment G - “Casebuilder Set-up and Operation for TARA Studies”.
2. START TARA program by selecting Excel file labeled “TARA**.xlsb”.
3. PREPARE TARA base cases as directed in Attachment A - “Create TARA Basecases” specifically for ORA analysis.
4. POPULATE the front page of the TARA main menu as follows (See Fig. 1):
 - a. If TARA has been closed since the ORA basecases had been created, CLICK “Import Options File” and select the file in your TARA folder that ends in “options**.csv”.
 - b. ENSURE the radio button under “Select TARA Application” is set to “ContAnalysis + TARA Screen”.
 - c. CLICK “...” next to the field under “Load Flow Case”, navigate to first (typically hours 00) of the AMB bases cases previously built. (NOTE: all AMB base cases to be studied should be in the same folder)
 - d. In the text of the field, DELETE all text between “Day_” and “.aux” and REPLACE it with “****”. This should result in this line ending with “....\Day_*.aux”.
 - e. VERIFY the “Multiple Case” check box is checked.
 - f. VERIFY the number of files indicated under “add cases” equals the number of files in the folder you wish to study.
 - g. CLICK the “...” next to the tab for “Study Data File”. SELECT the ora.sub file located in your TARA folder.
 - h. CLICK the “...” next to the tab for “Monitor File”. SELECT the amb.mon file located in your TARA folder.
 - i. VERIFY “Do not read the Contingency File” is unchecked, and “Do not read the Exclude File” is checked.
 - j. CLICK the “...” next to the tab for “Contingency File”. SELECT the contingency file generated in Attachment A and located in your TARA folder.
 - k. SELECT the “ORA (Outage Request)” radio button in the “Select Contingency Analysis Mode” tab.
 - l. CLICK the “...” next to the tab for “Outage Definitions File”. SELECT the “Trans_Outage.csv” file from the “Input Files” folder located in the TARA folder.

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- m. VERIFY all fields on the front page of the TARA viewer, and the page should roughly match the screenshot below.

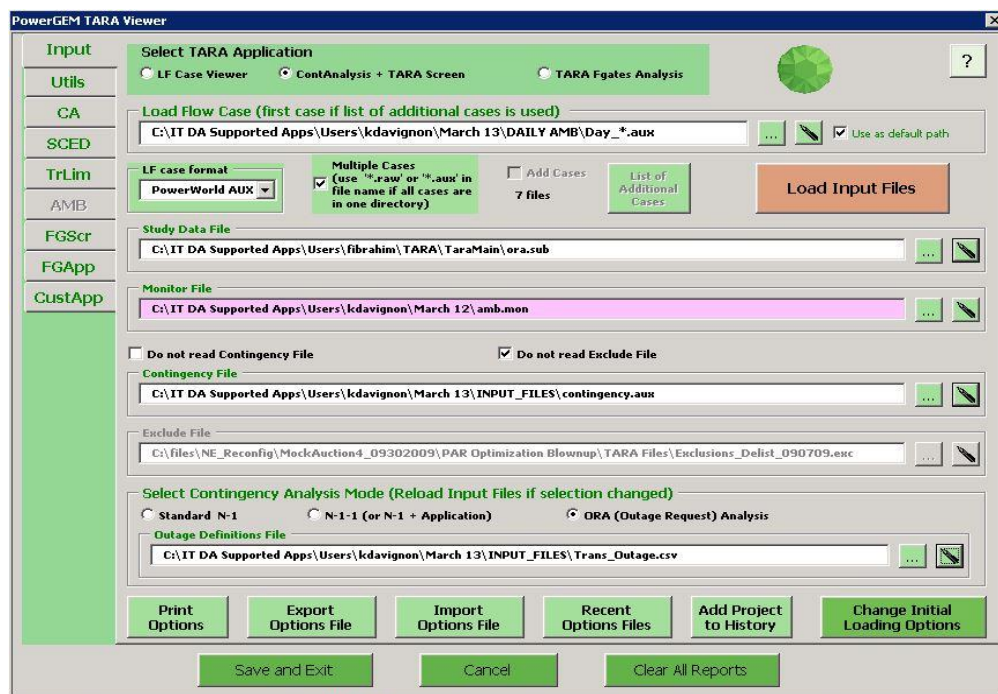



Fig. 1

- n. CLICK “Load Input Files”. TARA will now execute the functions needed to load the input files. This may take a few minutes.
- When complete, the TARA Excel viewer will revert back to the spreadsheet.
 - CLICK on the Excel tab labeled “ORA_Outlist”. This tab displays all outages in the date range selected during the creation of the INPUT files as mentioned in Attachment G.

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NOTE

TARA labels the outages with the following statuses

- **PreApproved** : Outages that have already been implemented
- **Approved**: Outages that have already been “Interim Approved” and/or “Approved”
- **Study**: Outages that have **not** been analyzed and are in “Submitted” mode.

7. RMC on an outage labeled “Study” and CLICK on “Automated STUDY Outage Evaluation” to bring up the ORA window as shown in Fig. 2, below

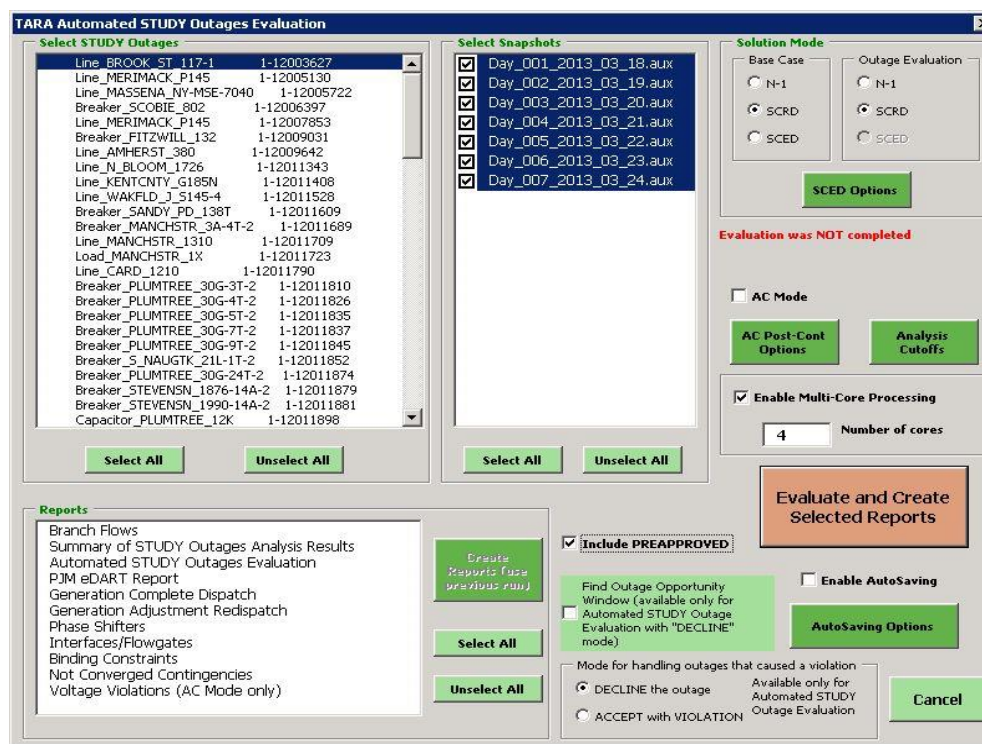




Fig. 2

8. SELECT all outages with the following exceptions

- Capacitor outage
- Load outage
- New York transmission element outage
- New Brunswick transmission element outage

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9. SELECT appropriate reports for TARA to generate
10. SELECT all snapshots and check the “SCRD” radio box
11. SELECT “Enable Multi-Core Processing” (maximum 32), if available
12. SELECT “Include PREAPPROVED” box
13. SELECT “DECLINE the outage” radio box
14. CLICK on “Evaluate and Create Selected Reports”
 - a. ORA will generate the reports chosen and transmission violations (if any) will be labeled as follows:
 - **Accepted**
 - Outage caused small thermal & voltage impacts
 - **No** resulting overloads for which re-dispatch is required
 - **Controlled**
 - Outage caused overloads for which re-dispatch was required
 - **Trending**
 - **No** overloads but big impacts
 - **Voltviol**
 - Small thermal impacts, **no** overloads requiring re-dispatch
 - Caused voltage violation
 - **Declined**
 - Caused overloads for which re-dispatch could **not** fix

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Attachment D - Perform NE-NY and NY-NE Transfer Limit Determination

1. After AMB basecases are created in TARA, from instruction Step 5.1.1.3.A, NAVIGATE to TARA main menu.
 - a. In the “Load Flow Case” box, SELECT the 1st AMB basecase from the AMB directory.
 - b. The “Study Data File,” “Monitor File,” and “Contingency File” entries should stay the same as for Create AMB Basecases.
 - c. “Standard N-1” should be selected at the bottom. Settings are as shown in Fig. 1, below:

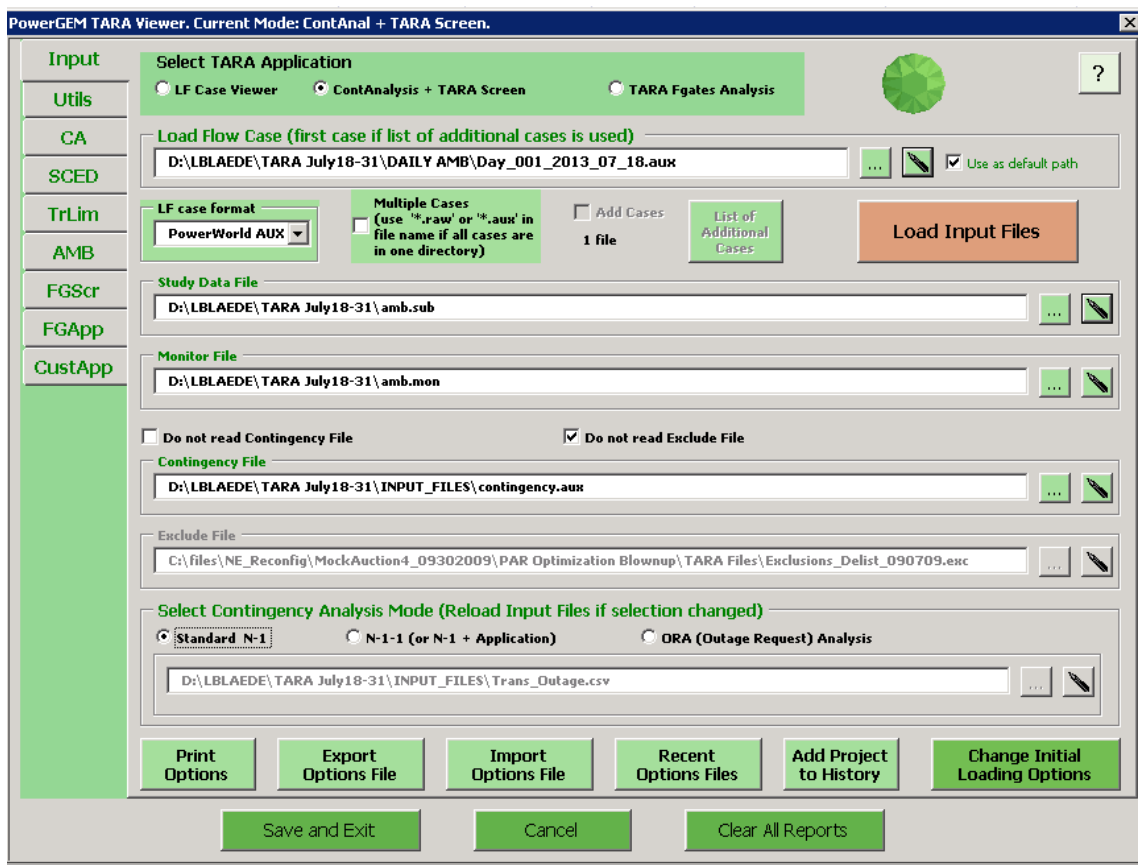



Fig. 1

	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
		Valid Through: July 31, 2026

2. CLICK “TrLim” tab on left menu. Then SELECT “Proportional Scale”

- a. For NY-NE studies, SELECT “NYPP_D” for “Sending System and NEGEN for “Receiving System.”
- b. For NE-NY studies, SELECT “NEGEN” for “Sending System” and “NYPP_D” for “Receiving System.”

Settings are as shown in Fig. 2, below:

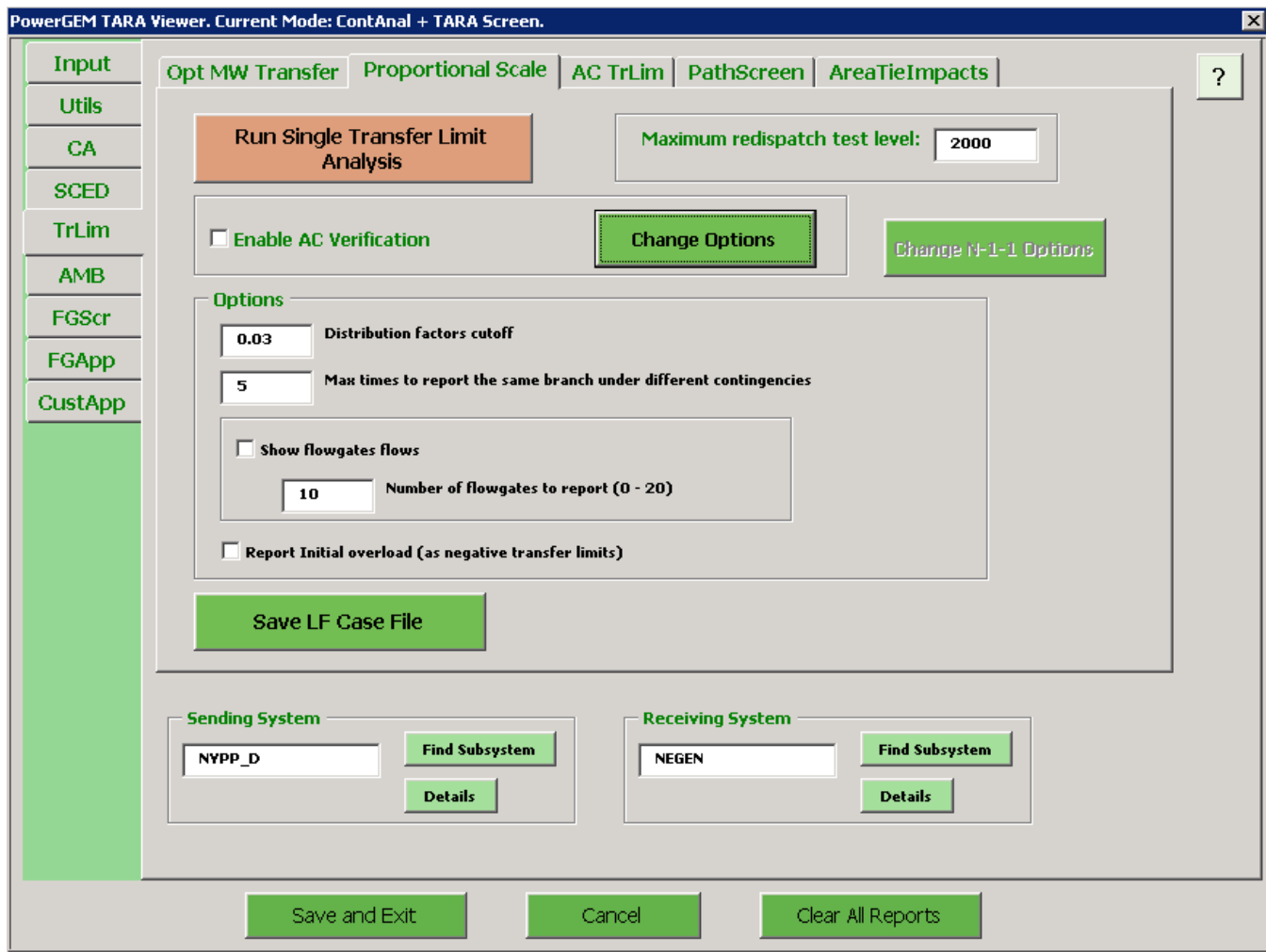



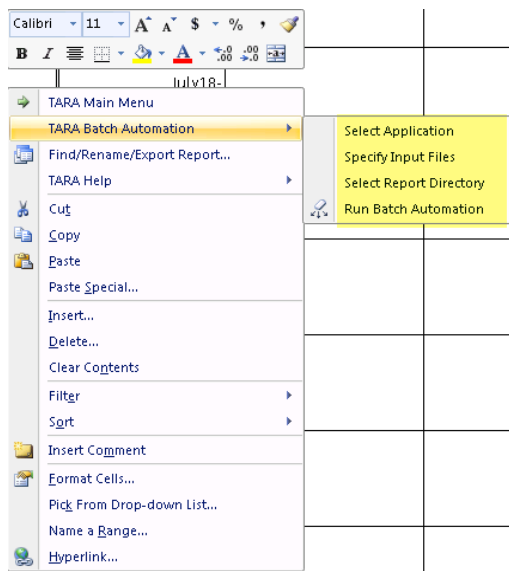
Fig. 2


	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
		Valid Through: July 31, 2026

3. If running a Transfer Limit study on only one case (as selected on the “Input” tab), then CLICK “Run Single Transfer Limit Analysis.
4. REVIEW results and ANALYZE any low limits discovered.
5. If performing Transfer Limit Analysis for a range of cases, PERFORM the following to use the batch process function (See Fig. 3 below):
 - a. NAVIGATE to “BatchProcessN1” tab
 - b. FILL IN the “Scenario Name” column with as many names/numbers as basecases to process. These names/numbers will be the names of folders produced by TARA

NOTE

The BatchProcessN1 sheet may be filled in manually by cutting and pasting filepath/filenames or by RIGHT CLICKING the BatchProcessN1 sheet and selecting “TARA Batch Automation” then “Specify Input Files.” The resulting dialog box is used to navigate to each file, one row at a time:



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	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

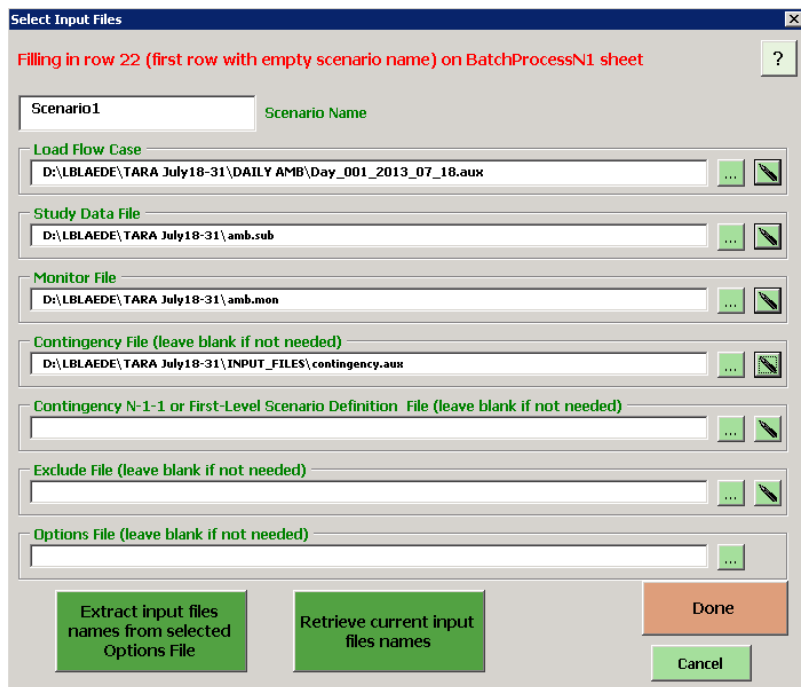



Fig. 3


- c. FILL IN “LF Case Name(required)” column with the filepaths/filenames of the basecases to be processed. One basecase filepath/filename per line (e.g., D:\LBLEDE\TARA July18-31\DAIY AMB\Day_001_2013_07_18.aux)
- d. FILL IN “Study Data File(required)” column with the filepath/filename of the .sub file to be used. The same filepath/filename will be filled in for each line
- e. FILL IN “Monitor File(required)” column with the filepath/filename of the .mon file to be used. The same filepath/filename will be filled in for each line.
- f. FILL IN “Contingency File” column with the filepath/filename of the contingency file to be used. The same filepath/filename will be filled in for each line.
- g. The “Exclude File” and “Options File” columns are left blank.
- h. A properly filled out example of the BatchProcessN1 sheet is shown in Fig. 4 below.

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	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
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Do NOT change B3 and B4 cells manually. Use RMC "Select Batch Process Application" routine. Use FULL path for all files. Do NOT change any columns names						
Application	Proportional Scale Transfer Limit Reports			N-1 mode		
Reports	TRLProp,0					
Reports Root Dir	D:\LBLAEDE\TARA July18-31\NY-NE TR LIM Results					
Scenario Name (should be non-empty)	LF Case Name(required)	Study Data File(required)	Monitor File(required)	Contingency File	Exclude File	Options File
Base	D:\LBLAEDE\TARA July18-31\DAI	D:\LBLAEDE\TARA July18-31\amb.sub	D:\LBLAEDE\TARA July18-31\amb.mon	D:\LBLAEDE\TARA July18-31\INPUT_FILES\conti		
Scenario1	D:\LBLAEDE\TARA July18-31\DAI AMB\Day_002_2013_07_19.aux	D:\LBLAEDE\TARA July18-31\amb.sub	D:\LBLAEDE\TARA July18-31\amb.mon	D:\LBLAEDE\TARA July18-31\INPUT_FILES\conti		
Scenario2	D:\LBLAEDE\TARA July18-31\DAI AMB\Day_003_2013_07_20.aux	D:\LBLAEDE\TARA July18-31\amb.sub	D:\LBLAEDE\TARA July18-31\amb.mon	D:\LBLAEDE\TARA July18-31\INPUT_FILES\conti		
Scenario3	D:\LBLAEDE\TARA July18-31\DAI AMB\Day_004_2013_07_21.aux	D:\LBLAEDE\TARA July18-31\amb.sub	D:\LBLAEDE\TARA July18-31\amb.mon	D:\LBLAEDE\TARA July18-31\INPUT_FILES\conti		
Scenario4	D:\LBLAEDE\TARA July18-31\DAI AMB\Day_005_2013_07_22.aux	D:\LBLAEDE\TARA July18-31\amb.sub	D:\LBLAEDE\TARA July18-31\amb.mon	D:\LBLAEDE\TARA July18-31\INPUT_FILES\conti		
Scenario5	D:\LBLAEDE\TARA July18-31\DAI AMB\Day_006_2013_07_23.aux	D:\LBLAEDE\TARA July18-31\amb.sub	D:\LBLAEDE\TARA July18-31\amb.mon	D:\LBLAEDE\TARA July18-31\INPUT_FILES\conti		
Scenario6	D:\LBLAEDE\TARA July18-31\DAI AMB\Day_007_2013_07_24.aux	D:\LBLAEDE\TARA July18-31\amb.sub	D:\LBLAEDE\TARA July18-31\amb.mon	D:\LBLAEDE\TARA July18-31\INPUT_FILES\conti		
Scenario7	D:\LBLAEDE\TARA July18-31\DAI AMB\Day_008_2013_07_25.aux	D:\LBLAEDE\TARA July18-31\amb.sub	D:\LBLAEDE\TARA July18-31\amb.mon	D:\LBLAEDE\TARA July18-31\INPUT_FILES\conti		

Fig. 4

- i. Right-CLICK anywhere in batch process sheet and then Left-CLICK "Select Application" then SELECT "Proportional TrLim" and ENSURE "Standard N-1" is selected (See Fig. 5 below). The Warn_Sum and/or Warn_List reports may be selected at the bottom, if desired. These reports would be added to the "Proportional Transfer Limit Analysis" report for each basecase.

