

**“INNOVATIVE COST SAVING IN
THE VALUE CHAIN”,
UFI SUSTAINABLE DEVELOPMENT
AWARD 2015
MARINA BAY SANDS**



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EXECUTIVE SUMMARY

The Sands Expo and Convention Center concentrated on energy conservation as its primary Key Performance Indicator for its Sustainability Targets in 2014. We introduced an interface project between our event booking system and building management system that contributed to a 29% reduction in Chilled Water Energy (kWh) consumption compared to our 2012 baseline data.

SUSTAINABILITY AT MARINA BAY SANDS: AN INTRODUCTION



SANDS ECO360° SUSTAINABILITY STRATEGY

- Global leadership



Sheldon G. Adelson
Chairman and Chief Executive Officer,
Las Vegas Sands Corporation

“ *We have demonstrated that it’s possible not only to grow our business during challenging economic times but to do so in a way that is responsible, transparent, and sustainable.* ”

- Local Strategy

“ *Sands ECO360° has inspired and led to many concrete, sustainable actions across our property.* ”



Benny Zin
Chief Operating Officer,
Marina Bay Sands

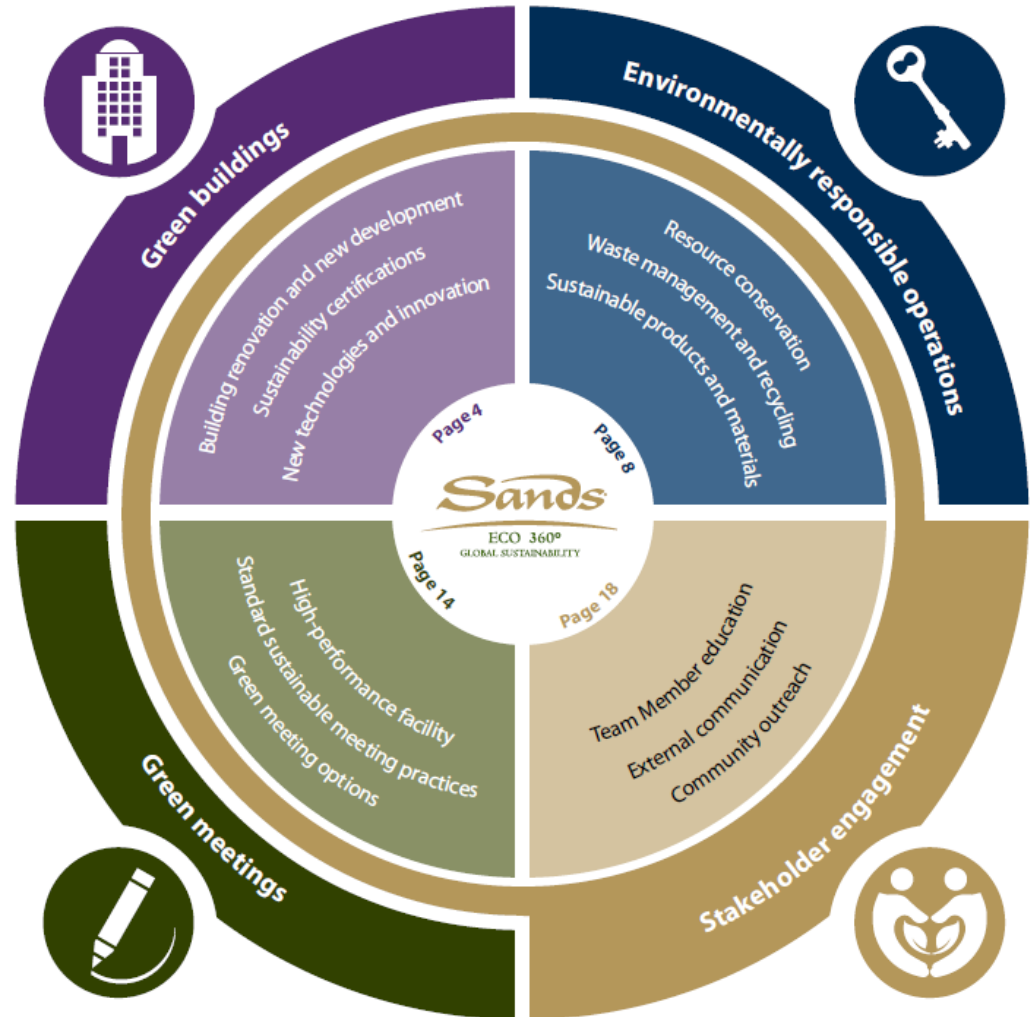
SANDS ECO360° PROGRAMME HAS 4 PILLARS

Sustainability is driven through our **Sands ECO360° programme** - a global sustainability strategy that includes all of Las Vegas Sands' businesses.

The programme integrates the company's best practices, technologies and methodologies in sustainability across all properties.

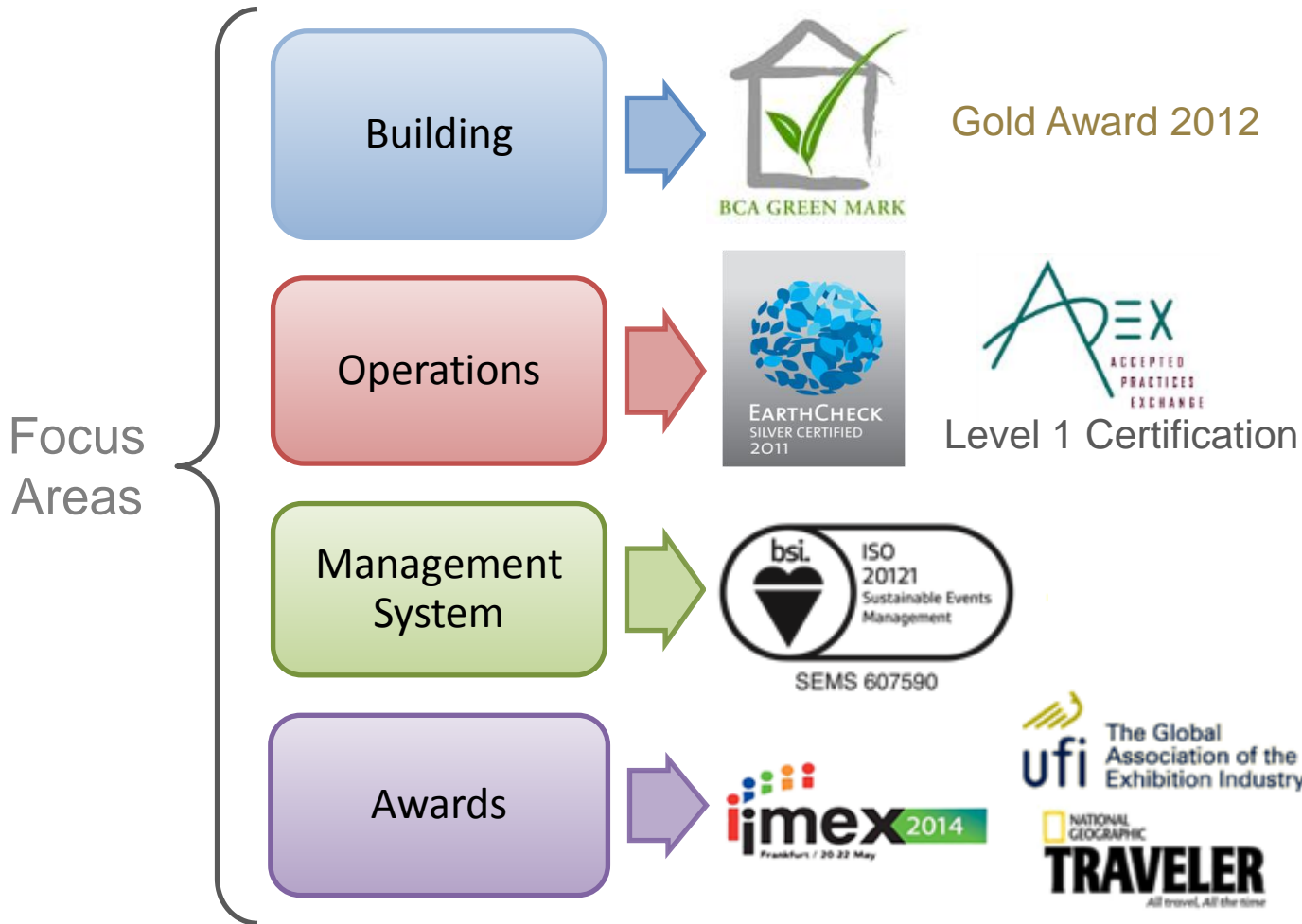
4 Pillars:

