Administration Details

For Participants

Please rename yourself (Name/Organisation)

Please mute your mic during presentation

During Q&A, please raise your hand and only unmute when asking questions

Any other questions, please email to us at BCA_Challenge_Call@bca.gov.sg
Please note that this session will be recorded.

GBIC2.0 Thematic Challenge Call Briefing

Green Buildings Technology Department,
Building and Construction Authority,
9 Mar 2023, 1400-1700hrs
Via MS Teams

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Agenda

	Topic	Presenter
14:00 – 14:05	Welcome by BCA	Mr Ang Kian Seng
140:5 – 14:20	Overview of the Challenge Call	Mr Noel Chin
14:20 – 14:40	GBIC R&I and creation of IGMS account	Mr Wong Ngian Chung
14:40 – 1455	GBIC Demonstration	Mr Noel Chin
14:55 – 15:05	FAQ	Mr Noel Chin
15:05	Q&A	
	10-mins Short Break	
15:15 – 16:45	Sharing by Challenge Statement Owners	a) South Beach Office b) Republic Plaza c) OCBC d) M Hotel e) Parkroyal@Kitchener f) Hotel Michael g) JW Marriott
16:45 – 17:00	Q&A	
17:00	End of Briefing	

Singapore Green Building Masterplan: Build our green future together

The SGBMP aims to deliver 3 key outcomes: '80-80-80 in 2030'

VISION

"A leading green Built Environment sector mitigating climate change and providing a healthy, liveable and sustainable Built-Environment for all"

80% of buildings to be green by 2030:

- ***Step up the pace*** of greening our buildings
- ***Raise the sustainability standards*** of our buildings

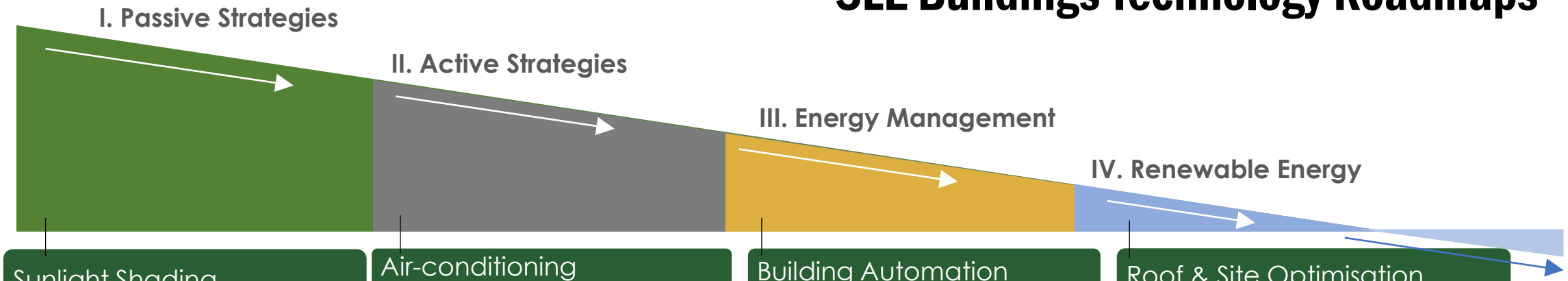
80% of new developments to be SLE from 2030:

- ***Mainstream Super Low Energy (SLE) performance of new buildings*** so that from 2030, large majority of new development would be achieving today's SLE energy performance standards

80% EE improvement (from 2005 levels) by 2030:

- ***Push boundaries in energy efficiency for best in class green buildings*** through research, innovation and implementation

SLE Buildings Technology Roadmaps



Sunlight Shading

- Solar analysis
- Shading devices
- Interblock shading

Natural Ventilation

- Site planning & orientation
- Building massing
- Cross ventilation
- Induced ventilation
- Thermal comfort modelling

Facade & Daylighting

- High performance glass & wall
- Cool materials/greenery
- Air-infiltration control
- Air-con space reduction
- Daylight redirection

Air-conditioning

- High COP chiller with low lift & friction
- Non-compressor cooling
- Decoupled latent & sensible cooling with desiccant/membrane
- High temperature cooling using radiant / convective / hybrid effect