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	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
		Valid Through: July 31, 2026

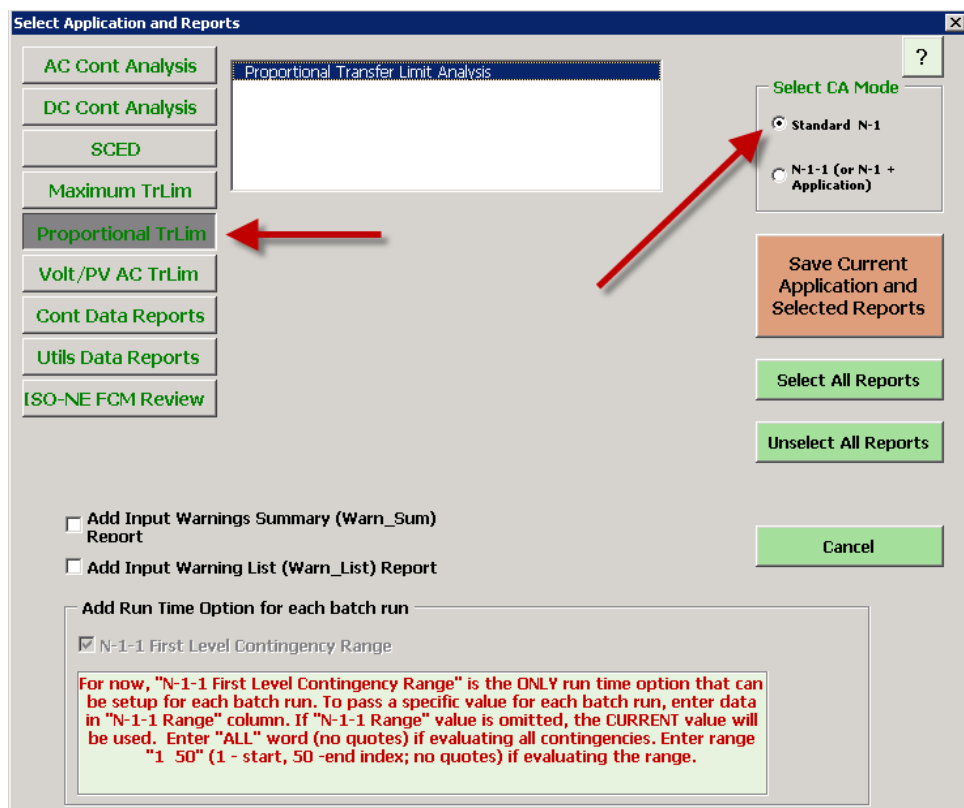

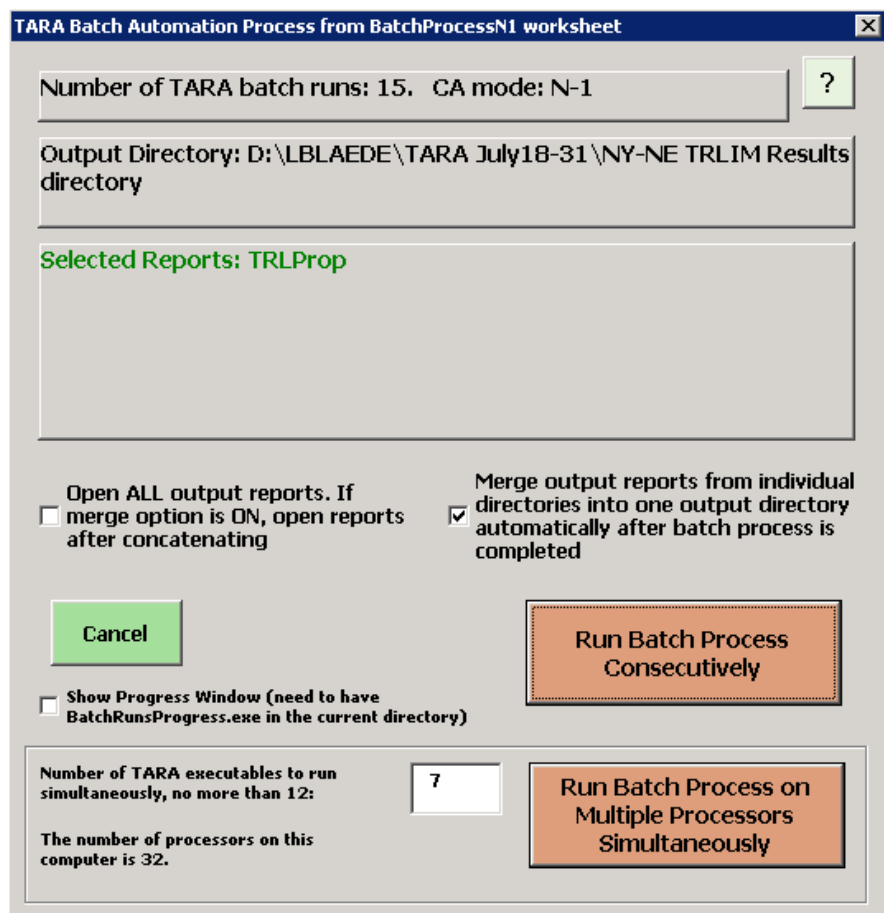


Fig. 5

- j. CLICK “Save Current Application and Selected Reports”
- k. RIGHT CLICK anywhere in the BatchProcessN1 and “TARA Batch Automation” then CLICK “Report Directory” and NAVIGATE to the folder where the TrLim results will be created.
- l. RIGHT CLICK anywhere in the BatchProcessN1 and “TARA Batch Automation” then CLICK “Run Batch Automation.” See Fig. 6 below.
- m. SELECT “Merge output reports....” and SPECIFY the “Number of TARA executables to run simultaneously, **no** more than 12.” This specifies the number of CPU cores that will be in use.

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	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	Revision Number: 5
	Procedure Owner: Maya Ault	Effective Date: July 31, 2024
	Approved By: Director, Operations Support Services	Valid Through: July 31, 2026



TARA Batch Automation Process from BatchProcessN1 worksheet

Number of TARA batch runs: 15. CA mode: N-1

Output Directory: D:\LBLEDE\TARA July18-31\NY-NE TRLIM Results directory

Selected Reports: TRLProp

☐ Open ALL output reports. If merge option is ON, open reports after concatenating

☒ Merge output reports from individual directories into one output directory automatically after batch process is completed

Cancel

Run Batch Process Consecutively

☐ Show Progress Window (need to have BatchRunsProgress.exe in the current directory)

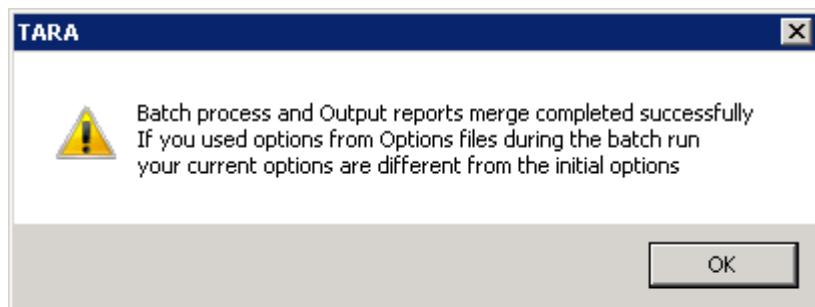
Number of TARA executables to run simultaneously, no more than 12: 7

The number of processors on this computer is 32.

Run Batch Process on Multiple Processors Simultaneously

Fig. 6

- n. CLICK “Run Batch Process on Multiple Processors Simultaneously”
- o. When the run is complete, successfully, the following dialog box will appear:




TARA

Batch process and Output reports merge completed successfully
If you used options from Options files during the batch run
your current options are different from the initial options

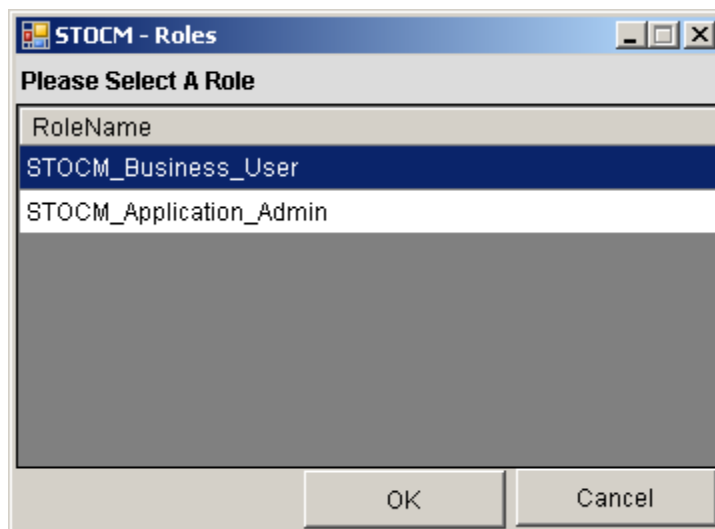
OK

- p. CLICK “OK” then REVIEW the combined Results file “TRLProp.csv”

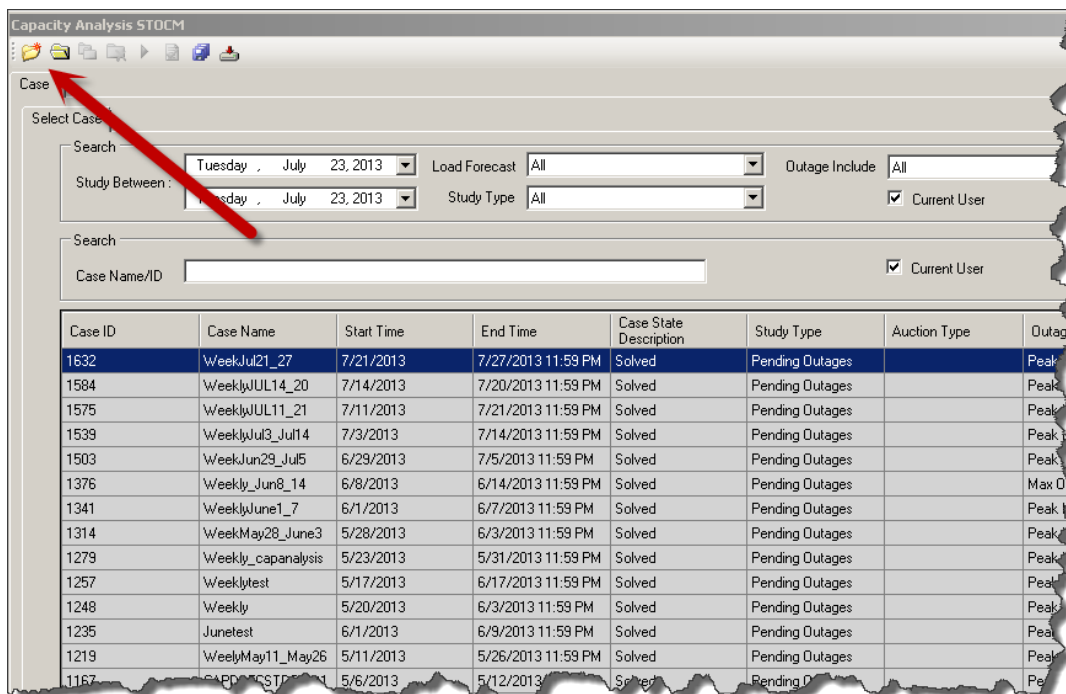
	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	Revision Number: 5
	Procedure Owner: Maya Ault	Effective Date: July 31, 2024
	Approved By: Director, Operations Support Services	Valid Through: July 31, 2026


Attachment E - Perform STOCM Capacity Margin Determination

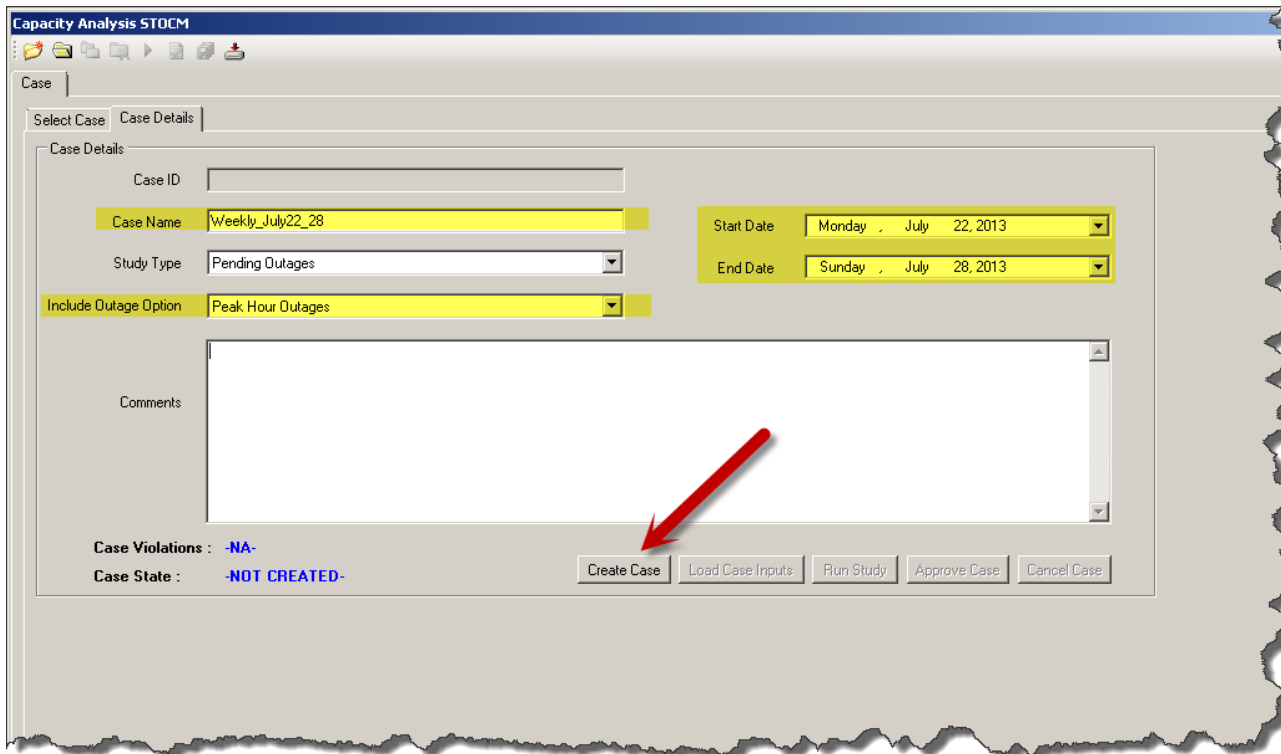
1. START the Short Term Operational Capacity Margin tool (STOCM) using the Short cut located at: [\rtsmb\STOCM\Shortcut to CapacityAnalysis.exe](#) or copied to the desktop.
2. LOGIN as “Business User” at the splash screen:



3. SELECT the icon to create a new case



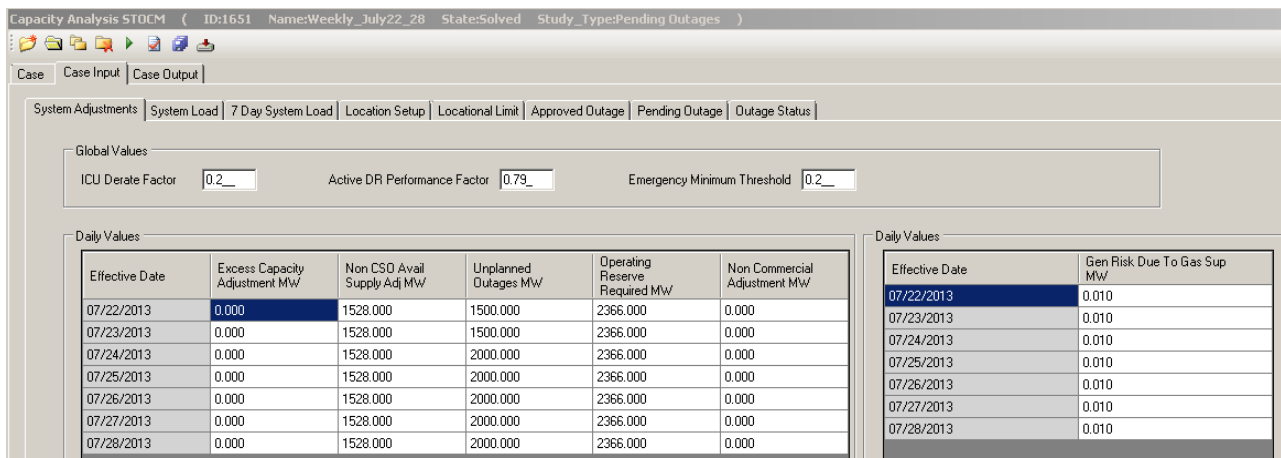
	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools Revision Number: 5 Effective Date: July 31, 2024 Valid Through: July 31, 2026
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	



The screenshot shows the 'Capacity Analysis STOCM' application window. The 'Case Details' tab is active. The 'Case Name' is 'Weekly_July22_28', 'Start Date' is 'Monday, July 22, 2013', 'End Date' is 'Sunday, July 28, 2013', and 'Include Outage Option' is 'Peak Hour Outages'. The 'Case State' is 'NOT CREATED'. A red arrow points to the 'Create Case' button.

Fig. 1

- ENTER a "Case Name," different than any pre-existing name, a "Start Date" and "End Date," "Peak Hour Outages" and then CLICK "Create Case" (Fig. 1).
- Once the case is created, CLICK "Load Case Inputs." This may take a few minutes as multiple databases are queried to populate the case values.




The screenshot shows the 'Capacity Analysis STOCM' application window with the 'Case Output' tab active. The window title bar indicates 'ID:1651 Name:Weekly_July22_28 State:Solved Study_Type:Pending Outages'. The 'Global Values' section shows 'ICU Derate Factor' as 0.2, 'Active DR Performance Factor' as 0.79, and 'Emergency Minimum Threshold' as 0.2. The 'Daily Values' section contains two tables.

Effective Date	Excess Capacity Adjustment MW	Non CSO Avail Supply Adj MW	Unplanned Outages MW	Operating Reserve Required MW	Non Commercial Adjustment MW
07/22/2013	0.000	1528.000	1500.000	2366.000	0.000
07/23/2013	0.000	1528.000	1500.000	2366.000	0.000
07/24/2013	0.000	1528.000	2000.000	2366.000	0.000
07/25/2013	0.000	1528.000	2000.000	2366.000	0.000
07/26/2013	0.000	1528.000	2000.000	2366.000	0.000
07/27/2013	0.000	1528.000	2000.000	2366.000	0.000
07/28/2013	0.000	1528.000	2000.000	2366.000	0.000

Effective Date	Gen Risk Due To Gas Sup MW
07/22/2013	0.010
07/23/2013	0.010
07/24/2013	0.010
07/25/2013	0.010
07/26/2013	0.010
07/27/2013	0.010
07/28/2013	0.010

Fig. 2

	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools Revision Number: 5 Effective Date: July 31, 2024 Valid Through: July 31, 2026
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

NOTE

When entering Reserve Zone limit values, F9 will fill the next cell with the previous cell's contents and F10 will fill down the whole column. Interface limits may also be loaded from an external .csv file.

6. VERIFY the "Excess Capacity Adjustment MW" and "Non Commercial Adjustment MW" columns are all 0.000s.
7. POPULATE the "Non CSO Avail Supply Adj MW" column with the "MW above EcoMin" from the EMS CapSYS page (Fig. 3).
8. ENTER the "Unplanned Outages MW" as 1500MW for days 1 through 6 from the current calendar day and then 2000MW for each day thereafter.
9. ENTER the "Operating Reserve Required MW" and "Non CSO Avail Supply Adj MW" as shown in a current EMS CapSYS page (Fig. 3):

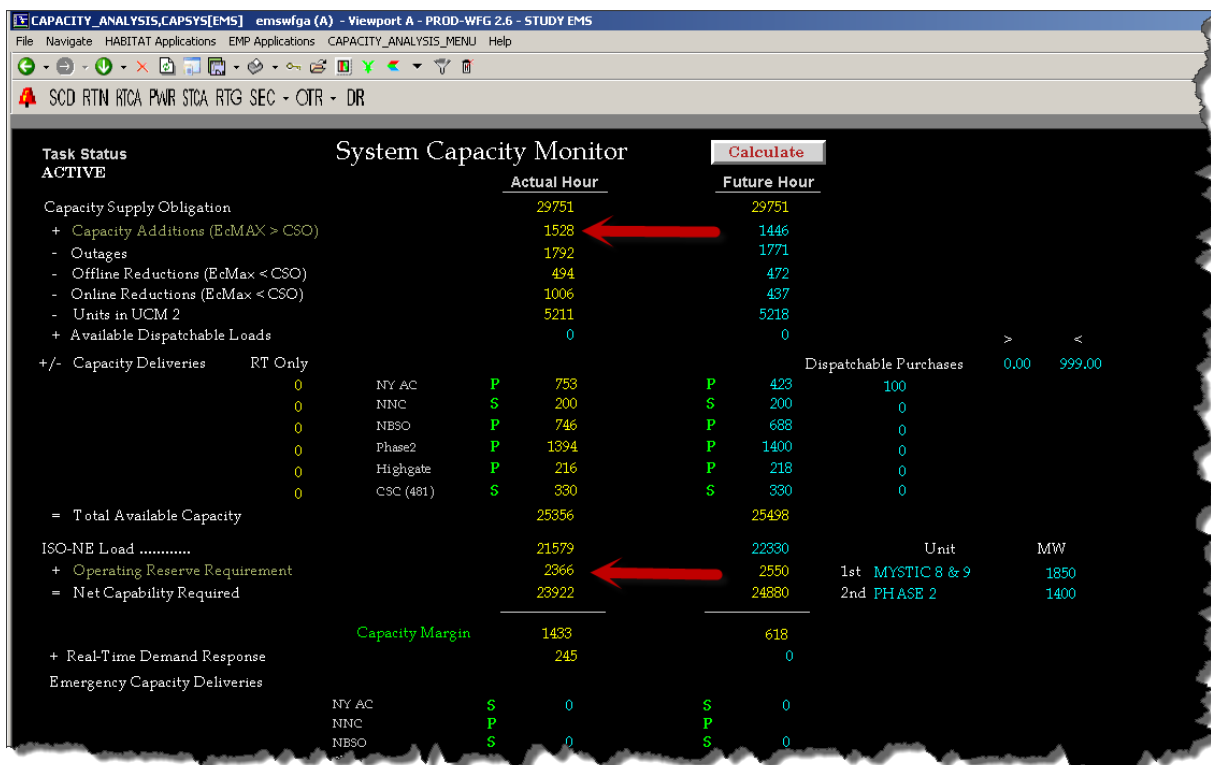



Fig. 3

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	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

10. SET “Gen Risk Due to Gas Sup MW” as predicted by the forecaster on the 7- day load forecast, located here: http://www.iso-ne.com/sys_ops/op_frctng/7day_frct/index.html. Use the “Anticipated Cold Weather Outages” as a guide. STOCM tool does **not** allow a 0.00 value so if there is **no** Gen at Risk then ENTER a low number (e.g., 0.001, etc.) - Fig. 4.

Seven Day Forecast

[Download a CSV file of the Seven-Day Forecast.](#) [Print this page](#)


For today's forecast, please refer to the [Morning Report](#).

For an explanation of this report please refer to the [Seven-Day Forecast Explained](#).

2005

	Day 2 Thu 07/25/13	Day 3 Fri 07/26/13	Day 4 Sat 07/27/13	Day 5 Sun 07/28/13	Day 6 Mon 07/29/13	Day 7 Tue 07/30/13
Weather						
High Temperature - Boston	71	73	82	80	82	84
Dew Point - Boston	55	62	64	68	66	61
High Temperature - Hartford	76	78	86	83	85	87
Dew Point - Hartford	53	62	63	68	63	60
Generating Capacity Position						
Total Capacity Supply Obligation (CSO)	29,751	29,751	29,751	29,751	29,751	29,751
Anticipated Cold Weather Outages	0	0	0	0	0	0
Other Generation Outage	2,855	2,859	3,098	3,243	3,472	3,728
Anticipated De-List MW Offered	1,400	1,400	1,400	1,400	1,400	1,400
Total Generation Available	28,296	28,292	28,053	27,908	27,679	27,423
Import at Time of Peak	1,888	1,888	1,688	1,688	1,888	1,888

Fig. 4

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	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
		Valid Through: July 31, 2026

11. The “System Load,” “7 Day System Load” and “Location Setup” tabs are set by the administrator and so do **not** need to be adjusted by the business user.

