



Understanding Renewable Energy Opportunities in New York State





Direct Energy Renewable Services

428 commercial &
industrial customers
currently served by Renewable Services

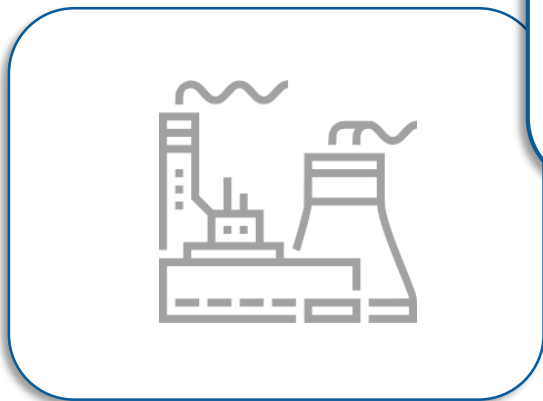
2,015 *ChooseGreen™*
small biz customers
currently served by Renewable Services

17 TWH
of bundled *Renewable Choice™* power
sold by Renewable Services

1,400 MW
of renewable power generation
assets under management

The Evolution of Energy Choice

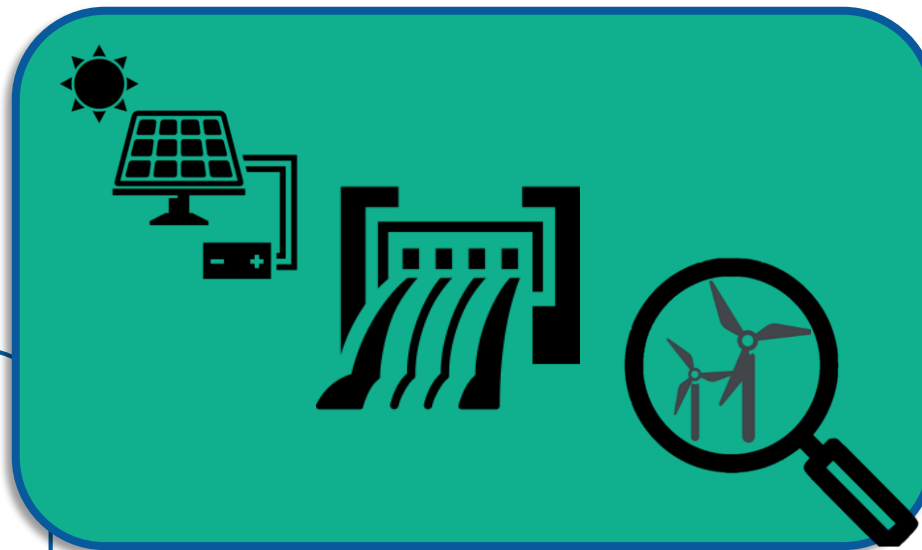
Renewables have ignited the third phase of energy choice evolution.



1.0 – Deregulation
Late 1990's - Mid 2000's



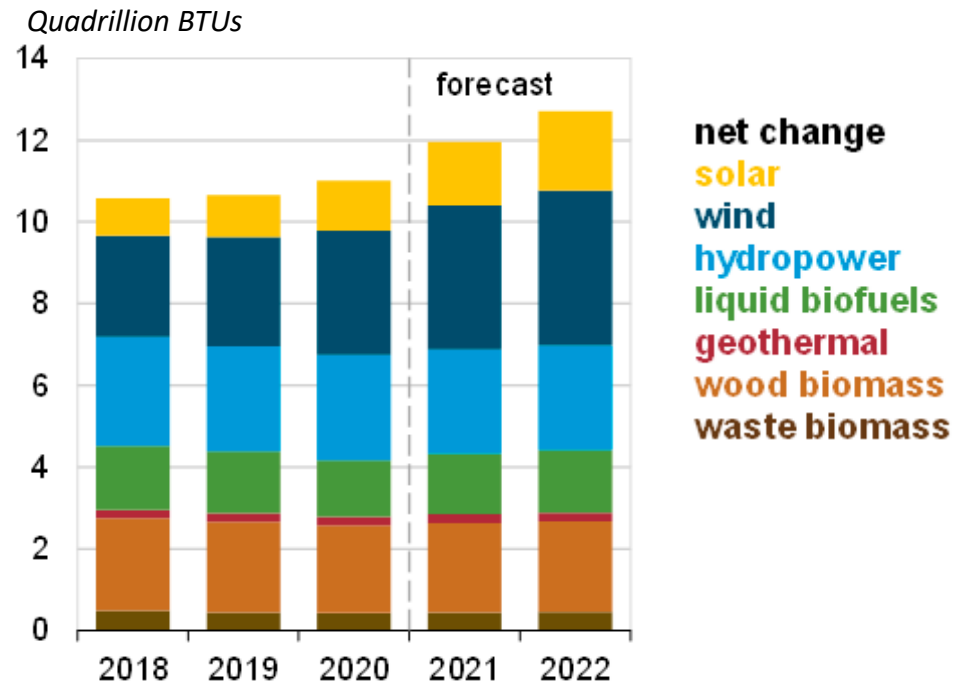
2.0 – Energy Risk Management
Mid 2000's – Late 2010's



**3.0 – Renewables /
Climate Risk Management**
2019 - Present

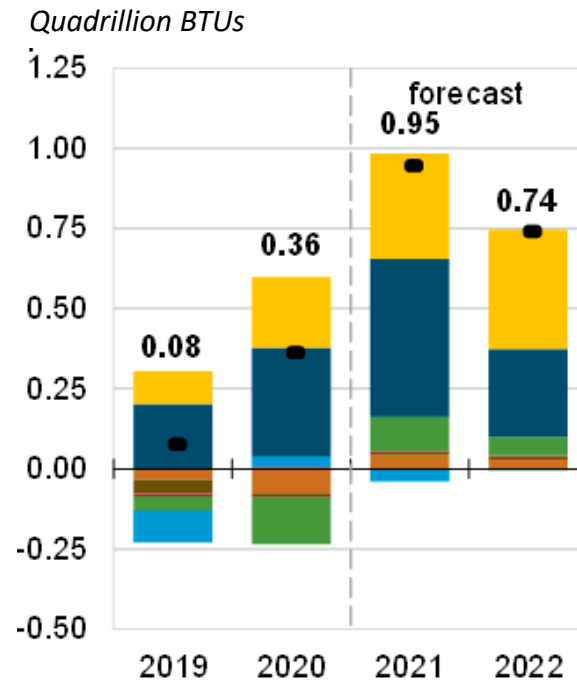
COVID-19 briefly stalled utility-scale RE generation... which finished with record year