- **Green Buildings**
- **Green meetings**
- **Environmentally responsible operations**
- **Stakeholder engagement**



GREEN ACCOLADES

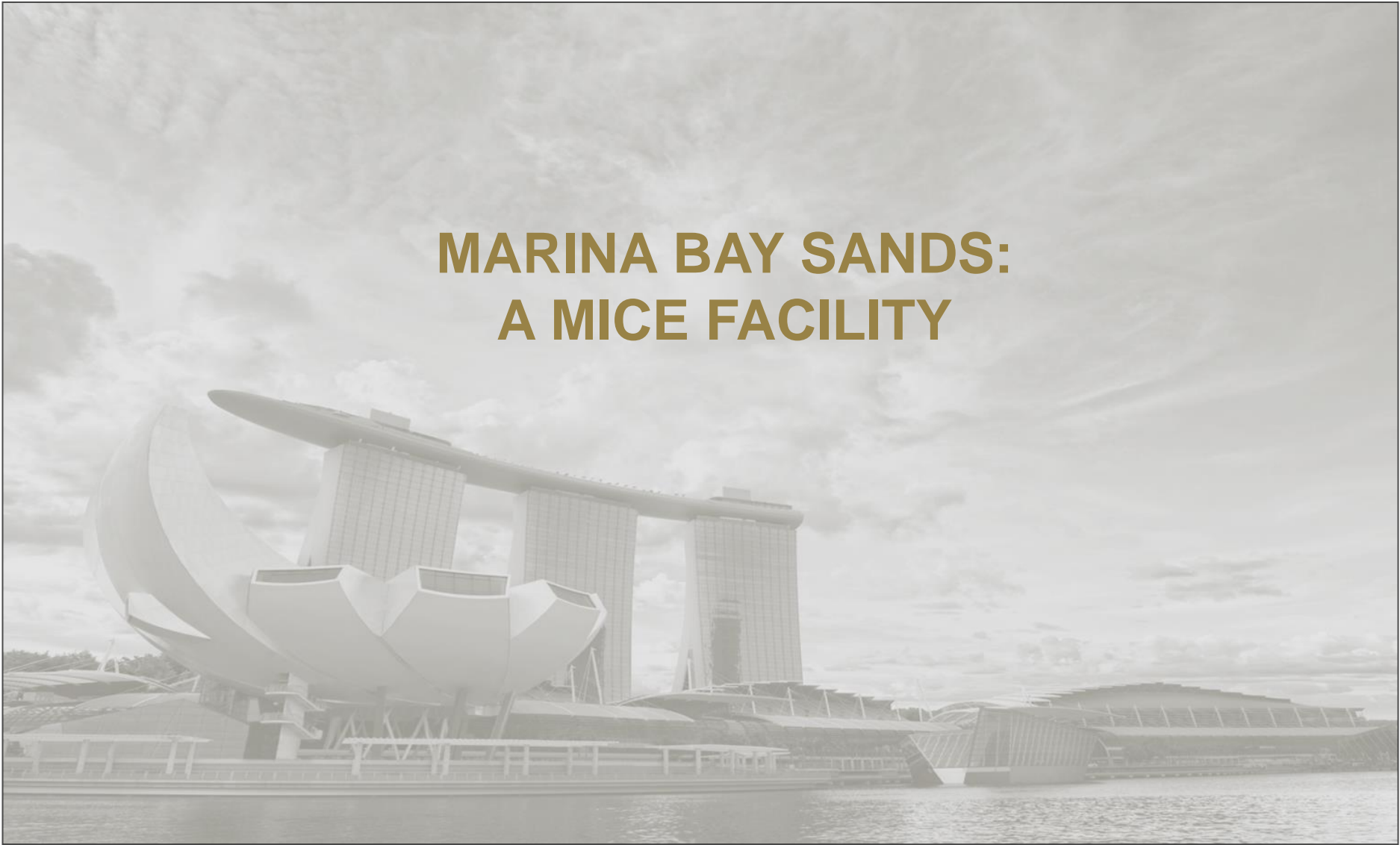
- Marina Bay Sands uses internationally recognized 3rd party standards to continuously improve our Sustainability programme:



Newsweek

LVSC ranked 18th
Greenest Company
in US500 and 28th in
Global500

MARINA BAY SANDS: A MICE FACILITY



thin minutes
nds.

AT THE HEART OF SINGAPORE CBD

- 20 min drive from Changi International Airport
- Located at the centre of Central Business District area
- Minutes away from popular cultural spots:
 - Chinatown
 - Little India
 - Albert Street
 - The Merlion
 - Waterfront Promenade
 - Gardens by the Bay

- 1 Singapore Zoological Gardens (10 min)
- 2 Night Safari (10 min)
- 3 Singapore Botanic Gardens (10 min)
- 4 Orchard Road (10 min)
- 5 Little India (10 min)
- 6 Clarke Quay (10 min)
- 7 Chinatown (10 min)
- 8 Boat Quay (10 min)
- 9 The Merlion (10 min)
- 10 Singapore River (10 min)
- 11 Sentosa (10 min)

BUSINESS HUBS

- A International Business Park (10 min)
- B Singapore Science Park (10 min)
- C One North (10 min)
- D Central Business District (10 min)
- E Marina Bay Financial Centre (10 min)
- F Changi Business Park (10 min)

- AYE Ayer Rajah Expressway
- BKE Bukit Timah Expressway
- PIE Pan Island Expressway
- ECP East Coast Parkway Expressway

Map is not drawn to scale

Singapore Cruise Centre (10 min)



MARINA BAY Sands SINGAPORE

A STRATEGIC LOCATION

INTRODUCTION – MARINA BAY SANDS

Location	Bayfront Avenue
GFA	581,000 m2
Floor	Hotel (57-Storey); Podium (5-Storey + 5 Basements); ASM (4-Storey)



ITS ALL WITHIN REACH, ALL UNDER ONE ROOF

- Marina Bay Sands is Asia's leading destination for business, leisure and entertainment.
- Home to Singapore's largest meeting and convention space
- Over 2,500 breathtaking rooms and suites and world class shops, dining and entertainment all under on roof.



