USER GUIDE

Connect+

Setpoint Management User Guide

COPELAND

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1. Setpoint Management Overview

Ideally, a store is commissioned at a perfect temperature in order to keep the food safe. A store is also commissioned for Refrigeration, HVAC and Lighting in order to minimize energy consumption and maximize energy saving. But in reality, retail stores always drift from the initial setpoint configuration after a while, which could be caused by various reasons.

Store staff would like to know when the setpoint deviation happened and who made the changes. They also want to know if their service providers have done a proper job to keep the setpoint at the correct values.

Connect+ Setpoint Management is a value-added feature to address these needs. With Connect+ Setpoint Management, users would have capability to:

- Choose a desired setpoint list to watch.
- Record the correct setpoint values as a benchmark once initial commissioning is set.
- Associate the service provider with a store on a domain Ref/HVAC/Lighting.
- Run Setpoints Comparison with Benchmarks on a given schedule.
- Generate Setpoint Change Alert to notify store staffs.
- Generate Setpoint Change Exception for a specialist to Approve/Change.
- Provide Energy Benefit-Loss Report and Service Provider Performance Report for review.

This User Guide serves as step-by-step instructions on how to enable Setpoint Management, keep your organization at the right setpoints, while maintaining visibility into the service provider's performance.

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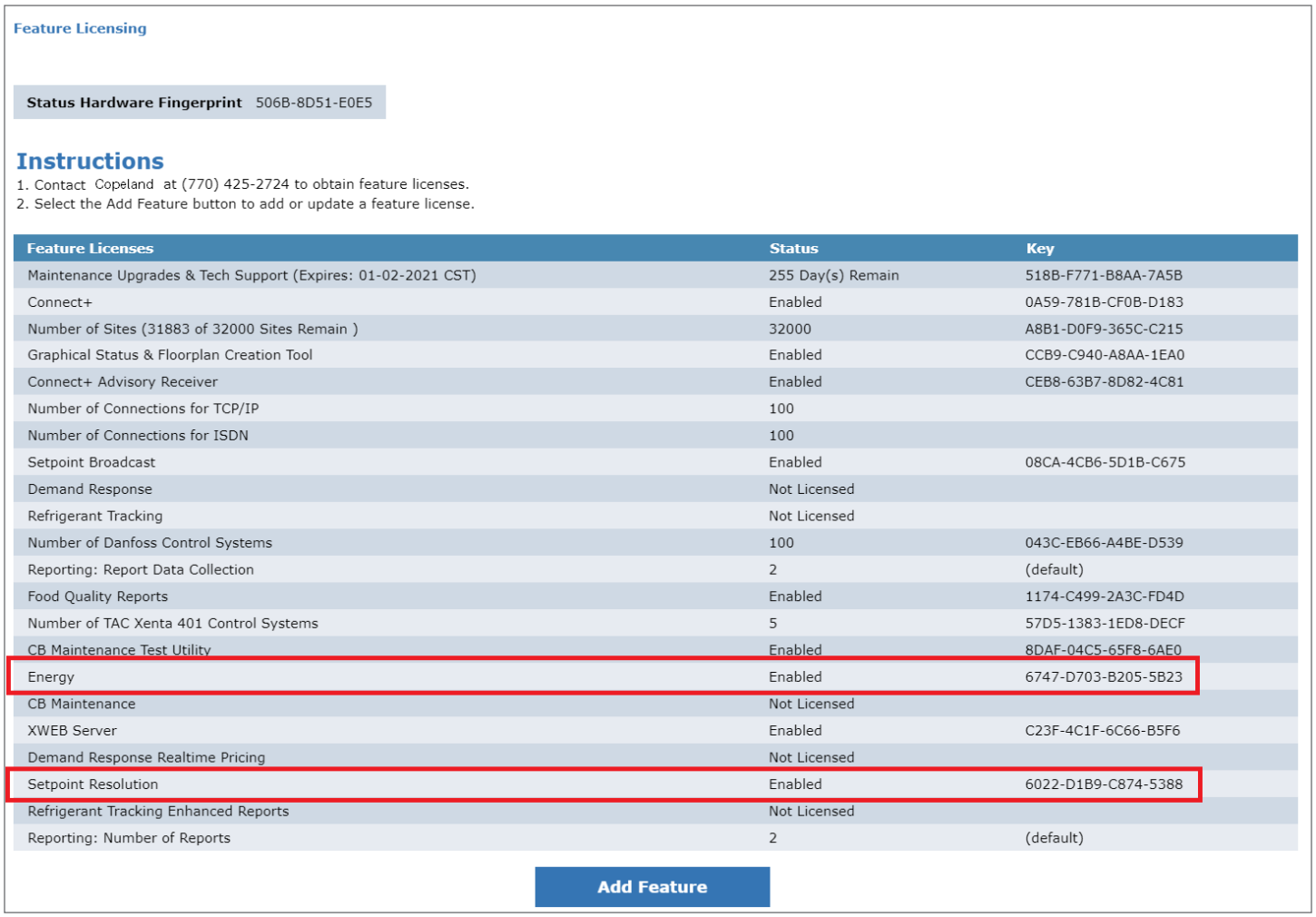
2. Get Started with Setpoint Management

2.1 Feature Activation

Users must contact their Copeland Administrator to first activate Feature Licensing for Setpoint Management.

Click the **Top Menu** > **Admin Tools** > **Feature Activation** to check the feature licensing is enabled.



Feature Licensing

Status Hardware Fingerprint 506B-8D51-E0E5

Instructions

1. Contact Copeland at (770) 425-2724 to obtain feature licenses.
2. Select the Add Feature button to add or update a feature license.

Feature Licenses	Status	Key
Maintenance Upgrades & Tech Support (Expires: 01-02-2021 CST)	255 Day(s) Remain	518B-F771-B8AA-7A5B
Connect+	Enabled	0A59-781B-CF0B-D183
Number of Sites (31883 of 32000 Sites Remain)	32000	A8B1-D0F9-365C-C215
Graphical Status & Floorplan Creation Tool	Enabled	CCB9-C940-A8AA-1EA0
Connect+ Advisory Receiver	Enabled	CEB8-63B7-8D82-4C81
Number of Connections for TCP/IP	100	
Number of Connections for ISDN	100	
Setpoint Broadcast	Enabled	08CA-4CB6-5D1B-C675
Demand Response	Not Licensed	
Refrigerant Tracking	Not Licensed	
Number of Danfoss Control Systems	100	043C-EB66-A4BE-D539
Reporting: Report Data Collection	2	(default)
Food Quality Reports	Enabled	1174-C499-2A3C-FD4D
Number of TAC Xenta 401 Control Systems	5	57D5-1383-1ED8-DECF
CB Maintenance Test Utility	Enabled	8DAF-04C5-65F8-6AE0
Energy	Enabled	6747-D703-B205-5B23
CB Maintenance	Not Licensed	
XWEB Server	Enabled	C23F-4C1F-6C66-B5F6
Demand Response Realtime Pricing	Not Licensed	
Setpoint Resolution	Enabled	6022-D1B9-C874-5388
Refrigerant Tracking Enhanced Reports	Not Licensed	
Reporting: Number of Reports	2	(default)

Add Feature

Feature Licensing

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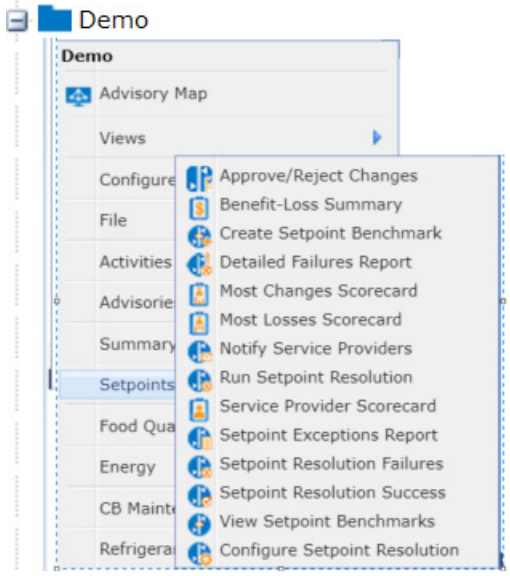
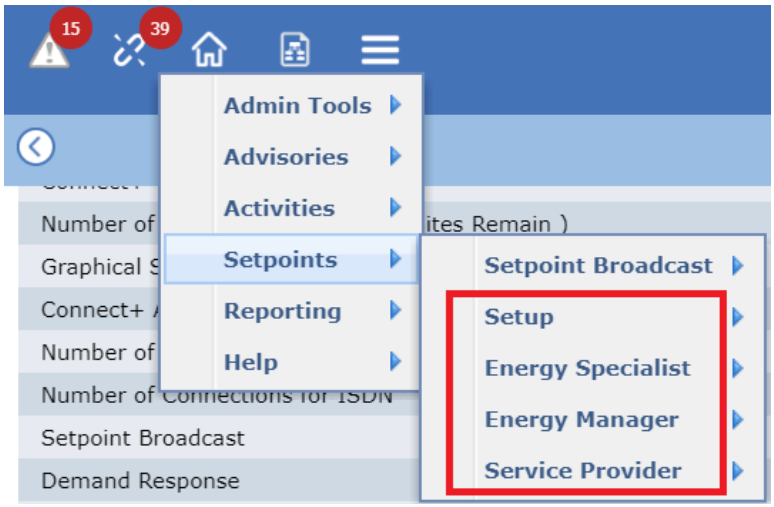
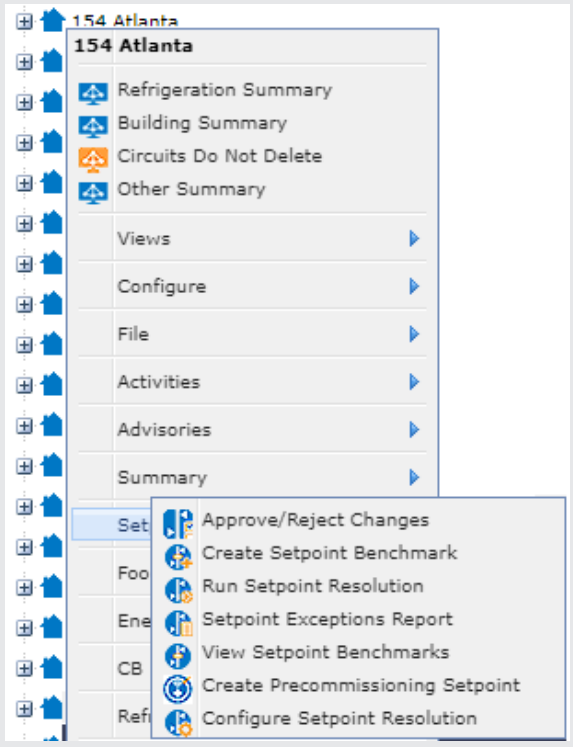
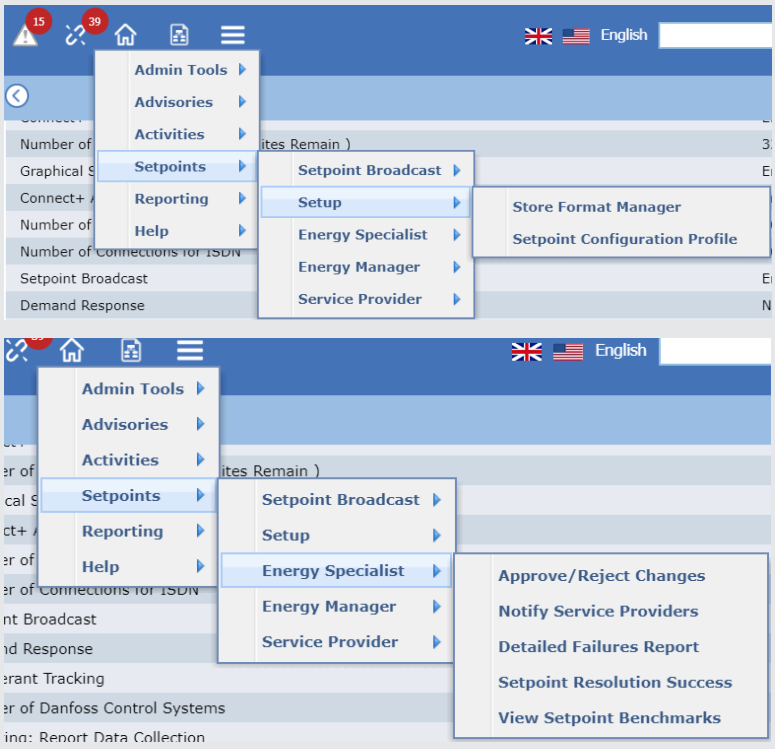
2.2 Review Setpoint Management Menu Access

Upon activation, you will see Setpoint Management (**Setpoints**) in the top menu and right-click menu at Directory level, Site level, and Controller level.

Navigation Tree	Top Menu
Directory:	
	
Site:	
	

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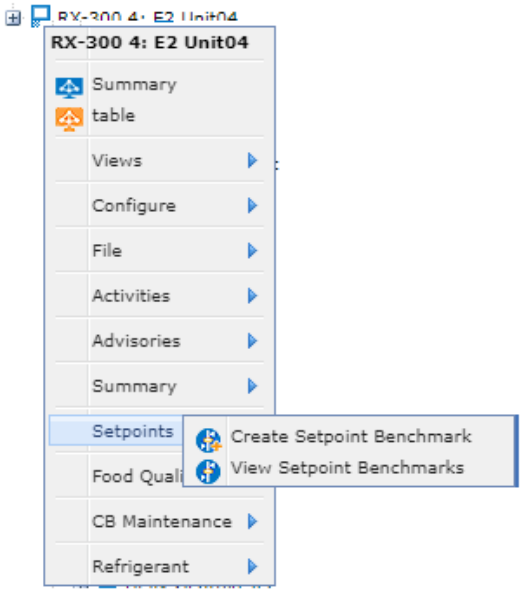
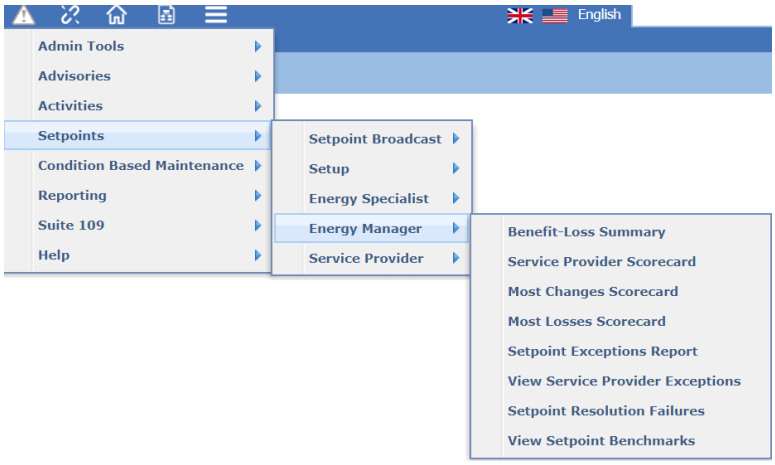
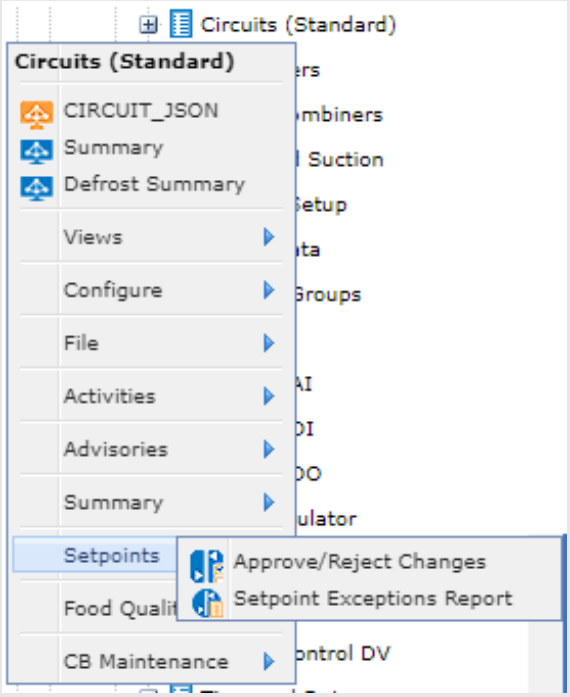
Navigation Tree	Top Menu
Unit:	
Application Type:	







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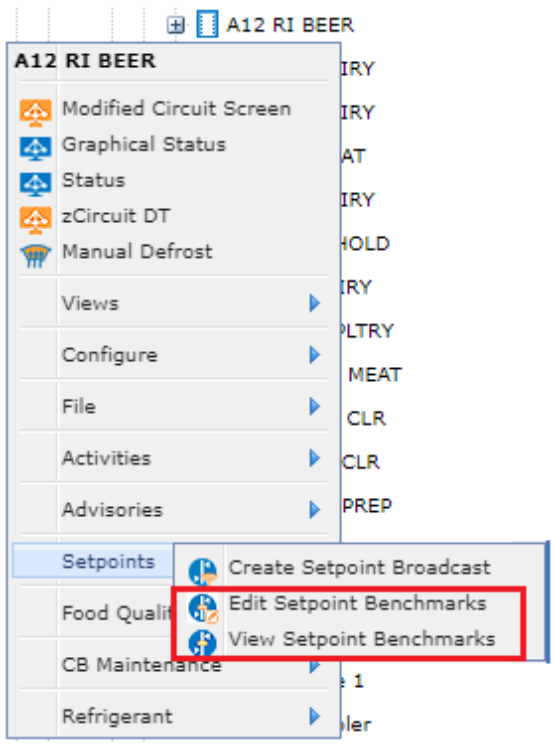
Navigation Tree	Top Menu

Application Instance:



Tree level right-click menu allows users to:

- Configure Setpoint Management setting
- Create/View Setpoint Benchmark
- Edit Setpoint Benchmark

Top Menu allows users to:

- **Create Setpoint Profile** by choosing preferred Setpoint Change Watch List.
- **Approve/Reject Setpoint Change**, Restore or Revert Setpoints.
- **View Setpoint Report**, such as Success/Failure Report, Benefit Loss Report & Service Provider Report.