US renewable energy generation



EIA STEO, January 2021

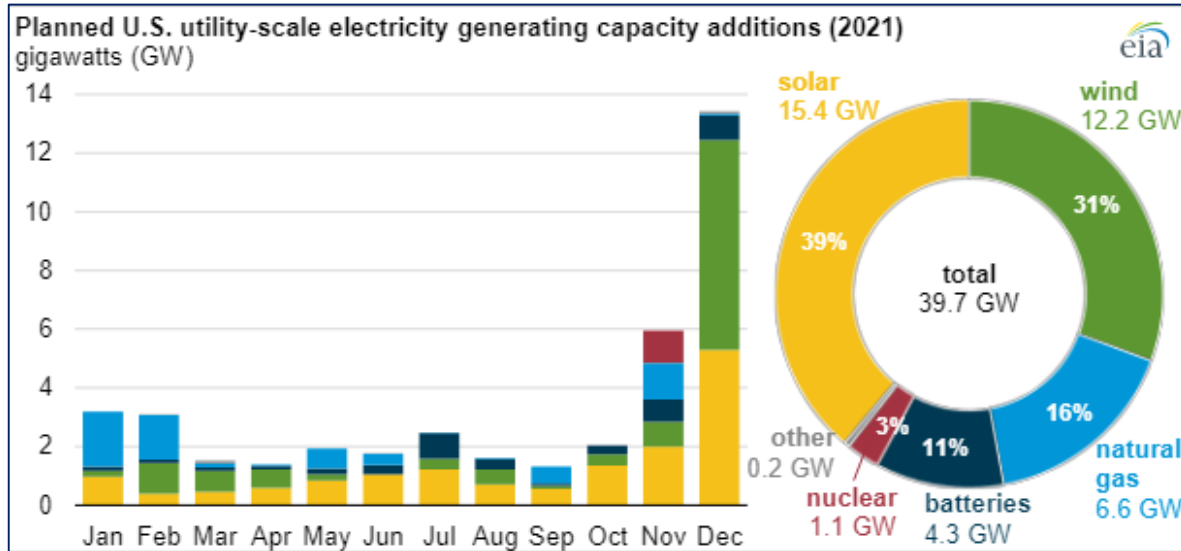
Components of annual change



Utility-scale supply chain and installations were largely sheltered from the pandemic limitations experienced by the residential/distributed market.

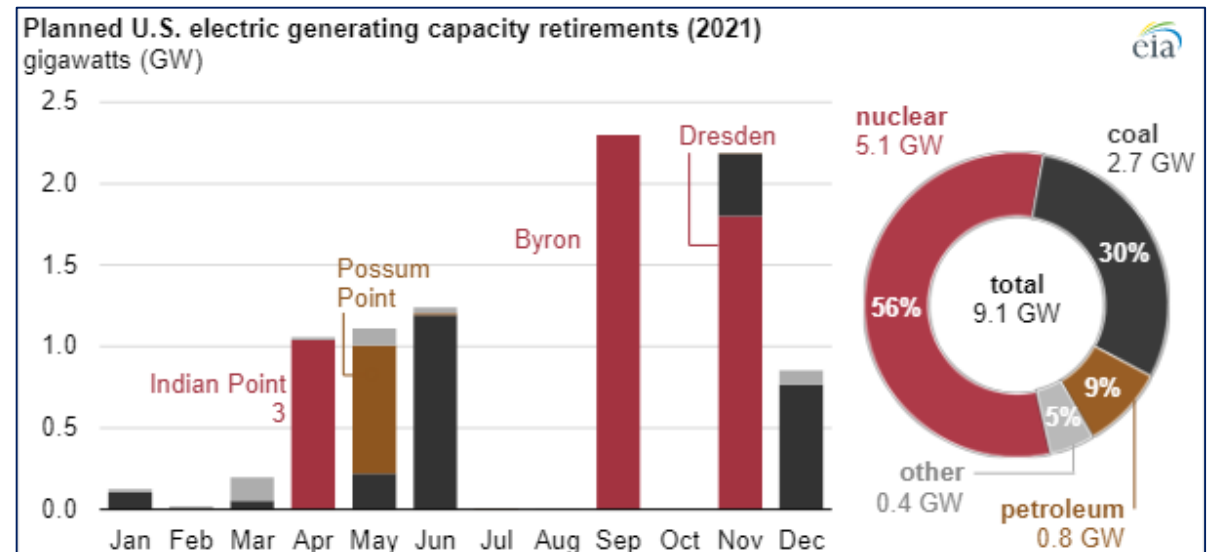
Tax equity also rebounded by September with JP Morgan expecting 2020 (\$15-16B) to shatter 2019's (\$12-13B) record placement year.

2021 - Renewables will dominate power gen as coal and nukes continue decline



Wind and solar represent 70% of all new build utility-scale power generation in 2021 with batteries storage providing 11% of new capacity.

