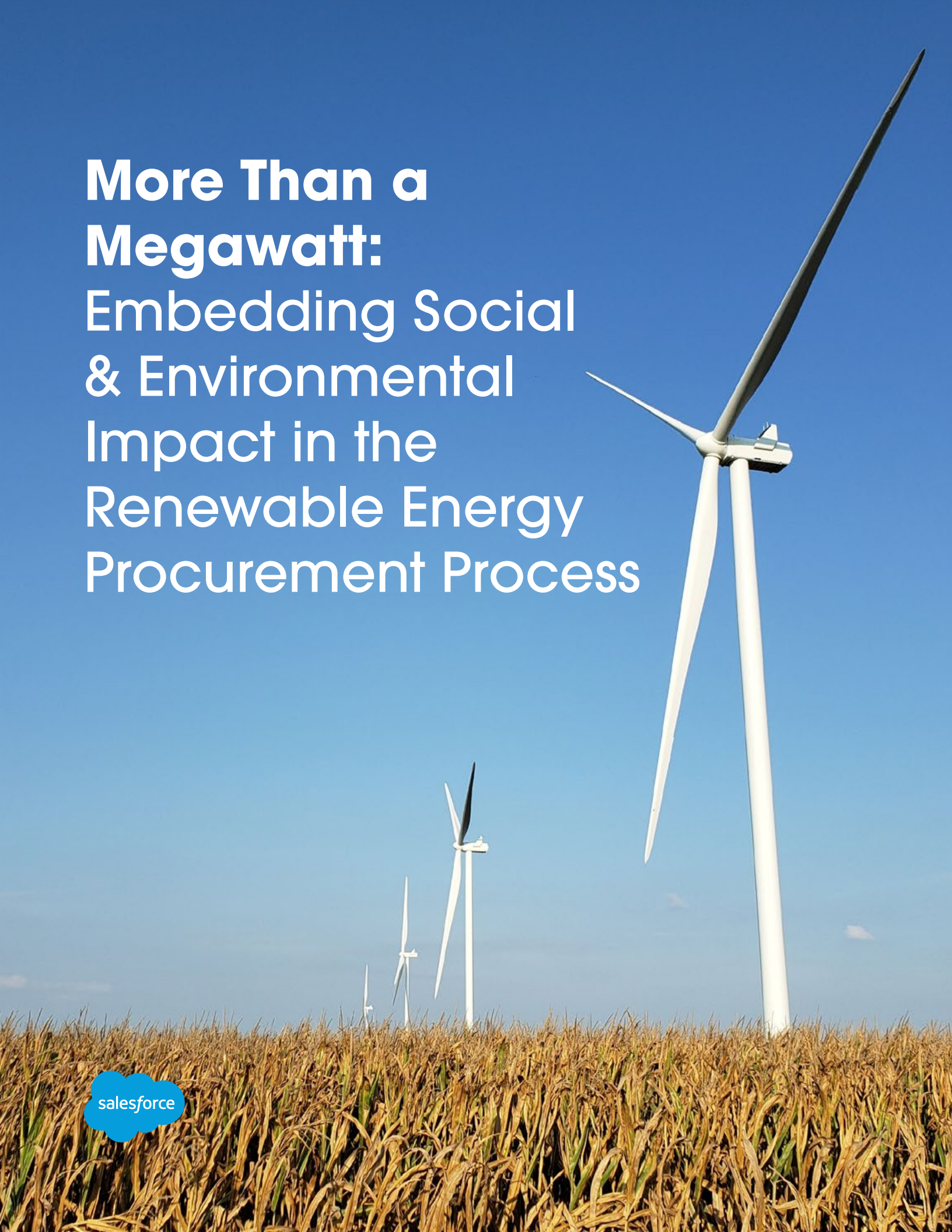
More Than a Megawatt: Embedding Social & Environmental Impact in the Renewable Energy Procurement Process



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Acknowledgements

Primary Authors

Megan Lorenzen, Salesforce

Max Scher, Salesforce

Key Contributors

Thank you to the following technical experts who are each leading the industry in their respective specialties. Their guidance and expertise is pushing the industry forward.

Erica Brand, The Nature Conservancy

Patty Dillon, Green Electronics Council

Lily Donge, Groundswell.org

Pasha Feinberg, Defenders of Wildlife

Sarah Freiermuth, The Nature Conservancy

Alex Klonick, Renewable Energy Buyers Alliance (REBA)

Bruce McKenney, The Nature Conservancy

Joy Page, Defenders of Wildlife

Henry Richardson, WattTime

The Rev. Kristen Snow Spalding, Ceres

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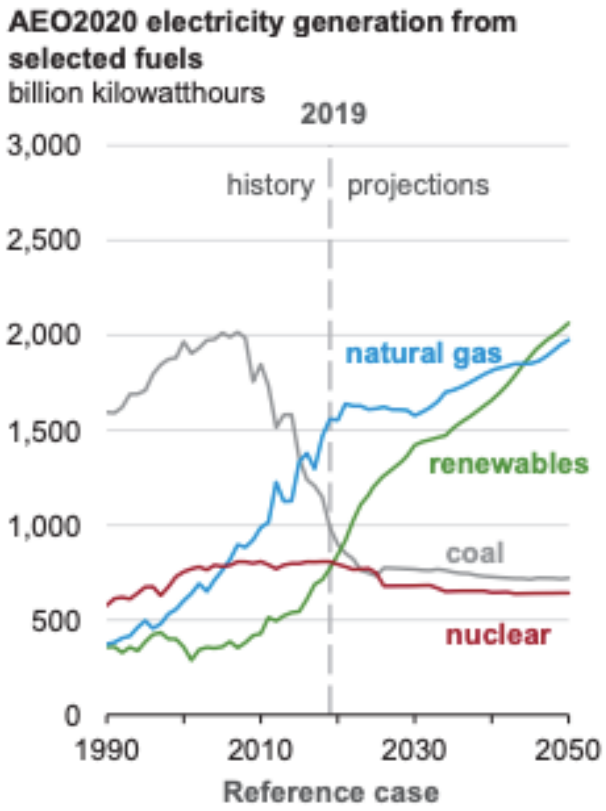
Introduction: The Role of Buyers in the Energy Transition



EIA 2020 US Energy Outlook [6]

The global energy system is undergoing a critical transition. After over a century of coal dominance in the U.S., 2019 marked the first time in over 130 years that renewable energy consumption surpassed coal consumption.[1] The increased growth of renewables is expected to continue well into the middle of the century with 132 to 157GW of new renewable energy capacity added in the U.S. over the next five years alone[2] (for context, the U.S. has 1,219GW of total energy capacity today[3]). How and where that renewable energy is deployed can drive radically different outcomes – maximizing positive impact for a range of stakeholders, or limiting benefits to just a few.

Companies choosing to purchase renewable energy are playing an increasingly important role in this clean energy transition. Today, over 200 companies have committed to reaching 100 percent renewable energy. In 2019, those same companies contracted with nearly 10GW of new renewable generation in the U.S.[4] In fact, of all the renewable energy generation added in 2019, *more than half* was associated with corporate purchases.[5] The decisions these companies make about which projects to contract with can shape the industry as a whole.

This paper provides a starting framework and expert third-party guidance on how to maximize the positive impacts of renewable energy purchases and minimize the negative impacts. While Salesforce certainly doesn't have all the answers, we believe that this pivot to a holistic evaluation of renewable energy projects is a critical step for the industry. The goal of this paper is to share some of our learnings thus far and our approach with the renewable energy community . Our hope is that together we can ensure the clean energy transition meets its full potential for improving the state of the world.

"The rise in corporate voluntary renewable energy procurements presents an unparalleled opportunity for corporates to influence the transition to a resilient, zero-carbon energy economy."

Miranda Ballentine
CEO, Renewable Energy Buyers Alliance

1 EIA Energy Consumption by Sector 2019
2 IEA Renewables 2019
3 2018 Renewable Energy Data Book
4 Deal Tracker
5 IRENA Capacity Stats 2020
6 EIA Annual Energy Outlook 2020

Renewable Energy Buyers Alliance tracker of voluntary corporate renewable energy deals

It Started With a Megawatt

The infrastructure behind the "cloud," which enables Salesforce's products and services (along with the world's cat video collection), consumes about 1 percent of electricity globally.[7] Today, that electricity comes predominantly from burning fossil fuels – a major source of global greenhouse gas emissions.

"Climate change is the biggest, most important and most complex challenge humans have ever faced. In order to limit global warming to 1.5°C, we know the world must quickly transition to non-polluting and emissions-free energy sources."

