Hotels- Optimizing Energy Consumption during Low Occupancy

A Case Study

مجلس الأعمال السويسري
SWISS BUSINESS COUNCIL
ENVIRONMENTAL GROUP

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FARNEK.COM ≡ SMART AND GREEN FM COMPANY

Presenters

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Agenda

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1. **FARNEK : COMPANY INTRODUCTION**
2. GCC Tourism Sector: Occupancy forecast
3. Introduction to the study
4. Energy consumption: Trends & Recommended Actions
5. Waste generation : Trends & Recommended actions
6. Best Practice Recommendations

Company Introduction

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- Farnek is the UAE's leading technology and sustainability-driven facilities management service provider.
- **40 years** of operations in the UAE FARNEK | H&G
- Farnek delivers professional Facilities Management services across several sectors including; Aviation, Hospitality, Banking, Retail, Shopping Malls, Telecom, Residential, Commercial, Infrastructure, Government, Education, Leisure, and Entertainment.

PROJECTS

EXPO 2020 إكسبو
DUBAI, UNITED ARAB EMIRATES
مطارات دبي DUBAIRPORTS
المشرق mashreq WE MAKE POSSIBLE
THE DUBAI MALL
BURJ KHALIFA
YAS MARINA CIRCUIT حلبة مرسى ياس
du وتحيا بها الحياة add life to life
RAK BANK Simply Better

AWARDS

Technology
Sustainability


FM company of the year
Innovation

ABOUT US

active in all 7 Emirates

8,000+ employees.

2,500+ customers

55+ services in-house

200+

Technology | Sustainability | Innovation | Cleaning | Maintenance | Security | Sustainability consultancy | Hitches & Glitches

- Green Globe- MENA Partner **>10 years**
- 100+ Hotels certified according to Green Globe Standards
- Hotel Optimizer: Specialist of Hotel Benchmarking in Energy & Waste
- Certified Energy Auditors & ESCO
- Waste Consultants
- Carbon Management specialists

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1. Farnek : Company Introduction
2. **GCC TOURISM SECTOR: OCCUPANCY FORECAST**
3. Introduction to the study
4. Energy consumption : Trends & Best Practices
5. Waste generation: Trends & Best Practices
6. Best Practice Recommendations

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Reasons for low occupancy trends

- Airlines still not fully operational
- Guest confidence low
- Lower oil prices and reduced production output- affecting GCC
- Reduced customer budgets
- Manpower downsize & budget constraints (corporates)
- Expo 2020 postponed

GCC Selected Cities – Annual Occupancy Forecast 2019 vs 2020

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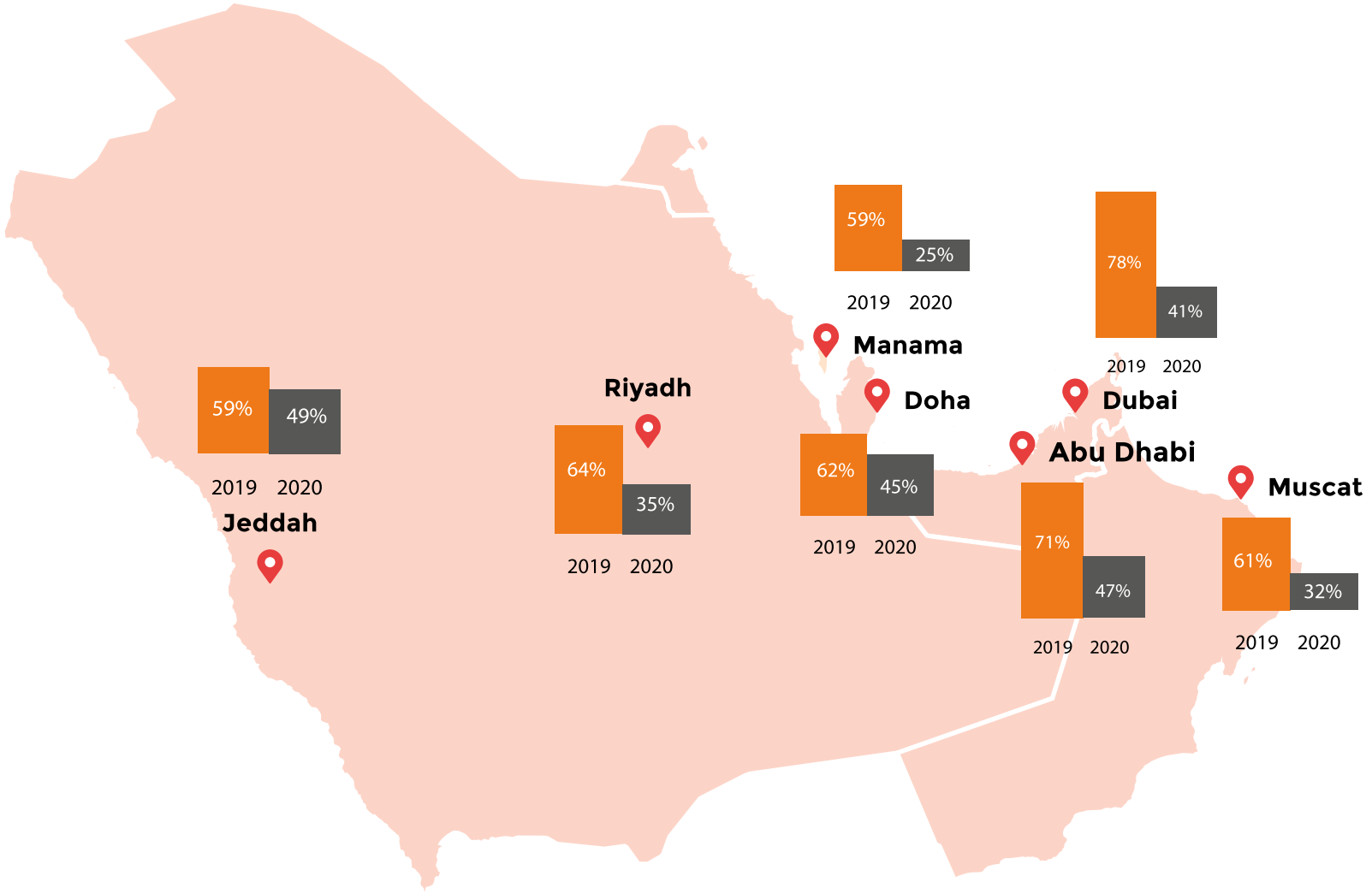

Average projected occupancy for 2020 is

40%

Source: HVS Middle East
Latest Update: May 7 2020

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Occupancy & Energy : Common questions raised

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Is there a relation between occupancy & utility consumption?