BUILT FOR MICE

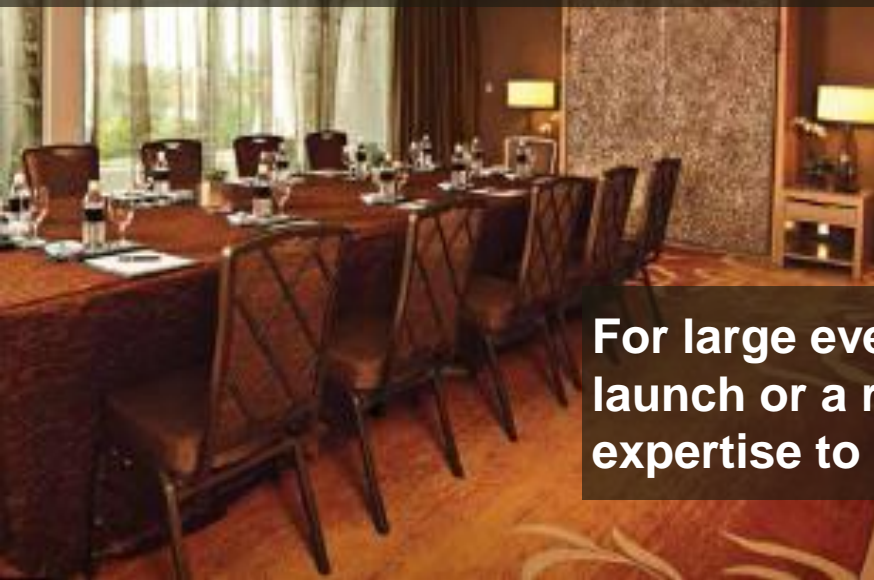


Sands Expo and Convention Centre is Singapore's largest and most versatile exhibition and meeting space.

- 250 meeting rooms
- Southeast Asia's largest ballroom
- The capacity for 2,000 exhibition booths
- Host up to 45,000 delegates at one time
- Over 120,000 square metres of convention space

INTIMATE SUITES OR LARGE MEETINGS

- Hospitality suites - Host small meetings for up to 30 people, with many configuration & catering options available.



For large events like a business summit, a new product launch or a red carpet press conference, we have the expertise to help plan all your requirements for the event.

THE NUMBERS

Over 9000 Team Members

Over 39 Million Property
Wide Visitors in 2014

Over 2000 Events in 2014

Up to 10,000 meals served
every day

2561 Hotel Rooms

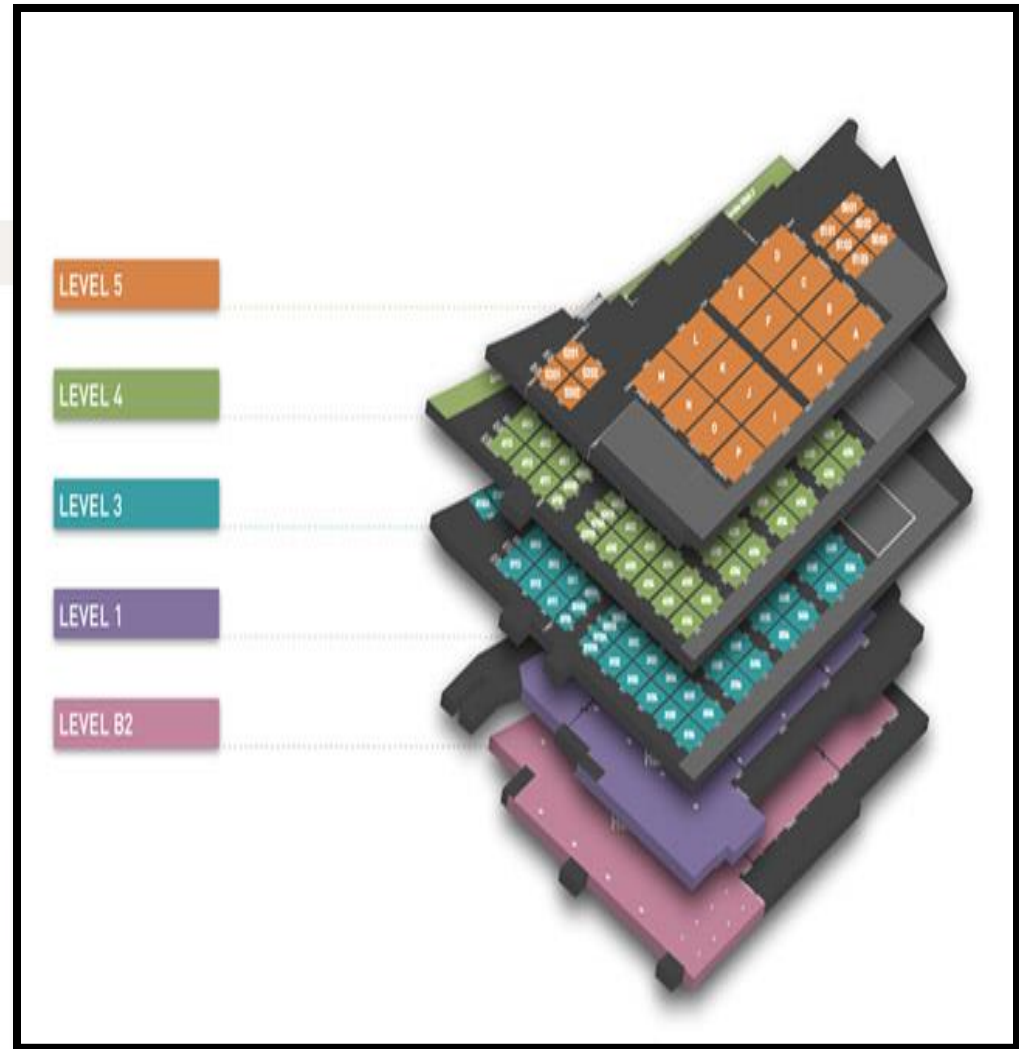
USD\$500 million in annual procurement spend to
local companies

