CxDocs™
provided by CxSolutions

User Manual

Version 1.0

8/20/2014

This User Manual provides instructions on how to use CxDocs to complete forms and develop commissioning documents.

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Table of Contents

1. Introduction 1
   - Assumptions 1
   - Supported Web Browsers 2
   - Features and Conventions of this Manual 2
   - Advantages and Limitations 2
   - Getting Help 3
   - Feedback 3

2. Dashboard 4

3. Owner's Project Requirements (OPR) 9

4. Basis of Design (BOD) 16

5. Commissioning Specification (Cx Spec) 29

6. Commissioning Plan (Cx Plan) 30

7. Checklists 32

8. Functional Performance Tests (FPT) 33

9. Issues Log 36

10. Systems Manual 38

11. Operation & Maintenance Staff Training (Training) 54

12. Commissioning Report (Cx Report) 56

13. Appendix – Basis of Design System Configurations

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1. Introduction

CxDocs™ is a web application designed to assist you in the development and management of your building commissioning documentation. The application guides you step-by-step through the commissioning documentation development process, providing form fields where you enter information and then generating your building commissioning documentation.

Project information entered in one form field will replicate to all documents where the information is required. For example, once you enter the project name, it appears in all the commissioning documents. This is also true for technical information when entered once, will appear in all applicable commissioning documents.

After you complete the form fields, CxDocs™ generates the following reports and tests:

- Owner's Project Requirements (OPR)
- Basis of Design (BOD)
- Commissioning Specification (Cx Spec)
- Commissioning Plan (Cx Plan)
- Functional Performance Tests (FPT)
- Issues Log
- Systems Manual
- Training Report
- Commissioning Report (Cx Report)

CxDocs™ generates functional performance tests based upon information you enter. These functional performance tests are generic in nature; however, you can customize the test procedures and expected results. Equipment checklists are also provided for your use; however, the checklists are not customized from the various form fields.

Assumptions

To be successful in using the application we make the following assumptions about your ability and knowledge:

- You are comfortable using a computer, mouse, and keyboard
- You have a good understanding of how to access the internet, use e-mail, and use web browsers to access web pages
- You have a basic understanding of building commissioning and the commissioning documents required for your project

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Supported Web Browsers

We support the following desktop browsers:

Microsoft Internet Explorer, Mozilla Firefox, Apple Safari, and Google Chrome. We typically support the latest version and the previous version of each browser release. We highly recommend you update to the newest version of your chosen browser. If you elect not to upgrade your web browser, your experience may not be optimal, or you may not be able to view forms and develop documents.

Features and Conventions of this Manual

Throughout this manual, the following conventions are utilized to guide you through information presented:

- **Bold** is used to indicate an action you are to conduct, such as Click **Save**, **Select**, etc. It may also be used for emphasis.
- *Italics* is used to highlight an action or step.
- Boxed Paragraph or Text, pay particular attention to these instructions, as they are very important to the success of developing various documents.

Advantages and Limitations

The advantages of CxDocs™ include:

- Simplifies the process of developing commissioning documentation
- Provides a consistent methodology for developing commissioning documentation
- Offers a step-by-step process for developing commissioning documents
- Reduces the entry of repetitive information
- All commissioning documents developed are based on Owner's Project Requirements, and Basis of Design

The limitations of CxDocs™ include:

- Suitable for typical buildings under 100,000 square feet
- Applicable for equipment and systems with simple control applications
- Only typical equipment and system configurations are available
- Customization of documents is limited

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Getting Help

Additional help can be located on the CxDocs™ main page under the

button. This page provides instructional videos, FAQ's, and updated documentation.

In the event you are having difficulty working with CxDocs™ and require assistance from our technical support group, please e-mail us at support@cx-solutions.com. Our technical support group typically responds to your request within 24 hours.

Feedback

Your feedback about CxDocs™ is greatly appreciated (positive, negative, or constructive). We understand that not one size fits all, so we strive to refine and improve on our web application to meet industry needs and requirements. Please send your feedback to feedback@cx-solutions.com.

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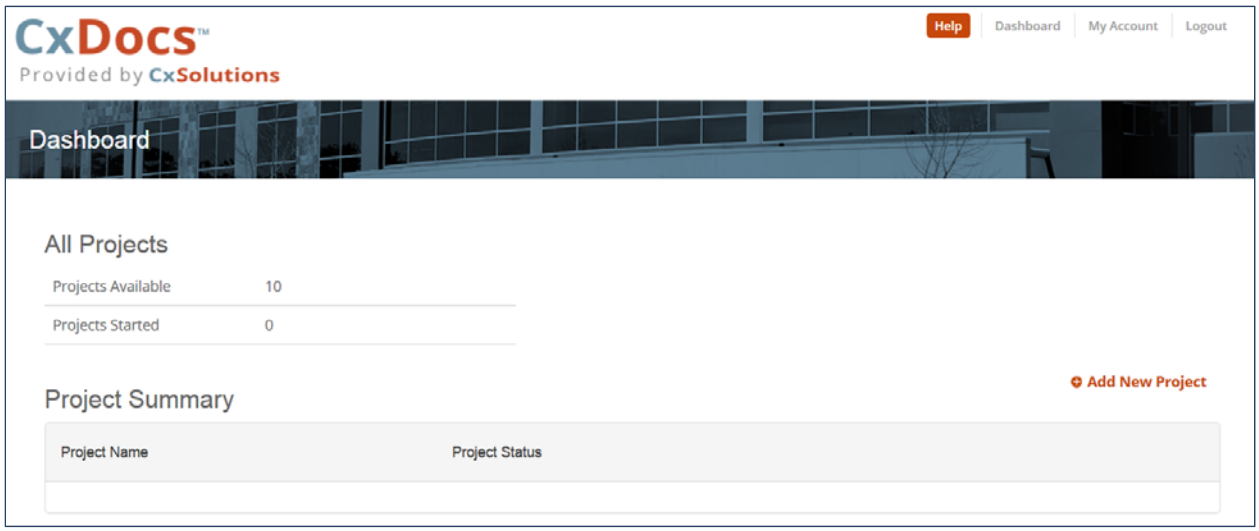
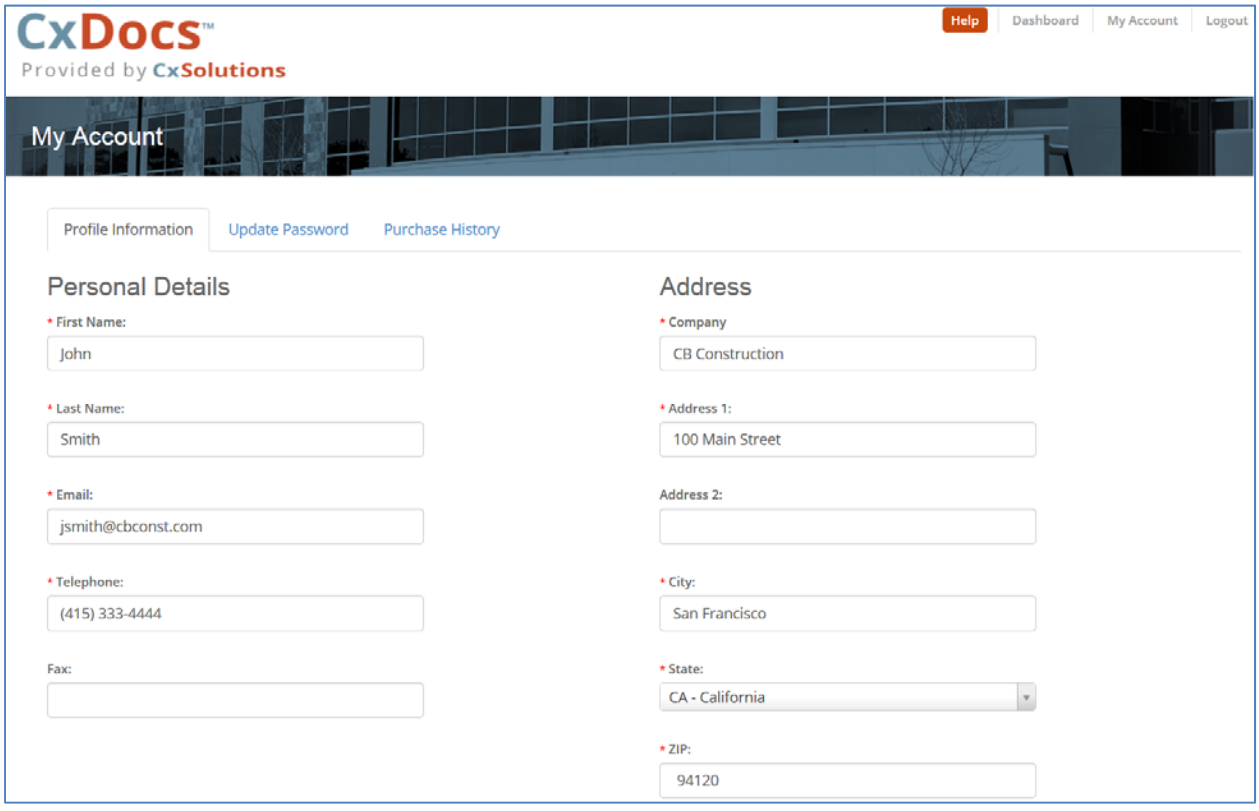
2. Dashboard

After the purchase process is complete, the Dashboard will appear. Your screen should look similar to the following illustration. This is the main page that shows all your projects including projects available, projects purchased and not yet started, and projects that you have started.



My Account – Profile Information and Logo Upload



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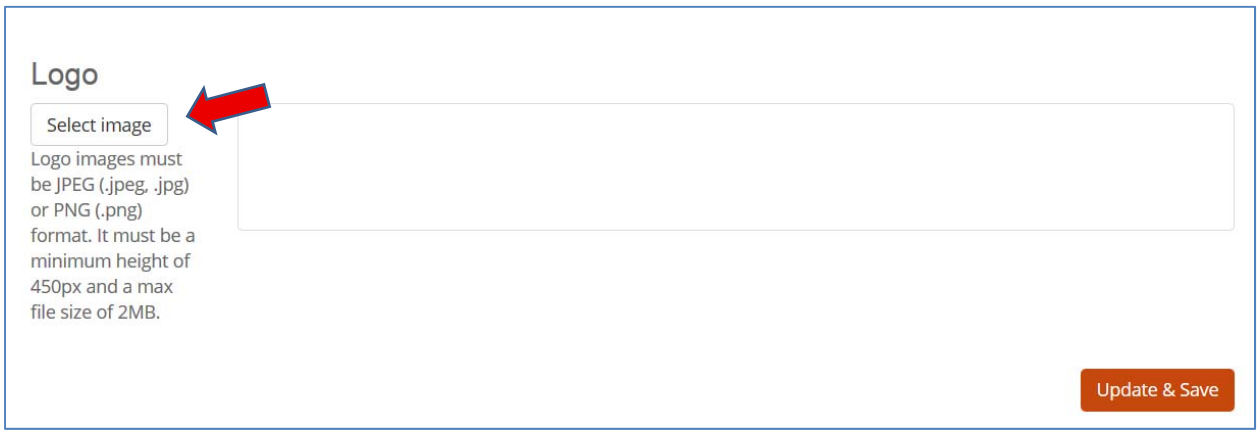
Personal Details: Information related to your personal details can be revised in this page. Simply click in a box to revise the information.

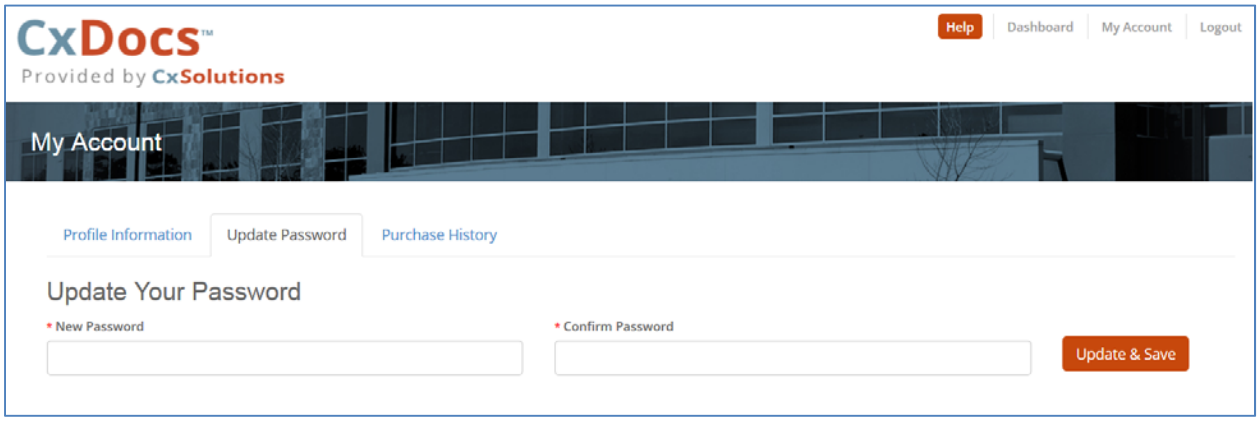
Inserting a company logo is optional and may be updated or removed. Click "**select image**" which takes you to your computer directory. Highlight the image from your directory, click "**open**" and your selected image will appear in the image box. Click **Update & Save** to upload the image.



You must adhere to the logo file requirements: Logo images must be JPEG (.jpeg, .jpg) or PNG (.png) format. Image must be a minimum height of 450 pixels and a maximum file size of 2MB. The logo may appear quite large; however, the logo image will be resized when it is inserted into the documents.

My Account – Update Password

This page allows the user to change their password. Enter the **New Password** in the textbox, Enter the Password again in the Confirm Password textbox. Click **Update & Save** to update the password.



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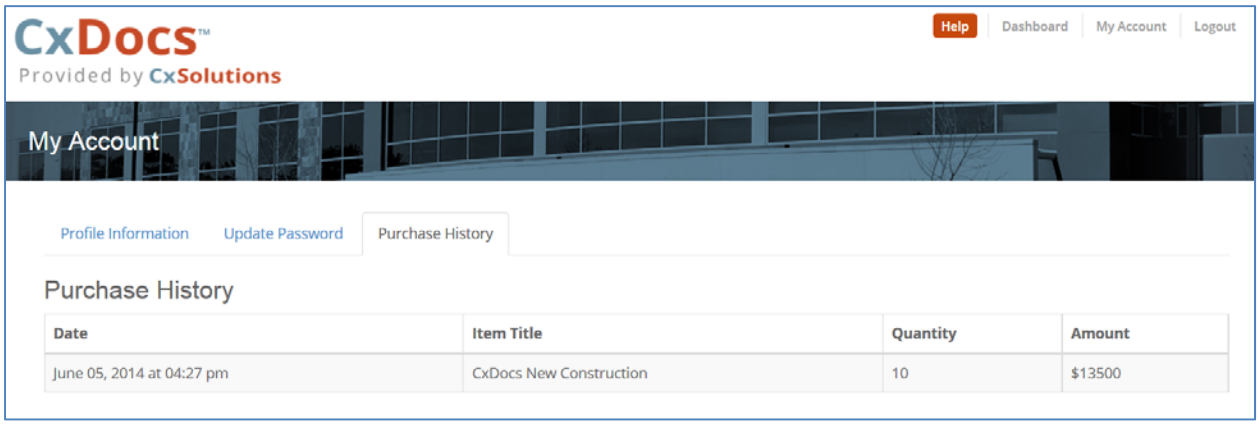
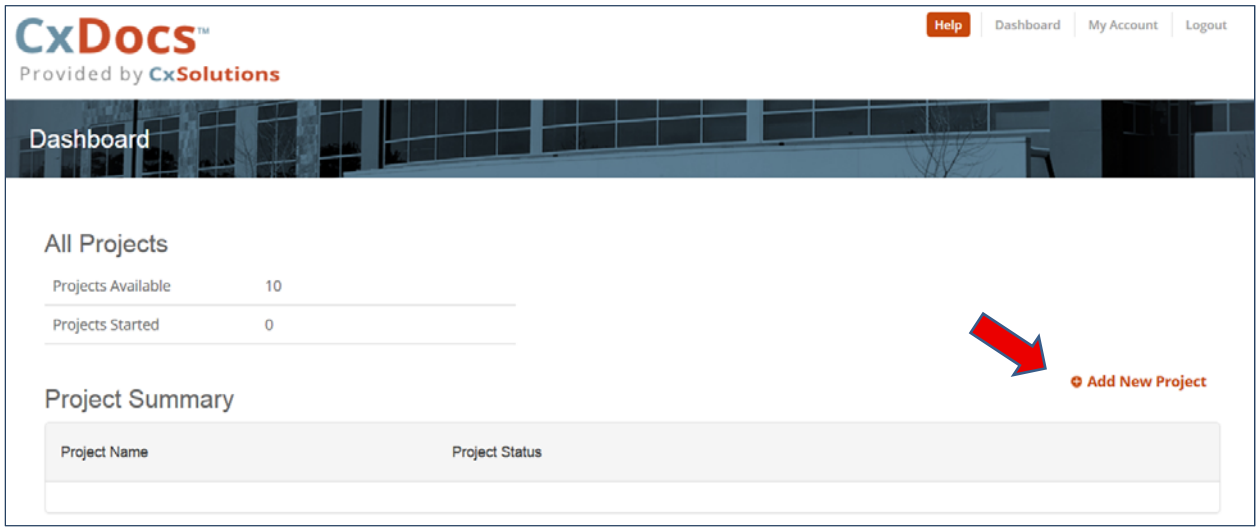
My Account – Purchase History

This page provides details about purchased items including date, items, quantity and dollar amount.



Starting Your Project

Once you have purchased one, or up to ten projects, you can see the number of "Projects Available". To start your first project, click **Add New Project**.



After you click **Add New Project,** a dialog box will appear where the **Project Name** must be entered. This is a short name or identifying name for the project, a longer more descriptive project name may be entered once the application is started.

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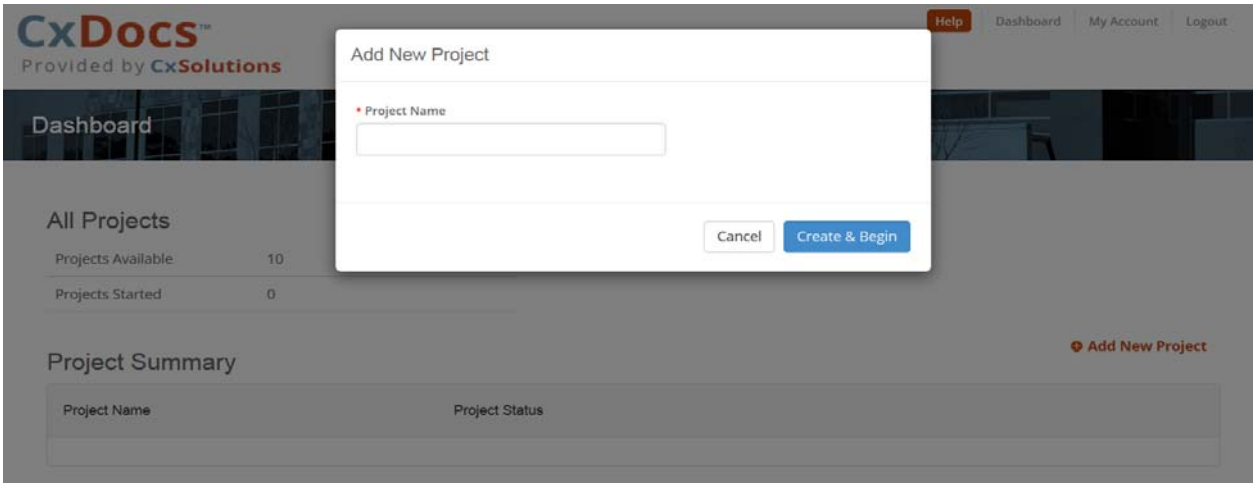
When you click **Create & Begin**, a single project will be deducted from the number of Projects Available. You *cannot* delete or reverse this process.



Once the Project Name is entered click **Create & Begin** to start your project and the Owner's Project Requirements (OPR) page will open.

Login and Continuing Projects

To continue working on projects already started, you can login from the Cx Solutions website or go directly to http://www.cxdocs.com/login.

Once the Customer Login dialog box appears, enter your Email Address and Password and Click **Submit** to enter CxDocs. If you have forgotten your password, Click **Forgot Password** and a dialog box will appear where you can enter the Email Address listed in your account and a password reset page will be displayed.

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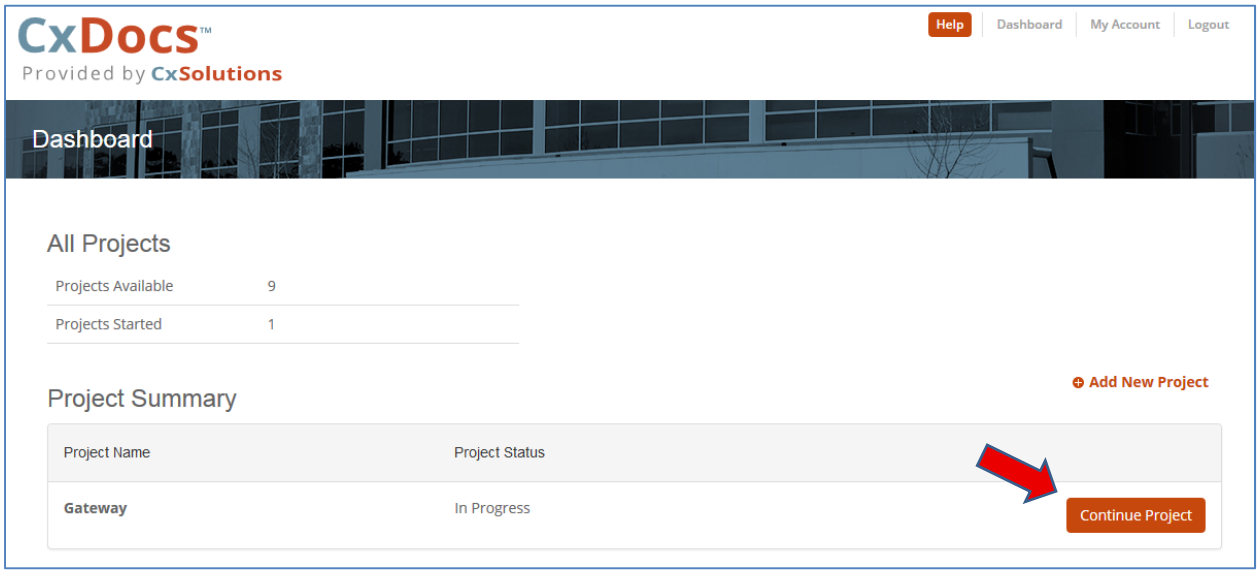
After you have successfully logged into CxDocs, the Dashboard page will appear. Each time you log into CxDocs, the Dashboard will appear and projects may be continued or new projects may be started if projects are available.



To start on your project, Click **Continue Project** and your selected Project page will open with the Owner's Project Requirements (OPR) menu.

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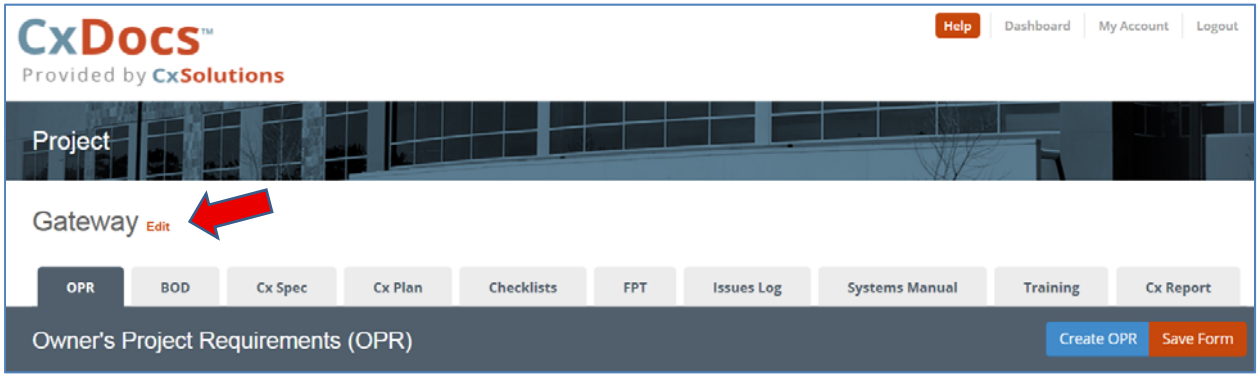
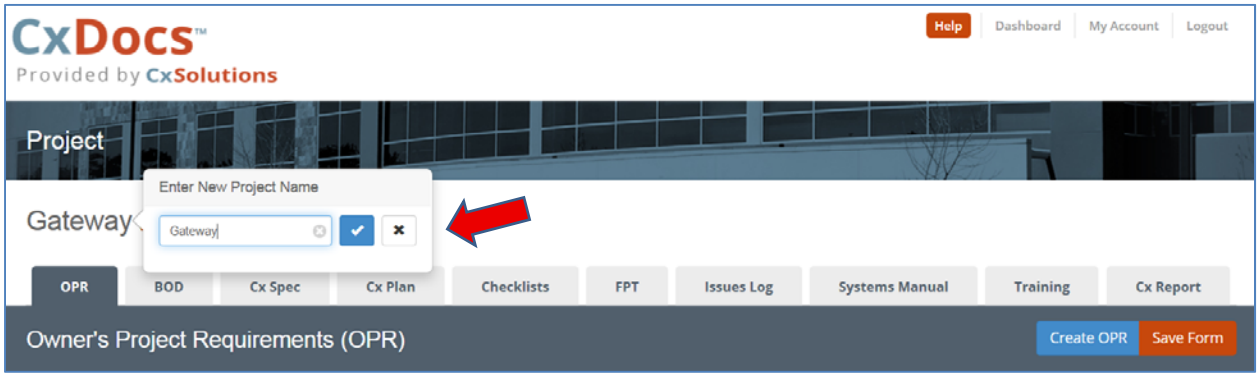
3. Owner's Project Requirements (OPR)

Every time you enter the CxDocs application, the menu bar will be displayed with the OPR page open, as this is where you begin to develop the commissioning documents. CxDocs guides you through the progression of a project using a series of pages beginning with the OPR, moving next to the BOD, and continuing left-to-right across the menu bar to the Cx Report. Each page contains form fields where you enter information, save information, view and create documents.



