



GEORGIA NETWORK *for*
ELECTRIC MOBILITY

UNIVERSITY OF GEORGIA

2025 GEORGIA EV FIRE SAFETY BRIEF

*BRIDGING LOCAL POLICY IN
ATLANTA WITH A CALL FOR A
UNIVERSAL GLOBAL STANDARD*



MAYOR'S OFFICE OF
**Sustainability
and Resilience**



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EXECUTIVE SUMMARY

As outlined in our inaugural white paper on the rapidly evolving global landscape of electric vehicle (EV) adoption and Georgia's growing role in shaping it, EVs are projected to comprise more than half of all new car sales globally by 2030 [1,2].

As electrification accelerates, EV fire safety remains a critical yet overlooked dimension of readiness; particularly in the United States, where current policy frameworks are not equipped to address the complexity and urgency of emerging fire risks. As more cities and states implement EV infrastructure, the absence of consistent safety standards across jurisdictions leads to uneven implementation, increases the likelihood of delayed emergency response, and heightens risks in densely populated areas [3,4]. Fire safety has also emerged as a critical concern for public agencies, first responders, and infrastructure providers when preparing their communities for increased EV adoption [5,6].

Lithium-ion batteries, now the dominant energy storage solution, offer high energy density and performance but also introduce unique fire risks. Damage from impact, manufacturing defects, or thermal stress can trigger thermal runaway: a self-sustaining chain reaction that produces extreme heat, toxic gases, and in some cases, explosions [12,13]. EV fire events, though 20 times less likely than gasoline vehicle fires, demand specific emergency response protocols, specialized training, and equipment and technology that remain inconsistently available and applied across regions [14,15]. Technology might eventually improve to address these issues. However, lithium batteries will still be a large percentage of new and used EV batteries for the foreseeable future.

While a handful of US cities and states now have some EV fire safety or readiness guidance, Atlanta's 2025 EV Readiness Ordinance is, as of the time of this publication, the only known policy at any level in the United States—municipal, state, or federal—that explicitly integrates both tiered EV infrastructure readiness and site-level fire safety requirements into a single, unified development ordinance.

This absence of broader regulatory action reflects a critical knowledge and preparedness gap. Addressing this gap is no longer optional—it is urgent.

Without proactive coordination, clear protocols, and infrastructure safeguards, the gap between rapid EV adoption and public safety preparedness will widen, increasing liability exposure, slowing emergency response, and placing unnecessary strain on fire departments and local governments.

To meet these challenges, several jurisdictions have taken initial steps. For example, local utilities have begun training their staff as “first and secondary responders” during natural disasters to better manage EV-related incidents. However, these efforts remain largely fragmented and inconsistent across regions. Besides Atlanta’s 2025 Ordinance, the U.S. federal government now mandates that automakers provide emergency response guides aligned with ISO 17840 standards and the National Fire Protection Association (NFPA) has published several EV fire safety–related codes and guidelines that, while influential, are largely advisory (not mandatory or uniformly enforced) [6]. Additionally, several EV fire safety standards and first responder training programs have been developed and adopted internationally in leading global markets like the European Union and China, as well as in smaller relative EV markets like Australia [10,16].

These challenges are not unfamiliar: the early rollout of EV charging infrastructure was hampered by incompatible connector types and similarly fragmented technical standards, which slowed progress and discouraged consumers [7,8]. Without intervention, the global industry risks repeating those same mistakes with similar lack of alignment in fire safety protocols [9,10]. The lack of a globally coordinated framework for EV fire safety and emergency response now threatens to undermine both public confidence and the safe, scalable growth of the EV ecosystem; especially in high-density urban or low-access and/or rural communities [17,18].

This white paper examines Atlanta’s EV fire safety policy landscape and compares it to regulatory approaches in leading global EV markets (the European Union and China). It highlights emerging best practices, identifies critical policy gaps, and issues a call to action for globally coordinated, forward-looking standards that can support safe, scalable EV adoption worldwide.



A COMPARATIVE OVERVIEW OF EV FIRE SAFETY POLICY DEVELOPMENTS IN ATLANTA, GA & LEADING GLOBAL MARKETS

As electric vehicle adoption accelerates globally, jurisdictions are taking varied approaches to fire safety. This section provides a comparative overview of policies and practices in three major markets: Atlanta (USA), the European Union, and China.

