FROST & SULLIVAN

Attn. Greg Walker

Continental Automated Buildings Association

1173 Cyrville Road, Suite 210

Ottawa, ON, K1J 7S6

"Intelligent Building Design & Implementation"

CLOSING DATE

Dec 7, 2016

4:00 PM ET

"Technical Proposal"

From:

Frost & Sullivan

7 December 2016

Table of Contents

1 RFP Section 13 – Mandatory Requirements Reference

RFP Reference	Requirement (Bidder's proposal should repeat exactly as defined in the RFP)	Referenced Section/Page In Bidder's Proposal
13.2	Evidence of knowledge and experience of personnel of current theory and practice in the discipline of Intelligent Buildings by providing short relevant biographies of all personnel who it is proposed will participate in the project. The vendor's project leader must have a minimum of 10 years relevant experience.	Pages 12-13; 17-22
13.3	Evidence of previous experience in the discipline of Intelligent Buildings by providing examples of relevant projects prepared for three (3) separate clients within the preceding 48 months. References may be required from these three (3) clients, only if requested by CABA. References are normally not required.	Pages 6-8; 23-29
13.4	A summary of how the vendor proposes to perform the project and the relevant experience of the proposed staff.	Pages 9-11
13.5	Identify size of the sample of both the interviews and surveys	Page 10
13.6	Acceptance of deliverables as identified in the Terms of Reference/Prospectus and proposed schedule.	Certified on Page 4 and further outlined on page 11
13.7	**The vendor must be a member of CABA or agree to become a member of CABA (US$800)** (before the RFP is reviewed).	Already Member of CABA
13.8	**RFP Signature** - Bidders must complete, sign (end of Section 17) and return this RFP form prior to the closing date.	Signed and submitted to CABA
13.9	**Costs must be in $USD.** A fixed price including a full cost breakdown as per Section 16, "Financial Proposal" must be provided.	Provided in $USD
13.10	The Financial Proposal must be submitted as a separate package (PDF document) to the Technical Proposal **(NO FINANCIAL INFORMATION MAY APPEAR IN THE TECHNICAL PROPOSAL).**	Submitted Separately

2 Legal/Certification/Other

Frost & Sullivan hereby provides the following certifications:

CERTIFICATION

I As per the RFP reference point # 9, sub points 9.1 and 9.2 (on page 5 of the RFP), Frost & Sullivan hereby certifies the following:

9.1 We hereby certify that all the information provided in all the attached biographies/resumes, particularly as this information pertains to education achievements, experience and work history, has been verified by us to be true and accurate. Furthermore we hereby certify that, should we be awarded a contract and unless CABA is notified in writing to the contrary, the personnel offered in our proposal shall be available to perform the tasks described herein, as and when required by the project authority. CABA and the Steering Committee must approve all new personnel working on the research that were not listed in the RFP submission.

9.2 We hereby recognize and certify that CABA will be the owner of the final deliverables and that no revenue sharing arrangements on subsequent report sales will be made with the selected consultancy/research vendor.

II Frost & Sullivan confirms acceptance of the deliverables as identified in the Terms of Reference/Prospectus and proposed schedule, as stated in the mandatory requirements of the RFP outlined in Section 13 of the RFP (Please refer to page 9, Section 13 – Mandatory Requirements, Item # 13.6).

III As per the RPF reference point # 1.2 (on page 2 of the RPF), Frost & Sullivan certifies the following:

1.2 a) We hereby offer to sell and/or supply to the Continental Automated Buildings Association (CABA), for terms and conditions set out herein, the supplies and/or services listed herein and/or any attached sheets at the price(s) set out therefore.

1.2 b) We hereby certify that the price quoted is not in excess of the price charged anyone else, including our most favored customer, for like services.

Signature .....
(Authorized Representative of Frost & Sullivan)

Name – Konkana Khaund

Date – 7 December, 2016

This proposal is valid till March 1, 2017 (60 business days from the date of submission).

3 Introduction and Background

The Continental Automated Buildings Association (CABA) is an industry association dedicated to the advancement of intelligent home and building technologies. The Intelligent Building Council (IBC) of CABA has expressed interest to pursue a landmark research project in 2017 titled "Intelligent Building Design & Implementation" to provide the council members and the intelligent building industry stakeholders a comprehensive understanding of the practices, challenges, process influencers and opportunities pertaining to intelligent building design and implementation.

