Large-Scale Renewables:

The Next Chapter in Higher Education Sustainability Leadership

By Second Nature and CustomerFirst Renewables

CustomerFirst Renewables

Second Nature

Executive Summary

Higher education institutions are uniquely positioned to both expand and benefit from climate leadership. They provide a unique setting to explore innovative carbon reduction strategies, leveraging the driving force of presidents and chancellors, students, faculty, and alumni. Simultaneously, the educational and scientific mission of higher education along with a long-term view on operations helps them gain reputational and financial value from increased climate action.

As ambition to accelerate climate solutions grows in the United States and globally, many universities and colleges have substantially stepped up their commitments and efforts to reduce greenhouse gases (GHG). However, the 'climate gap' toward reaching these commitments is widening, as campuses become more technology and electricity intensive.

Large-scale renewable energy (LSRE) provides higher education institutions with an attractive solution to close this gap and show climate leadership, while reducing long-term electricity cost and managing risk. A growing number of schools are realizing these benefits and achieving breakthroughs on their Climate Leadership Commitments (a program facilitated by Second Nature, a co-author of this report) to lead the fight against climate change.

To inform and inspire others to reduce GHG emissions and pursue LSRE, this white paper presents:

The Opportunity:
Climate Leadership Commitment signatories must become carbon neutral, more resilient, and shift their energy use. LSRE has emerged as a cost savings and risk reduction option, not only a necessary consideration for higher education institutions that are serious about making GHG reductions;

The Challenges:
Capturing the full potential value requires recognizing that the procurement of LSRE is different from business as usual and involves rethinking existing energy procurement paradigms;

Setting up for Success:
Given the magnitude of the opportunity and the challenges of pursuing LSRE, recommendations are shared on how to prepare the ground for LSRE procurement by navigating new procurement paradigms, adopting a visible and well-resourced cross-functional approach, and benefitting from new resources; and

Beginning the LSRE Procurement Journey:
Understanding operating principles applied to higher education institutions, and knowing initial steps to pursue and pitfalls to avoid can be helpful to getting started. The use of a new online tool can facilitate to have an informed conversation about the value proposition of LSRE. Second Nature proposes signatories and others to team up and jointly procure LSRE in a collaborative and aggregated way to open the next chapter in higher education sustainability leadership.

About the Authors

CustomerFirst Renewables (CFR) is an independent advisory services firm that designs and delivers economically attractive, large-scale renewable energy solutions, tailored and optimized to customer needs. CFR works entirely on behalf of institutional and corporate buyers to advise on energy strategy, on- and offsite renewable power procurement and successful organizational implementation.

As the first renewable energy advisory services firm exclusively focused on energy end-users, particularly in the higher education space, CFR has a long track record of assisting customers in developing and executing holistic energy strategies. On the implementation side, CFR focuses on maximizing value for customers by directly sourcing renewable electricity through on- and offsite solutions that provide compelling economics as well as step changes in environmental and strategic impact. With an experienced and international team, we have a 100% success rate for getting projects to operation. CFR is leading the industry in aggregated demand across locations and entities, enabling alliances of buyers with diverse or distributed loads to access the benefits of large-scale renewables.

Learn more: www.customerfirstrewables.com

Second Nature is a Boston based non-profit that works to proactively build a sustainable and positive global future through initiating bold commitments, scaling successful actions, and accelerating innovative solutions among leadership networks in higher education. The Climate Leadership Commitments are a signature program of Second Nature and include a Carbon Commitment (focused on achieving carbon neutrality) a Resilience Commitment (focused on climate adaptation and building community capacity), and a Climate Commitment that integrates both. The Climate Leadership Network comprises more than 600 colleges and universities in every state and the District of Columbia that have committed to take action on climate and prepare students through research and education to solve the challenges of the 21st century.

Learn more: www.secondnature.org

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1.1 Expanding Global Climate Commitments: Higher Education Institutions Showing Leadership

Climate change driven by greenhouse gas pollution is recognized as a defining global challenge of our time. Governments, religious and education institutions, businesses and private citizens are speaking out on the issue. As a global community, we are accelerating efforts to mitigate climate disruption and reduce carbon pollution, including:

- 195 nations reached an agreement at the United Nations Conference on Climate Change (COP 21) in Paris in December 2015 to limit global temperature rise this century to a target of 1.5°C above pre-industrial levels and combat climate change directly.[1] 318 U.S. colleges and universities representing over 4 million students lent their support to global climate action by signing on to the American Campuses Act on Climate (ACAC) initiative of the White House in 2015.

- In January 2017, 225 institutions signed an Open Letter to the new Administration emphasizing their commitment to climate action and support of the Paris Agreement.

- Pope Francis issued 'Laudato Si' in June 2015, the most direct papal response to climate change ever, warning of the grave implications of climate change and calling for the development of new renewable energy sources.

- Many large global businesses – including Google, Microsoft, Procter & Gamble, General Motors and Wal-Mart – are committed to switching to 100 percent renewable power. A growing number of corporations joined initiatives such as 'RE100' or World Wildlife Fund and World Resources Institute's 'Corporate Renewable Energy Buyers Principles.'

