



Public Safety Official and First Responder Interaction Plan: Toyota Sienna Hybrid

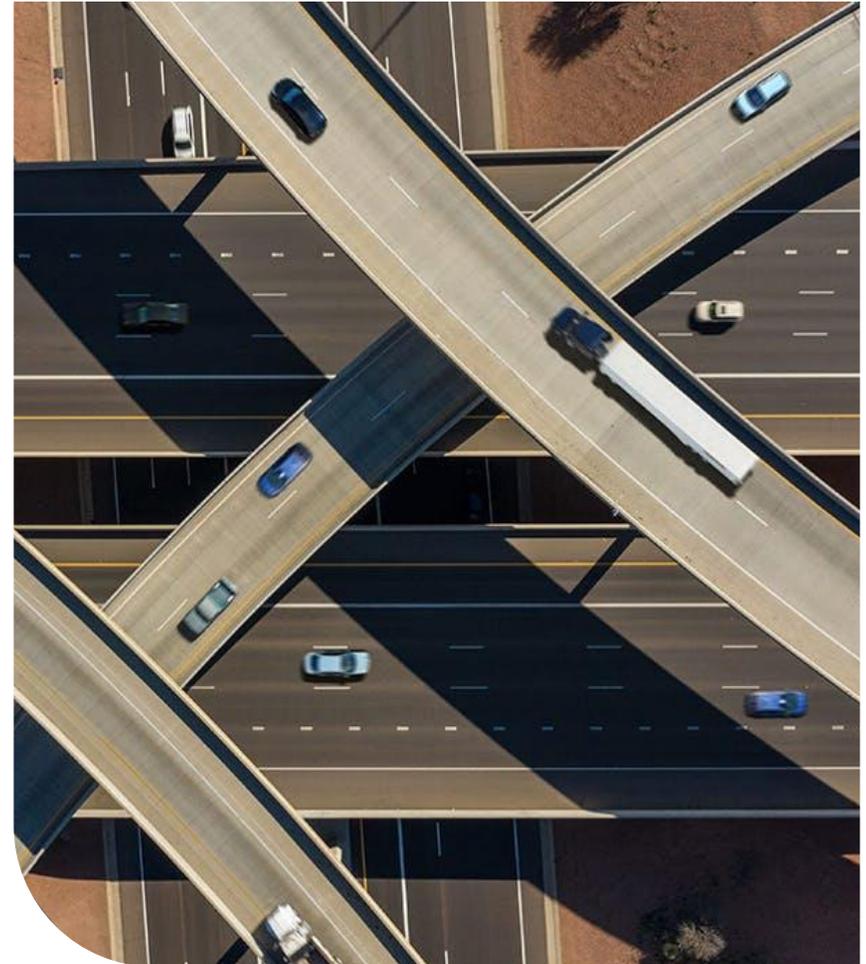
Introduction

Call 1-800-815-0780 for immediate assistance

If you need guidance on interacting with one of our self-driving trucks, see our related guide:

Public Safety Officials and First Responder Interaction Plan: Peterbilt 579

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Introduction

This section explains how this guide was developed, its intended use, and what will trigger updates in the future.

Introduction

Development Process & Intended Use

This guide was developed to assist public safety officials and first responders who may interact with passenger cars equipped with the Aurora Driver, our self-driving technology.

The contents of this guide include information from the Toyota Sienna Emergency Response Guide and are aligned with applicable guidance from the Automated Vehicle Safety Consortium’s “Best Practice for First Responder Interactions with Fleet-Managed Automated Driving System-Dedicated Vehicles (ADS-DVs)” that pertain to operating with a vehicle operator.

In addition to providing this guide to public safety officials and first responders, we work with state and local governments in every jurisdiction prior to operation and at a regular cadence thereafter.



Identifying an Aurora Vehicle

This section describes the vehicles and sensors we use to test the Aurora Driver, our self-driving technology.

