Technical Update 42: EDGE V3.1 Calculation engine update for May 2026

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The World Bank Group values transparency and addressing issues when identified. When a critical problem arises, the EDGE EO&M team either posts a workaround on the Known Issues Page or, when it is strictly required, we may implement an unscheduled fix to the calculation back-end.

To maintain program integrity and adapt to new regulations, a revised calculation engine will launch in **May 2026**. These updates will enhance calculation accuracy and trust in the EDGE Green Building program, though some project teams may experience changes in certification status during the transition. Any downgrade in certification for registered projects will be grandfathered, but the exact previous savings totals may not be restored as the new calculations reflect improved accuracy.

The comprehensive list of changes is presented in below.

List of improvements and fixes

1. Assessments in several cities showing #N/A in floor U-value (25542)

Category: Fix

Impact: High for those cities affected.

Description: In EDGE V3.1 the floor U-value in EEM06 shows #N/A error where the project is in 70+ cities around the world. The root cause was that the Floor U-values unintentionally got shifted from numerical to text values in database. o

Outcome: The issue has been fixed, no #N/A error is shown in any of the locations available in the EDGE App.

2. HVAC water no longer shows in water tab when District Cooling is selected (25535)

Category: Fix

Impact: High for projects with district cooling.

Description: When a project team selects District Cooling as its cooling source, the HVAC water consumption appears in the Water tab. This previously established assumption results in an inaccurate water base case, as it includes on-site water consumption for cooling towers that do not exist within the project boundary.

Outcome: This assumption has been changed. When District Cooling is selected, the HVAC water consumption is assumed as 0 m^3/day. According to EDGE protocols, HVAC water is only accounted for when a water-cooled chiller on-site; district cooling implies the cooling generation (and its associated water use) is managed off-site.

3. Missing U-Values in EEM27 when custom glazing materials (MEM08) are used (25510)

Category: Fix

Impact: High for retail and industrial projects with custom glazing materials.

Description: When Custom Materials are used for glazing in the Materials Tab (MEM08), the backend fails to maintain or recognize the U-value needed for the cold storage envelope calculations in EEM27. This results in a "U-value missing" issue, which prevents the App from calculating the building's heating and cooling loads. Affecting EDGE App V3.0 and V3.1.

This issue affected project teams modeling Industrial or Retail typologies that include refrigerated spaces (Frozen, Cold, or Fruit & Vegetable storage) and utilize custom glazing specifications in MEM08.

Outcome: When a "Custom Material" is selected and defined in MEM08, then the calculation engine now preserves and utilizes the glazing U-value for the EEM27 envelope assessment. As a result, the project's heating/cooling loads are successfully calculated without any data-missing errors.

4. Update base case envelope U values for Chile to better align with regulation (25466)

Category: Improvement

Impact: Medium in selected Chilean cities.

Description: Chilean city base case historically has had regional U-values for Latin America, but jurisdiction specific values should be implemented.

Outcome: The following cities in Chile have been updated to better align with the jurisdiction-related regulation as per the indicated values below. Note that the alignment is partial.

	Residential: Homes and Apartments			Education, Healthcare and Serviced apartments		
Climate Zone	**Roof U-value ($W/m^2 \cdot K$)**	**External Wall U-value ($W/m^2 \cdot K$)**	**Window (Frames & glazing) U-value ($W/m^2 \cdot K$)**	**Roof U-value ($W/m^2 \cdot K$)**	**External Wall U-value ($W/m^2 \cdot K$)**	**Window (Frames & glazing) U-value ($W/m^2 \cdot K$)**
Zone A - Antofagasta	0.84	2.10	5.80	0.84	2.00	5.80
Zone C - Valparaiso	0.47	0.80	5.80	0.47	0.80	3.60
Zone D - Santiago	0.38	0.80	5.80	0.38	0.60	3.60

5. Subproject multiplier display and calculation in apartments Typology (25465)

Category: Fix

Impact: Low, display fix only.

