CEA

Clean Energy Atlas

User Guide & Features Manual

Global Clean Energy Infrastructure · Interactive Atlas

2,091	461	305 GW	126+	11
Operational Projects	Pipeline Projects	Queue Capacity	Countries	Data Layers

Version 2.1 · April 2026

cleanenergyatlas.com · For authorized partners only

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1. Getting Started

Clean Energy Atlas is a professional-grade interactive map of global clean energy infrastructure. It provides a comprehensive view of operational projects, transmission infrastructure, and proposed developments across 126+ countries — updated monthly.

What You Can Explore

Layer	Count	Color	Description
Wind	507	Green	Utility-scale wind farms worldwide
Solar	514	Amber	Utility-scale solar PV projects
Hydro	200	Sky Blue	Hydroelectric power plants
Geothermal	150	Orange	Geothermal energy plants
Nuclear	150	Purple	Nuclear power reactors
Hydrogen	100	Emerald	Green hydrogen production projects
Storage	150	Pink	Battery / BESS storage facilities
Data Centers	320	Slate	Hyperscale data center facilities
Grid	512	Multi	307 transmission lines + 205 substations
Pipeline	461	Rings	Proposed projects seeking grid approval

2. Accessing the Atlas

URL & Login

Web address	cleanenergyatlas.com
Access code	CEA2026 (share this code with authorized partners only)
Browser	Chrome, Safari, Firefox, or Edge — desktop recommended
Mobile	Fully supported on iOS and Android browsers

Login Steps

- Navigate to cleanenergyatlas.com
- The Partner Access screen appears — enter the access code: CEA2026
- Click Enter Atlas →
- The atlas loads with the transmission grid visible by default

Tip: Your login is remembered for the current browser session. You will need to re-enter the code if you open a new browser or clear cookies.

3. Interface Overview

The atlas is organized into five main areas:

Area	Location	Purpose
Header Bar	Top of screen	Logo, search bar, language selector, theme toggle, news feed, help guide, and database button
Layers Panel	Left sidebar	Toggle energy layers, grid, and pipeline on/off. All On / All Off buttons. Heatmap and DC Links controls.
Map Canvas	Center	Interactive world map. Click markers to open project details. Click countries for summary cards.
Detail Panel	Right side	Opens when you click a project marker. Shows full project info and download options.
Stats Bar	Bottom	Live counts of visible projects, total capacity, countries, and pipeline stats.
Database Button	Header toolbar	Opens full searchable/filterable table of all 2,000+ projects with click-to-navigate

Header Controls

Control	Description
Search bar	Type to find projects, countries, or operators instantly
Language (EN/DE/FR…)	Switch map tile labels to 8 languages
Theme (Dark/Light)	Toggle between dark and light mode — button displays text label in v2.1
News	Open the energy news feed (56 curated headlines) — button displays text label in v2.1
Help	Open this in-app guide with feature descriptions and tips — button displays text label in v2
Database	Open the full Project Database table of all 2,000+ projects — new in v2.1

4. Energy Layers

Each energy type is a toggleable layer on the map. By default all energy layers are off — the transmission grid is on. Use the Layers panel on the left to turn layers on or off individually, or use All On / All Off to control them all at once.

Layer Colors & Counts

Layer	Count	Color	Description
Wind	507	Green	507 wind farms worldwide — onshore, offshore, and floating. Offshore/floating farms display a sky-blue ring halo for easy identification. Click markers for capacity, turbine count, owner, and cost data.
Solar	514	Amber	Utility-scale solar PV and CSP plants. Includes desert mega-projects and floating solar.
Hydro	200	Sky Blue	Hydroelectric plants including run-of-river, reservoir, and pumped storage.
Geothermal	150	Orange	Geothermal power and heat plants. Concentrated in volcanic regions and rift zones.
Nuclear	150	Purple	Active nuclear reactors worldwide, including SMR projects and plants under construction.
Hydrogen	100	Emerald	Green and blue hydrogen production facilities and electrolysis projects.
Storage	150	Pink	Battery energy storage systems (BESS) and other grid-scale storage installations.
Data Centers	320	Slate	Hyperscale data centers. Cross-reference with clean energy layers to assess power sourcing.

