LIGHTLINE
Haga Utsunomiya LRT

HAGA - UTSUNOMIYA LRT
(LIGHTLINE)

INTRODUCTION

Challenge from Scratch

On August 26, 2023, the Haga-Utsunomiya LRT(Light Rail Transit), also known as Lightline, was inaugurated.
In Utsunomiya City, we have been working ahead of the rest of the country to develop a "Network-based Compact City(NCC)" as a future urban structure to respond appropriately to significant changes in the social environment, such as population decline, low birthrates, a super-aging society, and the transition to a decarbonized society.

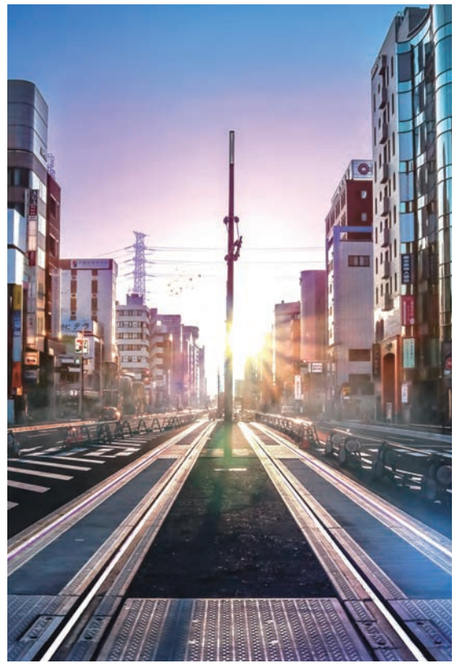
The Lightline, along with railways, buses, and community transportation, forms a hierarchical network where public transportation is conveniently connected, serving as the backbone of sustainable city development by linking hubs that consolidate residential, medical, welfare, commercial, and other facilities necessary for daily life.

The newly established Lightline in this region is the first full-scale LRT in Japan, newly built from scratch, with Utsunomiya City taking the lead. The project began from zero, involving the selection of routes, demand forecasting, and overall project planning. Based on a single concept, the design of vehicles, stops, transit centers, and more were unified using a "Total Design" approach, accumulating a variety of histories over about 20 years.

It was a challenge from scratch in a region without a tramway culture. Still, thanks to the immense support and cooperation of many people, including the national and prefectural governments, residents and businesses along the line, public transportation operators, and academic experts, we were able to open successfully.

Moving forward, we will make full use of the Lightline and maximize its effectiveness to realize a city that can sustain itself for the next 50 to 100 years. We aim to make Lightline a model for solving urban problems faced by municipalities nationwide. We also see it as our mission to convey the journey and achievements of this project to as many people as possible.

We hope that through this pamphlet, you can feel the passion we have entrusted to Lightline and that it will help you gain a deeper understanding of this project.



※ LRT stands for Light Rail Transit, a next-generation transportation system with excellent features, such as connectivity with various types of transportation, the use of low-floor vehicles(LRV), and ease of boarding and alighting due to the improvement of tracks and stops. The Haga-Utsunomiya LRT laid in Utsunomiya City and Haga Town is Japan's first fully newly established LRT line.

CONTENTS

HISTORY OF LIGHTLINE INTRODUCTION

1992 (Heisei 4)
October - November: The "2nd Utsunomiya Urban Area Person Trip Survey" was conducted
→Understanding the traffic situation in the eastern region

1993 (Heisei 5)
April: he "New Transportation System Study Group" was established
→Began examining the introduction of a new transportation system

1996 (Heisei 8)
April: The "Utsunomiya Urban Area Urban Transportation Master Plan" was formulated
→Proposed the need for a new public transportation system

1997 (Heisei 9)
April: The "New Transportation System Study Committee" was established
→Exploring the feasibility of introducing a new transportation system to the eastern region

2000 (Heisei 12)
The "Basic Policy for the Introduction of a New Transportation System" was formulated
→Started examining the introduction of LRT as a core option

2003 (Heisei 15)
March: In the "Survey for Formulating a Basic Plan for the Introduction of a New Transportation System (Prefecture/City)," the basic concept and issues of LRT as a new core public transportation system integrated with urban development and comprehensive transportation measures were summarized

2004 (Heisei 16)
August～: Promoted interactive efforts, including holding open houses at commercial facilities

2005 (Heisei 17)
March: Compiled a comprehensive transportation town planning and project management approach centered on the LRT in the "Study of Issues to be Addressed in the Introduction of a New Transportation System (City)" .

2006 (Heisei 18)
April: Utsunomiya City establishes "LRT Introduction Promotion Office" and strengthens the promotion system

2007 (Heisei 19)
October: The "Act on Revitalization and Regeneration of Local Public Transportation" was enacted
→Stabilizing operations through the public-sector track separation method in railway projects

2008 (Heisei 20)
March: The "5th Utsunomiya City Comprehensive Plan" positioned the "Network-based Compact City(NCC)" as the desired future city image
The "LRT Introduction Promotion Office" was newly established in Utsunomiya City to strengthen the promotion system

2009 (Heisei 21)
September: The "Utsunomiya Urban Transportation Strategy" positioned a hierarchical public transportation network(Fishbone Network) strengthen the promotion system

2010 (Heisei 22)
April: The "2nd Utsunomiya City Master Plan for Urban Planning" positioned the East-West core public transportation(LRT, etc.)

2011 (Heisei 23)
August～: Enhanced efforts to build momentum, including distributing LRT pamphlets to all households, actively holding citizen forums and open houses, and more

2013 (Heisei 25)
March: The "Basic Policy for Realizing East-West Core Public Transportation" was formulated
→Announced that the LRT would be developed with priority in the eastern area of JR Utsunomiya Station
October: A request for LRT development was submitted by Haga Town
Held regional briefings for all 39 district federations in Utsunomiya City
Held open houses
Nov.21st: Established the Haga-Utsunomiya Core Public Transportation Study Committee

2014 (Heisei 26)
Feb.21st: Symposium in collaboration with civic groups on "Urban Development and LRT" held
Nov.18th: Held briefing sessions on the LRT project in the areas along the line

2015 (Heisei 27)
Jul.28th: Decided on the "Policy for Securing Operating Entities"
→Decided to establish a "new company through public-private partnership" as the operating entity for the LRT project
Nov. 9th: Established "Utsunomiya Light Rail Co., Ltd."
Nov.25th: Formulated the "Haga-Utsunomiya Eastern Region Public Transportation Network Formation Plan"

2016 (Heisei 28)
Jan.22nd: Formulated and applied for the "Implementation Plan for Advanced Track Transportation"
→Applied for the railway business license
May.31st: Urban planning decision regarding the LRT project
Sep.26th: Approval of the "Implementation Plan for Advanced Track Transportation"
→Obtained the railway business license
Oct.24th: Determined the design concept in Total Design
→ "Bringing Thunder City to the Future"
～ Creating a Mobility City

2017 (Heisei 29)
Aug.9th: Applied for "Construction Execution Approval"
29th: Opened the Utsunomiya Open Square, a city for future transportation
Sep.2nd: Hosted a citizens' rally by the Executive Committee for "Citizens' Rally Aiming for Early LRT Construction"
Nov.30th: First LRT tour to Toyama City

2018 (Heisei 30)
Mar.20th: Obtained "Construction Execution Approval"
22th: Obtained "Urban Planning Project Approval"
May.28th: Held groundbreaking ceremony
Jun.4th: Started construction
Jul.10th: Vehicle design determined based on a survey
Nov.1st: Started construction work on Kinugawa Bridge
30th: Applied for "Vehicle Design Approval"

2019 (Heisei 31)
Mar.29th: Obtained "Vehicle Design Approval"

2020 (Reiwa 2)
Feb.1st: Held construction site tour
Jul.21st: Decided on the symbol mark
Sep.1st: Started rail laying work

2021 (Reiwa 3)
Jan.25th: Reviewed approximate project costs and revised the planned opening (March 2022 → March 2023)
Apr.23rd: Decided on the vehicle's nickname as "Lightline" based on a survey
Decided on the names of stops based on a survey
May.27th: Delivered the Lightline to the vehicle base from Niigata Prefecture
31st: Held unveiling ceremony for the Haga-Utsunomiya LRT vehicle "Lightline"
Jun.26th: Held Lightline tour at the vehicle base
Jul.27th: Completed Kinugawa Bridge

2022 (Reiwa 4)
Aug.17th: Revised the planned opening (March 2023 → August 2023)
Oct.31st: Decided on individualized designs for stop walls
Nov.17th: Started test runs on the "Utsunomiya Station East Exit - Hiraishi" section
18th: Derailment during a test run
26th: Held an on-site Lightline tour

2023 (Reiwa 5)
Feb.21st: Decided on naming rights for the secondary names of stops
Mar.1st: Started test runs on the "Hiraishi - Green Stadium Front" section
27th: Completed construction of all sections
Apr.27th: Started test runs on the "Green Stadium Front - Haga-Takanezawa Industrial Park" section
29th: Held riding classes
Jun.2nd: Announced opening date
5th: Started proficiency driving across all lines
Jul.29th: Held Lightline Rail Walk
Aug.26th: Held opening ceremony and inauguration

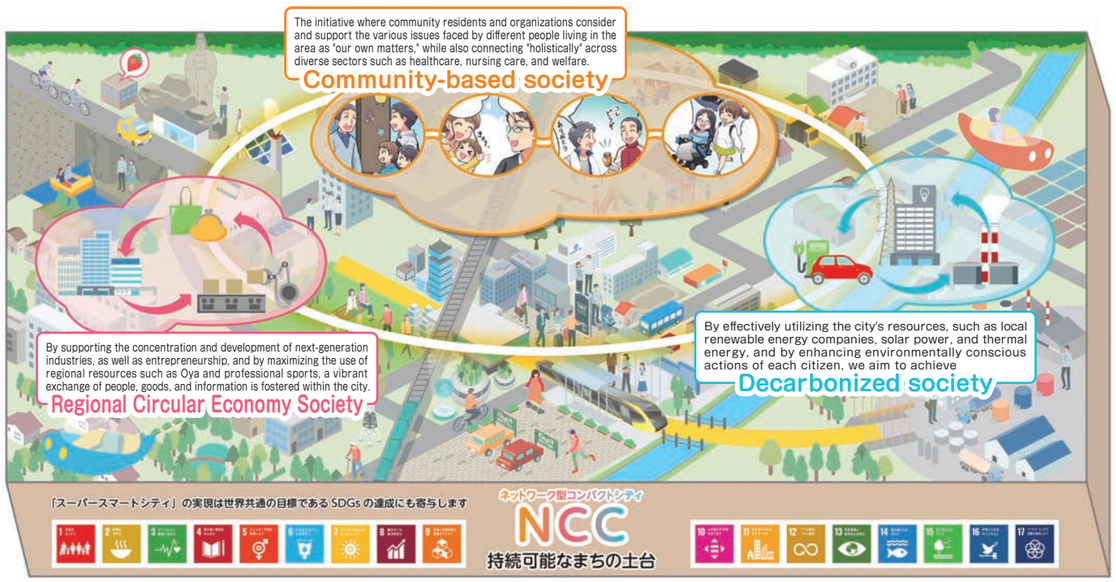
1 The Vision for Our City

City Development in Utsunomiya City

A foundation for a city that can continue to develop sustainably for the next 100 years: Network-based Compact City (NCC)

Even amidst significant changes in the social environment, such as population decline and the progression of a super-aging society, Utsunomiya City envisions itself as a "Super Smart City" where "everyone, from children to the elderly, can live conveniently and safely, with dreams and hopes fulfilled.
The foundation of this city development is the "NCC." NCC stands for "Network-based Compact City," a sustainable urban model that consolidates city functions not only in the city center but also at various regional, industrial, and t ourism hubs("Hub Formation")and connects these hubs with a highly convenient public transportation network, such as Lightline and buses("Networking").

