



Construction Process Guide

Subject: [New Equipment Asset Data Collection](#)

CPG #: 02

Last revised: **June 20, 2024 DRAFT**

Pertinence: All Construction Projects at UBC

Audience for this guide: UBC Project Mangers (Project Services, Properties Trust, Construction Office)

Written by: UBC Facilities Technical Review Team - Kayna Merchant, Jeff Cheong, Andrew Porritt

Re: Process for Uploading Assets into Planon – the maintenance management system at UBC

Introduction

In 2021 UBC launched [Planon](#) – a fully integrated Computerized Maintenance Management System (CMMS). This software package is the backbone of UBC’s maintenance program and is used to request, schedule and allocate resources throughout the UBC Facility Group.

Planon is also used to catalog UBC’s equipment, track important attributes and schedule re-occurring maintenance tasks. Planon is only as useful as the data entered into it which is why we have a process for uploading assets into Planon and ensuring that the necessary maintenance is scheduled.

Process for Integrating Assets into UBC’s CMMS

Below is a high-level outline of the overall process.

Step	Summary of Work	Responsible party
Collect High Level Asset Data	Asset information is collected and verified against the equipment actually installed in the field. The information is then entered into the supplied Equipment Identification Forms or Equipment ID Spreadsheets . These forms / spread sheets are submitted to the <i>Technical Review Team</i> for initial review and acceptance.	Construction Team Delegate as determined by the UBC Project Manager
Data Entry	The forms / spreadsheets collected from the project are entered into Planon. Additional information request from the project if needed.	UBC Facilities – Technical Review Team w/support from Maintenance Planning Group

Generate and affix QR Codes	Create QR codes and then visit every piece of equipment and affix the QR Codes.	UBC Facilities - Maintenance Planning Group
Schedule Maintenance Activities	New assets are reviewed and re-occurring maintenance activities are scheduled	UBC Facilities - Maintenance Planning Group
Add More Detailed Information	As maintenance work is completed, document more detailed information in Planon. For example, filter sizes, belt sizes or other notes useful to future service technicians.	UBC Facilities – Trades Groups

Project Responsibility

Projects are responsible for collecting high level asset data and filling out the relevant forms. This work should be delegated by relevant Project Manager, Development Manager or Project Coordinator.

- In projects where an owner hired *Commissioning Authority* is engaged, the CxA is well positioned to provide this data. The CxA may collect the data and fill out the forms within their own team; or, for some of the work it may make more sense for the CxA to just oversee and review the collection of data by the relevant contractor.
- Alternatively, at the discretion of the PM, DM or PC the scope may be assigned to other members of the project team. For small projects it may make sense for the contractor, design consultants, PC or PM to provide the information.

Depending on the scale of the project, asset data can be collected and turned over on:

- Equipment information spreadsheet – many assets in a single sheet
- Equipment information form – single asset per form

Once the data collection is complete, it should be reviewed with the appropriate representative (Mech, Elec, Arch) from UBC Facilities – Technical Review Team. Projects should expect that there will likely be a bit of back and forth requiring revisions to be made, to make sure that the data collected is consistent with UBC’s records.

Refer to the attached appendices for detailed information on which assets and what information for those assets is required by discipline.

Sincerely,

UBC Facilities, Technical Review Team

Attached: Appendix 1 – Mechanical, Appendix 2 - Electrical

Appendix 1 - Mechanical Specific Items

Types of Mechanical Equipment for which data should be collected

Asset data is collected on central mechanical equipment and equipment with specific regulatory requirements. This includes air handlers, chillers, compressors, boilers, DES heat exchangers, sumps, expansion tanks, building level pumps and DCVA and RPBP backflow preventers, etc.

Terminal equipment is not tracked at a such a granular level but rather grouped together to make the data more workable and useful. The way this is used by the maintenance planning team is that they would, for example schedule a maintenance activity such as “change filters for Level 2 fancoils”. The quantity and sizes of the filters for all the fancoils on the floor would be attached to that single “Level 2 Fancoils” asset so they could all be ordered at once. When completing the work, the filter changer will not constantly be on their phone opening and closing workorders but instead they can just do the entire floor as a single job. The data will be updated at a group level but no effort will be made to maintain each individual asset which is onerous and has limited value.

Please work with the UBC facilities group to agree upon an approach for how to collect data on terminal equipment:

- If a building only has one or two fancoils then it may make sense that they have their own unique asset entries.
- If building has a moderate use of fancoils then there may just be a single group for the entire building or maybe something like “IT Room Fancoils” and “entryway fancoils”.
- If a building has a widespread use of fancoils then they may just be grouped by floor. For example, an asset could be created that was titled “Level 2 fancoils”.