SAND EXPO AND CONVENTION CENTER

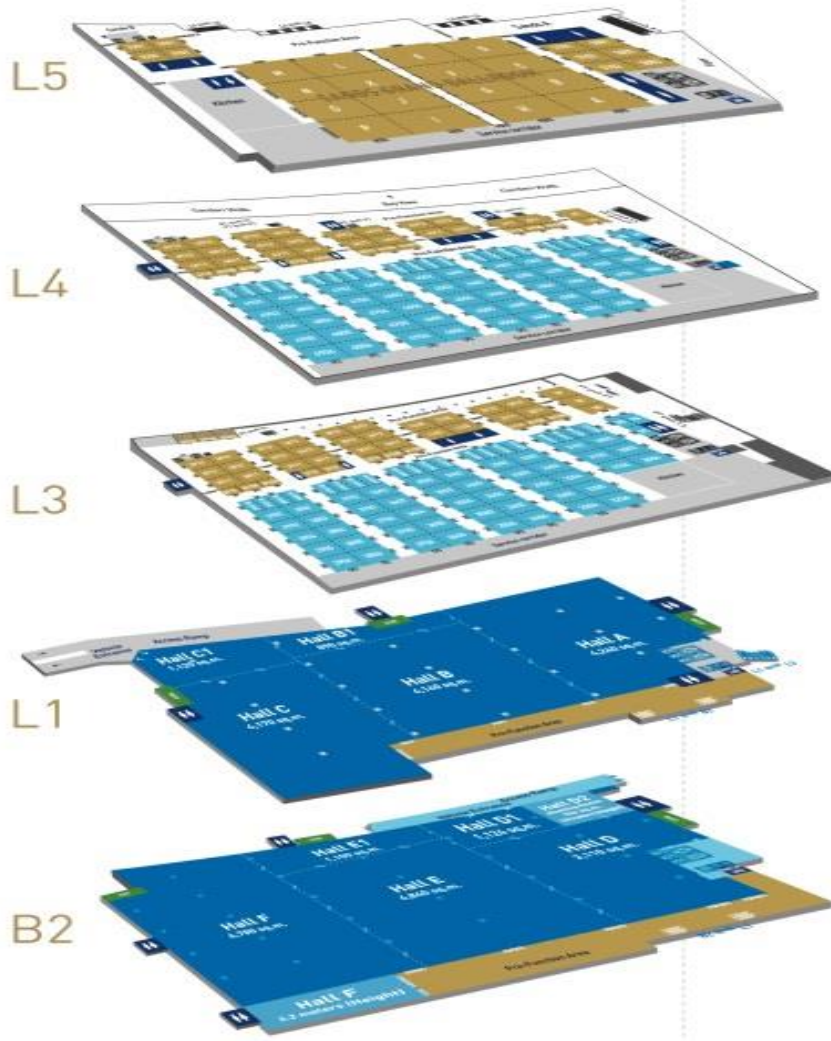
The rooms are spread over 5 levels:

- 250 meeting rooms
- 2,000 exhibition-booth capacity
- Able to accommodate 45,000 delegates

It has the largest ballroom in Southeast Asia which is able to accommodate 11,000 attendees or 6,000 in a banquet



FLEXIBLE MEETING FOOTPRINT



The meeting space is managed by a team of 40 event managers and 30 sales managers.

The teams block their required space in accordance with event requirements through EBMS (Event Booking Management System).

The configuration of the meeting rooms and the connecting airwalls combined with the volume of the events (over 3000 in 2014) results in a constantly changing foot print of the MICE meeting space.

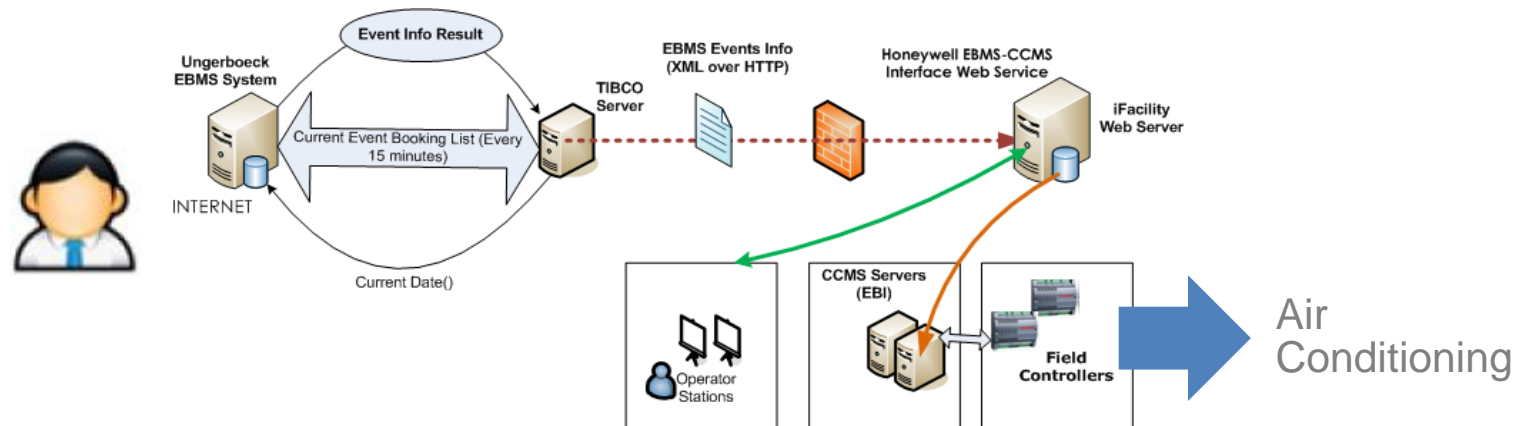
Given the climatic conditions of Singapore, air-conditioning is an essential feature in our meeting rooms. To ensure the high level of service, air-conditioning is required to be on whenever the meeting rooms are occupied



MARINA BAY SANDS: BOOKING AIR CONDITIONING INTERFACE PROJECT

PROJECT INTRODUCTION

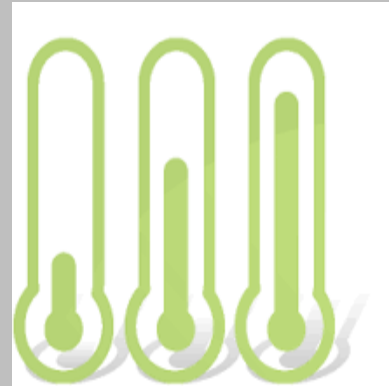
Up until 2013 the air-conditioning schedule was manually updated into the building management system by a dedicated facilities team that would receive daily event schedules. Any changes to schedules would require manual rectification. In January 2014, we launched an automatic scheduling of our meeting spaces through an interface between our Central Control Management System (CCMS) and our Electronic Booking Management System (EBMS).



TARGETS OF THE BOOKING AC INTERFACE PROJECT

12%

Contributing factor to overall property goal to reduce our energy consumption by 12% from 2012 baseline



Improve guest experience with better control of temperature

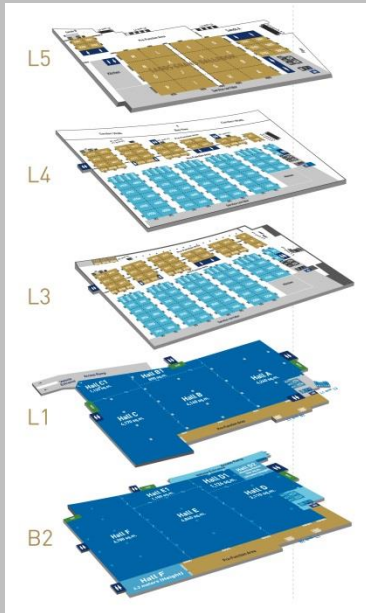


Drive energy savings through automated processes



Improve productivity by eliminating manual processes and Increase awareness and understanding of sustainability among event managers

