SUSTAINABLE ENERGY BUSINESS DISTRICTS

Enabling Clean Energy Deployment for Cities in China

Clean Energy Deployment Resource Guide Series

LOCAL GOVERNMENTS

Local governments have the unique ability to support and influence the deployment of clean energy solutions in their communities. This is especially beneficial when there are discrepancies between national- and local-level sustainability goals and resources. By leveraging public-private partnership models and collaborative approaches to clean energy technology deployment, public agencies and district-level organizations can help create and expand local markets for building efficiency and renewable energy technologies.

Despite well-intentioned efforts to advance clean energy in cities and countries across the world, tangible project activity in the commercial building sector has been slow to move past high-level policies and pilot programs. Some regulatory mandates exist, but there is often a major disconnect between national goals and on-the-ground implementation. Furthermore, the lack of technical expertise, resources, and focus, combined with a multitude of competing priorities, is limiting the impact that policymakers have been able to achieve thus far.

Clean Energy Aggregation Models Can Accelerate Carbon Reductions

This resource guide is intended to provide local governments and their communities with an integrated business model that leverages public-private partnerships to accelerate distributed clean energy project activity in the commercial building sector and achieve energy and climate goals.

DISTRICT-LEVEL APPROACH TO ENERGY AND CARBON REDUCTIONS

Citywide clean energy programs managed by government agencies are often ineffective at realizing their full potential due to the inability to adapt to shifting markets or having too broad of a scope. On the other hand, project development at the individual commercial building level lacks the scale necessary to achieve meaningful cost reductions. The Sustainable Energy Business Districts (SEBIZ) project team successfully piloted an alternative approach by working with leadership organizations at the district-level in China to aggregate clean energy project opportunities across a portfolio of commercial buildings.

COMMON CHALLENGES

The following challenges were identified through the SEBIZ demonstration project in China:

- Lack of awareness among building owners of their buildings' clean energy potential and the benefits that could be obtained through energy retrofits and upgrades.
- Standardized and transparent procurement processes, such as RFQs and RFPs, are not common in the industry vendors identify qualified vendors for retrofit projects.
- Business owners are unable to effectively position their companies to benefit from the sustainability aspects of clean energy upgrades, such as marketing the greening of operations.
- Buyers and vendors were initially uncertain about the value proposition offered by the third-party independent facilitator, but the support of the partner organization and U.S. Department of Energy reinforced the credibility of this role.

BENEFITS & OPPORTUNITIES

The aggregated approach to project development offers the following benefits and opportunities for participants:

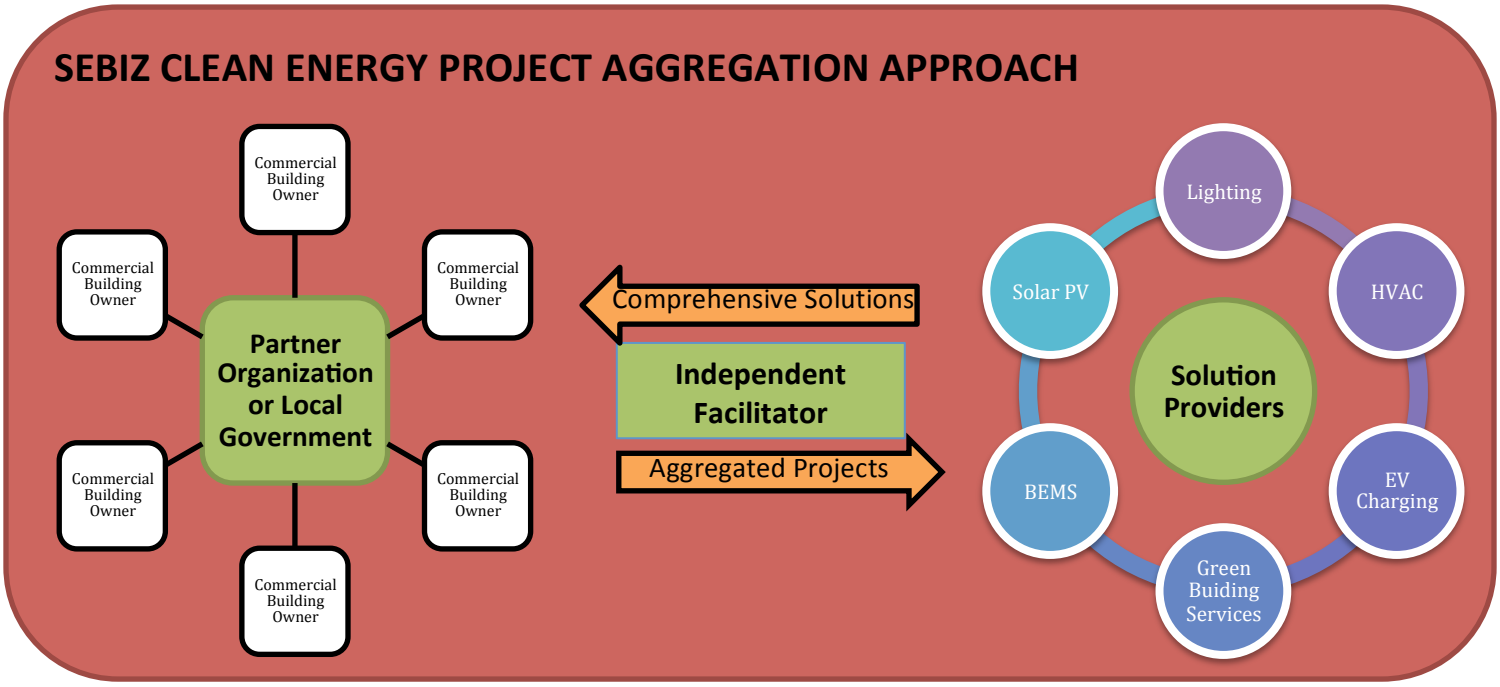
- Participants can achieve clean energy goals faster while stimulating economic activity and job creation for the local economy.
- Project aggregation leverages economies of scale and reduces transaction costs to improve project economics for buyers and sellers. Simplification of clean energy retrofit and upgrade process encourages commercial building owners to take action.
- Reduced time and costs for solution providers associated with customer acquisition.
- Opportunities for participant recognition and branding when multiple commercial building owners opt-in to an organized program.
- Partner organization and independent facilitator provide reassurance to all stakeholders that the process and transactions are fair and transparent.

KEY ACTORS AND STAKEHOLDERS

The success of this model depends in large part on three main stakeholder groups, as described below.

PARTNER ORGANIZATION

The partner could be a district-level organization or a local government that can effectively support the recruitment of individual commercial building owners to participate. Alternatively, this organization could be a corporate entity with a portfolio of buildings. In the case of SEBIZ, the Wujin National Hi-Tech Industrial Zone in Changzhou and China Development Orient in Beijing served as the partner organizations.



As an industrial zone administrative committee and a real estate developer, respectively, they provided the stakeholder engagement necessary to recruit participants and encourage active involvement. Participation of commercial building owners is essential in order to aggregate potential clean energy upgrades and retrofit projects across the buying group's building portfolio.

INDEPENDENT FACILITATOR

The facilitator provides independent technical expertise and project management capacity to ensure successful implementation. The primary function of the facilitator is to establish and strengthen the stakeholder network throughout the project lifecycle. The work scope for this role can vary depending on available resources and the desired level of involvement from the stakeholder group. Energy audits and procurement management could be performed by the partner organization or these tasks could be the responsibility of the facilitator. In the case of SEBIZ, Optony Inc. served as the independent facilitator and provided project management capacity, led the stakeholder engagement effort, performed energy audits, identified and pre-screened project opportunities, established a group of qualified solution providers through an open RFQ process, and facilitated buyers-vendor matchmaking.