Notice the Project Name is shown as it was entered when your new project was started. To edit the Project Name, Click **Edit** and a dialog box will open where a new Project Name can be entered. Click the **check mark** to save the New Project Name. Click the **X** to cancel.



The Owner's Project Requirements details the functional requirements of a project and expectations of how a building will be used and operated. These details include owner and user requirements, project goals, equipment, building systems, occupants, building operation and operation expectations, and supporting information. It is the responsibility of the property owner or owner's representative to assist in the development of this document and to review and confirm that the contents of this document represent the owner's project intent.

Information entered in the OPR page writes to several other pages and documents. The CxDocs application requires items to be completed on the OPR page before moving to the development of other pages within CxDocs application.

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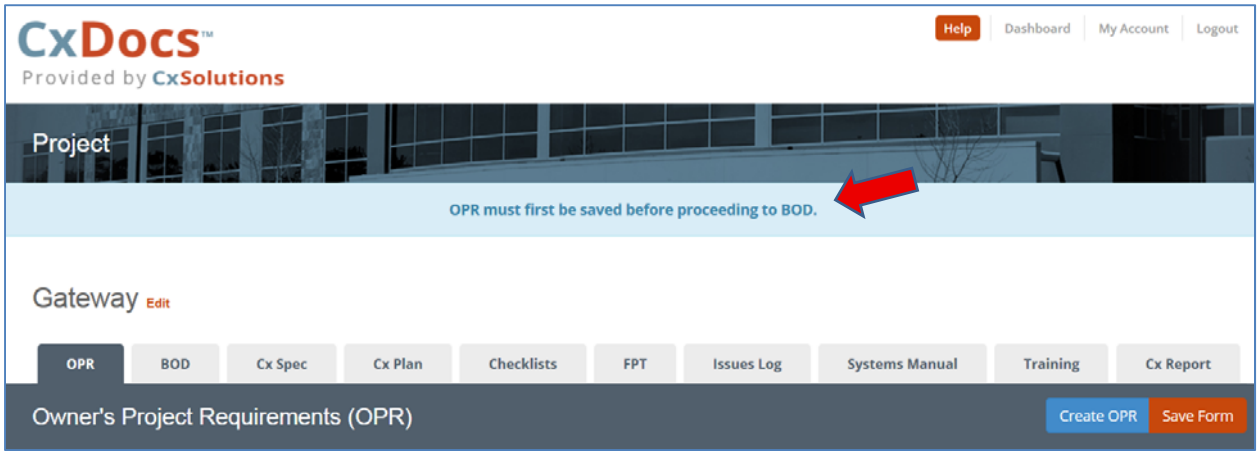
All other pages remain locked until you enter sufficient information in the OPR menu page. A blue bar will appear to notify you that OPR information must be saved before proceeding with the BOD. Completed OPR fields are required because information entered in the OPR is utilized throughout the application and critical to the development of various commissioning documents.



To complete the OPR page, enter project information starting at the top of the page under the grey bar and scrolling down to the bottom. Once you enter information into the OPR form fields, Click **Save** to save the information to the project database. Navigating to another area or logging out of the application without saving may result in the loss of the information entered in the form fields.

Always and frequently **Save** the information entered in the CxDocs application. You may always return later to change or revise the information entered.

Owner & User Requirements

OPR Date: Place your cursor in the field, Click and a **calendar** will open. Select an **OPR Date** from the calendar provided; today, an earlier, or a future date. The OPR date will appear on the cover page of the OPR and included into various commissioning documents.

Project Name: Enter your **Project Name**. This name can be the same as the Project Name previously entered or a longer more descriptive name.

Street Address, City, State, and ZIP: Enter the **Street Address** and **City** where the project is located. Select the **State** from the dropdown menu, and enter the five-digit **zip** code related to the project address.

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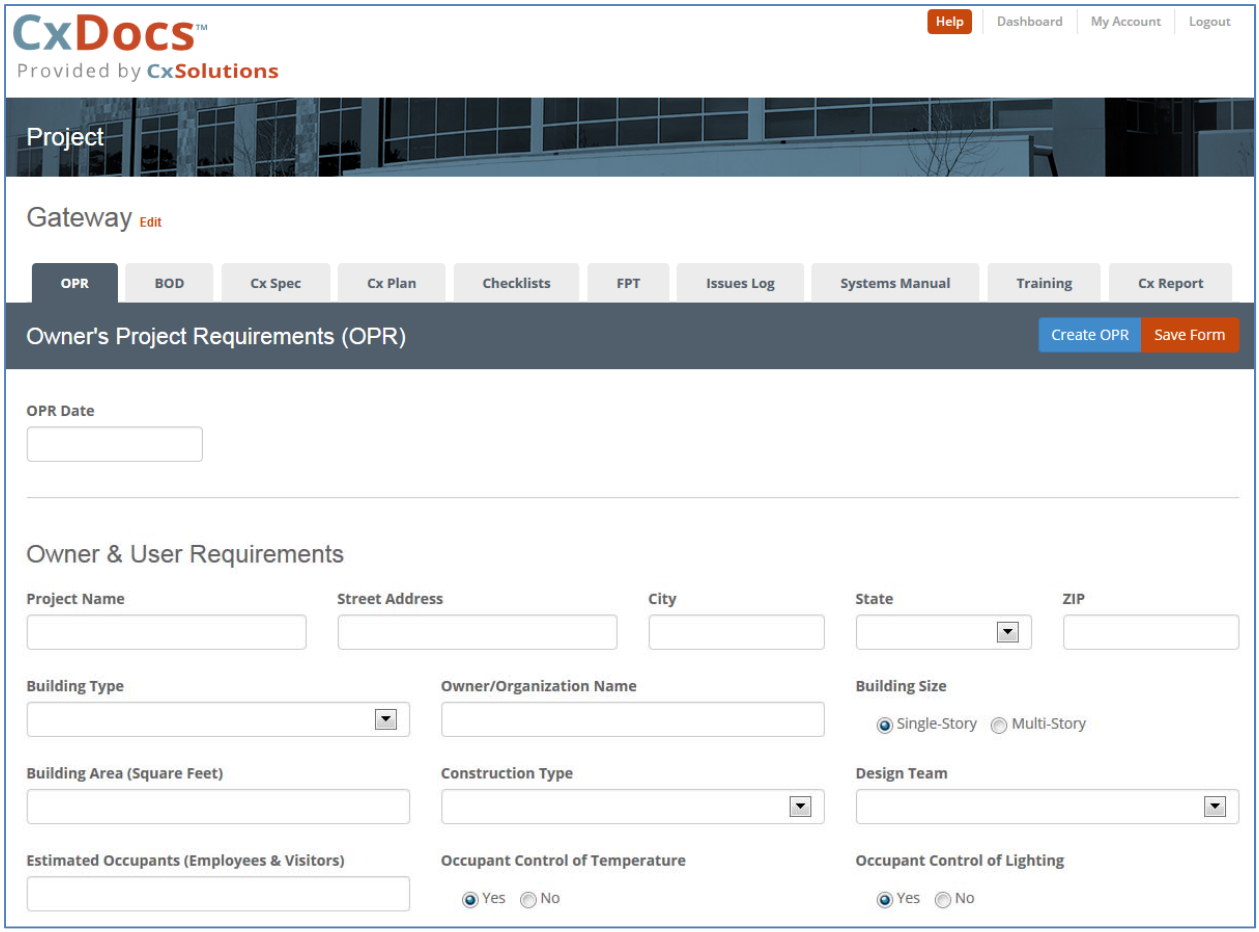

Building Type: Select the **building type** from dropdown menu. If your building type is not listed, Select Specialty Building or Specialty Complex.

Owner/Organization Name: Enter the building **Owner** or **Organization name**. The Owner/Organization Name will appear on the cover page of the OPR and included into various commissioning documents.

Building Size: Select **Single-Story** or **Multi-Story** building button.

Building Area: Enter the **building area** in square feet; enter numbers only in this field, no commas. Example: 10000.

Construction Type: Select the **building construction type** from dropdown menu. If your construction type is not listed, Select *Specialty Construction*.

Design Team: Select the **design team** from the dropdown menu.

Estimated Occupants (Employees & Visitors): Enter the **number of occupants** anticipated in the building. Enter numbers only in this field.

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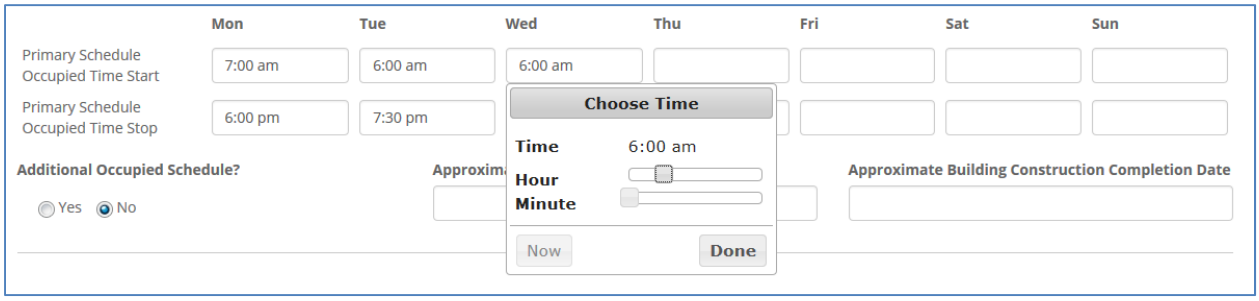
Occupant Control of Temperature: Select **Yes** if the building occupants may set and adjust temperature settings in the condition space, otherwise Select **No.**

Occupant Control of Lighting: Select **Yes**, if the building occupants may turn lighting in the space off or on, otherwise Select **No**.

Enter the **building's primary occupancy schedule**. Click the **time box** for start and stop times of the Primary Schedule Occupied Schedule. A dialog box will open to select the time. Select the hour and the minute with the slider button. If desired, a Now button will enter the current time in the field. Click **Done** when finished.



Additional Occupied Schedule: A Secondary Occupied Schedule is available by Selecting **Yes.** Another schedule will open, complete similar to the Primary Schedule Occupied Schedule.

Approximate Building Construction Cost (USD): Enter the **approximate building construction Cost** in U.S. Dollars. Enter numbers only in this field, no commas or decimal points.

Approximate Building Construction Completion Date: Click the date box and a calendar will open. Select the **approximate construction completion date** from the calendar provided.

Building Systems

Check the boxes next to the **building systems** that require commissioning. You will configure these building systems in the BOD page. You may return to this page to add or delete building systems at any time by checking or unchecking the boxes. Use *caution* when deleting building systems once you configure the systems in CxDocs. Information will be deleted throughout the documents related to the deleted building system.

Environmental & Sustainability

Sustainability Programs: Select the **sustainability program** from the dropdown menu. If your sustainability program is not listed, select *Suitable Sustainability Program.*

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Sustainability Level: Once you select the sustainability program, select the Sustainability Level dropdown will appear for the selected sustainability program. Select the **sustainability level** from this dropdown menu.

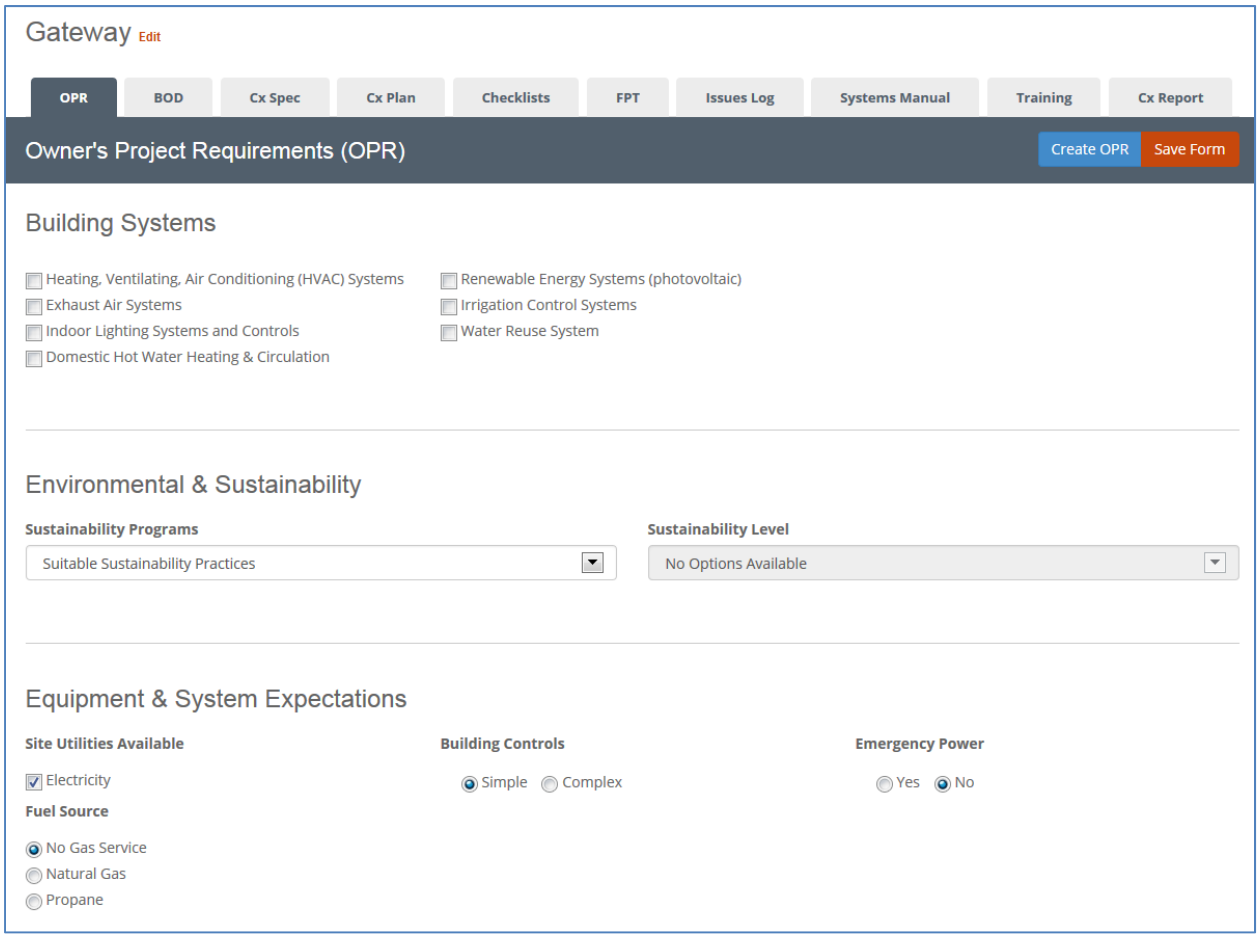
Equipment & System Expectations

Site Utilities Available: The electricity default must be unchecked if electricity is not provided to the site.

Fuel Source: Select the **heating fuel source** (Natural Gas or Propane) provided to the site. Select **No Gas Service** if gas service is not provided to the site.

Building Controls: Select **Simple** if the building controls do not require in-depth training or experience. Examples: single zone packaged HVAC units, thermostats, occupancy sensors, and time clocks. Select **Complex** if the building controls require extensive training or experience. Examples: Direct digital controls, variable air volume systems, and hot and chilled water systems.

Emergency Power: Select **Yes** if the site is equipped with a backup emergency power generator.



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Building Occupants & Maintenance Expectations

Operations & Maintenance Staff: Select the **method** that operations and maintenance will be provided from the dropdown menu.

Click **Save Form,** to save the information to the project database, you may always return later to change and revise the information entered.

Create OPR

Once sufficient information is saved to the database, you may now create the OPR. Remember to Click **Save Form** first and then Click **Create OPR** and a PDF will be created for viewing and saving.

You must have the Adobe PDF Reader installed on your computer to create documents. To obtain the Adobe PDF Reader, go to http://get.adobe.com/reader.

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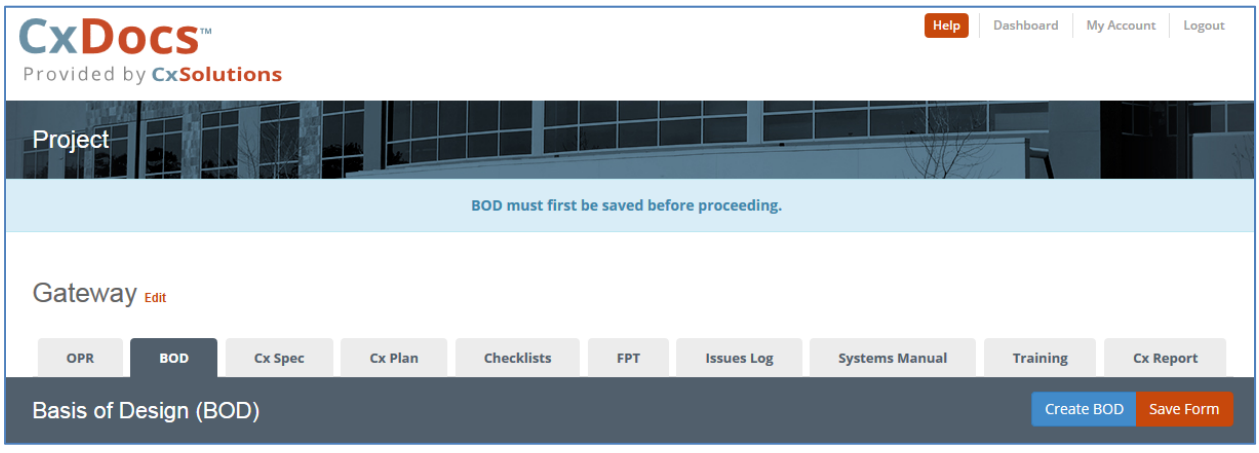
4. Basis of Design (BOD)

The purpose of this document is to provide clear and concise documentation of the design team's response to the Owner's Project Requirements (OPR), to satisfy applicable regulatory requirements, standards and guidelines and to record the designer's concepts, assumptions, engineering criteria, decisions, selections, and references.

This Basis of Design (BOD) is developed to focus on the building systems and contains preliminary information required to design the building systems. In addition to the BOD, various construction documents including construction drawings, specifications, submittals, systems manuals, record documents, and operation and maintenance manuals may be required to place the building into operation and to adequately verify and evaluate the performance of systems and equipment.

The information entered in the BOD page writes to several other pages and documents. The CxDocs application requires items to be completed on the BOD page before moving to the development of other pages within CxDocs application.

All other menus remain locked until you enter sufficient information in the BOD menu page. A blue bar will appear to notify you that BOD information must be saved before proceeding to other areas of the application. Completed BOD fields are required because information entered in the BOD is utilized in throughout the application and critical to the development of various commissioning documents.



To complete the BOD page, enter project information starting at the top of the page under the grey bar and scrolling down to the bottom. Once you enter information into the BOD form fields, Click **Save** to save the information to the project database. Navigating to another area or logging out of the application without saving may result in the loss of the information entered in the field.

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Building Systems

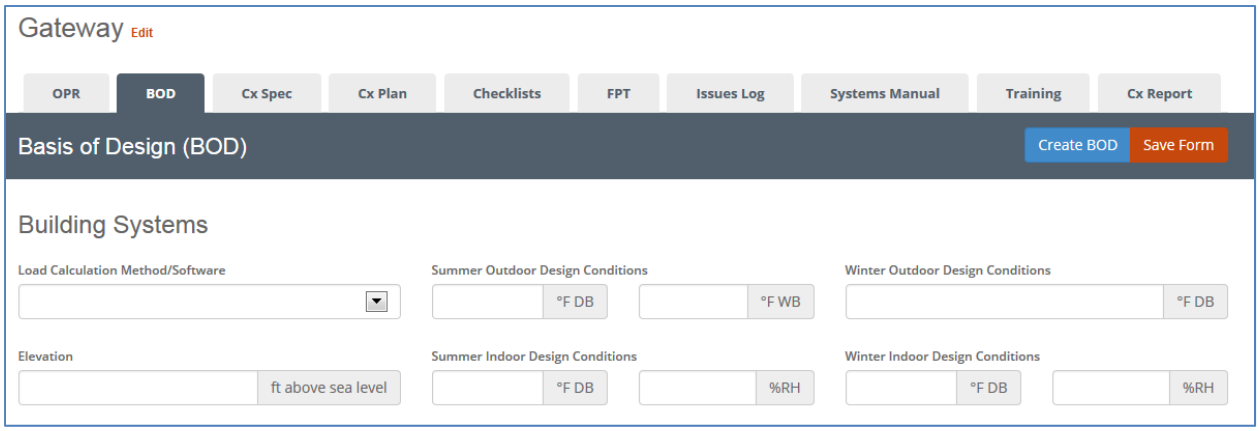
BOD Date: Place your cursor in the field, Click and a **calendar** will open. Select a **BOD date** from the calendar provided; today, an earlier, or a future date. The BOD date will appear on the cover page of the BOD and included into various commissioning documents.

Load Calculation Method/Software: Select the cooling and heating **load calculation software** utilized to determine the building heating and cooling loads from the dropdown menu. If cooling and heating loads were determined using manual calculations, Select *Manual Calculation* or if the software utilized is not listed, Select *Custom Software*.

Summer and Winter Outdoor Design Conditions: Enter the **summer** and **winter outdoor** design temperatures.

Elevation: Enter the **elevation** of the project location.

Summer and Winter Indoor Design Conditions: Enter the **summer** and **winter indoor** design temperature and relative humidity.



Building Envelope Components

Roof Frame Type: Select the **Roof Frame Type** from the dropdown menu. If the roof frame type is not shown, Select *Specialty*. For buildings without direct outdoor roof exposure, Select *None – No Roof Exposure*. Where multiple Roof Frame Types occur, choose the Roof Frame Type that represents the majority of roof area.

Roof Finish Type: Select the **Roof Finish Type** from the dropdown menu. If the Roof Finish Type is not shown, Select *Specialty*. For buildings without direct outdoor roof exposure, Select *None – No Roof Exposure*. Where multiple Roof Finish Types occur, choose the Roof Frame Type that represents the majority of roof area.

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Always and frequently **Save** the information entered in the CxDocs application. You may always return later to change or revise the information entered.

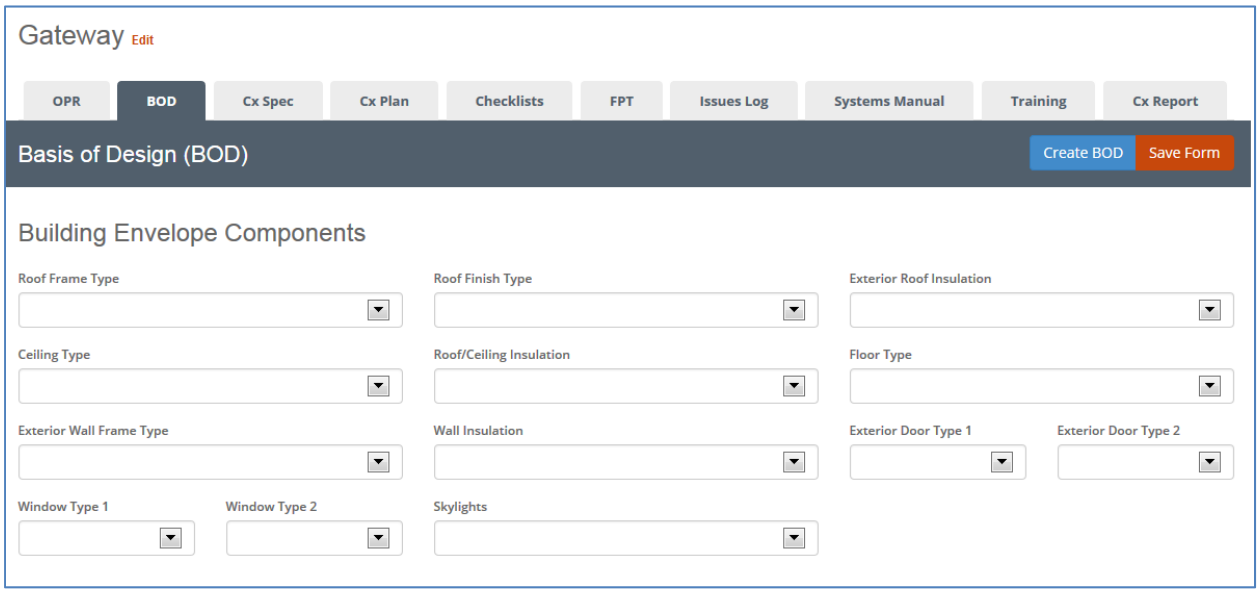
Exterior Roof Insulation: Select the **Exterior Roof Insulation** from the dropdown menu. If the Exterior Roof Insulation is not shown, Select *Specialty*. For buildings without roof insulation, Select *None*. Where multiple Insulation types occur, choose the Exterior Roof Insulation that represents the majority of roof area.

