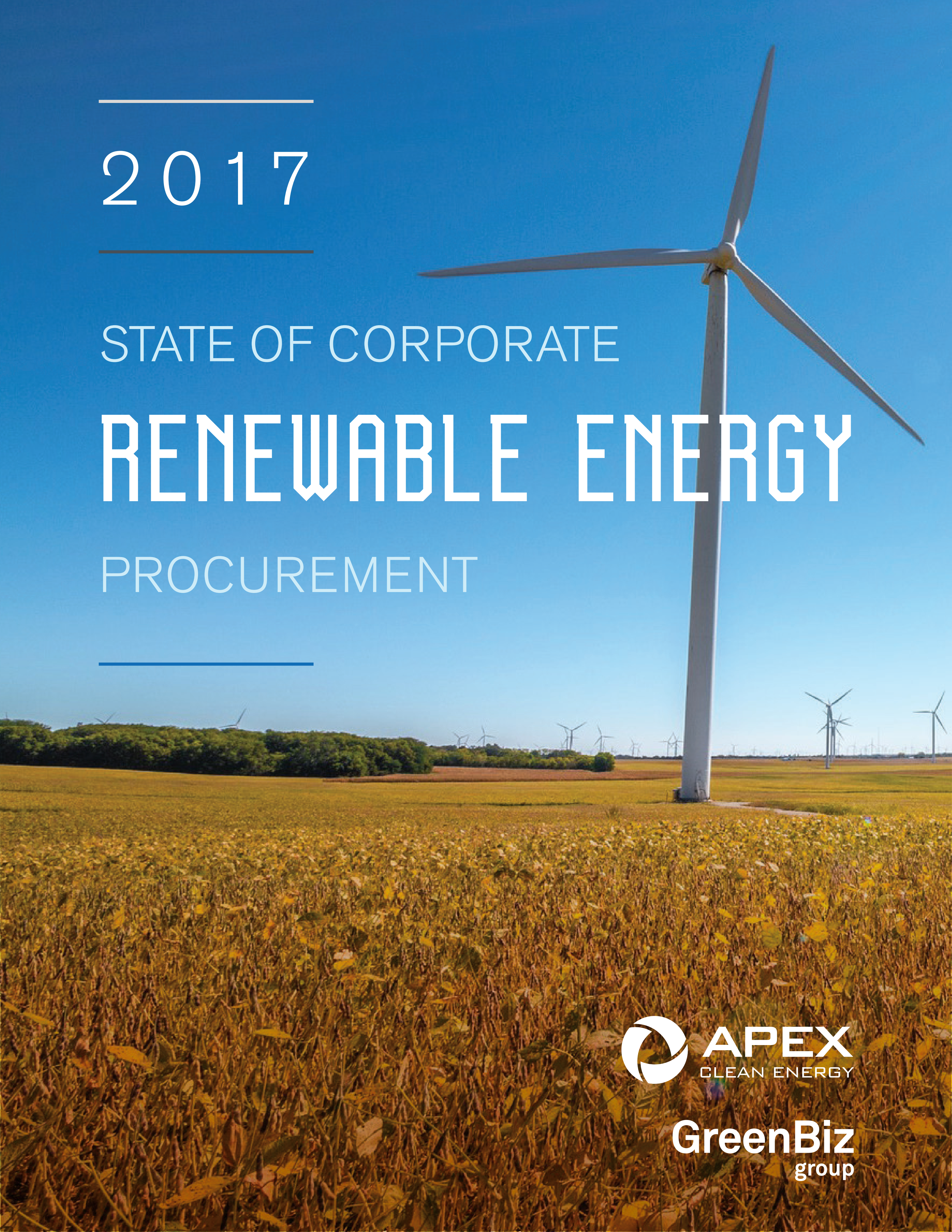


2017

STATE OF CORPORATE RENEWABLE ENERGY PROCUREMENT

APEX CLEAN ENERGY

GreenBiz group

EXECUTIVE SUMMARY

Apex Clean Energy and GreenBiz are pleased to provide an in-depth study of the state of direct renewable energy purchasing, with insights on why and how corporates buy renewables, and strategies to increase renewable energy project development. The intent of this report is to help corporate sustainability, energy and finance executives from Fortune 500 companies – and beyond – to plan and access renewable energy at an increased pace and scale.

Renewable energy resources such as wind and solar power are no longer just ways to meet sustainability goals. Corporate buyers increasingly seek renewables as cost-competitive sources of new power generation that offer a hedge against price volatility from traditional energy sources. More opportunities to buy and finance clean energy exist than ever before, allowing buyers to purchase on their terms and harness internal expertise they already possess.