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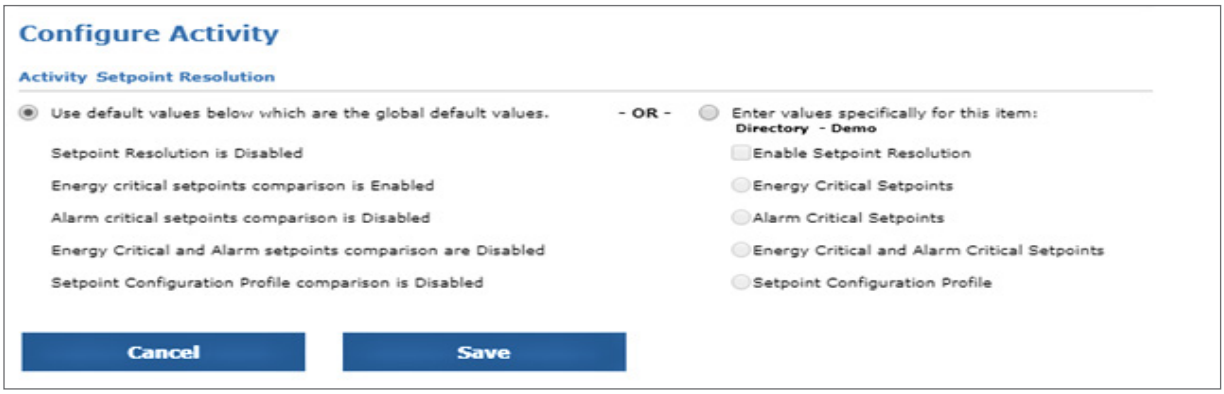
3. Configure Setpoint Management

3.1 Enable Setpoint Management

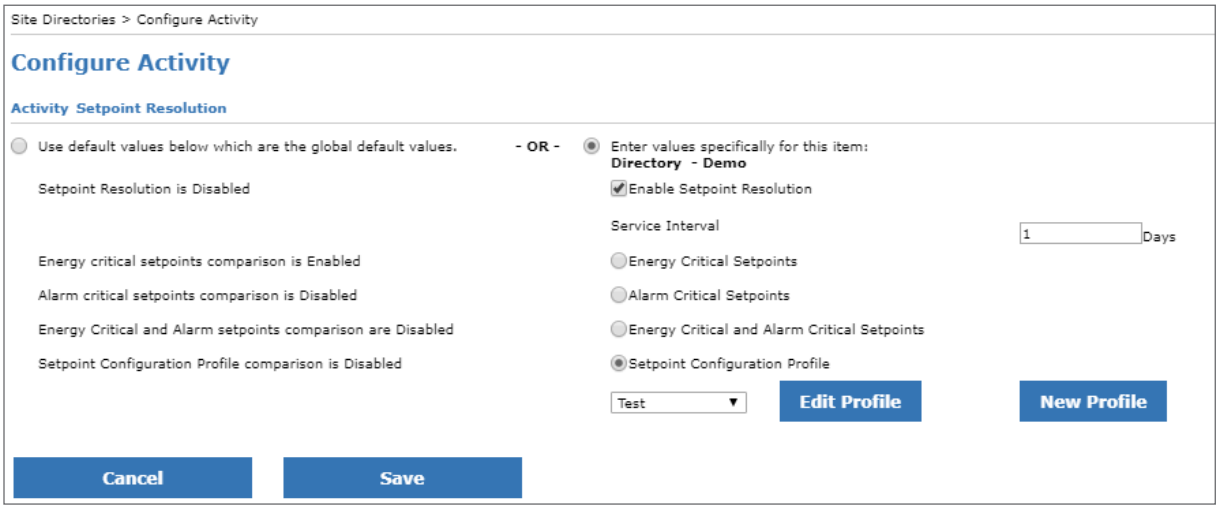
Locate the Directory or Site that you want to monitor and manage the Setpoint Change. Right-click at Directory/Site to access **Setpoints** > **Configure Setpoint Resolution**.

Setpoint Management is always Disabled by default. Users must configure Setpoint Management at the Directory/Site/Controller level to enable Setpoint Management. By default, the descending (lower) level inherits the parent level's configuration. If Setpoint Management is configured at a lower level, it will only be applied to the configured level. For example, a Directory is a parent or higher level in the navigation tree than a Site or Controller level. A Site is a descending or lower level than a Directory.



Activity Setpoint Resolution

As indicated in below figure, to Configure Setpoint Management, user needs to:



Configure Setpoint Management

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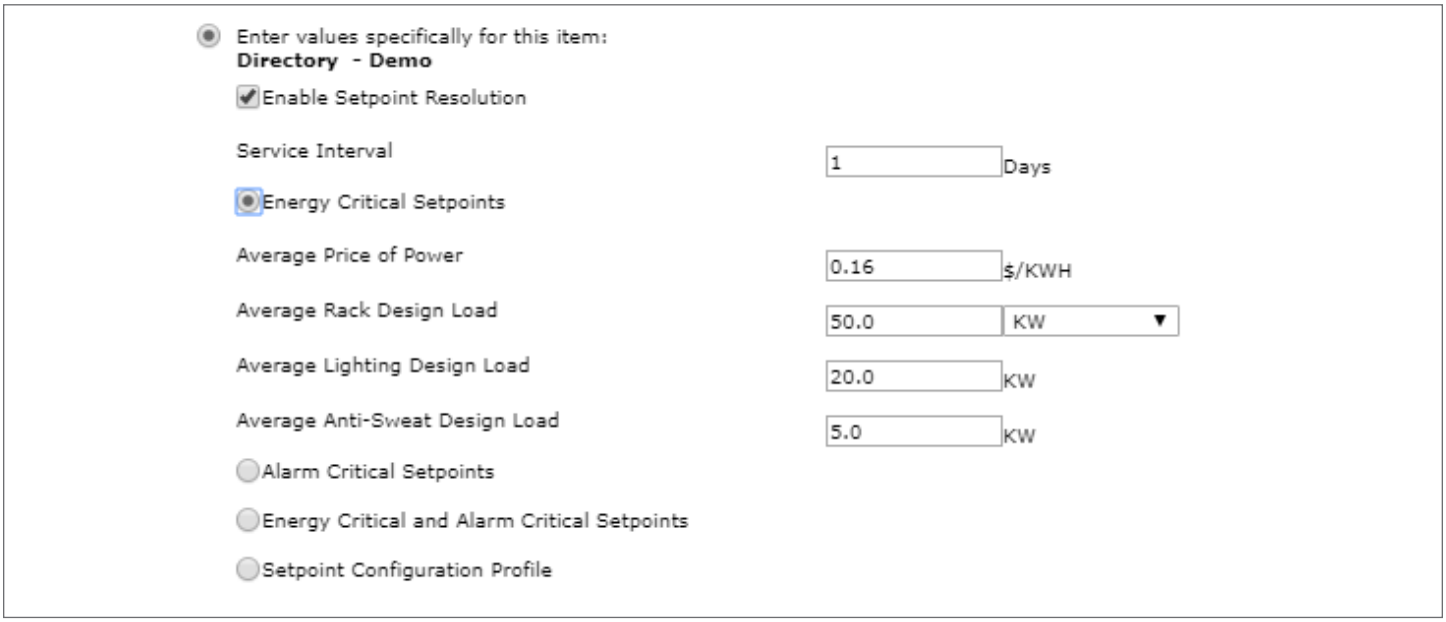
- Choose "**Enter values specifically for this item:**" and check "**Enable Setpoint Management**"
- **Fill in Service Interval**- Assign a value (between 1 and 366) in the **Days** field. This field indicates the duration of a Setpoint Management cycle.

  Setpoint Management will recur within the number of days specified for regions/stores reported to have failed the Setpoint Validation, until the activity completes for that store, or the service interval ends, whichever comes first.

  There will be instances when setpoint resolution will fail to complete on a number of stores on the first run because of possible activity interruptions (for example, intermittent network connections). Connect+ resolves this through a process called Smart Retries, wherein the setpoint resolution activity will attempt to re-run on these sites until the activity completes on them. If setpoint resolution is run on schedule, Connect+ will review the list of stores for which the activity failed and automatically re-run another setpoint resolution on each store (depending on the schedule) until the activity completes for that store, or the Service Interval ends. If setpoint resolution is run manually, the activity will run on ALL sites or control systems regardless of whether the store has completed or failed a previous setpoint resolution.
- **Choose Setpoint List**



Choose Setpoint List

» User can choose System Predefined Alarm Critical Setpoint

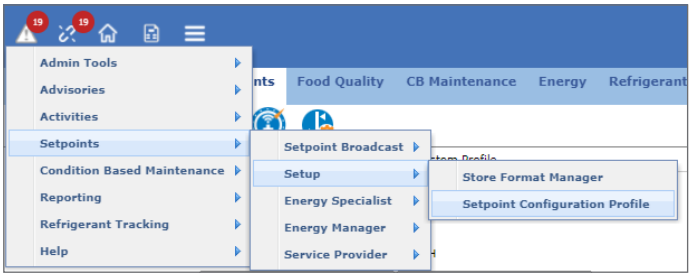
» Or Energy Critical Setpoint

Average Price of Power, Average Rack Design Load, Lighting Design Load and Anti-Sweat Design Load must be entered. These parameters are used to calculate Energy Savings or Losses based on the Setpoint Change.

» Energy Critical & Alarm Critical Both

» Create or Choose a Setpoint Profile

Create a new profile by clicking the **New Profile** button or choosing an existing profile such as Setpoint List.



Setpoint Profile

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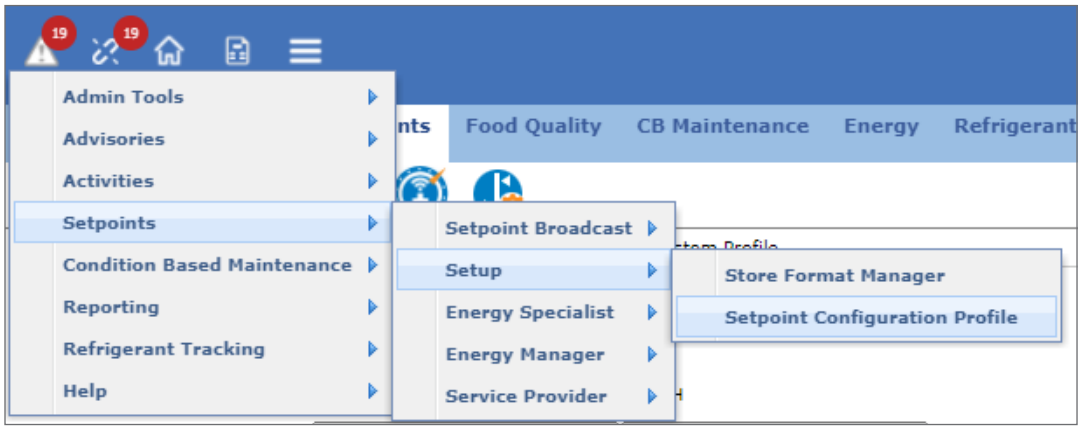
3.2 Setpoint Profile Management

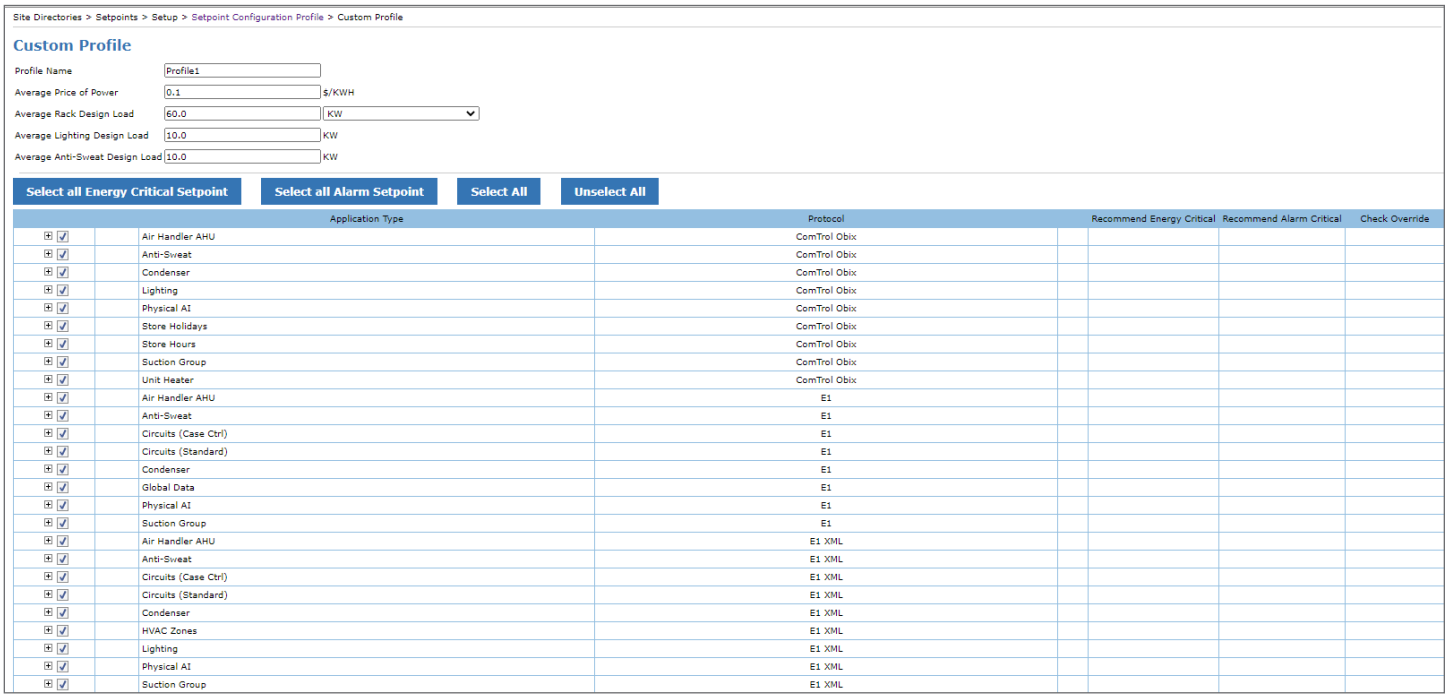
As indicated in the previous chapter, Setpoint Management can be configured by choosing a **Setpoint Profile** or **Create a New Profile.**

User also could get access from **Top Menu** > **Setpoints** > **Setup** > **Setpoint Configuration Profile**.



Setpoint Configuration Profile

In Create/Edit Profile page, choose the setpoint list that should be watched.



Setpoint List

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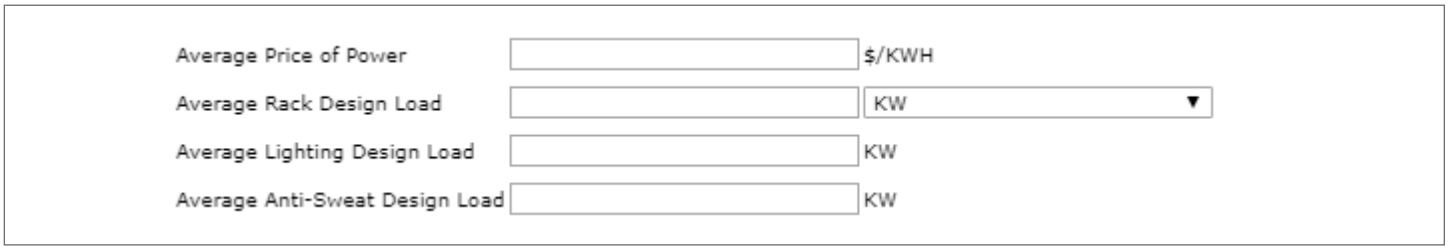
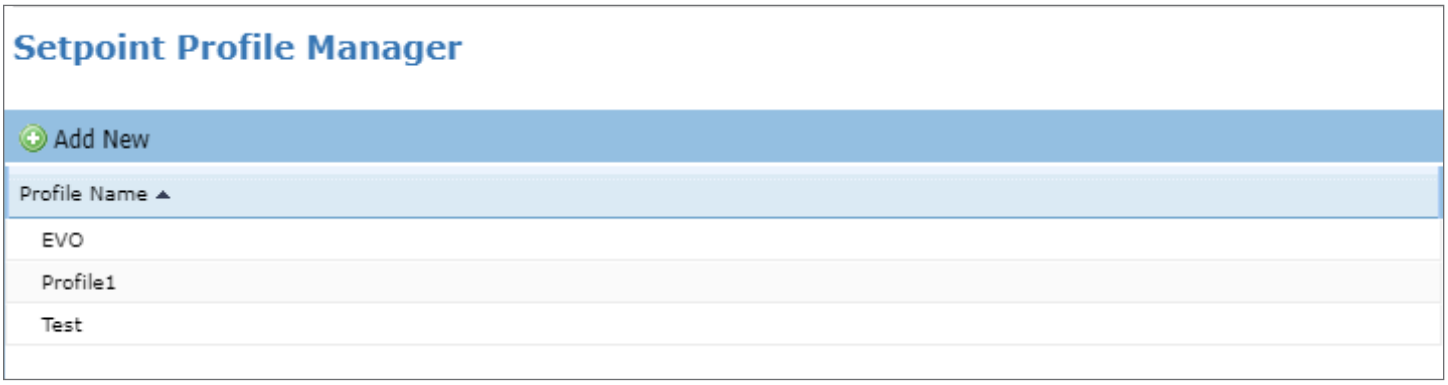
If an Energy Critical Setpoint Profile will be created, the Power Price and Design Load must be entered in the required fields above the table in order to calculate Energy Benefit Loss.