Asset data and maintenance tasks related to smaller equipment such as plumbing fixtures is currently not tracked in any manner and is not part of this process.

The below is not intended to be a rigorous table but rather a list of examples which establishes a precedent that can be applied more broadly at the discretion of the project team in consultation with the UBC Facilities Group.

Equipment	Asset Entry Detail Requirements
Hydronic Equipment	
Central Chillers & Heatpumps	Individual asset
Hot water boiler	Individual asset
Storage tanks	Individual asset
Expansion tanks	Individual asset
Central building pumps	Individual asset
Tertiary pumps (Pumped coils, radiant manifolds, etc)	None (assumes they would be viewed as a sub-component of larger eqpt)
Radiant heating panels	Logical groupings
Hydronic baseboard heaters	Logical groupings

Glycol feeder	Individual asset
Heat exchanger	Individual asset
Cooling tower / fluid cooler / dry cooler	Individual asset
Air and/or Dirt Separator	Individual asset
Sidestream Filter	Individual asset
Chemical Pot Feeder	Individual asset
Air Moving Equipment	
Fancoils	Logical groupings
VAV Box's	Logical groupings
Forced flow heaters	Logical groupings
Unit heaters	Logical groupings
Dust collector	Individual asset
Air handler	Individual asset
Fumehood exhaust fans	Individual asset
High plume fumehood exhaust fans	Individual asset
Terminal heatpumps	Logical groupings
Exhaust fans with unique application	Individual asset
Exhaust fans with repeat application (ex. repeating residential dryer booster fan)	Logical groupings
Rooftop Units	Individual asset
Plumbing Equipment	
Acid neutralization tanks (not supported at UBC)	Individual asset
Specialty water system (RO, DI, Dechlor, etc)	One asset per system c/w equipment and piping
Grease interceptors	Individual asset
Oil interceptors	Individual asset
Domestic hot water tank	Individual asset
Domestic hot water storage tank	Individual asset
Emergency Plbg Fixtures (eye wash, emerg shower, etc)	Individual Asset
Other Plumbing fixtures	None
Booster Pumps	Booster station as individual asset
Backflow preventer (testable – DCVA / RPBP)	Individual asset
Backflow preventer (non-testable – DCV, AVB, etc)	None
Domestic hot water recirc pumps	Individual asset
Sump pumps	Duty/standby pair (or individual asset if single)
Water meters	Individual asset
Expansion tanks	Individual asset

Fire Life Safety Equipment	
Fire pump	Individual Asset
Backflow preventer	Individual Asset
Other Mechanical Equipment	
Humidifier	Individual asset
Walk-in cooler / freezer	Individual asset
VRF systems	One asset per system (indoor and outdoor units)
Split systems	One asset per system (indoor and outdoor units)
Air Compressors	Individual asset
Air dryers - dessicant	Individual asset
Air dryers - refrigerated	Individual asset
Air Receivers	Individual asset
Vacuum system	Individual asset
Steam boiler	Individual asset
Steam boiler feedwater pump	Individual asset
Refrigerant Monitor	Individual asset

It is not the responsibility of the project to collect data on the actual replacement parts required for maintenance. Relevant data of this type will be collected when the equipment is visited for maintenance. For example, the first time a filter changer does the filters in a given area they will determine the filters they need to order and store this information in Planon so that the next time they do the work it is readily available for them.

Documentation for collecting data

There are two options for collecting data depending on the scale of project.

Small projects with only a few mechanical assets may elect to use the **Mechanical Equipment ID Form** which can be filled out by hand and submitted to the Technical Review Team. One form is required per asset.