Ceiling Type: Select the **Ceiling Type** from the dropdown menu. If the Ceiling Type is not shown, Select *Specialty*. For buildings without ceilings, Select *None*. Where multiple Ceiling Types occur, chose the Ceiling Type that represents the majority of ceiling area.

Roof/Ceiling Insulation: Select the **Roof/Ceiling Insulation R-Values** from the dropdown menu. For buildings without Roof/Ceiling Insulation, Select *None*. Where multiple Ceiling Roof/Ceiling Insulation R-Values occur, choose the Ceiling Roof/Ceiling Insulation R-Value that represents the majority of roof or ceiling area.

Floor Type: Select the **Floor Type** from the dropdown menu. If the Floor Type is not shown, Select *Specialty*. For buildings without direct outdoor floor exposure, Select *None – No Floor Exposure*. Where multiple Floor Types occur, choose the Floor Type that represents the majority of floor area.

Exterior Wall Frame Type: Select the **Exterior Wall Frame Type** from the dropdown menu. If the Exterior Wall Frame Type is not shown, Select *Specialty*. For buildings without direct outdoor wall exposure, Select *None*. Where multiple Exterior Wall Frame Types occur, choose the Exterior Wall Frame Type that represents the majority of wall area.



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Wall Insulation: Select the **Wall Insulation R-Values** from the dropdown menu. For buildings without Wall Insulation, Select *None*. Where multiple Wall Insulation R-Values occur, chose the Wall Insulation R-Value that represents the majority of wall area.

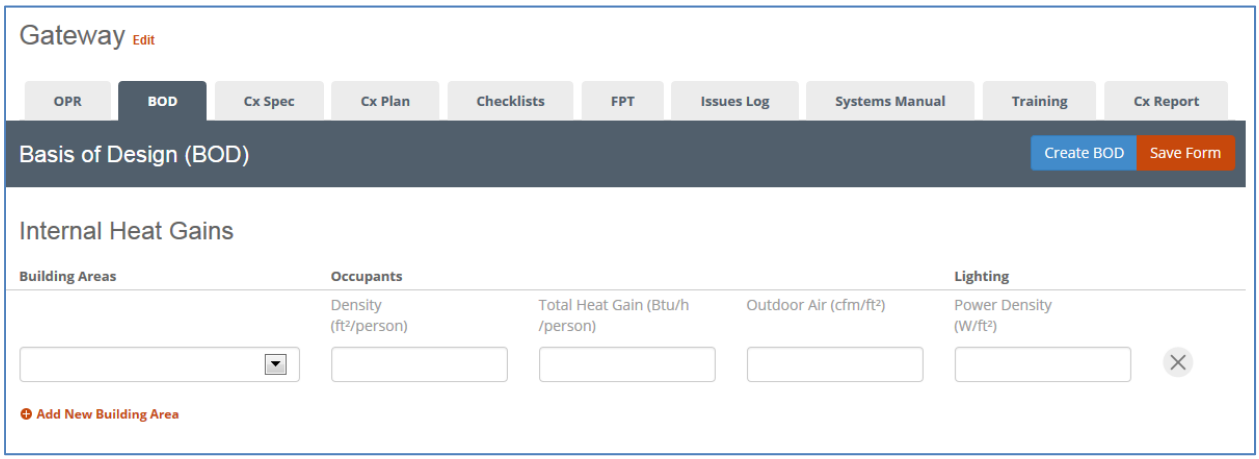
Exterior Door Types (1 & 2): Select the **Exterior Door Type** from the dropdown menu. If the Exterior Door Type is not shown, Select *Specialty*. For buildings without Exterior Doors, Select *None*. In the event on one door type is specified, select *None* for Exterior Door Type 2.

Window Types (1 & 2): Select the **Window Types** from the dropdown menu. If the Window Type is not shown, Select *Specialty*. For buildings without Windows, Select *None*.

Skylights: Select the **Skylight type** from the dropdown menu. If the Skylight type is not shown, Select *Specialty*. For buildings without Skylights, Select *None*.

Internal Heat Gains

The Building Areas section allows the user to select general areas included in the building design. Select **Building Areas** from the dropdown list. If the Building Area you are seeking is not shown, Select *Specialty*. Once a Building Area is selected, the Occupant Density (ft^2/person), Total Heat Gain (Btu/h/person), Outdoor Air Requirement (cfm/ft^2), and Lighting Power Density (W/ft^2) will be populated from the database. You may change and save these values to the project database; however, once saved, the default values are no longer available.



Add New Building Area: Click the **Add New Building Area** link to add building areas. Delete Building Areas by Clicking the **X** to the right of the building area.

Always and frequently **Save** the information entered in the CxDocs application. You may always return later to change or revise the information entered.

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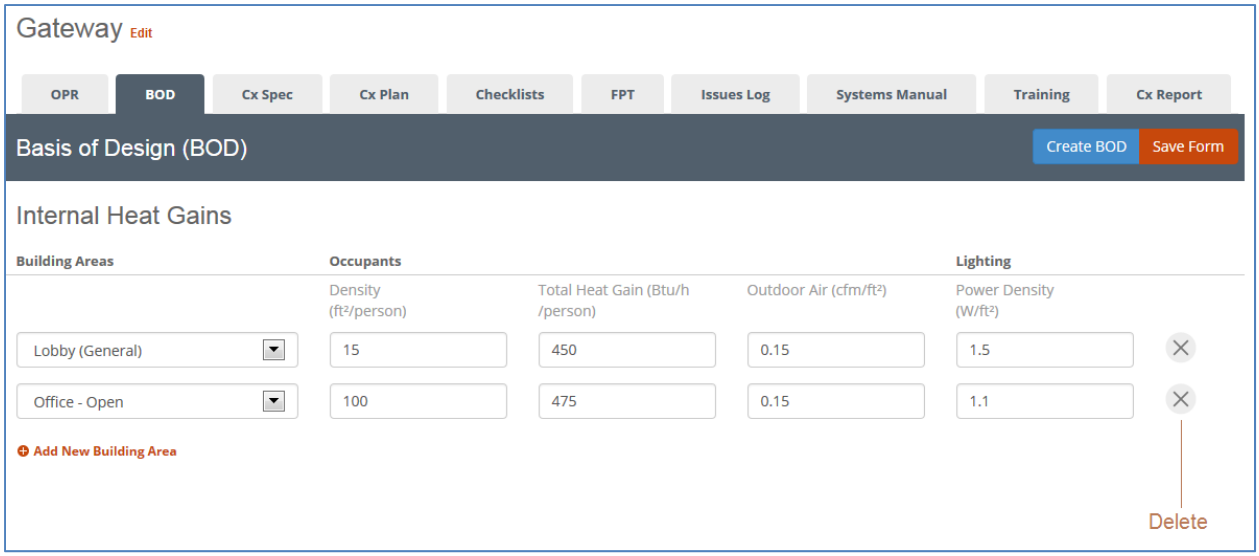

Mechanical Systems

Heating, Ventilating, Air Conditioning (HVAC) Systems

The Heating, Ventilating, Air Conditioning (HVAC) System is shown when you select this system from the Building Systems in the OPR. Variable Air Volume, Chilled Water Systems, and Hot Water Systems are systems associated with HVAC Systems. The initial HVAC System can only be deleted by deselected Heating, Ventilating, Air Conditioning (HVAC) System in the OPR page. System configurations are descriptions are shown in the Appendix.

Unit ID: Enter the **Unit ID**. The Unit ID establishes the unique identifier for the HVAC system. Examples: AC-1, HP-1. This Unit ID cannot be duplicated, as it is unique to this system.

Supply Fan Type: Select the **Supply Fan Type** from the dropdown menu.

Return Fan Type: Select the **Return/Exhaust Fan Type** from the dropdown menu. If the unit is not equipped with a Return/Exhaust Fan, Select *None*. Selecting Variable Air Volume will display the Return Fan Control.

Return Fan Control: Select **Building Static Pressure** or **Volumetric Tracking** to control the Return/Exhaust Fan.

Cooling System Type: Select the **Cooling System Type** from the dropdown menu. Depending on the selection, various fields related to the HVAC System may become unavailable. For example, if you select Packaged Terminal Air Conditioning (PTAC) Unit, the Economizer Type is unavailable for selection. If the unit has no cooling system, Select *None*.

Cooling Capacity: Enter the estimated **Cooling Capacity** of the unit in BTU/hr.

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SEER: Enter the estimated or required **SEER** (Seasonal Energy Efficiency Rating) value. The Packaged Terminal Air Conditioning (PTAC) Unit and Split System Air Conditioning Unit selections allow for either SEER or EER entries.

EER: Enter the estimated or required **EER** (Energy Efficiency Rating) value. The Packaged Terminal Air Conditioning (PTAC) Unit and Split System Air Conditioning Unit selections allow for either SEER or EER entries.

Heating System Type: Select the **Heating System Type** from the dropdown menu. Depending on the Cooling System Type selection, various fields may be unavailable. For example, if the Cooling System Type selected was the Packaged Terminal Air Conditioning (PTAC) Unit, the only selections available in the Heating System Type are the Heat Pump or Electric Heat Coil. If the unit has no cooling system, Select *None*.

Heating Capacity: Enter the estimated **Heating Capacity** of the unit in BTU/hr.

HSPF: Enter the estimated or required **HSPF** (Heating Seasonal Performance Factor) value. This field is only available when the Heat Pump is selected as the Heating System Type.

Supply Air Distribution: Select the **Supply Air Distribution** method from the dropdown menu.

Return Air Distribution: Select the **Return Air Distribution** method from the dropdown menu.

Ventilation Type: Select the **Ventilation Type** from the dropdown menu.

Economizer Type: Select the **Economizer Type** from the dropdown menu. If the unit has no Economizer, Select *None.*

Temperature Control Type: Select the **Temperature Control Type** from the dropdown menu.

Areas Served: Enter the **Areas Served** by the HVAC system. Example: Offices, Lobby.

Always and frequently **Save** the information entered in the CxDocs application. You may always return later to change or revise the information entered.

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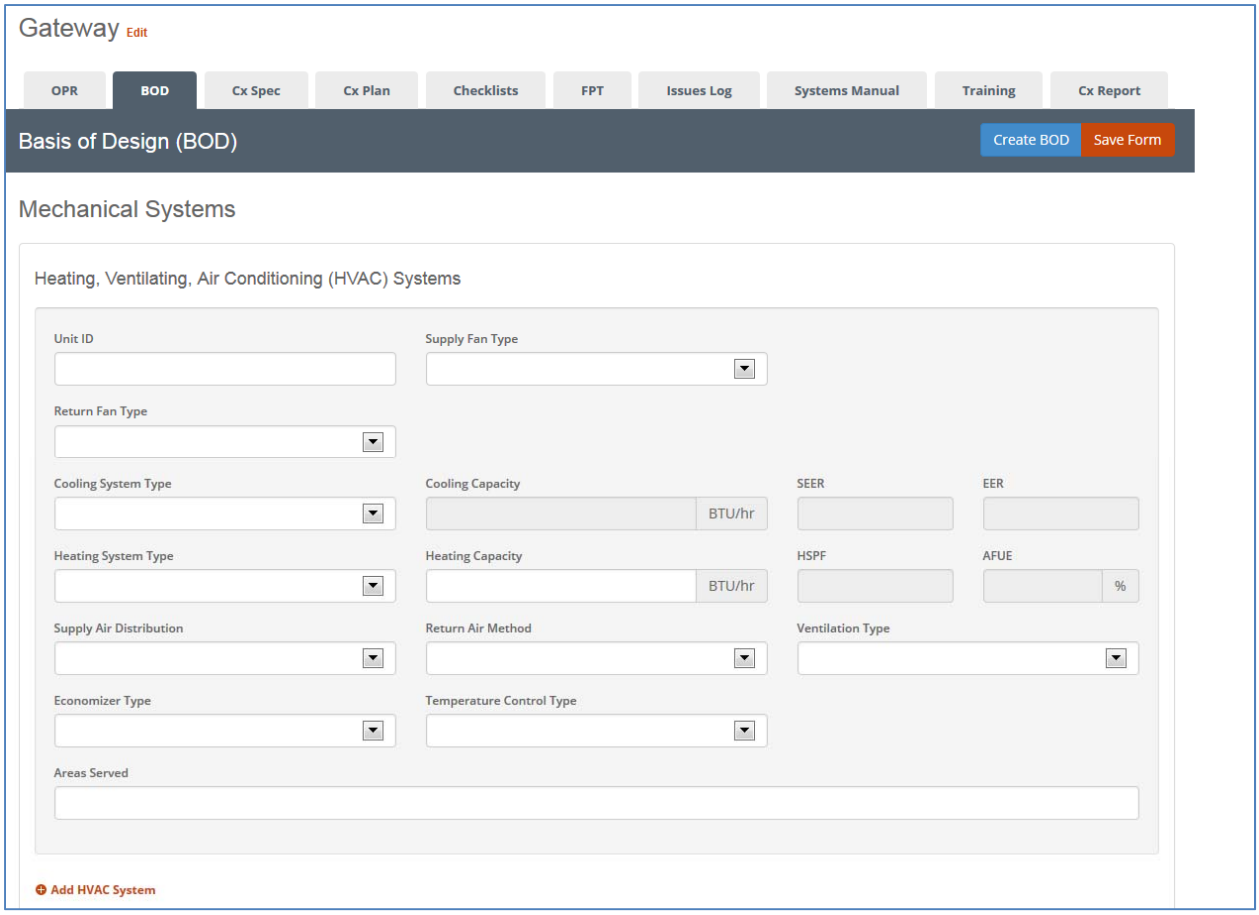
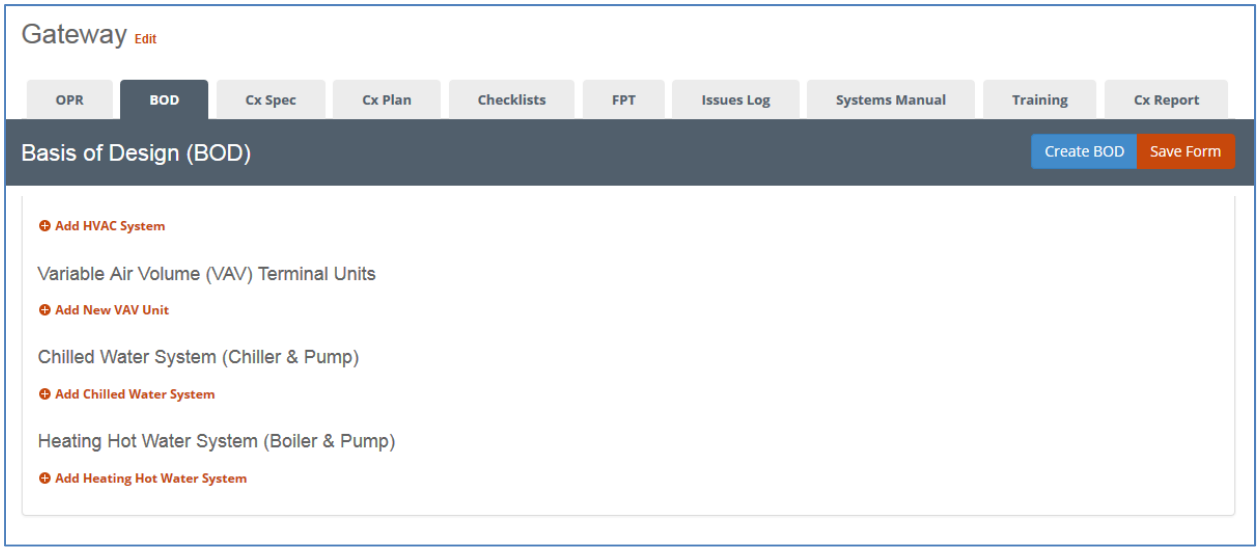


Adding HVAC Systems: Click the **Add HVAC System link** to add additional HVAC units. Delete HVAC units by Clicking the **Delete HVAC System button.**

Adding Mechanical Systems: Additional mechanical equipment and systems may be added. Click the equipment or system desired to open the dialog box for the selected system.



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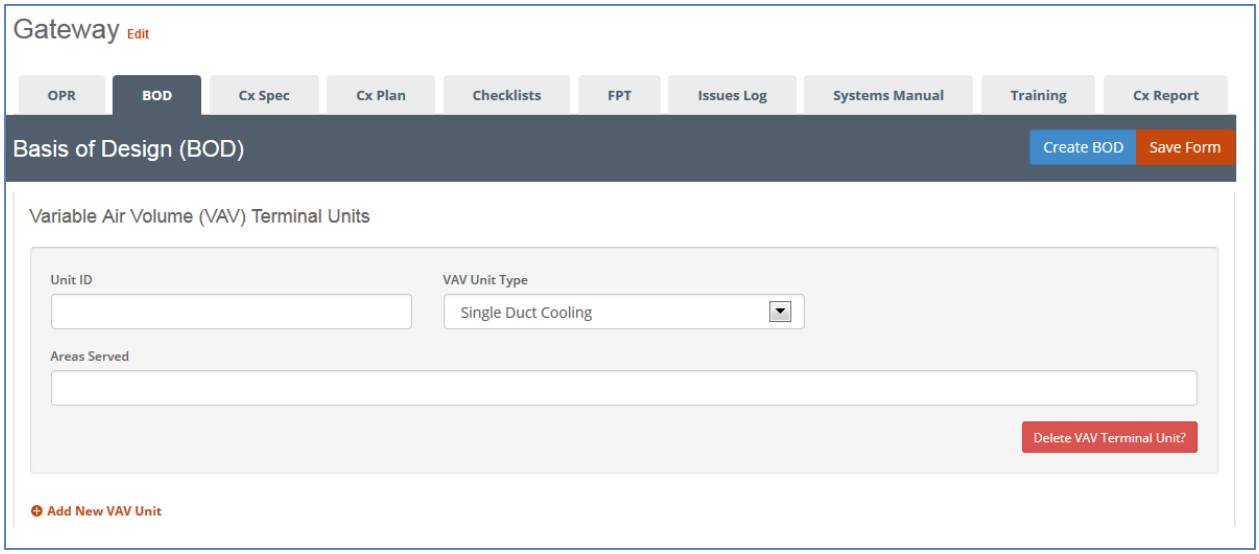
Variable Air Volume Unit

Unit ID: Enter the **Unit ID**. Enter the Unit ID. The Unit ID establishes the unique identifier for the VA Unit. Example: VAV-1.

VAV Unit Type: Select the **VAV Unit Type** from the dropdown menu.

Areas Served: Enter **Areas Served** by the VAV Unit. Example: Lobby, Offices, or Room 101.



Adding VAV Terminal Units: Click the **Add New VAV Unit** link to add additional VAV Terminal units. Delete VAV Terminal Units by Clicking the **Delete VAV Terminal Unit** button.

Chilled Water System

Unit ID: Enter the **Chiller Unit ID**. The Unit ID establishes the unique identifier for the Chiller. Example: CH-1.

Chilled Water Design Delta T: Enter the estimated **Chilled Water Design Temperature Difference (ΔT)**, typically 10 to 20 degrees.

Condenser Type: Select **Air Cooled** as the Condenser Type. Additional Condenser Types will be added in future versions of CxDocs.

Chiller Efficiency: Enter the estimated or required **Chiller Efficiency** in kW/Ton. This value may be the Full-Load (FL) rating or the Integrated Part Load Value (IPLV) rating. Typical Chiller Efficiency can range from 1.00 to 0.40 kW/Ton.

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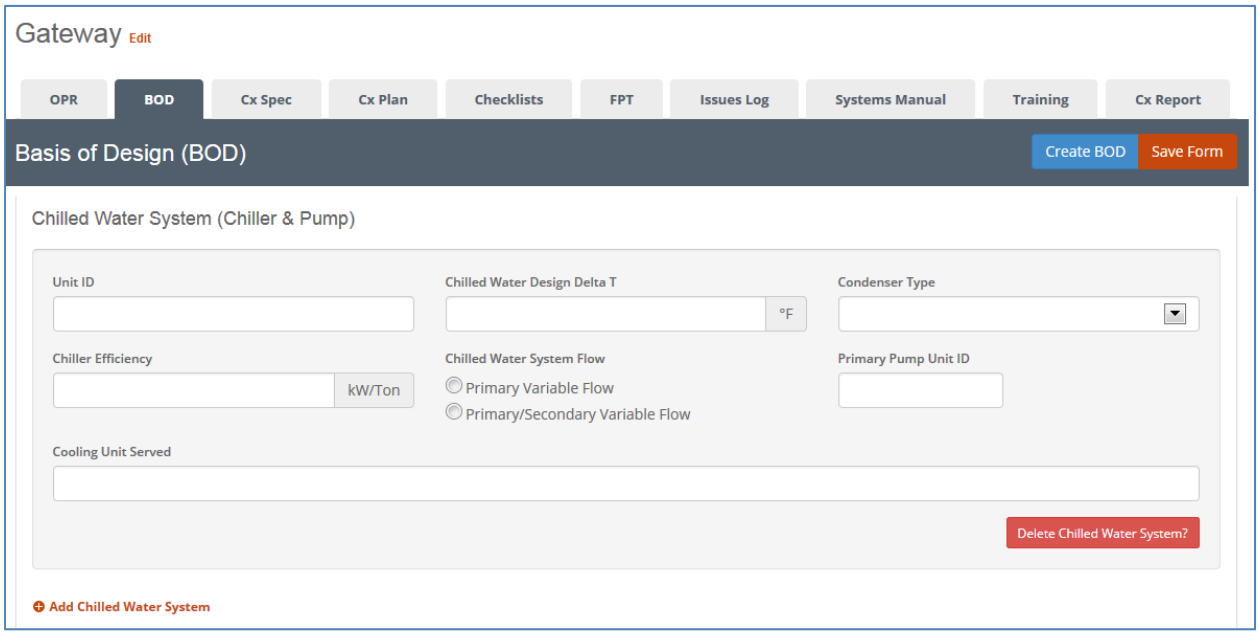
Chilled Water System Flow: Select the **Chilled Water System Flow**, *Primary Variable Flow* or *Primary/Secondary Variable Flow*.

Primary Pump Unit ID: Enter the **Primary Pump Unit ID**. Example: CHWP-1.

Secondary Pump Unit ID: Enter the **Secondary Pump Unit ID** if the *Primary/Secondary Variable Flow* was selected in the Chilled Water System Flow. Example: CHWP-2.

Cooling Unit Served: Enter the **Cooling Unit Served** by the Chilled Water System. Example: AHU-1.



Adding Chilled Water Systems: Click the **Add Chilled Water System** link to add additional Chilled Water Systems. Delete Chilled Water Systems by Clicking the **Delete Chilled Water Systems** button.

Heating Hot Water System

Unit ID: Enter the Boiler Unit ID. The Unit ID establishes the unique identifier for the Boiler. Example: B-1.

Boiler Energy Source: Select the **Boiler Energy Source** from the dropdown menu. If the energy source desired is unavailable for selection, review the selections listed in the OPR: Site Utilities Available, Fuel Source.

Boiler Draft System: Select the **Boiler Draft System** from the dropdown menu.

