



Operations and Maintenance for Electric Vehicle Charging Infrastructure in Indian Country

This fact sheet provides an overview of operations and maintenance (O&M) costs, responsibilities, and contracts to help ensure electric vehicle (EV) charging infrastructure remains functional and reliable in Indian Country.

O&M planning is important for Tribes to consider at the beginning of EV charging infrastructure projects to help ensure charger uptime and longevity. For more details, see *Strategic Pathways for Indigenous Resilient and Innovative Transportation*: docs.nlr.gov/docs/fy26osti/99494.pdf.

Operations

General operations actions include regular maintenance and monitoring, as well as payment system management. Compliance with electrical, safety, and accessibility codes is recommended.

Responsibilities

EV charging station operator (either the Tribe or a third-party contractor) responsibilities include:

- Establish fee and collection method.
- Track utility fees and understand impacts on operation costs.
- Monitor data, including uptime and utilization (e.g., number of charging sessions, session duration, and time of day).
- Coordinate with emergency services and organize trainings for first responders.

- Conduct reporting required for grant funding.
- Perform routine maintenance on equipment.
- Repair and replace equipment as needed.
- Keep records of repairs and repair costs.
- Provide customer support.

Costs

Operational costs for EV charging stations include:

- **Electricity:** The cost of energy is likely the highest operational cost. Commercial utility rates usually include multiple components such as fixed charges (these remain consistent regardless of electricity consumed), energy charges (a set price for each unit of energy used), and demand charges (a monthly fee based on the highest point of power consumption during a billing period). See **Section 3.7** of *Strategic Pathways for Indigenous Resilient and Innovative Transportation* for more details.



The Alliance for Tribal Clean Energy and the National Laboratory of the Rockies partnered to develop resources for Tribes interested in pursuing public EV charging infrastructure.

- **Networking and software:** Networked chargers offer smart charging management but require additional setup and annual fees that usually range from \$200 to \$400 per year per port (Desai et al. 2024). Ensure that networking contracts include Tribal data sovereignty considerations such as Tribal data ownership and data storage rules. See **Section 3.8** of *Strategic Pathways for Indigenous Resilient and Innovative Transportation* for more details.
- **Insurance:** If the Tribe owns the EV charging station, consider different insurance options, including business interruption insurance, cyber and general liability insurance, environmental insurance, and property insurance. Ensure that liability, insurance, and related disputes are handled through Tribal courts.

Maintenance

EV charging station maintenance includes both preventative and reactive maintenance.

Responsibilities

Preventative maintenance should be conducted regularly to maintain charger uptime—the total time a charger is functional and available for a user to complete a charge.



Weekly Maintenance Tasks

- **Conduct visual inspections:** Check for physical damage, loose or damaged parts, and other physical issues.
- **Reactive maintenance:** Repair damage from weather, vandalism, and other causes.



Monthly Maintenance Tasks

- **Inspect charging cables and connectors:** Ensure cables are secure and not frayed or worn.
- **Clean:** Remove dirt, dust, and debris.
- **Test system:** Run a full charging session.



Quarterly Maintenance Tasks

- **Coordinate with network provider:** Ensure software is up to date.
- **Inspect weatherproofing:** Ensure EV charging equipment is properly protected and insulated. Check for signs of water ingress.



Annual Maintenance Tasks

- **Coordinate a professional electrical inspection:** Include electrical safety inspection, internal inspection, and components check.

Many EV charging equipment manufacturers offer multiday maintenance trainings at the manufacturer facility to qualified professionals. This can enable Tribal staff to conduct much of the maintenance. In addition, many manufacturers sell packages of spare parts.

Costs

Factors that influence EV charger maintenance needs and costs include charging level and whether the equipment is networked or non-networked (Boudreau et al. 2018). Approximate maintenance costs are typically \$400 per charger annually for Level 2 chargers. Annual maintenance costs for direct-current fast chargers are typically \$1,000–\$2,000 per charger (Alternative Fuels Data Center n.d.). Costs are likely to be higher for Tribes located in rural or remote areas, as hiring outside labor will be more expensive.

O&M Contracts

The Tribe, as the owner of an EV charging station, can contract with an O&M provider instead of being responsible for these duties.

An O&M contract should include:

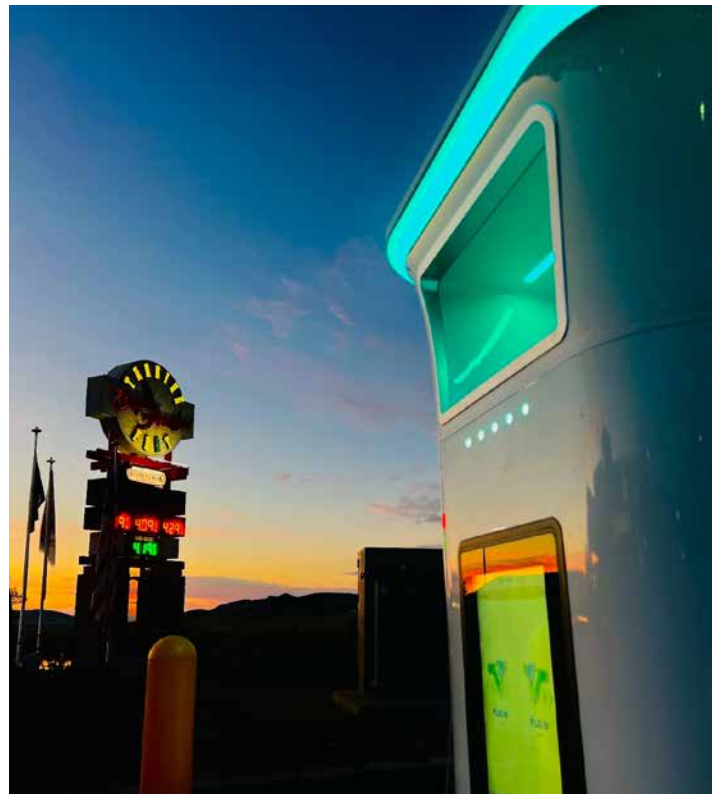
- Overall uptime requirement.
- Response time.
- Time for a given repair.
- Emergency maintenance protocols.
- Preventative services.

An O&M contract can also include requirements that the O&M provider comply with Tribal laws and regulatory authority. This may include following Tribal safety protocols, cybersecurity requirements, and procurement standards.

Tribes may use Tribal Employment Rights Ordinances (TERO) to require EV charging infrastructure O&M companies that serve them on Tribal lands to exercise Tribal member preference. Indian Preference is a political classification tied to sovereignty.

This ensures that job postings and training opportunities are first offered to the Tribe (Schaff 2020).

Note that Tribes located in rural or remote areas may face difficulty in contracts, including uptime guarantees and response times, or find that such guarantees are more costly.



Cover image: EV charger installation training as part of Electric Nation workforce development efforts. Photo from Electric Nation, Native Sun Community Power Development.

Page 3: Photo from Liam Huber, Tule River Indian Tribe.

References

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