•To adjust the Reserve Zone percentage as the administrator, PERFORM the following:

1. CLICK on “Location Setup” tab (see Fig. 2)
2. SELECT the “Reserve Zone” embedded tab (see Fig. 5)
3. ENTER corresponding percentage of system load for each Zone according to the most conservative hourly percentage on the latest GRT

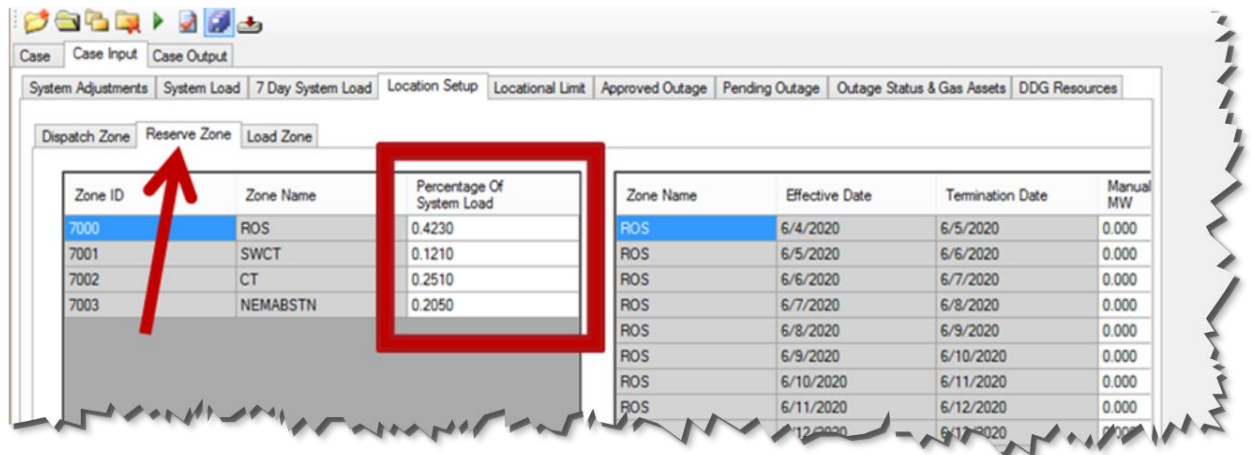



Fig. 5

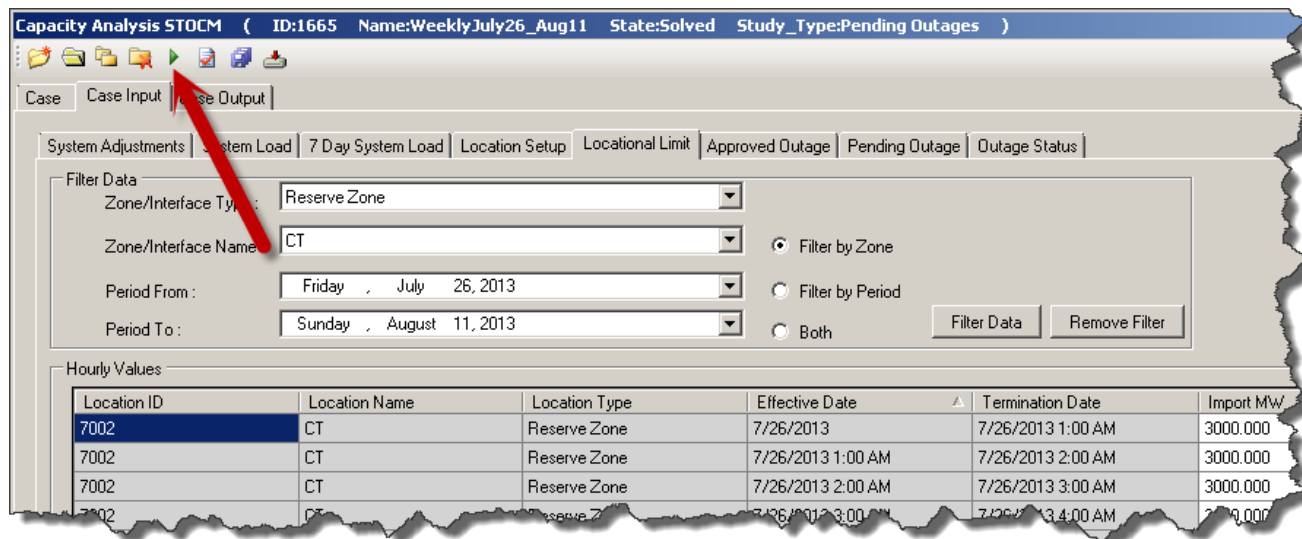
12. CLICK on “Locational Limit” tab (see Fig. 2), then SELECT the “Reserve Zone” interface type under Filter Data.

13. SELECT CT “Zone/Interface Name” then CLICK the “Filter Data” button. ENTER desired CT interface limit by using the best judgment for limits within the GRT. PERFORM the same steps for SWCT and BOSTON in turn and set the “Import MW” values.

14. REVIEW “Approved Outage” and “Pending Outage” tabs and deselect outages if desired.

15. CLICK the “Run a Case” (Green Arrow) button, then CLICK “OK” in the resulting dialog box, as below.

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	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	



Capacity Analysis STOCM (ID:1665 Name:WeeklyJuly26_Aug11 State:Solved Study_Type:Pending Outages)

Case Case Input Case Output

System Adjustments System Load 7 Day System Load Location Setup Locational Limit Approved Outage Pending Outage Outage Status

Filter Data

Zone/Interface Type: Reserve Zone

Zone/Interface Name: CT

Period From: Friday, July 26, 2013

Period To: Sunday, August 11, 2013

Filter by Zone (selected)

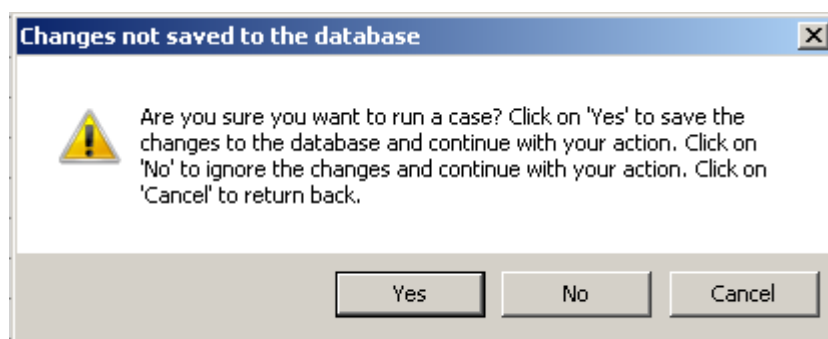
Filter by Period

Both

Filter Data Remove Filter

Hourly Values

Location ID	Location Name	Location Type	Effective Date	Termination Date	Import MW
7002	CT	Reserve Zone	7/26/2013	7/26/2013 1:00 AM	3000.000
7002	CT	Reserve Zone	7/26/2013 1:00 AM	7/26/2013 2:00 AM	3000.000
7002	CT	Reserve Zone	7/26/2013 2:00 AM	7/26/2013 3:00 AM	3000.000
7002	CT	Reserve Zone	7/26/2013 3:00 AM	7/26/2013 4:00 AM	3000.000

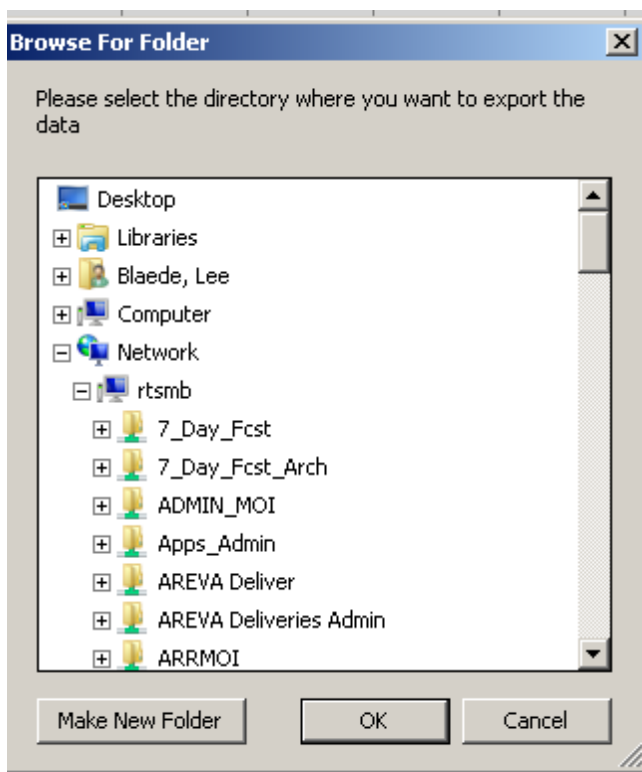



Changes not saved to the database

Are you sure you want to run a case? Click on 'Yes' to save the changes to the database and continue with your action. Click on 'No' to ignore the changes and continue with your action. Click on 'Cancel' to return back.

Yes No Cancel

- When complete, the “Case Output” tab will appear. CLICK “Case Output” tab and REVIEW the “System Results” and “Reserve Zone” Results for OpCap Margin and any violations.
- EXPORT the results to desired directory by clicking the “Export All” (arrow-drive) icon then specifying the destination directory.



	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
		Valid Through: July 31, 2026

Attachment F - Perform TTC Calculator Interface Limit Solutions

1. START the TTC Calculator Java application from the shortcut or from \\rtsmb\\TTC_Calc.

NOTE


Production and Integration versions of TTC Calculator uses the Active Directory (AD) (laptop login credentials). Kerberos in TTCCalc login must be updated with AD password for the auto login feature for the TTC calculator to work. In structions are found on Short Term Confluence: <https://docs.iso-ne.com/display/SOC/New+TTC+Calculator>.

2. SET the parameters as follows (Fig. 1):
 - a. "Date:" as desired.
 - b. "Hour Ending:" to any hour (typically peak). Currently, TTC Calculator does not perform hourly solutions, but this functionality may be added in the future.
 - c. "Target Application:" to DayAhead. Thermal study is automatically applied.
 - d. "Study Case:" navigate to desired bus-branch case. The only cases available are those in the <\\rtsmb\\PowerWorld\\exports> directory.
 - e. "Description:" type any appropriate description. **No** spaces are allowed in this field.

NOTE

The "View Results" box remains empty for TTC Calculator runs. SELECT a case from the dropdown in this box only to review a previously solved case.

3. CLICK "All Interface and Scenarios" button for all the calculations or "Single Interface" button then SELECT the interface to solve from the "Interface:" dropdown menu.
 - a. Single Interface selected: Options to run all scenarios or one specific scenario within that interface.
4. SELECT the following boxes ONLY in the "Condition" menu:
 - a. Opens the tie line
 - 390/3016and3001
 - CSC
 - 1385

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	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

- b. NHHB (only if online in the basecase)
- c. Reduces to ECOMIN when selected
 - MFD1
 - MFD2
 - BHR3 (Actually BHR5 unit)
 - DIGH_&_TIVR_Ecomin

TTC Calculator - Production mault - TTC Calculator Operator

ISO New England TTC Calculator

CaseData

Date: Hour Ending: ☐ Batch Mode

Target Application: Calculation Type: Completed / Total Scenarios:

Study Case:

Description:

Type Of Calculation

☒ All Interface and Scenarios

☐ Single Interface

Interface:

☐ Run all Scenarios for Selected Interface

☐ Run a specific Scenario

Type of Limit:

Scenario:

Condition

<input checked="" type="checkbox"/>	390/3016and3001
<input checked="" type="checkbox"/>	1385
<input type="checkbox"/>	CAN
<input type="checkbox"/>	CSC
<input type="checkbox"/>	NHHB
<input type="checkbox"/>	WS10
<input type="checkbox"/>	WSG1
<input type="checkbox"/>	WSG2
<input checked="" type="checkbox"/>	BERK

View Results


Case:

Case Status:

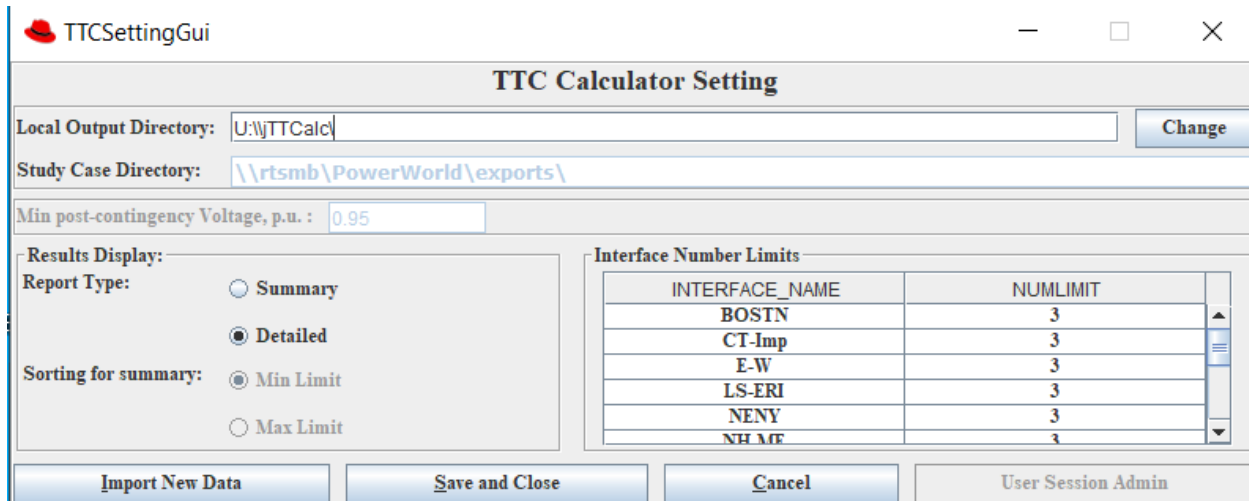
06/03/2024 11:58:23 - ISO New England TTC Calculator - Initialized
 06/03/2024 11:58:23 - TTC Calculator determined Default EMS Release Version - 3.2.11
 06/03/2024 11:58:22 - TTC Calculator determined EMS Release Version - 3.2.11
 06/03/2024 11:58:22 - TTC Calculator to add new setting for interface limits for user: mault

Fig. 1

5. CLICK the “Setting” tab on the bottom of the TTC Calculator screen (see above).

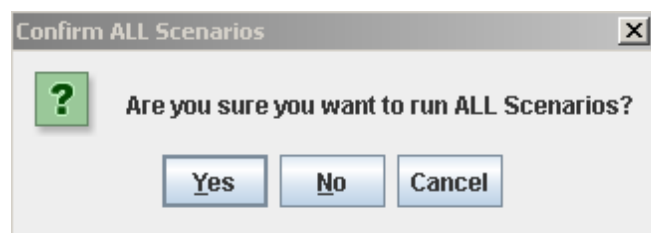
	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools Revision Number: 5 Effective Date: July 31, 2024 Valid Through: July 31, 2026
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

6. SET the “NUMLIMIT” to the number of desired solutions, from 3 to 10. SET “Results Display:” to “Summary” then “Max Limit” then leave it back on “Detailed”. CLICK “Save and Close” (This may not be adjustable without proper permissions, default is max limit.)




INTERFACE_NAME	NUMLIMIT
BOSTN	3
CT-Imp	3
E-W	3
LS-ERI	3
NENY	3
NH-ME	3

7. CLICK “Run” then CLICK “Yes” to the resulting dialog box:



8. When the TTC Calculator run is complete, CLICK “Display Detailed Report” on the resulting Approval Form

	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools
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	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
		Valid Through: July 31, 2026


TTC Calculation Limit Approval Form

TTC Calculator Case ID : PW_20130730194151_LBLAED Case Status : SOLVED

APPROVAL	INTERFACE	LIMTYPE	SCENARIO	DA/STE	LIMIT	CONTINGENCY	LIMELEM	LIMUSED	SOLTYPE
<input checked="" type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	3750	ZB11	110-511-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	3755	ZB11	110-510-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	3850	337	110-510-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	3854	337	110-511-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	4190	3162	110-510-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	4199	3163	110-510-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	4204	3162	110-511-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	4212	3163	110-511-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	4554	ZB11	T146-4	148	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +3	<input type="checkbox"/>	4853	Base Case	110-510-3	120.00001	YES
<input checked="" type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	2633	3162	110C_BAK...	205	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	4296	282602	110-510-3	179	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	4845	282602	110-511-3	179	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	5079	240E	240-508	290	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	5079	339	T146-4	148	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	5079	3164	211-511-4	198	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	5079	339	M139-2	286	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	5079	394	3	1908	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	5079	394	211-511-4	198	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +6	<input type="checkbox"/>	5079	3164	456-522	530	RAMP_FAIL_IN_FULL
<input checked="" type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +9	<input type="checkbox"/>	2713	ZB11	110-510-3	179	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +9	<input type="checkbox"/>	4703	ZB11	T146-4	148	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +9	<input type="checkbox"/>	4903	3164	456-522	530	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +9	<input type="checkbox"/>	5010	337	T146-4	148	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham +3 Baker St +9	<input type="checkbox"/>	5052	337	M139-2	286	RAMP_FAIL_IN_FULL

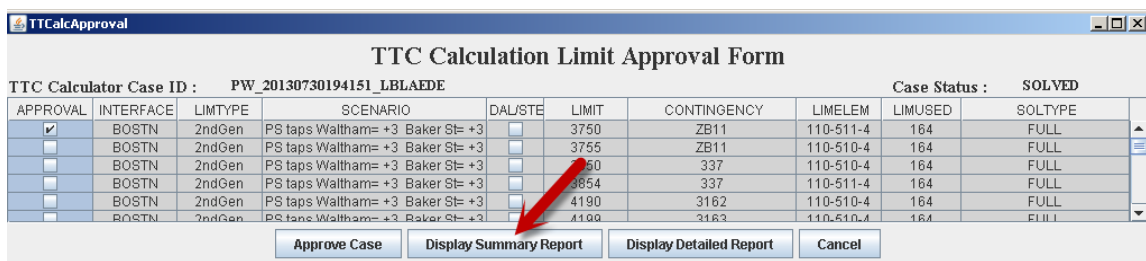
Approve Case Display Summary Report Display Detailed Report Cancel

9. REVIEW the resulting solutions and validate the contingency pairs and limiting elements prior to choosing the interface limit. Any limit with a "Solution Type" = "CTG_FAIL__ITERATED" or "Powerflow_Divergence" should be ignored as that contingency pair did **not** solve. Any Solution Type = "RAMP_FAIL_IN_FULL" can be used if a "FULL" solution is achieved. This means it is the max limit achieved prior to the case failing to solve due to voltage issues.

	© <i>ISO New England Inc. 2024</i>	<i>Procedure: Outage Coordination Reliability Analysis Tools</i>
	<i>Process Name: Capture and Evaluate Outage Requests</i>	
	<i>Procedure Number: OUTSCH.0030.0005</i>	
	<i>Procedure Owner: Maya Ault</i>	
	<i>Approved By: Director, Operations Support Services</i>	<i>Revision Number: 5</i>
		<i>Effective Date: July 31, 2024</i>
		<i>Valid Through: July 31, 2026</i>

Interface	Limit Type	Scenario	DAL / STE	Limit (MW)	Contingency	Limiting Element	Limit Used	Solution Type	Tripped Gen (MW)
SWCT	2ndLine	Haw & Nor reactors IN SERVICE		1545	1208+ESHORE9X	1342	278	FULL	
SWCT	2ndLine	Haw & Nor reactors IN SERVICE		1545	387+1208	1342	278	FULL	
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3		3843	Base Case	BAKER_ST_110C	115	POWERFLOW_DIVERGENCE	186
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3		3843	Base Case	BAKER_ST_110D	115	POWERFLOW_DIVERGENCE	186
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3		3843	Base Case	110-510-4	115	POWERFLOW_DIVERGENCE	186
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= -3		3010	Base Case	282-520-2	120	YES	186
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= -3		3034	Base Case	282-521-2	120	YES	186
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= -3		3826	3161	282-520-2	155	RAMP_FAIL_IN_FULL	186
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= 0		3844	3161	282-520-2	155	RAMP_FAIL_IN_FULL	186
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= 0		3844	Base Case	282-520-2	120	POWERFLOW_DIVERGENCE	186
BOSTN	2ndGen	PS taps Waltham= +3 Baker St= 0		3844	Base Case	282-521-2	120	POWERFLOW_DIVERGENCE	186
BOSTN	2ndGen	PS taps Waltham= -3 Baker St= +3		2924	Base Case	110-510-4	115	YES	186
BOSTN	2ndGen	PS taps Waltham= -3 Baker St= +3		2924	Base Case	BAKER_ST_110D	115	YES	186
BOSTN	2ndGen	PS taps Waltham= -3 Baker St= +3		2924	Base Case	BAKER_ST_110C	115	YES	186
BOSTN	2ndGen	PS taps Waltham= -3 Baker St= -3		3818	3162	3163	675	CTG_FAIL_ITERATED	186

10. Clicking “Display Summary Report” will show the lowest of the solution sets for each interface calculation except for the Boston Interface where the Lowest value of the Highest set will be chosen to display.




TTC Calculation Limit Approval Form

TTC Calculator Case ID : PW_20130730194151_LBLAED

APPROVAL	INTERFACE	LIMTYPE	SCENARIO	DAL/STE	LIMIT	CONTINGENCY	LIMELEM	LIMUSED	SOLTYPE
<input checked="" type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3	<input type="checkbox"/>	3750	ZB11	110-511-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3	<input type="checkbox"/>	3755	ZB11	110-510-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3	<input type="checkbox"/>	3760	337	110-510-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3	<input type="checkbox"/>	3854	337	110-511-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3	<input type="checkbox"/>	4190	3162	110-510-4	164	FULL
<input type="checkbox"/>	BOSTN	2ndGen	PS taps Waltham= +3 Baker St= +3	<input type="checkbox"/>	4190	3163	110-510-4	164	FULL

Buttons: Approve Case, Display Summary Report, Display Detailed Report, Cancel

11. If desired, CLICK “Save Log” to store a log in your user directory.

	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools Revision Number: 5 Effective Date: July 31, 2024 Valid Through: July 31, 2026
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

ISO New England TTC Calculator

Date: Hour Ending: ☐ Batch Mode
 Application: Calculation Type: Completed / Total Scenarios:
 Case:
 Name:

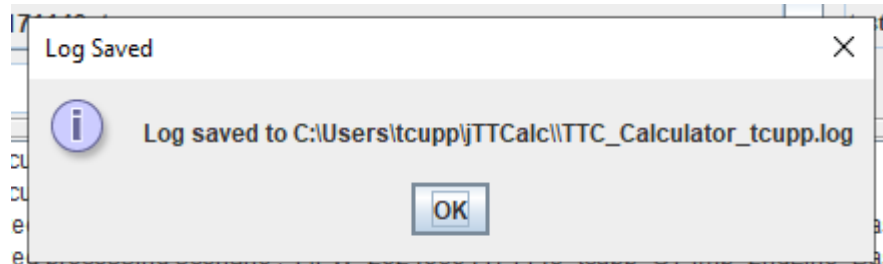
Calculation
☐ All Interface and Scenarios
☒ Single Interface

☒ Run all Scenarios for Selected Interface
☐ Run a specific Scenario
 Limit:
Condition


<input checked="" type="checkbox"/>	390/3016and3001
<input checked="" type="checkbox"/>	1385
<input type="checkbox"/>	CAN
<input checked="" type="checkbox"/>	CSC
<input type="checkbox"/>	NHHB
<input type="checkbox"/>	WS10
<input type="checkbox"/>	WSG1
<input type="checkbox"/>	WSG2
<input type="checkbox"/>	BERK

Results:
 Status:

4 13:13:27 - TTC Calculator successfully processed Case PW_20240604171149_tcupp
 4 13:13:27 - TTC Calculator completed calculation for PW_20240604171149_tcupp
 4 13:13:27 - Completed processing scenario : 2 [PW_20240604171149_tcupp_CT-Imp_2ndLine_Base_Y]
 4 13:13:14 - Completed processing scenario : 1 [PW_20240604171149_tcupp_CT-Imp_2ndLine_Base_N]
 4 13:13:14 - Completed processing scenario : 0 [PW_20240604171149_tcupp_CT-Imp_2ndGen_Base_N]



12. If it is desired to review the solutions for a previously solved case, SELECT the desired basecase solution in the “Case:” menu, then CLICK “View Result” to see the Approval Form or CLICK “View Report” to see only the final solutions report.