Atlanta, Georgia (USA): At the Forefront of National and Global Municipal EV Infrastructure Policy

In January 2025, the City of Atlanta adopted Ordinance 25-O-1011, a comprehensive update to its 2017 Electric Vehicle Readiness Policy. Atlanta is the only known United States jurisdiction to combine multi-tiered EV infrastructure requirements with site-level fire suppression access, such as ensuring EV charging areas are within reach of firefighter standpipes, all within a single, unified policy. This structure provides a compelling model for how local governments, especially in urban environments, can align electrification goals with public safety planning. The ordinance applies to both residential and commercial developments, placing Atlanta at the forefront of municipal EV infrastructure policy nationwide.

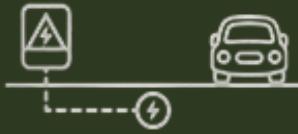
For all new or major renovations for commercial developments and parking garages, the ordinance mandates Electric Vehicle Supply Equipment (EVSE) “Installed” charging station requirements in 20% of all parking spaces, in addition to “EVSE Capable” infrastructure requirements for another 20% of parking spaces. For City-owned facilities, the thresholds are even higher, with 50% of spaces required to be EVSE Capable and 25% EVSE Installed with fully equipped charging stations. In addition, all new residential developments, including single-family homes and accessory dwelling units, must provide “EVSE Ready” infrastructure as a standard feature [3]. A parking space is EVSE Ready when additional wiring and a junction box or an 8320 VA to 9600 VA outlets are installed to support direct plug-ins for mobile EV chargers.

Importantly, the ordinance integrates EV fire safety measures into its infrastructure mandate. New enclosed parking structures must include fire blankets, emergency disconnects for each charging unit, and clearly marked fire extinguisher placements within 75 feet of all EVSE parking spaces and equipment rooms [19,20]. To mitigate thermal propagation, each EV parking space must also be separated by at least 30 inches or the width of the disconnect system, with buffer zones striped in red to prevent parking [21]. These measures are designed to improve firefighter access, minimize damage and liability during response times, and reduce the risk of fire spread in enclosed environments [22,23].

The Atlanta EV Readiness Ordinance development process was supported by the Electrification Coalition and input from several stakeholders including Atlanta Fire Rescue, the International Association of Electrical Inspectors - Georgia Chapter etc. The Electrification Coalition provided technical support during the revision of Atlanta's 2025 Electric Vehicle Readiness Policy and collaborated with the City of Atlanta throughout the development process. This included coordination with departments such as Atlanta Fire Rescue and the Department of City Planning's Office of Buildings to ensure the policy addressed both safety and implementation considerations.

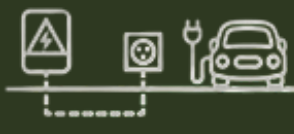
Atlanta's EV Readiness Level Definitions: EVSE Capable, Ready, and Installed

EVSE CAPABLE



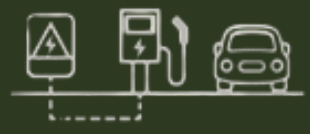
Enough electrical capacity is installed at the panel to support future EV charging spots. Additionally, there is a dedicated branch circuit to make sure enough power is available for future charging stations without overloading the system and raceway to future charging spots. Requires panel space, service load calculations to verify the service can accommodate the additional load, conduit and a pull string from the panelboard to the dedicated future space.

EVSE READY



A parking space is EVSE Ready when additional wiring and a junction box or an 8320 VA to 9600 VA outlet (like for a clothes dryer have been installed). This requires dedicated panel capacity, service load calculations to verify the service can accommodate the additional load, conduit, and wiring that safely terminates at the parking space.

EVSE INSTALLED



Enables immediate EV charging to meet current and future demand. Requires installation of at least a Level 2 EV Charger.

While the ordinance may appear ambitious relative to current U.S. adoption rates, especially since it goes into effect in January 2026, the ordinance addresses a critical inflection point: whether to wait for widespread EV adoption before implementing safety protocols or to proactively prepare for projected growth. Atlanta has opted for the latter, aligning its infrastructure and emergency response systems with accelerating EV market trends and international best practices from the European Union and China.