Higher education institutions are uniquely situated to act as living laboratories to test solutions and share successes. With a responsibility to educate and mold the leaders of tomorrow, the higher education community has stepped up its commitments to GHG reduction.

Since 2007, Second Nature's Carbon Commitment (formerly the American College & University Presidents' Climate Commitment) has grown from 12 founding universities and an initial signatory group of 280 institutions to about 600 schools in 2017 (~20% of U.S. higher education institutions), yet another clear indication that stakeholders are serious about finding renewable energy solutions. Climate Leadership Commitment signatories publicly announce carbon neutrality goals when creating their Climate Action Plan. As part of a Climate Action Plan, participating campuses are encouraged to make goals for different types of emissions – Scope 1, 2, and 3 emissions.[2] Campuses that signed the Carbon Commitment achieved 47% lower emissions from purchased energy than non-signatories and 27% less energy per square foot consumed than non-signatories.[3]

[1] The agreement entered into force in November 2016, after the threshold for ratification was met of 55 states representing 55% of global emissions.
[2] Scope 1 emissions are produced directly through campus activities. Indirect emissions from electricity purchases are Scope 2 emissions, and Scope 3 emissions result from other indirect emissions such as commuting, student and faculty air travel, and goods and services purchases (supply chain).
[3] UNH / Sightlines, 2016.

1.2 Large-Scale Renewable Energy: The Necessary Next Step to Close the 'Climate Gap' Between Leadership and Reality

Universities and colleges have substantially increased efforts to reduce energy demand, switch fuels or use onsite solar. However, the 'climate gap' is not closing between ambitious climate commitments and the progress needed in reality. Many institutions are now looking for additional ways to meet their goals.

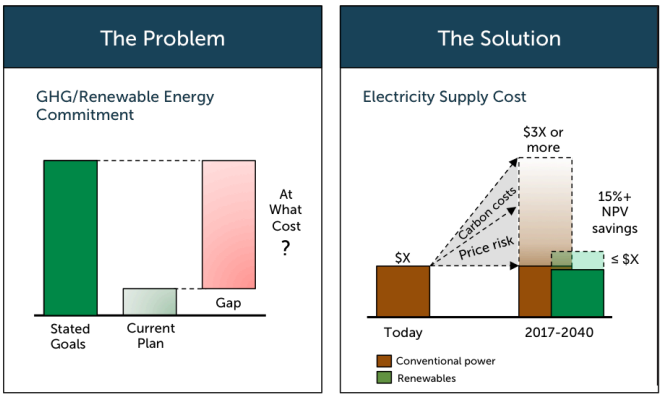
When considering energy use as a main driver for campus GHG emissions, many schools have already captured 'low hanging fruits' by making considerable progress on energy demand reduction and efficiency measures. This includes lighting retrofits, HVAC optimization, control system implementations, and other solutions that reduce campus energy usage. In addition, a number of institutions with onsite cogeneration have shifted fuel sources from coal to natural gas in an attempt to target a key driver of Scope 1 emissions and/or have benefited from their electricity supplier making similar changes in their generation fuel mix (which reduces Scope 2 emissions).

Moreover, numerous campuses have engaged with renewable energy. Second Nature signatories on average generate 1,771,994 kWh/year from onsite renewable generation and purchases. Although these represent another step toward reaching renewable energy goals and should be considered when economically viable, these solutions often do very little to meet total energy demand, can be expensive to procure and provide limited financial return, and do not help significantly meet carbon neutrality goals.

Taken together, demand reduction, fuel switching efforts, and onsite renewables can and have lowered GHG emissions. However, these solutions generally have provided only incremental improvements, and ultimately fall short of enabling changes in the biggest sources of campus GHG emissions – direct emissions from on-campus energy generation and emissions from electricity purchases (Scope 1 and 2). These emissions often represent 50% or more of the total campus GHG footprint.

The 'climate gap' is widening even further as the modern information economy causes campuses to become more energy intensive per square foot. The sources of this increased energy intensity are varied and composed of harder-to-manage footprints, despite the best attempts of facilities and sustainability leaders to control them. Capital and bandwidth constraints have been the predominant barriers hindering higher education sustainability programs adopting new, more comprehensive energy solutions to close the 'climate gap.'

Fig. 1 The 'Climate Gap' - LSRE As Solution



Big objectives, challenging situation (price premium, space, budget, timing)

Up to 100% of electricity usage optimized to your footprint & needs

While demand reduction and energy efficiency will continue playing an important role in higher education's carbon reduction playbook, shifting electricity supply from fossil to renewable sources (decarbonization) is critical to becoming carbon neutral. Historically, the cost/benefit of making this shift has been less attractive because of the capital needed to build new wind or solar farms, and as the renewable energy market was (and still is) inefficient and complex to access.

In an attempt to begin decarbonizing their electricity supply without directly entering the renewable energy market, in the early 2000s, schools began purchasing renewable energy certificates (RECs) for a premium to claim the benefits of renewable energy. If offered, campuses often opted for green pricing programs from their local utility, which adds RECs to the grid power purchase. Recently, however, there has been a push for moving beyond purchasing RECs from existing wind and solar farms, and instead displaying institutional leadership by directly enabling the development of new renewable energy projects. This motivates more and more schools to consider accessing the renewable energy market.