Image of the Super Smart City



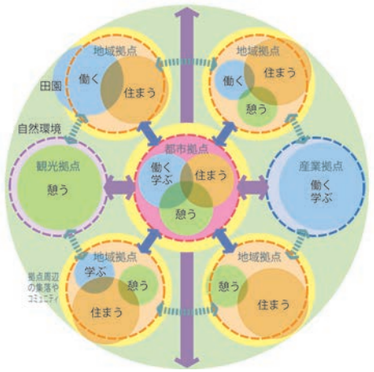
Concept Diagram of NCC

Living

In the face of future population decline, it will be necessary to form a city that consolidates urban functions supporting citizens' living and daily life around key hubs and their surroundings.
In doing so, it is essential to focus on not just the city center but also to consolidate functions into regional hubs based on the city' s formation and to maintain and strengthen existing communities.

Relaxing

To improve citizens' quality of life, it is crucial to ensure environments and recreational spaces where they can enjoy fulfilling leisure time. Additionally, it is necessary to enhance the city's brand value to offer high-quality relaxation to both citizens and visitors from outside the city.



Working and Learning

To promote the sustainable growth of the city's economy, it is necessary to create hubs that accumulate industries and businesses capable of generating high productivity, added value, and competitiveness. It is also essential to maintain and strengthen agriculture, which is one of the city's strengths, and to establish environments that foster "people development" rich in spirit and full of charm, which will serve as the driving force of various urban developments.

Transportation

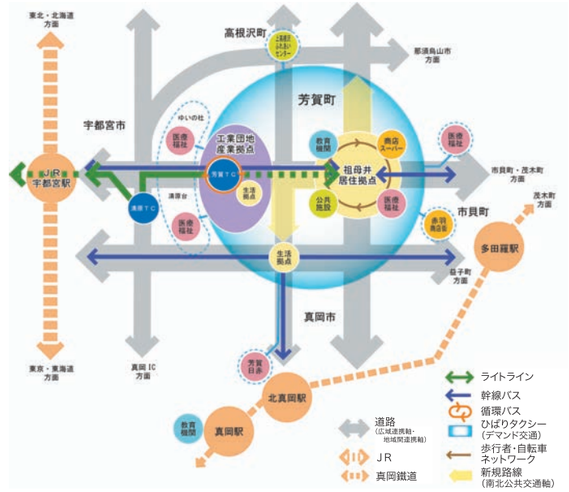
To form a city that addresses the challenges of a super-aging society and global environmental issues, it is important to create an urban environment that does not excessively rely on cars, allowing everyone to move freely. Strengthening the public transportation network, improving transportation nodes, and enhancing the usage environment are necessary. Moreover, to promote active industrial activities and increase the number of visitors, it is essential to establish a smooth road network.

Urban Development in Haga Town

Compact Urban Development with Two Hubs

In Haga Town, even amidst population decline and the progression of a super-aging society, the town aims to maintain urban functions and population density in the city center, and promote a city where everyone can live comfortably. The town's urban development goals are "Continued Development of a Compact City" and "Strengthening the Network." The town aims to continue the development of a compact city centered around the "residential hub" of Ubagai City and the "industrial hubs" such as Haga Industrial Park and Haga-Takanezawa Industrial Park. Utilizing the existing road network, the town aims to enhance public transportation, including Lightline, buses, and demand-responsive transport, to strengthen the network within the town and with adjacent cities, creating a livable town where everyone can move easily.

Vision for Public Transportation Formation



Establishing a hierarchical public transportation network based on Light rail.

Utsunomiya City and Haga Town are working to build a "Hierarchical Public Transportation Network" that integrates railways, Lightline, buses, community transportation, and demand-responsive transport, making it easy for everyone to move between hubs and mutually complementing the urban functions necessary for daily life.

Developing Core Public Transportation

- In addition to the north-south railway, **develop the Lightline** as the primary public transport with excellent transport capacity in the east-west direction.

Reorganizing Bus Routes

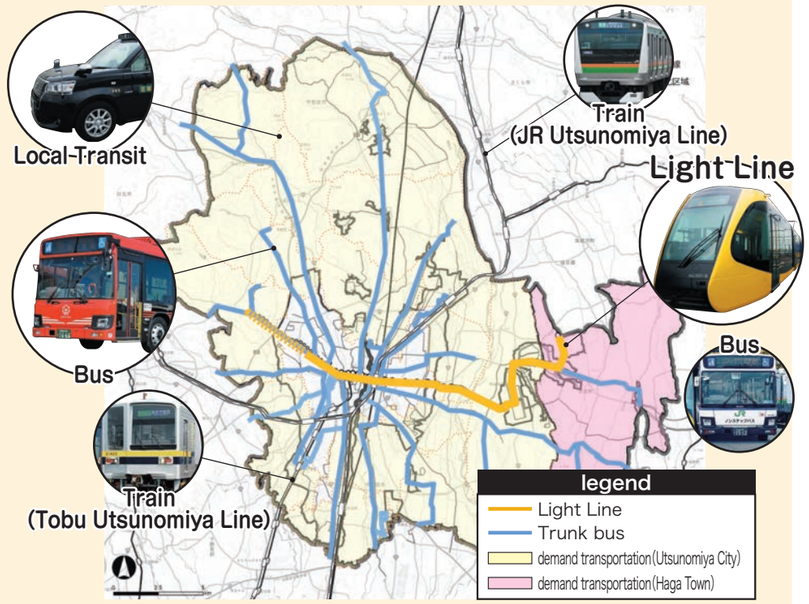
- To eliminate public transport gaps and strengthen connectivity between hubs, **reorganize bus routes**.

Introduction of Community Transport and Demand-Responsive Transport

- **Introduce community transport** and demand-responsive transport as a means of mobility in the suburbs (Utsunomiya City) and throughout Haga Town.

Strengthening Connectivity Between Public Transportation

- **Develop transport nodes (transit centers) as transfer hubs.**
- **Introduce transportation IC cards that can be used across various public transport services.**
- **Introduce a transfer discount system for public transportation.**



2 Overview of Development on the East Side of JR Utsunomiya Station

2-1 General Overview

The Haga-Utsunomiya LRT (Light Rail Transit) project focuses on developing a priority route as the east-west core public transportation in this region, connecting the urban hub at the east exit of JR Utsunomiya Station to the industrial hubs in the eastern region, including the Kiyohara Industrial Park and the Haga-Takanezawa Industrial Park.

Project Overview

Operating Kilometers	Utsunomiya-Haga Light Rail Line Approximately 14.6 km (double track) (12.1 km in Utsunomiya City area, 2.5 km in Haga Town area) Utsunomiya Station East Exit (Utsunomiya City) to Haga-Takanezawa Industrial Park (Haga Town)
Number of Stops	19 (15 in Utsunomiya City area, 4 in Haga Town area)
Vehicle Depot	1 location (with management building, maintenance shed, storage tracks, substation)
Substations	4 locations (3 in Utsunomiya City area, 1 in Haga Town area)
Passing Facilities	2 locations (Hiraishi Stop, Green Stadium Front Stop)
Low-Floor Vehicles	17 sets (three-car articulated vehicles)
Business Model	Publicly-Owned and Privately-Operated Model
Project Cost	68.4 billion yen (60.3 billion yen in Utsunomiya City area, 8.1 billion yen in Haga Town area)

Introduction of Low-Floor Vehicles (17 sets)

●vehicle specification

Track Gauge		1,067mm (narrow gauge)
Voltage		DC 750V (First in Japan)
Capacity		159 people (50 seats)
Vehicle Dimensions	Length	29.520 m
	Width	2,650mm
	Height	3,625mm (when pantograph is folded)
Maximum Speed		70 km/h

Operations Plan

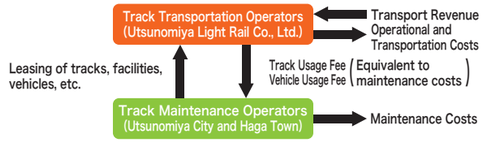
Operating Hours	6:00 AM - 11:00 PM Timed to connect with the first and last Shinkansen trains	Service Frequency	6-minute intervals during peak hours, 10-minute intervals during off-peak hours
Travel Time	Approximately 44 minutes (37-38 minutes for express service)	Fare	Starting at 150 yen up to 400 yen (distance-based)
Maximum Operating Speed	40 km/h	Fare Collection	One-man operation (IC card-based)

*Operation plan based on the "Advanced Implementation Plan for Track Transport"

Adoption of a Publicly-Owned and Privately-Operated Model

In the Haga-Utsunomiya LRT (Lightline) project, the "Public-Private Partnership Law" was applied, adopting the "Publicly-Owned and Privately-Operated Model."
Utsunomiya City and Haga Town, as the track maintenance operators, are responsible for the construction, ownership, and maintenance of the track facilities and vehicles. Utsunomiya Light Rail Co., Ltd. rents these facilities and provides transportation services.

●Concept Diagram of the Project Scheme



Project Costs and Funding

Project Cost: 68.4 billion yen (excluding tax)

National Subsidy Approximately 1/2 (32.6 billion yen) | Municipal Contribution ※1. 2. 3.58 billion yen

※1. Utsunomiya City: 31.3 billion yen, Haga Town: 4.5 billion yen
※2. Subsidies of 8.3 billion yen (including tax) have been provided by Tochigi Prefecture (2.5 billion yen during construction, 5.8 billion yen upon redemption of local bonds).

[Breakdown]

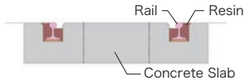
Track-Related Costs: 61.1 billion yen
- Social Infrastructure Development Comprehensive Grant: 2.89 billion yen
- National Subsidy Approximately 1/2 (47%): 2.89 billion yen
- Municipal Contribution※3 Approximately 1/2 (53%): 3.22 billion yen

Vehicle-Related Costs: 7.3 billion yen
- CO2 Emission Reduction Measures Subsidy, etc: 3 billion yen
- National Subsidy 1/2 (50%): 0.365 billion yen
- Municipal Contribution※3 Approximately 1/2 (50%): 0.365 billion yen
- Social Infrastructure Development Comprehensive Grant: 0.65 billion yen

※3. Municipal costs are covered using local bonds, with approximately 20% of the issued amount being subsidized by the national government.