CHALLENGES FOR THE PROJECT



Constant
changing
meeting
space
footprint



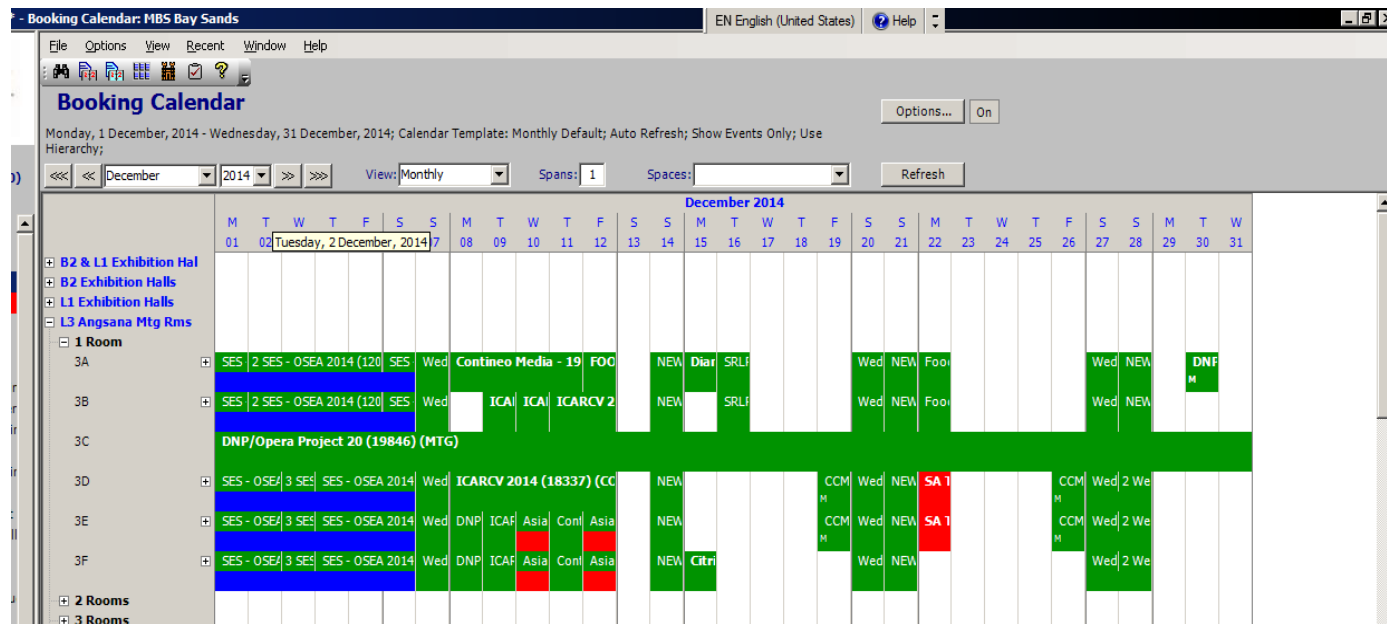
On spot client
requests for
temperature
change

A team of
over 70 Sales
and Event
Managers
booking the
meeting
space



EBMS (EVENT BOOKING MANAGEMENT SYSTEM)

This system is the main control for all event operations. All event orders and order tracking is managed by the team of 70 managers, this includes food and beverage, room sets and technical orders. One key role of EBMS is to manage all the space utilisation for all events taking place in the Sands Convention and Expo Centre. Event managers are required to input all event data into the program (meeting location, banquet event orders, event schedule) this system avoids the risk of double blocking any space



CCMS (CENTRAL CONTROL MONITORING SYSTEM)

This is our S\$25 million Building Management System that consists of over 80,000 points that control and monitor ACMV, Mechanical and lighting throughout the property from one centralised location. The system is operated by a dedicated CCMS Team part of the Facilities Department

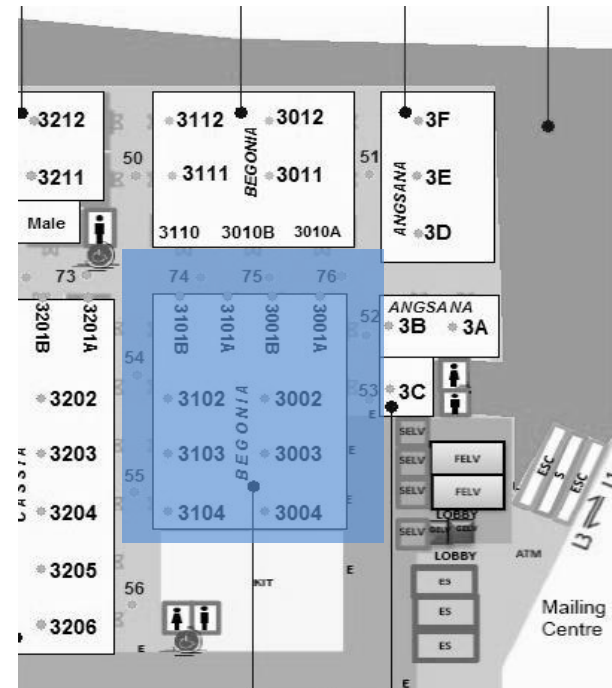


INTERFACING SERVER

The booking AC interface project required us to connect the EBMS system and CCMS systems through an iFacility interfacing server. This allowed the two separate systems to communicate automatically

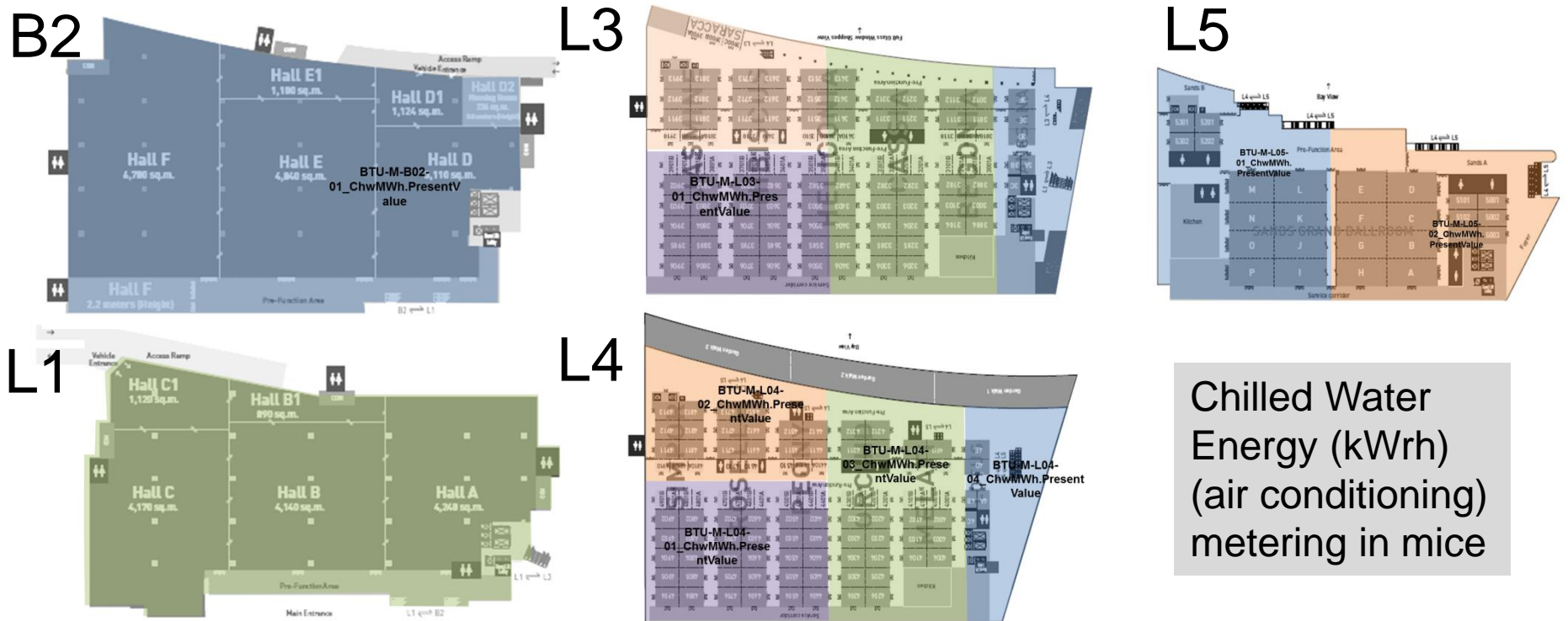
Sample of PAU's/FCU's to be turned on for the Rooms booked