Identifying an Aurora Vehicle

Toyota Sienna Hybrid

- Sensors are mounted on the front and rear bumpers, above the front wheel wells, and on the roof
- Branding is located on the sides and rear of the vehicle
- A red Driver shutoff button is located on the left-hand side of the steering wheel inside of the vehicle



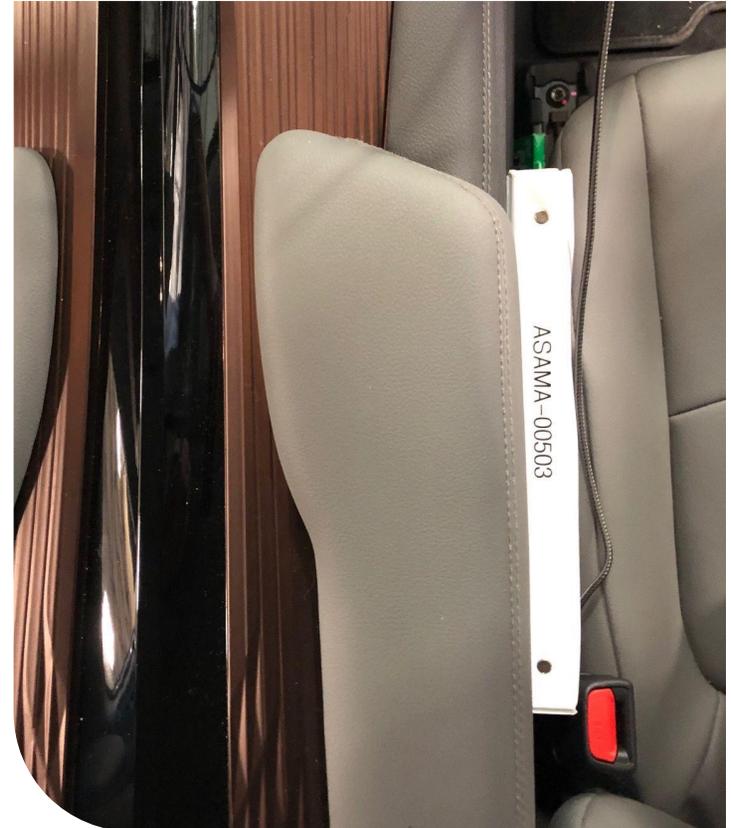
Documentation

This section explains what documentation is available and where it is located in the vehicle.

Documentation

A documentation binder is located between the passenger seat and center console and contains our:

- Contact information
- Insurance card
- Registration
- AV Permit
- Preferred towing vendors



Current Operations

This section describes our ODD, including where we operate, the conditions under which we operate, and the policies we follow to keep ourselves and other road users safe.

Current Operations

Where We Operate

Our ODD currently includes public and private roads in and around select cities in CA, PA, and TX.*

Our vehicles can be found on the following roadway types:

- Freeways
- On- and off-ramps
- Surface streets
- Tunnels and bridges
- Underpasses and overpasses

*We operate one test vehicle in Bozeman, MT in manual only for sensor data collection purposes

Current Operations

Where We Operate

Our vehicles operate:

- Within the speed limits of the roadways where we operate
- In suburban and urban areas, including in dense traffic
- In both day and night
- In varied weather, including snow and rain

We closely monitor weather conditions and may halt testing in the following circumstances, should we have any concern that the safety of our performance would be degraded:

- Fog, heavy rain, heavy snow, and ice; and
- Reports of adverse road conditions (including loss of traction, unplowed roads, and ice), severe weather, or high wind.

Current Operations

Vehicle Operators

All of our vehicles have two vehicle operators:

The trained Vehicle Operator behind the steering wheel is solely focused on safe operation of the vehicle

The trained co-pilot in the passenger seat monitors and annotates the behavior of the Aurora Driver on a laptop



Interacting with the Vehicle

This section describes how vehicle operators respond after a collision; the vehicle's post-collision safety features; how to identify the system state; how to disengage self-driving (if necessary); and how to immobilize and disable the vehicle.

Interacting with the Vehicle

Vehicle Operator Protocol

Our vehicle operators will do the following after a collision:

- Disengage autonomy (if needed);
- Call 911, if necessary;
- Pull the vehicle over to a safe location, if possible;
- Notify Aurora dispatch, who may assist with data requests, towing, or related post-collision needs.

