

eCFR-MCP — Model Context Protocol Server for U.S. Federal Regulations

Overview

eCFR-MCP is a Model Context Protocol (MCP) server that allows AI systems (such as Claude Desktop, Cursor, and other MCP-compatible tools) to query the official **Electronic Code of Federal Regulations (eCFR) API** to:

- Search federal regulations
- Retrieve XML snapshots of CFR titles/parts/sections
- List CFR titles and agencies
- Provide explainable, citation-based responses

Instead of relying on hallucinated legal answers, an LLM can use this MCP server to **ground its reasoning in authoritative regulatory text**.

This is especially valuable for:

- Healthcare, pharmacy, life sciences, medical compliance
- Legal research / regulatory analysis
- Government technology & policy engineering
- Enterprise AI governance workflows

Note: This project does *not* interpret law — it provides machine-accessible access to the CFR text. Always consult qualified professionals for legal or regulatory decisions.

Why This Matters

Modern LLMs are powerful but **unreliable without external knowledge grounding**. Regulations are particularly sensitive — incorrect answers can result in:

- compliance violations
- billing or licensing risk
- legal exposure
- operational failures

This project addresses that risk by:

- giving AI tools **structured access** to real regulatory data
- enabling **transparent citations** and **verifiable answers**
- supporting research workflows that require **traceability**

It transforms LLMs from *guessing about regulations* into *querying official data sources*.

Provided MCP Tools

Once installed, the MCP server exposes these tools:

- `ecfr_search_results` – Full-text search (JSON results)
- `ecfr_search_with_date_range` – Search with optional title + date window filters
- `ecfr_search_summary` – Aggregated search summaries / counts
- `ecfr_list_titles` – CFR titles and metadata
- `ecfr_list_agencies` – Agencies and CFR authority assignments
- `ecfr_get_title_xml` – Full title XML (optional part/section hints)
- `ecfr_get_part_xml` – XML for a specific part (smaller payload)
- `ecfr_get_title_structure` – Title hierarchy (JSON default, XML optional)
- `ecfr_get_title_versions` – Issue dates/versions (filters for issue_date, part, section)
- `ecfr_get_title_ancestry` – Full title hierarchy for a given date
- `ecfr_get_section_content` – Section content by structure index/section (XML fallback)
- `ecfr_get_corrections` – Correction notices (filter by title/date/error_corrected)
- `ecfr_compare_title_dates` – Compare structures between two dates (added/removed/modified)
- `ecfr_get_recent_changes` – Convenience wrapper for a trailing window (e.g., last 180 days)

These tools support workflows where the LLM can:

1. Search the regulation corpus
2. Identify candidate sections
3. Retrieve authoritative text
4. Interpret and explain it
5. Provide citations

Installation & Setup

Prerequisites

You'll need the following before installing the MCP server:

- Node.js **18+** (LTS recommended)
- Git (optional but recommended for cloning)

Below are platform-specific setup steps.

Install prerequisites on Windows

1. **Install Node.js**

- Download from <https://nodejs.org> (choose *LTS*)
- Run installer → keep default options → ensure “**Add to PATH**” remains checked

Verify installation:

```
node --version
npm --version
```

2. Install Git (optional but recommended)

Download from <https://git-scm.com/download/win>

After install, verify:

```
git --version
```

If `node` is not found, restart the terminal or sign out/in so PATH updates.

Install prerequisites on macOS

1. Install Homebrew (recommended)

```
/bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"
```

2. Install Node.js and Git

```
brew install node git
```

Verify:

```
node --version
npm --version
git --version
```

macOS System node (from Xcode tools) may be outdated — prefer Homebrew.

Install prerequisites on Linux Ubuntu / Debian:

```
sudo apt update
sudo apt install -y nodejs npm git
```

(If `node --version` shows `< 18`, install Node LTS from NodeSource: <https://github.com/nodesource/distributions>)

Fedora / RHEL:

```
sudo dnf install -y nodejs npm git
```

Verify:

```
node --version
npm --version
git --version
```

Once prerequisites are installed, continue with the platform setup below.

Do I need to run the server manually?

In most MCP-aware apps (like **Claude Desktop** or some editor integrations), you **do not need to run** `node build/index.js` yourself once everything is built.

- The client (e.g., Claude Desktop) will automatically start the MCP server using the command you configure in its settings.
- Manually running `node build/index.js` is mainly useful for **sanity checks** or **debugging**.

So in typical usage:

1. Install prerequisites (Node, Git)
2. Clone this repo
3. Run `npm install` and `npm run build`
4. Configure your MCP client (Claude / Cursor / etc.) to use `node /path/to/build/index.js`

After that, let the client manage the MCP process.