Patrick Flynn, Vice President Sustainability, Salesforce

As a cloud pioneer and sustainability leader, we're responsible for the transition to clean and renewable sources of electricity *this decade*. We want a future in which clean and renewable energy is powering the world around the clock. This will take a suite of actions, including trillions of dollars in investment, policy and regulatory changes, technology innovation, and much more. Towards that end we committed, in 2013, to reaching 100% Renewable Energy. For us, that means purchasing renewable energy equivalent to the amount of electricity we've used to power our global operations on an annual basis.[8]

Learn more about Salesforce's approach to clean energy here.

In the beginning of our journey, our renewable energy purchases focused mainly on transactional elements like the quantity and cost of what we're purchasing to reach our 100% Renewable Energy target. However we quickly learned that (unsurprisingly) not all renewable energy is created equal. Two projects with identical transactional details can have enormously different impacts. Some renewable energy projects displace more fossil fuels than others, some are built at the cost of critical habitat for plants and animals, and others provide invaluable support for their local community.

For us, purchasing renewable energy is about much more than adding new megawatts of renewable energy to the grid. It's about improving the state of the world, which includes reducing emissions, and so much more. So, we began to ask ourselves a simple question. What does "the best" renewable energy project look like to us? How do we make sure the projects we support are having the greatest positive impacts, and least negative ones?

Rethinking What Makes 'The Best' Project?

To wrap our heads around what other aspects of renewable energy are important to consider, we've turned to the United Nations Sustainable Development Goals (SDGs), which provide a framework for thinking about what's needed to improve the state of the world.

There has been great research on the linkages between renewable energy and the SDGs. The wide range of opportunities and impacts renewable energy can have on the SDGs can "stem from the provision of renewable energy itself, supply chain sourcing practices, corporate governance and much more."[9]

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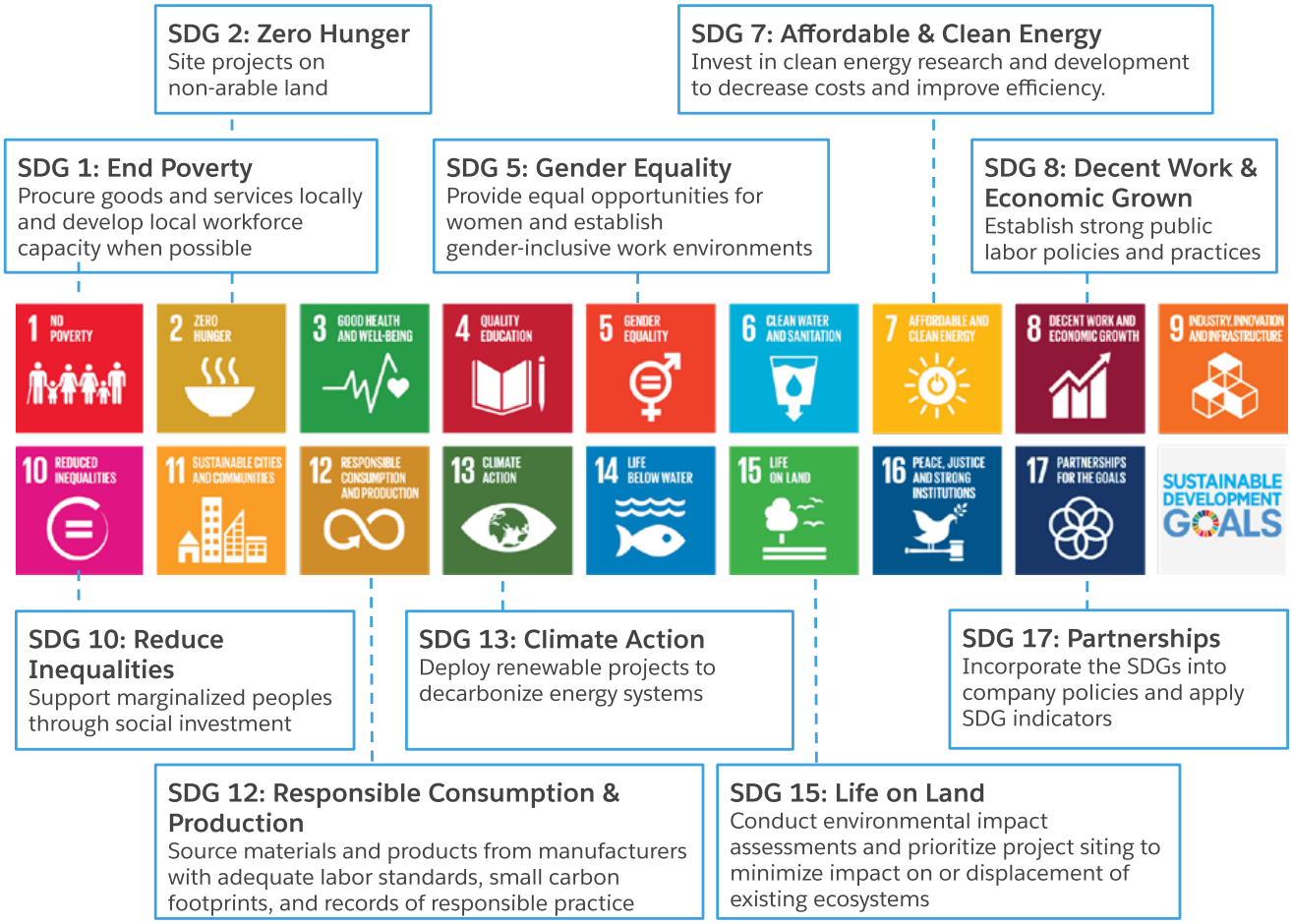
7 Recalibrating global data center energy-use estimates

8 Like many other leading companies we calculate our progress toward 100% Renewable Energy by adding up all of the environ mental attributes we have obtained in a given year and divide it by our total global energy use.

9 Mapping the Renewable Energy Sector to the Sustainable Development Goals

Opportunities for the renewable energy industry to contribute to the SDGs[10]



Research like this provides a critical starting place. But we've found ourselves struggling with how to evaluate *individual* projects for these opportunities and impacts. To address this, we've begun engaging technical experts to translate these sustainable development linkages into criteria we can use to evaluate individual projects.

One of the key challenges of integrating these environmental and social criteria into the procurement process is that there are inevitably tradeoffs between them. There is rarely one project that checks all the criteria perfectly. In reality, things are less black and white, and more shades of grey.

To tackle this, we developed our renewable energy procurement matrix – a tool for scoring projects across different economic, environmental, and social criteria. Each of which is weighted according to Salesforce's own prioritization to reflect the tradeoffs being made between them. Projects are then scored across each criteria, based on their Request for Proposal (RFP) responses.

"Given the critical role of corporate renewable energy purchasers in the market, we have a unique opportunity to shape the industry. Let's seize it."

Max Scher, Head of Energy and Carbon Programs, Salesforce

10 Mapping the Renewable Energy Sector to the Sustainable Development Goals

For us, the matrix is a valuable sensing mechanism to identify projects that do a better job improving the state of the world. While we inevitably still have to make tradeoffs between these criteria, the step of asking developers about each criteria sends an important signal to the market. We've even successfully influenced developers to address shortcomings they hadn't prioritized before. The more buyers and investors ask these questions, the stronger the signal to the market. Hopefully, with a strong enough signal, the industry as a whole will shift, and we'll eventually have to make fewer tradeoffs.

Our goal is to ensure the energy transition meets its true potential for improving the state of the world. And, we know that together, we can have a larger influence shaping the industry. That's why we are sharing some of what we've learned from the experts and our general approach with the entire renewable energy community. Our hope is that others can use and improve upon this work.

This is Just a Step on the Journey

This is just another step on this industry's journey of continuous improvement. We know that what's included here is incomplete and imperfect. There are certainly other points of view to incorporate, and other criteria to add.

With this in mind, we've asked the Renewable Energy Buyers Alliance (REBA), an alliance of clean energy buyers, service providers and NGOs working to unlock the marketplace for renewable energy buyers and accelerate the transition to a zero-carbon energy future, to continue leading the entire buyer community into the next phase of this journey. Moving forward, REBA will build on the work they are already doing to look, "Beyond the Megawatt" in a new workstream, gathering feedback and input from buyers, NGOs, and scientists to expand this resource for the entire renewable energy community. As one of the most successful NGO collaborations accelerating the renewable energy marketplace, REBA is uniquely positioned to tap into the expansive expertise of the renewable energy community to build out a robust tool for all buyers to use when selecting renewable energy projects. For our part, we will continue to develop criteria with the REBA community, including funding research on critical topics like Additionality, where guidance doesn't currently exist.