Nuclear and coal represent 86% of power plant retirements in 2021 with Indian Point 3 representing a significant decline in capacity for New York City (final unit to shut down in April)



Top asset managers are increasingly holding portfolios to climate change standards

Global AUM rank	Asset manager	Assets under management (AUM)	Notable ESG actions
1	BlackRock	\$7.3 trillion	<ul style="list-style-type: none"> • Task Force on Climate-Related Financial Disclosures (TCFD) founding member • UN Principles for Responsible Investment and Vatican 2019 carbon pricing signatory • Climate Action 100+ member (push fossil producers to meet CO₂ targets) • Opposed Dept. of Labor's June 2020 proposal limiting ESG 401(k) investments
2	The Vanguard Group	\$6.1 trillion	<ul style="list-style-type: none"> • Task Force on Climate-Related Financial Disclosures (TCFD) member • Opposed Dept. of Labor's June 2020 proposal limiting ESG 401(k) investments • Encourages investments with climate risk to set goals that align with Paris Agreement
3	Fidelity Investments	\$3.1 trillion	<ul style="list-style-type: none"> • Task Force on Climate-Related Financial Disclosures (TCFD) member • Climate Action 100+ member (push fossil producers to meet CO₂ targets) • Opposed Dept. of Labor's June 2020 proposal limiting ESG 401(k) investments
4	State Street	\$3.0 trillion	<ul style="list-style-type: none"> • Task Force on Climate-Related Financial Disclosures (TCFD) member • Opposed Dept. of Labor's June 2020 proposal limiting ESG 401(k) investments • "Fearless girl" statue placed in front of NYSE promoting more female finance leaders

*"I believe we are on the edge of **a fundamental reshaping of finance**...We will see capital allocations happen faster than climate change itself...Our investment conviction is that sustainability- and climate-integrated portfolios can provide better risk-adjusted returns to investors." - **Larry Fink, BlackRock CEO***

Note: AUM as of summer 2020

ESG is a main focus for both major capital and federal government into 2021

Asset managers' biggest ESG focus areas for 2021



Bank of America survey of institutional investors, Dec. 2020

Key federal-level tailwinds

December 2020

Congress extends renewable investment tax credit (ITC) by two years and production tax credit (PTC) by one year

January 2021

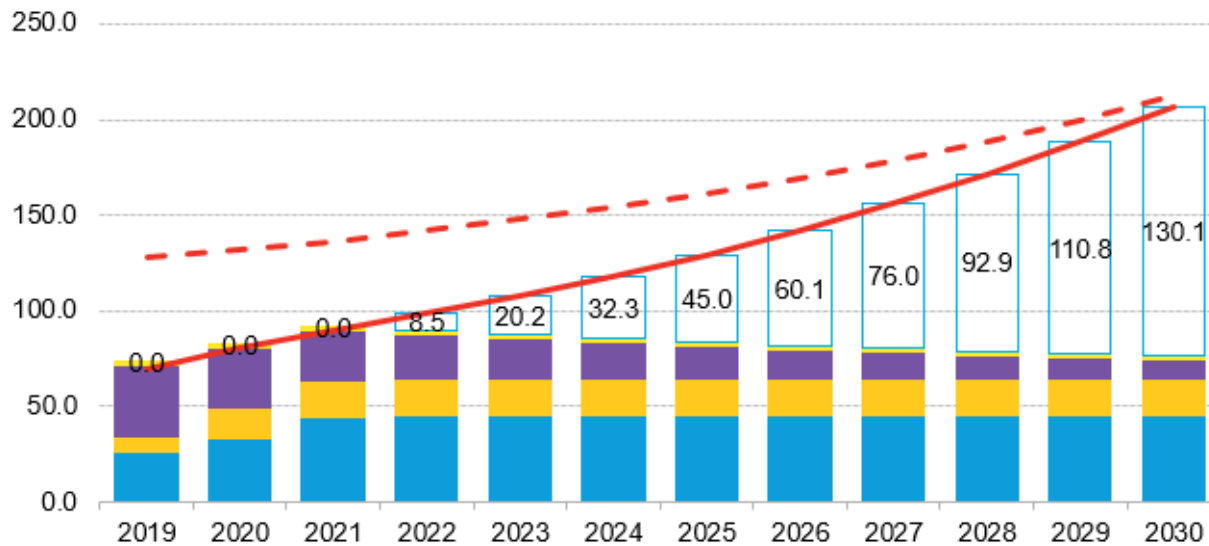
Pro clean-energy Democrats win Senate, giving them control of the three main branches of government

Biden's climate plan

- "Clean energy revolution"
- Carbon-free electricity by 2035
- Net-zero emissions by 2050
- \$1.7 trillion federal investment in clean energy and climate justice over next 10 years
- Day-one actions include requiring companies to disclose climate change risk and emissions

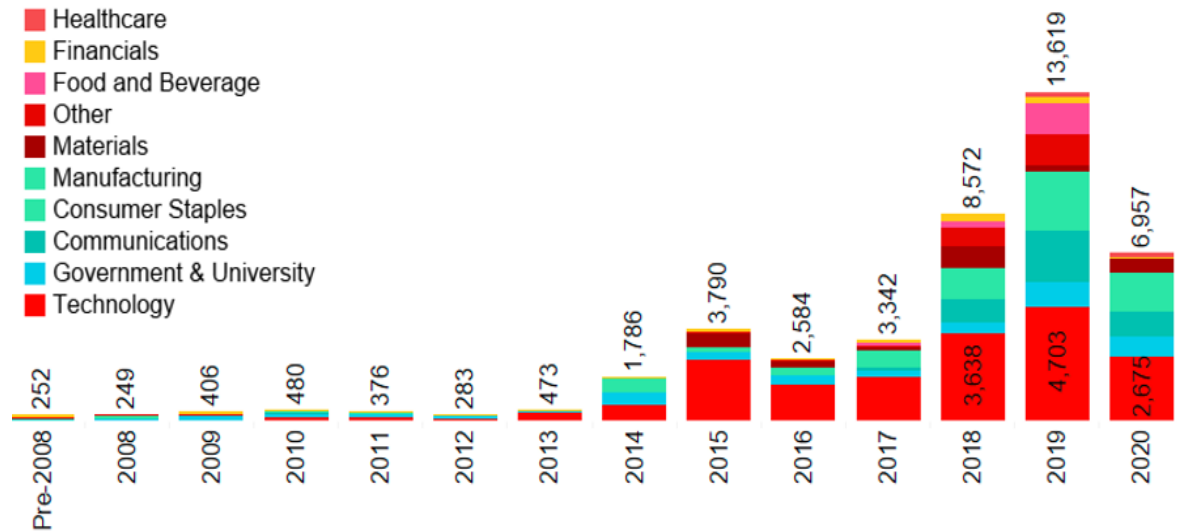
US corporate commitments to renewables remain aggressive and sector-diverse