How can I make sure my hotel operates efficiently during low occupancy?

What systems should I adjust during low occupancy?

How can I prepare my property to be more energy efficient during a next uncertainty crisis?

How much can I save?

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Study Objectives

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01 Analyze degree of correlation between low occupancy & utility consumption

02 Establish existing performance base load & identify the improvement opportunities

03 Predict consumption vs achievable savings

04 Identify opportunities for utility reductions & cost savings

05 Recommend practices to adapt to low occupancy periods

06 Identify monitoring solutions to improve performance

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Overview of the participating properties

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HOTEL

25

Hotels (Hotel Optimizer)
consistent data

4-5

star ratings

City-Resort
Hotels

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Study Time Line

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Normal Occupancy vs Low Occupancy Year to Year Comparison

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Data Collection source : Hotel Optimizer (100+ hotels)

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Web based input / Output analysis

hotel optimizer
brings more light into your business

- Energy
- Water
- Materials

- Emissions/ CO2
- Waste Water
- Waste

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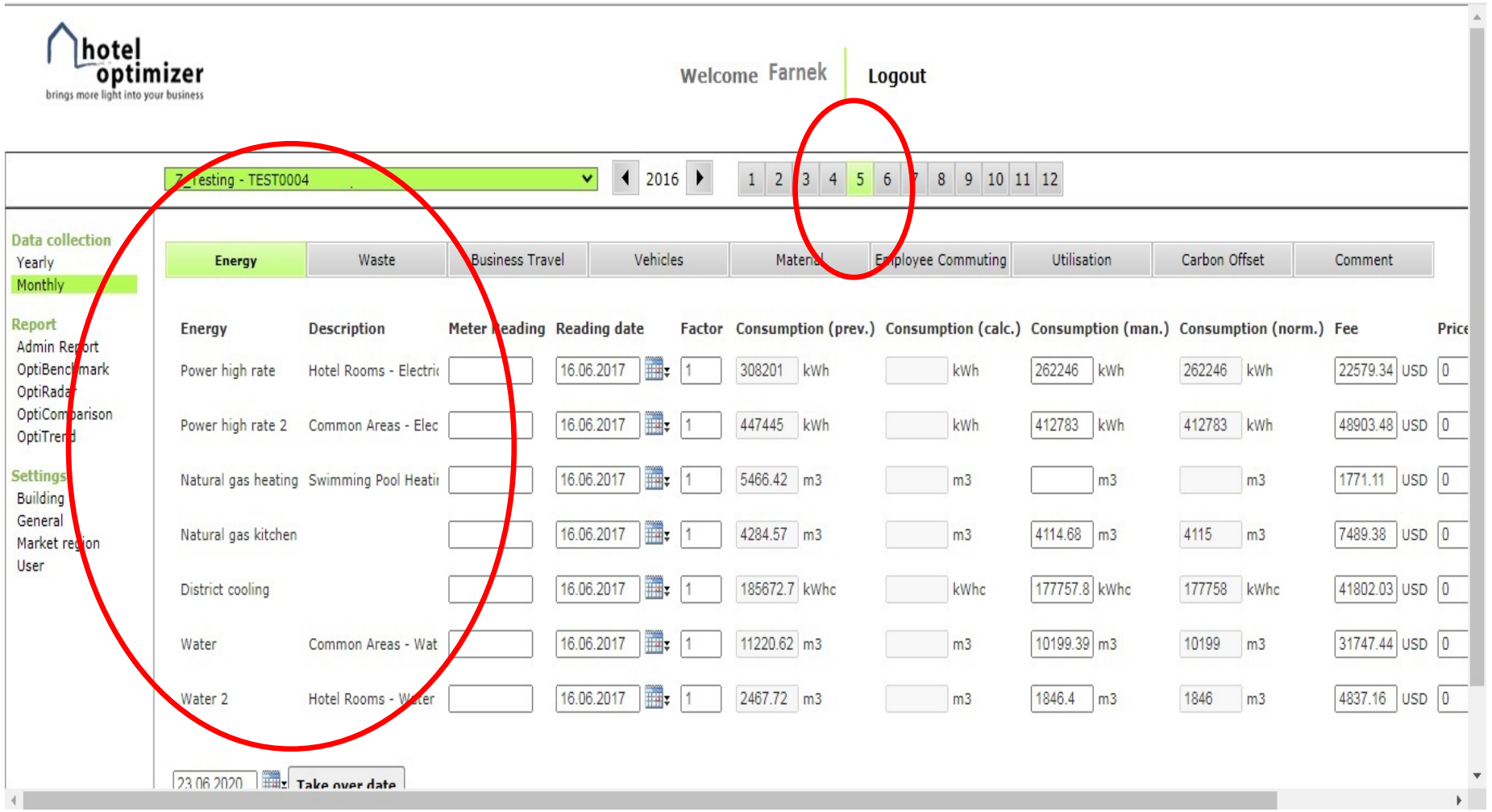

Monthly Data Entry

- Electricity
- Water
- Fuel
- Laundry
- Waste

The field will be adapted to reflect a specific facility and any other special requirements exclusive for the facility

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Analysis Methodology

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Are sqm	57,273
Number of rooms:	393
Occupancy:	74.6%
Guest Nights:	49,646
F&B Covers:	61,806
Conference Guests:	5,360
Temperature:	22.3 °C
Cooling degree days	658

TRUE ENERGY & WATER SAVING PERFORMANCE?