Apex Clean Energy partnered with GreenBiz to conduct an analysis of current and future corporate renewable energy activities, determine the outlook on the market, and identify procurement strategies and resources that corporates can use to help scale new projects and reach beyond onsite generation and purchasing of Renewable Energy Credits (RECs).

We conducted a web-based survey of 153 large corporate buyers (public and private) each with an annual revenue of greater than $250 million. Of those surveyed, 128 (or 84 percent) are actively pursuing or considering purchasing renewable energy over the next five to ten years. For more detailed insights, we then performed 12 phone-based interviews with a cross-section of leaders in corporate energy purchasing.

FIVE KEY FINDINGS

1. **Undaunted: 84 Percent of All Respondents Plan to Actively Pursue or Consider Directly Buying Clean Energy**
   - Most large corporates plan to be active in the renewable energy (RE) market over the next five to 10 years (84 percent) and 43 percent plan to be more aggressive in the next 24 months – led by retail (70 percent), technology (60 percent) and healthcare (54 percent).
2. **Corporate Renewable Energy Goals Matter**
   - Most corporates have RE targets (57 percent), and the primary drivers focus on addressing energy and emissions goals (70 percent) and demonstrating corporate leadership (65 percent).
3. **Economics Are Converting Sustainability Goals Into Purchases**
   - At 65 percent, price was the clear leading criteria among the drivers of corporate buying decisions, with value coming in a distant second (34 percent).
4. **As Market Matures, So Do Strategic Approaches to Achieving RE Goals**
   - It's no longer a mostly REC world. As the economics of clean energy become more compelling, corporates are leveraging new transaction methods including project aggregation and utility green tariffs.
5. **Accelerated Market Education Can Help Non-Active Corporates Overcome Market Barriers**
   - Most barriers cited by corporates not yet actively purchasing renewables were focused on internal coordination, indicating a need for greater market awareness.

INTRODUCTION

Bloomberg New Energy Finance's (BNEF) *New Energy Outlook 2017* found that corporate Power Purchase Agreements (PPAs) saw a record year in 2015, with a total of 3.7 gigawatts (GW) purchased. BNEF's report calls out the 50 "first-movers," a cross-section of U.S.-based companies that have committed aggressively to purchasing renewable energy. While these early adopter companies have been vigorous in their pursuit of renewable energy, their combined footprint of non-renewable sources remains an estimated five times greater.

This discrepancy between the early adopters and others was highlighted as the "green-energy gap" in May by the *Wall Street Journal.* It described the disparity between large corporations investing millions of dollars in wind energy, with companies outside the Fortune 100 slower to act. Some barriers are starting to shrink based on declining project costs, the continuation of the federal ITC and PTC tax credits and new innovations in project financing.

As corporate energy buyers gain momentum, a number of initiatives can help them share best practices and leverage resources to better understand renewables markets and strategies. For example, the Renewable Energy Buyer's Alliance (REBA) coalition of four non-governmental organizations aims to help facilitate and deploy 60 gigawatts of new corporate renewable energy in the United States by 2025. Separately, RE100 brings together more than 100 influential businesses committed to 100 percent renewable electricity.

A June 2016 PwC report, *"Corporate Renewable Energy Procurement Survey Insights,"* found a strong majority of corporate respondents actively pursuing renewable energy procurement. Most respondents were more inclined to continue purchasing renewable energy, identified that goals were the primary driver, and projected continued growth in the market through a variety of transaction types.

While the financial return of clean energy investments is increasingly compelling to corporate buyers, internal business commitments are a primary reason they looked at clean energy in the first place. In other words, internal goals are catalyzing purchase considerations. And more corporates are committing to renewable energy targets. According to *"The Path Forward 3.0: How the Largest US Companies Are Capturing Business Value While Addressing Climate Change,"* 53 companies in the Fortune 500 have set targets to buy or invest in renewable energy. Of the companies with a 100 percent renewable energy target, 14 (61 percent) are in the Fortune 100, four in the Fortune 101 to 200, three in the Fortune 201 to 300, two in the Fortune 301 to 400 and none in the final quintile.

We set out to build on prior studies of the growing wave of corporate renewable energy purchasing to provide a more detailed and updated market overview, and dig deeply into what is motivating buyers.

1. UNDAUNTED: 84 PERCENT OF ALL RESPONDENTS PLAN TO ACTIVELY PURSUE OR CONSIDER DIRECTLY BUYING RENEWABLE ENERGY

The large majority of companies surveyed (128 of 153 - or 84 percent) plan to actively pursue or consider directly purchasing renewable energy over the next five to 10 years.