Clustered View

At lower zoom levels, nearby markers cluster into a single circle showing the count. Click a cluster to zoom in and expand individual markers. Cluster circles use the same color as the layer type.

Marker Size

Each marker is sized proportionally to the project's installed capacity:

Small dot	Under 100 MW
Medium dot	100 – 500 MW
Large dot	500 – 2,000 MW
Extra large	Over 2,000 MW

5. Transmission Grid

The transmission grid is on by default when you open the atlas. It shows the backbone of global electricity infrastructure — the highways that move power from generation to demand centers.

What's Included

Transmission lines	307 major lines covering North America, Europe, Asia, Australia, and MENA
Substations	205 major substations and switching stations (visible at zoom level 4+)
Coverage	Western US Interconnection, Eastern US, ERCOT, European ENTSO-E, China UHV network, India, Australia NEM

Voltage Color Coding

Layer	Count	Color	Description
Ultra High (500kV+)	—	Red	HVDC and UHV backbone lines. Highest capacity long-distance transfer.
Extra High (345–499kV)	—	Orange	Major AC interstate transmission corridors.
High (230–344kV)	—	Amber	Regional transmission and grid interconnects.
Medium (<230kV)	—	Green	Sub-regional and distribution-level lines.

Clicking a Transmission Line

Click any line on the map to open a detail popup showing: line name, operator, voltage, length (km), capacity (MW), status, and countries served.

Clicking a Substation

Click any substation marker (yellow dot, visible at zoom 4+) to see: substation name, operator, voltage class, location, and connected lines.

6. Project Pipeline

The Pipeline layer shows 461 proposed clean energy projects (305 GW) that have filed for grid interconnection approval. This is a forward-looking view of what's being developed globally — a key tool for investment research.

How to Enable

- Scroll to the bottom of the Layers panel
- Click Show Pipeline (461 projects)
- Pipeline markers appear as rings on the map
- The Stats bar updates to show In Queue count and Queue GW

Data Sources

CAISO (California)	82 projects — Solar, Wind, Storage
ERCOT (Texas)	91 projects — Solar, Wind, Storage
SPP (Central US)	34 projects — Wind, Solar
ISONE (New England)	34 projects — Offshore Wind, Solar
UK REPD (Official)	60 projects — Wind, Solar, Marine (Gov.UK Q4 2025 data)
Global curated	160 projects — Australia, Canada, Germany, India, China, France, Spain, Netherlands, and

Ring Color = Approval Stage

Layer	Count	Color	Description
Applied	—	Gray	Initial interconnection application submitted
Under Study	—	Amber	Feasibility or system impact study in progress
Agreement Signed	—	Emerald	Interconnection agreement executed
Permitted	—	Green	All permits and regulatory approvals obtained
Under Construction	—	Sky Blue	Physical construction underway

Inner dot color = energy type (same color palette as the operational layers above).

Auto-Refresh: Pipeline data is automatically updated on the 1st of each month by pulling fresh data from ISO queues and redeploying the site. No manual action needed.

7. Interacting with the Map

Navigation

Scroll / pinch	Zoom in and out
Click + drag	Pan the map in any direction
Double-click	Zoom in to that location
Ctrl + scroll	Adjust tilt/pitch (desktop)
Two-finger drag	Pan on mobile/tablet

Clicking Markers

Energy project	Opens the full Detail Panel on the right with all project information
Cluster bubble	Zooms in to expand individual markers
Transmission line	Opens a popup with line details
Substation	Opens a popup with substation details
Pipeline ring	Opens the Pipeline Detail Panel with approval status and timeline
Country (map bg)	Opens a Country Summary Card with per-type stats for that country

Hover Tooltips

Hovering over any marker shows a quick popup with: project name, energy type, country, capacity (MW), and status. No click required — useful for quick scanning.

