Methodology Documentation

CRREM Tool GRESB Data Import

This document provides information on the mapping of GRESB asset-level performance data onto the CRREM tool input parameters.

For more information on the definitions of specific CRREM Tool parameters, please refer to the CRREM Risk Assessment Reference Guide.

For more information on the definitions of specific GRESB Asset-level parameters, please refer to the guidance on How to Complete the GRESB Asset Spreadsheet.

Table of Contents

Introduction

Carbon Risk Real Estate Monitor

The Carbon Risk Real Estate Monitor (CRREM) provides the real estate industry with transparent, science-based decarbonisation pathways aligned with the Paris Climate Goals of limiting global temperature rise to 2C, with ambition towards 1.5°C. These pathways enable industry stakeholders to estimate carbon and stranding risks associated with premature obsolescence and write-downs due to changing market expectations and legal regulations, encompassed within what is categorised as 'transition risks'. CRREM offers a comprehensive framework focused on carbon risk exposure and potential strategies to reduce this risk, and include the elements needed to undertake scenario analysis. As such it can be used to comply with large-scale initiatives such as the Recommendations of the Task Force on Climate-related Financial Disclosures and the EU Taxonomy for sustainable activities.

For more information, please visit crrem.org.

CRREM Risk Assessment Tool

The CRREM Risk Assessment Tool (CRREM Tool) is an Excel-based tool that allows users to analyse specific real estate assets, and portfolios of these assets, against the decarbonisation and energy pathways derived by the CRREM project.

Geographic scope: This implementation of the CRREM tool is limited to countries in the European Union and the United Kingdom. Assets in countries that are outside this scope will not be transferred into the CRREM tool. Upon CRREM tool download, the user will be notified of which assets were not imported for this reason. (See a full list of eligible countries in the General Information section below.)

Property Type scope: This implementation of the CRREM tool is limited to a subset of property types that GRESB collects data on. Assets with unsupported property types will not be transferred into the CRREM tool. Upon CRREM tool download, the user will be notified of which assets were not imported for this reason. (See a full list of eligible property types in the Building Characteristics section below.)

CRREM has expanded its scope to include other major markets including the Americas and Asia Pacific, as well as the residential real estate sector. (See the press release on global decarbonization pathways.) These are not supported by the Excel tool.

A note on data coverage: The CRREM tool implements linear extrapolation given the energy consumption of any energy type to estimate the energy consumption of the remaining floor area left uncovered by the inputted data. This is done at the asset level. This is a very rough methodology and does not necessarily reflect GRESB's stance on energy consumption estimation. Users of the tool should be aware of this feature.

CRREM Integration into GRESB

GRESB has been an active member of the CRREM consortium and has served as a resource to its development. As such the CRREM Tool aligns closely with the information GRESB collects on real estate assets.

Phase I: To enable GRESB participant members to quickly begin to assess their assets and portfolios against the CRREM pathways, GRESB has automated the process of filling in the CRREM Tool with the asset data uploaded into the GRESB Asset Portal. This document provides information on the mapping of GRESB asset-level performance data onto the CRREM Tool parameters in its Input tab.

Phase II: The underlying CRREM pathways and corresponding functions will be built directly into the Portal, providing participant members will be able to view CRREM outputs similar to what is provided in the Asset Analytics tab of the GRESB Asset Portal. Participant members will be able to see aggregated graphics and information (such as how much of their combined portfolios are in compliance with the CRREM pathways, etc). These capabilities will be for both commercial and residential real estate, and will include the global pathways.

Data Input

The format of the data input sections of this document are as follows:

CRREM tool input parameter:

GRESB data transformation.

The bold/italicized text is the input field within the Input tab of the CRREM Tool. For more information on the definitions of specific CRREM Tool parameters, please refer to the [CRREM Risk Assessment Reference Guide](#).

The normal text provides information on how GRESB data is combined, converted, and/or otherwise transformed to meet the constraints of the CRREM input fields.

[Text in brackets delineate excerpts from the [GRESB 2020 Real Estate Reference Guide](#).]

(Text in parentheses delineate excerpts from the [GRESB Asset Spreadsheet Guidance](#).)

General Information

Asset ID: Pre-filled unique asset identifier that enables the user to identify assets throughout the CRREM risk analysis on various tabs.