As REBA takes this workstream forward, we invite the renewable energy community to share feedback and recommendations of additional impact criteria to include going forward.
Please submit your feedback *here*.

What's Included in this Paper

In the following sections, we have asked several subject matter experts to share good practices and guidance across a number of environmental and social criteria including an overview of why the criteria is important and how to evaluate it. In addition, we've provided a downloadable procurement matrix which can be customized and weighted in accordance with your own priorities (Exhibit A), and a summary list of potential questions for renewable energy buyers to ask during their RFP process (Exhibit B).

We've divided the criteria presented here into those with clear evaluation guidance, and those early on in their development, which only have directional guidance:

Clear Quantitative or Qualitative Guidance

Avoided Emissions

Land Use

Wildlife

Solar Material Management

Just Transition

Directional Guidance Only

Community Engagement

Air Quality

Avoided Emissions

The primary goal of renewable energy purchases, for most corporations, is to mitigate climate change. That makes it critical to understand the impact of each project on greenhouse gas emissions. But the fact of the matter is, some megawatt-hours of renewable energy are more effective than others in avoiding emissions, depending on their location and production timing. By assessing the avoided emissions of different renewable energy projects, organizations can identify and select projects that are particularly effective at reducing emissions.

OVERVIEW

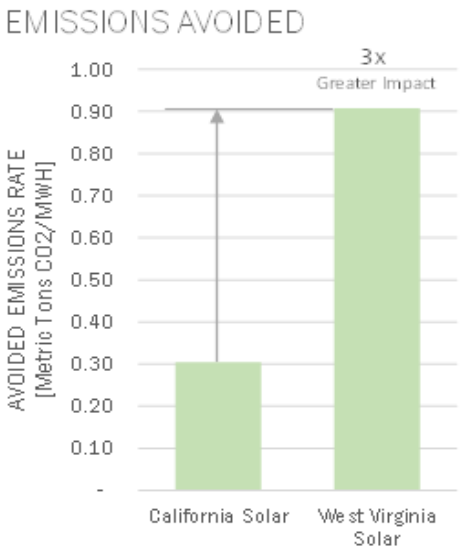
Renewable energy projects avoid emissions by displacing fossil-fuel based generation that would have otherwise produced electricity. Adding one megawatt-hour of electricity from a new renewable energy project to a power grid at a specific *time* and *place* displaces the power plants that would have otherwise produced power at that specific time and location – the marginal generators. Because the type of generators serving the grid vary, the emissions reduction of a potential project can change dramatically based on its location and production profile.

*On average, corporations procuring energy in the U.S. can achieve **34%** more emissions reductions from their large-scale renewable energy investments by citing projects based on overall avoided emissions.*[11]

By measuring the avoided emission potential of different renewable energy projects, buyers can identify and select projects that are particularly effective at reducing emissions. Currently, marginal emissions data used to calculate avoided emissions is available for the United States, but is limited for the remainder of the world. Increased global coverage can highlight regions where investment in renewables will have an outsized effect in reducing emissions from fossil fuel power plants.

SUGGESTED PRACTICES

At the highest level, this means identifying grids that have the highest emission factors, and, therefore, the greatest potential to reduce emissions. Adding a renewable energy project to a grid that runs primarily on coal or other fossil resources typically means the new renewable generator will displace one of those highly-emitting sources, substantially increasing its emissions reduction effectiveness. Conversely, adding a renewable energy generator to a grid that already consists primarily of renewable energy will typically displace fewer emissions.



In a recent analysis, we found a West Virginia solar project would avoid almost 3x the emissions than that of a California solar project. To maximize the emissions potential of a new renewable investment, buyers can compare different projects' avoided emissions rates and leverage this information to select projects in grid regions that cause the greatest avoided emissions.

11 WattTime Renewable Energy Projects

EVALUATION GUIDANCE

The GHG Protocol: Guidelines for Quantifying GHG reductions from grid-connected projects outlines clear quantitative guidance on how to compare the avoided impacts of different renewable energy projects.

Recommended RFP Questions

1. Provide estimated annual hourly generation profiles (aka an 8760 profile).
2. Identify the exact project location and proposed grid interconnection.

To determine the avoided emissions of a project, calculate (1) the hourly anticipated generation of the project (i.e. the project's 8760), and (2) the marginal emissions rate of the grid region where the project is located (some data available through WattTime, AVERT, or the Azevedo's group Electricity Marginal Factors Estimates). Multiply these together to get each project's projected avoided emissions. Based on this avoided emissions assessment, each project can be scored on a one through five scale, prioritizing projects with the greatest impact:

No go: Increase in emissions
1: 0 < X < 0.2 MT CO2e/MWh
2: 0.2 < X < 0.4 MT CO2e/MWh
3: 0.4 < X < 0.6 MT CO2e/MWh
4: 0.6 < X < 0.8 MT CO2e/MWh
5: 0.8 < X MT CO2e/MWh

LEADERSHIP CASE STUDY

To achieve the ambitious environmental goals established in its Climate Action Plan, Boston University (BU) committed to procuring high-impact renewable energy. To facilitate this, BU incorporated emissions impact into its evaluation criteria for selecting a renewable energy project. After comparing the emissions reduction potential of projects around the United States, BU invested in a virtual power purchase agreement (VPPA) for a new wind farm to be located in South Dakota. In South Dakota, the marginal generator is highly emitting due largely to the significant amount of coal generation on that grid. By selecting a project there instead of building a generation facility within BU's local grid, the University was able to more than double the resulting emissions reductions.
Read more about BU's selection process here.

Land Use and Habitat

The footprint of the build out of new renewable energy generation will put tremendous pressure on land and habitats around the world. With an improved understanding of project site conditions and the potential impacts of project development in areas that are important for wildlife and agriculture, buyers can disincentivize projects in critical habitats and avoid potential environmental conflicts and related project delays and costs.

OVERVIEW

Removing carbon from the power sector will require the buildout of tremendous amounts of new renewable generation, storage, and associated electrical infrastructure. This buildout will increase pressure on land and habitat around the world. When renewable energy is developed in areas important for wildlife and agriculture, it can cause environmental damage and conflicts that result in project delays and increased costs, slowing the global transition to a clean energy future. To avoid these impacts, renewable energy should be developed in low-impact areas for land and habitat.

*To achieve deep decarbonization by **2050**, the footprint of the U.S. wind and solar energy buildout could be as much as **76 million acres**, an area as large as the state of Arizona.*[12]

Corporate electricity buyers are uniquely positioned to drive the market toward procuring renewable electricity from low-impact areas. By integrating criteria for land and habitat into electricity procurement, buyers can advance their energy, climate, and conservation goals, while also reducing business risks. Additional research to identify renewable energy zones and infrastructure corridors is ongoing at local, state, and national scales, led by regulatory agencies, governments and non-governmental organizations. The results of these analyses can provide important future inputs to ensure that corporate procurement is addressing essential land use issues as effectively as possible.

Solar PV developed on water-stressed farmland with degraded soil - an example of low-impact renewable energy development.
© Lara Weatherly for The Nature Conservancy

Natural lands in the Mojave Desert - an example of habitat important for wildlife.
© Ian Shive for The Nature Conservancy

12 The Nature Conservancy Site Wind Right Map

SUGGESTED PRACTICES

Efforts should be made to incentivize contracting with generation and storage projects in the *built environment* and on *modified lands*, while disincentivizing contracting with projects in *critical* or *natural habitats*. Additionally, for utility-scale solar generation proposed on agricultural lands, corporate buyers should prioritize solar projects on impaired farmland and deprioritize solar projects that would convert prime or important farmland.

EVALUATION GUIDANCE

Project location can be evaluated in a qualitative or quantitative manner. Depending on the preference of the buyer, solicitations may ask for information about the proposed project's location in relation to important land. Buyers can request that it is descriptive, spatially explicit, and easily verifiable.