Count of Large Corporates Actively Pursuing/Considering RE in the Next 5 to 10 Years (n=153)

84 percent of large corporates are actively pursuing or considering purchasing renewable energy over the next five to ten years (n=153)

CORPORATES MOVING FORWARD POST-PARIS AGREEMENT

When asked about their outlook on climate-related initiatives, given President Trump's decision to with-draw from the Paris Agreement, the large majority (87 percent) among the 128 respondents actively involved in energy buying said they were not impacted. In addition, 11 percent indicated they were more inclined to purchase renewable energy. Only one respondent indicated being less inclined to purchase renewable energy.

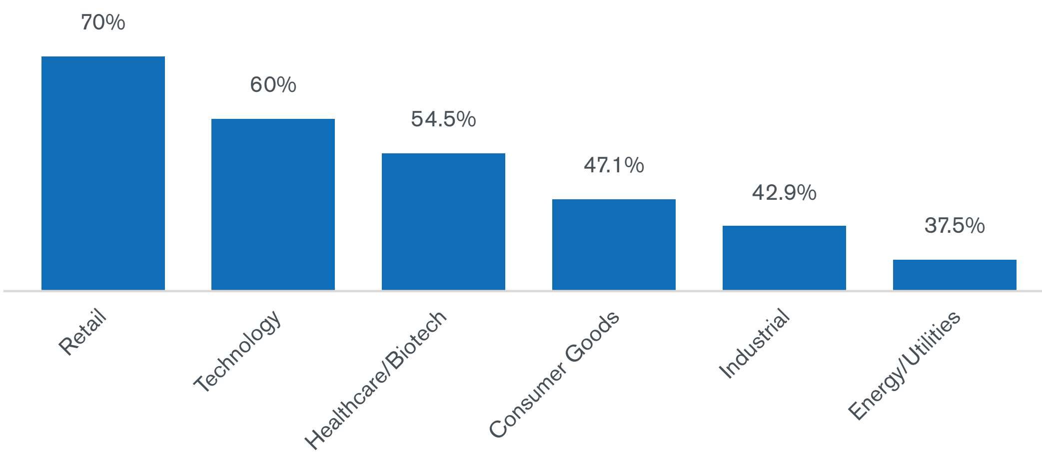
"Our strategy has not changed at all – and we've been pretty aggressive in the past. We are going full force with that."

– Senior Sustainability Manager at a mid-sized technology company

Furthermore, when asked, "How will your company's strategy for RE procurement likely change over the next 24 months?" a full 127 out of 128 (or 99 percent) of respondents were positive about either continuing forward or becoming more aggressive in attempts to purchase renewables.

The responses from industries more likely to become the most aggressive over the next 24 months include retail (70 percent likely to become more aggressive), technology (60 percent), healthcare (54 percent), consumer goods (47 percent) and industrial (43 percent).

% of Corporates Likely to Become More Aggressive in Renewables Purchasing Over Next 24 Months (n=128)



Almost every company is either continuing forward or plans to become more aggressive with their renewable purchases – 42 percent indicated they plan to ramp up their efforts.

This sentiment was further substantiated in qualitative surveys by corporate leaders who emphasized the aggressiveness of corporate goal setting, the increasing availability of a variety of renewable resource types, the increasingly broad use of diverse transaction strategies and overall diversification strategy in developing a portfolio approach to renewable energy assets.

"We want to diversify in all the different ways related to these transactions – diversify our generation assets, geography, and terms of agreement."

– Renewable Energy Manager at a large industrial company

2. CORPORATE RENEWABLE ENERGY GOALS MATTER

The majority of corporates have RE targets as part of their sustainability goals (57 percent), but our findings suggest that the positive economics of clean energy are converting those goals into purchases. Price was the top driver among buying decisions (65 percent of respondents).

"The first order of business is to set a corporate renewable energy purchasing goal. Goal setting enables discussions with finance, accounting and treasury departments and provides a forum for gaining leadership support."

– Renewable Energy Manager at a multinational manufacturing company

In fact, our in-depth interviews indicated the growing sense that 100 percent renewables is a viable goal. None of the 11 non-active corporates surveyed chose "Difficult to make the business case" as a primary barrier blocking RE procurement.

INTERNAL GOALS DRIVE PURCHASE CONSIDERATION

Several corporates emphasized the importance of goal setting in terms of getting an internal mandate and creating a channel for an internal champion to make decisions on renewable energy procurement. Fifty-seven percent of large, active corporates we surveyed have established a renewable energy goal. The leading sectors in terms of corporate goal setting included government/NGO (67 percent), technology (65 percent), industrial (60 percent) and retail (60 percent).

In addition, the companies that have established a renewable energy target are more likely (48 percent) to become aggressive than those without targets (35 percent) in renewable energy purchasing over the next 24 months.