Mechanical Ventilation

- Displacement ventilation
- Personalised ventilation
- High Volume Low Speed fan
- Brushless DC motor

Lighting Technologies

- High efficiency LED
- Dimmable lighting
- Digitally addressable lighting

Building Automation

- Fault detection and diagnostics (FDD)
- Energy Management System
- Occupancy sensoring & demand control
- Weather sensing & system resetting

Smart Control

- Model predictive control
- Machine learning
- IOT integration with BMS
- Personalised control of lighting/ACMV

Plug Load Management

- Smart plug
- Load monitoring and tracking
- Sleep mode optimisation

Roof & Site Optimisation

- Maximising roof and façade spaces
- Site planning for solar utilization

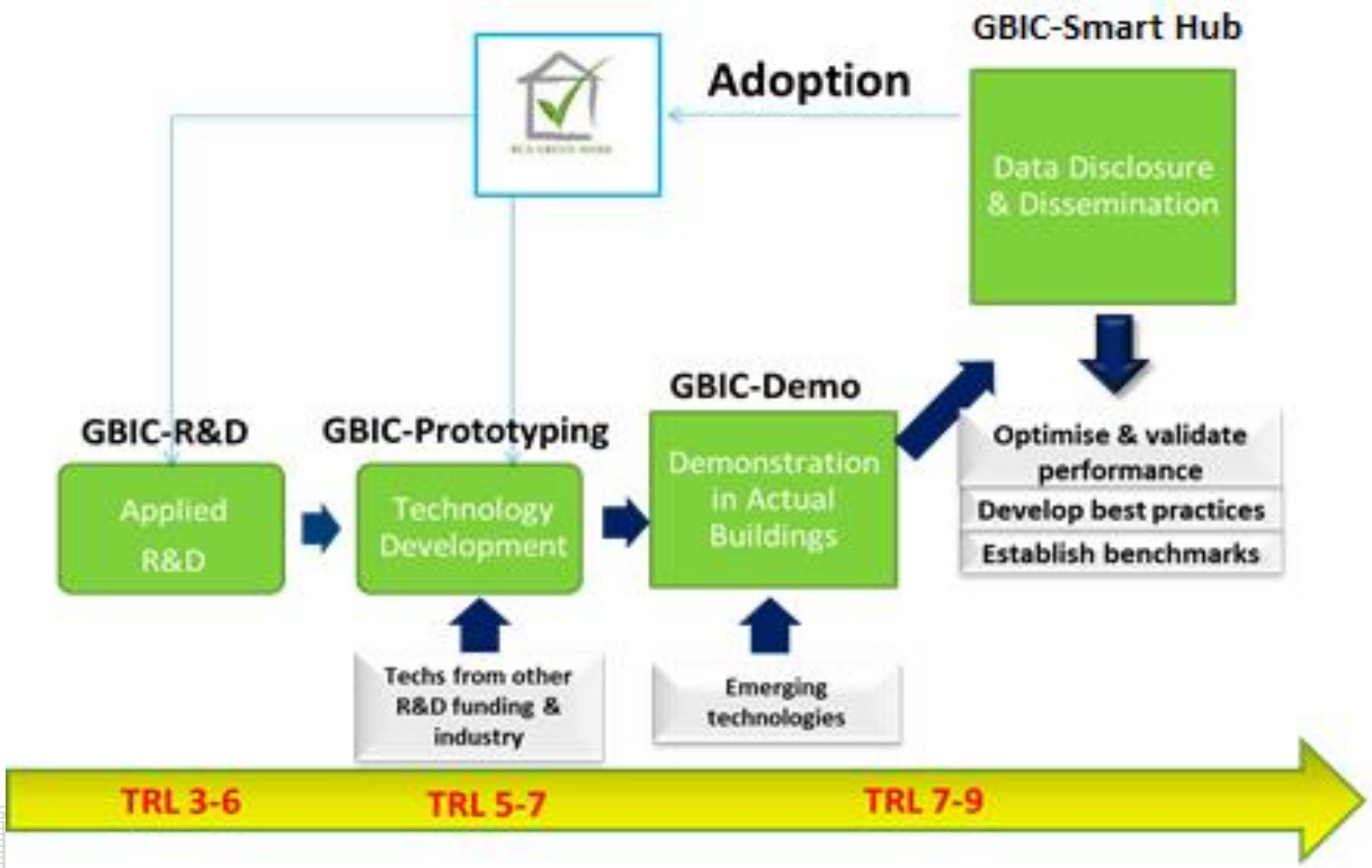
PV Technologies

- Highly efficient module
- Anti-shading design
- Anti-degradation system
- High performance BIPV
- PV integration with greenery
- PV energy management