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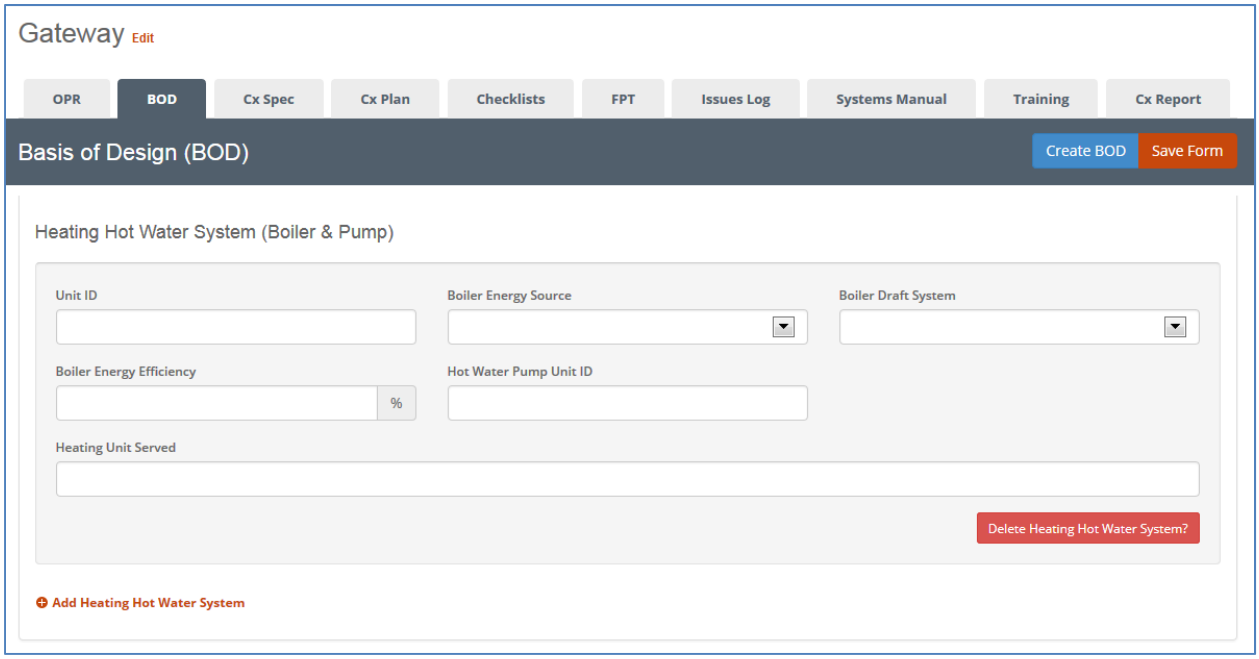
Boiler Energy Efficiency: Enter the **Boiler Energy Efficiency** as a percent of the annual fuel utilization efficiency (AFUE). Typical Boiler Energy Efficiency ranges from 70% to 99%.

Hot Water Pump Unit ID: Enter the **Hot Water Pump Unit ID**. Example: HWP-1.

Heating Unit Served: Enter the **Heating Unit Served** by the Heating Hot Water System. Examples: RHC-1, FCU-1, & BH-2.



Domestic Hot Water System (Water Heater)

Unit ID: Enter the **Water Heater Unit ID**. This Unit ID establishes the unique identifier for the Water Heater. Example: WH-1.

Energy Source: Select the **Energy Source** from the dropdown menu. If the energy source desired is unavailable for selection, review the selections listed in the OPR: Site Utilities Available, Fuel Source.

Water Heater Type: Select the **Water Heater Type** from the dropdown menu. Specific water heaters may be unavailable due Energy Source selected. For example, Tankless On-Demand water heaters are available only when Natural Gas or Propane are the selected Energy Source.

Temperature 1 and 2: Enter the required **hot water temperature** for the building use. Temperature 2 is typically used for a domestic hot water return system with mixing valves where two hot water temperatures are required.

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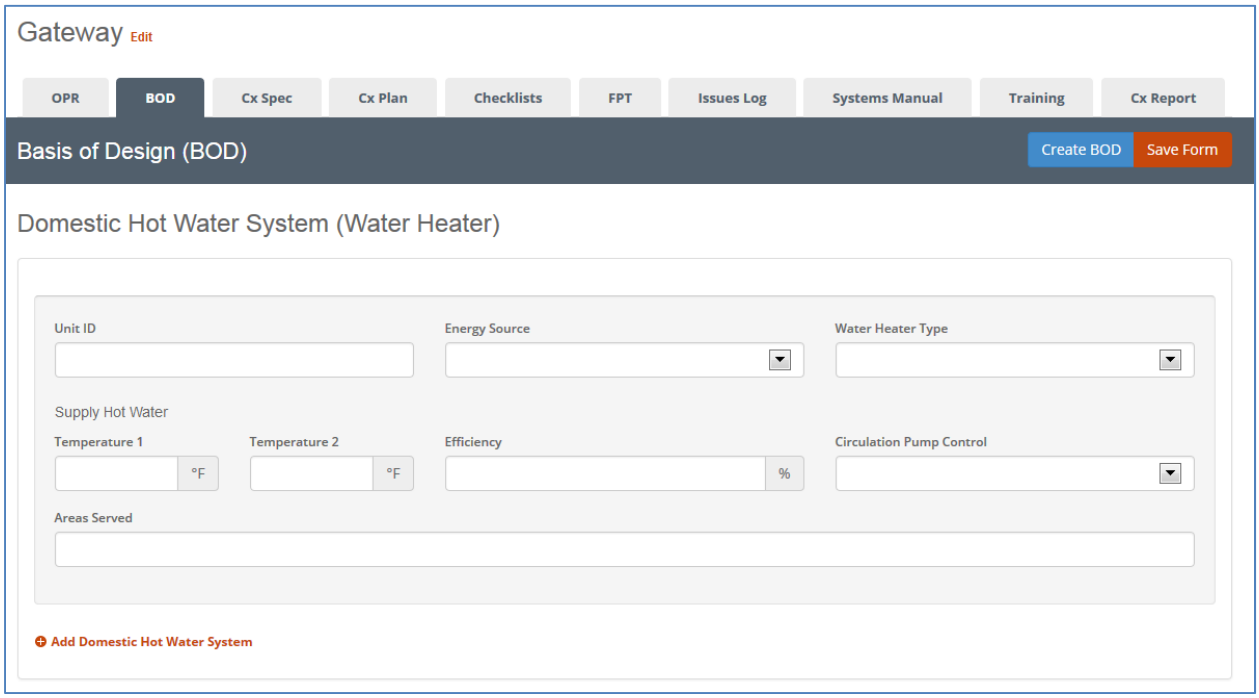
Efficiency: Enter the **Water Heater Efficiency** as a percent of the annual fuel utilization efficiency (AFUE). Typical Water Heater Energy Efficiency ranges from 70% to 99%.

Circulation Pump Control: Select the **Circulation Pump Control** from the dropdown menu. Select *None* if the circulation pump runs continuously.

Areas Served: Enter the **Building Areas Served** by the Water Heater. Example: Restrooms, Kitchen.



Exhaust Air Systems

Unit ID: Enter the **Exhaust Fan Unit ID**. This Unit ID establishes the unique identifier for the Water Heater. Example: EF-1.

Exhaust Fan Type: Select the **Exhaust Fan Type** from the dropdown menu. If the Exhaust Fan Type is not listed, Select *Specialty*.

Exhaust Fan Control: Select the **Exhaust Fan Control** from the dropdown menu.

Areas Served: Enter the **Building Areas Served** by the exhaust fan. Example: Conference, Restrooms, Kitchen.

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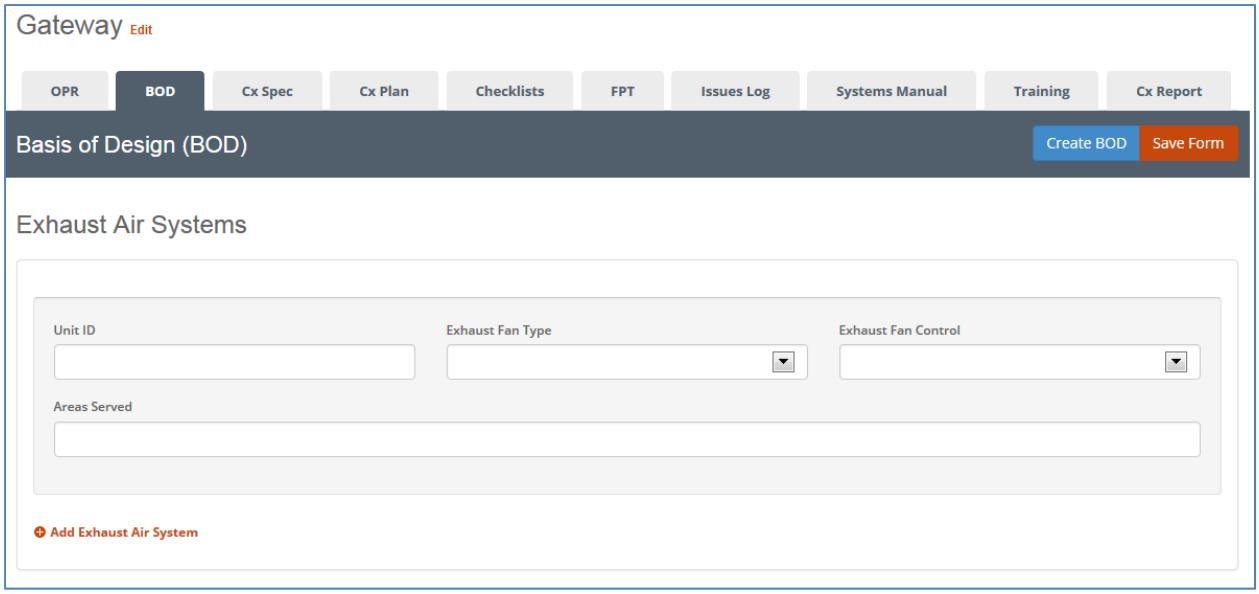

Electrical Systems

Indoor Lighting Systems

The building areas shown are derived from the Internal Heat Gains section of the BOD. The building areas fields are locked and may be changed only in the Internal Heat Gains section.

Lamp Type: Select the **Lamp Type** from the dropdown menu.

Lighting Illumination: Lighting Illumination is populated with default values from the database. This value may be changed and saved to the project database; however, once saved, the default value initially inserted is no longer available.

Control Type: Select the **Control Type** from the dropdown menu.

Always and frequently **Save** the information entered in the CxDocs application. You may always return later to change or revise the information entered.

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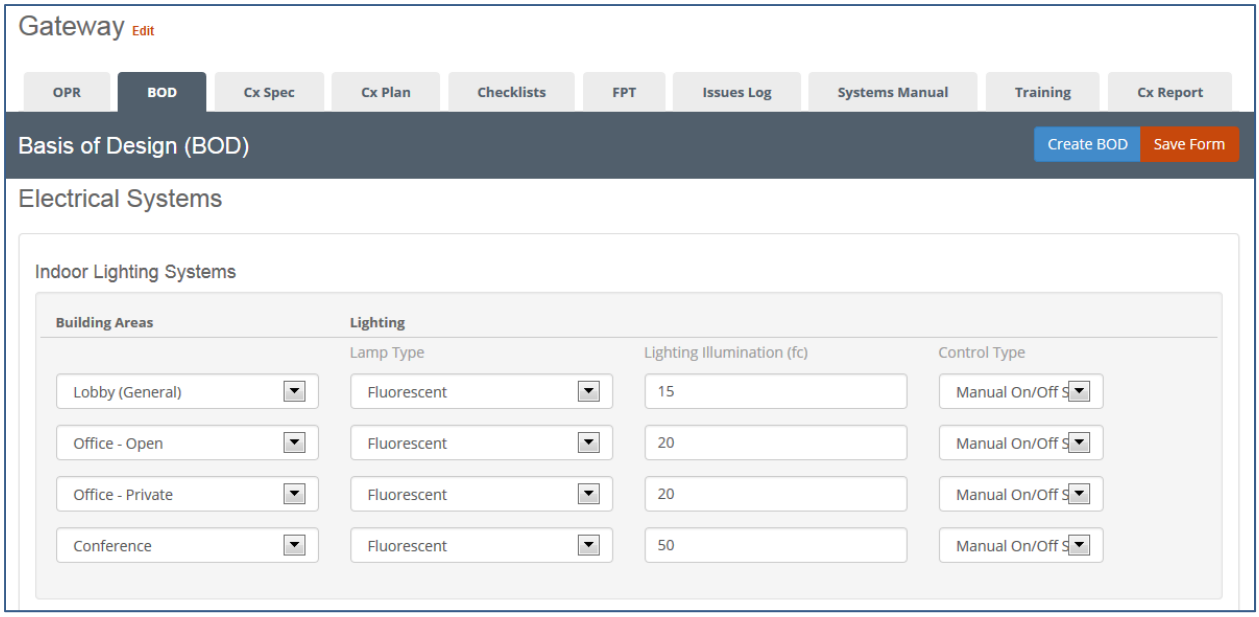

Renewable Energy Systems (Photovoltaic)

System ID: Enter the **System ID**. The Unit ID establishes the unique identifier for the Renewable Energy System.

Expected AC Energy Performance: Enter the **Expected AC Energy Performance** value in kW/h. For assistance determining the Expected AC Energy Performance for your specific conditions, Click (?) to visit the NREL website. Follow the instructions on the PVWatts site to calculate the Expected AC Energy Performance.

DC Rating: Enter the **DC Rating** in kW. The default value of 4.0 is provided.

DC-to-AC Derate Factor: Enter the **DC-to-AC Derate Factor**. The default value of 0.77 is provided.

Array Location: Select the **Solar Array Location** from the dropdown menu.

Array Type: Select the **Array Type** from the dropdown menu.

Array Tilt Angle: Select the **Array Tilt Angle** from the dropdown menu.

Array Azimuth Angle: Select the **Array Azimuth Angle** from the dropdown menu.

For assistance determining the Expected AC Performance, Arrray Tilt Angle, Array Azmith Angle and Required Solar Radiation, visit the NREL website and follow the instructions on the PVWatts site.

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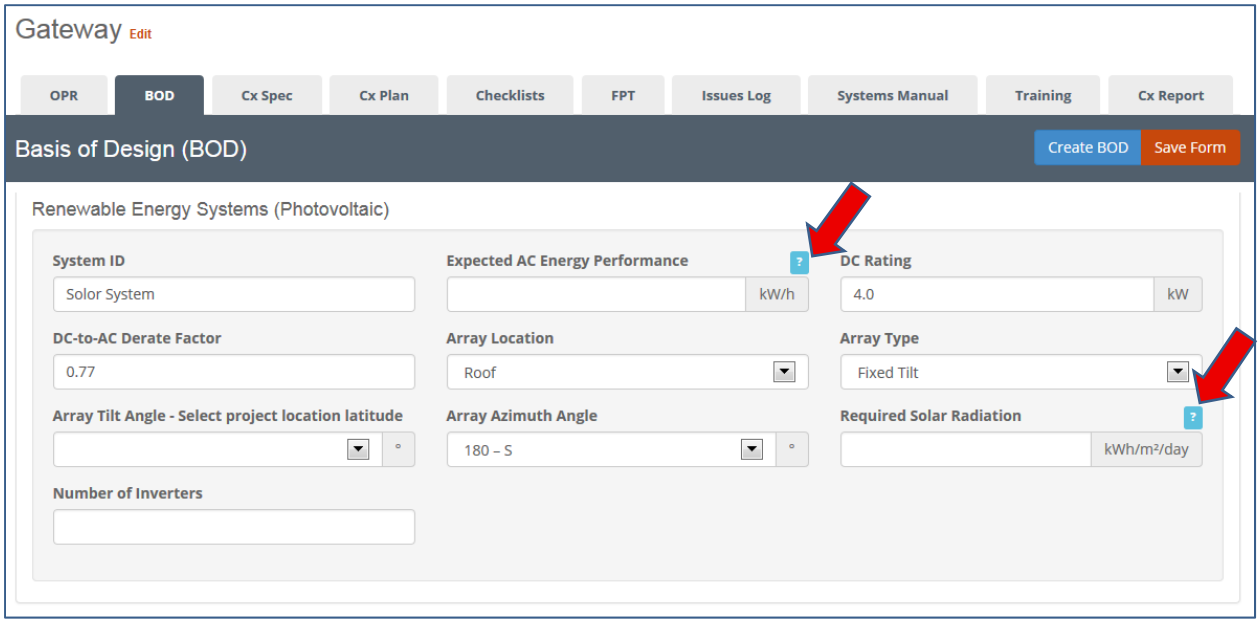

Required Solar Radiation: Enter the Required Solar Radiation value in kWh/m²/day. For assistance determining the Required Solar Radiation for your specific conditions, Click (?) to visit the NREL website. Follow the instructions on the PVWatts site to calculate the Required Solar Radiation.

Number of Inverters: Enter the Number of Inverters connected to the solar photovoltaic system.

Water Reuse Systems

Water Reuse System Type: Select the **Water Reuse System Type** from the dropdown menu.

Click **Save Form,** to save the information to the project database, you may always return later to change and revise the information entered.

Create BOD

Once sufficient information is saved to the database, you may now create the BOD. Remember to Click **Save Form** first and then Click **Create BOD** and a PDF will be created for viewing and saving.

You must have the Adobe PDF Reader installed on your computer to create documents. To obtain the Adobe PDF Reader, go to http://get.adobe.com/reader.

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5. Commissioning Specification (Cx Spec)

The commissioning specification addresses typical specification requirements of various sustainability guidelines, building codes and energy codes. This section contains no input screens, but is derived from information previously entered in CxDocs. Click *View the Commissioning Specification* to open and save the PDF.

A Microsoft Word Document version of the Commissioning Specification is available for your use in the Help Section under Other Resources. This document will not display information you entered into the database that is specific to your project.

Click **View the Commissioning Specification** to view and save the PDF.

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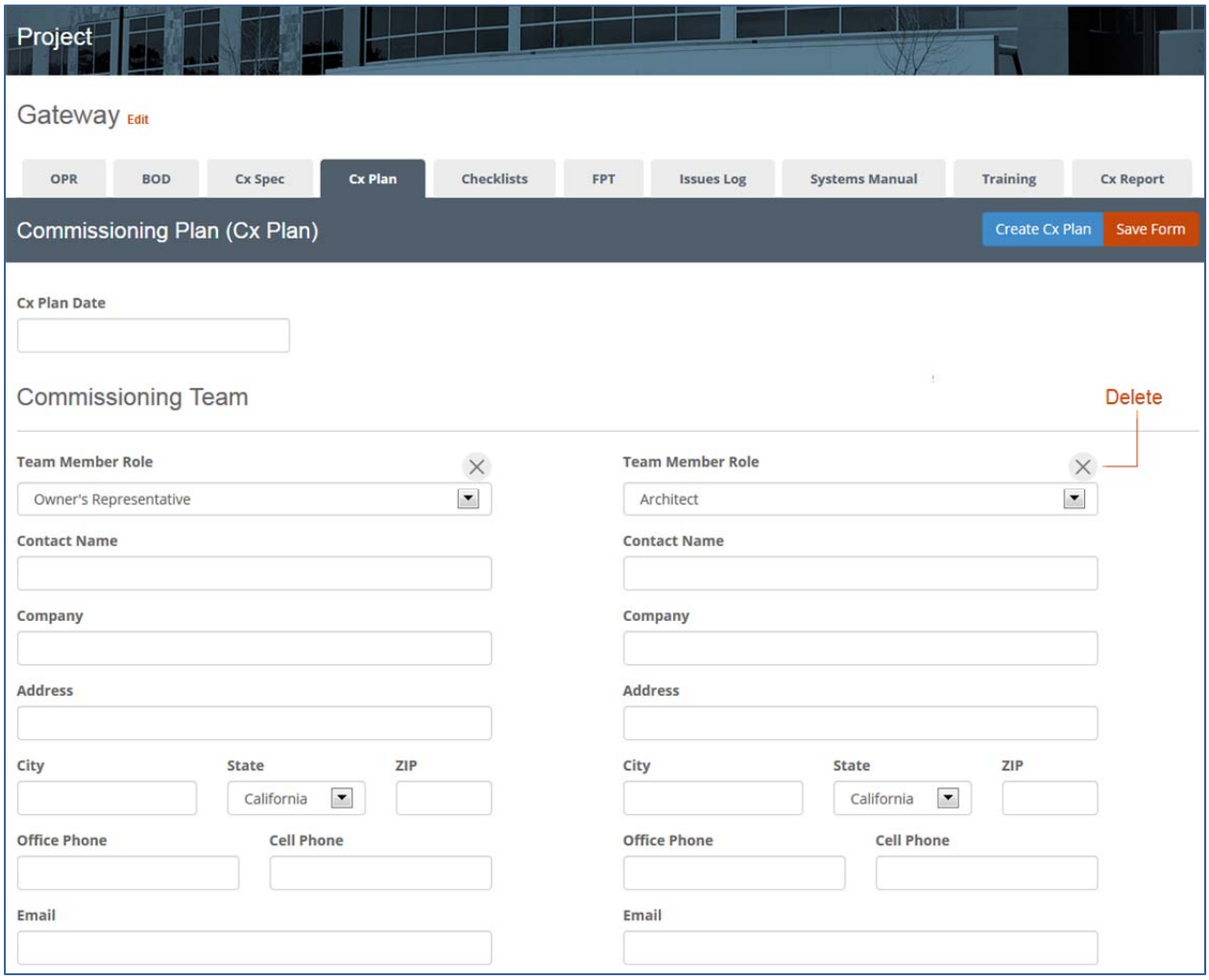
6. Commissioning Plan (Cx Plan)

The Commissioning Plan describes the building commissioning implementation process according to the OPR and BOD. The Commissioning Plan is developed from information entered in the OPR, BOD and Commissioning Plan page.

The plan outlines and describes the commissioning process and the roles and responsibilities of each Commissioning Team member.

Cx Plan Date: Place cursor in the field, Click a calendar will open. Select a **Cx Plan Date** from the calendar provided; today, an earlier date, or a future date. The Cx Plan date will appear on the cover page of the Cx Plan and included into various commissioning documents.

.



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Commissioning Team

Team Member Role: Select the **Team Member's Role** from the drop-down menu. Default roles are provided for various team members.

Team Member Information: Enter/Select the **Contact Name, Company, Address, City, ZIP, Office Phone, Cell Phone,** and **Email Address** for each team member.

To Add New Team Members: Click the **Add New Team Member** link.
Delete Team Members by Clicking the **X** to the right of the Team Member Role.

Click **Save Form** to save the information to the project database. You may always return later to change and revise the information entered.

Create Cx Plan

Once sufficient information is saved to the database, you may now create the Cx Plan. Remember to Click **Save Form** first and then Click **Create Cx Plan** and a PDF will be created for viewing and saving.

You must have the Adobe PDF Reader installed on your computer to create documents. To obtain the Adobe PDF Reader, go to http://get.adobe.com/reader.

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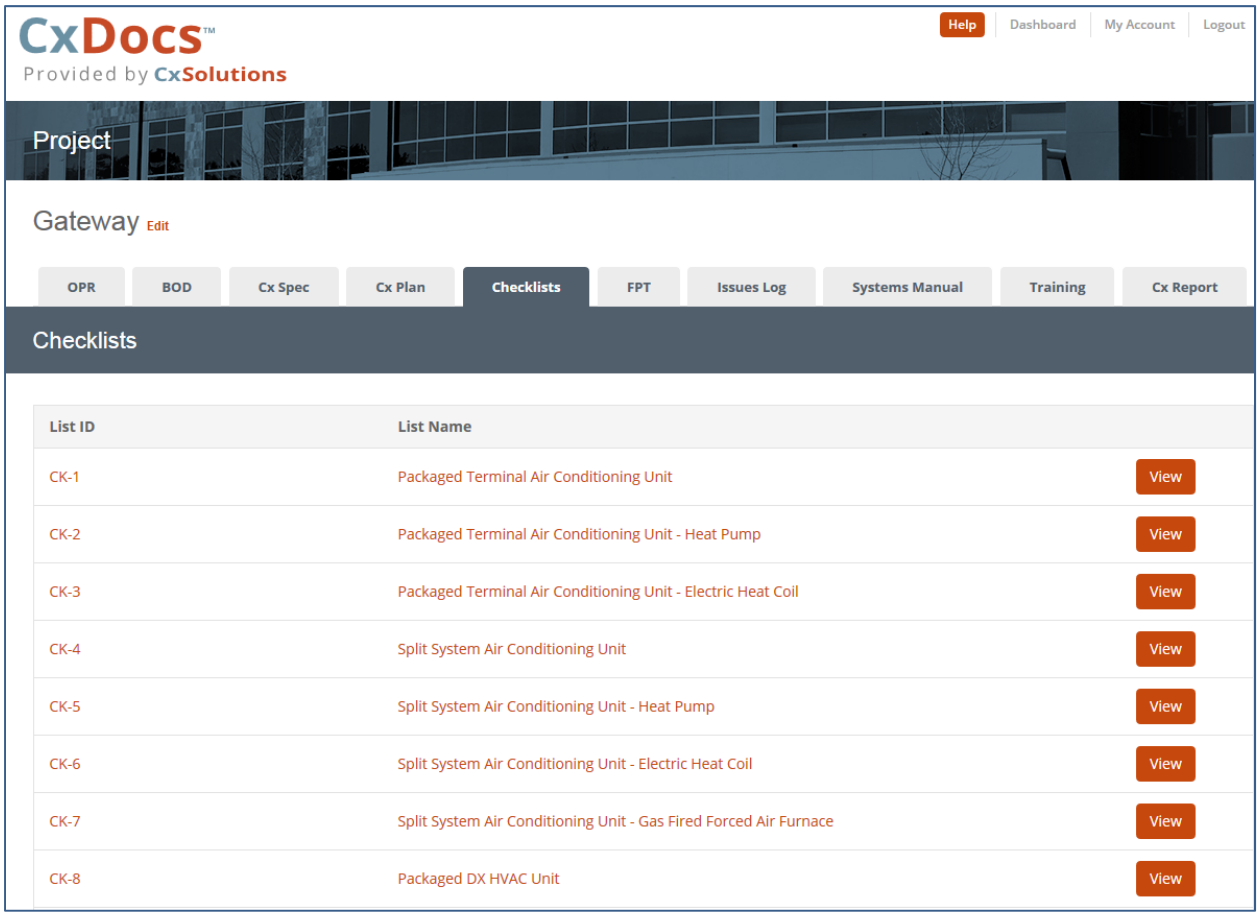
7. Checklists

Construction Checklists are forms used by the Commissioning Team to verify that equipment and systems are complete, installed properly, comply with the Owner's Project Requirements, and are ready for functional performance testing. The checklists are not project specific. After saving the BOD, access is allowed to the Checklists page.

