Transmission Register CAISO and PTO User Manual

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Version: 4.0

California Independent System Operator

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1. Introduction

The Transmission Register (TR) is a secure Web-enabled database environment for CAISO internal users and specific Participating Transmission Owners (PTO) to access TR data. The TR discloses for each transmission line and associated facility the:

- Identity of the PTO responsible for operation and maintenance and its owners (if other than the PTO).
- Dates the CAISO assumed or relinquished Operational Control.
- Date of any change in the PTO responsible for its operation and maintenance, or in the identity of its Owner.
- Transmission equipment's applicable ratings and history.

1.1. Purpose

The TR maintains the official listing of transmission lines, associated facilities, and Entitlements that are subject to the CAISO's Operational Control, as required by the Transmission Control Agreement, Section 4.2.

1.2. Scope

This manual covers the basic Transmission Register user functions and steps required for viewing Transmission Register data and generating reports. The manual covers the following topics:

- How to access the application
- Understanding the capabilities and views of the different windows
- How to use the Find capability of TR and view data
- Generating, creating, printing, and saving reports

1.3. Definitions

The following defined terms and acronyms are used within this document:

Object	Definition
APS	Arizona Public Service Company
BPA	Bonneville Power Administration
BSCB	Bus Sectionalizing Circuit Breaker
CABLE	Cable
CAP	Shunt Capacitor
CB	Circuit Breaker
CDWR	California Department of Water Resources
CFE	Comision Federal De Electricidad
Component	A single piece or grouping of electrical transmission equipment embedded within the Grid System. Attributes that define a component include the Organization, Owner, Description, Station, Voltages, Ratings, and ISO or Non-ISO.
COND	Overhead Conductor
.csv	Comma Separated Values (Excel format)
CSW	Circuit Switch
CT	Current Transformer
DISC	Disconnect Switch
Dynamic	A TR search type, which allows the User to select a value as search criteria, and the values of other search criteria are dynamically limited to only applicable values based on the selected value. If a User chooses to perform a dynamic search, the dynamic search fields are limited to the following fields, and values must be selected in the order shown as follows: • Station • High Nominal Voltage • Equipment Type
Equipment	Electrical transmission equipment category created to represent a Component, e.g. Circuit Breaker, Transformer, Leg, Transmission Line Section, etc.
FUSE	Fuse
IID	Imperial Irrigation District
ISO Equipment	Represents Components turned over to the ISO for their Operational Control.
LADWP	Los Angeles Department of Water and Power

Object	Definition
LEG	Component typically consisting of CB, DISCs, and COND at the CB position inside a Station
MID	Modesto Irrigation District
MOD	Motor Operated Disconnect Switch
MWD	Metropolitan Water District
NCPA	Northern California Power Agency
NEVP	Nevada Power
Nominal Voltage	Represents the voltage class which an Organization decides is the utility industry-wide standard value used to classify a range of voltages. For example, actual Components may operate at 220 or 225 kV, but each would fall into the 230 kV nominal voltage class.
Operating Voltage	Represents the voltage at which an Organization has decided to operate their Components for a specific Nominal Voltage of the Organization.
Organization	A utility entity that either performs the maintenance on and/or physically operates the Components listed under its name.
Owner	A utility entity that has an ownership percentage of or entitlements to the Components listed under its name.
PACE	PacifiCorp East
PACW	PacifiCorp West
PGAE	Pacific Gas and Electric
PTO	Participating Transmission Owner
Rating Note	An Organization specific note providing additional rating limit detail the operator needs to use when operating the Component.
Rating Type	All rated components have at least four rating types that represent Summer Normal, Summer Emergency, Winter Normal, and Winter Emergency ratings and are used to populate the Detailed Network Model (MVA1, MVA2, MVA3, and MVA4). Additional rating types may be added by the Organization that represents special emergency or planning conditions. Within each rating type is an AMP and/or MVA/MVAR value that provides the user the electrical limits a Component can be operated at or planned for while under normal or emergency conditions.
RCT	Shunt Reactor
REG	Regulator
RLY	Relay
.rtf	Rich Text Format

Object	Definition
SCAP	Series Capacitor
SCE	Southern California Edison
SCND	Synchronous Condenser
SDGE	San Diego Gas and Electric
SMUD	Sacramento Municipal Utility District
SRCT	Series Reactor
SRP	Salt River Project
Static	A TR search type, which allows the User to openly select or enter values as search criteria, and then submit all values at once for searching.
Station Name	Organization specific substation/switching station full name or a special category (Transmission Line) reserved to be the umbrella for all Organization specific transmission circuits and their associated equipment types.
SVC	Static VAR Compensator
SVP	Silicon Valley Power
TERM	A Component representing one terminus of a transmission line typically consisting of a LEG(s) and line drop CONDs
TL	Transmission Line
TLS	Transmission Line Section
TR	Transmission Register
TRCT	Tertiary Reactor
WALC	Western Area Lower Colorado
WACM	Western Area Colorado Missouri
WASN	Western Area Sierra Nevada
WTRP	Wave Trap
XFMR	Transformer

2. Accessing TR – CAISO and PTO Users

Before accessing the TR for the first time, the user must obtain and install a TR Certificate. Take the following steps to request, install, and access TR:

2.1. CAISO User Request TR Certification

1) From the eCurrent homepage 'QUICK LINKS' section, click on the Internal Application Access and you will land you 'Access request form' home page.
2) From the Internal Application Access Request homepage, click on 'Create Access Request' and follow the steps outlined in the User Guide.
3) Application = "TR - Transmission Register (TR)", Access Role = ISO USER, and Environment = Production

2.2. PTO User Request TR Certification

1) Access the following CAISO URL to obtain the External AARF: http://www.caiso.com/Documents/ApplicationAccessRequestForm.xls
2) The authorized UUA for the requesting Organization must fill out the form per the instructions in the form and submit as per Application Access Request Form Reference Guide

2.3. Certificate Installation

Once approved, Certificate Request replies via e-mail with the TR Certificate, password, and TR Installation Instructions. A password is required for the initial login only. All ensuing accesses automatically connect the user.

Save the certificate file and installation PIN in a secure location for possible future use and follow the installation instructions.

2.4. Accessing TR

Type the URL address https://portal.caiso.com/tr/app into your browser address bar.

3. Using TR Functions/Screen Views

3.1. Main Screen

Below is the Transmission Register main screen. The user has the option of using "Light" or "Dark" mode, as shown below.

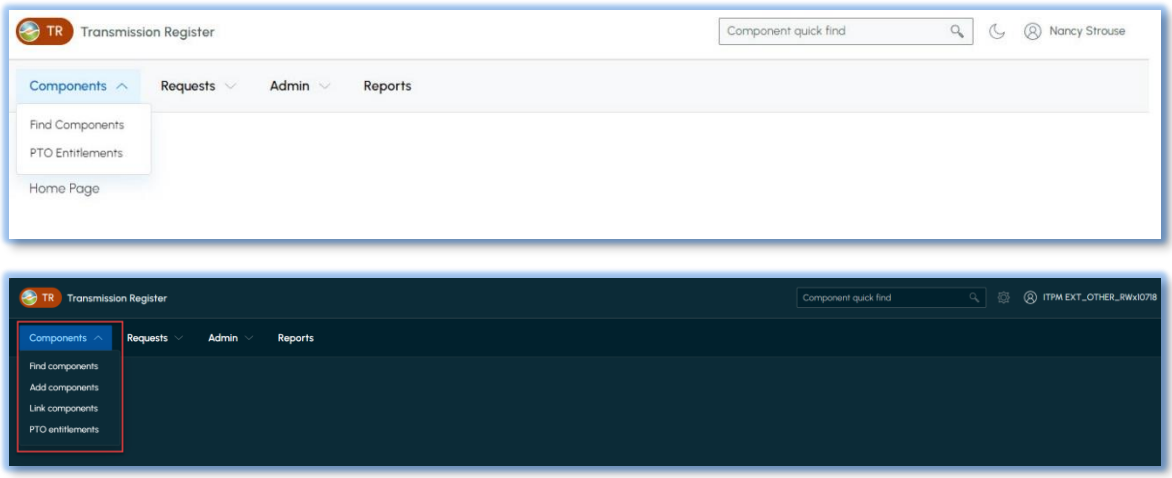


Figure 1 TR Main Screen - Components

Once the address has been typed into the browser, the screen in Figure 3 appears, displaying two folder labels, Components and Reporting. Click on Find Components. Preferences are in a dropdown under the user's profile.

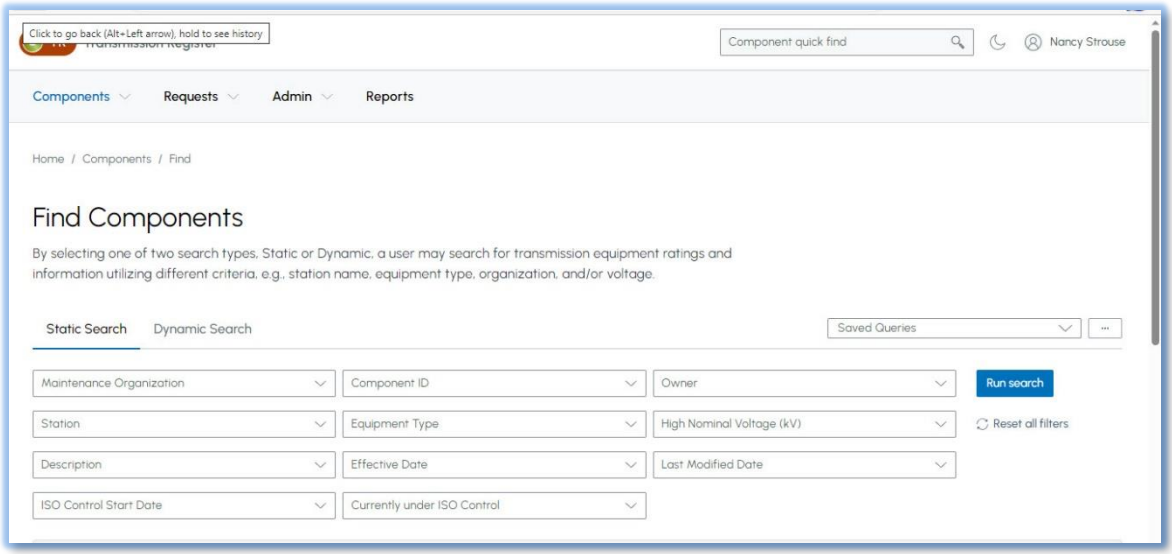


Figure 2 Find Components Page

This is where the search process begins in the selection of a Search Type. The Search Type window provides the user with the ability to conduct the search using either a Static Search or a Dynamic Search. The user may view their organization's components and only those that are included in the Maintenance Organization list, or if a valid share exists between the component and the user's organization.

As shown is Figure 4, the application automatically defaults to the Static Search screen.

If a Dynamic Search is desired, proceed to Section 3.3 and if a Static Search is desired, then proceed to Section 3.2.

3.2. Find Components - Static Search

As stated in Section 3.1., the Find Components defaults to the Static Search (refer to Figure 4). Static Searches allow the user to select *any or all* the criteria for a search, however keep in mind that the fewer the search selections, the greater the results. The user can likewise select a specific parameter in the left-hand column; however, the search automatically defaults to Equal to.

- Users can view only information that is relevant to their organization.

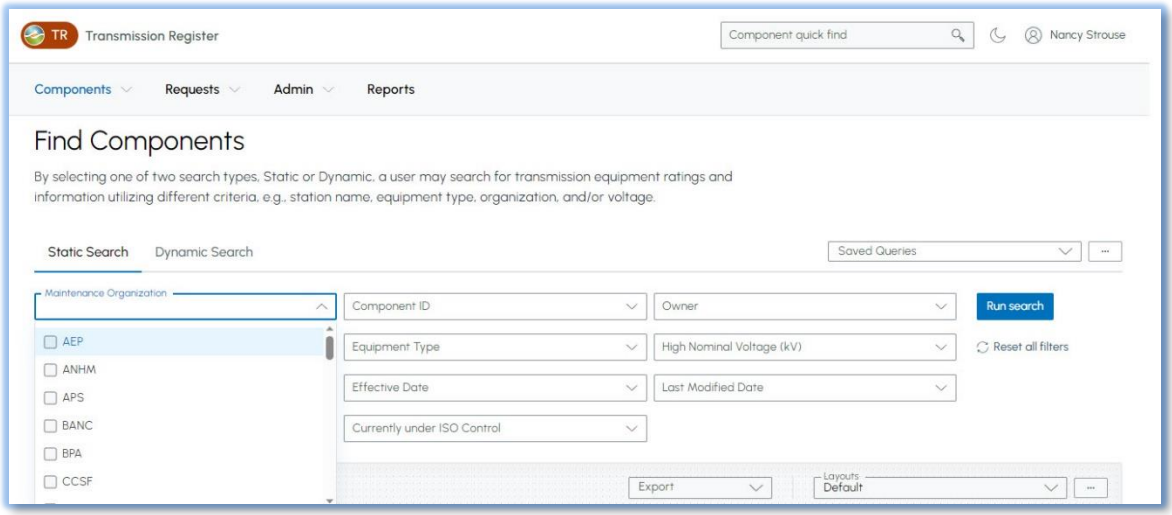


Figure 3 Static Search - Organization

1) Select the Maintenance Organization from the right column drop-down menu shown in Figure 5 and select Equal to parameter in the left-hand column, shown in Figure 6.
   - It is not required to make parameter selection in the left-hand column if "Equal to" is the preference.
   - There is no need to select "Equal to". The user selects the Maintenance Organization by clicking and checking the Maintenance Organization they would like to see.

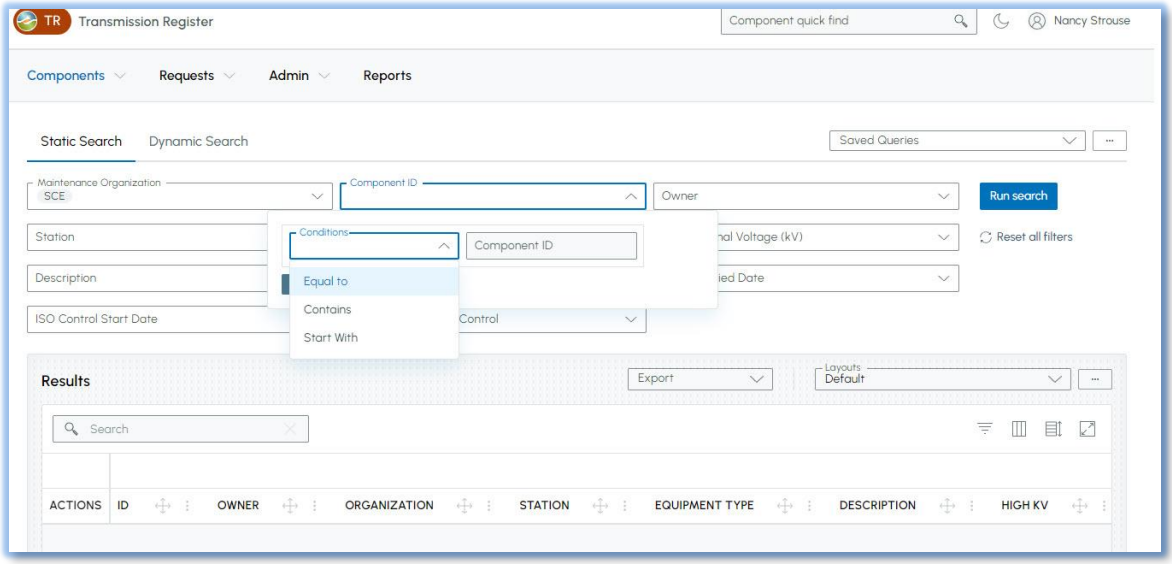


Figure 4 Static Search - Parameters

2) Enter the component ID in the second row of the right column and select the left-hand column parameter to one of the following:
   - Equal to- searches the exact ID number (the default choice)
   - Contains- searches using a partial ID number
   - Starts with- searches using the first few digits of an ID number
3) Select the Owner.

