HOSTING CAPACITY TOOL (HCT)

USER INTERFACE GUIDE AND FAQS

Revised on 7/16/2026

REVISION HISTORY

DATE	AUTHOR	CHANGE DESCRIPTION
2/6/2025	IT Engineering Staff	Created an initial document for UIs available in the Hosting Capacity Tool.
5/9/2025	Generator Interconnection Staff	Combined User Guide and FAQ documents.
8/24/2025	Generator Interconnection Staff	Additional information about HCT and underlying assumptions
12/22/2025	Generator Interconnection Staff	Changes to underlying assumption for DISIS-2023-001-1 Restudy to use Study Result Year 2 Post-Transfer Solution Set Scenario S3 cases versus Study Input Year 2 Post-Transfer for DISIS-2023-001-1 Restudy Hosting Capacity Tool Posting
7/16/2026	Generator Interconnection Staff	Updated with DISIS-2023-001-2 Restudy Year 2 Post-Transfer Solution Set Scenario S3 cases.

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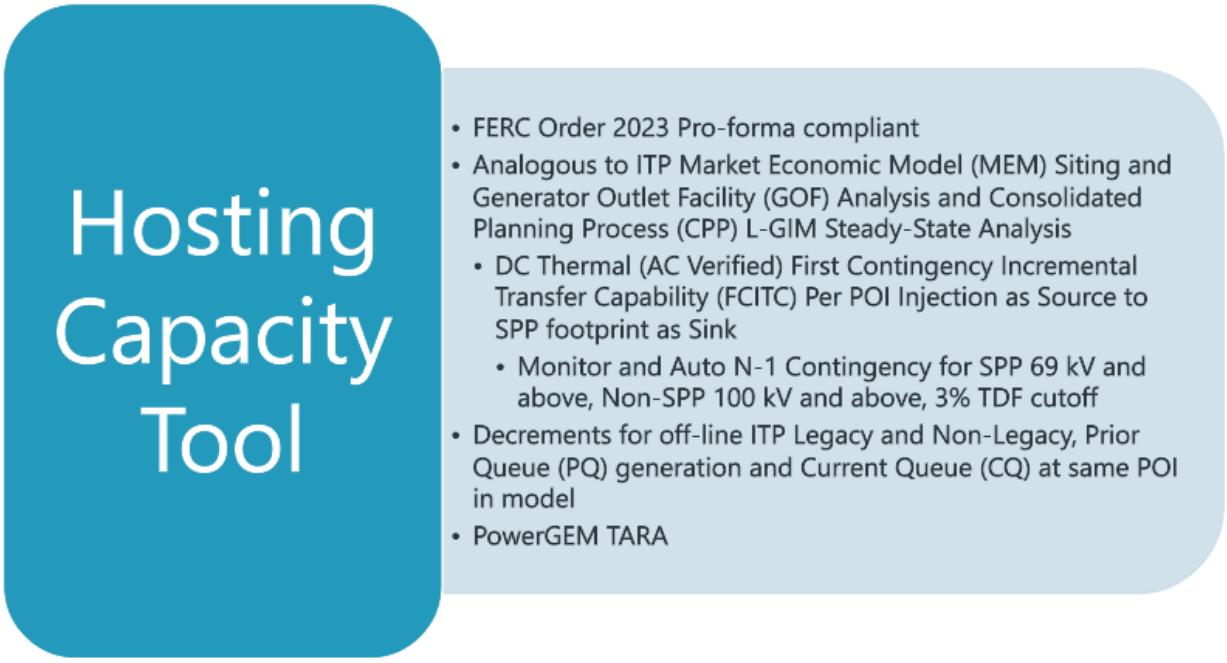
BACKGROUND

The SPP Hosting Capacity Tool (HCT) was developed from requirements under SCRIPT which was to reimagine SPP's transmission planning process. The Consolidated Planning Process (CPP) will bring the Integrated Transmission Planning (ITP) and Generator Interconnection (GI) studies together into one process. Through SCRIPT and CPP, there is a need for new tools to assist customers. The goal of the Hosting Capacity Tool is to provide data on capacity of the existing transmission system to host new interconnection. The tool should assist in planning for new interconnection requests.