Click **View** to open the individual Construction Checklists. Checklist PDF's may be saved to a local computer.



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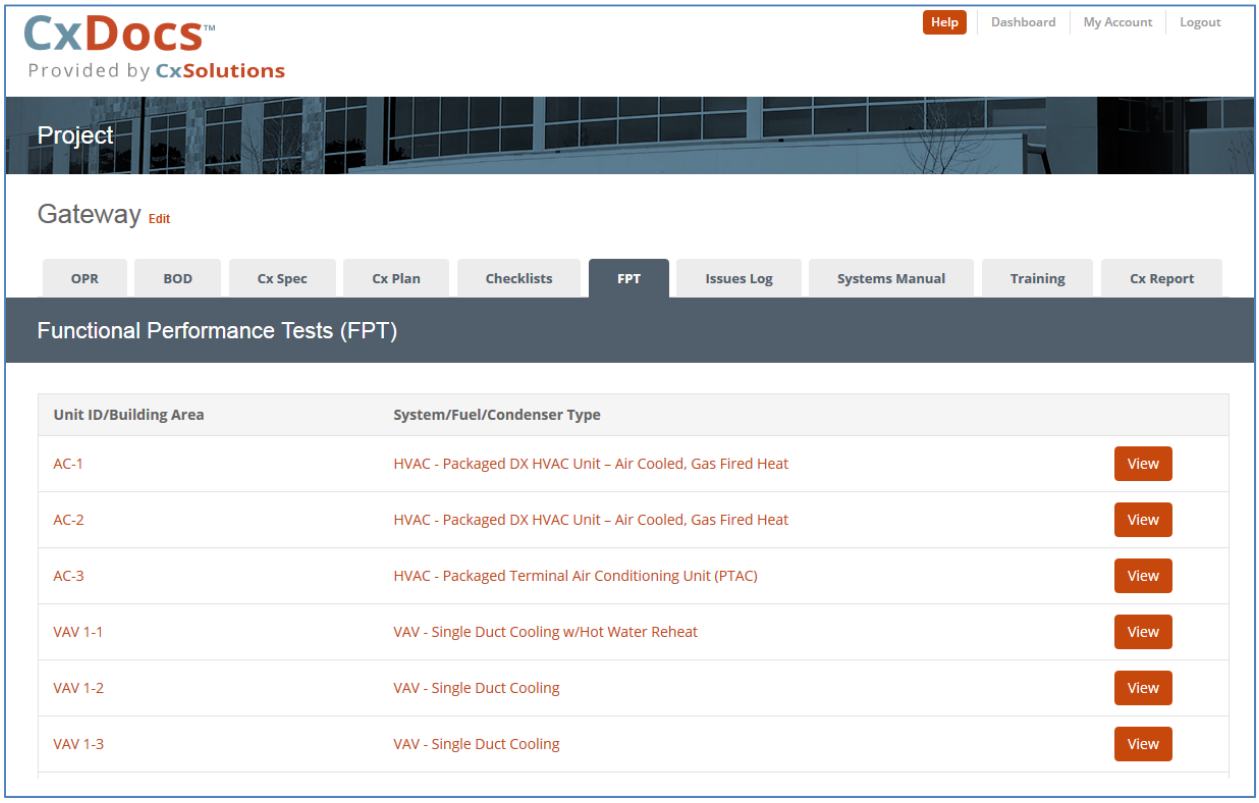
8. Functional Performance Tests (FPT)

Functional Performance Tests are a written protocol that defines methods and expectations for tests conducted on components, equipment, assemblies, and systems and interfaces among systems to verify compliance with the Owner's Project Requirements. The FPTs are specifically developed for your project from information entered in the OPR and BOD pages. After saving the BOD, access is allowed to the FPT page where tests can be viewed, revised, created and saved.



Click **View** to open each individual Functional Performance Test form. Once opened, the test may be reviewed, edited, and saved to the project database. Test items may be used as is or revised to suit your specific system components and control sequences.

> ***Warning:*** Once Functional Performance Tests are saved, ***they can no longer be updated from the OPR and BOD.*** To recreate the initial test provided, the unit must be deleted and recreated. Items may be removed and still available as described below.

The Unit ID/Building Area will appear in the upper left hand corner of each FPT. Test item numbers, test procedures and anticipated/expected results are shown for each test. To revise a

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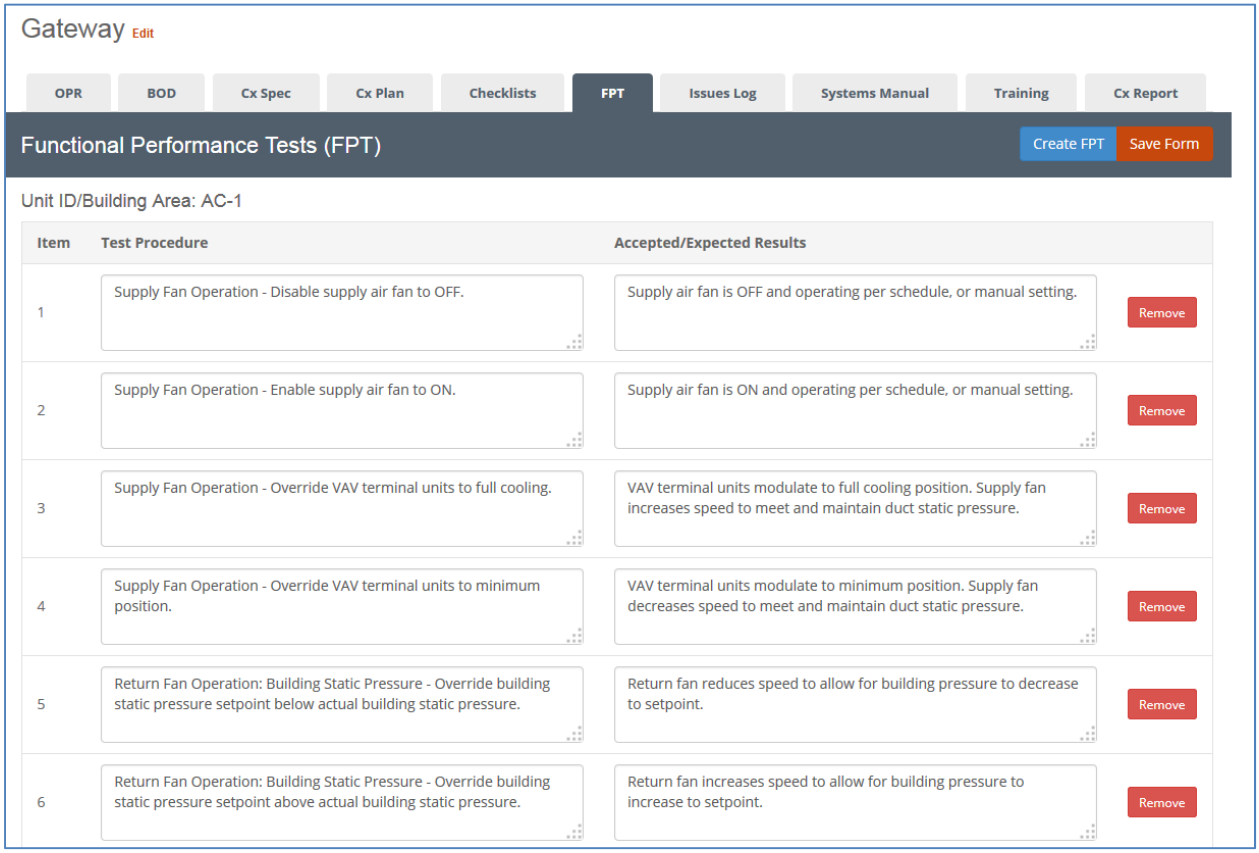
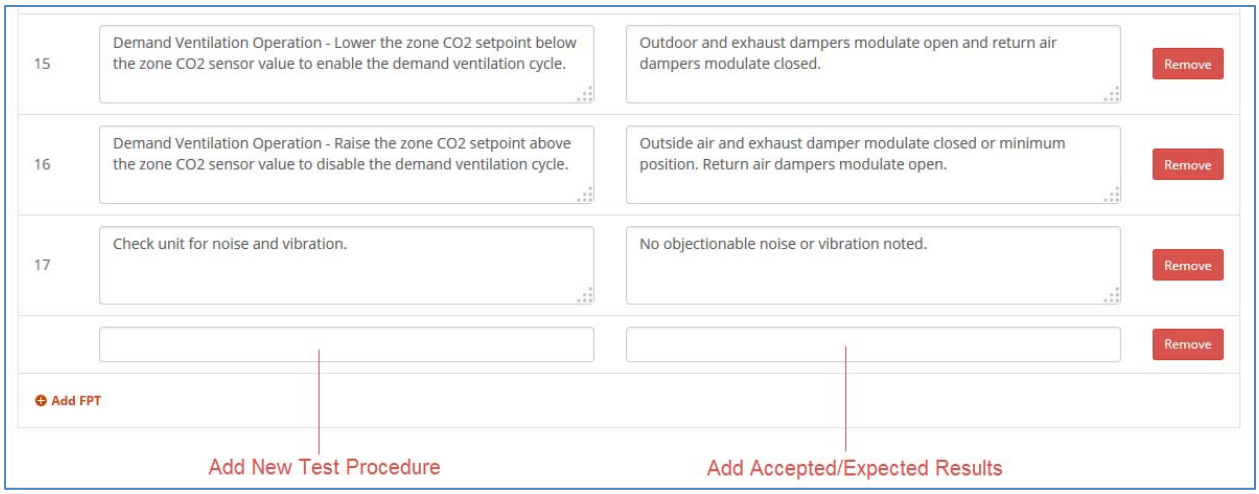
test item, place the cursor in the desired field and make changes. Once revisions are made, Click **Save Form** to save the tests to the project database.



If you require an additional test procedure, Click **Add FPT** and additional fields will appear at the bottom of the form where you may enter a new test procedure and accepted/expected results.



Individual FPT items may be removed from the final test PDF *without deleting the items from this form.* Click the **Remove** button next to the item you wish to delete from the test form and the test item will be greyed out. The grey area indicates that the test will not appear when you

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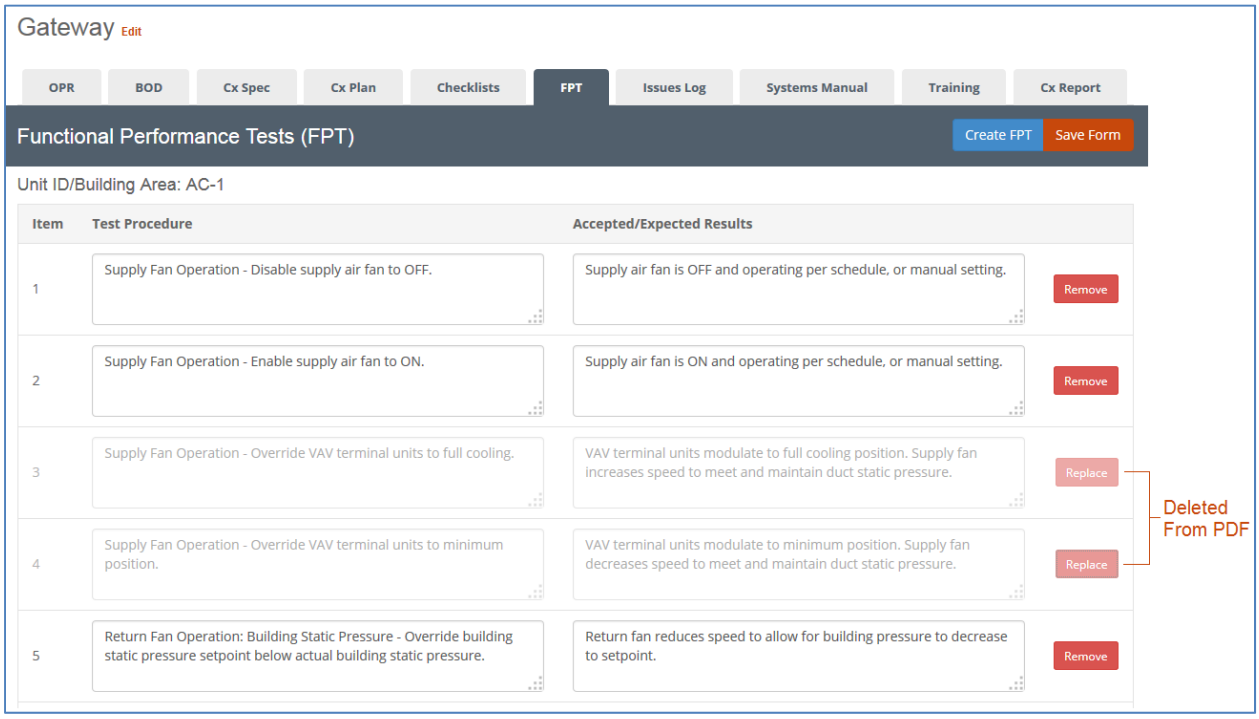
create the FPT PDF. You will notice that the **Remove** button has changed to a **Replace** button. If you desire to replace the test item back into the final test form, Click on the **Replace** button.



Click **Save Form** to save the information to the project database, you may always return later to change and revise the information entered.

Create FPT

Once you review, revise and **Save** the FPT, you may now create the FPT. Remember to Click **Save Form** first and then Click **Create Cx Plan** and a PDF will be created for viewing and saving.

You must have the Adobe PDF Reader installed on your computer to create documents. To obtain the Adobe PDF Reader, go to http://get.adobe.com/reader.

Warning: Once Functional Performance Tests are saved, ***they can no longer be updated from the OPR and BOD.*** To recreate the initial test provided, the unit must be deleted and recreated. Items may be removed and still available as described above.

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9. Issues Log

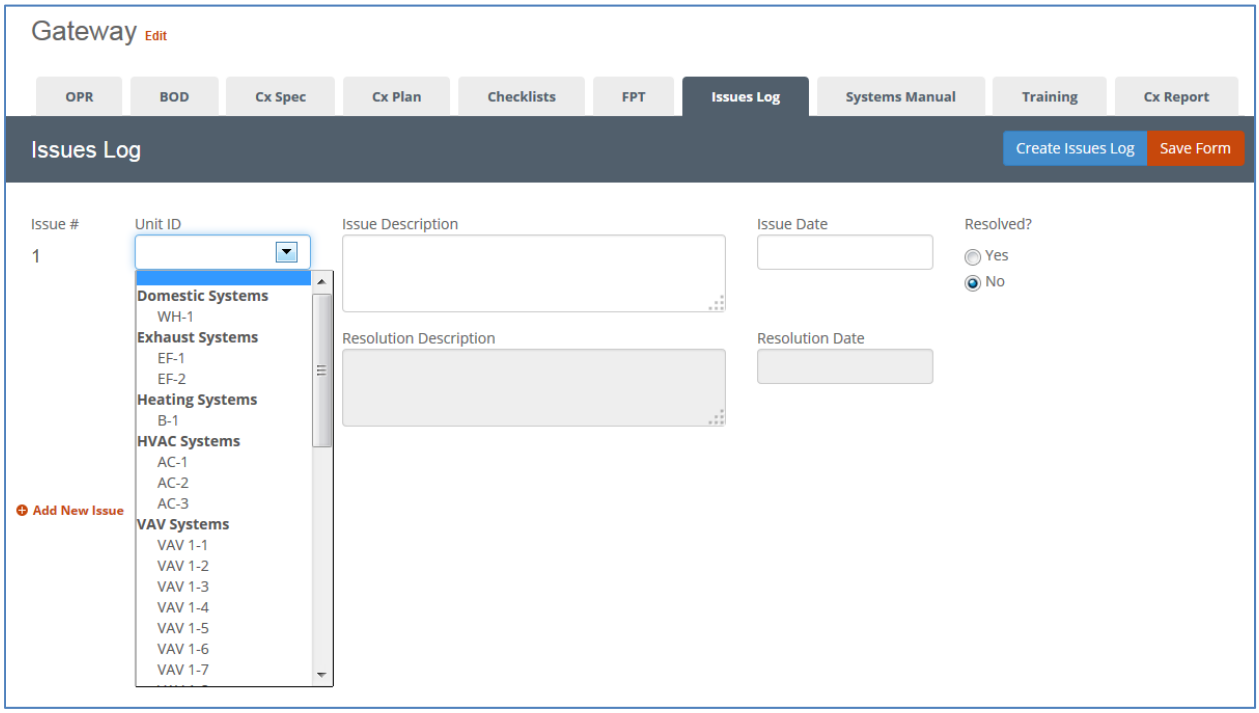
The Issues Log is an ongoing record of problems or concerns with resolutions compiled by Commissioning Team members during the course of the Commissioning Process. A summary of the issues and associated resolutions are listed in the commissioning report. All projects encounter issues, requiring attention, some are major and others are minor. The commissioning process documents the issues and resolutions implemented.

Issue No. 1: You must complete one issue entry within CxDocs.

Unit ID/Building Area: Select the **Unit ID** or **Building Area (Lighting)** associated with the issue from the dropdown list.

Issue Description: Enter a brief **description** of the issue in the textbox.

Issue Date: Select the **date** that the Issue was discovered from the calendar provided.



Resolved: Click **Yes** if the issue has been resolved, **No** if the issue has not been resolved.

Resolution Description: Enter a brief **description** of resolution of the issue in the textbox.

Resolution Date: Select the **date** that the Issue was resolved from the calendar provided.

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To Add New Issues: Click the **Add New Issue** link and additional fields will open and sequentially assign an issue number. Delete issues by Clicking the **X** to the far right of the issue. You must complete and save Issue #1.

Click **Save Form** to save the information to the project database, you may always return later to change and revise the information entered.

Create Issues Log

Once you review, revise and **Save** the Issues Log, you may now create the FPT. Remember to Click **Save Form** first and then Click **Create Issues Log** and a PDF will be created for viewing and saving.

You must have the Adobe PDF Reader installed on your computer to create documents. To obtain the Adobe PDF Reader, go to http://get.adobe.com/reader.

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10. Systems Manual

The Systems Manual provides the building owner or owner representative required documentation to properly operate and maintain the building systems. Contents include descriptions of the building/project, major buildings systems, facility operation and maintenance, operator training documents, and related record documents.

The Systems Manual captures project information and serves as a repository for design, construction, start-up, systems testing, and operation and maintenance documents. Design documents and objectives, construction details, and operational information are contained in a single document.

Unlike typical operation and maintenance manuals provided by equipment vendors, the Systems Manual is a customized document for your specific building and the various systems installed. Equipment and system interfaces, and sequences of operation are detailed and explained. Initial operational parameters, setpoints, calibrations, and schedules are recorded and documented.

> ***Warning:*** When you Click the **SAVE FORM** button in the Systems Manual, information you add, delete or change in the OPR and BOD forms will no longer be updated in the Systems Manual.
>
> It is ***highly*** recommended that inputs into the System Manual not occur until the project is

Mechanical Systems

Heating, Ventilating, Air Conditioning (HVAC) Systems

Systems Manual Date: Select the **date** the Systems Manual is completed from the calendar. This date will appear on the cover page of the Systems Manual.

Date Building Occupied: Enter the **date** the building was occupied.

Example: Constant Volume Supply Fan

Unit ID: The Unit ID will appear in the Unit ID textbox. This field was identified in the BOD section.

> **Do Not Alter the Unit ID Field**

Unit Manufacturer: Enter the HVAC system *manufacturer name*
Unit Model Number: Enter the HVAC *model number*
Unit Serial Number: Enter the HVAC *serial number*
Supply Fan Horsepower: Enter the *supply fan horsepower*

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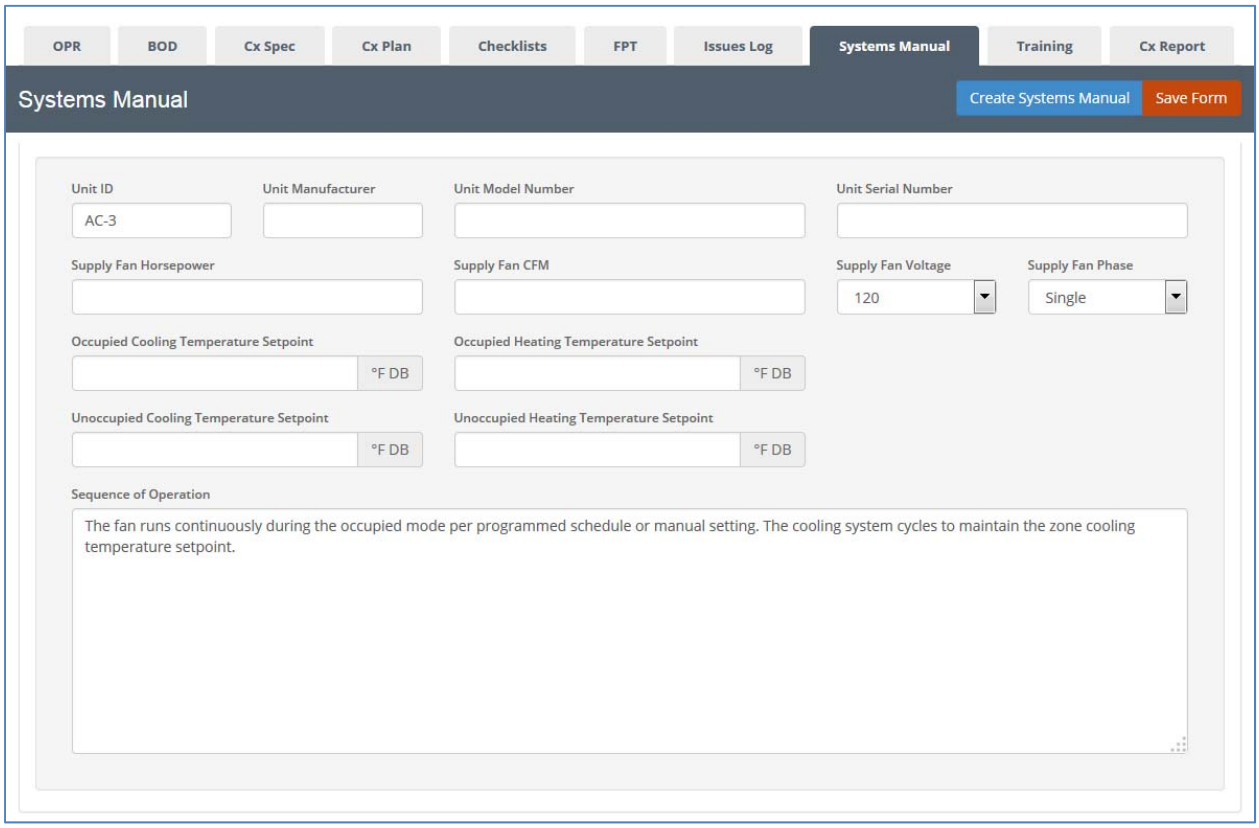
Supply Fan CFM: Enter the *supply fan CFM*
Supply Fan Voltage: Select the *supply fan voltage* from the dropdown menu
Supply Fan Phase: Select the *supply fan phase* from the dropdown menu
Occupied Cooling Temperature Setpoint: Enter the *occupied cooling temperature setpoint*
Occupied Heating Temperature Setpoint: Enter the *occupied heating temperature setpoint*
Unoccupied Cooling Temperature Setpoint: Enter the *unoccupied cooling temperature setpoint*
Unoccupied Heating Temperature Setpoint: Enter the *unoccupied heating temperature setpoint*
Sequence of Operation: The sequence of operation for this HVAC system is sourced from the database based upon input you entered into the OPR and BOD. This generic sequence can be edited and saved; however, once this information is saved, it cannot be updated from the OPR or BOD. Therefore, it is ***highly*** recommended that the Systems Manual information be entered when the project is nearing completion.