Area sqm	57,273	Same
Number of rooms:	393	Same
Occupancy:	54.2%	-27%
Guest Nights:	36,864	-26%
F&B Covers:	45,262	-27%
Conference guests	3,728	-30%
Temperature:	21.5 °C	-3.6%
Cooling degree Days	607	-7.7%

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5. Waste generation: Trends & Recommended Actions
6. Best Practice Recommendations

Parameters evaluated

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Water

Electricity

Cooling

- Guest Rooms
- Common areas
- F & B
- Laundry
- Pool
- Boiler
- Irrigation

Evaluation parameters

- Monthly kWh/Guest Night
- Monthly RTh/Guest night
- Potable water/Guest nights
- Fresh Air requirement/Guest room
- Exhaust air requirement/Guest room

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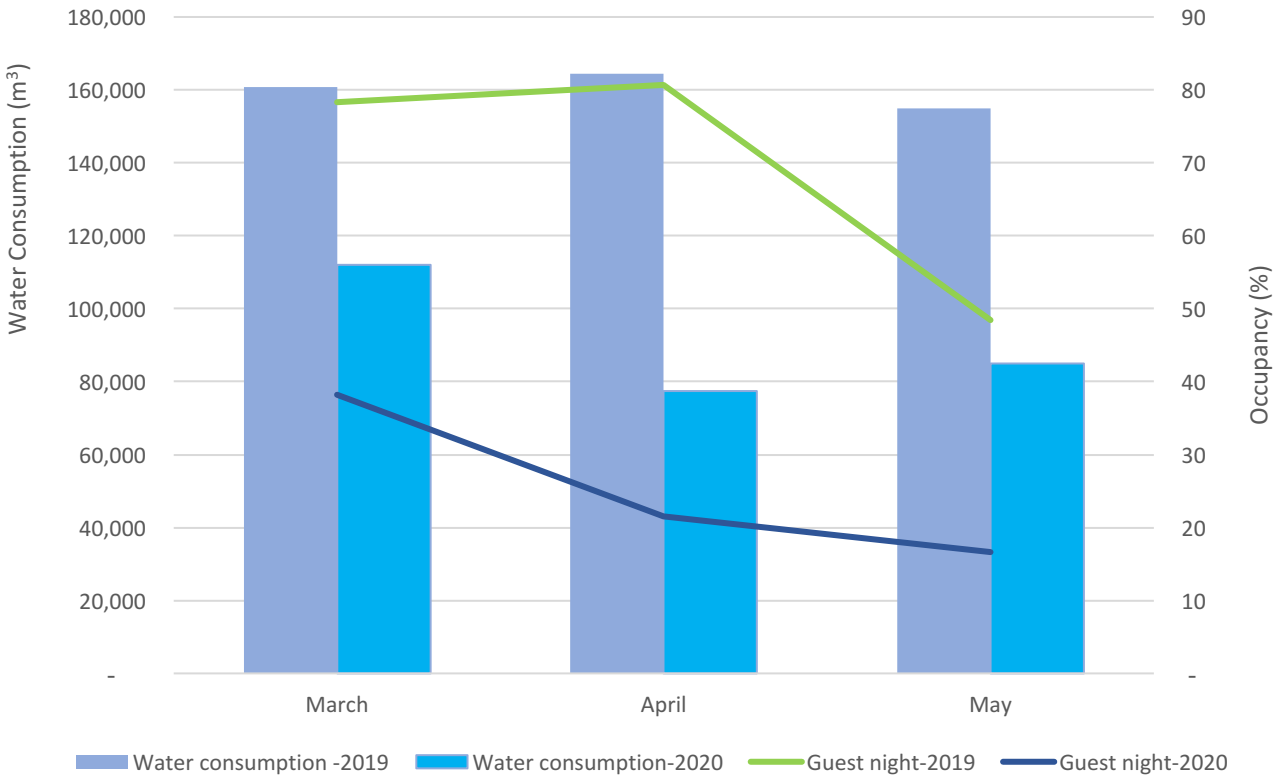
Occupancy & Water -2019 Vs 2020



- Hotels has exhibited **good reduction** in water consumption corresponding to occupancy reduction

- Occupancy reduction- **62% &** water reduction- **43%**

Hotel: Occupancy Dependent Loads (Electricity)

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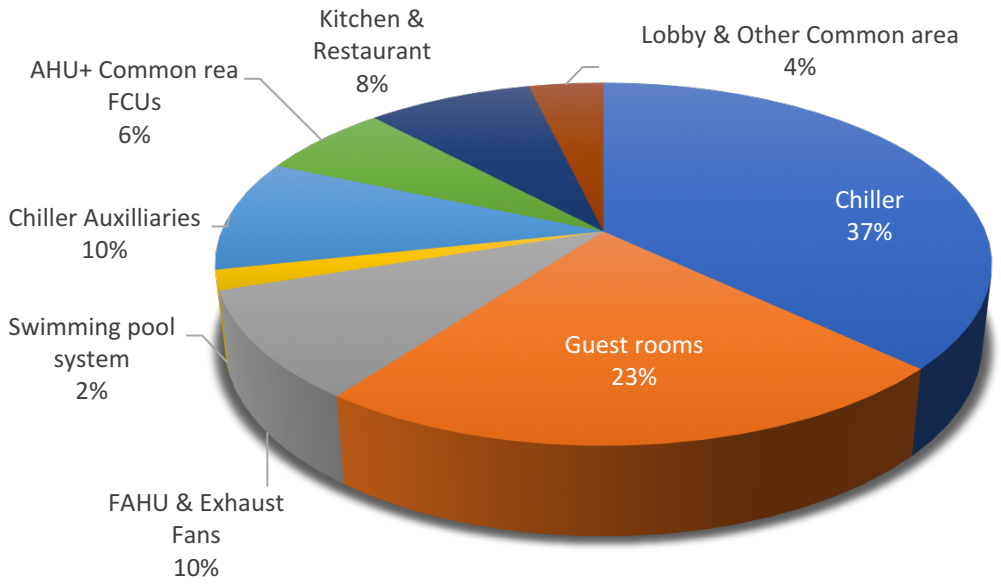
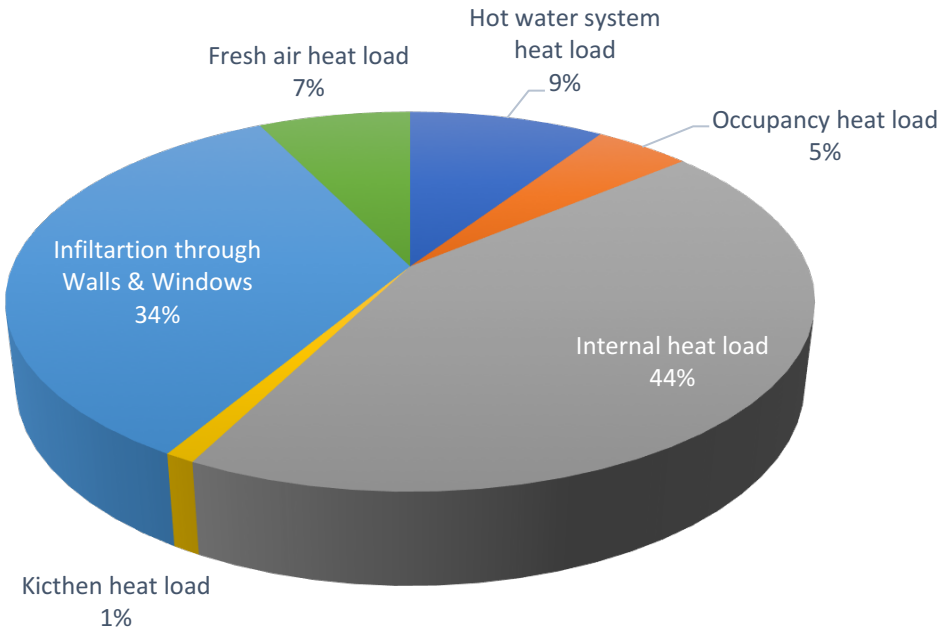
Hotel: Electricty Breakdown