US RE100 member energy procurement shortfall (TWh)



BNEF RE100 data viewer, Jan 2021

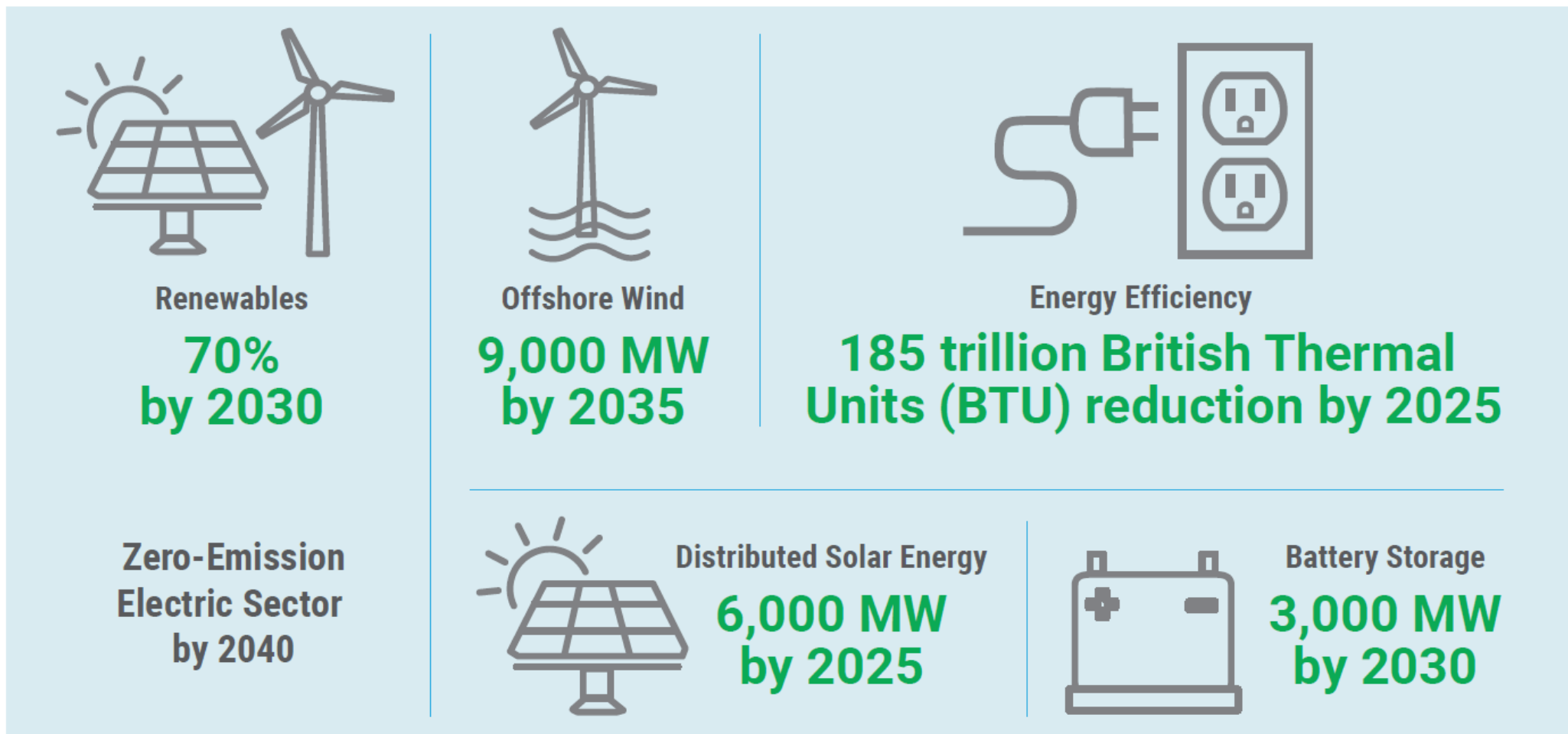
US PPA capacity by signing year by sector (MWh)



BNEF corporate PPA tracker, Nov. 2020

A June 2020 survey by **The Climate Group** found that **97%** of business professionals say their sustainability strategy remains unchanged through COVID-19, while **80%** say their company has been able to maintain current climate actions.

Climate Leadership and Community Protection Act



Carbon pricing proposal would socialize the cost of carbon emissions and bring NY's wholesale electricity market more in line with NY state environmental objectives. Pricing partially baked into forwards today, bridges gap to spur new RE investment.

New York State 2021 - Reimagine, Renew, Rebuild

Governor Cuomo's bold new agenda for building the Green Economy for New York State