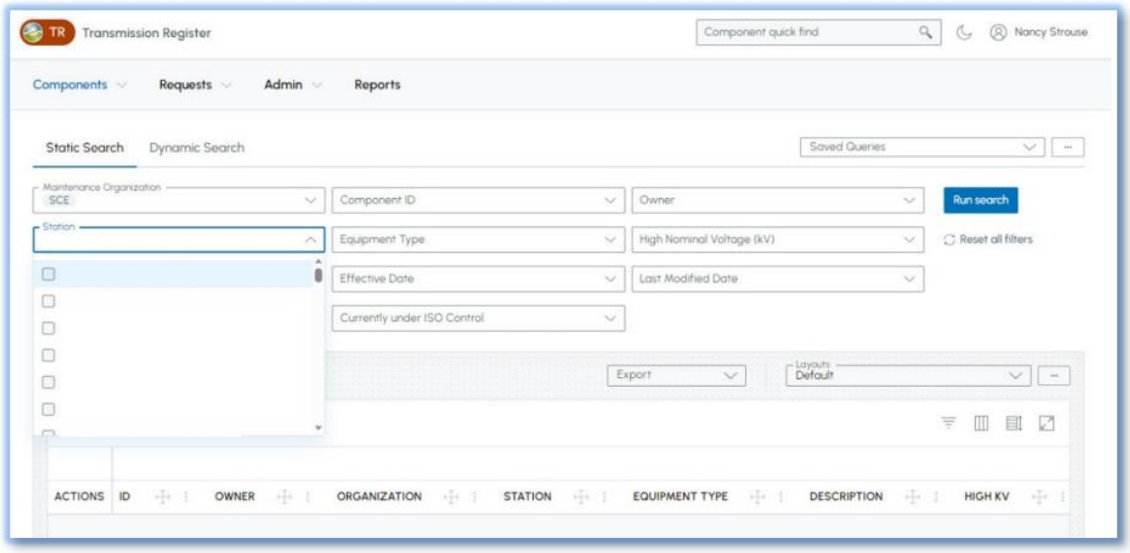


Figure 5 Static Search – Station Name

4) Select or type the Station name.
5) Select the Equipment Type.

- **T**his window offers all equipment types, which may or may not be related to the Organization or Owner.

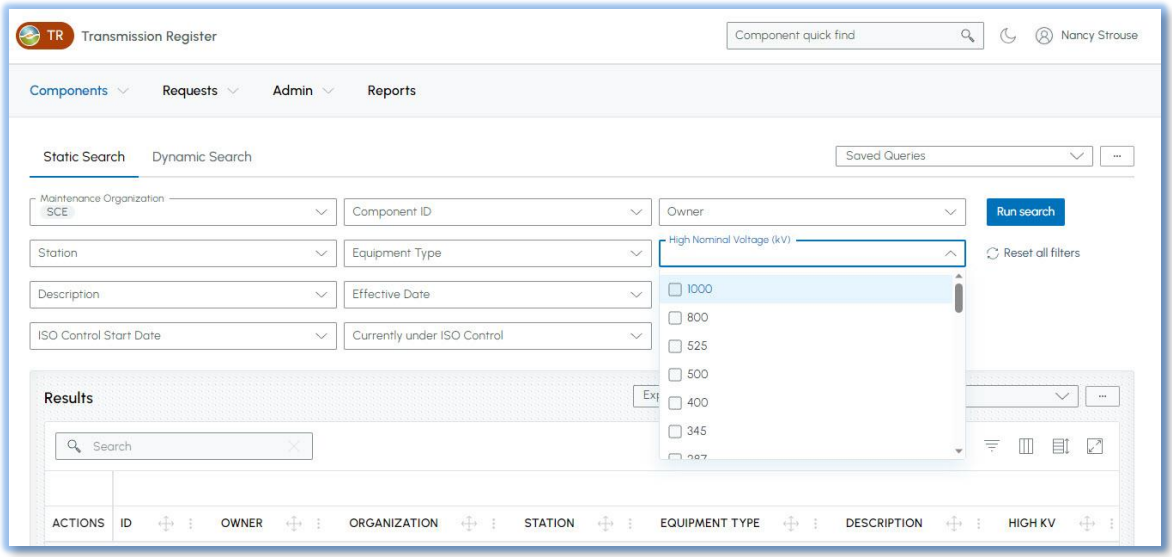


Figure 6 Static Search - High Nominal Voltages

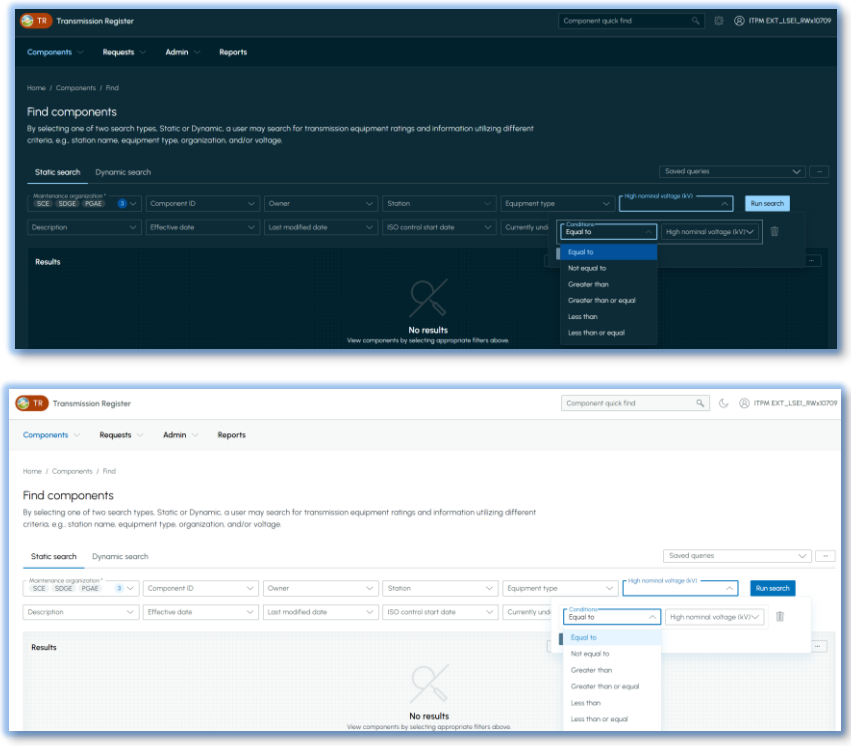


Figure 7 Static Search – Conditions (Dark and Light modes)

6) Select the High Nominal Voltage (kV), and then select one of the left-hand column parameters:
   - Equal to
   - Not Equal to

- Greater than
- Greater than or equal to
- Less than
- Less than or equal to

Static Search offers all voltages, which may or may not be related to the Organization or Owner.

7) Type in the Description and select one the left-hand column parameters:
   - Equal to
   - Contains
   - Starts with

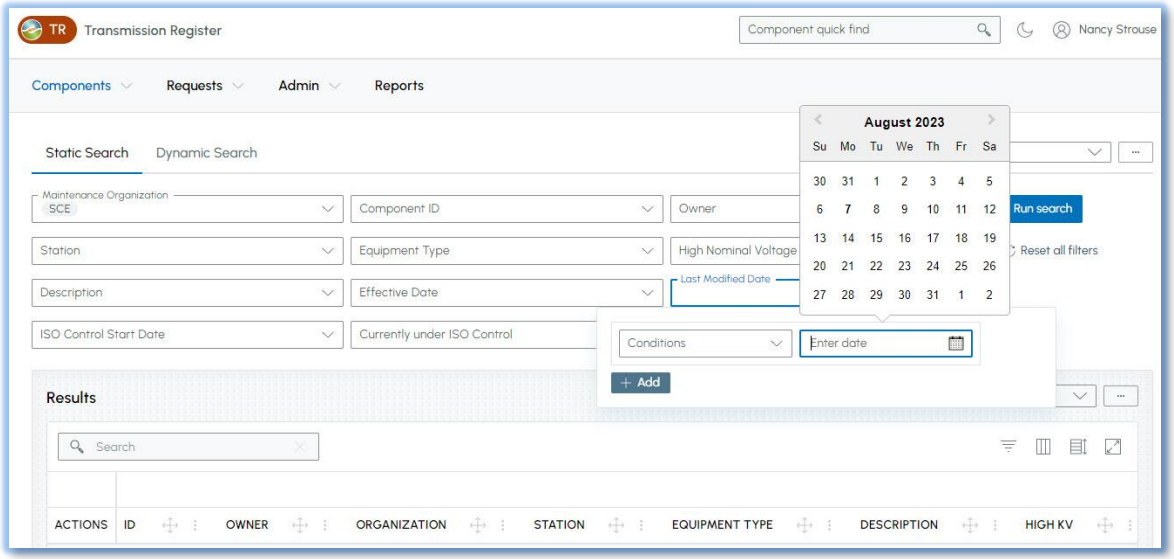


Figure 8 Static Search - ISO Effective Date

8) Type in the Effective Date or select the Effective Date by clicking on the date icon shown in Figure 9. A calendar displays.
   i. Click the desired day of the month and the calendar automatically closes.
   ii. Select the left-hand column parameters for the Effective Date shown in figure 9.
9) Select the Last Modified Date and parameters using the same method as shown previously.
10) Select the ISO Control Start Date and parameters in the same manner.
11) Choose either Yes or No from the Currently Under ISO Control dropdown window.
12) After the desired criterion is selected, click the Run Search button.

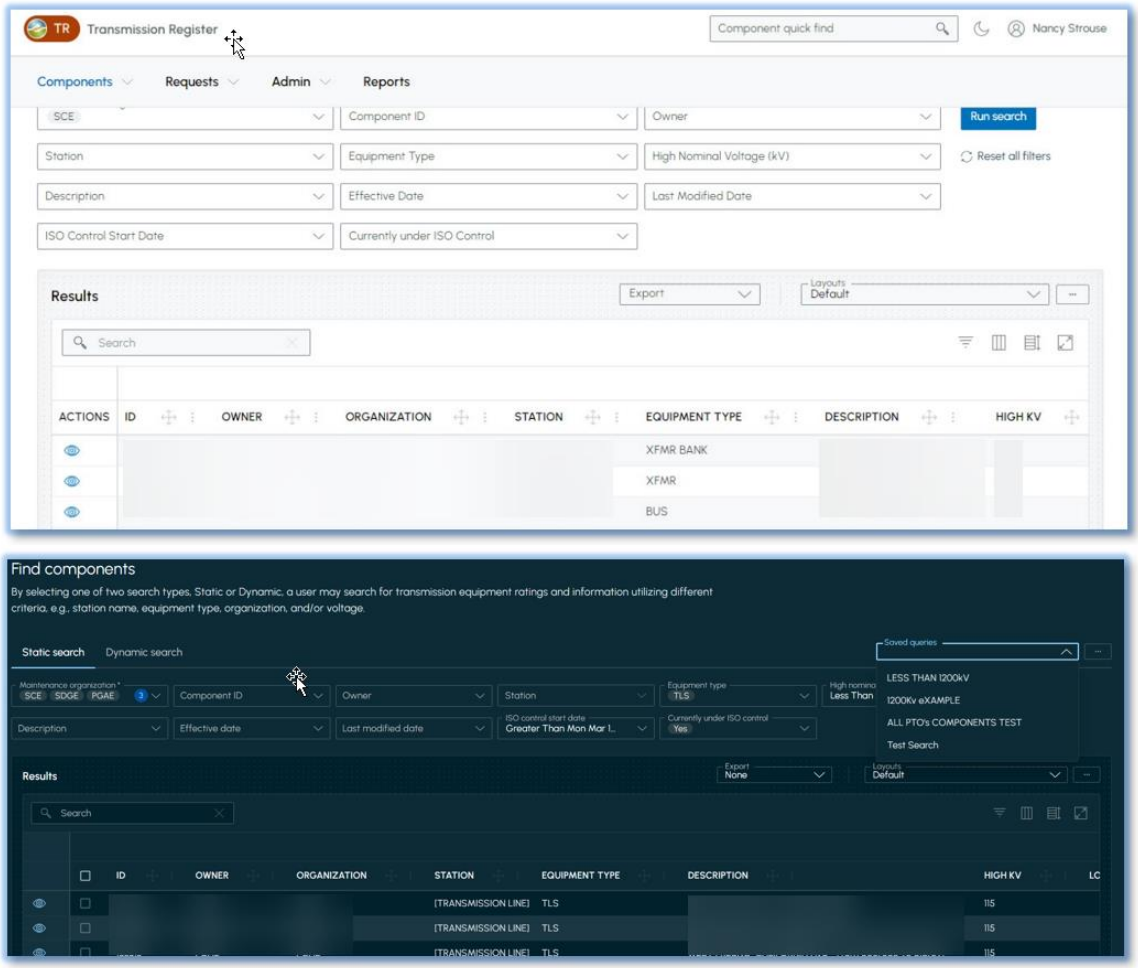


Figure 9 Static Search Results

3.2.1. Details View of Static Search Results

The search results display at the bottom of the page, shown in Figure 10. The user can scroll to the right of the Search Results screen and view the ratings for Summer Normal, Summer Emergency, Winter Normal, Winter Emergency, and all other ratings currently populated for each component. To save the query:

1) Click the Manage Queries hyperlink and a window loads to name and save the query to Saved Queries" for future reference.
2) Type in the file name.
3) Press the OK button. The screen refreshes and you can now see your saved query in the dropdown window next to the Manage Queries.

To sort the results by a specific category, click on the Details View hyperlink (clicking the ID number hyperlink next to the Details View provides the same outcome).

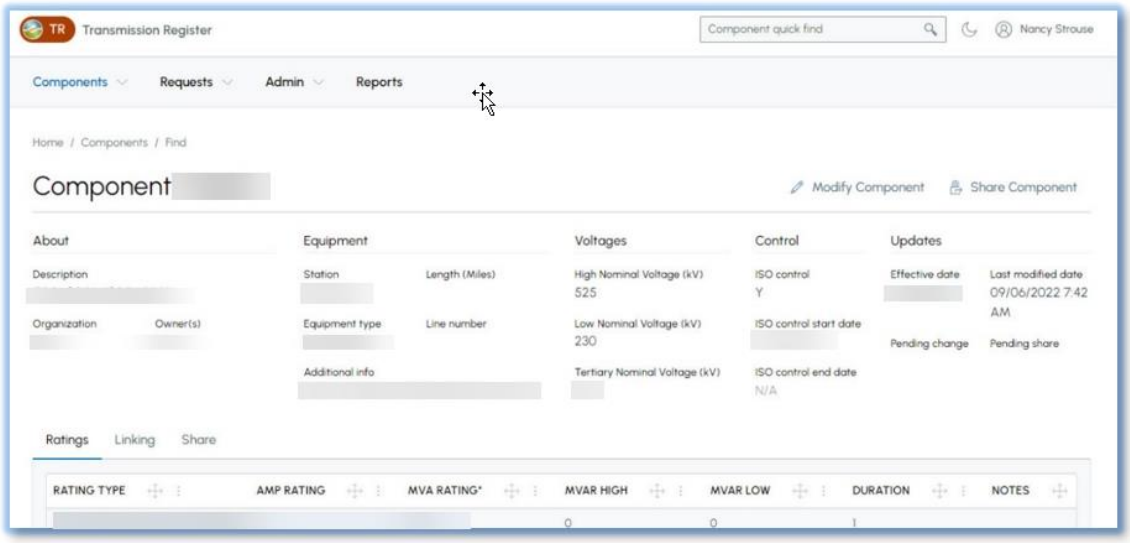


Figure 10 Static Search Details View

Once in the Details View, the user has the option to view components linked to this component (Linking View). A Component Link is a relationship between two Components of which one is considered a Parent Component and the other a Child Component. To view component links, from the dropdown menu select Linking View.