Georgia's EV sector is expanding rapidly. As of late 2024, the state ranks 1st nationally in EV-related manufacturing investments (exceeding \$30 billion) and eighth nationally in EV registrations, with over 85,000 EV registrations in 2023 and recently exceeding 125,000 EVs registered in May 2025 [12]. According to the Atlanta Regional Commission's 2024 Regional Transportation Electrification Plan, metro Atlanta could see between 350,000 and 500,000 EVs on the road by 2030 depending on market uptake, and over 2.5 million EVs in 2040 in a 50% adoption scenario) [12].

Rather than allowing fire safety gaps to widen alongside adoption, thereby necessitating reactive infrastructure and emergency preparedness measures, Atlanta's ordinance takes a proactive approach to mitigating foreseeable risks in one of the nation's most densely populated metropolitan areas [24].

While other states like California and other cities such as San Francisco, Boston, and Berkeley have advanced EV infrastructure through strong equipment standards, inspection protocols, and fire safety measures, this brief highlights Atlanta’s ordinance for its distinctive integration of both EV readiness and emergency response considerations.

Atlanta’s approach offers a national model for preparedness; underscoring the need for stronger coordination across regions and a more consistent application of fire safety best practices. Atlanta has positioned itself as an ambitious global leader in preparedness and resilience [23]. As of the time of this publication, Atlanta’s EV Readiness Ordinance remains one of the most comprehensive and forward-leaning EV fire safety and infrastructure policies in the United States.

ATLANTA, GEORGIA (USA)



Requires signage and equipment placement for responder access. Training includes emergency disconnects and blanket use.



Commercial sites: 20% EVSE capable, 20% EVSE installed - with installed chargers.
City-owned: 50% EVSE capable, 25% installed.
Residential: 1 EVSE Ready parking spot. Enclosed garages require safe spacing/access.
All new off-street parking, or the expansion of the existing footprint of off-street parking for all parking lot occupancy classifications, including additional floors on existing parking decks, shall comply but parking spaces below grade or three or more levels above the level of exit discharge are not required to comply with the ratio



Visual emergency disconnects must be accessible and clearly marked. Very Early Smoke Detection Systems (VESDA) and thermal camera imaging are not mandated but chargers must report battery info to the city.



30-inch buffer (or disconnect width) required between chargers; zones must be striped red and kept clear. Extinguishers with 10lbs of capacity minimum must be within 75 feet of each EVSE and electrical equipment room. One - nine by six (9x6) meter fire blanket required in a location approved by Atlanta Fire Rescue Department.

European Union: Advancing Technical Standards and Operational Preparedness

Across the European Union, electric vehicle fire safety is addressed through a combination of vehicle-level standards, national building codes, and increasingly specialized emergency response protocols. Rather than relying on a single municipal policy, the EU operates within a layered regulatory framework shaped by international technical standards and national implementation [16].

Two major harmonized standards form the foundation of EV safety oversight: UNECE Regulation Number 100 sets broad functional safety requirements for electric vehicles [16], while EN 50604-1 establishes protocols for lithium-ion battery design, testing, and containment [16]. These standards emphasize thermal protection, electrical insulation, and the prevention of internal battery faults.

At the national level, member states have introduced more targeted requirements for EV infrastructure. Germany's VDE-AR-E 2510-50 and the United Kingdom's amendments to BS 7671 address site-specific safety issues, including charger spacing, fire zone containment, and access routes for first responders [16]. These measures provide critical safeguards within enclosed environments like underground parking facilities.



Fire departments across several EU countries have increasingly integrated specialized equipment into standard response kits. Tools now commonly include thermal imaging cameras, fire-resistant battery blankets, foam suppression systems, and dedicated battery extraction equipment. Many fire services have adopted simulation-based training modules that guide responders through submerged EV fires, thermal runaway events, and chemical exposure procedures [6].

Building design requirements are also evolving. Enclosed parking garages are often required to include battery isolation zones, thermal barriers, and early detection systems [19,21]. Although the level of enforcement varies between jurisdictions, the direction of policy development is clear: new EV infrastructure must be designed not only for functionality but also for fire prevention and emergency accessibility.

The EU’s approach reflects a strong emphasis on technical harmonization, professional readiness, and integrated risk management, often coordinated at the national or regional level rather than through local ordinances [6]. While not always uniform in implementation, these policies represent a maturing regulatory ecosystem that increasingly anticipates the operational realities of EV fire safety.

