Institutional Renewable Energy Procurement:

Guidance for Purchasing and Making Associated Environmental Impact Claims

A Boston Green Ribbon Commission Report

Prepared by Meister Consultants Group
for the Boston Green Ribbon Commission
Higher Education Working Group
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BOSTON Green Ribbon COMMISSION

MEISTER CONSULTANTS GROUP

HARVARD Office for Sustainability

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Authors

Chad Laurent, Meister Consultants Group
Aaron Lindenbaum, Meister Consultants Group
Caroleen Verly, Green Ribbon Commission

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Purpose of this Paper

This paper responds to the growing interest of America's institutions and businesses in purchasing renewable energy by offering guidance about the different procurement options that are available, their tradeoffs, and which "green claims" they offer to buyers. Potential purchasers need this sort of roadmap to navigate through the increasingly complex and still emerging renewables landscape.

This guidance document can:

1. Help businesses and institutions better understand the mechanics and implications of popular renewable energy purchasing options from the perspectives of renewable energy capacity (locally and nationally), global greenhouse gas emissions, and financial considerations.
2. Provide a framework for analyzing and prioritizing these different (and often competing) options, especially as the World Resources Institute (WRI)'s accounting framework does not provide a hierarchy of project types by scale of impact.
3. Provide institutions with the information and resources to communicate clearly and transparently about their purchases, so that the nuances between the different types of deals will be clear.

The paper starts with a brief overview of the renewable energy market. Next it identifies and examines the objectives of purchasers of renewable energy. Then it describes the types of Renewable Energy Certificates (RECs) available in the market and presents in detail the implications and different environmental claims associated with RECs. Finally, it identifies the eight main ways of purchasing renewable energy and the environmental, renewable energy capacity, and financial impacts of different REC management strategies.

While there remains ambiguity about the relative levels of environmental and capacity impact that different types of renewable energy purchases can make, there is no ambiguity that the ownership and retirement of the REC is the legal foundation of any renewable energy claim. Regardless of which purchasing pathway is selected, renewable energy claims can only be made via RECs that are ultimately owned and retired by the institution, and making any other claims is deceptive, and legally unsubstantiated. In recent months there has been an increased outreach effort by the U.S. Environmental Protection Agency (EPA) and The Center for Resource Solutions (CRS) to ensure that all parties, both developers and purchasers, clearly

understand this basis.[1,2] Additionally, there is a recent trend toward greater transparency around renewable energy purchasing pathways.[3]

Although the information in this paper was developed for potential purchasers in Greater Boston and Massachusetts, its explanations and guidance can be useful for institutions throughout the United States that are interested in purchasing renewable energy.

This paper does not attempt to evaluate how the proposed Federal Clean Power Plan would impact emissions claims. Each state will develop its own Clean Power Plan implementation plans and final rules. It would be premature and beyond the scope of this paper to attempt to evaluate state implementation plans impacts on institutional green power purchasing pathways.

Background: The U.S. Renewable Energy Boom

America's institutional and business communities are making significant changes to the sustainability of their energy use through their procurement decisions. Furthermore, the political and economic context in which institutions and businesses make sustainability decisions has changed quite remarkably in the last decade. In particular, reduced renewable energy equipment costs and more favorable state and local laws have induced a renewable energy boom in the United States.

A growing number of institutions are seeking to reduce greenhouse gas emissions by tracking the emissions associated with their operations, either internally or through voluntary reporting programs, in support of institutional commitments to GHG reduction goals.[4] Emissions tracking, coupled with carbon reduction goals, are often the primary driver for institutions to purchase renewable energy.

In the past five years over 5.6 GW of renewable energy deals have been signed by corporations up from just 50 MW of capacity in 2012.[5] Voluntary REC purchases have also increased

[1] Webinar: "Solar Power Claims & Reporting: An Introduction for Colleges and Universities" U.S. EPA Green Power Partnership: https://www.epa.gov/greenpower/gpp-webinar-solar-power-claims-reporting-introduction-colleges-and-universities

[2] Webinar: "Solar Energy on Campus: Key considerations for solar developers working with higher education institutions" https://speakerdeck.com/resourcesolutions/solar-energy-on-campus-key-considerations-for-solar-developers-working-with-higher-education-institutions

[3] Webinar: "Solar Power Claims & Reporting: An Introduction for Colleges and Universities" Second Nature: https://www.epa.gov/greenpower/gpp-webinar-solar-power-claims-reporting-introduction-colleges-and-universities

[4] Bird, Lori & Sumner, Jenny, *Using renewable energy purchases to achieve institutional carbon goals: A review of current practices and considerations*, National Renewable Energy Laboratory 8 (2011), available at http://digitalscholarship.unlv.edu/renew_pubs/61 .

[5] http://www.businessrenewables.org/corporate-transactions/

dramatically over time. The U.S. Environmental Protection Agency Green Power Partnership's (GPP) National Top 100 renewable energy purchasers include numerous cities, non-profits, and universities.[6] The GPP grew from 104 partners and 83,400 MWh in 2003, to more than 1,300 partners and 30 million MWhs in 2016.[7] Over 650 colleges and universities have also joined the American College & University Presidents Climate Commitment (ACUPCC),[8] committing to carbon neutrality, and thirty percent of ACUPCC signatories have set a target of reaching climate/carbon neutrality date within 20 years.[9] Parallel examples of major commitments in the business community include RE100, the Business Renewables Center, and the Science Based Targets Initiative.

Policies that support renewable energy growth are certainly climate-friendly in aggregate; the rise of solar and wind during the last decade has coincided with a decrease in the amount of coal-generated electricity across America (and an increase in natural gas generation). At the same time, these policies have created a system which can be confusing for institutions and businesses looking to purchase renewable energy to further their voluntary sustainability goals, as the system was not originally designed for this purpose.

RECs were created to make the buying of renewable energy possible (since tracking the actual electrons is impossible), and the financial value of the REC (anywhere from 0.5 cents to 50 cents per kWh depending on the market and technology)[10] provides an additional revenue source for renewable energy generators, thus helping renewable energy markets grow. The market price for RECs is often dictated by the policy targets set and the cost of the fines imposed on utilities that do not purchase enough RECs to meet their requirement. RECs are typically sold by renewable energy project developers to utilities who then retire the REC to prove that they met their Renewable Portfolio Standard (RPS) requirements. Institutions and others who wanted to purchase renewable energy began buying RECs so they could make their "green energy" claims, in essence playing "keep away" from the utilities. This created a voluntary market for renewable energy in addition to the regulated market created by the RPS. Over time, renewable energy purchasing options have evolved to include not just buying RECs, but also:

1. Contracting directly with a generator for the electricity via a power purchase agreement (PPA),
2. Contracting via a PPA with one project and buying RECs from the same or a different project, and

[6] See: https://www.epa.gov/greenpower/green-power-partnership-national-top-100
[7] http://www.nrel.gov/docs/fy10osti/48158.pdf and https://www.epa.gov/greenpower/green-power-partner-list
[8] ecoAmerica, *American College & University Presidents Climate Commitment* (2016), at http://ecoamerica.org/programs/american-college-university-presidents-climate-commitment /.http://ecoamerica.org/programs/american-college-university-presidents-climate-commitment/ . http://ecoamerica.org/programs/american-college-university-presidents-climate-commitment/
[9] *Id.*
[10] http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=5

3. The synthetic PPA where the contracting mechanism is a contracts-for-differences with a renewable energy generator potentially located outside the regional transmission network.

An institution that is interested in sustainability today operates within a new renewables landscape, requiring it to parse the different goals and objectives that it seeks to achieve in its renewable energy purchasing decisions, and sustainability officers and administrators are tasked with the responsibility for evaluating renewable energy purchases and accounting for the associated carbon benefits.[11]. These purchasing decisions require a thorough understanding of the financial, operational and sustainability attributes of the renewable energy options that are available. An institution can promote renewable energy generation in three basic ways (or any combination thereof):

1. Purchasing the electricity through a power purchase agreement,
2. Purchasing the renewable energy credits (RECs), or
3. Providing capital or debt to finance the project.