Recommended RFP Questions

For procurements outside the U.S.:

1. Describe the existing condition of the project site (modified lands or natural habitat) and potential impacts to critical/natural habitat, if any, as defined by Guidance Note 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

For U.S. procurements:

1. Describe the existing condition of the project site. For example, built environment, modified habitat, agricultural land (e.g., prime, productive, or impaired), natural habitat, or habitat for at-risk or sensitive species and/or legally protected species.
2. Have you completed early project screening to identify and consider species of concern and their habitat (i.e., Tier 1 and Tier 2 analyses under the U.S. Fish & Wildlife Service Land-Based Wind Energy Guidelines and state equivalents)?
3. Have you consulted with federal and state agencies with trust responsibilities over wildlife to incorporate relevant science-based recommendations, data, and information (e.g., state wildlife action plans and planning tools, such as The Nature Conservancy's Site Wind Right Map)?
4. Is the project site on or adjacent to a conservation easement or lands owned by land trust or managed for wildlife?
5. Is the project site on agricultural land designated as Prime or other Important farmland?
6. Is the project site located within a renewable energy development zone designated or proposed by a federal, state or local jurisdiction?
7. List all the environmental permits and discretionary approvals required from local, state, federal, and/or tribal authorities, status of approvals, and schedule to complete permits.
8. List all environmental studies undertaken thus far (e.g., biological reconnaissance survey and cultural resources records search, federal Wind Energy Guidelines, cumulative impact assessments, and/or fatal flaw analyses) and describe key findings.

Using the descriptive information and spatial data, the project's site can be evaluated (either by the developer or by the purchaser) against land and habitat criteria. Resources include:

- For procurement outside the U.S., see World Bank Group: International Finance Corporation's Guidance Note 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. January 1, 2012 (last updated June 27, 2019).
- For U.S. procurement, see U.S. Fish & Wildlife Service Wind Energy Guidelines, State Wildlife Action Plans, and Natural Resource Conservation Service: Prime Farmland, Unique Farmland and Farmland of Statewide or Local Importance.

Once land and habitat type is identified, projects can be scored on a one through five scale, prioritizing projects in modified habitats:

No go: In critical habitat
1: In natural habitat or prime farmland
2: Adjacent to natural or critical habitat or prime farmland where development may impact adjoining habitats
3: On modified land with low habitat value including non-prime farmland
4: In area zoned by government for renewable energy development
5: In the built environment (e.g. rooftop, parking lot, brownfields)

LEADERSHIP CASE STUDY

Clean Power Alliance of Southern California is a leader in integrating environmental stewardship considerations, including land and habitat, into electricity procurement decisions. Environmental stewardship is one of ten criteria used in renewable energy purchasing decisions. Clean Power Alliance has not contracted with any projects that rank low on environmental stewardship.

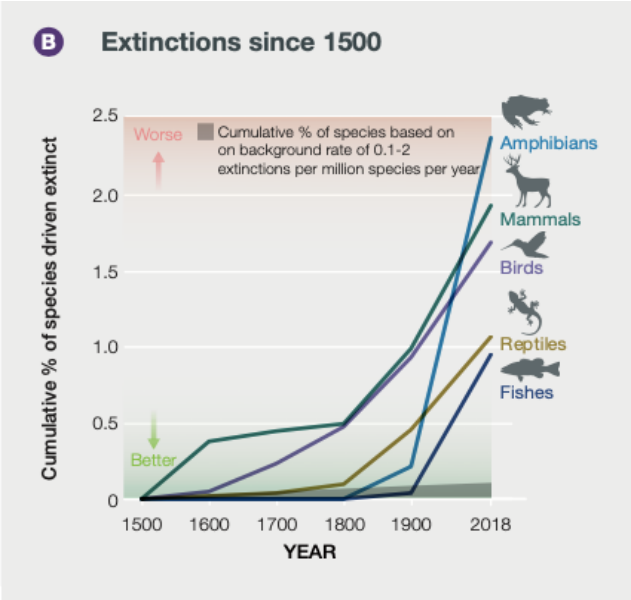
Wildlife

The impacts of renewable energy development on wildlife can vary greatly across projects. While no energy development is free from impacts, buyers can support projects that are more wildlife-responsible by considering whether the developer or operator has adopted strategies to minimize direct impacts and made proactive investments in research and conservation.

OVERVIEW

Our planet's biodiversity and wildlife have never been under greater threat. The United Nations reported last year around 25 percent of plants and animals face extinction. With over a million species at risk of extinction, we must protect wildlife and their habitat now in addition to addressing climate change.

*Renewable electricity generation will need to increase by **6-fold** by 2050 to limit warming to below 2°C. Given the potential wildlife impacts of such rapid and significant development, we must harness our renewable resources responsibly to prevent species extinctions.*[13]



Cumulative percent of species extinctions since 1500.[14]

Renewable energy development affects wildlife habitat (as discussed in the Lands and Habitat section). Beyond the habitat, developments can also directly impact species through bird and bat collisions with solar panels and wind turbines, and electrocutions from transmission lines. Indirect impacts can include projects that cause avoidance or alterations of migratory routes. Wildlife impacts run the gamut, from occasional fatalities to potential population-level declines. Solutions to reduce impacts to wildlife exist or are in development, but implementing such measures has associated costs and is often not required of developers by existing regulations. Fortunately, buyers can create incentives for and drive the development of responsible renewable energy by procuring energy from projects that are proactively reducing risks for wildlife through applying or testing operational changes and technology that deters wildlife from project sites.

SUGGESTED PRACTICES

A key first step in procuring wildlife-responsible renewable energy is understanding the importance of the project location for wildlife. Projects that affect critical habitat[15] of species of concern[16] should be avoided, as few options exist to mitigate such impacts.

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13 The role of renewable energy in the global energy transformation

14 IPBES - Global Assessment Report

15 "Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes." International Finance Corporation. January 1, 2012. Performance Standard 6 Biodiversity Conservation and Sustainable Management of Living Natural Resources.

16 Species of concern may include special status species (such as those with federal or state protections), species whose populations are declining, or other species known to be impacted by renewable energy (either via direct impacts such as collision fatalities or indirect impacts such as habitat loss, degradation, or fragmentation, avoidance, or disruptions of migratory movements)

Beyond project siting, buyers should consider whether the project voluntarily incorporates measures that minimize wildlife impacts above and beyond limited federal and state requirements and whether the project developers have shown a commitment to protecting wildlife (e.g. through corporate policies, supporting research, and conservation investments).

Buyers can incentivize responsible development by evaluating projects against the following best practices:

1. **Environmental Compliance and Standard Practices -** The project complies with federal and state wildlife policies, implements standard best practices, and adheres to the mitigation hierarchy. For projects requiring wildlife permits – which is not necessarily an indication of undue wildlife impacts – the developer has obtained all necessary wildlife permits or has a clear schedule to do so.
2. **Smart Siting -** The project does not adversely affect critical habitat of species of concern.
3. **Wildlife Stewardship -** The developer has specific policies that commit to wildlife-responsible renewable energy and provides guidance on how they plan to reduce wildlife impacts during project development and operation (e.g., sustainability reporting).
4. **Leadership in Minimization, Mitigation, and Research -**There are tools and technologies available to reduce wildlife impacts from renewable energy projects, such as leaving native vegetation intact under raised solar panels or technology to prevent eagles and bats from collision by temporarily shutting down turbines or deterring them from the site. Developers should voluntarily invest in such approaches, when appropriate, or voluntarily support research on renewable energy and wildlife coexistence, including through groups like the American Wind Wildlife Institute, the Avian Solar Working Group, and the Bats and Wind Energy Cooperative.

EVALUATION GUIDANCE

Utilizing the RFP questions below, buyers can identify wildlife-responsible projects by evaluating across four primary criteria: (1) the project is compliant with applicable laws and has assessed impacts, (2) the project is sited in a location that impacts critical species of concern, (3) does the project display wildlife stewardship by incorporating best management practices to minimize impacts, and (4) does the project display wildlife leadership by voluntarily mitigating impacts or investing in minimization strategies?

Recommended RFP Questions

1. Have proper environmental and wildlife due diligence assessments been completed for the project to understand what species of concern may be impacted by the renewable energy development project (e.g., consistent with the tiered risk assessment approach in the US Fish and Wildlife Service's Wind Energy Guidelines (WEGS) or consistent with standard studies associated with solar energy projects based on the region and habitat type)? What species were identified as impacted?
2. Please summarize, where applicable, what federal, state, and local agencies have been communicated with regarding potential wildlife impacts, and any significant concerns identified during these discussions. Have all required wildlife permits been identified? Please list the permits and provide information as to whether the permits have been obtained, schedules for attainment, or explanations as to why permits are not being pursued.
3. **Wind Projects:** Does the project meet standard best management practices (e.g., WEGs, American Wind Energy Association BMPs) and does the project have a bird and bat conservation strategy that

details the predicted impacts, monitoring program, and adaptive management strategy?
Solar Projects: What actions are being taken at the site to minimize biodiversity loss (e.g., actions to reduce disturbance to native vegetation, control invasive plants, modify fencing to preserve habitat connectivity, or improve conditions in the area such as pollinator friendly plantings)? What post-construction impacts to wildlife does the project plan to monitor?