Also, while in Details View, the user can opt to select the Share View that enables the Component to be viewed by the Organization it is shared with, but that Organization may not link any of its Components to it. In this case, there are no shares attached.

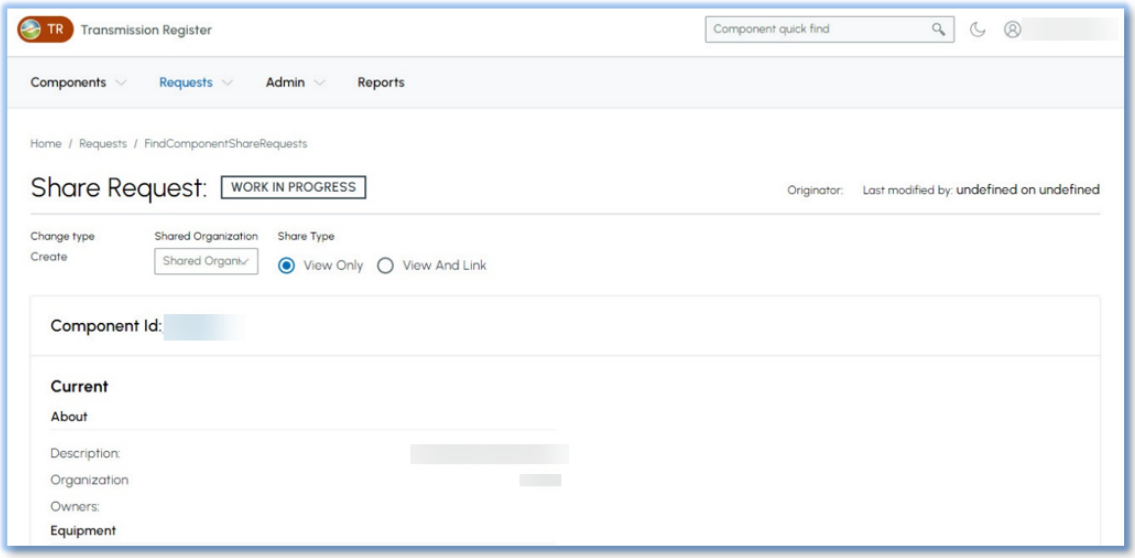


Figure 11 Component Link

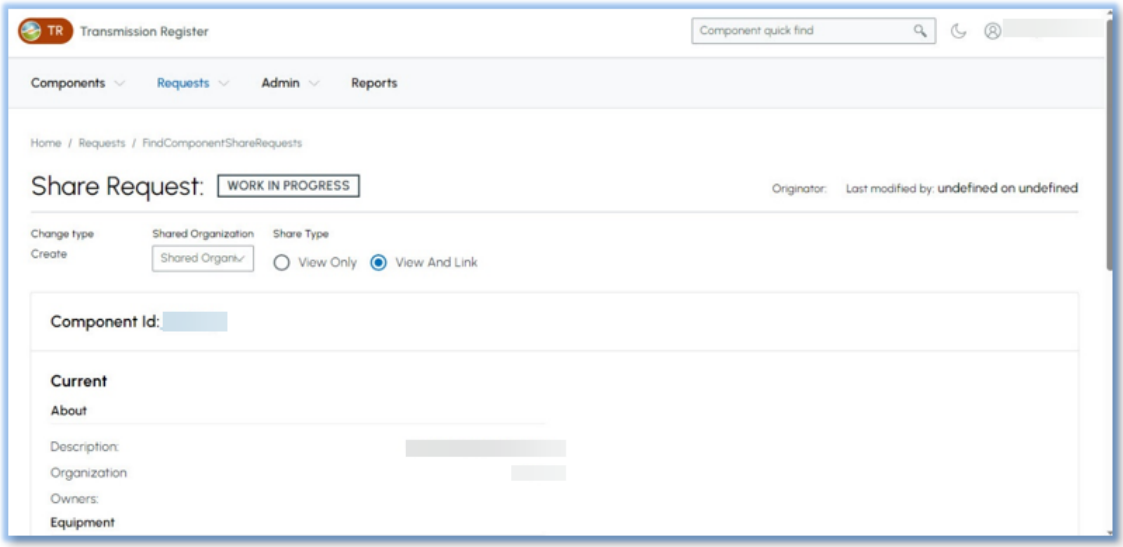


Figure 12 Component Share View

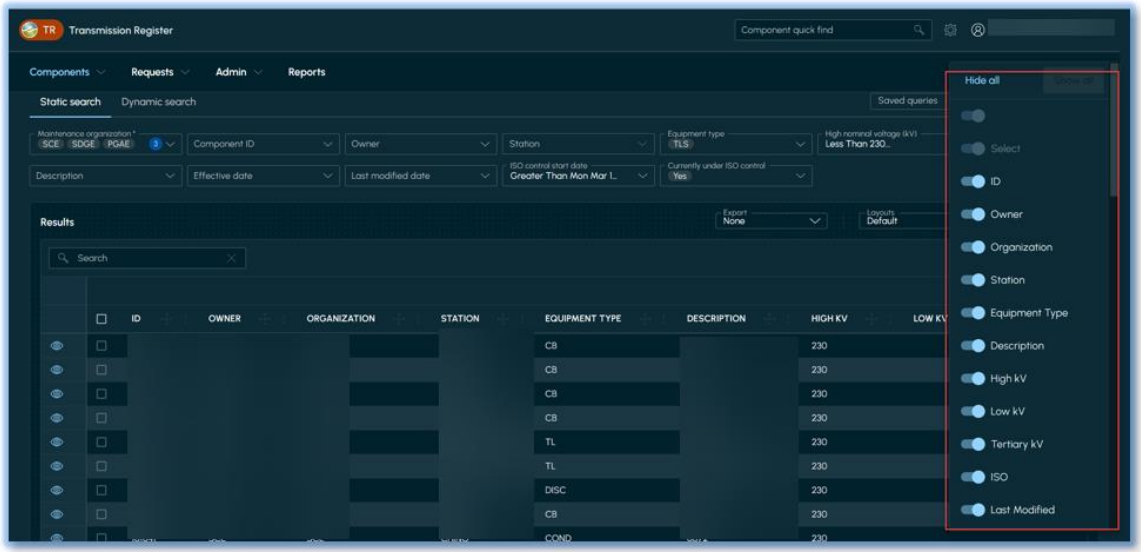


Figure 13 Static Results Modification

3.2.2. Modify/Manage Layout of Static Search Results

The Modify and Manage Layout window allows the user to change the headings of their Search Results, as well as save the modified layout for future component searches. An organization's proprietary rating types can be added or subtracted, as required, using the east/west arrows provided in the partition between the Available Columns and In Layout.

To modify the criteria for the Search Results, take the following steps:

1) Press the Modify Layout button and the Modify Layout window appears.

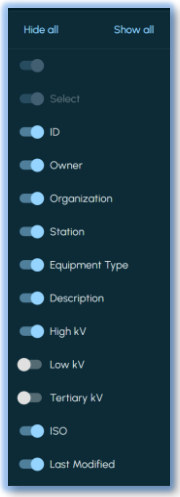


Figure 14 Modify Layout Window

2) Select the topic to either add (Available Columns) or remove (In Layout)
3) Click on the arrow to move the topics for layout.
4) Click Ok when complete.

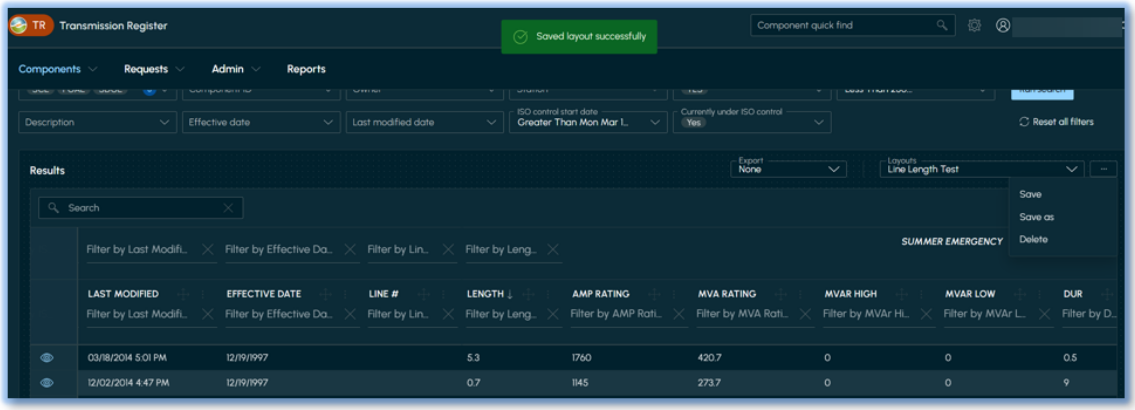


Figure 15 Manage Layout Window

To save a layout for future use, take the following steps:

1) Refer to the Static Search Results window.
2) Click on Manage Layout and the “Manage Layout” window appears.
3) Select one of two options and click “ok”.
    i. If you want to save the current layout (Manage Layout defaults to “Save current layout as”), then type in a file name and click ok.
    ii. If you want to delete the current layout, then check the Delete current layout button and click Ok.

Export Static Search Results to .csv Format

To export the results into an Excel .csv format, click the CSV Export hyperlink, which exports the Search Results into Excel's .csv format. A mock-up version is shown in Figure 17.

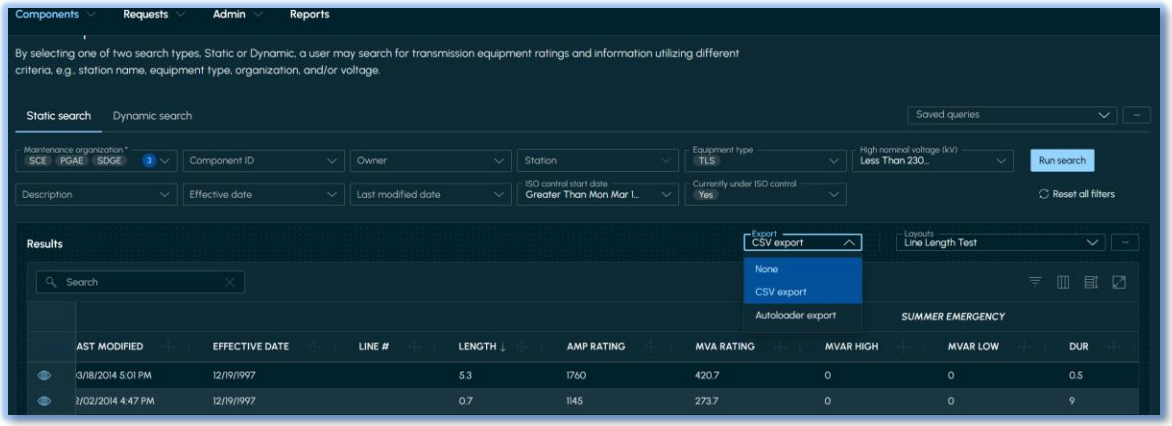
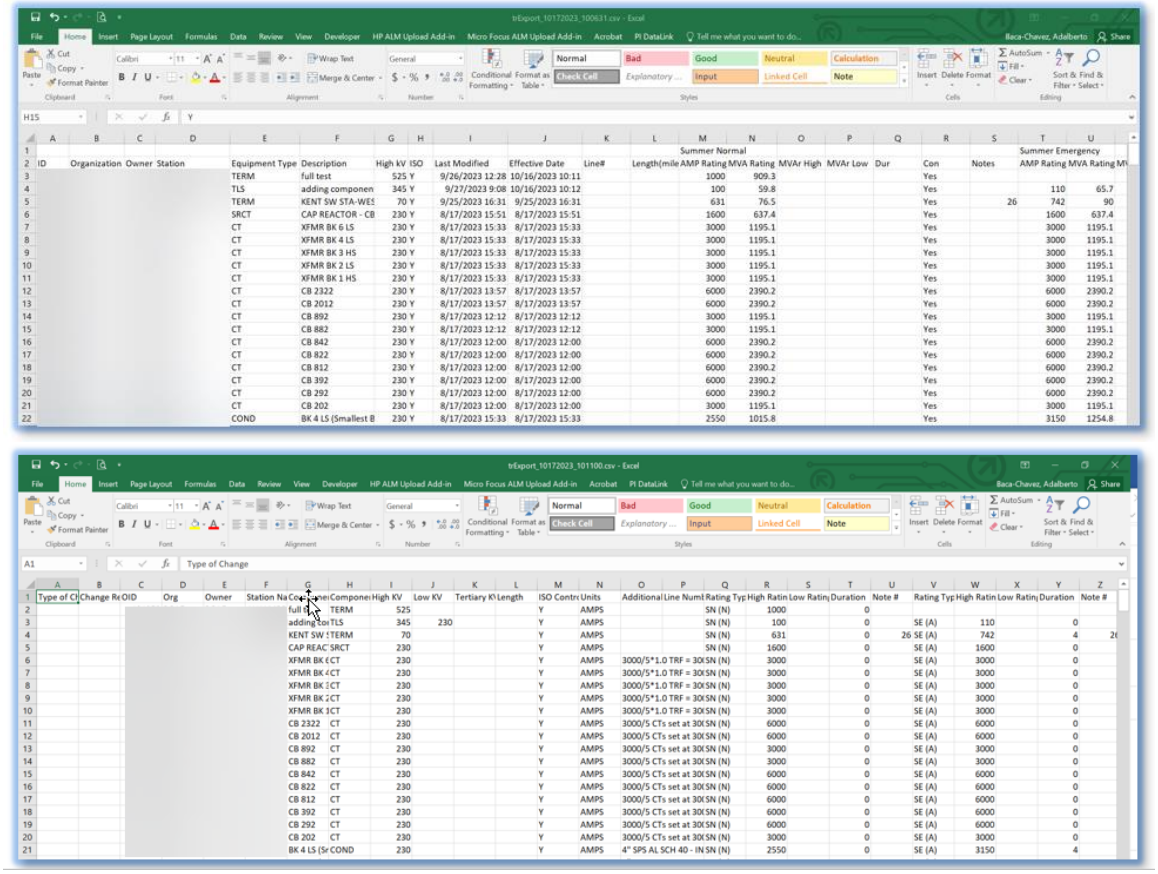


Figure 16 CSV Export Sample



Export Static Search Results to Autoloader Format

The results can likewise be exported into an Autoloader format (also .csv) so that changes are inserted quickly, and then uploaded by the PTO Administrator back into the Transmission Register. To do this, click the Autoloader Export hyperlink, which exports the Search Results into an Excel .csv format. A mock-up version is shown in Figure 18.