Additionally, in FERC's Order 2023, the Commission required Transmission Providers to publicly post available information pertaining to generator interconnection in the form of a heatmap. The Hosting Capacity Tool meets the Commission's requirements:

> Transmission Providers are required to update the heatmap within thirty (30) calendar days after the completion of each cluster study and cluster restudy. The heatmaps must be calculated under N-1 conditions and studied based on the power flow model of the transmission system with the transfer simulated from each Point of Interconnection to the whole Transmission Provider's footprint (to approximate NRIS), and with the incremental capacity at each Point of Interconnection decremented by the existing and queued generation at that location. Transmission Providers must also provide the following information as outputs at each Point of Interconnection: (1) the distribution factor; (2) the MW impact; (3) the percentage impact on each impacted transmission facility; (4) the percentage of power flow on each impacted transmission facility before the proposed project; and (5) the percentage power flow on each impacted transmission facility after the injection of the proposed project.

HCT OVERVIEW AT HTTPS://PST.SPP.ORG/



ITP Legacy, ITP Non-Legacy, Prior Queue (PQ), and Current Queue (CQ) generation definitions can be found in GI MANUAL BUSINESS PRACTICE 7250.

MODELS AND ASSUMPTIONS

The SPP Hosting Capacity Tool (HCT) uses the most recent posted DISIS Steady-State Year 2 Current Queue (CQ) Scenario S3 models to include respective GI Network Upgrades and the lowest queued Interconnection Requests. More information regarding the model development procedures for the DISIS CQ models can be found in GI MANUAL BUSINESS PRACTICE 7250.

Hosting Capacity Tool Models:

DISIS Year 2 Current Queue (CQ) Scenario S3

SERVICE TYPE	DISPATCH SCENARIO	YEAR 2	YEAR 5	PQ MODELS	CQ MODELS	TOTAL
ERIS	HVER	- Summer, 5 groups	- Summer, 5 groups - Winter, 5 groups - Light Load, 5 groups	20	20	40
	LVER	- Summer, SPP Region	- Summer, SPP Region - Winter, SPP Region	3	3	6
NRIS	NR	- Summer, SPP Region	- Summer, SPP Region - Winter, SPP Region - Light Load, 5 groups	8	8	16
TOTAL				**31**	**31**	**62**

Service Type	Scenario	Description
ERIS	S0	No upgrades (except for temporary reactive elements as described below)
	S1	ERIS upgrades mitigating non-converged contingencies
	S2	ERIS upgrades mitigating non-converged contingencies and thermal violations
	S3	ERIS upgrades mitigating non-converged contingencies, thermal and voltage violations
NRIS	S0	All ERIS upgrades (addition of temporary reactive elements as described below)
	S1	All ERIS upgrades + NRIS upgrades mitigating non-converged contingencies
	S2	All ERIS upgrades + NRIS upgrades mitigating non-converged contingencies and thermal violations
	S3	All ERIS upgrades + NRIS upgrades mitigating non-converged contingencies, thermal and voltage violations

The following table is a record of the DISIS Cluster Study Postings and HCT Posting Notification Model Activation and Deactivation of Models.