1.3 The Growing Attractiveness of Large-Scale Renewable Energy

With considerable improvements in cost and accessibility, large-scale renewable energy (LSRE) has emerged as a complementary and highly impactful tool to make higher education institutions more sustainable and resilient. For the purposes of this paper, LSRE is defined as renewable energy projects on- and offsite with a capacity exceeding 10 megawatts (MWac).[4]

Schools evaluating LSRE solutions today can benefit from a compelling four-part value proposition:

Cost savings: When procured smartly and competitively, LSRE solutions can provide year-one savings of over 5% and net present value (NPV)[5] savings of 10-20% or more during the life of a 15-25-year contract.

Reduced future price risk: Because they have no fuel costs – the largest source of uncertainty in traditional electricity supply – renewable solutions can mitigate the volatility and future uncertainties associated with electricity prices, reducing risk exposure by more than 80% for fully integrated solutions.

Reduced GHG footprint: Renewables can be located on- or offsite, allowing organizations to reduce Scope 2 emissions by 100%.

Other strategic benefits: Beyond the financial benefits, renewables provide a number of qualitative benefits including student attraction, support and reputation enhancement with students, faculty, staff, alumni and donors, leadership opportunities for the organization, and joint research projects with developers or other partnering organizations.

Two major market forces are driving down LSRE cost and risk, and improving solution benefits over time: 1) continued renewable technology cost improvements, and 2) the extension of historically uncertain federal tax credits. Together, these market drivers enable more attractive NPV and year-one cost savings, while also mitigating future prices risks associated with conventional power procured on a short-term basis.

Fig. 2 Large-Scale Renewable Energy (LSRE)[6]

a) Continued renewable technology cost improvements: Economies of scale in manufacturing, transportation, site preparation, installation, and operations continue to drive down the lifetime costs of renewable solutions. Technological improvements make renewable resources more efficient, providing more output from the project and further driving down per unit costs.[7] As an example, the total installed cost of utility-scale solar fell 70% over the last ten years,[8] while the capacity-weighted average installed cost of wind power dropped 27% from 2009-2013.[9]

b) Extension of historically uncertain federal tax credits: Since their inception in 2002, the Investment Tax Credit (ITC) for solar and the Production Tax Credit (PTC) for wind have incentivized renewable energy development through substantial financial benefits (covering 30% or more of initial project cost) but have also created ambiguity about future development due to the programs' short term life. However, in December 2015, both chambers of Congress passed legislation, signed into law by President Obama immediately after, providing for a 7-year ITC and a 5-year PTC ramp-down, giving long-term clarity to renewable energy developers looking to incorporate the credits into project finance calculations.

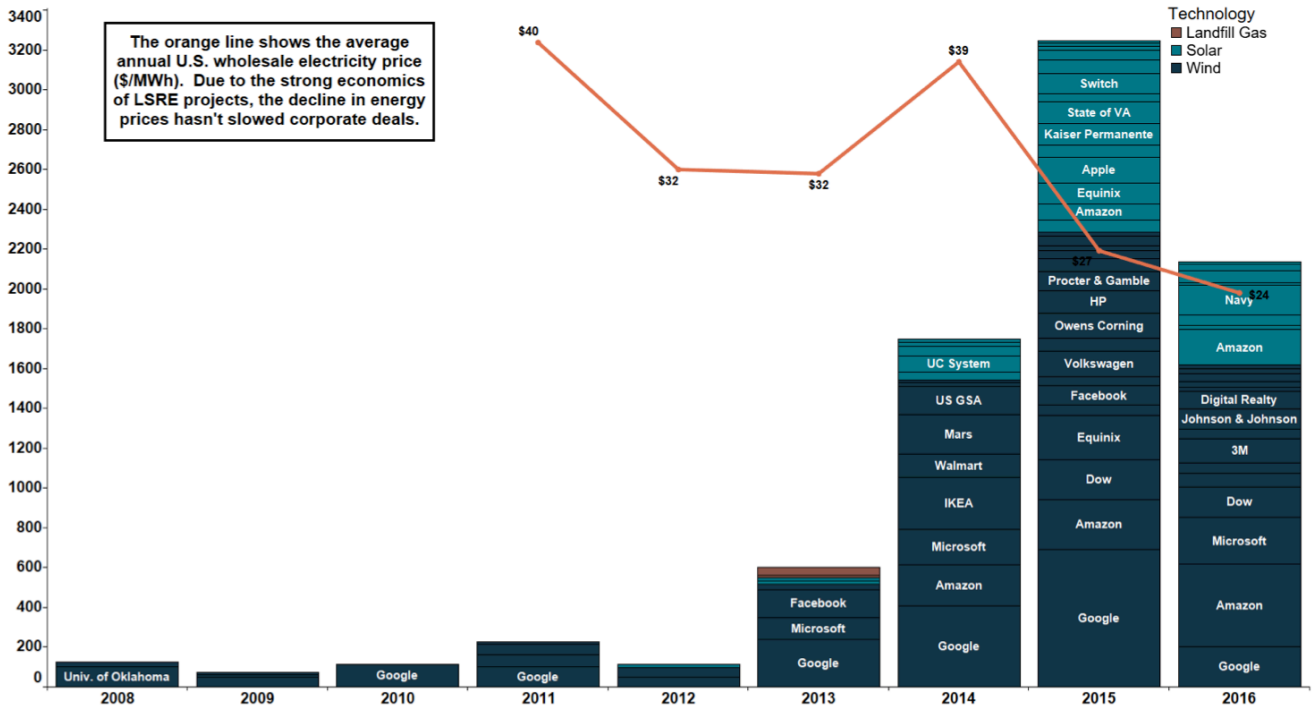
[4] For a mid-size university with an electric consumption of 120,000 MWh per year, depending on local and technical conditions, a 10 MWac solar farm could cover close to 20% of annual supply, a 10 MWac wind park over 30%.
[5] Net Present Value (NPV) is the sum of discounted cash inflows and outflows over the project contract life.
[6] Image Credit: Iaroslav Danylchenko
[7] International Renewable Energy Agency, Power to Change, June 2016.
[8] Solar Energy Industries Association, April 2016.
[9] National Renewable Energy Laboratory, August 2014.

