



Cornell Hotel Sustainability Benchmarking (CHSB) Index 2024: Carbon, Energy and Water

HOTEL BENCHMARK REPORT

Prepared By



Overview

We are proud to provide you with this confidential, property-level benchmarking and metrics report with the results of your energy, water, and carbon performance, as part of your company's participation in the [Cornell Hotel Sustainability Benchmarking \(CHSB\)](#) Index.

CHSB is an industry-led global data collection and benchmarking initiative, benchmarking data by market and segment on energy, water and carbon emissions from over 25,000 hotels around the world. The CHSB2024 Index is in its tenth year and presents the results on analyzing 2022 calendar year data.

This report is confidential for internal data intelligence purposes only. In addition, a market-level data set is available free of charge via the Cornell University Center for Hospitality Research and HCM1 metrics are globally available at www.hotelfootprints.org. CHSB data is used by governments, corporate customers, travel management companies and numerous other organizations to determine benchmarks and estimates for energy and water usage, and carbon footprints and calculate the carbon footprint of travel, for Scope 3 footprinting and carbon offsetting using the HCM1 calculations we perform.

Note that your report may be incomplete, either because of missing data or data that did not pass our strict validity testing. We also have limited segmentation available in some markets, and benchmarking is enabled at a global level based on climate zones and hotel attributes. As CHSB participation increases, our data and analytical outputs will continue to improve each year, and we thank you for your participation and support of the initiative.

For more guidance on how to read this report, please refer to the "[How to Read CHSB Hotel Benchmark Report](#)" section on page 8.

Should you have any questions or concerns, feel free to contact us at support@greenviewportal.com.

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About Greenview



5 Shenton Way
UIC Building #10-01
Singapore 068808

1201 Connecticut Avenue NW
The Expansive, Suite 514
Washington D.C. 20036

info@greenview.sg
www.greenview.sg
linkedin.com/company/greenview

With offices in Singapore and Washington D.C., Greenview is the world's leading provider of sustainability programs, benchmarking, online software and data analytics for the hospitality and tourism industry. We support companies to design, implement, and monitor their ESG program and sustainability platforms to drive profitability, streamline data, keep ahead of trends, and provide effective communications for stakeholders. Our hospitality sector experience includes publicly traded REITs, private equity, the top ten global hotel chains, smaller regional chains, luxury, timeshare, and other organizations outside of hotels in travel and tourism.

About Cornell Center for Hospitality Research



Statler Hall Cornell University
106 Statler Drive
Ithaca, NY 14853-6201

sha.cornell.edu

The mission of the Center for Hospitality Research (CHR) is to advance hospitality thought leadership by publishing and disseminating impactful and actionable research, including reports, briefs, tools, and case studies that industry leaders can put into practice today; facilitating the exchange of new ideas by bringing students, faculty, and industry professionals together at roundtables, panels, conferences, and other engaging events; and partnering with the other Centers and Institutes in the Cornell Peter and Stephanie Nolan School of Hotel Administration to maximize research, event, and networking collaborations.

Identifiers/Segmentation Information

PARTICIPANT CODE	PARTICIPANT CODE	HOTEL NAME	Hotel Sample
ADDRESS	1, Sample Property Address	BRAND	Sample Brand
		CODE	1AAAA

Country	Indonesia	Climate Zone 1	Tropical, monsoon	Stars	★★★★★
City	Uluwatu	Climate Zone 2	Eastern Java-Bali rain forests	Asset Class	Full Service
Market Area	South Bali	Hotel Type: Group	Resort	STR Market Segment	Upper Upscale
CHSB Region	Bali Island	Hotel Type: Sub-Group	Beach Resort	Laundry	On-site
		Operational Type	Year-Round	Location Type*	Not Applicable

Property Details

Number of Rooms	150	Floor Area in Square Meters	30,000	HCMI Ratio	98%
Room Tier	Small (Room Count)	Floor Area in Square Feet	322,917	HWMI Ratio	98%
Floor Area Tier	Large (Area)	Total Occupied Rooms	2,000	Occupancy Rate	3.7%

Validity Testing

Major Renovation or Not Open All 12 Months	Water Data Completeness
Energy Fences Per OCRM	Water Fences Per OCRM
Energy Fences Per Floor Area (SqM or SqFt)	Water Fences Per Floor Area (SqM or SqFt)
Electricity Data Completeness	Ratio of Average Number of Rooms to Gross Floor Area
Energy Data Completeness	Ratio of Average Number of Rooms to Net Floor Area
Number of Sources of Energy	HCMI Ratio
Occupancy Data Completeness	Overall Variance Test
Occupancy Level Fences	