Interacting with the Vehicle

Post-Collision Features of the Vehicle

When a significant impact is detected by the impact sensor, the emergency shut off system blocks the high voltage current and stops the fuel pump to help minimize the risk of electrocution and fuel leakage.

If the emergency shut off system activates, the vehicle will not restart.

Interacting with the Vehicle

Recommended Procedures for First Responders

Follow the recommended actions to secure the vehicle:

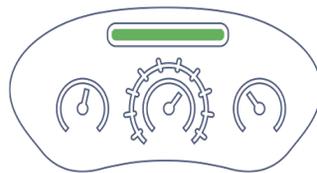
1. Determine if self-driving mode is engaged;
2. Disengage self-driving—if necessary—by pushing the emergency stop button;
and
3. Immobilize and disable the vehicle by ensuring the engine is off and the emergency brake is on.

Interacting with the Vehicle

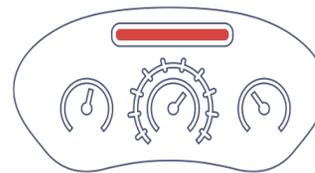
Determining if Self-Driving is Engaged

In the unlikely event that the vehicle has not automatically disengaged self-driving post-collision, or the vehicle operators have not manually disengaged self-driving post-collision, first responders should refer to the light bar on the center instrument panel to determine the vehicle state.

If the light bar is green or red, first responders should press the Driver shutoff button to disengage autonomy. All other colors mean the Driver is not operating in autonomy. See the next page for further instructions.



Green



Red

Disengaging Self-Driving

If the light bar is solid green or solid red, the first responder should press the Driver shutoff button (labeled “DBW”) located in the center console between the driver and passenger seats.

Pressing the Driver shutoff button will disengage self-driving mode and cut power to the self-driving system. The light bar will change color from green or red to blue or white and an audible alert will sound. Lights adjacent to the light bar pertain to the power source and do not relate to this guidance.

If there is any concern about the light bar color status, press the red Driver shutoff button.



The light bar is visible through the steering wheel in the center of the dashboard.

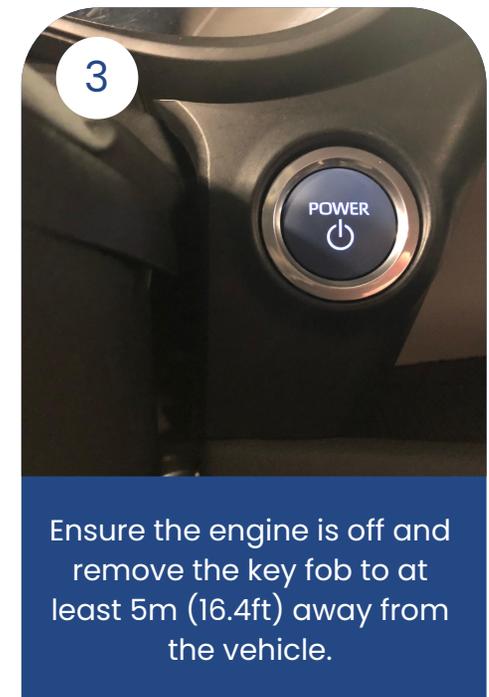
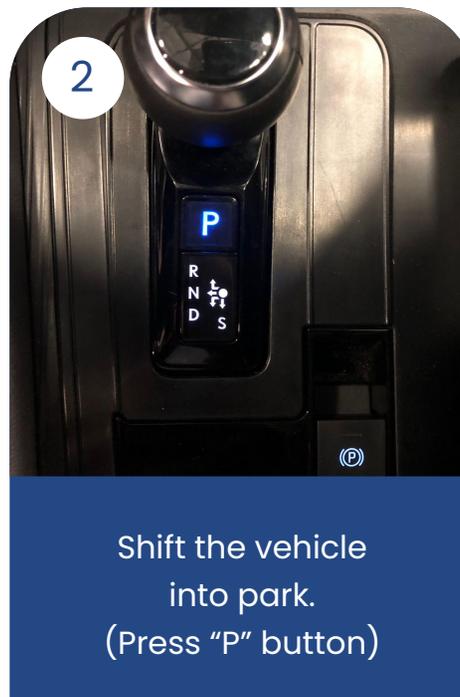
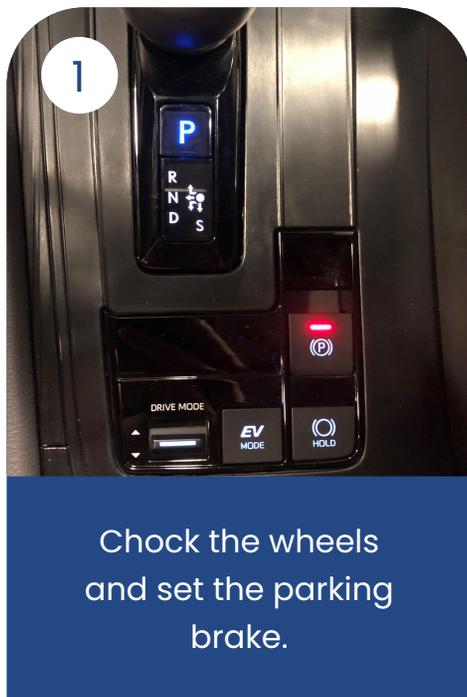