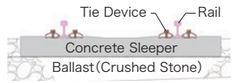
Adopting Track Structure According to the Travel Space

●Resin-fixed Track

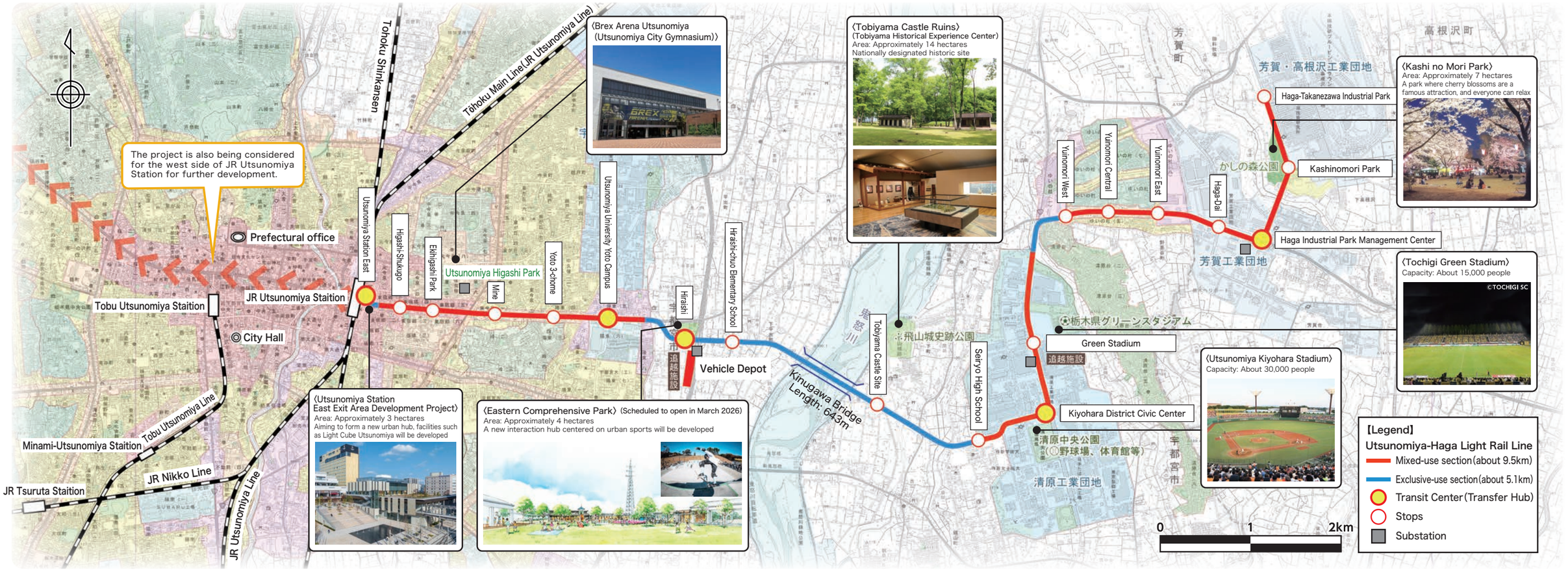


In the shared-use section, mainly in residential areas where the Lightline runs parallel to cars, a resin-fixed track with high vibration-damping properties was adopted.

● Ballast Track



In the exclusive-use section, mainly on bridges and elevated sections, a ballast track, commonly used in railways, was adopted.



2 Overview of Development on the East Side of JR Utsunomiya Station

2-2 Total Design

What is Total Design?

"Total Design" is a design perspective that builds the value of services by comprehensively considering functionality and comfort in "objects, information, and space" when developing public transportation. For the Haga-Utsunomiya LRT(Lightline), as a public transportation system representing the future, the aim was for it to become the "face of the city" that would guide future imagery. Therefore, Total Design was adopted to enhance clarity and appeal, and to ensure that vehicles, various facilities, signs, and more have a unified design concept that can be cherished for a long time.

From Thunder City to the Future

The Haga-Utsunomiya region is frequently struck by lightning and is known as the "Thunder City." The locals have traditionally referred to the lightning as "Raisama" and have regarded it as a "blessing" that brings abundance to the land. The design of the Lightline, which has been shaped by this rich natural environment since ancient times, focuses on incorporating and passing down the city's history and natural features into the future. The concept is "Creating a Future Mobility City with LRT, Bringing Thunder City to the Future."

ased on this concept, the design motif is the lightning flash, and the symbolic color is yellow, representing lightning and rice ears, which was used in vehicle design, symbolic marks, and signs. Additionally, local materials such as Oya stone and traditional local industries like Miyazome have been incorporated into the vehicle interiors and stops.
As part of efforts to raise public awareness, various activities were developed under the basic policy of "interactive, inclusive, and participatory." These included deciding vehicle designs and names through citizen surveys and holding design workshops with residents along the route to create graphics for display on the walls of each stop, providing opportunities for community involvement and fostering enthusiasm for the project.

Design Concept

From Thunder City to the Future

Creating a future mobility city through LRT

The Haga-Utsunomiya area experiences frequent lightning, which is seen as a symbol of blessing by the local people.
By incorporating the city's history and natural features and focusing on passing them down to the future, the design concept was set as "Bringing Thunder City to the Future."

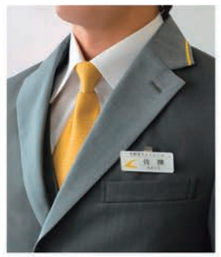
Creating Scenery

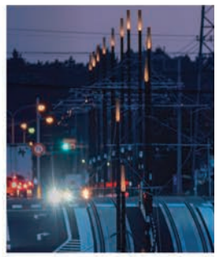
Integrating Objects, Information, and Space to Create an Attractive Ride Experience


Vehicle(Exterior)


Vehicle(Interior)

Stops and Symbol Mark


Uniform


Overhead Line Poles and Their Lights


Vehicle Depot


Seats with Thunder Pattern


Oya Stone Bench

Signs(Fare Table)

Signs(Station Name Sign)

Creating Awareness

Citizen Participation Programs to Familiarize and Instill Pride in Lightline

Customized Wall Surfaces (Collaborative Design with Local Residents)


Vehicle Tours


Vehicle Nickname Contest


Workshops with Local Residents Along the Line


Bench Donation

Vehicle Design Survey

2 Overview of Development on the East Side of JR Utsunomiya Station

2-3 Vehicles

Vehicles

The vehicle design features a streamlined shape with striking yellow that represents lightning, embodying "uniqueness" as the face of the city, "lightning (thunderbolt)" that conveys the unique natural environment of the area, and "advancement" that drives the future image.

Nickname: "Lightline" − Thunder City + LINE(Path/Connection)

The nickname "Lightline" incorporates "Thunder City." "LIGHT" is part of LRT(Light Rail Transit)and also conveys the message of a "path of light(to the future)."

Lightline Illustrated Book

Exterior

The color scheme emphasizes the power of "lightning (thunderbolt)" and the "advancement" leading Haga-Utsunomiya with a yellow L-shaped coloring that highlights the front of the vehicle.
The characteristic of the shape is the use of large glass on the front of the vehicle, expressing a flowing front shape, and connecting a dynamic line from the side to the front, extending to the pillar(the front pillar) to represent the sharp image of an arrowhead.

Vehicle height (when pantograph is folded) : 3,625mm

Vehicle width: 2,650mm

Interior

Wheelchair Space

Placed right next to the door for smooth boarding and alighting, offering ample space for caregivers.

Boarding and Alighting Space

Doors for boarding and alighting are installed at eight locations per train, allowing flexible boarding and alighting depending on the situation.

free space

Boarding and Alighting Space: The center of the vehicle has ample space that is comfortable for wheelchairs and strollers.

Priority Seats

Orange faux leather makes it easy to distinguish from general seating, with armrests for smoother movement.

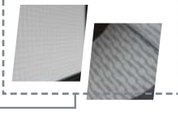
General Seats

Uses high-quality black faux leather. Bucket-type seats ensure a comfortable space for one person.

Even in unexpected places!?

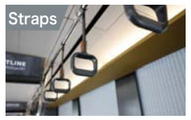
Hidden Lightning

Lightning design, symbolizing Thunder City, on some roller blinds and seats!



Large Display

A 29-inch large display that allows users to check guidance and operation information.



Straps

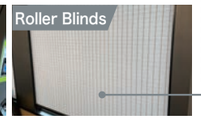
Ergonomically designed to prevent fatigue.

Wi-Fi

Free Wi-Fi service is available, allowing users to use the internet in a comfortable environment.

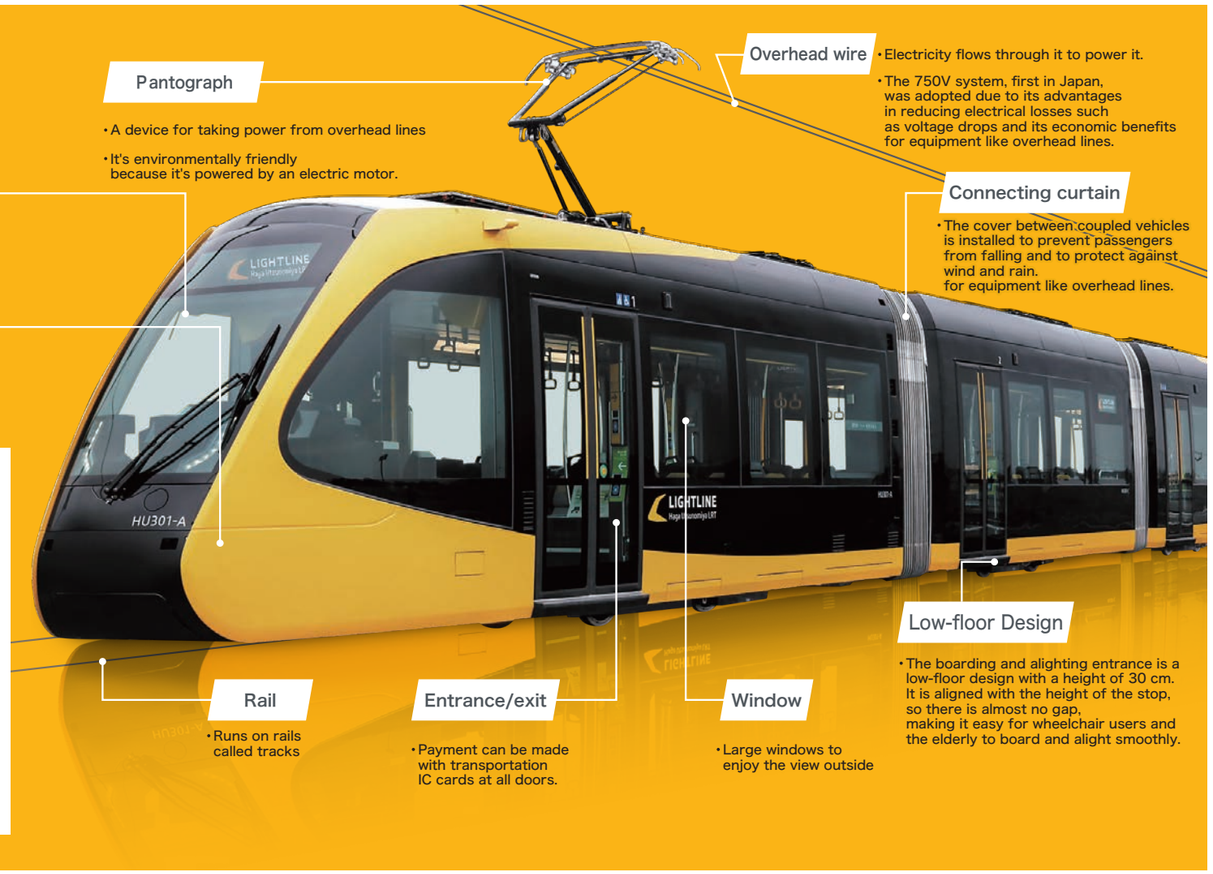
Oya Stone-like Floor

Flooring reminiscent of Oya stone, a local material, is used to convey the charm of the area from the ground up.



Roller Blinds

Expresses the image of "Miyazome," a traditional craft of Utsunomiya.



Comparison of Transport Capacity

LRT車両　29.520m

路線バス　約10m

One train set: Approximately 160 people

The vehicle's capacity is one of the largest in Japan, accommodating about 160 people with 50 seats, and incorporates universal design with priority seating. It boasts excellent transport capacity and a comfortable ride with minimal vibration.

