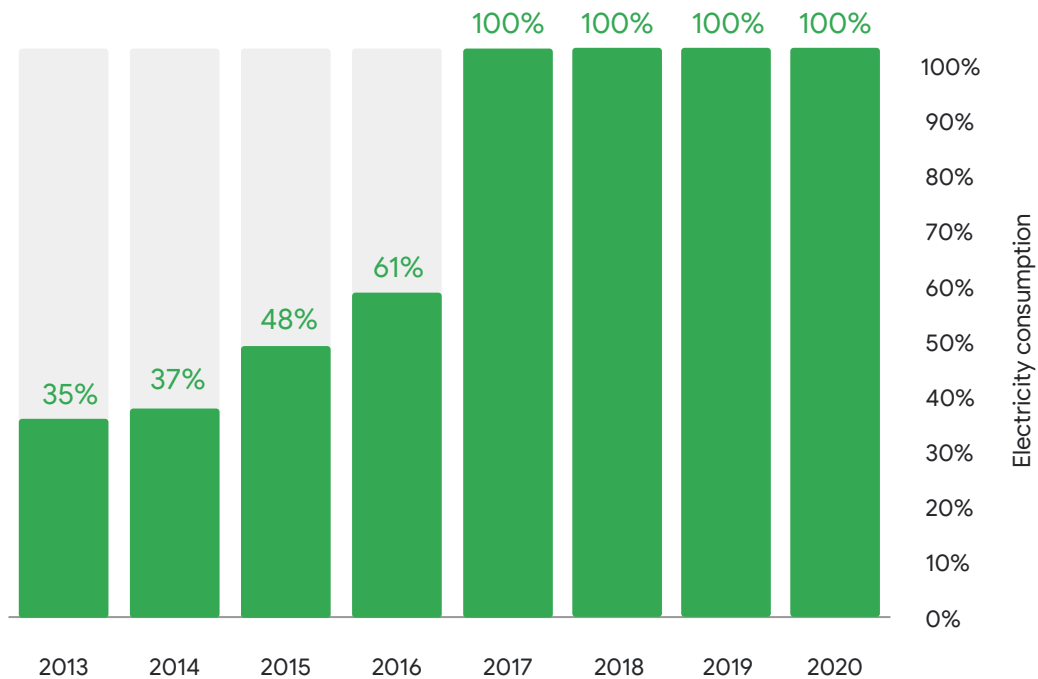
An aerial photograph of a wind farm situated in a landscape of rolling green hills. Numerous white wind turbines are scattered across the terrain, connected by a network of roads and power lines. The hills are covered in lush green grass, and the overall scene is bright and clear.

Google is one of the  
**world's largest**  
annual corporate purchasers  
of renewable energy.

Google

# Renewable energy purchasing compared with total electricity use

- Total electricity consumption
- Renewable energy





An aerial photograph of a white wind turbine in a rural landscape. The turbine is positioned on a cleared, circular area of brown earth, with a concrete access road leading to its base. The surrounding terrain is a mix of green grass and dark, tilled soil. The sky is not visible, focusing attention on the turbine and its immediate surroundings.