70% Renewable Energy by 2030 and zero carbon emissions by 2040



Energy Storage



100 Renewable Projects



2.5 GW
Offshore Wind



Global Wind
Manufacturing Hubs



Green Energy
Transmission Superhighway

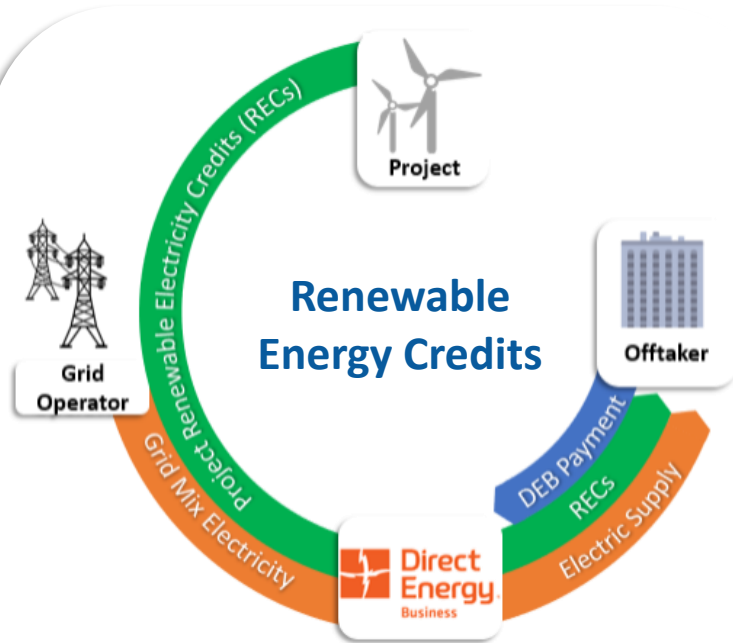


Green Workforce
Training

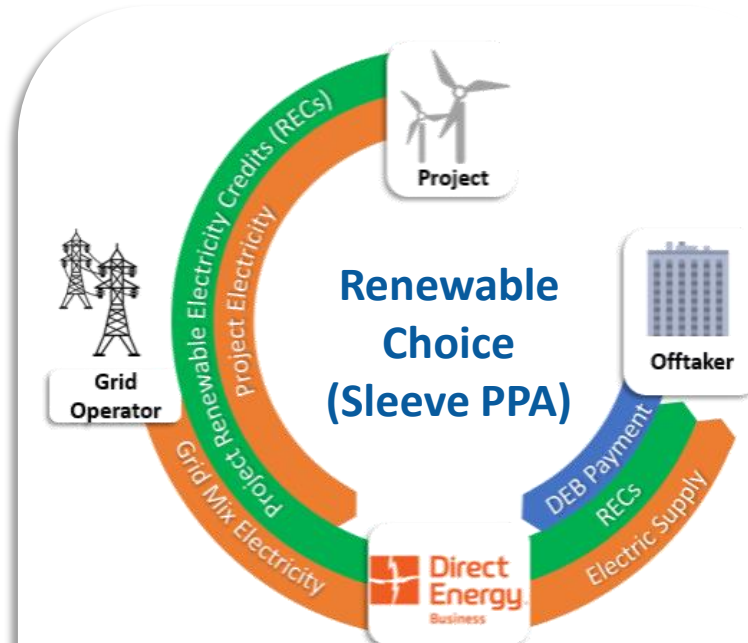
A Full Suite of Voluntary Renewable Services Options

<i>ChooseGreen™</i> RECs & Carbon Offsets	<i>Renewable Choice™</i> Custom Sourced Power	<i>Renewable Choice™</i> Power Purchase Agreement	Behind-the-Meter Solar & Community Solar
No Term Commitment	Term: 5 - 10 Years	Term: 10 – 20 Years	Term: Up to 20 Years
<p>Details & Benefits:</p> <ul style="list-style-type: none"> ✓ Direct Energy Renewable Services RECs are Green-e® Certified by the Center for Resource Solutions. ✓ RECs can be purchased from the project or region of your choice. ✓ RECs involve a short-term commitment. ✓ Direct Energy Renewable Services sources offsets from three major carbon registries (CAR, ACR, VCS) 	<p>Details & Benefits:</p> <ul style="list-style-type: none"> ✓ You choose the amount of your load you wish to cover with your <i>asset specific</i> renewable energy purchase. ✓ You pay one price for your firm, shaped power and renewable attributes coming from a named renewable energy resource. ✓ Our credit is used—not yours—to secure the agreement with the developer. ✓ We manage the risk for unit contingency, congestion and developer credit. 	<p>Details & Benefits:</p> <ul style="list-style-type: none"> ✓ We originate and manage the grid connect asset and finance it, with no capital expense. ✓ We schedule the power coming from that project in a separate sub-account with the RTO or ISO in which your facilities are located. ✓ We manage your wholesale power purchases and the remainder of your energy supply requirements. ✓ You pay a fixed rate that is settled like a traditional PPA, but invoiced through your standard retail agreement 	<p>Details & Benefits:</p> <ul style="list-style-type: none"> ✓ We conduct an in-depth analysis to determine if your facility can support an on-site installation, provide projections on the economics of the project and manage the installation and ongoing maintenance. ✓ We finance, manage and provide warranties on your solar installation. ✓ We manage the sale of any excess generation back to the grid through net metering.

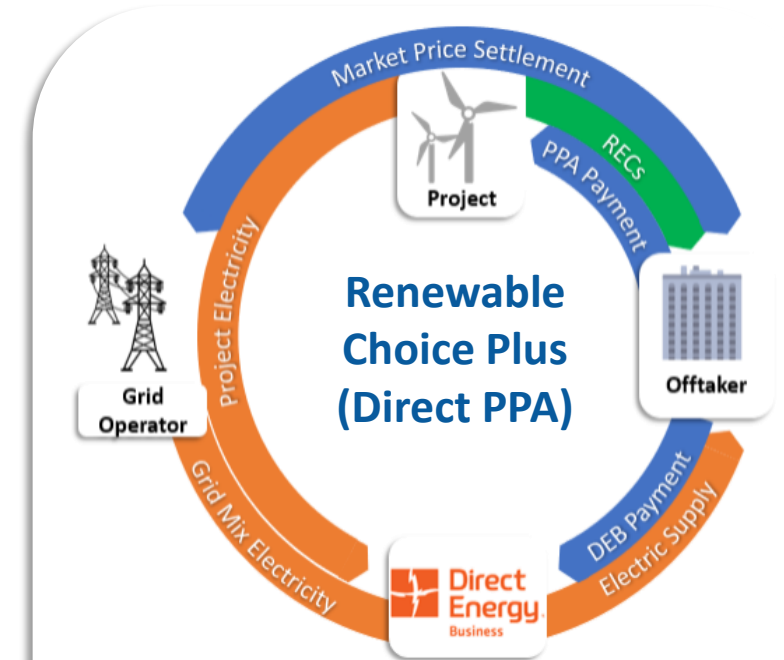
The Three Ways to Procure Offsite Renewables



- ✓ **Customizable** – RECs can be purchased from a project or region of choice.
- ✓ **Flexible** – Control your spend by procuring RECs for a portion or all of your load.
- ✓ **Foundational** – RECs are at the core of every renewable energy solution in North America.