DISIS CLUSTER	STUDY POSTING	HCT MODEL ACTIVATION	HCT POSTING NOTIFICATION	HCT MODEL DEACTIVATION
DISIS-2022-001 Phase 2	1/28/2025	3/17/2025	3/25/2025	8/24/2025
DISIS-2023-001 Phase 2	7/25/2025	8/24/2025	8/24/2025	12/22/2025
DISIS-2023-001-1 Restudy	12/5/2025	12/22/2025	12/23/2025	7/15/2026
DISIS-2023-001-2 Restudy	7/1/2026	7/15/2026	7/16/2026	

DISIS-2023-001-2 RESTUDY MODEL STUDY ASSUMPTION INFORMATION

DISIS-2023-001-2 Restudy Year 2 CQ Models Available in HCT
ERIS HVER (GROUP 1, 2, 3, 4, 5) Models
- DIS231TC01ALL-24SP (Note: No Group 1 requests or Group 1 specific upgrades included)
- DIS231TC02ALL-24SP (Note: No Group 2 specific upgrades included)
- DIS231TC03ALL-24SP3 (Note: Group 3 specific upgrades included)
- DIS231TC04ALL-24SP3 (Note: Group 4 specific upgrades included)
- DIS231TC05ALL-24SP3 (Note: Group 5 specific upgrades included)

ERIS LVER Model
- DIS231TC00ALL-24SP3 (Note: LVER specific upgrades included)

NRIS Model
- DIS231TC00NR-24SP3 (Note: ERIS and NRIS upgrades included)

DISIS-2023-001-2 Restudy Report:
https://opsportal.spp.org/documents/studies/files/2023_Generation_Studies/DISIS_Results_Workbook_DIS2023-2_Restudy-PowerFlow_Stability_SC_07_01_2026.xlsx

DISIS-2023-001 Phase 2 Models are posted on Globalscape in the following locations:

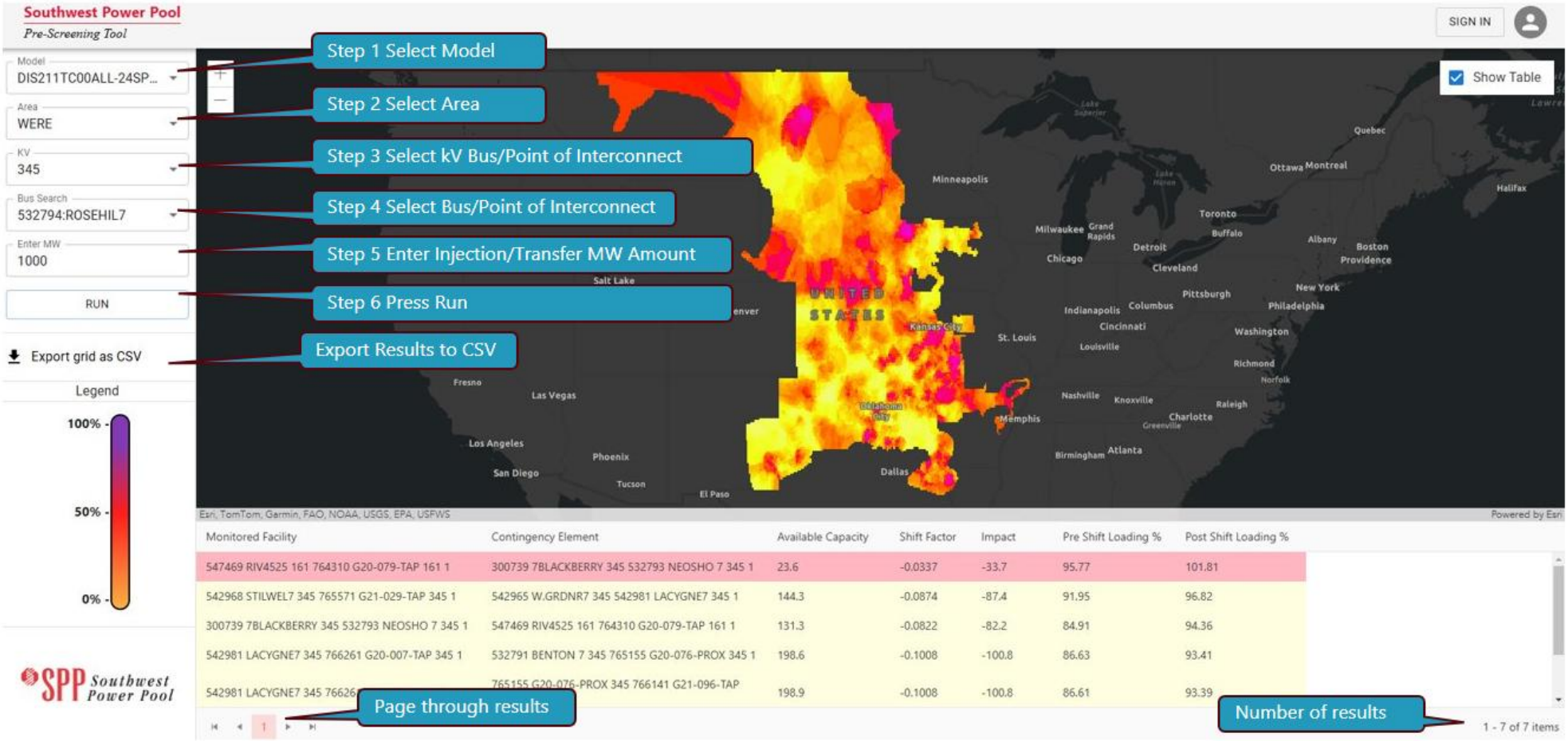
PowerFlow Models: GlobalScape → GI (CEII,RSD) → GI_Community_TO_and_Affected_Systems→ GI_Models → Power flow→ Study → DISIS-2023-001-2 Restudy→ Study Results