100 PERCENT (OR MORE) IS ACHIEVABLE TODAY

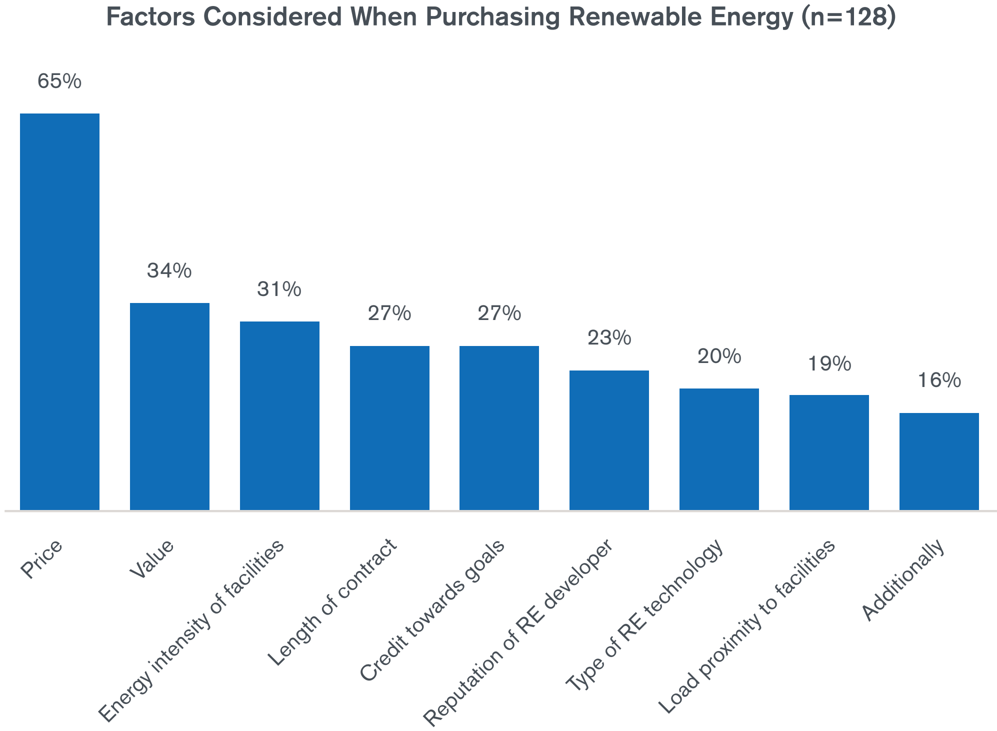
In fact, when asked about the feasibility of a 100 percent renewable energy target, one leader at a multinational manufacturer cited the idea that a 100 percent renewable target is realistically achievable, a major change over the last five years.

"We were able to surpass our 2020 target more than four years ahead of time, so then we took a look and we soon decided that going to 100 percent was doable and gave us a leadership position."

– Renewable Energy Manager at a multinational manufacturing company

3. ECONOMICS ARE CONVERTING SUSTAINABILITY GOALS INTO PURCHASES

When asked about the leading factors considered when making renewable purchases, price was overwhelmingly in the lead (among 65 percent of respondents), followed by value (34 percent) and other non-financial factors.