Power Price and Design Load

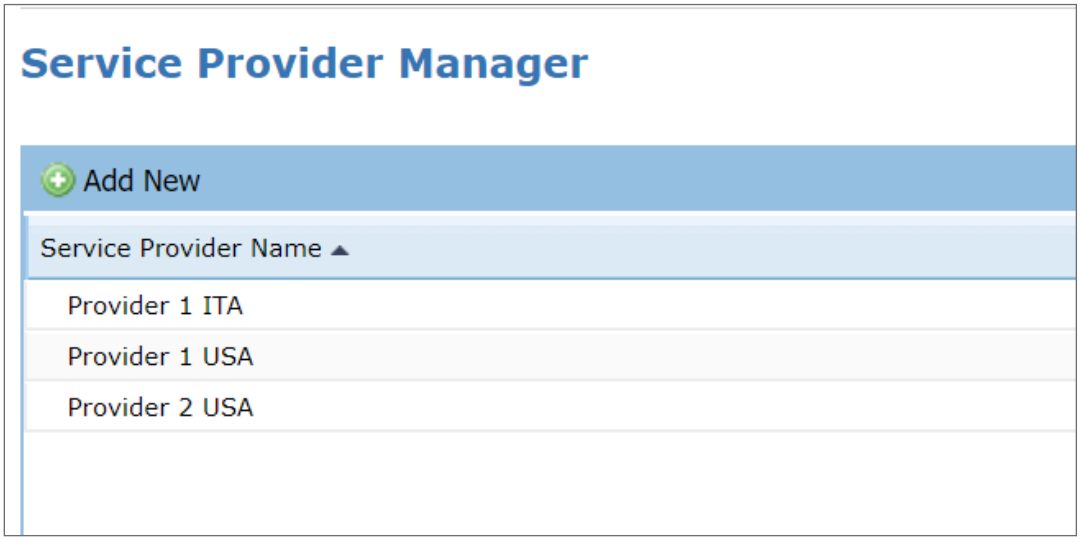
Upon saving, the Setpoint Profile will be listed in Setpoint Profile Manager.



Setpoint Profile Manager

3.3 Onboard Service Provider

You can add a service provider by clicking the **Top Menu** > **Admin Tools** > **Service Provider Manager**.



Service Provider Manager

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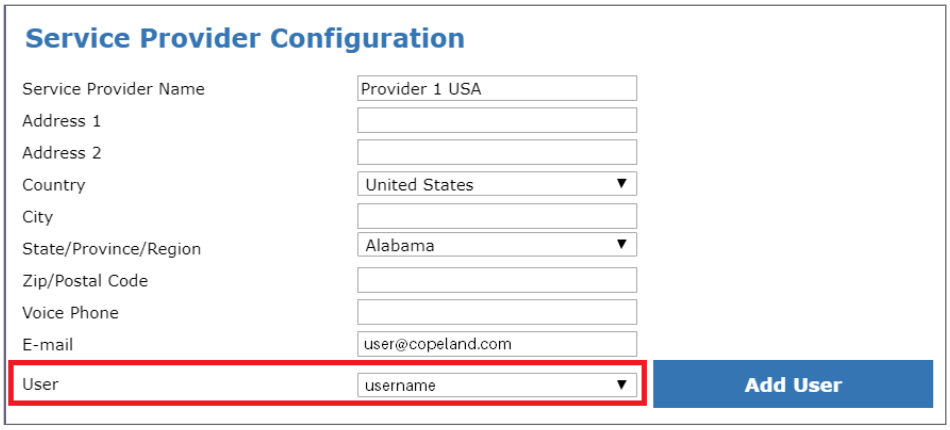
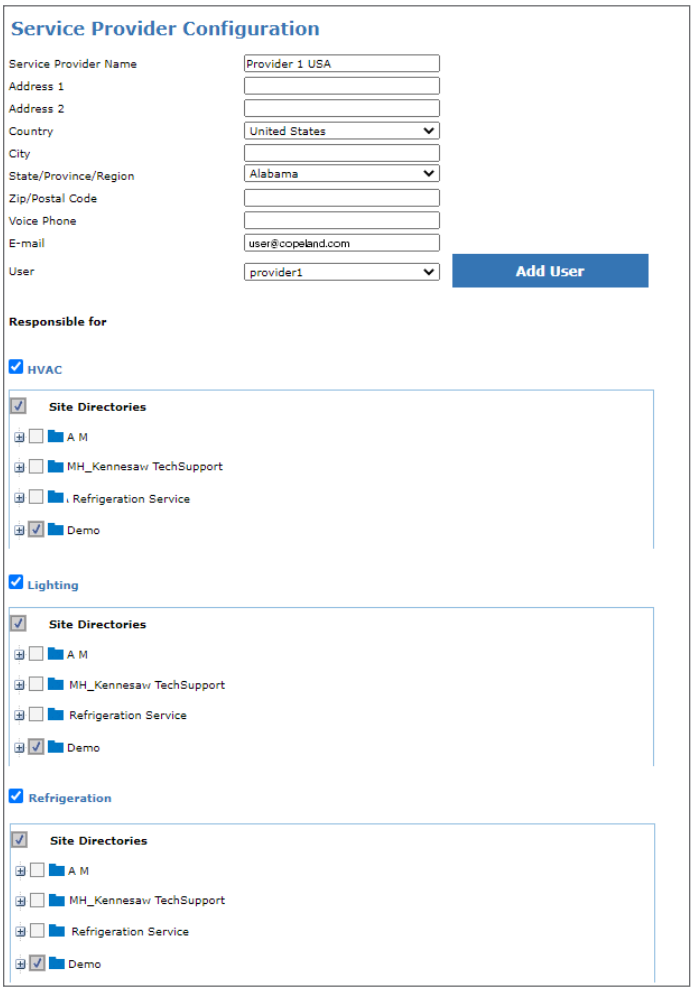
Provide the name and email in configuration page, then associate a user for each service provider.



Service Provider Configuration Page

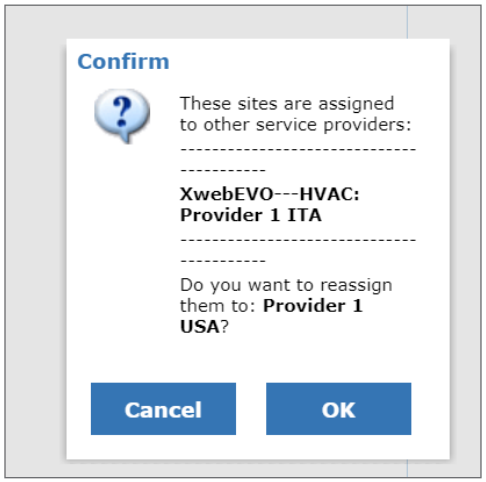
The existing user is listed in the drop-down. If there is not an existing user, then you can click the **Add User** button to create a new user.

After configuring the basic information, you must assign the directory responsibility of HVAC, Lighting & Refrigeration for the service provider.



Service Provider Configuration

Each service provider can assign multiple sites for each type (Refrigeration/HVAC/Lighting). But one site of each type can only be assigned to one service provider. If you assign the site to another service provider, there will be a message to confirm if you need to reassign it.



Confirmation to Reassign

Click **Cancel** to keep the current configuration, and click **OK** to reassign the site to another service provider.

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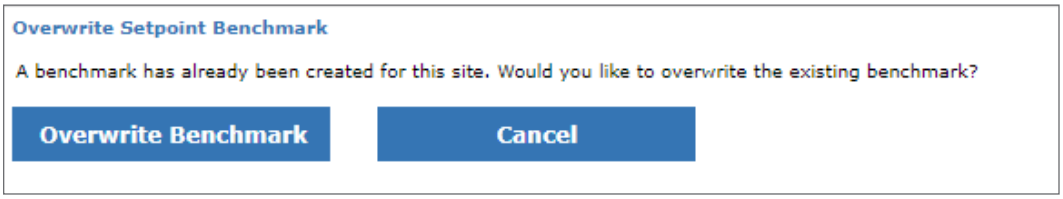
4. Create/View/Edit Setpoint Benchmarks

Setpoint Benchmarks are values to which a setpoint is set, and against which setpoints will then be compared to (as the standard).

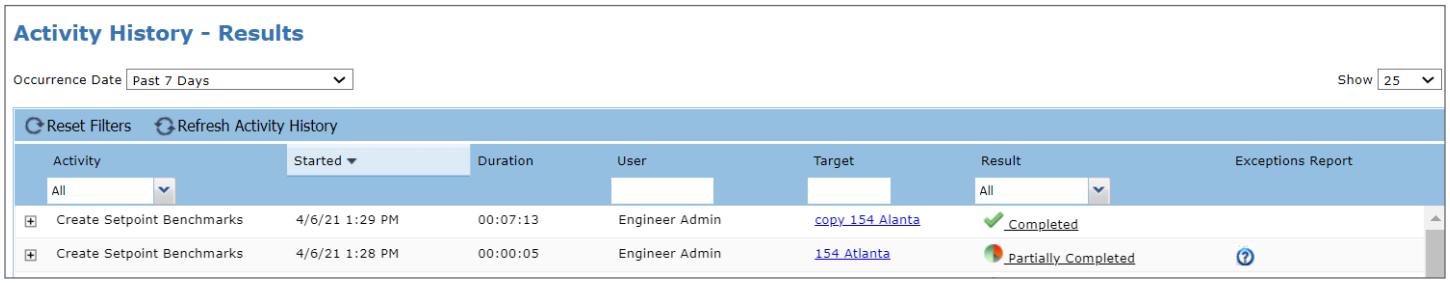
4.1 Create Setpoint Benchmarks

- **Review Setpoint Management Configuration:** Locate the Directory or Site that requires benchmarks. Right-click on directory or site, select **Setpoints** > **Configure Setpoint Resolution** to verify Setpoint Management has been enabled. Refer to Chapter 2 if it is not yet enabled.
- **Create Setpoint Benchmark**: Right-click a Directory, a Site or a Controller and click **Setpoints** > **Create Setpoint Benchmarks** from the navigation tree menu.
- **Overwrite the existing benchmarks**: If a benchmark has already been created for this site/ unit, a message will appear and ask if the existing benchmark should be overwritten. Click the **Overwrite Benchmark** button. To use the benchmarks that are currently in the system, click **Cancel**.



Overwrite Setpoint Benchmark

- **Check Create Setpoint Benchmark Activity Status**: Once the activity of Create Setpoint Benchmarks has been completed successfully, go to Activity History to see a status record. The Activity History can also show if a Directory, Site or Controller has failed Creating Setpoint Benchmarks.



Activity History

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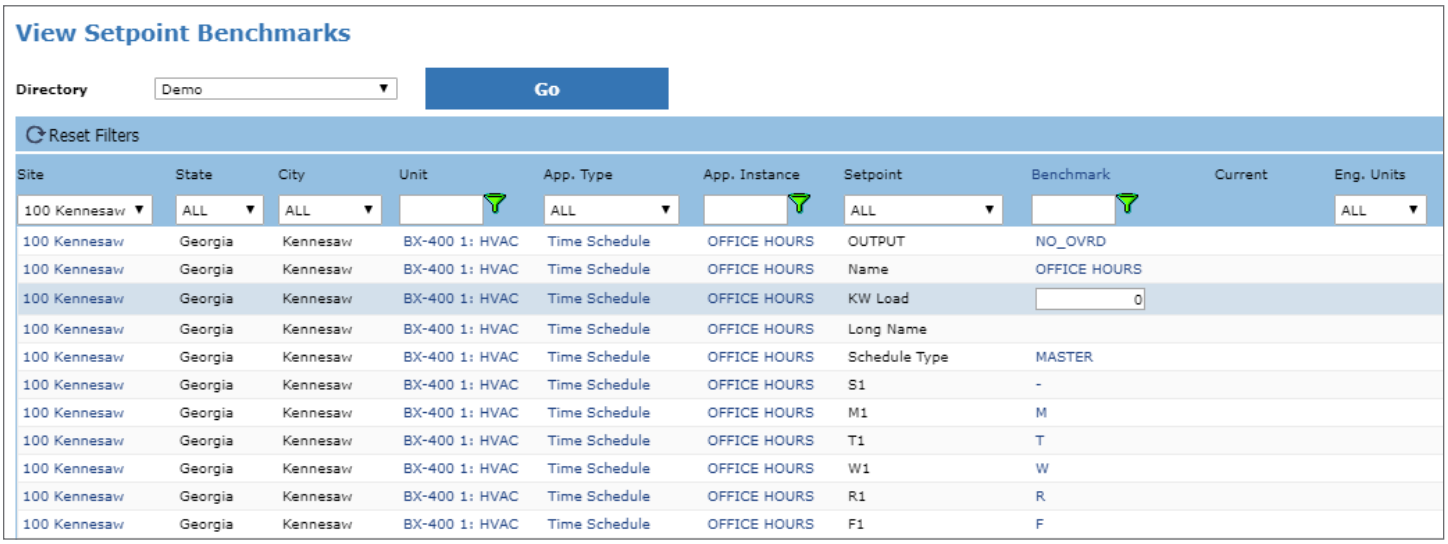
4.2 View Setpoint Benchmarks

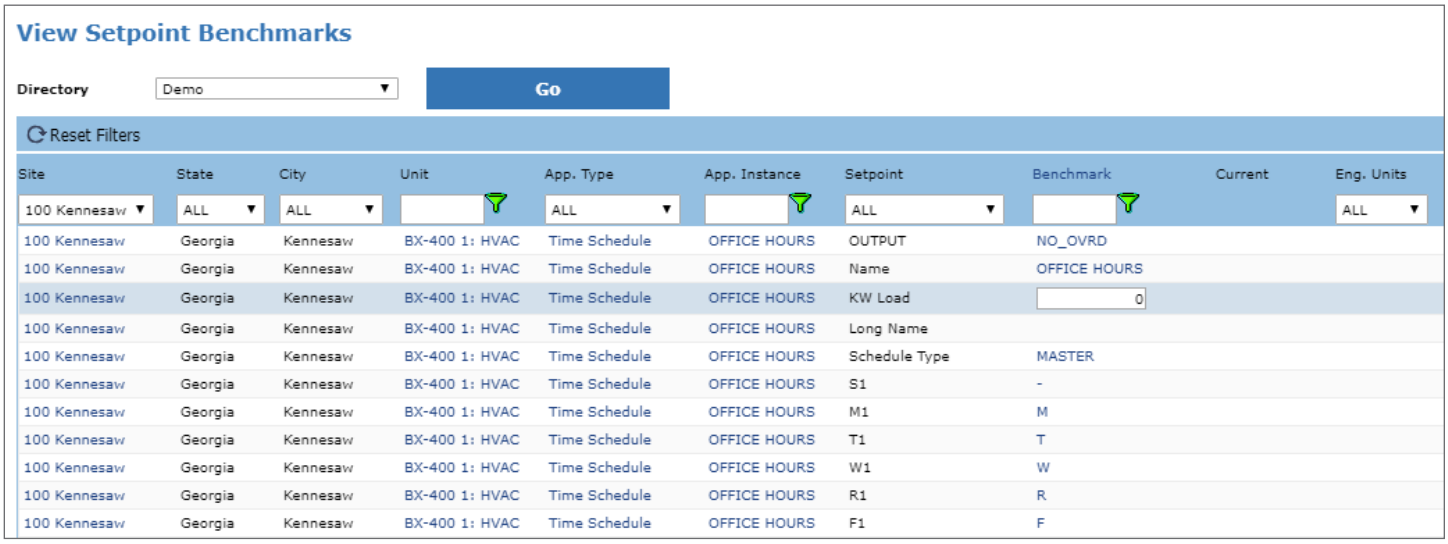
After a Setpoint Benchmark is successfully created, View Setpoint Benchmarks can be viewed through **Top Menu** > **Setpoints** > **Energy Manager** > **View Setpoint Benchmarks** or right-click the Tree menu > **Setpoints** > **View Setpoint Benchmarks** at Directory/Site/Controller/Application Instance level.



View Setpoint Benchmark

4.3 Edit Setpoint Benchmarks

Select **Setpoint Benchmarks** in the **View Setpoint Benchmark** page to edit the Setpoint Benchmarks.