	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools Revision Number: 5 Effective Date: July 31, 2024 Valid Through: July 31, 2026
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

TTC Calculator - Production

tcupp - TTC Calculator Operator

ISO New England TTC Calculator

CaseData

Date: 06/05/2024
Hour Ending: 18
Batch Mode

Target Application: DayAhead
Calculation Type: Thermal
Completed / Total Scenarios: 3 / 3

Study Case: pw_nkasala_mon_06_10_15750mw_osd6_20240604_110419.aux
Open

Description: test

Type Of Calculation

☐ All Interface and Scenarios
☒ Single Interface

Interface: CT-Imp
Run all Scenarios for Selected Interface
Run a specific Scenario

Type of Limit:

Scenario:

Condition

☒ 390/3016and3001
☒ 1385
☐ CAN
☒ CSC
☐ NHHB
☐ WS10
☐ WSG1
☐ WSG2
☐ BERK

Save Log
Clear Log

View Results

Case: PW_20240604171149_tcupp
test

Case Status: Solved

06/04/2024 13:13:27 - TTC Calculator successfully processed Case PW_20240604171149_tcupp
06/04/2024 13:13:27 - TTC Calculator completed calculation for PW_20240604171149_tcupp
06/04/2024 13:13:27 - Completed processing scenario : 2 [PW_20240604171149_tcupp_CT-Imp_2ndLine_Base_Y]
06/04/2024 13:13:14 - Completed processing scenario : 1 [PW_20240604171149_tcupp_CT-Imp_2ndLine_Base_N]
06/04/2024 13:13:14 - Completed processing scenario : 0 [PW_20240604171149_tcupp_CT-Imp_2ndGen_Base_N]
06/04/2024 13:12:07 - Total number of scenario(s) being processed for PW_20240604171149_tcupp is 3
06/04/2024 13:12:07 - Server(s) available for processing Scenario message(s)
06/04/2024 13:12:07 - Waiting for available servers for processing Scenario Message(s)
06/04/2024 13:12:07 - TTC Calculator successfully completed creating scenario script JMS messages for PW_20240604171149_tcupp
06/04/2024 13:12:05 - TTC Calculator started creating scenario script JMS messages for PW_20240604171149_tcupp
06/04/2024 13:12:05 - TTC Calculator successfully processed Base Case for CaseID PW_20240604171149_tcupp
06/04/2024 13:12:05 - TTC Calculator recieved Base Case Acknowledgement for CaseID PW_20240604171149_tcupp with status of Success
06/04/2024 13:11:50 - TTC Calculator successfully published Base Case script JMS message for PW_20240604171149_tcupp
06/04/2024 13:11:50 - Server(s) available for processing Base Case message
06/04/2024 13:11:50 - Waiting for available servers for processing Base Case Message
06/04/2024 13:11:50 - Selected All scenarios for CT-Imp interface for process

Run
ViewResult
ViewReport
CopyCase
Setting
Close

TTC Calculation Limit Approval Form

TTC Calculator Case ID : PW_20240604171149_TCUPP								Case Status : SOLVED	
APPROVAL	INTERFACE	LIMTYPE	SCENARIO	DAL/STE	LIMIT	CONTINGENCY	LIMELEM	LIMUSED	SOLTYPE
<input checked="" type="checkbox"/>	CT-Imp	2ndGen	Base		2356	CARD5X	L190S-5	251	FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		2460	330	L190S-5	251	FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		2516	CARD5X	150S-1	378	FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		2655	CARD5X	L190S-4	251	FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		2659	330	150S-1	378	FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		2743	330	L190S-4	251	FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		3235	NBLOOM7X	N_BLOOM_5X	554	FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		3371	1751	1777	202	FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		3933	341	347	1618	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	CT-Imp	2ndGen	Base		3939	3216	3419	1599	RAMP_FAIL_IN_FULL
<input checked="" type="checkbox"/>	CT-Imp	2ndLine	Base		1498	1726+1751	1777	202	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1594	3348+CARD5X	L190S-5	251	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1615	KILLNG2X+CARD5X	L190S-5	251	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1732	330+3216	3419	1599	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1758	3216+CARD5X	3419	1599	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1821	330+3348	L190S-5	251	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1839	330+KILLNG2X	L190S-5	251	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1855	3348+CARD5X	L190S-4	251	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1872	KILLNG2X+CARD5X	L190S-4	251	FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		1923	CARD5X+371	L190S-5	251	FULL
<input checked="" type="checkbox"/>	CT-Imp	2ndLine	Base		2983	3348+CARD5X	L190S-4	333	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		2983	3348+CARD5X	L190S-5	333	POWERFLOW_DIVERGENCE
<input type="checkbox"/>	CT-Imp	2ndLine	Base		2983	KILLNG2X+CARD5X	1870S-1	275	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		2983	KILLNG2X+CARD5X	L190S-4	333	RAMP_FAIL_IN_FULL
<input type="checkbox"/>	CT-Imp	2ndLine	Base		2983	KILLNG2X+CARD5X	L190S-5	333	RAMP_FAIL_IN_FULL

Approve Case

Display Summary Report


Display Detailed Report

Cancel

Rev 5

ISO-NE PUBLIC

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	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
		Valid Through: July 31, 2026

JasperViewer

1

100%

ISO New England TTC Calculation -Detailed

Case ID: PW_20240604171149_tcupp

Study Time: 06/05/2024 18:00

Approval Time: null

Target Application: DayAhead

DAL Season: Summer

Case Description: test

Study Case: model_pf_pwrflow_nkasala_mon_06_10_15750mw_osd6_20240604_110419.aux

Case Status: Solved

Execution Time: 06/04/2024 13:13

EMS Release: 3.2.11

Calculation Type: Thermal


NSTAR: NotApplied

System Status:

1385 : Open 390/3016and3001 : OpenBERK : Not AvailableBHCC : Limited BHR3 : Limited CAN : Not Limited CSC : Open Comb
Applied

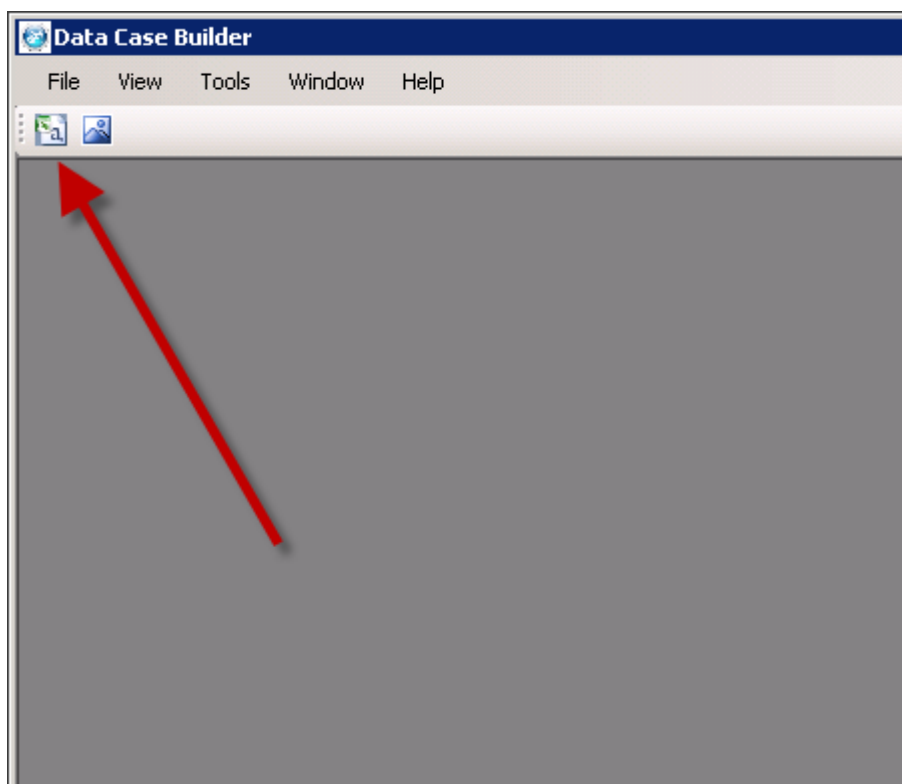
DIGH_ & TIVR_Ecomin : LimitedMFD1 : Limited MFD2 : Limited MTOM : Not AvailableNHHB : Not Limited WS10 : Not AvailableWSG1 : No

Interface	Limit Type	Scenario	DAL / STE	Limit (MW)	Contingency	Limiting Element	Limit Used	Solution Type	Tripped Gen (MW)	Load Shed	Tripped Unit(s)
CT-Imp	2ndGen	Base		2356	CARD5X	L190S-5	251	FULL	1242	0	MIL3
CT-Imp	2ndGen	Base		2460	330	L190S-5	251	FULL	1242	0	MIL3
CT-Imp	2ndGen	Base		2516	CARD5X	150S-1	378	FULL	1242	0	MIL3
CT-Imp	2ndGen	Base		2655	CARD5X	L190S-4	251	FULL	1242	0	MIL3
CT-Imp	2ndGen	Base		2659	330	150S-1	378	FULL	1242	0	MIL3
CT-Imp	2ndGen	Base		2743	330	L190S-4	251	FULL	1242	0	MIL3
CT-Imp	2ndGen	Base		3235	NBLOOM7X	N_BLOOM_5X	554	FULL	1242	0	MIL3
CT-Imp	2ndGen	Base		3371	1751	1777	202	FULL	1242	0	MIL3


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	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
		Valid Through: July 31, 2026

Attachment G - Casebuilder Set-Up and Operation for TARA Studies

1. START Casebuilder using the shortcut copied to the personal folder (e.g., **not** from the IT DA Supported Apps directory).
2. CLICK Excel Icon:



3. SELECT "TARA – Outage Reliability Review" Study Mode (See Fig. 1, below).
4. ENTER appropriate "Case Name" (e.g., TARA or Weekly. Casebuilder will append the start and end dates to the filename)
5. SELECT "Destination folder" - CLICK "..." button and navigate to any personal folder or desktop.
6. SET "Study Date Range," "Start Date" and "End Date" according to the span of the study to be performed.
7. SET the "Direct Dispatch," "Start Date" and "End Date". This should be one or several days prior to the current date and will determine the period during which the wind/hydro/nuclear unit hourly outputs are averaged.

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	Approved By: Director, Operations Support Services	Valid Through: July 31, 2026

8. SELECT the Contingency File and Network model bus-branch .aux files created from EMS. CLICK “...” buttons. Casebuilder will automatically navigate to the [\\rtsmb\PowerWorld\exports](#) folder. (SELECT the normal full contingency file - 1st one in list below).

NOTE

Three contingency files are created when exporting from EMS STCA: The regular full contingency file, N-1_and_N-2 file and the sps file. For TARA outage coordination studies, do **not** select the N-1 and N-2 contingency file

 ctgs_stca_stca_lblaede_263_ali_summer_july12_20130712_080859.aux
 ctgs_stca_stca_lblaede_263_ali_summer_july12_20130712_080859_N-1_and_N-2.aux
 ctgs_stca_stca_lblaede_263_ali_summer_july12_20130712_080859_sps.aux

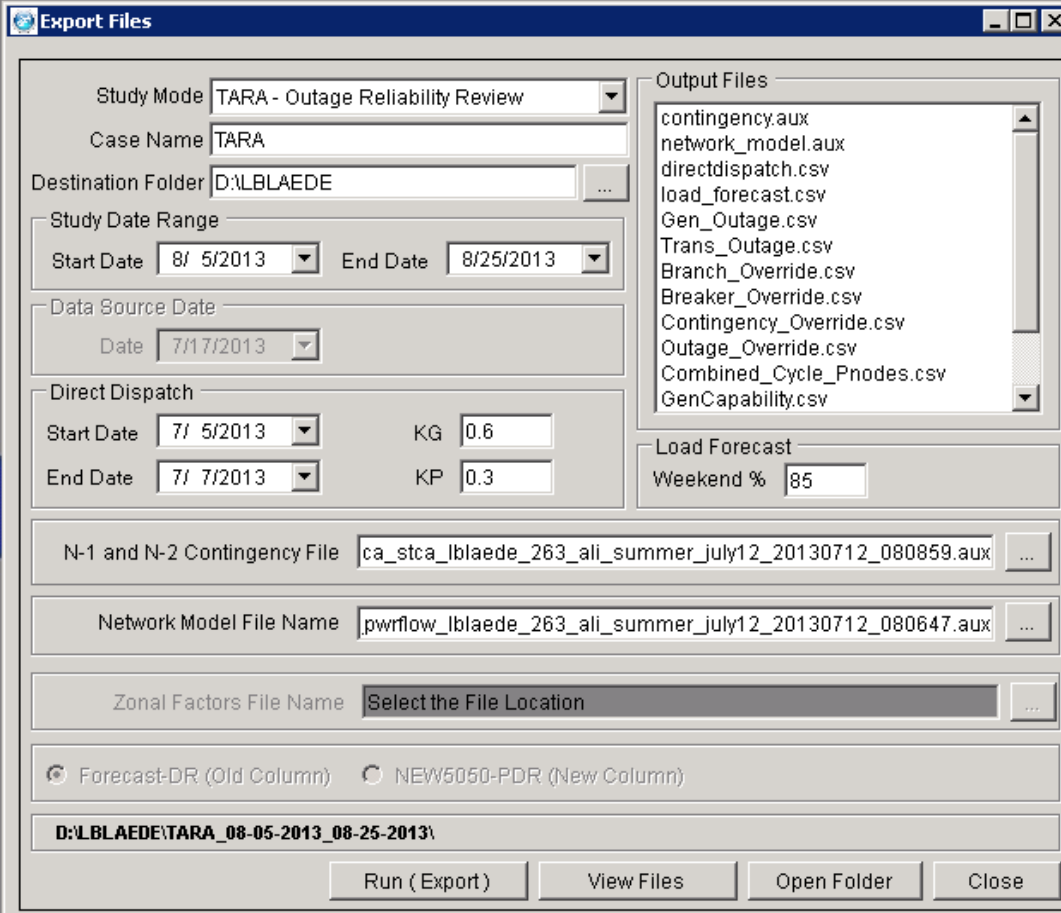



Fig. 1


	© ISO New England Inc. 2024	Procedure: Outage Coordination Reliability Analysis Tools
	Process Name: Capture and Evaluate Outage Requests	
	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
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NOTE

The “Output Files” box reveals all the files that will be produced with the selected casebuilder run.

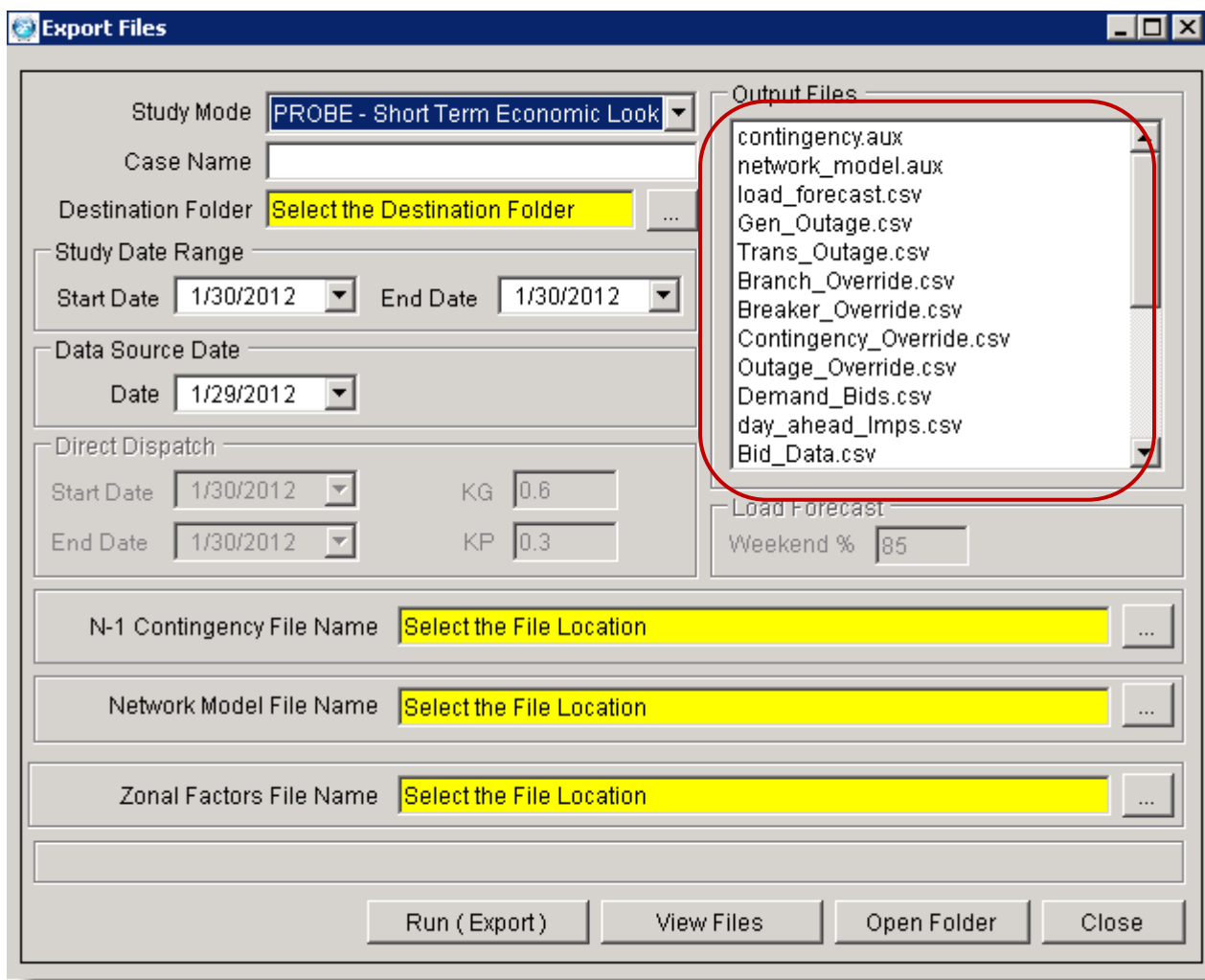
The load forecast is automatically taken from a file in the IT DA Supported APPs directory. The weekend percentage of weekday load is set to a default “85%” but can be modified by the user.

9. CLICK “Run (Export)” - A folder will be created on the selected directory and will contain one set of input files for all the TARA studies for the selected study date Range.
10. COPY these files and PASTE into the “Input Files” folder in the desired TARA study folder.


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	Approved By: Director, Operations Support Services	Revision Number: 5
		Effective Date: July 31, 2024
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Attachment H - Casebuilder Set-Up and Operation for PROBE Studies

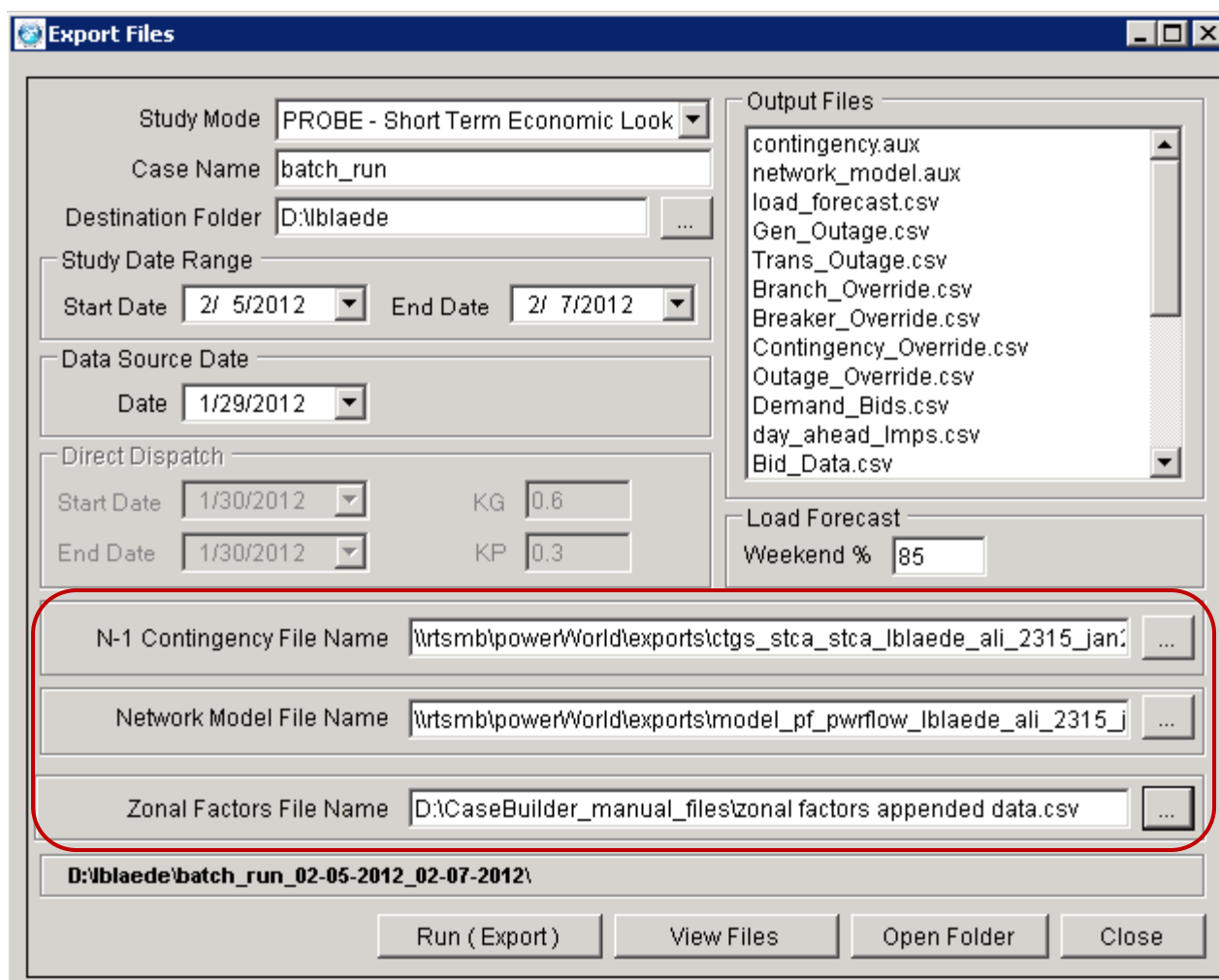
1. SELECT “PROBE - Short Term Economic Look Ahead” Study Mode. The resulting output files are displayed in the box on right.



2. DEFINE “Case Name” and “Destination Folder.” The selected study dates will be automatically appended to the resulting folder. If more than one study date is selected, there will be a folder for each study day.

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3. DEFINE "Study Date Range" and "Data Source Date" (Market Day - used for bids/offers/transactions). The Direct Dispatch selectors are **not** applicable to any of the PROBE study modes and so are "grayed out".
4. SELECT "N-1 Contingency File," "Network Model File" and "Zonal Factors File". See below. CLICK "..." buttons and builder will open the \\rtsmb\PowerWorld\Export folder where these files are saved when created from EMS. The zonal factors file should be chosen to match the month of the Study dates and are located in the casebuilder_manual_files folder.



Export Files

Study Mode: PROBE - Short Term Economic Look

Case Name: batch_run

Destination Folder: D:\Iblaede

Study Date Range

Start Date: 2/ 5/2012 End Date: 2/ 7/2012

Data Source Date

Date: 1/29/2012

Direct Dispatch

Start Date: 1/30/2012 End Date: 1/30/2012 KG: 0.6 KP: 0.3

Load Forecast

Weekend %: 85

Output Files

- contingency.aux
- network_model.aux
- load_forecast.csv
- Gen_Outage.csv
- Trans_Outage.csv
- Branch_Override.csv
- Breaker_Override.csv
- Contingency_Override.csv
- Outage_Override.csv
- Demand_Bids.csv
- day_ahead_lmps.csv
- Bid_Data.csv


N-1 Contingency File Name: \\rtsmb\power\World\exports\ctgs_stca_stca_ilaede_ali_2315_jan: ...

Network Model File Name: \\rtsmb\power\World\exports\model_pf_pwrflow_ilaede_ali_2315_j ...