66 % of cooling load has dependency on occupancy.

Hotel- Cooling load: Breakdown



70 % of facility electrical load is dependent on Occupancy

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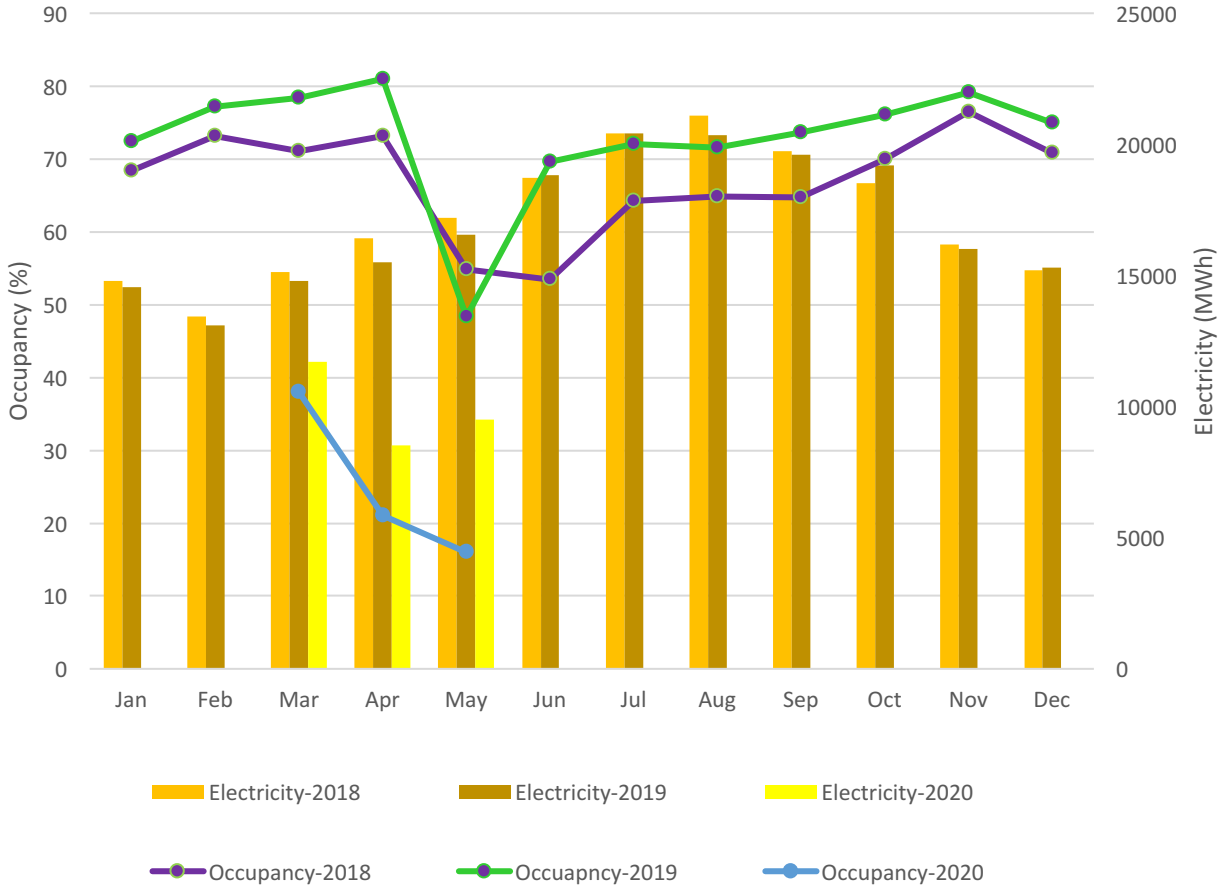
Occupancy & Electricity -2018 vs 2019 vs 2020



2018 – 2019

- Average occupancy is 70%
- With occupancy reduction corresponding energy reduction is noticed if occupancy does not fall below 50%

2020

- Average occupancy is 25% (Mar to May)
- Electrical consumption remains high even with decreased occupancy

