



ACCC: RENEWABLES ACCELERATOR STATE OVERVIEWS: SUMMARY OF METHODS AND DATA

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1. SUMMARY

The American Cities Climate Challenge: Renewables Accelerator website (hereafter referred to as “the website”) is a resource developed by World Resources Institute (WRI) and Rocky Mountain Institute (RMI) that aids cities in understanding the regulatory and market context in their states when considering various methods for procuring renewable electricity. As a partner in the Bloomberg Philanthropies American Cities Climate Challenge: Renewables Accelerator (ACCC: Renewables Accelerator or RA),¹ WRI provides technical assistance to the ACCC and Urban Sustainability Directors Network (USDN) cities that are developing renewable electricity purchasing plans to implement sustainability goals. This technical note outlines the structure of the state-related-resources portion of the website (referred to as the State Overviews), the types of data found there, the underlying data sources, and our methodology for curating and interpreting these data into a platform that aids cities in developing an enhanced understanding of procurement methods for renewable energy.

The website is designed for two main purposes. One is to serve as a user-friendly public platform that can be used by a broad array of cities, allowing them to glean information about the renewable energy procurement options available to them. The second is to directly support the ACCC: Renewables Accelerator’s engagement with cities. The RA works one-on-one with ACCC cities developing their procurement plans. There are several types of materials available to them through the website, although this note focuses on the methodology and data behind the

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Technical notes document the research or analytical methodology underpinning a publication, interactive application, or tool.

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state-level resources (State Overviews). Understanding the regulatory and market conditions for their states is a starting point for cities as they learn about the renewable electricity options available to them. The website presents illustrative data and is not a substitute for detailed analysis or direct assistance from an expert specializing in a specific procurement method. Facilitated by Rocky Mountain Institute, user testing was performed by a group of city staff prior to website launch.

2. BACKGROUND

An understanding of the opportunities and barriers related to various procurement methods is crucial for successful planning and implementation for both municipal and community-wide renewable energy strategies. City renewable energy procurement must fit within the bounds of state laws and be sourced within available energy markets. City employees developing and implementing renewable purchasing plans have varying familiarity and experience with renewable energy purchasing. Currently, if a city employee (such as a sustainability director or energy manager) is interested in understanding their state's electricity regulatory framework, they need to navigate through a series of tool-specific websites and/or granular databases. This website fills a void by organizing data from well-known and reputable sources to provide an easy-to-understand state regulatory and market overview, while also including a repository of links to more in-depth resources.

The website is focused solely on electric power and although some of the procurement methods covered may also apply to renewable electricity purchased from geothermal or other energy sources, the regulatory review included here focuses on rules for solar and wind procurement to match expressed city interest. The state policies that determine the availability of procurement options and the experiences that cities and other large purchasers have in using them both vary. For these reasons, some states have more available procurement options than others and some procurement options have more considerations than others.

Procurement options covered include the following:

- On-site solar (Section 4.1)
- Community choice aggregation (Section 4.2)
- Community solar (Section 4.3)
- Physical power purchase agreements (Section 4.4)
- Virtual power purchase agreements (Section 4.5)
- Green tariffs (Section 4.6)

3. TYPES OF DATA COVERED AND SOURCES

The website provides users with overarching definitions and descriptions related to procurement methods as well as several types of data organized by state: basic energy data, broad regulatory and market considerations, and regulatory and market considerations specific to particular procurement methods. This technical note describes the sources and methodology related to these types of data, collected and analyzed before the launch of the website. As the ACCC: Renewables Accelerator project develops, additional website features are expected to be integrated. Those features and materials may be reviewed separately.

The website is organized to provide basic data for each state as well as considerations related to each renewable procurement method available in each state. The website user can enter their state into a search tool to find data for their state, arranged in sections (Table 1). The first section presents the State Market and Regulatory Snapshot, which displays state electricity data and broad regulatory and market considerations. The remaining tabs are organized by procurement method: on-site solar, community choice aggregation, community solar, physical power purchase agreements, virtual power purchase agreements, and green tariffs. If one of these options is not available in the state, the website notes why and does not provide further data for that procurement method. If the method is available in that state, the website describes what the procurement approach is and then provides regulatory and market considerations specific to that option. These considerations are meant to help guide the user in beginning to assess whether the procurement method is an option for their city and what that procurement path may entail.