- This is a default unique asset identifier used within the CRREM Tool and should not be confused with the GRESB unique asset IDs, which are not used in the CRREM Tool.

Asset Name: Asset Name

Reporting year: Reporting Year

- [Reporting Year: Responses provided in the Assessment must refer to the reporting year identified in this indicator and should correspond to the most recently closed calendar year / fiscal year, as applicable. A response to an indicator must be true at

the close of the reporting year; however, the response does not need to have been true for the entire reporting year. GRESB does not favour the use of calendar year over fiscal year or viceversa, as long as the chosen reporting year is used consistently throughout the Assessment.]
- Business year 2018 and 2019 can be analyzed.

Gross Asset Value (GAV): Gross Asset Value (GAV)

- GAV is an optional data point for both GRESB and the CRREM tool. If the GRESB Participant provided the GAVs for their assets to GRESB, these values were ported into the CRREM tool.
- (The Gross Asset Value remains optional at the asset-level. If participants provide a GAV for all assets, values will be automatically aggregated by GRESB and displayed at portfolio level in indicator R1.1 of the Performance Component for participants' review.
  If the GAV is not reported in the Asset-level Spreadsheet, the "% of GAV" field will be requested on an aggregate level for each active Property Sub-Type in indicator R1.1. The value reported should represent the GAV of the asset at the end of the reporting period.
  Make sure to report GAV values in millions, using the appropriate currency, as reported in indicator RC1.)
- GRESB reported currency is automatically converted to EUR using the historical exchange rates from xe.com from 2019-12-31.

% Ownership: N/A

Reporting period: GRESB Data Availability dates are converted into the number of months, rounded to the nearest whole month value.

- (Data Availability columns represent the period for which the data was collected and reported.)
- The CRREM Reporting Period refers to the time period covered by the data provided and should not be confused with the GRESB Reporting Period.
- Assets with data availability of less than one month will not be transferred into the CRREM tool. The email received with the link to download the pre-filled tool will include a list of the assets that were excluded from the transfer for this reason.

Entity: N/A

- The name of the entity for which the CRREM Tool is downloaded is included in the download file name.

Building Characteristics

Location:

Country: Country

Countries supported by CRREM Tool
Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden

United Kingdom

City: City

ZIP: N/A

Address: Address

Property type:

CRREM Property Types	GRESB 2020 Property Sub-Types
Retail, High Street	Retail: High Street
	Retail: Restaurants/Bars
	Retail: Other
Retail, Shopping Center	Retail: Retail Centers: Shopping Center
	Retail: Retail Centers: Strip Mall
	Retail: Retail Centers: Lifestyle Center
Retail, Warehouse	Retail: Retail Centers: Warehouse
Office	Office: Corporate: Low-Rise Office
	Office: Corporate: Mid-Rise Office
	Office: Corporate: High-Rise Office
	Office: Medical Office
	Office: Business Park
	Office: Other
Industrial, Distribution Warehouse	Industrial: Distribution Warehouse
Hotel	Hotel
Lodging, Leisure & Recreation	Lodging, Leisure & Recreation: Indoor Arena
	Lodging, Leisure & Recreation: Fitness Center
	Lodging, Leisure & Recreation: Performing Arts
	Lodging, Leisure & Recreation: Swimming Center
	Lodging, Leisure & Recreation: Museum/Gallery
	Lodging, Leisure & Recreation: Other
Healthcare	Healthcare: Healthcare Center
	Healthcare: Senior Homes
	Healthcare: Other

Mixed Use	Mixed use: Office/Retail
	Mixed use: Office/Residential
	Mixed use: Office/Industrial
Property types not currently supported by the CRREM Tool	Mixed use: Other
	Industrial: Industrial Park
	Industrial: Manufacturing
	Industrial: Other
	Residential: Multi-Family: Low-Rise Multi-Family
	Residential: Multi-Family: Mid-Rise Multi Family
	Residential: Multi-Family: High-Rise Multi-Family
	Residential: Family Homes
	Residential: Student Housing
	Residential: Retirement Living
	Residential: Other
	Education: School
	Education: University
	Education: Library
	Education: Other
	Technology/Science: Data Center
	Technology/Science: Laboratory/Life Sciences
	Technology/Science: Other
	Other: Parking (Indoors)
	Other: Self-Storage
	Other