Green Buildings Innovation Cluster (GBIC) Programme

A key Lever to Support SLE Technology Roadmap

- To support the RD&D of Innovative Energy Efficient Technologies for building sector to achieve greater energy efficiency.



Past GBIC R&I Solutions

Building: Sim Lim Square
Solution provider: Ampotech Pte Ltd

A **smart energy management system** to achieved similar monitoring capabilities as the existing BMS system at approximately 3% of the solution cost, and lowered the implementation time from 12 weeks to 7 days.

Building: Chinatown Point
Solution provider: Advanced Digital Sciences Center Kaer Pte Ltd

A **data-driven chiller plant optimisation system** to achieve 10-15% energy saving for chiller plants without additional hardware.

Building: Tampines Grande
Solution provider: Hitachi Asia Ltd

An **integrated smart building platform** to automate building management to achieve about 23% building energy saving.

Building: Holiday Inn Express at Orchard
Solution provider: Natflow Pte Ltd

An **Intelligent Hot Water System** estimated to save 90% of recirculation energy loss and reduce 60% hot water demand.

Past GBIC Demonstration SLE Buildings

Keppel Bay Tower

Demonstration of innovative techs scouted from the 1st challenge call on an **Existing GM Platinum Office Building**. The Keppel Bay Tower has gone on to make further improvements to achieve Zero Energy Building.

DBS Newton Green

Retrofit of existing 4 story office building to achieve Super Low Energy, DBS Newton Green serves to test-bed innovative technologies for the rest of DBS Bank's buildings.

SMU-Connexion

A **new 24x7 student experiential center** designed with the latest energy efficient technologies and smart building system to achieve net zero energy.

Samwoh Smart Hub

The **new 4-story office building** supports Samwoh's operations and manufacturing services. The building is designed to achieve positive energy with the use of renewables and solar driven chillers and pumps.

Challenge Call for
High Rise Commercial Office Buildings and Hotels

80% EE for best-in-class buildings through R&I under SGBMP 3rd target.

- Focus on high energy consuming buildings (Commercial office buildings and hotels ~combined 45% of total building energy consumption)
- Buildings with potential to replicate solutions to optimise EE

Desired outcomes :

- At least 25 – 30% improvement in energy efficiency compared to best-in-class technologies (R&D, Prototyping).
- Best-in-class SLE buildings achieving 75% EE (from 2005 levels) by 2025 (Demo).

Scaling up of technologies for adoption through tech firms, replication of technologies through building owners & operators.

- Tap on building owners and operators with potential to scale up and replicate technologies in their building portfolio to:
  - Develop problem statements for the researchers to develop solutions for future applications,
  - Improve performance of existing technologies,
  - Demonstrate innovative technologies that can help buildings to achieve up to 75% EE.
- Building owners as the Sponsor for R&I proposals (R&D and Prototyping), and lead applicant (Demonstration).
- Tech firms commitment to take up the technology after R&D/demonstration is completed

Challenge Call for
High Rise Commercial Office Buildings and Hotels

R&D

Develop innovative technologies to address pain-points of building owner or operator

- Building owner/operator as sponsor.
- Open to IHLs with industry firm as collaborator.
- Project timeline 2 year.
- Outcome: Technologies that are ready for performance testing.

Prototyping

Support refinement of technologies to cater to building owner or operator's needs.

- Building owner/operators as adopter.
- Led by industry firm.
- Project timeline 1 year
- Outcome: Translation of the prototype after successful test-bedding towards demonstration.

Demo

To support projects to achieve 75%.