Existing & Predicted energy performance

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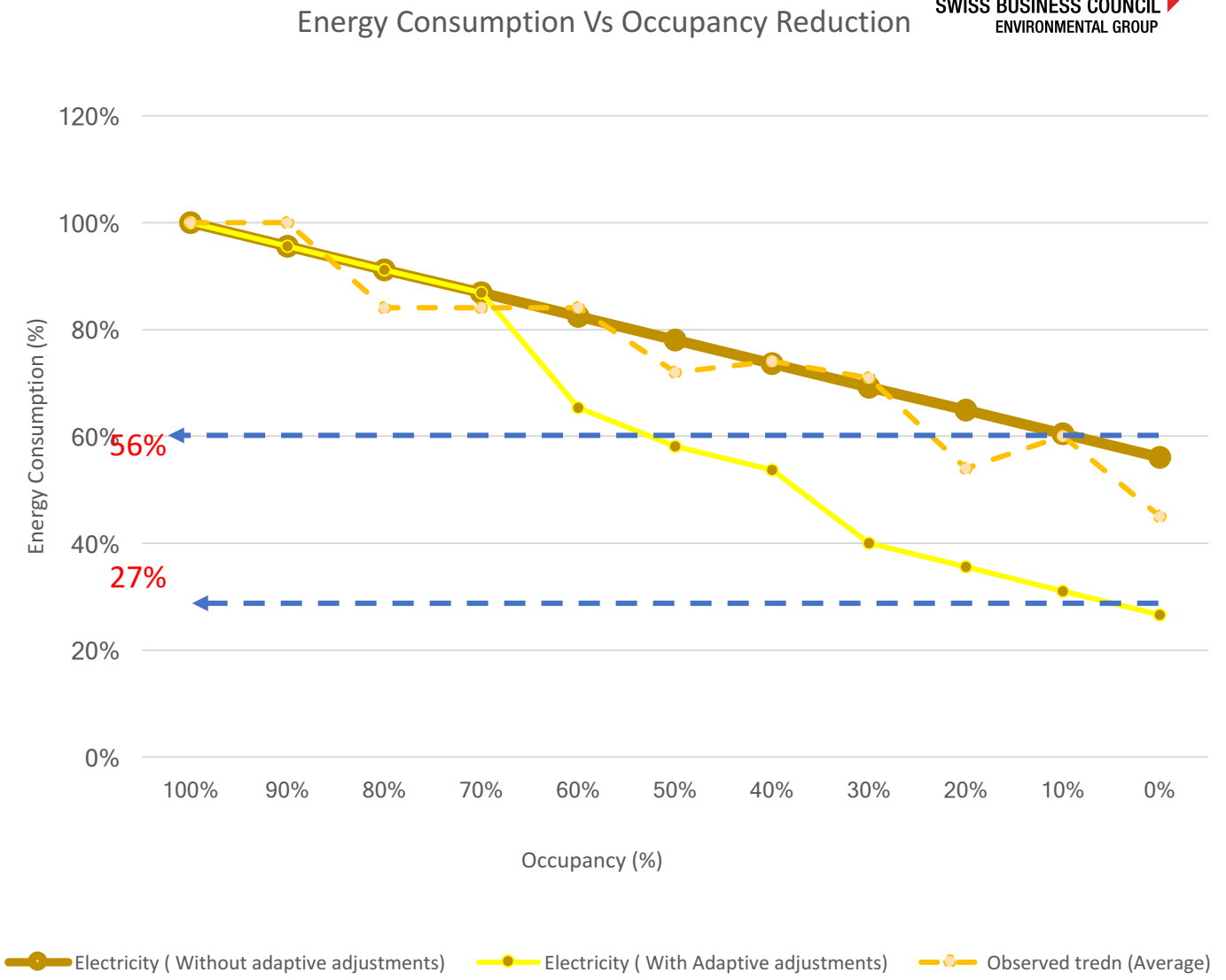
Description	March	April	May
Number of hotels	25	25	25
Best performers (Nos)	8	12	12
Under performers (Nos)	17	13	13



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Occupancy vs electricity consumption: 2019 vs 2020
(normal vs low occupancy)

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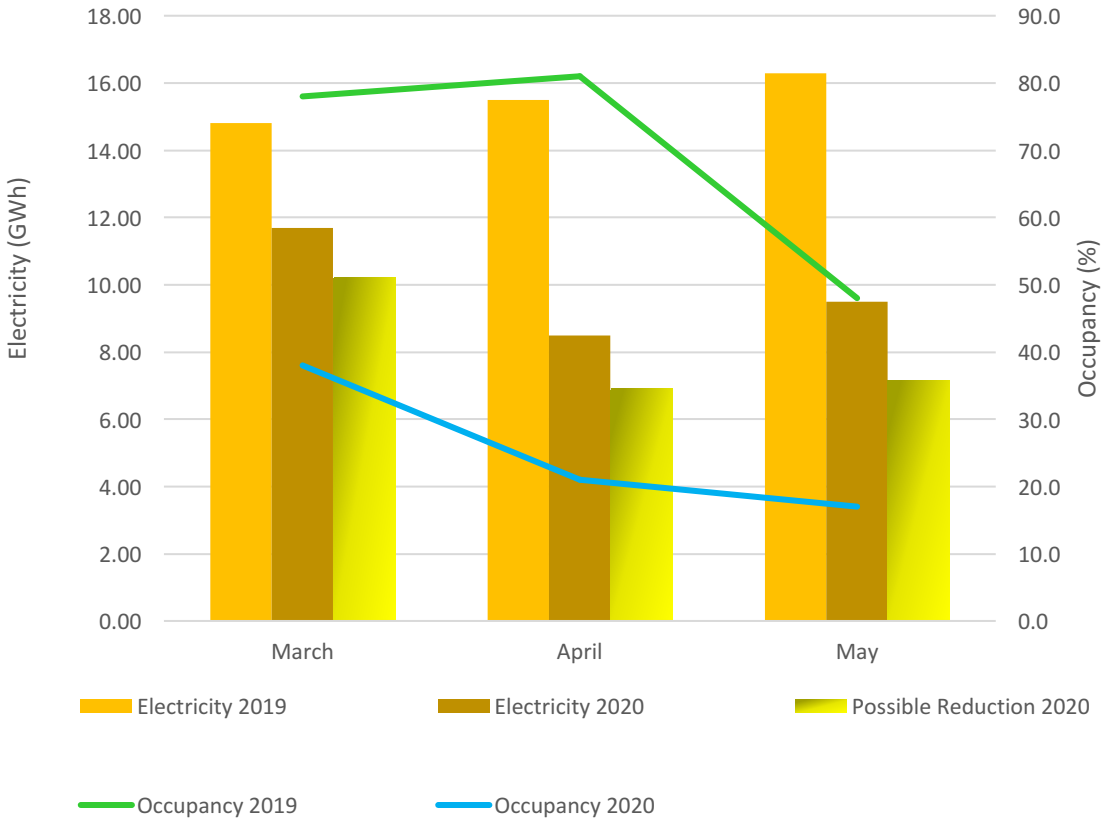
- Average occupancy reduction : **63%**
- Electricity reduction 2019 vs 2020 : **36% (16.8 GWh)**
- *Possible reduction:* ***48% (5.4 GWh), 2.4 Million AED***
- **Possible CO2 reduction : 2,400 Tonnes**



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Energy Consumption forecast 2020 : Best Occupancy pick up