PASS	FAIL	FAIL-HIGH	FAIL-LOW	MISSING	No Data Submitted	FLAG
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Legend

Market Area	Major city and surrounding towns, such as Greater Metropolitan Area, Metropolitan Statistical Area, National Capital Region.
CHSB Region	Region that is sub-national (e.g. state/province) or trans-national (e.g. major tourist market that crosses national borders).
Climate Zone	(1) Koeppen-Geiger Climate Classification System, (2) Bailey's Ecoregions of the World (for US), WWF Ecoregions (for non-US).
Hotel Type	Type of resort or non-resort property, and when the property is open and operational.
Stars	Star classification estimated from 1 to 5; half stars are rounded down.
Asset Class	Full Service or Limited Service.
STR Market Segment	Chain scale segment according to STR Global Chain Scales; independents assigned at estimated level.
Laundry	Whether laundry is done onsite or outsourced.
Location Type*	Whether the property is in an Urban, Suburban, Small Metro/Town or Rural/Highway location (for US only).
Room Tier	Tiering classification of room count based Asset Class and Hotel Type - Group. - Full Service Resort: Small (<115 rooms), Medium (115-249 rooms), Large (250-449 rooms), Very Large (>449 rooms) - Full Service Non-resort: Small (<120 rooms), Medium (120-219 rooms), Large (220-379 rooms), Very Large (>379 rooms) - Limited Service: Small (<78 rooms), Medium (78-104 rooms), Large (105-164 rooms), Very Large (>164 rooms)
Floor Area Tier	Tiering classification of conditioned space floor area based Asset Class and Hotel Type - Group. - Full Service Resort: Small (<11,500 sqm), Medium (11,500-28,000 sqm), Large (28,000-55,000 sqm), Very Large (>55,000 sqm) - Full Service Non-resort: Small (<6,300 sqm), Medium (6,300-18,000 sqm), Large (18,000-45,000 sqm), Very Large (>45,000 sqm) - Limited Service: Small (<3,800 sqm), Medium (3,800-5,700 sqm), Large (5,700-9,500 sqm), Very Large (>9,500 sqm)
HCMI Ratio	Percentage of total floor area apportioned to Guestrooms per Hotel Carbon Measurement Initiative (HCMI).
HWMI Ratio	Percentage of total floor area apportioned to Guestrooms per Hotel Water Measurement Initiative (HWMI).
Fences	Lower and upper limit boundaries used in Validity Testing, determined based on previous CHSB data set.
OCRMs/Floor Area	Validity Testing is based on intensity per OCRM (occupied room) or pro-rated conditioned floor area (SqM or SqFt).



ENERGY (kWh)

Total Energy (kWh) 12,000,000

All comp set groupings are segmented by laundry in-house or outsourced, and whether the property is a resort or not.

▲	6,000.00	Energy Usage Per OCRM
✓	400.00	Energy Usage Per SqM
✓	37.16	Energy Usage Per SqFt
✓	10.00%	% Energy from Renewables (w/o Grid Renewables)
✓	20.00%	% Energy from Renewables (w/ Grid Renewables)
▲	5,800.00	Benchmarked Energy Usage Per OCRM
✓	380.00	Benchmarked Energy Usage Per SqM

	COMP SET GROUPING	INTENSITY METRIC	COMP SET SIZE	DECILE TIER
Market Area	STR Market Segment	OCRMS	15	Not Benchmarked
		Floor Area	9	3rd decile
	Asset Class	OCRMS	30	Not Benchmarked
		Floor Area	32	6th decile
	Stars	OCRMS	12	Not Benchmarked
		Floor Area	11	8th Decile
Global	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	40	Not Benchmarked
		Floor Area	35	Bottom decile
	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	40	Not Benchmarked
		Floor Area	35	Bottom decile
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	■	Insufficient Data Set
		Floor Area	10	4th decile
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	■	Insufficient Data Set
		Floor Area	10	4th decile