4. Please share any explicit corporate stewardship policies related to biodiversity and commitments made to renewable energy and wildlife coexistence research (e.g., supporting wildlife research through the American Wind Wildlife Institute or Avian Solar Working Group, investing in the Wind Wildlife Research Fund, or contributing wildlife monitoring data to researchers or transparent databases, such as the American Wind Wildlife Information Center).
5. Does this project go above and beyond standard industry practices and legal requirements to minimize wildlife impacts through voluntary actions? If so, please describe how. Examples include participating as a host site for wildlife-related research, reducing take through operational changes (e.g., curtailment for birds or bats) or technology deployment (e.g., Identiflight, NRG systems), or investing in wildlife conservation offsite to "offset" on-site impacts).

Projects are scored on a one through five scale. Any project that fails to comply with applicable wildlife laws should be eliminated from consideration as part of the "no go" category.

No go: Developer has failed to assess wildlife impacts, OR does not comply with applicable wildlife law.
1: Project is compliant with applicable wildlife laws and has assessed impacts. There are known impacts on species of concern and their critical habitat.
2: Project is compliant with applicable wildlife laws and has assessed impacts. There are known impacts on species of concern and their critical habitat, but the project incorporates best management practices to reduce risk to wildlife (e.g. Wind Energy Guidelines, American Wind Energy Association's Bat BMPs).
3: Project is compliant with applicable wildlife laws and has assessed impacts. There are no adverse impacts on the critical habitat of species of concern, and the project incorporates best management practices to reduce risk to wildlife.
4: Meets all criteria to be scored a "3" AND developer has a corporate stewardship policy for wildlife AND invests in wildlife coexistence research.
5: Meets all criteria to be scored a "4" AND developer voluntarily supports innovative wildlife minimization projects and research on site that go above and beyond standard industry best management practices or has voluntarily offset impacts offsite OR solar energy developed in the built environment.

LEADERSHIP CASE STUDY

Cummins, a fortune 500 company headquartered in Indiana, worked with the Environmental Defense Fund and the Nature Conservancy to ensure that the project they procured energy from posed minimal risk to wildlife. More specifically, the company worked with the project developer to ens ure that special care be taken not to destroy or interfere with the natural habitat of the local bat and bird populations.

Solar Material Management

The sustainability impact of solar photovoltaic (PV) projects extends beyond the generation of clean energy. We cannot overlook the life cycle environmental and social impacts attributed to the manufacturing and disposal of PV hardware. By evaluating and prioritizing solar projects that use more sustainable PV hardware, buyers can maximize their project's sustainability and avoid increasing levels of electronic waste.

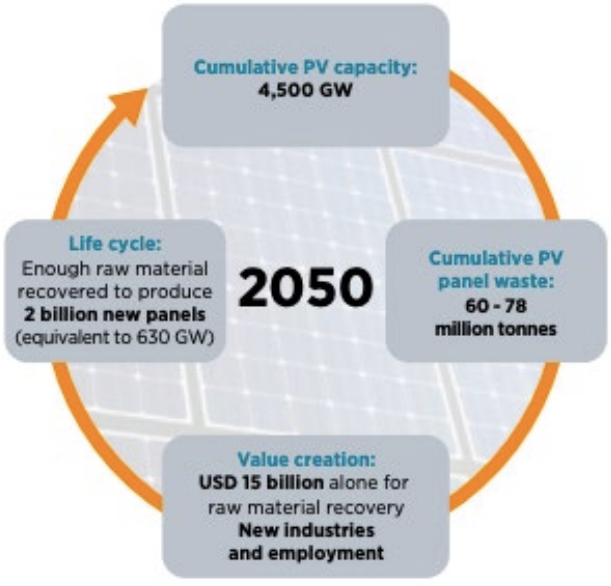
OVERVIEW

*The PV panel accounts for over half of the lifecycle climate impacts of solar installations, and as much as **80%** for some PV Panels.[17]*

While renewable energy benefits the planet, the materials and manufacturing processes used to produce these technologies cannot be ignored. Solar PV modules and micro and central inverters, the key components of solar renewable energy projects, carry negative impacts in their manufacture and disposal. For example, PV modules contain numerous non-renewable and hazardous materials that cause environmental damage during mining and manufacturing. The PV panel alone accounts for over half of the lifecycle climate impacts (CO_2e) of solar installations, and as much as 80% for some PV panels.[17] The current end of life for PV equipment is also far from "clean," and it requires special handling to prevent environmental impact. By 2050, PV modules are estimated to account for 10 percent of global electronic waste.[18]

As the global installed capacity of PV modules nears terawatt levels, responsible end-of-life management practices become increasingly important to reclaim valuable resources, contribute to a circular economy and ensure that today's clean energy solutions do not pose a future waste burden. Further, and addressing the environmental and social impacts of mining and manufacturing of modules can reduce lifecycle sustainability impacts, making this clean energy source a more sustainable energy source.

Organizations that purchase PV modules or the energy generated by solar installations can influence the market and availability of more sustainable PV hardware, by building a preference for sustainability into their purchasing decisions. Responsible recycling of early-loss or end-of-life PV modules by owners of solar installations can reduce waste and inject valuable raw materials such as glass, aluminum, silver, and copper back into the economy.



Responsible end-of-life recycling of PV panels has the potential to generate raw material to create 2B new panels by 2050.[18]

SUGGESTED PRACTICES

The Green Electronics Council's EPEAT ecolabel allows purchasers to easily identify products that meet lifecycle-based sustainability performance criteria for PV modules and inverters. The sustainability criteria exemplify sustainability leadership in the industry and

17 Life cycle assessment of most widely adopted solar photovoltaic energy technologies by mid-point and end-point indicators of ReCiPe method

18 End-of-Life Management: Solar Photovoltaic Panels

address multiple issues, including the materials in the product and their sourcing, energy and water use in product manufacturing, social performance in the supply chain, and responsible end-of-life recycling. The criteria translates into quantifiable benefits and reportable reductions associated with the installed modules and inverters, including reduction in greenhouse gases, energy, toxics, and solid waste, for example. By giving preference to renewable energy projects that utilize more sustainable hardware, developers and power purchasers can move closer to a truly carbon neutral investment.[19]

The Green Electronics Council provides a free, searchable registry of products that meet the EPEAT ecolabel criteria. While the EPEAT registry for PV modules and inverters launched in October 2020, the EPEAT ecolabel has assisted large scale purchasers to identify sustainable IT products since 2007.

EVALUATION GUIDANCE

The EPEAT ecolabel has both required and optional criteria, and three tiers of performance -- bronze, silver and gold. A product must meet every required EPEAT criterion to be considered an "EPEAT-registered" product. Required criteria ensures a minimal threshold for projects to achieve a valid sustainable designation. Optional criteria goes beyond that threshold and is a way for manufacturers to show their commitment to addressing additional environmental and social issues. The full list of the sustainability criteria in EPEAT are available on the Green Electronic's Council website.

Recommended RFP Questions

1. Are the PV modules EPEAT registered? If so, what level?
2. Are the PV inverters EPEAT registered? If so, what level?

When evaluating a specific project, buyers (and developers) can also search the EPEAT Registry to identify if the products used meet these sustainability criteria. If the PV modules and inverters installed are registered to EPEAT, they will be scored against performance tiers – bronze, silver or gold – with gold indicating the highest performing projects.