Example: Variable Air Volume

Unit Manufacturer: Enter the HVAC system *manufacturer name*
Unit Model Number: Enter the HVAC *model number*
Unit Serial Number: Enter the HVAC *serial number*
Supply Fan Horsepower: Enter the *supply fan horsepower*
Supply Fan CFM: Enter the *supply fan CFM*

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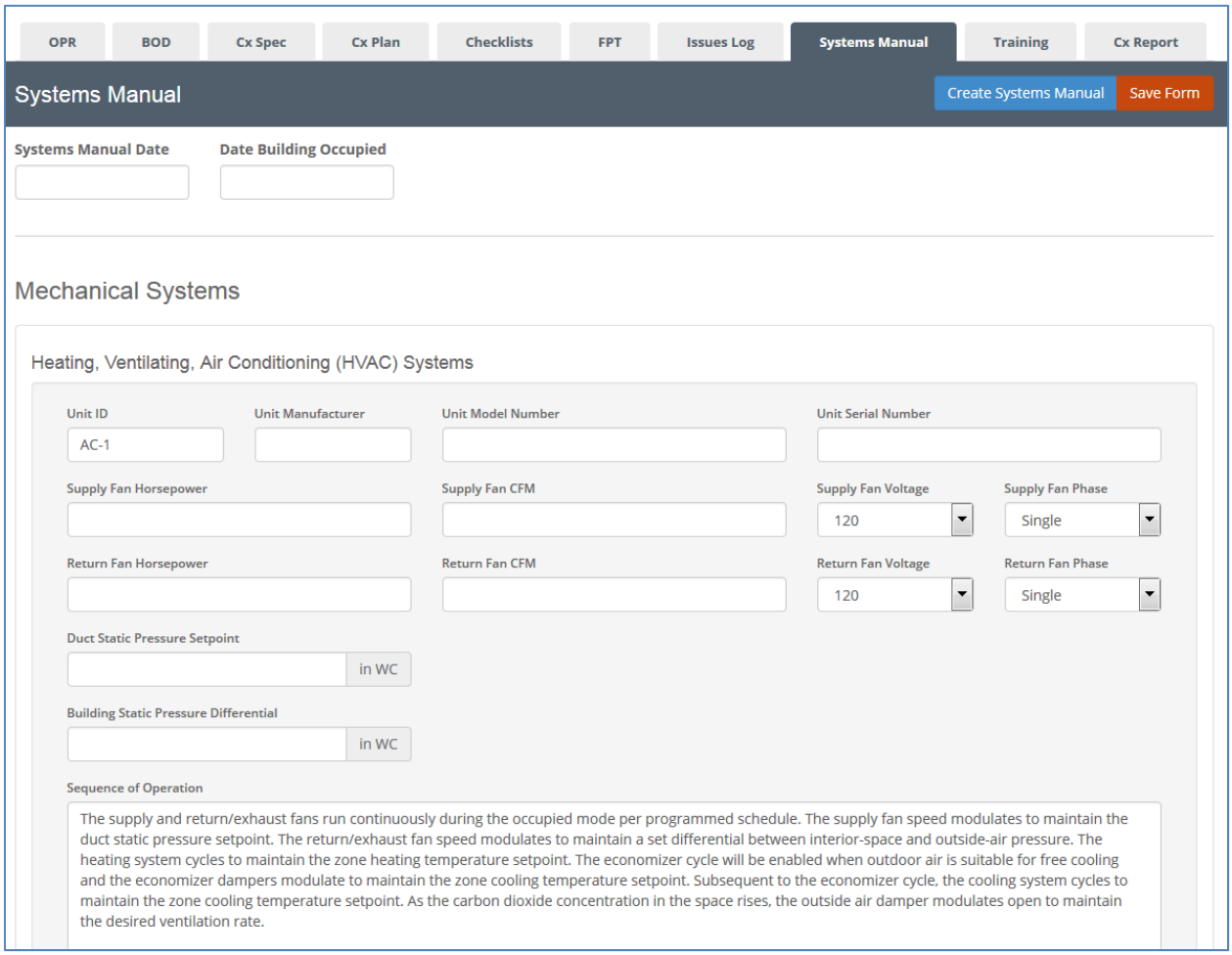
Supply Fan Voltage: Select the *supply fan voltage* from the dropdown menu
Supply Fan Phase: Select the *supply fan phase* from the dropdown menu
Return Fan Horsepower: Enter the *return fan horsepower*
Return Fan CFM: Enter the *return fan CFM*
Return Fan Voltage: Select the *return fan voltage*
Return Fan Phase: Select the *return fan phase*
Duct Static Pressure Setpoint: Enter the actual *duct static pressure setpoint*
Building Static Pressure Differential: Enter the *actual building static pressure differential* (This field will not be shown with units utilizing volumetric tracking.)
Sequence of Operation: The sequence of operation for this HVAC system is sourced from the database based upon input you entered into the OPR and BOD. This is a generic sequence and may be edited and saved; however, once this information is saved, it cannot be updated from the OPR or BOD. Therefore, it is ***highly*** recommended that the System Manual information be entered when the project is nearing completion.



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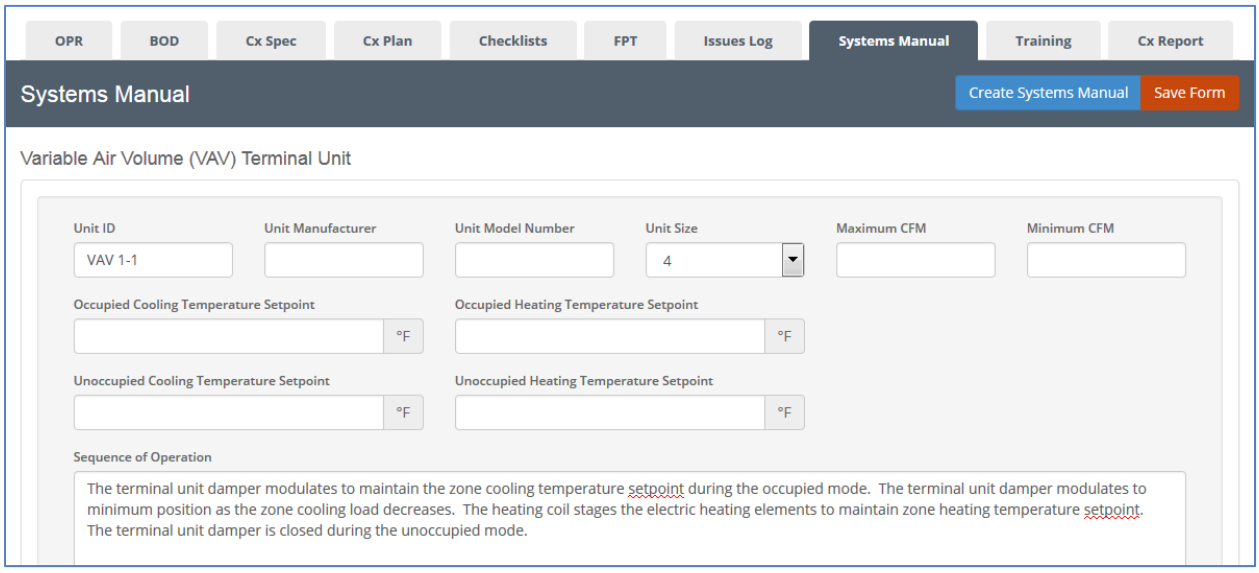
Variable Air Volume (VAV) Terminal Units

Example: *Single Duct Cooling*

Unit ID: The Unit ID will appear in the Unit ID textbox. This field was identified in the BOD section.

Do Not Alter the Unit ID Field

Unit Manufacturer: Enter the VAV Terminal Unit *manufacturer name*
Unit Model Number: Enter the VAV Terminal Unit *model number*
Unit Size: Select the *unit size* from the dropdown menu
Maximum CFM: Enter the *maximum air flow rate* in CFM
Minimum CFM: Enter the *minimum air flow rate* in CFM
Occupied Cooling Temperature Setpoint: Enter the *occupied cooling temperature setpoint*
Occupied Heating Temperature Setpoint: Enter the *occupied heating temperature setpoint*
Unoccupied Cooling Temperature Setpoint: Enter the *unoccupied cooling temperature setpoint*
Unoccupied Heating Temperature Setpoint: Enter the *unoccupied heating temperature setpoint*
Sequence of Operation: The sequence of operation for this VAV Terminal Unit is sourced from the database based upon input you entered into the OPR and BOD. This is a generic sequence and may be edited and saved; however, once this information is saved, it can longer updated from the OPR or BOD. Therefore, it is ***highly*** recommended that the System Manual information be entered when the project is nearing completion.



Example: *Single Duct Cooling w/Hot Water Reheat*

Unit Manufacturer: Enter the VAV Terminal Unit *manufacturer name*
Unit Model Number: Enter VAV Terminal Unit *model number*

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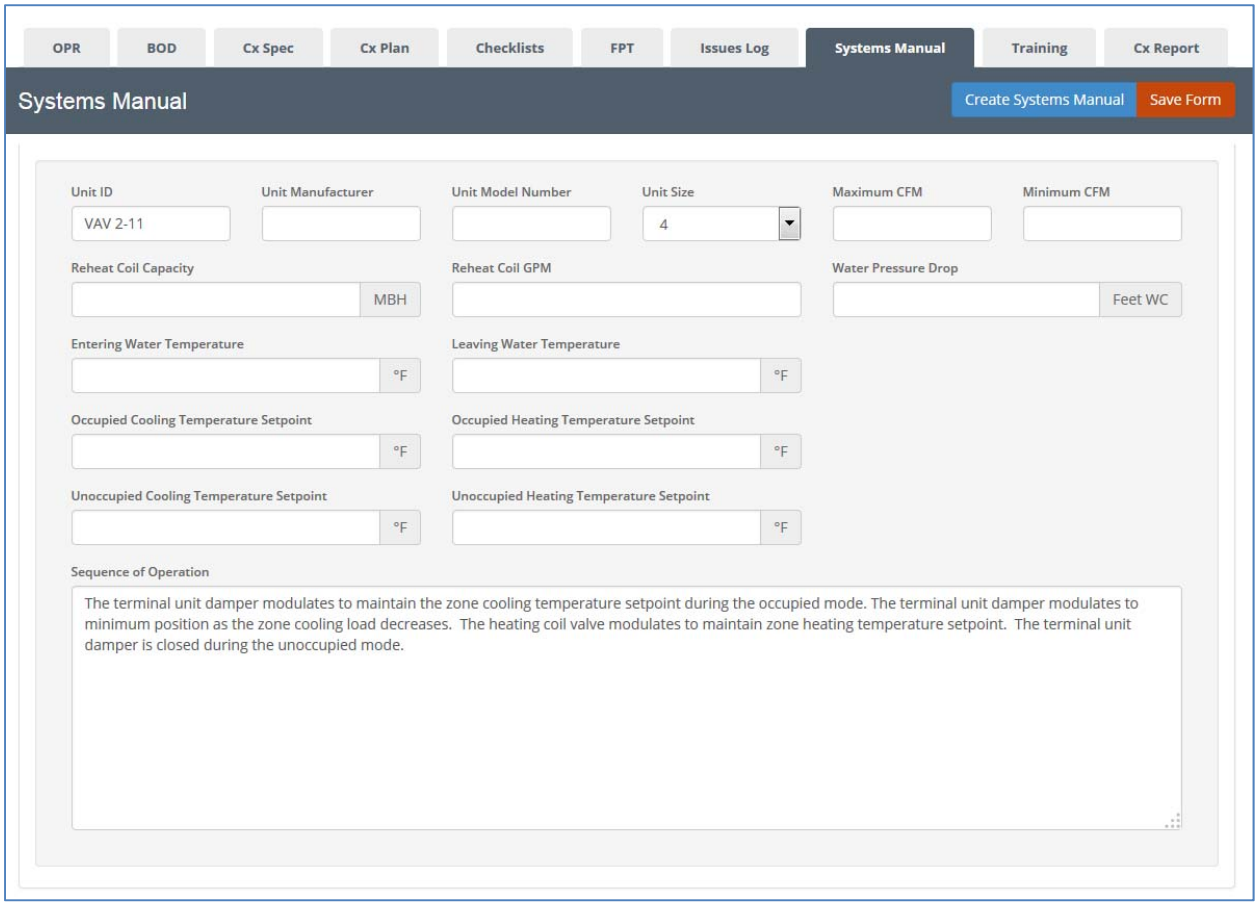
Unit Size: Select the *unit size* from the dropdown menu
Maximum CFM: Enter the *maximum air flow rate* in CFM
Minimum CFM: Enter the *minimum air flow rate* in CFM
Reheat Coil Capacity: Enter the *reheat coil capacity* in MBH
Reheat Coil GPM: Enter the *coil flow rate* in GPM
Water Pressure Drop: Enter the *coil water pressure drop* in Feet WC
Entering Water Temperature: Enter the *coil entering water temperature* in ^{o}F
Leaving Water Temperature: Enter the *coil leaving water temperature* in ^{o}F
Occupied Cooling Temperature Setpoint: Enter the *occupied cooling temperature setpoint*
Occupied Heating Temperature Setpoint: Enter the *occupied heating temperature setpoint*
Unoccupied Cooling Temperature Setpoint: Enter the *unoccupied cooling temperature setpoint*
Unoccupied Heating Temperature Setpoint: Enter the *unoccupied heating temperature setpoint*
Sequence of Operation: The sequence of operation for this VAV Terminal Unit is sourced from the database based upon input you entered into the OPR and BOD. This is a generic sequence and may be edited and saved; however, once this information is saved it cannot be updated from the OPR or BOD. Therefore, it is ***highly*** recommended that the System Manual information be entered when the project is nearing completion.



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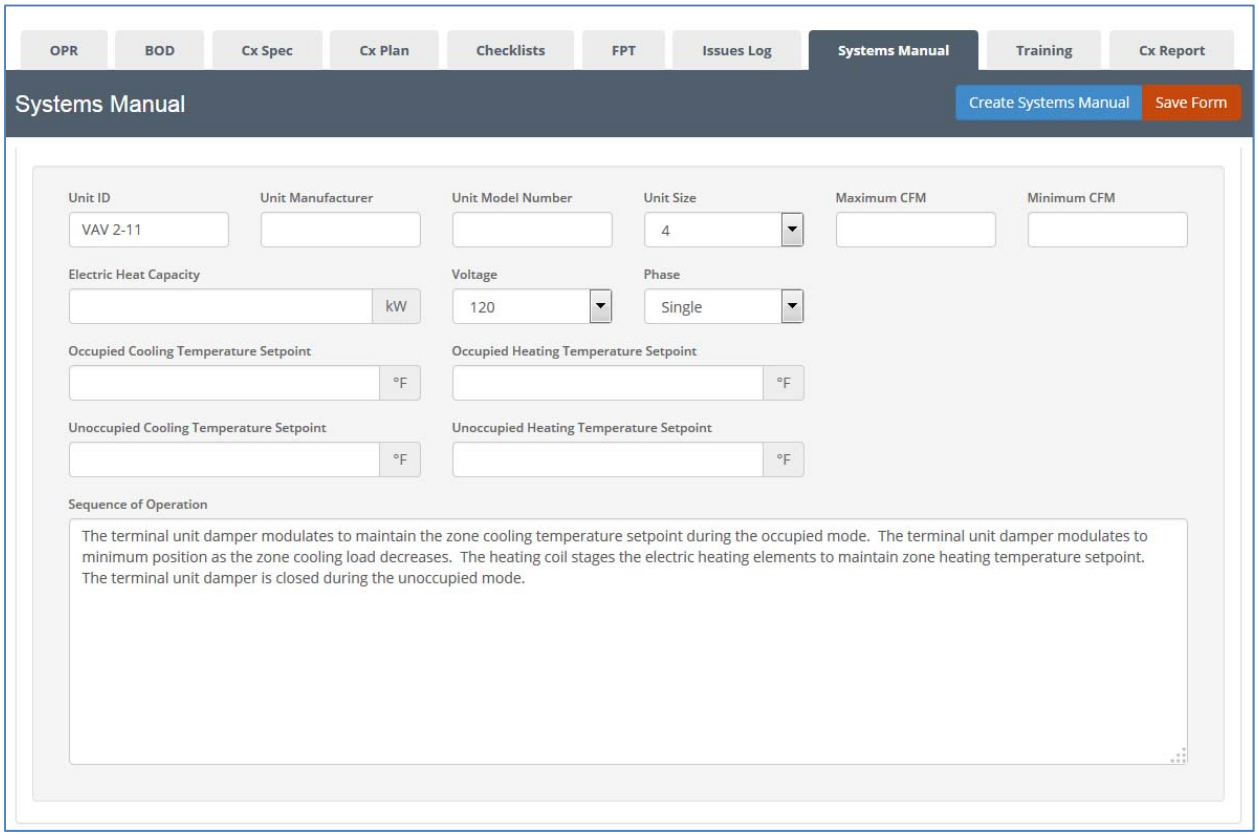
Example: *Single Duct Cooling w/Electric Reheat*

Unit Manufacturer: Enter the VAV Terminal Unit *manufacturer name*
Unit Model Number: Enter the VAV Terminal Unit *model number*
Unit Size: Select the *unit size* from the dropdown menu
Maximum CFM: Enter the *maximum air flow rate* in CFM
Minimum CFM: Enter the *minimum air flow rate* in CFM
Electric Heat Capacity: Enter the *electric heat capacity* in kW.
Voltage: Select the *voltage* from the dropdown menu
Phase: Select the *phase* from the dropdown menu
Occupied Cooling Temperature Setpoint: Enter the *occupied cooling temperature setpoint*
Occupied Heating Temperature Setpoint: Enter the *occupied heating temperature setpoint*
Unoccupied Cooling Temperature Setpoint: Enter the *unoccupied cooling temperature setpoint*
Unoccupied Heating Temperature Setpoint: Enter the *unoccupied heating temperature setpoint*
Sequence of Operation: The sequence of operation for this VAV Terminal Unit is sourced from the database based on the input you entered into the OPR and BOD. This is a generic sequence and may be edited and saved; however, once this information is saved it cannot be updated from the OPR or BOD. Therefore, it is ***highly*** recommended that the Systems Manual information be entered when the project is nearing completion.



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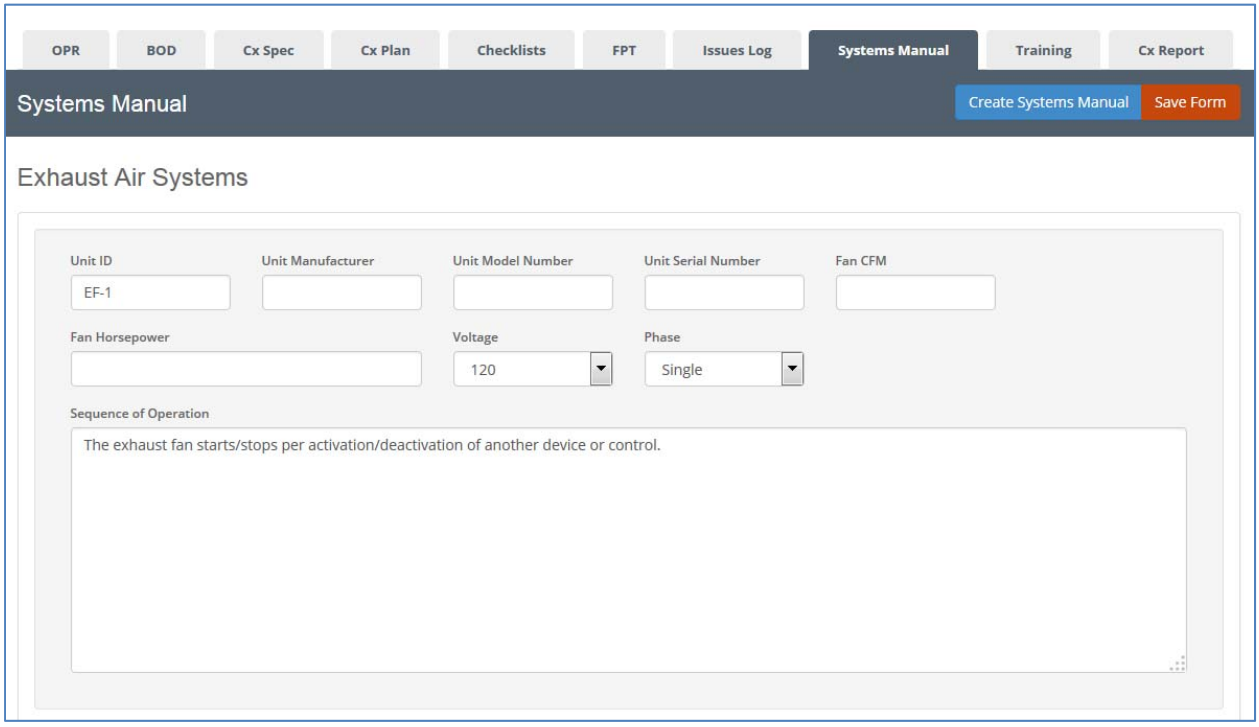
Exhaust Air Systems

Unit ID: The Unit ID will appear in the Unit ID textbox. This field was identified in the BOD section.

Do Not Alter the Unit ID Field

Unit Manufacturer: Enter the Exhaust Fan *manufacturer name*
Unit Model Number: Enter the Exhaust Fan *model number*
Unit Serial Number: Enter the *serial number* of the Exhaust Fan
Fan CFM: Enter the *air flow rate* in CFM
Fan HP: Enter the *fan horsepower*
Voltage: Select the *exhaust fan voltage* from the dropdown menu
Phase: Select the *exhaust fan phase* from the dropdown menu
Sequence of Operation: The sequence of operation for this Exhaust Fan is sourced from the database based upon the input you entered into the OPR and BOD. This is a generic sequence and may be edited and saved; however, once this information is saved it cannot be updated from the OPR or BOD. Therefore, it is ***highly*** recommended that the Systems Manual information be entered when the project is nearing completion.



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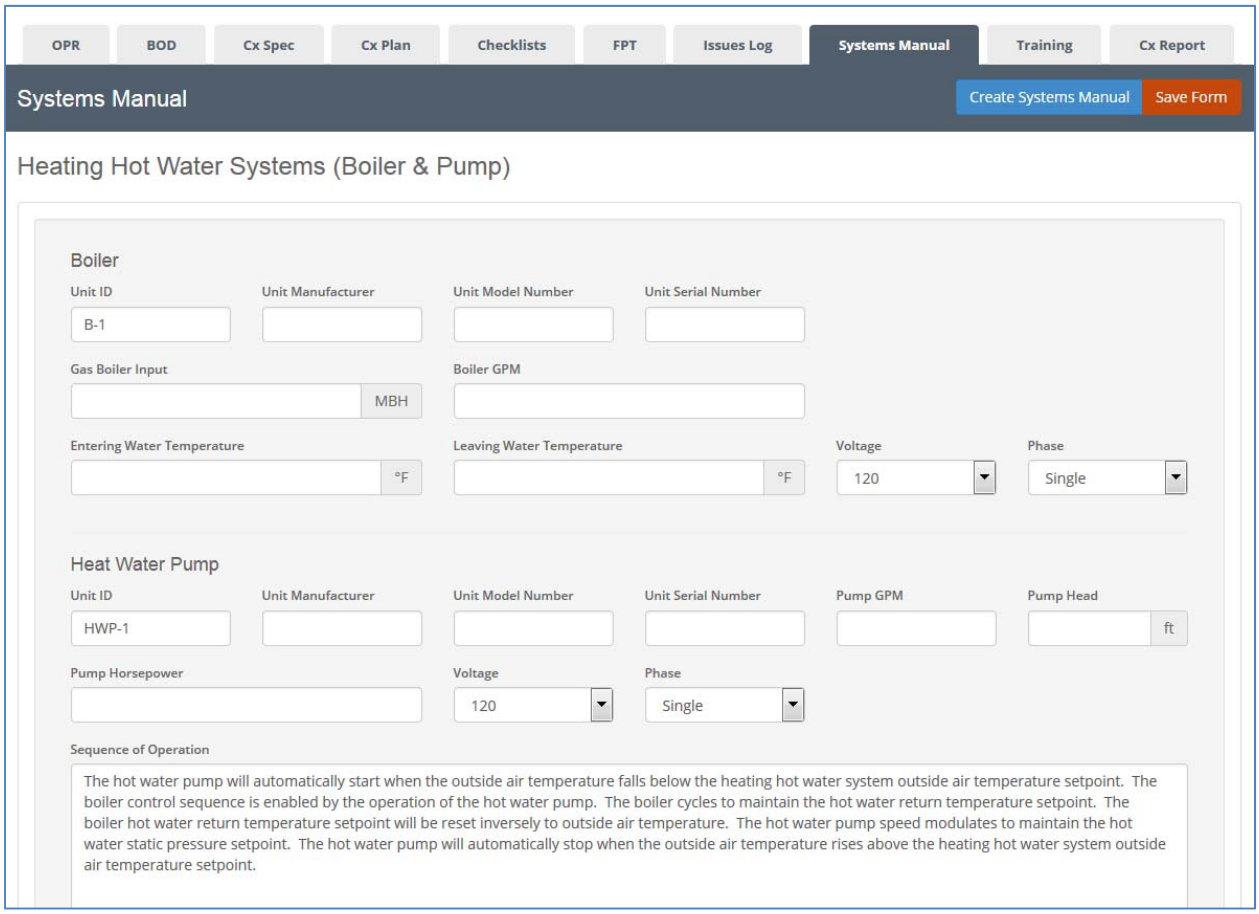
Heating Hot Water Systems (Boiler & Pump)

Boiler

Unit ID: The Unit ID will appear in the Unit ID textbox. This field was identified in the BOD section.

Do Not Alter the Unit ID Field

Unit Manufacturer: Enter the Boiler *manufacturer name*
Unit Model Number: Enter the boiler *model number*
Unit Serial Number: Enter the boiler *serial number*
Gas Boiler Input: Enter the *boiler input* in MBH
Boiler GPM: Enter the *boiler flow rate* in GPM
Entering Water Temperature: Enter the *coil entering water temperature* in ^{o}F
Leaving Water Temperature: Enter the *coil leaving water temperature* in ^{o}F
Voltage: Select the *boiler voltage* from the dropdown menu
Phase: Select the *boiler phase* from the dropdown menu



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Hot Water Pump

Unit ID: The Unit ID will appear in the Unit ID textbox. This field was identified in the BOD section.