Stability Models: Globalscape → GI (CEII,RSD) → GI_Community_TO_and_Affected_Systems → GI_Models→ Stability→ Study→ DISIS-2023-001-2 Restudy

Base Models: GlobalScape → GI (CEII,RSD) → GI_Community_TO_and_Affected_Systems→ GI_Models → Power flow→ Base → DISIS-2023-001-2 Restudy

Base Models posting includes model assumptions to include a gen list with Current Queue (CQ), Prior Queue (PQ), and Non-Legacy ITP Firm and Non-Firm generation requests and worksheet with previously assigned transmission upgrades in models. Study Result posting includes DISIS-2023-001-2 Restudy Year 2 CQ Models Available in HCT and are equal to Year 2 Post-Transfer Solution Set Scenario S3 cases to include any ERIS Group specific upgrades in respective ERIS Group specific models and all ERIS and NRIS upgrades in NRIS model.

HTTPS://PST.SPP.ORG/ WALKTHROUGH



ABOUT THIS GUIDE

PURPOSE

The purpose of this document is to provide a user interface (UI) reference guide for users utilizing the Hosting Capacity Tool (HCT), which is a Pre-screening Tool (PST) for external users. This guide describes how to create a new user account and generate a map color contour from user input.

The following areas are described in this document:

- Contour Map Functions
    - Displaying a color contour from user inputs
    - Toggling Transmission Lines, POI, and Generators
    - Data Table
    - Exporting the Table Data

TERMINOLOGY

The following acronyms are used in this guide.

ACRONYM	DEFINITION
HCT	Hosting Capacity Tool
PST	Pre-Screening Tool(s) – various tools, such as the HCT, which will provide data to end users
Admin	Administrative user with privileges in model activation/deactivation and user role changes
User Role	An account role that dictates the user's privileges within HCT
Model	Representation of the transmission, generation, and load elements of the interconnected SPP Transmission System and the transmission system of other regions in the Eastern Interconnection
Area	An electrical system or systems bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other Control Areas and contributing to frequency regulation of the interconnection
Bus	A node on a branch
KV	Kilovolts
MW	Megawatts
Transmission Lines	Power lines present within the SPP footprint
Generators	A power generation facility
POI	Point of interconnection
Contour	A heatmap representing power usage levels in various areas
UI	User Interface

INTRODUCTION

SUPPORTED BROWSERS

The HCT UI is supported on the following internet browsers:

- Google Chrome
- Microsoft Edge

STATUS MESSAGE COLORS

The HCT UI provides the following status message colors for user submissions and application interactions:

GREEN: Green toasts and messages represent a successful submission of a form or data, or that a process that was started has completed successfully.

