



# VE 2021.4.0.0 Release Notes

Release Notes

20/01/2022



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# VE 2021 Feature Pack 04 Changes

## General

**Troubleshooting dialog shows Standard Data and Weather Files path [ID-67701]:** The Standard Data and Weather Files directory is now displayed correctly.

**Technical support link updated [ID-58186]:** The Help menu >> Technical Support link is now working and directs the user to the VE support page where all resources can be accessed.

**Improved software stability in event of Crash [ID-73389]:** In event of a fatal software crash improvements are made to retain current model data.

**Script DLL load failed error resolved [ID- 93804]** Generic error showing DLL load failed when running VE Scripts or reports based on scripts has been resolved so no longer requires VE restart to resolve.

**Notes can be deleted [ID-96927]:** A crash has been prevented when deleting a note.

## ModelIT

**DXF can now be exported in IP units [ID-38447]:** DXF files can now be exported with IP units.

**Corrected issue when splitting windows at small dimensions [ID-29166]:** The glazing is no longer removed from the area of intersection of split windows.

**Internal floor/ceiling and partition constructions retained when space copied. [ID- 77183]** When a space is copied it will retain the assigned Constructions

**Corrected issue with the External Wall area showing a negative value [ID-88179]:** A building space with a hole in a partition no longer produces a negative value for the External Wall area in the ModelIT data bar.

**Diagonal Partition can be created [ID-91321]:** Crash prevented when adding diagonal partition from one corner of a space to the other.

**Construction Lines can be copied [ID-102797]:** Resolved issue when construction lines are copied to a new location which resulted in the construction lines erroneously being moved, not copied.

## Apache application view

**Prevented crash when resolving meter conflict [ID-10270]:** A crash no longer occurs when resolving meter conflicts automatically.

**Improved stability when adding meters [ID-96879]:** When adding new meters to large/complex models the dialog will show a wait cursor while the meter is being added, this prevents an error occurring while this is in progress and further meters are added/removed.

## Constructions Database

**Corrected issue with unit display in Construction Usage dialog [ID-95593]:** The values displayed in the Area column now adjust according to the project unit preference option selected.

## ApacheSim

**Prevented corrupt compact profiles stopping simulations [ID-88678]:** Corrupt profiles now no longer prevent Apache simulations from running.

## SunCast

**Visual Analysis can select by Room Group [ID- 80109]:** Room Group option is added to the 'Show on' dropdown, when selected any grouping scheme and room group can be selected so that colouring is only displayed on rooms within the chosen group .

**SunCast surfaces visibility can be edited [ID- 52790]:** SunCast surface icon updates when set to opaque or invisible and changes to surface are applied/persist correctly.

**Adjusted values in report for Annual Probable Sunlight Hours (APSH) [ID-11376]:** The Azimuth and Altitude values are now displayed to 2 decimal places.

**Prevented crash when loading Solar Energy Analysis results [ID-87857]:** When loading Solar Energy Analysis results it is no longer possible to select 'None' in the geometry file drop down menu, this prevents a crash from occurring.

**Corrected issue with SunCast surface grid displaying negative values [ID-101486]:** Issue resolved when a space created in which sunlight would track through multiple windows onto an external surface no longer erroneously shows a negative internal insolation. Similarly with sunlight being tracked through an exterior hole a negative internal insolation is no longer displayed.

## ApacheHVAC

**Drain Water Heat Recovery added [ID-91776]:** Drain Water Heat Recovery can be specified on Explicit model DHW systems. This allows waste heat from drains to pre-heat cold inlet water via a heat exchanger.

**Improved UI with setting 24 Hours active days in System Occupied Hours [ID-32846]:** A 24hr checkbox has been added to easily set 24hrs occupancy for each day type as well as layout tweaks.

**Updated Heat pump EER and SEER limits [ID-82422]:** The limit constraints for both EER and SEER have been amended to allow values to be input between 7-30 for both.

**Fixed typo in Chilled water loop dialog [ID-84237]:** A typo has been corrected in the tooltip for the 'Minimum flow fraction' field.

**Room unit controller Proportional bandwidth corrected [ID-91125]:** When a room unit has the sensed variable set to Surface Temperature the Proportional Controller is corrected so that the entered value is adjusted to add on 32F when working in IP units.

**Updated HVAC Radiator dialog [ID-91127]:** The "Flow at min sensed DB Temp" and "Temp. at min sensed DB Temp" are now visible in the main part of the room unit dialog with the corresponding max Temps visible in the Proportional flow controller and Proportional temperature controller tabs.

**HVAC System Schedules are constrained to start/end at midnight [ID- 95759]:** When the system occupancy schedule and morning startup/after hours extension hours result in the daily schedule starting before midnight or ending after midnight the generated Compact Profiles set will be constrained to start/end at midnight so as to avoid incorrect system operation or simulation errors.

**Range error on heating coil controller improved [ID-97545]:**When an out of range value is detected on a Heating Coil Controller the error is displayed and then the dialog can be edited to resolve the error

**Revised initial Supply Temperature setpoint option for Condenser water loop [ID-102735]:** Chilled water loop prototype systems have been updated so that the default option for the Condenser water loop supply temperature setpoint defaults on 'Reset per outdoor WBT range and fixed approach'.

## Loads Report

**Improved zone component handling in load reports [ID-87511]:** Improved handling of zone components allows report to generate without Script KeyError displaying.

**Report can generate without Model image [ID-84240]:** An option is added to Tools >> Preferences >> General tab to allow the Loads Reports generation to proceed without the 3D model image generation stage.

## Navigator for Title 24 2019

**Updated for Title 24 2019 v1.1 [ID-97343]** The Navigator for Title 24 2019 is updated in line with 2019 v1.1 updates. ResidentialDHW modelling and reporting added to support High rise residential and Hotel/Motel Guest Room requirements

**Improved standard model generation [ID-93385]:** Improved the generation T24 standard models to prevent incorrect construction assignment and improper argument errors.

**HVAC Wizard DHW system warning added when Tank Capacity fails ACM rules [ID-95585]:** When chosen DHW system has storage capacity greater than 55 Gallons and capacity less than 75 kBtu/hr a warning is shown.

**Fixed issue with 'Unoccupied' space templates [ID-96909]:** Standard Model generation no longer encounters an error when 'Unoccupied' space templates are applied to a model.

**Prevented error when generating Standard Model [ID-97402]:** Standard Model generation no longer incorrectly duplicates internal windows which prevents an error from occurring.

**Fixed issue with standard model generation error messaging [ID-99651]:** The false error 'the expected number of Title 24 AAHP types is not available' is no longer displayed when generating the Standard model.

**Improvements to HVAC Wizard [ID-99663]:** Multiple space groups assigned with the same HVAC system and water loops/DHW systems with the same name are now displayed correctly on the HVAC Properties dialog. When editing an existing system in the HVAC Wizard the system properties are retained and presented correctly. Deleting airside systems, water loops or DHW systems then opening the HVAC Properties dialog no longer causes a crash.

**Prototype data updated to correct profiles [ID-103309]:** Prototype data has been corrected for Assembly heating set point profiles and Office profiles - 'AssemblyHtgSetptSat', 'AssemblyHtgSetptSun' and 'AssemblyHtgSeptWD' as well as OfficeHVACAvailSun', 'OfficeInfiltrationSun' and 'OfficeEscalatorSun'. To correct affected models click the Prototype Data action in the Navigator again to merge in the corrected data.

**CZ3 Wood-Frame walls added [ID-102869]:** The Title 24 2019 prototype data is updated to include wood framed walls for Climate Zone 3.

**Door Constructions updated [ID-102873]:** The Title 24 2019 prototype data is updated to correct the Door constructions so that u-values match the descriptions and ACM requirements.

**Metal Framed Residential walls updated [ID-103464]:** The insulation layers on the Residential metal framed walls is updated in the prototype data.

**Changes to radiant fraction is now applied correctly throughout model [ID-103278]:** Radiant fraction changes are now correctly applied throughout the model when changed from the Create Process Loads action.



## Navigator for ASHRAE 90.1 PRM

**Number of floors excludes voids/plenums. [ID-73212]:** PRM Reports no longer include voids/plenums in the floor count.

**Fixed issue when applying template via Space classification action in PRM 2016 navigator [ID-84282]:** The template for 'Audience Seating area – All other' is now correctly assigned by the Space classification action when it is selected through the Space by space method in the Space/Room Group Assignment dialog.