- Building owners or operators as applicant.
- Focus on integrating innovative EE technologies.
- Project timeline 2-3 year
- Outcome: Validate performance of the technologies and replicating technologies across building portfolio.

GBIC R&I

R&D	
Intent	Support development of high impact solution to be ready for adoption upon completion
Target Group	Solution provider from private sector[1] or research institute as lead with building owner/developer as sponsor/adopter.
Technology Readiness Level	Start TRL: 3 End TRL: 6
Key Milestone	Research/Development phase Testbeding the developed solution in building owner's provided spaces
Funding	Up to 70%, cap at S$1.0M
Project Duration	Up to two years
Desired Outcome	Technologies achieve at least 30% better than current GM 2021 Platinum standards or existing best-in-class solutions, whichever is better.

[1] *Funding for private entities for research projects of total project budget >$500K would be conditional on collaboration with a public research performer*

Product Prototyping

Intent	Support refinement of innovation to be ready for market adoption upon completion.
Target Group	Solution provider from private sector[1] as lead with research institute as collaborator, building owner/developer as sponsor/adopter.
Technology Readiness Level	Start TRL: 5 End TRL: 7
Key Milestone	Research/Development phase Testbeding the developed solution in building owner's provided spaces
Funding	Up to 70%, cap at S$0.5M
Project Duration	Up to one year
Desired Outcome	Technologies achieve at least 25% better than current GM 2021 Platinum standards or existing best-in-class solutions, whichever is better.

[1] *Funding for private entities for research projects of total project budget >$500K would be conditional on collaboration with a public research performer*

Evaluation Criteria for R&I

Energy Efficiency

- R&D: >30% better than GM Platinum standard or current best-in-class technology, whichever is better.
- Prototyping: >25% better than GM Platinum standard or current best-in-class technology, whichever is better.

Scalability

- Ability to ramp up production of technologies and provide after-sale support.
- Potential application of technologies across wider building typologies

Novelty & Innovation

- Game-changing, disruptive technology, not used in SG before.
- Aligned with SLEB Technology Roadmap focus areas
- Improve current practices or setting standards for industry
- Involve research performers in development & verification

Commercial Viability & Cost

- *Potential for commercialisation, IP creation, technology transfer to industry.*
- *Solutions developed are cost effective and ease on maintenance.*

Application and Evaluation Process for R&I

Key Timeline

28 Feb 23	Mar-Apr 23	28 Apr 23	Jun - Jul 23	Aug 23
Launch of Challenge Call	Proposal preparation Consultation between tech providers with building owners New applicants to apply for IGMS account	Close of R&I proposal submission *Proposals are to submitted via IGMS*	Shortlisted applicants will be notified and will be required to present to Project Evaluation Panel for evaluation.	Notification on award of proposal

Step 1 (Lead PI):

- Send an email to BCA_Challenge_Call@bca.gov.sg with the following details:
  - Subject: *Creation of new Company/Institution in IGMS for GBIC 2.0 Thematic Challenge Call for High-rise Commercial Office & Hotel Buildings*
  - Details to include:
    1. Full name of company
    2. Local company or foreign company?
    3. Public company or private company?
    4. UEN or Unique Identifier?

For enquiries pertaining to IGMS system, please email IGMS helpdesk: Helpdesk@researchgrant.gov.sg.

GBIC Demo

Demonstration

Intent	To support shortlisted building to demonstrate innovative energy efficient technologies and solutions to achieve best-in-class building energy efficiency.
Target Group	Consortium led by Environmental Sustainability Design Consultant consisting of system integrator, progressive technology firms and leading research performers.
Technology Readiness Level (TRL)	Start TRL: 7 End TRL: 9
Desired Outcome	1) Energy Efficiency 75% building energy efficiency improvement from 2005 levels. Ie. Target Energy Utilisation Index (EUI) kWh/m²/year • High Rise Office Buildings: **<72** • Hotel Buildings: **<119** 2) Solutions Open to local and overseas technology companies with the following criteria: • Solutions must be *technically feasible* and *commercially viable,* • Ready to scale up for *mass market adoption*