Legend

Benchmarked Energy Usage Intensity	Energy usage per OCRM or per pro-rated conditioned floor area (SqM or SqFt) used when comparing against Comp Set Groupings, with purchased chilled water data normalized by applying a COP of 4.0.
Comp Set Grouping	Grouping of properties with matching attributes as below:
Geography	Benchmark is based on Market Area and Global by Climate Zone.
Climate Zone	(1) Koeppen-Geiger Climate Classification System, (2) Bailey's Ecoregions of the World (for US), WWF Ecoregions (for non-US).
STR Market Segment	Chain scale segment according to STR Global Chain Scales; independents assigned at estimated level.
Asset Class	Full Service or Limited Service.
Stars	Star classification estimated from 1 to 5; half stars are rounded down.
Location Type*	Whether the property is in an Urban, Suburban, Small Metro/Town or Rural/Highway location (for US only).
Intensity Metric	Benchmark is based on intensity per OCRM (occupied room) or pro-rated conditioned floor area (SqM or SqFt).
Comp Set Size	Number of properties with matching attributes in the same Comp Set and passed validity testing.
Decile Tier	Positioning within Comp Set in deciles (i.e. Comp Set divided into 10 equal parts); 2nd decile = hotel performed better than 80% of Comp Set.
Insufficient Data Set	Insufficient properties within the comp set grouping passed the validity tests to generate a benchmark, or insufficient data submitted for benchmarking.
Not Benchmarked	Property did not pass the validity tests required to generate a benchmark.



WATER (L)

Total Water (Cubic Meters) 150,000

All comp set groupings are segmented by laundry in-house or outsourced, and whether the property is a resort or not.

- ✓ 7,500.00
- ✓ 5,000.00
- ✓ 464.52
- ✓ 8,400.00
- ✓ 1.33

Water Usage Per OCRM

Water Usage Per SqM

Water Usage per SqFt

HWMI Rooms Footprint per OCRM

HWMI Meetings Footprint Per hour Per SqM

	COMP SET GROUPING	INTENSITY METRIC	COMP SET SIZE	DECILE TIER	
Market Area	STR Market Segment	OCRMS	12	3rd decile	<div style="width: 85%;"></div>
		Floor Area	10	8th decile	<div style="width: 60%;"></div>
	Asset Class	OCRMS	28	2nd decile	<div style="width: 95%;"></div>
		Floor Area	32	5th decile	<div style="width: 75%;"></div>
	Stars	OCRMS	20	4th decile	<div style="width: 80%;"></div>
		Floor Area	16	6th decile	<div style="width: 65%;"></div>
Global	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	40	8th decile	<div style="width: 65%;"></div>
		Floor Area	48	6th decile	<div style="width: 75%;"></div>
	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	40	8th decile	<div style="width: 65%;"></div>
		Floor Area	48	8th decile	<div style="width: 65%;"></div>
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	35	2nd decile	<div style="width: 95%;"></div>
		Floor Area	30	9th decile	<div style="width: 25%;"></div>
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	35	2nd decile	<div style="width: 95%;"></div>
		Floor Area	30	9th decile	<div style="width: 25%;"></div>

Legend

HWMI Rooms Footprint	(1) Water usage per OCRM and (2) Water usage per meeting hour by meeting space (SqM or SqFt) according to the Hotel Water Measurement Initiative (HWMI) methodology.
Comp Set Grouping	Grouping of properties with matching attributes as below:
Geography	Benchmark is based on Market Area and Global by Climate Zone.
Climate Zone	(1) Koeppen-Geiger Climate Classification System, (2) Bailey's Ecoregions of the World (for US), WWF Ecoregions (for non-US).
STR Market Segment	Chain scale segment according to STR Global Chain Scales; independents assigned at estimated level.
Asset Class	Full Service or Limited Service.
Stars	Star classification estimated from 1 to 5; half stars are rounded down.
Location Type*	Whether the property is in an Urban, Suburban, Small Metro/Town or Rural/Highway location (for US only).
Intensity Metric	Benchmark is based on intensity per OCRM (occupied room) or pro-rated conditioned floor area (SqM or SqFt).
Comp Set Size	Number of properties with matching attributes in the same Comp Set and passed validity testing.
Decile Tier	Positioning within Comp Set in deciles (i.e. Comp Set divided into 10 equal parts); 2nd decile = hotel performed better than 80% of Comp Set.
Insufficient Data Set	Insufficient properties within the comp set grouping passed the validity tests to generate a benchmark, or insufficient data submitted for benchmarking.
Not Benchmarked	Property did not pass the validity tests required to generate a benchmark.



CARBON (kgCO2e)

Total Carbon Emissions (KgCO2e) 3,500,000

All comp set groupings are segmented by laundry in-house or outsourced, and whether the property is a resort or not.