SOLUTION PROVIDERS

Qualified clean energy solution providers bring the actual technology solutions to the aggregated projects, including building envelope retrofit materials, efficient equipment upgrades, and on-site renewable energy generation systems. Through the issuance of a request for qualifications or proposals, pre-qualified solution providers can help simplify the process of energy retrofits and upgrades for commercial building owners. By leveraging the aggregated approach, building owners receive individual proposals with group pricing that reflect a bulk purchase discount. Ideally, the offers have integrated financing options or an established financing partner in order to overcome the upfront cost hurdle. In the case of SEBIZ, the solution providers were identified through the issuance of a RFQ by the independent facilitator on behalf of the commercial building owners.

"The SEBIZ approach to identifying clean energy project opportunities has provided WIZ with invaluable insight and tangible metrics for the potential scale of energy savings and carbon reductions in our district. The potential for a 31% reduction in electricity usage (16 GWh) and carbon emissions (13,500 tCO_2) would reach nearly twice the energy and carbon intensity reduction targets under the 12th Five Year Plan. As this project factors directly into the achievement of our sustainable development goals, WIZ has already begun helping businesses pursue SEBIZ recommendations."

-Mr. YIN Yimin, Deputy Director
Wujin National Hi-Tech Industrial Zone

Buyer-vendor matchmaking meeting in Wujin, China

The ultimate goal of the SEBIZ program is to help communities achieve environmental goals by reducing energy consumption and associated carbon emissions in the commercial building sector. The model accelerates the deployment of building retrofit projects, equipment upgrades, and on-site renewable energy generation, while expanding business opportunities in global clean energy markets. For more information, visit www.cleanenergyroadmap.com

10-STEP IMPLEMENTATION PROCESS

The following ten steps provide the outline for an integrated approach to distributed clean energy project aggregation from stakeholder engagement to project commissioning:

1. **Recruit Commercial Building Owners to Build Portfolio of Participating Facilities**
2. **Perform Energy Audits and Benchmarking Across Building Portfolio**
3. **Analyze Energy Data and Identify Project Opportunities**
4. **Draft Energy Action Reports With Specific Technology Recommendations**
5. **Issue RFQ on Behalf of Participating Commercial Building Owners**
6. **Identify "Green Team" of Qualified Clean Energy Solution Providers**
7. **Facilitate Buyer-Vendor Matchmaking**
8. **Vendors Perform Follow-Up Site Assessments and Deliver Detailed Proposals**
9. **Commercial Building Owners Select Compelling Offers DeployTechnologies**
10. **Commission Projects to Confirm Energy Reductions and Financial Savings**

1. RECRUIT COMMERCIAL BUILDING OWNERS TO BUILD PORTFOLIO OF PARTICIPATING FACILITIES

- Partnering with district-level organizations unlocks access to their existing network. Ideally, this organization has strong support from the local government to increase effectiveness.
- Working with local partners builds credibility and trust, which can reduce the administrative effort associated with participant recruitment.
- Aggregating a portfolio of facilities to assess for clean energy project opportunities builds scale and increases vendor interest.

2. PERFORM ENERGY AUDITS AND BENCHMARKING ACROSS BUILDING PORTFOLIO

- Energy data collection and benchmarking should be the first step in the evaluation process in order to establish a baseline for quantifying future energy reductions.
- Commercial building energy audits should be performed by independent technical experts in accordance with local guidelines or internationally recognized standards, such as ASHRAE Level 1, 2 or 3. Technical experts may be internal or external.
- The level of energy audit performed will depend on goals of the participants and stakeholders.

3. ANALYZE ENERGY DATA AND IDENTIFY PROJECT OPPORTUNITIES

- Data analysis should follow industry best practices and clearly state reasonable assumptions that come from reputable sources.
- Utilizing online, open-source tools for analysis and modeling can reduce costs and increase transparency.
- Project opportunity identification should be driven by data obtained through the energy audit and data analysis processes, but it should also take into account each participant's goals and factors that will increase the likelihood of taking action.

4. DRAFT ENERGY ACTION REPORTS WITH SPECIFIC TECHNOLOGY RECOMMENDATIONS

- Energy audit and analysis report should clearly present results and actionable recommendations.
- Common project opportunities identified across the building portfolio should be narrowed down to the top three to five options in order to

Business district outside of Shanghai, China

maximize impact and leverage the benefits of project aggregation.