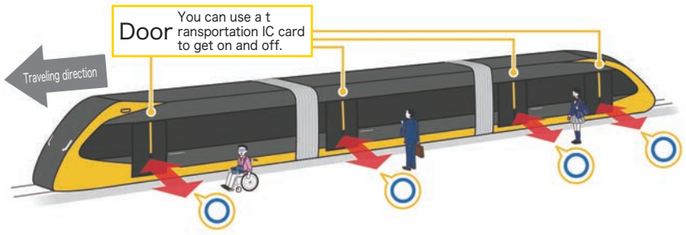
Equivalent to 3.2 buses
(calculated at approximately 50 people per bus)

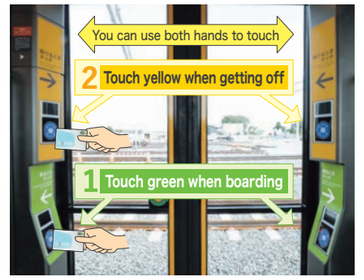
コンパクトカー
約4m

Equivalent to 107 cars
(calculated at approximately 1.5 people per car)

Proof of Payment(Self-boarding and Alighting) System Utilizing Transportation IC Cards

All doors of the vehicles have boarding and alighting readers installed on both sides to facilitate smooth boarding and alighting from all doors using transportation IC cards, adopting a "Proof of Payment(Self-boarding and Alighting) System."





▲ IC card readers installed on both sides of all vehicle doors

2 Overview of Development on the East Side of JR Utsunomiya Station

2-4 Stops

Overview of Stop Facilities

The stops have a simple design that highlights the symbolic vehicles, ensuring user safety and barrier-free access while also considering ease of maintenance. To express the design concept of "Bringing Thunder City to the Future, " Oya stone, a local material that symbolizes the culture of the Haga-Utsunomiya region, is used for benches.
The basic shape of the stops consists of a modular frame that incorporates common signs, service guidance, benches, and personalized spaces, forming a glass wall-like structure that consolidates these functions.

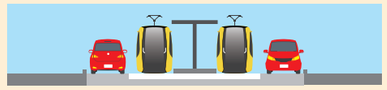
1. **Glass Panels**
   Used for service information, personalization, and advertising space
2. **Louver Ceiling**
   Local wood is placed at regular intervals
3. **Service Guidance Board**
   Equipped with functions to provide information via text or voice about service conditions
4. **Speaker**
   Installed to make the audio from the service guidance board audible throughout the stop
5. **Surveillance Camera**
   Installed at all stops for safe and secure use
6. **Information Display**
   Shows fares, route information, timetables, and surrounding area guides
7. **Bench**
   Made using local material (Oya stone) with donation plates
8. **Leaning Poles**
   Designed to ensure convenience while maintaining platform width
9. **Platform**
   Barrier-free, slip-resistant, and designed to allow easy boarding and alighting for wheelchairs
10. **Personalized Space**
    Reflects local individuality (details on the next page)

Stop Types and Layout

The basic stop type is "opposite" at signalized intersections on straight sections, and "island" at terminal points and sections where right or left turns occur at intersections. Stop placement is determined by considering accessibility and transfer convenience between hubs, surrounding land use, track layout, visibility, and barrier-free access.

Opposite Type
One side of the stop is used for vehicle arrivals and departures.

Island Type
Both sides of the stop are used for vehicle arrivals and departures.



List of Stops (Opposite Type and Island Type)

Transit Centers (Transfer Hubs)

Initiatives for Customizing Stop Walls

When developing the stops, efforts were made to customize the wall spaces to express their unique characteristics, taking into account the creation of the "face of the city" and fostering a "My Rail" awareness.

The stops located at "Utsunomiya Station East Exit," "Kiyohara District Civic Center Front," and "Haga Industrial Park Management Center Front," which are positioned as "city gateways" and "industrial hubs," have been designed to create new urban value and dignity (the "face of the city") by showcasing the characteristics and industries of the entire city and town.

For the 16 stops located at regional hubs, workshops were held in collaboration with local residents to foster a "My Rail" awareness, creating a design that makes people feel closer to "our station."

Provision of Digital Services

As part of Utsunomiya City's efforts to realize a "Super Smart City," free Wi-Fi service is provided inside the vehicles and at all stops within the city, and digital signage has been installed at four locations : both platforms of the inbound and outbound lines at "Utsunomiya University Yoto Campus" and the annex facility of the "Kiyohara District Civic Center Front Transit Center" (inside the waiting room).
The digital signage provides transfer guidance for Lightline and bus routes, the departure times of the next services, and displays tourist spots, event information, and the latest news.

2 Overview of Development on the East Side of JR Utsunomiya Station

2-5 Urban Area Surrounding Area (Utsunomiya Station East Exit to Utsunomiya University Yoto Campus)

On Kinugawa Street, which has high access to roadside facilities, a center reservation method has been adopted where the track bed is placed in the middle of the road.
The type of stop, except for the "Utsunomiya Station East Exit" terminal stop, is set as opposite to effectively utilize the road space, and the spacing of the stops is about 300-500 meters, considering a walking distance that allows easy access.
During construction, steps were taken to minimize the impact on surrounding traffic by securing pedestrian and vehicle travel spaces and proceeding with track construction in a way that minimizes disruption.

〈Installation of Traffic Island〉

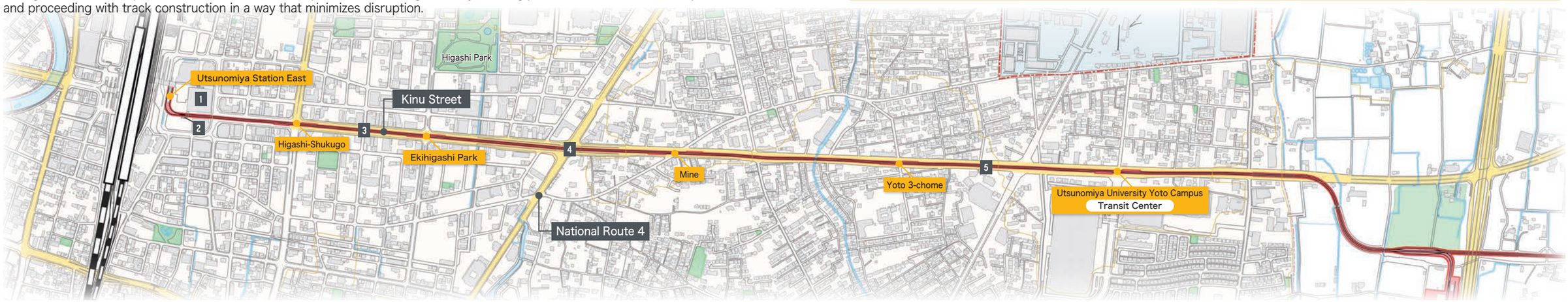
At intersections with stops, a "traffic island" was installed to prevent vehicle entry.

〈Installation of Traffic Signals for Lightline〉

To avoid intersection between the Lightline and cars, dedicated traffic signals were installed, and signal control is implemented using the "right-turn separation method."

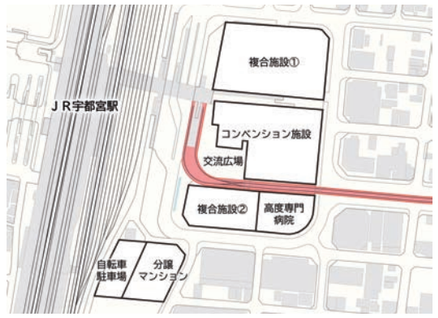
〈Center Pole Method for Overhead Line Poles〉

For the overhead line poles, the center pole method, which considers aesthetics, was primarily adopted.



1 Utsunomiya Station East Exit District Development Project

At Utsunomiya Station East Exit, the gateway to the prefectural capital, a new urban hub with diverse and high-level urban functions, including exchange hubs and commercial facilities, was formed to create exchange and vibrancy of "people, goods, and information" and enhance urban appeal.
By arranging facilities centered around stops and exchange plazas, the Lightline is visible from all parts of the district, and the stops are directly connected to the plazas, fostering a sense of unity with the Lightline.

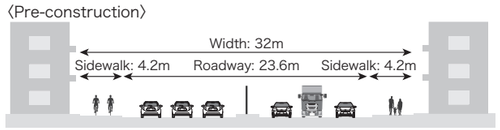


2 Near "Utsunomiya Station East Exit" Stop

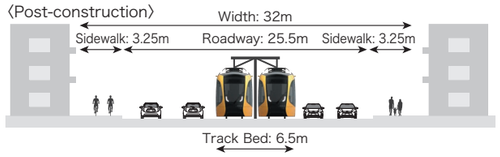
The curve at Utsunomiya Station East Exit has the smallest curve radius on the main line(R25m). Switches were installed to accommodate train operations at the starting station.

3 Kinu Street (JR Utsunomiya Station East Exit to National Route 4)

〈Pre-construction〉



〈Post-construction〉

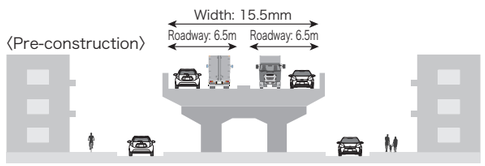


Pre-construction

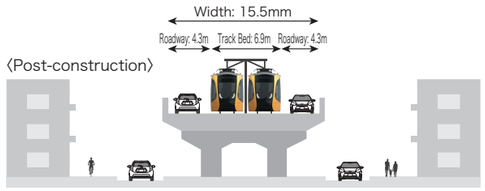
Post-construction

4 Mine Viaduct Section

〈Pre-construction〉

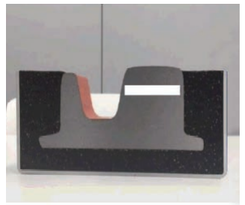


〈Post-construction〉



Pre-construction

Post-construction

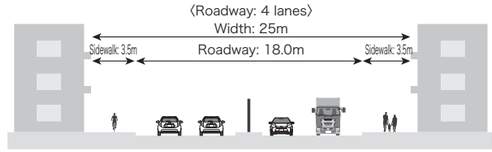


〈Adoption of Thin Rails〉

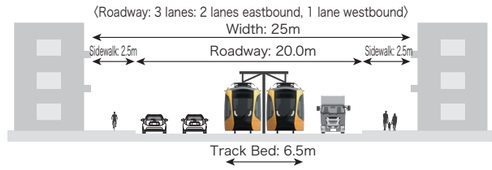
The Mine Viaduct section is the only section in the development area where tracks were laid on an existing bridge.
Due to the insufficient thickness of the track bed for standard rails, thin rails, the first in Japan, were adopted.

5 Kinu Street (National Route 4 to near "Utsunomiya University Yoto Campus" Stop)

〈Pre-construction〉



〈Post-construction〉



Pre-construction

Post-construction

When changing from four lanes to two lanes, traffic simulations showed a significant increase in congestion in some sections. Therefore, three lanes were set with two lanes eastbound and one lane westbound.

2 Overview of Development on the East Side of JR Utsunomiya Station

2-6 Hiraishi Surrounding Area

To minimize the impact on traffic on Kinugawa Street, the approximately 130-meter-long steel box girder bridge of the Hiraide Overpass was constructed as an exclusive section running south from Kinugawa Street, along with a box culvert approximately 40 meters long passing under the New National Route 4.
Additionally, a vehicle depot (total area: approximately 4 hectares) was constructed, consolidating critical functions necessary for operation, such as storage tracks for all 17 sets, a management building for operation control, and a maintenance shed for vehicle inspections.
At Hiraishi Stop, overtaking facilities and entry/exit lines to the vehicle depot were constructed, and on the north side of the stop, the development of the Eastern Comprehensive Park, which includes sports facilities, multipurpose plazas, dining, and retail facilities, is underway.
(Scheduled to open in March 2026)

1 Vehicle Depot

The vehicle depot houses critical functions necessary for operation, including a management building with an operation control room and a maintenance shed for vehicle inspections. Additionally, to protect stored vehicles from damage caused by heavy rain, a reservoir was installed, and the ground level was raised by about 1 to 2 meters with embankments and L-shaped retaining walls.