Strategic Imperative and Objectives

The strategic intent and key objectives is to help IBC address the following:

- Evaluate the need and adoption influencers for parametrically justified intelligent building design concepts
- Obtain valuable insights pertaining to the state of the market and hindrance factors that lead to value engineering of core design elements based on cost, lack of knowledge or proven efficiency factors
- Assess the positive and negative influence exerted by various stakeholders in the design and implementation process of intelligent building technologies, and ways to mitigate technical adoption barriers
- Uncover specific opportunities and collaboration techniques that will allow design tools and methods to be incorporated early on in the process
- Address issues pertaining to educational efforts, training, certification and incentives that could positively impact the industry in pursuing intelligent building design and implementation aspects

Intended Outcome

Frost & Sullivan envisages the following as the key outcomes from this landmark research:

- Establish the benefits of adopting proper design and implementation practices that lead to better market adoption of intelligent building products and solutions
- Provide clear understanding of various design processes currently in use and the ways to improve their adoption
- Address issues and challenges propagated by professional end users such as architects, design build consultants, specifiers etc. that delays or eliminates incorporation of intelligent technologies
- Evaluate the role of energy efficiency mandates, utility rebates, building design specification master formats, rating tools and incentives in promoting intelligent designs
- Uncover ways to justify design-backed investments in intelligent buildings to successfully finance projects and prove long term return on investment (ROI)
- Understand interdependencies among the value chain and stakeholder groups of the intelligent building industry, and efforts needed for collaboration to promote design methods and their frequent adoption
- Obtain actionable insights on the complexities associated with making such design concepts a mainstream component of the intelligent building industry

The building technology industry is heterogeneous and fragmented by nature, and some segments of the industry are more open to adopting design practices and technology justification processes than others. Investment metrics, in relation to the efficiencies created by intelligent and integrated building design and implementation concepts, can significantly reduce ongoing operating costs and produce a timely ROI for owners. Winning over end user market segments and key decision influencers, involved in technology procurement and fund allocations in the design, construction and operations process, is often a complex proposition. Frost & Sullivan's experience and perspectives in this highly complex and transitioning world of intelligent buildings will help CABA and the IBC drive strategic thinking and pursue sound recommendations towards addressing the issues, challenges and opportunities associated with this concept.

We are pleased to put forward this proposal to CABA and IBC that will look at the present and predict the future state of the industry as well the challenges and opportunities associated with intelligent building design and implementation processes. This proposal provides a detailed understanding of scope and our suggested methodology to execute the same in order to meet the end goals that CABA and IBC has set out to achieve by undertaking the project.

4 About Frost & Sullivan

Frost & Sullivan, a global research and consulting organization, is uniquely positioned to not only identify growth opportunities but to also empower and inspire our clients to create visionary growth strategies for their future, enabled by our extraordinary depth and breadth of thought leadership, research, tools, events and experience that assist our clients by making their goals into a reality. Our understanding of the interplay between industry convergence, mega trends, technologies and market trends provides our clients with new business models and expansion opportunities. We are organized, positioned and trained to assist our clients in the development of their transformational growth strategies. We work with clients to not only help them survive the present, but adapt and thrive for the future. Our unparalleled breadth of services combines collaborative growth partnership research and consulting, technology and IP solutions, strategy, brand and demand solutions.

Frost & Sullivan's Expertise in Intelligent Buildings

Frost & Sullivan's expertise in intelligent buildings is a result of over two decades of dedicated work in this industry. In keeping with the changing trends Frost & Sullivan's research has always taken a comprehensive view of the intelligent building industry encompassing all key aspects of technology, processes and participants. Our experience confirms that the need for technology upgrades and replacements has been a key driver for increase in integrated design and technology contracting projects in recent times. Numerous services including need assessment for building automation and control system, design and optimization, integration, project management and commissioning often get prioritized based on design plans and audits. The changes witnessed in intelligent buildings are giving way to complex approaches towards vendor procurement - a consultative solution-based approach, where companies play the role of a building technology consultant and collaborate with the facility managers, architects, design build and specification engineers, IT department, and other decision making heads to develop an optimal project design and delivery approach. This further influences the adoption or non adoption of design and implementation tools since technology vendors have to work among a growing ecosystem of stakeholders.