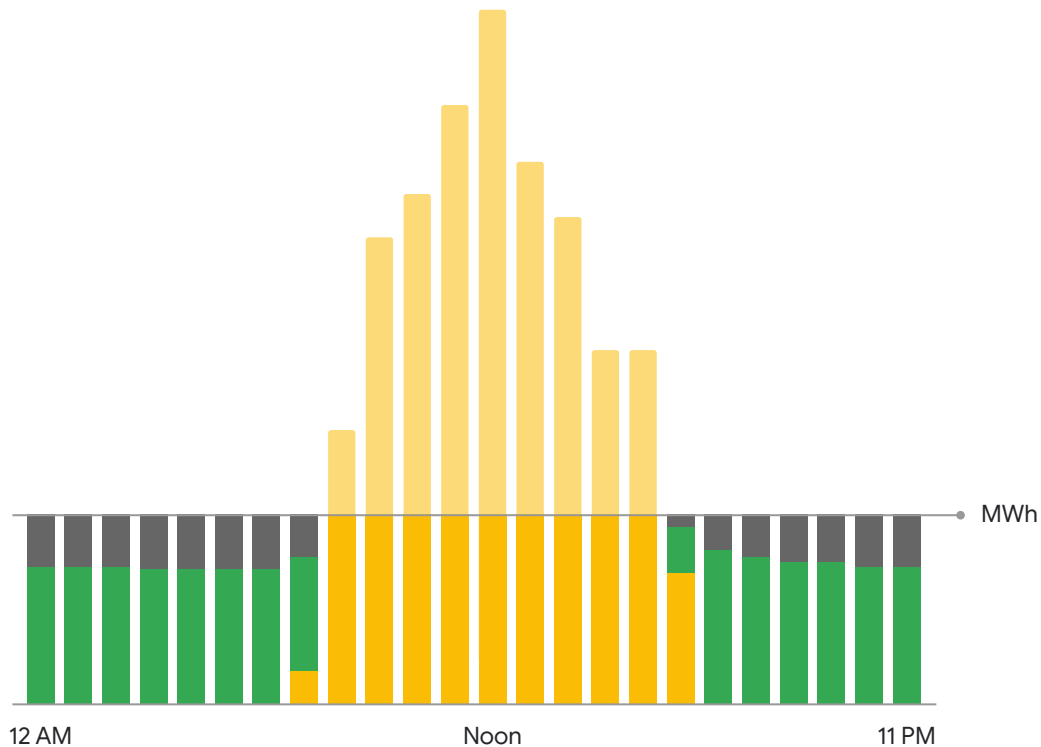
## Beyond 100% Renewable

Sourcing clean energy for  
Google facilities in **all  
places, at all times**

## 24-hour snapshot

Data from Chile data center on a day in August

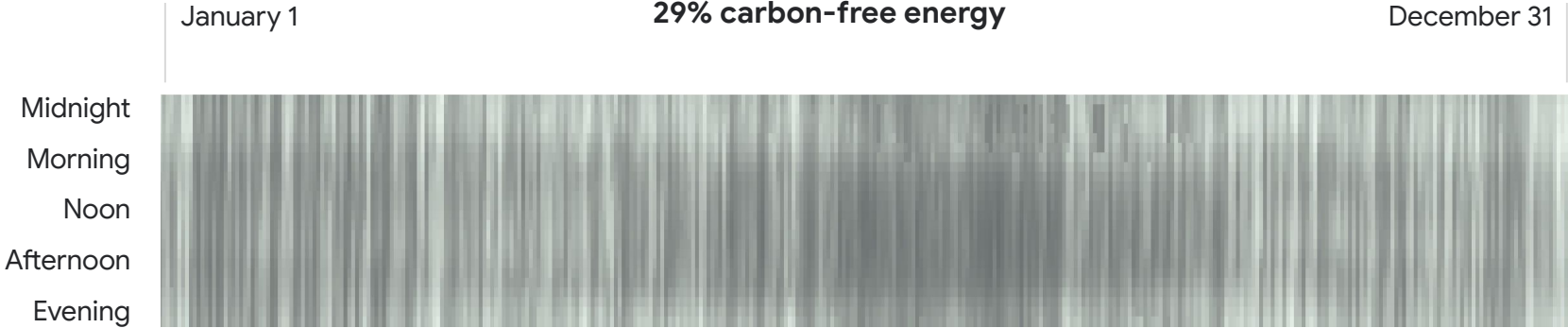
- Grid carbon-based energy
- Grid carbon-free energy (CFE)
- Google-contracted solar energy
- Excess Google-contracted solar energy



# Scenario: every hour of electricity use at **Iowa** data center

Without solar and wind PPAs, our energy profile in some places would be much higher in CFE score