Edit Setpoint Benchmark

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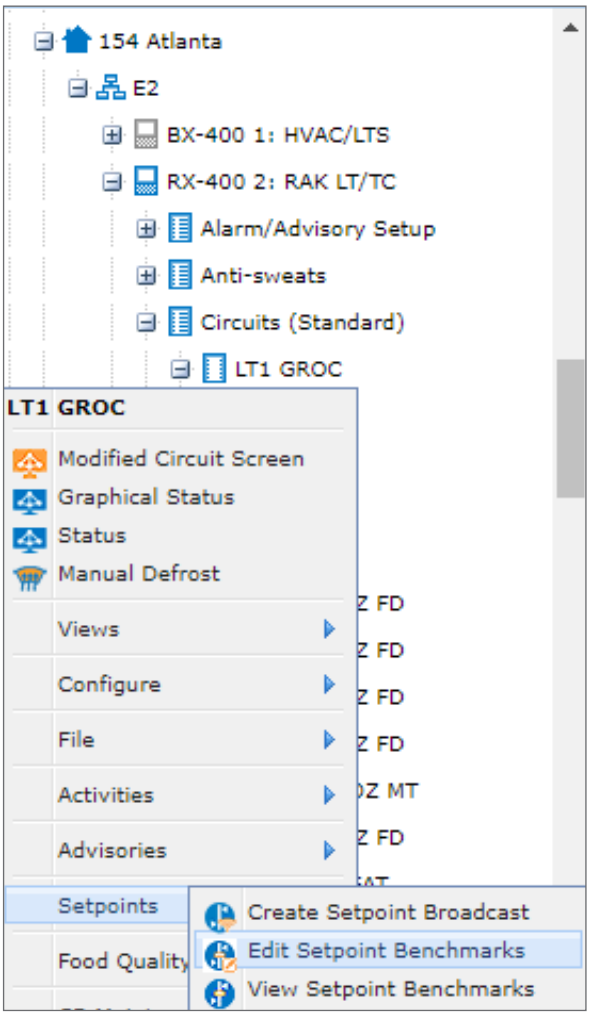
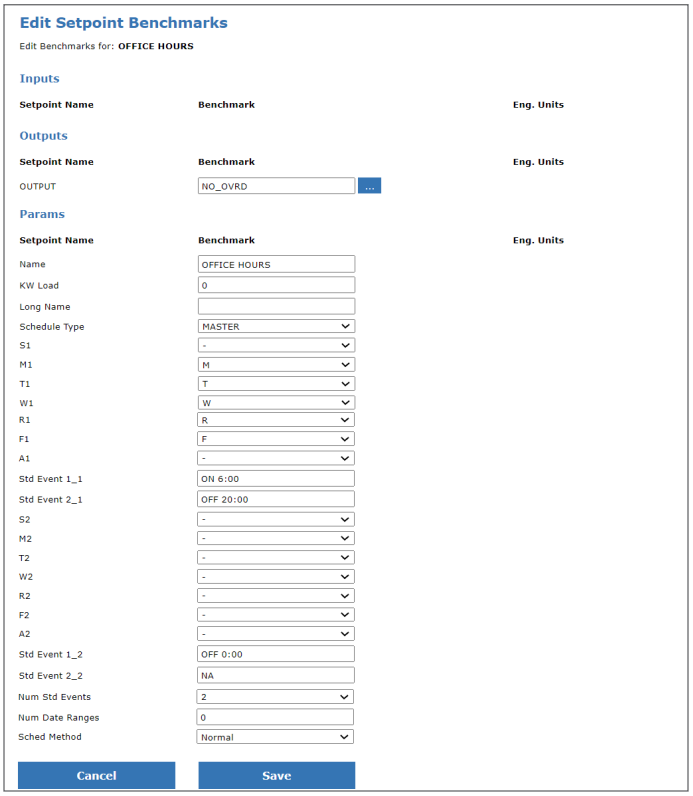
Setpoint Benchmarks can also be edited at the Application Instance level, right-click **Menu** > **Setpoints** > **Edit Setpoint Benchmarks**:



Edit Setpoint Benchmark Navigation Tree

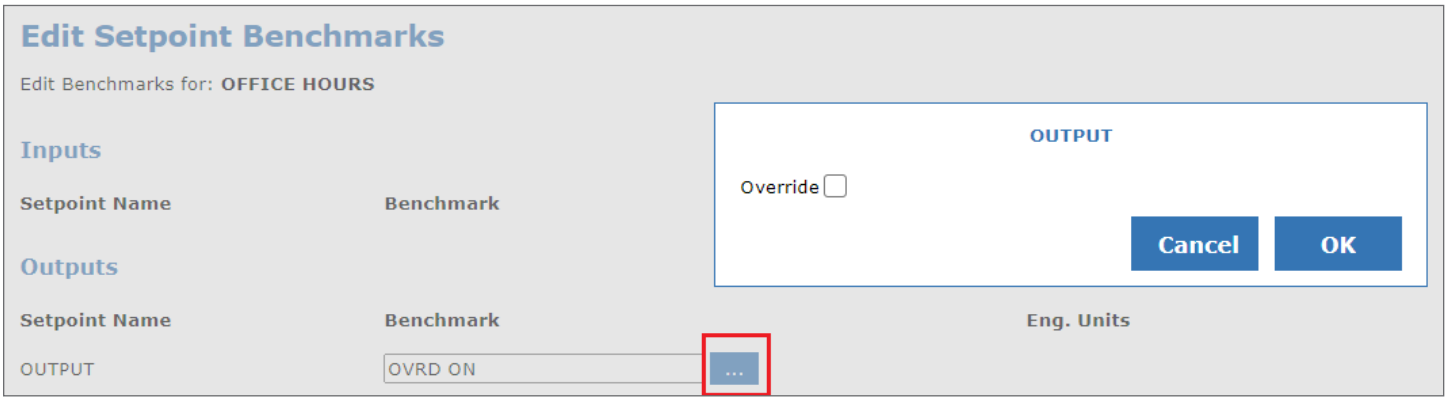
When **Edit Setpoint Benchmarks** are selected of an application instance:

- If Setpoint Benchmarks have been created for this Application Instance, a setpoint benchmark has been changed, the current benchmark of that setpoint will be overwritten.
- If Setpoint Benchmarks have not been created for the Application Instance, a message will display and ask if you would like to create a benchmark.



Edit Setpoint Benchmark

Change the setpoint with the **Browse** button. Clicking the **Browse** button will cause a pop-up window to appear:



Changing Setpoint

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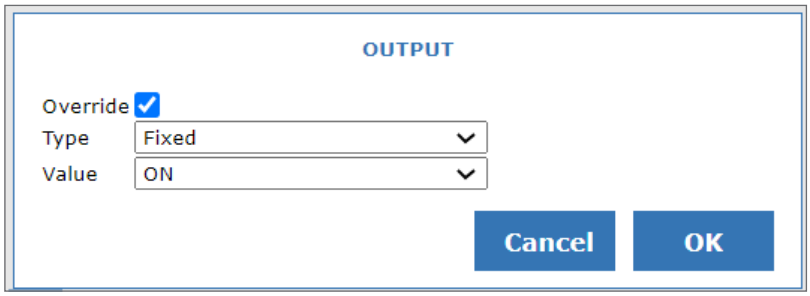
An **Override checkbox** will be available in the pop-up window for setpoints that can have a value of either "Override" or "No Override". Enable the Override, configure the setting, and click **OK**.



Override Checkbox

Scroll down and select an option for setpoints using the drop-down menus. For setpoints with a text field, enter the new value.

When all the desired setpoint benchmarks are changed, click the **Save** button to save and apply the changes, or click **Cancel** to exit the page without saving.

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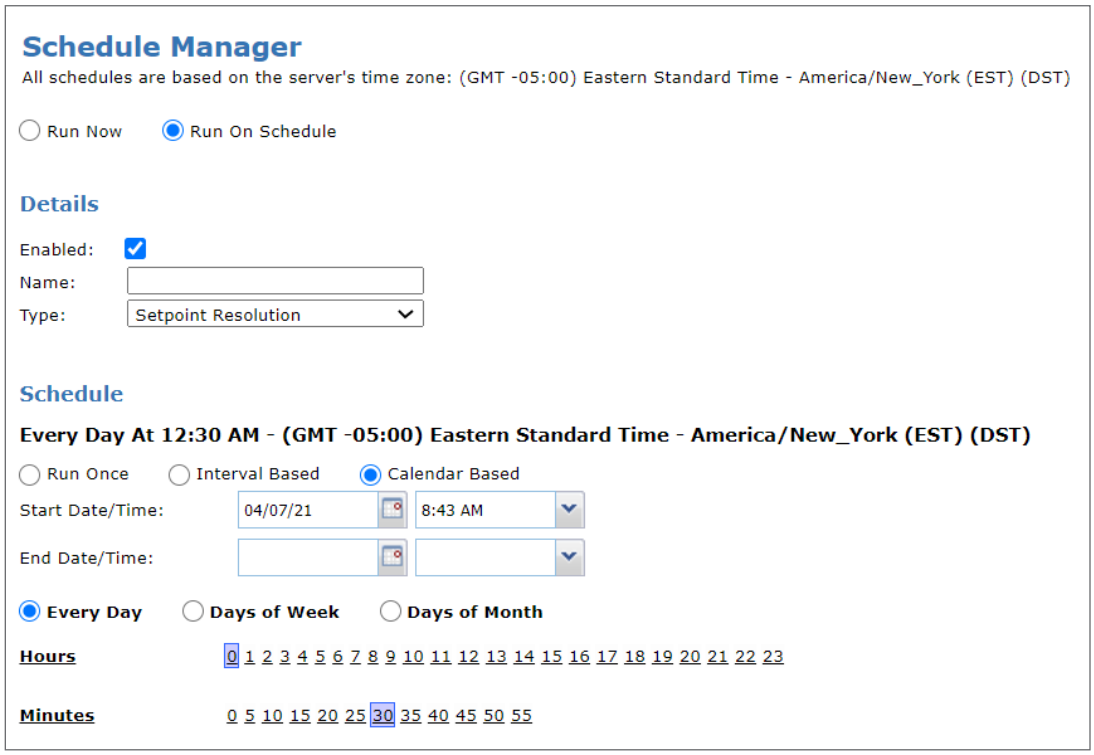
5. Running Setpoint Management

After Setpoint Management is enabled and Setpoint Benchmarks have been created, users can then start to configure **Run Setpoint Management Job**.

5.1 Schedule Run Setpoint Management

Usually Run Setpoint Management is a recurring job that regularly compares current setpoint with benchmarks to review the store setting. Follow the steps below to schedule Run Setpoint Management Job in Connect+:

- Go to **Top Menu** > **Activity** > **Schedule Manager**
- Choose the Activity Type as **Setpoint Resolution**
- Set the schedule details of the activity (for example, when will the activity run for the first time, the starting and ending date and time of succeeding Smart Retries, etc).
- Click **Save** to save your changes.



Schedule Manager

5.2 Run Setpoint Management one time

Run Setpoint Management one time manually can be run by right-clicking on the Directory/Site/Controller in the navigation tree and selecting **Setpoints** > **Run Setpoint Resolution**.

5.3 Generate Setpoint Exceptions for Review

Run Setpoint Management Job pulls current settings of Setpoint Lists that is configured at the time of the run, and is then compared against the Setpoint Benchmark and lists deviations.

Upon success, Run Setpoint Management job will.

- Generate Setpoint Change Exceptions for user to process.
- Generate Setpoint Change Alert in View Advisories.
- Capture Job activity status in Activity History.

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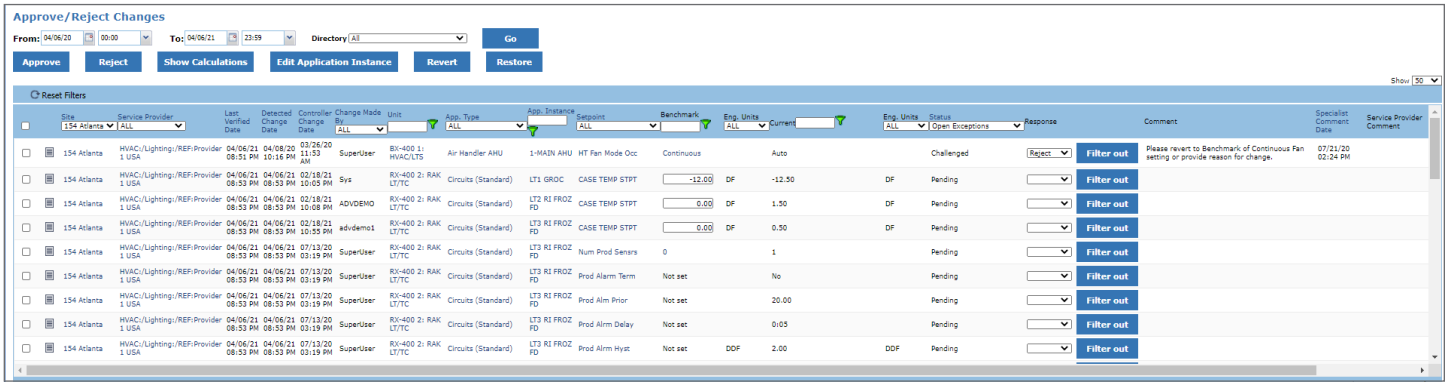
6. Approve/Reject Changes

Once a Directory/Site has been successfully run on Setpoint Resolution, any Setpoint Deviation from Setpoint Benchmarks would be captured in Approve/Reject Changes.

Click the **Top Menu** > **Setpoints** > **Energy Specialist** > **Approve/Reject Changes** to review the Setpoint Changes that might be made by the Service Provider since the last pullback.

Once the page has loaded, change the **From** date back far enough to ensure that all the changes for the site or Directory are loaded:



Approve and Reject Changes

The Approve/Reject Changes page displays a matrix detailing all setpoint changes for sites. In the **Response** column, Energy Specialist can select **Approve** or **Reject** to save a Service Provider's setpoint changes or challenge the change and enter supporting documentation by entering a message to the Service Provider in the **Comment** column.

- **Site** - the site on which the setpoints were changed (can be filtered to show all exceptions per site); displayed as a hyperlink.
- **Service Provider** - the name of the Service Provider who made the change (the matrix can be filtered to show all Service Providers who made changes, or all changes made by one Service Provider or all unconfirmed Service Providers); a "No Service Provider Assigned" message displays for exceptions with sites or Service Provider types that were not assigned a Service Provider; (a hyperlink).
- **Verification Date** - the date the change was verified by the energy specialist.
- **Original Change** - the date the change was actually made by the Service Provider.
- **Unit** - the controller unit where the setpoints were changed (a hyperlink).
- **App. Type** - the application type where the setpoints were changed (a hyperlink.)
  - » **App. Instance** - the application instance where the setpoints were changed (a hyperlink).
  - » **Setpoint** - what kind of setpoint was changed; can be filtered to show all exceptions per kind of setpoint.
  - » **Benchmark** - the original value the setpoint should be set.
  - » **Current** - the current value of the changed setpoint.
  - » **Eng. Units** - what unit of measure is used to define the setpoint value.
  - » **Status** - current state of the setpoint change and the progress of setpoint exception, can be either Open or Closed. Refer to Table *"Setpoint Exception Status and Definitions" on page 17* for a list of all setpoint exception states and definitions.
  - » **Response** - shows whether or not the setpoint change was approved or rejected. Selecting to Approve the change saves the setpoint to the changed value. (This means the energy specialist agrees with the setpoint change made by the Service Provider). Selecting to Reject the change enters Challenged in the State column. (The energy specialist disagrees with the setpoint change made by the Service Provider.) If approved, the setpoint exception is deleted from the system and will not reappear.

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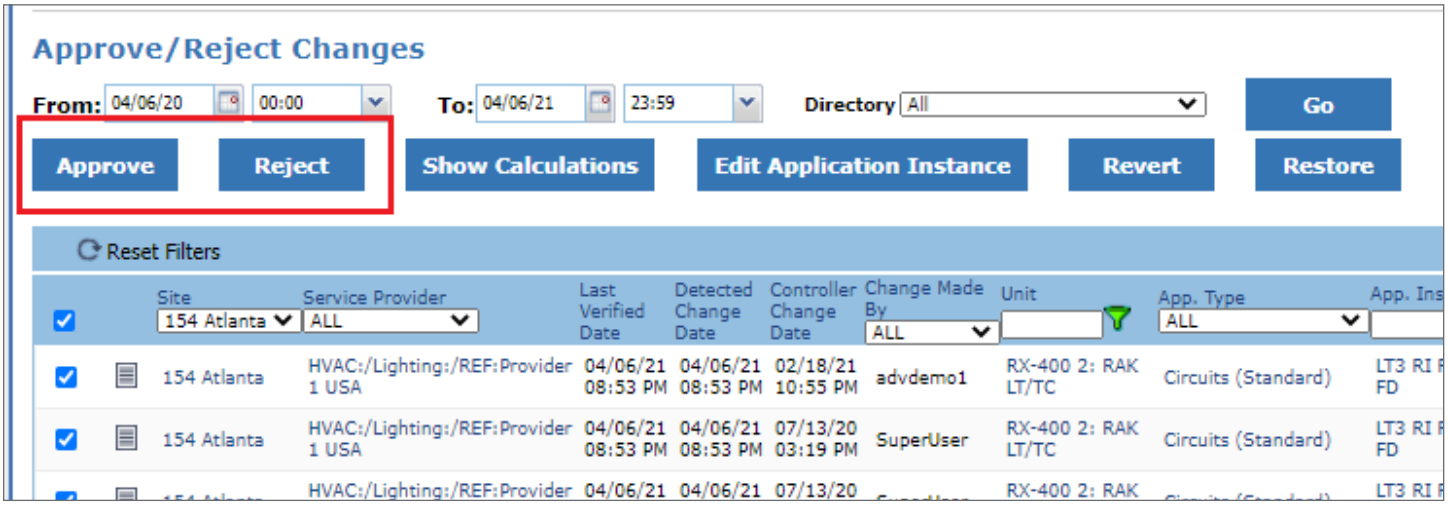
- **Filter Out** - if you click the **Filter out** button, the report will disregard that chosen setpoint and exclude that value from the report.
- **Comment** - a message entered by the energy specialist as to why a setpoint was approved or rejected that will be visible to the Service Provider when he or she logs into the system. Click **Add** to enter a comment.
- **Specialist Comment Date** - the date and time the energy specialist entered a message.
- **Service Provider Comment** - a reply message entered by the Service Provider.
- **Service Provider Comment Date** - the date and time the Service Provider comment was entered.