THE UNIVERSITY OF BRITISH COLUMBIA		Facilities Group Mechanical Equipment ID Form <small>Rev. 01/2023 (DRIFT) - 2023/01/01</small>																	
<p>The form is used to collect installed equipment asset information for upload into UBC's computerized maintenance software - Emplog. Please use one form per piece of equipment for small projects, or fill out the standardized template spreadsheet for large projects. In all cases, if uncertain of some information, please leave it blank and review with UBC Facilities before submission.</p>																			
<p>Basic Equipment Information: The tables in this section should be completed as much as possible for all assets.</p>																			
<p>Project Information:</p> <table border="1"> <tr> <td>UBC Project Name:</td> <td>UBC Project Number:</td> </tr> <tr> <td>UBC Project Map Group:</td> <td>UBC Project Manager:</td> </tr> <tr> <td>Building Name:</td> <td>Building Number:</td> </tr> <tr> <td>Installation Contractor:</td> <td>Date Installed:</td> </tr> <tr> <td>Name of the person filling out this form:</td> <td>Company of the person filling out this form:</td> </tr> </table>				UBC Project Name:	UBC Project Number:	UBC Project Map Group:	UBC Project Manager:	Building Name:	Building Number:	Installation Contractor:	Date Installed:	Name of the person filling out this form:	Company of the person filling out this form:						
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<p>Specific Detailed Equipment Information: The below tables include information that is only required for certain types of equipment. You should complete between 0 (zero) and a maximum of 1 (one) of the below tables and cross out all other sections with a clear slash through them.</p> <p>General Mechanical Assets <small>(cross out this section if not relevant)</small>: For the majority of mechanical assets, the only information required from the installing project is the basic equipment information as per the tables on the previous page.</p> <p>These assets include most pumps, air handlers, terminal HVAC equipment and any number of miscellaneous assets where additional information is not required per the below tables. Please refer to CPD-003 for more information on what information is required for specific assets.</p> <p>Backflow Preventer <small>(cross out this section if not relevant)</small>: This table should be completed for all testable backflow preventers. Typically, this means all reduced pressure backflow preventers and all dual check valve assembly backflow preventers.</p> <table border="1"> <tr> <td>Service <small>(primary/secondary)</small></td> <td>Size <small>(nominal, inches)</small></td> </tr> <tr> <td>Parallel configuration <small>(parallel/series)</small></td> <td>Backflow Assembly Test Report Submitted to UBC EHS <small>(yes or don't submit this form yet)</small></td> </tr> </table> <p>Domestic Water Meters <small>(cross out this section if not relevant)</small>: This table should be completed for all primary meter only domestic water meters.</p> <table border="1"> <tr> <td>Size <small>(nominal, inches)</small></td> </tr> </table> <p>Refrigeration Equipment <small>(cross out this section if not relevant)</small>: This table should be completed for all equipment which has refrigerant such as chillers, packaged rooftop units, split systems, etc.</p> <table border="1"> <tr> <td>Prime mover <small>>200kW</small> <small>(yes/no)</small></td> <td>Nominal Capacity <small>(refrigerant tonnage)</small></td> </tr> <tr> <td>Refrigerant <small>(see table: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100)</small></td> <td>Refrigerant quantity <small>(nominal units of measure)</small></td> </tr> <tr> <td>TSBC Installation Permit # <small>(if not a requirement)</small></td> <td>TSBC Operating Permit Required <small>(yes/no)</small></td> </tr> </table> <p><small>*Prime mover is the sum of the nameplate power of compressors connected to a single refrigerant circuit. If <200kW are connected to a single circuit then the chiller will be considered a 5" class plant per the BC Boiler and Pressure Vessel act and the regulatory requirements increase substantially. Ex. 2x 20hp compressors = 42hp = 30kW prime mover. In all but the largest chillers include the answer to this should be "No".</small></p>				Service <small>(primary/secondary)</small>	Size <small>(nominal, inches)</small>	Parallel configuration <small>(parallel/series)</small>	Backflow Assembly Test Report Submitted to UBC EHS <small>(yes or don't submit this form yet)</small>	Size <small>(nominal, inches)</small>	Prime mover <small>>200kW</small> <small>(yes/no)</small>	Nominal Capacity <small>(refrigerant tonnage)</small>	Refrigerant <small>(see table: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100)</small>	Refrigerant quantity <small>(nominal units of measure)</small>	TSBC Installation Permit # <small>(if not a requirement)</small>	TSBC Operating Permit Required <small>(yes/no)</small>					
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<p>Compressors & Vacuum Systems <small>(cross out this section if not relevant)</small>: This table should be completed for all compressors and vacuum systems including control compressors, workshop compressors, lab air compressors, dental vacuum, medical vacuum, etc.</p> <table border="1"> <tr> <td>Compressor / Vacuum Pressure Setpoint:</td> <td>System Pressure <small>(nominal value of the PVC)</small></td> </tr> <tr> <td>Oil filled or oil free:</td> <td>Notes/Issues:</td> </tr> <tr> <td>TSBC Operating Permit Required <small>(yes/no)</small></td> <td></td> </tr> </table> <p>Boilers and Water Heaters <small>(cross out this section if not relevant)</small>: This table should be completed for all boilers.</p> <table border="1"> <tr> <td>Fuel <small>(see: electric, natural gas, etc.)</small></td> <td>Pressure relief setting:</td> </tr> <tr> <td>Operating Fluid <small>(steam/water)</small></td> <td>Power Input <small>(nominal units)</small></td> </tr> <tr> <td>Steam / Water / Other:</td> <td>TSBC Installation Permit # <small>(if reason not required)</small></td> </tr> <tr> <td>Heating Surface Area <small>(not required for electric)</small></td> <td>TSBC Operating Permit Required <small>(yes/no)</small></td> </tr> </table> <p>Other Pressure Vessels and Equipment <small>(cross out this section if not relevant)</small>: This table should be completed for all pressure vessels that have not been covered by the above equipment specific sections. This includes heat exchangers, air drums, air receivers, expansion tanks, hydro and domestic water storage tanks, hot water tanks, etc.</p> <table border="1"> <tr> <td>TSBC Installation Permit # <small>(if reason not required)</small></td> <td>TSBC Operating Permit Required <small>(yes/no)</small></td> </tr> </table>				Compressor / Vacuum Pressure Setpoint:	System Pressure <small>(nominal value of the PVC)</small>	Oil filled or oil free:	Notes/Issues:	TSBC Operating Permit Required <small>(yes/no)</small>		Fuel <small>(see: electric, natural gas, etc.)</small>	Pressure relief setting:	Operating Fluid <small>(steam/water)</small>	Power Input <small>(nominal units)</small>	Steam / Water / Other:	TSBC Installation Permit # <small>(if reason not required)</small>	Heating Surface Area <small>(not required for electric)</small>	TSBC Operating Permit Required <small>(yes/no)</small>	TSBC Installation Permit # <small>(if reason not required)</small>	TSBC Operating Permit Required <small>(yes/no)</small>
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Large projects with many mechanical assets are expected to use the **Mechanical Equipment ID Spreadsheet**.