EUROPEAN UNION

	Batteries must meet UNECE R100 and Regulation 2023/1542 thermal containment standards to prevent overheating and fire spread.
	EV scenarios must be included in regional fire planning. No EU-wide drill or equipment mandate; training and tools vary by country.
	EU codes require ≥3.5 m wide bays, solid floors, and fire-safe layouts. Spacing rules vary by country (e.g., Czech Decree No. 146/2024 Coll.).
	National codes increasingly require HF/CO/VOC sensors, automatic exhaust, and ventilation in enclosed garages. Norway and Germany lead in enforcement; full EU harmonization ongoing.
	Garages >50 spaces: Require sprinklers. >25 spaces + ≥2 chargers: Must include alarms, smoke/heat extraction, and ≥10 ACH if no natural ventilation.

China: Integrating Safety into EV Infrastructure and National Policy

China has rapidly scaled its electric vehicle (EV) industry over the past decade, embedding fire safety as a central element of its regulatory and industrial strategy [8,9]. Rather than focusing solely on infrastructure retrofits or municipal guidelines, China's approach integrates safety standards at the national level and throughout the EV value chain [9].

The GB/T 34590 standard series forms the foundation of China's regulatory framework for EV safety [8,9]. These standards encompass battery system design, vehicle testing, and charging equipment protocols, emphasizing the prevention of fire- and thermal-related incidents [8,9]. Provisions address electrical isolation, fault monitoring, and containment mechanisms, particularly for lithium iron phosphate (LFP) battery packs.

In a significant policy shift set to take effect in July 2026, new national rules will prohibit battery fires or explosions resulting from thermal runaway events [8]. Manufacturers will be required to demonstrate that their battery systems can withstand impact, overheating, and extreme charging conditions without igniting [8]. This move toward performance-based safety certification is already influencing battery design and engineering standards across the industry [9].

Leading Chinese manufacturers have responded with innovation. BYD, for instance, has introduced the Blade Battery, a lithium iron phosphate battery designed to enhance safety and thermal stability [8]. During rigorous nail penetration tests, the Blade Battery emitted no smoke or fire and maintained surface temperatures between 30 and 60 degrees Celsius, showcasing its resistance to thermal runaway [8]. The battery's elongated, blade-like design increases space utilization and structural integrity, contributing to its safety profile.

Beyond product design, China has established a national infrastructure for early risk detection and response. EV manufacturers are required to report real-time battery health diagnostics and performance data to a centralized government-managed platform [9,18]. This system enables regulators to identify patterns, intervene proactively, and initiate recalls or safety alerts before incidents escalate.

Charging infrastructure is subject to stringent safety requirements. Public and commercial EV charging stations must be equipped with intelligent fire suppression systems, remote shutdown capabilities, and multi-sensor detection technologies that monitor for abnormal heat, gas release, and vibration [9,18]. The Ministry of Emergency Management supplements this infrastructure with quarterly drills simulating large-scale EV fire scenarios in urban settings.

Operationally, regional fire departments are increasingly equipped with specialized tools, including robotics, thermal imaging, and chemical-resistant gear [6,9]. These investments reflect a growing recognition that EV fires require a different response model compared to traditional internal combustion engine incidents.

China’s approach integrates fire safety directly into its EV industrial strategy, using national mandates, centralized monitoring, and technological innovation as levers [9]. While much of this system operates within a state-controlled framework, it provides a model of how top-down alignment can accelerate both safety outcomes and technical progress.

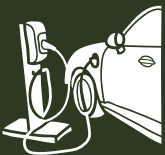
CHINA



Starting July 2026, battery fires from thermal runaway will be banned. Batteries must resist heat, impact, and overcharging. BYD’s recently announced Blade Battery meets these standards.



Quarterly national drills simulate urban EV fires. Fire departments equipped with robotics, thermal cameras, and chemical-resistant gear. Centralized, top-down approach.



Stations must include multi-sensor fire detection, remote shutdowns, and suppression systems. GB/T standards ban most underground chargers unless safety systems are installed.



Multi-sensor systems monitor for abnormal gas/heat. Ventilation and smoke exhaust required in enclosed areas per GB 50116 and GB 50084.



Manufacturers must report real-time battery data to a centralized platform. Enables predictive alerts, early intervention, and national safety oversight.