Description: When using the Subproject Multiplier for Apartments typology, the app fails to accurately reflect the impact of the multiplication factor on the building statistics. Specifically, the "Total no. of apartments" field in the Design Tab remains static despite changes to the multiplier. Furthermore, in the "Detailed Results" view, the number of bedrooms is being incorrectly multiplied by the project multiplier.

Outcome: The "Total no. of apartments" field in the Design Tab now reflects the change in the project multiplier (Total Units = Base Units × Multiplier). The number of bedrooms listed on the Detailed Results page remains constant based on the unit typology definition and it is not impacted by the subproject multiplier.

6. Updated Oman envelope U-values (25340)

Category: Improvement

Impact: Low, targeted for Oman cities.

Description: Oman city base case had a strict set of envelope U-values, higher than the regulation required it and the BAU.

Outcome: Envelope U-values have been adjusted as per the latest available regulation. The new envelope U-values are indicated below.

Building Element	U-value (W/m²·K)	SHGC
External Walls	4.86	-
Glass	2.84	0.37
Roof	1.26 (Homes & Apartment) 1.13 (Industrial) 1.54 (All other typologies).	-

7. Overestimation of heating energy across all typologies (25337)

Category: Fix

Impact: High, impacting homes, and most commercial buildings located in climate zones 2A, 2B, 3A, 3B, and 3C.

Description: Several comparisons with dynamic simulation models have identified a systematic overestimation of heating energy demand in the EDGE App, particularly in temperate and cold climate zones. While currently Shou results across other building typologies.

Outcome: The backend calculation engine has been updated to better align with validated simulation models and better reflect the common practices and thermal requirements of the region.

8. Inflated Savings in EEM18 due to Underestimated Distribution Losses for Instant Hot Water Systems (25335)

Category: Fix

Impact: High, impacting subprojects using instant hot water.

Description: In the backend calculation engine for measure EEM18, the distribution losses for instantaneous hot water heaters are currently set at 5%. This leads to disproportionately high and unrealistic savings when compared to the base case boiler, which assumes distribution losses of 17%.

Outcome: The distribution loss for instantaneous hot water heaters has been updated to 13%. This adjustment will ensure that the savings calculated for instant systems provide a more realistic comparison against the 17% base case loss of a standard boiler. The reference for the new value can be found in here: https://docs.nrel.gov/docs/fy14osti/62848.pdf and https://www.aceee.org/sites/default/files/pdf/conferences/hwf/2018/4b-healy.pdf

9. Base Case Flow Rate for Banquet Hall Faucets in Indonesia (WEM02 – Hotel 3-Stars) (25334)

Category: Fix

Impact: Low, impacting only 3-star hotels in Indonesia

Description: In the backend calculation engine, the base case value for banquet hall faucets in the hotel 3 stars typology is mistakenly set to 66 liters per minute. This causes a disproportionately high "Wash Basin" end use in the base case, creating an "illusion of energy/water savings" because any standard improved fixture will show massive percentage improvements against such an inflated base case.

Outcome: The base case flow rate for banquet hall faucets in Indonesia now reflects standard local construction practices (6L/min) rather than 66 L/min.

10. EEM01: Base case WWR value display issue for ASHRAE template (25326)

Category: Fix

Impact: Low, display fix.

Description: The ASHRAE base case WWR value does not show proper average value in EEM01. Notice that there is no Impact on Energy calculations, but it is a display update.

Outcome: The displayed WWR value now only considers non zero values for display while considering average for basecase.

11. Update Base case envelope U-values for Moroccan Cities (25318)

Category: Improvement

Impact: High, impacting subprojects in Morocco.

Description: To promote alignment of the EDGE certification with evolving national regulations, the base case values for energy performance indicators has been updated to better align with current local construction practices across Morocco's six climatic zones and for the following typologies: Residential: High and Medium-income Homes and Apartments. 5-, 4-, and 3-star Hotels and Resorts, Offices and Hospitals.

Outcome: The EDGE App now utilizes the following City-Customized base case values for Morocco to accurately reflect local standards as per the relevant climate zone.

