

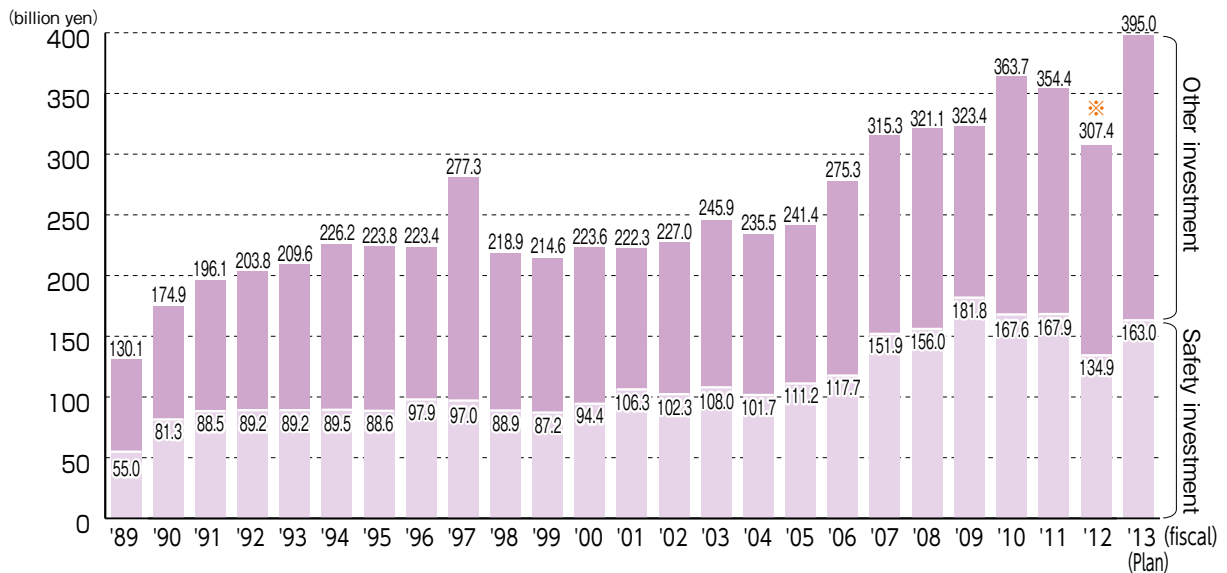
Improvement of safety equipment

Investment in safety equipment for “extreme safety levels”

To achieve a more assured level of safety in railway operations, weak points in the current systems must be identified and reviewed from a safety standpoint. Furthermore, safety equipment must undergo intensive and effective assessments in order to prevent the occurrence of accidents in the future. JR East analyses and evaluates all potential areas of risk and takes appropriate measures to ensure that these risks do not become reality, placing priority on facility investments in order to avert any major damage in the case of a major earthquake in the Tokyo metropolitan area.

Regarding our improvements to safety equipment, and based on our four previous 5-year Safety Plans leading up to FY2009, JR East has invested more than 2.2 trillion yen for the 20 years since the company’s establishment. In our 2013 Safety Vision, JR East’s 5th 5-year Safety Plan which began in FY2010, JR East plans to invest approximately 750 billion yen on safety measures during the five years from April 2009 to March 2014, and our cumulative safety investment amounted to approximately 2.7 trillion yen by the end of FY2012.

■ Trends in safety investment



* Due to the effects of the Great East Japan Earthquake, there was a decrease in the FY2012 safety investment.