As result of the compelling four-part value proposition described above, the implementation of both on- and off-site renewable energy solutions has accelerated in recent years. Since 2008, large corporate and institutional end-users of electricity have contracted for large-scale projects with over 8,700 MW of capacity, as shown in figure 3. This is above and beyond large-scale solutions procured by utilities in response to Renewable Portfolio Standards (RPS) enacted by state regulators. The end-user driven market experienced a significant uptick in 2013 as a result of falling wind and solar prices, coupled with federal tax credits that created a supportive growth environment. It has slowed a bit due to more stable incentive frameworks.

Of the 100 LSRE projects – single on-/offsite projects with a capacity exceeding 10 MWac – announced since 2008, thirteen have been for higher education institutions. Figure 4 (see page 6) lists institutions that procured power from renewable energy projects exceeding 10 MW in total capacity (not necessarily single projects). In 2014, the University of California System, Cornell University, and a partnership between American University and The George Washington University brought approximately 160 MW of LSRE projects to market, representing 9% of total LSRE generation installed that year. In 2015, Michigan State University and Stanford University committed to an additional 79 MW of LSRE solar projects. In 2016, MIT announced a PPA for an additional 44 MW.

LSRE's value proposition is relatively new and often not well understood. Historically, only utilities have been able to capture the value of LSRE due to the importance of scale in project cost economics. As technology prices have fallen and more creative procurement solutions have been created, opportunities for large institutional and corporate end-users have emerged to enter the market, and achieve scale as well as prices as good or better than utilities. However, capturing these new opportunities requires a different, more comprehensive procurement approach than traditional electricity supply due to the lack of transparency in LSRE market prices as well as other contract terms and conditions. These market inefficiencies lead to markedly different outcomes where purchasers 'leave money on the table' unless they are equipped to overcome challenges associated with LSRE procurement.

Fig.3 Large U.S. Corporate and Institutional End-Users of Elecricity Engage in Large-Scale Renewable Energy[10]



[10] Source: Publicly available press announcements; CFR analysis; projects over 10 MW

Fig.4 Renewable Energy Procurement by U.S. Higher Education Institutions

Institution	Total Size of Project(s) (MW)	Project Location	In-state vs Out-of-state
Michigan State University	10	Onsite	In-state
Cornell University	12	Offsite	In-state
American University*	12	Offsite	Out-of-state
Harvard University	12	Offsite	Out-of-state
University of Illinois	15	Onsite and Offsite	In-state
UC Davis	16	Onsite	In-state
Mount St. Mary's University & University of Maryland System	17	Onsite	In-state
Arizona State University	25	Onsite	In-state
George Washington University*	36	Offsite	Out-of-state
MIT*	44	Offsite	Out-of-state
Ohio State University	50	Offsite	In-state
University of Maryland	55	Offsite	Out-of-state
MIT*	44	Offsite	Out-of-state
Oklahoma State University	60	Offsite	In-state
Stanford	78	Onsite and Offsite	In-state
UC System	80	Offsite	In-state
University of Oklahoma	101	Offsite	In-state
* Part of an aggregated purchase			
Source: CFR based on publically available data and press releases; institutions listed if total project(s) size is +10 MW with power procured by the institution			

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2.1 Common Concerns on Campus

The seemingly complex nature of LSRE solutions has historically prevented them from being core to the discussion on campus climate leadership. Recent trends allow many fears to be overcome. Common concerns include:

- Lack of awareness that renewables are accessible at competitive cost – Organizations do not have to pay a premium for renewables. Solutions can be tailored to fit the needs of each organization.

- Skepticism due to low cost of grid electricity – Many schools believe that with cheap grid power, it will not be cheaper to get renewable energy. Yet, there are many LSRE solutions that lower energy cost and risk. agreements (PPA) can be secured for 12 year-plus terms, and well-structured contracts can reduce risk.

- Belief that existing conventional power contracts need to be replaced – Organizations do not need to end well-negotiated conventional power contracts with their local utility or retail energy supplier. Most of the time, LSRE is sourced in a complementary way to offset the existing or even renegotiated procurement from a grid power provider. This means, that these solutions are also possible in regulated electricity markets where schools do not have retail choice.