Project Information		Equipment Information										Specific Detailed Equipment Information																	
Project Name	UBC Project #	UBC Project Group	Building Name	Building Number	Contractor	Date Installed	Quantity	Asset Description	Field Tag	Manufacturer	Model	Area	Voltage	Phases	Date	Quantity	Prime Mover	Refrigerant	Capacity	Permit #	Operating Permit	Fuel	Pressure	Power	Surface Area	Other	Permit #	Operating Permit	

Note that both the above form and the above spreadsheet are still evolving documents at the time of writing this. Please request the latest version of them from the **UBC Technical Review Team**.

Appendix 2 - Electrical Specific Items

The following outlines the process for electrical asset data collection, entry and submission during the various stages of the project:

Data collection, entry and submission prior to occupancy:

1. *Obtain all documentation that contains relevant electrical asset data.*

This includes but is not limited to:

- a. Latest Drawing Set – IFCs are preferred.
- b. Electrical related addendums, RFI, SI, Change orders.
- c. Shop drawings.
- d. Fire Alarm System Verification (VI) Report.

2. *Refer to the Electrical Capital Asset Declaration spreadsheet.*

- a. Tab 1 covers basic project information that is required to be filled out for every project. Tabs 2 to 7 cover the types of electrical assets that must be entered for each project (as applicable). Within each tab are examples of commonly filled assets. These examples should be followed when filling out asset information. If there is a unique asset that is not covered in the examples or if there is uncertainty with filling out information contact Jeff Cheong (jeff.cheong@ubc.ca) for guidance. Do not guess when filling out information. It is always preferred to leave fields blank until direction has been provided by UBC.
- b. The form is designed for both digital and hand filled input. Each tab has already been formatted to be printed out in standard Letter/Legal format for hand filled input.

3. *Utilizing the documentation obtained in Step 1, fill out the fields in the spreadsheet.*

The following apply to each equipment tab on the spreadsheet:

- a. 2 - Electrical Services & Distribution.
 - i. The most common documents that will be utilized are the following:
 1. Drawings:
 - a. Single/ One Line Diagram.
 - b. Plot plan(s) indicating equipment locations.
 2. Shop Drawings.
 - ii. The following assets shall be input on the sheet:
 1. Automatic Transfer Switches (ATS)
 2. Disconnect
 - a. Any disconnect, fused or unfused, on the single line diagram shall be added.
 - b. If a building has an Elevator there will be an Elevator Disconnect that is required to be added.
 3. Enclosed Circuit Breakers – Enclosed breakers are similar to the Disconnect category except it utilizes a circuit breaker instead of a fuse. It shall be added if shown on the single line diagram.