Residential Buildings (High and Medium-income Homes/Apartments)

Climatic Zone (Reference City)	Roof U-value ($W/m^2 \cdot K$)	Ext. Wall U-value ($W/m^2 \cdot K$)	Glass U-value ($W/m^2 \cdot K$)	Solar Factor FS
Z1– Agadir, Rabat, Sidi Ifni	0.70	1.50	High: 2.6 / Rest: 5.7	High: 0.55 / Rest: 0.75
Z2 – Tangier	0.70	0.80	2.60	0.55

Z3– Fès	0.70	0.80	2.60	0.55
Z4– Ifrane	0.60	0.70	2.60	0.65
Z5– Marrakech	0.60	0.70	2.60	0.45
Z6– Errachidia	0.60	0.70	2.60	0.45

Hotels/Resorts 5-, 4- and 3-star, Offices, Hospitals, and Schools

Climatic Zone (Reference City)	Roof U-value ($W/m^2 \cdot K$)	Ext. Wall U-value ($W/m^2 \cdot K$)	Glass U-value ($W/m^2 K$)	Solar Factor FS
Z1 – Agadir, Rabat, Sidi Ifni	0.65	1.20	2.60	0.53
Z2 – Tangier	0.65	0.70	2.60	0.53
Z3 – Fès	0.65	0.70	2.60	0.53
Z4 – Ifrane	0.55	0.60	2.60	0.63
Z5 – Marrakech	0.55	0.60	2.60	0.43
Z6 – Errachidia	0.55	0.60	2.60	0.43

12. Base case changes in ASHRAE template for Colombia (25276)

Category: Improvement

Impact: High, impacting subprojects in Colombia.

Description: To promote alignment of the EDGE certification with evolving national regulations, the building envelope base case ASHRAE (Base Case) for Colombia have been updated to comply with the country's newly enforced national regulation. Changes in the following energy measures EEM05 (Roof Insulation), EEM08 (Wall Insulation), and EEM09 (Efficiency of Glass) were required.

Outcome: The App now uses an updated base case that aligns with the standard construction practice or the current national code in Colombia. The table below provides the new U-Value, SHGC, and VT values for each typology.

Building Type	Base Case Roof U-value (W/m^2K)	Base Case Wall U-Value (W/m^2K)	Base Case Glass U-value (W/m^2K)	Base Case Glass SHGC	Base Case Glass VT
Private Hospital	1.16	3.44	5.80	0.81	0.76
Public Hospital	1.16	3.44	5.80	0.81	0.76
Multi-Specialty Hospital	1.16	3.44	5.80	0.81	0.76
Clinics	4.79	3.44	5.80	0.81	0.76
Office	4.09	2.29	5.80	0.81	0.76
Apartments Low Income	3.96	3.42	5.80	0.81	0.76
Apartments Middle Income	4.09	3.49	5.80	0.81	0.76
Apartments High Income	4.09	3.49	5.80	0.81	0.76
Homes Low Income	1.40	3.43	5.80	0.81	0.76
Homes Middle Income	1.14	3.49	5.80	0.81	0.76
Homes High Income	1.14	3.49	5.80	0.81	0.76
Department Store	4.07	1.38	5.80	0.81	0.76
Shopping mall	1.16	1.55	5.80	0.81	0.76
5 Star Hotel	4.09	1.93	5.80	0.81	0.76
4 Star Hotel	4.09	1.93	5.80	0.81	0.76
3 Star Hotel	6.83	2.09	5.80	0.81	0.76
2 Star Hotel	6.83	2.09	5.80	0.81	0.76
1 Star Hotel	6.83	2.09	5.80	0.81	0.76
Preschool	1.16	1.99	5.80	0.81	0.76
School	1.16	1.99	5.80	0.81	0.76
University	1.16	2.01	5.80	0.81	0.76

13. Display Unit Mismatch (Lts/Kg vs. Lts/Load) in WEM11 (25269)

Category: Fix

Impact: Low, display issue only.

Description: The water measure WEM11 (Water Efficient Washing Machine) is displaying an incorrect unit of measurement for water consumption in Serviced apartments. It currently shows "Lts/Kg" when it should be showing "Lts/Load" for both the base and improved cases. This is a display-only issue; the underlying backend calculations for water savings are confirmed to be correct.