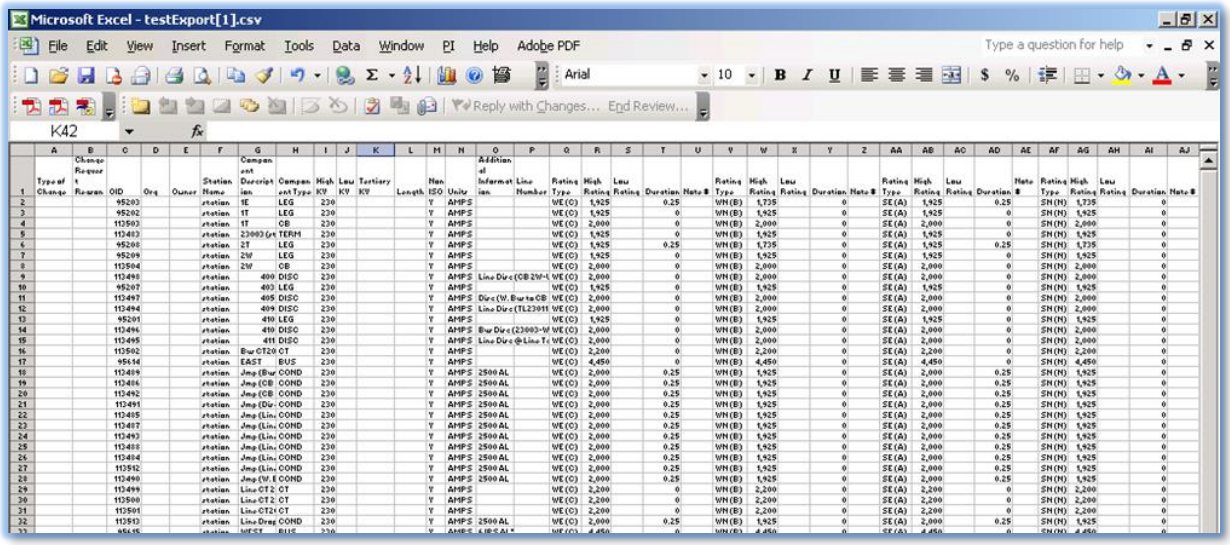


Figure 17 AutoLoader Export Sample

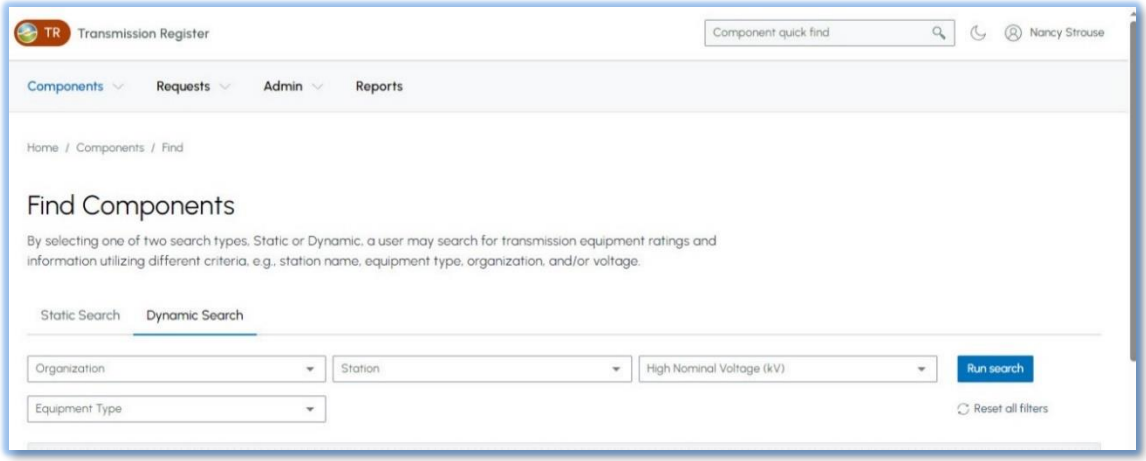


Figure 18 Dynamic Search Main Screen

The TR Dynamic Search (refer to Figure 19) offers fewer criteria, but you can just select Organization, or drill down to specific component details. After choosing the Organization, the screen refreshes after each selection with the associated station, voltage, and equipment type information.

- Users can view only information that is relevant to their organization.

1) Select the Organization name from the dropdown window shown in Figure 20. When a user selects Organization, the Station populates with only stations that have active components for the organization.

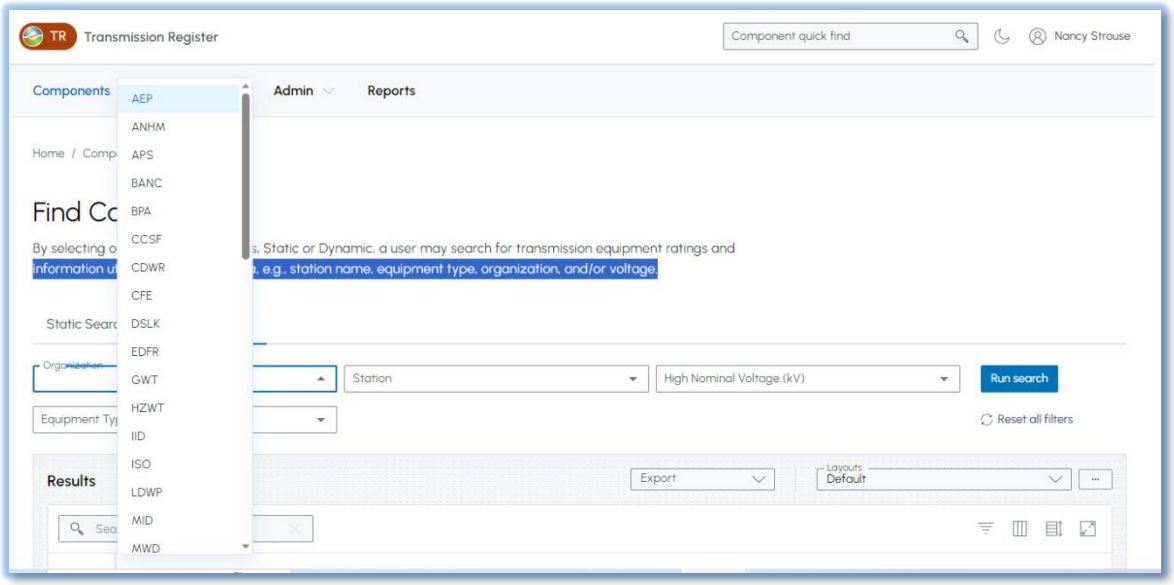


Figure 19 Dynamic Search Organization Dropdown

2) Select the Station from the dropdown window. Once a station is selected, the high nominal kV populates based on the high nominal kV values of components associated with that station and organization.
3) Select the High Nominal Voltage (kV) from the dropdown window. Once the voltage is selected, the equipment type populates based on the previous entries.
4) Select the Equipment Type from the dropdown window and press the Run Search button.

- The screen in Figure displays mock-up results of a Dynamic Search.

Viewing the details of a Dynamic Search, modifying or managing layouts, and exporting Dynamic Search results to .csv and Autoloader formats is the same procedure for a Static Search described in Sections 3.2.1 thru 3.2.4.

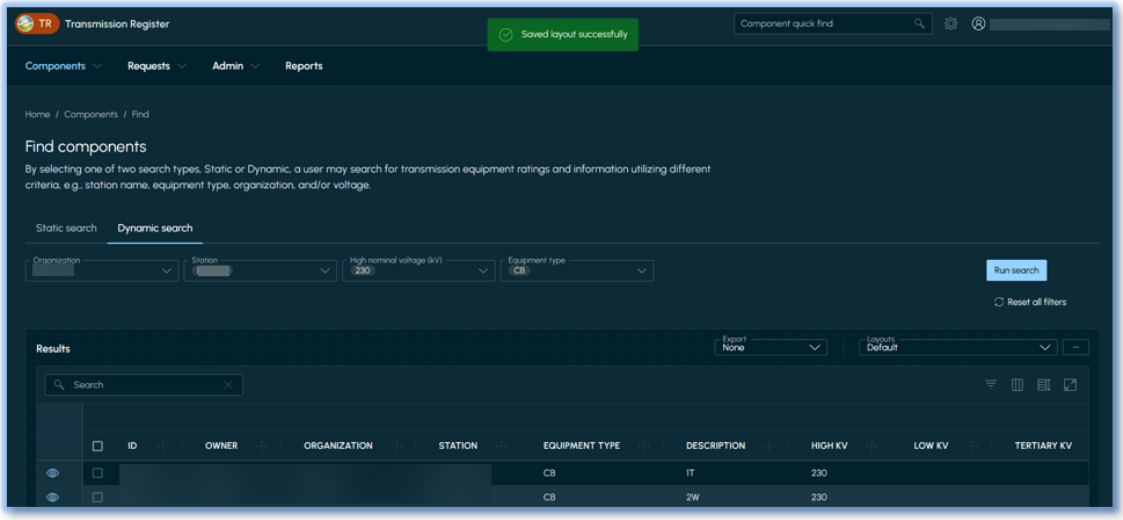


Figure 20 Dynamic Search Results

4. Request & Rating Facts

General users have read privilege to view information under the two folder tabs of Requests and Admin, which includes the following subjects:

- **Find Change Requests-** Search and view pending Change Requests for new and existing components.
- **Find Component Share Requests-** Find a component that is shared by another Organization.
- **Rating Types-** View the different rating types, this can include those unique to a specific Organization.
- **Rating Notes-** View Organization-specific rating notes.

The ensuing subsections offer the steps to navigate through these two screens.

4.1. Find Change Requests

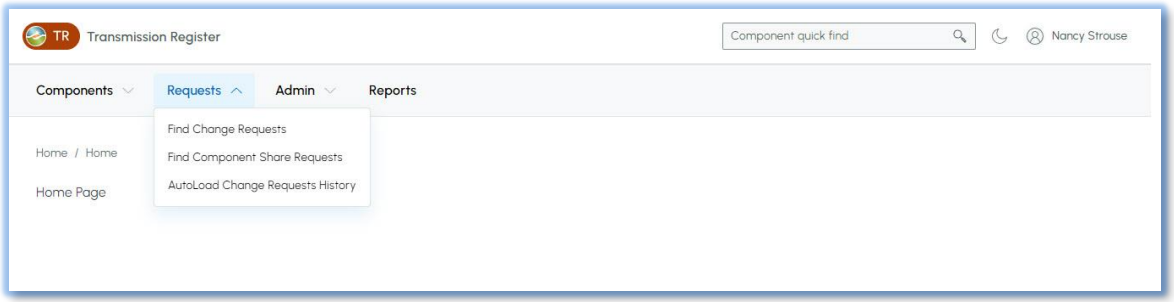


Figure 21 Request Screen

Click the Find Change Requests hyperlink and the screen loads.

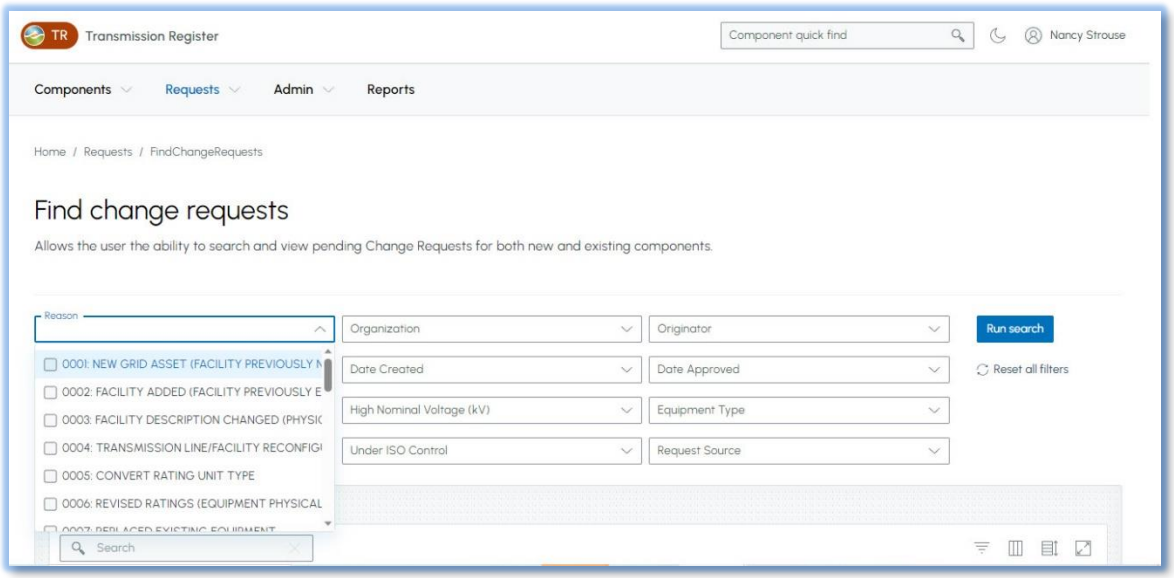


Figure 22 Find Change Request Page

Under the Find Change Requests topic, the user can search for Change Requests on new or existing components using either specific criteria or by general category type. For example, if we choose the Reason as Transmission Line/Facility Reconfigured (Physically Changed), and then select the Status Approved, we retrieve six pages of approved Change Requests that pertain the that reason type. However, for training purposes, we will proceed step-by-step as if all the criteria is identified.

Reminder: The parameter for all search options automatically defaults to “Equal to”.

1) Click the Find Change Requests hyperlink shown in Figure 22 and the screen in Figure 23 loads.
2) Select the following criterion from the dropdown windows.

a. Reason
b. Organization
c. Originator
d. Status – Defaults to “Pending Approval”.

3) Type in the Date Created, or press the calendar icon and select a date. Once the date is selected the window automatically closes.
4) Select the appropriate Date Created parameter if different than “Equal to”.
5) Type in the Date Approved, or press the calendar icon and select a date.
6) Select the appropriate Date Approved parameter if different than “Equal to”.
7) Type in the Component ID. If only a partial number is available, you can select the parameter of either “Contains” or “Starts with”.
8) Select the High Nominal Voltage (kV) and the associated parameter (defaults to “Equal to”).
9) Select the Equipment Type.
10) Select the Station name.
11) Choose either Yes or No as to whether the component is Under ISO Control.
12) Choose AUTOLOAD for the Request Source and the search outputs below the Search Results on the bottom of the page, as demonstrated.

Type of Change	Change Request Reason	OID	Org	Owner	Station Name	Component Description	Component Type	High KV	Low KV	Tertiary KV	Length	ISO Control	Units	Additional Information	Line Number	Rating Type	High Rating	Low Rating	Duration	Note #
create	New GRID Asset (Facility Previously non-Existing Until New Construction)		PLUD	PLUD	AMADOR	BSCB 1	BSCB	230				Y	AMPS							
update	Revised Ratings (Equipment Physically Unchanged)	95668	PLUD	PLUD	AMADOR	NORTH	BUS	70				Y	AMPS			WE (C)	2900		0	
retire	Other (Causes not covered in above listing)	95669	PLUD	PLUD	AMADOR	SOUTH	BUS	69				Y	AMPS							
create	New GRID Asset (Facility Previously non-Existing Until New Construction)		PLUD	PLUD	AMADOR	NEW 1	FUSE	69				Y	AMPS							

Figure 23 Sample .csv Format

The user can export to a .csv format by clicking the CSV Export hyperlink and the spreadsheet shown is generated.
To view the details of one line of the Search Results:

1) Click the Details View hyperlink and the Change Request loads.
2) Press the Close Button when complete.