Status	Definition
OPEN EXCEPTIONS	
Pending	A setpoint change has been made by the Service Provider and is waiting.
Challenged	The energy specialist has rejected the Service Provider's reason for making a setpoint change and believes the setpoint should be set back to the benchmark value. The status of the setpoint exception is dependent upon the energy specialist agreeing with the change, or the Service Provider reverting the setpoint back to its benchmark.
Contested	The Service Provider has disputed the energy specialist's rejection of this setpoint change. The Service Provider should enter a message in the Service Provider Comment column explaining why the change he or she made is correct.
Pending Fix	The Service Provider has accepted the energy specialist's rejection of the setpoint change and will revert the setpoint back the benchmark value.
CLOSED EXCEPTIONS	
Approved	The setpoint change made by the service provider was rejected by the energy specialist and was approved at a later time
Set As Benchmark	No benchmark existed for the setpoint. The current setpoint is set as the benchmark.
Resolved	The setpoint has been reverted to the benchmark.
Obsolete	The exception is no longer relevant. This may occur if the benchmark of the same setpoint was updated, or if the energy specialist approved an exception, or if a new exception was created for the same setpoint.
Filtered Out	The energy specialist has chosen to exclude the exception from the list earlier. Selecting this as the State will redisplay all filtered-out exceptions in the report (read only).

Setpoint Exception Status and Definitions

Instead of approving or rejecting changes individually, you can approve or reject multiple exceptions at the same time. Select **ALL** from the drop-down on the first column header as shown in the figure below (or click the individual checkboxes to select specific exceptions) and click the **Approve** or **Reject** button.



Approve and Reject Changes Menu

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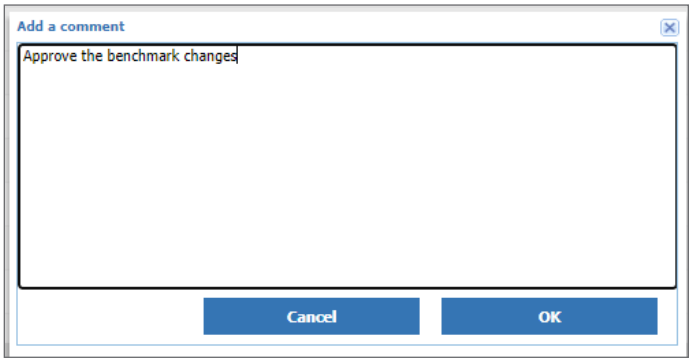
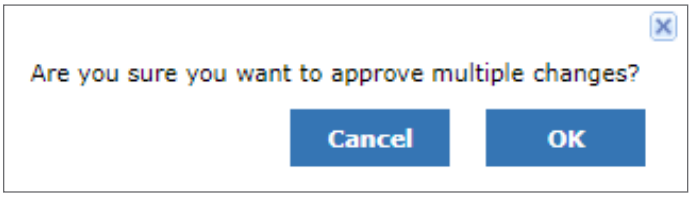
A comment text box displays on the screen. Optionally, enter a common comment for all the exceptions you wish to approve or reject, or leave the field blank.



Comment Section

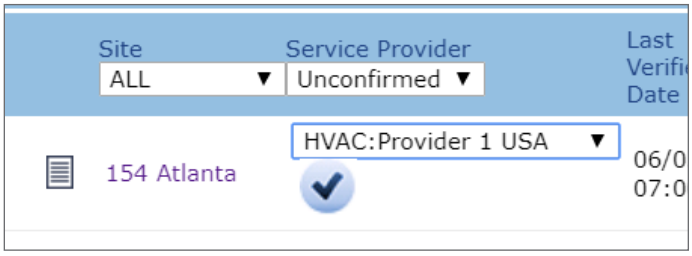
Click **OK** on the comment text box and click **Approve** or **Reject** to confirm the operation.



Changes Confirmation

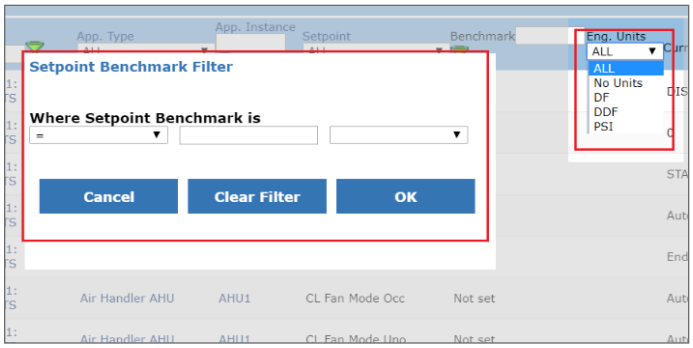
Click the **Cancel** button on the comment box or confirmation dialog box to cancel and return to the Approve/Reject Changes page.

Service Providers for all Physical AI exceptions should be confirmed before approving or rejecting the exceptions. Physical AI exceptions are exceptions not categorized by Connect+ into any of the three general category types of applications (Refrigeration, Lighting, and HVAC). Therefore, the user will have to assign the Service Providers for these exceptions and confirm them. Select **Unconfirmed** from the Service Provider drop-down list to show all exceptions with unconfirmed service providers. Click the corresponding button with the checkmark icon placed beside the Service Provider name to confirm. The Service Provider name should be displayed in the field before you can confirm; if the Service Provider field is blank, select the appropriate Service Provider from the drop-down list.



Comment Section

Filter the exceptions matrix to show only exceptions that are within the setpoint range of your choice. Click the funnel icon (next to the **Benchmark** or **Current** columns), set your filtering rules in the filter window, and click **OK**. Click **Cancel** to return to the page or click the **Clear Filter** button to remove the previously applied column filters. To filter by **Engineering Units**, select the engineering unit from the drop-down list.



Setpoint Benchmark Filter

6.1 Specific Setpoint Guidelines

6.1.1 Override

For Setpoints containing override, set to **NO OVRD** so that these changes may be accepted. For Setpoints containing override, set to **OVRD OFF** or **OVRD ON**, these changes may be rejected.

In some cases, the service provider may come back with a response that they are working on the system and an OVRD OFF or OVRD ON is required until the system has been serviced. When this happens, the Energy Specialist follows up until its conclusion; for example, checking back weekly or at other set intervals of time until the issue is resolved.

6.1.2 Cooling Stages

Cooling stages can be from 1-2 compressors and sometimes more than 2 compressors. Note that all are currently accepted.

Setting Configurations (applicable to all customers unless otherwise specified)

- **Dehum OCC** should be set to around 55 +/-10. If so, these can be approved.
- **Dehum SP 1 and 2** should be set to 60 or less. If so, these can be approved.
- **Heating SP 1 and 2** should be set to 65-70. Accept all within this range or lower. If greater than 70, these can be rejected.
- **HVAC Setpoint** should be set to 70-75. Accept all within this range or higher. If lower than 70, these should be rejected.

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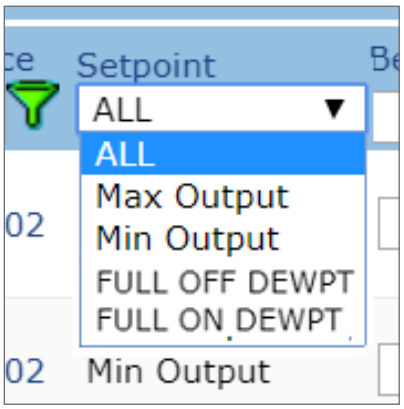
- All **Summer/Winter Cool OCC** should be set to 70-75. Accept all within this range or higher. If lower than 70, these should be rejected.
- All **Summer/Winter Cool UOC** should be set to 70-80. Accept all within this range or higher. These function hand in hand with the OCC setting. For the maximum in energy savings, UOC should be set to a ***higher value*** than OCC setpoints. If set to lower than 70, the deviations and exceptions should be rejected. For some customers, the heating or cooling setpoints are not processed at this time.
- All **Summer/Winter Heat OCC** should be set to 65-70. Accept all within this range or lower. If ***higher*** than 70, these should be rejected.
- All **Summer/Winter Heat UOC** should be set to 65-70. Accept all within this range or lower. These go hand and hand with the OCC setting and to save the most energy, and should be ***lower*** than Summer/Winter Heat OCC. If ***higher*** than 70, these should be rejected.

6.2 Approve/Reject Changes Filtering Types

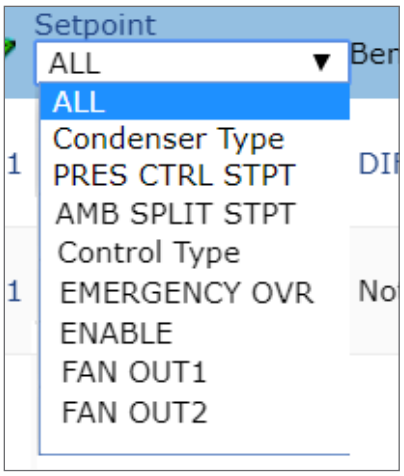
6.2.1 Anti-Sweat App Type



Anti-Sweat App Type

- **ASW Max/Min Humidity Setpoint** should be set for the range of 38-58%. ASW Min Setpoint = 38% and ASW Max Setpoint = 58%. (These settings can be used as a base for all customers and each will depend on what equipment is being used.) These settings should be considered based on store locations such as Hawaii and Canada. For Hawaii these settings will exceed the default setting due to the local climate.
- **FULL OFF DEWPT** will typically be set for 58%. This setting should be considered based on store locations such as Hawaii and Canada. For Hawaii these settings will exceed the default setting due to the local climate.
- **FULL ON DEWPT** will be set for 38% on average. These settings should be considered based on store locations such as Hawaii and Canada. For Hawaii these set will exceed the default setting due to the local climate.
- **Max Output** for Anti-Sweat setpoints will be set for 90-100. This setting should be considered based on store locations such as Hawaii and Canada. For Hawaii these settings will exceed the default setting due to the local climate.
- **Min Output** for Anti-Sweat setpoints will be set for 60 or less. This setting should be considered based on store locations such as Hawaii and Canada. For Hawaii these settings will exceed the default setting due to the local climate.

6.2.2 Condenser Type



Condenser Type

- **Condenser Type** is to be verified and reference to the E-Commissioning books may be required. *Note that if no E-Commissioning data is present, depending on the information, the existing benchmark should be used.* This will be either Air or Evaporative condenser. If the setting differs from the E-Com books *reject* the change and *request further information from the Service Provider.*
- **Control Type** can be set for various settings such as Pressure, Ambient Temp, PSI Ambient/ Modified, Temperature, or Temperature Differential. Some customer calls for this to be "PSI Ambient/ Modified". *Review the E-Com books to determine if the system can handle this setup and to determine what was set during E-Com.*
- **Fan Type** can be set for Fixed, Staged, or Variable Speed (Variable-speed fans may operate at any percentage of its maximum speed). *Please review E-Com books for system configurations.*

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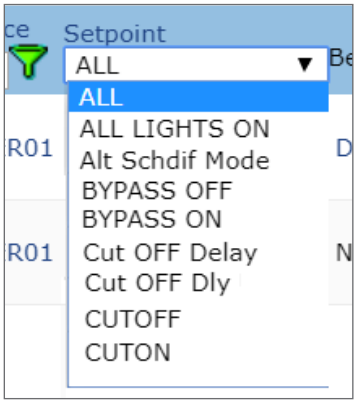
- **Hot Gas Shift** should be set for 25 or lower. Many other variables come into play that can help reduce this setpoint to fall below 25 (such as mechanical valves and piping arrangements). *Ask the Service Provider to verify the Receiver Regulator setting and Drop leg Pressure regulators setting and operation to assist in returning this to below 25.*
- **Max Temp STPT** should be set between a range of 90-100. A setpoint lower than 90 ***should be rejected and asked to return to a range of 90-100***. Settings above 100 has no effect on control, but the setting is incorrect.
- **Min Temp STPT** should be set for a range of 65-70 for refrigerant other than R-22 (for R- 22, the setting should be 75). These settings will require changes as the weather starts to cool off in order to keep the system operating properly. The Energy Specialist currently reviews these settings again prior to warmer weather to aid in helping the customer reduce the energy usage.
- **Number of Fans** is usually between 1-12. If the number is 0, ask the Service Provider for details of the system design to aid in resolving this setting.
- **Press CTRL STPT** can be calculated various ways. A typical refrigeration system requires a set amount of pressure to the cases to allow the refrigerant to flow, called Head Pressure. In colder weather the pressure at the condenser drops and the Head Pressure may need to be raised to keep the refrigerant flowing. Some customers specify keeping this within a range of 155# if possible, but for higher suction pressure systems this could be in the range of 175-185#. For further assistance, review the E-Com books.
- **Reclaim Shift** should be set for 25 or lower. *WARNING: Anything higher than 25 could cause equipment damage in the field.*
- **Ref Type** is configured by the Service Provider and is completely subjective. The refrigerant type is set to show whatever refrigerant type is being used at that time. If this is not set properly by the Service Provider, the system could have issues achieving its correct setpoint. *If it is the consensus that the refrigerant type is incorrect, ask the Service Provider to verify the refrigerant type in the system. Also review E-Com books.*
- **Split 1 and 2** setting can aid in cooler weather to assist in keeping a positive flow of refrigerant. ***Always challenge if this setting differs from the benchmark and initiate dialog with the Service Provider.***
- **Split Enable** splits are not always used on the condensers; some systems have splits and others do not. It depends on the system design. *If Split Enable has been benchmarked with having a split and they have set the current to No, always reject and initiate dialog with the Service Provider to get their feedback to get this resolved.* To verify that the benchmark is correct, review the E-Com books and if the setting is what the Service Provider has changed the system to, the benchmark is incorrect. Approve the change made by the service provider, which will update our benchmarks.
- **Temp CTRL STPT** - Some customer calls for this to be set for 70-75.
- **Temp Diff STPT** for air cooled condensers this should be set for 8-12# and for Evap condensers this should be set for 18-22#.

6.2.3 Lighting App Type



Lighting App Type

Lighting is hard to accomplish without having discussions with the Service Provider or customer. The breaker panels must be set up properly to help save energy and keep from having issues at a site.

- **Cut OFF Delay** is typically approved unless it gets into a delay of more than 20 minutes. ***If greater than 20 minutes, reject this change.*** These settings can be accepted or rejected.
- **Cut ON Delay** is typically approved unless it gets into a delay of more than 10 minutes. ***If greater than 10 minutes, reject this change.*** These settings can be accepted or rejected.
- **CUTON** is the setpoint for the amount of foot candles (FTC) desired for the light to come on. For example, as the sun starts to set, the lights should be programmed to come on when the darkness is X. A typical setting is 20-30. These settings can be accepted or rejected.
- **LIGHTS OUTPUT** should be set for NO OVRD if OVRD ON or OVRD OFF. These settings can be accepted or rejected.

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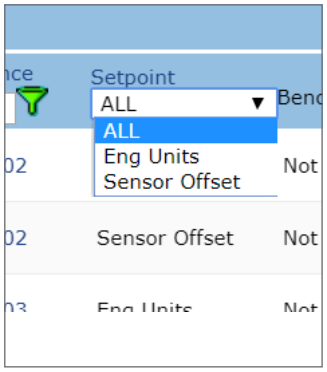
- **Alt Schdif Mode** most all of these settings can be accepted unless blank. These could be set for both on/any off, Schedule only, etc.
- **Schedule #1 - #3** should never be accepted when set to 0000-2400 without verification from the customer/Service Provider. These settings can be accepted or rejected.

6.2.4 Physical AI App Type



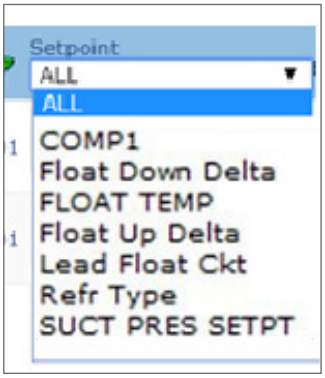
Physical AI App Type

- **Eng Units** - The units of a reading from the I/O board on how the controller should display the reading.
  For example: Units for temperature would be DF. Generally, most all of these are accepted.
- **Mult Factor** - This setting multiplies the reading from the I/O boards before displaying the reading in the controller. Generally, most of these are accepted.
- **Sensor Offset** - Offsets allow the user to tune the readings of a sensor to get a more accurate reading. *Example: Using a highly accurate temperature sensor to take a reading of the case discharge temperature and find that it is 2DF lower than the controllers displayed value. The offset can be set for the sensor by subtracting -2 from the reading, allowing it to be displayed as accurately as it can be in the controller.*

Here are a few standards that can be used across many customers:

- Suction Offsets +/- 3 PSI if the site has been E-Commissioned. And +/- 15 PSI if no E-Commissioning has been performed.
- Temperature Sensors +/- 10F
- Float Temperature Sensors +/- 5F if site has been E-Commissioned. And +/- 10F if no E-Commissioning has been performed.
- Discharge Offsets +/- 10 PSI if the site has been E-Commissioned. And +/- 15 PSI if no E-Commissioning has been performed.