From exploring technology integration prospects, new business models, industry convergence, and initiatives to disseminating though leadership–our experience profile and recognized brand equity gives us a distinct edge.

Sample of Past Experience

Provided below is a representative list of our expertise in the intelligent buildings industry that would directly benefit CABA in working with Frost & Sullivan on this project.

Project	Project Highlights and Outcome
Life Cycle Costing and Intelligent Buildings Client: CABA, IBC, 2013	• The project was undertaken to help CABA and the IBC in their ongoing endeavors in promoting the benefits of life cycle costing (LCC), uncovering pertinent issues around LCC adoption, and to address the complexities associated with making LCC and similar design and cost justification tools a necessary component of the intelligent building industry. • The project revealed the need to logically approve capital investments by making design and specification tools a necessary part of the project flow for intelligent buildings. • Recommendations were made to the industry participants to organize initiatives to work together and create structural frameworks for joint collaboration in technology deployment as well as propagating LCC adoption.
Intelligent Buildings and the Bid Spec Process Client: CABA, IBC, 2012	• The project was undertaken to uncover the issues and complexities associated with bid and spec processes in pursuing intelligent building design and implementation. • The research proved that present bid and spec processes followed in the industry lack transparency, are price driven, and do not offer adequate impetus to the incorporation of intelligent technologies. • It critically examined the role and challenges associated with leading industry design and implementation processes such as bid and spec, design build, and construction management for intelligent buildings. • The recommendations included action items to address immediate needs for industry participants such as organization initiatives to work together and create structural frameworks for joint collaboration in developing design and spec development practices.
Global opportunity evaluation in design specification and partner decision making processes, including business strategy for Americas, Europe and APAC Client: Global leader in building automation, controls and energy efficiency, 2013	• Key challenges for the client was controlling revenue and margin erosions, understanding the specification process and influence in customer decision making exerted by various spec providers, and sustaining continued business with customers for their diversified products. • Frost & Sullivan undertook detailed industry and professional partner market research, to help Client understand the complexities in the design specification model and recommended changes to their existing product and market strategy to align with market requirements. • Recommendations were made on channel partner strategy to be adopted, regional market focus areas, product development efforts as well as positing with building owners, architects and engineering consultants for continued business success.
Evaluation of market opportunities for delivering design consulting, master system integration and continued services on a turnkey basis in regional markets Client: Global Tier 1 supplier in building and lighting controls, 2015	• Frost & Sullivan carried out a market entry planning exercise for the Client that included a review of the opportunity landscape and alignment of client's core competencies with market needs and gaps. • Detailed research in key countries of the Asia Pacific region revealed the market gaps and needs for turnkey technology contracting and service delivery options, which were than prioritized for the Client. Regional market entry plans were drawn up with specific timelines for execution. • Unique modus operandi characterizing the regional markets were analyzed to understand the manner in which Client would need to operate and engage with various channel partners such as contractors, design build firms, building owner/operators and vendors in offering technology implementation and turnkey services.
North America and European market partner strategy for participating in the design and specification process Client: Market and segment leader in lighting equipments and smart controls, 2015	• Client had a need to understand the working processes with various specification partners, including designers, architects, consultants, etc to partner with in their go-to-market strategy. • Frost & Sullivan undertook a detailed market research exercise in European and North American markets to understand the demand for such products, the commercialization prospects, and the ability to introduce the product early on in the design and implementation process of the end user. • Primary research conducted among various decision makers and project influencers provided valuable insights to the process flow and intricacies associated from spec to delivery. • Analysis was conducted on buying behaviors, willingness to pay, etc., and collaboration prospects with various partners were evaluated for the Client.

