



U.S. Department  
of Transportation

**National Highway  
Traffic Safety  
Administration**

# ODI RESUME

**Investigation:** PE 20-016  
**Date Opened:** 10/09/2020  
**Investigator:** Alexander Argant  
**Approver:** Stephen Ridella  
**Subject:** Electric Vehicle Battery Fires  
**Date Closed:** 02/07/2022  
**Reviewer:** Tanya Topka

## MANUFACTURER & PRODUCT INFORMATION

**Manufacturer:** General Motors, LLC  
**Products:** 2017-2020 Chevrolet Bolt EV  
**Population:** 86,172 (Estimated)

**Problem Description:** Complainants report fires starting under seating area in parked vehicles.

## FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
<b>Complaints:</b>	12	19	24**
<b>Crashes/Fires:</b>	12	19	24**
<b>Injury Incidents:</b>	0	0	0
<b>Number of Injuries:</b>	1	0	1
<b>Fatality Incidents:</b>	0	0	0

\*\* Total eliminates duplicates received by ODI and manufacturer.

## ACTION / SUMMARY INFORMATION

**Action:** Close the Preliminary Evaluation. Recall 21V-560 and 21V-650 has been submitted.

### Summary:

In October 2020, the Office of Defects Investigation (ODI) opened a Preliminary Evaluation (PE) on 2017-2020 Model Year (MY) Chevrolet Bolt vehicles based on complaints received alleging that the vehicles caught fire under the seating area while parked and unattended. At the time, ODI had received 2 Vehicle Owner Questionnaires (VOQs) and several field reports. All complaints alleged vehicles caught fire during or after electrical charging.

ODI's review found vehicle thermal events occurred during and/or at the end of the battery module charging cycle. The information learned from NHTSA and General Motors joint vehicle inspections prompted General Motors to file Recall 20V-701 on April 29, 2021. The remedy for this recall included 1) performing diagnostic procedures to identify and replace potentially defective battery cell-module assemblies and 2) installing onboard diagnostic software, designed to detect and warn owners regarding potential issues related to changes in battery module performance over time. Until this interim remedy became available for all affected vehicles, General Motors instructed their customers to enable Hilltop Reserve or Target Charge Level, based on the vehicle-equipped technology. Enabling these technologies would limit charging capacity of the battery module to a maximum of 90 percent. General Motors then continued to investigate the root cause of these battery cell module thermal events, which would lead them to their long-term recall remedy solution.

Utilizing the information obtained from the Recall 20V-701 software update, General Motors and LG Energy Solutions, the supplier of the battery cell module pack along with LG Electronics, determined the root cause of the thermal events to be the result of two simultaneous manufacturing defects occurring in the same battery cell. The defect condition appears to be aggravated by routinely charging the battery to a full or nearly full state of charge after it has been substantially depleted. The two defects, located within the same battery cell module, would cause an internal short within the battery pack, resulting in the thermal events. The manufacturing process was changed to prevent the occurrence of these two defect conditions.

On July 24, 2021, General Motors filed a defect information report recalling all 2017-2018 Chevrolet Bolt and certain 2019 Chevrolet Bolt vehicles with design level N2.1 battery cell produced at the LG Ochang, Korea plant. This remedy replaces defective battery cell-modules and will prevent potential thermal events from occurring during and/or at the end of the charge cycle. The recall (21V-560) includes vehicles that were remedied under 20V-701.

General Motors continued to review new data after Recall 21V-560 and learned of an incident that occurred outside of the scope of the recall population. Additional analysis led General Motors and LGES to determine that the manufacturing defects defined by Recall 21V-560 were not isolated to one battery manufacturing plant. On August 21, 2021, General Motors filed a defect information report to expand the scope of recall 21V-560. The recall (21V-650) includes all 2019-2022 Chevrolet Bolt EV and 2022 Chevrolet Bolt EUV vehicles.

In view of the recall actions being taken by General Motors, ODI is closing this Preliminary Evaluation. NHTSA reserves the right to take additional action if warranted by future circumstances.

The ODI reports cited above can be reviewed online at [nhtsa.gov](https://www.nhtsa.gov) under the following identification numbers:

11230072, 11425524, 11339878, 11365622, 11364692, 11427180, 11429891, 11374956, 11407212, 11372429, 11425225, 11415800