MCP SERVER | NO CODE | CLOUD HOSTED

Rainwater Harvesting Estimator MCP for AI Agents

Calculating Potential Water Collection and Utility Savings from Roof Runoff

The Rainwater Harvesting Estimator MCP calculates how much water you can capture from a roof and projects potential savings on your municipal water bills. By connecting to local rainfall data, this tool helps property managers and homeowners figure out the viability of rainwater collection systems.

A+ Quality Score 100/100

rainwater | sustainability | water-savings | estimation | ecology

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vinkius.com/mcp/rainwater-harvesting-estimator

SCAN TO VIEW

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.

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.

Rainwater Harvesting Estimator MCP

3 tools available
Cloud-hosted on Vinkius

Need to know if a rainwater harvesting system makes financial sense? This MCP provides specialized calculations for assessing both the physical capacity and the economic impact of collecting rooftop runoff. You simply connect your AI agent and tell it which city or roof size you're working with. It pulls historical precipitation data, allowing you to accurately determine how many liters of water you can expect from a specific surface area. Then, it models that volume against local utility tariffs, giving you an estimate of money saved on standard water bills. This capability is invaluable for sustainable property planning and infrastructure assessment. Accessing this specialized engine through Vinkius means your AI client has immediate access to complex resource metrics without needing manual calculations or data lookups.

Core Capabilities

01 — Estimate total monthly harvest volume

Calculates the anticipated liters of water that can be collected from a given roof area in one month.

02 — Project utility bill savings

Determines the potential financial reduction on municipal water bills based on estimated harvested volume and local tariffs.

03 — Retrieve historical precipitation data

Provides average monthly rainfall averages for supported cities, like London or New York.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/rainwater-harvesting-estimator** — connect your AI agent in three steps.

01 First, prompt your AI agent with the required location and roof dimensions.

02 The MCP uses available data to pull historical precipitation statistics for that city. It then calculates the potential water volume from the given surface area.

03 Finally, it takes that calculated volume and applies varying utility tariff tiers to generate a projected savings figure.

The bottom line is you get an immediate, multi-step financial and physical assessment of your rainwater harvesting potential without leaving your chat interface.

Built For

This MCP serves sustainability consultants, civil engineers, property developers, and water resource planners. If your job requires calculating resource viability or quantifying the impact of green infrastructure, this tool saves you days of spreadsheet work.

Sustainability Consultant

Assesses client properties to determine the optimal size and feasibility of rainwater catchment systems for LEED certification documentation.

Civil Engineer

Models water resource usage in new construction projects, ensuring that local stormwater runoff can be managed efficiently and legally.

Property Developer

Quickly estimates the cost savings associated with installing rainwater systems across multiple sites to improve project bids.

What Changes When You Connect

01 Calculate volume instantly: Use the `calculate_harvest_volume` tool to get a precise monthly liter count, eliminating manual runoff math.

02 Quantify financial impact: The `calculate_savings_estimate` tool projects dollar figures saved on water bills using complex utility tariff assumptions.

03 Ground calculations in reality: The `get_monthly_rainfall` function pulls verified historical data for cities like London or New York, ensuring your estimates are accurate.

04 Fast site assessment: Instead of running multiple spreadsheets, your agent handles the entire calculation chain—from rainfall input to final savings projection—in one go.

05 Future-proof planning: You can rapidly model how water scarcity issues will affect a property's operational costs for sustainability reports.

Real-World Applications

Determining feasibility for commercial properties

A developer needs to know if an office building in New York can offset its water usage. They ask their agent, and it first uses `get_monthly_rainfall` for the area, then runs `calculate_harvest_volume`, finally projecting savings with `calculate_savings_estimate`. The result is a clear ROI analysis.

Assessing residential sustainability upgrades

A homeowner wants to install a system and needs a budget estimate. They prompt their agent, which calculates the potential liters of water collection using `calculate_harvest_volume` based on their roof size, giving them confidence for investment.

Comparing city resource availability

A consultant is advising clients in different climates. They ask their agent to run `get_monthly_rainfall` for both London and New York, providing immediate comparative data points necessary for cross-city planning reports.

Modeling cost savings over time

A facility manager wants to prove the value of green infrastructure. They input their usage rates and let the agent use `calculate_savings_estimate`, generating a clear, quantifiable annual savings report for stakeholders.

Patterns to Avoid

Assuming rainfall is constant

✗ AVOID

A user might manually assume 'average' rainfall and input that number into an outdated spreadsheet model. This ignores seasonal variations or specific city data.

✓ INSTEAD

Always use the `get_monthly_rainfall` tool first to verify historical precipitation averages for your target city. This grounds all subsequent calculations in real-world data.

Calculating volume without tariffs

✗ AVOID

A planner might calculate total liters of water using a basic formula, but stop there. The resulting number doesn't tell the client how much money that translates to.

✓ INSTEAD

Never forget the financial step. Use `calculate_savings_estimate` immediately after finding the volume to translate collected water into actionable monetary value.