Sample of Relevant Research Expertise

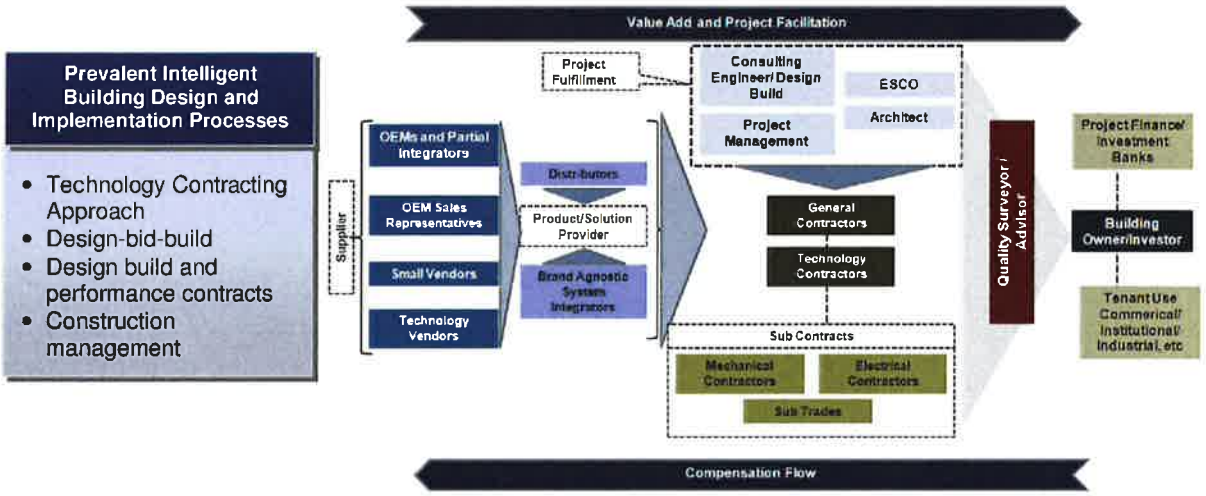
Bright Green Building: Convergence of Green and Intelligent Buildings, CABA, IBC (208)
Intelligent Buildings Roadmap, CABA, IBC, 2011
Analysis of Energy Management and Performance Contracting Services Markets, 2016
Analysis of Building Automation Systems and Services Markets, 2015
Cybersecurity and Intelligent Buildings, 2015
Analysis of Building Installation and Services Market in North America and Europe, 2012
Global Fire and Life Safety Market Analysis, 2014
Smart Buildings IoT enabled Market, 2016
Analysis of Lighting Equipments and Controls Market, 2013
Analysis of Demand Response Market North America for Commercial and Industrial Buildings, 2011
Opportunities for Internet of Things (IoT) in Connected Homes and Buildings, Mar 2015
Technology Convergence with IoT and impact on Urbanization, Construction and Mega Cities, 2016
North American Energy Management Services, 2015
The Future of Lighting – Role of IoT and LaaS in Buildings, 2016

Representative Client List and Our Reach in the Intelligent Buildings Industry

5 Technical Proposal Methodology and Deliverables

Frost & Sullivan will extensively utilize our repository of industry research and databases pertaining to intelligent buildings, energy efficiency, design and installation services and related domains for a good head start on this project. To uncover the underlying trends and issues associated with design processes, cost justification tools and technology contracting approaches Frost & Sullivan will start with key predictions and hypotheses about the concept of design and technology implementation in intelligent buildings that will be tested as part of the research. Additionally, Frost & Sullivan will also reference valuable insights obtained from past important landmark research projects delivered to IBC that strongly advocated the need for adopting intelligent building design and technology implementation approaches for proving the business case for such projects. These aspects are highlighted below.

Intelligent Building Design Approach: Process Flow and Value Add



Examples of Study Hypotheses
Design and spec processes lack robustness and are not transparent for all professional users, which in turn challenges frequent adoption.
Lack of incentives and awareness further prohibits the adoption of systematic design processes for intelligent buildings.
Complexities in design software and issues with reconciling design discrepancies question the credibility of these tools and concepts.
The building owner/operator has little visibility to actual construction/installation costs until design/bid is completed, thus reducing their popularity and leading to frequent change orders.
Design processes often lead to a conflict of interest, with design build/CE, ESCO, and contractors being on the same team.
Technology disruptors such as smart solutions and IoT enabled technology offerings will further impact the design process and interactions among value chain participants.