6.2.5 Single Group App Type



Single Group App Type

- **CompX** - Should be set for NO_OVRD
- **Float Down Delta** - Dependent on the type of controller on-site, this could be 0 or a temperature value. It should be the system float circuit setpoint.
- **Float Temp** - This should be the temperature of the circuit the rack is to float on. There may be two in the controller but this should be the first float circuit. To verify if the system is floating on the ideal circuit, all the circuits can be viewed to determine the lowest operating case temperature.
- **Float Up Delta** - Dependent on the type of controller on-site, this could be 5 or a temperature value. It should be the system float circuit setpoint + 5 and max + 7.
- **Lead Float Circuit** - This is the circuit chosen to float the system from.
- **Refr Type** - This indicates what the refrigerant type the system is running. If this differs from the benchmark rejection, ask the service provider *"Has the system changed? This system benchmarked with XX. Does the benchmark need to be updated?"* Typically, if the benchmark is not set, the Energy Specialist approves the current setting.
- **Suct Pres Setpt** -This setting is the compressor operating temperature/pressure. A P/T chart can be viewed (these are calculated) to get an idea of either the temperature or pressure of the system. The Energy Specialist must either know the pressure or temperature, and refrigerant type to find either readings. E-Com data can be referenced, or this can be found in the controller.

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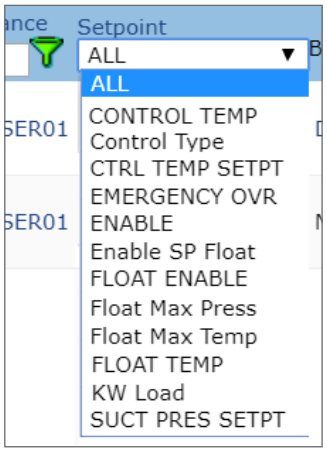
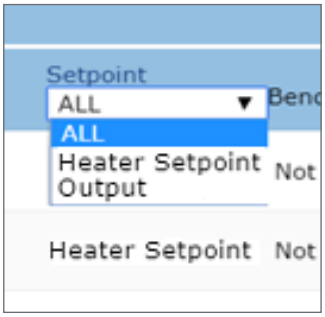
6.2.6 Suction Group App Type



Suction Group App Type

- **CompX** - Should be set for NO_OVRD
- **Control Temp** - This can be a reference or temperature. Accept all.
- **Control Type** - This should be set for Pressure.
- **CTRL Temp Setpt** - The system design temperature. Locate the Pressure of the system and the refrigerant using the P/T chart, which can be useful in locating temperature settings.
- **Emergency OVR** - Accept all except where current is equal to Yes. If Yes, add comments asking the Service Provider if the system is being serviced or if the system has problems requiring it to be in Override.
- **Enable** - Accept all
- **Enable SP Float** - It is dependent on the strategy. Floating is the best method for saving energy.
- **Float Down Delta** - Dependent on the type of controller on-site, this could be 0 or a temperature value. It should be the system float circuit setpoint.
- **Float Enable** - It dependent on their strategy. Floating is the best method for saving energy.
- **Float Max Press** - The pressure should be set for 5# minimum and 7# max above Float circuit pressure. Convert the temperature of the float circuit to pressure, then add 5-7.
- **Float Temp** - This should be the temperature of the circuit the rack is to float on. There may be two in the controller, but this should be the first float circuit. To verify if the system is floating on the ideal circuit, all circuits can be reviewed to determine the lowest operating case temperature.
- **Float Up Delta** - Dependent on the type of controller on-site this could be 5 or a temperature value. It should be the system float circuit setpoint + 5 and max + 7.
- **High Suct Type** - Accept All
- **Lead Float Circuit** - This is the circuit chosen from where to float the system.
- **Num of Stages** - Accept all not equal to 0.
- **One Comp Always** - Accept all
- **Refr Type** - This indicates what the refrigerant type the system is running. *If this differs from the benchmark, reject and ask the service provider "Has the system changed? We have this system benchmarked with XX. Does the benchmark need to be updated?"* Typically, if the benchmark is not set, the current setting is approved.
- **Strategy** - Normal is preferred but Fixed Steps is acceptable.
- **Suct Pres Setpt** - This is the pressure at which the rack should be running. Find the temperature of the system and then the refrigerant type. Refer to the P/T chart and find the pressure for the condition. If this is higher than the benchmark, it can be accepted, but a lower value should be questioned.
- Suction Offsets +/- 3 PSI if the site has been E-Commissioned. And +/- 15 PSI if no E-Commissioning has been performed.
- Suction Shift +/- 3 from benchmark can be accepted. All other values should be questioned.

6.2.7 Unit Heater App



Unit Heater App

- **Heater Setpoint** should be set for 65-70. These settings can be accepted or rejected.
- **Output** should be set for NO OVRD. These settings can be accepted or rejected.

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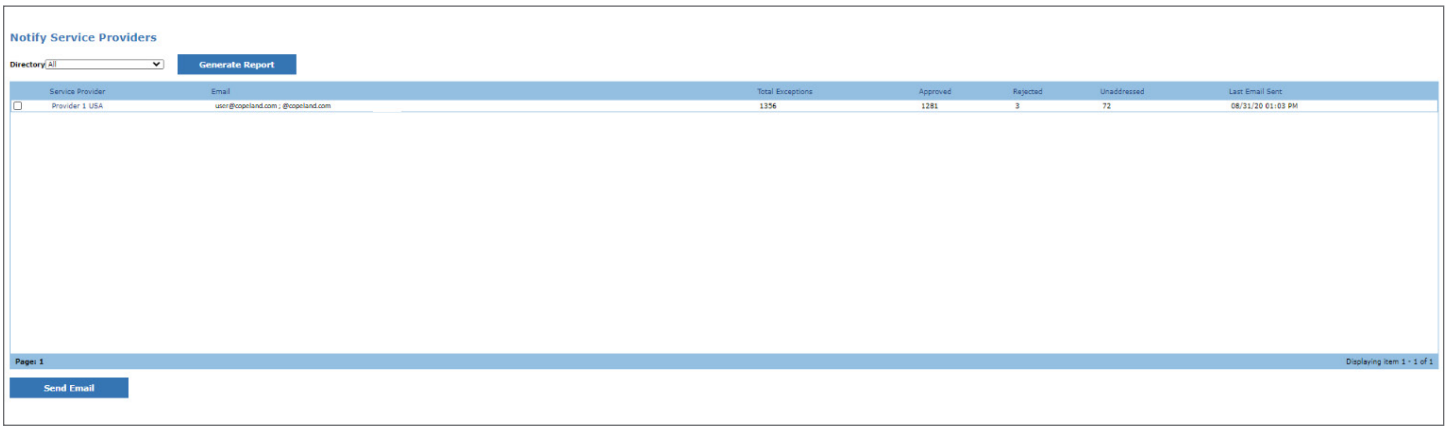
7. Notify Service Providers

After Approve or Reject Changes, users can send an email message to notify a Service Provider of the status of setpoint changes that have been made.

Click the **Top Menu** > **Setpoints** > **Energy Specialist** > **Notify Service Provider** or expand the Setpoints menu on a directory level (right-click menu) then click **Notify Service Providers**.



Notify Service Providers

- User Chooses Directory
- Clicks **Generate Reports**
- Chooses a Service Provider
- Click **Send Email**

An email will be sent to the address listed in the **Email** column. Once the Service Provider receives the email, they can access details by clicking a URL contained in the message.

This URL will direct them to the Service Provider Setpoint Exceptions page where they can access approval and rejection details regarding the setpoint changes they made.

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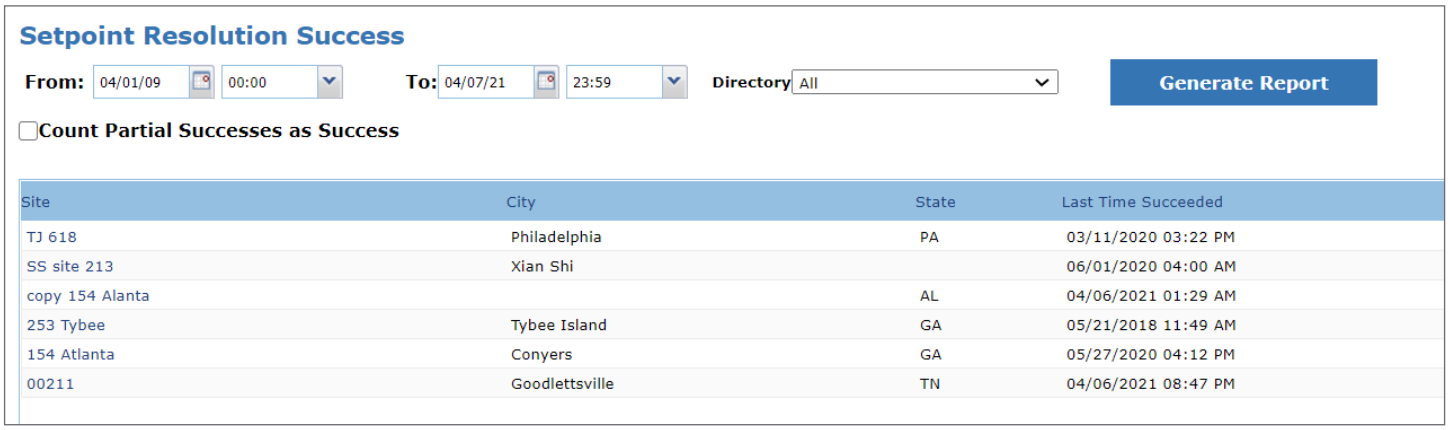
8. Review Success & Failure for Troubleshooting

8.1 Setpoint Resolution Success

The Setpoint Resolution Success Report gives a historical view of the sites on which the report was run and was completed (read only). To access this page, select **Top Menu** > **Setpoints** > **Energy Specialist** > **Setpoint Resolution Success**, or right-click a directory on the navigation tree then hover the cursor over Setpoints and click S**etpoint Resolution Success**.



Setpoint Resolution Success

You can filter this report by configuring the following:

- **From/To** - The date and time range you enter will result in reports between those dates and times. Enter a date and/or time in the From and To fields or click to select from the calendar window.
- **Directory** - The specific directory from where you wish to generate the reports. Scroll down and select the directory from the drop-down (default is set to All).
- **Count Partial Successes as Success** - Enable this checkbox to include sites on which the report was run but was only partially completed.

Click the **Generate Report** button to generate the report.

- **Site** - the site on which setpoint resolution was run (a hyperlink)
- **City/State** - the physical location of the site
- **Last Time Succeeded** - if the Count Partial Successes as Success checkbox is enabled, the value will be the most recent date of either a partially successful or completed activity, or the value will be the most recent completed date.

Click the column headers to sort the list.

8.2 Setpoint Resolution Failures

The data collection process for sites can fail for a variety of reasons. The Setpoint Resolution Failure Report gives a historical view of the sites on which the report was run, but was not completed or failed. This report shows results of the report, any failures, on which sites data collection was last successful, site, and service provider information. To access this page, select the**Top Menu** > **Setpoints** > **Energy Manager** > **Setpoint Resolution Failures,** or right-click a directory on the navigation tree, then hover the cursor over Setpoints and click **Setpoint Resolution Failures**.

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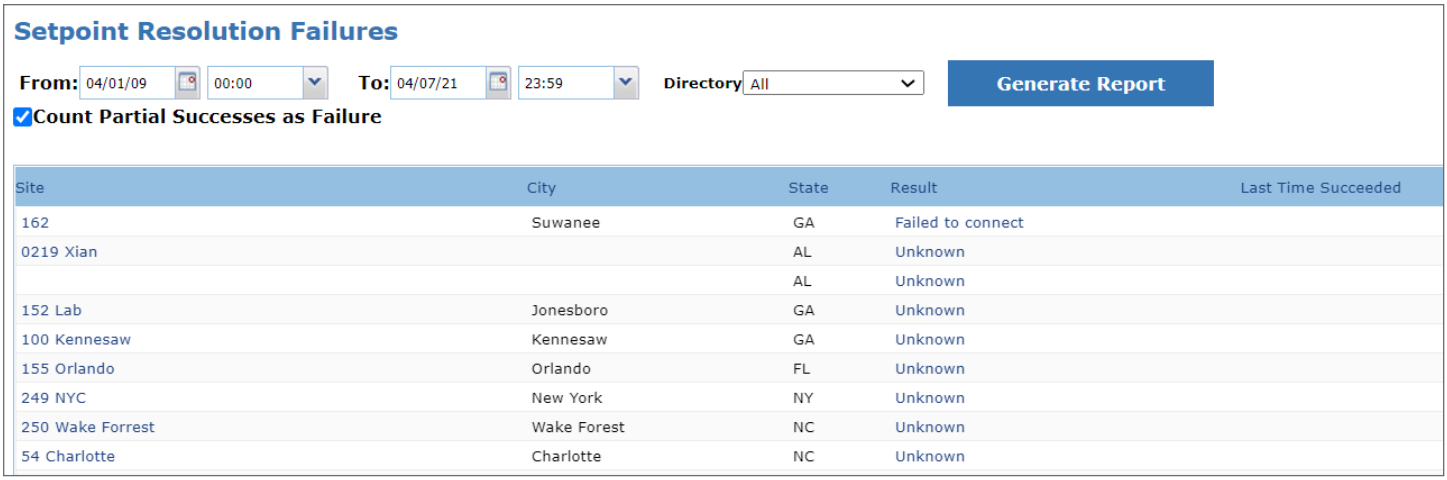

Setpoint Resolution Failures

Filter the list to display by selecting values from the following:

- **From/To** - The date and time range you enter will result in reports between those dates and times. Enter a date and/or time in the **From** and **To** fields or click to select from the calendar window.
- **Directory** - The specific directory from which you want to generate the reports. Scroll down and select the directory from the drop-down (default is set to **All**).
- **Count Partial Successes as Failure** - click the checkbox to include sites on which Setpoint Resolution activity was run, but was only partially completed. Disabling the checkbox will show only the sites that failed to run the activity.

When the filters are set, click the **Generate Report** button to generate the report.

- **Site** - the site on which setpoint resolution was run (a hyperlink); clicking the site name will open the site's properties page.
- **City/State** - the physical location of the site.
- **Result** - describes the result after the activity was run.

Result	Definition
Never Ran	Setpoint Resolution was never run for this site.
Unknown	The activity was either failed or partially completed (a hyperlink); click to open the Activity History - Results page of the site (the page will display all setpoint resolution activities of the site by default).

- **Last Time Succeeded** - the date when setpoint resolution was last run and completed

Sort the list by clicking the column headers.

To export the list, click the **Excel** icon.

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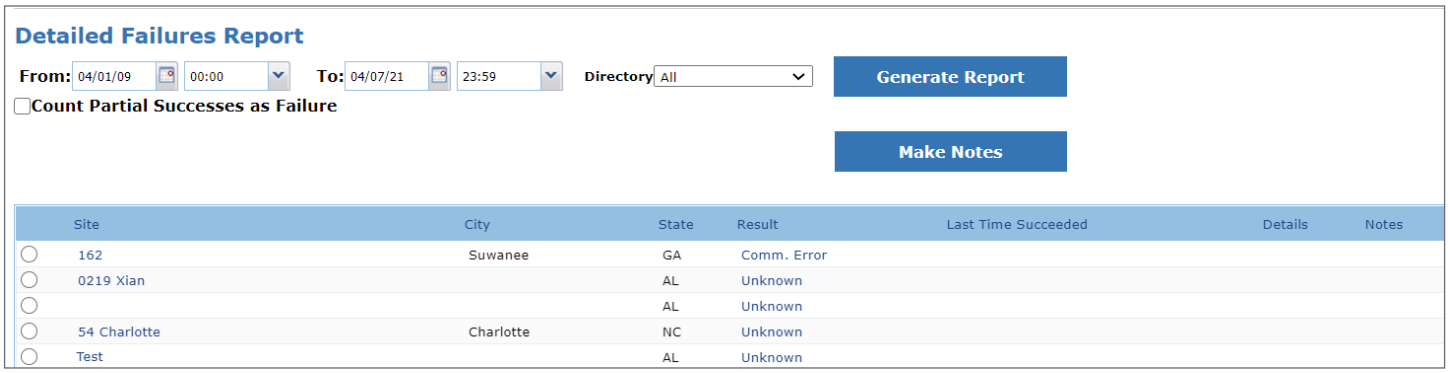
8.3 Detailed Failures Report

The Detailed Failures Report shows the list of sites on which setpoint resolution or create setpoint benchmarks (or both) activities were run, but were not completed or failed. This report is similar to the Setpoint Resolution Failures report except that this report shows failure details, displays recommendations on how to fix errors, and allows the energy specialist to enter notes about the failure. Select **Top Menu** > **Setpoints** > **Energy Specialist** > **Detailed Failures Report**, or right-click a directory on the navigation tree, then hover the cursor over Setpoints and click **Detailed Failures Report**.



Detailed Failure Report

Filter this report by selecting values from the following:

- **From/To** - The date and time range entered will result in reports between those dates and times. Enter a date and/or time in the **From** and **To** fields, or click to select from the calendar window.
- **Directory** - The specific directory from which to generate the reports. Scroll down and select the directory from the drop-down (default is set to **All**).
- **Count Partial Successes as Failure** - Enable this checkbox to include sites on which activities were run, but were only partially completed. Disabling the checkbox will show only the sites that failed to run an activity.

When the filters are set, click the **Generate Report** button to generate the report.

- **Site** - the site on which an activity was run (a hyperlink); clicking the site name will open the site's properties page.
- **City/State** - information on the physical location of the site
- **Result** - a brief description of the activity failure. If the Result is not "Never Ran", the value will be displayed as a hyperlink; click to open the Activity History Results page.
- **Last Time Succeeded** - the date when the activity was last performed successfully (dependent on the type of activity that was run). If the Count Partial Successes as Failure checkbox is disabled, the value will be the most recent date of either a partially successful or completed activity, or the value will be the most recent completed activity date.
- **Details** - displays a detailed information of the failure and a list of actions that can be performed to fix the failure.
- **Notes** - any message that was entered by the energy specialist about the reported failure. To add notes, click the appropriate radio button from the first column and click the **Make Notes** button. The Edit Notes pop-up window will open. Enter any notes there and click **OK**.