Adding to the complexity, the costs of various renewable energy purchasing options range across several orders of magnitude, while the differences in impact are less clear. The lack of transparency in the external communications around these deals and the fact that all options can be counted equally in a greenhouse gas accounting framework reinforce a buyer's motivation to seek the least cost option even without a full understanding of the true environmental implications of this decision. The decision-making process is particularly challenging for projects located in New England where project development costs are higher than in other parts of the country, especially for wind. Massachusetts solar policy has also resulted in high Solar REC (SREC) prices, making them unattractive in the voluntary REC market.

Renewable energy purchases are increasingly marketed to institutional purchasers not only an environmental benefit, but also as a cost-saving strategy and price hedging tool. While purchasing renewable energy may present significant business opportunities, large institutions with climate or sustainability commitments will want to ensure that these purchases do not promote monetary benefits *at the expense* of environmental benefits, especially if environmental commitments are the original motivating factor behind the purchase.

By understanding the potential pitfalls and asking the right questions, it is possible for institutions to make credible claims for renewable energy purchases that further sustainability and climate goals. However; there remain a significant number of outstanding questions and a need for further research. Outstanding issues include:

1. The specific impacts and relative merits of pursuing out-of-region vs. in-region deals, especially where large price differences exist,

[11] *Id.*

2. Whether it is appropriate to consider the U.S. as one electric market for renewable energy transactions and accounting, even though electricity cannot physically be delivered nationally,
3. How to assess the impacts of REC arbitrage, and
4. How out-of-region REC deals specifically impact New England renewable energy markets.

Objectives of Making Renewable Energy Purchases

A renewable energy purchase can achieve an array of objectives, both for the purchaser and for the energy project developer; however, not all purchases are created equal. It is imperative for parties contemplating renewable energy purchases to not only understand the many options available to them, but also how a particular choice is likely to further or complicate the purchasers' goals. For example, an organization interested in the renewable energy market for solely economic reasons should know that it can sell the RECs and purchase only the null power (electrons), even from an on-site project. Likewise, for the organization seeking to fulfill its environmental goals, procuring electricity or providing financing from a renewable energy project and using these actions to make carbon-reduction claims without also acquiring RECs could lead to legal liability related to the legitimacy of making any renewable energy claims. This section of the report lays out the differing objectives for organizations interested in making a renewable energy purchase.

As institutions ask the question "did my purchase make a difference?", it is important to remember what it takes to get a renewable energy project built in the United States. At a basic level, three distinct and critical concepts motivate the development of renewable energy projects in the U.S.: (1) electricity output, (2) environmental attributes, and (3) financing. Typically all three of these elements must be considered before an installation is "shovel-ready." Administrators of large institutions such as colleges, hospitals, manufacturing facilities and data centers will often find themselves in a unique position: they can promote renewable energy by participating in one or any combination of the three components. This is due to the potential overlap of (1) facilities' energy demand, (2) organizational sustainability goals, and (3) financial priorities.

First, a renewable energy purchase can constitute a promise to purchase the electrons generated by the project for a specified period of time through a Power Purchasing Agreement (PPA). Often PPAs or "offtaker agreements" are created through a long-term purchasing contract which can provide a project with long-term revenue that allows it to obtain development capital. A renewable energy project is likely not investment grade unless it has secured a "bankable PPA," i.e., a long term offtaker agreement from a creditworthy party. By signing a PPA, the offtaker takes on the power price risk (in the event that power prices fall below the PPA rate) and provides a long-term revenue stream to the project, which allows the

developer to get financing for the project.[12] Locking in a contract to purchase electrons for 10 - 25 years also provides a valuable hedge against energy price volatility to the buyer/offtaker and usually requires little upfront capital. There are logistical and engineering hurdles to purchasing electricity generation, including interconnection and transmission, which can complicate a PPA deal. Synthetic or off-site PPAs allow for the remote sale of electrons outside of an institution's regional electric grid, which can alleviate those technical location issues but can lead to other complications.[13]

Second, a renewable energy purchase can impact the environment by reducing the greenhouse gas emissions profile of a given unit of electricity generation, and in aggregate theoretically reduce overall global emissions. The environmental attributes of electricity generation in the United States are most often recorded and represented in the form of tradeable and fungible renewable energy certificates, which are "retired" on behalf of the party that wishes to claim the associated benefits. RECs can be decoupled from their corresponding energy output and sold separately or "unbundled." Purchasers of renewable energy who are seeking environmental benefits from the transaction must pay particular attention to the nature of the electricity generation tied to the REC (type of renewable energy generation, and location) to ensure the instrument's fidelity and the term of the REC purchase agreement. Green-e standards help to ensure that an institution is buying a REC that is not being double-counted. Selling environmental attributes on the open market increases the reach and availability to parties interested in making an environmental impact or greenhouse gas emissions reduction claim; however, the purchaser must remember that the REC represents the renewable attributes of a megawatt-hour of electricity produced where the project that created the REC is located, not where the purchaser is located.

Third, an institution can provide financial support to a project by infusing it with development or construction capital. While not a common approach, a large institution's financial backing may help fund a project that might otherwise not be built. Financing can come in the form of debt or equity, depending on the goals of the investor or lender, especially their risk appetite. Choosing to purchase using project finance can make a huge impact on a renewable energy project's viability and can align well with an organization's own financial strategy. However; the financing option is not without risk. There is a sizable initial investment, and actual investment returns are dependent on the project's future construction and operational quality. Thus, increased levels of financial and legal sophistication and due diligence will be required to ensure that the risk profile is well understood and accounted for in the financing terms. While possible, this strategy has not been widely adopted among large institutions. This may change

[12] See Google's description of their renewable energy purchasing pathways: https://static.googleusercontent.com/external_content/untrusted_dlcp/www.google.com/en/us/green/pdfs/renewable-energy.pdf

[13] Synthetic PPAs are a term used to classify an arrangement that takes the form of a "contracts for differences" where the offtaker agrees to pay the difference if the electricity sale price or "strike price" falls below a pre-determined rate per kWh and the seller agrees to pay the offtaker when the electricity sale prices goes above the strike price.

as the federal tax credit winds down as tax-equity investment becomes less involved in renewable energy financing.

Different deals will have widely different impacts on local renewable energy capacity, national renewable energy capacity, the organization's own greenhouse gas footprint, global greenhouse gas reductions, and the organization's financial balance sheet. For example, RECs can be purchased "unbundled," i.e., without purchasing the underlying power. And vice versa, organizations can procure the electrons-only through a PPA or other contract without acquiring the environmental benefits. Alternatively, organizations can participate solely in financing, such as Yale University's direct investment in a Maine-based wind project.[14] This contractual and strategic flexibility creates an attractive menu of renewable energy purchasing pathways with a wide range of associated costs, but it can pit competing institutional priorities against each other. It is therefore critical that an organization underlie its renewable energy spend with specific objectives in mind because the different purchasing decisions will engender different impacts.

Environmental Attributes, Claims and Climate Registries

This section examines the relationship between renewable energy purchases and environmental attributes by examining RECs, public marketing claims, and greenhouse gas (GHG) inventories. Because large institutions often seek to fulfill sustainability goals through renewable energy purchases, it is important that decision makers understand the environmental impacts of particular purchases.