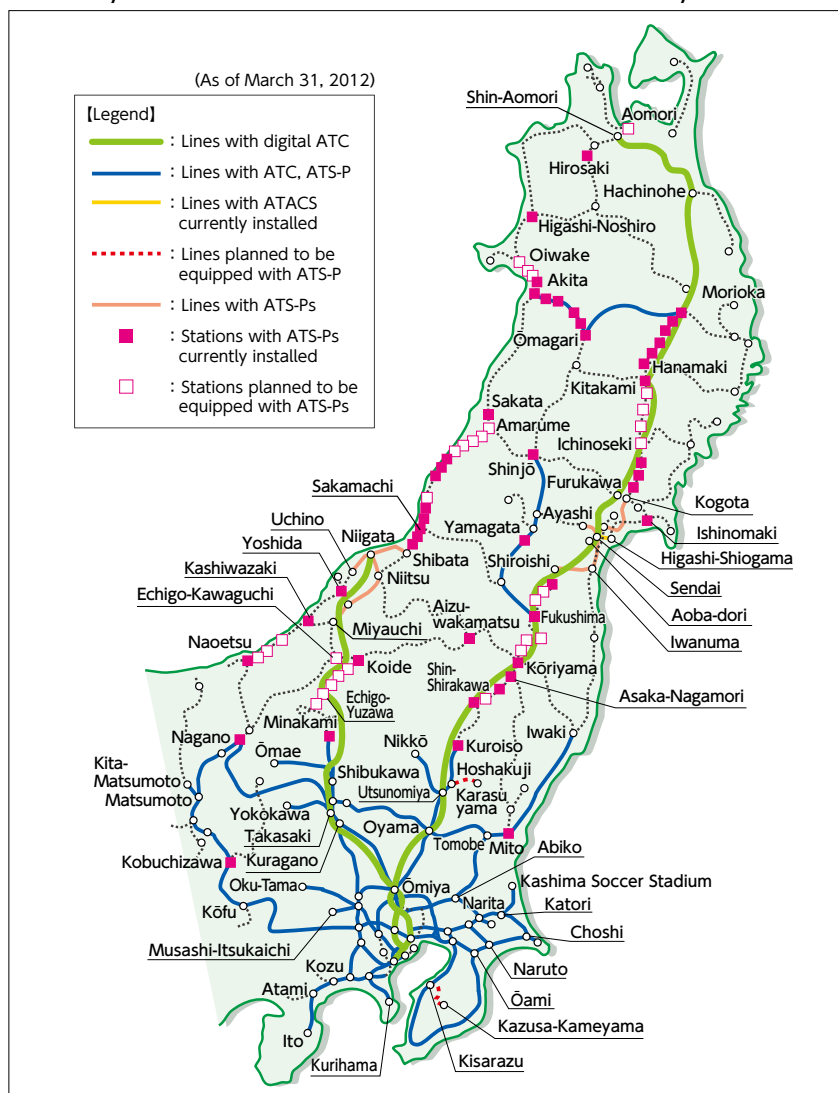
Installing safety equipment

To prevent collisions between trains, JR East has installed ATS (automatic train stop) and ATC (automatic train control) systems on all of its railway lines.

To heighten the current safety level of train operations even further, we are installing ATS-P and ATS-Ps systems, which employ continuous speed monitoring functions. The number of installations is steadily increasing; most are in the Tokyo metropolitan area. By the end of March 2012, the ATS-P system had been installed on 2,353.5km of railway line. The ATS-Ps system is currently installed on 210.5km of line in the Sendai and Niigata regions and at 47 stations. Additionally, JR East replaced the ATS-Ps for the section of the Senseki Line between Aoba-dori and Higashi-Shiogama with its Advanced Train Administration and Communications System (ATACS), a radio-controlled train operation control system, in October of 2011.

In response to revisions to the Ministry Ordinance for technological standards for railways in July 2006, we are working on measures to prevent excessive train speeds at curves, turnouts, and terminals, and on descending grades. Planned improvements at all curves that had been targeted for action were completed by the end of March 2010.

■ Railway lines and stations with ATC, ATS-P and ATS-Ps systems



■ Measures to prevent excessive train speeds

	Target locations	Installations as of the end of March 2012	Planned completion
Curves	1,468 locations	1,468 locations	March 2010 (completed)
Turnouts	816 stations	721 stations	March 2016
Line terminals	63 stations	61 stations	March 2016
Descending grades	1,528 locations	872 locations	March 2016

* Including locations where improvements were made prior to July 2006

Systemization of maintenance work

When starting maintenance work on railway tracks, JR East works to ensure the safety of its trains and maintenance workers by following procedures to set signals to stop, so that trains do not enter sections of railway where maintenance work is being conducted. In the past, this was done mainly via telephone from maintenance workers to stations. However, in order to prevent any occurrence of error, including human error, JR East adopted a method for maintenance workers to operate handheld devices to change signals to red, and the devices have since been introduced to major railway sections in the Tokyo metropolitan area. In the future, JR East aims to continue its efforts to improve the safety of its operations through the systemization of its maintenance work in other railway sections as well.



Track closure procedure by a handheld device for maintenance work



The operation center terminal for the confirmation of maintenance work

Introduction of the Advanced Train Administration and Communications System (ATACS): train control system with radio transmission

ATACS is a train control system utilizing radio transmissions. By using radio communications for the transmission of information between ground and on-board facilities, the system enables the trains to be mainly controlled by on-board equipment, permitting reductions in traditionally required facilities such as signals, connecting cables, and track circuits, which are currently used for the detection of trains. Eliminating these facilities is expected to reduce the number of facility failures and the number of subsequent transport disruptions.