Storage Tracks

▲ Tracks for storing vehicles during nighttime and other times

Management Building

Maintenance Shed

Operation Control Room

▲ Facilities for operation management and other activities
◀ Facilities for checking operational status and giving instructions to drivers

Inside the Maintenance Shed

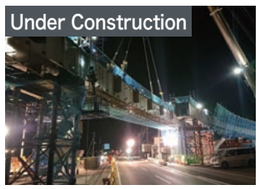
◀▲ Facilities for routine repairs and inspections of vehicles

2 Hiraide Viaduct Section

Considering the gradient of the existing road and its impact on surrounding traffic, a new elevated exclusive section, including an overpass, was constructed from the point where a gradient appeared on Kinugawa Street.

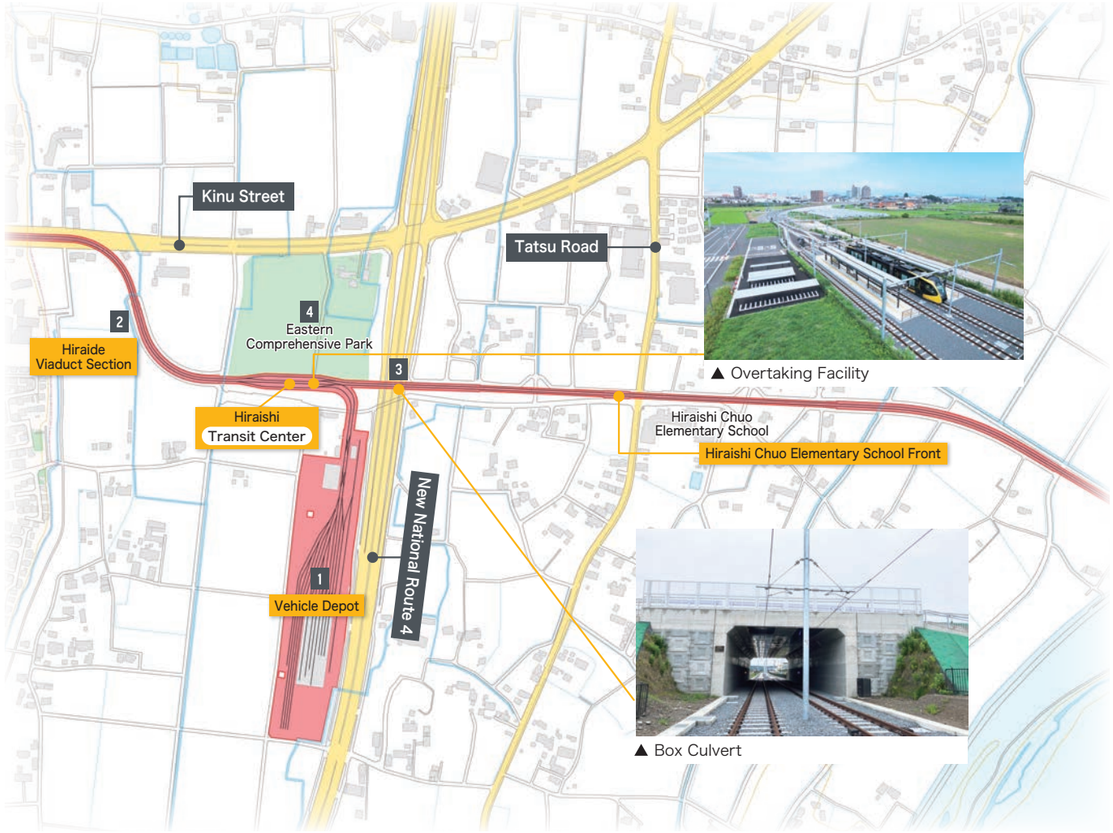
Under Construction

Under Construction



Post-Construction

◀ The construction of the overpass connecting with the tracks on Kinugawa Street was completed using a large crane to lift and place the bridge in just two days during nighttime hours.



▲ Overtaking Facility

▲ Box Culvert

3 New National Route 4

For the crossing section of the New National Route 4, a route was chosen that passes under the embankment section(under the ramp), which has minimal impact on traffic and provides superior advantages in terms of maintenance after opening.

Under Construction

Post-Construction

4 Eastern Comprehensive Park (Scheduled to open in March 2026)

For the first time in Japan, a park centered around a skate park directly connected to a stop that can accommodate national competitions will be developed, creating a space where multiple generations can gather and enjoy.

Skateboarding

Lawn Square

3x3

2 Overview of Development on the East Side of JR Utsunomiya Station

2-7 Area around Kinugawa Bridge (Hiraishi Chuo Elementary School Front to Seiryo High School Front)

Due to the proximity to Hiraishi Chuo Elementary School, local briefings and consultations were repeatedly held from the planning stage to ensure safe use for schoolchildren and local residents. Additionally, various safety measures were implemented, such as intersection improvements and protective fence installations.
The 643-meter Kinugawa Bridge crossing the Kinugawa River was constructed only during the dry season (November to May of the following year) but was completed in about three years.

1 Near "Hiraishi Chuo Elementary School Front" Stop

This section runs on an elevated structure from the north side of Hiraishi Chuo Elementary School, passing through residential areas towards the Kinugawa Bridge.
Near the elementary school, various safety measures were implemented, such as improving traffic signals, widening roads, installing new sidewalks, and erecting protective fences.


▲ Intersection Improvement


▲ Protective Fence

2 Kinugawa Bridge

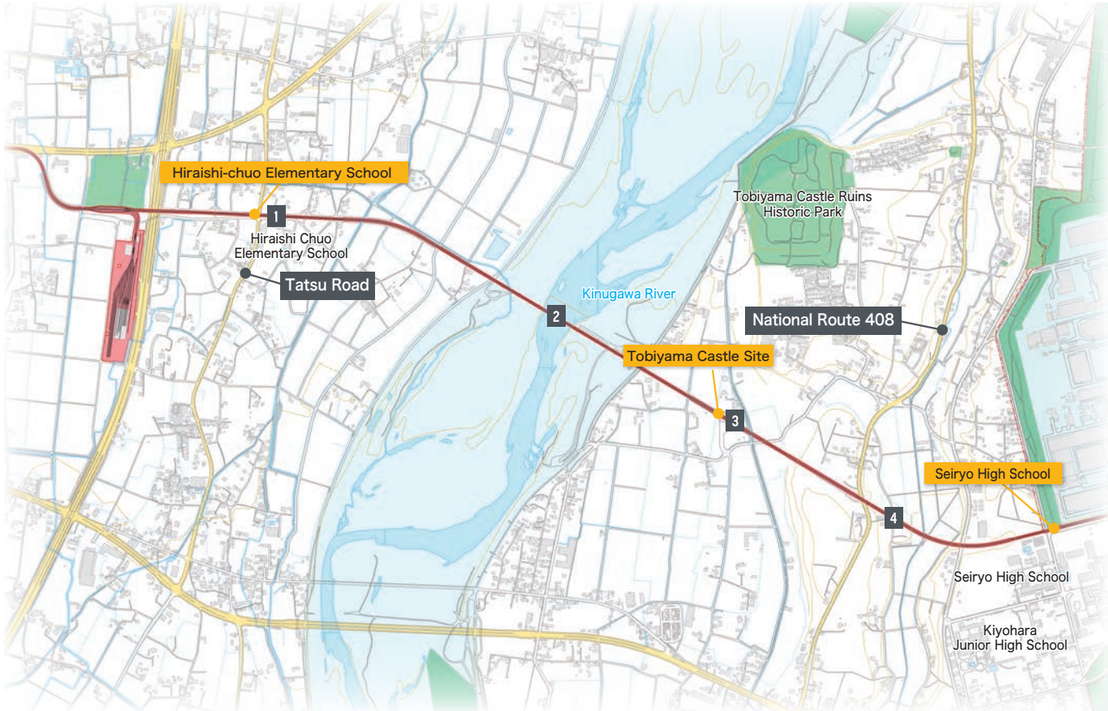
The Kinugawa Bridge, which crosses the Kinugawa River and has a total length of 643 meters, is a dedicated bridge exclusively for the Lightline. To ensure completion within the limited period (three years), the optimal construction methods and substructure types were adopted.


October 2018 (Before construction started)


First dry season (November 2018 to May 2019)


Second dry season (November 2019 to May 2020)


Third dry season (November 2020 to May 2021)



3 Kinugawa River Left Bank (Near "Tobiyama Castle Ruins" Stop)

Although a turnaround area for Kiss & Ride was initially established, a Park & Ride parking lot and multipurpose restrooms were added after opening based on user feedback.

4 Kinugawa River Left Bank (Near National Route 408)


Pre-construction


Post-construction

To cross the Kinugawa River and head towards Kiyohara Industrial Park, the route connects areas with varying elevations using elevated structures.
The elevated structures were designed in a way that maintains the local community's cohesion.

〈Kinugawa Crossing Area: Part of the Left Bank〉


Under Construction


Under Construction


Post-construction

2 Overview of Development on the East Side of JR Utsunomiya Station

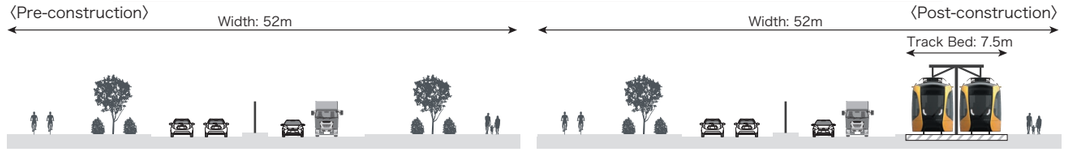
2-8 Kiyohara Industrial Park to Yuinomori Area(Seiryo High School Front to Yuinomori East)

Within Kiyohara Industrial Park, a side reservation method was adopted, where the track bed is placed on one side of the road, being the only section in the development area to do so. Since Kiyohara Chuo Dori was a section that utilized the existing green belt, track construction began here first. Also, at the "Kiyohara District Civic Center Front" stop, a transit center was developed, becoming the largest transfer point in the development area, connecting automobiles, buses, and taxis.
At Nogoya Intersection, where National Route 408 and Prefectural Road Utsunomiya-Motegi Line intersect, a grade separation was created to minimize the impact on traffic at the intersection, with the development of Nogoya Overpass, a three-span continuous box girder bridge approximately 170 meters long.

1 Near"Seiryo High School Front"Stop to Nogoya Viaduct(Side Reservation)

A side reservation method was adopted to minimize the impact on future road plans and the movement intersections of cars and Lightline, reducing the impact on automobile traffic as much as possible.

Image of the Introduction Space from Near Kiyohara Industrial Park Management Center to the Northern End of Kiyohara Industrial Park



2 Nogoya Viaduct Section

At Nogoya Intersection, a major congestion point, considering the impact on surrounding traffic and ensuring express service, the area was developed using a dedicated bridge for the Lightline to create a grade separation. During construction, an erection method using a multi-axle special vehicle to transport the assembled bridge girder to the installation site was adopted to efficiently carry out the work within limited nighttime hours.