Room #	3001A	3001B	3002	3003	3004
Room FCU	FCU-M-3M-183	FCU-M-3M-182	FCU-M-3M-179	FCU-M-3M-177	FCU-M-3M-175
Precool	PAU-M-3M-07	PAU-M-3M-07	PAU-M-3M-07	PAU-M-3M-07	PAU-M-3M-07
Pre-function Corridor	FCU-M-3M-74	FCU-M-3M-74	FCU-M-3M-74	FCU-M-3M-74	FCU-M-3M-74
	FCU-M-3M-75	FCU-M-3M-75	FCU-M-3M-75	FCU-M-3M-75	FCU-M-3M-75
	FCU-M-3M-76	FCU-M-3M-76	FCU-M-3M-76	FCU-M-3M-76	FCU-M-3M-76
			FCU-M-3M-52	FCU-M-3M-52	FCU-M-3M-52
			FCU-M-3M-53	FCU-M-3M-53	FCU-M-3M-53
Room #	3101A	3101B	3102	3103	3104
Room FCU	FCU-M-3M-180	FCU-M-3M-181	FCU-M-3M-178	FCU-M-3M-176	FCU-M-3M-174
Precool	PAU-M-3M-07	PAU-M-3M-07	PAU-M-3M-07	PAU-M-3M-07	PAU-M-3M-07
Pre-function Corridor	FCU-M-3M-74	FCU-M-3M-74	FCU-M-3M-74	FCU-M-3M-74	FCU-M-3M-74
	FCU-M-3M-75	FCU-M-3M-75	FCU-M-3M-75	FCU-M-3M-75	FCU-M-3M-75
	FCU-M-3M-76	FCU-M-3M-76	FCU-M-3M-76	FCU-M-3M-76	FCU-M-3M-76
			FCU-M-3M-54	FCU-M-3M-54	FCU-M-3M-54
			FCU-M-3M-55	FCU-M-3M-55	FCU-M-3M-55
			FCU-M-3M-56	FCU-M-3M-56	FCU-M-3M-56



TRACKING THE RESULTS


Marina Bay Sands MICE facility has over 164 electricity and BTU sub-metres installed across property. Coupled with an energy dashboard for real-time viewing consumption so that data can be verified easily and accurately. This dashboard is provided via the company intranet for Team Members to access at all times.



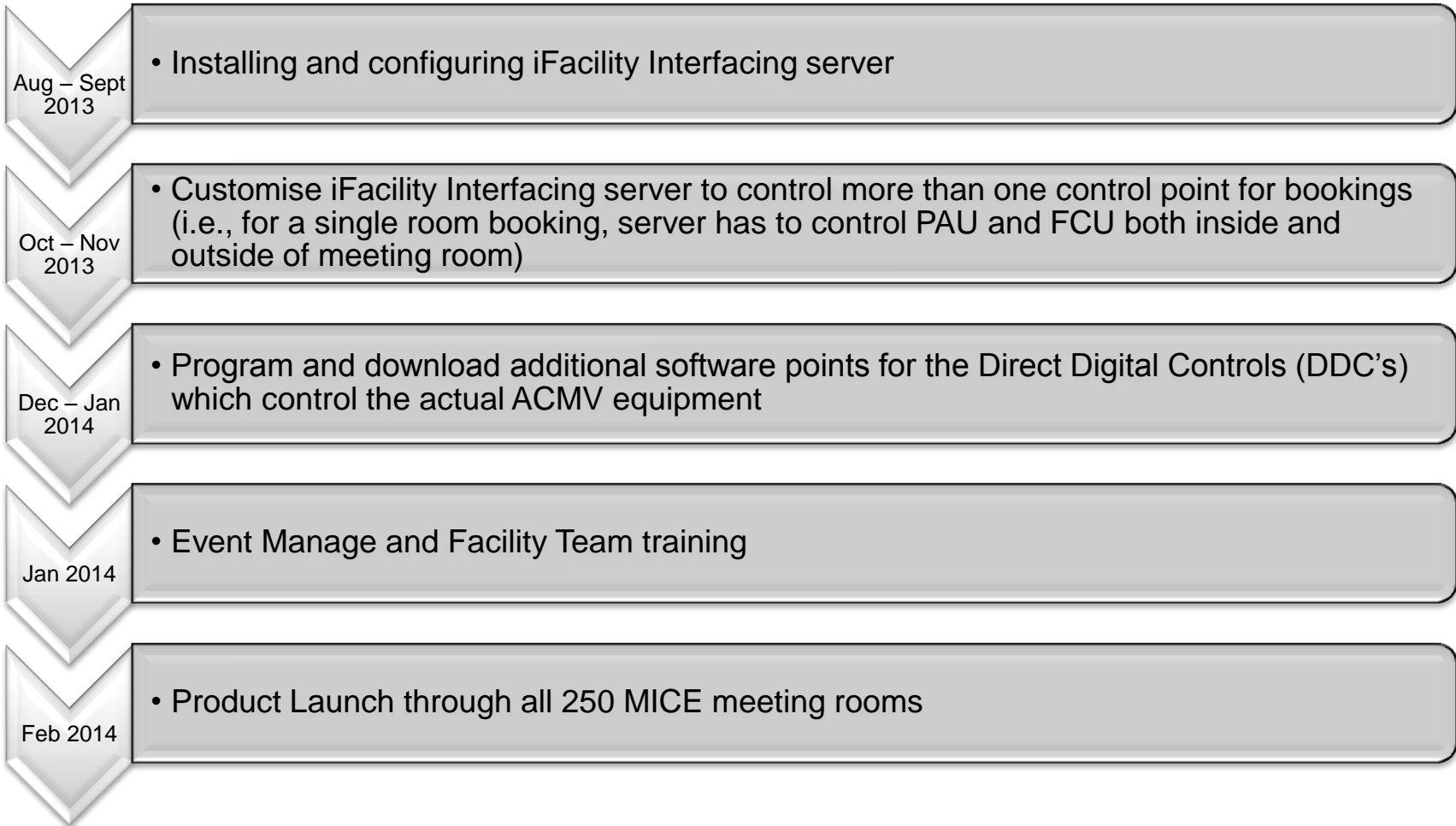
Chilled Water Energy (kWhr)
(air conditioning)
metering in mice

TRACKING THE RESULTS

The Dashboards shows live results of our Chilled Water Energy (kWrh) metres and monitored at a minimum of weekly, sometimes daily for challenging areas. Additionally summarised results from the dashboard are distributed to senior management on a weekly basis.