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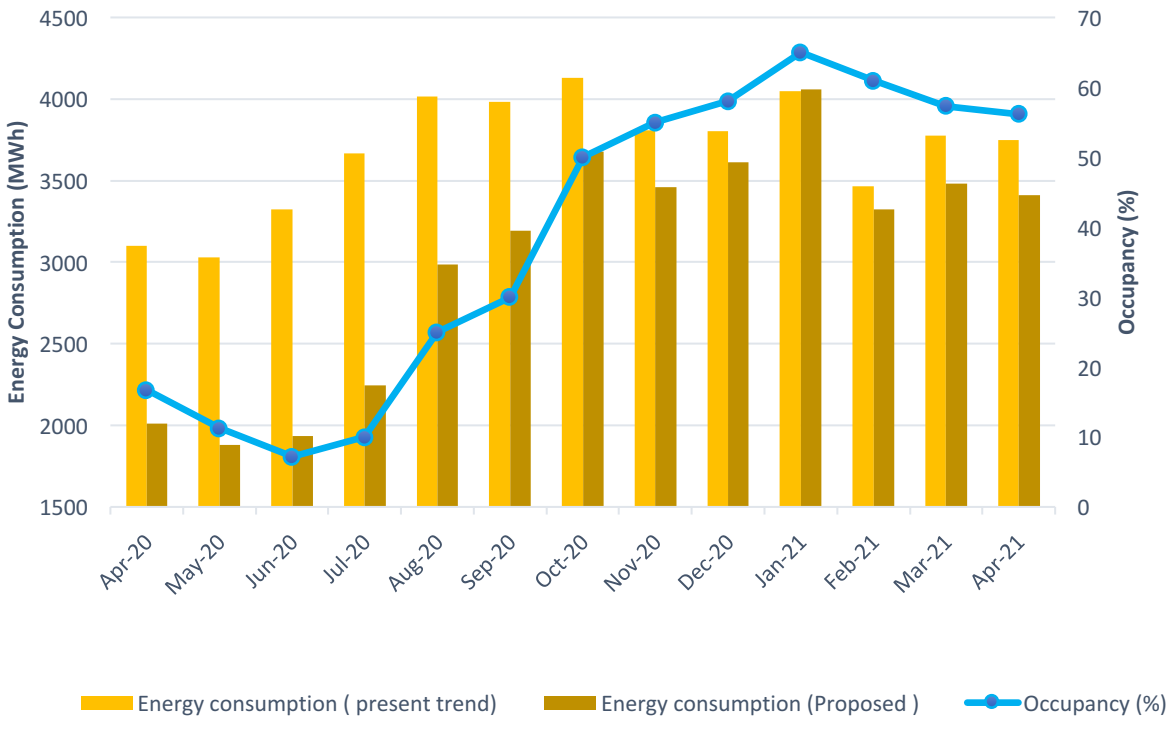

- Average occupancy prediction-2020 : **40%**
- **Average Electricity consumption with present trend : 44,700 MWh**
- **Average electricity consumption proposed: 37,000 MWh**
- 7,500 MWh more reduction possible from the current performance trend **(Savings of 3.4 Million AED)**
- Possible CO_2 reduction: 3,300 Tonnes

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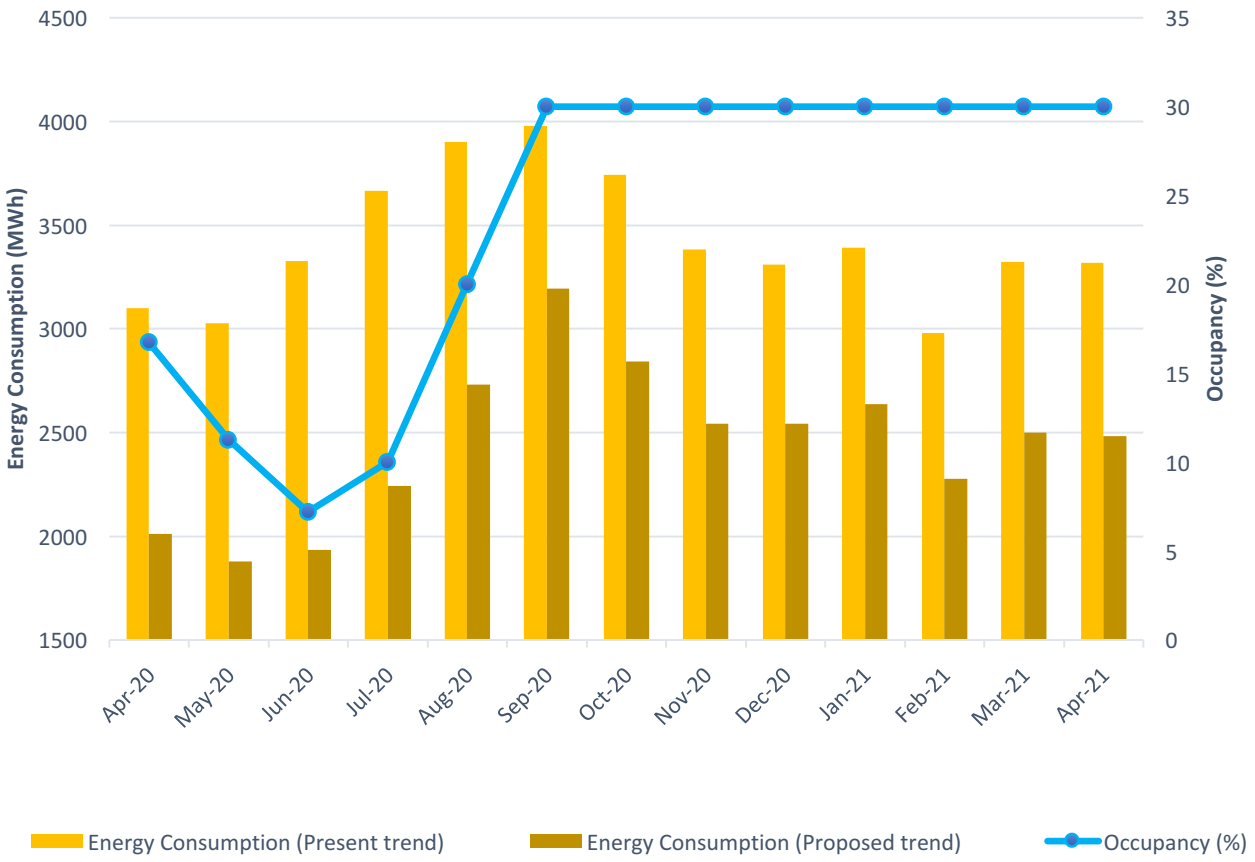
Energy Consumption forecast 2020 : Least occupancy