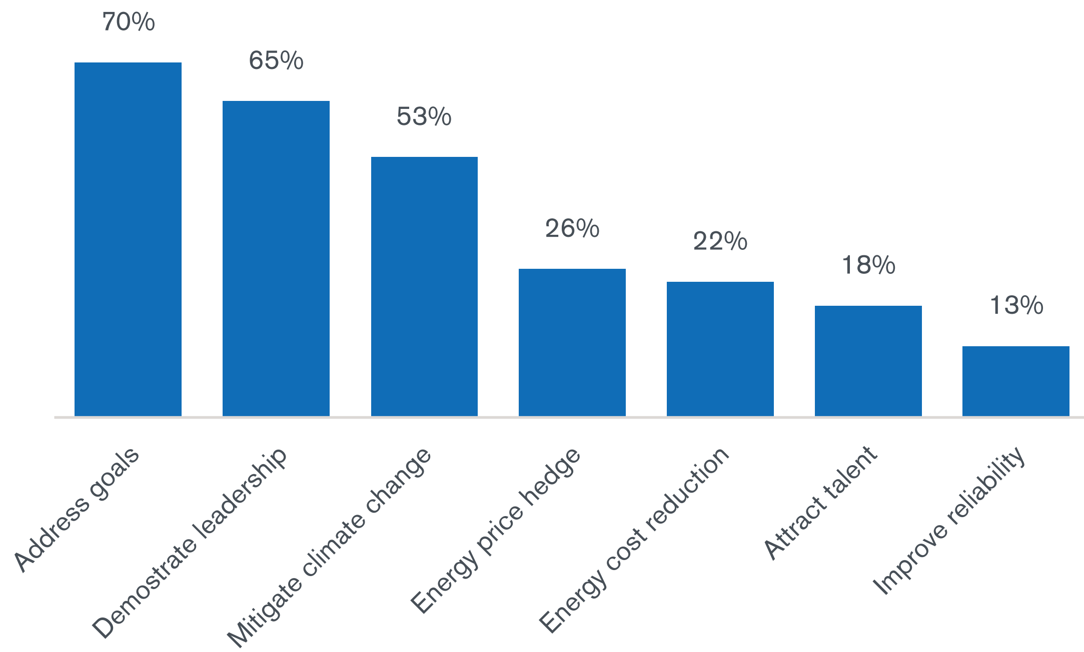


DRIVERS REMAIN FOCUSED ON GOALS AND DEMONSTRATING LEADERSHIP

Despite the focus on price as a decision criteria for RE deals, the data shows that corporates are active in procuring renewable energy primarily to achieve internal goals and demonstrate corporate leadership.

The top drivers for purchasing renewables are to address internal climate goals (70 percent), demonstrate corporate leadership (65 percent) and mitigate climate change (53 percent).

Overall Renewable Purchasing Drivers (n=128)



RENEWABLES AS TALENT RETENTION AND RECRUITMENT – ESPECIALLY IN TECHNOLOGY

Attracting and retaining talent fell to No. 6 on the list of primary drivers. Yet several corporates, especially technology companies (35 percent of which ranked this as a top driver), mentioned the need to compete for talent. Renewable energy can help companies differentiate themselves.

"In the tech industry, we compete on talent and the talent that we see coming out of universities and from other really strong organizations expects us to be leading on renewable energy procurement."

– Sustainability Manager at mid-sized technology company

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4. AS MARKET MATURES, SO DO STRATEGIC APPROACHES TO ACHIEVING RE GOALS

As both the economics of renewable energy and the pool of corporate purchasers have grown, the approaches that corporates are taking to achieve renewable energy goals have diversified.

FOCUS ON ADDITIONALITY – MOVEMENT BEYOND RECS

In the in-depth interviews, a common theme emerged across sectors around the maturation of the bundled and unbundled Renewable Energy Credit (REC) market. According to the U.S. EPA, a REC is "the legal instrument that conveys to its owner, the right to claim the associated environmental attributes of its generating resource – in essence a REC represents the 'renewableness' of the power."

However, numerous respondents, including at three technology companies, three manufacturers and a major bank, indicated that they are moving beyond purchasing RECs as a strategy due to the lack of “additionality.” These corporate leaders expressed skepticism that REC purchases were driving new renewable energy capacity and creating real-world GHG reductions.

“We went from no renewable energy to purchasing 100 percent through bundled RECs. I remember having a conversation with the CEO, who had no clue what we had just agreed to do – but he wrote a $5 million check to buy RECs to offset our global footprint.”

– Chief Sustainability Officer describing an experience at a previous technology company

IMPROVING ECONOMICS LEADS TO NEW MARKET EXPANSION

As the market continues to mature for renewable projects, the prices continue to decline. One renewable energy manager at a multinational manufacturer cited the reduction in costs for a solar project from $9 per watt in 2005 to $1.50 per watt in 2017. While previously the project was driven primarily by financial returns, the company now looks beyond ROI at intangible benefits.

“Every deal we’ve done so far has delivered cost-savings on day one.“

– Chief Sustainability Officer at a large consumer goods company

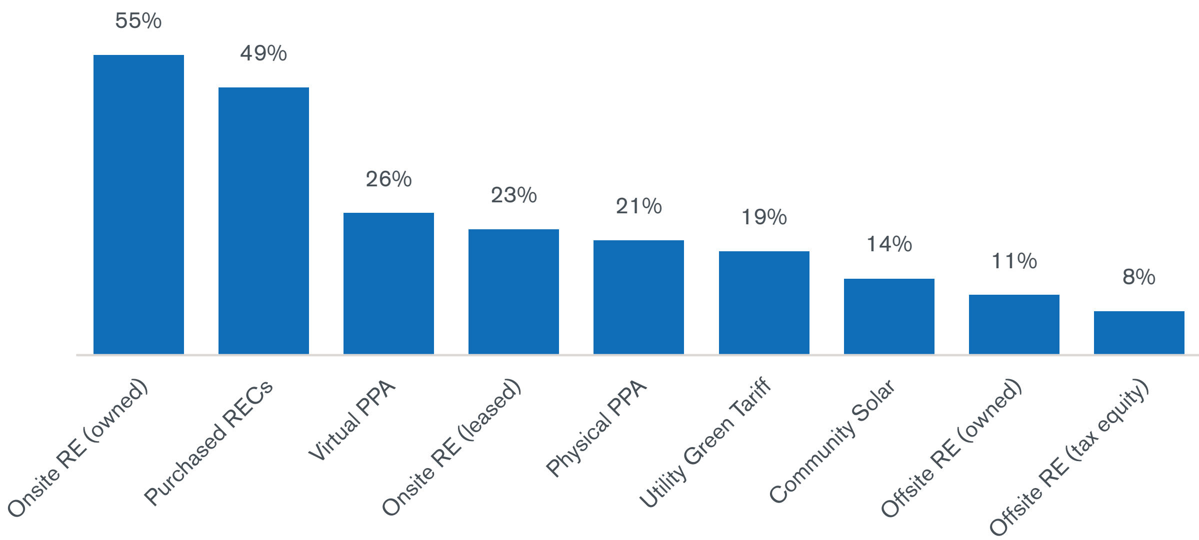
As the economics continue to improve, the risk tolerance, especially within the CFO’s office, continues to expand. In addition, as the capacity to navigate energy markets continues to increase, there is a trend towards developing renewable energy projects near high-energy usage facilities such as data centers and manufacturing sites. These projects are often paired near energy power markets that offer the greatest economic returns for a given project.