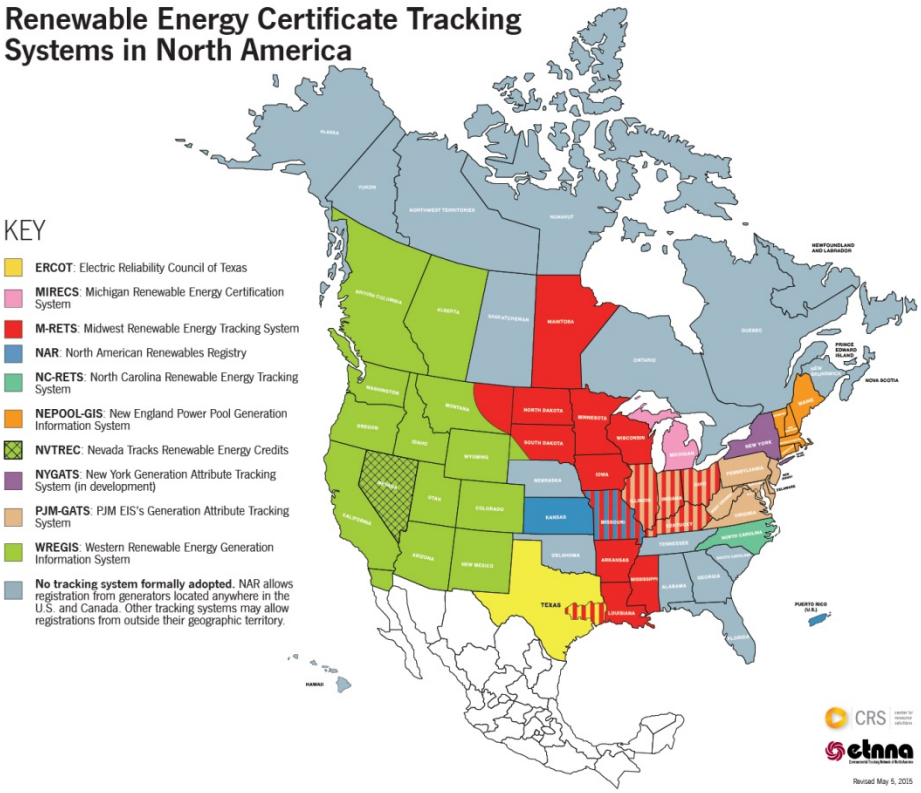
RECs and Tracking Systems

The mechanism for tracking and accounting for a renewable energy purchase in the United States is the Renewable Energy Certificate (REC). RECs are inventions of state property law,[15] designed to track renewable energy for Renewable Portfolio Standards (RPS) imposed on utilities, and have become part of the mechanisms of U.S. electricity markets.[16] RECs are used to communicate and document renewable energy purchasing, delivery, and use,[17] and to convey the renewable, environmental and/or social attributes of renewable electricity generation to the owner of the REC, along with the legal right to claim usage of that renewable electricity.[18] Without RECs, such a claim could not otherwise be substantiated, whether the

[14] See: http://news.yale.edu/2011/03/03/endowment-invests-maine-wind-power-project
[15] Todd Jones et al., Center for Resource Solutions, *The Legal Basis for Renewable Energy Certificates* 5 (2015), available at http://resource-solutions.org/document/the-legal-basis-for-renewable-energy-certificates/ (citing United States Court of Appeals, Second Circuit in *Wheelabrator Lisbon, Inc. v. Dep't of Pub. Util. Control*, 283 Conn. 672, 931 A.2d 159 (2007)).
[16] *Id.* at 3-4. (A number of multi-jurisdictional entities, with the support of U.S. states, designate specific tracking systems to be used for issuing and tracking RECs and verifying compliance with state policies or programs.)
[17] *Id.* at 3.
[18] *Id.*

claim is to demonstrate legal compliance with an RPS requirement or to meet voluntary or mandated reductions in GHG emissions.[19]

A REC tracking system issues a uniquely numbered certificate for each megawatt-hour (MWh) of electricity generated by a qualifying renewable energy generation facility registered in the system.[20] The tracking system then tracks the ownership of certificates as they are traded.[21] Finally, and importantly, a certificate tracking system retires the certificates once they are used or claims are made based on their attributes or characteristics.[22] Ten tracking systems exist in the U.S. as shown in the map below. There is no national registry for RECs.



In addition to a serial number, additional information about each REC is tracked, including: energy source, generation/conversion technology, project location, and vintage.[23] These

[19] *Id.*
[20] U.S. Envt'l Protection Agency (EPA), *EPA's Green Power Partnership: The Environmental Value of Purchasing Renewable Energy Certificates Voluntarily, Discussion Draft* 1, fn. 2 (2010).
[21] *Id.*
[22] *Id.*
[23] Environmental Tracking Network of North America, *The Intersection between Carbon, RECs, and Tracking: Accounting and Tracking the Carbon Attributes of Renewable Energy* 4 (2010), available at http://www.etnna.org/images/PDFs/Intersection%20btwn%20Carbon%20RECs%20and%20Tracking.pdf .

characteristics are referred to as the *primary attributes* of the REC.[24] Emissions from fossil fuel facilities that are displaced or avoided by renewable generation are referred to as *derived or secondary attributes*.[25] Increased purchaser interest in making carbon avoidance claims has made calculating, tracking, and displaying carbon reduction amounts of increasing importance;[26] however, with the exception of the North American Renewable Registry (one of the ten U.S. tracking systems), the amount (in tons) of GHG emission reductions attributed to renewable projects is not explicitly measured or tracked.[27]

The Center for Resource solutions implements the Green-e National Standard for RECs. Purchasing RECs that are Green-e Certified provides two kinds of quality assurance: (1) that the RECs are not being double-counted (meaning that no two parties are claiming usage of the same renewable power) and (2) that a third-party is verifying that the RECs are from their advertised source. Green-e also verifies that the RECs are from "new" renewable energy projects, meaning the project is not more than 15 years old. (For example, a REC sold in 2015 must be from a project built in 2001 or later.) Green-e RECs must also contain all of the greenhouse gas reduction benefits, among other Green-e specifications.[28]

Strategic REC management

Parties to a renewable energy transaction can manage these environmental attributes in many different ways. This section discusses some of the different REC management strategies available to purchasers today.

Unbundled RECs

Environmental attributes (represented by RECs in the U.S.) can be traded separately or "unbundled" and are not necessarily bound to or conveyed with the underlying energy or capacity.[29] This distinction between the environmental attributes of one MWh of renewable electricity generation and the actual electrons from the same unit of generation creates two distinct tradeable products. Thus, by buying standalone, unbundled RECs, a purchaser can acquire all of the "greenness" of a unit of green power, but not the underlying electricity itself. In this case, the electricity generation is stripped of its greenness. Thus, the purchaser of that electricity is not buying renewable power, even though the power was generated from a

[24] *Id.* Also, "PJM-GATS and NEPOOL-GIS are 'all-generation' tracking systems, which means they keep track of both renewable and non-renewable (including fossil-fuel) electricity generation in their regions." *Id.*
[25] *Id.*
[26] *Id.*at 5.
[27] *Id.*
[28] For additional Green-e certification details see the Green-e National Standards available at: http://www.green-e.org/docs/energy/Green-e%20Energy%20National%20Standard%20v2.8%20REDLINE.pdf
[29] Jones et al. at 4 (citing *Federal Energy Guidelines: FERC Reports (FERC) Am. Ref-Fuel Co., Covanta Energy Grp., Montenay Power Corp., & Wheelabrator Technologies, Inc.*, 107 FERC ¶ 61016 (Apr. 15, 2004) available at: http://www.ferc.gov/whats-new/comm-meet/041404/E-28.pdf .)

renewable energy source. Organizations that don't own RECs cannot claim that they are getting their electricity from renewable energy.[30]