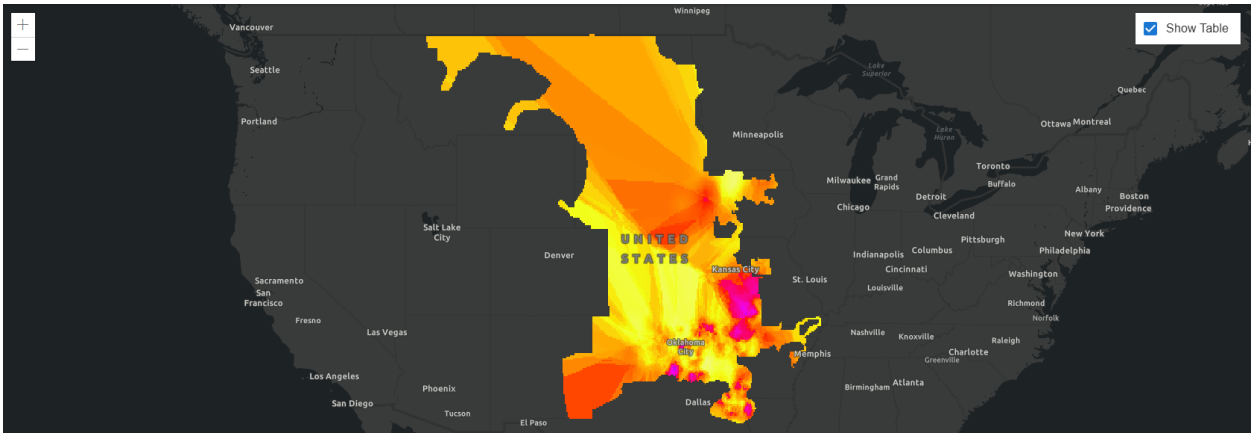
RED: Red toasts and messages represent a failed submission of a form or data, improperly interred values, or that a process that was started has failed or timed out.

DISPLAYING A COLOR CONTOUR

To display a color contour from user inputs:

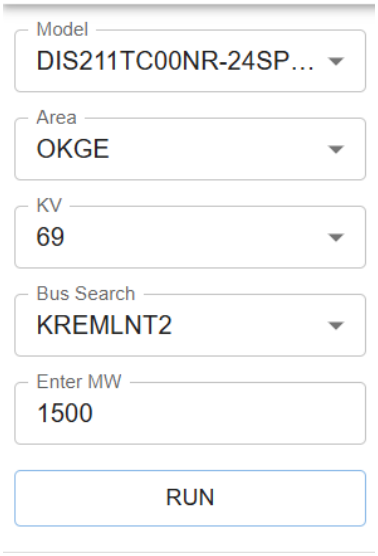
Base Contour

- When the app first starts, there is a heat map already present known as the "**base contour.**" This contour is generated by a default model (The first model on the model dropdown list).



Post Shift Contour

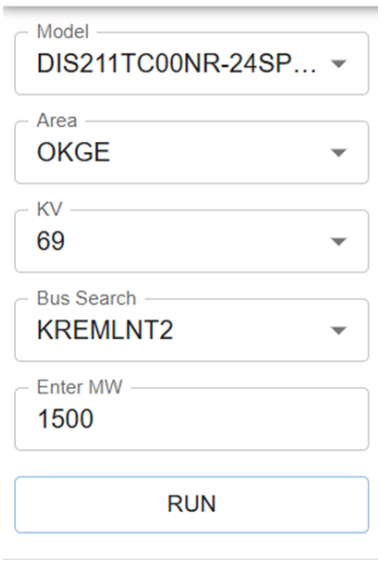
- When Model, Area, KV, Bus Search, and MW are modified, and "Run" is selected. The heat map will update according to the values entered.