In terms of renewable energy resources solar (73 percent) and wind (49 percent) are the most common – but numerous others including combined heat and power (20 percent), biomass (13 percent), geothermal (11 percent), and fuel cells (9 percent) are increasing in popularity.

NEW RISK APPETITE LEADS TO USING NEW APPROACHES

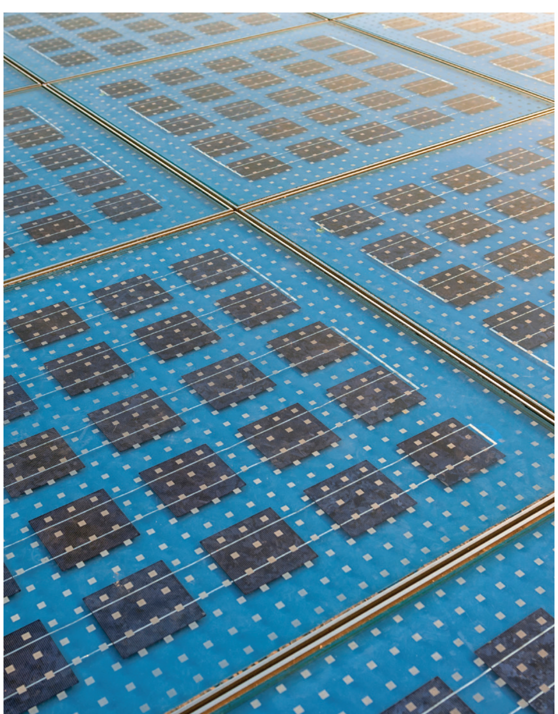
These projects can include physical PPAs adjacent to high energy use facilities. Alternatively, several corporates discussed pursuing virtual PPAs in which corporates enter into long-term agreements to purchase renewables at a different location. These virtual PPAs give corporates geographic flexibility and bring additionality while still offering the ability to address goals and the potential for economic benefits.

Renewable Energy Strategies Used/Considered (n=128)



Onsite, owned projects were the most common (55 percent) followed by REC purchases (49 percent). PPAs including virtual (26 percent) and physical (21 percent) are becoming more common, especially when buying at scale.

Two different renewable energy leaders used the analogy of purchasing renewable energy to investing in the stock market. The strategy includes diversifying in terms of generation assets, geography and term of agreement.



"The strategy to some degree has been no different from how you would invest in stocks. You diversify your portfolio to spread your risk across multiple locations, multiple hubs within the same location, multiple term lengths, and multiple technologies."

– Renewable Energy Manager at a multinational manufacturing company

PROJECT AGGREGATION AND UTILITY GREEN TARIFFS ON THE RISE

In order to capitalize on scale, many companies are looking to renewable energy project aggregation, wherein multiple companies jointly agree to purchase renewables from one larger project. This valuable strategy can leverage shared resources such as legal, finance, procurement and project development.