4. Main Switchboards - The main switchboard is the first 600V distribution in the building and is typically located in the main electrical room. There are rare instances where this could be 208V if the building has no 600V distribution. There will only be 1 per building.
 5. Main Transformers - The main transformer(s) is fed from the main switchboard. If there is no transformers on the main switchboard distribution then this asset will not exist for this project.
 6. Interior Distribution Transformers – All other transformers will fall under this category.
 7. Other Service and Distribution – Any distribution such as Switchboards, CDPs, MDPs, Splitters all fall under this category. Normal, Emergency, Standby and Life Safety distributions are all included.
 8. Panels – There are 2 types of panels that fall under this category:
 - a. Panelboards – This covers every panelboard configuration and load (Power, lighting, Emergency, Standby, Life Safety)
 - b. Relay Panels – This includes any panel that contains relays such as lighting relay panels. It is common on the single line diagram to see relay panels attached to the lighting panels they are associated with.
- b. 3 - Elevators.
- i. The most common documents that will be utilized are the following:
 1. Drawings:
 - a. Plot plan(s) showing the elevator location(s), machine room location(s) and elevator disconnect locations.
 - b. Single Line Diagram
 2. Shop drawings
 - ii. Populate the fields contained within the tab.
- c. 4 - Emergency Generators.
- i. The most common documents that will be utilized are the following:
 1. Drawings:
 - a. Single/ One Line Diagram.
 - b. Plot plan indicating generator location.
 2. Shop drawings.
 - ii. Populate the fields contained within the tab.
- d. 5 - Emergency Lighting.
- i. The most common documents that will be utilized are the following:
 1. Drawings:
 - a. Plot plan(s) indicating locations of exit signs, unit equipment (battery pack), Remote heads
 - b. Panel Schedule or Single Line Diagram indicating the source panel/distribution feeding the equipment.
 2. Shop drawings.
 - ii. Populate the fields contained within the excel tab. Please note the following:
 1. Unit Equipment, Remote Head, Head and Unit Equipment/Exit Combo only pertain to emergency lighting with battery packs. Keep in mind the following:

- a. These systems usually are contained within the main electrical, transfer switch, generator and life safety electrical rooms.
 - b. For buildings that contain a generator with emergency distribution: These systems will typically not exist outside of the areas cited in a.
 - c. For buildings that have a central unit (Inverter) feeding these loads: Do not populate the exit lights/remote head/head fields. The only asset that needs to be populated is the Central Unit located in the Emergency Power tab.
2. Exit Lights:
 - a. This field only needs to be filled out if the exit lights are fed from Unit Equipment (Battery Packs). Buildings that feed Exit lights with Generator or Central Unit (Inverter) do not need to populate this field.
- e. 6 - Emergency Power.
- i. The most common documents that will be utilized are the following:
 1. Drawings:
 - a. Plot plan(s) indicating locations of the Central Unit (Inverter) and UPS units. Typically Central Units are located in in main electrical rooms
 - b. Panel Schedule or Single Line Diagram indicating the source panel/distribution feeding the equipment.
 2. Shop drawings.
 - ii. Populate the fields contained within the tab.
- f. 7 - Fire Alarm Panels.
- i. The most common documents that will be utilized are the following:
 1. Drawings:
 - a. Plot plan(s) indicating locations of the Fire Alarm Control, Fire Alarm Releasing and Fire Alarm Annunciator Panels. These panels are typically located in Main electrical rooms and the front entrance of a building.
 - b. Panel Schedule or Single Line Diagram indicating the source panel/distribution feeding the equipment.
 2. Shop drawings.
 - ii. Populate the fields contained within the excel tab.

4. *Prior to Occupancy the following asset information must be submitted to Jeff Cheong (jeff.cheong@ubc.ca):*

- Automatic Transfer Switch(s)
- Elevator(s)
- Generator
- Fire Alarm Panel(s)

Prior to occupancy UBC must input the assets cited above to ensure maintenance plans are implemented for regulatory compliance. It is expected that fields will be incomplete at this time. After occupancy these assets can be resubmitted when all the information has been obtained.

Data collection, entry and submission after occupancy:

1. *Field verification of all assets entered into the Electrical Capital Asset Spreadsheet. Update, Add or Remove any information that does not match.*
2. *Obtain As-Built documentation from the project team, review, update/add any changes that relate to applicable electrical equipment.*
3. *Update and submit the Electrical Capital Asset Declaration spreadsheet for submission to Jeff Cheong (jeff.cheong@ubc.ca).*

The final submission should always be in digital format however hand filled may be acceptable for smaller projects with valid justification.

DRAFT