Outcome: For residential typologies (Homes and Apartments), the EDGE App now displays the water requirement in L/Load (or Lts/Load) to accurately reflect standard household washing machine metrics.

14. Brazil Grid Emissions Factor to 0.15 tonsCO2eq/kWh (25223)

Category: Fix

Impact: Low, default value fix but may be user overwritten.

Description: In the current version of the EDGE App (V3.1), the default grid emissions factor for Brazil has been set with the incorrect units, equivalent to >0.001 tonsCO2eq/kWh

Outcome: The default grid emissions factor for all locations in Brazil is now 0.15 tonsCO2eq/kWh, in line with the IFI Harmonized Emissions Factors used in EDGE V3.0 to ensure consistency in CO2 emissions across the EDGE program. All values will be revised in EDGE V4.0

Inconsistency in Embodied Carbon Scaling for Material Measures Between v3.0 and v3.1(25179)

Category: Fix

Impact: High

Description: User have reported a significant discrepancy in the embodied carbon calculations for some building elements, mainly the bottom floor construction, when doing manual calculations following the user guide part 5 with varying thicknesses. The issue causes incorrect carbon reporting for any country where the local base case thickness deviates from the base benchmarks.

Outcome: Then the calculation engine now applies a scaling factor based on the ratio of the user-defined thickness to the benchmark study thickness, And the resulting embodied carbon ($kgCO2eq/m^2$) reflects the proportional change in material volume.

15. Mismatch of Efficiency Units (COP vs. %) in EEM16 Space Heating Systems (25143)

Category: Fix

Impact: Medium, it is primarily a display and input unit error, but it materially affects the project's reported energy performance

Description: In measure EEM16, certain systems display the efficiency field as a percentage (%) when they require a Coefficient of Performance (COP), and vice versa. This creates confusion for users and can lead to misleading energy savings if the wrong numerical scale is applied.

Outcome: The EDGE App and its detailed calculator should automatically display and require the correct unit of measurement (COP or %) based on the specific heating system type selected. COP-based performance should always be labeled as COP, and percentage-based efficiency should be labeled as % to ensure global consistency.

16. Heating Energy End-Use Missing in EEM16 Calculator (25142)

Category: Fix

Impact: High, but focused on specific climate zone and system selection

Description: For projects located in climate zone 4, when using the EEM16 calculator, if all three system types are not fully completed, the entire heating energy end-use (including Heating, Fans, and Pumps) disappears in the improved case.

Outcome: The EEM16 calculator is now usable with one, two, or three systems regardless of the climate zone. The heating energy end-use (Heating, Fans, and Pumps) is calculated based on the systems provided and no longer disappears from either the base or improved case.

Weather profile update for Makhado, South Africa (24770)

Category: Fix

Impact: Low, default value change that can be overwritten by the user.

Description: The default monthly temperatures in Makhado (Limpopo province), seem excessively high, going as high as 45 degrees. According

Outcome: The default monthly temperatures in Makhado have been updated as per the Makhado.AFB, ZAF weather file.

17. Embodied carbon in Apartments calculation issue and proposed fix (24368)

Category: Fix

Impact: Medium. It does not impact on certification outcome but only the final indicators used for reporting.

Description: The subproject multiplier in Apartments typology was creating an overestimation of the final embodied carbon savings used for reporting. This cause due to the multiplier being used twice during the calculation process.

Outcome: The embodied carbon savings calculation is correct, even when the subproject multiplier is used.

18. Window to Floor Ratio miscalculation in South African residential buildings (24200)

Category: Fix

Impact: Low, display issue only.

Description: The displayed value for window to Floor Ratio is incorrect.

Outcome: The displayed value for window to Floor Ratio is now correct, consistent with the one shown in EDGE V3.0.

Incorrect ASHRAE climate zone as the default selection for EDGE Location Kochi, India (24146)

Category: Fix

Impact: Low, a default value that user can overwrite.

Description: Kochi, India indicated a default ASHRAE climate zone of 4A, a highly unlikely selection.