Map Styles

Dark mode	Default — dark background optimized for data visualization
Light mode	Click the Theme button in the header to switch
Language	Use the language selector: EN / DE / FR / ES / PT / CN / JP / AR to change map labels

v2.1 contrast improvements: v2.1 improves land/ocean contrast in both dark and light mode. Dark mode features a deep navy ocean with clearly separated land masses and brighter country borders. Light mode uses a distinct blue ocean vs. green-tinted land for instant orientation.

8. Project Detail Panel

Clicking any project marker opens the Detail Panel on the right side of the screen (slides up from the bottom on mobile). It contains the full project record.

Information Shown

Project name	Full official project name
Location	Country, state/region, county where available
Capacity	Installed capacity in MW (or GW for very large projects)
Status	Operational / Under Construction / Planned / Decommissioned
Owner / Developer	Owning company and developer
Year online	Commissioned year or expected COD
Technology	Turbine type, panel technology, reactor type, etc.
Cost	Project cost in USD where available
Investment grade	Bankability rating where available

Pipeline Detail Panel

Pipeline project panels also include: queue date, estimated commercial operation date (COD), interconnection point, ISO/queue operator, and a visual approval stage progress bar.

9. Downloading Data

Every project detail panel includes a Download CSV button. Clicking it exports the full project record as a comma-separated file you can open in Excel, Google Sheets, or any data tool.

What's Exported

- All fields shown in the Detail Panel
- Coordinates (latitude / longitude)
- All metadata fields stored in the database

Compare Projects

Use the Compare button in the detail panel to add a project to the comparison queue. You can compare up to 3 projects side by side in a modal window — useful for evaluating competing sites or technologies.

10. Search & Filtering

The search bar covers all project fields — name, country, owner, developer, energy type, and status. Type any term to see matching results with energy type, country, and capacity shown at a glance. Click any result to fly directly to that project on the map. At the bottom of search results, click 'Browse all projects' to open the full Project Database.

What You Can Search

- Project name — e.g. Hornsea, Noor, Three Gorges
- Country — e.g. Germany, India, Australia
- Owner or developer — e.g. Orsted, NextEra, SGRE
- Energy type — e.g. offshore wind, BESS, solar
- Status — e.g. operational, under construction, planned

How It Works

Results appear as a dropdown below the search bar showing energy type, country, and capacity at a glance. Click any result to fly the map to that project and open its Detail Panel. Search requires at least 2 characters and updates live as you type.

Tip: Type / on your keyboard to instantly focus the search bar from anywhere in the atlas.

11. Project Database

The Project Database gives you a full tabular view of all 2,000+ projects across every energy layer. Open it by clicking the 'Database' button in the header toolbar or via the 'Browse all projects' link in search results.

Filters Available

- Energy Type: Wind, Solar, Hydro, Geothermal, Nuclear, Hydrogen, Storage, Data Centers
- Status: Operational, Under Construction, Planned, Decommissioned
- Free-text search across name, country, owner, and developer

Click any row in the database to close the modal and fly the map directly to that project, opening its detail panel.

12. Country Summary Cards

Click anywhere on a country's landmass (not on a marker) to open a Country Summary Card — a popup showing the breakdown of clean energy projects in that country by type.

Card Contents

Country name	With flag emoji where available
Per-layer counts	Number of projects for each active energy type
Total projects	Sum of all operational projects currently visible
Capacity total	Combined installed capacity (GW) for the country

Cards are context-sensitive — they only show counts for layers that are currently toggled on. Turn on more layers to see a fuller picture.

13. Additional Features

Wind Density Heatmap

Click the Heatmap button at the bottom of the Layers panel to overlay a wind energy density heat layer on the map. Color gradient from green (low density) through amber to red (high concentration). Useful for identifying wind-rich regions at a global scale.

Data Center Power Links

Click DC Links to display fiber-style connection lines between major data centers. Shows the geographic clustering of hyperscale facilities and their proximity to power sources. Best used with the Data Centers layer and energy layers active simultaneously.

Energy News Feed

Click the News button in the header to open the news panel. Contains 56 curated clean energy headlines covering project announcements, policy updates, grid developments, and investment news. Filter by topic using the category chips at the top of the panel.