**Added default name for HVAC File in the HVAC System Design Wizard [ID-88352]:** When using the HVAC System Design Wizard with the ASHRAE 90.1-2016 App. G PRM navigator the created file is now named 'Proposed' by default.

**Florida report Lighting Controls table updated [ID-88355]:** The table now correctly reports the room area based on the project units.

**Improved error reporting when generate Reports [ID-96379]:** When generating any 90.1 PRM output Report an error message now appears if prototype data has not been imported to the project.

**PRM Compliance report Unmet Load Hours update [ID-97401]:** For both Proposed and Baseline models, the script that generates the PRM Compliance report for the ASHRAE 90.1 Navigator is updated to calculate and report Unmet Load Hours consistent with the BPRM Report and manual analysis in the VistaPro Range Test tool. Updates include consistent treatment of hours during which the HVAC *System Occupancy Schedule* or equivalent is ON for just half or less than half of the hour, and thus the HVAC system is not intended to maintain the occupied-hours space temperature setpoint during the remainder of that hour.

**Adjusted averaging for Baseline unmet load hours in PRM Reports [ID-98451]:** Averaging of unmet load hours for the baseline rotations is now consistent between BPRM and PRM reports. Values of less than 0.5 are rounded down to 0 while values of 0.5 or greater are rounded up to 1 to allow whole numbers of hours to be reported.

**ASHRAE 90.1-2016 Baseline HVAC G3.1.3.11 correction [ID-99509]:** Application of rules for ASHRAE 90.1-2016 Baseline systems corrected so that the Cooling Tower Leaving Water Temperature defaults to the appropriate constant value per table G3.1.3.1.1 and the project Climate Zone (i.e., instead of the previously applied "ASHRAE..." profile). This eliminates the possibility of the profile configuration and subsequent autosizing resulting in a negative approach and associated simulation error.

**Parking Garage no longer affects WWR when 90.1 Baseline is generated [ID-90500]:** When a building has a space type set to parking garage it is no longer included in the WWR calculation when the baseline model is generated.

**System air settings copied to Baseline from Proposed [ID-84970]:** When the Baseline building is generated the system air settings on the System tab of Space data are copied directly from the Proposed building to the Baseline (previously template values were applied on Baseline as a starting point).

## Navigator for GreenMark

**Fixed error in Setup section of navigator [ID-91677]:** The Import baseline files action no longer results in an error.

## VE Compliance

**Tabular Space Data updated for VE Compliance >> NCM Lighting Data option [ID-57032]:** The Tabular Space Data is updated to set Design Illuminance "From Activity"

## VE API

**Casual gains API UTF-8 Conversions [ID-95117]:** UTF-8 errors no longer occur when accessing the casual gains.name property (get or set).

## EU Navigator

**Improved PMV Optimiser script [ID-99200]:** Script improved to handle cases where models lacked required variables which resulted in an error/script not responding previously.

## RadianceIES

**Improved UI when applying Multi View option the WP Grid tab [ID-90652]:** The file list now only displays the most recent simulation result for existing spaces.

**Prevented crash when using Multi view option [ID-87884]:** In the WP Grid tab applying the Multi view option when using Visualise no longer causes a crash.

## VistaPro

**Results consistently updated when switch between results files [ID- 86766]:** When switching between two results files that have different applicable variables (e.g. one has MacroFlo outputs and the other does not) now updates consistently to show n/a for variables not available in the selected file.

**Corrected issue with Bar stacked (+/-) graph [ID-87823]:** Prevented the graph from extending beyond the range of the y-axis scale.

**Energy Report supports sub-60 mins reporting [ID-94527]:** Energy Reports now report the correct EUI value from simulations with a sub 60-minute reporting interval applied.

**Error running OpenEI Tariff on Battery outputs fixed [ID-97075]:** The script no longer hangs when attempting to calculate results for an app file which includes Battery script outputs

**Model Viewer Variable Colour supports Comfort variables [ID-99864]:** Comfort variables are now displayed correctly within Model Viewer 2.

## VE 2021 Feature Pack 03 Hotfix 01 Changes

### Apache

**SunCast link correction in calculation of direct beam radiation [ID-98921]:** Correction to calculation of solar radiation when SunCast link is on so that obstruction from shading objects or self-shading from building elements is included in the assessment of the direct beam radiation.

**Comfort availability schedule uses correct weekday for 1st January [ID-93632]:** The availability schedule for ASHRAE 55 method calculation of PMV and PPD is applied correctly regardless of which day of the week January 1st is set to in the simulation weather file/ApLocate.

### ApacheHVAC

**Custom chiller curve coefficients correctly upgraded [ID-93672]:** ApacheHVAC networks upgraded from VE 2019 persist custom chiller coefficients used in simulation.

### Navigator for Title 24 2019

**Proposed minimum chiller efficiency applied [ID-97458]:** The Proposed.asp is modified when saved to apply minimum chiller efficiency. If user entered COP is below minimum for the size then it is modified to apply the standard minimum.

**Chiller efficiency reported correctly [ID-97440]:** Title 24 2019 PRF-01 report table K4 reports the correct kW/ton efficiency of chillers in the Proposed HVAC system.

### Navigator for ASHRAE 90.1

**90.1 2004/2007 Baseline Rotations reinstated [ID-98866]:** When running loads calculations or energy simulation the baseline rotations are all simulated. Option dialog to choose to run only proposed or full set gives further options on this for test simulations.

### VE Compliance

**Benchmark Building generation robustness improved [ID-96878]:** Reference and Notional Building generation improved when Real/Actual Building has complex geometry.

### Tariff Analysis

**OpenEI Tariff Certificate updated [ID-98231]:** Certificate updated to allow secure connection to OpenEI Tariff database.

# VE 2021 Feature Pack 03 Changes

## Constructions Database

**U-value correction for solid concrete walls [ID-24504]:** U-value calculation for solid concrete walls no longer includes air film resistances.

## ApacheSim

**VistaPro coil and node temperature reporting corrected [ID-67441]:** Correction made to ensure coil entering temperature and node temperature (dry bulb and wet bulb) are reported correctly in VistaPro node/component results.

Note for clarity correction here is only on reported values and no change to the values used in simulation is required.

**Prevented error simulating Cool-Phase Battery [ID-91283]:** An error has been prevented when attempting to perform System Load Calculations when the network contained the Monodraught Cool-Phase Thermal Battery.

**Apache supports room without air supply [ID-93293]:** When ApacheHVAC network contains the room without air supply component in a Multiplex Apache loads calculations and simulation can be run.

**Prevented crash when ApacheHVAC network includes Fan Filter component [ID-95682]:** A crash will no longer occur when trying to run apache loads or sim linked to an HVAC network that includes a fan filter.

**Direct Acting Heater can use Proportional Control [ID-95801]:** When the system contains Direct Acting Heaters that have proportional control specified on the room unit controller the apache simulation will switch the direct acting heater on/off according to the setpoint control specified.

## RadianceIES

**UI improvements made in WP Grid tab [ID-80932]:** Visualise button in the WP Grid tab is now disabled unless viewing model at surface level.

**Improved retention of selected options in WP Grid tab [ID-87864]:** In the WP Grid tab the Bands/Contour view setting is now retained when changing between results files.

**Image modifier can be assigned to surfaces [ID-93209]:** When image modifier is assigned to a surface, calculations and image generation runs without error.

**Prevented location error when running dynamic simulations [ID-94574]:** Corrected an error when passing coordinates to rtrace\_dc so that dynamic simulations can run for all locations.

**RadianceIES sensors generated for current geometry [ID-95123]:** When sensors are being generated for a building all rooms are checked for existing openings, spaces with previous openings that have been removed have sensors removed.

**Enabled the "Average DF" button on the WP Grid tab [ID-95575]:** "Average DF" button can now be used to generate reports.

**ALE output is now generated from Process options [ID-95582]:** ALE output is generated and can be viewed in WP Grid tab.

**UI improvements made in Dynamic Results Process dialog box [ID-95588]:** Clicking EFA checkbox now disables inapplicable fields.