- ✓ 30,482.00
- ✓ 236.90
- ✓ 116.67
- ✓ 10.84

Carbon Emissions Per Room
Carbon Emissions Per OCRM
Carbon Emissions per SqM
Carbon Emissions per SqFt

	COMP SET GROUPING	INTENSITY METRIC	COMP SET SIZE	DECILE TIER
Market Area	STR Market Segment	OCRMS	10	3rd decile
		Floor Area	16	6th decile
	Asset Class	OCRMS	20	5th decile
		Floor Area	25	5th decile
	Stars	OCRMS	18	8th decile
		Floor Area	16	2nd decile
Global	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	40	6th decile
		Floor Area	35	8th decile
	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	40	7th decile
		Floor Area	35	8th decile
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	■	Not Benchmarked
		Floor Area	10	8th decile
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	■	Insufficient Data Set
		Floor Area	10	8th decile

Legend

Comp Set Grouping	Grouping of properties with matching attributes as below:
Geography	Benchmark is based on Market Area and Global by Climate Zone.
Climate Zone	(1) Koeppen-Geiger Climate Classification System, (2) Bailey's Ecoregions of the World (for US), WWF Ecoregions (for non-US).
STR Market Segment	Chain scale segment according to STR Global Chain Scales; independents assigned at estimated level.
Asset Class	Full Service or Limited Service.
Stars	Star classification estimated from 1 to 5; half stars are rounded down.
Location Type*	Whether the property is in an Urban, Suburban, Small Metro/Town or Rural/Highway location (for US only).
Intensity Metric	Benchmark is based on intensity per OCRM (occupied room) or pro-rated conditioned floor area (SqM or SqFt).
Comp Set Size	Number of properties with matching attributes in the same Comp Set and passed validity testing.
Decile Tier	Positioning within Comp Set in deciles (i.e. Comp Set divided into 10 equal parts); 2nd decile = hotel performed better than 80% of Comp Set.
Insufficient Data Set	Insufficient properties within the comp set grouping passed the validity tests to generate a benchmark, or insufficient data submitted for benchmarking.
Not Benchmarked	Property did not pass the validity tests required to generate a benchmark.



HCM I (kgCO₂e)

HCM I Carbon Footprint (KgCO₂e) 3,500,000

All comp set groupings are segmented by laundry in-house or outsourced, and whether the property is a resort or not.



220.00

HCM I Rooms Footprint Per OCRM

	COMP SET GROUPING	INTENSITY METRIC	COMP SET SIZE	DECILE TIER
Market Area	STR Market Segment	OCRMS	20	3rd decile
	Asset Class	OCRMS	40	3rd decile
	Stars	OCRMS	■	Insufficient Data Set
Global	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	15	5th decile
	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	14	5th decile
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	10	5th decile
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	16	6th decile

Legend

HCM I Rooms Footprint	Carbon footprint per OCRM according to the Hotel Carbon Measurement Initiative (HCM I) methodology.
Comp Set Grouping	Grouping of properties with matching attributes as below:
Geography	Benchmark is based on Market Area and Global by Climate Zone.
Climate Zone	(1) Koeppen-Geiger Climate Classification System, (2) Bailey's Ecoregions of the World (for US), WWF Ecoregions (for non-US).
STR Market Segment	Chain scale segment according to STR Global Chain Scales; independents assigned at estimated level.
Asset Class	Full Service or Limited Service.
Stars	Star classification estimated from 1 to 5; half stars are rounded down.
Location Type*	Whether the property is in an Urban, Suburban, Small Metro/Town or Rural/Highway location (for US only).
Intensity Metric	Benchmark is based on intensity per OCRM (occupied room) or pro-rated conditioned floor area (SqM or SqFt).
Comp Set Size	Number of properties with matching attributes in the same Comp Set and passed validity testing.
Decile Tier	Positioning within Comp Set in deciles (i.e. Comp Set divided into 10 equal parts); 2nd decile = hotel performed better than 80% of Comp Set.
Insufficient Data Set	Insufficient properties within the comp set grouping passed the validity tests to generate a benchmark, or insufficient data submitted for benchmarking.
Not Benchmarked	Property did not pass the validity tests required to generate a benchmark.

How to Read CHSB Hotel Benchmark Report

Step 1

The **Identifiers/Segmentation Information** and **Property Details** sections provides the hotel's details and attributes.

Refer to the **Legend** section for description of attributes.

