



<https://www.its-tea.or.jp/english/>
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Heading into the Future



ITS Technology Enhancement Association

Realizing optimal highway use by promoting the utilization of ETC and ETC 2.0.

ITS Technology Enhancement Association (ITS-TEA) helps with security aspects of the development of Intelligent transport system services (ITS services). We make use of the security technologies, systems and practical uses that were developed for ETC and ETC 2.0, contributing to the creation and development of new ITS services.

ITS-TEA Business Areas

We carry out the following work to ensure that ETC and ETC 2.0 can be used safely and securely.

1 To ensure that ETC and ETC 2.0 may be used safely and securely

Manage and disclose security standards

We manage security standards which describe common rules for the security processing of the ETC cards, onboard units and roadside equipment that make up the system, and we disclose those standards to relevant parties which have concluded a confidentiality agreement.

Issue encrypted data

■ ETC key data

We generate and provide key data for security processing such as mutual authentication, data verification and encryption in the systems for ETC cards, onboard units and roadside equipment.

■ ITS Connect key issuance system

We generate and provide key data to ensure the security of the ITS Connect service, which supports the safe and secure operation of vehicle-to-infrastructure and vehicle-to-vehicle communications.

■ ETC setup data

We provide the setup data required to activate onboard ETC units.

2 Promote the widespread utilization of ETC and ETC 2.0

■ Create and supervise a network of setup shops

We have a nationwide network of setup shops that handle the entire process from purchase to setup of onboard units, enabling smooth use of ETC and ETC 2.0.

■ Handle ETC and ETC 2.0 related PR and inquiries

We handle inquiries from users, and work hard to disseminate information about the convenience of ETC and ETC 2.0, and how they are used.

3 Enhance and standardize ETC and ETC 2.0 technologies

■ Manage and administer interoperability tests for ETC and ETC 2.0

We work together with related companies and organizations to manage and operate efficient interconnection tests.

■ Enhance and standardize security technologies and operations

We carry out surveys and research to enhance security technologies and operations, and also participate in standardization initiatives.

■ Carry out surveys, research and development on services that utilize ETC and ETC 2.0

We contribute to the creation of mechanisms that allow the private sector to use ETC security for multiple purposes.

4 Respond to new ITS services

New ITS services are being developed and rolled out with the release of systems such as safe driving support and autonomous driving systems. We will leverage our experience as a security platform operator to contribute to social progress.

The operational structure that supports ETC and ETC 2.0

We partner with toll road operators and ETC and ETC 2.0 related businesses to create an environment where users can utilize safe, secure and convenient services.



The figures are accurate as of March 2023

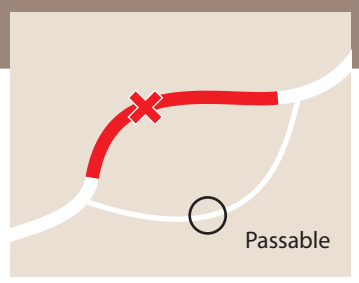
Making roads safer and more pleasant with ETC 2.0

ETC 2.0 is a more advanced form of ETC. It not only enables the smooth payment of expressway tolls via its toll collection system, but also helps to make driving safer and more pleasant through various features. ETC 2.0 provides traffic congestion data via its VICS (Vehicle Information and Communication System), displays evacuation routes in the event of a natural disaster, and issues warnings about fallen objects. In addition, probe data* is used in highway policies such as strategies to deal with natural disasters and road safety measures, thereby helping to build a better future for Japan.

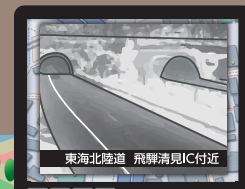
* Probe data is travel and behavior history information recorded in the onboard unit.

Provision of maps showing traversable routes

In the event of an emergency, traffic data is utilized to create maps of roads that can be used. These are shared with relevant organizations to save lives and transport goods immediately after a disaster, as well as for subsequent recovery activities.



Road condition information



Driving alerts (tail ends of traffic jams)



Special ETC 2.0 toll discounts

ETC tolls are set with the aim of distributing traffic flow.



