



# Amtrak Acela Express

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## 1 Background

### **Amtrak Acela Express High-Speed Trainset**

Amtrak, the U. S. passenger rail carrier, holds the largest share of the commercial transportation market between New York and Washington. In the process of improving its operations on the Northeast Corridor, Located in one of the most densely populated areas in the United States, Amtrak acquired 20 new high speed (150 mph, or 240 km/h) tilting train-sets. The NEC is notorious for its many curves, especially north of New York. Between New York and Boston, the track makes the equivalent of over 11 full circle requiring a tilting train to allow higher speeds in curves without causing passenger discomfort. Some sections of track were upgraded for 150 mph operation, and the entire NEC was electrified to Boston by late 1999. Acela Express services began in December 2000 after a series of technical glitches that delayed the originally planned start of service in November 1999.

The contract to build the train-sets was announced by Amtrak on 15 March 1996 with the chosen design being put forward by a consortium led by Bombardier for a tilting high speed train, marketed as the 'American Flyer'. Bombardier owned the exclusive rights in North America to the proven TGV technology. They were later joined as part of the consortium by Alstom who manufacture the French TGV.

The units were largely built in the US, as stipulated in the contract, at Bombardier's plants in Barre, Vermont and Plattsburgh, New York with Alstom making some of the components in France. Bombardier were also contracted to maintain the vehicles for 20 years.

In 1999 controversy arose when it was reported the trains had been built 10cm (4") wider than specified. In some areas on the NEC this reduced the maximum speed under tilt due to a constraint of the clearance standards however it was claimed by Amtrak and Bombardier that this would not significantly affect schedules. Further issues occurred during track testing on the NEC with excessive wheel wear and defective bolts. These issues delayed the first scheduled services from late 1999 into December of 2000.

The Acela brand was unveiled by Amtrak on 9 March 1999. The name is intended to reflect a combination of acceleration and excellence. The brand now covers the entire range of services on the NEC and no longer limited to the Acela Express service.

The Acela Express service now cuts journey times from Boston to New York from 4 or 5 hours down to 3 and a half hours while New York to Washington from 3 hours to 2 and 3 quarter hours.

The standard consist for the Acela Express is as follows:

**Power Car + First Class + Business Class + Business Class + Cafe Car +  
Business Class + Business Class + Power Car**

## 2 Rolling Stock

The following units are provided

### 2.1 Acela Power Car



### 2.2 Acela First Class Car



### 2.3 Acela Business Class Car



### 2.4 Acela Cafe Class Car



## 3 Driving the Acela Express EMU

### 3.1 Cab Diagram



1	Engine Start/Stop Button	15	Train Status Display
2	Reverser	16	Train Status Display Power Button
3	Throttle Lever	17	Wipers Switch
4	Train Brake Lever	18	Horn Levers
5	Dynamic Brake Lever	19	Bell Control Switch
6	Emergency Brake Buttons	20	Sander Switch
7	Auto Dynamic Braking Toggle Switch	21	In-cab Signalling Display
8	Handbrake Switch	22	Tilt Isolation Switch
9	Pantograph Engage/Disengage	23	Headlight Switch
10	Pantograph Configuration Selector	24	Ground Lights Switch
11	Cruise Control Switch	25	Destination Boards Switch
12	Cruise Control/Throttle Reset Button	26	Destination Selector
13	Speed Display	27	Dashboard Light Switch
14	Speed Display Power Button	28	Coupler Cover Button

### 3.2 Driving Technique

#### Starting the Train

Move the Reverser to the Forward position and set the brake to 20% (Min) using the Brake Handle. Release the Handbrake (8). Move the Throttle Lever to notch 1, then set the Brake Handle to Release. Move the Throttle Lever to notches 2, 3, 4, 5 or 6 depending on the final speed you wish to reach.

### **Power Control**

The Throttle Lever has 6 discrete notches.

### **Stopping the Train**

Move the Throttle Lever to notch 0 and apply the train brake using the Brake Handle. Use the brake cylinder gauge (lower dials on Train Status Display) to determine the level of braking.

### **Brake Controls**

Braking is handled by the Brake Handle and a Dynamic Braking system.

The Brake Handle allows the driver actuated brake application. There are 6 levels – Release (REL), Minimum (MIN), Suppression (SUP), Full Service (FS), Neutral Handle Off (HO) and Emergency (EM). The EM position causes the brake pipe pressure to be reduced and the brakes fully applied.