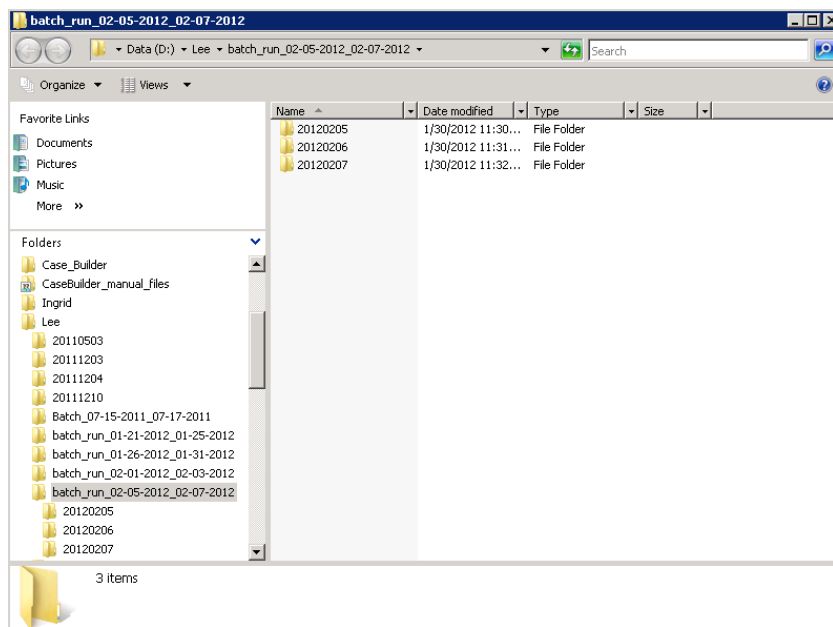
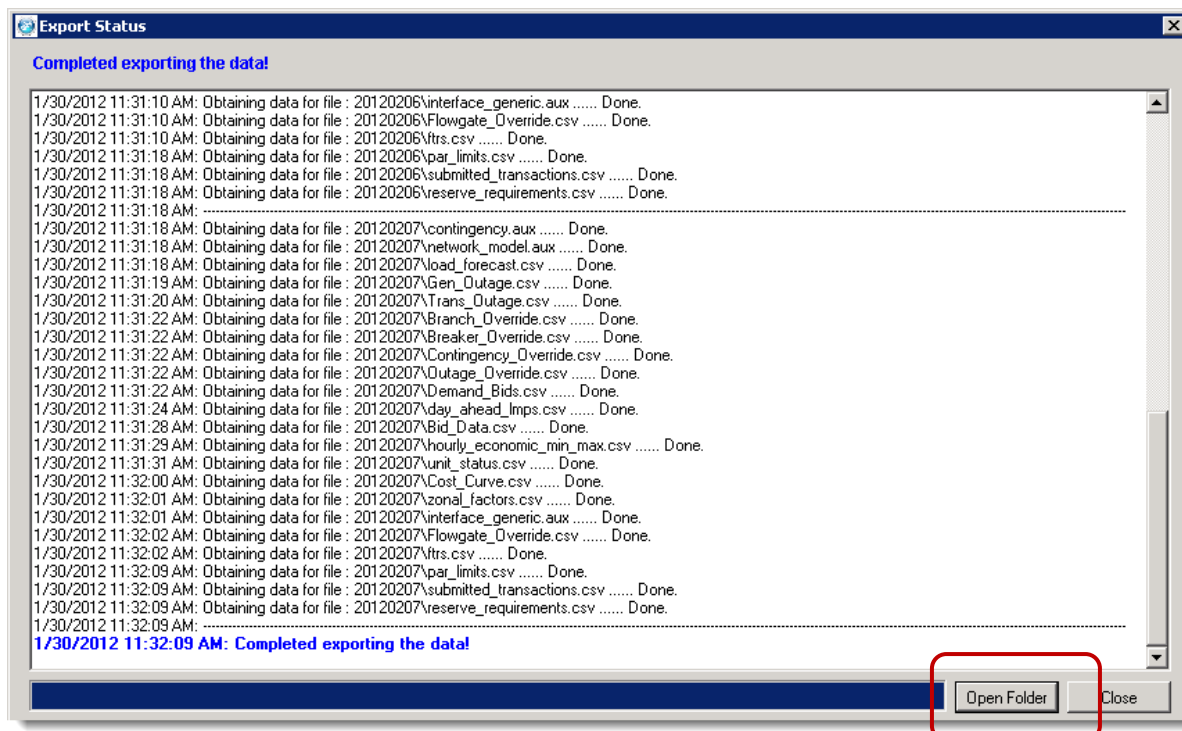
Zonal Factors File Name: D:\CaseBuilder_manual_files\zonal factors appended data.csv ...


D:\Iblaede\batch_run_02-05-2012_02-07-2012\

Run (Export) View Files Open Folder Close

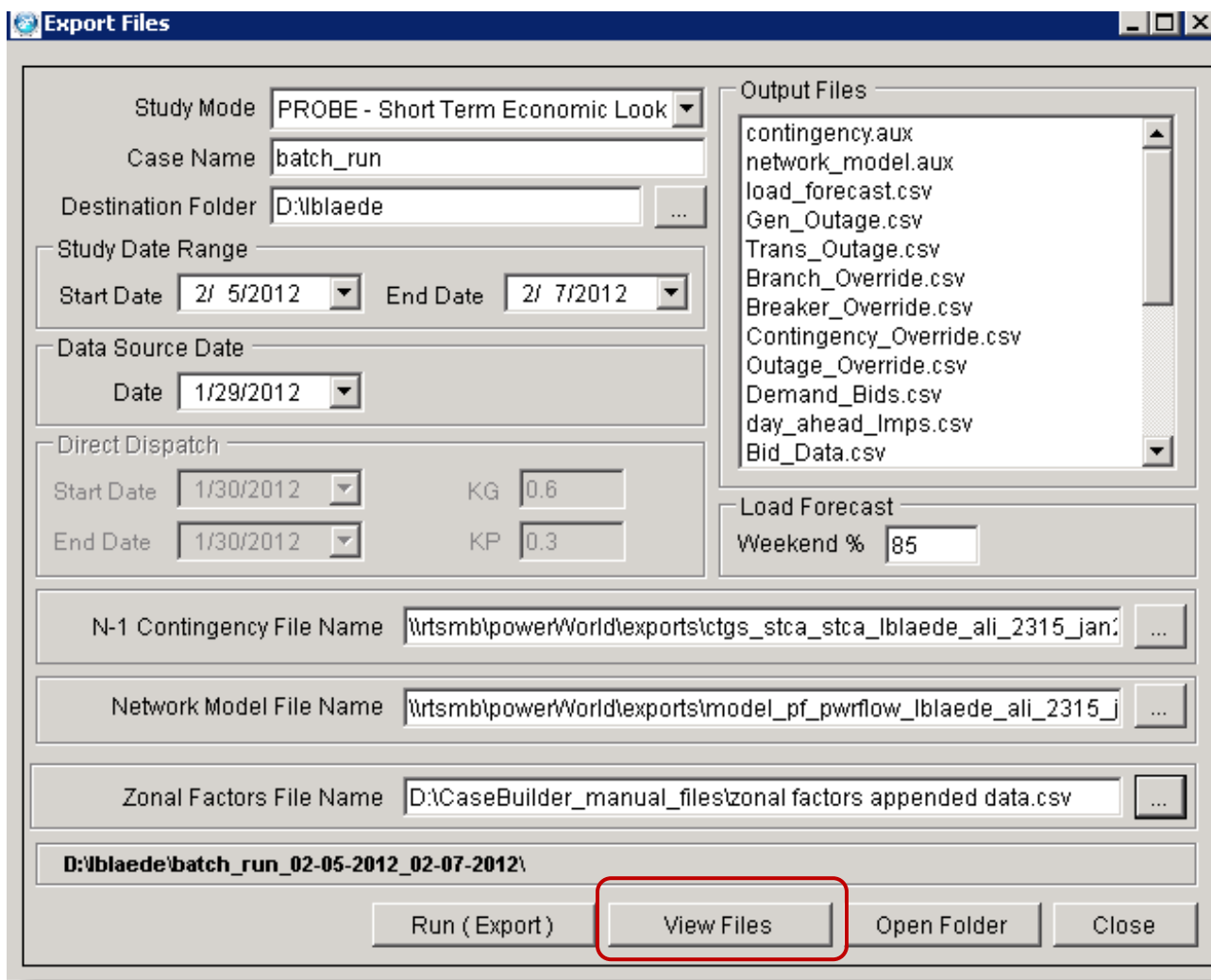
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	Procedure Number: OUTSCH.0030.0005	Revision Number: 5
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- CLICK “Run (Export)”. A complete set of input files will be created for each day and a folder will be created for each study day selected. Clicking “Open Folder” will open the folder



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6. If desired, CLICK “View Files” SET Date (for multi-day batch runs) and the file name to view each file.



Export Files

Study Mode: PROBE - Short Term Economic Look

Case Name: batch_run

Destination Folder: D:\blaede

Study Date Range:

Start Date: 2/ 5/2012 End Date: 2/ 7/2012

Data Source Date:

Date: 1/29/2012

Direct Dispatch:

Start Date: 1/30/2012 KG: 0.6

End Date: 1/30/2012 KP: 0.3

Output Files:

- contingency.aux
- network_model.aux
- load_forecast.csv
- Gen_Outage.csv
- Trans_Outage.csv
- Branch_Override.csv
- Breaker_Override.csv
- Contingency_Override.csv
- Outage_Override.csv
- Demand_Bids.csv
- day_aheadimps.csv
- Bid_Data.csv

Load Forecast:

Weekend %: 85


N-1 Contingency File Name: \\rtsmb\power\World\exports\ctgs_stca_stca_blaede_ali_2315_jan...

Network Model File Name: \\rtsmb\power\World\exports\model_pf_pwrflow_blaede_ali_2315_j...

Zonal Factors File Name: D:\CaseBuilder_manual_files\zonal factors appended data.csv


D:\blaede\batch_run_02-05-2012_02-07-2012\

Run (Export) View Files Open Folder Close

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Attachment I - Perform PROBE Market Simulations

1. CREATE a new case folder in the “filepath” as follows: \\rtsmb\oasis\DA_PROBE files\Daily market runs.
 - a. START “Remote Desktop Connection”.
 - b. LOG IN to the PROBE/TARA Analysis software production server “taraenfrd1”
 - c. NAVIGATE to appropriate user directory and appropriate monthly folder.
 - d. CREATE study folder with appropriate name (e.g., “Weekly July15-July21” etc.).
2. CREATE input files for PROBE:
 - a. If Desired, CREATE powerworld model and contingency database files for the PROBE market runs.
 - i. LOAD all-lines-in basecase to EMS powerflow and RUN the solution.
 - ii. CLICK “Data Retrieval” and ENTER the appropriate Savecase Title that includes the network model number and date (e.g., ALI_2.3.15_Jan26).
 - iii. CLICK “Model File” to generate the PowerWorld Model file and VERIFY the letters “model_pf_pwrflow” are automatically appended
 - iv. COPY the “EMS all-lines-in basecase” into STCA and RUN the solution
 - v. CLICK “Data Retrieval” and enter appropriate Savecase Title to include the network model number and date (e.g., ALI_2.3.15_Jan26).
 - vi. CLICK “Generate PowerWorld Contingency File”.
 - b. Refer to Attachment H – “Casebuilder Set-Up and Operation” and RUN “Casebuilder” to create input files for PROBE.
3. REVIEW transmission and Resource outages, from CROW, for each day of the study.
 - a. DETERMINE any informational, Relays, Reclosers and trip tests. EXCLUDE these outages from the market simulation studies by either deleting them from the “Trans_Outages.csv” file,” or commenting them out.
 - b. DETERMINE any modified interface limits. MODEL these modifications for the appropriate days of the study in the “flowgate_Override.csv” file.
 - c. IF any combined-cycle unit reductions are present in the “gen_outages.csv” file, then ENSURE those units have full EcoMax values in the “economic_Min_max.csv” file.


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- d. IDENTIFY any units required to run for reliability. Set those units as status “S” in the “unit_status.csv” file for the applicable hours.
 - e. IDENTIFY any breakers or disconnects that need to be opened or closed as compensatory measures. ENTER these, manually, in the “Breaker_Override.csv” file.
 - f. IDENTIFY any temporary, temperature or otherwise enhanced line ratings necessary and ENTER into the “Branch_Override.csv” file.
4. SET UP PROBE options and SELECT reports:
 - a. REFER to Attachment J – “PROBE Look Ahead Study Options Set-up”.
 - b. VERIFY options set as shown or import options file for custom studies.
 - c. CLICK to select desired reports from the tabs on the left of the PROBE Simulator tab.
 5. Run PROBE market simulation
 6. If running a one-day solution, PERFORM the following:
 - a. From the PROBE “Input Files” tab, NAVIGATE to the study folder in the “Data Directory” window.

NOTE

When selecting the study folder in the “Data Directory” the pertinent files are automatically loaded. Any files that PROBE **cannot** find will be highlighted in pink. For Look Ahead study mode, the final_dispatch, demand_dispatch and cleared_transactions files are **not** needed and should be pink.

- b. VERIFY “Use Date” is **not** selected.
- c. SET the study date in the “StudyWindow” tab in Simulator Options
- d. CLICK “Create Reports” for only the reports showing or “Create Reports from ALL Tabs” for all reports selected.
- e. When the case has solved:
 - i. REVIEW the input warnings summary for any input file errors
 - ii. CLICK “Create Custom ISO-NE Reports” button, SELECT the desired reports and file path and CLICK “Create.”
 - iii. MODIFY input files as necessary and RE-RUN case.


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7. If running batch mode solutions, REFER TO Attachment K - “PROBE Batch Mode Set-Up and Operation” and PERFORM the following:
 - a. From the PROBE “Input Files” tab, NAVIGATE to the study folder in the “Data Directory” window.
 - b. VERIFY “Use Date” is **not** selected.
 - c. SET the study date in the “StudyWindow” tab in Simulator Options

NOTE

When selecting the study folder in the “Data Directory”, the pertinent files are automatically loaded. Any files that PROBE **cannot** find will be highlighted in pink. For Look Ahead study mode, the final_dispatch, demand_dispatch and cleared_transactions files are **not** needed and should be pink.

- d. CREATE reports results folders for each study day in the batch run.
- e. NAVIGATE to the “BatchProcess” tab of the PROBE Excel spreadsheet and ENTER the file paths of each day’s input file folders, results locations, study dates and scenario name.
- f. SELECT “Probe Simulator” tab and CLICK on “Create All Selected Reports in Batch Mode” button.
- g. CLICK “Validate All Input Files”, RESOLVE any input file issues and then REPEAT.
- h. CLICK “Run Batch Process Consecutively” button or SPECIFY the number of processor cores to work simultaneously and CLICK “Run Batch Process on Multiple Processors Simultaneously” button.
- i. When all study cases have solved:
 - i. REVIEW the input warnings summary for any input file errors.
 - ii. MODIFY input files as necessary and RE-RUN cases.
 - iii. CLICK “Create Custom ISO-NE Reports” button.
 - iv. SELECT the desired reports and filepath/filename, and CLICK “CREATE.”
 - v. REVIEW all selected reports, MAKE adjustments and RE-RUN cases and reports as necessary.

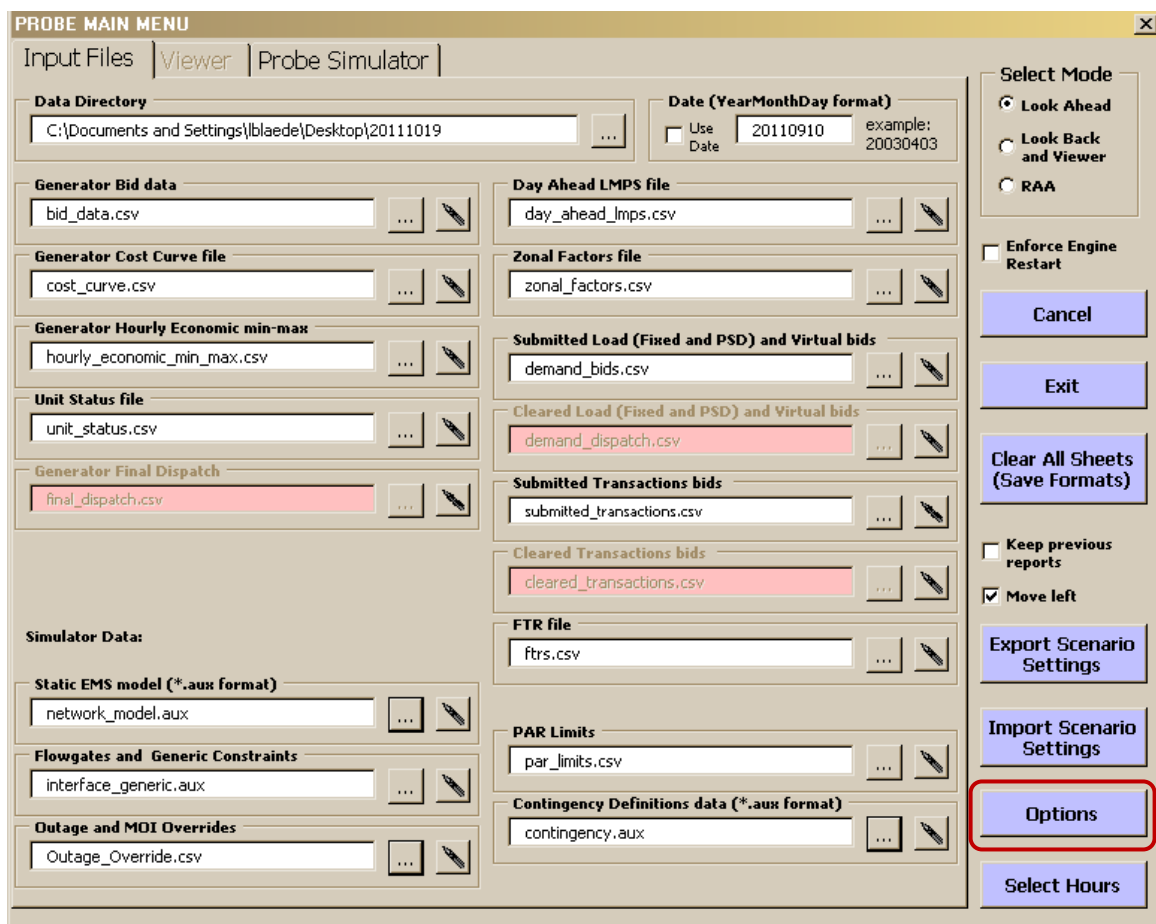
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	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

Attachment J - PROBE Look Ahead Study Options Set-Up

The following steps are used to set up PROBE for a Look Ahead study using fixed load forecast.

PROBE General Options:

Once PROBE has been saved, these options will also be saved.



The screenshot shows the 'PROBE MAIN MENU' dialog box with the 'Viewer' tab selected. The 'Options' button on the right-hand side is highlighted with a red rectangle. The dialog box contains various input fields for data files and simulation parameters.

Input Files | **Viewer** | **Probe Simulator**

Data Directory: C:\Documents and Settings\blade\Desktop\20111019

Date (YearMonthDay format): ☐ Use Date 20110910 example: 20030403

Generator Bid data: bid_data.csv

Generator Cost Curve file: cost_curve.csv

Generator Hourly Economic min-max: hourly_economic_min_max.csv

Unit Status file: unit_status.csv

Generator Final Dispatch: final_dispatch.csv

Day Ahead LMPS file: day_ahead_lmcs.csv

Zonal Factors file: zonal_factors.csv

Submitted Load (Fixed and PSD) and Virtual bids: demand_bids.csv

Cleared Load (Fixed and PSD) and Virtual bids: demand_dispatch.csv

Submitted Transactions bids: submitted_transactions.csv

Cleared Transactions bids: cleared_transactions.csv

FTR file: ftrs.csv

PAR Limits: par_limits.csv

Contingency Definitions data (*.aux format): contingency.aux

Simulator Data:

Static EMS model (*.aux format): network_model.aux

Flowgates and Generic Constraints: interface_generic.aux

Outage and MOI Overrides: Outage_Override.csv


Select Mode: ☒ Look Ahead, ☐ Look Back and Viewer, ☐ RAA

☐ Enforce Engine Restart

☐ Keep previous reports

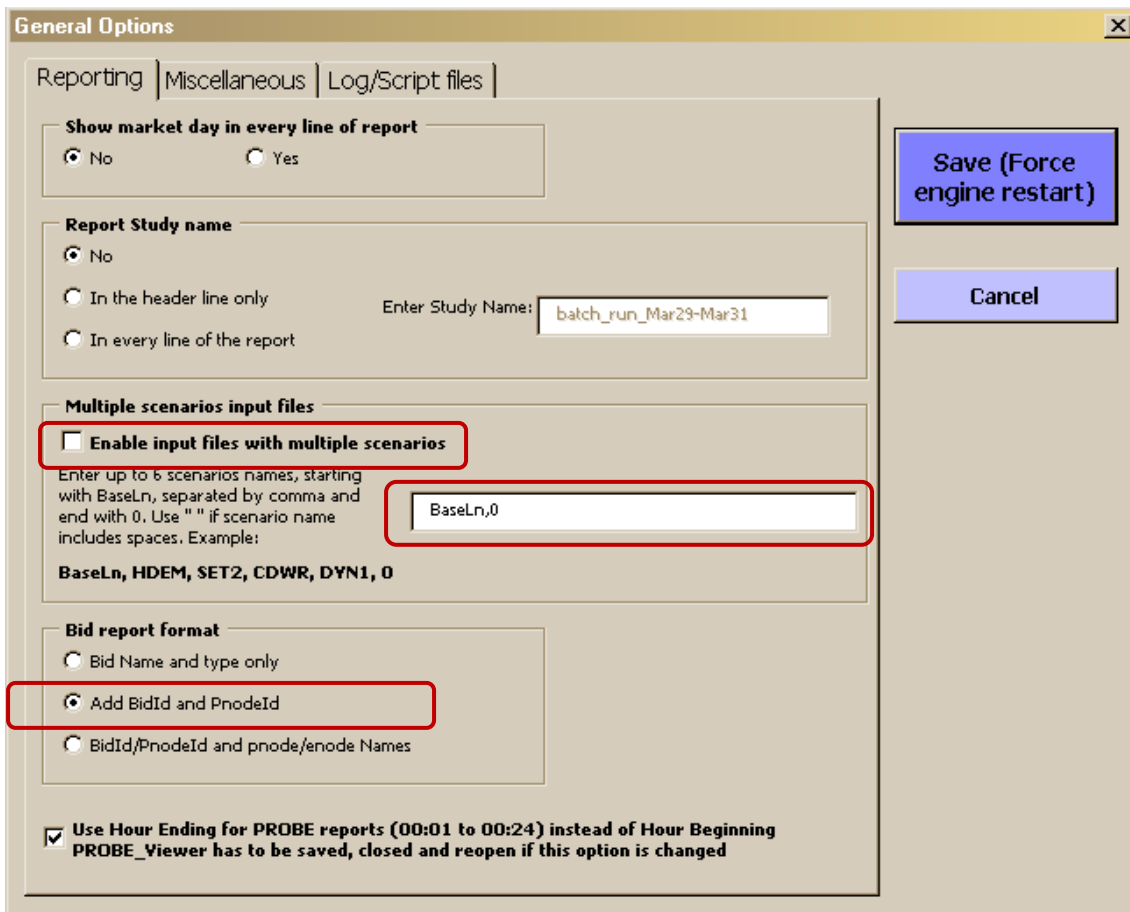
☒ Move left

Buttons: Cancel, Exit, Clear All Sheets (Save Formats), Export Scenario Settings, Import Scenario Settings, **Options**, Select Hours

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1. "Reporting" Tab

- SET selections as shown. If it is desired to use multiple scenarios, ENTER scenario names and check the box.



