



THE RECHARGEABLE SOCIETY:

How We Move Near and Far

Lithium-ion batteries power the smartphones, laptops, tablets, e-cigarettes, portable chargers, and other devices we rely on every day. They travel with us wherever we go, including on airplanes, where the average passenger carries approximately four rechargeable devices.

As rechargeable technology becomes an increasingly important part of modern travel, battery safety is essential. Even a small battery fire on board an aircraft can present significant challenges, making standards, education, and safe battery practices critical to helping protect passengers and crew.

Incidents are increasing

More devices on board
= more potential risk

A large passenger aircraft can carry up to around 2,200 batteries on a single flight. As more devices travel on board, battery-related incidents are increasing, often involving thermal runaway.

Thermal runaway:

An uncontrollable, self-heating state that can lead to smoke, fire, or even explosion if they are damaged, improperly charged, poorly manufactured, or counterfeit.

Thermal runaway incidents on passenger aircraft increased 15%, rising from 107 incidents in 2024 to 123 incidents in 2025.

Airlines are now experiencing an average of 2.36 incidents per week on passenger planes.



Portable chargers overtook e-cigarettes as the leading device involved in thermal runaway incidents in 2025, with incidents rising 42% year over year.

Passenger awareness remains low:

- 58% of Americans do not know that lithium-ion batteries power many products they use regularly.
- 45% admit to knowing nothing about lithium-ion batteries.
- 39% of passengers admit to packing lithium-ion-powered devices in checked baggage, where fires are more difficult to detect and manage.

The Impact of Battery Incidents

From onboard disruptions to economic losses

Where issues occur:



Overhead bins

Devices are harder to reach if they begin to smoke or overheat.



Checked luggage

Fires may go unnoticed and are inaccessible during flight.



Damaged or defective devices

Higher likelihood of failure.



Loose or improperly packed batteries

Increased risk of short circuit.

The cost of disruptions:

- 1 12% of onboard incidents resulted in a diversion, return to gate, emergency evacuation, or unplanned deplaning.
- 2 UL Standards & Engagement estimates that significant disruptions from thermal runaway incidents cost airlines approximately \$96,000 per incident.
- 3 Between 2021 and 2024, these incidents may have resulted in at least \$7.3 million in damages and losses on U.S. commercial passenger flights.

ULSE's Role in Travel Safety

Standards and education
to reduce battery fire risk

ULSE develops safety standards that address how battery risks are managed before, during, and after an incident.

UL 5800 sets performance criteria for battery fire containment products used onboard aircraft.

UL 5840 supports the safe use of battery-powered ground support equipment.

UL 5810 (forthcoming) will help advance fire protection for air cargo systems.