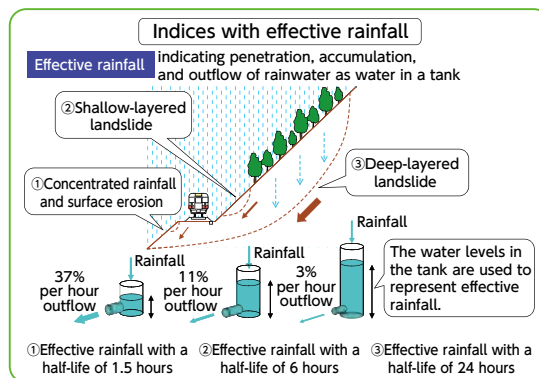
JR East began using the ATACS system in October 2011 on the Senseki Line between Aoba-dori and Higashi-Shiogama.

Introduction of effective rainfall as a new indicator

When there is heavy rainfall, we ensure train safety through operational restrictions such as limits to train speed and, when necessary, by suspension of operations. For operational restrictions on conventional lines, we have been using hourly rainfall*1 and continuous precipitation*2 as our indices. Since June 2008, we have been using “effective rainfall” as a new indicator that is effective in prevention of landslide disasters due to rainfall. Effective rainfall is the amount of underground water remaining after changes over time in ground penetration and outflow. Using this indicator, we can more precisely predict the occurrence of landslide disasters, improving the safety and reliability of our train operations.

*1: Hourly rainfall: the total rainfall over a one-hour period

*2: Continuous precipitation: the total continuous rainfall over a 12-hour period



Effective rainfall indices

Measures to prevent railway crossing accidents

When the company was established in 1987, there were 247 accidents during the year at level crossings. In the fiscal year ending March 2012, the number had been drastically reduced to 36. Approximately 60% of all level-crossing accidents involve automobiles. We have installed devices such as obstacle detectors, which are capable of detecting an obstacle such as an automobile stalled on a crossing and stopping trains, and we have increased the number of crossing warning devices in a higher position for better visibility. More large red and white crossing gates have been installed; the barrier arms are thicker than usual and have red and white reflective plates that cover the whole bar. These are expected to provide better visibility day and night. Studies are currently being carried out on the effectiveness of these bars. In addition, we are presently promoting a wide range of public relations activities for the prevention of level crossing accidents, appealing to drivers for their cooperation and understanding.

In addition, for countermeasures against secondary accidents resulting from derailments at level crossings, derailment prevention guards have been installed at level crossings. Furthermore, in order to decrease the number of level crossings, we are cooperating with local governments, neighboring residents, and the police to increase the number of overhead crossings.

As examples of our most recent efforts, in 2005 JR East began working to improve safety at the Sojiji Temple level crossing on the Tokaido Line near Tsurumi Station, where there had been more troubles than at other level crossings in the Tokyo area, because it is on a curve with restricted visibility. The overhead pedestrian crossing was rebuilt to be barrier-free and in FY2011 the level crossing was closed during rush hours. Closed hours were extended to between 6:00 and 21:00 in FY2012, and, as a result of our agreements with concerned parties, from April 1, 2012, this level crossing has been closed to road traffic at all times.

Learning lessons from an accident at a level crossing on the Iiyama Line between Morimiyanojohara and Ashidaki on February 1, 2011, JR East has introduced a rule to stop trains at stations when the warning signals at a the level crossing are being activated due to causes such as equipment failures, and when pedestrians and automobiles are allowed to cross at the level crossing, to ensure that train operations do not endanger pedestrians or automobiles. JR East also formulated a procedure for field staff to prevent failures in safety confirmation.



Now-closed Sojiji Temple level crossing on the Tokaido Line

Station platform safety

In the fiscal year ending March 2012, there were 75 accidents in which customers fell from platforms onto tracks or came into contact with trains. JR East is installing protection-related devices, including emergency train-stop systems, on our platforms to ensure customer safety. Customer awareness and cooperation are also vital to safety on our platforms, and we are implementing our “Zero Platform Accident Campaign” through posters, as a measure to heighten this awareness.

As a major measure to prevent accidents to customers on platforms, JR East is introducing automatic platform gates on the Yamanote Line. In FY2012, JR East completed its replacement of all Yamanote Line railcars by E231 Series 4-door railcars. All locations at Ebisu and Meguro Stations, where the platform gates were initially introduced, are now equipped with these gates. And, based on experience at these initial two stations, JR East has been working on platform gate installation at other Yamanote Line stations since FY2011. In FY2013, we plan to install these gates at Osaki and Ikebukuro Stations, and, in FY2014, at Otsuka, Sugamo, Komagome, Shin-Okubo, Mejiro, Takadanobaba, and Tamachi Stations. With the exception of four stations, Shimbashi, Shibuya, Shinjuku and Tokyo, which require large-scale improvement work, we plan to complete installations at all stations on the line by FY2018.

For stations with a daily number of passengers exceeding 100,000, JR East is currently working to install an increased number of dot-Braille blocks that indicate which direction is away from the edge of the platform.



Automatic platform gates on the Yamanote Line