- Concern that offers are 'too good to be true' – With bold claims about cost and risk reduction, it is natural to worry that opportunities are 'too good to be true', or that it is nothing more than a sales pitch. Recent LSRE procurement by some of the world's most valuable businesses (e.g., Google, General Motors, Wal-Mart) have created benefits to these businesses' bottom lines relative to traditional sources.

- Apprehension about a long-term commitment – Some organizations that explore LSRE are concerned about the length of contracts. Power purchase agreements (PPA) can be secured for 12 year-plus terms, and well-structured contracts can reduce risk and provide greater savings over time.

- Lack of understanding/buy-in from senior leaders – Staff may feel unable to direct executive attention to renewable energy. However, given the value of LSRE, the number of stakeholders it benefits, and the reduction in risk exposure it provides, there is a greater duty to the organization to ensure the case for LSRE is made. By offering a clear, concise, fact-based proposal with the proper organizational support, a compelling case to senior decision makers can be made and acted upon.

2.2 Lack of Market Transparency

The market for LSRE is still bearing a considerable lack of transparency, making it difficult to apply traditional procurement processes, and requiring significant expertise to overcome market inefficiencies, and achieve value-creating outcomes.

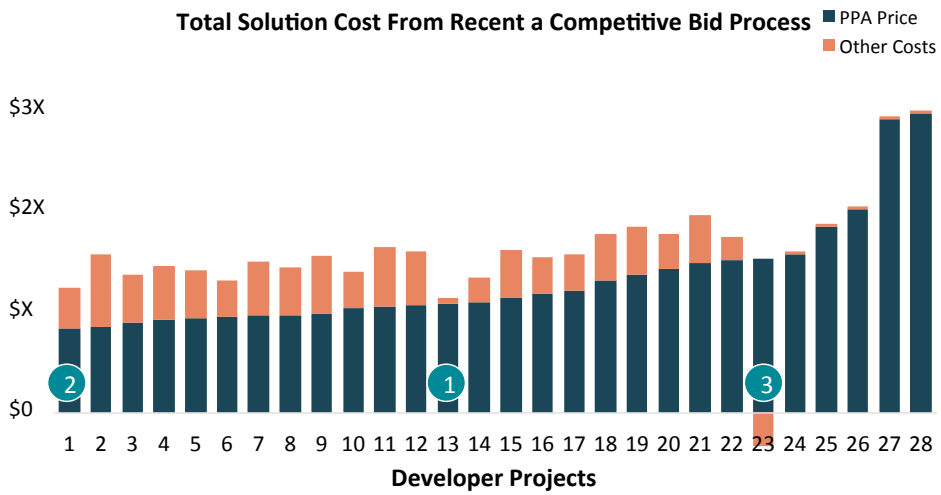
Many organizations that first enter the space are wondering if they can rely on traditional energy procurement processes, such as benchmarking and reverse auctions. These traditional tools, however, are less effective for the market structure surrounding LSRE, which is far less transparent than that for conventional power procurement due to the disparate physical location of LSRE projects, variations in how and when each project produces electricity, and how these factors correspond to the electricity usage profile of the purchaser. The lack of market transparency makes it difficult for LSRE purchasers to understand where inefficiencies exist, thus compromising the effectiveness of conventional purchasing strategies and tools.

This lack of information, combined with a non-existent public marketplace where transactions take place, creates a dearth of information to benchmark against in determining whether a price is at fair-market value. Figure 5 illustrates large price spreads with LSRE bids showing >2x price differential between lowest and highest bidder.

Historically, the industry has provided little to no transparency on market clearing prices or prior transactions. This puts organizations with little internal bandwidth or experience with the sector's nuances in a weak position to get the best financial and risk outcomes possible. As LSRE projects are typically one-time endeavors for schools, it is extremely difficult, if not impossible, to internally develop the deep experience and expertise needed to overcome all market inefficiences.

Yet, without this level of expertise and credibility, project developers, who are accustomed to responding to utility-driven competitive procurements, are less likely to take end-user driven project requests as seriously, due to a lack of confidence that a deal will actually close. As a result, these procurement efforts tend to see fewer bids, incomplete RFQ/RFP responses, and additional contingencies or buffers built into prices to cover the expenses developers foresee in dealing with a less sophisticated counterparty on a complicated long-term transaction. The result is either a failed, frustrating process that ultimately loses the attention of executive management, or one that opens decision makers up to second guessing project cost effectiveness and hampers the opportunity for future renewable energy solutions.

Fig. 5 PPA Price Spreads Reflect Market Ineffeciencies



Source: Actual results of CFR led LSRE procurement; CFR analysis

- Huge spread (> 2x) in PPA price bids received through competitive process reflects market inefficiencies
- Total Solution Cost (TSC) incorporates PPA price plus other generation-related costs to compare projects on apples-to-apples basis
- Beyond TSC, project-specific due diligence on other factors is required to make robust selection decisions.