Outcome: The default climate zone has been updated.

19. Default occupancy and meals/day change for selected typologies in Colombia (24089)

Category: Improvement

Impact: High, the energy savings impact of specific measures may be affected due to the general reduction of cooking energy.

Description: To align with the new Colombian legislation (0194), the default occupancy and meals/day for selected typologies in Colombia has been changed. Users are not required to provide justification on when default values are selected.

Outcome: The default occupancy and meals/day has been updated as per table below.

Primary Building Type	Secondary Building Type	Occupancy No.	No. of Meals /day
Office	Office		0
Apartments	Apartments Low Income		0
Apartments	Apartments Lower Middle Income		0

Apartments	Apartments Middle Income	3	0
Apartments	Apartments High Income	3	0
Homes	Homes Low Income	4	0
Homes	Homes Lower Middle Income	4	0
Homes	Homes Middle Income	4	0
Homes	Homes High Income	3	0
Education	Preschool		0
Education	School		0
Education	University		0

Climate zone for three cities in Colombia update (24087)

Category: Improvement

Impact: Medium, user may overwrite the default climate zone

Description: The default ASHRAE climate zone for Cali, Manizales and Tulua do not reflect the observed temperatures in the region.

Outcome: The default ASHRAE climate zone has been updated for the following cities in Colombia: Cali from 1A to 1B Manizales from 3A to 2A Tulua from 3A to 2A

20. Base case water updates for all African countries without country specific base case (24059)

Category: Improvement

Impact: Medium, Africa-based users will see a more representative water base case model

Description: African countries without country specific database use a global average, which does not reflect the general trends observed.

Outcome: The base case flow and flush rates for all African countries without country specific base have been updated as follows:

- Homes & Apartment Low Income: WEM01: 12L/min WEM02: 8 L/min WEM04: 8.5 Liters per flush, Single flush WEM08: 11 L/min
- Homes & Apartment Medium Income: WEM01: 12L/minWEM02: 8 L/minWEM04: 7/6 Liters per flush, dual flush WEM08: 11 L/min
- Homes & Apartment High Income: High IncomeWEM01: 12L/minWEM02: 8 L/minWEM04: 7/5; Liters per flush, dual flushWEM08: 11 L/min

21. Temperature and climate data for Panama City (23972)

Category: Fix

Impact: Low, user may overwrite the default climate zone

Description: Discrepancies between the reported and observed temperature monthly data for Panama City

Outcome: The default weather monthly temperature data for Panama city has been updated in line the closest available TMY weather data file.

22. Change the weather data for Dos Quebradas city, Colombia (23938)

Category: Fix

Impact: Low, user may overwrite the default climate zone

Description: Discrepancies between the reported and observed monthly temperature data for Dos Quebradas City

Outcome: The default weather monthly temperature data for Dos Quebradas city has been updated in line with the closest available TMY weather data file (Pereira-Matecana International Airport).

23. Mismatch between "Final Operational CO2 emissions:" and the carbon emissions graph (23862)

Category: Fix

Impact: Medium. It does not impact the certification outcome but affects the reporting metrics.

Description: A mismatch between the “Final Operational CO2 emissions" value in the list of KPIs at the top bar and the carbon emissions graph.

Outcome: the “Final Operational CO2 emissions" and the carbon emissions graph now report consistent values.

24. EEM34 Other energy savings, does not work for "Hot water energy" (23807)

Category: Fix

Impact: Medium, workarounds are available.

Description: The measure “EEM34 Other energy savings” does not work for the "Hot water energy" end use.

Outcome: The measure “EEM34 Other energy savings” now works for "Hot water energy" end use.

25. Adjustment of Internal Wall Area Factors for Industrial and Serviced Apartment Typologies (25804)

Category: Fix

Impact: High

Description: The internal wall area factors for industrial and serviced apartments typologies, used to estimate the total area of internal wall partitions, was substantially higher compared to evidence provided by EDGE stakeholders.

Outcome: The internal wall area factors for industrial and serviced apartments typologies have been revised. The serviced apartments internal wall factor is aligned with apartments’ high income. The industrial wall area factor has a reduction of 50%.