  NOTE: *The Add/Edit Notes feature in this page is disabled for sites with a "Never Ran" result.*

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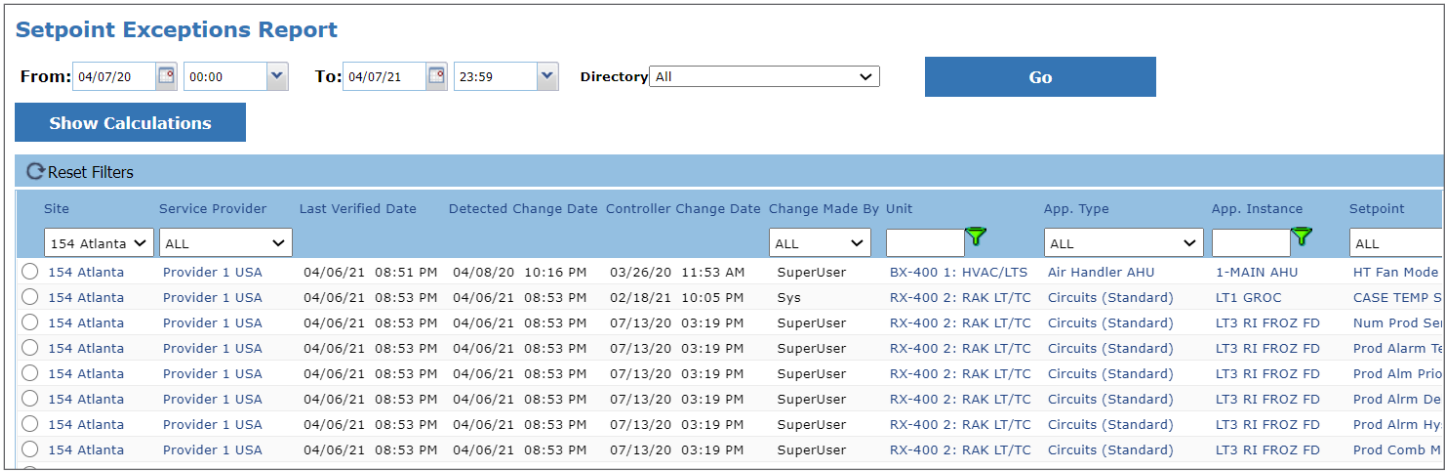
9. Review Setpoint Exceptions Report

9.1 Setpoints Exceptions Report

After Setpoint Resolution has been run, the energy manager can create a read-only Setpoint Exceptions report that will show all setpoints that have been changed, comments, and more. This report is similar to the Approve or Reject Changes report except that the energy specialist takes action on the Accept or Reject report and the energy manager runs the Setpoint Exceptions report to view the state of setpoint exceptions and evaluate progress.

Run the Setpoint Exceptions report from **Top Menu** > **Setpoints** > **Energy Manager** > **Setpoint Exception Report** or right-click a directory on the navigation tree then hover cursor over Setpoints and click **Setpoint Exception Report.**



Setpoint Expectations Report

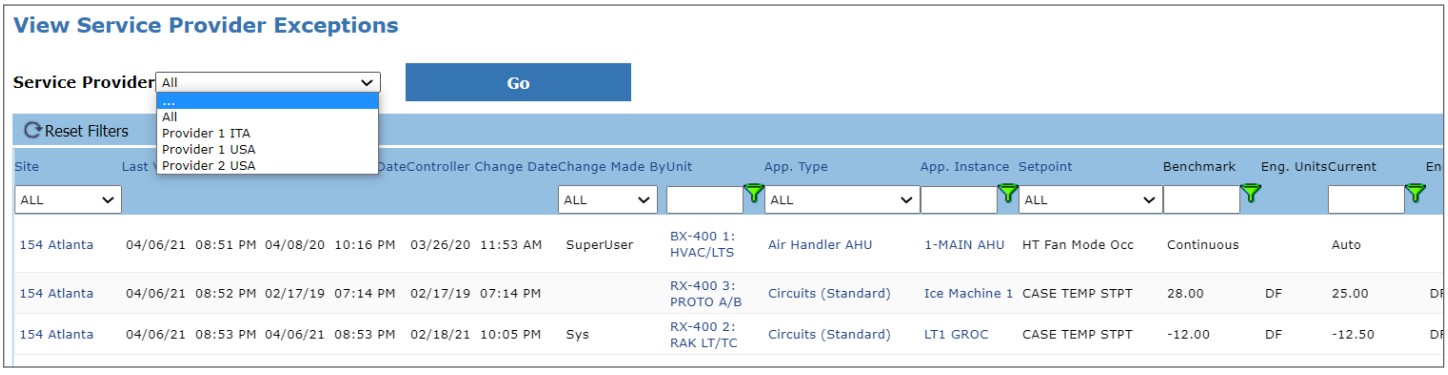
From this report, an energy manager can see comments for the setpoint exception made by the energy specialist and the Service Provider's response. When a setpoint exception has been approved at the onset or fixed, the setpoint exception is deleted from the system and will not reappear. This information can also be exported to an .xls.

The progress of setpoint exceptions is found under the **Status** column of this report. This progress is the exchange of communication between the setpoint specialist and the Service Provider on a setpoint exception (refer to *"Setpoint Exception Status and Definitions" on page 17*).

9.2 View Service Provider Exceptions

This report enables you to generate and view all setpoint exceptions created by a Service Provider. To access this report, click **Top Menu** > **Setpoints** > **Energy Manager** > **View Service Provider Exceptions.**

Scroll down and select a Service Provider from the drop-down and click **Go** to generate the report. A listing of all the exceptions made by the chosen Service Provider will display.



Service Provider Exceptions

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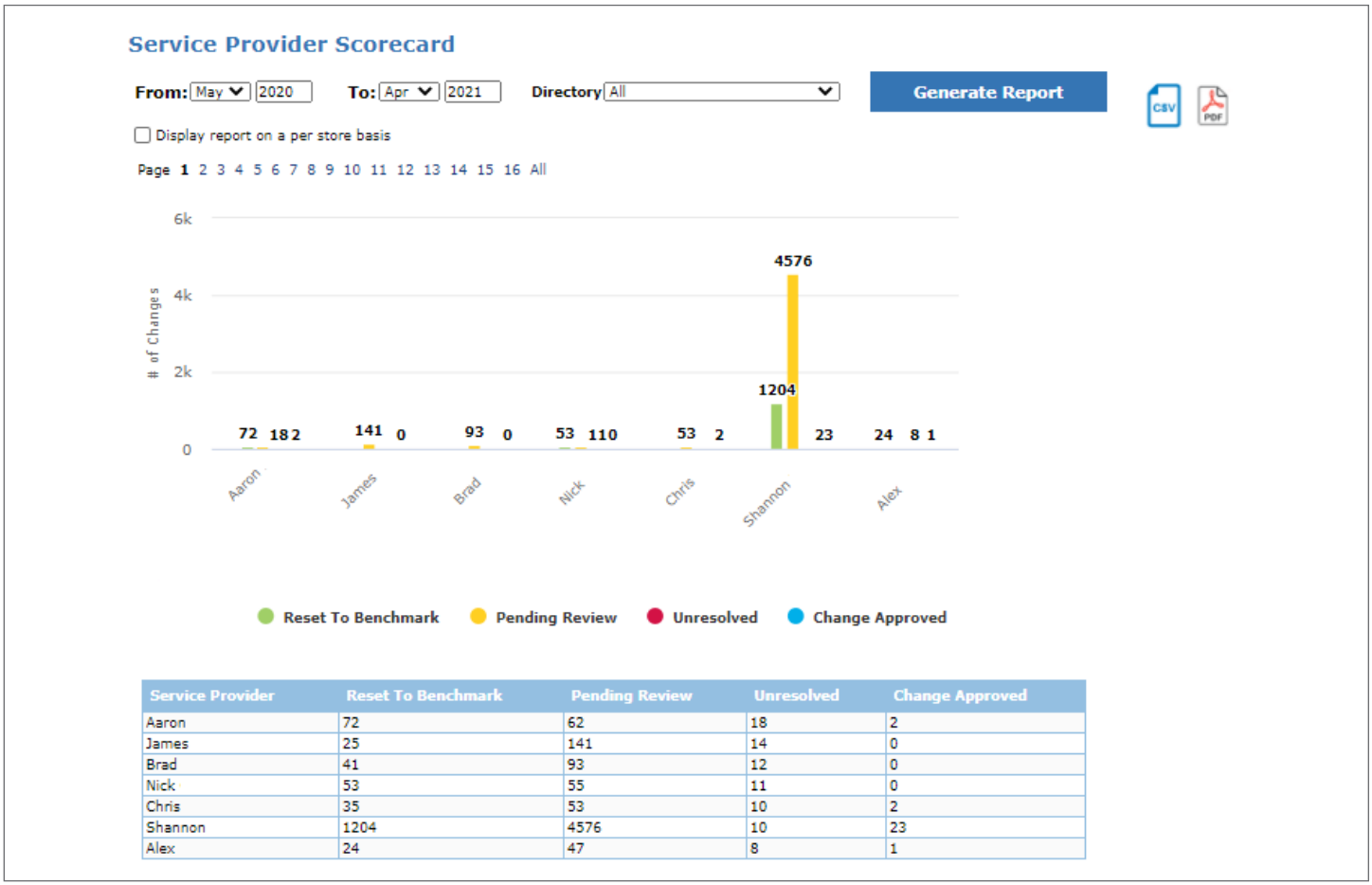
9.3 Service Provider View My Exceptions

This report enables Service Provider to generate and view all setpoint exceptions created by himself. To access this report, click **Top Menu** > **Setpoints** > **Service Provider** > **View My Setpoint Exceptions**.

9.4 View Service Provider Performance

Service Provider scorecard is a report that shows a current snapshot within a graph format of a Service Provider's performance, ranked in order of which Service Provider made the most mistakes within a selected date range.

To access this page, click the **Top Menu** > **Setpoints** > **Energy Manager** > **Service Provider Scorecard**.



Service Provider	Reset To Benchmark	Pending Review	Unresolved	Change Approved
Aaron	72	62	18	2
James	25	141	14	0
Brad	41	93	12	0
Nick	53	55	11	0
Chris	35	53	10	2
Shannon	1204	4576	10	23
Alex	24	47	8	1

Service Provider Scorecard

- **Reset to Benchmark** (the least favorable score a Service Provider can achieve) - shows which Service Providers had the highest number of their setpoint changes corrected (reverted back to the benchmark).
- **Pending Review** shows which Service Providers had the highest number of their setpoint changes initially disputed by the energy specialist and are still waiting on an action from the Service Provider.
- **Unresolved** shows which Service Providers made setpoint corrections that were rejected by the energy specialist but are still currently unresolved because the Service Provider has not made the necessary corrections to resolve the setpoint exception.
- **Change Approved** (the most favorable score a service provider can achieve) - shows which Service Providers made setpoint changes and were approved by the energy specialist (only exceptions which were rejected by the energy specialist and were approved later are counted).
- To export the report, select from the available export options: export to spreadsheet or export to PDF.

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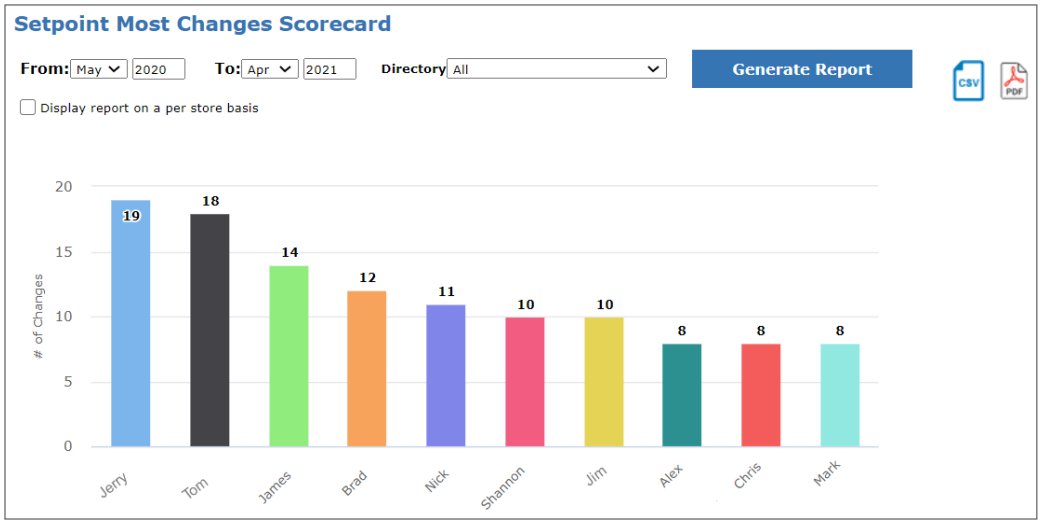
9.5 Service Provider Most Changes Scorecard

The Most Changes Scorecard shows the Service Providers with the most setpoint changes within a selected date range. This report calculates a "store to changes" ratio only - NOT an overall comparison ranking of Service Providers between other Service Providers in the system. This report shows which Service Providers individually have the most changes on a store basis only.

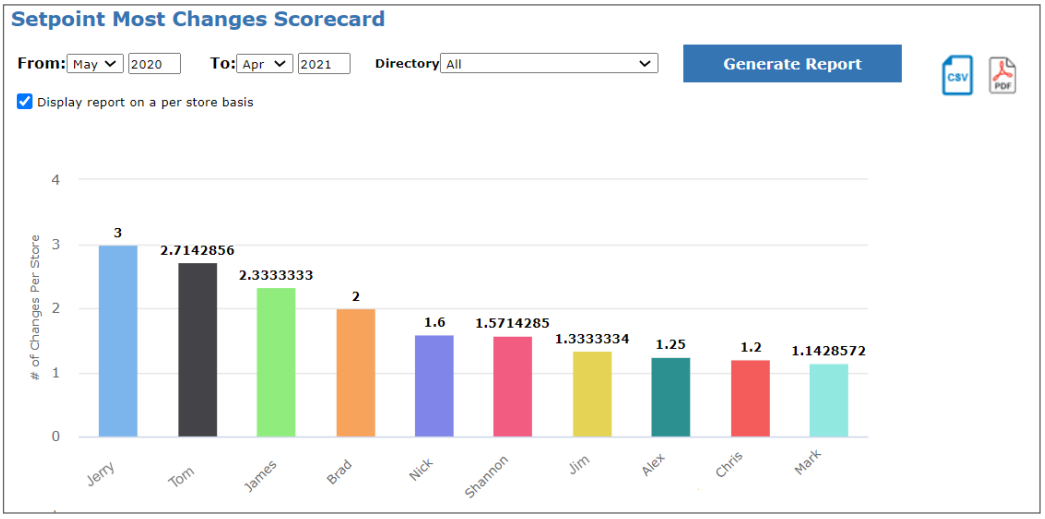
Run this report from **Top Menu** > **Setpoints** > **Energy Manager** > **Most Changes Scorecard** or select **Most Changes Scorecard** from a directory level of the navigation tree (right- click menu).



Setpoint Changes Scorecard

Enter the desired date range in the **From** and **To** fields and click **Generate Report**. (You can filter this report further by selecting a directory or a site from the Directory drop-down).

Enable the **Display report on a per store basis** checkbox to display the graph by the AVERAGE number of changes made by a Service Provider (per directory or site that is indicated in the **Directory** filter), or disable to display by the ACTUAL number of changes.



Setpoint Changes Scorecard Per Store

In the graph, the order of appearance of the service provider (from left to right) is from the most number of changes to the least number of changes made.

To export the report, select from the available export options: export to spreadsheet or export to PDF.