DATA TABLE INTERACTIONS

To interact with the data table:

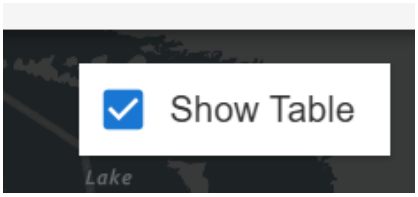
1. In the navigation bar, to the left of the map, there are five (5) fields:



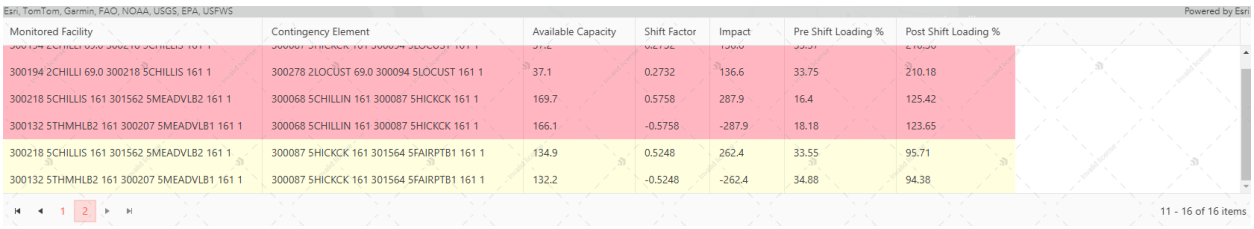
2. Enter the desired values and select "Run."

> - **Note**: All fields must contain a value or "Run" is disabled.

3. If the table view is not visible, select the checkbox beside "Show Table."



4. Observe the data in the data table.



5. There are seven (7) possible observable columns:

   - Monitored Facility
   - Contingency Element
   - Available Capacity – In MW, on Monitored Facility for Contingent Element equals 100% Loading minus the From Pre-Shift Loading % times the applicable rating of the facility.
     - Available Injection or Available Transfer MW Amount can be approximated by dividing Available Capacity by absolute value of Shift Factor
   - Shift Factor – Relative to the Monitored From and To Bus. (Positive Shift Factor flow is from From bus to To bus, Negative Shift Factor flow from the To bus to From bus.)
   - Impact – Injection or Transfer MW Amount times Shift Factor
   - Pre Shift Loading % - % loading of Monitored Facility before Injection/Transfer MW Amount.
   - Post Shift Loading % - % loading of Monitored Facility after Injection/Transfer MW Amount.

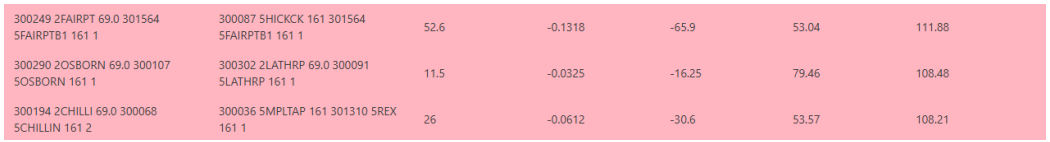
   - **Note:** The **Impact** and **Post Shift Loading %** columns will not be visible if the MW field is left at 0.

6. You can page through the rows of data by utilizing the paging feature at the bottom of the table.



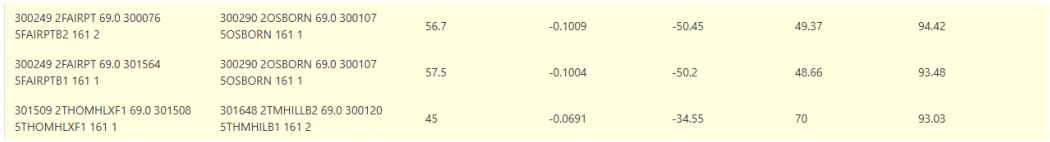
7. Rows will appear as two colors varying on their **Post Shift Loading %** value.