## ModelIT

**Correct PV Panel dimensions when imported in .gem file [ID-84726]:** Dimensions of PV panels are now retained when exported as .gem file and subsequently imported into a new project (ip units).

**Corrected issue displaying dimensions on PV Panels [ID-84727]:** Correct dimensions of PV panels are now displayed when switching between Unit Preference options (metric and ip).

**Prevented a crash when drawing partitions [ID-94910]:** A crash has been prevented when partitioning spaces with sloped surfaces.

## Loads Report

**Script error prevented when default AHU group has been removed or modified [ID-84969]:** Script error has been prevented when loads report is being generated when default 'AHU 1' group has been removed or modified.

**Loads report error improved [ID-95574]:** Updated error message when attempting to generate loads reports with Title 24 navigator active.

## ApacheHVAC

**Warning message is now presented when trying to import NECB 2017 system outside of NECB workflow [ID-86805]:** When importing NECB systems from the Prototype library into a non-NECB system a warning is displayed and profiles are replaced with non-NECB specific schedules.

**Prevented a crash when deleting HVAC DHW System [ID-92588]:** Crash no longer occurs when removing active DHW system through the Service hot water dialog box.

**Prototype systems minimum LAT for dehumidification revised [ID-92908]:** Prototype systems updated so that "System cooling coil min LAT for dehumidification" set to 55F(12.78C).

**Pump IDs applied correctly when heat recovery chiller added via hot water loop [ID-93601]:** When specifying a heat recovery chiller linked to a chilled water loop via the hot water loop interface all IDs are set correctly.

## General

**VE Memory improvement [ID-87752]:** VE is modified so it can take advantage of more memory available as a 32-bit application. This allows more space for processing simulation, results files and report generation on medium - large sized projects. Some large - extremely large projects can still exhibit memory-related errors and current guidance to restart VE for memory intensive processes remains until a 64-bit version of VE is available.

## Navigator for NECB 2017

**HVAC Wizard warns of unassigned HVAC Zones [ID-88034]:** After regenerating the reference model HVAC zoning issues will now be highlighted in the airside system selection of the Wizard with a tooltip. These should be reassigned prior to running loads or simulation.

**Prevented error when generating NECB report if several rooms listed excluded from unmet load hours check [ID-96266]:** Layout error in script no longer occurs when generating report.

## Navigator for NECB 2011

**Infiltration rate calculation improved [ID-91202]:** l/s.m2 façade calculation method improved for cases where surface properties were corrupted and roof was being included in façade area. Will only include wall areas based on surface type (affected specific model only).

## Navigator for Title 24 2019

**Updated labels when running Title 24 Simulation [ID-92633]:** When performing Title 24 Simulation, Radiance Sensors are now correctly labelled as (Standard), (Proposed) and (Design) in Parallel Simulation Manager.

**Assign Lighting Systems dialog box dialog improved [ID-92886]:** Increased Space Name column width within Assign Lighting Systems dialog box.

**Improved Title 24 mode HVAC Wizard workflow [ID-92894]:** A warning message is now displayed when a non-compliant system is created.

**Updated configuration of Title 24 systems library [ID-92915]:** The configuration of hot water loops on Title 24 compliant systems now has the boiler set to meet 100% of loop load.

**Title 24 performance curve names updated [ID-92952]:** Title 24 EAC performance curve sets have been renamed with Title 24 identifiers.

**Title 24 DHW systems updated [ID-93021]:** In Title 24 mode the HVAC Wizard proposed DHW models are now set to Simple mode.

**Recirculation in DHW system now applied correctly to Standard model [ID-93042]:** When generating standard model in Title 24 navigator if DHW recirculation is selected in the proposed model it is now applied to the standard model.

**Editing Internal Gains improved for both Proposed and Standard [ID-93237]:** Edits made via the Internal Gains Navigator action 'People' applies to the Standard Design Model if already generated.

**Title 24 Standard Model corrected to avoid Negative Flow errors [ID-93604]:** changes are applied to Title 24 Standard systems to apply simple controls on exhaust airflow controllers to ensure they work in conjunction with airflow controls during system sizing calculations and simulation so that Standard model generation and unmet load hours analysis can complete.

**Construction import improved [ID-93802]:** Importing glazing assemblies from library improved so that imported glazing has Title 24 type applied and unique IDs are generated so will no longer cause ASHRAE Loads simulation to fail.

**Title 24 profiles updated [ID-94186]:** Title 24 prototype data has been updated to correct the following profiles: AssemblyClgSetpt and LabServiceHotWater.

**Improved error message when generate 'Standard Model' in Title 24 navigator [ID-95259]:** Error message is shown when not all spaces in a model are assigned a Title 24 thermal template.

**Local shades not included in reported wall areas [ID-95289]:** External wall area of shading objects is no longer included in the compliance report.

**Standard Model generates when Proposed includes Unoccupied templates [ID: 95583]:** An error message no longer displays when generating a Standard Model if Title 24 template data for a Space is set to 'Unoccupied – exclude from floor area'.

**HVAC Wizard DHW system warning added when Tank Capacity less than 55 gallons [ID-95585]:** When chosen DHW system has storage capacity greater than 55 Gallons and capacity less than 75 kBtu/hr a warning is shown.



**Reports include manual edits to fan components [ID-95768]:** Manual fan sizing edits on the HVAC network are now applied to the report.

**Prevented an error when generating PRF-01 report if MacroFlo used in simulation [ID-96681]:** Reports can now be generated from simulations when MacroFlo is used.

## Navigator for ASHRAE 90.1 App G PRM

**"SPACE: Void/Plenum" template updated for unmet load hours analysis [ID- 92829]:** PRM 90.1-2016 Template for "SPACE: Void/Plenum" conditioned status is set to No by default.

**90.1 2016 Navigator corrected unit type for Infiltration [ID-93853]:** The output of the infiltration calculation is corrected to  $l/(s.m^2 \text{ fac})$  units rather than  $l/(s.m^2)$ .

**90.1 2010 PRM Compliance report unmet load hours corrected [ID-94598]:** Report now displays the correct number of unmet load hours based on setpoints during startup period.

**Improved HVAC wizard for PRM 2016 [ID-95371]:** Simulation options for baseline rotations are now visible to select from the HVAC Wizard.

# VE 2021 Feature Pack 02 Changes

## General

**Multifamily geometry added to Start Page** [ID-]: New geometry options are added to the VE Start Page for use in a new project.

**Project archive/save as includes scripted profiles** [ID-87953]: Scripted profile files now saved correctly when archiving or performing a save as operation.

## ModelIT

**Parallel and perpendicular locks updated** [ID-67393]: Parallel and perpendicular locks have been updated to work as expected when drawing extruded shapes.

**Partition tool improvements** [ID-85312]: Improvements have been made to the partition tool to ensure that the z-coordinates match when the partition is done in the front view.

**Resolved the area/volume value showing as 0 on a partitioned space** [ID-89622]: A fix has been made so that selecting the new separate space of a space that has been partitioned shows the correct area/volume of the new space.

## ApacheHVAC

**Prototype library Hot water loop capacity correction** [ID-60896]: Correction made to Single Duct VAV and CAV systems where the Hot Water Loop capacity was set to 10%. The capacity has been updated to 100%.

**PTAC/PTHP Flow Controller improvements** [ID-78683]: Prototype systems updated so that controllers with the system parameter links listed below apply appropriate proportional controller midband as well as setting link to Terminal Unit Fan Control which can be applied on System Parameters;

- "PTAC/PTHP cool airflow CAV/2sp/VAV"
- "PTAC/PTHP heat airflow CAV/2sp/VAV"
- "PTAC/PTHP cool airflow CAV/2sp/VAV, no offset"
- "PTAC/PTHP heat airflow CAV/2sp/VAV, no offset"

**Prevented a crash when setting a Condenser type and Performance Curve for DX Cooling** [ID-88021]: An application crash no longer occurs when setting Condenser Type as Evaporative-cooled and setting the Performance Curve Set to RESDVVT for DX Cooling.

**Correction made when sizing spaces with no cooling/heating load** [ID-91989]: Models containing rooms with zero cooling or heating load will no longer have an invalid value assigned to the 'Percent of sensible cooling/heating load to be met by supplemental unit system' parameter after zone-level sizing.