Scope of Work

The scope of work as understood from the RFP includes the following. Frost & Sullivan acknowledges that the steering committee will have the ability to collaborate on ratifying the scope at the kick-off stage of the study.

Scope Items	Description
Domain Area: Intelligent Buildings comprising new and retrofit projects in North America	This research will encompass elements of Intelligent Building Design which utilizes the latest technologies as described in the RFP Page 15 and to be further developed in collaboration with the steering committee
Topics of coverage (sample list)	As described under the Terms of Reference/Prospectus Item #5 on page 15-16 of the RFP.

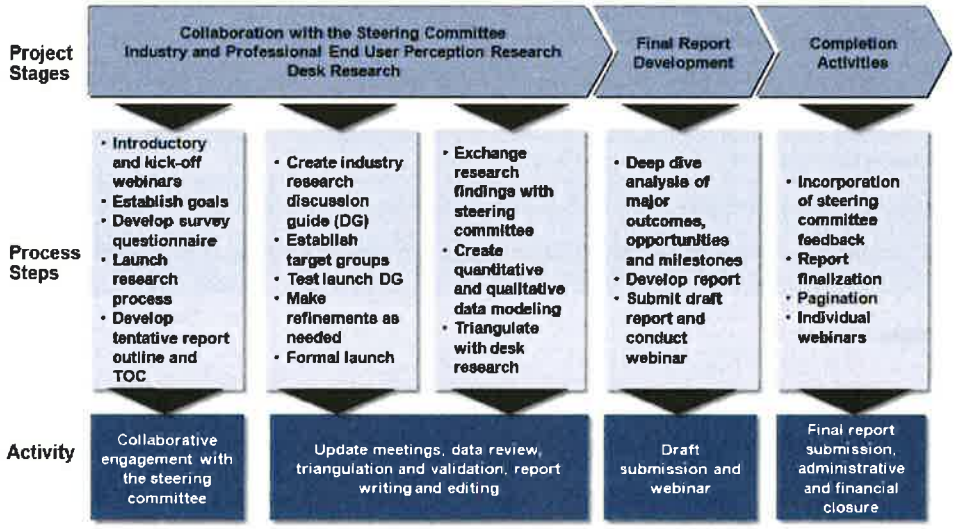
Sample Size, Target Groups and Research Methodology

The exhibit below provides a detailed description of the sample categorization, interview technique and research methodology to be deployed and the target groups to be included in this research.

Item	Component	Description	Target Group Profile	Sample Size	Research Technique
A	**Intelligent Buildings**	Selection of technologically advanced buildings and smart campus projects	Builder Owner, Developer, REIT, Facility Operator	10-15	Analyst Interviews with Project Stakeholders
B	**Intelligent Building Technology Vendors and Service Providers**	Vendors/suppliers of technology solutions such as BAS, HVACR, Lighting, Security, Energy Management, Utility solutions like smart meters, Sensors and Controls, Telecom and Connectivity, Cabling, Wireless solutions, IoT solutions, Managed services, Analytics, Dashboards, Remote monitoring, Could hosted technologies and platforms, End-to-end IoT providers, Ongoing services including M&V, Utilities	Vice Presidents, Directors, Product/Sales Manager, R&D Specialists, CIOs, CTOs, Alliance Partners, Utilities Personnel, Third Party Service Personal in the organization of these vendors and service providers	65-75	Analyst Interviews with Industry Stakeholders
C	**Industry Influencers**	Codes and Standard Development Organizations, Industry Associations, Academic Influencers, Regulators	Technical Committee Heads, University Professors, Government Leaders, Policy Analysts	25-30	Analyst Interviews with Industry Stakeholders
D	**Professional End Users**	General and Mechanical Contractors, Engineering Procurement Companies, Design Build Firms, Architects, Designers, Specifiers, Integrated Service Providers, Energy Performance Contracting Companies, System Integrators, etc.	Consulting Engineers, General Contractor, Master Service Integrator, Technology Contractor, Project Designer, ESCO, Specifiers, Commissioning Agents	650-700	End User Survey by invitation to online panel/forum
Overall Sample Size (A+B+C+D)				750-820	