Basement charging banned for Level 1–3 chargers; Level 4 allowed near exits with safeguards. ≥50 m from public buildings, ≥6 m from walls. Sprinklers and smoke controls required.

GAPS AND OPPORTUNITIES FOR U.S. DOMESTIC AND GLOBAL CONSIDERATION

As the electric vehicle (EV) transition accelerates, fire safety remains one of the most underdeveloped aspects of the global mobility ecosystem. Cities, regional jurisdictions, and countries like Atlanta, the EU, and China, have taken promising steps, but the broader policy landscape, both in the U.S. and internationally, remains inconsistent and fragmented.

Without coordinated action, the growing complexity of EV adoption will outpace our ability to manage the risks it introduces. This section highlights key domestic and international gaps that need to be addressed.



EXISTING U.S. DOMESTIC GAPS

Building Codes, Electrical Codes and Standards Lag

National model codes such as National Fire Protection Association (NFPA), National Electric Code (NEC) and the International Fire Code (IFC) provide baseline provisions for EV-specific hazards such as thermal propagation spacing, high-voltage disconnects, and charger zone containment but the enforcement of these provisions is not currently mandatory [4,23].

Fragmented Policy Landscape

There is currently no unified federal standard for EV fire safety. Jurisdictions vary widely in how they approach emergency response planning, charger siting, and infrastructure design, creating major gaps in readiness and resilience.

Limited Emergency Response Capacity

Fire departments often lack specialized tools like thermal imaging cameras, battery and fire blankets, and suppression units, particularly in suburban and rural areas. Training for EV-specific incidents is limited or nonexistent; except for a few travelling training programs including some offered by the NFPA, New York City Fire Department, as well as other private industry providers [6,10].

Equity in Deployment

EV infrastructure investments, and the safety upgrades that accompany them, are often concentrated in higher-income areas, leaving rural and lower access communities more vulnerable to unmitigated risks [17,22].

Absence of Battery Monitoring Infrastructure

The U.S. does not require real-time battery health diagnostics reporting. Without centralized monitoring systems, early intervention in high-risk vehicles is extremely difficult.

EXISTING GLOBAL GAPS

No Unified International EV Fire Safety Standard

The current patchwork of regional policies is unsustainable. As EVs and their infrastructure become increasingly interconnected across borders, the absence of harmonized safety protocols will not only endanger lives but stall technological progress.

Inconsistent Product and Infrastructure Certification:

Manufacturers face complex, non-aligned safety and testing requirements across regions. This complicates global EV and charger compliance and deployments, as well as slowing potential innovation [16].

Data Silos and Limited Interoperability

Incident reporting, battery diagnostics, and emergency response outcomes are rarely shared globally across borders. This hinders global learning and weakens predictive risk analytics.

Limited Global Inclusion

Many emerging markets are deploying EVs without any complementary fire safety policies, infrastructure design guidelines, or first responder training [11,18].



RECOMMENDATIONS: A CALL FOR UNIVERSAL EV FIRE SAFETY STANDARDS

To address these gaps and accelerate progress, we propose a coordinated international effort to establish universal EV fire safety standards and knowledge-sharing platforms. Specifically, we recommend the following actions:

- **Establish an international working group** under ISO/IEC* to define foundational EV fire safety standards covering vehicle design, battery containment, charging infrastructure, and emergency response protocols.
- **Develop cross-border certification requirements** for EVs and charging systems, including signage and height threshold limits for EV parking, ensuring consistent safety compliance regardless of deployment region or market.
- **Incentivize the adoption of advanced safety technologies**, including Very Early Smoke Detection Systems (VESDA), early thermal event detection, remote shutdown systems, and automated suppression units, through federal grants, public procurement criteria, and utility partnerships.
- **Facilitate international training exchanges and traveling training programs** including simulation-based learning across fire departments, utilities, and transportation agencies to build shared response capacity.
- **Create a global EV fire incident reporting database** to capture case studies, technical learnings, and evolving best practices; all accessible to policymakers, manufacturers, and emergency services worldwide.

These actions will not only reduce the risk of catastrophic EV fire events but also enable faster, safer, and more equitable EV deployment worldwide.