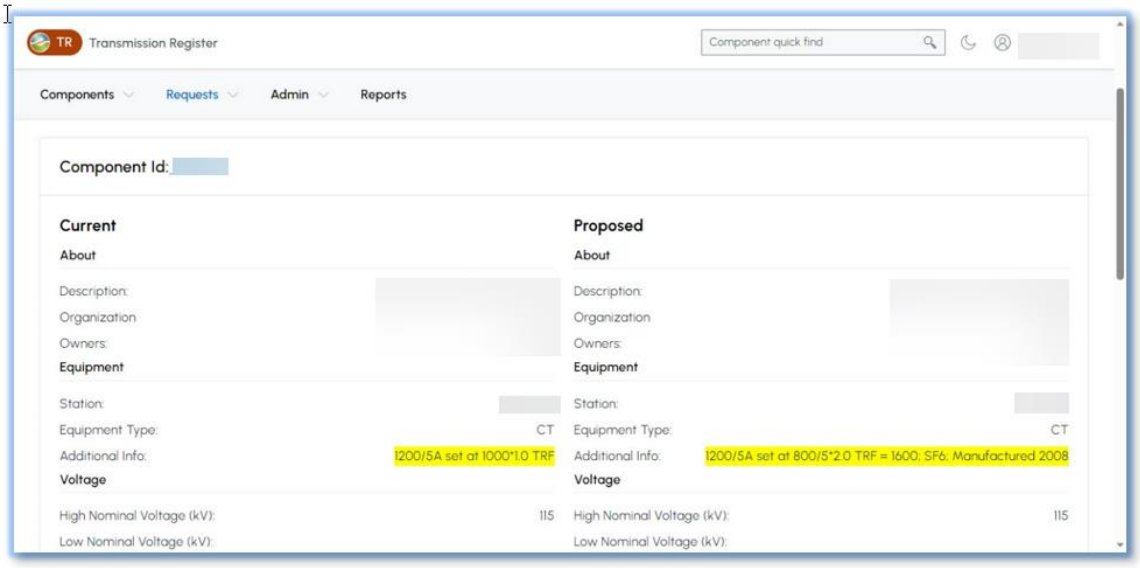


Figure 24 Details View

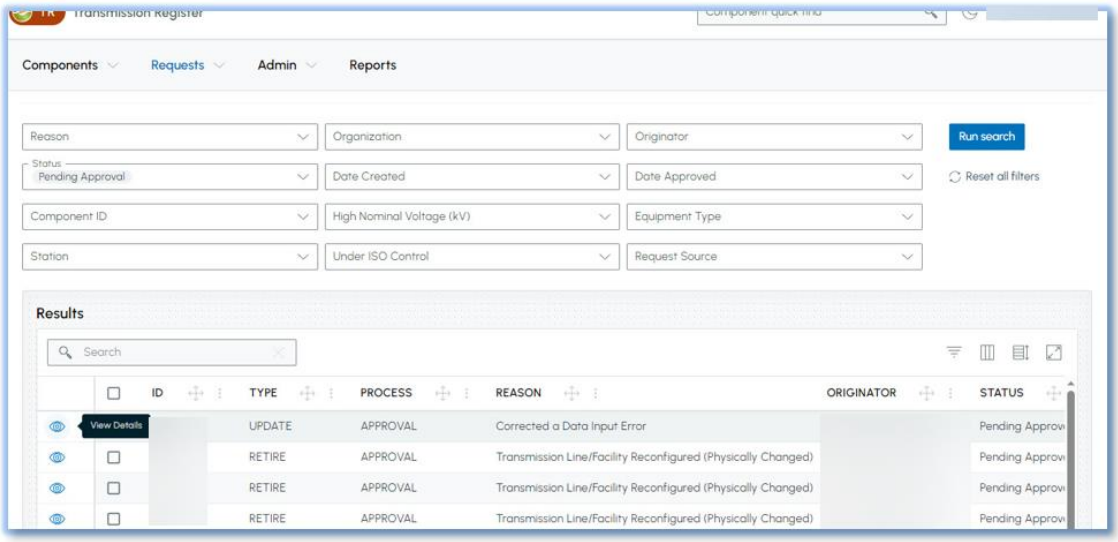


Figure 25 Change Request

4.2. Find Share Requests

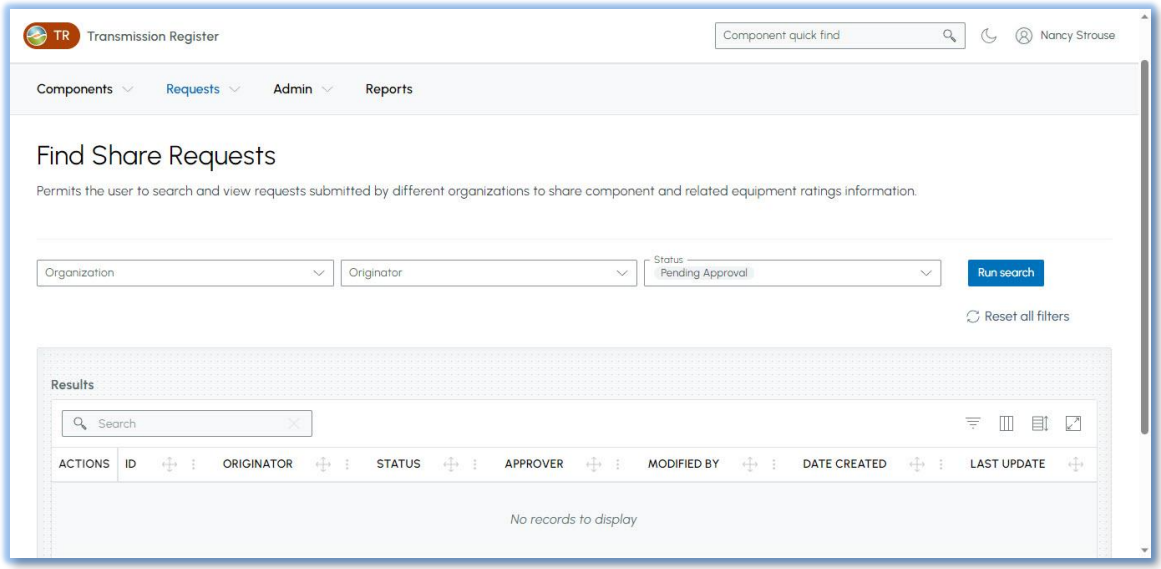


Figure 26 Find Share Requests

The Find Share Requests page permits the user to search and view requests submitted by different organizations that share their component and related equipment ratings information. One or the entire criterion can be selected, but for training purposes, we select all.

Reminder: The parameter for all search options automatically defaults to “Equal to”.

Take the following steps to Find Share Components:

1) Click the Find Share Requests hyperlink shown in Figure 22 and the window in Figure 26 loads.
2) Select the Organization.
3) Select the Originator.
4) Select the Status.
5) Press the Run Search button and the screen in Figure 27 loads.
6) Click the Detail View hyperlink to see the Share Request details.

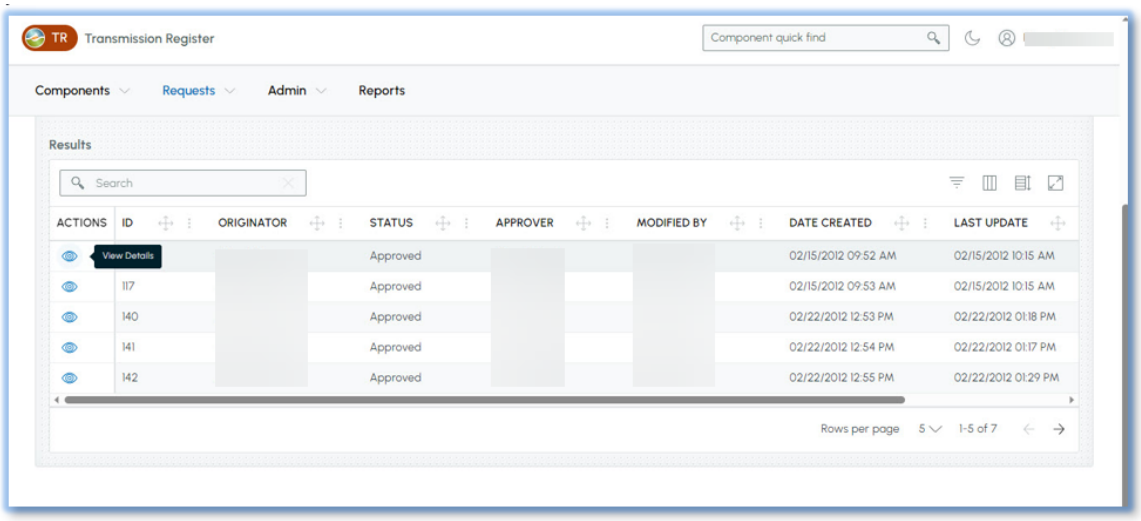


Figure 27 Find Share Request

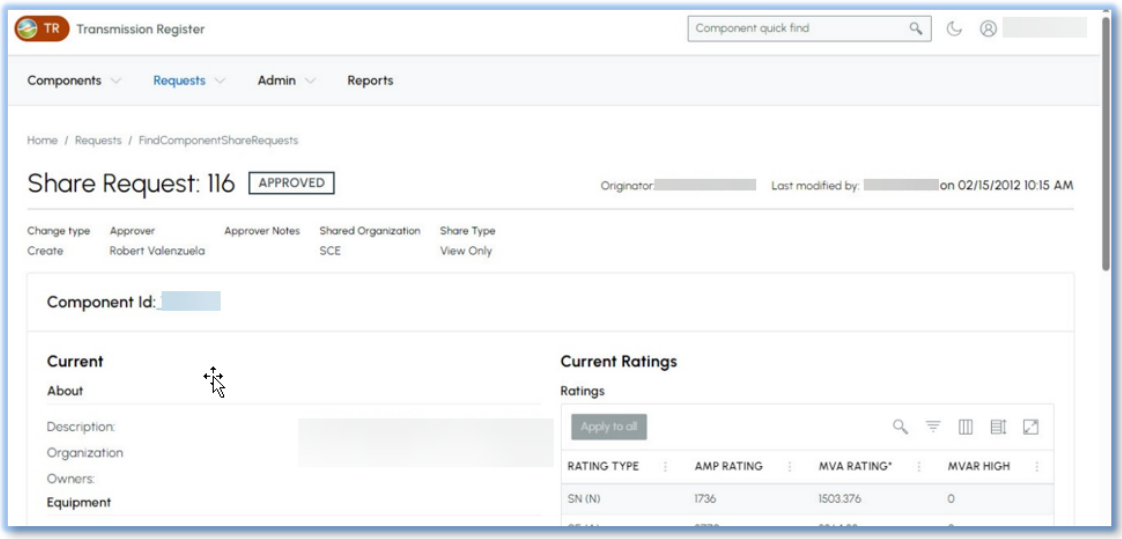


Figure 28 Share Request Details

4.3. Rating Types

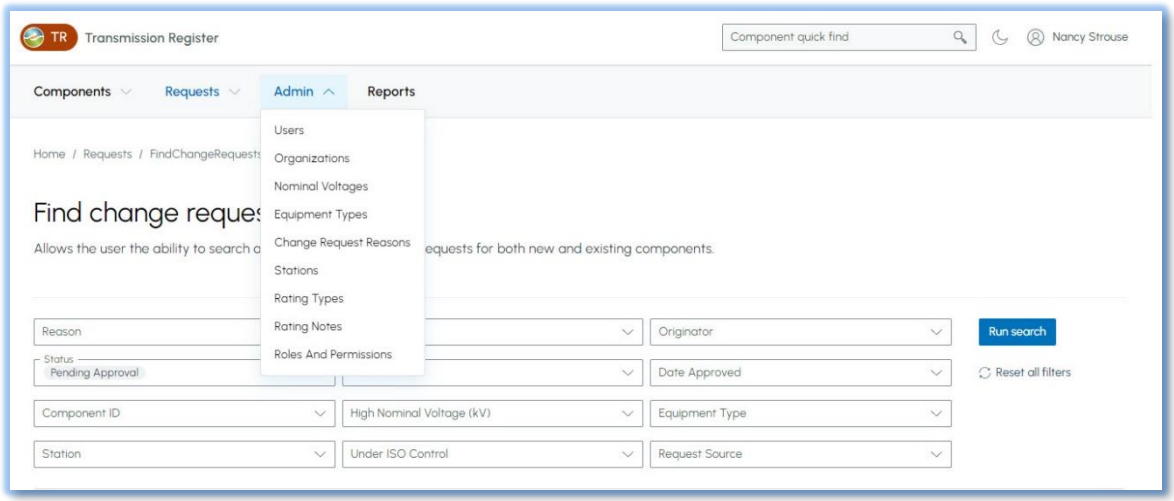


Figure 29 Admin Screen

Rating Types defined is an organization's standard description of an industry common operating condition that an electrical component would be subjected to when in an energized state (e.g. Winter Normal, Summer Normal).

1) Click on the Rating Types hyperlink shown in Figure 28 and the screen in Figure 29 loads.
2) Click the View Rating Type or Rating Type ID hyperlink to view the details of a rating type, and the example shown in Figure 30 loads.

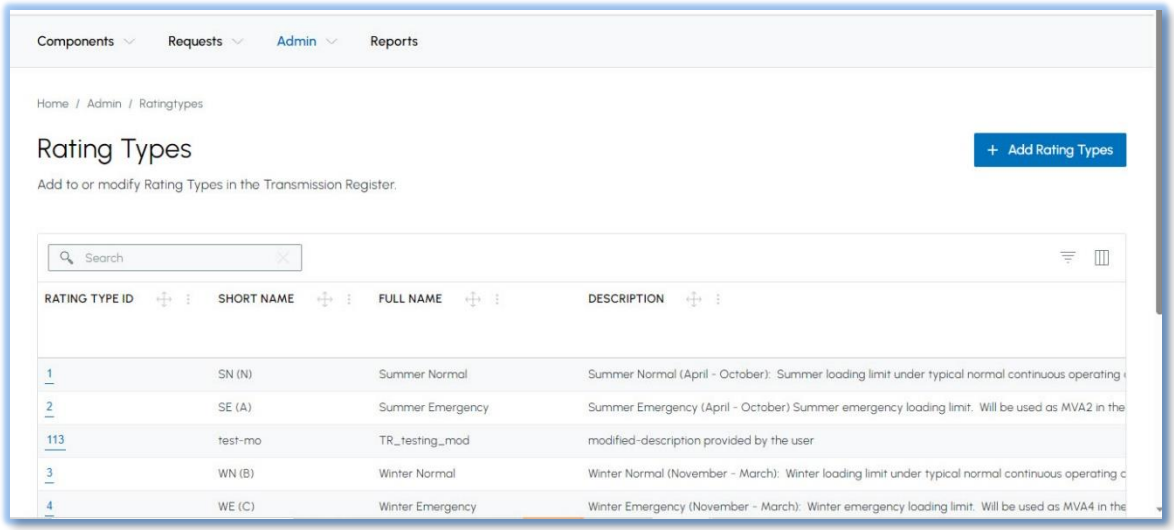


Figure 30 Rating Types Screen

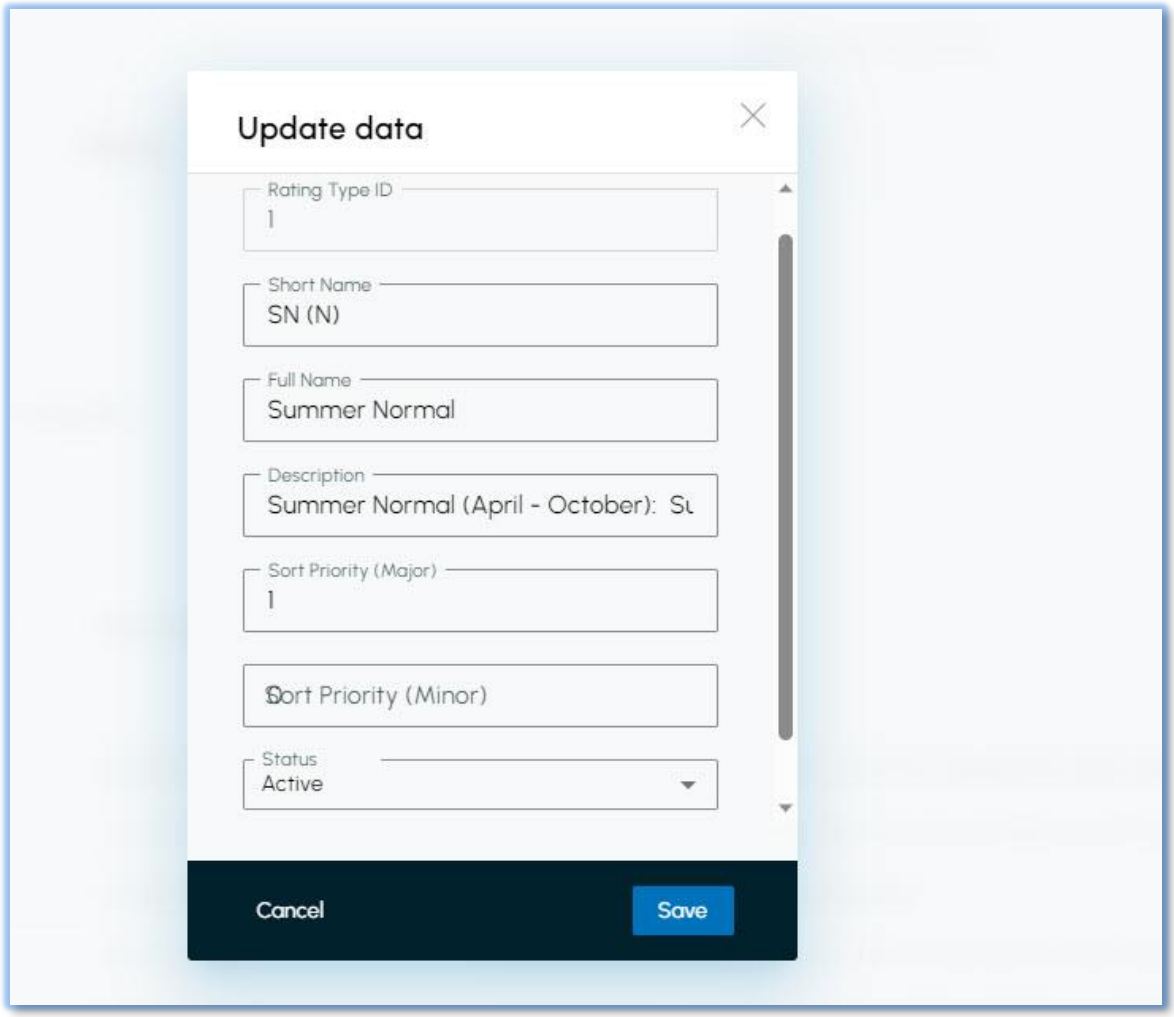


Figure 31 Rating Type Details

4.4. Rating Notes

Rating Notes are an organization's detailed operating constraint that is in addition to or reaffirms an electrical component's Rating Type information. The note typically informs the operator what additional constraint has been applied to the Rating Type (e.g. Limited by Ground Clearance, Limited by Disconnect).