3. Setting Up For Success

To overcome challenges and avoid pitfalls, it is important to understand the differences between LSRE procurement and conventional power procurement as well as the steps needed to achieve institutional goals. Understanding how these concepts might apply prior to sharing the initiative within the organization ensures clear, concise, and thoughtful responses to any questions. The following lessons and recommendations are drawn from projects that achieved successful change management and LSRE implementation.

3.1 Recognizing the Differences between Procuring LSRE and Conventional Power

Recognizing the differences of procuring energy compared to other products and services, some organizations have established energy or power departments that have expertise in sourcing grid power. While this provides greater institutional capability and knowledge of electricity markets, there may be gaps in the knowledge of the more comprehensive and nuanced LSRE procurement process. LSRE solutions have a wider variety of options and generally more complex contracts than traditional power procurement.

More Variables to Consider in Contracts:

Conventional power contracts have requirements, term, volume, and counter-party due diligence. LSRE contracts have additional considerations and few conventional power procurement teams have experience analyzing these options.

- Renewable solution location – Onsite or offsite? If offsite, what state? What are the market conditions at the project location, and how do they affect the cost and risk of the LSRE project?

- Project term – Conventional power contracts are generally 1-3 years. LSRE contracts are 12-25 years. Longer terms come with new contract protections and language. What is the right term for your organization?

- Regulated vs. deregulated markets – Different power markets require different solutions. Not every LSRE solution will work equally well in each market.

- Indirect vs. direct/integrated solutions – An indirect solution works well in a regulated market. In a deregulated market, an LSRE solution can be integrated with your existing power procurement paradigm and capture additional economic savings of 2-5%. This can be very significant on a large dollar contract.

- Physical vs. financial contracts – LSRE contracts can be physical (taking ownership of the power) or financial (contract for price differences or 'virtual PPA'). This choice can affect accounting treatment (i.e. whether it is considered an on- or off-balance sheet item, or even a derivative), the line of sight the purchaser maintains during operations, and additional costs.

- Ownership of renewable assets vs. PPA (or other third party financing) – Should the solution be structured as a PPA, a lease, a lease to own, or as another financial mechanism?

- With or without project-specific renewable energy credits (RECs) – RECs are what give a project the legal claim to the environmental attributes that determine whether it is counted as renewable energy. There are markets where entities can purchase or sell RECs directly. Without owning and retiring RECs, the power purchaser cannot claim to use renewable energy.

- Go alone or join with others – Should you try to contract with a developer alone or partner with likeminded organizations (aggregation)? How are these partnerships structured to benefit all parties and to access higher economies of scale?

Contract Complexity:

Contract terms and conditions for procuring LSRE are more comprehensive and complex than those needed for traditional short-term grid or utility-sourced power supply. Business terms and ramifications of decisions on LSRE options need to be established before moving forward. At a high level, this involves balancing project risks between the developer and the purchaser in order to produce reasonable costs within an allowable risk tolerance for the institution.

Particular contract complexities that need to be considered include:

- Apples-to-apples price comparisons – For conventional power, contracts are generally written for direct delivery of power to the organization. For LSRE, they are structured to deliver power to the grid where the renewable asset is located. How do you compare two projects delivering power to two different points on the grid or to two entirely different grids?

- Project scale relative to energy usage – Conventional power contracts are generally structured for 100% of the electricity need. LSRE solutions can be structured for any percentage the institution wishes to obtain. How do you determine the appropriate amount?

- Exit clauses – With a longer term, the institution will be looking for protection from developer non-performance. With significant investment in the project, the developer, on the other side, will want to minimize the risk of lacking power off-take. This creates a challenging negotiation on exit clauses.

- Federal and state tax incentives – Unlike conventional power, renewables are promoted by the government and can receive rebates of more than 30% on system costs. How can an institution ensure they are capturing these benefits?

- Organizational involvement – By its nature, volume and duration, LSRE requires cross-functional buy-in from procurement, facilities/operations, sustainability, finance, communications and senior leadership.

3.2 Meeting the Unique Needs of Your Organization and of its Internal Stakeholders

Given this backdrop of options and complexity, it is important to take a tailored approach and involve different stakeholders early in the process in order to set up the project for success, and meet the needs of your organization.

Procuring LSRE is institution-specific, and a peer's approach cannot necessarily be applied one-by-one. Organizations have different constraints, decision-making processes, economics, energy use profiles, physical locations, and risk tolerances. Economics and the risk mitigation potential of a solution vary for each organization. As a result, following what others have done tends to be ineffective and could lead to failure to launch, project cancellation, or sub-optimal results. Furthermore, reflecting on what happened after a project is completed often misses how hurdles during the process were successfully navigated. Hence, it is crucial to recognize the importance of pursuing an institution-specific LSRE solution approach to overcome these various complexities.

An LSRE procurement process generally requires tapping a broader set of internal influencers and seniority of decision makers. The longer term necessitates a larger dollar commitment during the life of the contract, often requiring the approval of the CFO, President, and Board of Trustees. Supporting this decision requires different functional teams usually not involved in conventional procurement to weigh in on the recommended solution and ensure their needs are met.

Although stakeholders will change for each institution, figure 6 shows some internal groups to consider looping into the discussion. For successful LSRE procurement it is helpful to form a cross-functional decision-making team. Initial steps how to best kick off an initiative, will be explained below.