Do Not Alter the Unit ID Field

Unit Manufacturer: Enter the Hot Water Pump *manufacturer name*
Unit Model Number: Enter the Hot Water Pump *model number*
Unit Serial Number: Enter the Hot Water Pump *serial number*
Pump GPM: Enter the *flow rate* of the Hot Water Pump in GPM.
Pump Head: Enter the *pump head* of the Hot Water Pump in feet of head.
Pump Horsepower: Enter the *pump horsepower* of the Hot Water Pump.
Voltage: Select the Hot Water *pump voltage* from the dropdown menu
Phase: Select the Hot Water *pump phase* from the dropdown menu
Sequence of Operation: The sequence of operation for this Heating Hot Water System is sourced from the database based upon the input you entered into the OPR and BOD. This is a generic sequence and may be edited and saved; however, once this information is saved it cannot be updated from the OPR or BOD. Therefore, it is ***highly*** recommended that the System Manual information be entered when the project is nearing completion.

Chilled Water Systems (Chiller & Pump)

Chiller

Unit ID: The Unit ID will appear in the Unit ID textbox. This field was identified in the BOD section.

Do Not Alter the Unit ID Field

Unit Manufacturer: Enter the Chiller *manufacturer name*
Unit Model Number: Enter the Chiller *model number*
Unit Serial Number: Enter the Chiller *serial number*
Capacity: Enter the Chiller *cooling capacity* in Tons
Entering Water Temperature: Enter the *coil entering water temperature* in ^{o}F
Leaving Water Temperature: Enter the *coil leaving water temperature* in ^{o}F
Chiller GPM: Enter the *flow rate* of the Chiller in GPM
Voltage: Select the *voltage* of the Chiller from the dropdown menu
Phase: Select the *phase* of the Chiller from the dropdown menu

Primary Chilled Water Pump

Unit ID: The Unit ID will appear in the Unit ID textbox. This field was identified in the BOD section.

Do Not Alter the Unit ID Field

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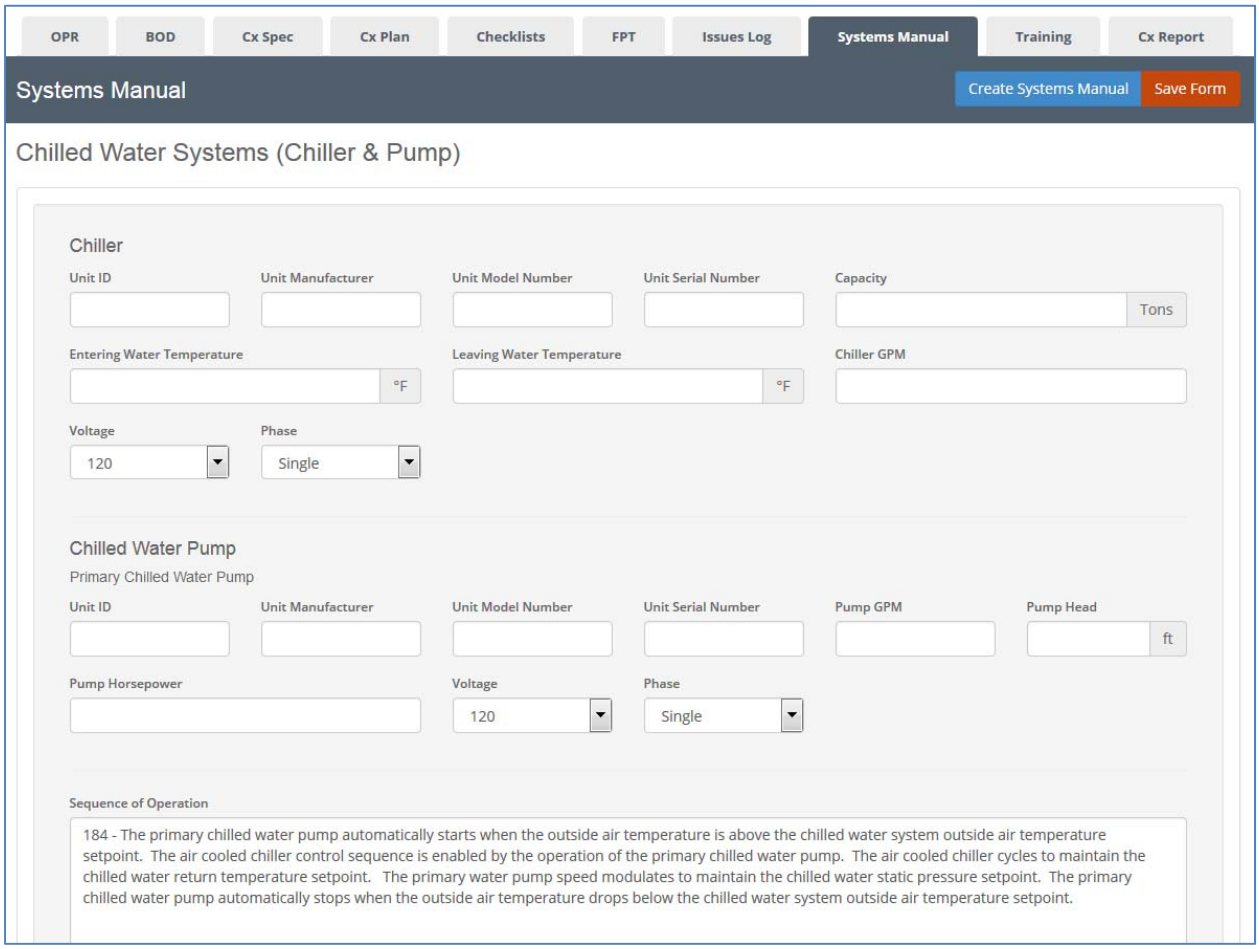
Unit Manufacturer: Enter the Chilled Water Pump *manufacturer name*
Unit Model Number: Enter the Chilled Water Pump *model number*
Unit Serial Number: Enter the Chilled Water Pump *serial number*
Pump GPM: Enter the Chilled Water Pump *flow rate* in GPM
Pump Head: Enter the Chilled Water Pump *head* in feet of head
Pump Horsepower: Enter the Chilled Water Pump *horsepower*
Voltage: Select the Chilled Water Pump *voltage* from the dropdown menu
Phase: Select the Chilled Water Pump *phase* from the dropdown menu
Sequence of Operation: The sequence of operation for this Chilled Water System is sourced from the database based upon input you entered into the OPR and BOD. This is a generic sequence and may be edited and saved; however, once this information is saved it cannot be updated from the OPR or BOD. Therefore, it is ***highly*** recommended that the System Manual information be entered when the project is nearing completion.

Secondary Chilled Water Pump

A Secondary Chilled Water Pump will appear with similar fields when Primary/Secondary Variable Flow is chosen under Chilled Water System Flow in the BOD.



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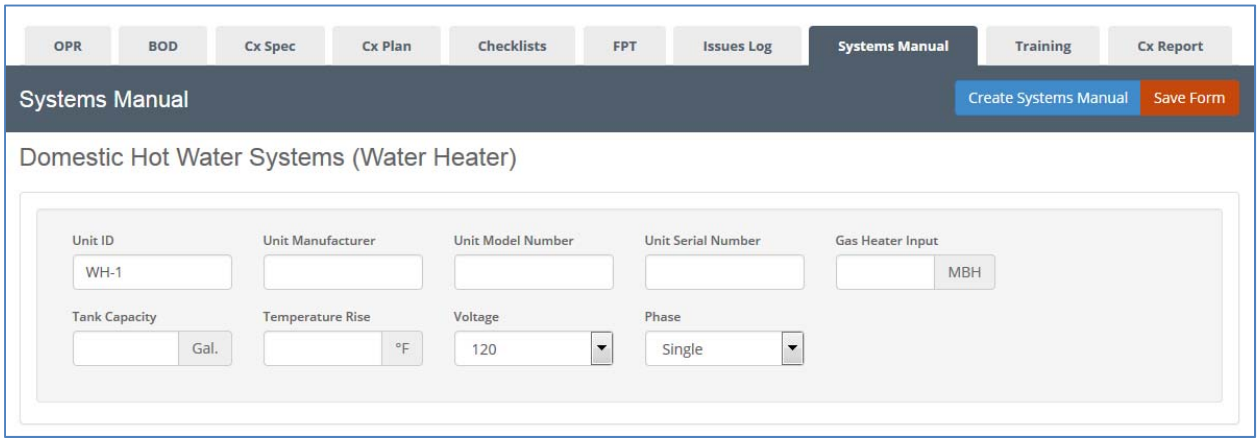
Domestic Hot Water Systems (Water Heater)

Conventional Storage Tank – Gas

Unit ID: The Unit ID will appear in the Unit ID textbox. This field was identified in the BOD Section.

Do Not Alter the Unit ID Field

Unit Manufacturer: Enter the Storage Tank Water Heater *manufacturer name*
Unit Model Number: Enter the Gas Storage Tank Water Heater *model number*
Unit Serial Number: Enter the Gas Storage Tank Water Heater *serial number*
Gas Heater Input: Enter the Gas Storage Tank Water *Heater Input* in MBH
Tank Capacity: Enter the Gas Storage Tank Water Heater capacity in gallons
Temperature Rise: Enter the Gas Storage Tank Water Heater *temperature rise*
Voltage: Select the Gas Storage Tank Water Heater *voltage* (if applicable) from the dropdown menu
Phase: Select the Gas Storage Tank Water Heater *phase* (if applicable) from the dropdown menu



Tankless On-Demand – Gas

Unit Manufacturer: Enter the On-Demand Water Heater *manufacturer name*
Unit Model Number: Enter the On-Demand Water Heater *model number*
Unit Serial Number: Enter the On-Demand Water Heater *serial number*
Gas Heater Input: Enter the On-Demand Water *Heater Input* in MBH
Heater Capacity: Enter the On-Demand Water *Heather capacity* in GPM
Temperature Rise: Enter the On-Demand Water Heater *temperature rise*
Voltage: Select the On-Demand Water Heater *voltage* from the dropdown menu
Phase: Select the On-Demand Water Heater *phase* from the dropdown menu

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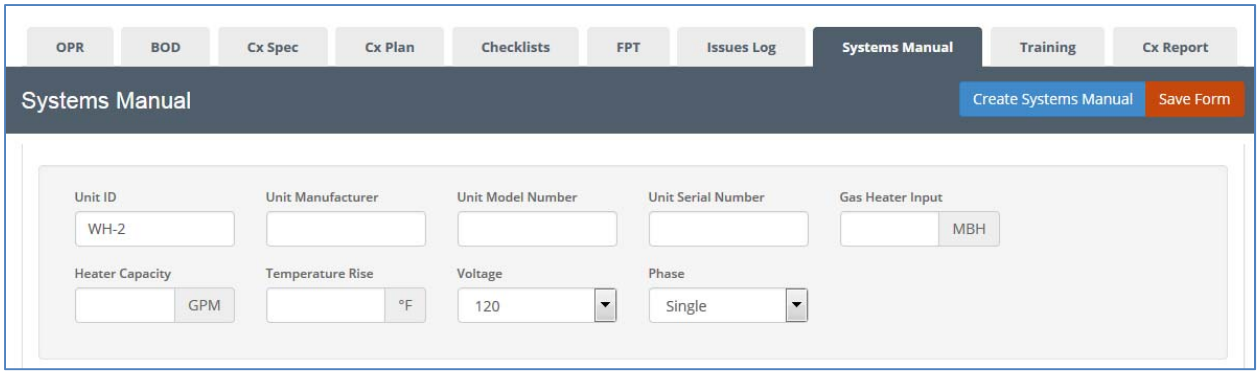
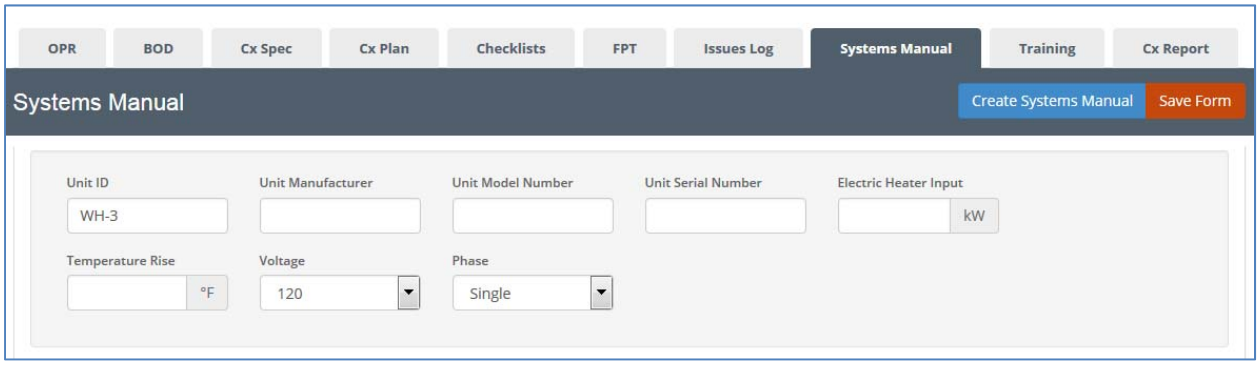


Point-of-Use – Electric

Unit Manufacturer: Enter the Point of-Use Water Heater *manufacturer name*
Unit Model Number: Enter the Point of-Use Water Heater *model number*
Unit Serial Number: Enter the Point of-Use Water Heater *serial number*
Electric Heater Input: Enter the Point of-Use Water *Heater input* in kW
Temperature Rise: Enter the Point of-Use Water Heater *temperature rise*
Voltage: Select the Point of-Use Water Heater *voltage* from the dropdown menu
Phase: Select the Point of-Use Water Heater *phase* from the dropdown menu



Conventional Storage Tank - Electric

Unit Manufacturer: Enter the Electric Storage Tank Hot Water Heater *manufacturer name*
Unit Model Number: Enter the Electric Storage Tank Hot Water Heater *model number*
Unit Serial Number: Enter the Electric Storage Tank Hot Water Heater *serial number*
Electric Heater Input: Enter the Electric Storage Tank Water *Heater input* in kW
Tank Capacity: Enter the Electric Storage Tank Water *Heater capacity* in gallons
Temperature Rise: Enter the Electric Storage Tank Hot Water Heater *temperature rise*
Voltage: Select the Electric Storage Tank Hot Water Heater *voltage* from the dropdown menu
Phase: Select the Electric Storage Tank Hot Water Heater *phase* from the dropdown menu

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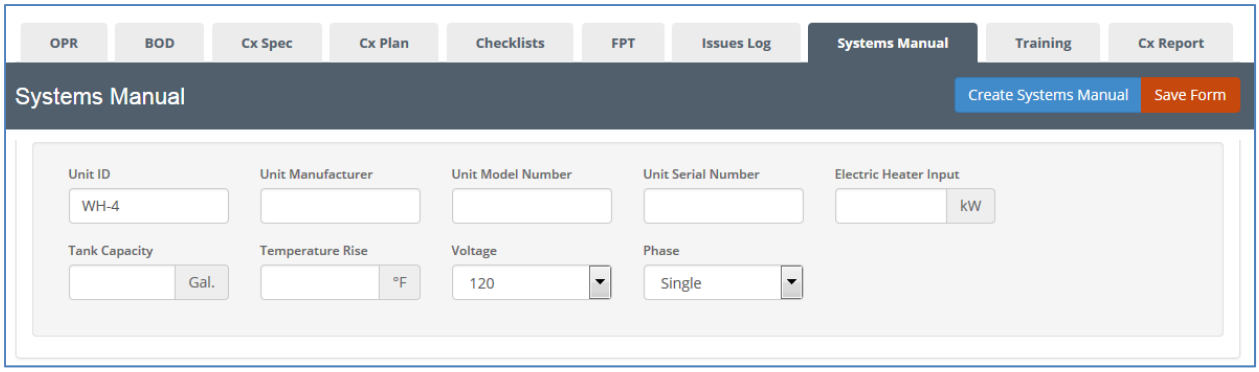
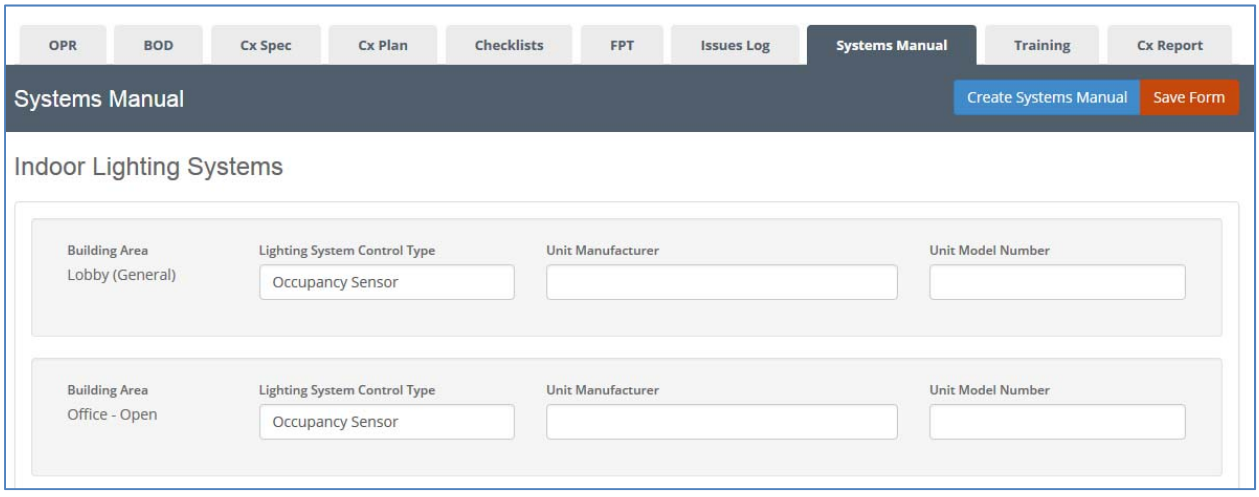


Indoor Lighting Systems

Building Area: The building area associated with the lighting system will be shown.
Lighting System Control Type: The Lighting System Control Type will be shown.

Do Not Alter the Lighting System Control Type

Unit Manufacturer: Enter the Lighting System Control *manufacturer name*
Unit Model Number: Enter the Lighting System Control *model number*



Renewable Energy Systems (Photovoltaic)

System ID: The System ID will appear in the System ID textbox. This is identified in the BOD section.

Do Not Alter the Unit ID Field

Solar Panel Manufacturer: Enter the Photovoltaic Panel *manufacturer name*
Solar Panel Model Number: Enter the Photovoltaic Panel *model number*
Inverter Manufacturer: Enter the Inverter *manufacturer name*
Inverter Model Number: Enter the Inverter *model number*

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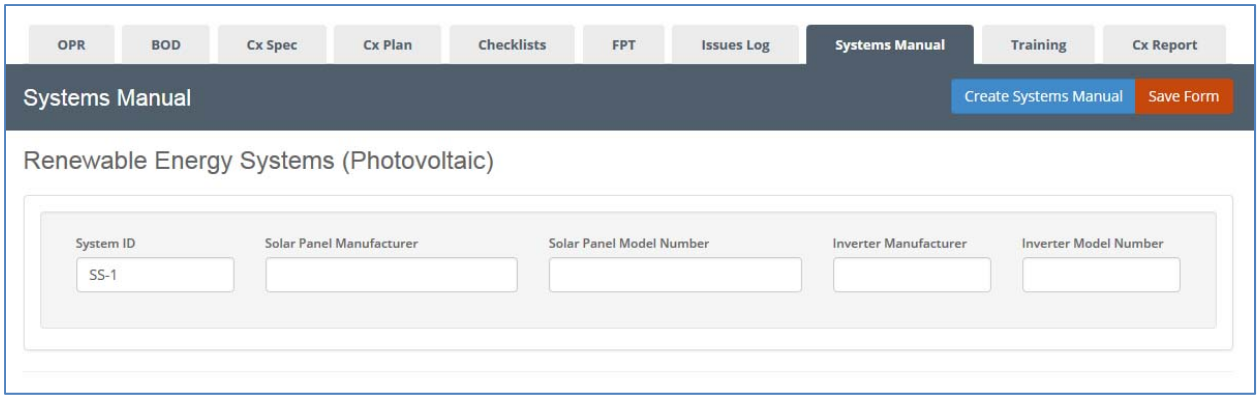

Related Documents & Resources

Record Drawings & Documents

Document Location: Enter the *Record Drawings & Documents location*
Contact Name: Enter *the Record Drawings & Documents Contact Name*
Phone: Enter the *Contact's Phone Number*
Email: Enter the *Contact's Email address*
Continue to enter information related to the *Approved Submittals & Shop Drawings*, *Operation & Maintenance Manuals, Warranties and Commissioning Documentation*

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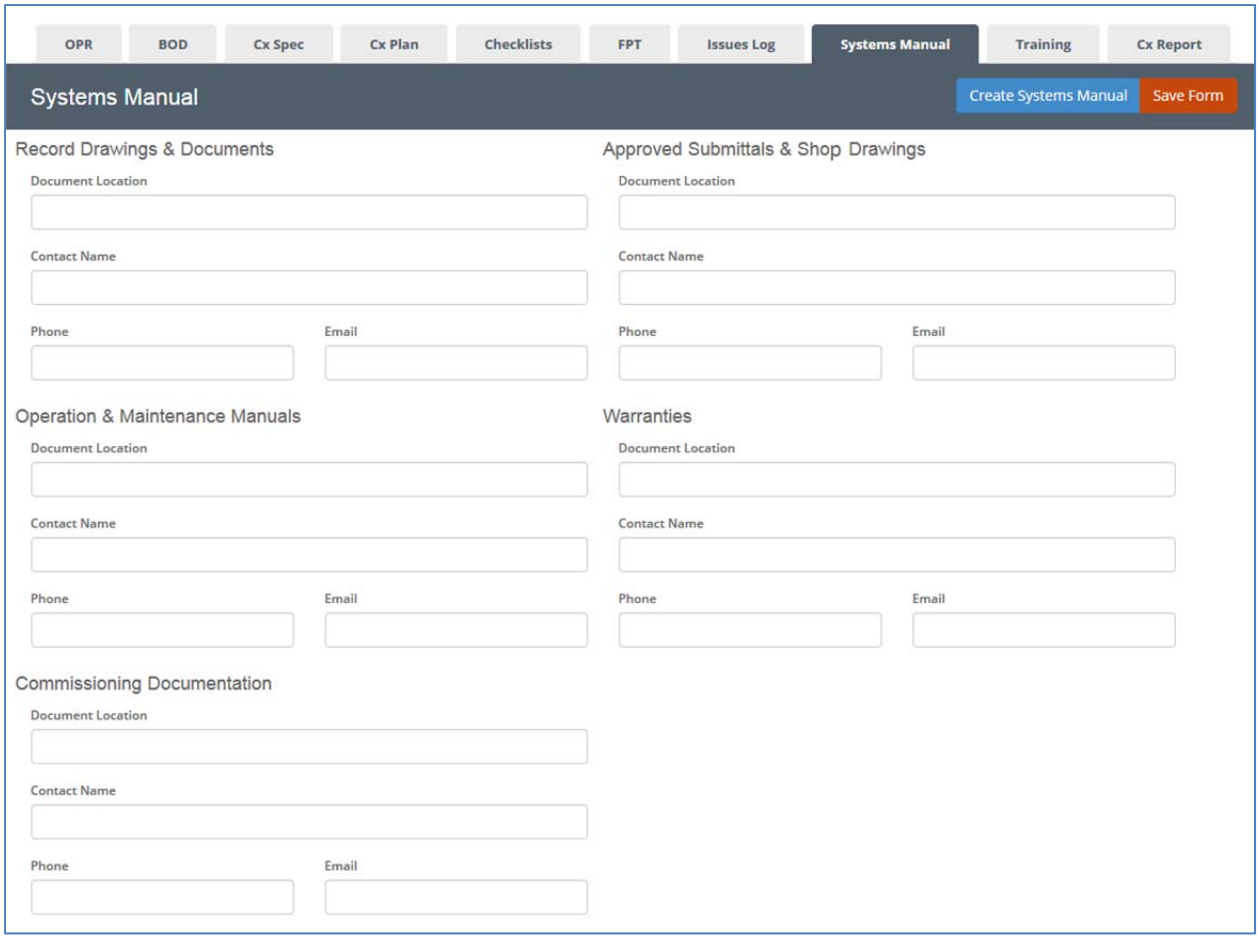

Building Resources Contact Information

Property Owner/Management

Company: Enter the Property Owner or Property Management Company name
Contact Name: Enter the Property Owner/Management Contact Name
Phone: Enter the Contact's Phone Number
Email: Enter the Contact's Email address

Continue to enter information related to the Operation & Maintenance Staff and Occupants/Users

Click **Save Form** to save the information to the project database, you may always return later to change and revise the information entered.