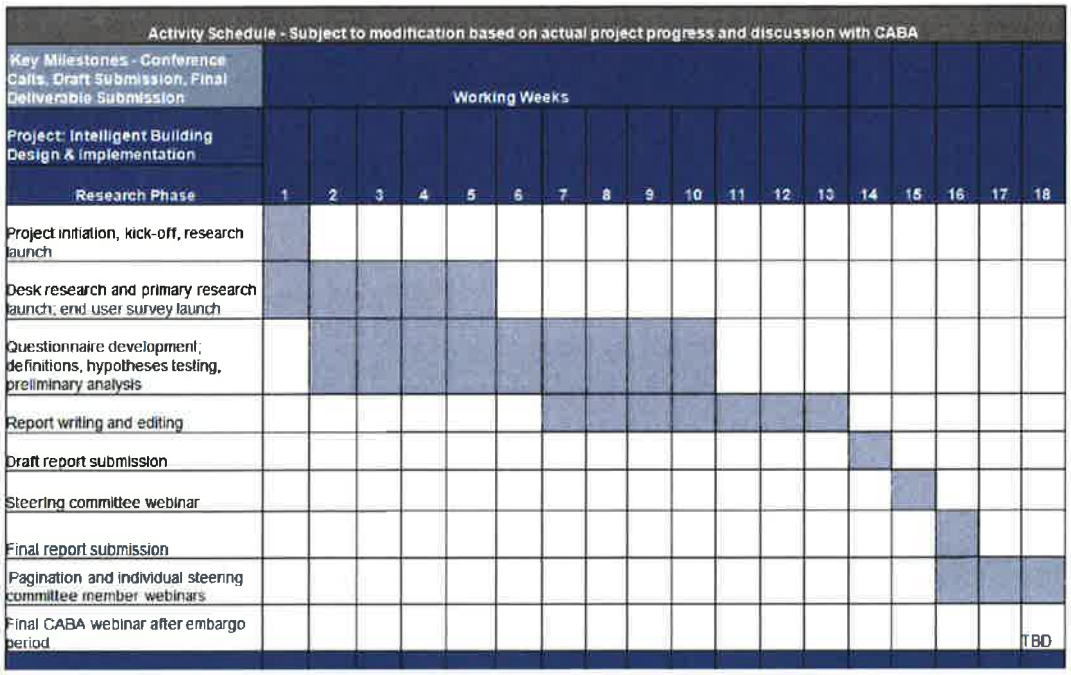
Methodology and Process Flow

The chart to the left explains Frost & Sullivan's complete methodology and process flow to be adopted for this project.



Timeline: Activity Schedule

The proposed timeline for this project is depicted below. Actual milestones may vary based on progress and discussion with CABA and steering committee members. Total time frame is expected to be 18 working weeks.



Deliverables

Frost & Sullivan will provide CABA with the following deliverables and webinars as requested in the RFP. The outline of report and content will be created once the steering committee is formed and the project is formally kicked off.

Reports, Presentations and Data	Webinars
Delivery of five (5) draft documents in a format that CABA will provide, including the following: (1) Full report (Microsoft Word format) (2) Executive summary (Microsoft Word format) (3) Full report presentation (Microsoft PowerPoint format) (4) Executive summary presentation (Microsoft PowerPoint format (5) Raw Data Delivery of five (5) final documents, including the following: (1) Full report (Microsoft Word and PDF format) (2) Executive summary (Microsoft Word and PDF format) (3) Full report presentation (Microsoft PowerPoint format) (4) Executive summary presentation (Microsoft PowerPoint format) (5) Raw Data	• One (1) introductory webinar (1 hour) for prospective funders • Kick-off webinar (1 hour) to the Steering Committee to outline the research purpose, scope, objectives, approach, and timelines. The webinar will be hosted and recorded, with contact information of attendees to be shared with CABA. • Regular Steering Committee webinar meetings (1 hour) to communicate; progress, preliminary findings, approvals of research methodologies, and next steps. The webinar will be hosted and recorded, with contact information of attendees to be shared with CABA. • Final group webinar (1.5 – 2 hours) will be presented to all the funders after the final documents have been delivered. This webinar will be hosted and recorded and all contact information provided to CABA. • Individual Steering Committee organization webinars (1 hour) for each organization on the Steering Committee, unlimited attendance per organization, to be delivered within one month of final report submission. • CABA Membership Webinar (1 hour on executive summary findings of the research to the CABA membership at the end of the four (4) month embargo period.
• Frost & Sullivan will provide a fully paginated final report to CABA as per CABA's guidelines	

6 Personnel Biographies

Frost & Sullivan proposes the following project team structure and responsibilities for success of this project.