Extensive road information



SA/PA parking space information

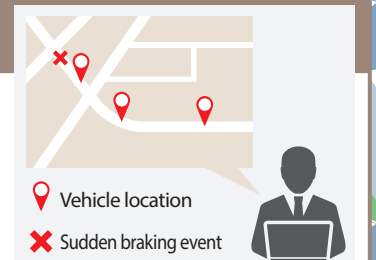


Enabling vehicles to temporarily exit the expressway

This service enables drivers to temporarily exit the expressway to use rest facilities such as roadside stations.

Visualized management of vehicle operations

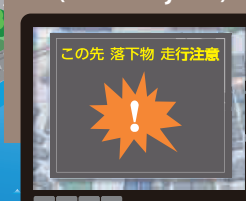
We are carrying out real-world testing that provides business operators with probe data on events such as sudden braking and sudden steering corrections. This is used for purposes such as management of vehicle operations and safety measures for drivers.



Support for the approval system for the use of Oversized/Overweight vehicles on roads

We simplify the procedures to renew permits for the use of oversized/overweight vehicles on roads, and manage the routes they may travel.

Driving alerts (fallen objects)



ETC 2.0

Next-generation ITS services support a better future for people, cars and roads.

The popularization and implementation of ITS services has been promoted in Japan for a quarter of a century. Our efforts to popularize systems that enrich people's lives and benefit society include the development of ETC and the upgrading of car navigation systems. ITS services will continue to evolve and will contribute to resolving future social challenges through measures such as supporting autonomous driving technologies and realizing sustainable mobility.

STAGE 1

Promotion of the practical implementation of ITS services, provision of infrastructure

1995

Development and provision of UTMS (Universal Traffic Management Systems)

1995

Promotion of ARTS (Advanced Road Transportation System)

1996

Overall vision regarding the promotion of ITS (nine themes)

The development and practical implementation of this overall vision became a national project in 1996 through collaborations between industry, government, academia, and the private sector.



1996

Provision of VICS data launched



2001

ETC commenced operation



1995

STAGE 2

Establishment of guidelines and promotion for the popularization of ITS services

2004

Guidelines for the promotion of ITS

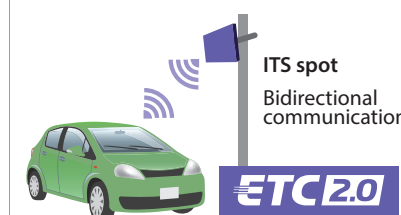
The fundamental principles of Japan's guidelines for the promotion of ITS are "safety and security," "the environment and efficiency," and "comfort and convenience." These were decided at Japan's ITS Info-communications Forum.

- 1. Create a safe and secure society**
- Fewer traffic accidents
- 2. Create an environmentally friendly and efficient society**
- Decreased environmental loads
- Reduced losses due to traffic congestion
- 3. Create a comfortable, convenient society**
- Less travel-related stress
- Revitalized local communities

2004

2014

ETC 2.0 commenced operation



2015

ITS Overall Strategy 2015 established
VICS WIDE service launched
ITS connect service launched

STAGE 3

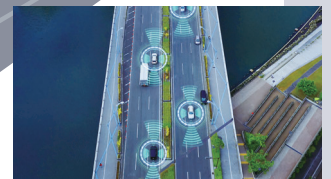
Next-generation ITS services offer solutions for social challenges

2025 onwards

ADAS* become more widespread and sophisticated

* Advanced driver-assistance systems

2030



Level 4 autonomous driving becomes more widespread

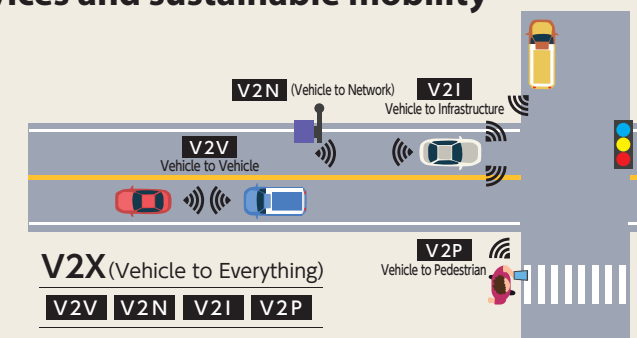
Sustainable mobility is achieved

Provision of next-generation ITS services for an era of autonomous driving

ITS Services Long-term Vision 2030: Aiming for next-generation ITS services and sustainable mobility

Contributing to secure V2X communications that support autonomous driving technologies

ITS-TEA has provided security platforms for purposes such as the issue of ETC key data and setup data. We support the promotion of next-generation ITS and aim to provide security platforms for the vehicle-to-infrastructure (V2I), vehicle-to-vehicle (V2V) and vehicle-to-everything (V2X) communications that underpin autonomous driving technologies.