1) Click on the Rating Notes hyperlink shown in Figure 28 and the screen in Figure 31 loads.
2) Click the ID number to view the details of the rating note and the window in Figure 32 loads.

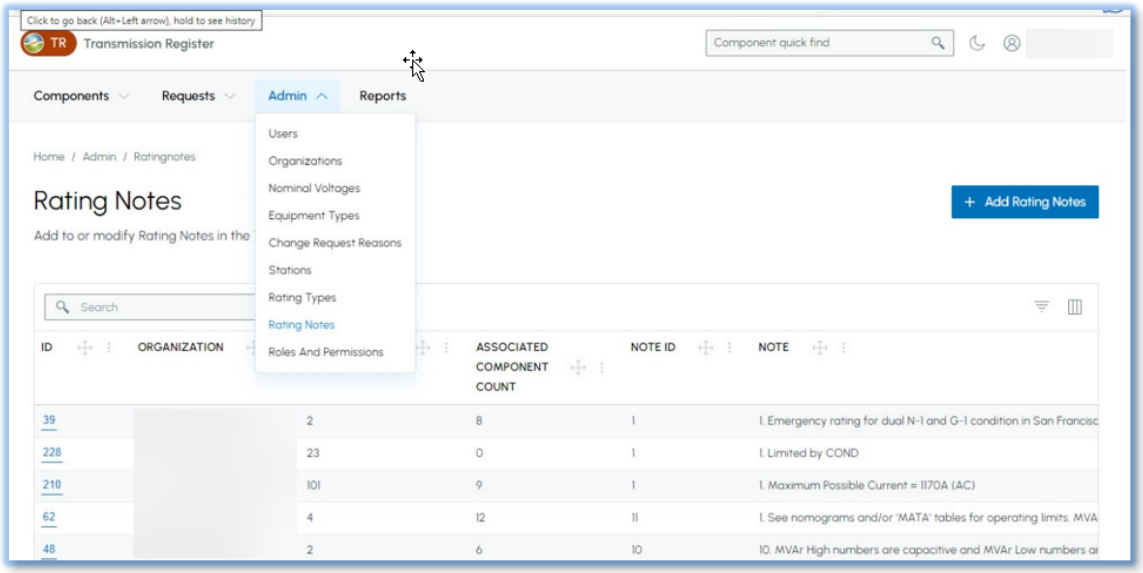


Figure 32 Rating Notes Screen

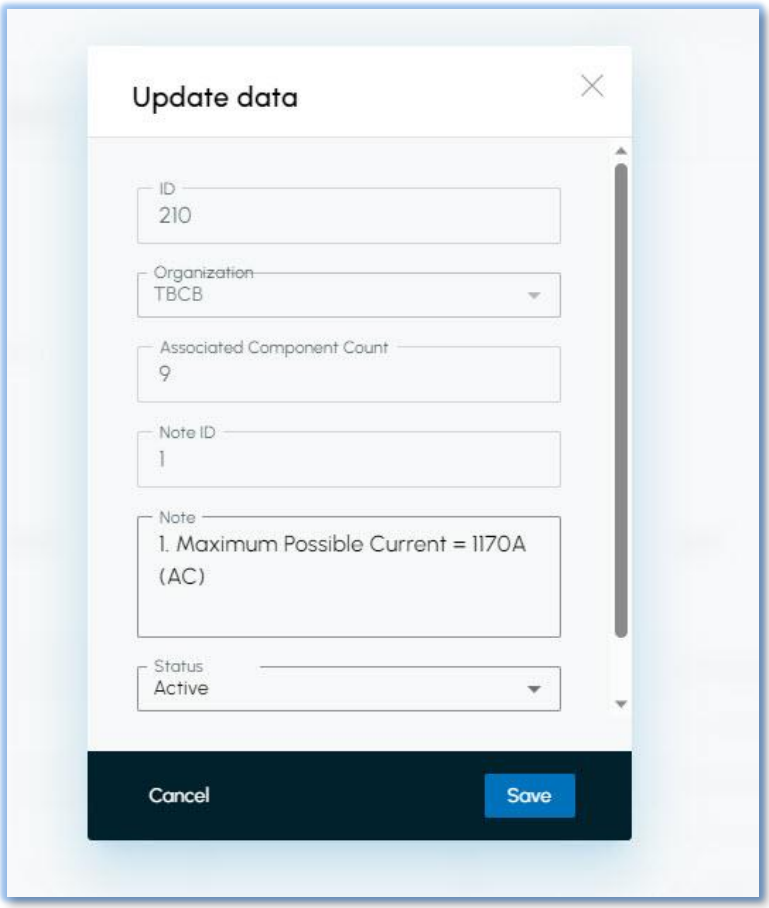


Figure 33 Rating Note Details

5. Reports

Figure 33. Reporting Screen

To access the Transmission Register report options, take the following steps:

1) Select the Reporting file folder of the main TR screen shown in Figure 33.
2) Click on the “Reports” hyperlink. This navigates the user to the Reporting site shown in Figure 34.
3) Click on TR folder name and the screen in Figure 35 appears offering a selection of reports the user can run.

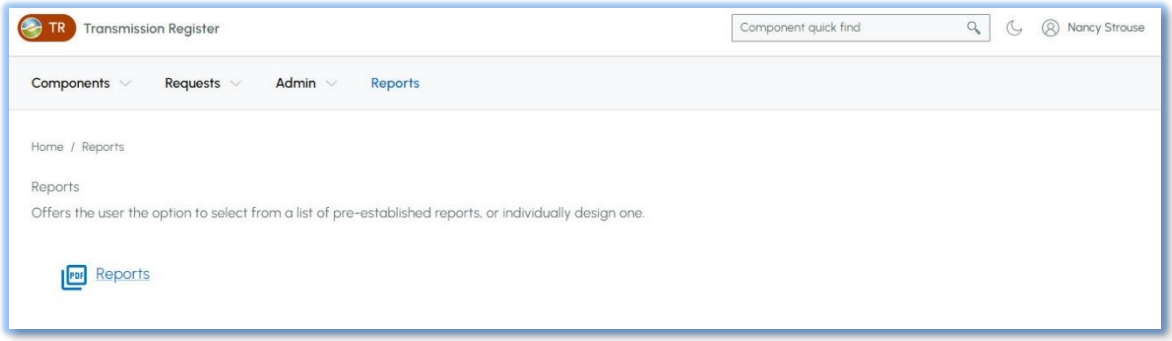


Figure 34 Reporting Screen

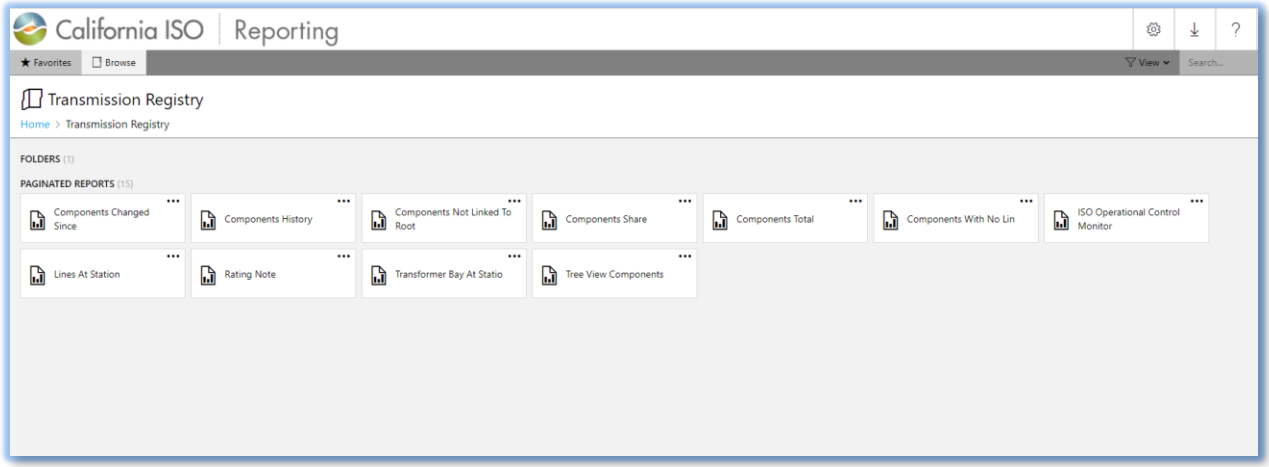


Figure 35 TR Report Selection

5.1. Components Changed Since

The Components Changed Since report retrieves all active or retired components modified since a specific date for a particular utility. Any change request information, associated with the components, is displayed including change request reasons.

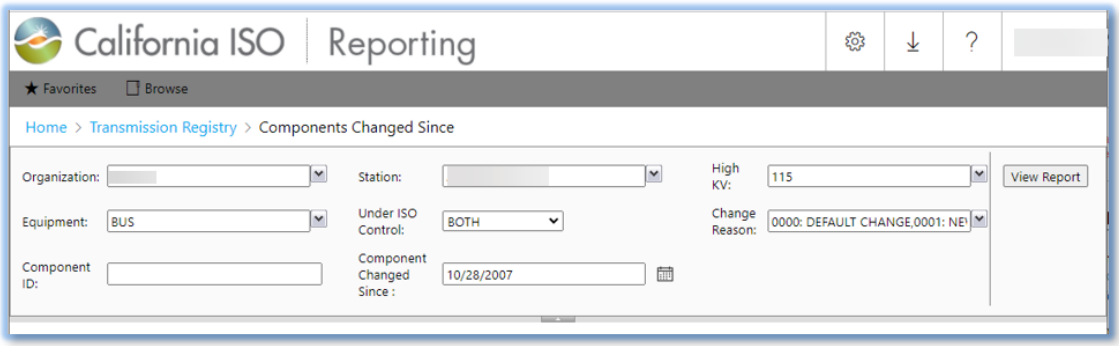


Figure 36 Components Changed Since Parameters

To create a "Components Changed Since" report, choose the parameters shown in Figure 36.

1) Select the Organization. A range of organizations or individual organizations can be chosen.
2) Select the Station(s).
3) Select the High kV(s).
4) Select the Equipment Type(s).
5) Select Under ISO Control.
6) Select the Change Reason(s).
7) Type in the Component Changed Since date or press the calendar icon and select a date.
8) Click View Report.
9) Once submitted, a screenshot resembling Figure 37 appears.

Depending on the desired outcome, one or all of the parameters may be selected. However, be cognizant of the additional time to download more results when fewer parameters are selected.

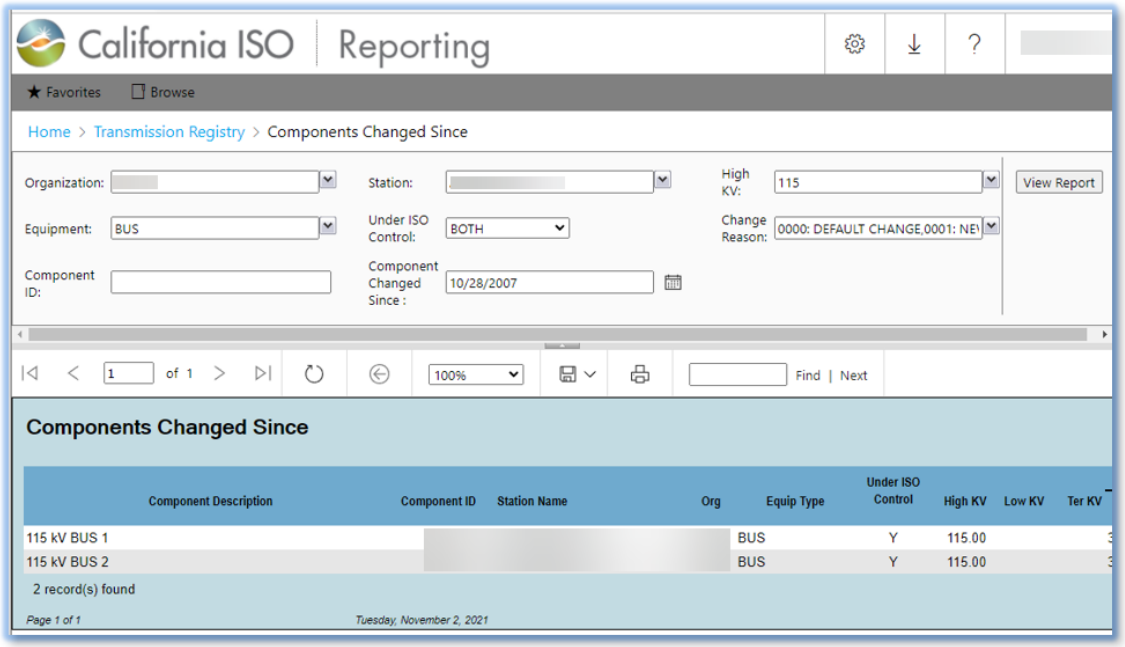


Figure 37 Components Changed Since Results

5.2. Component History Report

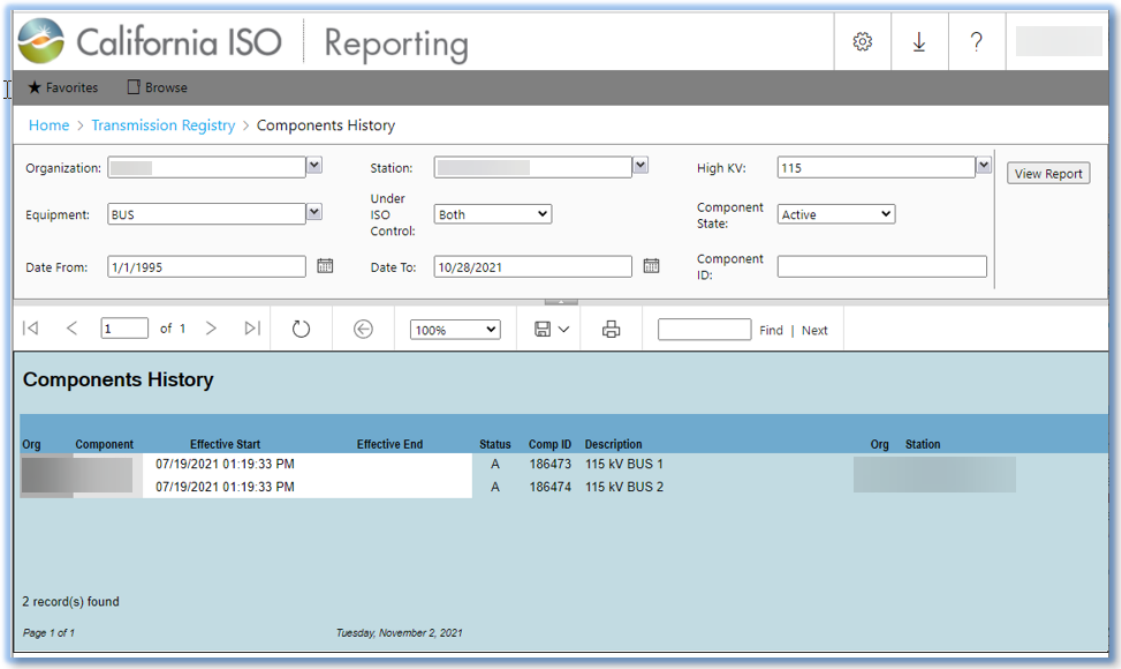


Figure 38 Components History

The Component History report shows all versions of one or more components over a desired date range, highlighting any attribute values that changed between each version. The user has the option to query on a record status including active

components and associated history (default setting), or on inactive components with associated history. A sample report is demonstrated in Figure 38.