- Average occupancy prediction-2020 : **30%**
- **Average Electricity consumption with present trend : 41,300 MWh**
- **Average electricity consumption proposed: 29,800 MWh**
- 11,500 MWh more reduction possible from the current performance trend **(Savings of 5.2 Million AED)**
- Possible CO_2 reduction: 5,000 Tonnes

Recommended actions / Best practices implemented

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Chiller plant

- Energy Management plan
- Strategic room deployment
- Low occupancy set points
- Effective Utilization of chiller plant
- Demand based chilled water set points
- Wet bulb based cooling tower operation

Ventilation system & FCUS

- Optimization of FAHU Systems
- Dew Point based fresh air supply
- Set point Optimization-Corridor
- Taking advantage of VSDs
- Intermittent FCU & FAHU operation

Other Systems

- Thermostat locking
- Kitchen exhaust fan operational control
- Pool covers
- Pool back wash optimization
- Temperature optimization of pool water system

Energy Handbook

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The handbook
can be downloaded from
www-hotel-optimizer.com

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Evaluation Parameters

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Occupancy

Waste

Guest nights

General waste

Food waste

Recyclables

Total waste costs

Waste Generation Ratio

Normal vs Low occupancy

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Occupancy & Total waste -2018 vs 2019 (Historical Trends)

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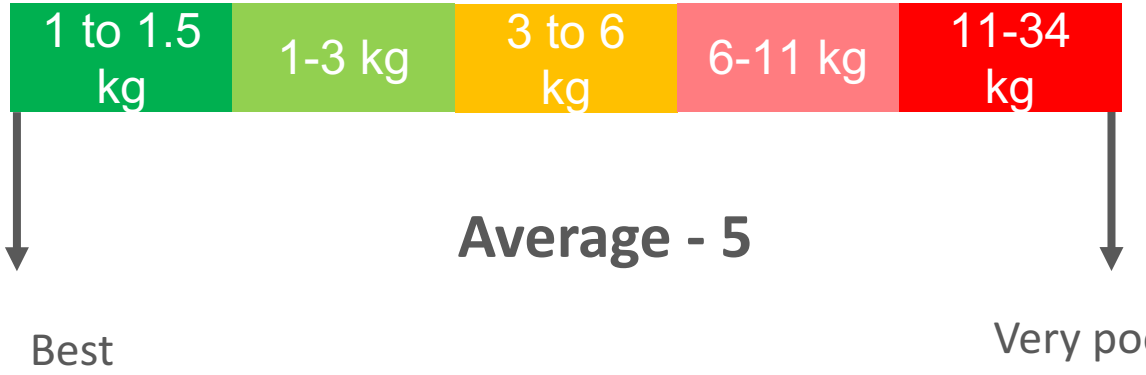
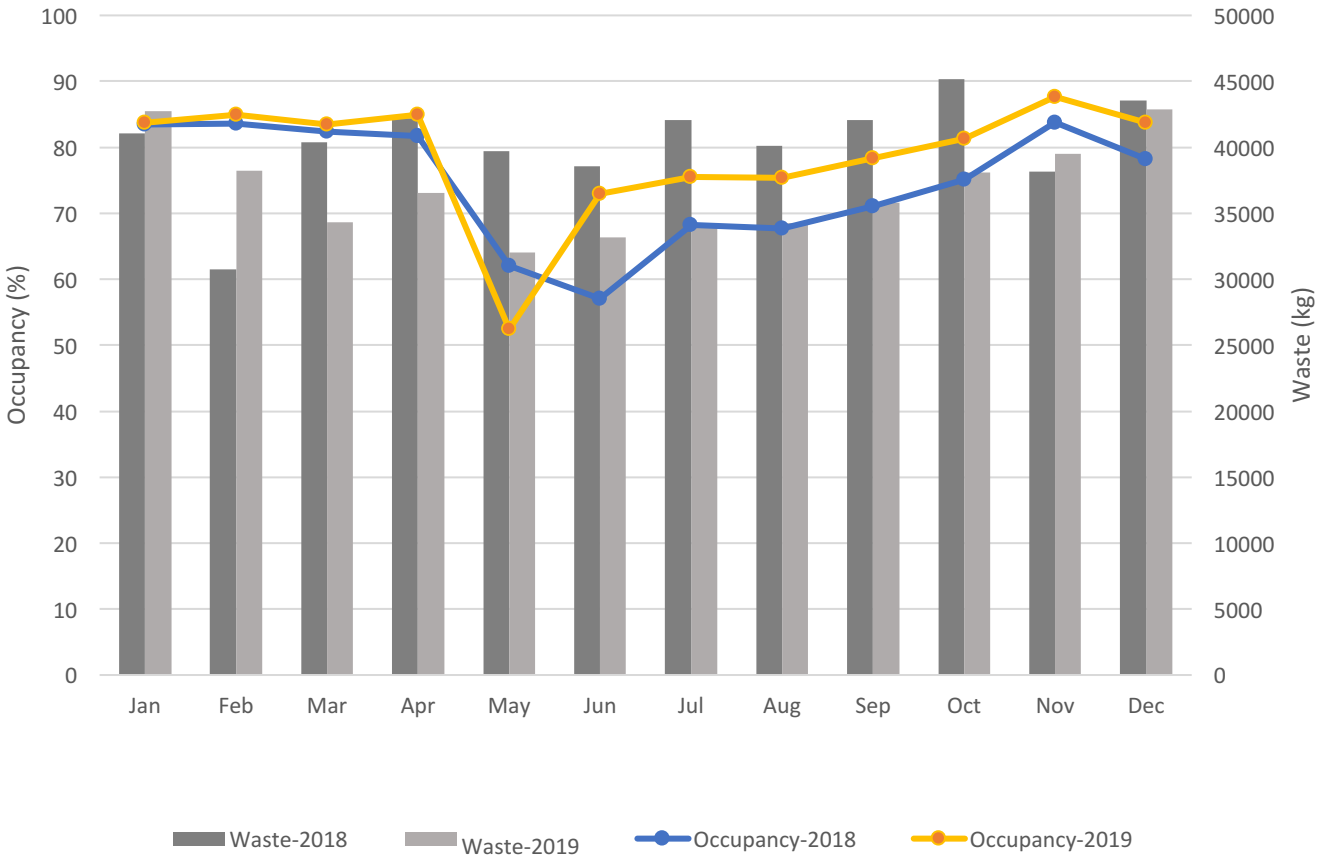
A hotel guest generates about 1kg (2lb) of waste per night –International Average