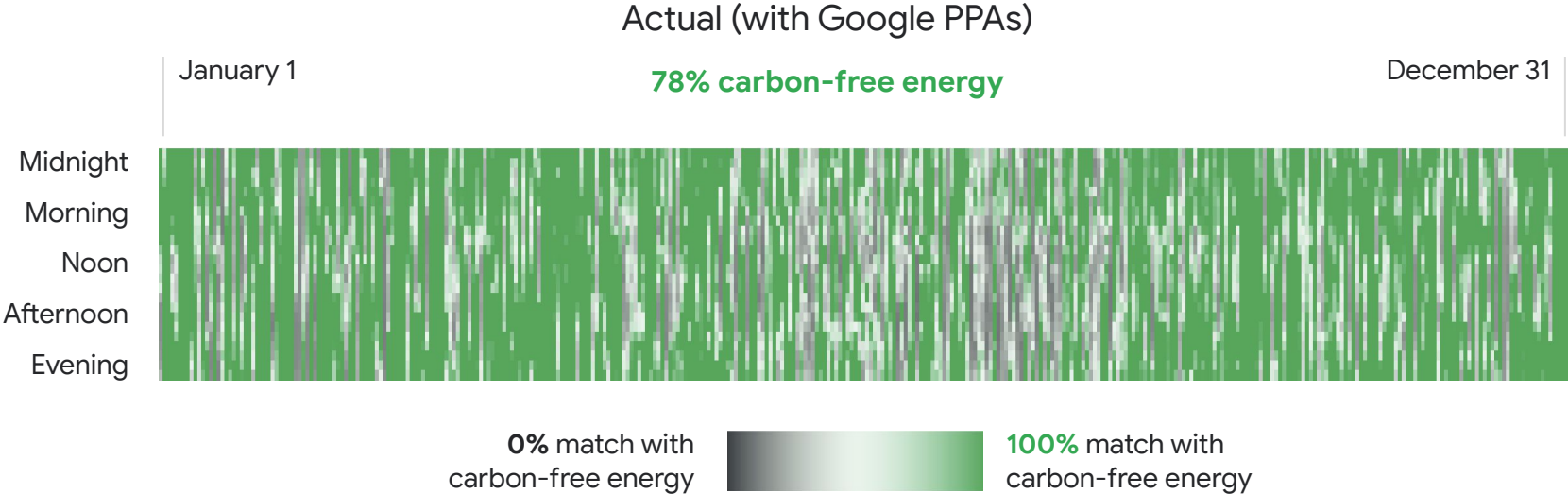
Status Quo (without Google PPAs)



0% match with carbon-free energy  100% match with carbon-free energy

# Actual: every hour of electricity use at **Iowa** data center

PPAs have had a transformative impact on greening our energy profile





## Key strategies

# Moving toward 24/7 Clean Energy

Explore next-generation carbon-free energy technologies

Remove policy barriers






Purchase multiple types of renewables in more regions and in new ways

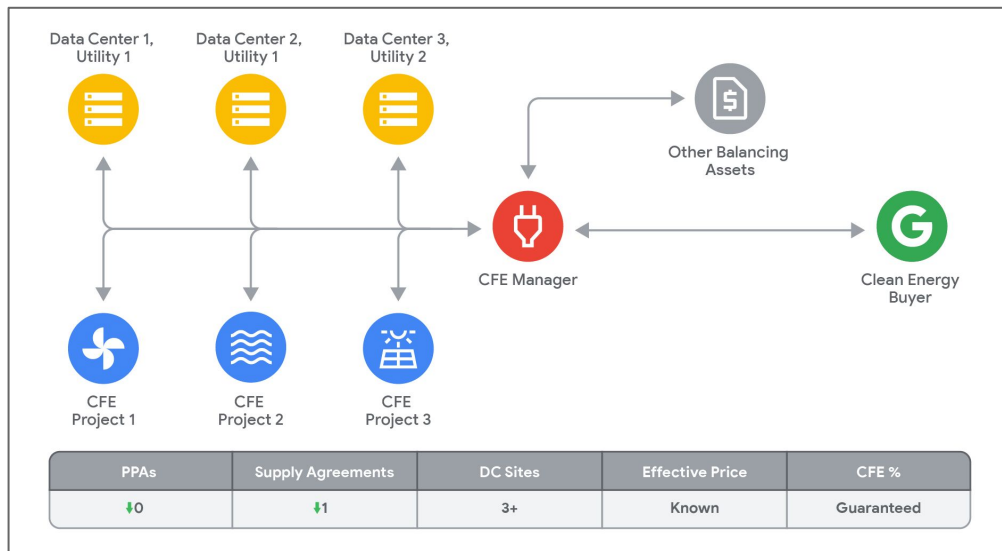


Google

# Carbon-Free Energy Manager Approach

## Benefits for Buyer

-  Reduces Transaction Costs
-  Reduces Risks
-  Scalable Model
-  Greater Liquidity and Optionality
-  Increased Hourly Carbon-Free Energy Matching