The Driver shutoff button is located to the left of the steering wheel.

Interacting with the Vehicle

Immobilizing and Disabling the Vehicle

After determining the system state and disengaging self-driving:



The key fob is kept on the shelf below the power button in front of the gear shift, on the the right side of driver.

Interacting with the Vehicle

Turning on the Vehicle

Should turning on the vehicle be required for any reason, please note:

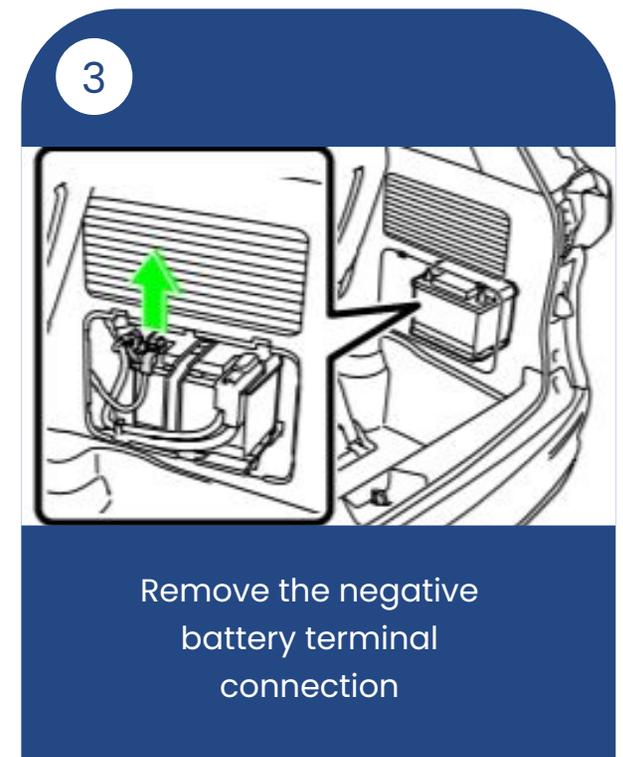
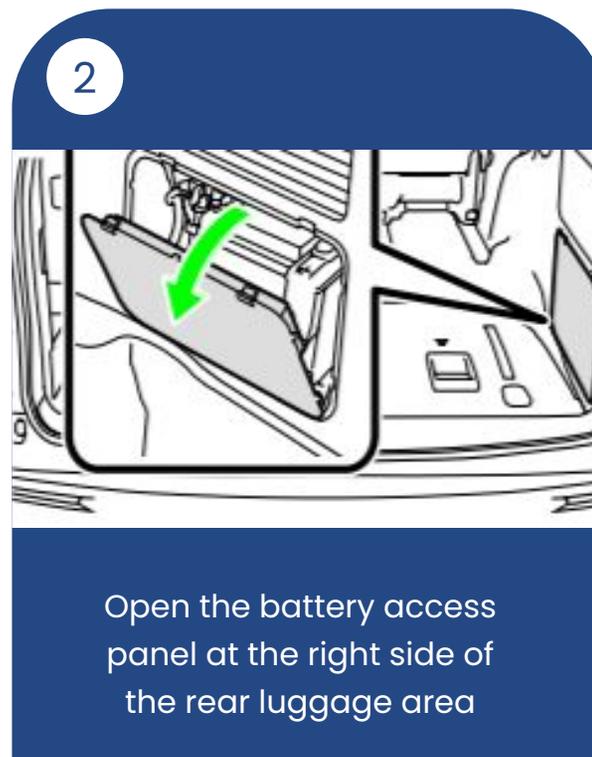
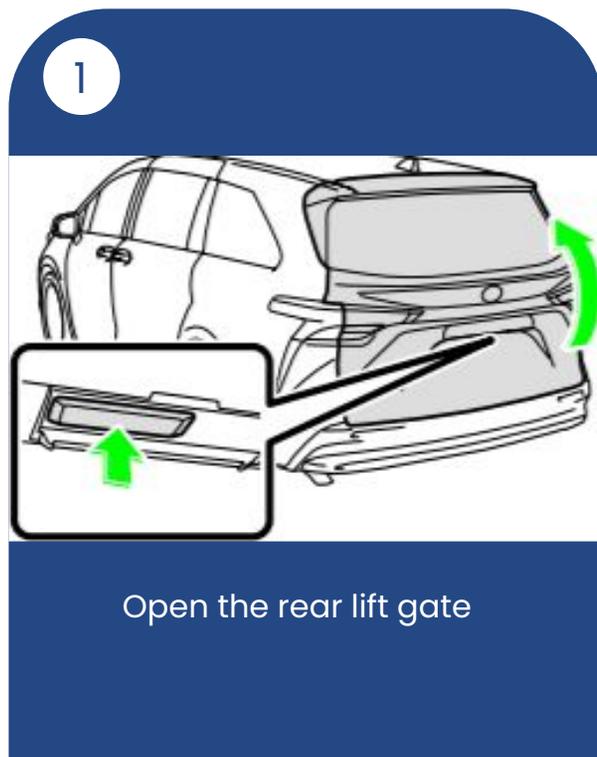
- Turning on the vehicle will **not** engage the system in self-driving mode.
- Aurora vehicle operators will assist with turning on, moving, and towing the vehicle, when possible.
- If Aurora vehicle operators cannot assist and you need further support, please call Aurora Dispatch at 800-815-0780 for instructions or wait for an Aurora employee to arrive at the site to provide assistance.