## Building Template Manager

**Clo method value retained** [ID-87798]: The Clo method value is retained when closing Building Template Manager.

**Comfort MET value retained** [ID-90284]: The Comfort MET value is now retained after closing the Building Template Manager.



## Navigator for ASHRAE 90.1 PRM

**BPRM Report table 1.8.2 updates** [ID-82642]: Energy use and demand is now written out to table 1.8.2 of the BPRM report.

**Baseline fan power pressure drop adjustment applied** [ID-86294]: Correction to the application of baseline fan power pressure drop adjustment so it is applied to new systems imported from the baseline library.

**Non-landscaping and facade Exterior Lighting daily profile updated** [ID-89445]: The non-landscaping and facade daily profile formula has been updated to be reduced to 50% instead of 30%.

**Window to wall ratio corrected for ECB 90.1 2013 baseline models** [ID-89730]: ECB Baseline WWR is set to 40% irrespective of building type and climate zone.

**Parking Garage no longer affects WWR when 90.1 Baseline is generated** [ID-90500]: When a building has a space type set to parking garage it is no longer included in the WWR calculation when the baseline model is generated.

**Error prevented when generating the Florida compliance report** [ID-91572]: An error has been prevented that stopped the Florida compliance report from being generated when a cooling tower is present with a fan power of zero.

**Fan control correction** [ID-92792]: The fan controls for all Florida 90.1 2016 baseline systems have been updated. The occupied hours are now set to 'On continuously' and the closed periods are set to 'Cycle on as needed'.

## Navigator for Title 24 2019

**Navigator for Title 24 2019 added** [ID-]: New Navigator for assessment of California building code Title 24 2019 using ApacheSim engine with Compliance for Non-residential buildings (performance method).

## Navigator for ASHRAE 90.1 PRM

**BPRM Report table 1.8.2 updates** [ID-82642]: Energy use and demand is now written out to table 1.8.2 of the BPRM report.

**Baseline fan power pressure drop adjustment applied** [ID-86294]: Correction to the application of baseline fan power pressure drop adjustment so it is applied to new systems imported from the baseline library.

**Non-landscaping and facade Exterior Lighting daily profile updated** [ID-89445]: The non-landscaping and facade daily profile formula has been updated to be reduced to 50% instead of 30%.

**Window to wall ratio corrected for ECB 90.1 2013 baseline models** [ID-89730]: ECB Baseline WWR is set to 40% irrespective of building type and climate zone.

**Parking Garage no longer affects WWR when 90.1 Baseline is generated** [ID-90500]: When a building has a space type set to parking garage it is no longer included in the WWR calculation when the baseline model is generated.

**Error prevented when generating the Florida compliance report** [ID-91572]: An error has been prevented that stopped the Florida compliance report from being generated when a cooling tower is present with a fan power of zero.

**Fan control correction** [ID-92792]: The fan controls for all Florida 90.1 2016 baseline systems have been updated. The occupied hours are now set to 'On continuously' and the closed periods are set to 'Cycle on as needed'.

## Navigator for NECB 2017

**PV panels no longer displayed in NECB Reference model** [ID-87924]: Free standing PV panel geometry is no longer shown in the workspace for the reference model.

**Equipment power dialog display updated** [ID-87982]: The Set Equipment Power dialog has been updated to remove a note that no longer applies.

**NECB report unmet load hours calculation correction** [ID-87990]: The NECB report now calculates the unmet load hours correctly when the simulation timestep is less than 60 minutes.

**NECB 2017 report generates when project details contain French accents** [ID-88015]: An error has been prevented when generating the NECB report when French accents have been used in the Project Details dialog.

**Refrigeration energy consumption included in NECB report** [ID-88048]: Refrigeration electricity is now output in the NECB report.

**ASHRAE cooling loads no longer locked to July** [ID-89211]: When NECB 2017 is in effect, Apache view's ASHRAE cooling loads calculation covers May to September by default and is editable.

When run from the NECB 2017 the calculation is still only run or July per standard.

**Report generation improvements** [ID-89721]: Changes have been made to prevent errors when generating the NECB 2017 report.

## Navigator for NECB 2011

**NECB report now outputs reference results** [ID-90624]: The NECB 2011 report now correctly shows the reference results.

## RadianceIES

**UDI Processing options expanded** [ID-]: When processing awp results from udi analysis the Daylight Availability assessment options include target hours, target hours as a % (including specification of two different thresholds at once) and BREEAM hard coded option.

**Daylight coefficient files saved when archiving project** [ID-65286]: When archiving a project or performing a 'Save as', the daylight coefficient files will be saved.

**ASE calculations no longer fail for locations close to the international date line** [ID-91300]: ASE calculations no longer fail when using the rtrace\_dc route for locations close to 180 degrees meridian.

**sDA simulation can be run on multiple zones** [ID-91423]: The sDA simulations are now split out to separate tasks for each zone. This allows the simulation to complete successfully.

**CBDM outputs multi-view support** [ID-91955]: Multi-view and model viewer displays are available for new outputs from CBDM calculations including BREEAM presets.

## SunCast

**Solar visualisation improvements** [ID-84303]: Improvements have been made to the algorithm so that solar visualisation cells now show the correct exposure when in contact with shading objects.

**Annual Probable Sunlight Hours enhancement** [ID-]: Visual display of unmet probable sunlight hours on the SunCast workspace with chosen results highlighted on each opening.

## VE Compliance

**Hanging prevented during compliance simulation** [ID-91772]: Corrections have been made to prevent projects from hanging during the notional building creation stage of the PartL2 2013 ApacheSim Compliance or EPC simulation.

## ApacheSolar

**Corrected an issue with Apache Solar producing notably different PV Results compared to Apache** [ID-89188]: PV results using Apache Solar have been fixed and are now more accurate in comparison to Apache PV Results.

# VE 2021 Feature Pack 01 Hotfix 01 Changes

## General

**Simulation Manager allows tasks to complete [ID-88559]:** In environments where there is a lag to complete a simulation and Download results back to the project folder the VE Simulation Manager will allow the copy to complete before completing the Task. This resolves the 'Apache process failed to complete' errors seen in some instances.

## ApacheHVAC

**Pump energy modelling defaults revised [ID-88362]:** Due to an error in pump energy modelling which is highlighted when plant loops operate under very low load conditions some default values have been revised in new ApacheHVAC systems created and in the Prototype libraries as described below. A full solution for the pump energy discrepancy is expected in a future VE update but these values are designed to minimise the impact meantime (it is expected this energy consumption would account for 0.1 - 0.2% of building energy usage on a typical size office building).

The revised Minimum chilled-water flow fraction of 0.3 applies to all cooling sources that have this parameter and can be connected to a water loop (any loop listed below):

- *EWC chillers*
- *EAC chillers*
- *PLC chillers*
- *Generic cooling sources*

The revised Minimum hot-water flow fraction of 0.1 applies to all heating sources that have this parameter and can be connected to a water loop (any loop listed below):

- *HW boiler*
- *PLC boiler*
- *Generic heating sources*

Revised default of 1.0 for Pump Maximum v applies ALL water loop pumps in all cases for which the UI backend code passes this value to apache, including pumps on:

- *CHWL (primary and secondary loops)*
- *CWL*
- *HWL (primary and secondary loops)*
- *HTL*
- *DHW loops*
- *CHWL > Thermal storage loop*

## Navigator for ASHRAE 90.1 PRM

**Prototype data exterior lighting profile units corrected [ID-88809]** The units for the following templates have been updated to be in IP:

- ALL: External lighting (Sun-Sat)
- Exterior Lighting Astronomical & Photosensor Time Switch

**ASHRAE 55 Comfort analysis workflow updated** [ID-85648]: The ASHRAE 55 “Select spaces in assessment” dialog now defaults to have all spaces unchecked. The user should select the spaces to be analysed for Thermal Comfort using ASHRAE-55. The subsequent Unmet Load Hour test for both the BPRM report and the PRM Compliance report will exclude those spaces that are selected.