# Powerledger commits to UN 24x7 Energy Compact



## 24x7 EC commitment spans the Energy ecosystem:

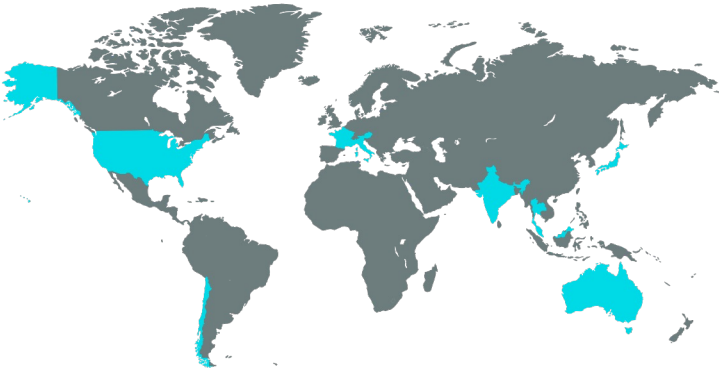
Powerledger will be 100% 24/7 Carbon Free Energy by 2025.

Expand peer-to-peer energy trading networks to over three million prosumers by 2030.

Decarbonize 20 percent of global cryptocurrency by 2030.

Help digitization of 20 percent of clean energy markets by 2030.

Enhance the integrity of 20 percent of environmental commodity markets by 2030.



**12**

Countries using the technology

**30+**

Companies using the technology

**Forbes**

5 Companies spearheading blockchain for Renewable Energy

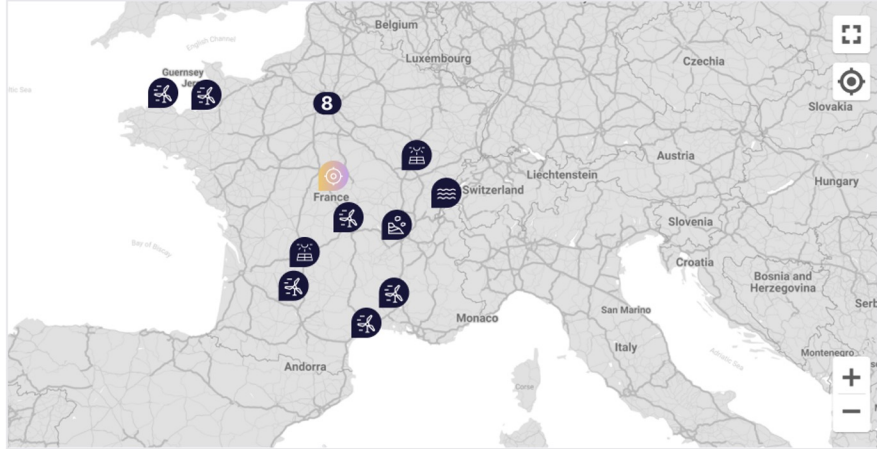
- Dashboard >
- Consumption >
- Emissions >
- Sources >
- Reports >
- Settings >

# YourCorp Sustainability Portfolio

Current Time: Fri, 17th June 2022 • 15:33pm ACST

Quick Filter ▾ Last 24 Hrs Custom Timeframe 📅 17/03/22 - 24/03/22 ▾

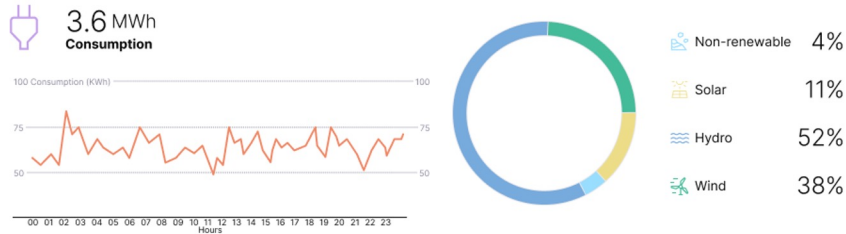
## Map overview



## Assets

- Facility Lorem Ipsum Dolor Sit →  
1441MWh
- Facility Ipsum Consecetur →  
1441MWh
- Facility Lorem Dolor Sit →  
1441MWh
- Facility Lorem Consecetur Lorem Dolor Sit →  
1441MWh