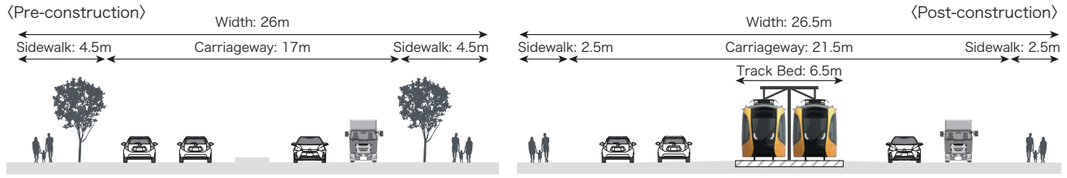
Pre-construction

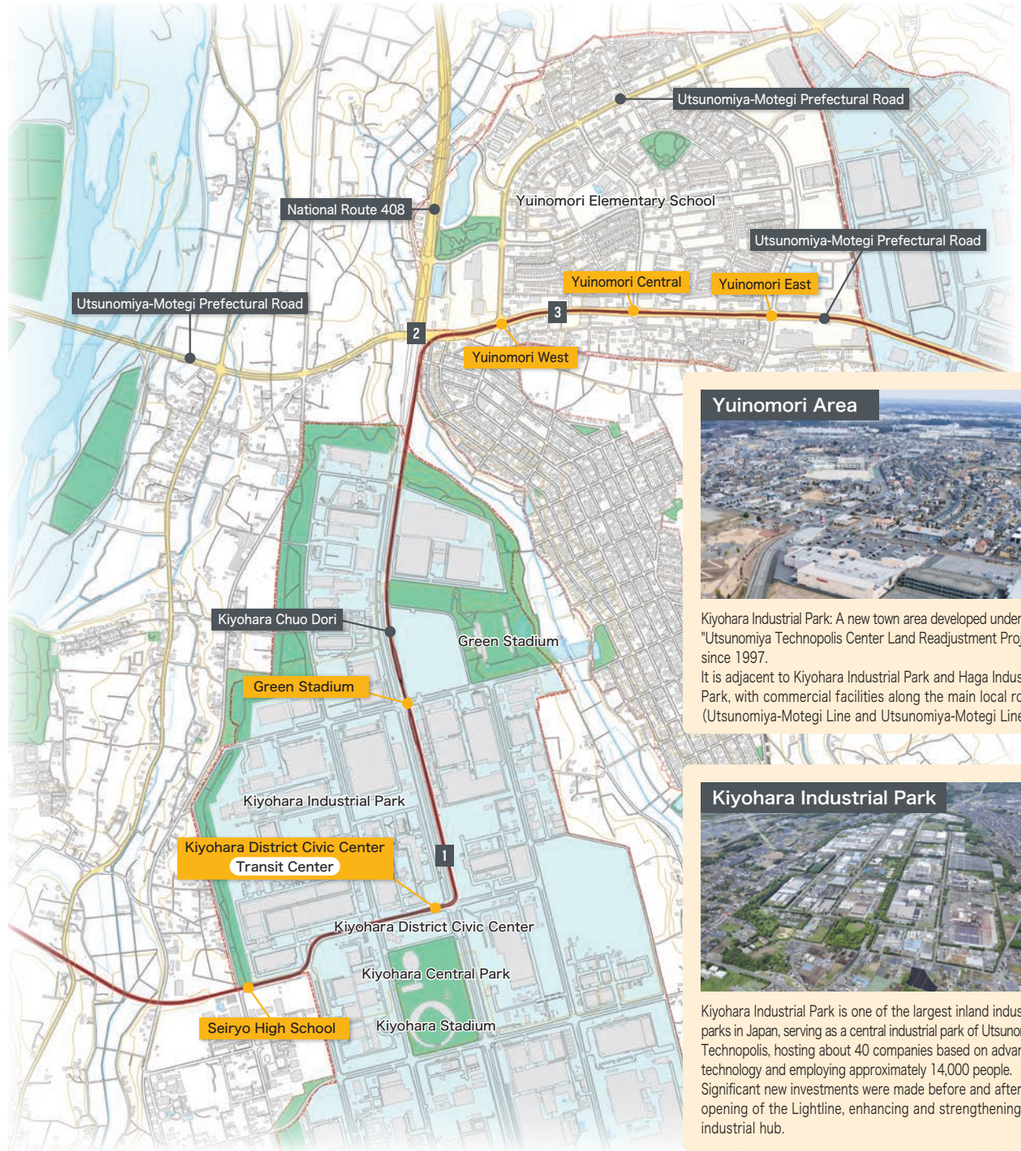
Under Construction

Post-construction

3 From the Nogoya Viaduct Section to Near "Yuinomori East" Stop

In the Yuinomori section, where there is high access to roadside facilities, a center reservation method was adopted, placing the track bed in the center of the Utsunomiya-Motegi Prefectural Road. Due to the high volume of automobile traffic, the road was widened to ensure two lanes in each direction, similar to the pre-development configuration.
In the Yuinomori area, the population has increased significantly, and a new elementary school (Yuinomori Elementary School) was established in Utsunomiya City for the first time in 26 years.





Yuinomori Area

Kiyohara Industrial Park: A new town area developed under the "Utsunomiya Technopolis Center Land Readjustment Project" since 1997.
It is adjacent to Kiyohara Industrial Park and Haga Industrial Park, with commercial facilities along the main local roads (Utsunomiya-Motegi Line and Utsunomiya-Motegi Line).

Kiyohara Industrial Park

Kiyohara Industrial Park is one of the largest inland industrial parks in Japan, serving as a central industrial park of Utsunomiya Technopolis, hosting about 40 companies based on advanced technology and employing approximately 14,000 people.
Significant new investments were made before and after the opening of the Lightline, enhancing and strengthening the industrial hub.

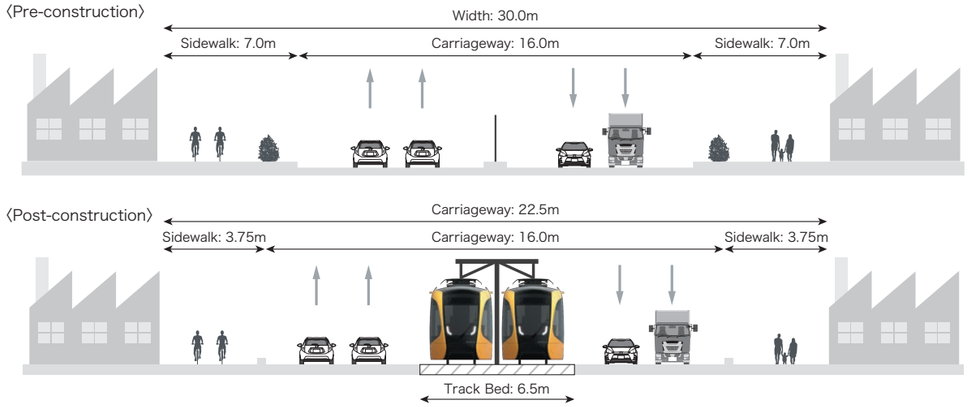
2 Overview of Development on the East Side of JR Utsunomiya Station

2-9 Haga Town Area (Haga-Dai to Haga-Takanezawa Industrial Park)

In the valley area connecting Haga Industrial Park and Haga-Takanezawa Industrial Park, the steepest gradient within this development section exists.
Near the "Haga Industrial Park Management Center Front" stop, a transit center was established to serve as the gateway to the eastern region of the prefecture (Mashiko Town, Motegi Town, Ichikai Town, Haga Town, etc.), connecting cars, buses, and taxis.
At the "Haga-Takanezawa Industrial Park" stop, to improve accessibility for employees of nearby companies, a pedestrian bridge directly connected to the stop was reestablished.

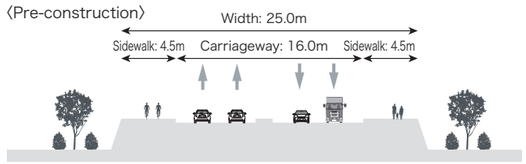
1 City-Town Boundary to Management Center Front Intersection (Utsunomiya-Motegi Prefectural Road)

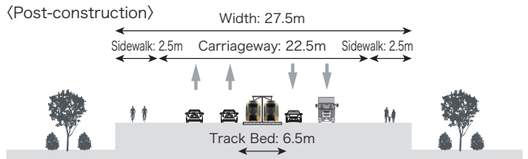
Since this is a major commuting route for over 20,000 commuters, and there is a high volume of automobile traffic during commuting hours, the road was widened to maintain the pre-development four-lane configuration to ensure smooth automobile traffic even after the Lightline development.



2 Steep Gradient Section (Dai-no-Hara/Shimo-Hara Line, Town Road)

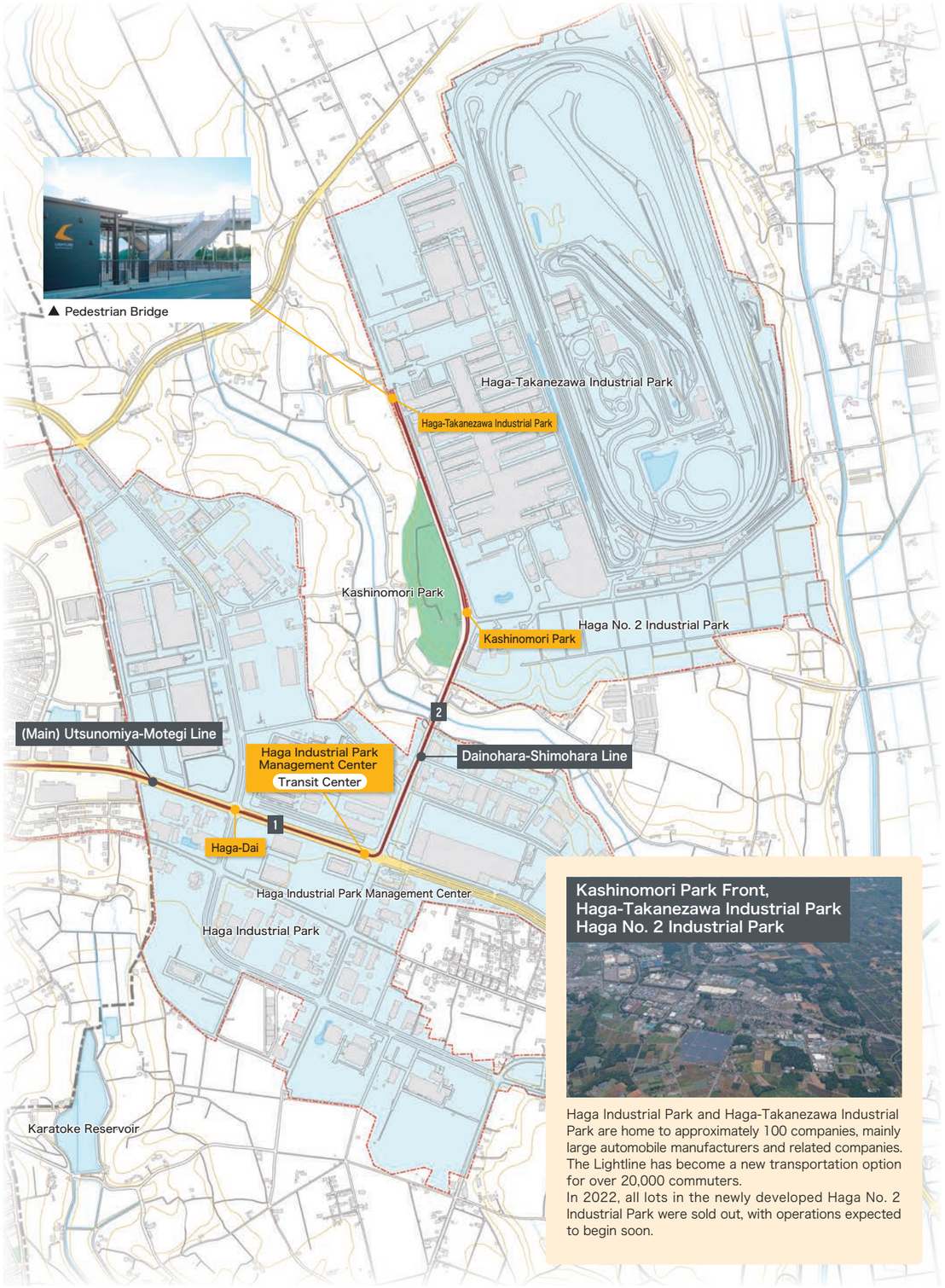
The 60‰(6%) valley section connecting the two industrial parks represents the steepest gradient within this development section. The road was widened using reinforced soil retaining walls, minimizing the expansion area while maintaining the pre-development four-lane configuration.
Additionally, since it is a major commuting route to the industrial parks, the construction was carried out while maintaining the pre-development four lanes to minimize the impact on traffic during construction.





