Operations and Maintenance (O&M) Plan

1. Approach to Preventive & Corrective Maintenance

Preventative Maintenance (PM):

- **Schedule:** Quarterly on-site inspections and semi-annual deep cleaning of cooling vents and connectors.
- **Tasks:** Verification of cable management tension, lubrication of moving parts, thermal imaging of electrical terminations, and physical inspection for vandalism or wear.
- **Firmware:** Monthly remote audits to ensure that all chargers are running the latest **OCPP 2.0.1** and **ISO 15118-2**-compliant firmware.

Corrective Maintenance:

- **Monitoring:** 24/7 automated "heartbeat" monitoring via the Charging Station Management System (CSMS).
- **Tiered Response:** * **Tier 1:** Remote reboot/software fix within 2 hours of an error code.
    - **Tier 2:** On-site technician dispatch within 24–48 hours for hardware failures.
- **Parts Inventory:** We will maintain a local "critical spares" kit (e.g., charging cables, contactors, and HMI screens) to minimize downtime.

2. Plan to Achieve 97% Annual Uptime

To meet the 23 CFR 680 requirement, we will implement the following:

- **Calculation:** Uptime will be tracked per port, excluding scheduled maintenance and grid-side outages beyond our control.
- **Redundancy:** By installing four independent 150kW ports, a single port failure does not take the entire site offline, allowing the hub to maintain high overall availability.
- **EVITP Certification:** All maintenance will be performed by **EVITP-certified electricians**, as required by Illinois NEVI rules, ensuring safety and quality.

3. Customer Reporting Mechanisms

We will provide three ways for drivers at the Justice site to report issues:

1. **On-Unit QR Code:** A direct link to a status-reporting web form.
2. **24/7 Toll-Free Hotline:** Printed clearly on the charger housing for immediate voice support.
3. **App Integration:** Real-time feedback via the [Your Network Provider] app, which automatically creates a maintenance ticket upon a user-reported "fail to start."

4. Cybersecurity (NIST 8473 Compliance)

- **Physical Security:** 24/7 surveillance and tamper-resistant hardware.

- **Data Security:** All payment and telemetry data will be encrypted using TLS 1.2+.
- **Network Isolation:** The charging network will be logically segmented from any on-site host business networks to prevent lateral movement of threats.

5. Operations & Maintenance for Battery Energy Storage System (BESS)

Integrating the BESS ensures site resiliency and optimizes energy costs. The maintenance approach will focus on maximizing cell life, thermal stability, and overall system safety in compliance with energy storage standards.

Preventative Maintenance (PM):

- **Schedule:** Monthly remote system diagnostics and quarterly on-site visual inspections. An annual deep-dive electrical and thermal analysis of the system will be conducted.
- **Tasks:**
    - **Thermal Management:** Check and clean BESS enclosure HVAC/cooling fans to ensure optimal operating temperatures.
    - **Safety Systems:** Quarterly verification of the fire suppression system (e.g., clean agent/aerosol integrity) and smoke/gas detection sensors.
    - **Electrical Inspection:** Inspect battery racks, modules, and wiring for signs of corrosion, wear, or loose connections. Test DC insulation resistance.
- **Firmware & Calibration:** Quarterly remote updates for the Battery Management System (BMS) and Power Conversion System (PCS) to ensure optimal State-of-Charge (SoC) and State-of-Health (SoH) calibration.

Corrective Maintenance:

- **Monitoring:** 24/7 remote monitoring via the BESS control platform for critical alarms (temperature, voltage, current deviations, and fire alerts).
- **Tiered Response:**
    - **Tier 1 (Remote):** Remote diagnostics and BMS/PCS reset for non-critical faults within **1 hour** of an alarm.
    - **Tier 2 (On-Site):** Technician dispatch within **12–24 hours** for hardware issues (e.g., cooling unit failure, faulty sensor, or communication loss).
    - **Tier 3 (Major Failure):** Isolation of the failed battery module or stack via remote or on-site action. Replacement parts ordered within 24 hours to minimize downtime.

Safety and Compliance:

- All BESS O&M procedures will strictly comply with **NFPA 855** (Standard for the Installation of Stationary Energy Storage Systems) and local fire codes.
- Maintenance will be performed exclusively by technicians trained and certified in

high-voltage DC safety protocols specific to the installed battery chemistry.

O&M Project Roles

Role	Responsibility
Project Manager	Oversight of 97% uptime reporting and IDOT annual data submittals.
Network Provider (EVSP)	24/7 remote monitoring, data reporting, and software updates.
Field Technician	On-site repairs and quarterly preventative maintenance (EVITP Certified).
Customer Support	24/7 phone/app support for end-user troubleshooting.