- ✓ **Robust** – Support new and existing renewable projects by purchasing both *asset specific* project energy and RECs.
- ✓ **Low Risk** – DEB manages wholesale risk in order to deliver a firm fixed price.
- ✓ **Easy** – Easily integrate physical renewable supply using a standard retail commodity agreement.



- ✓ **Robust** – Support new renewable projects by executing a PPA.
- ✓ **Long Term** – Lock in power supply for 10 – 20 years.
- ✓ **Flexible** – PPAs have a wide variety of structures that can be tailored to a customer's needs.

Dissecting the renewable offtake cost stack

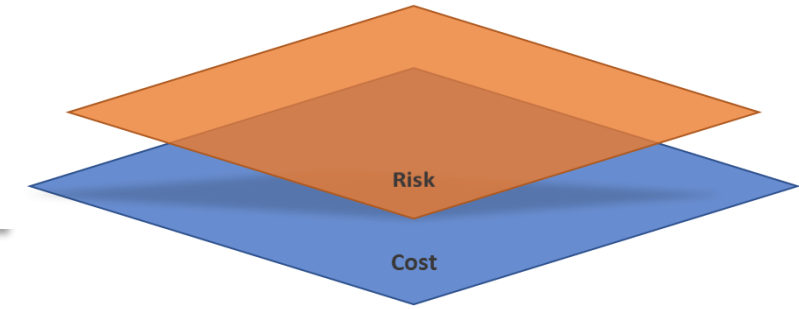
Sample Energy Component Costs	PPA	Renewable Choice Plus PPA	Renewable Choice (Sleeve PPA)
Project Generated Rate	\$27.00 - \$33.00	\$28.00 - \$32.00	Included
Settlement Risk (Congestion/Basis)	\$1.00 - \$2.00	\$0.50 - \$1.50	Included
Credit	\$0.25 - \$1.00	Included	Included
Commercial Operation Date Risk	\$0.00 - \$2.00	Included	Included
Firming and Shaping	\$2.00 - \$5.00	\$1.50 - \$4.00	Included
Legal Fees	\$0.25 - \$0.50	\$0.10 - \$0.25	Included
Retail Energy Rate	\$30.50 - \$43.50	\$30.10 - \$37.75	\$33.00
Capacity	\$6.61	\$6.61	\$6.61
Ancillaries, RPS, Balancing	\$2.21	\$2.21	\$2.21
Losses	\$1.19	\$1.19	\$1.19
Transmission	\$8.53	\$8.53	\$8.53
Utility T&D Bill	\$9.24	\$9.24	\$9.24
Delivered Price	\$58.28 - \$71.28	\$57.88 - \$65.53	\$60.78
Term Length	10 - 15 Years	10 - 15 Years	5 - 10 Years

Understanding the difference between wholesale offtake prices and delivered retail rates is critical when evaluating and transacting for renewable offtake

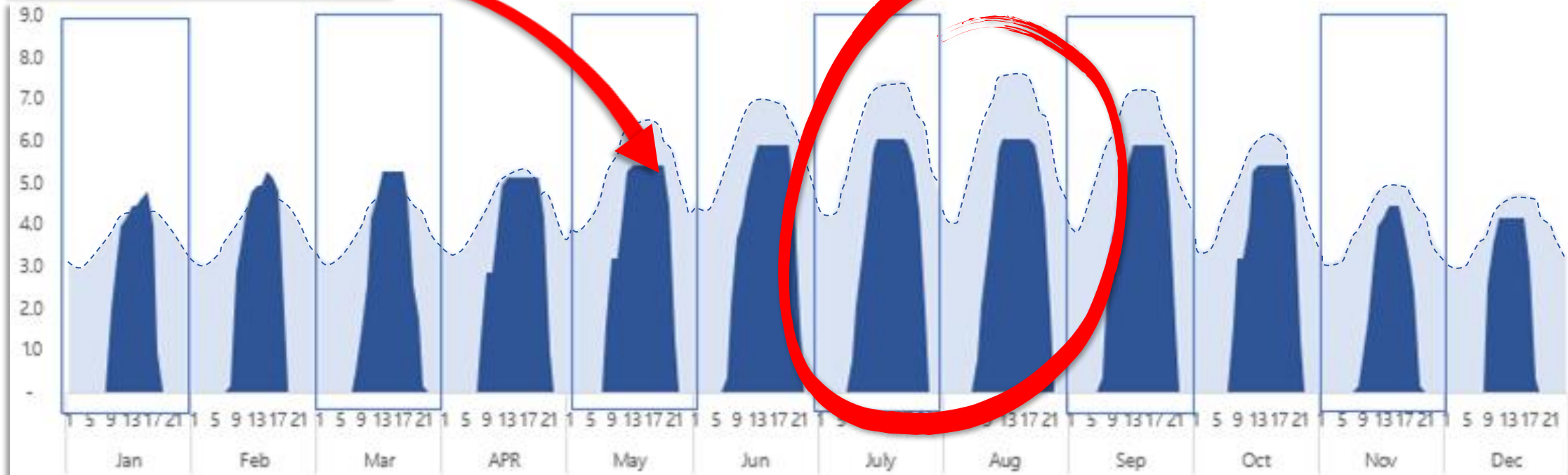
Leveraging Renewables to Mitigate Index Risk

Fixed Firm Renewable Shape / noun

An asset specific renewable production profile that is sold at a fixed price and firm quantity.