    - Rows with a **Post Shift Loading %** value of 100 or greater will be highlighted with light red (or pink).



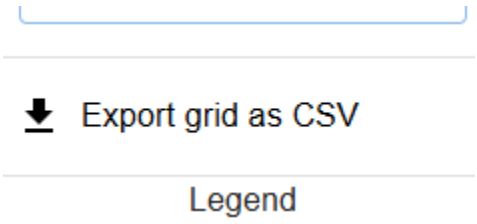
300249 2FAIRPT 69.0 301564 5FAIRPTB1 161 1	300087 5HICKCK 161 301564 5FAIRPTB1 161 1	52.6	-0.1318	-65.9	53.04	111.88
300290 2OSBORN 69.0 300107 5OSBORN 161 1	300302 2LATHRP 69.0 300091 5LATHRP 161 1	11.5	-0.0325	-16.25	79.46	108.48
300194 2CHILLI 69.0 300068 5CHILLIN 161 2	300036 5MPLTAP 161 301310 5REX 161 1	26	-0.0612	-30.6	53.57	108.21

    - Rows with a **Post Shift Loading %** value of 99 or less will be highlighted with light yellow.



300249 2FAIRPT 69.0 300076 5FAIRPTB2 161 2	300290 2OSBORN 69.0 300107 5OSBORN 161 1	56.7	-0.1009	-50.45	49.37	94.42
300249 2FAIRPT 69.0 301564 5FAIRPTB1 161 1	300290 2OSBORN 69.0 300107 5OSBORN 161 1	57.5	-0.1004	-50.2	48.66	93.48
301509 2THOMHLXF1 69.0 301508 5THOMHLXF1 161 1	301648 2TMHILLB2 69.0 300120 5THMHILB1 161 2	45	-0.0691	-34.55	70	93.03

- Once data has been populated in the table, an "Export grid as CSV" option will appear. It will be located in the navigation bar, located to the left of the map, below the text fields and map controls. Select "Export grid as CSV" to download the currently visible data table as a .csv file.



- **Note:** The file name will be grid-data.csv

FREQUENTLY ASKED QUESTIONS

QUESTION	ANSWER
Where is the test environment?	Access to the Test Environment: pst.itesppmembers.org .
Where is the production environment?	Access to the Production Environment: https://pst.spp.org/
What do the colors represent?	The colors represent the % loading on a monitored facility. It is calculated from the nearest 12 data points (monitored facilities) to any given point on the map.
How is capacity determined?	Available Capacity on Monitored Facility for Contingent Facility = 100% loading minus from pre-shift loading % times applicable rating of facility
Is there a way to populate the location of the substations from the drop down?	At this time, no. This will be logged as a future enhancement.
Can the transmission lines be shown on the map?	Due to CEII data restrictions, transmission lines cannot be shown.
Is there a glossary to translate the characteristics of the monitored elements (e.g. voltage, equipment type, length of line, etc.)?	The models that are posted along with each DISIS study would have that information. You will need a current DISIS request and a signed NDA for access to the study models on GlobalScape. Alternatively, you can order individual models through RMS.
Will the tool change the dispatch of the prior queue generators under the exception rule in the DISIS manual (AKA PQE)?	The tool decrements for all generation at the same POI. This is in line with the requirements for SPP's FERC Order 2023 compliance filing under ER24-2026-000.
Will the TC models used for the tool be the ones posted at the start of the study cycle or will they be the cases posted along with the results (S0, S1, S2, S3) which have varying levels of current queue upgrades?	The TC models without upgrades will be used.

Is any bus selected in the tool is in the SPP system? As in, if I find the bus in the map, then I can say that it is a POI to submit a DISIS application?	Every 69 kV bus or greater for SPP modeling areas in the posted models is available in the prescreening tool.
Are candidate contingent facilities shown based on the screening results?	No, contingent upgrades are not part of the initial phase of the pre-screening tool. We will log as a future enhancement. Previously identified contingent upgrades are listed.