These bifurcated products provide helpful transferability and access for institutions seeking to make environmentally friendly purchases and claims, as it enables customers to offset a percentage of their annual energy use with certificates generated elsewhere.[31] However, the separation of electrons from green attributes has also become a source of confusion, and allows for potential deception (whether accidental or intentional). An example of this type of deception or misinformation would be if an institution installs solar panels on its roof, but then sells the RECs to a third party to finance the project, yet still claims it is "being powered by solar energy." Technically, it has sold its right to make that claim. Concerns over the actual contents of a renewable energy buyer's purchase, and how it should be communicated to the public or counted toward GHG emissions reporting, have become more visible as the voluntary REC market has grown (See *Green Claims Confusion* section below*).*

REC Sales

Once RECs have been acquired, they maintain their liquidity and availability for resale, unless they are retired pursuant to a tracking system or registry. Developers of renewable energy projects that create RECs choose to sell their RECs for any number of reasons. A renewable energy project may exist in a REC market with high monetary values (such as is the case in New England). When REC prices are high, project owners can realize financial benefits by selling them to REC marketers or any other party, and the prices can be incorporated into the project's financial pro forma as an additional revenue stream, increasing the project's return on investment. Parties may buy voluntary market RECs from renewable energy project developers in order to make an environmental claim (as opposed to being required to meet a renewable portfolio standard). Additionally, renewable project owners may also choose to sell only a portion of the total number of RECs generated by a project, or enter into sale-buyback arrangements with other parties for a term of years, both of which may complicate communication claims and understanding of the impact around the project.

REC Arbitrage

REC owners may choose to sell high-cost RECs and, in turn, buy lower-cost RECs sourced from other renewable energy sources.[32] This process is sometimes referred to as "REC arbitrage" and allows the site host to capture the financial benefits of high-value RECs, while also

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[30] National Renewable Energy Laboratory, *Renewable Electricity: How do you know you are using it?* 2 (2015), *available at* http://www.nrel.gov/docs/fy15osti/64558.pdf .

[31] Jones et al. at 5 (citing *Exec. Order No. 13,423.* Prepared by U.S. Department of Energy Efficiency and Renewable Energy, Federal Energy Management Program (FEMP). January 28, 2008. Section 2.2.12. Pg.4. http://www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf .)

[32] U.S. Envt'l Protection Agency, Green Power Partnership, *Solar Power Purchase Agreements* (2016), *available at* http://www3.epa.gov/greenpower/buygp/solarpower.htm .

securing less expensive RECs that enable them to make environmental claims. REC owners may substitute lower cost RECs from the same region but perhaps generated from a different resource, or they may buy lower cost RECs from other regions. In New England specifically, high prices for RECs have made arbitrage the de facto option, with purchasers stating that without arbitrage, the renewable energy project is not financially viable. But what is the impact of this decision on the institution's environmental impact and claims?

REC arbitrage is explicitly or implicitly encouraged under all major REC tracking systems, in GHG protocols, such as World Resources Institute (WRI), and is endorsed by the federal[33] and state governments as the most fiscally responsible way to use ratepayer or taxpayer dollars. But there are outstanding questions about the true environmental impacts of a deal that does or does not employ arbitrage. For instance, if an institution helps develop a project in New England but arbitrages the RECs and obtains cheap national RECs as a replacement, thereby leaving the purchaser of the original RECs and the seller of the original RECs to make equivalent GHG claims, what is the true impact of this deal on local capacity, national capacity, and global absolute GHG emissions? What is the true impact of the entity that sold the original RECs versus other arrangements they could have entered into, such as simply purchasing national RECs from the outset or developing a project directly in another region rather than engaging in arbitrage from one region to another? What is the best course of action for institutions located in a particular region, specifically in New England? These are still open questions that each institution needs to answer for itself in the absence of clearer data and information about relative impacts.

While extremely helpful in promoting and increasing the installed capacity of renewable energy generation nationwide, the practice of REC arbitrage can complicate the purchaser's environmental claims and communications around the project because the location of the RECs vary. This is because one REC is always equal to the environmental attributes of one MWh of generation, regardless of the particular variations in environmental attributes arising from location, generation technology, and other factors. As the avoided CO_2 emissions impacts are not explicitly tracked in REC tracking systems, this leaves the task of emissions reduction reporting to the buyer.

Green Claims Confusion

Claiming emissions reductions is a critical motivation behind the voluntary green purchasing market, especially for large institutions and corporations with emissions reductions goals who want to be seen as environmental leaders. In addition to the actual environmental attributes of a unit of renewable energy generation, a REC "also embodies *the claim* to the greenness."[34]

[33] See: https://www.sustainability.gov/Resources/Guidance_reports/Federal-Renewable-Energy-Certificate-Guide-June-16-2016-Final-Version.pdf

[34] Center for Resource Solutions, *Best Practices in Public Claims for Solar Photovoltaic Systems* 2 (2010), *available at* http://resource-solutions.org/document/best-practices-in-public-claims-for-solar-photovoltaic-systems/ .

Only the ultimate owner of the REC has rights to the claim.[35] If the owner sells a REC rather than consuming it themselves, they have sold the claim and cannot truthfully state that they are using renewable electricity, or that the electricity that was produced with the REC is renewable.[36] Similarly, an institution that does not own the PV system it is hosting on its property cannot claim to be *using* renewable electricity unless it is buying RECs.[37] If an onsite system host is arbitraging RECs, statements made by the host should make it clear that the renewable electricity it is buying is not from the system it hosts.[38]

A number of legal and industry institutions have formulated rules constricting public claims about the benefits that are being derived from purchasing renewable energy. A deceptive claim could violate federal,[39] state,[40] criminal and/or civil law. In *Guides for the Use of Environmental Marketing Claims ("Green Guides")*, the U.S. Federal Trade Commission states that a claim, directly or by implication, that one is "using" renewable energy, is deceptive if the claimant generates renewable energy but sells RECs for all of that electricity.[41] The Commission provides a reasonable consumer standard for deception in public claims and points out that customers may mistakenly believe that electricity they purchase is renewable.[42] Purchasers of electricity are advised to exercise caution and qualify claims about their generation by disclosing that their electricity is not renewable.[43] The Commission extended the same rationale to utilities that sell RECs from renewable projects and still use the electricity as part of a green power program offering to consumers.[44] Industry groups concur with the basic premise. The Center for Resource Solutions[45] and Solar Energy Industry Association[46] have

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[35] *Id.*
[36] *Id.*
[37] *Id.* at 3.
[38] *Id.*
[39] U.S. Federal Trade Comm'n, *FTC Green Guides: Statement of Basis and Purpose* (2012) 225, *available at* http://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguidesstatement.pdf (The U.S. Federal Trade Commission can take action under the Federal Trade Commission Act, 15 U.S.C. § 45, prohibiting deceptive acts and practices in or affecting commerce. Associated FTC regulations state that "deception" occurs if an entity makes an environmental claim inconsistent with 16 C.F.R. § 260.1(a). The Commission is authorized to conduct investigations by subpoena, and take enforcement actions including seeking injunctive relief and civil penalties.).
[40] See, e.g., State of Vermont Office of the Attorney General, *Guidance for Third-Party Solar Projects* 4 (2015), available at http://www.ago.vermont.gov/assets/files/PressReleases/Consumer/Guidance%20on%20Solar%20Marketing.pdf (Deceptive statements "made by a claimant in Vermont could violate the Vermont Consumer Protection Act, 9 V.S.A § 2453(a), which prohibits unfair or deceptive acts or practices. Violations of the Act are subject to injunctive relief and civil penalties of up to $10,000 per violation. 9 V.S.A. § 2458. The Attorney General is authorized to investigate deceptive claims by issuing subpoenas under 9 V.S.A. § 2460.").
[41] *FTC Green Guides*, 16 C.F.R. § 250.15(d) (2012).
[42] *FTC Green Guides: Statement of Basis and Purpose* (2012) 225.
[43] *Id.*
[44] U.S. Federal Trade Commission, *Letter to Green Mountain Power Corporation* (2015).
[45] Center for Resource Solutions, *Best Practices in Public Claims for Green Power Purchases and Sales* (2010), *available at* http://resource-solutions.org/document/best-practices-in-public-claims-for-green-power-purchases-and-sales/ .

developed guides and best practices consistent with FTC guidance stating that a party must own RECs in order to say that they are using renewable energy.