Turning Off Battery Power Supply

This section provides instructions on how to safely turn off the vehicle's 12V and high voltage power supply in the event of a fire or to ensure safe extrication of passengers.

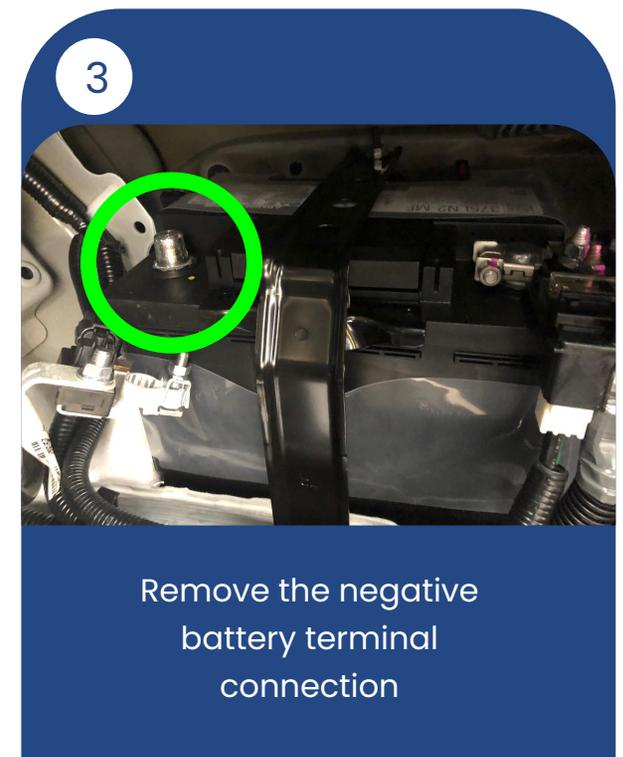
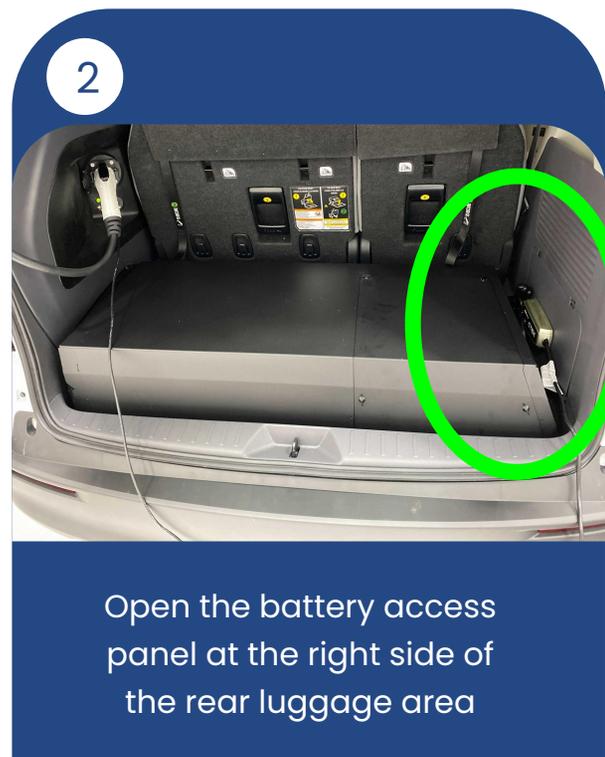
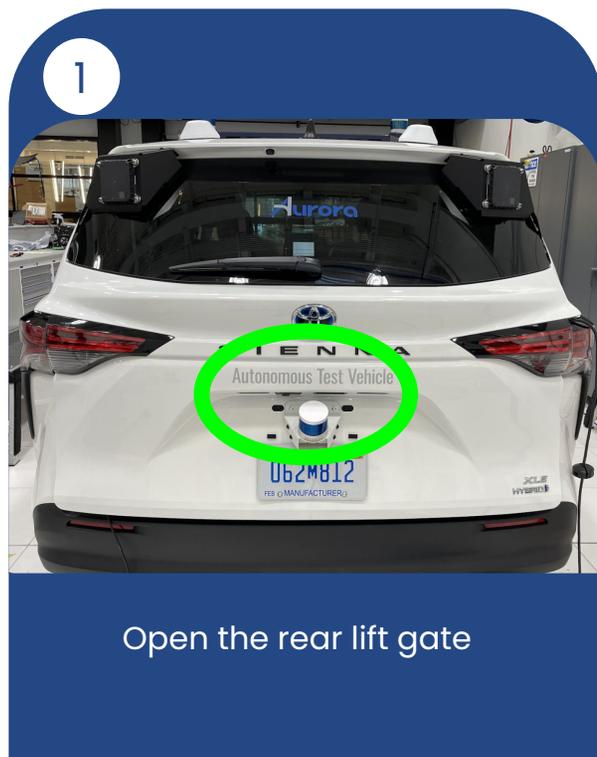
12V Power Disablement

The battery is located at the rear of the vehicle on the right side of the rear luggage compartment. This page includes 12V power disablement illustrations from Toyota. Refer to the next page for images of our vehicle.



12V Power Disabling

The instructions on this page duplicate the illustrated instructions on the previous page to provide additional context about our specific vehicle configuration.



Firefighting and Extrication

This section includes recommended guidance for how to fight a fire in the vehicle and how to extricate passengers if necessary.

Firefighting and Extrication

Firefighting

Each vehicle is outfitted with a fire extinguisher behind the passenger seat.

Firefighters and first responders should follow current best practices for fighting fires in electric and hybrid vehicles.

See [Additional Resources](#) (page 34) for more information.