**Automatic exclusion from the Unmet Load Hours test according to space type** [ID-85908]: An “Include in automated Unmet Load Hour testing” checkbox has been added within the Thermal Templates and is editable in BTM, Tabular BTM, Space Data and Tabular Space Data. This box shall be checked by default for all regularly occupied space types and unchecked by default for the typically excluded space types. Any space for which the template has this box unchecked will be excluded from any automated Unmet Load Hours tests in reports generated from 90.1 PRM, NECB, IECC Navigator workflows.

**Unmet Load Hours reporting for Zones considers only Master Room** [ID-60295]: When the ApacheHVAC network has been modelled using HVAC Zones then reports from 90.1, NECB, IECC Navigators will only assess the Master Room against the zone setpoints for unmet load hours reporting. This is in accordance with ASHRAE and USGBC intention towards assessing unmet load hours in zones. Reports produced from the Navigators will only count these hours in the Master Rooms but if required to check further (slave) rooms served within a Zone then this can be manually done in VistaPro using the range tool.

## Navigator for NECB 2017

**NECB 2017 TEDI Calculation updated [ID-88272]**: The calculation of TEDI on the NECB 2017 Compliance report is revised to report on heating loads rather than energy consumption. Calculation now uses sum of total ApHVAC Heating coil and room units heating load / conditioned floor area.

# VE 2021 Feature Pack 01 Changes

## ModelIT

**Improved unmatched adjacency handling** [ID-67156]: Adjacency calculation when modelling or running Rebuild command is improved to avoid Unmatched Adjacency errors due to small surfaces between rooms.

**OSM import improved** [ID-74025]: OSM import has been made more stable so that the option will work on new VE installations.

**Corrected add voids tool** [ID-81505]: Prevented the add voids tool from creating 2 RA plenums instead of 1.

**Improved undo/redo functionality** [ID-86070]: Prevented undo/redo functionality from skipping certain actions e.g. Partition tool.

## Component Modeller

**Prevented crash when using Divide Space** [ID-53071]: Prevented a crash when selecting Divide space in components view.

## Apache

**Prevented Tabular Space Data dialog from appearing in preview** [ID-17860]: The tabular space data dialog no longer incorrectly shows as open when the preview of VE is viewed from the task bar.

**Improved DHW consumption range validation** [ID-83519]: Improved range validation for consumption field of DHW zones.

## ApPro

**System profile name corrected** [ID-72992]: The System profile Absolute 'Constant -15' is correctly named (previously had been displayed as 'Constant -30')

## Model Viewer 2

**Corrected animation toggle button in model Viewer 2** [ID-29247]: Animation toggle button now correctly shows the animation toggle state.

**IDV Corrected make windows opaque option** [ID-37640]: Make windows opaque toggle now correctly makes windows opaque while in exploded view when using input data visualisation tool.

## General

**Improved meter conflict resolver** [ID-82691]: Meter conflict resolver now displays correctly when trying to remove an in-use meter.

**Prevented crash when upgrading models** [ID-84490]: A crash has been prevented when upgrading certain models.

## ApLocate

**Design Weather Data message displayed fully** [ID-46410]: Error shown when design weather data is edited outwith range is improved to show the full message.

**Exporting calendar files has been corrected** [ID-73698]: Calendar files now export correctly to the location specified by the user.

## Constructions Database

**Prevented error on ASHRAE 90.1 import** [ID-84967]: ASHRAE 90.1 constructions can now be successfully imported from the CDB library.

## ApacheHVAC

**Coil type rules are enforced to prevent conflict** [ID-64818]: Extra checks are added to prevent mixing coil types in multiplexed systems (previously this could manifest as a failure to run system loads calculations during sizing).

**Pump heat gain excluded from Fluid Cooler derived values** [ID-69902]: Fluid Cooler on Heat Rejection tab of Chilled Water Loop excludes any pump heat gain when Design leaving Temperature and Range are derived.

**User library import correction** [ID-79740]: Import of components to a multiplex from the user library is improved so that the components are recognised as being part of the system multiplex and have correct system parameters options enabled.

**Constant and Variable air volume Fan behaviour corrected** [ID-79741]: The option to set a fan to be Variable Air Volume or Constant is reinstated after addition of custom fan curve option. The interface on the fan component, via System Parameters system level toggle and when Demand Controlled Ventilation is specified now correctly sets the Fan to use the Variable Air Volume curve.

**Label in EAC chiller dialog corrected** [ID-80362]: Label now refers to 'Compressor heat gain to condenser coil'.

**Prototype systems updated** [ID-80526]: Addition of logical AND connection from the Cooling Airflow controller to the OA economizer MAT reset controller. This was added so that when all zones are in heating mode, the economizer mode will be fully shut off. Changes applied to basic VAV and FPB systems.

**Prevented zone level parameters from being read-only** [ID-82424]: When editing in Zones Tabular Edit the zone level parameters no longer can be locked to read only.

**Improved HVAC system import preview window** [ID-83225]: And connections are now shown in the import preview window.

**Improved system parameters dialog for Hot Water Loop** [ID-83661]: Hot water loop and circuit drop down in system parameters is available to set for heating coil.

**Corrected HVAC visual inconsistency** [ID-83868]: AND/OR connections are now displayed correctly when loading networks via 'Load most recent network' preference.

**Improved Room unit handling** [ID-86532]: Improved handling of room units outside of multiplexes to prevent memory error during room loads sizing calculation.

## Loads Reports

**Improved loads report aggregations** [ID-71437]: The Room and System Loads report now more accurately calculates wall area and area weighted thermal transmittance.



**Corrected capacities in system sizing report** [ID-82858]: Cooling and heating capacities are now more accurately reported in system sizing report.

**Room and Zone loads xls output shows peak times** [ID-85377]: Room and Zone loads excel report now reports the correct peak time for cooling.

## ApacheSim

**Cooling Energy includes Unitary Cooling Systems** [ID-65122]: ApacheHVAC networks that include coils served by Unitary Cooling Systems are simulated with this energy reported under Cooling Energy in the End Uses and Meters section.

**Thermal Storage Pump reporting corrected** [ID-73151]: Energy consumed by Pumps on Thermal Storage system is correctly reported under the Pumps energy end use.

## VistaPro

**ASHRAE 55 PMV Direct Solar calculation corrected** [0083763]: Calculation of PMV under ASHRAE 55 2017 Direct Solar Method is corrected to account for radiation calculated to be incident on the occupant.

**ASHRAE 55 Comfort calculation updates** [0083089]: ASHRAE 55 Comfort calculations updated to include ASHRAE 55 2017 Addendum B and incorporate algorithm from CBE tool

**Operative Temperature (ASHRAE) added** [0083188]: When ASHRAE 55 Comfort Analysis is performed the Operative Temperature calculated per ASHRAE is output to the room variables list.

**OpenEI Tariff Tools updates** [79807]: Tariff Tool labels updated to make each input clearer, rat dialog saves user changes, electrical energy usage and charge is output hourly to app file, off-peak rates used for holidays.

## SunCast

**Improved saving solar analysis results** [ID-83792]: Solar analysis can now be saved correctly without error or crash occurring.

**Horizontal angle taken into account for solar visualisation** [ID-85655]: The horizontal-vertical transition angle in ModellIT is now accounted for in solar visualisation.

## Navigator for NECB 2017

**Navigator for NECB 2017 added** [ID-72769]: A new Navigator to support National Energy Code of Canada for Buildings is added.

Note: requires a new licence key to access under Compliance Navigators section.

## Navigator for ASHRAE 90.1 PRM

**Improved compliance reports** [ID-29271]: Compliance reports now have character limits imposed on their fields to prevent overflow.

**Tariff action moved in workflow** [ID-80288]: The tariff data section has been moved into the costs section of the workflow so that the required simulation files are available in the project.

**Corrected BPRM report currency setting** [ID-81261]: BPRM report now displays the correct currency chosen for the project.



**Improved the PRM elevators and refrigerators dialogs** [ID-81993]: Dialogs now use the correct unit depending on the project unit setting. Number of refrigerators scaling has been corrected.

**PRM 2016 baseline HVAC systems corrected** [ID-82815]: Corrected the 2016 PRM baseline HVAC systems to be able to set baseline system pressure drop adjustment value.

**ASHRAE 90.1 2016 BPRM Report Renewables correction [ID-84307]**: BPRM Report Energy Cost and Consumption by Energy type table corrected so that Proposed Total and Energy Cost correctly counts any Renewables while Baseline does not.