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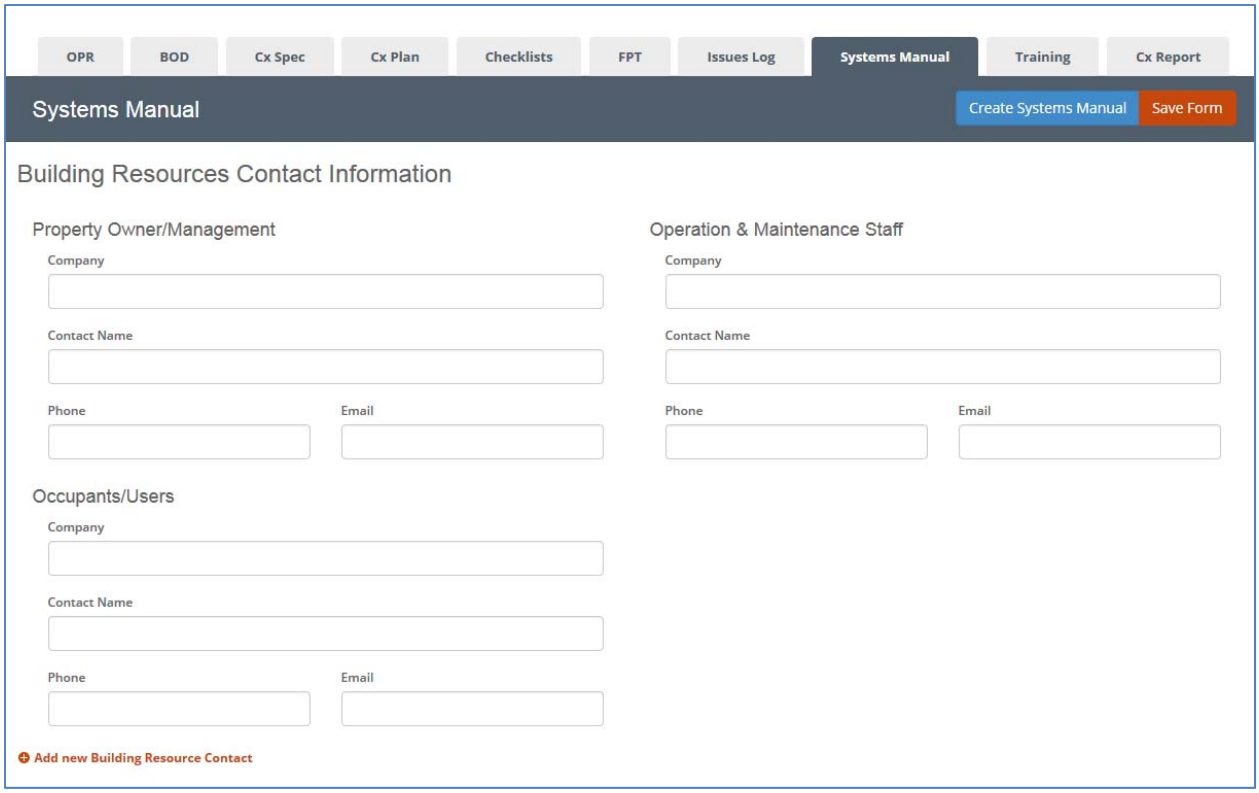

Create Systems Manual

Once the Systems Manual information is entered and saved to the database, you may now create the Systems Manual. Click **Create Systems Manual** and a PDF will be created for viewing and saving.

You must have the Adobe PDF Reader installed on your computer to create documents. To obtain the Adobe PDF Reader, go to http://get.adobe.com/reader.

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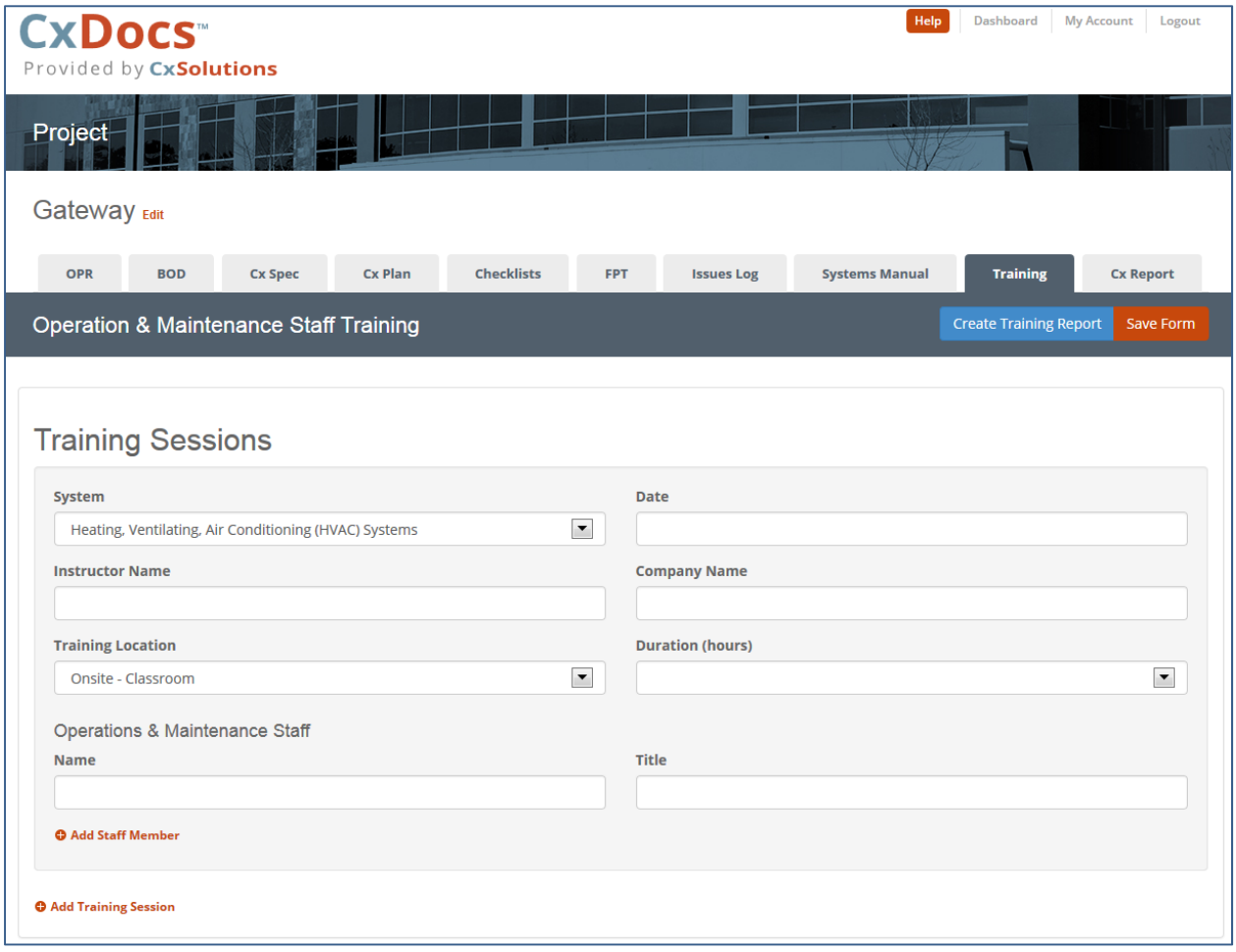
11. Operation & Maintenance Staff Training (Training)

Training Sessions

System: Select the training *System session* from the dropdown menu
Date: Select the training *session Date* from the calendar
Instructor Name: Enter the *Instructor Name*
Company Name: Enter the *Instructor's Company Name*
Training Location: Select the *training Location* from the dropdown menu
Duration (Hours): Select the *training session Duration* from the dropdown menu

Operations and Maintenance Staff

Name: Enter the Operation and Maintenance *Staff Name*
Title: Enter the Operation and Maintenance *Staff Title*
Add Staff Member: Click *Add Staff Member* to add additional staff
Add Training Session: Click *Add Training* Session to add additional training sessions.



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Click **Save Form** to save information to the project database, you may always return later to change and revise the information entered.

Create Training Report

Once the Training Report information is entered and saved to the database, you may now create the Training Report. Click **Create Training Report** and a PDF will be created for viewing and saving.

You must have the Adobe PDF Reader installed on your computer to create documents. To obtain the Adobe PDF Reader, go to http://get.adobe.com/reader.

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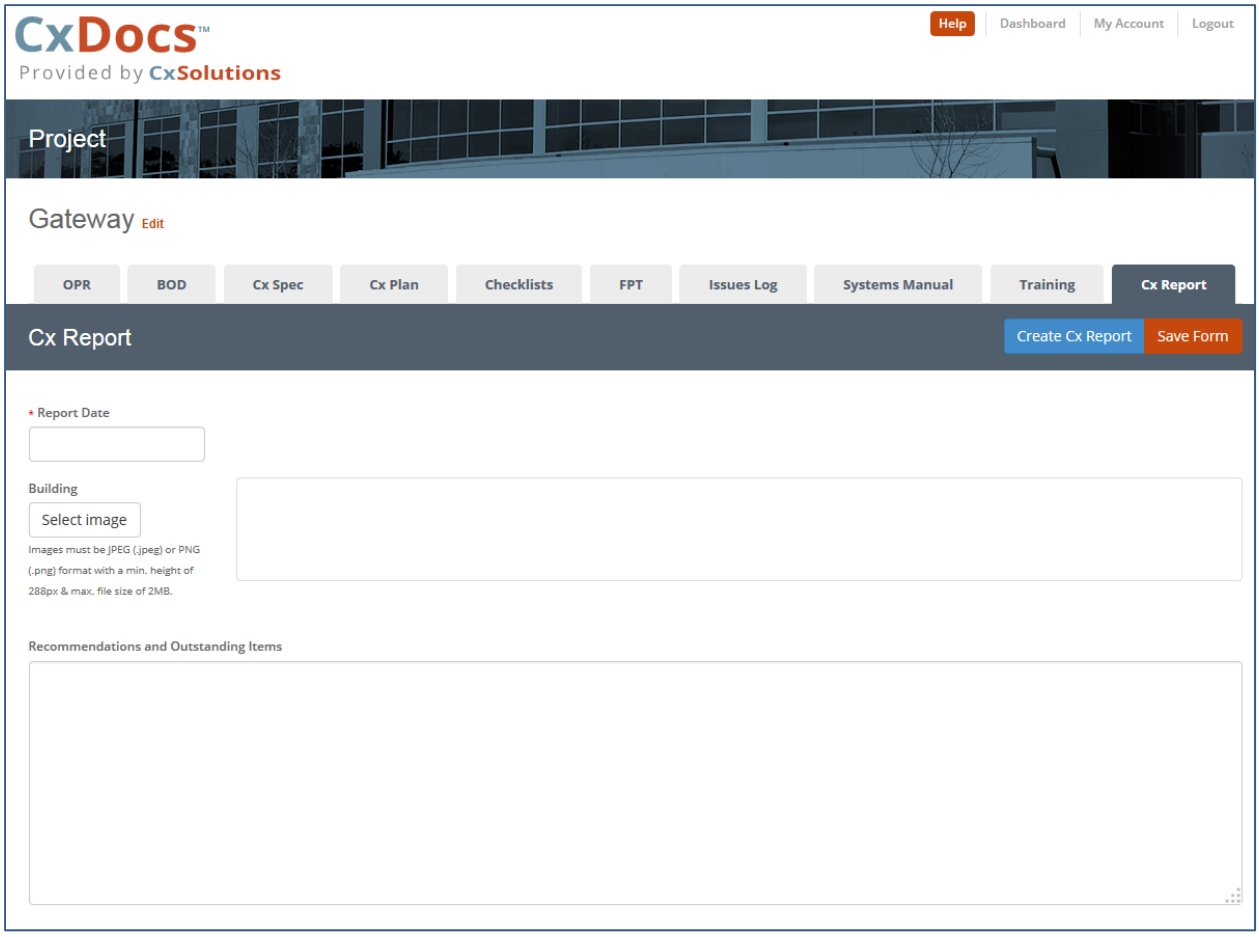
12. Commissioning Report (Cx Report)

Report Date: Place your cursor in the field, Click and a calendar will open. Select a Cx Report development date from the calendar provided; today, an earlier, or a future date. This date will appear on the cover page of the Cx Report.

Select Image: Select a photograph of the project to be used on the Cx Report cover. You must adhere to the image file requirements: Images must be JPEG (.jpeg) or PNG (.png) format with a minimum height of 288pixels and maximum file size of 2 MB.

Recommendations: List any recommendations or outstanding items.



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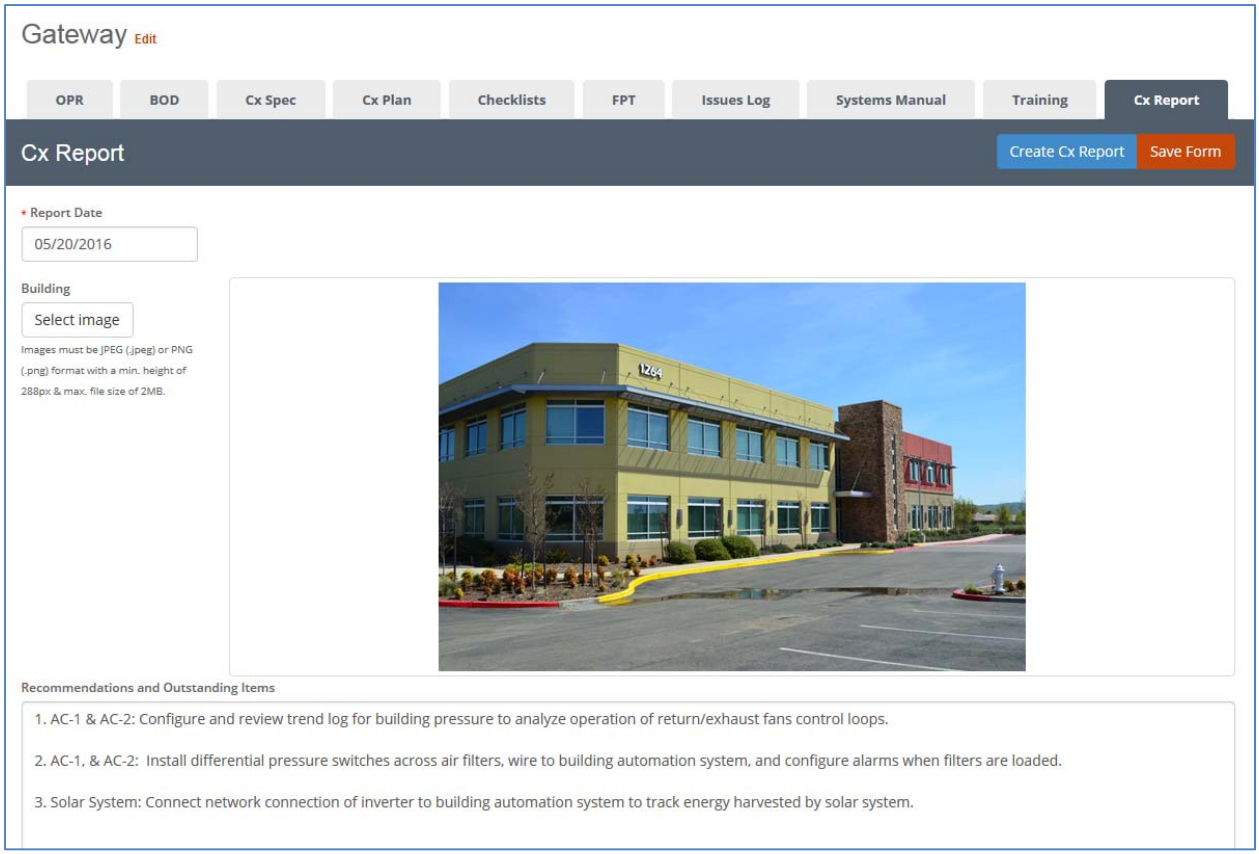

Click **Save** to save the information to the project database, you may always return later to change and revise the information entered.

Create Commissioning Report

Once the Cx Report information is entered and saved to the database, you may now create the Cx Report. Click **Create Cx Report** and a PDF will be created for viewing and saving.

You must have the Adobe PDF Reader installed on your computer to create documents. To obtain the Adobe PDF Reader, go to http://get.adobe.com/reader.

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13. Appendix

Basis of Design (BOD) System Configurations

Heating, Ventilating, Air Conditioning Systems

Constant Volume Supply Fan, Packaged Terminal Air Conditioning Unit

Constant Volume Supply Fan, Packaged Terminal Air Conditioning Unit, Heat Pump

Constant Volume Supply Fan, Packaged Terminal Air Conditioning Unit, Electric Heat

Constant Volume Supply Fan, Split System Air Conditioning Unit

Constant Volume Supply Fan, Split System Air Conditioning Unit, OADB Economizer

Constant Volume Supply Fan, Split System Air Conditioning Unit, OA Enthalpy Reference Economizer

Constant Volume Supply Fan, Split System Air Conditioning Unit, OADB & RADB Temp Comparison Economizer

Constant Volume Supply Fan, Split System Air Conditioning Unit, OA & RA Enthalpy Comparison Economizer

Constant Volume Supply Fan, Split System Air Conditioning Unit, Heat Pump

Constant Volume Supply Fan, Split System Air Conditioning Unit, OADB Economizer, Heat Pump

Constant Volume Supply Fan, Split System Air Conditioning Unit, OA Enthalpy Reference Economizer, Heat Pump

Constant Volume Supply Fan, Split System Air Conditioning Unit, OADB & RADB Temp Comparison Economizer, Heat Pump

Constant Volume Supply Fan, Split System Air Conditioning Unit, OA & RA Enthalpy Comparison Economizer, Heat Pump

Constant Volume Supply Fan, Split System Air Conditioning Unit, Gas Fired Forced Air Furnace

Constant Volume Supply Fan, Split System Air Conditioning Unit, OADB Economizer, Gas Fired Forced Air Furnace

Constant Volume Supply Fan, Split System Air Conditioning Unit, OA Enthalpy Reference Economizer, Gas Fired Forced Air Furnace

Constant Volume Supply Fan, Split System Air Conditioning Unit, OADB & RADB Temp Comparison Economizer, Gas Fired Forced Air Furnace

Constant Volume Supply Fan, Split System Air Conditioning Unit, OA & RA Enthalpy Comparison Economizer, Gas Fired Forced Air Furnace

Constant Volume Supply Fan, Split System Air Conditioning Unit, Electric Heat Coil

Constant Volume Supply Fan, Split System Air Conditioning Unit, OADB Economizer, Electric Heat Coil

Constant Volume Supply Fan, Split System Air Conditioning Unit, OA Enthalpy Reference Economizer, Electric Heat Coil

Constant Volume Supply Fan, Split System Air Conditioning Unit, OADB & RADB Temp Comparison Economizer, Electric Heat Coil

Constant Volume Supply Fan, Split System Air Conditioning Unit, OA & RA Enthalpy Comparison Economizer, Electric Heat Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit

Constant Volume Supply Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer,

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Heat Pump

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Heat Pump

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Heat Pump

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Heat Pump

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Heat Pump

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Heat Pump

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Heat Pump

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Heat Pump

Constant Volume Supply Fan, Packaged DX HVAC Unit, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Electric Heat

Constant Volume Supply Fan, Packaged DX HVAC Unit, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Hot Water Coil

Constant Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil

Constant Volume Supply Fan, Chilled Water Coil, Demand Controlled Ventilation

Constant Volume Supply Fan, Chilled Water Coil, OADB Economizer

Constant Volume Supply Fan, Chilled Water Coil, OA Enthalpy Reference Economizer

Constant Volume Supply Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer,

Constant Volume Supply Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer

Constant Volume Supply Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation

Constant Volume Supply Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation

Constant Volume Supply Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation

Constant Volume Supply Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation

Constant Volume Supply Fan, Chilled Water Coil, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, OADB Economizer, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Packaged Terminal Air Conditioning Unit

Variable Air Volume Supply Fan, Packaged DX HVAC Unit

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer,

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer

Variable Air Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Electric Heat

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit. OADB Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Chilled Water Coil, OADB Economizer

Variable Air Volume Supply Fan, Chilled Water Coil, OA Enthalpy Reference Economizer

Variable Air Volume Supply Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer,

Variable Air Volume Supply Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer

Variable Air Volume Supply Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Chilled Water Coil, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, OADB Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer,

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Heat Pump

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Heat Pump

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Heat Pump

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Heat Pump

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Heat Pump

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Heat Pump

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Heat Pump

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Heat Pump

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Electric Heat

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Hot Water Coil

Constant Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer

Constant Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer

Constant Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer,

Constant Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer

Constant Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation

Constant Volume Supply & Return Fan, Chilled Water Coil, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer , Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Constant Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer,

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Heat Pump

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Heat Pump

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Heat Pump

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Heat Pump

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Heat Pump

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Heat Pump

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Heat Pump

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Heat Pump

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Electric Heat

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit. OADB Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OADB Economizer

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer,

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OADB Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer , Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply Fan, Constant Volume Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Heat Pump, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Heat Pump, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Heat Pump, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Heat Pump, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Heat Pump, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Heat Pump, Building Static Pressure Return Fan Control

Variable Air Volume Supply Fan & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Heat Pump, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Heat Pump, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Electric Heat, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer , Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil, Building Static Pressure Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Heat Pump, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Heat Pump, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Heat Pump, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Heat Pump, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Heat Pump, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Heat Pump, Volumetric Tracking Return Fan Control

Variable Air Volume Supply Fan & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Heat Pump, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Heat Pump, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Gas Fired Heat

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Gas Fired Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control Electric Heat

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Electric Heat, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, Demand Controlled Ventilation, Hot Water Coil , Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit. OADB Economizer, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA Enthalpy Reference Economizer, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OADB & RADB Temp Comparison Economizer, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Packaged DX HVAC Unit, OA & RA Enthalpy Comparison Economizer, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer , Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB Economizer, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA Enthalpy Reference Economizer, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OADB & RADB Temp Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Variable Air Volume Supply & Return Fan, Chilled Water Coil, OA & RA Enthalpy Comparison Economizer, Demand Controlled Ventilation, Hot Water Coil, Volumetric Tracking Return Fan Control

Constant Volume Supply Fan, Fan Coil Unit – Chilled Water Coil

Constant Volume Supply Fan, Fan Coil Unit – Chilled Water Coil, Hot Water Coil

Constant Volume Supply Fan, Fan Coil Unit – Chilled Water Coil, Electric Heat Coil

Constant Volume Supply Fan, Evaporative Cooling

Constant Volume Supply Fan, Gas Fired Heat

Constant Volume Supply Fan, Gas Fired Furnace

Constant Volume Supply Fan, Electric Heat Coil

Constant Volume Gas Unit Heater

Constant Volume Electric Unit Heater

Hot Water Baseboard Heater

Electric Baseboard Heater

Variable Air Volume Terminal Unit – Cooling Only

Variable Air Volume Terminal Unit – Hot Water Reheat

Variable Air Volume Terminal Unit – Electric Reheat

General Exhaust Fan, Manual Switch Control

General Exhaust Fan, Interlocked

General Exhaust Fan, Scheduled

Toilet Exhaust Fan, Manual Switch Control

Toilet Exhaust Fan, Interlocked

Toilet Exhaust Fan, Scheduled

Kitchen Exhaust Fan, Manual Switch Control

Kitchen Exhaust Fan, Interlocked

Kitchen Exhaust Fan, Scheduled

Specialty Exhaust Fan, Manual Switch Control

Specialty Exhaust Fan, Interlocked

Specialty Exhaust Fan, Scheduled

Natural Gas Fired Hot Water Boiler

Propane Fired Hot Water Boiler

Electric Hot Water Boiler

Air Cooled Chilled Water System, Primary Variable Flow

Air Cooled Chilled Water System, Primary/Secondary Variable Flow

Domestic Hot Water System

Natural Gas Conventional Hot Water Heater

Natural Gas Conventional Hot Water Heater, Timer/Schedule

Natural Gas Conventional Hot Water Heater, Thermostat

Propane Conventional Hot Water Heater

Propane Conventional Hot Water Heater, Timer/Schedule

Propane Conventional Hot Water Heater, Thermostat

Electric Conventional Hot Water Heater

Electric Conventional Hot Water Heater, Timer/Schedule

Electric Conventional Hot Water Heater, Thermostat

Tankless Hot Water Heater

Point-of-Use Hot Water Heater

Indoor Lighting Systems

Fluorescent, Manual Control

Fluorescent, Occupancy Sensor

Fluorescent, Time Clock/Lighting Control Panel

Fluorescent, Daylight Dimming

Incandescent, Manual Control

Incandescent, Occupancy Sensor

Incandescent, Time Clock/Lighting Control Panel

Incandescent, Daylight Dimming

High Intensity Discharge, Manual Control

High Intensity Discharge, Occupancy Sensor

High Intensity Discharge, Time Clock/Lighting Control Panel

High Intensity Discharge, Daylight Dimming

LED, Manual Control

LED, Occupancy Sensor

LED, Time Clock/Lighting Control Panel

LED, Daylight Dimming

Specialty, Manual Control

Specialty, Occupancy Sensor

Specialty, Time Clock/Lighting Control Panel

Specialty, Daylight Dimming