 Daily Chilled Water Energy Consumption Location :- MICE Level:- L3 [Period:- 19/02/2015 00:00:00 - 25/02/2015 23:59:00]						
Level	Start Reading	End Reading	Actual Measured Value		Substitution Value Ap	
	Mega Watt Hour(mWh)	Mega Watt Hour(mWh)	Consumption Kilo Watt Hour(kWh)	Usage Charges (\$) 0.0984 /kWh	Consumption Kilo Watt Hour(kWh)	Usage C
15 Level 3 MICE	35,881.34	35,904.41	23,440.00		23,440.00	
	Total On	19-February-2015	23,440.00		23,440.00	
15 Level 3 MICE	35,904.41	35,933.04	28,730.00		28,730.00	
	Total On	20-February-2015	28,730.00		28,730.00	
15						

IMPLEMENTATION SCHEDULE

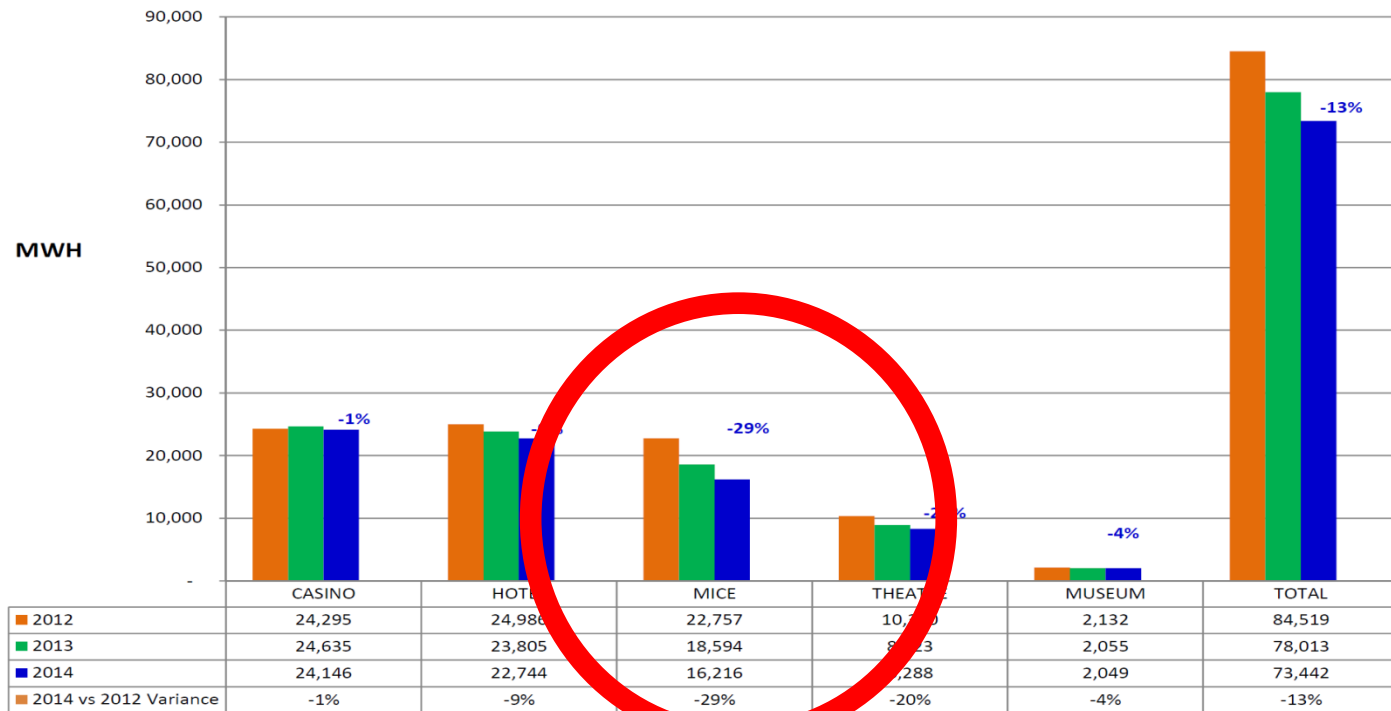


MARINA BAY SANDS: PROJECT RESULTS

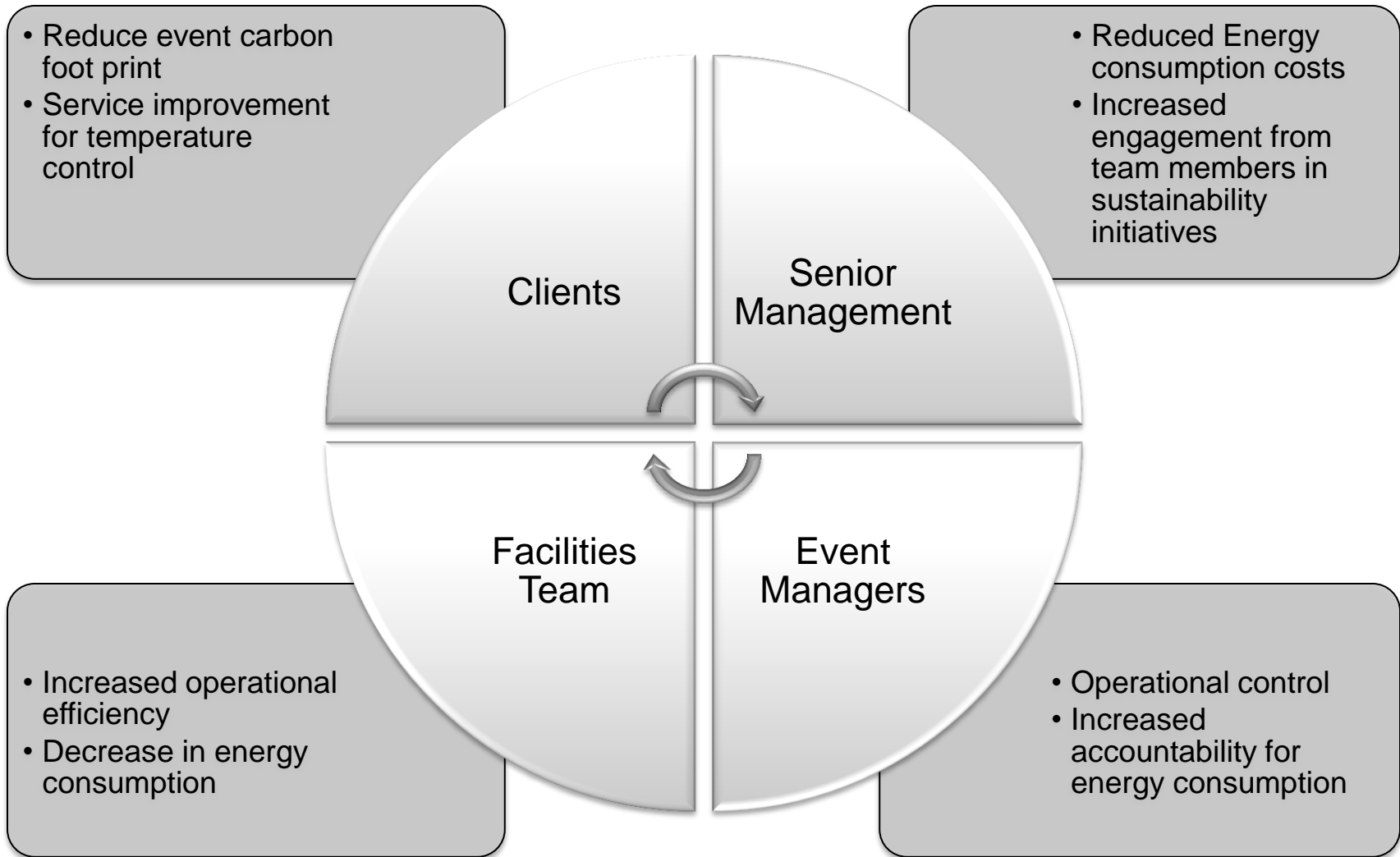


CONSUMPTION RESULTS

The system was designed to reduce the energy consumption of the MICE space as well as improve the operational efficiency of events held at Marina Bay Sands. Marina Bay Sands invested over S\$180,000 with an estimated 2 year payback in our Chilled Water Energy (kWrh) costs. The projected savings for 2014 were S\$100,000 - S\$200,000 in the first year. Our overall Chilled Water Energy (kWrh) consumption for the MICE space for 2014 has reduced by 29% (as below).