*Note: ISO/IEC refers to the International Organization for Standardization and the International Electrotechnical Commission, two bodies that collaborate to create global standards for safety, reliability, and compatibility across industries, including vehicle and battery safety, charging infrastructure, and emergency response protocols for electric vehicles (EVs)

CONCLUSION

Cities like Atlanta and global leaders such as the European Union are demonstrating what is possible when fire safety is treated as a foundational element of electric vehicle infrastructure policy. But localized progress, while important, is not enough. The future of EV safety demands coordination across jurisdictions and sectors.

To build lasting resilience, governments, manufacturers, utilities, and emergency responders must establish consistent, forward-looking standards. Without alignment, we risk repeating the early pitfalls of EV deployment—fragmented emergency planning, inconsistent codes, and incompatible systems.

A universal standard for EV fire safety is essential. It is the next step in protecting lives, building public confidence, and sustaining the momentum of the electric mobility transition. The path forward requires a coordinated framework that is globally informed, locally implemented, and grounded in enforceable standards. This is not a challenge to defer. It is an opportunity to lead. Stakeholders must come together to align safety protocols, modernize codes, institutionalize training, and invest in infrastructure designed for the realities of high-energy systems in public space.

The energy transition must not come at the expense of human safety. A safer EV future is possible—but only if we build it deliberately, collaboratively, and now.



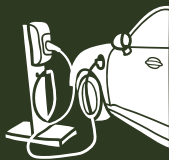
PROPOSED GLOBAL STANDARD



Fire isolation and suppression required for all batteries over 48 volts. Open global platform with live battery alerts and cybersecurity protections



Global training with simulation exercises and consistent safety gear requirements. Annual/Quarterly drills and integrated response planning. Minimum specialty kit: blanket, battery tank, detectors, thermal camera, isolation tools, hazmat suit



Global layout rules for spacing, sensors, and evacuation signage



HF, CO, and VOC mitigation required. Sites must install toxic gas alarms, ventilation fans ≥ 6 ACH, and provide Level B hazmat decon for first responders



Require VESDA systems for prompt smoke detection, thermal imaging cameras for continuous heat monitoring, and integrated smart monitoring solutions



No EV parking above 23 m (75 ft) or more than 1 subterranean level without sprinklers, gas sensors, and dedicated isolation zones. Do not exceed signage

GLOBAL STANDARDS AT A GLANCE



ATLANTA (USA)

Batteries must meet safety tests used in vehicles, buildings, and thermal events

Local firefighters get basic EV fire training; no national mandate

Some rules for large battery packs, but not always required

New chargers must send battery info to the city

EUROPEAN UNION

Batteries must prevent overheating from spreading; EU battery laws are strict

Firefighters must train with manufacturers and follow European safety signage laws

Batteries must contain internal fires by law

Smart chargers must track battery temperature and health in real time

CHINA

Batteries must detect and stop fires quickly; vents required

Firefighters run special EV drills and use fire blankets

Mandatory fire containment and detection for all EV batteries

All chargers must report battery data to central systems

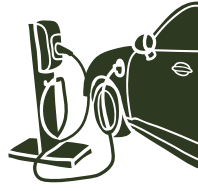
PROPOSED GLOBAL STANDARD

Combines best tests from U.S., Europe, and China into universal global safety guidance

Global training with simulation exercises and consistent safety gear requirements. Quarterly drills and integrated response planning.

Fire isolation and suppression required for all batteries over 48 volts

Open global platform with live battery alerts and cybersecurity protections



Sprinklers required in parking decks; smoke detectors used

Some fire blankets and detectors available; limited EV-specific tools

Spacing between chargers required; fire access routes must be clear

Not widely addressed, but some departments use gas sensors

No charging allowed above certain garage heights or deep underground garages

Firefighting systems needed for powerful chargers; includes smoke and lightning protection

Firefighters use full protective gear, extinguishers, and heat cameras

High-power chargers must be isolated; signage and safety zones required

Laws require gas ventilation and protective gear in case of toxic release

EVs must be spaced out; no charging near building air intakes

Sprinklers, fire alarms, and CCTV required at all charger sites

Well-funded gear includes high-voltage gloves, foam, and blankets

Physical barriers and no-smoking zones required; spacing between chargers

Mandatory toxic gas detection and full decontamination after fires

No EV parking under buildings; spacing and gas sensors required

Require VESDA systems for prompt smoke detection, thermal imaging cameras for continuous heat monitoring, and integrated smart monitoring solutions.