**Improved space group creator** [ID-84662]: Spaces assigned through the space group creator are now applied the correct templates in PRM navigator.

**Lighting gains now split correctly** [ID-84663]: Lighting gains now split correctly in 90.1 2010 PRM navigator when lighting controls have been specified.

**LPD values corrected** [ID-86029]: When generated from Navigator for ASHRAE 90.1 2016, 2013 or IECC 2012 the assignment of lighting power density to spaces and calculation of Room-Cavity Ratio is corrected.

## RadianceIES

**Dynamic Analysis for CBDM improved** [ID-65506]: Dynamic analysis options and settings for Climate based Daylight Modelling (ASE, sDA, UDI) improved to allow more accurate fast analysis. Robustness improved to allow calculations to complete without error on different user systems where the RadianceIES calculation was prone to exit before the simulation was complete previously.

Calculation quality options changed from Dynamic to offer CBDM (fast) and CBDM (ref) options to allow initial early analysis and more detailed results to be generated for 365 days assessments.

Default grid spacing reduced to be 0.25m grid when choose dynamic analysis so that CBDM outputs are compliant with global standards.

**WPgrid results now correctly labelled** [ID-77742]: Prevented the pass/fail colouring of the WP grid view being inverted.

**Prevented sky errors when processing sDA results** [ID-80001]: Errors with sky models have been prevented when processing sDA results (previously manifested as error generating 10k lux/sunny sky).

**Radiance method sDA calculation blind control improved** [ID-80759]: When running sDA calculations using Radiance method an additional ASE calculation is performed with ambient bounces set to 1 in order to judge direct radiation on the working plane to apply blind up/down control logic.

**Prevented backup files from being batch processed on Dynamic Results tab** [ID-87714]: Prevented backup files from being processed when the 'apply to all' option is selected.

If required to process backup files from previous calculations then these can be selected and manually processed.

## Import/Export BIM Navigator

**Support added for Revit systems** [ID-57840]: Revit HVAC systems information included in gbXML files can be imported to VE via the Import/Export BIM Navigator workflow and when creating a new project from a BIM file. A new option is included in Preferences >> BIM Import settings to choose to include this or not and when imported they are mapped to a set of corresponding ApacheHVAC networks with spaces/zones in the model assigned.



## VE Compliance

**BRUKL area reported consistently** [ID-85554]: ApacheSim BRUKL report corrected to ensure Actual and Notional Building show correct building floor areas for all model scenarios.

## OneClick LCA

**One Click LCA units corrected** [ID-83573]: QTY\_TYPE units output to OneClickLCA corrected so that they can be uploaded to the project in metric or ip.

## VE 2021 Hotfix 02 Changes

### ApacheSim

**Corrected PV detection in Apache** [ID-81583]: Freestanding PV panels placed in ModelIT are now correctly identified in Apache electricity generators and simulation.

### ModelIT

**MacroFlo opening type can be assigned using the 'Select opening by criteria and assign fabric' tool** [ID-81892]: Changing the MacroFlo opening type from the default option is now correctly assigned via the 'Select opening by criteria and assign fabric' tool.

**Crash prevented when using room partition tool** [ID-81925]: A crash has been prevented when using Undo function after partitioning a room.

### Licence Keys

**Network licence performance improved** [ID-]: Performance of VE startup and operation is improved when connected to network licences. Logging is added to system report for troubleshooting purposes.

**Activation Code shown in system report** [ID-]: System Report generated via Help menu >> Troubleshooting is updated to show current Activation Code beside PIN.

### ApacheHVAC

**Chiller Curve data maintained when select new performance curve** [ID-82992]: When a Chiller curve is changed to a new selection the performance data is correctly written to apache for simulation.

**Room unit controls simulate correctly** [ID-83325]: Room units (e.g. Radiators) specified with on/off or Proportional Controls behave correctly in apache simulations.

### MicroFlo

**Supply Diffuser recognised in simulation** [ID-83238]: General supply diffuser boundary conditions now correctly recognised in internal simulation.

### Navigator for ASHRAE 90.1 PRM

**BPF corrected on 90.1 2016 PRM Reports** [ID-84280]: The BPRM and PRM Compliance reports now use correct Building Performance Factor set from Building Area Type selection on Navigator and project Climate Zone.

## VE Compliance

**Thermal Template can be assigned via Tabular Space Data** [ID-82928]: Thermal template assignments made through Tabular Space Data now set correctly.

Note: in VE Compliance templates of ApHVAC methodology and NCM may not be assigned to spaces, an Apsys template from the project should be selected.

## VistaPro

**Updated labels in ASHRAE 55 report** [ID-83182]: The ASHRAE 55 Comfort output sheet now correctly shows Adaptive Comfort Method in the header of the relevant results table.

**Comfort variables reinstated** [ID-83605]: Standard Comfort variables are reinstated when viewing simulation results files.

Predicted Mean Vote, Percentage People Dissatisfied, Comfort Index and Standard Effective Temperature are calculated for each room using the Room Data >> Comfort tab inputs for CLO, MET and nominal air speed (previously had been using fixed values approach).

Standard variables use a single value for CLO, user can choose Fixed input method and specify a single value else average of Max and Min is used. CLO variable is added to standard comfort variables to see value used in these calculations.

ASHRAE comfort outputs are unaffected and continue to use room data comfort settings, Comfort Analysis button on toolbar can be used to access these variables and output reports.

## VE 2021 Hotfix 01 Changes

Navigator for ASHRAE 901. PRM

**90.1 2016 BPRM Report Table 1.8.1 correction** [ID-82200]: Table 1.8.1 sum of Energy Consumption no longer includes Peak demands values.

**90.1 2016 BPRM Report Table 1.8.2(b) shows PCI values** [ID-82266]: Table 1.8.2(b) Proposed Cost Index is populated for all models.

**90.1 2016 PRM Compliance Report Costs improved** [ID-82278]: PRM Compliance report is improved to ensure script consistently uses tariffs as input on VistaPro tariff interface via 90.1 PRM Navigator action.

**90.1 2016 Baseline WWR applied per building type** [ID-82241]: The Baseline building is generated with correct window areas matching chosen Building Types.

**90.1 2016 Florida sizing error corrected** [ID-82243]: Generation and sizing of the HVAC systems via HVAC Wizard no longer gives the error “Must load HVAC system first” at end of sizing routine for baseline system.

### VE Compliance

**Reference Building Simulation runs with SunCast link on** [ID-81847]: Reference Building uses correct shading file name so simulations with SunCast link on can run without error using Parallel Simulation Manager route.

**Section 6 Simulation runs with SunCast link on** [ID-82600]: Correction to allow Section 6 simulation to run with SunCast link on, previously when user changed building location an error would appear ‘Latitude or longitude in shading file differs from that specified in site data’.

### VistaPro

**ASHRAE 55 MRT output is consistent (ip units)** [ID-83183]: ASHRAE 55 Comfort output MRT (Mean Radiant Temperature) is corrected so that value shown on charts is consistent in ip units (previously value would increase each time the variables was reselected in VistaPro while viewing on a chart)

## VE 2021 Changes

### ApacheHVAC

**HVAC System Design Wizard** [ID-]: System Design Wizard can be accessed via Apache, ApacheHVAC or compliance Navigators. Offers simple interface to generate new systems by specifying rooms/zones then select airside options, plant equipment and finally option to autosize and generate reports ready for energy simulation.

**Advanced Air to Air Heat Pump model added** [ID-]: An advanced air to air heat pump for heating and cooling is added.

Traditional simple heat pump type also retained for consistency on existing projects.

**Free Convection model on Cooling Tower/Fluid Cooler added** [ID-]: An option to specify free convection is added to cooling tower/fluid cooler on chilled water loop. Specific as an initial air flow fraction that will operate in free mode with no fans power consumption.

**Fan Controls updates** [ID-]: Added capability for zone-level recirculation fans to operate only when associated compressor operates (as in heat pumps, zone-level AC, etc.) via new "Cycle on with terminal unit compressor" control option in the System Parameters.

**Updated defaults for humidity control and setpoints** [ID-76906]: New defaults have been set for humidity control and setpoints.

Dehumidification option is set to "Per system-level dry-bulb or dew-point control only" and info pop up is added to clarify modelling options on System Parameters.