Firefighting and Extrication

Firefighting

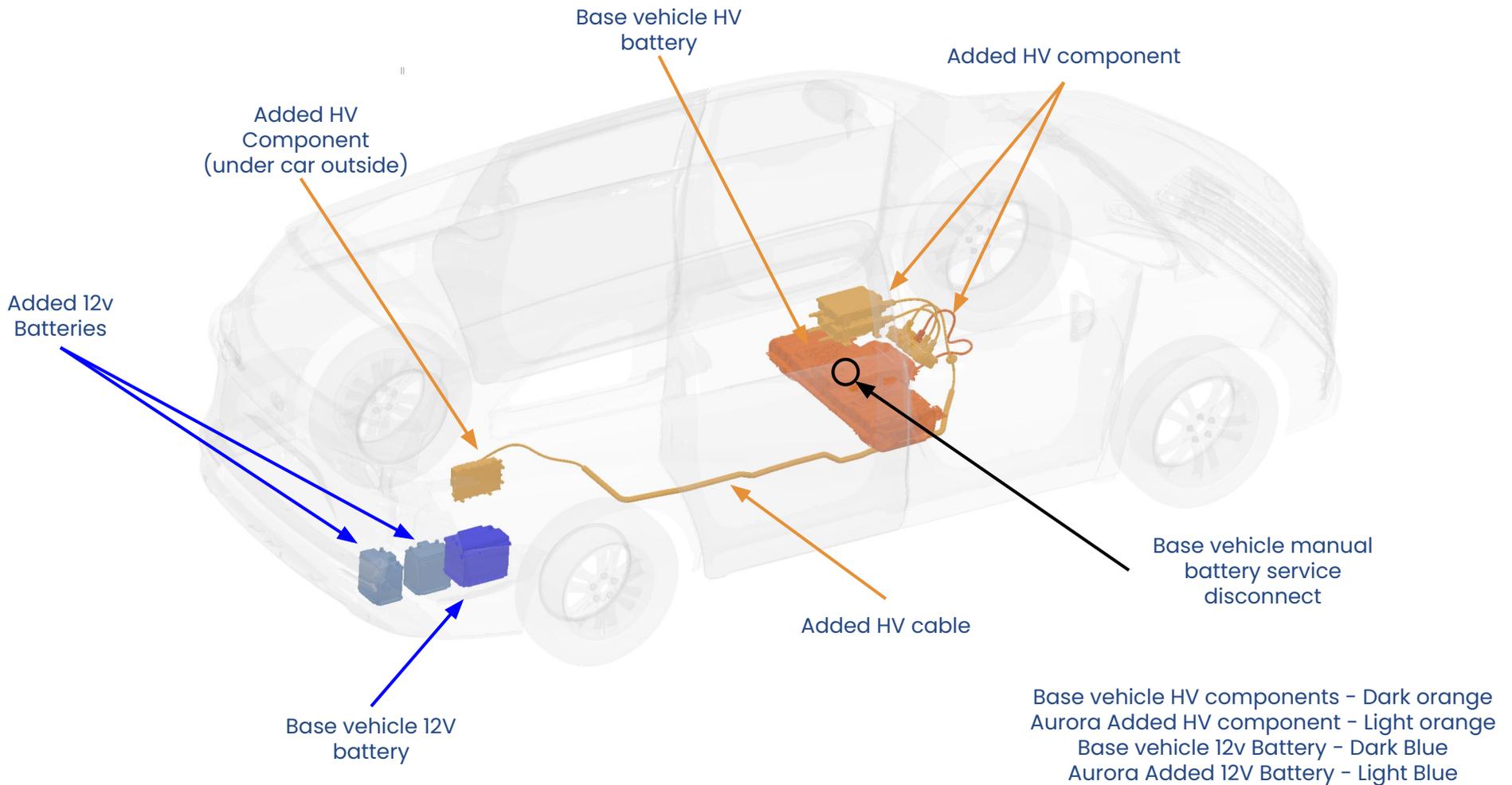
- Apply large amounts of water at the first signs of battery smoke.
- Deluge with water delivered via fire hose at the maximum possible distance. Continue until the battery pack is cool.
- For any battery thermal event, the National Fire Protection Association (NFPA) recommends self-contained breathing apparatus (SCBA) be required within 50 feet.
- Chemical extinguishers and oxygen denial are not effective in EV fires.

Firefighting and Extrication

High Voltage Components

- High voltage (HV) harnessing is colored the standard international safety orange.
- We have added components to the existing HV system; these are labeled with safety stickers.
- Disabling the 12V battery will disable HV power to the components Aurora adds to the Sienna.