1) Select the Organization.
2) Select the Station(s).
3) Select the High kV(s).
4) Select the Equipment Types(s).
5) Select Under ISO Control.
6) Select Active Components or Inactive Components.
7) Select the Start Date and End Date.
8) Click View Report.

Depending on the desired outcome, one or all of the parameters may be selected. However, be cognizant of the additional time to download more results when fewer parameters are selected.

5.3. Components Not Linked to a Root Component

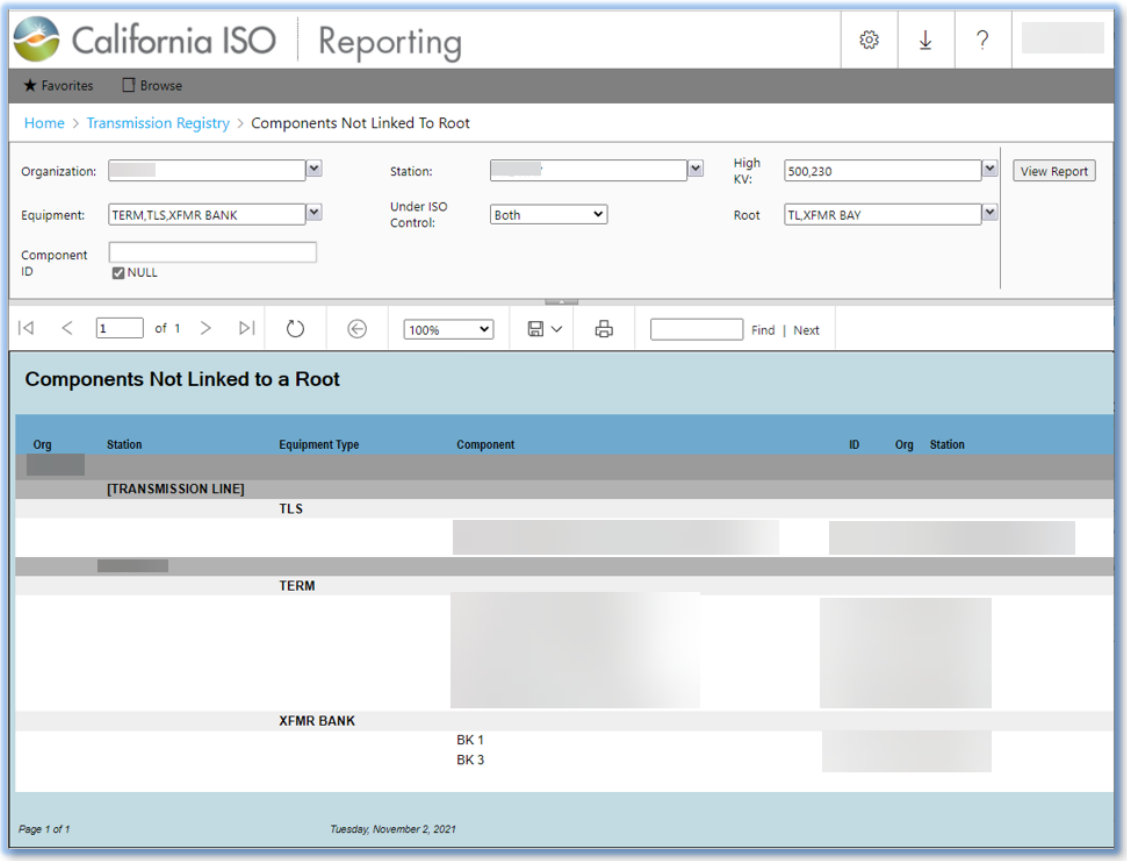


Figure 39 Components Not Linked to a Root

The Components Not Linked to a Root Component report lists all active components that are not linked to a root component. It shows the top-most Component in each "branch" not linked to a root component, but not the entire branch. A sample report is shown in Figure 39.

1) Select the Organization.

2) Select the Station(s).
3) Select the High kV(s)
4) Select the Equipment Type(s).
5) Select Under ISO Control.
6) Select the Root component.
7) Click View Report.

- Depending on the desired outcome, one or all of the parameters may be selected. However, be cognizant of the additional time to download more results when fewer parameters are selected.

5.4. Components Share

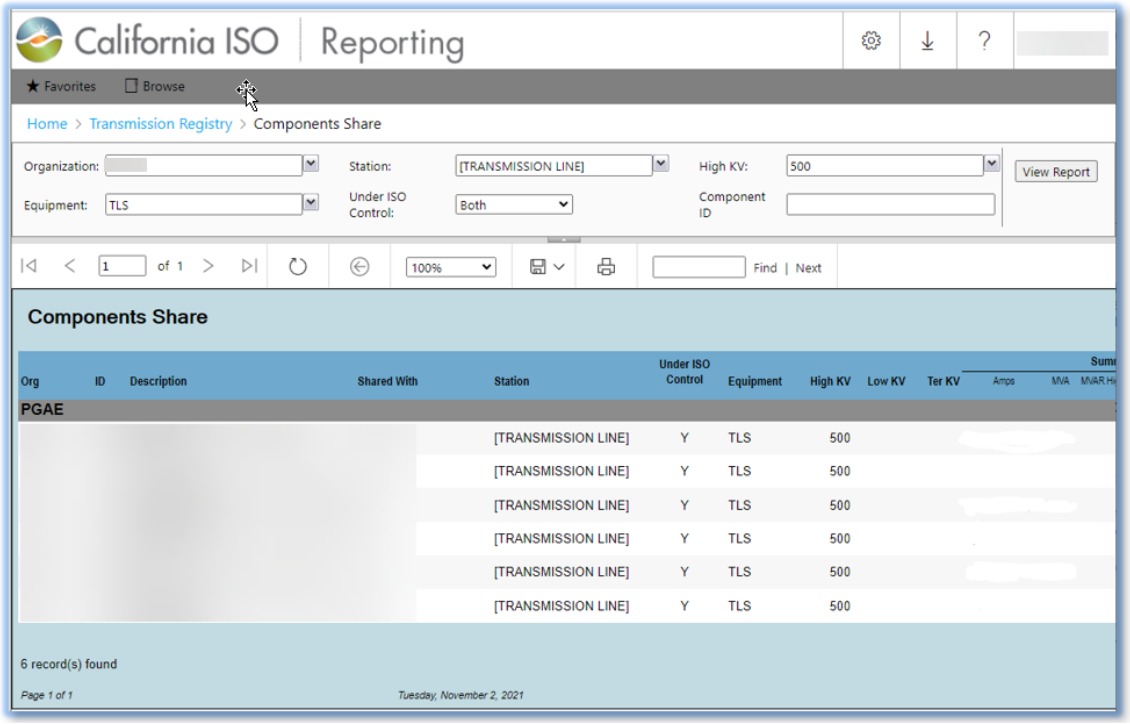


Figure 40 Components Share

The Components Share report displays all active Component Shares for a specified Organization, which is demonstrated in Figure 40.

1) Select the Organization.
2) Select the Station(s).
3) Select the High kV(s).
4) Select the Equipment Type(s).
5) Select Under ISO Control.
6) Click View Report.

- Depending on the desired outcome, one or all of the parameters may be selected. However, be cognizant of the additional time to download more results when fewer parameters are selected.

5.5. Components Total

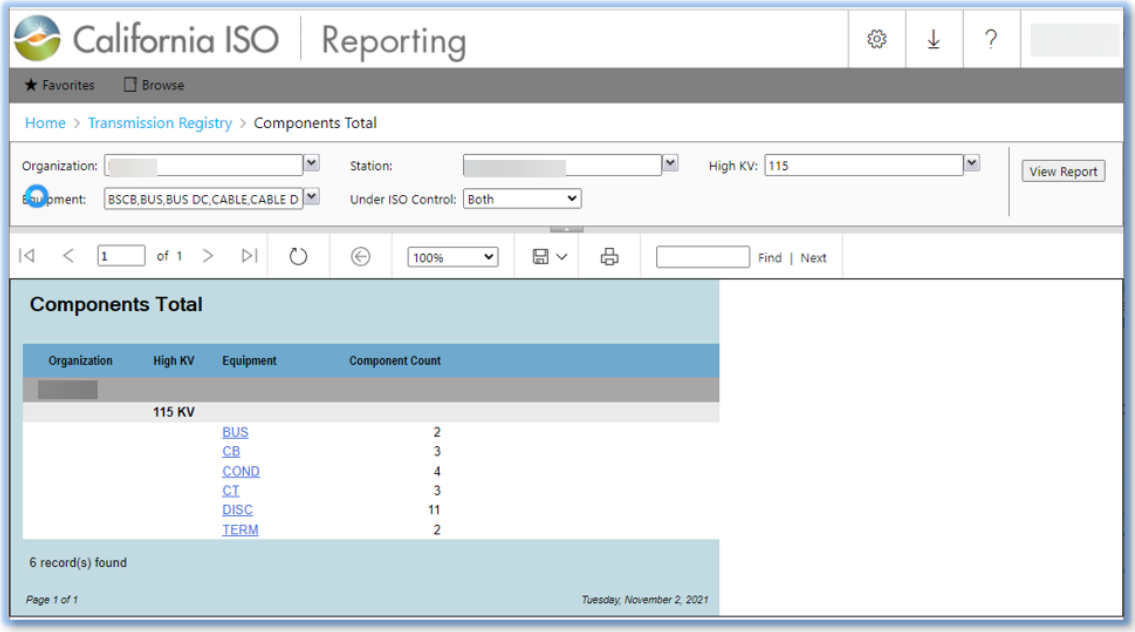


Figure 41 Components Total

The Components Total report identifies the number of Components for an Organization using any Component attribute. The user can click on an Equipment Type and view the actual components totaled when calculating the sum for that Equipment Type. Refer to Figure 41.

1) Select the Organization.
2) Select the Station(s).
3) Select the High kV(s).
4) Select the Equipment Type(s).
5) Select Under ISO Control.
6) Click View Report.

- Depending on the desired outcome, one or all of the parameters may be selected. However, be cognizant of the additional time to download more results when fewer parameters are selected.

5.6. Components with No Link

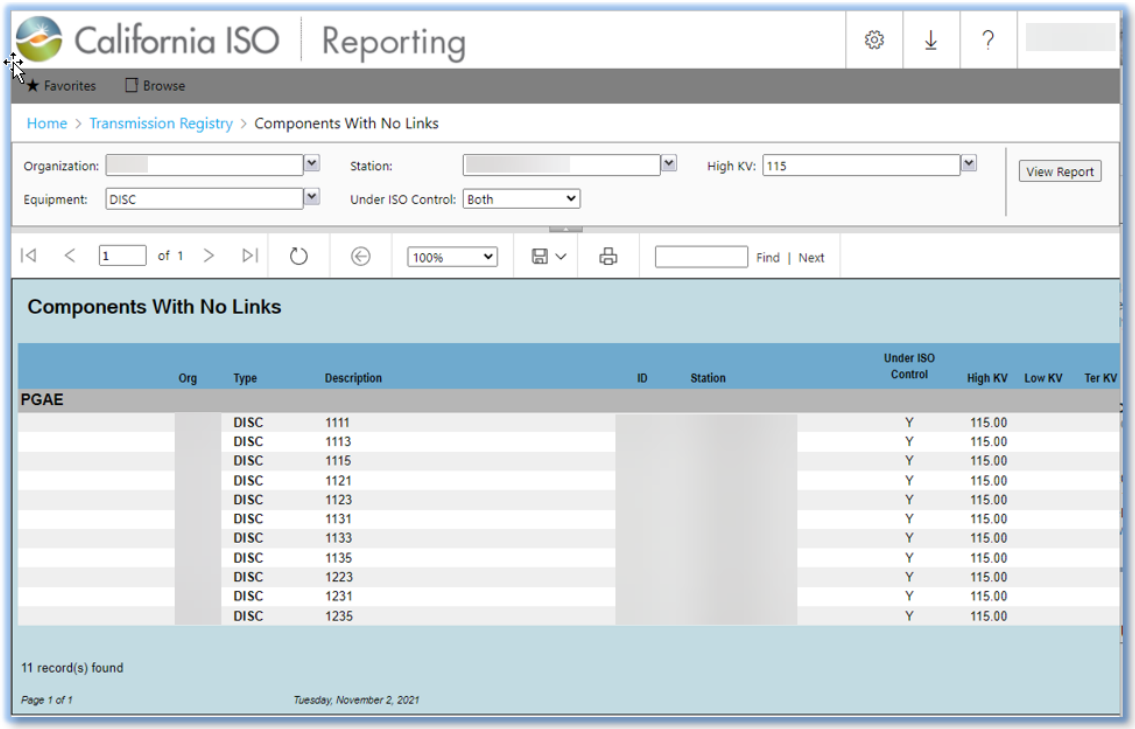


Figure 42 Components with No Links

The Components with No Links report lists all active components that have no links associated to them. Refer to Figure 42 for a sample report.

1) Select the Organization.
2) Select the Station(s).
3) Select the High kV(s).
4) Select the Equipment Type(s).
5) Select Under ISO Control.
6) Click View Report.

Depending on the desired outcome, one or all of the parameters may be selected. However, be cognizant of the additional time to download more results when fewer parameters are selected.

5.7. Lines at a Station

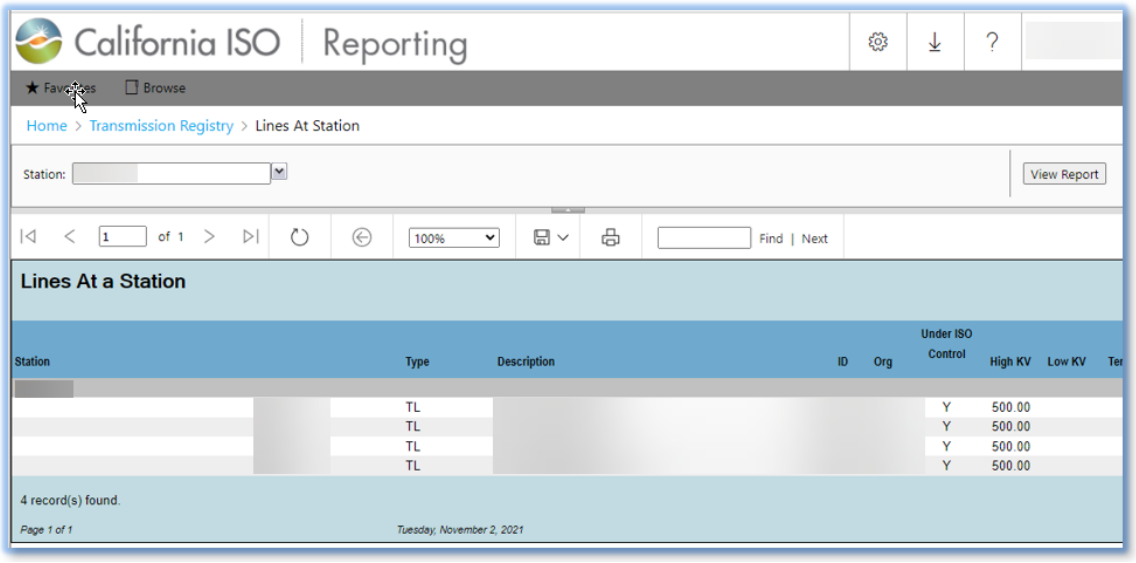


Figure 43 Lines at a Station

The Lines at a Station report determines which Transmission Lines are linked to a Component in that Station. To do so, the report examines all components at the specified Station and determines if any of those Components are linked to a component of equipment type “TL”. All active linked components of equipment type "TL" that are found are displayed in the report as Transmission Lines linked with that Station. A report similar to Figure 43 appears.