In *Environmental Marketing Guidelines for Electricity*, the National Association of Attorneys General provides a comprehensive list of guidelines and recommendations to define and deter deception from claims based on the purchase of unbundled RECs.[47] These claims guidelines address: deception; substantiation; qualifications and disclosures; properly linking attributes and benefits to the product; overstatement of environmental attributes; geographic limitations on claims; scope of claims; general environmental benefit claims such as "green," "clean," "renewable," "new," and "reduced emissions"; and specific environmental benefit claims such as "No X," "X-free," "Low X," "100% X," "All X," and specific percentage claims.

The table below synthesizes guidance from the various sources that have provided guidance on making renewable energy claims. The language presented below is taken directly from the listed source, and while some of the examples may be phrased for other industries, they are directly transferable to other organizations. Organizations should specifically look to the following guidance documents:

- Environmental Protection Agency: https://www.epa.gov/greenpower/making-environmental-claims and https://www.epa.gov/greenpower/gpp-webinar-solar-power-claims-reporting-introduction-colleges-and-universities
- Federal Trade Commission: https://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguides.pdf
- National Association of Attorneys General: http://apps3.eere.energy.gov/greenpower/buying/pdfs/naag_0100.pdf
- National Renewable Energy Laboratory: http://www.nrel.gov/docs/fy15osti/64558.pdf
- Vermont Attorney General's Office: http://ago.vermont.gov/assets/files/PressReleases/Consumer/Guidance%20on%20Solar%20Marketing.pdf
- RE:100: http://media.virbcdn.com/files/62/53dc80177b9cc962-RE100CREDIBLECLAIMS.pdf
- Center for Resource Solutions: https://speakerdeck.com/resourcesolutions/solar-energy-on-campus-key-considerations-for-solar-developers-working-with-higher-education-institutions

[46] Solar Energy Industry Association, *SEIA Solar Business Code* (2015), available at http://www.seia.org/policy/consumer-protection/seia-solar-business-code.
[47] National Association of Attorneys General, *Environmental Marketing Guidelines for Electricity* (1999), available at http://apps3.eere.energy.gov/greenpower/buying/pdfs/naag_0100.pdf .

Table 1. What can you do to minimize the risk of unintentional misrepresentation?

If…	Then…	Do not do this	Source
If making any claim about environmental attributes	Specify the source of renewable energy (e.g., wind or solar)[48]		FTC
If even a small part of the significant manufacturing processes involved in making a product are not powered with renewable energy or non-renewable energy matched by RECs	Clearly and prominently specify the percentage of renewable energy that powered the significant manufacturing processes involved[49]	Make an unqualified "made with renewable energy" claim[50]	FTC
If a marketer buys wind energy for 50% of the energy it uses to make the clothing in a new clothing line, when advertising the clothing line	Say "We purchase wind energy for half of the energy needs of our manufacturing facilities." [51]	Say "made with wind power" [52]	FTC
If a marketer generates renewable energy but sells RECs for all of that electricity **If a marketer generates renewable energy but sells RECs for all of that electricity continued…**	Say: "We generate renewable energy and sell the RECs to [our utility]"[53] Say: "We generate renewable energy, but sell all of it to others"[54] Say: "We installed solar panels, but sell the renewable energy others"[55] Say: "We are hosting a system that generates clean energy, but a third party, not us, owns the right to claim the clean energy attributes of such energy."[56] Say: "We are helping advance solar energy in the United States"	Represent, directly or by implication, that you use renewable energy[62, 63] State or imply that the electricity consumed is "renewable," "clean," "green," etc.[64] Do not say: "You've joined a new, renewables-driven community helping to build our clean energy future."[65] Do not say: "Your facility is now running on cleaner, cheaper, greener energy."[66] Do not say: "We are relying on the sun to provide our	CRS, SEIA, FTC, VT AG

[48] *FTC Green Guides*, 16 C.F.R. § 260.15(b) (2012).
[49] *Id. at* § 260.15(c).
[50] *Id.*
[51] *Id. at* § 260.15 Example 1.
[52] *Id.*
[53] Center for Resource Solutions, *Guidelines for Renewable Energy Claims: Guidance for Consumers and Electricity Providers* (2015), available at http://www.resource-solutions.org/pub_pdfs/Guidelines%20for%20Renewable%20Energy%20Claims.pdf .
[54] *Id.*
[55] *Id.*
[56] *SEIA Solar Business Code*

If…	Then…	Do not do this	Source
	or similar broad policy or market statements.[57] Say "The renewable attributes (RECs) of this electricity will be sold by us to keep the cost of your panels affordable."[58] Say: "We are buying solar panels and lowering our utility bills through emissions-free solar generation."[59] Say: "The sale of RECs in no way negates the fact that the solar arrays are in fact creating energy from a source that has renewable attributes."[60] Describe clearly and up front on any main webpage (not just FAQ page) exactly what happens to the RECs in your project – who owns the RECs and whether they are sold.[61]	electricity needs."[67] Do not say: "We deliver clean, safe, in-state renewable energy."[68] Make any statements or suggestions that you are using the renewable electricity produced.[69]	
If you do own RECs (see below if these RECs are from out-of-state)	You can claim renewable energy for yourself, and that you are going above and beyond the amount of renewable energy that you receive by default from your electricity provider.[70] Say: "I use x% solar power"[71]		CRS

[62] *FTC Green Guides*, 16 C.F.R. § 260.15(b) (2012).
[63] *Guidance for Third-Party Solar Projects*
[64] *Id.*
[65] *Id.*
[66] *Id.*
[57] *Id.*
[58] *Id.*
[59] *Id.*
[60] *Id.*
[61] *Id.*
[67] *Id.*
[68] *Id.*
[69] *Id.*
[70] *Guidelines for Renewable Energy Claims: Guidance for Consumers and Electricity Providers.*
[71] *Id.*

If…	Then…	Do not do this	Source
	Say: "I match 100% of my electricity use with solar RECs."[72] However, you must claim the type of renewable energy associated with the REC and say they are not necessarily from your on-site project, if you are selling the RECs from the on-site project.		
Even if 100% of your power comes from renewable power facilities, if none of the facilities are new, and all of them are generating the same amount of power they produced in the past, and there is no evidence that once the demand for renewable power exceeds the supply, the amount or percentage of renewable power, generation will increase		Say: "Choose our 100% renewable power option to make a difference in the world and reduce our nation's addiction to fossil fuels." The claim is deceptive because it overstates the environmental benefit of supporting the pre-existing renewable energy facilities.[73]	NAAG
If a claim states or implies an environmental attribute or benefit which actually occurs or exists outside the geographic area in which the claim is being made--such as buying Texas RECs to equal electricity used in Massachusetts	Inform consumers by clear and prominent disclosure about the specific geographic impact of the environmental attribute or benefit[74]	Say: "We do not pollute the air" It implies an environmental benefit in the geographic area in which the claim is being made[75]	NAAG

Additionality

There is a trend in the renewables market towards PPA agreements and bringing new projects online to demonstrate greater environmental impact,[76] but all types of RECs are counted equally in a GHG accounting framework. There are outstanding questions about whether

[72] *Id.*
[73] *Environmental Marketing Guidelines for Electricity.*
[74] *Environmental Marketing Guidelines for Electricity.*
[75] *Environmental Marketing Guidelines for Electricity.*
[76] See Google's description of their renewable energy purchasing pathways: https://static.googleusercontent.com/external_content/untrusted_dlcp/www.google.com/en/us/green/pdfs/renewable-energy.pdf

additionality through PPAs is the best way to claim greenhouse gas reductions,[77] including whether these additionality claims should be shared by various parties to a transaction, and whether this is the correct additionality framework to consider, or if regulatory additionality (defined below) is more important. In other words, is it more important to prove that an additional project would not have happened without the institution's involvement, or that global emissions were reduced by the project coming online?