## Electricity



## CO2 Avoidance

- 0.59 t CO2 avoided**
- 1 Trees planted**
- 16 Cars taken off the road**

# Powerledger Vision : A Visualisation tool to trace and track energy mix

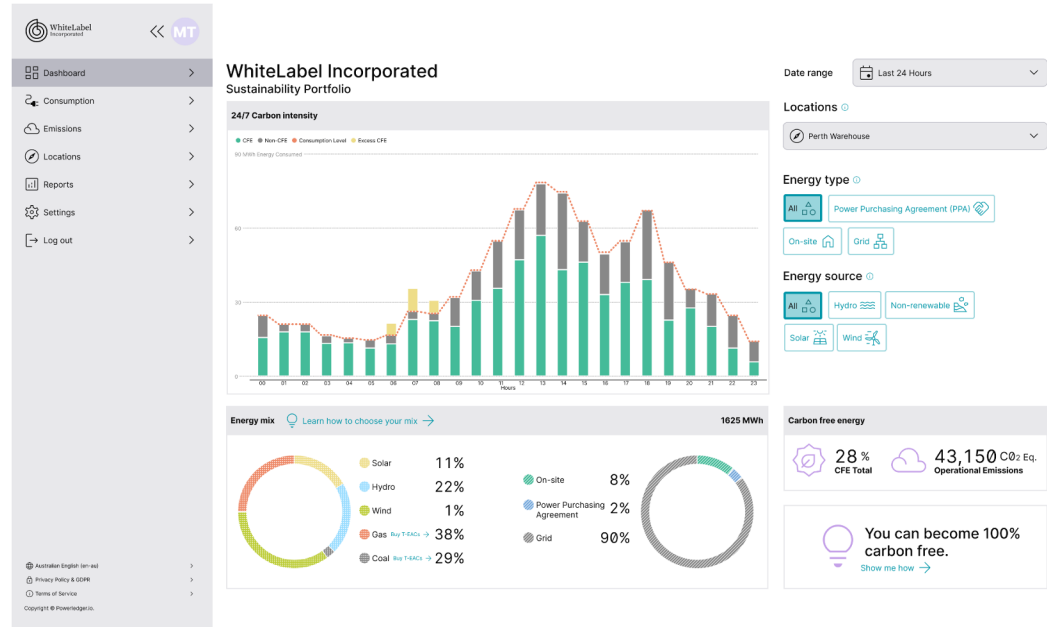


Vision is a **visualisation** tool that delivers automated data collection and supports reporting on the mix of energy consumed and the accompanying carbon emissions.

The tool includes dashboards with:

A **breakdown** of the types of energy consumed from renewable and non-renewable sources, per location (at meter level) and per time interval (e.g. hour).

**Real-time matching** of energy consumption and available/contracted Renewable Energy sources, depending on the availability of meter data.



Grid energy mix based on best available information



# Powerledger Vision: Provides insights into emissions and % of Carbon Free energy used



Powerledger has partnered with the Midwest Renewable Energy Tracking System (M-RETS) to launch TraceX, a blockchain-enabled **certificate trading platform.**

Already enabled for customers to buy by **Project, Location and eligibility**

TraceX will move to **24/7 REC** procurement

Using with VISION, customers will be able to **procure granular RECs to close gaps in CFE** across their consumption Profile.

The screenshot shows the Powerledger TraceX interface. On the left is a navigation sidebar with options: Market, REC Holdings, Order History, User Resources, and Log out. The main area displays a 'Filter RECS' menu with the following options:

VINTAGE	ELIGIBILITY	LOCATION	FUEL TYPE	PROJECTS
Any	Any	Any	Any	Any
<input type="radio"/> 2022	<input type="radio"/> Ecologo Certified	<input type="radio"/> Alabama	<input type="radio"/> Air Source	<input type="radio"/> Gutkowsk-Windler
<input type="radio"/> 2021	<input type="radio"/> Iowa	<input type="radio"/> Alaska	<input type="radio"/> Alternate Use	<input type="radio"/> Gutkowsk-Windler
<input type="radio"/> 2020	<input type="radio"/> Iowa AEP	<input type="radio"/> American Samoa	<input type="radio"/> Biogas	<input type="radio"/> PL 2 - My Wind generator
<input type="radio"/> 2019	<input type="radio"/> Iowa Voluntary Green	<input type="radio"/> Arizona	<input type="radio"/> Biomass	<input type="radio"/> PL 2 - My Wind generator
<input type="radio"/> 2018	<input type="radio"/> Illinois ARES	<input type="radio"/> Arkansas	<input type="radio"/> Biomass (WI Eligible)	<input type="radio"/> PL 2 - My Wind generator
<input type="radio"/> 2017	<input type="radio"/> Illinois Utility	<input type="radio"/> Armed Forces	<input type="radio"/> Biomass - Alt	<input type="radio"/> PL 2 - My Wind generator