Windows Installation

```
git clone https://github.com/sidneyanderson/ecfr-mcp
cd ecfr-mcp
npm install
npm run build
```

Optional sanity test (manual run):

```
node build/index.js
```

You don't need to run this for normal Claude/Cursor use — it's just to confirm the server starts without errors.

macOS Installation

```
git clone https://github.com/sidneyanderson/ecfr-mcp
cd ecfr-mcp
npm install
npm run build
chmod +x build/index.js
```

(Optional direct execution)

```
./build/index.js
```

Linux Installation

```
git clone https://github.com/sidneyanderson/ecfr-mcp
cd ecfr-mcp
npm install
npm run build
chmod +x build/index.js
```

Optional sanity test (manual run):

```
node build/index.js
```

You don't need to run this for normal Claude/Cursor use — it's just to confirm the server starts without errors.

Using with Claude Desktop (Recommended)

Open:

Settings → Developer → **Edit Config**

Claude expects **valid JSON** — that means:

- All paths must be quoted strings
- On **Windows**, backslashes must be **escaped** in JSON (`\\` → becomes `\`)
- Or simply use **forward slashes**, which Windows also accepts (e.g., `C:/ecfr-mcp/build/index.js`)

Windows example (Node on PATH)

If your project is at `C:\ecfr-mcp` and `node` is on your PATH:

```
{
  "mcpServers": {
    "ecfr-mcp": {
      "command": "node",
```

```

        "args": [
            "C:\\ecfr-mcp\\build\\index.js"
        ]
    }
}

```

Inside JSON, each \\ becomes \ in the real Windows path.

Windows example (simpler — forward-slash path)

```

{
  "mcpServers": {
    "ecfr-mcp": {
      "command": "node",
      "args": [
        "C:/ecfr-mcp/build/index.js"
      ]
    }
  }
}

```

macOS / Linux example

Use forward slashes — no escaping required:

```

{
  "mcpServers": {
    "ecfr-mcp": {
      "command": "node",
      "args": [
        "/Users/yourname/ecfr-mcp/build/index.js"
      ]
    }
  }
}

```

Linux variant:

```

{
  "mcpServers": {
    "ecfr-mcp": {
      "command": "node",
      "args": [
        "/home/yourname/ecfr-mcp/build/index.js"
      ]
    }
  }
}

```

```
}  
}
```

After editing, **restart Claude Desktop** so it reloads the MCP configuration. Make sure the Claude system tray instance is also closed. If you are unsure, reboot.

Test Prompt

Using the eCFR tools, fetch and explain 21 CFR 1306.04 with citations.

You should see tool execution in the side panel (calls to `ecfr_get_title_xml`, `ecfr_search_results`, etc.).

Using with Cursor / VS Code MCP clients

Add to your MCP configuration:

```
"ecfr-mcp": {  
  "command": "node",  
  "args": [  
    "/path/to/ecfr-mcp/build/index.js"  
  ]  
}
```

Restart the client.

CLI Testing (No UI)

List tools:

```
npx -y @modelcontextprotocol/cli call node ./build/index.js tools
```

Call a tool manually:

```
npx -y @modelcontextprotocol/cli call node ./build/index.js call ecfr_list_titles
```

Helper Scripts

Windows startup script

Create `run-ecfr.ps1`:

```
cd C:/ecfr-mcp  
node build/index.js
```

macOS / Linux startup script

Create `run-ecfr.sh`:

```
#!/bin/bash
cd ~/ecfr-mcp
node build/index.js
```

Then:

```
chmod +x run-ecfr.sh
./run-ecfr.sh
```

Troubleshooting

MCP tools don't appear in Claude

- Restart Claude Desktop
- Verify the path in config
- Check Developer → **Open Logs Folder**
- Ensure `npm run build` was executed

Node quits immediately

Run manually to see the error:

```
node build/index.js
```

Copy the stack trace into a GitHub issue.

Project Structure

ecfr-mcp/	
src/	TypeScript source (MCP server logic)
build/	Compiled MCP server (Node-ready JS)
scripts/	Optional helper / maintenance utilities
COMMERCIAL_LICENSE_REQUEST.md	Commercial license request form
NOTICE.txt	Mandatory usage & restriction notice
package.json	Project metadata and dependencies
package-lock.json	Dependency lock file
readme.pdf	PDF rendering of this README
readme.md	Project documentation
tsconfig.json	TypeScript configuration
LICENSE	Restrictive license
.gitignore	Build + dependency exclusion rules

Support & Contributions

Issues and PRs are welcome!

- File bugs, questions, or feature requests here:
<https://github.com/sidneyanderson/ecfr-mcp/issues>
-

Disclaimer

This project provides **technical access** to regulatory data.
It does **not** constitute legal guidance or regulatory interpretation.
Always consult regulatory professionals for formal decisions.

License & Usage Restrictions

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