"Additionality" assures an action is "additional to what would have otherwise occurred under a business-as-usual scenario."[78] Additionality is difficult to track and calculate, but is crucial to substantiating some green claims.[79] The most relevant comparable differentiations for additionality come from carbon offsets which can be claimed based on any of six tests: 1) regulatory additionality test (as with renewable energy); 2) performance-based test (project's emissions profile must outperform a pre-calculated business-as-usual emissions baseline); 3) financial additionality (project would not have been built but for offset revenues); 4) barriers test (project would not have been built but for overcoming significant institutional barriers); 5) common practice test (whether the type of facility is commonly employed); and 6) timing test (whether the project was newly installed).[80]

In the U.S., the common form of substantiating additionality for carbon offsets generated by renewable energy projects is "regulatory additionality," which requires that a renewable energy purchase occur on top of what is required by regulation or above a baseline value.[81] Applying this same definition to purchases of renewable energy: If you own a project and sell the RECs to the utility, then you are helping the state meet its renewable energy goals, but you are not necessarily creating capacity over and above what was mandated by law. If instead you retire those RECs, you are providing demand for renewable energy above and beyond the state RPS requirements. Although regulatory additionality is the common form of substantiating additionality for *carbon offsets* generated by renewable energy, discussions of additionality for direct purchases of renewable energy generally refer to other types of additionality (e.g. the institution provided the capital or contract or creditworthiness needed to make the project go forward).

Renewable energy purchases made and counted in an institution or corporation's Scope 2 inventory (as opposed to carbon offsets sourced from renewable energy projects) are not required to meet any additionality tests. These RECs can be counted in an emissions accounting inventory as zero-emissions electricity even though the same RECs would not be certifiable carbon offsets. Although additionality is not a requirement for Scope 2 renewable

[77] See Michael Gillenwater, *What David Roberts Gets Wrong About "Buying" Green Power* (2015), available at http://ghginstitute.org/2015/11/12/what-david-roberts-gets-wrong-about-buying-green-power/
http://ghginstitute.org/2015/11/12/what-david-roberts-gets-wrong-about-buying-green-power/
[78] *Id.* at 2, Fn. 3.
[79] *Id.*at 5.
[80] *Id.*at 6.
[81] *Id.* at 2, Fn. 3-5.

energy purchase accounting, many purchasers feel that this is an important aspect of their purchase and will go to greater lengths to engage in deals that meet their definitions of additionality. However, some experts have investigated the actual impact of green power purchases, and argue that voluntary RECs purchased outside a regulatory market have no influence on grid emissions since the value of the voluntary REC is not enough to have "altered investor behavior."[82] On the other hand, the number of wind and solar capacity additions in recent years, along with the increase of natural gas use, versus coal, has dramatically altered projected emissions in the EIA Annual Energy Outlook. How much of this reduction in emissions is due to voluntary REC purchases is the crux of the debate. This is discussed in greater depth below.

Greenhouse Gas Accounting for Green Power Purchases

GHG accounting programs and inventories usually discern between direct and indirect GHG emissions. Direct emissions, often called "Scope 1" emissions, represent the emissions directly emitted by, and under the control of, the reporting organization.[83] Indirect emissions, often called "Scope 2" emissions,[84] represent the emissions generated elsewhere or outside the control of the organization but resulting from the organization's energy consumption.[85] For example, emissions from on-site electricity generation are considered Scope 1, while emissions from electricity or steam purchased from the utility are considered Scope 2. Renewable energy purchases are usually made to address an institution's Scope 2 electricity consumption emissions.[86]

The New GHG Protocol Scope 2 Guidance and the "Market-based" Method

The emissions associated with purchased electricity are categorized as "Scope 2" emissions by the World Resources Institute's (WRI's) and World Business Council for Sustainable Development's (WBCSD's) Greenhouse Gas Protocol Corporate Standard, which provides the baseline GHG accounting standards used by institutions across the world. Under this standard, companies are required to report Scope 2 emissions based on either the location-based method, or the market-based method. The location-based method uses the average electricity grid emissions factors and the market-based method uses specific factors based on the actual generator.

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[82] Matthew Brander et al., *Open Letter on Scope 2 GHG Reporting* (2015), available at https://scope2openletter.wordpress.com/ . https://scope2openletter.wordpress.com/ . See also, Michael Gillenwater, *What David Roberts Gets Wrong About "Buying" Green Power* (2015), available at http://ghginstitute.org/2015/11/12/what-david-roberts-gets-wrong-about-buying-green-power/ http://ghginstitute.org/2015/11/12/what-david-roberts-gets-wrong-about-buying-green-power/ .

[83] *Id.*

[84] Another form of indirect emissions are often called scope 3 emissions. These are indirect emissions associated with the entire value chain of a product or service creation and delivery.

[85] Bird & Sumner at 8.

[86] *Id.* at iv.

Traditionally, WRI required organizations to calculate Scope 2 emissions reductions pursuant to a "location-based" method, which derives emissions from a locational grid average. While this calculation remains valid today, WRI issued new GHG Protocol Scope 2 Guidance on emission reporting in 2015. The revised GHG Protocol Scope 2 Guidance formalized the "market-based" method, which allows different types of contractual data (such as green power tariffs, power purchase contracts and RECs) to "reflect the emissions from the electricity that a company is purchasing, which may be different from the electricity that is generated locally."[87] Organizations following the WRI methodology must now report their emissions according to both methodologies, and organizations now may choose either method for setting and achieving GHG goals.

In addition to both the location-based and market-based methods, there is a supplemental optional disclosure of avoided emissions. The avoided emissions disclosure calculates the amount of GHG emissions avoided on the grid due to the renewable energy purchase. This calculation is based on the average emissions factors from the power grid in the location of the generator compared to the average emissions factor in the location of the institution.

There is an important distinction between avoided emissions calculations and Scope 2 market-based accounting. REC purchases that reduce GHG emissions relate to a company's own electricity use and "its corresponding GHG emissions impact or "footprint", and are not equivalent to claims about the amount of RE or greenhouse gas emissions on the grid or globally."[88] They are not carbon offsets that prove a global emissions reduction on the grid based on a theoretical baseline. Additional analysis is needed in order to prove "additionality" from a global perspective, so for most institutions the appropriate claim is to say that the GHG footprint is reduced and not that all GHG emissions are offset.