SDGs and ETC 2.0

ETC 2.0 and next-generation systems are responsible for work such as the smooth collection of tolls and the gathering of road information. They contribute to efficient energy usage, infrastructure development, industrial development, and the creation of comfortable travel conditions. We aim to expand next-generation ITS services to include areas covered by these nine SDG themes.



Overview

In September 1999, the Organization for Road System Enhancement (ORSE) (the predecessor of ITS-TEA) was established primarily to provide information security standards related to the ETC system and issue encrypted data for it.

As ETC became widespread, ORSE developed as the organization responsible for the security platform for social infrastructure that is indispensable for road traffic.

In September 2014, ORSE merged with the ITS Service Promotion Association (ISPA), thereby also becoming responsible for the provision of information security standards related to the DSRC (ETC 2.0) system and the issue of encrypted data for it. With the merger, its name was changed to the ITS Technology Enhancement Association (ITS-TEA).

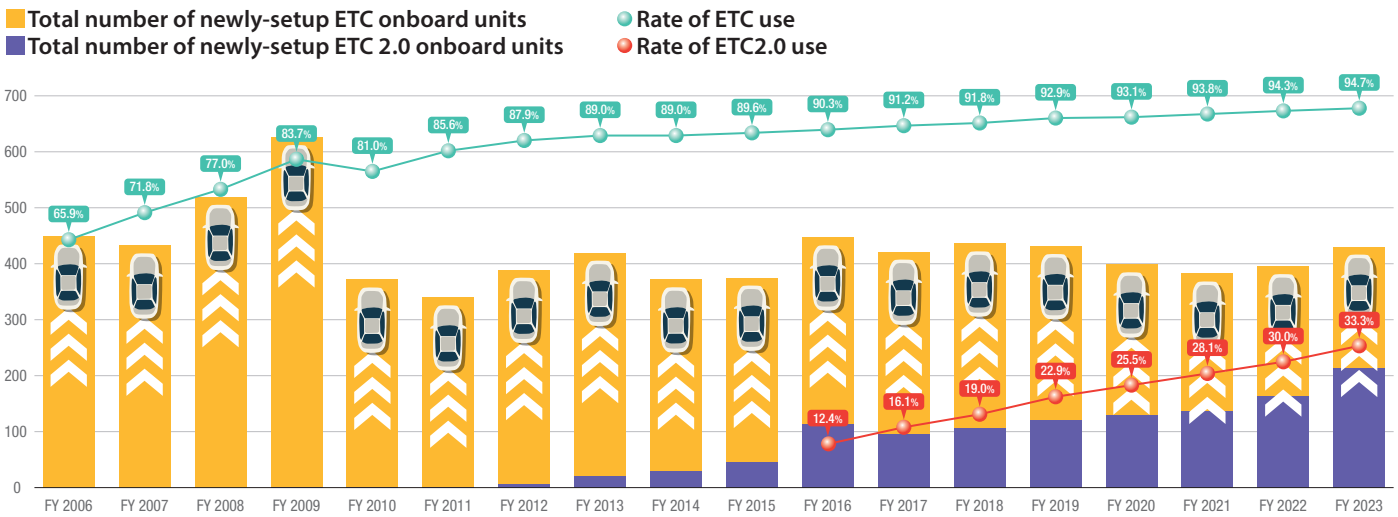
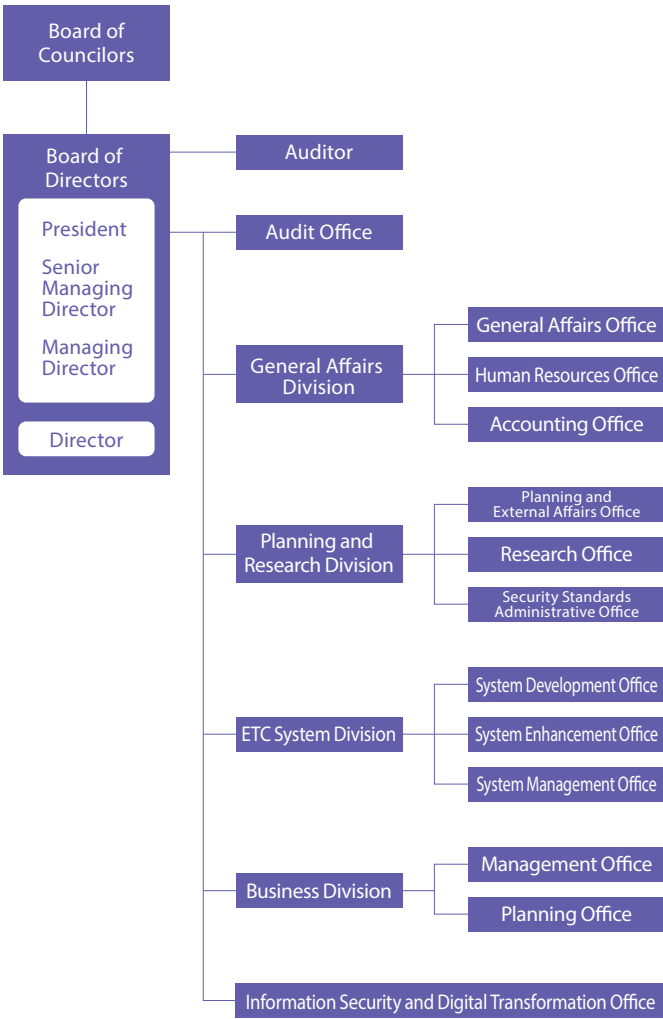
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Milestones

