“Technical Guidance”

Knowledge Product as part of P4G Grant Program

Practical Guidelines for Installing and Operating EV Charging Stations in Residential and Office Buildings in Vietnam

With EBOOST as a Leading Contributor to Vietnam’s Zero-Emission Urban Transition

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Disclaimer:

This knowledge product is developed during the P4G grant program period, in specifics considered EBOOST knowledge, experiences and implemented practices, statistics as well as applicable Vietnamese laws and regulations up to 06-2025. Furthermore, this knowledge product serves as a knowledge sharing only, can be used as a guide, however, the reader must check and conform to any applicable laws & regulations if any accordingly.

1. Executive Summary

Vietnam is on the brink of a major transportation transformation. With government plans to ban internal combustion engine (ICE) vehicles in major urban centers like Hanoi and Ho Chi Minh City, the electrification of transport is not just imminent, but essential. A critical barrier to this transition is the lack of clear, standardized, and technically feasible guidelines for installing electric vehicle (EV) charging infrastructure within existing residential and office buildings, especially in basements.

This guidance paper, led by EBOOST, provides practical technical recommendations, fire safety protocols, and policy-aligned processes for implementing EV charging stations in building-integrated settings. Drawing from leading international practices in other countries, the document proposes Vietnam-specific adaptations suitable for both new developments and retrofits. It supports building owners, developers, and regulators in enabling safe, reliable, and future-proof EV charging solutions aligned with national clean transport goals.

2. Policy Context & Strategic Importance

The Vietnamese government has made clear its intent to accelerate the shift to electric mobility. In 2025, the Prime Minister and municipal authorities announced plans to restrict ICE vehicles in urban areas starting 2026. This builds on broader energy and environmental strategies to reduce emissions and increase electric power use in transportation.

EV charging infrastructure, especially in densely populated urban buildings, is a cornerstone for this transition. Unlike standalone stations, basement and on-site chargers offer convenience, reduce street congestion, and optimize existing electricity networks. However, safety risks, lack of building regulations, and limited technical capacity remain key barriers.

EBOOST, Vietnam's leading brand-agnostic EV charging solution provider, proposes this knowledge product to close that gap with actionable insights and replicable frameworks.

3. Guideline For Technical & Fire Safety Standards

Electrical and Infrastructure Requirements

- Load Capacity Management: Assess building capacity and ensure sufficient capacity. Apply smart load balancing if required (smart chargers with dynamic load control).
- Charging Modes: Ideal charging mode is mode-3 (AC, smart)
- Separate Metering: Every charger shall be equipped with separate smart metering.
- Surge Protection and Grounding: Mandatory earthing and RCBO / RCCB for EV safety.

Fire Safety and Structural Guidelines

Safety Element	**Guideline**
Compartmentalization	Parking zones with EVs must be resistant-isolated from residential floors
Ventilation	Natural/mechanical extraction; ensure no gas accumulation
Detection & Suppression	Heat/smoke detectors; optional sprinklers or water mist in high-density zones
Clearance & Spacing	Minimum 0.5m lateral clearance between chargers and cars
Emergency Cutoff	Manual or remote power cutoff switch near the EVCP panel
Firefighter Access	Provide unblocked access and firehose reach points in charger zones

Equipment and Installation Best Practices

- Use only certified chargers according to the applicable standards
- Install chargers away from potential flood-prone zones
- Ensure cables are enclosed in fire-retardant trunking
- Allow space for battery venting under vehicle in basement layout

4. Deployment Models & Implementation Steps

Proposed Standardized Deployment Process

1. Site Assessment: Load audit, fire safety scan, ventilation check
2. Design & Planning: Layout design, charger selection, permit strategy
3. Permitting: Submit to PCCC, EVN; follow QCVN/TCVN standards
4. Installation: Electrical works, testing, fire compliance, civil works
5. Commissioning & Monitoring: Activate, commissioning, testing, maintenance

Ownership Models

EBOOST recommends an “SHARED-OPEN-ACCESS” model for residential and office complexes. This model is most optimized, scalable and inclusive.

Maintenance & Operations

- Software-based real time tracking and predictive maintenance for each charger
- Half-yearly physical inspection of cabling, housing, and breakers (Periodic maintenance)
- Customer service hotline and technical support

5. Policy Recommendations & Way Forward

1. Update Building Guidelines & Regulations: Add charging stations requirements into urban building permit regulations for all new developments.
2. Retrofit Existing Buildings: Create practical guidelines for retrofit of existing buildings and potential technical assistance / incentives.
3. Mandate Risk Assessment: Require practical fire risk assessment and design approval by PCCC following guidelines.
4. Encourage Partnerships: Incentivize real estate developers or operational management companies to collaborate with certified operators like EBOOST.
5. National Guidelines: Publish national guidelines on charging station installation for new and existing residential and office buildings (e.g. basement)