Table 1 | **Data in State Overviews**

DATA TYPE	CONTENT	LOCATION
Descriptions and Definitions of Terms	<ul style="list-style-type: none"> ■ Describes types of data the website shows and why they are relevant to the user ■ Clearly defines terms within text ■ Provides link to full glossary with additional features, such as relationships between broad and solar-specific terms 	<ul style="list-style-type: none"> ■ Frames each State Market and Regulatory Snapshot ■ Frames each procurement method ■ Linked to separate glossary
Energy Data	<ul style="list-style-type: none"> ■ Generation ■ Percentage of electricity imported or exported ■ Renewable portfolio standard targets 	<ul style="list-style-type: none"> ■ Found in State Market and Regulatory Snapshot
Broad Market and Regulatory Considerations	<ul style="list-style-type: none"> ■ Regional transmission operators ■ Wholesale and retail prices ■ Additional links to stakeholders 	<ul style="list-style-type: none"> ■ Found in State Market and Regulatory Snapshot
Procurement Method-Specific Regulatory and Market Considerations	<ul style="list-style-type: none"> ■ State-level laws and regulations that impact procurement options ■ Names of existing programs 	<ul style="list-style-type: none"> ■ Found under each procurement method section

3.1 Descriptions and Definitions of Terms

The purpose of defining technical terms throughout the website is twofold: to educate the user and add specificity to the data. To ensure accessibility, several terms used in the website have a definition tied to them in descriptive text and refer to a separate glossary page, allowing the user to learn more about the terms while browsing the website. For example, a paragraph describing the wholesale market covering a city’s area may be unclear to a user who doesn’t know the definition of *wholesale market*. The website also differentiates between commonly confused terms such as *green tariffs* and *green power pricing*. Many who are new to power purchasing either incorrectly use the terms interchangeably or confuse one for the other. By providing definitions that draw a clear distinction between the two, the website is able to educate users on these options and elevate the technical fluency of our user base.

We have also defined terms where there is no single agreed-upon industry definition to provide specificity on what our data cover. Many terms related to the clean energy industry have broad definitions that vary by institution. For example, *community solar* can be defined in many ways; however, our definition focuses on the ownership model, and we make it clear to users what we consider to fit under the term. The definitions are based

on language used by the U.S. Energy Information Administration (EIA), U.S. Environmental Protection Agency, U.S. Department of Energy–funded Database of State Incentives for Renewables & Efficiency (DSIRE) at North Carolina State University’s NC Clean Energy Technology Center, and other sources we link to on the website. The definitions are compiled in a glossary that is available on the website. Because the State Overviews make use of several data sources, we have checked for consistency across our definitions and the definitions of those data sources whenever appropriate.

Several times within the website we offer a technical term for the type of data, prefaced with a phrase that describes the technical term in plain language. The purpose of having both is to use language accessible to everyone while still providing data with technical accuracy. For example, some city managers may find data on both retail and wholesale energy prices useful within the State Market and Regulatory Snapshot. We understand, however, that some newer city managers may not be accustomed to these distinctions, so we offer the data with additional phrasing such as “How much does the typical customer pay per unit of electricity?”² and “At what prices is electricity bought and sold by energy traders and utilities?”³ We have included language to indicate that the data are meant to serve as an example and that the ACCC:

Renewables Accelerator or hired consultants can provide additional interpretation and context on these terms and their respective data.

3.2 Energy Data within the State Market and Regulatory Snapshot

The State Market and Regulatory Snapshot provides users with energy data and broad regulatory and market considerations as a starting point for understanding their state energy landscapes. The energy data are organized as a dashboard that illustrates the most up-to-date, high-level information for a series of market indicators. The indicators included are intended to provide users context on renewable energy development in their states. The indicators not only capture the development of renewables the states have already achieved but also show the potential market growth in the states. These indicators help users consider the impact their purchases could have on the market. Additional indicators present average prices for retail electricity and link to market data at the wholesale level. These indicators present users with data that are important to consider if they are examining contract prices and terms.