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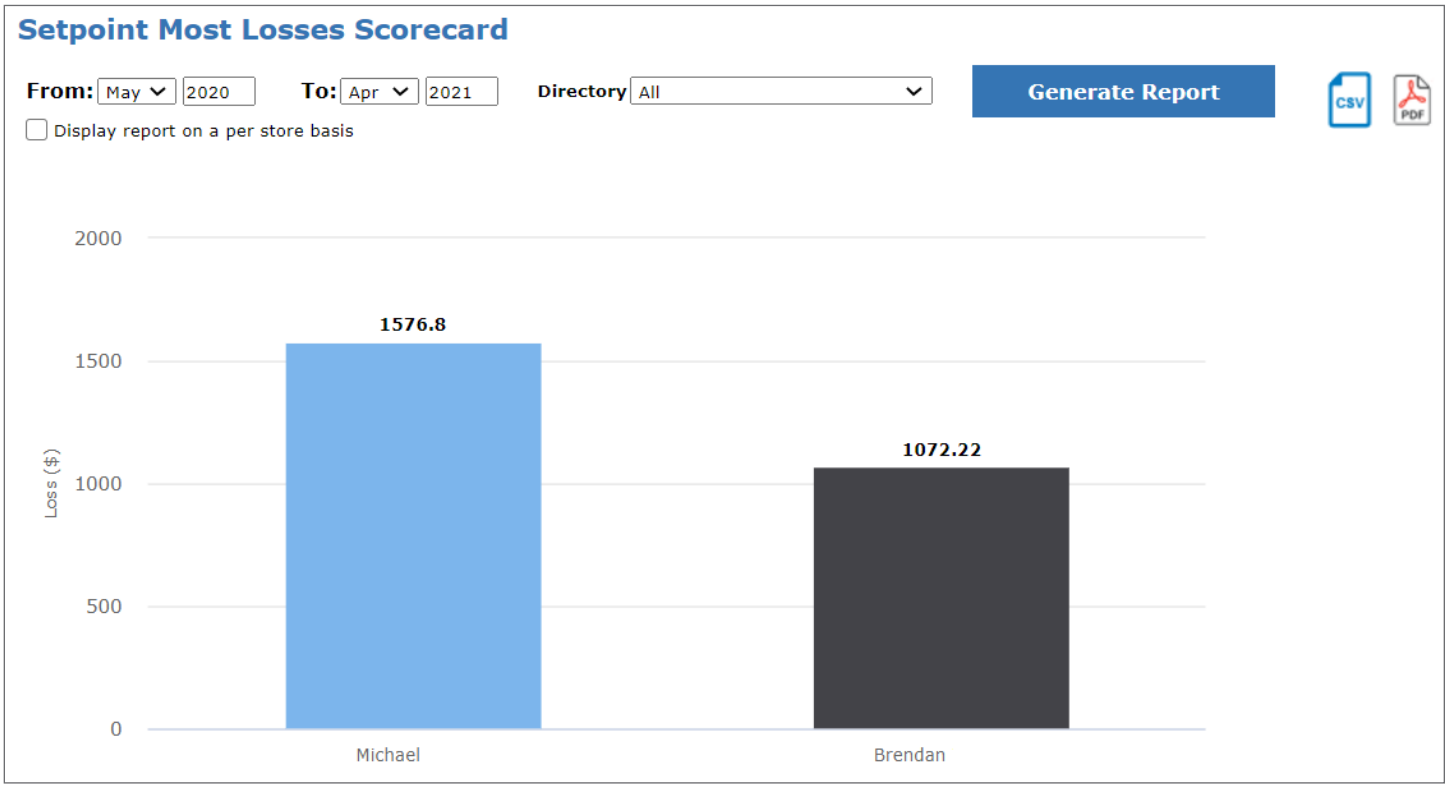
9.6 Service Provider Most Losses Scorecard

The Most Losses Scorecard shows the Service Providers with the most losses in dollar amount during a selected date range due to the setpoint changes they have made. This report is NOT an overall comparison ranking of Service Providers between other Service Providers in the system. This report shows which Service Providers individually have caused the most loss in dollar amount on a store basis only.

Run this report from the **Top Menu** > **Setpoints** > **Energy Manager** > **Most Losses Scorecard** or select Most Losses Scorecard or from a directory level of the navigation tree (right- click menu).

Enter the desired date range and click **Generate Report**.



Setpoint Losses Scorecard

Enable the **Display report on a per store basis** checkbox to display the graph by the AVERAGE number of changes made by a Service Provider (per directory or site that is indicated in the **Directory** filter), or disable to display by the ACTUAL number of changes.

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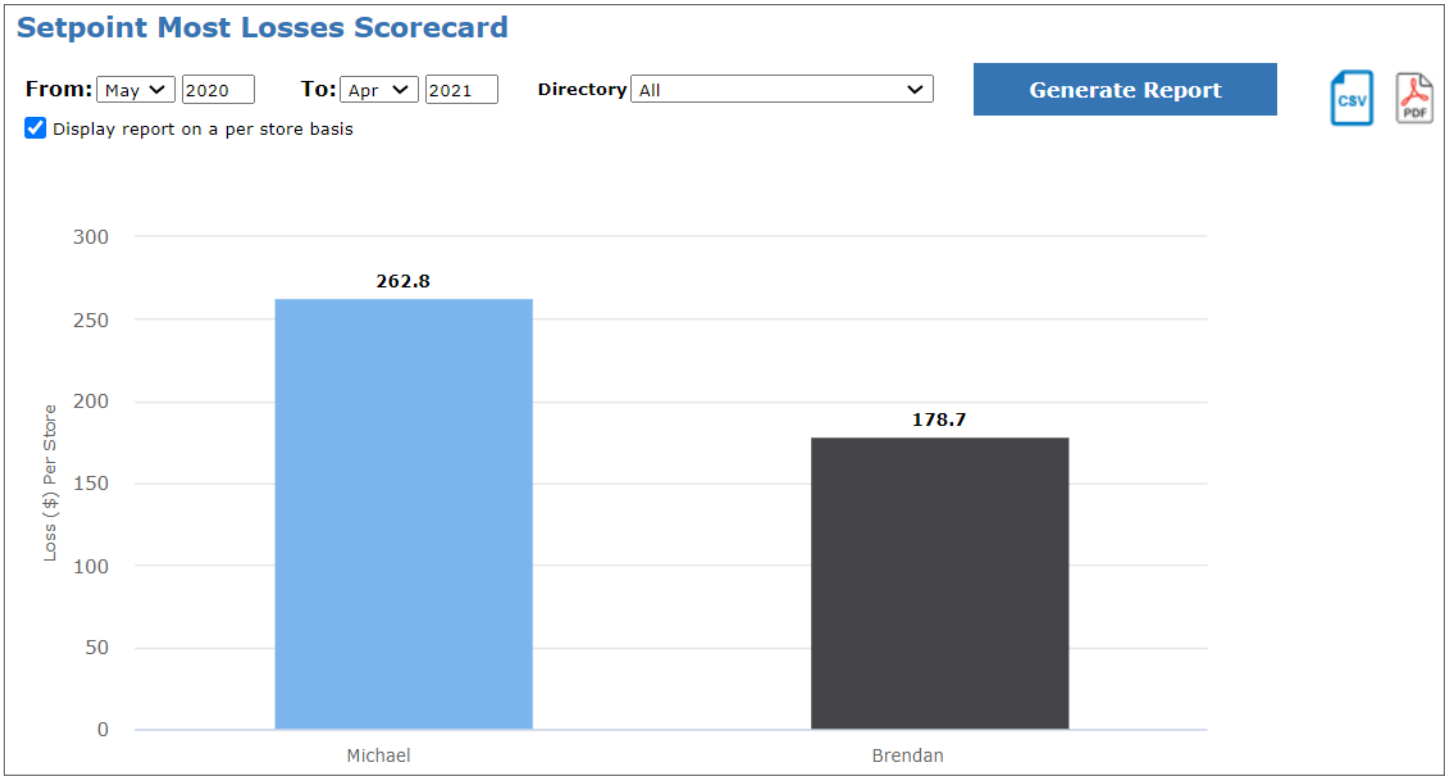

Setpoint Losses Scorecard Per Store

In the graph, the order of appearance of the contractors (from left to right) is from the most amount of losses to the least amount of losses made.

To export the report, select from the available export options: export to spreadsheet or export to PDF.

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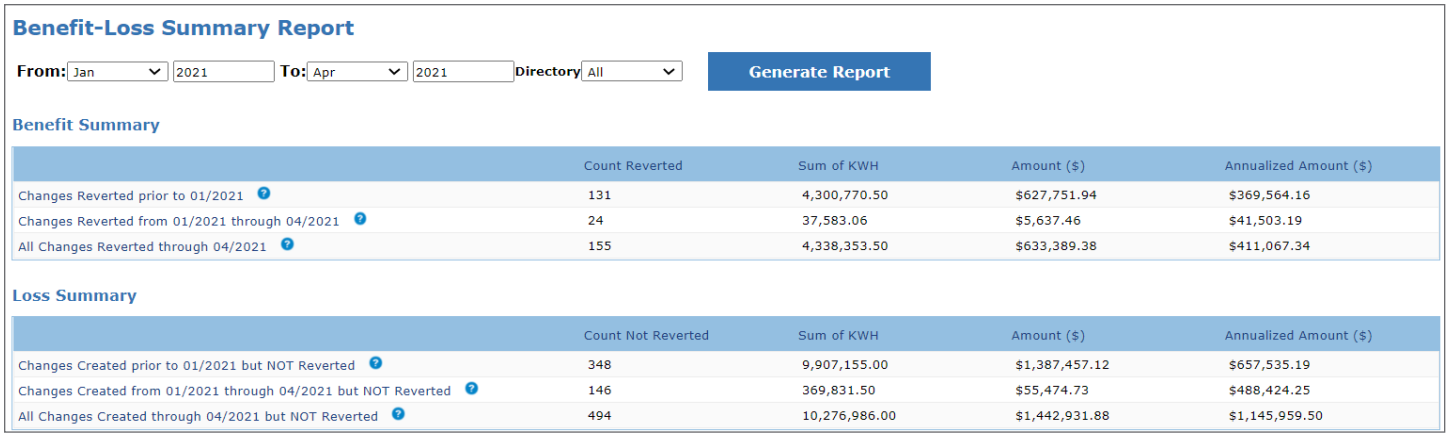
10. Review Benefit-Loss Summary

The Benefit-Loss Summary Report shows how much in dollar amount a company profited and lost during a selected accounting time period as a result of setpoint resolutions, and how much in dollar amount is carried forward over a 12-month period. Run the Benefit-Loss Summary report from the **Top Menu** > **Setpoints** > **Energy Manager** > **Benefit-Loss Summary** or from a directory level of the navigation tree.



Benefit-Loss Summary Report

From: Jan 2021 To: Apr 2021 Directory All Generate Report

Benefit Summary

	Count Reverted	Sum of KWH	Amount ($)	Annualized Amount ($)
Changes Reverted prior to 01/2021	131	4,300,770.50	$627,751.94	$369,564.16
Changes Reverted from 01/2021 through 04/2021	24	37,583.06	$5,637.46	$41,503.19
All Changes Reverted through 04/2021	155	4,338,353.50	$633,389.38	$411,067.34

Loss Summary

	Count Not Reverted	Sum of KWH	Amount ($)	Annualized Amount ($)
Changes Created prior to 01/2021 but NOT Reverted	348	9,907,155.00	$1,387,457.12	$657,535.19
Changes Created from 01/2021 through 04/2021 but NOT Reverted	146	369,831.50	$55,474.73	$488,424.25
All Changes Created through 04/2021 but NOT Reverted	494	10,276,986.00	$1,442,931.88	$1,145,959.50

Benefit-Loss Summary Report

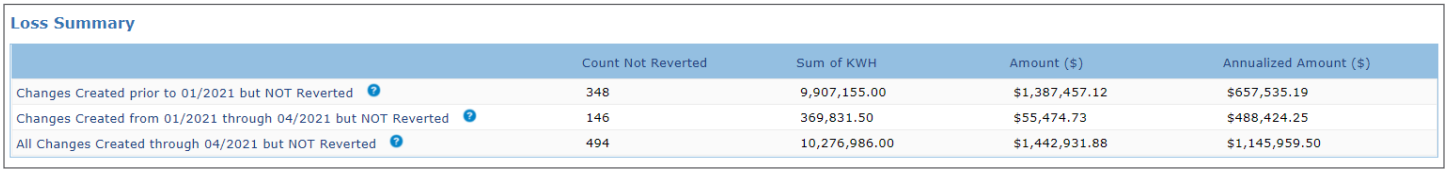
The Benefit-Loss Summary Report can be filtered. To do this, enter or select a value the from the filters:

- **From/To** - The date range you enter will result in reports between those dates. Select a month from the drop-downs (default month for the **From** filter is Jan, and the current month for the **To** filter) and enter a year to specify the year of the month selected (default year is set to the current year).
- **Directory** - The specific directory from where the reports should be generated. Scroll down and select the directory from the drop-down (default is set to All).

When the filters are set, click the **Generate Report** button to generate the report.

10.1 Loss Summary

The Loss Summary section reports the dollar amounts the company LOST during the selected accounting period due to setpoint exceptions that were unresolved. If these setpoint exceptions had been found and corrected, a dollar amount in SAVINGS would have been reported.



Loss Summary

	Count Not Reverted	Sum of KWH	Amount ($)	Annualized Amount ($)
Changes Created prior to 01/2021 but NOT Reverted	348	9,907,155.00	$1,387,457.12	$657,535.19
Changes Created from 01/2021 through 04/2021 but NOT Reverted	146	369,831.50	$55,474.73	$488,424.25
All Changes Created through 04/2021 but NOT Reverted	494	10,276,986.00	$1,442,931.88	$1,145,959.50

Loss Summary

The following rows and columns divide the Loss Summary table:

- **Changes Created prior to MM/YYYY but NOT Reverted** - shows the amount of money lost prior to specified time period because the Service Provider failed to go back and revert the setpoint exception that was found and left unresolved. Click this link to view the setpoint exception details.
- **Changes Created from MM/YYYY through MM/YYYY but NOT Reverted** - shows the amount of money lost prior to specified time period because the Service Provider failed to go back and revert the setpoint exception that was found and left unresolved. Click this link to view the setpoint exception details.

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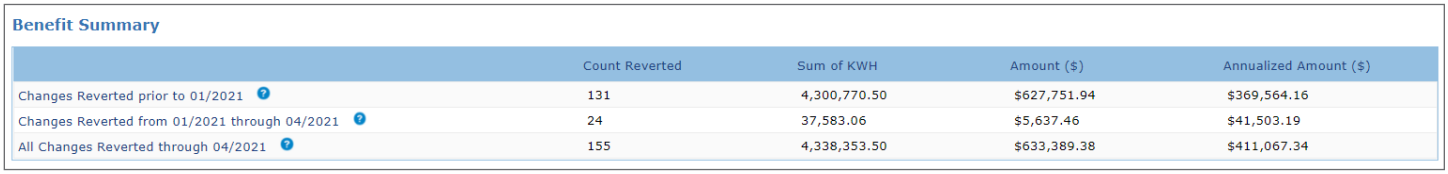
- **ALL Changes Created through MM/YYYY but NOT Reverted** - shows the dollar amount of money lost during that time period because the Service Provider failed to go back and revert the setpoint exception. Click this link to view the setpoint exception details.
- **Count Not Reverted** - the number of setpoint exceptions that were rejected by energy specialists but remained unchanged instead of being set back to the benchmark value, subsequently resulting in a loss. These are setpoint exceptions that were found to be made erroneously.
- **Sum of KWH** - the sum of KWH for the time period selected in the filter, for example, Jan '10 to Jun '10.
- **Amount** - amount of LOSSES in dollars for the time period selected in the filter, for example, Jan '10 to Jun '10.
- **Annualized Amount** - the loss in dollar amount: this is the amount of money that IS LOST over a time period of 12 months because the setpoint exceptions were unresolved.

10.2 Benefit Summary

The Benefit Summary section reports in dollar amount money the company SAVED during the selected accounting period due to setpoint exceptions being created and then resolved, which results in a quantitative amount of savings that can be reported in dollar amount.



Benefit Summary

	Count Reverted	Sum of KWH	Amount ($)	Annualized Amount ($)
Changes Reverted prior to 01/2021	131	4,300,770.50	$627,751.94	$369,564.16
Changes Reverted from 01/2021 through 04/2021	24	37,583.06	$5,637.46	$41,503.19
All Changes Reverted through 04/2021	155	4,338,353.50	$633,389.38	$411,067.34

Benefit Summary

The Benefit Summary table is divided into rows and columns:

- **Changes Reverted prior to MM/YYYY** - shows the amount of money saved during the accounting period in which the setpoint changes were resolved PRIOR to the start of that time period. Click this link to view the setpoint exception details.
- **Changes Reverted from to MM/YYYY through MM/YYYY** - shows the amount of money saved during the accounting period in which the setpoint changes were resolved DURING that time period. Click this link to view the setpoint exception details.
- **ALL Changes Reverted through to MM/YYYY** - shows the dollar amount of savings during that time period due to changes being reversed back to the benchmark value. Click this link to view the setpoint.
- **Count Reverted** - shows the number of setpoint exceptions that were rejected by energy specialists and subsequently reverted back to the benchmark value.
- **Sum of KWH** - the sum of KWH for the time period selected in the filter, for example, Jan '10 to Jun '10.
- **Amount** - the amount of SAVINGS in dollars for the time period selected in the filter, for example, Jan '10 to Jun '10.
- **Annualized Amount** - the loss in dollar amount: this is the amount of money that WOULD HAVE BEEN LOST over a time period of 12 months if the setpoint exceptions had not been resolved.

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Appendix: Engineering Units Table

Suffix	Unit	Suffix	Unit	Suffix	Unit
%	Percent	**DFC**	C per Hour	**LPS**	Liters per Second
A	Amps	**DFH**	F per Hour	**LUX**	lux
BAR	Bars	**DFM**	F per Minute	**M**	Meters
CCF	Cubic Centi-Feet	**DINW**	Differential Inches of Water	**MA**	Milliamps
CCFH	Cubic Centi-Feet per Hour	**DKPA**	Differential in Kilopascals	**MPM**	Meters per Minute
CF	Cubic Feet	**DPA**	Differential in Pascal's	**MPS**	Meters per Second
CFM	Cubic Meters per Minute	**DPSI**	Differential Pressure in PSI	**OHM**	ohms
CM	Cubic Meters	**FPM**	Feet per Minute	**PA**	Pascal's
CMS	Cubic Meters per Second	**FT**	Feet	**PCT**	Percent
CMW	cm of Water	**FTC**	Foot-Candles	**PPM**	Parts per Million
DBAR	Differential in Bars	**GAL**	Gallons	**PSI**	Pounds per Square Inch
DC	Degrees C	**GPM**	Gallons per Minute	**RH**	Relative Humidity
DCM	C per Minute	**INW**	inches of Water	**RPM**	Revolutions per Minute
DCMW	Differential CM of Water	**KPA**	Kilopascals	**RPMM**	RPM per Minute
DDC	Delta Degrees C	**KW**	Kilowatts	**V**	Volt
DDF	Delta Degrees F	**KWH**	Kilowatts Hours	**W**	Watts
DF	Degrees F	**L**	Liters	**WH**	Watt-Hours

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