In order to account for both modules and inverters, project scores are additive based on EPEAT ratings, according to the following guidance:

No points: PV Modules & Inverters not EPEAT registered
+1 point: If Inverters are EPEAT registered at least Bronze
+0.5 point: For each level the Inverters are EPEAT registered above Bronze
+1.5 points: If PV Modules are EPEAT registered at least bronze
+0.5 point: For each level the PV Modules are EPEAT registered above bronze
+0.5 point: If PV Modules & Inverters are both EPEAT registered Gold

19 End-of-Life Management: Solar Photovoltaic Panels

Just Transition

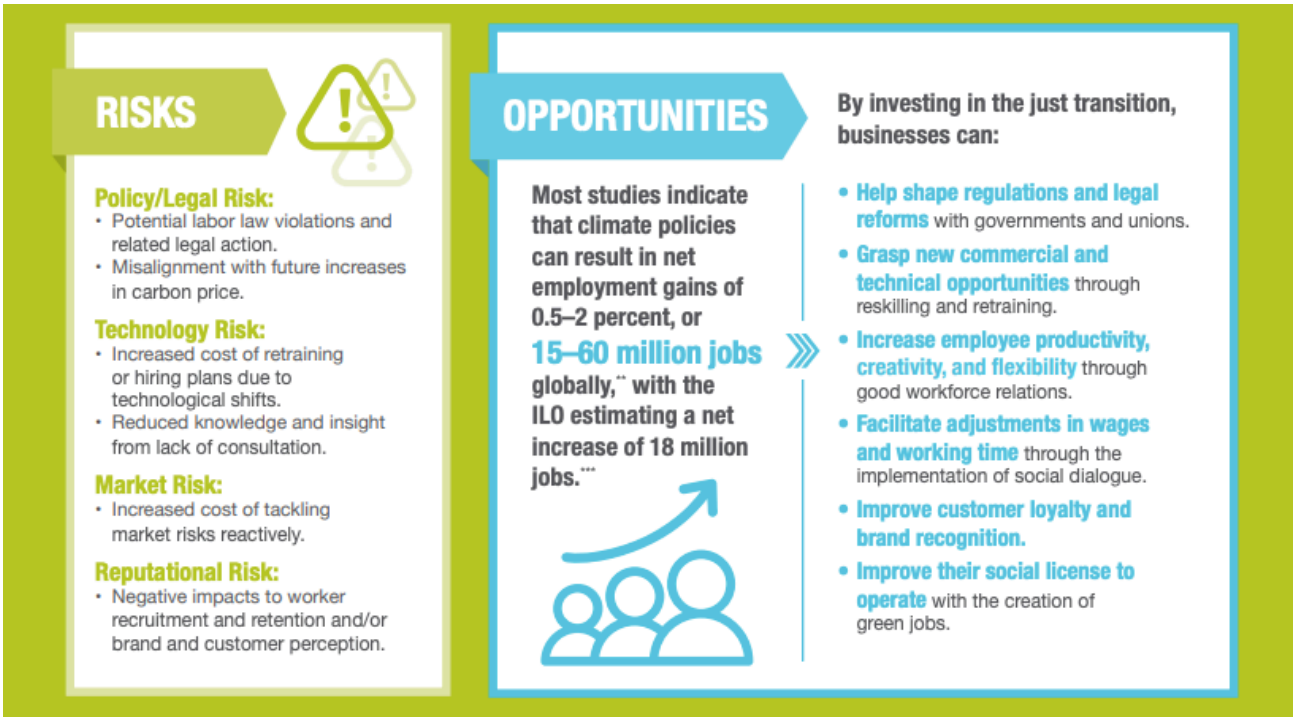
Just Transition is one piece of a comprehensive approach to focusing on equity, sustainability, and justice for the communities who will benefit from and be impacted by the development of renewable energy projects. As a buyer of renewable energy, corporations have an opportunity to signal and require good jobs in the materials provision, construction, and operation of renewable projects.

OVERVIEW

The landscape of urban and rural America is being transformed as renewable energy infrastructure is deployed at scale. In some cases, the energy transition is creating jobs and economic opportunity for local workers and communities. Too often, however, the wind turbines and solar panels cropping up across America are not only manufactured thousands of miles away, but also installed by low-wage workers or travelers that move temporarily to communities to build a project, reducing the developmental benefits to local communities and local jobs. At the same time, the communities and workers who kept the lights on for generations by extracting and burning fossil fuels potentially face devastating losses of family-supporting jobs, business opportunities, and tax revenues as fossil fuel plants retire. Addressing job creation, job quality, local hire, economic development, and workforce training in the procurement process can build community support for renewables projects and reduce the risks of project delays and disruptions.

BSR, in their Climate Nexus report on a Just Transition, highlights the business case for a Just Transition, touching on how individual companies that implement a just transition will better manage the risks from a transition to a low-carbon economy and capitalize on the related opportunities.

The business case for a just transition.[20]



20 BSR Climate Nexus: Just Transition

SUGGESTED PRACTICES

Buyers of renewable energy should align their RFPs, their bid review processes, and their power purchase agreements (PPAs) with the worker expectations of Responsible Contractor Policies (generally adopted by investors), and the best practices of regulators and policy makers who seek to ensure good local economic and workforce development for renewables projects. They can require developers to provide new employment, training, and career opportunities to the conventional energy workforce wherever feasible. And, buyers, with their developer partners, can look for appropriate opportunities to make other business investments and create local jobs in communities disproportionately impacted by energy transition and environmental injustice. Key just transition practices to include in a request for developer proposals or power purchase agreement are:

1. **Job quality and union representation**
    - Require developers to engage Organized Labor, including local affiliates of NABTU, early in the development process well before bidding so that local signatory contractors are notified of the bid opportunity.
    - Ensure use of Project Labor Agreements, Community Workforce Agreements, and/or prevailing wage requirements for all construction.
    - Provide strong neutrality policy that will require the firm, and contractors and subcontractors retained by the firm, to protect workers' rights to organize.
    - Name a labor liaison who will make the bidding process efficient and competitive, resolve labor issues before they become disputes, and establish appropriate lines of communication between the developer and unions.
    - Include materials transportation, construction, operations, and maintenance in any responsible contractor policies or community workforce agreements.

2. **Local hire provisions**
    - Preference contractors that utilize federally regulated apprenticeship programs to build a local workforce with job skills for clean energy construction, operations, and maintenance.
    - Provide for hiring preference for displaced workers from extractive industries.
    - Provide equity targets to sustain and increase workforce diversity in collaboration with registered apprenticeship and other workforce partners.
    - Require developers to engage with community partners and query the developers' track record for community responsiveness and engagement around local hire and equity issues (See the Community Engagement section, below).

3. **Compliance and monitoring**
    - Hours worked and wages should be reported regularly to investors, energy purchasers, and wage enforcement agencies.
    - Job safety records should be transparent and made available to buyers and union representatives.
    - Records of labor disputes and their resolution should be transparent to buyers and investors.
    - Whistleblower protections should encourage workers to report concerns, incidents, and injuries without fear of retaliation.

EVALUATION GUIDANCE

While there currently isn't a comprehensive just transition benchmark for renewable energy developers, a qualitative questionnaire approach for evaluating developer commitment to just transition will provide a nuanced picture of whether they have adopted just transition principles or are really engaging with workers, unions, and communities around the issues of job creation, job quality, equity, job training, and worker safety. Buyers must look beyond what developers promise as "best efforts" and determine whether the developer has a track record of good practices. The national and local Building and Construction Trade Unions (NABTU, or the County level Building and Construction Trades Council, AFL-CIO) will be a useful source of experiences with developers and their contractors.

Recommended RFP Questions

1. Will the project be built and maintained under a Responsible Contractor Policy that includes affirmative performance, labor, environmental, and safety standards along with transparency and whistleblower protections?
2. Will jobs created by the project offer pay, benefits and career opportunities consistent with area standards for conventional energy jobs (e.g. coal, gas plants)?
3. Will the developer and EPC contractor partner with registered apprenticeship programs to train and employ workers who work in conventional energy and/or come from environmental justice communities?
4. Will the developer and EPC contractor work with local stakeholders, including labor unions, to maximize use of local workforce to build and maintain the project?

Project evaluation should consider commitments to compliance and monitoring, job quality and local hire provisions. A high point score will be based on a verifiable track record of good practices, a low point score will be based on "best efforts" language or reports of negative practices.

No go: The project will not be built and maintained under a Responsible Contractor Policy which includes transparent compliance and monitoring mechanisms for ensuring labor, environmental and safety standards are met.
+1 point: The developer has set affirmative standards (e.g. a Responsible Contractor Policy) for its contractors and provides transparent compliance and monitoring mechanisms to ensure labor, environmental and safety standards are met for the project.
+1 point: The developer or operator has established job standards at least consistent with local area standards for conventional energy jobs (pay, benefits and career opportunities).
+1 point: The developer or operator has established job standards that pay above area standards for conventional energy jobs including benefits (pay, benefits and career opportunities).
+1 point: The developer has explicit local hire provisions for the project (including EPC contractors).
+1 point: The developer has additional employment programs to support conventional energy workforce or environmental justice communities (e.g. registered apprenticeship programs, preference for displaced workers from extractive industries, workforce diversity targets, etc.)

Additional nuanced scoring guidance could be further developed based on percent of jobs that pay at or above area standards, specific employment goals for conventional energy workforce or environmental justice communities, and percent of work hours performed by local workers.