Mapping of Mixed-use property types:

- GRESB Mixed use: Office/Retail: will be input into the CRREM tool as Mixed-use, with a default allocation of 75% and 25% to Office and Retail, High Street, respectively.
- GRESB Mixed use: Office/Residential: 100/0
- GRESB Mixed use: Office/Industrial: 25/75

These default allocations were designed to align with GRESB Asset Spreadsheet Guidance:

(If an asset is mixed; composed of 2 or more Property Sub-Types for which the split of floor area sizes and consumption data is **not available**, participants have the following choices, depending on the asset composition:

75% (or more) of the asset floor area is Office; 25% (or less) is Retail – two options exist:

1. Report the asset as Office (and include the entire asset's floor area)
2. Report the asset as Mixed use: Office/Retail

74% (or less) of the asset floor area is Office; 25% (or more) is Retail – one option exists:

1. Report the asset as Mixed use: Office/Retail)

The email received with the link to download the pre-filled tool will flag those assets that are categorized as mixed-use so that users may identify and edit those asset inputs as needed.

Air conditioning: N/A

Asset size Total - Gross internal area: Asset size

- (Asset Size: Report the total floor area size of the asset (Gross Floor Area, GFA). The total Asset Size can exclude outdoor/exterior areas as well as indoor parking.)
- Conversion from sqft to m^2 is implemented if necessary.

Asset size: Average annual vacant area: This is calculated as the product of the Asset Size and the Vacancy Rate.

- (Asset Size: Report the total floor area size of the asset (Gross Floor Area, GFA). The total Asset Size can exclude outdoor/exterior areas as well as indoor parking.)
- (Vacancy Rate: Report the Vacancy Rate of assets for both reporting years, expressed in percentages. For example, if the Vacancy Rate of an asset is 10%, report "10". The Vacancy Rate is based on the asset's total net leasable area, NOT the rental value of the asset.)
- Conversion from sqft to m^2 is implemented if necessary.

Energy Consumption

The following guidance on How to Complete the GRESB Asset Spreadsheet pertains to the consumption, coverage, and maximum floor area parameters of the GRESB data used to complete the CRREM input parameters below:

(If the Whole Building is not classified as Tenant Controlled, participants can either report their Energy data at [Whole Building] level, or at [Base Building + Tenant Spaces] level. *Participants should only report at the Whole Building level if the breakdown of Energy data between Base Building and Tenant Space is not known.*

For any combination of utility type (e.g. Fuel, District Heating & Cooling or Electricity) and floor area type (e.g. Whole Building, Shared Services, etc.) where energy is consumed, participants are required to report the following data points, for the reporting year as well as the prior year:

- The Consumption value (in kWh). If Consumption is not known, the field should remain empty.
- The Floor Area Covered (m2/sq.ft) corresponding to the reported Consumption. If Consumption is not known, the Floor Area Covered should be set to 0.
- The Maximum Floor Area (m2/sq.ft) representing the total floor area serviced by the utility type reported. Maximum Floor Area differs from Floor Area if the Consumption is not known for the entire area.

For floor area which is not serviced by a utility, all 3 fields are to remain empty.

If an asset does not contain areas not serviced by any utility, the Maximum Floor Area should equal to the size of the Asset size in tab *Asset Characteristics.*

Vacant areas should be included in calculations, in the same way as other areas.)

Grid Electricity (Usage): *'*Electricity: Consumption' for either the whole building or combined base building and tenant spaces, minus on-site generated electricity that is used on-site.

Grid Electricity (Data Coverage): 'Electricity: Floor Area Covered' for either the whole building or combined base building and tenant spaces.

Grid Electricity (Max Coverage): *'*Electricity: Maximum Floor Area' for either the whole building or combined base building and tenant spaces.

GRESB does not collect data on the type of fuels used. As such all fuel use is assumed to be natural gas and only the natural gas fuel sections of CRREM are populated. If a user knows that a particular asset uses a different type of fuel (e.g., fuel oil), they may edit the pre-filled areas to reflect this.

Natural Gas (Usage): 'Fuels: Consumption' for either the whole building or combined base building and tenant spaces.