General Options

Reporting | Miscellaneous | Log/Script files

Show market day in every line of report

☒ No ☐ Yes

Report Study name

☒ No ☐ In the header line only ☐ In every line of the report

Enter Study Name:

Multiple scenarios input files

☒ **Enable input files with multiple scenarios**

Enter up to 6 scenarios names, starting with BaseLn, separated by comma and end with 0. Use " " if scenario name includes spaces. Example:
BaseLn, HDEM, SET2, CDWR, DYN1, 0


Bid report format

☐ Bid Name and type only ☒ Add BidId and PnodeId ☐ BidId/PnodeId and pnode/enode Names

☒ **Use Hour Ending for PROBE reports (00:01 to 00:24) instead of Hour Beginning**
PROBE_Vviewer has to be saved, closed and reopen if this option is changed

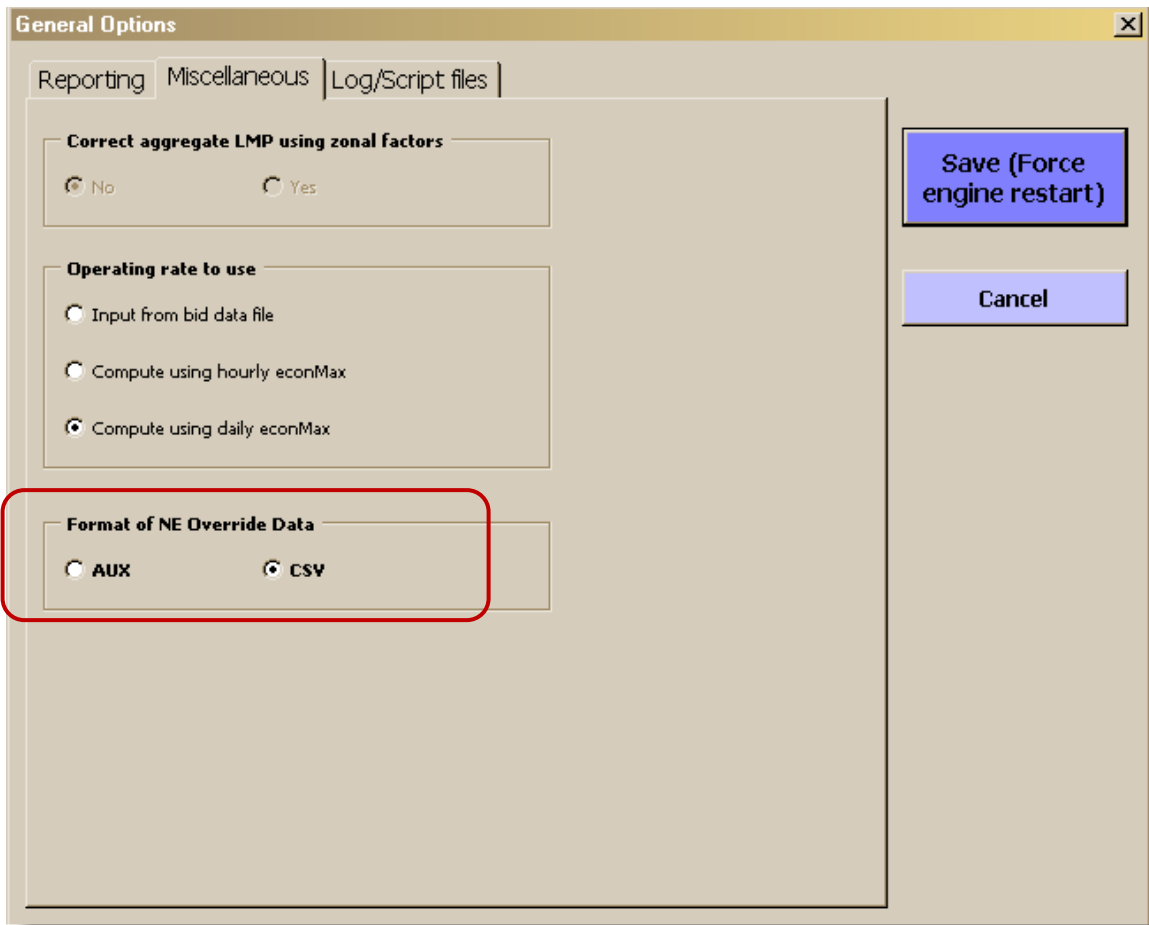
Save (Force engine restart)

Cancel

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2. “Miscellaneous” Tab

- a. USE .csv as format for override data



General Options

Reporting | **Miscellaneous** | Log/Script files

Correct aggregate LMP using zonal factors

☐ No ☐ Yes

Operating rate to use

☐ Input from bid data file

☐ Compute using hourly econMax


☒ Compute using daily econMax

Format of NE Override Data

☐ AUX ☒ CSV

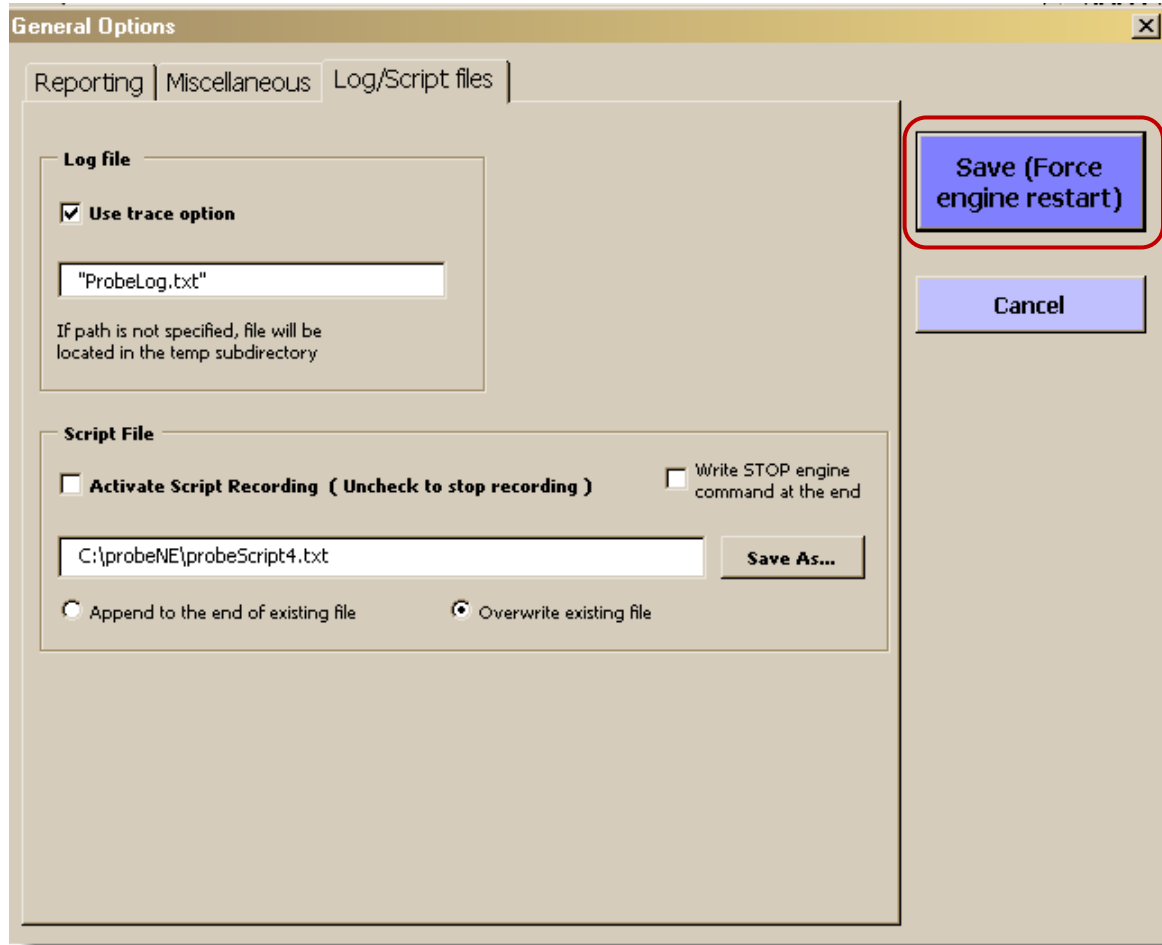
Save (Force engine restart)

Cancel

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3. Log/Script files

- a. When done CLICK “Save (Force engine restart)”



General Options

Reporting | Miscellaneous | **Log/Script files**

Log file

☒ **Use trace option**

"ProbeLog.txt"

If path is not specified, file will be located in the temp subdirectory

Script File


☐ **Activate Script Recording (Uncheck to stop recording)** ☐ Write STOP engine command at the end

C:\probeNE\probeScript4.txt **Save As...**

☐ Append to the end of existing file ☒ Overwrite existing file

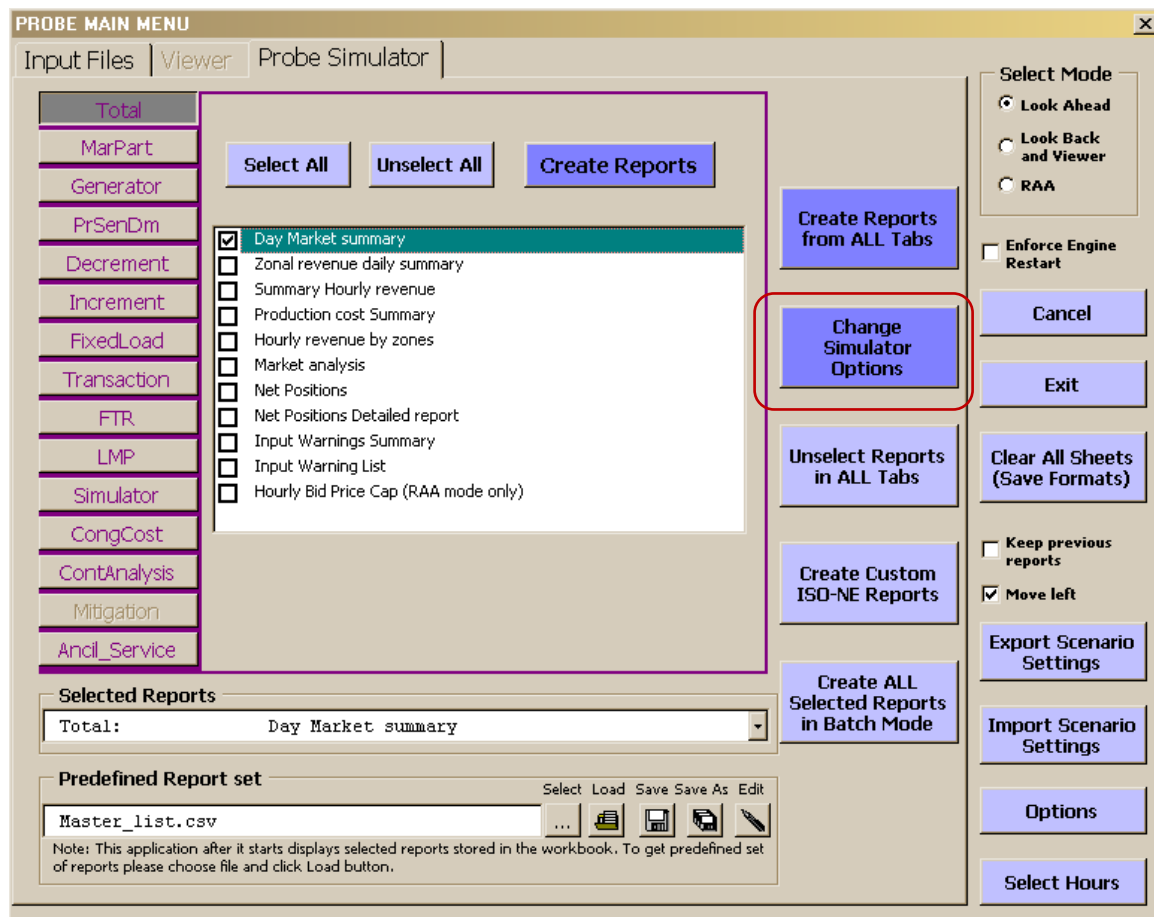
Save (Force engine restart)


Cancel

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4. PROBE Simulator Options

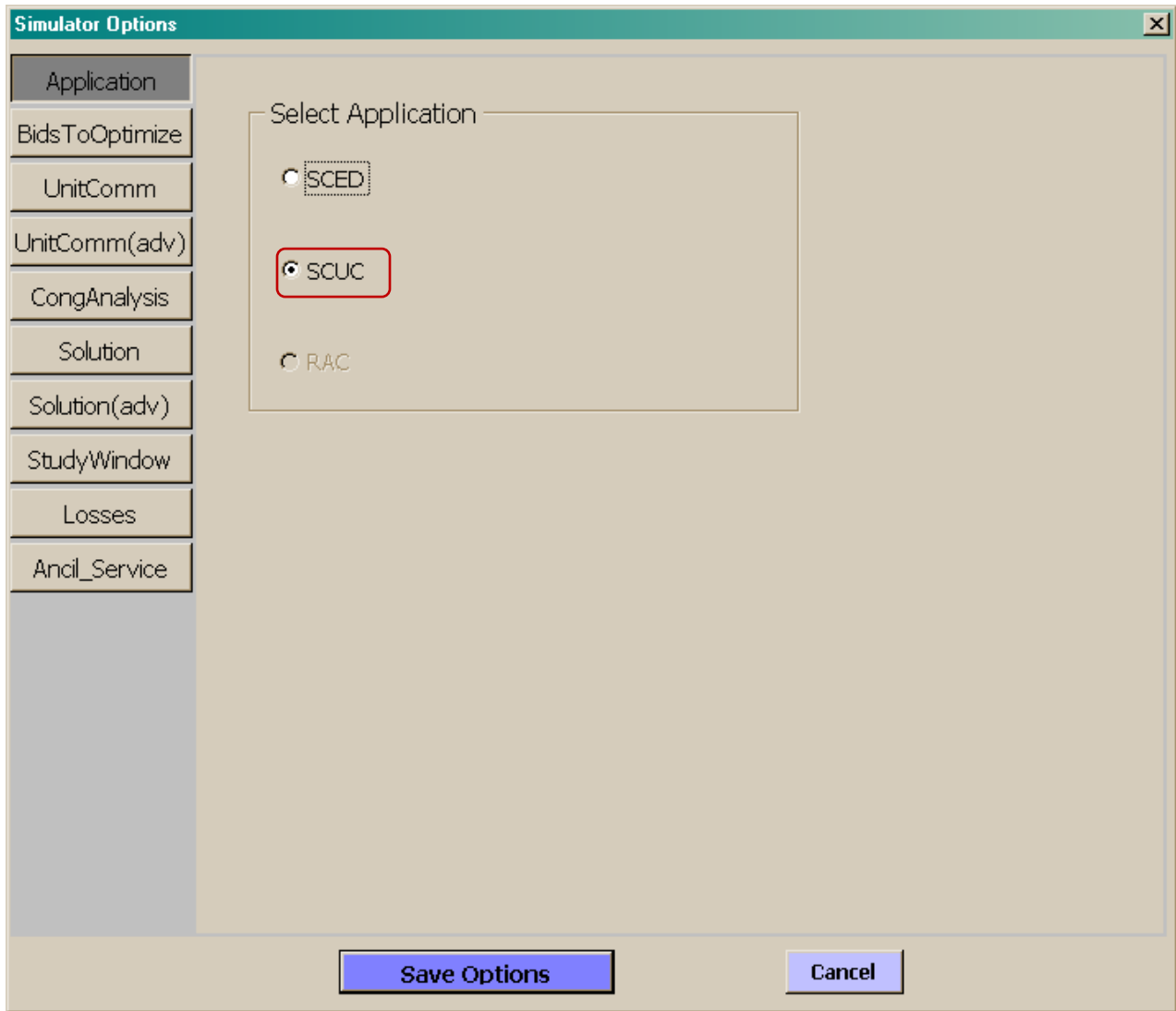
- a. These options should be set for each PROBE run.



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5. “Application” tab

a. SET “SCUC” for unit commitment from scratch



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

StudyWindow

Losses

Ancil_Service

Select Application


☐ SCED

☒ SCUC

☐ RAC

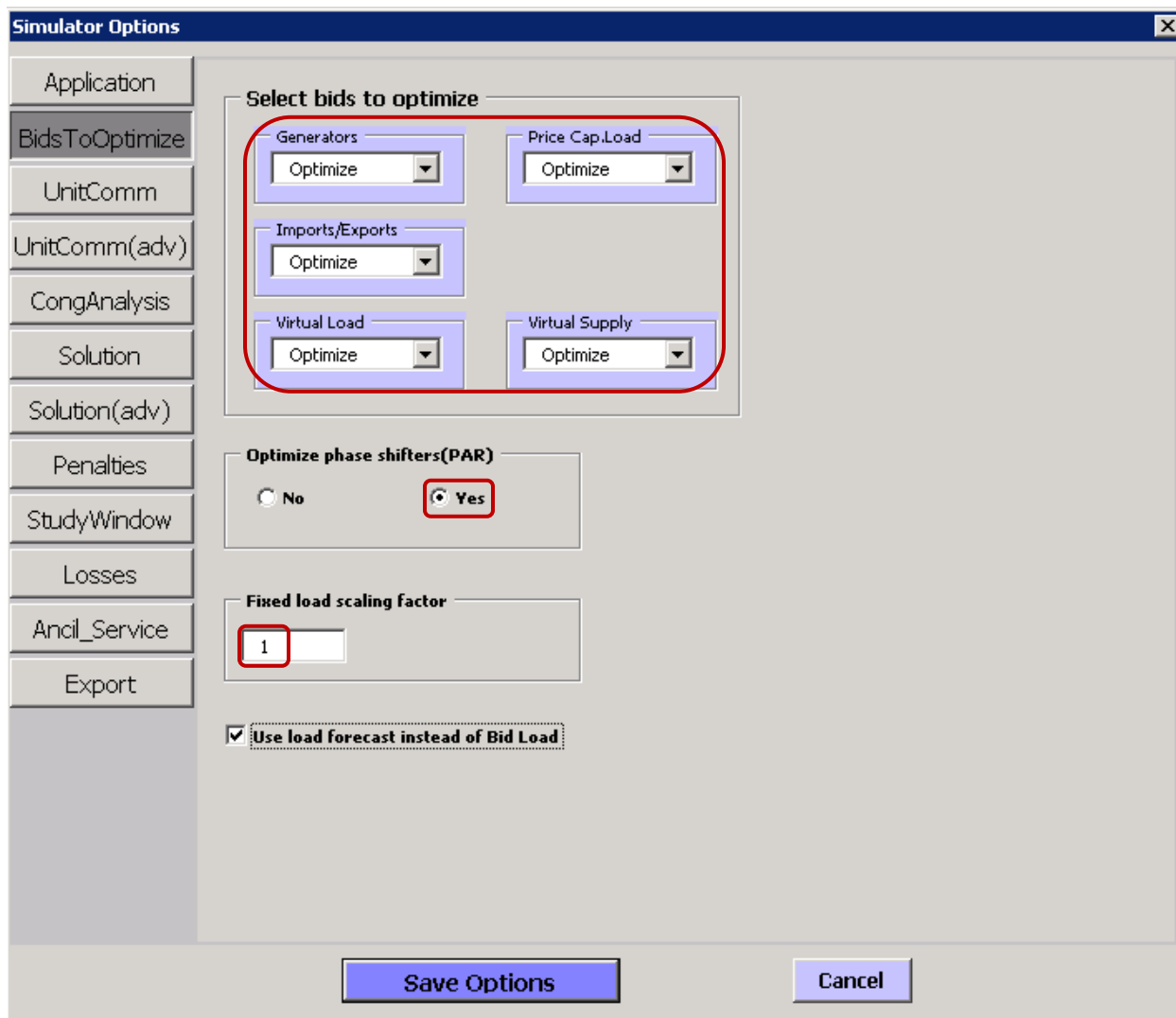
Save Options

Cancel

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	Procedure Number: OUTSCH.0030.0005	
	Procedure Owner: Maya Ault	
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6. “Bids ToOptimize” tab

- a. SET “Select bids to optimize” to “Optimize”
- b. SET “Optimize phase shifters(PAR)” to “Yes”
- c. SET “Fixed load scaling factor” to “1” to account for losses as the load forecast includes them, but it is desired that PROBE calculate marginal losses separately.
- d. SELECT “Use load forecast instead of Bid Load”



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

Penalties

StudyWindow

Losses

Ancil_Service

Export

Select bids to optimize

Generators: Optimize

Price Cap.Load: Optimize

Imports/Exports: Optimize

Virtual Load: Optimize

Virtual Supply: Optimize

Optimize phase shifters(PAR)


☐ No ☒ Yes

Fixed load scaling factor

1

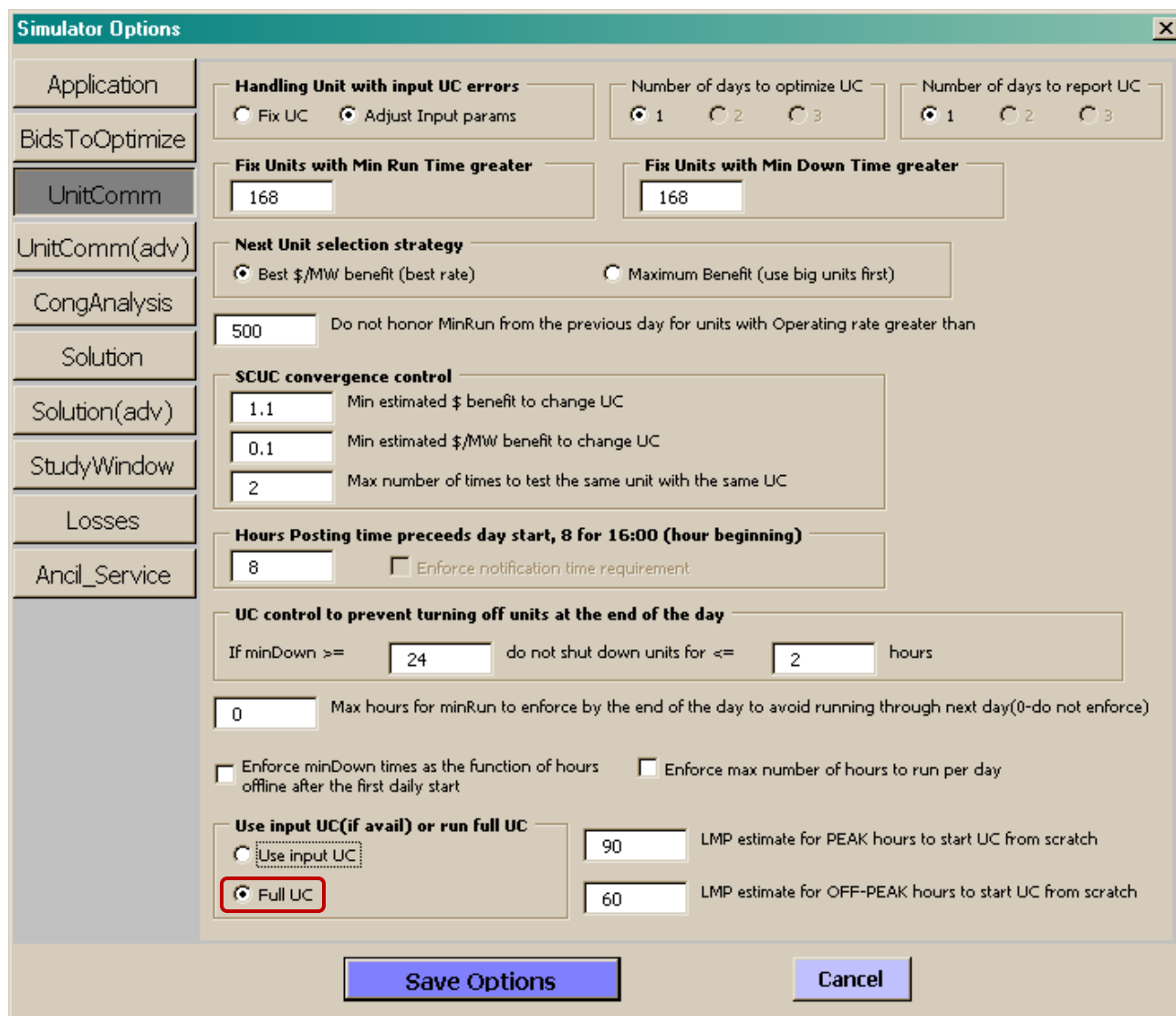
☒ Use load forecast instead of Bid Load

Save Options Cancel

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7. "UnitComm" tab

- SELECT "Full UC" to perform unit commitment from scratch.
- All other settings as shown. Adjustments maybe made as analysis shows may be necessary.