1) Select the Station(s).
2) Click View Report.

More lines may be coming into the station, but they will not appear in this report until they are linked correctly and have been created in the TR. Also, be cognizant of the additional time to download more results when fewer parameters are selected.

5.8. Rating Notes

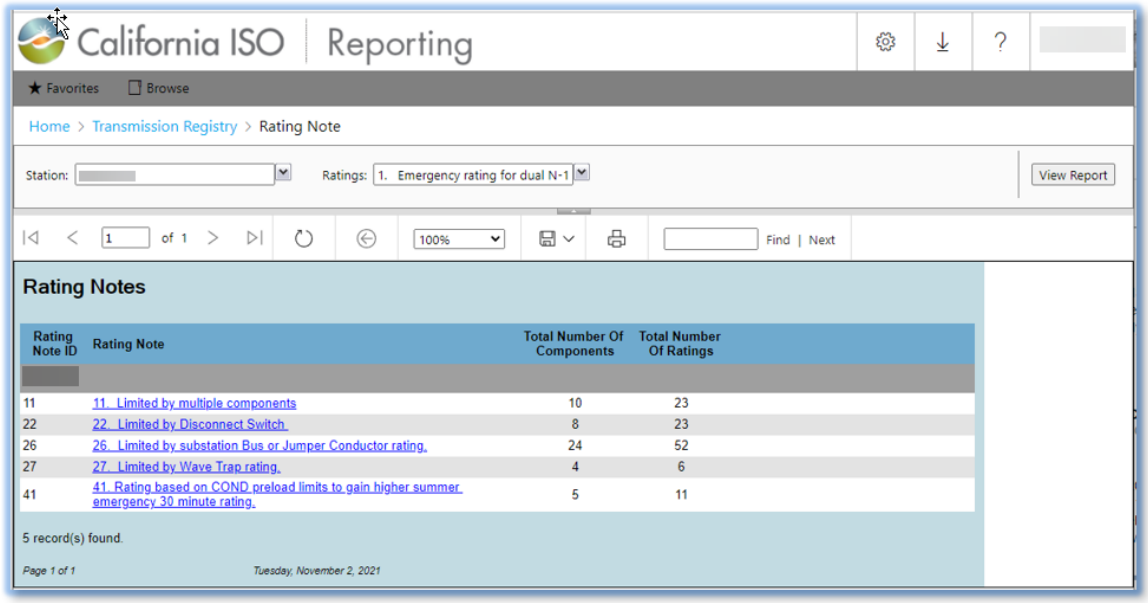


Figure 44 Rating Note

The Rating Notes report displays the total number of active Components with ratings associated with a rating note. In addition, it likewise displays the total number of ratings that are associated with a rating note. The report similar to Figure 44 appears.

1) Select the Station(s).
2) Select the Rating Note(s).
3) Click View Report.

Depending on the desired outcome, one or all of the parameters may be selected. However, be cognizant of the additional time to download more results when fewer parameters are selected.

5.9. Transformer Bays at a Station

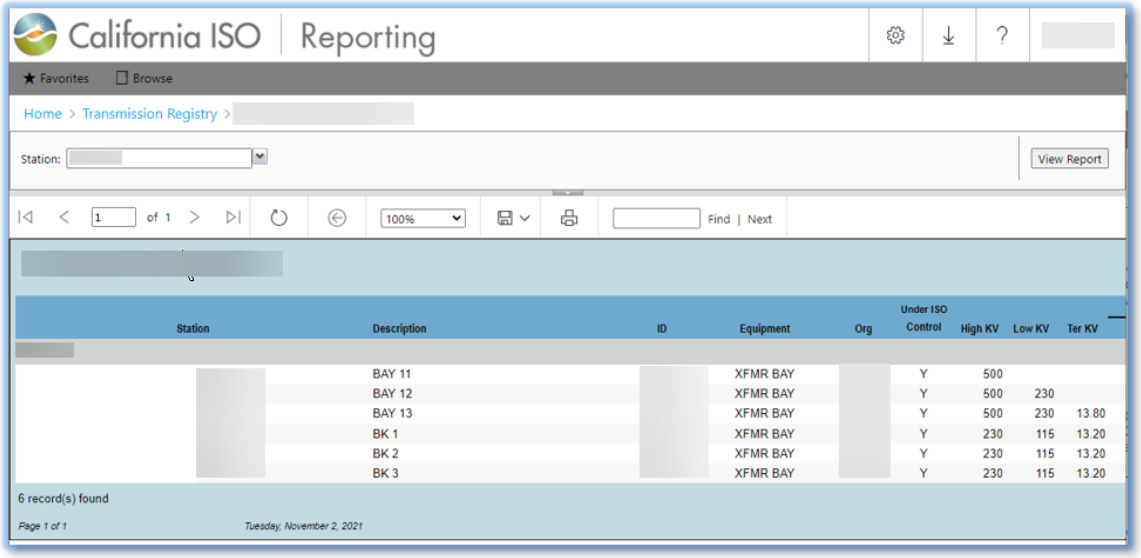


Figure 45 Transformer Bays at a Station Report

The Transformer Bays at a Station report determines which Transformer Bays are connected to a Station. To do so, the report examines all the components of equipment type “XMFR BAY” that have a station equal to the specified station. This is displayed in the report as Transformer Bays associated with that Station. The sample report in Figure 45 appears.

1) Select the Station(s).
2) Click View Report.

There may be more transformer bays in the station, but they will not appear in this report until those components are created in the TR. Also, be cognizant of the additional time to download more results when fewer parameters are selected.

5.10. Tree View Components

The Tree View Components report displays any or all linked active components in a hierarchical (tree) format, and includes actively linked components for a specified Organization, Station, High Nominal Voltage or Equipment Type selected.

To create a Tree View Components report, which is demonstrated in Figure 46, take the following steps:

1) Select the Organization.
2) Select the Station(s).
3) Select the High kV(s).
4) Select the Equipment Type(s).
5) Click View Report.

- Depending on the desired outcome, one or all of the parameters may be selected. However, be cognizant of the additional time to download more results when fewer parameters are selected.

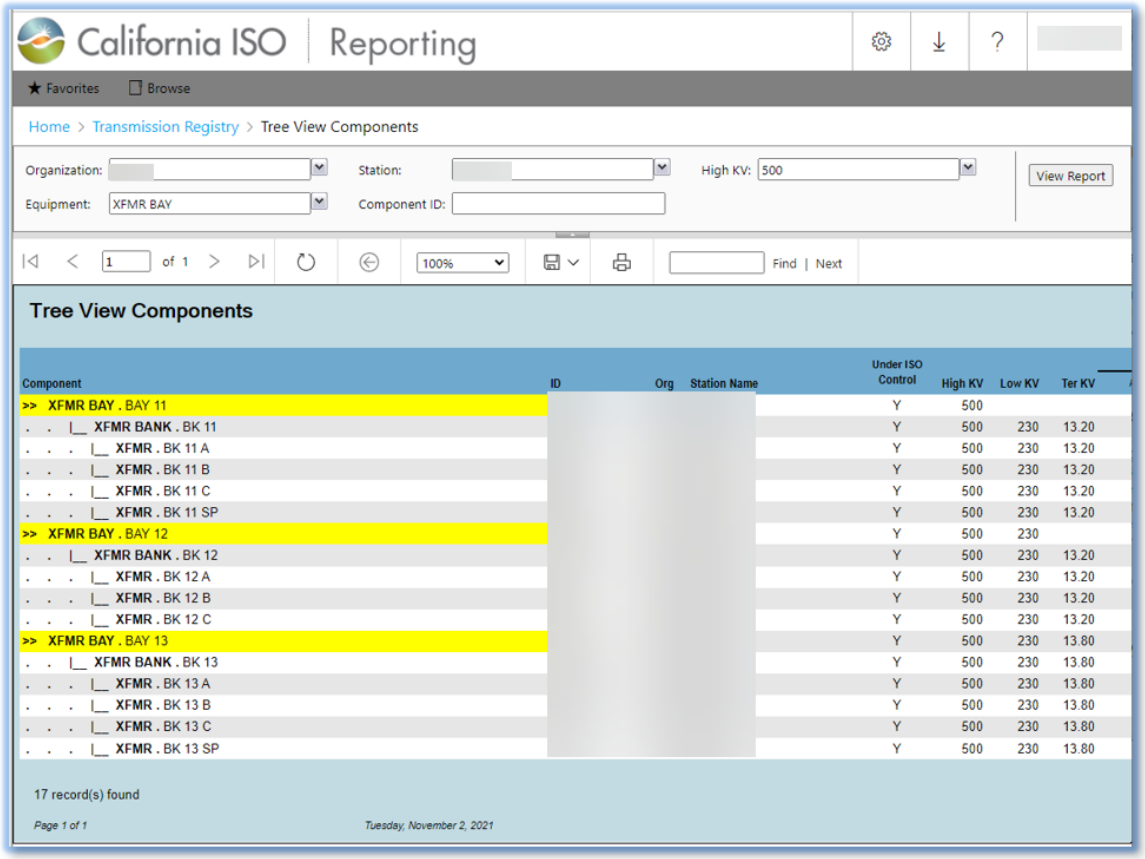


Figure 46 Tree View Components

5.11. Printing a Report

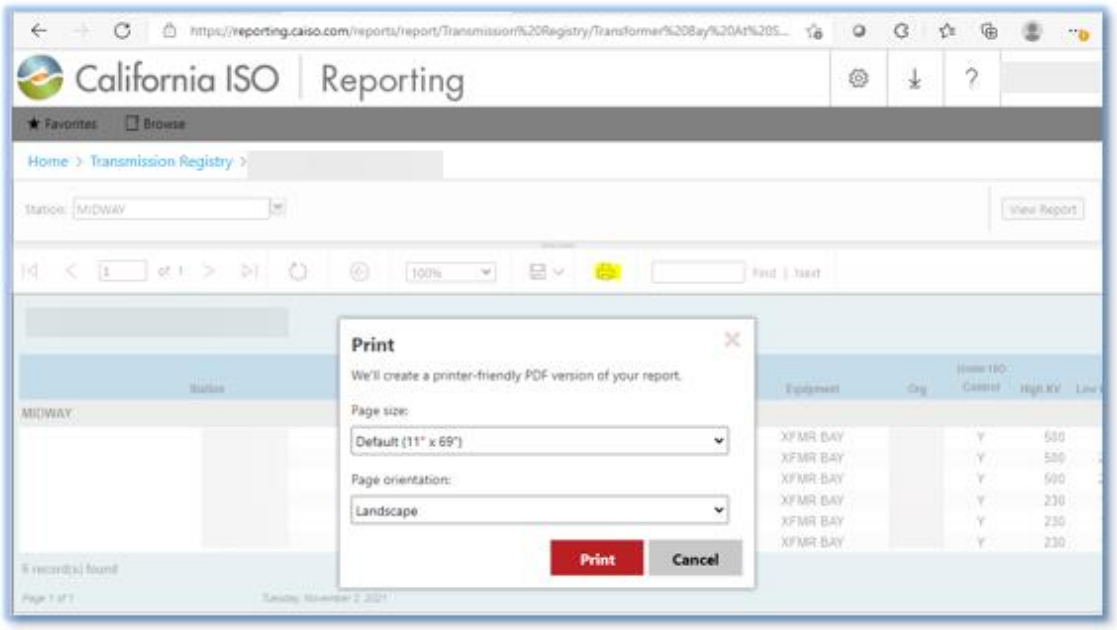


Figure 47 Report Print Function

To print a report, click on the Printer icon (refer to Figure 47) and the report opens up into a printer-friendly PDF version, along with the print properties window.

5.12. Saving a Report

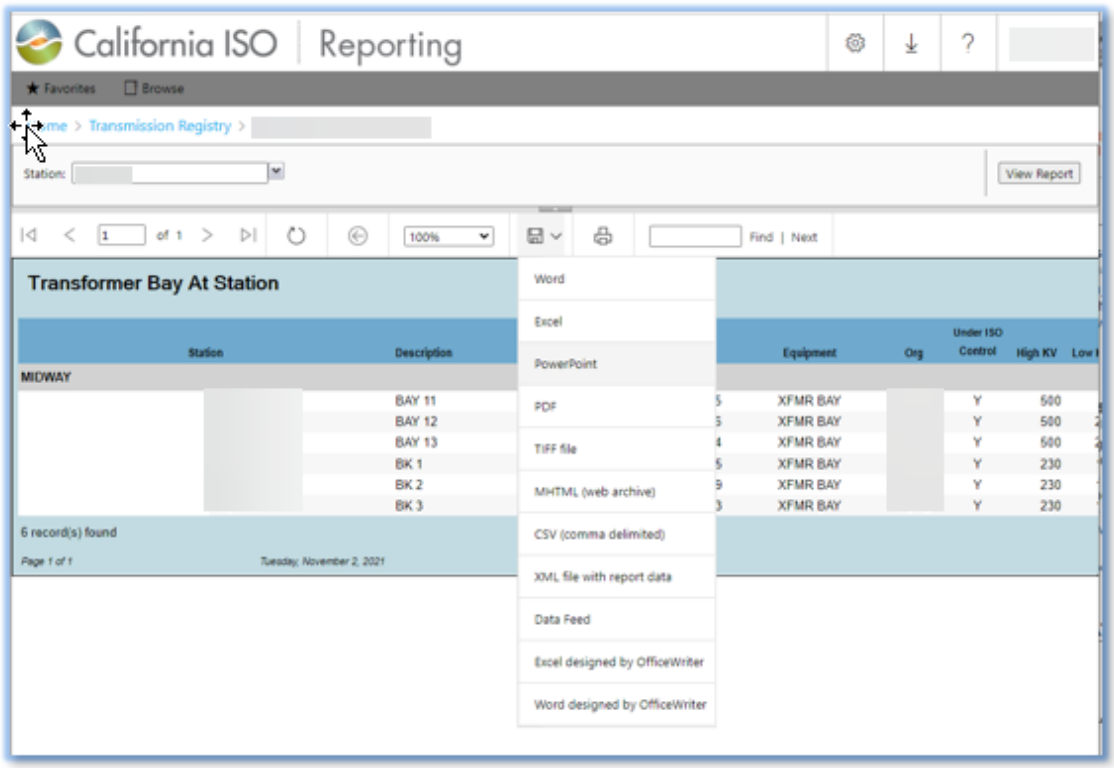


Figure 48 Report Download

To download a report into another format to be stored on your hard drive, click the Disk icon and the window shown in Figure 48 appears. The desired file format can then be chosen by making a selection from the dropdown menu.

6. Revision History

Version	Activity	By	Date
1.0	Draft	Marilyn Lien	4/12/07
2.0	Update to add Future in service date if the appropriate cause is selected	Scott Vaughan	3/05/17
3.0	Updated ISO Logo, formatting and Reports Figures	Chris Hillman	11/02/2021
4.0	Updated screenshots and text for UI updates and updated formatting	N. Strouse	11/14/2023