Pre-construction

Post-construction



Kashinomori Park Front, Haga-Takanezawa Industrial Park Haga No. 2 Industrial Park

Haga Industrial Park and Haga-Takanezawa Industrial Park are home to approximately 100 companies, mainly large automobile manufacturers and related companies. The Lightline has become a new transportation option for over 20,000 commuters.
In 2022, all lots in the newly developed Haga No. 2 Industrial Park were sold out, with operations expected to begin soon.

2 Overview of Development on the East Side of JR Utsunomiya Station

2-10 Transportation Hub Functions

Transit Centers

A transit center is a transfer hub where various transportation modes such as LRT, buses, taxis, local transit (within Utsunomiya City), demand-based transit (within Haga Town), cars, and bicycles are interconnected.

LRT Stops and Associated Facilities

Transit Centers (Transfer Hubs) Stops

Stops / Associated Facilities	Utsunomiya Station East	Higashi-Shukugo	Ekihigashi Park	Mine	Yoto 3-chome	Utsunomiya University Yoto Campus	Hiraishi	Hiraishi-chuo Elementary School	Tobiyama Castle Site	Seiryo High School	Kiyohara District Civic Center	Green Stadium	Yuinomori West	Yuinomori Central	Yuinomori East	Haga-Dai	Haga Industrial Park Management Center	Kashinomori Park	Haga-Takanezawa Industrial Park
Parking Lot							●		●		●						●		
Bicycle Parking	●			●		●	●	●	●	●	●	●	●	●	●		●		
Bus Boarding Area	●					●					●						●		
Taxi Boarding Area	●										●						●		
Local Transit Boarding Area						●◇	◇	◇	◇	◇	●◇	◇	◇	◇	◇	◇	◇	◇	◇
General Car Boarding Area	●						●		●		●						●		
Waiting Area											●						●		
Toilet	● (Toilets Only in Station Square)						●		●	● (Park Toilets Only)	●						●	● (Park Toilets Only)	
LRT Commuter Pass Sales Office※2	●						●												

※1 Local transit includes designated boarding areas at "Utsunomiya University Yoto Campus", "Kiyohara Area Community Center Front", and demand-based transit at "Haga Industrial Park Management Center Front".
Local transit operates on a fixed route and schedule (●) and demand-based transit operates based on destination from home to desired location (◇).
※2 The LRT commuter pass sales office at Hiraishi Transit Center (Hiraishi Stop) is located within the vehicle depot management building.

Utsunomiya Station East Exit Transit Center

Facility Information


General Car Boarding Area


LRT Commuter Pass Sales Office


Bus Boarding Area


Taxi Boarding Area

Transferable Transportation Modes

Car, Bus, Taxi, Bicycle

Utsunomiya University Yoto Campus Transit Center

Facility Information


Bicycle Parking (147 spaces)


Drop-off Area (Bus and Local Transit)

Transferable Transportation Modes

Bus, Bus and Local Transit, Bicycle

Hiraishi Transit Center

Facility Information


Car Parking (174 spaces)


Bicycle Parking (50 spaces)

Private Car Drop-off Area (4 locations) ※Prioritizing Local Transit

Accessible Parking Spaces (2) Multi-Purpose Toilet

Transferable Transportation Modes

Car, Bus and Local Transit, Bicycle

Kiyohara District Community Center Transit Center

Facility Information


Bicycle Parking (70 spaces)


Bus Drop-off Area

Car Parking (85 spaces, 2 accessible spaces)
Drop-off Area (6 cars, 1 accessible space)
Taxi Drop-off Area
Local Transit Drop-off Area
Waiting Area and Toilet

Transferable Transportation Modes

Car, Bus, Taxi / Local Transit, Bicycle

Haga Town Industrial Park Transit Center

Facility Information


乗降場（一般車・デマンド交通等）


バス乗降場

Bicycle Parking (60 spaces)
Toilets / Waiting Area
Parking (75 spaces)

Transferable Transportation Modes

Car, Bus, Taxi / Demand-Responsive Transit, Bicycle

2 Overview of Development on the East Side of JR Utsunomiya Station

2-11 Legal Procedures Progress/ Construction Process

Legal Procedures Progress

In the process of commercializing the Light Line project, various legal procedures, including obtaining a patent for the railway business, were carried out.

【Legend:】■ Act on Vitalization in City, Town and Villages and Railway Business Act ■ City Planning Act ■ Construction and Others

2015

- ■ Establishment of the Haga/Utsunomiya Eastern Area Public Transportation Revitalization Council (August 3)
- ■ ormulation of the Haga/Utsunomiya Eastern Area Public Transportation Network Formation Plan (November 25)

2016

- ■ Application for Railway Transport Modernization Implementation Plan (January 22)
  - • Consultation with the Transport Council • Public hearing held by the Transport Council • Recommendations from the Transport Council
- ■ Urban planning decision (January 19 - May 31)
  - • Browsing of urban planning draft • Holding of public hearings • Holding of Urban Planning Council • Browsing of urban planning proposal
  - • Holding of Urban Planning Council ⇒ Recommendation without objection as per original proposal • Notification of urban planning change
- ■ Certification of the Railway Transport Modernization Implementation Plan (September 26)

2017

- ■ Application for construction implementation approval (August 9)
- ■ Application for urban planning project approval (November 8)

2018

- ■ Obtaining construction implementation approval (March 20)
- ■ Obtaining urban planning project approval (March 22)
- ■ Application for vehicle design approval (November 30)

- ■ Groundbreaking ceremony (May 28)
- ■ Commencement of construction (June 4)

2019

- ■ Obtaining vehicle design approval (March 29)

2020

- ■ Commencement of rail laying work (September 1)

2021

- ■ Unveiling ceremony for the "Light Line" vehicles (May 31)
- ■ Completion of the Kinugawa Bridge (July 27)

2022

- ■ Completion of the delivery of all 17 Light Line vehicles (June 2)
- ■ Start of trial operation (Utsunomiya Station East Exit to Hiraishi section) (November 17)

2023

- ■ Application for transportation commencement approval (June 5)
- ■ Obtaining transportation commencement approval (August 17)

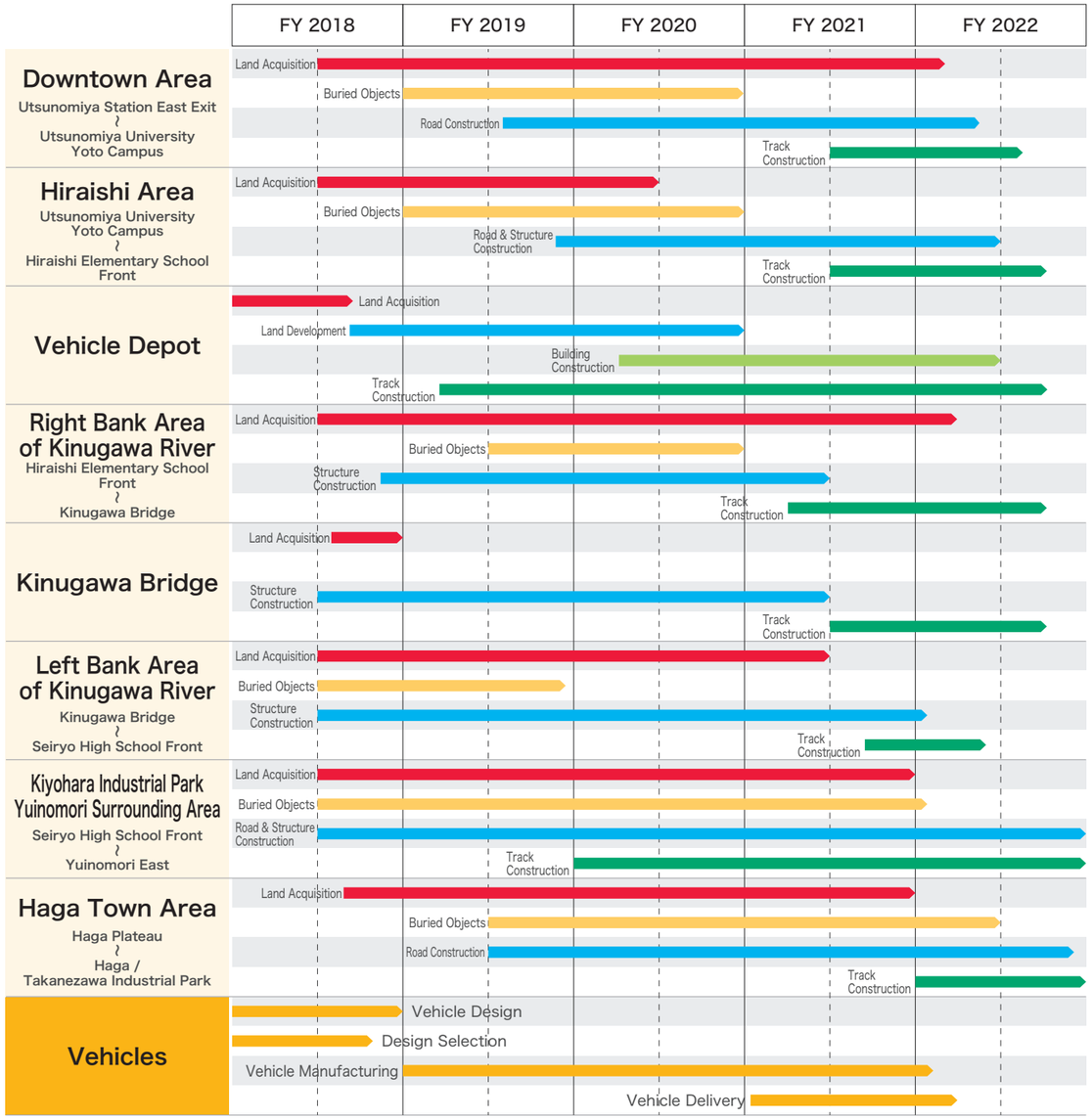
- ■ Completion of all construction work (March 27)
- ■ Start of trial operation over the entire section (April 27)
- ■ Start of full-line training operation (June 5)

Opening (August 26)

Construction Process

Light Line is the first LRT project in Japan to be newly constructed for its entire route, and the construction work began in June 2018, following the acquisition of construction implementation approval in March 2018, with the removal of the central divider around the East Exit of JR Utsunomiya Station.
Due to the overlapping state of track construction, communications, electrical work, and station construction, etc., a daily work schedule was created, focusing on the municipal staff in charge, and meticulous total and individual adjustment meetings were regularly held in the "Construction Liaison Council" organized by the relevant construction contractors to shorten the construction period thoroughly.
Furthermore, the construction was progressed with the cooperation of local residents and related organizations through construction briefings and the distribution of construction leaflets, etc., and the construction work for the entire section was completed in March 2023, about five years after the commencement.