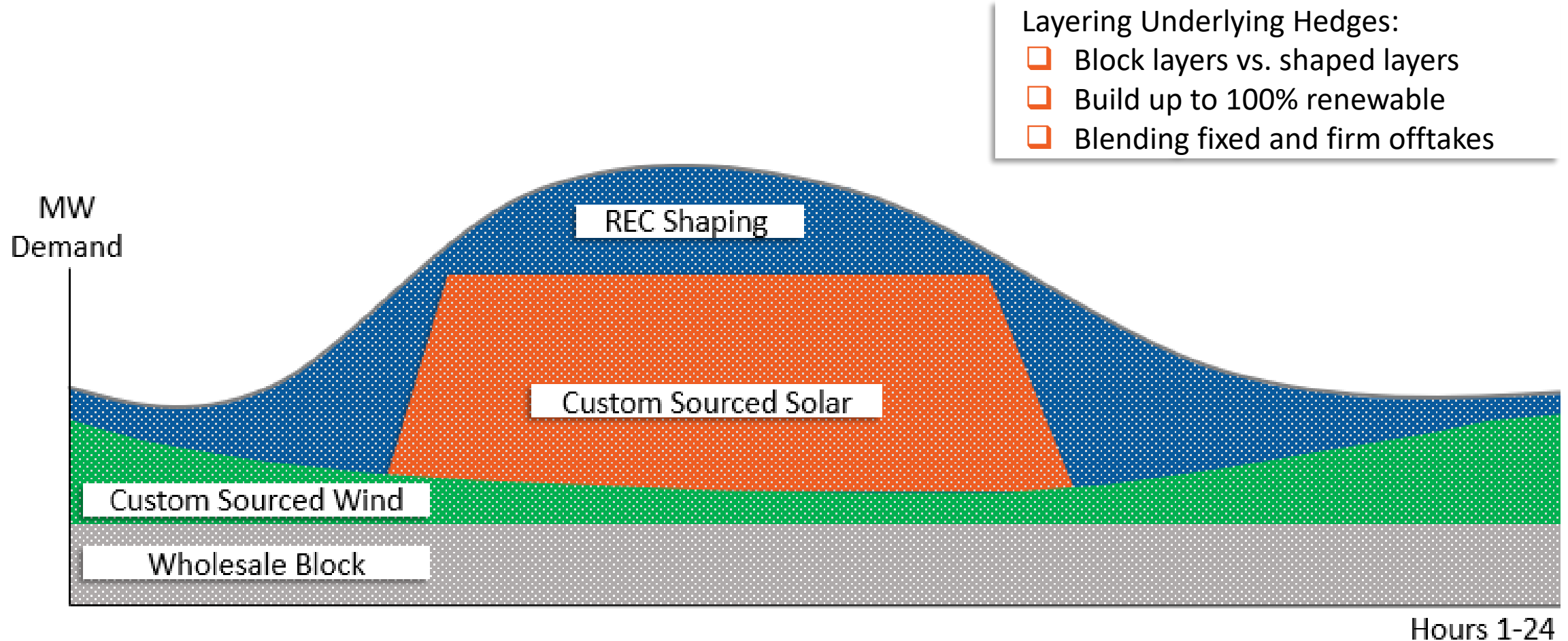


Fixed Firm Solar Shape from Grid Scale Solar Farm



A fixed firm solar shape can be leveraged as a refined on peak block and can help de-risk retail load curves from index exposure during the most volatile times of the day and year.

The intersection of renewables and electricity supply



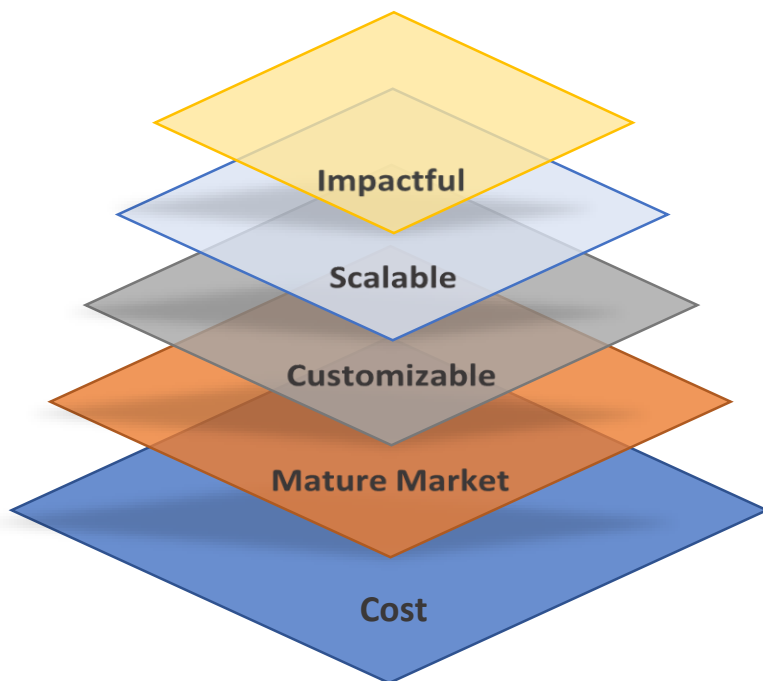
Decarbonizing Natural Gas

Carbon Offsets are an easy and cost effective path to natural gas decarbonization

Carbon Offsets

Commodity adder of \$0.15 - \$1.50 / Dth

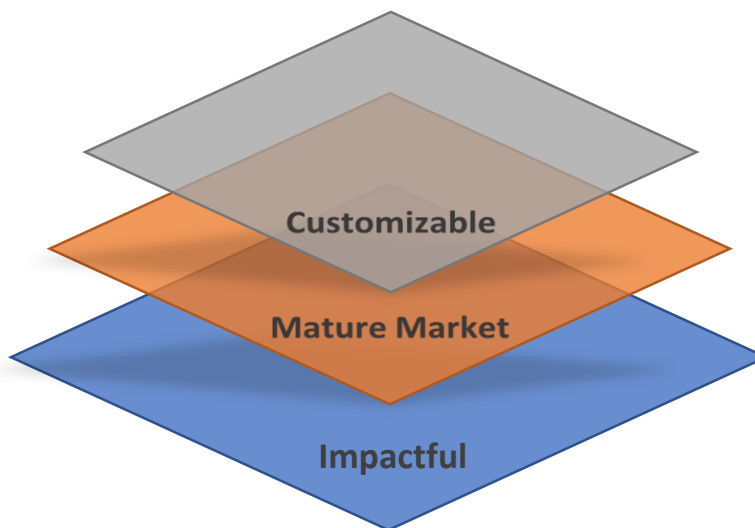
An instrument representing the reduction or avoidance of one metric ton of carbon dioxide emissions.