Identifiers/Segmentation Information			
PARTICIPANT CODE	Refresh Hospitality_REF0003	HOTEL NAME	Refresh Hotel Paris
ADDRESS	55 rue de la Verrerie Paris, Paris 73000	BRAND	Refresh Hotels
		CODE	REF0003
Country	France	Climate Zone 1	Temperate, no dry season, hot summer
City	Paris	Climate Zone 2	Permanently Humid Eastern Oceanic Broadleaf Forests
Market Area	Paris	Hotel Type: Group	NonResort
CHSB Region	Not Applicable	Hotel Type: Sub-Group	All Other Hotel (AOH)
		Operational Type	Year-Round
		Stars	★★★★★
		Asset Class	Full Service
		STR Market Segment	Luxury
		Laundry	Off-site
		Location Type*	Urban

Property Details			
✓ Number of Rooms	100	✓ Floor Area in Square Meters	6,932
✓ Room Tier	Small (Room Count)	✓ Floor Area in Square Feet	74,616
✓ Floor Area Tier	Medium (Area)	✓ Total Occupied Rooms	26,684
		✓ HCMI Ratio	0.89
		✓ HWMI Ratio	0.89
		✓ Occupancy Rate	0.73

Step 2

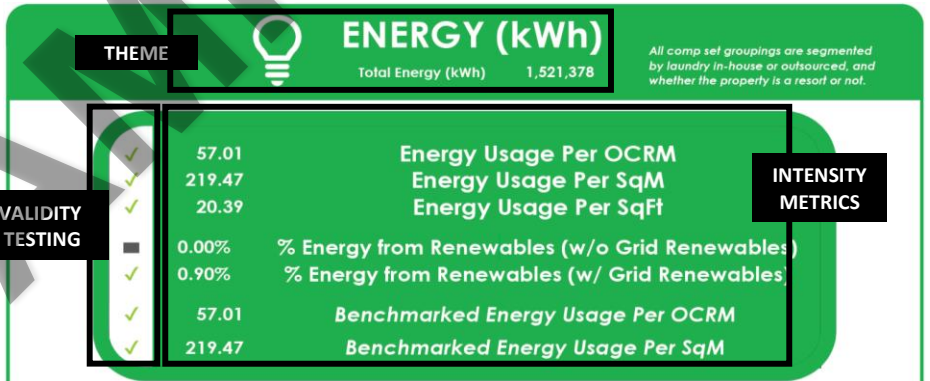
The **Validity Testing** section shows whether potential errors and missing data was identified from the data submitted.

Validity Testing	
✓ Major Renovation or Not Open All 12 Months	✓ Water Data Completeness
✓ Energy Fences Per OCRM	✓ Water Fences Per OCRM
✓ Energy Fences Per Floor Area (SqM or SqFt)	✓ Water Fences Per Floor Area (SqM or SqFt)
✓ Electricity Data Completeness	✓ Ratio of Average Number of Rooms to Gross Floor Area
✓ Energy Data Completeness	✓ Ratio of Average Number of Rooms to Net Floor Area
✓ Number of Sources of Energy	✓ HCMI Ratio
✓ Occupancy Data Completeness	✗ Overall Variance Test
✓ Occupancy Level Fences	

PASS
 FAIL
 FAIL-HIGH
 FAIL-LOW
 MISSING
 No Data Submitted
 FLAG

Step 3

Across 4 themes - **Energy, Water, Carbon, HCMI** - users can see Validity Testing results and intensity metrics based on data submitted



Step 4

Users can benchmark performance against peers by -

- 1** Comp Set Grouping - Geography (Market Area/ Global), STR Market Segment, Asset Class, Stars, Location Type, Hotel Type
- 2** Intensity Metric - Intensity per OCRMS (occupied room) or Floor Area (SqM or SqFt)
- 3** Comp Set Size - Number of peers within the same Comp Set and passed validity testing
- 4** Decile Tier - Positioning among peers within same Comp Set in deciles (i.e. Comp Set divided into 10 equal parts)

	1	2	3	4
	COMP SET GROUPING	INTENSITY METRIC	COMP SET SIZE	DECILE TIER
Market Area	STR Market Segment	OCRMS	14	2nd decile
		Floor Area	12	3rd decile
	Asset Class	OCRMS	34	2nd decile
		Floor Area	33	4th decile
		Stars	OCRMS	18
Global	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	102	2nd decile
		Floor Area	105	5th decile
	Climate Zone 1 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	OCRMS	48	2nd decile
		Floor Area	52	3rd decile
	Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier	OCRMS	33	2nd decile
		Floor Area	31	4th decile
		OCRMS	27	2nd decile
Climate Zone 2 + Asset Class + Stars + Room Tier + Floor Area Tier + Location Type*	Floor Area	27	4th decile	

The higher the decile ranking, the better the performance
(Example: 2nd decile = hotel performed better than 80% of the Comp Set Grouping)