Fig. 6 Internal Stakeholders to Engage

3.3 Connecting with New External Resources

To get inspiration, learn, and benchmark your approach regarding LSRE, it is recommended to connect with other members of the higher education community at your executive or functional level who also focus on sustainability and renewables. Higher education institutions looking to pursue renewables should tap into peer experiences and resources from organizations that support higher education action. Second Nature's Climate Leadership Network contains many institutions that are actively pursuing LSRE options. AASHE (Association for the Advancement of Sustainability in Higher Education) provides sustainability coordinators and other stakeholders with critical resources, and NACUBO (the National Association of College and University Business Officers) focuses on financial tools for business officers. These organizations connect you to peers at institutions that have implemented LSRE projects.

Establishing goals for carbon reduction and renewable energy use can help hold the organization's feet to the fire. To be more proactive, sign a public pledge or commitment to LSRE and/or GHG reduction. If not already a signatory, Presidents or Chancellors can sign the Climate Leadership Commitment managed by Second Nature. After a higher education institution signs a commitment, Second Nature engages with and provides resources for sustainability officers, academics, and sustainability committees.

Seeking NGOs and government organizations assisting with renewables will help your campus expand your knowledge on LSRE. Rocky Mountain Institute's Business Renewables Center (BRC), the Association of Climate Change Officers, World Wildlife Fund and World Resources Institute's Corporate Renewable Energy Buyers Principles, and EPA's Green Power Partnership all provide different tools and levels of support to organizations interested in buying renewables. In addition, many states or municipalities have clean energy centers or specialized agencies that manage important incentive and rebate programs. These organizations can connect you with other LSRE thought-leaders, implementers, industry organizations and project developers that can help you get up to speed on the industry. It is also an opportunity for your organization to take a seat at the renewable energy table, and help steer regulation and policy making in your favor.

Get to know the range of outside support available beyond campus and how their offerings differ. Some firms provide full-service advisory offerings, in essence playing a 'co-pilot' role through all stages needed to implement a project, including change management support for functional groups and decision makers. Others have a narrower agent/broker-like scope, performing project matchmaking, contract negotiation, legal and accounting review. Given the challenges inherent to LSRE procurement, the cost/benefit of external support can be compelling. However, it is important to look carefully at each provider to determine the scope of services offered, its experience with LSRE projects, the fit with your school's culture, and track record of projects similar to your needs.

Once you have decided who needs to be involved in the project and how to set up for success by shaping your view on LSRE procurement and by preparing your organization for closing the 'climate gap', it is time to take the concrete next step: start your LSRE procurement journey.

4.1 Adopting Organizing Principles for Higher Education Institutions

Based on CustomerFirst Renewables' experience in effective LSRE implementation with a broad set of corporate and institutional purchasers, the following organizing principles are distilled for higher education institutions. These may be helpful to consider as you begin designing the preferred approach:

- **Develop a clear, upfront agreement on what defines success.** This agreement should be across stakeholders, functional support, and executive leadership. Knowing where you are headed is the first step on a successful journey, and aligning the team towards the same goal can prevent many misunderstandings along the way.

- **Setting up a cross-functional team that owns the process and creates buy-in.** Create the internal focus and bandwidth necessary by forming a cross-functional core team to pursue the initiative in a high-quality manner commensurate with the opportunity and challenge. Put in place a dedicated, renewable energy-savvy support team (internal or external) who facilitates the process and shows organizational commitment to the project.

- **Utilize an extremely objective, transparent, and fact-based process** that everyone trusts to guide project selection and negotiations. Once buy-in is established, leveraging a quantitative, rather than qualitative, process ensures projects are not justified into acceptance and that the best projects rise to the top.

- **Compare more than one technology** to build confidence. Do not reduce your options upfront; often the best alternatives will not be clear until significant due diligence is performed on both the front-runner and the runner-ups. Given the various characteristics required to select the finalist – credit worthiness, project availability, permitting risk, contract risk – it is not uncommon for a secondary or tertiary project to come out as the top choice. Keep the aperture wide open.

- **Adapt the project process and timeline.** As new issues and challenges arise, be prepared to problem solve through the numerous 'show stoppers' that will crop up along the way. Each LSRE project is different, and despite your best efforts, each will have its own challenges. Keep your options open and be flexible.

- **Consider leveraging the benefits of aggregation** to create scale/better economics and build confidence to keep moving forward (i.e. "we are in this together"). While increasing the project size by collaboration with other organizations allows to realize economies of scale, often it is the assurance that comes from partnership that is the key value of an aggregation. Organizations have their own internal delays but having a partner often allows momentum to carry the project forward, and get the LSRE solution over the finish line.

- **Finally, … enjoy embarking on an exciting journey!** This is a new process that will be challenging, exciting and impactful. A carefully implemented LSRE solution will add to your organization's legacy, enable you to meet organizational goals on sustainability and close the 'climate gap', expand your institution's climate leadership, attract talent, and provide significant economic benefits.