Demonstration Application

Challenge call closing: **29 May 2023**
Notification on outcome: July 2023

Parts	Submission requirements
A	Select the Building Project that your proposal seeks to address
B	Documents required for the organisations involved in the consortium
C	Details of the technology/solutions proposed – describe the technology, how it can be demonstrated (including M&V)
D	How the technology can be scaled up
E	Economic considerations such as CAPEX, OPEX, CBA
F	Commercial viability focusing on size of the market and how to commercialise the IP, as well as plans to go overseas
G	Point of Contact
H	Information on the LEAD – ESD Consultant including simple energy modelling and CBA with CAPEX, payback and M&V

Frequently Asked Questions

Q1: Can I submit more than 1 proposal for each challenge statement?

A1: Yes, but each of the proposals must be different .

Q2: Will my company be able to meet with the building owners issuing the challenge statement?

A2: You may approach the building owners to request and arrange to meet up. The list of building owner contacts will be shared. The Point of Contact emails are avialbe in the Building Information document (Sleb.sg)

Q3: How do I know if my application is shortlisted?

A3: We aim to inform shortlisted participants via email in Jun 23 (for R&I proposals), in Jul 23 (for Demo proposals) with instruction on next steps. However, the timeline may be subject to changes depending on prevailing circumstances.

Q4: What are your policies on intellectual property ("IP") protection and confidentiality obligations?

A4: The participant is solely responsible for the protection of IP rights in his/her/its submission. Once an application is submitted and selected for trial with the corporate (challenge statement owner), the protection of IP rights in the submission shall be privately agreed between the corporate (challenge statement owner) and the participant. If you would like to share IP rights which may contribute to the value proposition of the developed solution, you are advised to obtain appropriate legal advice prior to making any disclosures to the corporate.

Frequently Asked Questions

Q5: What is the funding support for private sector entities?

A5: Tiered funding support levels would apply for private sector entities (up to 30% for all non-Singapore entities ; 50% for Singapore Large Local Enterprises (LLEs); 70% for Singapore Small and Medium-sized Enterprises (SMEs), start-ups and not-for-profits). Funding for private sector entities for research projects (total project budget >$500K) would be conditional on collaboration with a public research performer, to ensure that research funding enables the growth of the public research ecosystem.

Q6: May I request for extension of time to submit my proposal?

A6: You are required to submit your proposal endorsed by your organisation by the given deadline. We will not be able to grant any extension of time for late submissions.

Q7: What are the documents I would need to submit if I am participating in the Demonstration Challenge Call?

A7: Please refer to Annex C for the Application template for the Demonstration Challenge Call for the list of documents to be submitted.

Frequently Asked Questions

Q8: What is the indirect research cost that IHLs are eligible for?

A8: The IDR is 30% for IHL. Please note that the funding support is inclusive of IDR and GST.

Q9: I am interested in forming a consortium for the Demonstration Challenge Call, is there a list of ESD consultants I can approach?

A9: You can refer to the list of consultants registered with SGBC (professional building and environmental consultants)

Q10: I am a global technology firm without any presence in Singapore. Am I allowed to participate in the Challenge Call?

A10: We would advise you to partner with a Singapore company or ESD Consultant if you are interested in participating in the Challenge Call.

Submission

GBIC-R&I – please submit through the Integrated Grant Management System (IGMS) at https://researchgrant.gov.sg/ with the supporting documents by **28 Apr 2023, 2359 hours** (Singapore time).

Demonstration – please submit your proposal via email: BCA_Challenge_Call@bca.gov.sg using the Demo Application template provided in Annex C by **29 May 2023, 2359 hours** (Singapore time).

You are encouraged to approach the building owners issuing the challenge statements to better understand their challenges when preparing for the proposals. Please refer to Annex A for the building owners' contact details.

For more information on the Challenge Call, please visit [NEW] GBIC 2.0 Thematic Challenge Call for High-rise Commercial Office and Hotel Buildings - SLEB

Any question, please write to BCA_Challenge_Call@bca.gov.sg

Q&A

Sharing of Challenge Statements and Building Information by Building Owners

Q&A

Thank you

@BCASingapore

Any other questions, please email to us at BCA_Challenge_Call@bca.gov.sg