The section titled “How Is Electricity Generated in My State?” includes a pie chart showing total electricity generation across the total electric power industry, by energy source. Electricity generation is sourced from EIA’s Detailed State Data, which is updated annually. The webpage shows the state ranking for percentage of aggregated wind and solar energy, also based on EIA data. For this analysis, we consider only wind and solar as they are the renewable energy sources for which cities are most likely to contract. Other renewables, such as hydropower, could also power renewable projects for cities but are better addressed in targeted resources and not the broader guides outlined by this project.

This section also includes a bar graph titled “Where Is My State Heading?” which displays planned renewable energy capacity (defined here as wind and solar), where applicable, in 2018, 2019, 2020, and the final target year, as mandated under state renewable portfolio standard (RPS) targets. Top-line RPS targets and required sales in 2018, 2019, and 2020 are sourced from DSIRE. Individual utilities may have additional renewable energy targets, but these are not statewide so therefore not appropriate for our level of analysis. Additionally, state governors may set statewide targets but these are often not binding and

therefore the existing RPS is widely recognized as the most reliable indicator for mandated future renewable development. Since 2000, approximately half of renewable energy generation and capacity can be attributed to RPS targets (Barbose 2018).

This section also provides energy data in the form of prices. Using the most recent annual EIA data available, we provide the average residential, commercial, and industrial rates for each state. We also point users to pages within the websites of the one or more regional transmission organizations (RTOs)⁴ that may exist within their states. These links direct users to RTO-managed webpages displaying market and operation data that include day-ahead pricing by hub as well as the current generation mix across the RTO market. These links provide users with the prices and fuel mixes for their RTOs.

3.3 Broad Regulatory and Market Considerations within the State Snapshot

The “What Is My Regulatory and Market Landscape?” section provides an introduction to the regulatory and market considerations, starting with broad considerations and then moving into procurement tool-specific considerations by state. This section also notes whether the state lies within an organized wholesale electricity market, which is administered by its RTO and, if so, provides the name of that RTO on the basis of current maps available on the Federal Energy Regulatory Commission (FERC) website. An important consideration is that RTO boundaries do not align perfectly with state boundaries and it is possible for one state to have utility territories in more than one RTO market. This is noted to clarify for cities that their location within the state may affect whether they have access to a particular wholesale market.

3.4 Procurement Method-Specific Regulatory and Market Considerations

For each procurement method, the website provides Key Considerations as well as an option to reveal Additional Considerations that help provide a fuller picture. For the Key Considerations, we present each consideration with both plain terms geared specifically to the city’s concerns as well as the technical term for the data. Rather than just presenting the data alone, each section includes descriptive text that frames why each consideration was included and its relevance to the procurement method.

4. METHODOLOGY

To determine whether a particular procurement method is available to a city, we have aggregated regulatory and legal data from several public sources. In each case, the data are interpreted and presented in a user-friendly way. For each procurement method below we list the key considerations (Tables 2–7). We provide technical information, give some city context in plain language, identify the data source and its vintage at the launch of the website, and explain how often the original source updates these data. Sources were selected by WRI and RMI experts on the basis of accuracy and frequency of updates. The key considerations and additional considerations were identified and sorted accordingly by senior WRI and RMI subject area experts.

4.1 On-site Solar

The information on whether a state has net metering policies in place is sourced from data on the DSIRE website.

The type of net metering allowed is characterized in three ways: state-developed mandatory rules for utilities metering, statewide distributed generation compensation rules other than net metering, or N/A. The DSIRE website defines net metering as allowing “for the flow of electricity both to and from the customer—typically through a single, bi-directional meter,” and states that “when a customer’s generation exceeds the customer’s use, electricity from the customer flows back to the grid, offsetting electricity consumed by the customer at a different time during the same billing cycle” (DSIRE n.d.). Although this definition may differ from definitions used by other organizations, generally in terms of how excess generation is credited, DSIRE is an oft-cited, widely accepted-as-credible source for renewable energy policy. DSIRE also provides further details on these net metering policies, including caps on system size (which may impact the potential size of a city project) and aggregate capacity limits (which may indicate how near the state is to closing net metering programs to new projects).