4.2 Considering Initial Steps to Pursue and Traps to Avoid

You may want to consider initial steps to pursue, and traps to avoid along your journey. CustomerFirst Renewables, a full-service renewable energy advisory services firm and co-author of this report, has developed a set of best practices and lessons learned drawn from other businesses and institutions that successfully initiated LSRE procurement. Think of this as an initial checklist for creating a tailored approach for your organization.

Initial Steps to Pursue:

1. Identify if there is a 'climate gap' between your climate goals and your current progress
2. Do your homework: learn about the hurdles and opportunities associated with LSRE, and analyze internal frameworks and timelines
3. Convince yourself that LSRE provides a compelling value proposition
4. Convince other decision makers that a 'climate gap' exists and that LSRE is the right way to close it
5. Determine the right time for your organization to maximize market benefits by overlaying internal and market related considerations
6. Bring together a broad group of stakeholders to understand their needs and perspectives for success
7. Bring in experts, either internal or external, that can provide industry insight and prevent missteps
8. Explore if the intended solution can pass muster with accounting, finance, legal, and marketing teams
9. Determine if demand aggregation makes sense for your organization
10. Confirm your intended solution matches your goals, both economic and environmental

Traps to Avoid

1. Allowing procurement to run a standard RFP
2. Assigning the project to a single functional group
3. Running into analysis paralysis by not consulting external sources when necessary
4. Investing in on-campus energy infrastructure before considering other options
5. Signing up with the first developer you meet
6. Focusing solely on PPA rate when selecting your project when total solution cost need to be considered
7. Assuming you can follow another organization's path to an LSRE project one-by-one
8. Expecting LSRE to be easy or taking short cuts that can leave money and options on the table
9. Failing to fully understand the terms and clauses of your long-term PPA
10. Pursuing LSRE without support and hoping to learn the market's nuances along the way
11. Eliminating solutions or options without thoroughly vetting them
12. Moving forward without a clear strategy in place

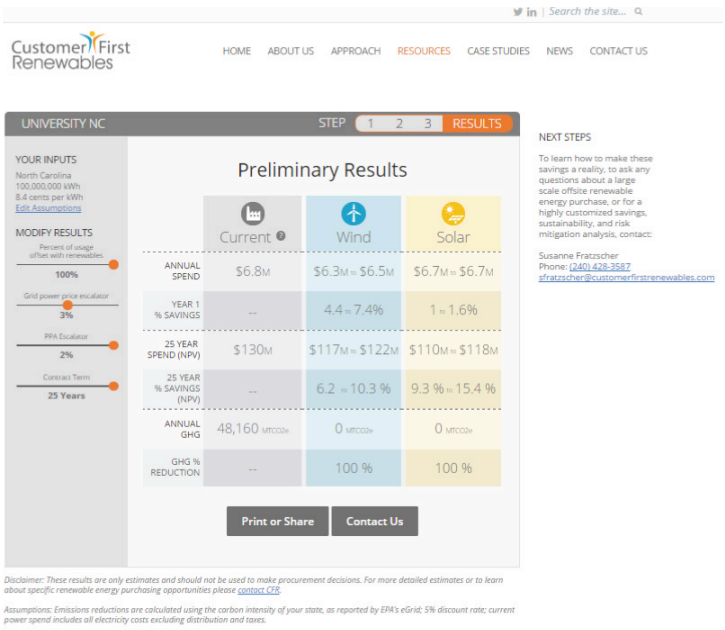
4.3 Quantifying the Opportunity

CustomerFirst Renewables has developed an online LSRE-Value-Calculator[9] that is available to any organization free of charge. It is updated regularly to reflect latest LSRE market pricing available to your organization and is designed to help you get some concrete estimates about the value proposition for your organization including year-one cost savings and NPV-savings over time.

The calculator takes into account an institution's electric load, the portion you want to offset with large-scale renewables, your physical location, and your interest in aggregation with other organizations. The market price trends are drawn from actual experience on project prices. You can test how various assumptions, such as changes in the percentage of load offset by renewables, grid power price escalators, PPA price escalators and different contract term lengths, influence the outcome for your organization.

The calculator was developed to help you get a quantitative sense of the opportunity, and use the results to create understanding and excitement on campus for launching an LSRE procurement.

Fig. 7 Preliminary results quantifying cost and GHG savings from offsite LSRE



4.4 Teaming Up - Second Nature's Joint Renewable Energy Procurement (LSRE Aggregation)

As Second Nature works to proactively build a sustainable and positive global future through initiating bold commitments, scaling successful actions, and accelerating innovative solutions among leadership networks in higher education, an accelerated focus is placed on supporting signatories to shift from commitment to performance by providing new solutions via action oriented programs (versus solely giving out guidance and advice). To support this effort, in January 2017, Second Nature launched a newly redesigned reporting platform that helps signatories highlight institutional performance and gives increased recognition for use of renewable energy.

Second Nature therefore is proposing to help signatories source LSRE in an aggregated and collaborative way. A joint renewable energy procurement will be a concrete next step to support signatories close the 'climate gap' and meet their ambitious climate commitments.

Please contact Second Nature if your institution is interested in teaming up with other organizations to procure LSRE. Over the next year we will be creating and publishing additional resources to support joint renewable energy procurement, and look forward to increasing participation across the network.

[9] https://LSRE-tool.customerfirstrenewables.com