STAKEHOLDER IMPACT



MARINA BAY SANDS: EVENT CASE STUDY



CASE STUDY: ITB ASIA

Marina Bay Sands hosted ITB Asia in both 2012 and 2014. We set ourselves and the organisers the challenge of reducing the carbon foot print of the event by 5%, following the introduction of the innovative new systems Marina Bay Sands had implemented in the 2 year gap between events.



Marina Bay Sands Eco360 Meetings Impact Statement

Singapore

Marina Bay Sands

Conference Overview

Client:	ITB
Event:	ITB - Messe Berlin Singapore

Conference Dates: 13 October 2012 to 20 October 2012

Total Conference Meeting Space Used (sq. m.) 130,455

Economic

Impacts	Key Performance Indicator	Value	GRI Indicator
Investment in Event Sustainability	Total expenditure to improve event sustainability and offset emissions (SGD)	0	EN 30
Participation	Number of delegates	5,000	

Social

Using the event Impact Statement Generated in 2012 we had the all the relevant data from the 2012 event to show that 399 tonnes of carbon emissions had been generated in 2012

CASE STUDY: ITB ASIA

- Event Characteristics

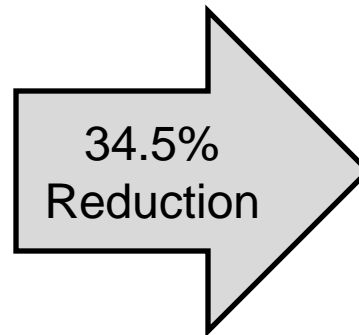
- 5 day event
- 8000 participants
- 1800 room nights
- 17,190 sqm exhibition space
- 6410 sqm meeting space

- Operational changes from 2012 – 2014

- Interface system in place
- Detailed event booking between event manager and client
- Lighting sensors in meeting rooms activated*
- Harvest menu taken*



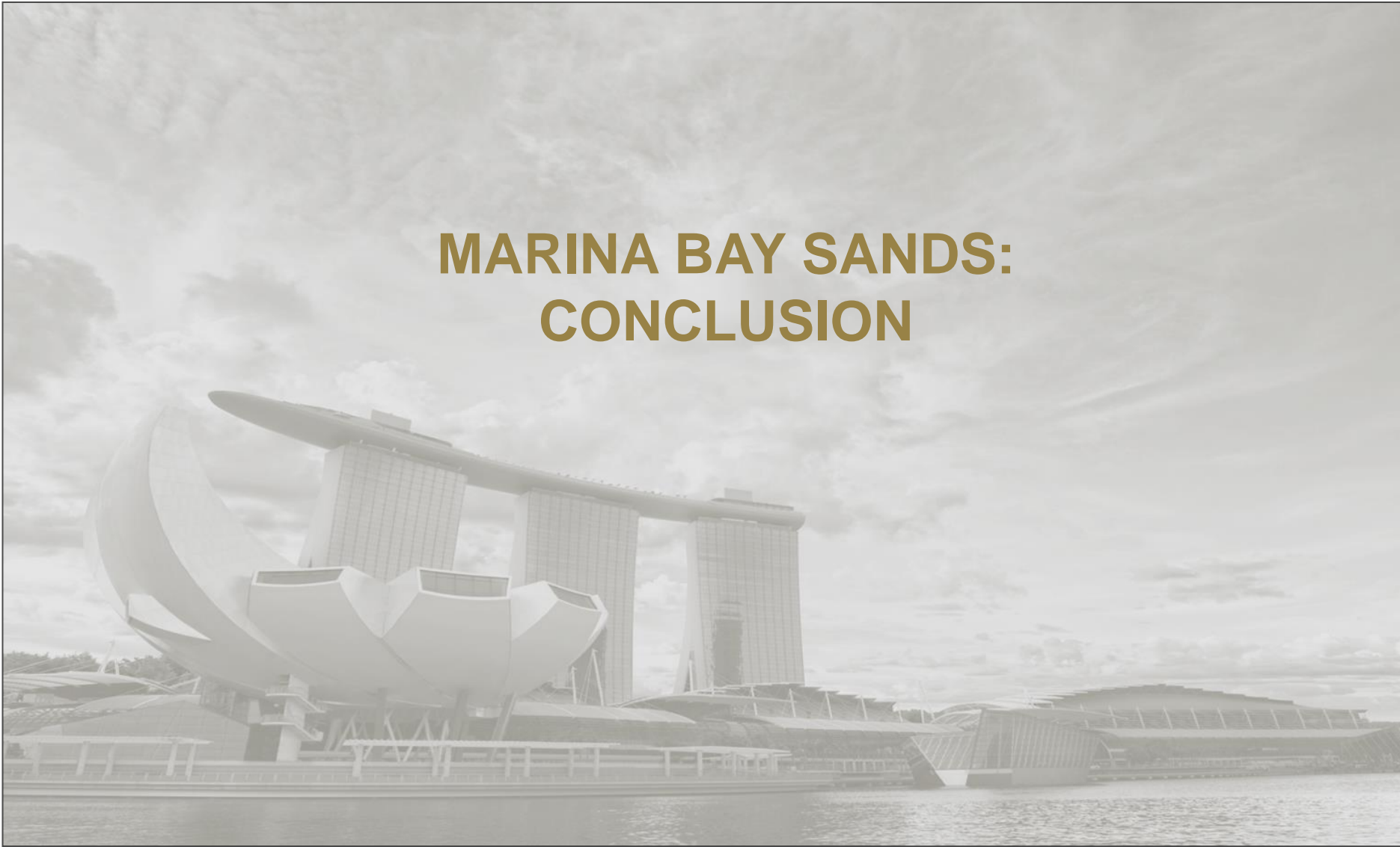
2012 =
399
Tonnes



2014 =
262
Tonnes

* Marina Bay Sands also introduced additional innovations that reduced the carbon footprint of this event, though the Booking AC Interface project was considered the most significant contributor

MARINA BAY SANDS: CONCLUSION



CONCLUSION

Our overall property energy goal at Marina Bay Sands is to reduce our total property energy consumption by 12% compared to our 2012.

Although we are unable to identify the exact percentage savings attributed to this project, Implementing the interface project combined with a number of energy saving initiatives in 2014, has enabled our teams in MICE to achieve their 2014 energy consumption goals and achieve a 29% reduction in energy consumption in MICE since 2012.

In combination with our efforts towards maintaining our Earth Check and ISO20121 certifications projects such as this are essential to developing our environmental management system across property, furthermore we can continue to provide our sustainably conscious meeting planners and organizations who are looking to improve the sustainability of their event-related activities, products and services innovative solutions to help achieve these goals.