- Distributed project aggregation increases cost-effectiveness by leveraging purchasing power, reducing transaction costs, and alleviating administrative burden.

5. ISSUE RFQ ON BEHALF OF PARTICIPATING COMMERCIAL BUILDING OWNERS

- District-level or partner organization issues a request for qualifications (RFQ) on behalf of all participants to broad group of clean energy solution providers that solicits experience, product/service details and general costs, and financing options.
- Top three to five project opportunities that are common across the building portfolio and likely to be pursued are included in the RFQ.
- Commercial building owners should be consulted to identify which technologies they are most interested in and most likely to pursue.

6. IDENTIFY GROUP OF QUALIFIED CLEAN ENERGY SOLUTION PROVIDERS

- Evaluate vendor RFQ responses using the evaluation criteria included in the RFQ. This process should be transparent, fair, and follow a predetermined methodology.
- Project team, including district-level organization, commercial participants, and technical expert partners, select the most compelling offers for each technology."

7. FACILITATE BUYER-VENDOR MATCHMAKING

- District-level organization arranges and facilitates one-on-one meetings between decision makers from each commercial participant (buyer) and representatives from the solution providers (vendors).
- Solution providers have an opportunity to pitch their clean energy solution package to the buyers and begin developing relationships.

8. VENDORS PERFORM FOLLOW-UP SITE ASSESSMENTS AND DELIVER DETAILED PROPOSALS

- Solution providers request any necessary site visits to collect additional information or confirm scope of opportunities prior to developing proposals.
- Solution providers deliver customized proposals with discounted group pricing to commercial building owners for specific technology solutions.

9. COMMERCIAL BUILDING OWNERS SELECT COMPELLING OFFERS DEPLOY TECHNOLOGIES

- Independent technical experts are available to help commercial building owners make informed decisions on their energy upgrade proposals.
- Decision makers at each participating business select the projects that meet their investment criteria and optimize the energy performance of their facilities and cost savings.

10. COMMISSION PROJECTS TO CONFIRM ENERGY REDUCTIONS AND FINANCIAL SAVINGS

- After new equipment is installed and/or services are performed, a qualified building commissioning agent confirms that projects have been completed according to specifications.
- Data is collected and analyzed to confirm energy reductions and financial savings.
- Partner organizations provide recognition for participants that take action and meet goals.
- Depending on the level of retrofit, commercial building owners may be able to pursue a green building certification.

Commercial energy audit in Wujin, China

ANNUAL IMPACT POTENTIAL

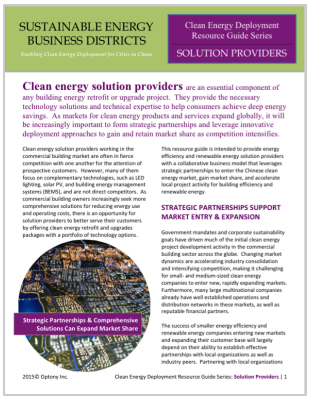
Initial results from the SEBIZ demonstration project in China's Wujin National Hi-Tech Industrial Zone revealed the potential for a 31% reduction in annual commercial building electricity usage via high-impact retrofit projects. The 31% reduction represents 16 million gigawatt-hours, 13,500 tCO_2, and ¥18 million in avoided costs plus incentives.

GETTING STARTED

The SEBIZ model can help local governments meet and exceed their energy and carbon reduction targets, especially when combined with other market enabling policies that support clean energy technology deployment. To implement this model consider starting with the following steps:

1. **Establish local clean energy goals** and explore how SEBIZ approach can provide a cost-effective solution to goal achievement.
2. **Appoint independent facilitator** that will be responsible for program implementation and accountable for goal achievement.
3. **Convene stakeholders** to determine project scope, set goals, and develop a work plan. Include representatives from state/province and national level government agencies.
4. **Provide training resources** to local government staff and clean energy industry stakeholders to build capacity for effective support.
5. **Create an outreach program** to recruit commercial building owners to participate.