Mixing up units

✗ AVOID

Trying to manually convert between square meters, liters, and cubic feet without a consistent conversion factor, leading to wildly inaccurate estimates.

✓ INSTEAD

Let the MCP handle the math. The built-in tools manage all unit conversions, making sure your calculated volume is accurate regardless of input format.

The Right Fit

Use this MCP if you need to quantify resource viability; specifically, if your project involves assessing water usage or implementing rainwater harvesting on a property. It's perfect for projects requiring multiple inputs—rain data, roof area, and utility tariffs—to produce one cohesive financial and physical assessment. Don’t use it if you are simply calculating the total volume of water in a reservoir (use a pure fluid dynamics model instead). Also, don't rely on it as an emergency plumbing diagnostic tool; this MCP is strictly for long-term planning and resource estimation, not immediate repair needs.

Rainwater Harvesting Estimator: Calculating Water Resource Potential

Right now, assessing a property's potential for rainwater harvesting is a tedious process. You have to manually research historical rainfall data for the city (checking archives or contacting meteorologists). Then, you take that raw number and calculate how much water volume it represents given your roof's square footage, which means constantly cross-referencing conversion rates and unit measures.

With this MCP, all those steps disappear. You tell your agent the location and roof size; it pulls the necessary precipitation data, calculates the total potential liters of water you can collect, and spits out a precise figure ready for planning.

Rainwater Harvesting Estimator: Quantifying Water Bill Savings

The biggest hurdle is figuring out if the volume even pays off. Manually, you'd have to look up complex utility tariff structures—residential rates versus commercial industrial rates—and apply those variable costs against your calculated water volume. This usually requires a spreadsheet and several hours of cross-referencing.

This MCP handles that complexity for you. It takes the estimated harvest volume and instantly models potential savings across different tariff tiers, giving you the definitive financial bottom line needed to sell the project.

Rainwater Harvesting Estimator: 3 Tools for Water Sustainability Calculation

These three tools allow you to calculate historical rainfall, estimate monthly harvest volume from a roof, and model the resulting financial savings on utility bills.

#	TOOL	DESCRIPTION
01	`calculate_harvest_volume`	Gives you an estimate of the total liters of water that can be collected in a month from a specific roof surface.
02	`calculate_savings_estimate`	Figures out the financial impact and potential cost reductions of harvesting rainwater on utility bills.
03	`get_monthly_rainfall`	Retrieves the average historical rainfall amount for any major supported city like London or New York.

See It in Action

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

U I'm doing a feasibility study on a commercial site in London. What is my maximum monthly water capture?

Rainwater Harvest Potential: London Site

- **City:** London
- **Avg Monthly Rainfall (Historical):** 65 mm
- **Roof Area:** 800 m²
- **Estimated Collection Volume:** ~5,200 liters/month.

This is enough to offset significant usage in non-potable applications like irrigation and flushing.

U If I save 4,000 liters per month at the residential rate, how much money does that represent?

Estimated Savings Projection

Based on your input of 4,000 liters/month and current utility tariffs:

TARIFF LEVEL	ANNUAL COST SAVED
Residential (Tier 1)	$720.00
Commercial (Tier 3)	$980.00

The savings are significant, especially when factoring in the annual reduction of your utility footprint.

U What's the average monthly rainfall for New York this time of year?

Rainfall Data Retrieval

For New York City, the average historical monthly rainfall is **114 mm**. This figure accounts for typical seasonal variations and is reliable for baseline calculations. You can use this number to adjust your volume estimates accordingly.

Frequently Asked Questions

01 **How does the Rainwater Harvesting Estimator MCP calculate potential water savings?**

It calculates potential savings by taking the estimated liters of collected water and running that number through local utility tariff models. It gives you a clear dollar amount showing how much money you'll save annually.

02 **Do I need to input my own rainfall data for this MCP?**

No, the system handles that. You just tell your agent the city name—it uses its internal tools to retrieve the average historical monthly rainfall for supported locations like New York or London.

03 **Can I use Rainwater Harvesting Estimator MCP for different roof sizes?**

Absolutely. You just update the roof area in your prompt, and the tool recalculates the entire chain—from rain data to potential savings—for that new size.

04 **Is this MCP good for commercial properties or residential ones?**

It works for both. The system supports different utility tariff tiers so you can model financial outcomes whether you're planning a small home project or a large corporate campus.

05 **What kind of data does the Rainwater Harvesting Estimator MCP need to get started?**

You just need three things: the city name, the roof area size (in square meters), and an idea of which tariff type you want to model for savings.

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 `"rainwater-harvesting-estimator": { "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

Rainwater Harvesting Estimator 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

INDEPENDENT PLATFORM DISCLAIMER

DOCUMENT INFORMATION

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MCP Server	Rainwater Harvesting Estimator MCP
Server ID	`019f1752-6fa1-73e0-8efe-a5e71bd114d9`
Platform	Vinkius Cloud for AI Agents
Endpoint	`https://edge.vinkius.com/{token}/mcp`

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