Below the filter menu, a message states: 'THERE ARE 26 RECS AVAILABLE THAT MATCH YOUR SEARCH CRITERIA'. Below this is a table of available RECs:

Vintage	Eligibility	Project	Location	Fuel Type	Commenced Operation Date	Price USD	Volume
2016	Minnesota + 3 more	PL 2 - My Wind generator	North Dakota	↔	23/08/2022	\$55.50	1
2016	Minnesota + 3 more	PL 2 - My Wind generator	North Dakota	↔	23/08/2022	\$55.50	1
2016	Minnesota + 3 more	PL 2 - My Wind generator	North Dakota	↔	23/08/2022	\$55.50	1

# Renewable Energy Markets 2022

*24/7 Clean Energy Procurement Workshop*

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Prove your impact



**Cleartrace**



# Cleartrace: The Digital Standard In Decarbonization

The Cleartrace solution is a sophisticated data layer for the energy supply chain that accounts for renewable energy and carbon emissions on a 24/7 hourly basis.

Hourly data handling allows all energy stakeholders to visualize and optimize their energy portfolio and prove their climate impact.



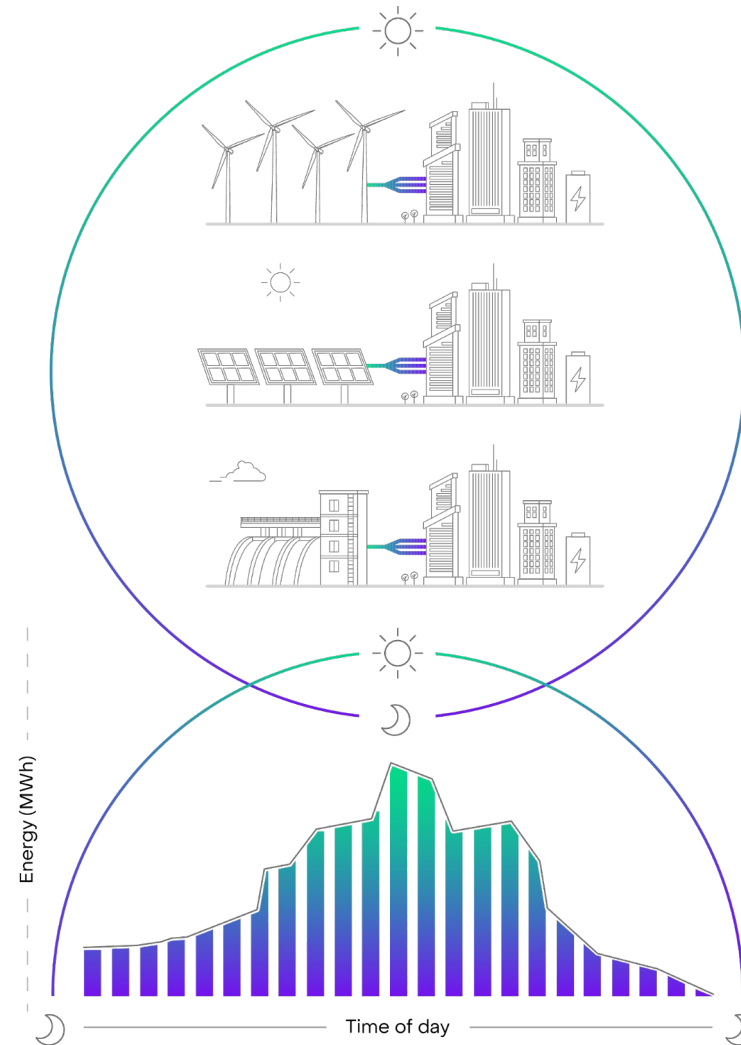
Unified Data Layer



Innovative User Interface



External API





# Case Study

## JPMorgan Chase (JPMC)

### The Problem

In 2021 JPMC set a target to reduce Scope 1 and Scope 2 location-based emissions by 40% by 2030. To hit this goal, they needed a better way to track, trace and verify their renewable energy usage.

### The Solution

Partnering with Cleartrace, JPMC can now visualize and track, on an hourly basis, the load matched electricity production and consumption of their U.S.-based operations. This has allowed them to advance their decarbonization strategy, which includes onsite and offsite energy procurement.



