

# Extreme Heat Preparations

High temperatures can impact Amtrak operations as the extreme heat can cause rail, bridges and catenary wires to expand. As a safety measure, Amtrak sometimes imposes heat restrictions during warmer months, which requires locomotive engineers to operate trains at lower speeds than under typical operating conditions. Speed reductions are based on the rail temperature, not the ambient (air) temperature, to ensure we're only issuing heat restrictions when necessary. As always, our goal is to keep customers and employees safe and ensure our trains are moving with minimal delays.

## Who Enforces Heat Restrictions

All commuter and freight entities operating on Amtrak infrastructure are required to adhere to Amtrak guidelines. Likewise, Amtrak is required to follow speed restrictions imposed by other railroad partners who host our passenger services on their tracks.

## How Amtrak Measures Rail Temperature

Amtrak monitors rail temperatures and weather conditions along its right-of-way in the following locations:

- Northeast Corridor (between Washington – Boston)
- Keystone Corridor in Pennsylvania
- Empire line in New York
- Springfield line in Connecticut and Massachusetts
- Michigan line

By measuring the actual rail temperatures, instead of the weather conditions in the area, it is possible to reduce the number of “slow orders” and their impact on operations.

## When Amtrak Activates Heat Restrictions

The reduction of speed is based on the rail temperature, not the ambient (air) temperature.

Rail temperature 131 degrees = maximum speed 100 mph

Rail temperature 140 degrees = maximum speed 80 mph

The only exception is the Hell Gate Bridge in New York City, where ambient readings are still in use. On this section of track, when the ambient temperature reaches 105 degrees, the maximum operating speed drops to 80 mph. This is an exception because only one small area has a regular maximum operating speed of 100 mph while the rest of the line is already limited to 80 mph or under.



## Moveable Bridges

Draw bridges and other moveable bridges are affected by high temperatures and Amtrak takes steps to maintain their reliability. As temperatures increase, these structures can cause delays when they are moved for marine or other traffic.

## Smart-Technology ACS-64 Electric Locomotives

A fleet of advanced electric locomotives is in operation on the Northeast and Keystone Corridors. The state-of-the-art microprocessor system installed in these ACS-64 locomotives allow for self-diagnosis of technical issues, which helps ensure power is maintained to the passenger cars to keep heating and cooling systems working, the lights on and the doors operational.

## Catenary Wires

Amtrak trains running along the Northeast and Keystone Corridors are powered by overhead power wires called a catenary system. The system provides electrical power to trains, allowing them to move quickly across the Corridor. Dramatic swings in temperature (both hot and cold) can cause the catenary wires to expand and contract. In extreme cold or heat, the tension that supports the catenary wires increases or decreases tremendously as they contract. These large tension swings can occasionally cause components in the catenary system to fail.



The wires are electrified, so power along segments where catenary wire has been damaged must be shutdown, which can cause a service delay or suspension. Catenary wire issues are repaired by Amtrak engineering crews using a specialized maintenance vehicle nicknamed a “cat car”, which must be moved into the area in order to make repairs. In addition, we deploy forces from our Electric Traction department to patrol the wires and inspect trains for any pantograph issues to address problems before they escalate.

## Disabled Train Operating Plan

In the event of a mechanical break down and/or loss of air conditioning, Amtrak initiates an operating plan that focuses on the needs of passengers. Elements of the plan include:

### Constant Monitoring of On-Board Conditions

Amtrak conductors and senior managers will continually monitor on-board conditions, identify passengers with special needs and communicate that information to the national operations center for use in developing and revising the response plan. As appropriate, and as safety allows, conductors may open vestibule doors to facilitate air flow and may also call in the Amtrak Police Department and local emergency response crews to assist with the needs of passengers.

### Water and On-Board Communication with Passengers

Water and other beverages are stored onboard trains and Amtrak Police Department patrol vehicles are also stocked with water to bring to disabled trains. Frequent announcements will be made by train crews to provide passengers with current and accurate information.

### Rescue Equipment for Passengers

Rescue locomotives with assigned crews are positioned every 30 to 50 miles along the Northeast Corridor and mobilize immediately in the event of a disabled train. If it becomes necessary to transfer passengers to another train, no train capable of accepting additional passengers is allowed to pass the disabled train. In addition to other trains already en route, Amtrak will use trains staged and available at Washington, Philadelphia, or New York as “rescue trains.” Mechanical technicians also ride trains daily to troubleshoot problems.