Table 2 | **Considerations for Evaluating On-site Solar as a Renewable Energy Procurement Option**

TECHNICAL DATA	CITY CONTEXT PHRASING	SOURCE	YEAR LAST UPDATED	UPDATES
Key Considerations				
State Net Metering Policies	Does my state allow for net metering?	Database of State Incentives for Renewables & Efficiency (DSIRE); National Renewable Energy Laboratory (NREL)	Varies by state	At least annually
System Capacity Limit	What is the state limit on program size or system cap?	DSIRE; NREL	Varies by state	At least annually
Net Metering for Customer Classes	Who is eligible?	DSIRE	Varies by state	At least annually
Net Excess Generation Crediting	How am I compensated/credited when I generate more than I use?	DSIRE; NREL	Varies by state	Varies by source
Renewable Energy Credit (REC) Ownership	Who owns the RECs?	DSIRE; NREL	Varies by state	At least annually
Third-Party Power Purchase Agreement (PPA) Authorization	Does my state allow me to enter into a third-party PPA?	DSIRE	Varies by state	At least annually
Additional Considerations				
Aggregate Capacity Limit	Is there a state cap on the total amount of installed photovoltaic (PV) capacity eligible for net metering?	DSIRE; NREL	Varies by state	At least annually

One of the key considerations is how customers are compensated for their excess generation. We define these using two broad categories: at retail rate or an alternative. An alternative refers to net metering programs that have been redesigned to compensate customers with a portion of the retail rate (often the wholesale rate) or a “value of solar” rate for that state. These data, in combination with the other factors, are not intended to fully guide the city user through the economics of developing an on-site solar project, but instead provide an entry-level guide to the considerations that come into play when doing so.

4.2 Community Choice Aggregation

Whether or not a state has authorized community choice aggregation depends on regulation or the passage of enabling legislation and is tracked by the nonprofit Local Energy Aggregation Network (LEAN) Energy US. The

source defines CCA legislation as allowing “local governments and some special districts to pool (or aggregate) their electricity load in order to purchase and/or develop power on behalf of the residents, businesses, and municipal accounts within their service territory” (LEAN Energy US n.d.). We categorize CCA authorization within states as one of the following: active within the state, available due to enabling legislation but no programs in place, or not authorized. For these categories we draw from LEAN Energy US’s database.

For the additional considerations, we make use of details provided by LEAN Energy US on each CCA program or those provided through DSIRE. DSIRE, for example, provides details on commodities allowed for enacted CCAs.

Table 3 | **Considerations for Evaluating Community Choice Aggregation as a Renewable Energy Procurement Option**

TECHNICAL DATA	CITY CONTEXT PHRASING	SOURCE	YEAR LAST UPDATED	UPDATES
Key Considerations				
State Community Choice Aggregation (CCA) Market	Has the state enabled CCA, and how active is it?	Local Energy Aggregation Network (LEAN) Energy US	2018	At least annually
Customer Classes Eligible	Who is eligible for CCA?	LEAN Energy US	2018	At least annually
Opt-In/Opt-Out Provisions	Do I have to opt in to participate?	LEAN Energy US	2018	At least annually
Additional Considerations				
Allowed Commodities	Are CCAs allowed for just electricity or also natural gas?	LEAN Energy US	2018	At least annually
Cost Competitiveness	Does the state have a mandate for cost-competitive rates?	LEAN Energy US/reviewed CCA-enabling statutes for each state	2018	At least annually

4.3 Community Solar

Data on the presence of enabling community solar legislation are sourced from Shared Renewables HQ, a project of the nonprofit organization Vote Solar. The names of the shared solar programs are pulled from the Shared Renewables Scorecard, a project of the nonprofit organization Interstate Renewable Energy Council (IREC). The scorecard defines shared renewables as “programs that enable multiple customers to share the economic benefits of one renewable energy system via their individual utility bills” (IREC n.d.) and distinguishes them from community renewable investment programs, green tariffs, group purchasing programs, and other community or community-based renewable energy programs.

System capacity limit data are sourced from DSIRE as well as the state net metering categorizations (as described in Section 4.1) and virtual net metering (also known as aggregate net metering) regulations. Low-to-moderate-income (LMI) community considerations are sourced from IREC’s Shared Renewables Scorecard, using its categorization of whether a program either has an explicit component that promotes LMI participation, addresses financial barriers, or requires marketing, outreach, and education for LMI customers. IREC details its community solar LMI criteria in the report *Shared Renewable Energy for Low- to Moderate-Income Consumers: Policy Guidelines and Model Provisions*.

