

M C P S E R V E R

N O C O D E

C L O U D H O S T E D

Bulb Energy Calculator MCP

Get exact energy usage and cost estimates for any light bulb.

Bulb Energy Calculator MCP lets your AI client handle the math for lighting efficiency. You can calculate total kWh used, estimate monthly electricity costs based on local rates, classify bulbs into efficiency tiers, and compare the energy draw between different bulb types.

A+ Quality Score 100/100

electricity

wattage

energy-consumption

cost-estimation

efficiency



The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest
managed MCP catalog

Vinkius is the connectivity layer where AI connects 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.

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.

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.

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

Encryption at rest

Ed25519

PKI vault signatures

24h TTL

Ephemeral session keys

V8 Isolate

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.

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.

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.

06 — Honeypot Trap System

Phantom credentials are injected into isolated environments. If a honeypot 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.

FinOps

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

Firewall & DLP

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

Agent Activity

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

Tool Health

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

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.

Bulb Energy Calculator MCP

4 tools available

Cloud-hosted on Vinkius

Stop guessing how much your lighting setup costs to run. This MCP gives your AI agent the specific tools needed to crunch numbers for electrical consumption and efficiency. You can pull up the total kWh used by a bulb over a set timeframe or figure out the actual dollar amount you'll see on your utility bill by factoring in local electricity rates. If you are deciding between different lighting options, you can use this to see which bulb falls into a better efficiency tier or run a direct comparison between two different models to see which one draws less power. It turns your AI client into a precise utility calculator for any lighting project.

Core Capabilities

01 — Consumption Math

Your agent calculates total kWh used over any duration.

02 — Cost Projection

Your agent estimates electricity bills based on local rates.

03 — Efficiency Grading

Your agent assigns efficiency tiers based on wattage profiles.

04 — Direct Comparison

Your agent compares the power draw of two different bulbs.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/bulb-energy-calculator — connect your AI agent in three steps.

- 01 Connect your AI client to the Vinkius hosted MCP.
- 02 Provide the bulb wattage and usage duration to your agent.
- 03 Include local electricity rates for cost calculations.
- 04 The agent uses the tools to run the math.
- 05 Receive precise kWh, cost, or efficiency data.

Connect the MCP to your client and start asking questions about bulb energy and costs.

Built For

This MCP is for anyone managing lighting setups or looking to reduce electrical overhead.

Facility Managers

They hand off energy auditing tasks to the AI to estimate building costs.

Home Automation Enthusiasts

They use the AI to compare bulb efficiency before upgrading smart lighting.

Electrical Contractors

They use the AI to provide quick cost estimates to clients for new installations.

What Changes When You Connect

- 01 Calculates kWh usage without manual math.
- 02 Converts energy consumption into real dollar amounts.
- 03 Identifies efficient bulb options through tier classification.

04 Provides side by side usage comparisons.

Real-World Applications

Home Energy Audits

Use the AI to see how much money you save by switching from incandescent to LED bulbs.

Commercial Lighting Planning

Calculate the total energy load for a warehouse or office lighting installation.

Product Comparison

Compare two specific bulb models to see which one is more cost effective over a year.

Budgeting for Utilities

Estimate how much a new set of high wattage lights will add to your monthly bill.

Patterns to Avoid

Vague energy requests

❌ AVOID

Asking your agent to tell you if a light is expensive without providing any specific bulb data.

✓ INSTEAD

Provide the specific wattage and usage duration, then use `get_bulb_energy_consumption` to get a precise kWh value.

Ignoring local rates

❌ AVOID

Assuming a bulb's cost is the same everywhere regardless of your local utility pricing.

✓ INSTEAD

Input your specific local electricity rates into the `get_energy_cost_estimate` tool to get an accurate dollar amount.

Manual comparison errors

❌ AVOID

Trying to eyeball the difference between two different bulb models to guess which is better.

✓ INSTEAD

Use `compare_bulb_usage` to get a direct, data-backed comparison of power draw between two specific models.

The Right Fit

Connect this MCP if you manage lighting loads for buildings or plan large-scale electrical installs. Do not connect it if you are just looking for general lighting design advice. The decision depends on whether you need hard numbers for energy consumption and utility costs.

Bulb Energy Calculator 4 Tools

These tools handle the math for electrical consumption, cost projections, and efficiency grading.

#	TOOL	DESCRIPTION
01	compare_bulb_usage	This tool compares the energy consumption of two different bulbs over the same period. It shows you exactly how much more or less power one bulb uses compared to another.
02	get_bulb_efficiency_tier	This tool classifies a bulb into an efficiency category. It looks at the wattage relative to standard usage profiles to tell you how efficient the bulb is.
03	get_bulb_energy_consumption	This tool calculates the total energy consumed by a single bulb. It works over any specific timeframe you provide to give you a total kWh value.
04	get_energy_cost_estimate	This tool estimates the financial cost of running a bulb. It combines the bulb's energy usage with your local electricity rates to provide a dollar amount.

See It in Action

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

U How much energy does a 60W bulb use if it is on for 10 hours?



A 60W bulb used for 10 hours consumes 0.6 kWh.

U What is the cost of running a 100W bulb for 24 hours at \$0.15 per kWh?



The estimated cost is \$0.36.

U Which is more efficient: a 10W bulb or a 40W bulb used for 5 hours?



The 10W bulb is more efficient.

Frequently Asked Questions

01 How do I calculate the cost of my lights?

You can ask your AI client to use the `get_energy_cost_estimate` tool by providing the bulb wattage, hours of use, and your local electricity rate.

02 Can I compare two different bulbs?

Yes, the `compare_bulb_usage` tool allows your agent to compare the energy consumption of two bulbs over the same period.

03 What is an efficiency tier?

The `get_bulb_efficiency_tier` tool classifies bulbs into categories based on how their wattage compares to standard usage profiles.

04 Which AI clients work with this MCP?

This MCP works with any compatible client including Claude, Cursor, Windsurf, and VS Code.

05 Do I need to host this myself?

No, Vinkius hosts and manages the MCP for you. You just connect your client and it is ready to use.

06 How do I calculate the cost of my light bulb usage?

You can use the `'get_energy_cost_estimate'` tool by providing the bulb's wattage, the hours used, and your local electricity rate per kWh.

07 What units are used for energy consumption?

Energy consumption is calculated and returned in kilowatt-hours (kWh).

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 <code>"bulb-energy-calculator": { "url": "..." }</code>
 Windsurf	MCP Settings → <code>mcp_settings.json</code> → 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

Bulb Energy 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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DOCUMENT INFORMATION

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Platform	Vinkius Cloud for AI Agents
Endpoint	<code>https://edge.vinkius.com/{token}/mcp</code>

LICENSE & USAGE

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