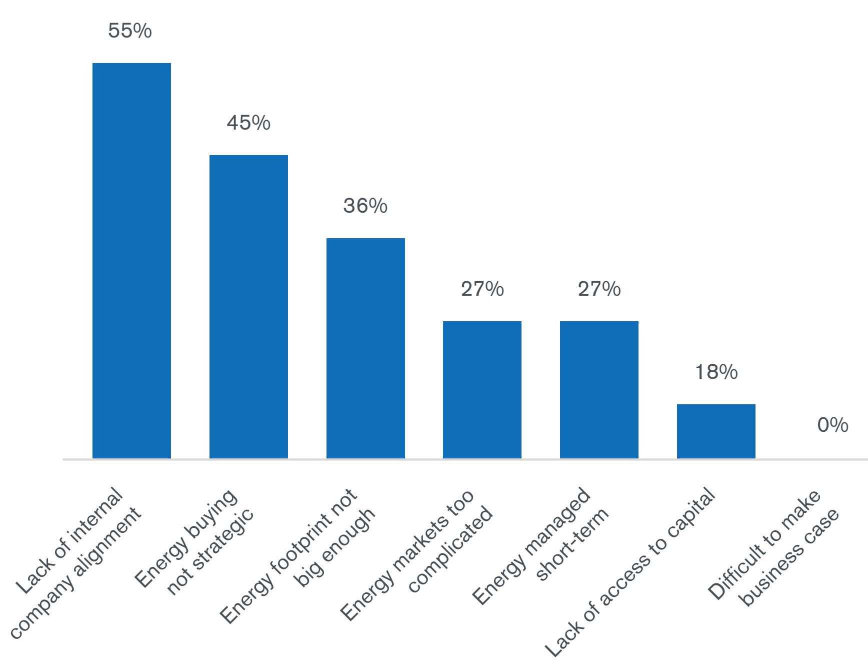
Three companies – a large technology company, a mid-sized technology company and a large multinational manufacturer – cited the potential importance of working with utilities to change their mindsets on the need to partner with large corporates on developing green tariffs to enable more distributed resources such as wind and solar.

5. ACCELERATED MARKET EDUCATION CAN HELP NON-ACTIVE CORPORATES OVERCOME MARKET BARRIERS

Most barriers cited by non-active corporates were non-financial and were anchored in long-term strategic concerns, all of which have answers in today's markets.

Among the 11 respondents not actively involved in energy buying, the top barriers focused on the lack of internal company alignment and of energy buying as a strategic corporate initiative. These surpassed other barriers such as complex energy markets, or economic barriers such as lack of access to capital and difficulty of making the business case.

Top Barriers for Non-Active Corporates (n=11)



The top two barriers are "lack of internal company alignment" and "energy buying is not a strategic initiative" while "lack of access to capital" and "difficulty in making the business case" rank low.

NEED FOR INTERNAL ALIGNMENT AND AN INTEGRATED ENERGY STRATEGY

Several companies spoke of the need to create internal frameworks across departments to facilitate project flow, standardize approval processes, and look beyond project cost as the single driver for project evaluation.

"We've started to connect procurement, sustainability, and engineering as a formal team and are looking at our energy strategy as an integrated program versus everybody doing their own thing and just looking at cost."

– Chief Sustainability Officer from consumer goods company

RENEWABLE ENERGY AS A COMPETITIVE DIFFERENTIATOR

Corporates are starting to think about decarbonization strategies that go beyond looking at their own footprint. One technology company cited the trend of other technology companies, many of which are current customers, making renewable energy a preferable purchasing requirement.

"We saw our biggest customers were making big commitments to buy renewables. And if we could as a supplier present them with carbon-free or low-carbon services, that could be a differentiator for us."

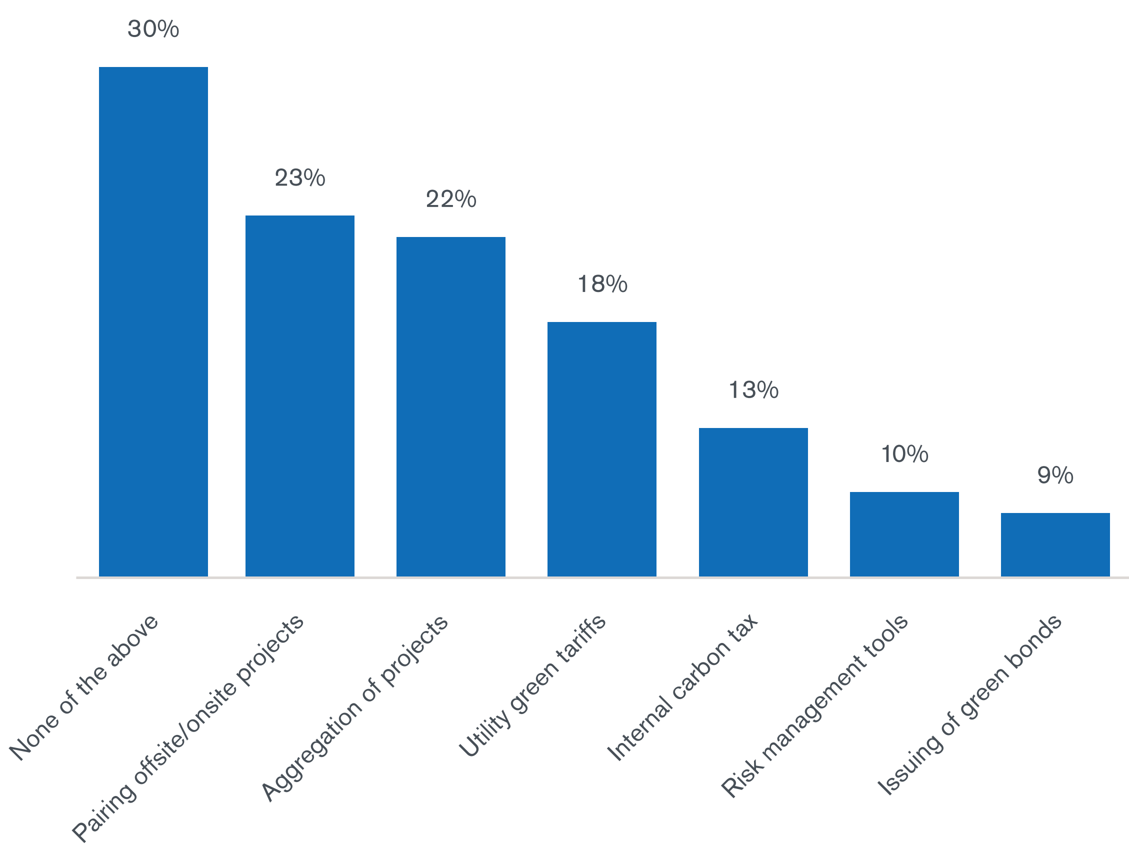
– Senior Director at a mid-sized technology company