For other resource guides in this series about the SEBIZ model and approach to project aggregation, visit www.cleanenergyroadmap.com/about/sebiz.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SOLUTION PROVIDERS

Clean energy solution providers are an essential component of any building energy retrofit or upgrade project. They provide the necessary technology solutions and technical expertise to help consumers achieve deep energy savings. As markets for clean energy products and services expand globally, it will be increasingly important to form strategic partnerships and leverage innovative deployment approaches to gain and retain market share as competition intensifies.

Clean energy solution providers working in the commercial building market are often in fierce competition with one another for the attention of prospective customers. However, many of them focus on complementary technologies, such as LED lighting, solar PV, and building energy management systems (BEMS), and are not direct competitors. As commercial building owners increasingly seek more comprehensive solutions for reducing energy use and operating costs, there is an opportunity for solution providers to better serve their customers by offering clean energy retrofit and upgrades packages with a portfolio of technology options.

Strategic Partnerships & Comprehensive Solutions Can Expand Market Share

This resource guide is intended to provide energy efficiency and renewable energy solution providers with a collaborative business model that leverages strategic partnerships to enter the Chinese clean energy market, gain market share, and accelerate local project activity for building efficiency and renewable energy.

STRATEGIC PARTNERSHIPS SUPPORT MARKET ENTRY & EXPANSION

Government mandates and corporate sustainability goals have driven much of the initial clean energy project development activity in the commercial building sector across the globe. Changing market dynamics are accelerating industry consolidation and intensifying competition, making it challenging for small- and medium-sized clean energy companies to enter new, rapidly expanding markets. Furthermore, many large multinational companies already have well established operations and distribution networks in these markets, as well as reputable financial partners.

The success of smaller energy efficiency and renewable energy companies entering new markets and expanding their customer base will largely depend on their ability to establish effective partnerships with local organizations as well as industry peers. Partnering with local organizations

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COMMERCIAL BUILDINGS

Commercial building owners are well positioned to take advantage of sharp price declines and new financing models for clean energy technologies to reduce operating costs and their environmental impact. This is especially true for property owners with multiple buildings in their portfolio. By taking a group purchase approach to project development, commercial building owners and commercial tenants can install advanced energy efficiency and renewable energy technologies more cost-effectively than ever before.

Falling prices for increasingly mature clean energy technologies and new innovations in financing have led to a surge in demand for cost-effective clean energy solutions. While early adopters have been government agencies and large corporations, there are a great number of small- to medium size commercial buildings worldwide that stand to benefit from clean energy upgrades. Energy performance contracting and other new financing models help avoid up-front costs for building equipment and renewable energy systems and can ensure immediate paybacks in many instances.

This resource guide is intended to provide commercial building owners and commercial tenants with an integrated approach to reducing the energy usage and environmental impact of their facilities by leveraging aggregated upgrades and innovative financing models for high-performance energy efficiency and renewable energy technologies.

PUBLIC- & PRIVATE-SECTOR COLLABORATION OPPORTUNITIES

It's well documented that buying in bulk saves time and money. This is true for small and large purchases, and across the commercial, industrial, and government sectors. The aggregated approach to building energy upgrades unlocks the power of group purchasing for commercial building owners that own multiple facilities, or combines the collective purchasing and negotiating power of a group of individual facility owners. Aggregating clean energy projects allows a consortium of building owners to reduce costs, avoid duplicating administrative time, simplify processes, and achieve energy and carbon goals faster.

Aggregated Energy Upgrades Across Building Portfolios Save Time & Money

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Optony is a global research and consulting firm focused on enabling government and commercial organizations to bridge the gap between clean energy goals and real-world results. Leveraging our independence, domain expertise and unique market position, our clients are empowered to make informed decisions that reduce risk, optimize operations, and deliver the greatest long-term return on their investments. www.cleanenergyroadmap.com

SEBIZ is funded through a grant from the US Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE). EERE's International program accelerates the speed and scale of clean energy deployment through international collaboration with strategic partners. www.energy.gov