26. Incorrect Default Space Conditioning for Cold Storage in Detailed Loads Input (25805)

Category: Fix

Impact: Medium, a default value that user can overwrite

Description: The default conditioning assumption for cold storage is set as “Non-AC & Non-Heating”, this is inconsistent with the other industrial refrigeration areas that show “AC & Heating” instead.

Outcome: The default conditioning assumption for cold storage is now set as “AC & Heating”.

27. Correction of Unusually High Base Case COP for PTAC and PTHP in Hospitality Typologies (25780)

Category: Fix

Impact: Medium, a workaround has been provided in the known issues page

Description: The calculation formula for the heating and cooling base case COP in PTAC and PTHP systems was incorrect, resulting in unusually high base case COPs. This issue is inherited from the ASHRAE 90.1-2016 standard.

Outcome: The calculation formula for the heating and cooling base case COP in PTAC and PTHP systems has been corrected as per ASHRAE 90.1-2022.

28. Inconsistency between displayed steel reinforcement and backend calculation (25763)

Category: Fix

Impact: Low, display fix.

Description: The display value of the base case reinforcement steel for certain assemblies does not match with the actual value used in the back-end calculations. Notice that there is no Impact on material calculations, but it is a display update.

Outcome: The display value for steel reinforcement is now consistent with the one used in the back-end calculations.

29. Refrigeration End use appearing in Office, Healthcare, Education, Hotel, & Resort typologies (25759)

Category: Fix

Impact: Medium, only impacting small sized subprojects.

Description: The back-end calculations assume a minimal but constant refrigeration energy use in in Office, Healthcare, Education, Hotel, & Resort typologies. This assumption was creating potential double counting when pantry is enabled in the kitchen loads inputs in the design tab.

Outcome: The back-end calculations no longer assume a constant refrigeration energy use in in Office, Healthcare, Education, Hotel, & Resort typologies. Users may estimate the energy for refrigeration via the kitchen loads inputs in the design tab, or using EEM27, where applicable.

30. EEM05 incorrect AASF display value (25796)

Category: Fix

Impact: Low, display fix.

Description: The AASF display value does not show a meaningful average value in EEM04. Notice that there is no Impact on Energy calculations, but it is a display update.

Outcome: The displayed AASF value now only considers valid orientations for display as opposed to all eight orientations.

31. EEM11: Defect in Operative Temperature Formulas for Natural Ventilation (25856)

Category: Fix

Severity: Medium, especially for apartment projects relying on natural ventilation

Description: This issue represents a defect in the thermal modeling logic. By incorrectly compounding opening into a single zone and ignoring the remaining activity zones. As a result, the tool estimates inaccurate indoor operative temperature and may change the energy savings estimations for cooling energy.

Outcome: Natural ventilation is correctly being implemented in the corresponding activity areas, resulting in more reliable cooling energy savings.

32. EEM27 User Entry Input Issues, Internal Wall U-value user entry not considered for calculation (25832)

Category: Fix

Impact: High

Description: When a user modifies EEM27, there had been no change in energy use as the internal load was not getting added to cooling load for refrigeration.

Outcome: Updated to consider user entry U value to demonstrate savings when selecting U values for cold storage, frozen storage and fruits & vegetables storage.

33. Incorrect base case in Serbia, for Healthcare projects (25534)

Category: Fix

Impact: Medium.

Description: The base case display for dual-flush water closets shows incorrect base case values. Specifically, the low-flush volume is displayed as **0 lpf** instead of the **3 lpf**. Base case assumptions are critical as they serve as the standard benchmark to calculate the 20% efficiency savings required for certification.

Outcome: Base case for Serbia Healthcare projects now displays 6/3 lpf.

Conclusion

The extensive list of fixes and improvements mentioned above represent a significant step toward more reliable and robust EDGE App, and as a result, an overall increase in trust and the quality of the program.

We appreciate your understanding and your cooperation to make this update as seamless as possible.

For more information, please reach at edge@ifc.org.

Thank you for your continued support.

The EDGE Global Technical Team.

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