Minimum kit: blanket, battery tank, detectors, thermal camera, isolation tools, hazmat suit

Global layout rules for spacing, sensors, and evacuation signage

HF, CO, and VOC mitigation required. Sites must install toxic gas alarms, ventilation fans ≥ 6 ACH, and provide Level B hazmat decon for first responders

No EV parking above 23 m (75 ft) or more than 1 subterranean level without sprinklers, gas sensors, and dedicated isolation zones. Do not exceed signage

AUTHORS AND CONTRIBUTORS

Georgia has established itself as a potential global leader in the electric mobility economy. Georgia's strategic positioning in the Southeastern United States, coupled with its world-class logistics infrastructure, including major ports and interstate networks, affords it a competitive advantage in EV manufacturing and distribution. Additionally, the state's expanding power grid capacity supports the demands of large-scale EV production.

As a leading think tank and public-private consortium dedicated to advancing electric mobility, GNEM seeks to provide leading-edge discourse and perspectives, support and amplify cutting-edge e-mobility research from the University of Georgia and around the state, and facilitate strategic collaborations on workforce development, community engagement and beyond. We look forward to supporting Georgia's electric mobility and economic development ecosystem on this mission-critical endeavor.

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ABOUT GNEM AND THE UNIVERSITY OF GEORGIA E-MOBILITY INITIATIVE

The Georgia Network for Electric Mobility (GNEM) was established to advance the State of Georgia's leadership in electric mobility through multidisciplinary research, workforce development, community engagement, and collaborative partnerships. Aligned with the mission of the university, GNEM seeks to foster economic growth, drive technological innovation, and position Georgia as a global leading ecosystem in electric vehicle technology.

This white paper serves as a strategic document, offering data-driven guidance to stakeholders, policymakers, and industry leaders on the evolving landscape of electric mobility and Georgia's emerging role. It provides a comprehensive analysis of historical trends, current opportunities, and future outlooks, establishing a foundation for strategic decision-making in electric mobility and future whitepapers related to this work.