Importantly, the new GHG Protocol Scope 2 Guidance does not consider additionality a core concept of electricity emissions accounting and thus does not require a renewable energy purchase to be "additional" in the sense that the project would not have been created but for the procurement.[89] WRI's position is that Scope 2 emissions accounting "is based on attributional accounting, which in this context means allocating electricity emissions to end-users—but not the 'impact' of a given action or activity outside of the inventory boundary."[90] The GHG Protocol Scope 2 Guidance suggests that the addition of "market-based" reporting is important because it will "increase demand for low-carbon energy," which will grow supply and reduce overall emissions over time, and "maintains policy-neutrality by not trying to

[87] Greenhouse Gas Protocol, *Top Ten Questions about the Scope 2 Guidance* (2015), at http://www.ghgprotocol.org/node/463.
[88] RE100 Credible Claims paper: http://media.virbcdn.com/files/62/53dc80177b9cc962-RE100CREDIBLECLAIMS.pdf
[89] *Id.*
[90] *Id.*

distinguish which types of impact are best. Instead, companies can document the key features of their purchases separately to illustrate the types of impact they intend to have."[91]

While most stakeholders agreed with the Scope 2 Guidance that was adopted, some experts criticize the Guidance's introduction of the market-based method as antithetical to the very purpose of GHG reporting. They argue that the Guidance allows organizations to overstate the net emissions reductions achieved from making renewable energy purchases, and that reporting organizations should instead "quantify actual outcomes rather than mere contractual arrangements."[92] They further argue that "by paying an extra fee to make a claim on renewable power, a company can report having a GHG 'footprint' of zero, equivalent to not having consumed any electricity."[93]

Local vs. National purchases

Although the U.S. is not physically interconnected,[94] for the sake of renewable energy purchasing, the U.S. is considered one market, and institutions are allowed to purchase out-of-region RECs to displace in-region brown power purchases. National RECs are often an attractive option to businesses and institutions as the prices are generally significantly lower than New England-based options.

High SREC prices in Massachusetts have made it impractical to purchase or retire those SRECs associated with a local project owned by an institution and forgo the associated SREC revenue stream. EPA and state guidance also recommend selling these high value SRECs to RPS compliance entities in order to help the state meet its renewable energy goals. However, this raises the question as to what the institution's goals are with the purchase. An in-state or in-region REC purchase supports renewable energy generation in the region, whereas an out-of-state or out-of-region purchase supports generation further away. If the goal is to drive the development of projects locally, then a local REC purchase is more important. If the goal is to drive projects located nationally, then out-of-region RECs still help the institution meet its goal. It is key; however, when purchasing out-of-region RECs to evaluate the local renewable energy market conditions of where the project is located in order to evaluate additionality (i.e. the local regulatory/RPS market context).

Despite the high cost of New England RECs, the Boston-based Mass Energy Consumers Alliance has come out strongly on the position that it is important to support local renewable energy projects. Mass Energy sells innovative REC products including a forward purchase of

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[91] *Id.*

[92] *See* Brander et al.

[93] *Id. See also: Guidelines for Quantifying GHG Reductions from Grid-Connected Electricity Projects* (2007).

[94] A future interconnected grid system with addition high transmissions lines could allow for increased amounts of renewable and for example, allow large wind projects in the plains states to power cities on the east coast. See: http://news.harvard.edu/gazette/story/2016/10/a-way-forward-on-climate/ and http://www.vox.com/2016/3/29/11322600/plains-eastern-transmission-line

renewable energy credits that will be used to help provide a revenue stream to future new wind projects located within New England. Mass Energy's position is that only local (New England) based "new" RECs really drive the development of renewable energy in the region. They prioritize buying RECs from new projects that "need" the REC sale revenue in order to be built.[95]

Purchasing Pathways: Impacts and Insights

This section provides a scorecard for analyzing the potential impacts of different renewable energy purchasing choices. First, it defines the different purchasing pathways and the types of impacts that institutions might achieve from a single procurement or as part of a larger purchasing strategy. Next, this section illustrates how an institution's REC management choices can achieve different kinds of impacts. Finally, this section makes high level observations about the purchasing pathways to provide decision makers with insights into how they can achieve their renewable energy goals.

Purchasing Pathways

The renewable energy market provides institutions with eight main ways to procure renewable energy, which are described in the table below.

Table 2: Renewable Energy Purchasing Pathways Defined

Term	Definition	Example
Onsite ownership	Purchasers have decided to install renewable energy projects at their premises and the customer itself owns the project.[96]	A Boston-based institution purchases and owns a parking canopy solar project on its parking garage in Boston.
Onsite leasing	Purchasers have decided to install renewable energy projects at their premises; however the customer merely hosts the project, which is actually owned by another entity.[97]	A Boston-based institution signs a lease and PPA for net metering credits from a solar project located on the roof of its athletic facilities.

[95] See: http://blog.massenergy.org/blog/does-your-renewable-energy-purchase-actually-displace-fossil-fuels
[96] *Id.*
[97] Holt, Edward et al., National Renewable Energy Laboratory, *The Role of Renewable Energy Certificates in Developing New Renewable Energy Projects* 35 (2011), *available at* www.nrel.gov/publications .

Term	Definition	Example
Traditional PPA (or net metering credit sales agreements)	Power purchase agreements between a customer and a power generator that is in close proximity to the customer.	A Boston-based institution signs a net metering credit agreement from a solar power project in greater-Boston, or a university signs a PPA with a wind project in New Hampshire.
Unbundled RECs in region	Standalone RECs sold separately from the underlying renewable energy generation, but which derive from renewable energy generated within the region of the purchaser.	A Boston-based institution buys RECs from a wind power project in Maine or a Boston-based institution signs up for NSTAR Green or New England GreenStart and pays a premium every month on its electric bill.
Unbundled RECs out of region	Standalone RECs sold separately from the underlying renewable energy generation, but which derive from renewable energy generated outside of the region of the purchaser.	A Boston-based institution purchases (relatively inexpensive) RECs from a wind project in Texas, or a mix of Green-e certified RECs from outside of New England.
Synthetic PPA	Power purchase agreements (in the form of a "contracts for differences") contracted between a customer and power generator that are not in the same regional transmission grid.	A Boston-based institution signs a contract for differences with a solar power project in North Carolina.
Green tariff	"Green tariffs" are green power rates that allow large commercial utility customers to purchase, through their utility, renewable energy from a specific facility in the utility's service territory, instead of negotiating a PPA directly with a generator.[98]	Not available in greater Boston.

[98] Eric O'Shaugnessy et al., National Renewable Energy Laboratory, *Status and Trends in the U.S. Voluntary Green Power Market (2014 Data)* 2 (2015), *available at* www.nrel.gov/publications .

Term	Definition	Example
Community solar	"Community or 'shared' solar" programs allow utility customers to purchase or subscribe to a portion of a larger solar project. Customers then receive the benefits of the energy that is produced by their shares.[99]	Employees of a Boston-based institution purchase shares of a community solar project in Massachusetts with a community solar developer/provider.

Impacts

Through the eight purchasing pathways described above, institutions can make three different types of impact. These impacts are defined here and discussed in greater detail in the sections below.

Table 3: Types of Impact Defined

Type of Impact	Definition	Institutional Renewable Goals
Environmental impact	The positive effect that a renewable energy purchase has on the environment, including the reduction of GHG emissions to combat climate change.	"*I want to prioritize making an environmental impact by reducing emissions*." My purchase has reduced GHG emissions.
Capacity impact	The positive effect that a renewable energy purchase has on the amount of renewable energy generation capacity overall, including the role that the purchase has in the creation of additional new projects. Note: the impact will vary depending on where the project is located. There is the regulated capacity, capacity additional to the regulated capacity,	"*I want to prioritize making an impact on reducing GHG emissions on the electricity grid by increasing renewable capacity*." My purchase has increased the amount of renewable capacity in our region/in another region.

[99] *Id.* at 1.

Type of Impact	Definition	Institutional Renewable Goals
	local capacity impacts, and national capacity impact. International capacity impacts are not considered.	
Financial impact (on the project developer or the institution making the purchase)	The positive effect that a renewable energy purchase has on the monetary cost and risk profile of renewable energy project finance, development and construction. Or the purchase results in the institution saving money on its electricity bills over the term of the agreement. Note: Making an environmental impact (buying RECs) may cost more; therefore, being at odds with creating a financial benefit to the institution.	"*I want to prioritize making a financial impact for project developers by reducing the cost of project development.*" My purchase has made the project financially viable. My purchase has reduced energy prices for my institution and/or reduced energy price volatility for my institution.