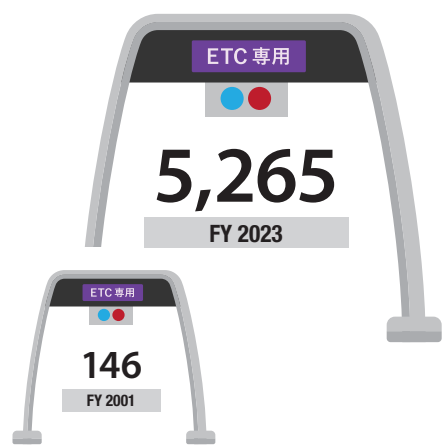
- Mar. 2001 ETC service launched in some regions
- Jul. 2001 Service expanded to three largest cities (Tokyo area, Nagoya area, Osaka area)
- Nov. 2001 Service expanded nationwide
- Jun. 2003 Total ETC onboard unit installations exceed 1 million
- Jan. 2005 Total ETC onboard unit installations exceed 5 million
- Dec. 2005 Total ETC onboard unit installations exceed 10 million
- Sep. 2014 Merger of ORSE and the ITS Service Promotion Association (ISPA). Name changed to the ITS Technology Enhancement Association (ITS-TEA)
- Jul. 2015 Installation of ETC 2.0 onboard units launched
- Sep. 2020 Total ETC onboard unit installations exceed 100 million
- May 2024 Total ETC onboard unit installations exceed 122 million

(The above totals for ETC onboard unit installations are the cumulative totals of new installations and reinstallations of ETC onboard units and ETC 2.0 onboard units.)