“RECs aren’t enough; we need direct access to the energy generation data in order to prove and trust the authenticity of what we’re buying. Cleartrace is the solution that allows for standardization and complete automation of tracking, monitoring, serialization, certification and retirement of Renewable Energy/RECs and emission reduction.”

**Alec Saltikoff**  
Global Head of Sustainability


JPMORGAN CHASE & CO.

 Environment + Energy Leader

JP Morgan is now moving towards its Renewable Energy Target

 Architectural Digest

JP Morgan Chase Bank's New Manhattan Skyscraper is Powered Entirely by Renewable Energy

 Environment + Energy Leader

Renewable Energy to offset JPMorgan Chase's UK Electricity Use

# Case Study

## Iron Mountain

### The Problem

Iron Mountain decided to go beyond “100% Renewable” and commit to powering their U.S.-based data centers with 24/7 RE by 2040. To accomplish this, they needed a solution to provide greater traceability of the energy they procured and to help them manage and prove their progress.

### The Solution

Iron Mountain partnered with Cleartrace to track, trace, and prove that the energy consumed at their data centers is 100% Renewable, every hour of the day. Iron Mountain has distinguished itself as one of the leading co-located data centers in sustainability.



“After a successful pilot with Cleartrace, we are excited for the insights their technology will provide in support of our commitment to 24/7 carbon free energy. Knowing where we are throughout the journey towards complete decarbonization is critical for accurate reporting and credible results.”

**Chris Pennington**

Director of Energy and Sustainability



 S&P Global

‘Beyond the PPA’: Quest for 24/7 carbon-free power is reshaping energy buying

 PV Magazine

Re-Source 2021: Q&A with Iron Mountain's Chris Pennington

 Solar Industry

Iron Mountain Tracking Hourly Renewable Energy Usage

# Case Study

## Brookfield Properties

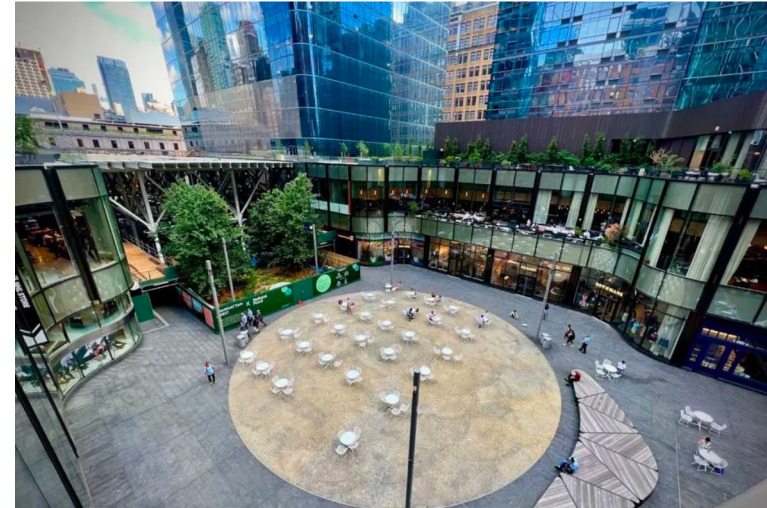
### The Problem

Brookfield Properties set out to source and verify 100% renewable energy for their state of the art skyscraper, One Manhattan West. They needed to:

- Meet decarbonization goals and back it up with proof
- Appeal to sustainability-leading tenants
- Build climate reputation value

### The Solution

Brookfield Properties partnered with Cleartrace to track, trace and prove that the energy consumed at One Manhattan West is 100% Renewable, every hour of the day.



“The main thing is investors want to know that public net-zero claims can be backed up with evidence...We can go onto the platform now for One Manhattan West, and our tenants can do this as well, where you can see for every hour of the day exactly where the energy that the building is consuming was actually generated.”

**Mike Daschle**

VP of Sustainability

**Brookfield  
Properties**

**CO Commercial Observer**  
Real Estate Starts to Use Blockchain for ESG Goals

**RE Real Estate Weekly**  
Brookfield Properties' One Manhattan West to be Powered by 100 Percent Renewable Energy

**GlobeSt**  
Brookfield Uses Blockchain Accounting to Verify ESG



# Thank You!



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[cleartrace.io](https://cleartrace.io)



**Cleartrace**