LEADERSHIP CASE STUDY

Xcel Energy and cooperatively-owned Great River Energy are among the companies leading the way when it comes to incorporating community benefits and just transitions into resource acquisition plans. Both have incorporated creation of high-quality jobs and use of skilled local labor into their resource planning and project development process, which has translated into hundreds of new jobs and growing local support for clean energy in Minnesota.

Community Engagement

When developing wind and solar projects, the local community is essential for corporate buyers' to consider. A lack of attention to community engagement and consultation risks overlooking concerns and misconceptions from the local community. Moreover, community engagement should take place well before opposition occurs, in order to avoid reputational risk and avoid project impacts (e.g. delays in construction). Intentional and proactive engagement practices offer an opportunity to build trust and ensure that the project offers a multitude of additional benefits to the local community.

OVERVIEW

Getting community engagement right is a critical part of every renewable energy project. Effective community engagement fosters trust, a feeling of shared ownership and pride for the project. Ineffective engagement risks opposition and friction with the local community. More than ever, buyers need to integrate the social impacts of the PPA to consider issues involving race, equity and environmental justice (as indicated in the section on Just Transition).

"Community engagement" is the first step in the process to understand risks and community needs. It covers a broad spectrum of activities from research, stakeholder consultations, communications and benefit sharing. Projects should also share the tangible benefits of a renewable energy project with the local community through a "community benefit" plan. For both community engagement and community benefit plans, there is no one size fits all approach.

Community impacts and benefits are also highly dependent on location and community needs. The communities near the project site are those that are commonly directly addressed by the project. However, communities along the project's entire value chain can also benefit. For example, the immediate community may only be the specific county in which a project is located, yet the developer and buyer may develop a community plan that shares the economic benefits with the entire region or with the community around a buyer facility. For this reason, the overall community strategy can be unique and innovative.

SUGGESTED PRACTICES

Engagement: While community engagement itself can be in the hands of the developer, the buyer, a consultant or an external party, the buyer is still responsible for ensuring the developer has engaged early and often with the local community. The simplest mechanism to ensure community engagement is asking about the developer's engagement plan during the RFP process.

The community engagement plan might include education and stakeholder meetings to answer questions, address concerns, solicit feedback and build trust. Through the stakeholder engagement process, developers can learn what the unique needs are of the local community and collaborate with community members to determine the best way to meet those needs. This investment will encourage community approval and active support of the project.

Benefit sharing: The best community benefit sharing plans are developed by the communities themselves. Some benefits to consider in the dialogue and engagement with the community might include but are not limited to:

1. **Economic Growth** - Create a training program for the local community that will create a sustainable workforce. Set expectations with the community for potential and duration of job growth. Carve out local workforce quotas.

2. **Philanthropy** - Work with the local economic development agency to determine local organizations with the highest need for donations and sponsorships (e.g. senior center, educational institution, recreational center, etc.). Alternatively, seed a community development fund that allows the community to determine the best use of funds within predetermined guidelines.

3. **Tax Benefits** - Renewable projects contribute to state and local taxes. By treating the project as a place of business for local sales and tax purposes, it will increase the total tax dollars injected into the local community for public use.

EVALUATION GUIDANCE

Both community engagement and a community benefits plan are critical components of a successful renewable energy development. At this time, we are not aware of a consistent quantifiable framework for every community and every project. However, because every community impact is local, it is critical to engage the community early before development, and define a process with the community. Recognizing this gap, many community organizations and governments are now working to build knowledge, resources, and best practices for corporate engagement of local communities for renewable procurement. REBA and Groundswell have partnered together to explore this area of work in 2021 with the objective of expanding this directional guidance.

Although there is no one size fits all solution, buyers should still evaluate developers on their investments in community engagements and plans for benefit sharing (in whatever shape or form it takes).

Recommended RFP Questions

1. Describe any community engagement efforts or plan, and current perception of the project by the local communities. Include a contact name in the community, if possible.
2. Describe any economic benefit to the community beyond business as usual.

Projects are scored on a scale of one to five, balancing community perception of the project (support/lack of opposition/opposition) and benefit sharing model (does the developer have a community benefit plan or not).

No go: Strong and diverse community opposition
1: Some community opposition. NO community benefit plan
2: No community support (no response/little response). NO community benefit plan
3: Some community support.
4: Some community support. Developer has a community benefit plan (e.g. a local fund or benefit sharing arrangement).

5: Some community support. Developer has a strong multi-year community benefit plan (e.g. one that includes early engagement, resources for stakeholder consultation, and a community-defined benefit sharing arrangement).

If a developer falls short, a buyer can and should encourage the developer to rapidly incorporate best practices. For example, if a project hasn't conducted community stakeholder engagement workshops or established economic development or job creation targets, the Buyer should prompt the developer to include that in their plan.

LEADERSHIP CASE STUDY

Many municipal utilities are the economic development engines for the communities they serve because municipal utility revenues (not property taxes) help pay for essential services such as firemen, teachers, and police. By supporting a new state policy that enables municipal utilities to compete for corporate renewable energy business for the first time, Walmart helped the small towns they serve to thrive.

Air Quality Impacts

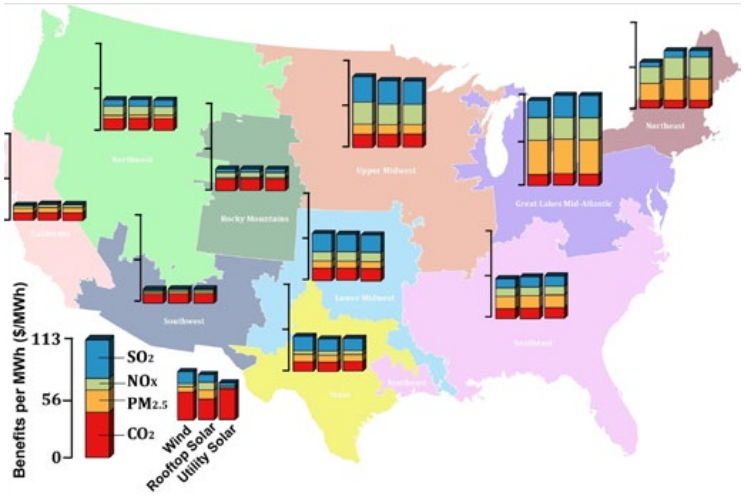
Wind and solar projects offer not just climate benefits, but also critical health benefits. By displacing conventional generators, renewable energy projects can eliminate harmful air pollutants and provide a tangible health benefit. The amount of health benefit depends on which specific fossil fuel power plants are displaced, and should be considered when selecting renewable energy projects.

OVERVIEW

Air pollution is a major public health crisis and fossil fuel use is one of the largest air pollution sources. Key air pollution emissions include SO2, NOx, and fine particulate matter and often cause asthma, lung cancer, bronchitis, and premature death. Around 6.5 million deaths are attributed each year to poor air quality, making this the world's fourth-largest threat to human health.[21]

By displacing power generation from fossil fuel-fired power plants, renewable energy projects can reduce harmful air pollutants. In 2015, the deaths of more than 3.6 million people worldwide could have been avoided if air pollution from fossil fuels were reduced to zero.[22]

*A **7%** increase in clean energy investments has the potential to reduce premature deaths from outdoor and household air pollution by **3.3 million** people annually in 2040.*[21]



Health benefits per MWh of renewable energy deployed for each electrical grid region.[24]

When considering human health benefits of renewable energy projects, it's important to recognize that all renewable energy projects are not created equal. Some projects have greater potential to displace air pollutants and therefore offer greater value to the community. For example, wind projects in Indiana have thirty-five times greater health and environmental benefits than projects located in California because they displace greater emissions per kilowatt of installed capacity.[23] These regional variations are driven by differences in the generation mix and the primary fuel types displaced.

SUGGESTED PRACTICES

Researchers are continuing to improve the calculations to determine the damages from power plants and the potential benefits of new renewable generation. For example, the Electricity Marginal Factors Estimates tool provides downloadable estimates of hourly damages per MWh in different regions. Further tools expanding on

21 Energy and Air Pollution Executive Summary: World Energy Outlook 2016
22 Loss of life expectancy from air pollution compared to other risk factors: a worldwide perspective
23 Regional variations in the health, environmental, and climate benefits of wind and solar generation
24 Climate and health benefits of increasing renewable energy deployment in the United States

these concepts are needed in a form that is easily available to energy purchasers. Where there are gaps in tools to evaluate human-health benefits, the following practices may help buyers identify renewable energy projects that offer the greatest benefits. Renewable energy projects have an outsized human-health impact when they:

- Displace coal plants cause a larger health benefit because many such plants emit 10x more air pollutants per megawatt-hour than natural gas plants do;
- Are located in urban areas where each ton of pollution affects more people;
- Are located near vulnerable populations who are more likely to get sick from pollution; or
- Displace plants which do not have scrubbers which reduce pollution at the plant.