Renewable Natural Gas

\$20+ / Dth

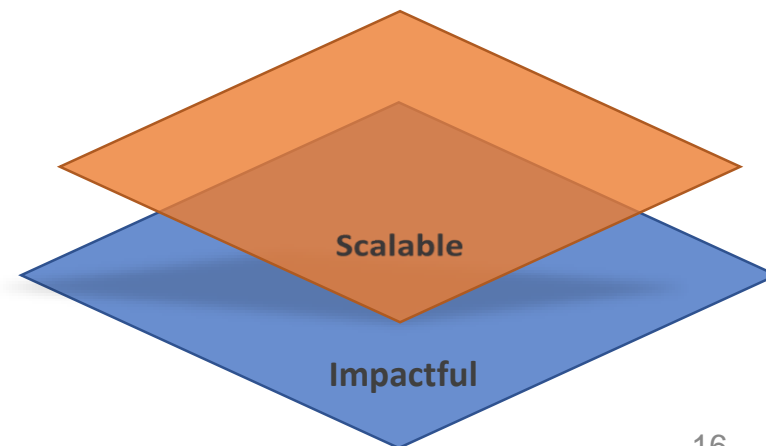
Methane captured from organic waste at landfills, livestock operations, farms, and sewage treatment facilities.



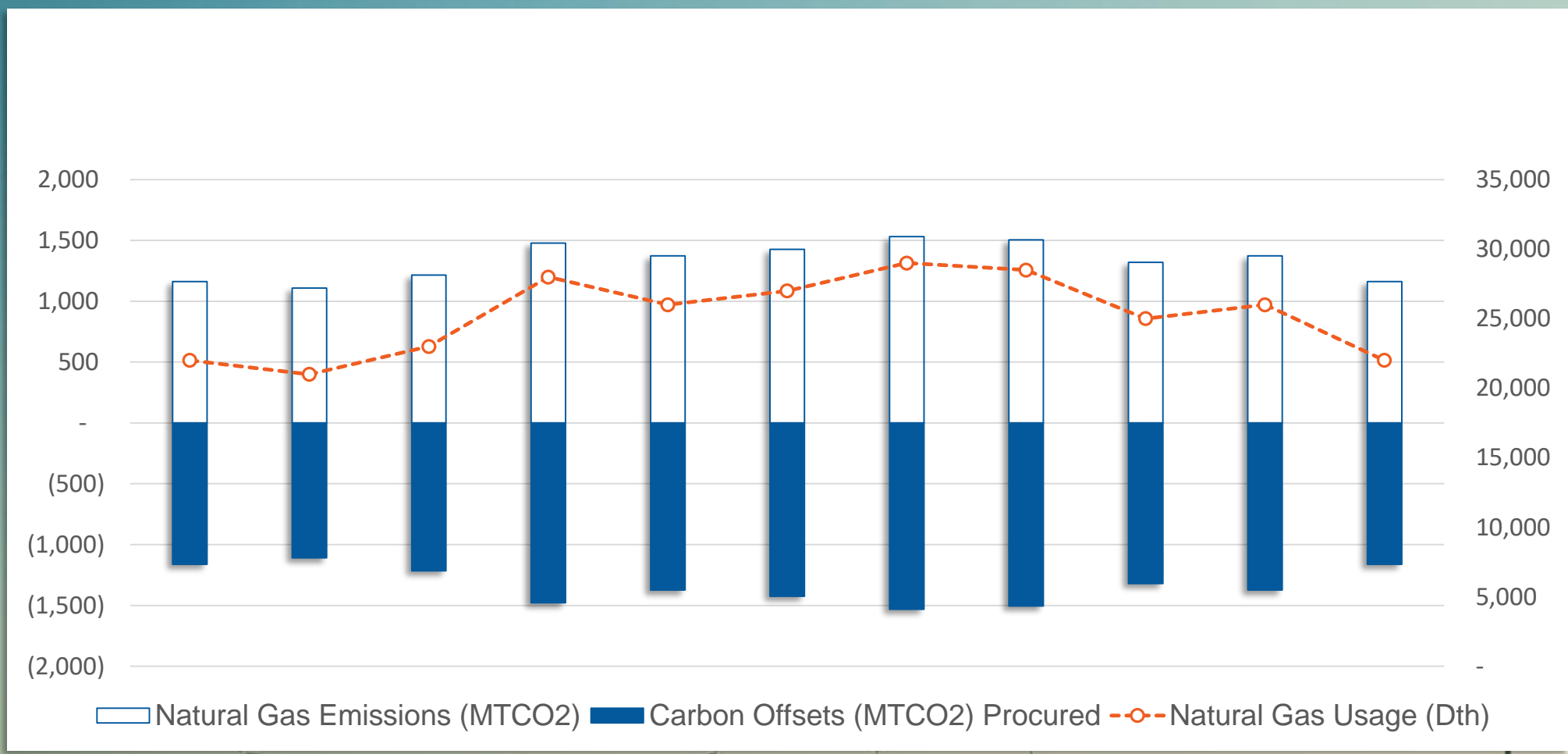
Green Hydrogen

\$40 / Dth

Hydrogen produced through electrolysis powered by renewable electricity.



Delivering Carbon Neutral Natural Gas



Carbon Offsets are an easy and cost effective path to natural gas decarbonization

2021 AND BEYOND - A LOOK FORWARD TO THE FUTURE OF ENERGY...



RENEWABLES, become democratized with access to more businesses than ever before



ENERGY STORAGE, begins to scale fundamentally changing wholesale power markets



CARBON, we move closer to quantifying the cost of carbon emissions thru a National pricing initiative



ELECTRIFICATION, of transportation continues to rapidly scale and impact the grid as EV's dominate



GREEN HYDROGEN, shows potential to decarbonize thermal plants displacing natural gas



Questions?

For more information please visit:

directenergybusiness.com/renewables