Dynamic Brakes are controlled using the Dynamic Brake Handle. This system works by flipping the electric field in the motors causing them to reverse, slowing the train down, all without applying any physical force to the wheels. The value set by the lever sets the amount of power that is reversed.

Dynamic Braking can be automatically controlled by activating switch number 7 shown in the previous diagram.



## 4 Scenarios

### 4.1 Acela from Philadelphia *(Free Roam)*

Experience the speed of the Acela Express train set to explore the NEC starting from track 2 at Philadelphia 30<sup>th</sup> Street station.

- **Date** **1st April 1998**
- **Weather** **Patchy Clouds**
- **Start Location** **Philadelphia**
- **Route** **Northeast Corridor**

### 4.2 Acela from the Apple *(Free Roam)*

Take over a southbound Acela Express from Boston on the approach into New York Penn Station to explore the NEC, the only US high-speed line.

- **Date** **1st July 2011**
- **Weather** **Clear & Sunny**
- **Start Location** **New York City**
- **Route** **Northeast Corridor**

### 4.3 Acela Express *(Standard & Career)*

Drive the Acela Express from Philadelphia 30th Street to New York City.

- **Date** **10th September 2010**
- **Time** **18:29**
- **Rating** **hard**
- **Duration** **85 Minutes**
- **Weather** **Raining**
- **Start Location** **30 Street Station**
- **Route** **Northeast Corridor**

### 4.4 Business Bullet *(Standard & Career)*

Another day, another dollar. Take the morning commuters into New York, via Newark, starting at Tenton.

- **Date** **10th October 2010**
- **Time** **06:44**
- **Rating** **Easy**
- **Duration** **50 Minutes**
- **Weather** **Overcast Sunrise**
- **Start Location** **Trenton Station**
- **Route** **Northeast Corridor**

### 4.5 Silver Star *(Standard & Career)*

Drive an early service from NYC Penn Station to Trenton, Calling at Newark and Metropark on the way.

- **Date** **21st May 2011**
- **Time** **05:59**
- **Rating** **Medium**
- **Duration** **50 Minutes**
- **Weather** **Cloudy with rain**
- **Start Location** **New York City Penn Station**
- **Route** **Northeast Corridor**

#### 4.6 [ACELA] Acela Express to Washington (Career)

You start this scenario from just outside Stamford. You will be picking up passengers at Stamford, before continuing southbound for a second pick up at New York Penn Station.

- **Date** **1st October 2014**
- **Weather** **Cloudy**
- **Start Location** **Stamford**
- **Route** **New York New Haven**

#### 4.7 [ACELA] First train to Stamford (Career)

Experience the speed of the Acela Express train set to explore the NEC starting from track 2 at Philadelphia 30<sup>th</sup> Street station.

- **Date** **8th August 2014**
- **Weather** **Cloudy**
- **Start Location** **Sunny Side Yard**
- **Route** **New York New Haven**

#### 4.8 [ACELA] Express to Stamford (Career)

Experience the speed of the Acela Express train set to explore the NEC starting from track 2 at Philadelphia 30<sup>th</sup> Street station.

- **Date** **1st July 2014**
- **Weather** **Overcast**
- **Start Location** **New Haven**
- **Route** **New York New Haven**

## 5 Using the Acela Express in Custom Scenarios

Before you are able to use the Amtrak Acela Express in your own scenarios you must enable it in the object set filters for that scenario.



When you make your own scenarios, or edit existing ones, only the default object sets are enabled for that route (for example the Kuju/RailSimulator assets for European routes and Kuju/RailSimulatorUS for North American routes). To enable additional object sets (which could be for any downloaded or freeware content) ready for use they must be checked in the object set filter list in the editors.

When editing the scenario you wish to add the Acela Express to, ensure you are in the **Scenario Editor** and click the small blue square on



the middle left panel.

This opens a new panel on the right hand side of the screen (you may need to move your mouse over to the right hand side for the panel to fly out. You can pin it open if you wish).

This new panel has a drop down list of providers (usually the company name which produced the add-on) and a list of all products by that provider.

The AcelaPack01 pack is produced by Railsimulator.com so RSC needs to be selected as the provider. The rest of the panel is then populated by all other RSC products you have purchased.