Project Team Organization		Responsibilities (both for CABA and Frost & Sullivan)
Client Project Steering Committee	Frost & Sullivan Roberta Gamble, Partner & VP Konkana Khaund, Principal Consultant	• Provide supervision for the engagement • Approve initiatives • Eliminate roadblocks, facilitate client organization buy-in • Make decisions for engagement progress
Project Lead		
Client Project Steering Committee	Frost & Sullivan Konkana Khaund, Principal Consultant	• Manage day-to-day tasks • Lead creation of deliverables • Monitor progress against plan • Review weekly status
Project Team		
Client Project Steering Committee	Frost & Sullivan Core team Konkana Khaund, Principal Consultant Romualdo Rodriguez, Consulting Director Lucrecia Gomez, Principal Consultant Vishal Sapru, Principal Consultant Anirudh Bhaskaran, Senior Consultant	• Provide deep industry expertise • Offer strategic insights into project planning and conduct research • Produce deliverables and recommendations

Brief Team Member Profiles

The exhibit below provides brief profile highlights of each team member. Detailed bios are provided in the appendix.

Team Member Credentials	Profile Highlights
Roberta Gamble, Partner & VP Role in this project: Project Supervisor and Quality Assurance Executive	• Over 16 years of consulting experience in energy, homes, buildings and power sectors • Extensively involved in the home and building technology, power and energy sector, with focus on both traditional and alterative solution markets including Smart homes, connected living, smart buildings, IoT, environmental technologies, and converged industry solutions; renewables, in particular solar and wind industry; T&D markets with a focus on smart grid and metering
Konkana Khaund Role in this project: Project Manager and Team Lead	• Over 16 years of experience in research and consulting in home and building technologies, environmental technologies, and urban infrastructure sectors • Extensively involved in smart homes and intelligent building solutions, urban infrastructure development, energy management, Internet-of-Things (IoT) and cybersecurity, building automation and control, smart cities, sustainable solutions, energy efficient technologies and solutions, climate technologies, HVACR and lighting
Romualdo Rodriquez, Consulting Director, Energy & Environment End User Research Group Role in this project: Team Member	• Over 10 years of experience as a quantitative market research and marketing strategy consultant, including hand-on experience on four CABA projects delivered to IBC and CHC • Experience covers consumer and professional industry end user research; brand research – consumer and B2B; advertising and message optimization; product features configuration and pricing optimization; market segmentation and positioning research; predictive modeling; advanced multivariate analysis; choice modeling using various methods (ACBC, CBC, MaxDiff, etc); marketing strategy formulation based on quantitative research insights
Lucrecia Gomez, Principal Consultant Role in this project: Team Member	• More than 14 years of energy and urban infrastructure consulting expertise • Extensive professional experience in the buildings and energy sector, with a focus on technology contracting processes and procurement evaluations; controls, automation, lighting, HVACR and performance contracting; generator sets and other distributed generation solutions; renewables (wind, solar, biomass); fuel cells (stationary, portable)
Vishal Sapru, Principal Consultant Role in this project: Team Member	• Over 17 years of consulting and research experience in energy, environment and building technology sectors • Experience covers a broad range of markets with a specific focus on energy management in buildings and industry, power systems, leveraging long-standing working relationships with leading industry participants • Managed several high value engagements in energy efficiency and alternate energy solution related areas including: performance contracting markets, power quality, power supplies, backup power, batteries, energy Storage, alternative and renewable energy projects pertaining to commercial and industrial facilities
Anirudh Bhaskaran, Senior Consultant Role in this project: Team Member	• Over 8 years of industry expertise, which include research and consulting • Experience in the homes and buildings sector with primary focus on HVACR, building controls and automation, lighting and energy efficiency; energy services and performance contracting; building and homes energy management; smart and connected Homes • Proficient in statistical quantitative modeling and projections