MCP SERVER | NO CODE | CLOUD HOSTED

Energy Emissions MCP

Know your home's true carbon footprint.

Home Energy Emissions Calculator estimates your home's carbon footprint by tracking CO2 emissions from electricity use. Input your usage data, specify the region, and get accurate calculations for monthly or annual environmental impact in kilograms and metric tons.

B Quality Score 85/100

carbon-footprint | electricity | emissions | climate-change | energy-usage | sustainability

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vinkius.com/mcp/home-energy-emissions-calculator

SCAN TO VIEW

The infrastructure that powers AI agents in the real world.

Vinkius connects AI to the world's software through secure, enterprise-grade infrastructure — enabling real-world execution at scale, built on the Model Context Protocol (MCP).

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the cloud infrastructure where AI agents connect to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Home Energy Emissions Calculator MCP

0 tools available
Cloud-hosted on Vinkius

Wondering how much electricity really costs the planet? This MCP helps you calculate a home's true carbon footprint. You just feed it your electricity usage numbers and tell it where you live—the regional grid factor is key here. It first determines the specific emission factor for your area, then uses that rate to figure out exactly how many kilograms of CO2e you produced over a given month. Want to look ahead? The tool also projects what your total environmental impact will be across an entire year in metric tons. You get concrete numbers—not just vague estimates—so you know exactly where your energy consumption stands. If tracking sustainability is part of your job, having this data instantly available through Vinkius makes a huge difference.

Core Capabilities

01 — Determine regional emission factors

The MCP retrieves the specific CO2 emission factor for any given geographic region.

02 — Calculate monthly emissions totals

You provide electricity usage, and the tool calculates the resulting total kilograms of CO2e produced that month.

03 — Project annual environmental impact

The MCP takes your current usage patterns and forecasts your estimated total environmental impact for a full year in metric tons.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/home-energy-emissions-calculator** — connect your AI agent in three steps.

01 Start by giving the tool three things: your electricity consumption amount, the time frame (month or year), and the region where you live.

02 The MCP first checks the specific emission factor for that region, then applies it to your usage data to calculate the immediate CO2e output.

03 Finally, depending on the scope, you receive either a monthly total in kilograms or an annual projection in metric tons.

The bottom line is you get clear, actionable numbers about your energy's environmental cost without needing to know any complex science.

Built For

Sustainability consultants and corporate ESG teams need this. Homeowners who are genuinely concerned about their utility impact also use it. If you deal with carbon accounting or climate reporting, this MCP is essential.

ESG Analyst

They calculate a client's operational emissions footprint by running various regional and usage scenarios to report accurate annual CO2e totals.

Energy Consultant

They help homeowners understand the real-world impact of their utility choices, showing how different consumption patterns affect local carbon targets.

Sustainability Manager

They use this to benchmark departmental energy usage against regional emission factors when writing mandatory climate reports.

What Changes When You Connect

01 Pinpoint exact monthly emissions. Instead of guessing, use `calculate_monthly_emissions` to get precise kilograms of CO2e from specific utility bills.

02 Determine the local cost of power. Use `get_regional_factor` to confirm the current emission rate for any state or country, making your data reliable.

03 Plan for the long haul. Get a full picture of your environmental responsibility with `estimate_annual_impact`, which projects yearly totals in metric tons.

04 Build robust sustainability reports. Quickly generate verifiable CO2 accounting figures that meet corporate reporting standards.

05 Compare energy sources accurately. Understand how changing utility providers or consumption habits directly alters your carbon score.

Real-World Applications

Client needs a quarterly ESG report

A sustainability analyst needs to report on their client's electricity use across three different states. They run `get_regional_factor` for each location, then feed the results into `calculate_monthly_emissions` multiple times to create one comprehensive quarter-end summary.

Homeowner wants to reduce utility impact

A homeowner wants to know if buying an electric car helps. They run `estimate_annual_impact` using their current usage and compare that total with a simulated low-usage scenario to quantify the benefit.