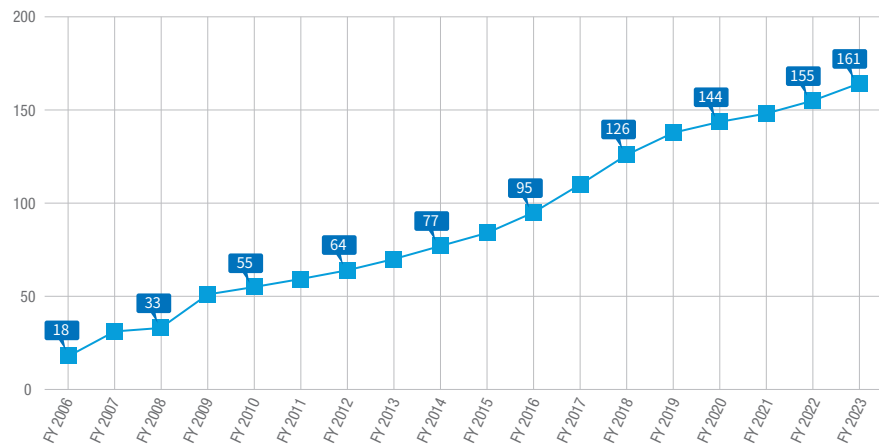
Organization



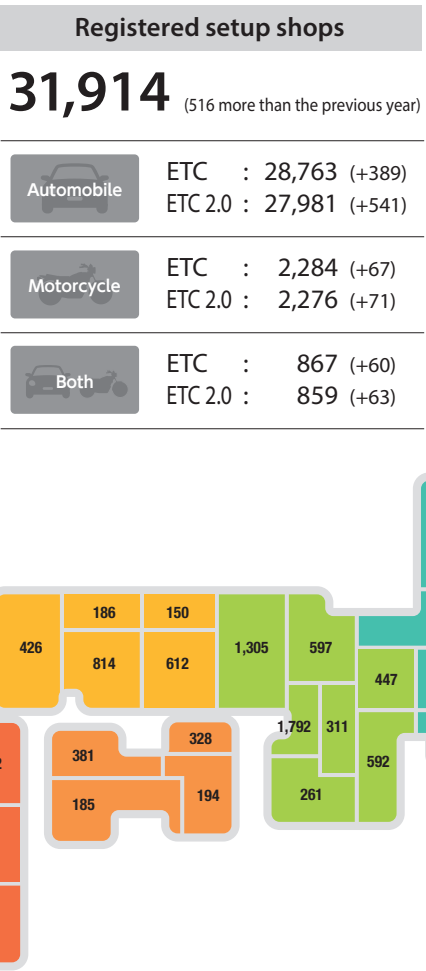
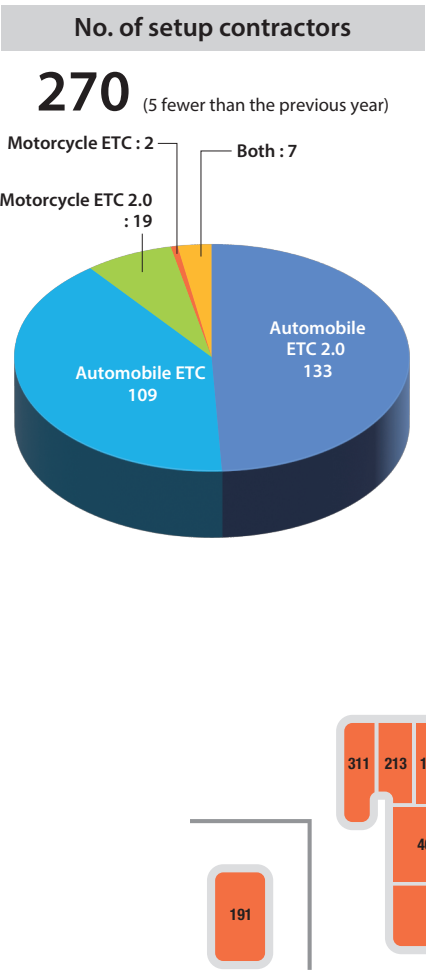
No. of ETC lanes



Development of smart interchanges (No. in operation)



No. of setup contractors/registered shops (As of March 31, 2024)



Shops handling ETC 2.0

31,116 (675 more than the previous year)

The Main Effects of Installing ETC

Improved convenience, comfort, and traffic efficiency

The time it takes to pass through tollgates has been shortened by eliminating the complexity of cash payments and contact with toll collectors. The realization of a cashless system has greatly improved convenience and comfort. Reduced congestion around tollgates leads to traffic efficiency.

Lower environmental impact

Reducing and resolving tollgate traffic congestion and facilitating traffic flow makes it possible to reduce emissions (CO2, etc.) from vehicles and save fuel. This benefits the environment around tollgates and also reduces their environmental impact.

Cost reduction and new services

Toll collection costs less than the conventional method of collecting tolls in cash. The integrated ETC system is expected to lead to the appearance of new services etc. based on information related to onboard devices and EC cards.