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

StudyWindow

Losses

Ancil_Service

Handling Unit with input UC errors

☐ Fix UC ☒ Adjust Input params

Number of days to optimize UC

☒ 1 ☐ 2 ☐ 3

Number of days to report UC

☒ 1 ☐ 2 ☐ 3

Fix Units with Min Run Time greater

168

Fix Units with Min Down Time greater

168

Next Unit selection strategy

☒ Best \$/MWh benefit (best rate) ☐ Maximum Benefit (use big units first)

500 Do not honor MinRun from the previous day for units with Operating rate greater than

SCUC convergence control

1.1 Min estimated \$ benefit to change UC

0.1 Min estimated \$/MWh benefit to change UC

2 Max number of times to test the same unit with the same UC

Hours Posting time precedes day start, 8 for 16:00 (hour beginning)

8 ☐ Enforce notification time requirement

UC control to prevent turning off units at the end of the day

If minDown >= 24 do not shut down units for <= 2 hours

0 Max hours for minRun to enforce by the end of the day to avoid running through next day(0-do not enforce)

☐ Enforce minDown times as the function of hours offline after the first daily start ☐ Enforce max number of hours to run per day


Use input UC(if avail) or run full UC

☐ Use input UC ☒ Full UC

90 LMP estimate for PEAK hours to start UC from scratch

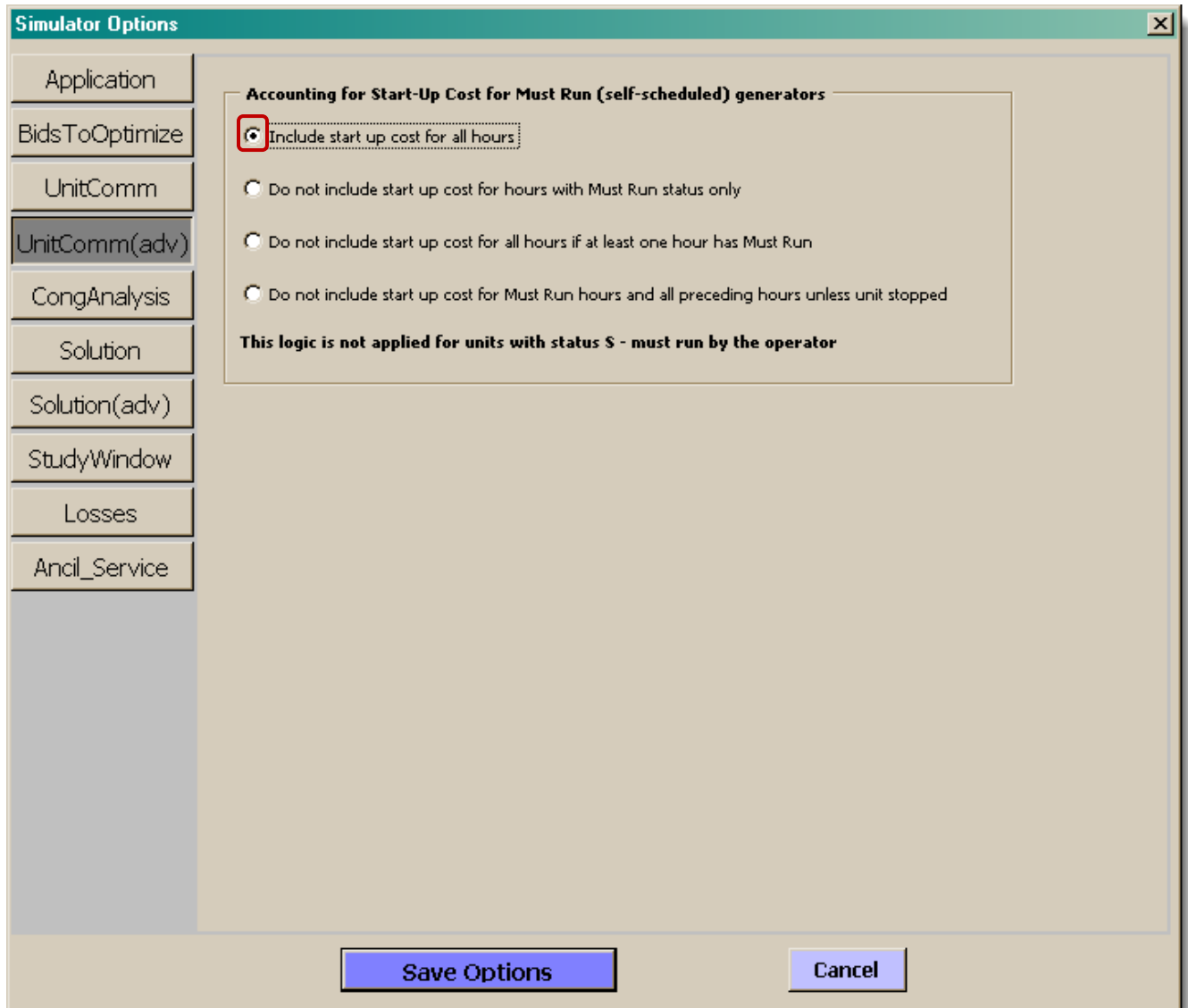
60 LMP estimate for OFF-PEAK hours to start UC from scratch

Save Options **Cancel**

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8. “UnitComm(adv)” tab

a. SELECT “Include start up cost for all hours”



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

StudyWindow

Losses

Ancil_Service

Accounting for Start-Up Cost for Must Run (self-scheduled) generators

☒ Include start up cost for all hours


☐ Do not include start up cost for hours with Must Run status only

☐ Do not include start up cost for all hours if at least one hour has Must Run

☐ Do not include start up cost for Must Run hours and all preceding hours unless unit stopped

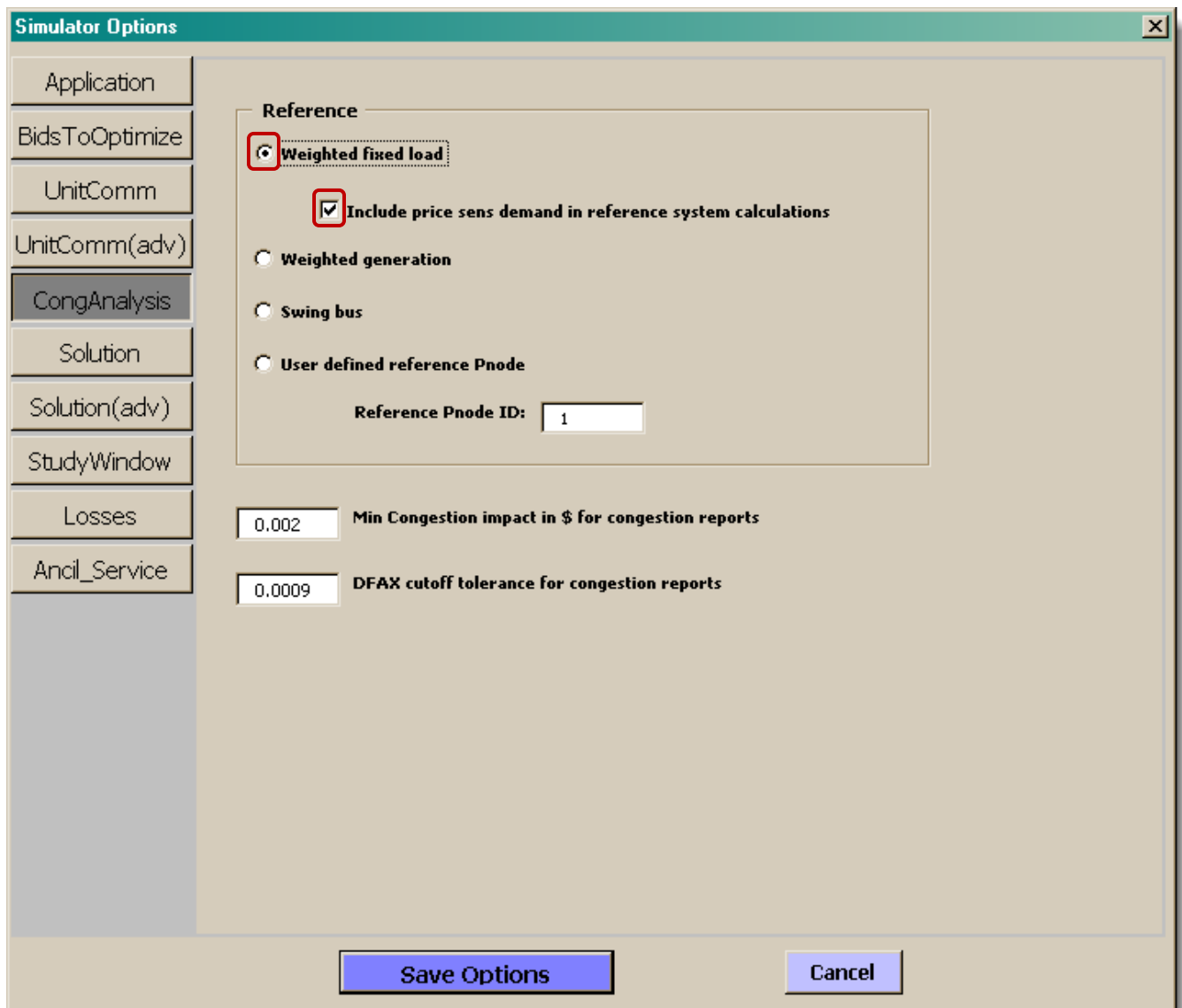
This logic is not applied for units with status S - must run by the operator

Save Options **Cancel**

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9. “CongAnalysis” tab

- a. SELECT “Weighted fixed load” and SELECT “Include price sens demand in reference system calculations”
- b. Other selections as shown



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

StudyWindow

Losses

Ancil_Service

Reference

☒ **Weighted fixed load**

☒ **Include price sens demand in reference system calculations**

☐ **Weighted generation**

☐ **Swing bus**


☐ **User defined reference Pnode**

Reference Pnode ID: 1

0.002 **Min Congestion impact in \$ for congestion reports**

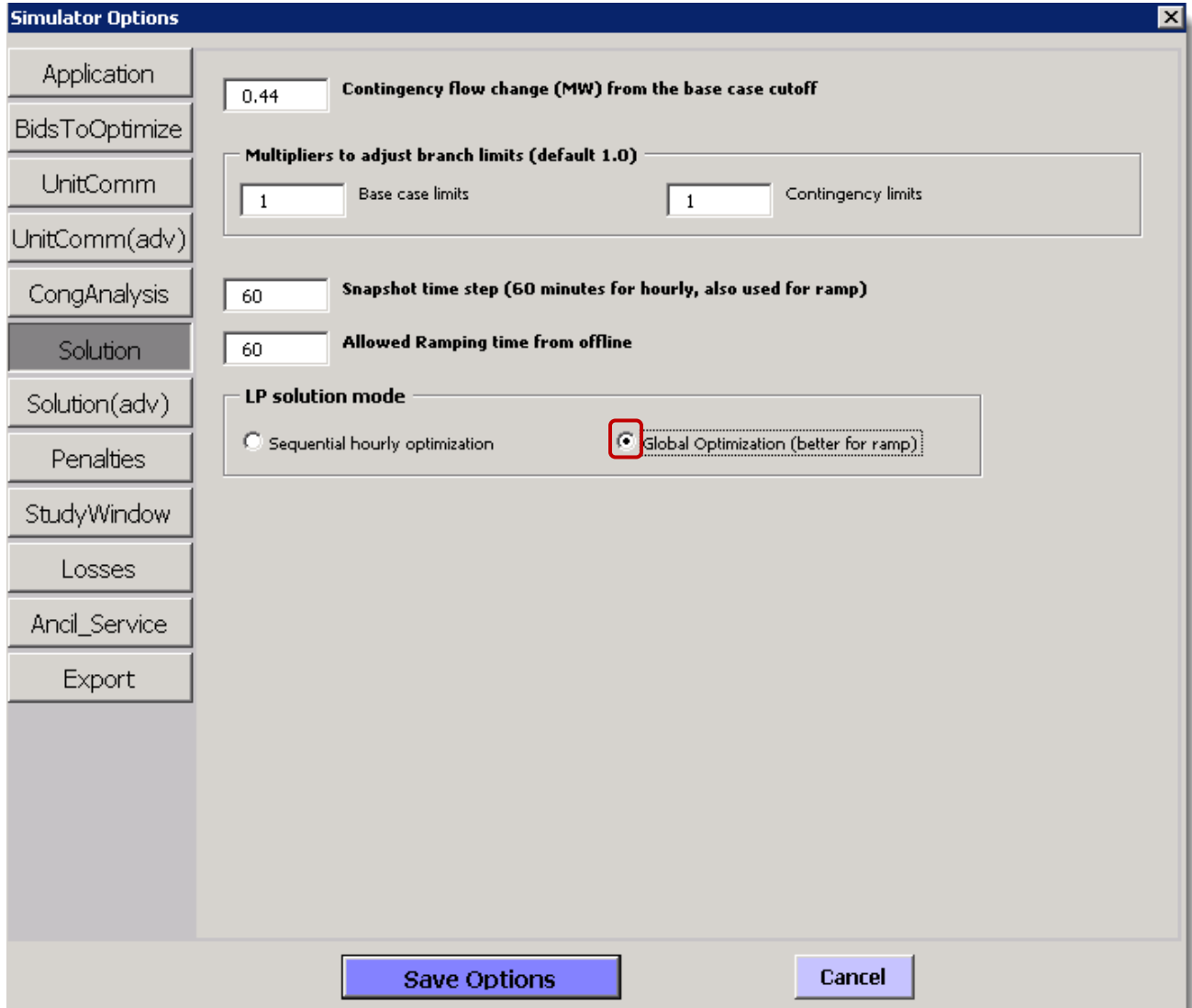
0.0009 **DFAX cutoff tolerance for congestion reports**

Save Options **Cancel**

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	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

10. “Solution” tab

- a. SELECT “Global Optimization (better for ramp)”
- b. Other selections as shown



Simulator Options

Application: 0.44 Contingency flow change (MW) from the base case cutoff

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

Penalties

StudyWindow

Losses

Ancil_Service

Export

Multipliers to adjust branch limits (default 1.0)

1 Base case limits 1 Contingency limits


60 Snapshot time step (60 minutes for hourly, also used for ramp)

60 Allowed Ramping time from offline

LP solution mode

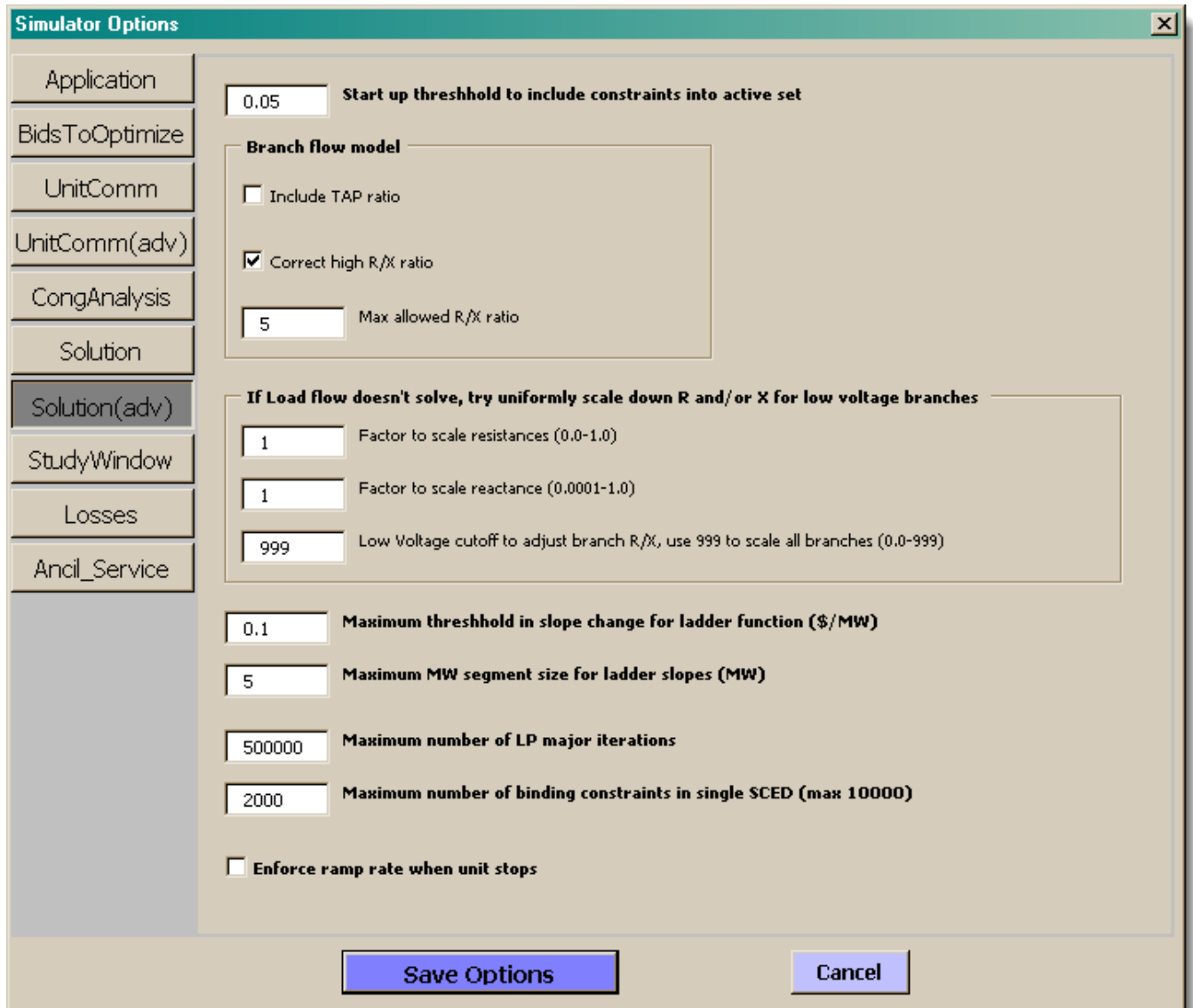
☐ Sequential hourly optimization ☒ Global Optimization (better for ramp)

Save Options Cancel

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	Procedure Owner: Maya Ault	
	Approved By: Director, Operations Support Services	

11. "Solution(adv)" tab

- a. Other selections as shown



Simulator Options

Application: 0.05 Start up threshold to include constraints into active set

Branch flow model

☐ Include TAP ratio

☒ Correct high R/X ratio

5 Max allowed R/X ratio

If Load flow doesn't solve, try uniformly scale down R and/or X for low voltage branches

1 Factor to scale resistances (0.0-1.0)

1 Factor to scale reactance (0.0001-1.0)

999 Low Voltage cutoff to adjust branch R/X, use 999 to scale all branches (0.0-999)

0.1 Maximum threshold in slope change for ladder function (\$/MW)


5 Maximum MW segment size for ladder slopes (MW)

500000 Maximum number of LP major iterations

2000 Maximum number of binding constraints in single SCED (max 10000)

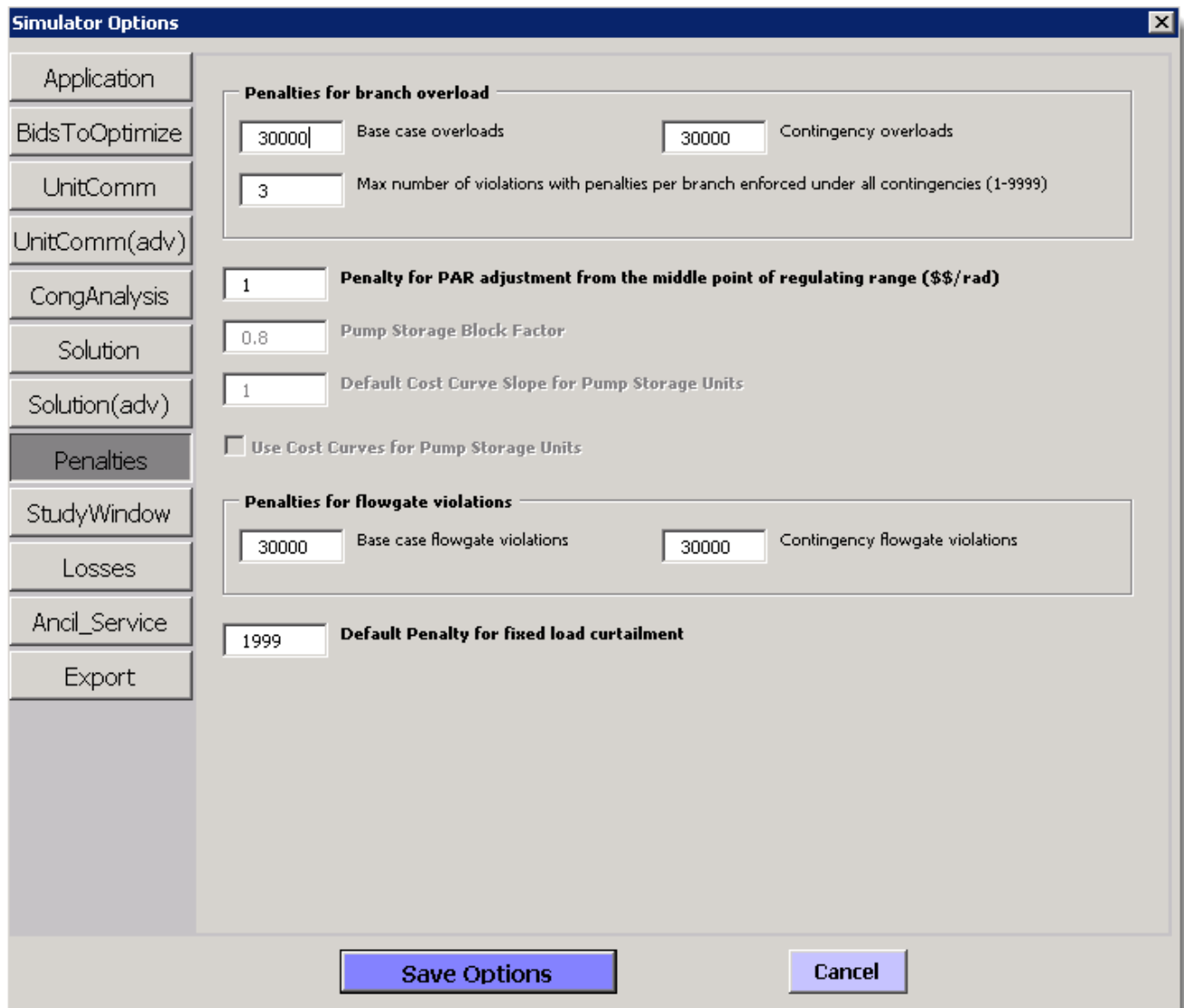
☐ Enforce ramp rate when unit stops

Save Options Cancel

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12. "Penalties" tab

- a. USE default values, as shown



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

Penalties

StudyWindow

Losses

Ancil_Service

Export

Penalties for branch overload

30000 Base case overloads 30000 Contingency overloads

3 Max number of violations with penalties per branch enforced under all contingencies (1-9999)

1 **Penalty for PAR adjustment from the middle point of regulating range (\$\$/rad)**

0.8 **Pump Storage Block Factor**

1 **Default Cost Curve Slope for Pump Storage Units**


☐ Use Cost Curves for Pump Storage Units

Penalties for flowgate violations

30000 Base case flowgate violations 30000 Contingency flowgate violations

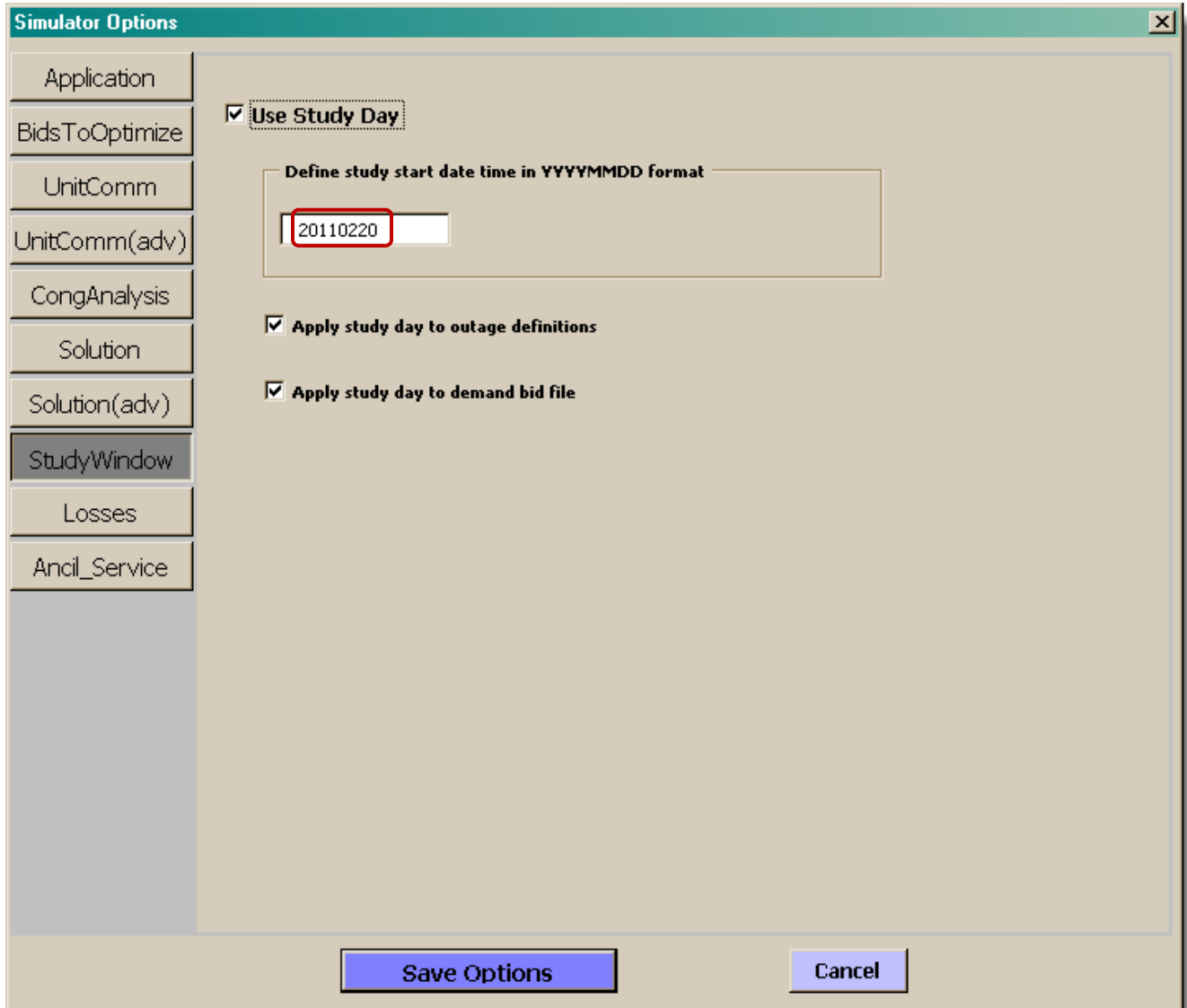
1999 **Default Penalty for fixed load curtailment**

Save Options Cancel

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13. “StudyWindow” tab

- a. CHECK all selections and set “Define study start date....” to future study date or first future study date if performing multi-day runs.