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ELECTRIC MOBILITY

SOURCES

1. International Energy Agency (IEA). (2024, April 23). More than 1 in 4 cars sold worldwide this year is set to be electric as EV sales continue to grow. Retrieved from <https://www.iea.org/news/more-than-1-in-4-cars-sold-worldwide-this-year-is-set-to-be-electric-as-ev-sales-continue-to-grow>
2. RMI. (2024, May 9). EVs to surpass two-thirds of global car sales by 2030, putting at risk nearly half of oil demand, new research finds. Retrieved from <https://rmi.org/press-release/evs-to-surpass-two-thirds-of-global-car-sales-by-2030-putting-at-risk-nearly-half-of-oil-demand-new-research-finds/>
3. City of Atlanta. (2024, May 15). Atlanta Fire Rescue Department receives \$2.2 million federal grant for firefighter cancer prevention. Retrieved from https://www.atlantaga.gov/Home/Components/News/News/10258/?utm_source
4. Electronic Code of Federal Regulations (eCFR). (n.d.). 49 CFR § 561.6 – Reporting requirements. Retrieved from https://www.ecfr.gov/current/title-49/subtitle-B/chapter-V/part-561/section-561.6?utm_source
5. National Transportation Safety Board (NTSB). (2001, November). Highway Special Investigation Report: Bus Crashworthiness (NTSB/SR-01/01). Retrieved from https://www.nts.gov/safety/safety-studies/Documents/SR2001.pdf?utm_source
6. CTIF. (n.d.). ISO 17840: Information for OEMs, manufacturers, and decision-makers within transportation & logistics. Retrieved from https://ctif.org/iso-17840-information-oems-manufacturers-and-decision-makers-within-transportation-logistics-intro?utm_source
7. CTIF. (n.d.). ISO 17840: The first worldwide firefighters' standard. Retrieved from https://ctif.org/commissions-and-groups/iso-17840-first-worldwide-firefighters-standard?utm_source
8. Reuters. (2025, April 15). China to tighten EV battery rules to reduce fire, explosion risks. Retrieved from https://www.reuters.com/business/autos-transportation/china-tighten-ev-battery-rules-reduce-fire-explosion-risks-2025-04-15/?utm_source
9. U.S. Fire Administration (USFA). (2024, April 18). Emergency response guides for electric vehicles and lithium-ion batteries. Retrieved from https://www.usfa.fema.gov/blog/emergency-response-guides-for-electric-vehicles-and-lithium-ion-batteries/?utm_source
10. The Guardian. (2024, March 16). NSW announces compulsory training for firefighters to deal with electric vehicle incidents. Retrieved from https://www.theguardian.com/australia-news/2024/mar/16/nsw-announces-compulsory-training-for-firefighters-to-deal-with-electric-vehicle-incidents?utm_source
11. Fire & Safety Journal Americas. (2024, April 22). New technologies address battery safety concerns following electric vehicle fire incidents. Retrieved from https://fireandsafetyjournalamericas.com/new-technologies-address-battery-safety-concerns-following-electric-vehicle-fire-incidents?utm_source
12. Georgia Department of Economic Development. (2022). Hyundai Motor Group to Invest \$5.54 Billion in Georgia at First Fully Dedicated Electric Vehicle and Battery Manufacturing Facility. Retrieved from <https://georgia.org/press-release/hyundai-motor-group-invest-554-billion-georgia-first-fully-dedicated-electric-vehicle>
13. Environmental Defense Fund. (2024). U.S. Electric Vehicle Manufacturing Investments and Jobs: Characterizing the Impacts of the Inflation Reduction Act after 18 Months. Retrieved from <https://www.edf.org/sites/default/files/2024->
14. Mudduluru, H. (n.d.). Understanding ECE R100: The technical backbone of electric vehicle safety. LinkedIn. Retrieved from <https://www.linkedin.com/pulse/understanding-ece-r100-technical-backbone-electric-safety-mudduluru-hhdbe/>
15. Emitech. (n.d.). Vehicle battery approval: UN ECE R100 Rev3 and ECE R100 Rev2. Retrieved from https://www.emitech.fr/en/vehicle-battery-approval-un-ece-r100-rev3-and-ece-r100-rev2?utm_source
16. ATIC. (2023, November 3). UN ECE R100 vehicle electrical safety and power battery draft regulations updated. https://www.atic-ts.com/un-ece-r100-vehicle-electrical-safety-and-power-battery-draft-regulations-updated/?utm_source
17. GlobalSpec. (n.d.). EN 50604-1:2017 – Secondary lithium cells and batteries for use in industrial applications. Retrieved from https://standards.globalspec.com/std/14417011/en-50604-1?utm_source
18. Zurich Insurance. (n.d.). EV charging: Fire safety guidance. Retrieved from https://www.zurich.co.uk/-/media/news-and-insight/documents/useful-documents/zrs-ev-charging.pdf?utm_source
19. BSI Group. (n.d.). FLEX 2071: Fire safety of electric vehicle charging infrastructure. Retrieved from https://www.bsigroup.com/siteassets/pdf/en/insights-and-media/insights/brochures/flex-2071.pdf?utm_source
20. ECA. (n.d.). Guidance on electrical safety for electric vehicle charging. Retrieved from https://www.ea.co.uk/CMSPages/GetFile.aspx?guid=8cc721f4-ddcd-405e-b89a-83cb366a9f97&utm_source
21. IET (Institution of Engineering and Technology). (2023, November). Electric vehicle charging point fire safety considerations. Retrieved from https://electrical.theiet.org/wiring-matters/years/2023/98-november-2023/electric-vehicle-charging-point-fire-safety-considerations/?utm_source
22. UK Government. (2024, January). Covered car parks: Fire safety guidance for electric vehicles. Retrieved from https://assets.publishing.service.gov.uk/media/65bb7b5ccc6fd600145dbe1a/covered-car-parks-fire-safety-guidance-for-electric-vehicles.pdf?utm_source
23. Federal Emergency Management Agency (FEMA). (n.d.). Fire Prevention and Safety Grant Program: FP&S Activity Frequently Asked Questions (FY 2023). Retrieved from https://www.fema.gov/sites/default/files/documents/fema_gpd-fy-2023-fps-faqs.pdf
24. Marlowe Fire & Security. (n.d.). Very early warning aspirating smoke detection (VESDA). Retrieved from https://marlowefireandsecurity.com/solutions/fire-protection/vesda/?utm_source