Environmental Impact

There are a few types of renewable energy purchases that make relatively strong environmental impacts. First and foremost, retaining and retiring all of a renewable energy project's original RECs is the most common indicator of environmental impact. Almost as important to ensuring environmental impact is onsite ownership. Recognizing many institutions cannot own projects onsite for many reasons, acquiring project equity and traditional PPAs, respectively, can maximize the environmental benefits of an offsite renewable energy purchase. Finally, some regions with high REC prices, such as New England, encourage the sale or monetization of RECs in order to significantly improve project economics. If the project's RECs are to be transferred, then environmental impact is not as strong without strong additionality with alternative RECs or evaluation of avoided emissions.

Capacity Impact

To achieve strong capacity impact, capacity projects need to closely mirror the methods that create the greatest environmental impact. Installing and hosting a renewable energy project onsite, whether as an onsite owner or lessee, is the most common factor indicating strong capacity impact. This makes intuitive sense because the organization's decision to install solar onsite clearly creates additional capacity that directly offsets the institution's own Scope 2 emissions, plus it largely eliminates energy wasted through losses in utility transmission and distribution systems. Additionally, retaining and retiring all original RECs indicates strong

impact on capacity. Finally, as with achieving environmental goals, temporarily selling or arbitraging RECs can positively affect renewable energy capacity and while not as "good" as retaining and retiring all of the RECs, it is better than not buying any RECs at all.

The analysis below refers to four distinct types of capacity, defined here:

- Regulated Capacity is the capacity required by regulations such as the renewable portfolio standard.
- Additional Capacity is renewable energy capacity above-and-beyond the amount that is required by renewable portfolio regulations.
- Local Capacity refers to projects that are based within the same RTO/ISO as the institution.
- National Capacity refers to projects that are based outside the RTO/ISO where the institution is located, but within the United States.

Financial Impact

For those institutions seeking to maximize their financial impact with a renewable energy purchase, the methods employed can often be in conflict with environmental or capacity-driven goals. Financial benefits can include lower electricity costs and reduced price volatility, even though purchasing RECs can reduce those savings somewhat (and without RECs, no renewable energy claims of any kind can be made). One key activity for making a financial impact is selling the original RECs, especially where REC prices are high, or where the project is small. As with the other impact goals, building onsite is also key in making a positive financial impact. For offsite projects, the ability to participate in project-level financing, either as an equity owner or lender, while uncommon, is a potentially an effective way to improve the financial strength of a renewable energy project. And if retiring RECs is not an option, then an institution should consider arbitraging all of the RECs and replacing them with cheaper RECs, understanding that this will impact other project goals and claims.

Combined Impacts

If an institution sets out to achieve all three goals' benefits, environmental, capacity and financial, it will have to make tradeoffs in achieving some goals at the expense of achieving others. However; it appears that owning a renewable energy system onsite is a high impact purchasing pathway in all three areas; however, this option is not always feasible, especially at the desired scale. If hosting a project onsite is not feasible, then buying project equity makes the widest impact for offsite purchases, followed by participating in a traditional PPA. The lowest impact across all three areas would be to purchase unbundled RECs out of region unless it can be shown that the emissions or additionality benefits are equal or greater from the offsite project than a local project. It is important for an organization to consider scale. This analysis may be true on a project-by-project basis. However; an institution is left with the question of how to evaluate the benefit or impact of a 100 MW wind project in Texas versus a 100 *kW* on-site project. From a global perspective, the 100 MW project represents 100 times the scale of renewable energy development, but the relative scale of difference made by the

institution's contribution to the project (would this project have happened without the institution's help?) may not be as large.

An important complementary relationship exists between achieving environmental and capacity goals. Usually the achievement in one area will likewise fulfill the other. However, both impact areas have a potentially inverse relationship with financially motivated purchasing decisions, especially environmental impact methods. In other words, many of the purchasing pathways with the highest environmental impacts (e.g., holding and retiring RECs) do the least financially, and vice versa.

While there is a difference between retiring all RECs and selling all RECs, doing something in-between will likely be the most attractive option when an institution seeks to achieve multiple impact goals. Temporarily selling or arbitraging all of the RECs makes a higher environmental and capacity impact, while permanently arbitraging all of the RECs makes a higher financial impact. Interestingly, selling or arbitraging some of the RECs while retiring the others is not optimal for making either high environmental or high financial impacts because it is difficult to prove the effect the arbitraged RECs have on new renewable energy development. In these cases, clear communication about what was done will be even more important to minimize any potential confusion.

Analysis

The following Table 4 parses out a number of different strategic REC management methods available to institutions pursuant to their selection of a purchasing pathway. Each combination is evaluated for its varying ability to advance environmental, capacity, and financial goals. Green, yellow, or red represent a higher, middle, or relatively lower impact based on the treatment of the RECs. The framework for Table 4 is based largely on the analysis set forth by Holt et al., *The Role of Renewable Energy Certificates in Developing New Renewable Energy Projects* 31-36.[100] Some of the main takeaways include:

- Retiring RECs is the key to advancing environmental goals.
- Arbitraging RECs is mostly about reducing the cost of a renewable energy purchase.
- Selling the original RECs becomes complicated as other RECs need to purchased.
- The location of the project matters across the various options.
- Environmental and financial drivers are generally at odds with each other.

[100] Holt, Edward et al., National Renewable Energy Laboratory, *The Role of Renewable Energy Certificates in Developing New Renewable Energy Projects* 31-36 (2011), *available at* www.nrel.gov/publications .

Table 4: The Different Potential Impacts of Various REC-related Decisions

Purchase pathway	Sell all original RECs	Arbitrage RECs	Retire RECs
Onsite ownership	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial
Onsite leasing/PPA	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial
Offsite Traditional PPA	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial
Synthetic PPA	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial
Green tariff	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial	Environmental Capacity – Regulated Capacity – Additional Capacity – Local Capacity – National Financial

Conclusion

Institutional renewable energy purchasing is an inherently complicated process. There are many options available, and multiple decisions need to be made regarding the form the purchase takes and what claims the institution hopes to make based on the purchase. Many departments and individuals within an institution are likely to be involved in these decisions, and there may be competing internal priorities to be worked-out. Regardless of the final decision, transparency and clear communications are key.

There is currently no ambiguity that the ownership and retirement of the REC is the legal foundation of any renewable energy claim. The EPA, FTC, NAAG, and CRS have all issued clear guidance on renewable energy claims, and there has been a recent increase in outreach on this guidance to encourage accuracy and transparency both for renewable energy developers and renewable energy purchasers. As the number of deal types, financing mechanisms, and REC management permutations increase, this guidance has become increasingly important.

While there are relatively simple answers for what types of claims you can make, there are no easy answers to the question "what type of renewable energy purchase should I make?", and the larger question of "how much of an impact is my purchase making?" requires careful analysis. Institutions should not shy away from asking difficult questions as they evaluate renewable energy purchasing options. There remain a significant number of outstanding questions and a need for further research including:

1. The specific impacts and relative merits of pursuing out-of-region vs. in-region deals, especially where large price differences exist,
2. Whether it is appropriate to consider the U.S. as one electric market for renewable energy transactions and accounting, even though electricity cannot physically be delivered nationally,
3. How to assess the impacts of REC arbitrage, and
4. How out-of-region REC deals specifically impact New England renewable energy markets.

In this complex environment, institutions should keep the big picture in mind:

- More renewable energy is better for the environment.
- Different types of renewable energy transactions have different types of impact.
- You can prioritize local capacity, regional capacity, or national capacity.
- Your purchase is ultimately about helping finance a project.
    - A long term PPA is probably most beneficial to a project.
    - RECs add value, but by varying degrees and importance.
    - Institutions should look closely at evaluating who it is buying the RECs from. Ask if that entity will build more projects?
- Transparency and clear communications are important to ensure no double counting and to make sure institutions are accurately and consistently representing the projects and purchases they are making.