Kg/guest night range for Dubai Hotels (Hotel Optimizer)





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Occupancy vs waste generation: 2019 vs 2020
(normal vs low occupancy)

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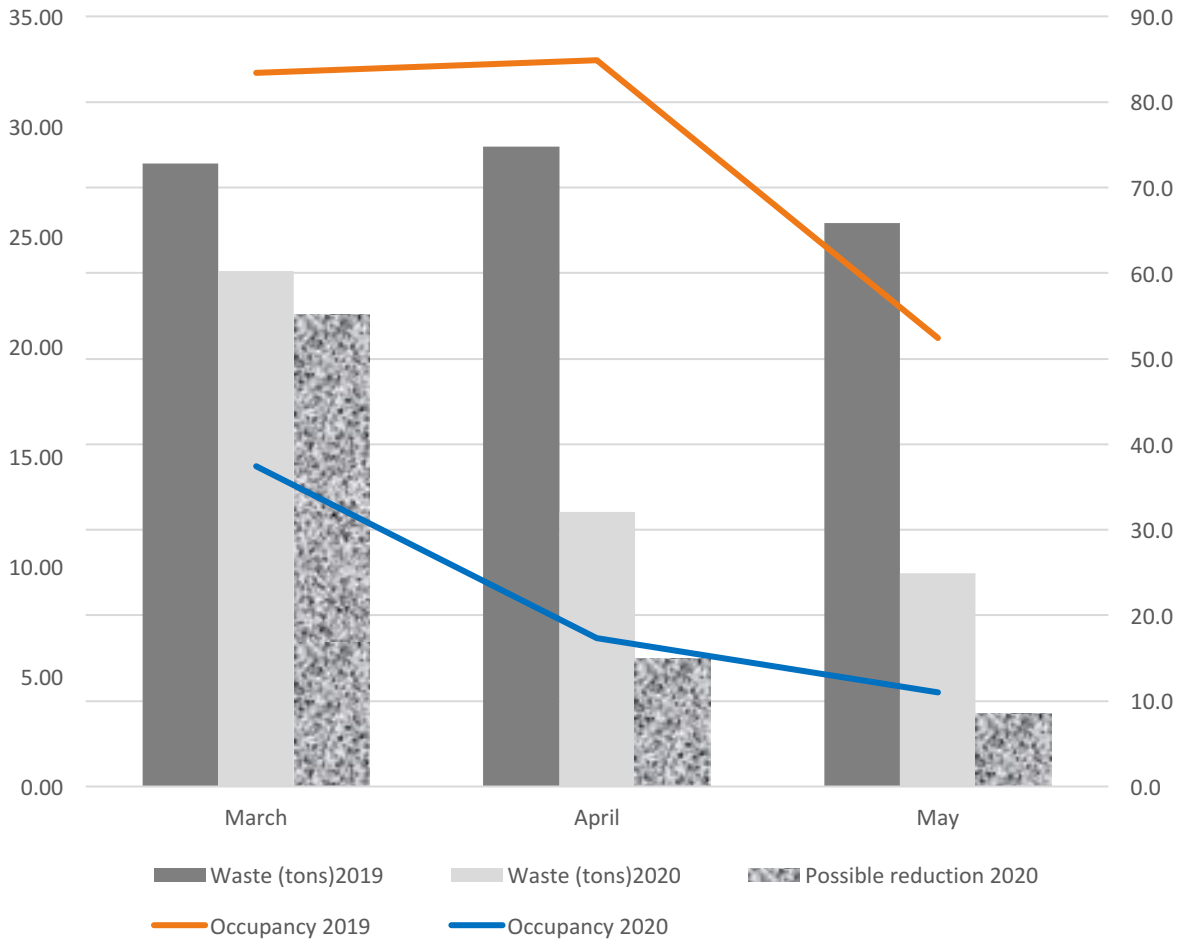

- Average occupancy reduction : **71.2%**
- Waste reduction 2019 vs 2020 : **40%**
- Irrespective of guest generation; a **baseload of general waste** exists
- ***If baseload waste is managed : 30% more reduction is possible.***

No strong correlation cannot be established

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Factors influencing waste baseload generation during low occupancy

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Staff Activities

- Waste from staff apartments
- Office operations

Waste collection

- Skips collected empty or half empty
- Weight of waste calculated based on skip collection

Food waste

- Staff catering waste
- Outside catering waste

Stock Management

- Expired/spoiled foods
- Store stock clearance

By addressing these factors hotels can reduce their baseload waste thus achieving reduction in waste generation as well as cost savings during low occupancy periods

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6. **BEST PRACTICE RECOMMENDATIONS**

Best Approach

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Monitoring

- Monthly utility consumption
- Waste generation
- Compared to previous year
- Calculate how much savings could have been achieved‘

Web based platform

Assessment

- Are your assets performing well?
- Measuring performance
- Is there any wastage?
- Which are the potential areas of savings?
- Which are the activities that generate waste?

Energy Audits

Preventive maintenance

- Keep up with scheduled tasks
- Predicting consumption patterns with established baselines

Efficient FM service

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Farnek Solutions: Hotel Optimizer

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hotel optimizer
brings more light into your business

- Web based platform
- 2-5 star hotels
- Energy, Water, Waste, Carbon & Operational costs monitoring
- Performance comparison – Quarter to Quarter, Year to Year
- Benchmarking
- Genuine Performance Monitoring – How much you could have reduced
- Alerts, Review & Consultation by Energy & Waste Consultants

- Clients on average achieve annual savings of 5% within initial years.
- Consumption reduced by 5-10% during initial year
- Best performers that achieved water and/or energy saw an additional profit of US$100,000 per year

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Farnek Solutions : Remote Energy Auditing

Spend Less & Save More

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- Safest way to do energy audits in the light of access restrictions
- Suitable for locations that does not have energy auditors
- **Low cost as compared to onsite audit**
- Fast report delivery
- Easy to be handled by customers
- Less CO2 emissions

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Save Energy. Save More

For more information visit www.hotel-optimizer.com

For any enquiries please mail Optimizer@farnek.com