Table 4 | **Considerations for Evaluating Community Solar as a Renewable Energy Procurement Option**

TECHNICAL DATA	CITY CONTEXT PHRASING	SOURCE	YEAR LAST UPDATED	UPDATES
Key Considerations				
Enabling State Legislation	Has my state enabled community solar legislation?	Vote Solar Shared Renewables HQ	2018	Annually
Program Name	For states that enable community solar: What state-supported community solar programs exist?	Interstate Renewable Energy Council (IREC) Shared Renewables Scorecard	2018	Annually
System Capacity Limit	Is there a limit on the project size if the program is state supported?	Database of State Incentives for Renewables & Efficiency (DSIRE)	Varies by state	At least annually
Virtual Net Metering (VNM) Regulation	Is virtual net metering also allowed in my state?	DSIRE; National Renewable Energy Laboratory	Varies by state	At least annually
Retail Credit Rate	At what rate am I compensated/credited when I generate more electricity than I use?	IREC Shared Renewables Scorecard	2018	Annually
Additional Considerations				
Low-to-Moderate-Income Considerations	For the state program, does my state require low-to-moderate-income considerations?	IREC Shared Renewables Scorecard	2018	Annually
Portability	If I move within the service territory, can I take my rate with me?	IREC Shared Renewables Scorecard	2018	Annually
Transferability	Can I transfer my program subscription to others?	IREC Shared Renewables Scorecard	2018	Annually
Siting Restrictions	Where can I site community solar projects?	IREC Shared Renewables Scorecard	2018	Annually

4.4 Physical Power Purchase Agreements

Whether or not a state has a deregulated retail market that provides customers with retail choice for competitive suppliers is a key consideration for physical power purchase agreements and is determined by WRI’s research captured in a previous technical note: *U.S. Renewable Energy Map: A Guide for Corporate Buyers*. This source defines retail choice using EIA’s definition⁵ and then categorizes most states as either having retail choice or not. This analysis is open to debate but reflects that while some states have enabled retail choice, there have been program restraints such as caps on participation and limits on which classes can participate that effectively reduce access to retail choice. For states with a more nuanced retail market status, we direct users to the American Coalition of Competitive Energy Suppliers’ database for additional information.

4.5 Virtual Power Purchase Agreements

The primary consideration for cities considering their options for entering into a virtual power purchase agreement is the presence of an organized wholesale market. The website displays which RTOs manage wholesale markets in any part of the selected state. We do not provide granular data on the wholesale market each city operates within because the website’s data are generally provided state by state. Our broader program materials⁶ note that it is not necessary for a city to procure renewable projects within its local market, although sourcing a project in a different market may have implications on the project’s impact.

Please see Section 4.4 for a discussion of our retail choice methodology.

Table 5 | **Considerations for Evaluating Physical Power Purchase Agreements as a Renewable Energy Procurement Option**

TECHNICAL DATA	CITY CONTEXT PHRASING	SOURCE	YEAR LAST UPDATED	UPDATES
Key Considerations				
Retail Electricity Choice	Can I choose my electricity provider?	American Coalition of Competitive Energy Suppliers	2018	Unknown
Additional Considerations				
There are no additional considerations for physical power purchase agreements.				

Table 6 | **Considerations for Evaluating Virtual Power Purchase Agreements as a Renewable Energy Procurement Option**

TECHNICAL DATA	CITY CONTEXT PHRASING	SOURCE	YEAR LAST UPDATED	UPDATES
Key Considerations				
Organized Wholesale Electric Market (Regional Transmission Organization, RTO/Independent System Operator, ISO)	Is my state in a wholesale market?	Individual RTO websites ^a	2019	Varies
RTO/ISO Name(s)	Which market(s)?	Individual RTO websites	2019	Upon changes
Additional Considerations				
There are no additional considerations for virtual power purchase agreements.				

Note: ^a CAISO 2019; ISO-NE 2019; MISO 2019; NYISO 2019; PJM 2019; SPP 2019.

4.6 Green Tariffs

The primary consideration for cities considering their options for entering into a green tariff is whether their state has passed legislation to enable a green tariff. Additionally, not all green tariffs are available for use by cities, so understanding the status of the program and which customers are eligible is necessary.