**Negative room loads do not result in negative airflows from system parameters** [ID-12768]: When cooling/heating design zone loads change to a negative value, the design airflow correctly limits to a 0, not a negative value.

**Corrected the default HVAC link via the Room/zone sizing step using the System Prototypes & Sizing navigator** [ID-15776]: The default link has now been set to proposed instead of being set to 'None'.

**DHW dialog retains Pump description edits** [ID-29269]: The DHW dialog now correctly updates when the description is changed within the pump curve edit dialog (explicit mode).

**Corrected Zone Airflow Distribution dialog interface** [ID-35388]: Zone Airflow Distribution dialog columns can now be resized.

**Corrected the conversion of Setpoint values in the data table when using IP units** [ID-40433]: Setpoint values are now converted correctly in the data table when using IP units.

**Offsets applied on controller when negative value specified** [ID-43642]: When controller variation is set to profile and setpoint offset is applied as negative value the correct adjustment is applied.

**Range validation improved when exit chilled water loop dialog** [ID-45846]: Chilled water loop dialog now accepts the default values when cancel edits.

**Added minimum size to data table dialog** [ID-63320]: Added minimum width to tabular edit data table dialog to prevent erroneous errors.

**Prevented a crash when opening corrupted models** [ID-65901]: Prevented a crash caused by the chilled water loop of certain models which held an invalid value. User can edit the loop and correct the highlighted issue.

**Prevented a rounding error when changing to IP units** [ID-66856]: Prevented an error from occurring due to an incorrect rounding in IP units of the flow rate.

**Number of primary circuit pumps now correctly updated** [ID-74005]: The number of primary circuit pumps is now correctly updated when a new chiller is added on chilled water loop and default setting (dedicated chiller pumps) is selected.

**Prevented fan end use from being populated with duplicate entries** [ID-74832]: Prevented fan end use for chilled water loops from being populated with duplicate entries when switching tabs.

**Corrected secondary pump DT being incorrectly set** [ID-77502]: Pump power dialog is now correctly updated for the secondary circuit of a Chilled water loop when editing the associated DT.

**Apache simulation settings are correctly saved when accessed through the HVAC System Wizard** [ID-77757]: Apache simulation options are now correctly saved when set via the HVAC System Wizard.

**Systems generated via HVAC System Wizard sizing calculation corrected** [ID-77930]: The sizing calculation of DOAS systems is improved to avoid design calculation failure related to an error on Heat Transfer Loop so that error no longer interrupts system loads calculation step.

## ApacheSim

**Comfort Settings added to Space Data** [ID-]: To support thermal comfort calculations (TM52, ASHRAE 55) a Comfort tab is added to Space Data and Building Template Manager to allow settings Clo, Met and variables specific to ASHRAE 55 Adaptive thermal comfort and direct solar radiation calculations.

**Improved error reporting when invalid weather file is used for Apache simulation** [ID-50810]: Added a new error message when a simulation is run without a valid weather file selected so that multiple messages do not appear.

**Error with ordinal use indexing corrected** [ID-70062]: Improved error in calculation of ApacheHVAC heat transfer loop that resulted in apache simulation error.

**Apache results description is now correctly saved when closing** [ID-73550]: Apache results description is now correctly saved after user edit when selecting "Save and close" in the simulation settings dialog.

**Prevented a stall in simulation for certain models** [ID-74723]: An improvement is made to apache simulation when encountering an edge case in calculation of ApacheHVAC Hot Water Loop DHW Heat Exchanger so that simulation does not stall on first timestep.

## APLocate (Weather)

**Updated ASHRAE design day temperature variation profile to fit 2009 curve** [ID-66653]: The ASHRAE design day temperature variation profile has been updated.

## ASHRAE Loads

**Loads calculation can be run for heating or cooling only** [ID-15764]: An issue has been resolved which prevented running a calculation when only one option (heating or cooling) has been selected when analysis type: ApacheHVAC Room and HVAC Zone loads has been selected.

**Heating/Cooling Loads calculation settings only displayed when relevant** [ID-16402]: When the heating/cooling loads checkbox is unticked, the settings for either the heating/cooling loads are disabled.

## Loads Report

**Improved CIBSE load calculations to deal with large room area** [ID-55693]: The CIBSE load calculations have been improved to better handle exceptionally large floor areas.

**Prevented layout error causing system loads report generation to fail** [ID-71526]: The system loads reports can now be successfully generated when ApacheHVAC plant equipment exceeds the page size.

## ApPro (Profiles)

**Cancel option improved when creating new profile** [ID-9272]: When a profile is newly created, clicking cancel no longer retains the new profile and now correctly deletes the profile.

**Corrected compact profiles default holiday times** [ID-29219]: Default holiday hours have the correct default times assigned to them. These are now inactive as standard and set as below;

System occupied - 08:00 > 18:00

System extended - 06:30 > 18:30

**Day group labels are now displayed correctly for Compact profiles** [ID-76806]: Day group labels are now correctly shown in the compact profile editing dialog.

## Constructions

**Prevented commas from being written incorrectly in the internal shading device dialog** [ID-74021]: Commas are now written in correctly for formulas for the raising and lowering of shading devices.

## FlucsPro/FlucsDL

**Improved zoom functionality for drawing a task area** [ID-14670]: Improvements have been made to the zoom in and out tool to ease functionality when drawing a task area.

**Reports show correct reflectance values** [ID-42369]: User edited reflectance values in FlucsPro are now correctly shown in reports.

**Translucent shades not supported in FlucsDL calculations** [ID-50643]: Prevented translucent shades from being displayed in FlucsDL as they are not supported.

## MacroFlo

**Wind pressure coefficients limits increased** [ID-73397]: Wind pressure coefficient range has now been increased for the range -10 to 10.

## VE Scripts/api

**Improved VEScripts editor** [ID-34346]: VEScripts editor now saves scroll position on all open tabs when switching between scripts.

**VEScripts dialog loads correctly** [ID-49164]: Prevented the VEScripts dialog from flashing when first opened with open tabs.

**Corrected typo in VEScripts API** [ID-51247]: Corrected a typo in the VEScripts API (the previous spelling is still supported).



**Prevented a crash in the model summary sample script** [ID-53429]: Prevented a crash in the model summary script when run with an unsaved project.

**Improved VEScripts go to line functionality** [ID-58577]: VEScripts go to line functionality now correctly goes to the error line when double clicking the error message.

**Corrected macroflo.py sample script** [ID-73010]: macroflo.py sample script has now been updated to run without error.

**Improved error reporting for FFD csv** [ID-75258]: Improved error checking and reporting for incorrect headers in the FFD csv file.

## General

**Full meter paths are now shown when being assigned** [ID-29509]: Full meter paths are now shown in the meter dialog and in meter dropdowns rather than each path element.

**Collapse all now does not collapse to model node** [ID-32851]: The collapse all option in the model browser has been modified to only collapse displayed groups and not up to model level.

**Removed obsolete menu items for Compliance modules** [ID-34089]: Removed obsolete menus for NECB, PRM and IECC Compliance modules.

**HVAC zone view added to all Compliance modules** [ID-34258]: HVAC zone view has been enabled for all compliance modules except for UK & Ireland.

**Improved project overwriting** [ID-38655]: When a project is overwritten by a new one all files relating to the previous project are removed.

**Project notepad wraps text** [ID-50705]: Text now wraps to the size of the textbox making it easier to read.

## Keys/Licence System

**Improved error checking in request licence dialog** [ID-65368]: Improved error checking and reporting in request licence dialog for unsupported characters.

## Master Templates

**Improved Master Template Wizard to prevent unresponsive dialog** [ID-79924]: Improved the Master Template Wizard to prevent the dialog become unresponsive after repeated clicks.

## Navigator for ASHRAE 901. PRM

**Navigator for ASHRAE 90.1 2016** [ID-]: Navigator for ASHRAE 90.1 2016 App G PRM and Prescriptive methods added. Approved for Florida Building Code 2020 (when location/state is set to Florida)

Note: requires a new licence key, you can refresh your licence to check if this is already available on your account, else contact sales@iesve.com.

**Updated descriptions for PRM 2013 Baseline Systems** [ID-19353]: Descriptions have been added to 2013 baseline systems via the Import Systems dialog.