Natural Gas (Data Coverage): 'Fuels: Floor Area Covered' for either the whole building or combined base building and tenant spaces.

Natural Gas (Max Coverage): 'Fuels: Maximum Floor Area' for either the whole building or combined base building and tenant spaces.

Fuel Oil (Usage): N/A

Fuel Oil (Data Coverage): N/A

Fuel Oil (Max Coverage): N/A

GRESB does not separate district heating and district cooling. 100% of GRESB Heating and Cooling will be put into CRREM Heating input. If a user knows that a particular asset uses a significant amount of district cooling, they may edit the pre-filled areas to reflect this.

District heating [steam](Usage): 'District Heating & Cooling: Consumption' for either the whole building or combined base building and tenant spaces.

District heating [steam] (User Defined): N/A

District heating [steam] (Data Coverage): 'District Heating & Cooling: Floor Area Covered' for either the whole building or combined base building and tenant spaces.

District heating [steam](Max Coverage): 'District Heating & Cooling: Maximum Floor Area' for either the whole building or combined base building and tenant spaces.

District cooling [chilled water] (Usage): N/A

District cooling [chilled water] (User Defined): N/A

District cooling [chilled water] (Data Coverage): N/A

District cooling [chilled water] (Max Coverage): N/A

Other energy consumption types: N/A

Fugitive Emissions

GRESB does not collect data on fugitive emissions, and these are optional fields in the CRREM tool. This section of the CRREM tool is left unpopulated by GRESB data.

Renewable Energy

GRESB does not differentiate between different types of renewable energy sources.

[On-site renewable energy: Any source of energy produced at the site that can be used without depleting reserves, including energy from the sun, wind, water and the earth's core. Technologies should be available onsite, such as photovoltaic panels, wind turbines, transpired solar collectors, solar hot water heaters, small-scale hydroelectric power plants, ground pump heating systems, etc.]

Therefore, all renewable energy is assumed to fall under the "(PV, wind)" inputs in the CRREM Tool.

(Report absolute renewable energy generation and consumption based on the whole building. Leave blank the fields for which you do not have data.)

On-site renewable electricity (PV, wind) - Generated and consumed on site (amount): Combined renewable energy generated and consumed on-site by landlord and generated and consumed on-site by third party or tenant.

On-site renewable electricity (PV, wind) - Generated on-site and exported (amount): Renewable energy generated on-site and exported by landlord.

Off-site renewable electricity - Generated off-site and consumed on-site (amount): Combined renewable energy generated off-site and purchased by landlord and renewable energy generated off-site and purchased by tenant.

Off-site renewable electricity - Generated off-site and consumed on-site (reporting method): N/A

Off-site renewable electricity - Generated off-site and consumed on-site (emission factor if market-based): N/A

Other on-site renewable energy source (heatpump, solar thermal) - Generated and consumed on site (amount): N/A

Other on-site renewable energy source (heatpump, solar thermal) - Generated on-site and exported (amount): N/A

Retrofit Actions

The CRREM Tool allows users to define generalised retrofit actions by setting year and investment amount intending to improve the energy and carbon performance of the

building, with retrofit costs specific to country and property type. GRESB allows participants to report on the implementation of a variety of energy efficiency measures in the last 3 years for an asset. GRESB does not translate reported energy efficiency measures into Retrofit Actions inputs in the CRREM Tool, as the measures are likely to already have been reflected in the reported energy consumption of the reporting year.

It is possible that, if energy efficiency measures were implemented during the reporting year, that the full expected reduction in energy consumption was not fully captured, perhaps leading to an over-estimation of future energy consumption. If a user knows that a particular asset underwent significant energy efficiency retrofits within the reporting year, they may choose to manually input a Retrofit Action into the CRREM tool with the expected uncaptured energy reduction to reflect this using the format below.

Retrofit action Year: Reporting Year

Retrofit action Investment: 0 (it has already taken place)

Retrofit action Achieved reduction of energy consumption [%]: the percentage of energy consumption reduction that was not expected to be captured during the reporting year

Retrofit action Embodied carbon related to the retrofit action: 0 (it has already taken place)

Please be aware that, should the Retrofit Action tab be used to correct for improvements from the reporting year, it will not be available for testing the impact of future retrofit actions.