Consultant needs quick data for a pitch

A consultant is pitching an energy efficiency audit. They run `get_regional_factor` instantly on the client's zip code, allowing them to quote precise monthly emissions figures immediately during the meeting.

Comparing yearly utility providers

An account manager needs to compare two energy suppliers over 12 months. They run `estimate_annual_impact` for both scenarios using a consistent usage number, providing measurable data points for their sales pitch.

Patterns to Avoid

Calculating emissions manually

✗ AVOID

Looking up formulas online and trying to multiply monthly kWh by the emission factor, which is prone to human error and requires constant verification of regional rates.

✓ INSTEAD

Use this MCP. First, get the correct rate using `get_regional_factor`. Then, use that number in conjunction with your usage data in `calculate_monthly_emissions` for accurate results.

Using outdated national averages

✗ AVOID

Assuming a single national average emission factor works everywhere, which severely under- or overestimates the actual carbon cost due to varied energy grids.

✓ INSTEAD

Always use `get_regional_factor` first. This ensures you're using the precise rate for the specific area in your calculation.

Forgetting the yearly projection

✗ AVOID

Only calculating monthly emissions and failing to forecast the total impact, leaving the user without a clear long-term picture of their carbon commitment.

✓ INSTEAD

Run `estimate_annual_impact`. This gives you the big picture in metric tons, which is what most large reports require.

The Right Fit

Use this MCP if your primary need is to quantify energy consumption's environmental cost. Specifically, use it when you need to calculate emissions based on regional grid intensity, whether for a single month or an entire year. Don't use it if you are tracking non-electricity sources of pollution, like transportation fuel or waste disposal, as this MCP only handles residential electricity usage.

If your goal is simply to report general energy savings without linking it to CO2, a basic spreadsheet might suffice. But if the client requires verifiable, location-specific carbon accounting—the kind that uses factors from specific regions—this tool is necessary. It provides the precise mechanism to translate utility data into measurable environmental impact.

Tracking your home's true energy cost feels overwhelming.

Right now, figuring out a home's carbon footprint means juggling three different pieces of information: your monthly kWh bill, the state or region you live in, and a complex formula to combine them. You end up doing multiple lookups and manual calculations, making it hard to trust the final number.

With this MCP, you skip the manual arithmetic entirely. Simply input your usage details into your AI client, and the tool handles all the cross-referencing. It gives you an immediate, reliable figure for CO2e—the single metric you need.

Get a clear annual picture with estimate_annual_impact.

Previously, if you wanted to project your total environmental impact over 12 months, you had to manually calculate and sum up twelve separate

Now, just running `estimate_annual_impact` gives you the full annual projection in metric tons of

monthly figures. It was tedious work and always felt incomplete.

CO2e. You get a final, definitive number that tells your whole story instantly.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U How much CO2 did I produce in California with 500 kWh this month?

Your electricity usage produced 125 kg of CO2e.

U What is the emission factor for France?

The emission factor for France is 0.05 kg CO2e per kWh.

U If I use 1000 kWh monthly in Texas, what is my annual impact in metric tons?

Your estimated annual impact is 5.4 metric tons of CO2e.

Frequently Asked Questions

01 **How does Home Energy Emissions Calculator use my location?**

The tool uses `get_regional_factor` to check the specific CO2 emission rate for your area. This ensures the calculation isn't based on a general national average, which could be inaccurate.

02 **Can I calculate emissions for last year using calculate_monthly_emissions?**

Yes, you just need to provide the historical kWh data and specify the correct month. The tool will then output the precise CO2e figure based on that usage.

03 **Does Home Energy Emissions Calculator cover all types of energy?**

No, this MCP is specifically designed to calculate emissions tied to residential electricity consumption (kWh). It won't track things like gasoline or natural gas use.

04 **How do I get the annual projection using estimate_annual_impact?**

You provide a consistent monthly usage number, and the tool multiplies that by 12 months to give you your total estimated environmental impact in metric tons.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"home-energy-emissions-calculator": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Home Energy Emissions Calculator is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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Endpoint	`https://edge.vinkius.com/{token}/mcp`

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