Please see Section 4.4 for a discussion of our retail choice methodology.

5. SOURCES CITED AND ADDITIONAL RESOURCES

At the bottom of each State Overview, a list of links to the original data sources is provided. There is also a section of links to other relevant state-specific resources. For example, the New York State Energy Research and Development Authority has developed a Community

Choice Toolkit, which is noted as being relevant to state-specific CCA concerns. Similarly, we provide a link to WRI's Resource Watch power plant map to show existing projects and provide a sense for what has been built historically at a utility scale. This section also includes links for other relevant entities, varying by state, but usually including the relevant state agency, utility commissions, ratepayer advocacy offices, and active clean energy nonprofit organizations.

6. DATA AVAILABILITY

Data sources were accessed between October 2018 and February 2019. Data are updated at least twice yearly, although major state legislation, such as a state energy omnibus bill, will prompt off-schedule updates.

Table 7 | **Considerations for Evaluating Green Tariffs as a Renewable Energy Procurement Option**

TECHNICAL DATA	CITY CONTEXT PHRASING	SOURCE	YEAR LAST UPDATED	UPDATES
Key Considerations				
Tariff Name	What green tariffs are available in my state?	WRI	2017	Biannually
Status of Program	What is the status and eligibility of the green tariff(s)?	One-on-one calls with utilities	2018	Monthly
Additional Considerations				
The website directs users to WRI's publication on green tariffs to learn more about additional considerations that are program specific.				

ENDNOTES

1. The American Cities Climate Challenge, supported by Bloomberg Philanthropies, is a two-year acceleration program that provides powerful new resources and access to cutting-edge support to help cities meet—or beat—their near-term carbon reduction goals. U.S. cities are rapidly taking action to procure clean energy to meet these goals. To make this happen, the ACCC: Renewables Accelerator, an initiative of the challenge, offers technical support to the 25 selected challenge cities and to over 100 Urban Sustainability Directors Network (USDN) members interested in powering their cities with low-carbon renewable energy. The effort is jointly led by RMI and WRI and is facilitated by the USDN.
2. The retail price is the price charged to end-use consumers by their distribution utility, and includes the wholesale cost of electricity plus additional charges, such as delivery.
3. The wholesale electricity price is the price at which electricity is sold in a given organized wholesale market.
4. For this tool and other materials developed by the ACCC: Renewables Accelerator, we use the abbreviation RTO for simplicity. Technically, both regional transmission organizations and independent system operators constitute organized wholesale markets, though there are differences between the two. Both names are used almost interchangeably within the industry.
5. *Electric retail choice* is defined as “the right of customers to purchase energy from a supplier other than their traditional supplier or from more than one seller in the retail market” within the “customer choice” term in EIA’s glossary. See <https://www.eia.gov/tools/glossary/index.php>.
6. These program materials can be found on www.cityrenewables.org.

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ABOUT WRI

World Resources Institute is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity, and human well-being.

Our Challenge

Natural resources are at the foundation of economic opportunity and human well-being. But today, we are depleting Earth's resources at rates that are not sustainable, endangering economies and people's lives. People depend on clean water, fertile land, healthy forests, and a stable climate. Livable cities and clean energy are essential for a sustainable planet. We must address these urgent, global challenges this decade.

Our Vision

We envision an equitable and prosperous planet driven by the wise management of natural resources. We aspire to create a world where the actions of government, business, and communities combine to eliminate poverty and sustain the natural environment for all people.

Our Approach

COUNT IT

We start with data. We conduct independent research and draw on the latest technology to develop new insights and recommendations. Our rigorous analysis identifies risks, unveils opportunities, and informs smart strategies. We focus our efforts on influential and emerging economies where the future of sustainability will be determined.

CHANGE IT

We use our research to influence government policies, business strategies, and civil society action. We test projects with communities, companies, and government agencies to build a strong evidence base. Then, we work with partners to deliver change on the ground that alleviates poverty and strengthens society. We hold ourselves accountable to ensure our outcomes will be bold and enduring.

SCALE IT

We don't think small. Once tested, we work with partners to adopt and expand our efforts regionally and globally. We engage with decision-makers to carry out our ideas and elevate our impact. We measure success through government and business actions that improve people's lives and sustain a healthy environment.



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