Education that drives behavior change

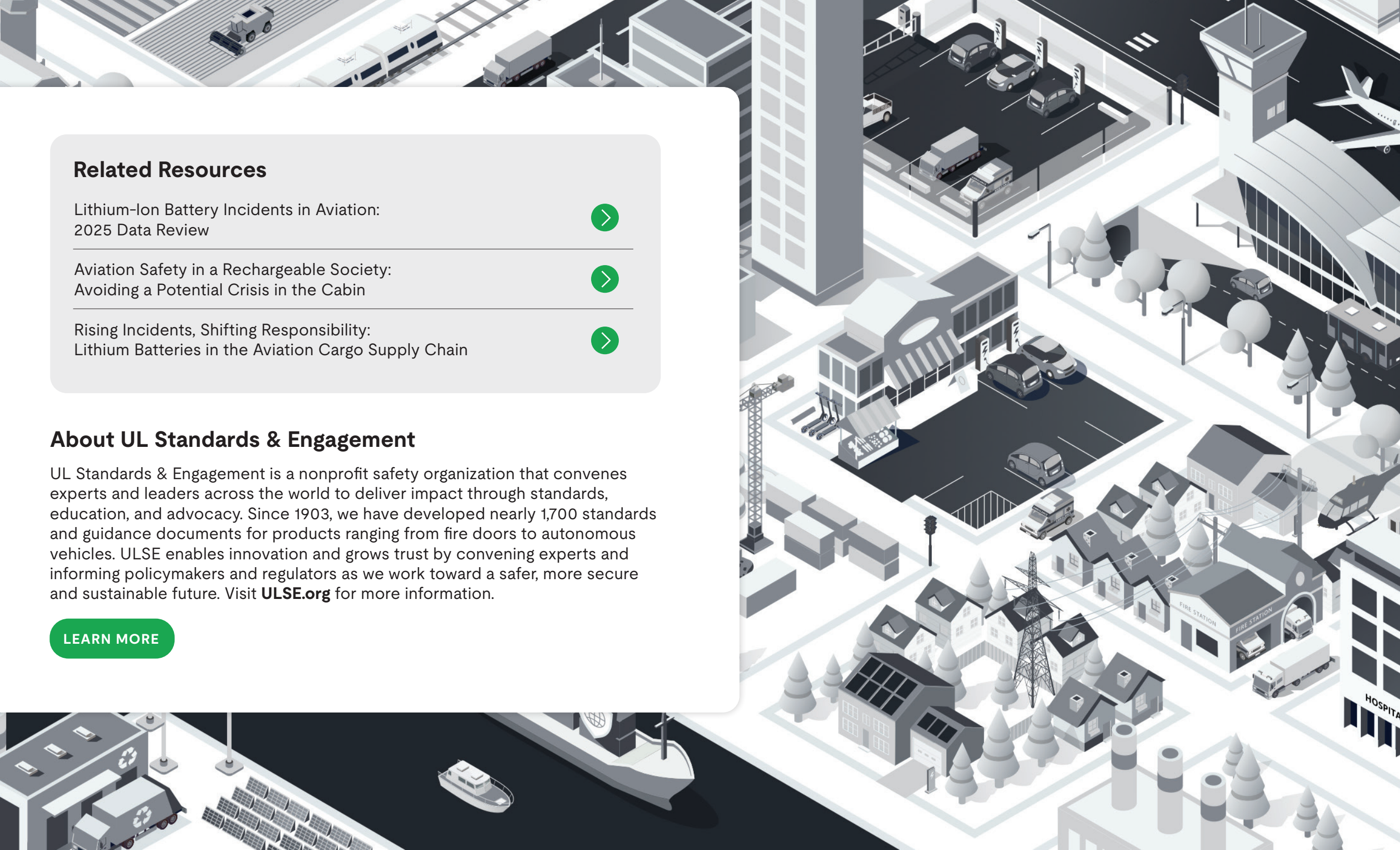
ULSE pairs technical expertise with research-backed education to close critical awareness gaps among travelers and industry.

TRIP: In partnership with the aviation industry, ULSE developed the Thermal Runaway Incident Program, a voluntary reporting system that captures real-world incidents and turns them into actionable safety insights.

Passenger Awareness Campaign:

Built on traveler research, this campaign translates complex battery risks into simple, memorable actions.

- Keep li-ion devices within arm's reach.
- Never place rechargeable devices in checked luggage.
- Recognize warning signs and alert crew members immediately.

An isometric illustration of a city scene. In the top left, a train is on tracks. Below it, a truck is on a road. To the right, a parking lot contains several cars and a truck. Further right, an airport terminal with a control tower and an airplane is visible. In the center, there's a building with a large circular feature and a parking lot with cars. To the right of that, a residential area with houses and trees is shown. In the bottom right, a fire station with a fire truck and a hospital are depicted. At the bottom left, a large ship is docked at a pier with solar panels and a recycling truck. The entire scene is rendered in a clean, modern, isometric style with a muted color palette.

Related Resources

Lithium-Ion Battery Incidents in Aviation:
2025 Data Review



Aviation Safety in a Rechargeable Society:
Avoiding a Potential Crisis in the Cabin



Rising Incidents, Shifting Responsibility:
Lithium Batteries in the Aviation Cargo Supply Chain



About UL Standards & Engagement

UL Standards & Engagement is a nonprofit safety organization that convenes experts and leaders across the world to deliver impact through standards, education, and advocacy. Since 1903, we have developed nearly 1,700 standards and guidance documents for products ranging from fire doors to autonomous vehicles. ULSE enables innovation and grows trust by convening experts and informing policymakers and regulators as we work toward a safer, more secure and sustainable future. Visit **ULSE.org** for more information.

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