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

StudyWindow

Losses

Ancil_Service

☒ **Use Study Day**


Define study start date time in YYYYMMDD format

20110220

☒ **Apply study day to outage definitions**

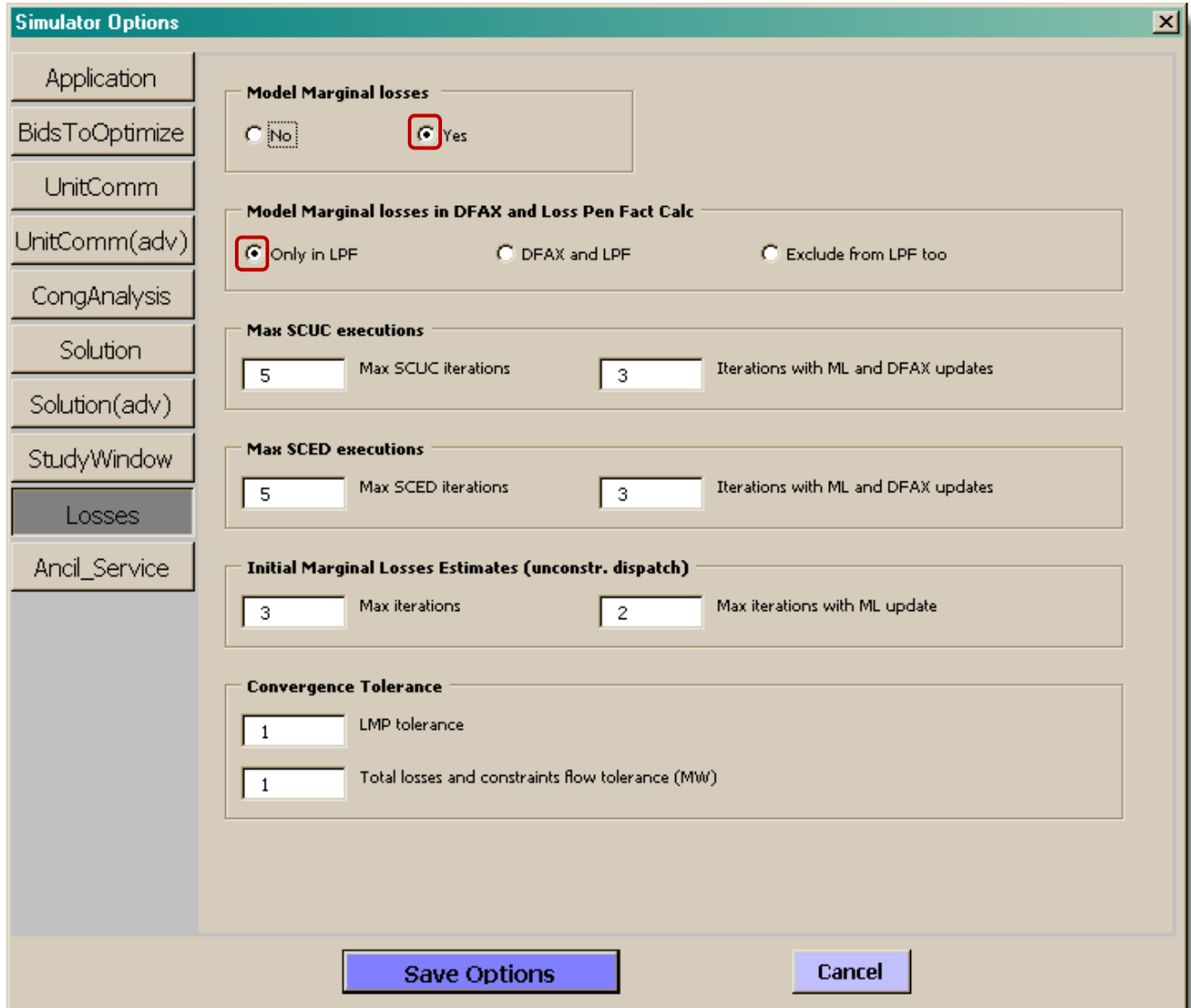
☒ **Apply study day to demand bid file**

Save Options **Cancel**

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14. “Losses” tab

- a. SET “Model Marginal losses” to “Yes”
- b. CHECK “Only in LPF”
- c. Other settings as shown



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

StudyWindow

Losses

Ancil_Service

Model Marginal losses

☐ No ☒ Yes

Model Marginal losses in DFAX and Loss Pen Fact Calc

☒ Only in LPF ☐ DFAX and LPF ☐ Exclude from LPF too

Max SCUC executions

5 Max SCUC iterations 3 Iterations with ML and DFAX updates

Max SCED executions

5 Max SCED iterations 3 Iterations with ML and DFAX updates

Initial Marginal Losses Estimates (unconstr. dispatch)


3 Max iterations 2 Max iterations with ML update

Convergence Tolerance

1 LMP tolerance

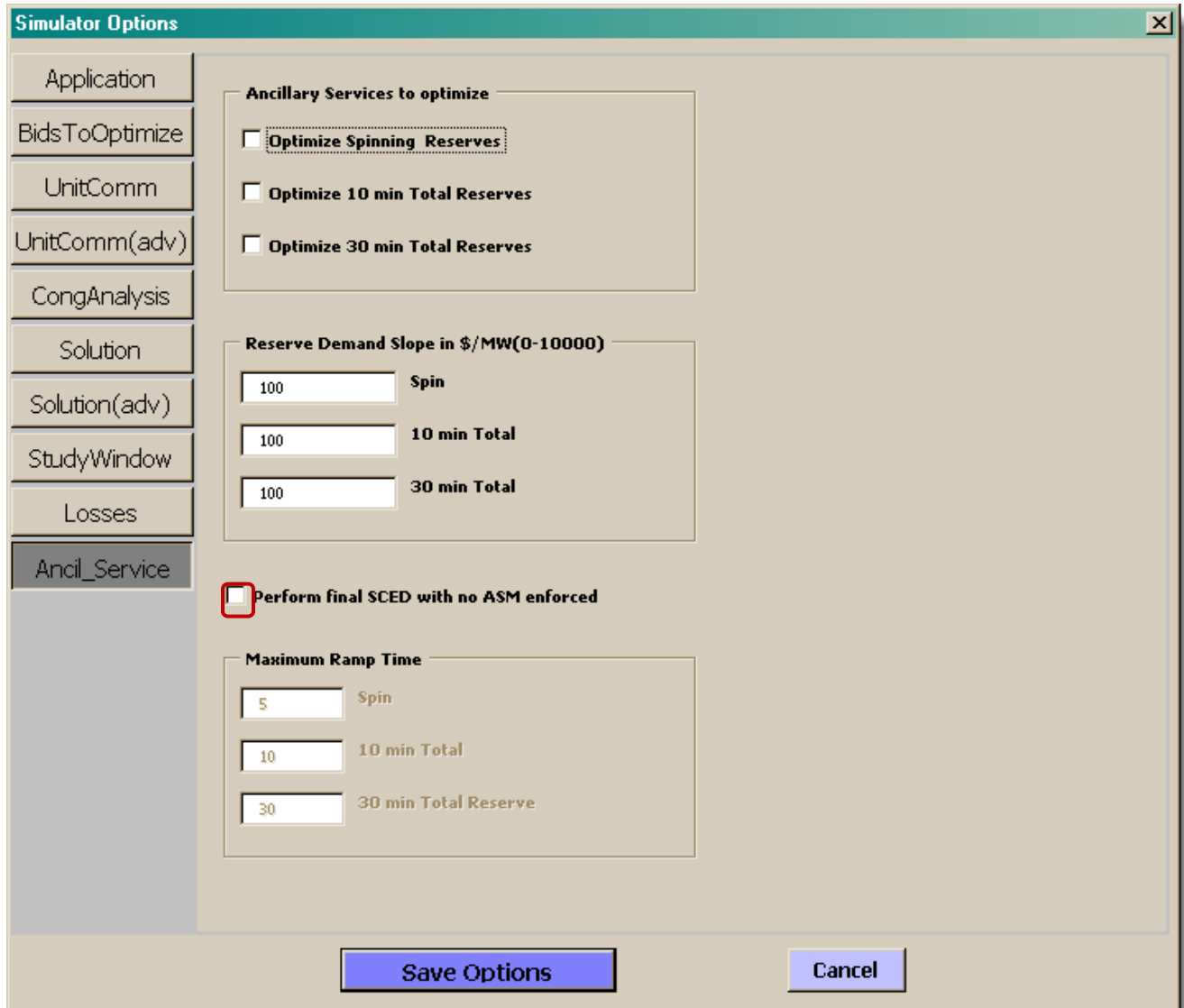
1 Total losses and constraints flow tolerance (MW)

Save Options **Cancel**

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15. "Ancil_Service" tab

- a. If it is desired to model unit commitment for reserves, CHECK all "Ancillary Services to optimize" selections for DA simulation. UNCHECK "Perform final SCED with no ASM enforced" for Real-Time simulation. UNCHECK all if **not** respecting reserve requirements in unit commitment.



Simulator Options

Ancillary Services to optimize

☐ Optimize Spinning Reserves

☐ Optimize 10 min Total Reserves

☐ Optimize 30 min Total Reserves

Reserve Demand Slope in \$/MW(0-10000)

100 Spin

100 10 min Total

100 30 min Total

☐ Perform final SCED with no ASM enforced


Maximum Ramp Time

5 Spin

10 10 min Total

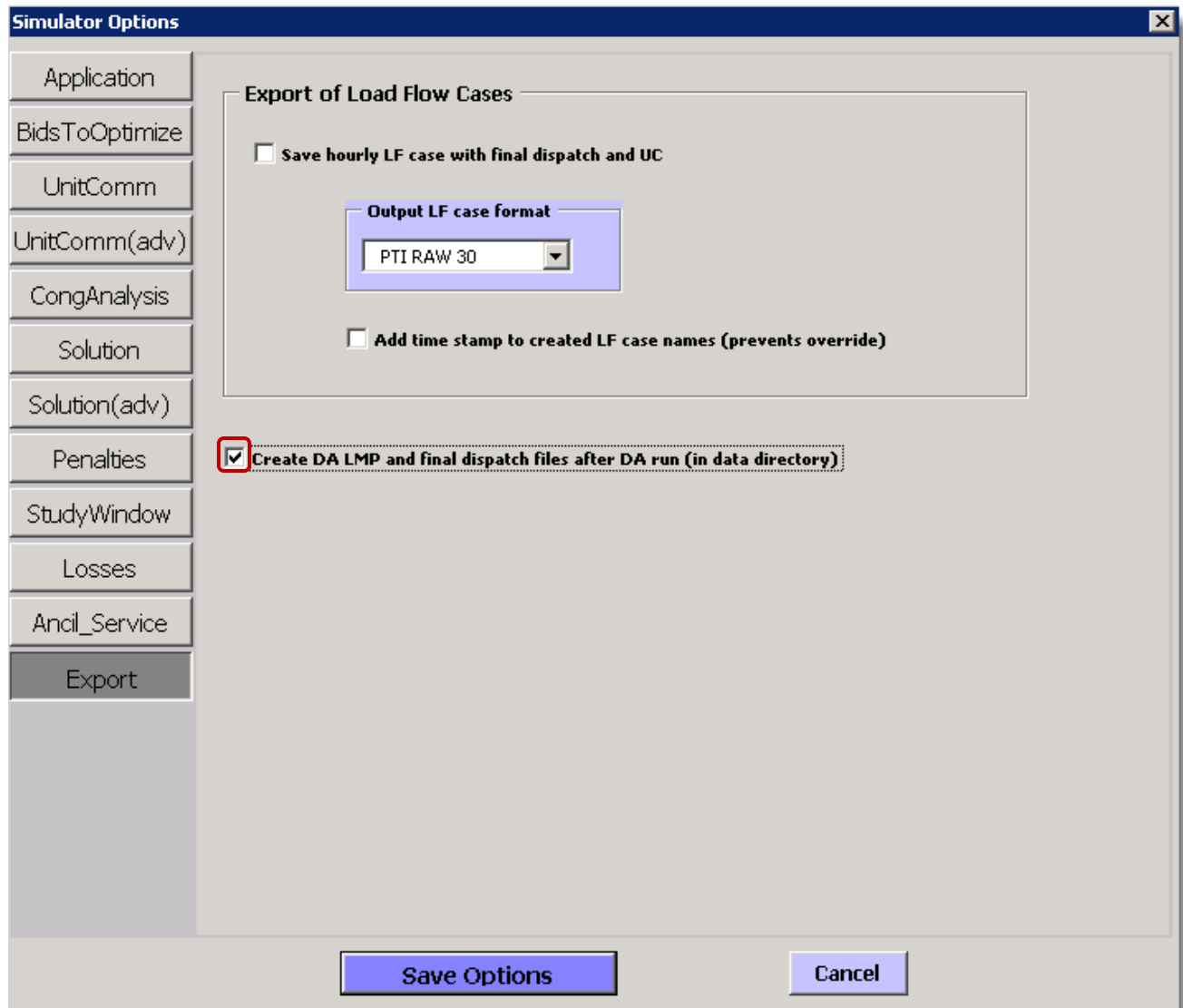
30 30 min Total Reserve

Save Options Cancel

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16. “Export” tab

- a. If it is desired to export hourly load flow models, SELECT the desired format and check boxes.
- b. CHECK “Create DA LMP...(in data directory)” box



Simulator Options

Application

BidsToOptimize

UnitComm

UnitComm(adv)

CongAnalysis

Solution

Solution(adv)

Penalties

StudyWindow

Losses

Ancil_Service

Export

Export of Load Flow Cases

☐ Save hourly LF case with final dispatch and UC

Output LF case format


PTI RAW 30

☐ Add time stamp to created LF case names (prevents override)

☒ Create DA LMP and final dispatch files after DA run (in data directory)

Save Options

Cancel


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- SET the folder paths where the reports are to be written in the “ReportDir” column. The “Combined ReportDir (if not empty)” cell is **not** normally used but can be if it is desired that the reports of each day’s run are to be formatted into 1 report (e.g., each day annotated to the bottom of the previous, etc.). The “MarketDay” column is **not** normally used:

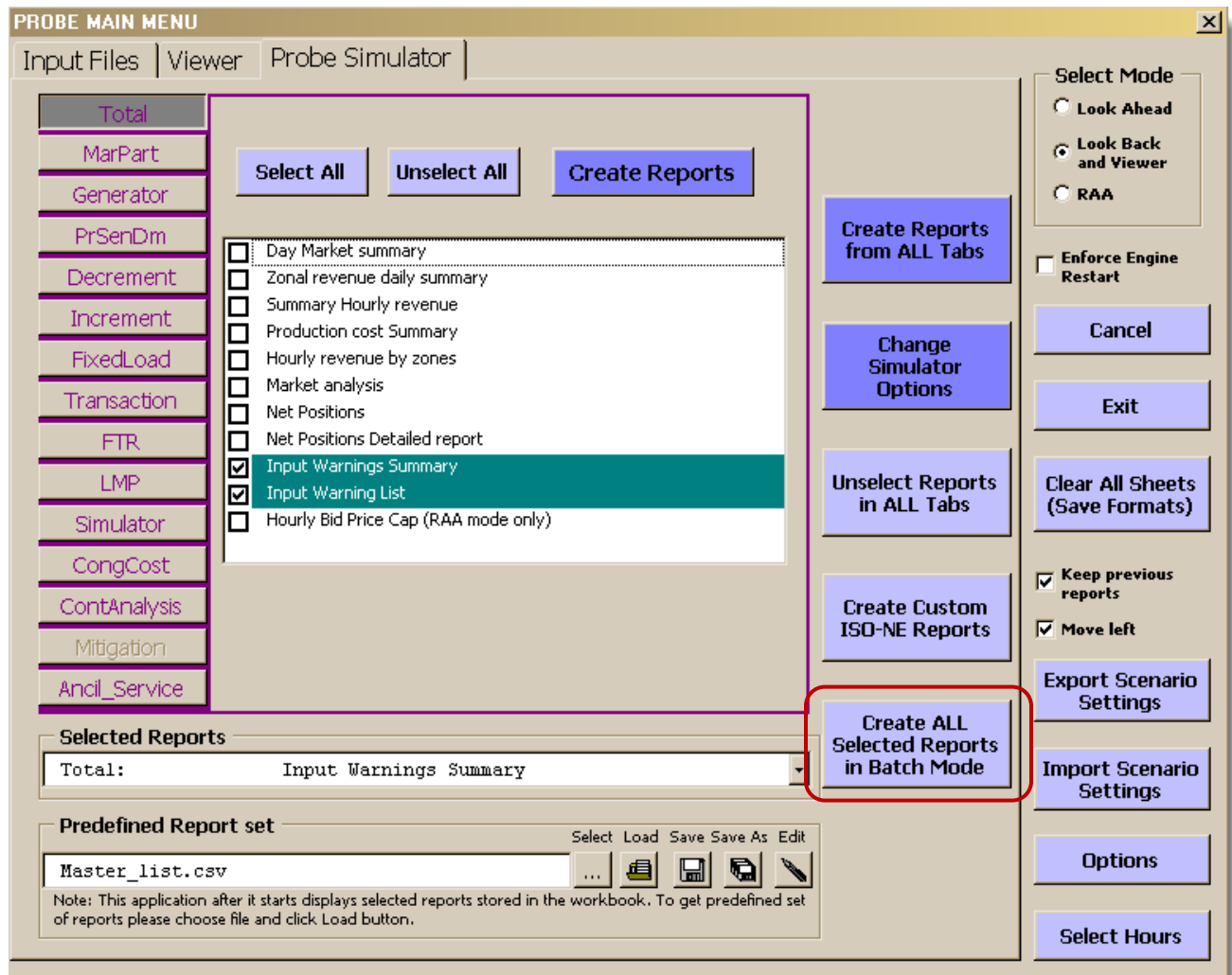
PROBE Batch Processing	Please ALWAYS include DataDir, MarketDay, ReportDir columns. ReportDir columns can be empty, if Combined ReportDir is defined					
Combined ReportDir (if not empty)	Combined ReportDir or all ReportDirs should be different from any DataDir					
DataDir	MarketDay	ReportDir	Scenario1	Scenario2	Scenario3	Scenario4
Z:\Daily market runs\Batch_run_Jan4-Jan7\20120104		Z:\Daily market runs\Batch_run_Jan4-Jan7\Results Jan4	BaseLn			
Z:\Daily market runs\Batch_run_Jan4-Jan7\20120105		Z:\Daily market runs\Batch_run_Jan4-Jan7\Results Jan5	BaseLn			
Z:\Daily market runs\Batch_run_Jan4-Jan7\20120106		Z:\Daily market runs\Batch_run_Jan4-Jan7\Results Jan6	BaseLn			
Z:\Daily market runs\Batch_run_Jan4-Jan7\20120107		Z:\Daily market runs\Batch_run_Jan4-Jan7\Results Jan7	BaseLn			


- IDENTIFY the Scenario1, Scenario2....Scenario6 names as desired. Normal Scenario1 name will be BaseLn. If a line is back in-service for a run as a variation of the first BaseLn run...SET that as the Scenario1 name as that will serve as the ISONE report name (e.g., 1845in, etc.).

PROBE Batch Processing	Please ALWAYS include DataDir, MarketDay, ReportDir columns. ReportDir columns can be empty, if Combined ReportDir is defined					
Combined ReportDir (if not empty)	Combined ReportDir or all ReportDirs should be different from any DataDir					
DataDir	MarketDay	ReportDir	Scenario1	Scenario2	Scenario3	Scenario4
Z:\Daily market runs\Batch_run_Jan4-Jan7\20120104		Z:\Daily market runs\Batch_run_Jan4-Jan7\Results Jan4	1845in			
Z:\Daily market runs\Batch_run_Jan4-Jan7\20120105		Z:\Daily market runs\Batch_run_Jan4-Jan7\Results Jan5	1845in			
Z:\Daily market runs\Batch_run_Jan4-Jan7\20120106		Z:\Daily market runs\Batch_run_Jan4-Jan7\Results Jan6	1845in			
Z:\Daily market runs\Batch_run_Jan4-Jan7\20120107		Z:\Daily market runs\Batch_run_Jan4-Jan7\Results Jan7	1845in			

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5. CLICK “Create All Selected Reports in Batch Mode:”



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6. CLICK “Validate All Input Files” this will ensure that all the files in the input folders are included and that the filepaths on the BatchProcess spreadsheet are correct.
 - a. CHECK “Use Final_unit_status...day” box, this will enable PROBE to pass the unit run histories from one day to the next
 - b. CHECK “Create Custom Reports...” box, this will create the ISONE custom reports in the results path, if the box is unchecked, all the reports selected in the PROBE Simulator tab will be created for each day.
 - c. The “Merge output reports from individual directories...” box is normally unchecked as this does **not** work with the ISONE custom reports.

Batch Mode Process from BatchProcess worksheet

Number of PROBE batch runs: 4

Output reports will be saved in individual directories

☒ Use Final_unit_status file from the previous day

Market Day is NOT included in every line of the reports
To change Market Day reporting, open MainMenu->Options form and make the change

Selected Reports: Warn_Sum, Warn_List, simBinding, congBidders, ConAnFG

☒ Create Custom Reports (instead of selected reports). All custom reports created after each batch run will be saved in a workbook named CustomReports_StudyDay_ScenariosNames.xlsx in the corresponding ReportDir directory

Validate ALL Input Files

Run Batch Process Consecutively

Number of PROBE executables to run simultaneously, no more than 12 (Check the number of CPUs before entering): 1

Run Batch Process on Multiple Processors Simultaneously

Output reports will be saved in individual directories

Merge output reports from individual directories into defined combined directory

☐ Merge output reports from individual directories into defined combined directory automatically after batch process is completed

Cancel