In-App Help

Click the Help button in the header to open the built-in Help & Guide panel. It provides a quick-reference version of this manual directly inside the atlas — ideal for sharing with partners who are exploring for the first time.

Share a Project

Each Detail Panel includes a Share button that generates a direct URL to that specific project. Share the link with a colleague and it will open the atlas and fly directly to that project.

Favorites

Click the star icon in any Detail Panel to add a project to your favorites list. Favorites persist in your browser session and can be accessed for quick comparison.

14. Maintenance & Data Refresh

Automatic Monthly Updates

Wind Atlas refresh	1st of every month — new wind farms added, status changes updated
Pipeline data refresh	1st of every month — fresh ISO queue data pulled from CAISO, ERCOT, SPP, ISONE
UK REPD update	Quarterly — UK Renewable Energy Planning Database (official Gov.UK source)

Both updates run automatically — no action required. You will receive a notification summarizing what changed after each run.

Manual Maintenance Check

A maintenance check script is available that validates 64 system health checks in under 2 seconds, including: site availability, SSL certificate, data file integrity, feature code, Vercel deployment status, and scheduled task status.

To run a manual check at any time, open a conversation with your atlas administrator and say: "Run maintenance check."

15. Keyboard Shortcuts

Shortcut	Action
/	Focus the search bar
Escape	Close any open panel, modal, or popup
Click + drag	Pan the map
Scroll wheel	Zoom in / out
Double-click	Zoom in to location

16. Frequently Asked Questions

Q: How do I share the atlas with a business partner?

A: Send them the URL (cleanenergyatlas.com) and the access code (CEA2026). They can open it on any modern browser — no app download required.

Q: Can I use it on my phone or tablet?

A: Yes. The atlas is fully mobile-responsive. The Layers panel becomes a slide-up drawer on smaller screens, and the Detail Panel slides up from the bottom.

Q: How current is the data?

A: Operational project data is curated and updated periodically. The Pipeline layer refreshes automatically on the 1st of each month with fresh ISO queue data. The UK REPD data updates quarterly.

Q: Why don't I see any projects when I first open the atlas?

A: The transmission grid loads by default, but all energy layers are off. Use the Layers panel on the left to turn on the layers you want to explore.

Q: Can I download data for multiple projects at once?

A: Currently you can download one project at a time via the CSV button in the Detail Panel, or compare up to 3 side-by-side. Bulk export is planned for a future update.

Q: What does the Pipeline layer show vs. the regular layers?

A: Regular layers show operational projects (built and running). The Pipeline shows projects that have filed for grid interconnection approval but are not yet built — it's a forward-looking view of what's in development.

Q: How do I access all projects in one view?

A: Click the Database button in the header toolbar (new in v2.1). This opens the full Project Database — a searchable, filterable table of all 2,000+ projects. You can also reach it via the 'Browse all projects' link at the bottom of search results.

Q: How do I change the access code?

A: Contact your atlas administrator to update the access code. It can be changed in minutes and all visitors will be prompted to enter the new code on their next visit.

Q: The map seems slow — what should I try?

A: Try turning off layers you're not actively using. Having all 10 layers on simultaneously renders thousands of markers. The atlas runs best with 1-3 active layers at a time.

Q: Is the data available via API?

A: Not in the current version. API access and bulk data export are planned for Phase 2. Contact your administrator for updates on availability.

CLEAN ENERGY ATLAS

Thank you for using Clean Energy Atlas. This platform is designed to give clean energy investors, developers, and partners a comprehensive view of the global energy transition — from operational infrastructure to the projects being built today.

Live URL	cleanenergyatlas.com
Version	2.1 — April 2026
Data refresh	Monthly (1st of each month, automatic)
Support	Contact your atlas administrator
Confidentiality	This document and the atlas are for authorized partners only. Do not distribute publicly.

Clean Energy Atlas is built on MapLibre GL JS v4.7.1, hosted on Vercel, and served at cleanenergyatlas.com. Data sources include gridstatus.io (US ISO queues), UK REPD (Gov.UK), and curated global datasets. Pipeline data auto-refreshes monthly. All operational project data is research-curated.