EVALUATION GUIDANCE

There are several studies and resources currently available to define potential health benefits or damages by grid region.

1. The Harvard study on the benefits of renewables defines the dollars of ***health benefits*** per MWh for the development of wind, rooftop solar or utility solar in each grid region. Recommend evaluating projects based on the grid specific midpoint for dollars of total health benefits shown in Figure 3 (includes CO2, NOxs, PM2.5, and SO2 pollutants).
2. The Azevedo's group Electricity Marginal Factors Estimates tool provides downloadable estimates of ***health damages*** per MWh by grid region or state through 2018. Once the data selection table is filled out, the "Plot" tab will update with dollars per MWh of damages by pollutant (includes CO2, NOxs, PM2.5, and SO2 pollutants).

Either resource can be used to rank projects based on air quality damages. Looking forward, at least one additional organization working to develop a health benefit model for renewable energy projects for release at the end of 2020.

Recommended RFP Questions:

1. Has any research been done on the potential health benefit impacts from this project, especially as it relates to air quality and pollutants?

Utilizing the project grid region and either the Harvard study on dollars of ***health benefits*** per MWh or the Electricity Marginal Factor Estimates tool estimates on dollars of ***health damages*** per MWh, projects can be scored on a one to five point basis.

No go: Increase in negative health impacts
1: $0-$20 of health benefits or damages/ MWh
2: $20-$40 of health benefits or damages/ MWh
3: $40-$60 of health benefits or damages/ MWh
4: $60-$80 of health benefits or damages/ MWh
5: $80-$100 of health benefits or damages/ MWh

One or the other tool should be used to rank all projects.

Appendix

Exhibit A: How to Use the Procurement Matrix

The procurement matrix can be set-up and customized through a four step process. This allows individual companies to evaluate projects against their own customized corporate priorities. Please download the Procurement Matrix spreadsheet and follow the following five steps.

Download the Procurement Matrix spreadsheet here.

1. **Identify criteria for consideration**

   It is up to each company to align on their corporate priorities for their renewable energy procurements. These priorities often look very different from buyer to buyer so this is a moment to customize the tool and select which criteria align with your company's unique goals. This may require using a subset of criteria offered in this matrix or may require adding additional criteria outside of what is discussed here today (e.g. other environmental or social criteria or logistical criteria like financials, volume, timing, etc...). We've included several blank criteria sections to allow for that customization.

   Engaging a broad stakeholder group in this process will ensure internal alignment and build trust in the project selection process. Be sure to document why certain criteria are being included in the matrix. This will offer a point of alignment to refer back to in the future.

   With those modifications, the matrix will identify the best projects based on your criteria, not anyone else's.

2. **Weight your criteria**

   Not all criteria are created equal. Rate each criteria (on a scale of 1 to 10) in order of importance. This will allow you to consider a broad range of criteria while still applying a heavier weight to criteria that are most important to your company.

3. **Determine scoring guidance**

   Set clear guidance on scoring (on a scale of 1 to 5). For some criteria there is a very straightforward quantitative or qualitative evaluation framework. For other criteria, an evaluation framework is less clear cut or may not exist at all. Where possible leverage technical experts, like those who have contributed to this paper, to help develop that scoring guidance.

   On occasion, projects will perform so poorly against a criteria that they are considered "no go" and are removed from consideration. Be sure to identify what (if any), the minimum threshold a project must achieve for each criteria.

4. **Score projects against criteria**

   Leveraging the responses to the questions you included in the RFP (Exhibit B), score each project against each criteria. The resulting weighted score should rank each project from highest to lowest alignment with your priorities.

Exhibit B: RFP Questions / Information Requests

Accurate evaluation of projects starts with asking the right questions. Beyond needing this information to inform project evaluation, these questions send an important signal to the market of buyer priorities.

See Exhibit A for scoring guidance.

Emission Avoidance	
1	Please provide estimated annual hourly generation profiles (aka an 8760)
2	Identify the exact project location and proposed grid interconnection
Land Use	
For procurement outside the U.S.	
1	Describe the existing condition of the project site (modified lands or natural habitat) and potential impacts to critical/natural habitat, if any, as defined by Guidance Note 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.
For U.S. procurements	
1	Describe the existing condition of the project site. For example, built environment, modified habitat, agricultural land (e.g., prime, productive, or impaired), natural habitat, or habitat for at-risk or sensitive species and/or legally protected species.
2	Have you completed early project screening to identify and consider species of concern and their habitat (i.e., Tier 1 and Tier 2 analyses under the U.S. Fish & Wildlife Service Land-Based Wind Energy Guidelines and state equivalents)?
3	Have you consulted with federal and state agencies with trust responsibilities over wildlife to incorporate relevant science-based recommendations, data, and information (e.g., state wildlife action plans and planning tools, such as The Nature Conservancy's Site Wind Right Map)?
4	Is the project site on or adjacent to a conservation easement or lands owned by land trust or managed for wildlife?
5	Is the project site on agricultural land designated as Prime or other Important farmland?
6	Is the project site located within a renewable energy development zone designated or proposed by a federal, state or local jurisdiction?
7	List all the environmental permits and discretionary approvals required from local, state, federal, and/or tribal authorities, status of approvals, and schedule to complete permits.
8	List all environmental studies undertaken thus far (e.g., biological reconnaissance survey and cultural resources records search, federal Wind Energy Guidelines, cumulative impact assessments, and/or fatal flaw analyses) and describe key findings.

Wildlife	
1	Have proper environmental and wildlife due diligence assessments been completed for the project to understand what species of concern may be impacted by the renewable energy development project (e.g., consistent with the tiered risk assessment approach in the US Fish and Wind Energy Guidelines (WEGS) or consistent with standard studies associated with solar energy projects based on the region and habitat type)? What species were identified as impacted?
2	Please summarize, where applicable, what federal, state, and local agencies have been communicated with regarding potential wildlife impacts, and any significant concerns identified during these discussions. Have all required wildlife permits been identified? Please list the permits and provide information as to whether the permits have been obtained, schedules for attainment, or explanations as to why permits are not being pursued.
3	Wind Projects: Does the project meet standard best management practices (e.g., WEGs, American Wind Energy Association BMPs) and does the project have a bird and bat conservation strategy that details the predicted impacts, monitoring program, and adaptive management strategy? Solar Projects: What actions are being taken at the site to minimize biodiversity loss (e.g., actions to reduce disturbance to native vegetation, control invasive plants, modify fencing to preserve habitat connectivity, or improve conditions in the area such as pollinator friendly plantings)? What post-construction impacts to wildlife does the project plan to monitor?
4	Please share any explicit corporate stewardship policies related to biodiversity and commitments made to renewable energy and wildlife coexistence research (e.g., supporting wildlife research through the American Wind Wildlife Institute or Avian Solar Working Group, investing in the Wind Wildlife Research Fund, or contributing wildlife monitoring data to researchers or transparent databases, such as the American Wind Wildlife Information Center).
5	How does this project go above and beyond standard industry practices and legal requirements to minimize wildlife impacts through **voluntary actions**? If so, please describe how. Examples include participating as a host site for wildlife-related research, reducing take through operational changes (e.g., curtailment for birds or bats) or technology deployment (e.g., Identiflight, NRG systems), or investing in wildlife conservation offsite to "offset" on-site impacts).
Solar Materials Management	
1	Are the PV modules EPEAT registered? If so what level?
2	Are the PV inverters EPEAT registered? If so what level?
Just Transition	
1	Will the project be built and maintained under a Responsible Contractor Policy that includes affirmative performance, labor, environmental, and safety standards along with transparency and whistleblower protections?
2	Will jobs created by the project offer pay, benefits and career opportunities consistent with area standards for conventional energy jobs (e.g. coal, gas plants)?

3	Will the developer and EPC contractor partner with registered apprenticeship programs to train and employ workers who work in conventional energy and/or come from environmental justice communities?
4	Will the developer and EPC contractor work with local stakeholders, including labor unions, to maximize use of local workforce to build and maintain the project?
Community Engagement	
1	Describe any community engagement efforts or plan, and current perception of the project by the local communities. Include a contact name in the community, if possible.
2	Describe any economic benefit to the community beyond business as usual.
Air Quality	
1	Has any research been done on the potential health benefit impacts from this project, especially as it relates to air quality and pollutant data?