**Whole building method Infiltration calculation corrected** [ID-77077]: When choosing to set Infiltration via whole building method from Navigator action the correct values are applied to rooms based on user selection.

**Space/room group assignment only lists rooms** [ID-29215]: An improvement has been made which filters out Shades and Adjacent Buildings by default, stopping them from being listed for space/room group assignment via the PRM navigator.

**Removed duplicate WWR rows in BPRM report** [ID-32840]: Removed duplicate data rows in the proposed vs baseline design table.

**BPRM report to refers to LEED 2012** [ID-43345]: BPRM reports for 2010 and 2013 now correctly reference LEED 2012.

**Corrected prototype template "Space: Religious building"** [ID-47950]: The Space: Religious building template now correctly has the correct proposed power density.

**Data centre energy now correctly reported in PRM compliance report** [ID-69348]: The data centre end use energy is now correctly reported within the PRM compliance report

**Improved error reporting for PRM exterior lighting dialog** [ID-69516]: Improved error reporting for categories that do not have an end use.

**Prevented script error (hanging) when generating Florida compliance report** [ID-75224]: An error preventing generation of the Florida compliance report has been prevented for certain models.

**Baseline reheat energy adjustment now available for Florida report** [ID-79928]: The baseline reheat energy adjustment option is now available for the Florida compliance report.

**Prototype data can now be correctly imported with composite layers** [ID-75778]: Corrected an issue that was preventing constructions from being imported when they contained composite layers.

## VE Navigator for LEED v4

**Prevented erroneous error message in LZCT dialog** [ID-54014]: Prevented an incorrect error message being displayed when opening the LZCT dialog from the Navigator for LEED.

## VE Navigator for One Click LCA

**Register link in OCL navigator now opens browser in the foreground** [ID-45012]: Corrected the OCL navigator to open the browser for the register link in the foreground.

**One Click LCA report now more accurately outputs PV generated electricity** [ID-80029]: PV generated electricity is now correctly reported in the One Click LCA report.

## NECB Navigator

**Reference fan sizing step removed from NECB navigator** [ID-33444]: Reference fan sizing step has been removed from the NECB navigator as it is redundant.

**Removed 0 degree only option from the HVAC wizard when accessed from NECB navigators** [ID-51072]: Removed the redundant 0 degree only option from the HVAC wizard when accessed via the NECB navigators.

## ModelIT

**Improvements to the preview navigation on SHP/GML import** [ID-14705]: Improvements have been made to make the preview navigation more intuitive, with enhancements to the zoom and pan controls.

**Enhanced the instruction shown in the preview window on SHP/GML import** [ID-14706]: The import instruction has been refined to make it clearer on actions that can be performed.

**Colour thumbnail updates when a new colour is assigned for a space** [ID-18266]: When selecting a new colour for a space, the thumbnail of the newly assigned colour correctly changes.

**Improved gbXML import** [ID-44735]: Prevented VE from freezing when importing problem XML files.

**Prevented translucent shades from being turned off with local shades** [ID-50626]: Prevented the local shades toggle from turning translucent shades on and off.

**Prevented a mismatch of freestanding PV panel count between ModelIT and Apache** [ID-56996]: Added the capability to remove freestanding PV panels that had become corrupted and were visible in Apache but had no geometry associated.

**Prevented a crash from occurring with freestanding PV panels** [ID-60765]: A crash has been prevented when manipulating freestanding PV panels.

**Copied PV panels are now correctly recognised by Apache** [ID-77965]: Copied PV panels are now correctly identified by Apache in the electricity generators dialog.

**Prevented glazed partitions being added to adjacent buildings** [ID-58885]: Prevented glazed partitions from being added to attached adjacent buildings.

**Prevented openings from being added to adjacent building/local shade** [ID-59442]: Prevented openings from being added to adjacent buildings and local shades.

**External wall area now correctly reported after space has been scaled** [ID-65498]: External wall area is now correctly calculated after an object has been scaled.

**Surfaces can be placed at surface level** [ID-77541]: Openings can now be correctly placed at surface level view in ModelIT.

## RadianceIES

**Dynamic results multi-view option added** [ID-]: Option to quickly select any dynamic results output on WP Grid tab and show all similar outputs for other rooms on Model Viewer 2.

**Window labels drawn on workspace** [ID-]: Option to draw window labels on model workspace for;

- sDA allows to view window groups which correspond to the different simulations and results outputs
- VSC allows to view the window index numbers matching to results grid.

**Sensor table updates per selection** [ID-22434]: The sensor table correctly updates/clears the sensor data for a selected room, depending on if the room has sensor data or not.

**Corrected IP unit conversion for WP height and grids fields** [ID-46090]: IP units are now correctly converted for use in the WP height and grid fields.

**Working Plane interface improved** [ID-66997]: Working plane height can be set from menu and RadianceIES view interfaces. When workspace is refreshed then view will reflect user settings.

**Glare can now be analysed regardless of file location** [ID-71791]: Glare can now be analysed regardless of where the luminance image has been saved.

## SunCast

**Solar altitude results are automatically displayed** [ID-47362]: Solar altitude results are now automatically loaded when solar shading calculations complete.

**Prevented a crash from occurring when running Solar exposure** [ID-57002]: Prevented a crash when attempting to run a solar exposure analysis without a valid Apache licence.

Note: licence is required to be purchased for this analysis.

**Improved missing surfaces reporting in SunCast** [ID-57987]: SunCast will report problematic surfaces which may not be drawn correctly when images are generated.

**Prevented a shading file error running solar visualisation calculation** [ID-69401]: Prevented a shading file error for certain models and improved user feedback on fixing the error.

## VE Compliance

**Scottish accreditation scheme list is now displayed correctly** [ID-76844]: Scottish accreditation scheme names are now displayed correctly within the dropdown list.

**Connected spaces now have correct height written out after SBEM compliance simulation** [ID-79603]:

Prevented an incorrect height being used for connected spaces when running an SBEM compliance simulation.

Note: as of VE 2019.3 64-bit SBEM is included for all VE-SBEM routes and so user should avoid connecting spaces when using this version as it has a higher rooms limit which can run all level 3 buildings.

## VistaPro

**Comfort outputs enhanced to include ASHRAE 55: 2013 & 2017** [ID-]: The Comfort option on VistaPro is extended to offer csv summary outputs for TM52, ASHRAE 55 Analytical method, Adaptive method and direct solar radiation method.

Select spaces to analyse then click Thermal Comfort option on toolbar to choose standards you wish to assess.

Note Comfort settings are now applied per room on the Comfort Tab of space data.

When applied additional outputs such as PMV for the chosen method are added to room variables.

**Blind state added as an output variable** [ID-]: State of a blind (up or down) is output for windows that have local external and/or internal shading devices specified as part of their construction. This is an opening level variable.

**Improved functionality using VistaPro Table** [ID-15816]: An improvement has been made to allow scrolling via the wheel mouse in the Table window.

**End use energy reporting corrected for electric air-cooled chiller** [ID-18548]: When network is served by electric air-cooled chiller the end use reporting is corrected so that space cooling and heat rejection are in the correct categories.

**Description on a results file retained when Save As project to a new name** [ID-29178]:

Resolved an issue with the description on a results file not being retained when a new copy of the project is saved via Save Project As.

**Default weather file retained when refresh results** [ID-29184]: Issued resolved stopping the default weather file disappearing when refreshing the Files section in VistaPro.

**Default variable selection changed** [ID-34020]: A default variable is no longer automatically selected when a category is selected by the user.



**Apache simulation results file description is now correctly updating when altered** [ID-67531]: Results file description is now correctly updated when altered by the user.

**XY Plots update from Selected Dates preference** [ID-34565]: Settings >> Chart Preferences option is read by XY Plot. When unticked the vista view will be locked to yearly view and when ticked will show only selected date range.

**Improved variable selection when viewing baseline model** [ID-61062]: Room variables are now correctly selected when selecting a room with the baseline model.

**Updated unit labels in OpenEI Tariff tool** [ID-77674]: Unit labels have been corrected in the OpenEI Tariff Tool.  
Power Adjustment is \$/kWh/%  
Daily rate input is \$/day  
Correction to G-PPPS label