FURTHER OPPORTUNITIES FOR MARKET EDUCATION

While the 24-month market outlook remains fairly aggressive, and several corporates cited using strategies such as project aggregation, there is still a relatively low level of awareness of innovative transaction types, including utility green tariffs and issuing of green bonds. The most common strategies include pairing onsite and offsite projects (23 percent), project aggregation (22 percent) and utility green tariffs (18 percent).

The most commonly used innovative transaction type was "none of the above," which indicates an overall lack of market awareness.

Most Commonly Leveraged Purchasing Strategies (n=128)



There are overall low levels of engagement with partners including developers (42 percent), utilities (41 percent), brokers (27 percent), and industry groups/NGOs (23 percent).

THE PATH FORWARD

The renewable energy market is always evolving and likely will continue to do so. As corporates develop more knowledge and capacity for project development, there is a trend towards addressing renewable energy as a portfolio of dynamic energy assets. Corporates increasingly see renewable energy as an opportunity to generate additional revenue, mitigate risks, manage energy costs and differentiate themselves from other companies.

However, while each business is different, corporations considering or actively pursuing renewable energy projects can consider these important takeaways:

- For companies early in the process, engage a diverse set of internal stakeholders including energy management, energy strategy, sustainability, finance and legal – leverage existing frameworks established for goal setting and project evaluation from experience with energy efficiency, onsite PV, purchasing RECs and operational sustainability projects.
- For those further along in the process, consider taking a portfolio approach to projects based on renewable energy resource (such as wind and solar), transaction types and geographic location. Companies can look to partners and can consider financing mechanisms that mitigate risk by leveraging transactions including project aggregation, utility green tariffs and other project development tools.
- Partner with natural conveners including NGO-driven initiatives such as REBA and RE100 that can facilitate best-practice sharing, workshops and valuable tools for scaling projects.

ABOUT THE RESEARCH

This report summarizes results of both quantitative and qualitative research. The quantitative results are based on a survey of the GreenBiz Intelligence Panel, consisting of executives and thought leaders in corporate environmental strategy and performance. For this type of research, panel members participate in brief monthly surveys to provide their expertise and perspective on corporate initiatives, laws and regulations and technology advances shaping corporate sustainability.

"The 2017 State of Corporate Renewable Procurement" presents the findings of an online survey conducted by GreenBiz in July 2017 among a sample of respondents within the GreenBiz Intelligence Panel.

An email link invited the panel's 3,486 members to participate anonymously in the survey. We analyzed the results from 350 respondents in nearly 18 industries. These sub-industries were categorized into 10 primary industries. The "other" industry category included recipients from agriculture, hospitality, transportation and other undefined industries.

The overall response rate was 10 percent. About 67 percent of these respondents are based in the United States. Forty-four percent of respondents are from organizations with revenues greater than $250 million.

It is important to note that the quantitative data in the report reflects the demographic of the GreenBiz panel — respondents represent a broad span of corporate sustainability experience.

The qualitative research consisted of one-on-one phone interviews with active members of the GreenBiz Executive Network, a membership-based, peer-to-peer learning forum for sustainability executives from the world's largest companies (above $1 billion in annual revenue).