High Voltage Components



Firefighting and Extrication

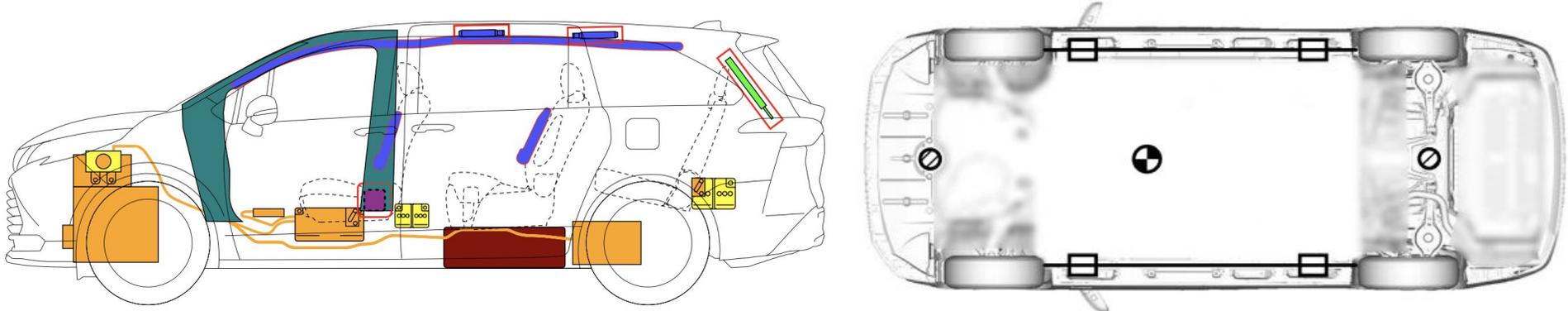
Extrication

- Avoid cutting fuel tank, fuel, or coolant lines.
- Avoid cutting or piercing high voltage devices.
- The diagram on the next page is the vehicle manufacturer's guidance.
- See the manufacturer's guidance below for recommended access points to occupants.

[Toyota Emergency Response Guide](#)

Extrication

Toyota does not provide recommended cut zones. Refer to the illustration below and the Toyota Emergency High Voltage Sheet for details about vehicle components as well as lift points.



	Airbag		Stored gas inflator		Seat belt pretensioner		SRS control unit		Pedestrian protection active system
	Automatic rollover protection system		Gas strut / Preloaded spring		High strength zone		Zone requiring special attention		
	Battery low voltage		Ultra capacitor, low voltage		Fuel tank		Gas tank		Safety valve
	High voltage battery pack		High voltage power cable / component		High voltage disconnect		Fuse box disabling high voltage system		Ultra capacitor, high voltage

- Jack Position
- Support Position
- Vehicle Center of Gravity

[Toyota Sienna High Voltage Sheet](#)

Towing Information

This section provides towing information.

Post-Incident Response

Towing

- All of our vehicles currently have two trained operators who will arrange for towing assistance.
- If our operators cannot assist, please call 1-800-815-0780.
- Flatbed tow trucks are preferred. If a flatbed isn't available, a wheel lift tow can be used.
- A list of our preferred vendors is included in the documentation binder located near the center console between the driver and passenger seats.
- Towing personnel should refer to page 7 of this guide to review the sensor locations to avoid damage if possible.

Additional Resources

This section includes links to the vehicle manufacturer's Emergency Response Guide, additional electric vehicle firefighting best practice guidance, and Aurora company resources.

Additional Resources

Vehicle Emergency Response Guide

Toyota Sienna

[Toyota Emergency Response Guide](#)

[Emergency Response Quick Reference Sheet \(QRS\): 2021-2022 Sienna HV](#)

Additional Resources

Firefighting

National Fire Protection Association
[Alternative Fuel Vehicles Safety Training](#)
[Safety Information for Electric Vehicle Fires](#)

National Highway Traffic Safety Administration
[Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped](#)
[With High-Voltage Batteries](#)

Additional Resources

Company Resources

Safety at Aurora

aurora.tech/safety

Aurora's Voluntary Safety Self-Assessment (VSSA)

[View Our VSSA](#)

Aurora