〈Construction Schedule〉



3 Overview of the JR Utsunomiya East Area Project

3-1 Development of a Hierarchical Public Transportation Network and Regional Unique Services

Formation of a Hierarchical Public Transportation Network

New Bus Routes

A total of nine new bus routes have been established, starting from the transit centers and connecting to various regional and industrial hubs in the surrounding areas.

●New Bus Routes

- Okamoto Station East Exit Line
- Station East Exit and Bell Mall Line
- Hiraide and Bell Mall East Circular Line
- Kiyohara Industrial Park Circular Line
- Kiyohara-dai and Yuinomori Circular Line
- Ichihana and Akabane Industrial Park Line(starting from Kiyohara)
- Ichihana and Akabane Industrial Park Line(starting from Haga)
- Soyooka Circular Line
- Haga Industrial Park Circular Line

●Number of Bus Operations After Reorganization(JR Utsunomiya East Side)

	Before reorganization	After reorganization	Increase / decrease
Weekdays	506 trips	654 trips	+ 148 trips
Saturdays	399 trips	414 trips	+ 15 trips
Sundays & Holidays	320 trips	323 trips	+ 3 trips

※Number of operations after reorganization in August 2023

Connecting Regional Transportation

Primarily in suburban areas, supplementary regional and demand-responsive transportation services were connected to the Light Rail Transit(LRT) stops to ensure comprehensive coverage of public transportation, including the Light Rail Line and buses, for citizens' mobility.

Fixed-Route Transportation

●Kiyohara Sakigake Line
●Gurutto Ishii Line

・Transportation hub
Established stops at transit centers.

Demand-Responsive Transportation

●Itado Nozomi Line ●Seinan Smile Line
●Hirari Line ●Smile Ishii Line
●Mizuho Ainori Line
●Fureai Taxi "Hibari"(Haga Town)

・Nearby Light Rail stops were added as destination facilities.

Enhancing Last-Mile Transportation

Near Light Rail stops, parking lots and bicycle parking areas have been developed to enhance accessibility by car and bicycle, thereby enhancing last-mile transportation.

Parking Lots and Bicycle Parking

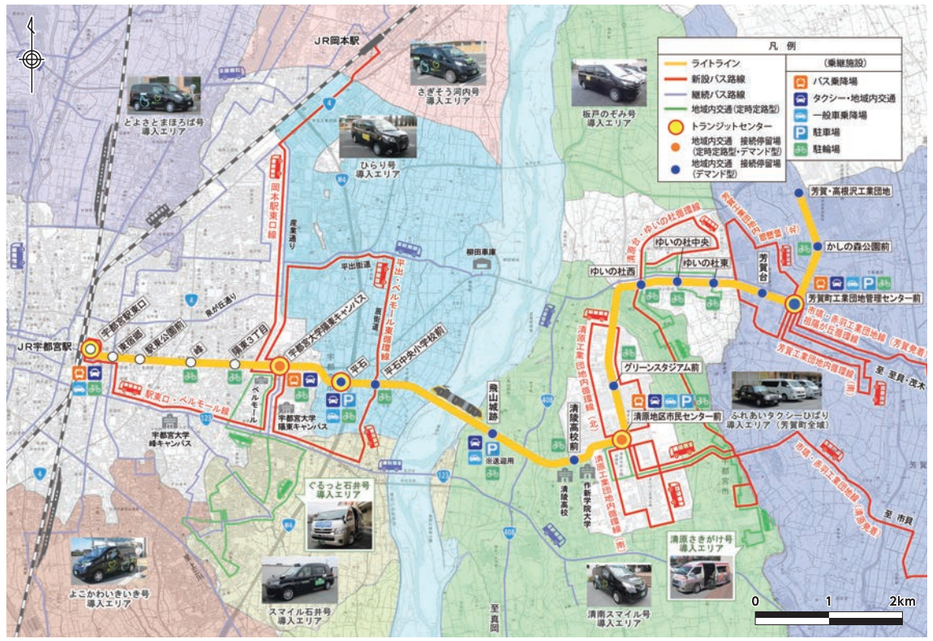
Around 380 parking spaces and 500 bicycle parking spaces were newly established along the route.

Electric Assist Bicycle and Scooter Sharing Services

To enhance last-mile connectivity from train stations, Light Rail stops, and bus stops to destinations, as well as to improve circulation within central urban areas, we have introduced sharing services for electric assist bicycles and scooters.

●Utsunomiya City
・Approximately 60 ports
・100 electric assist bicycles
・60 electric scooters

●Haga Town
・Approximately 2 ports
・10 electric assist bicycles



Introduction of Regional Integrated IC Card "totra" and Expansion of Unique Regional Services

Simplify public transportation fare payments, improve punctuality and speed, and facilitate smooth transfers, the "totra" card, the first regionally integrated IC card in Japan that offers unique regional services in addition to the nationwide Suica card functionality, was introduced. With just one totra card, all public transportation in the Utsunomiya area can be accessed, along with various unique regional services, such as transfer discount systems between Light Rail Transit(LRT), buses, and local transit, and a variety of point services.

Public Transport Transfer Discount System

Combined with the bus fare cap system, travel to the city center can be Within 500yen!!

By using the totra card for transfers between LRT, route buses, and local transit, the fare for the second ride will be automatically discounted.

Bus ⇔ LRT = 100yen discount
Bus LRT ⇔ Local Transit = 200yen discount
Bus ⇔ Bus = 200yen discount

※City Center: The axis connecting JR Utsunomiya Station and Tobu Utsunomiya Station and its surrounding areas.

Bus Fare Cap System

No matter how far, a single ride. Within 400yen!!

By using totra or other IC transportation cards for route buses during the day※, a one-way fare cap of 400 yen applies for boarding and alighting within Utsunomiya City.

※Between 9 AM and 4 PM

Regional Integrated IC Card Cooperation Image

Transportation Point Service

Using the remaining balance(SF) on the totra card, Utsunomiya Light Rail, Kanto Transportation, JR Bus Kanto(Utsunomiya and Nishinasuno branches) general route buses, and local transit can be used, earning a "transportation point" equivalent to 2% of the fare. These "transportation points" are automatically settled when they accumulate to the fare for the used section.

Welfare Point Service(Utsunomiya City)

【Senior Citizen Travel Support Project】
Citizens aged 70 or older (by the end of the fiscal year) are awarded welfare points equivalent to 10,000 yen.
【Mental Disability Transport Cost Assistance Project】
Citizens with a mental disability welfare certificate are awarded welfare points up to 12,000 yen.

Free Distribution of "totra" to Elementary, Junior High, and High School Students

To encourage children to use public transportation in the future, a free distribution of totra cards was conducted for junior high and high school students in Utsunomiya City before the LRT's opening. Additionally, after the opening, vouchers to receive a free "Child's totra" were mailed to all elementary school students residing in the city.
In Haga Town, before the opening, totra cards were distributed free of charge to all households in the town. After the opening, free distribution of "Child's totra" to elementary school students and "Unnamed totra" to junior high school students was carried out through schools in the town.

The distribution process in Utsunomiya City

As of July 2024, initiatives and other efforts

3 Overview of the JR Utsunomiya East Area Project

3-2 Business Operations

Operating Entity

When considering the introduction of a new transportation system, the major challenge was recovering the initial investment costs, such as the construction costs of railway facilities.
With the enactment of the Regional Vitalization Law in 2007, it became possible to introduce the "Publicly Established, Separately Operated Model," where the government handles the initial investment, such as the construction costs of railway facilities, and private operators lease the facilities from the government to operate them. For the Light Line project, this "Publicly Established, Separately Operated Model" was adopted, and Utsunomiya Light Rail Co., Ltd., a new public-private partnership company (a third sector), was established to operate the service.

【Outline of Utsunomiya Light Rail Co., Ltd.(At the time of opening)】

① Date of Establishment: November 9, 2015

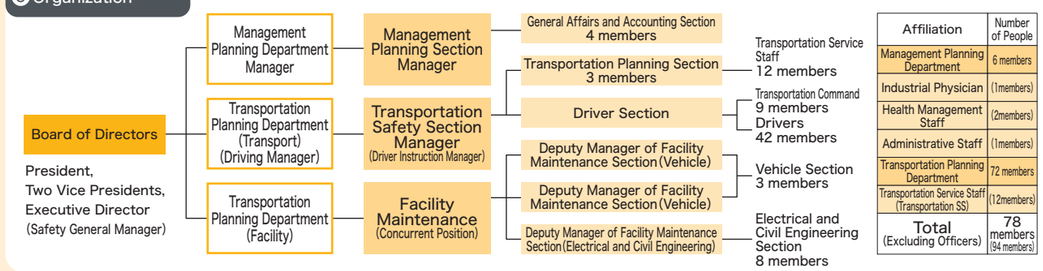
② Location: 3110 Shimoheiide-cho, Utsunomiya City, Tochigi Prefecture

③ Capital: 1 billion yen

④ Shareholding Structure: Government 51%, Private Sector 49%

Category	Utsunomiya City	Haga Town	Local Economic Community	Local Transportation Operators	Financial Institutions
Equity Ratio	40.8%	10.2%	24.0%	15.0%	10.0%

⑤ Organization



Affiliation	Number of People
Management Planning Department	6 members
Industrial Physician	(1members)
Health Management Staff	(2members)
Administrative Staff	(1members)
Transportation Planning Department	72 members
Transportation Service Staff (Transportation SS)	(12members)
Total (Excluding Officers)	78 members (94 members)

Progress Toward Determining the Operating Entity

2014 Late November: Conducted a "Survey on Business Participation Intention Related to the LRT Project" with 14 private railway business operators and 5 local public transportation operators.

2015 June 15: Conducted "Recruitment of Operators Willing to Undertake the Utsunomiya City & Haga Town LRT Project."
⇒ After examining proposals from private business operators and conducting hearings, it was confirmed that commercialization by private operators alone was difficult.

July 28: Joint press conference by Utsunomiya City and Haga Town announcing "Policy for Securing the Business Entity."
⇒ Began coordination to establish a new public-private partnership company where the government plays a proactive role.

October 23: Held "Founders' Meeting."

November 6: Held "Inaugural General Meeting."

November 9: Established Utsunomiya Light Rail Co., Ltd.


Utsunomiya Light Rail Co.,Ltd. Inaugural General Meeting

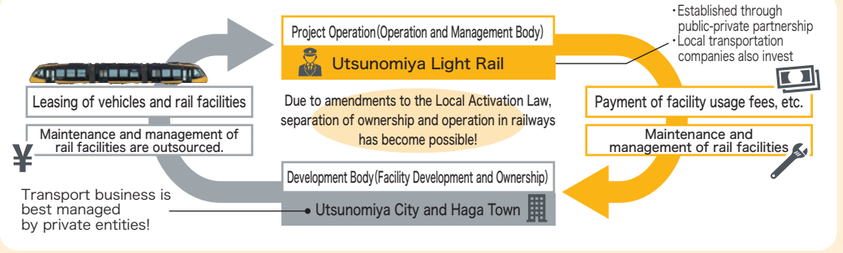

Joint Press Conference by Utsunomiya City & Haga Town

Policy for Securing the Business Entity

Regarding the business entity for the LRT project, it was decided to establish a "new public-private partnership company" with Utsunomiya City and Haga Town playing a proactive role. Toward its establishment, formal requests were made to railway operators nationwide for technical cooperation, including training of drivers, and requests were made to the national and prefectural governments, local transportation operators, and the economic community for investments in the new company.

Project Scheme

The vehicles and track facilities are developed and owned by the administration(Utsunomiya City and Haga Town), while private operators(Utsunomiya Light Rail Co.,Ltd.) lease these facilities and handle operations. This approach is known as the "Public Ownership and Private Operation Separation Model."



Preparations for Opening

Training of Drivers

To acquire the "Type B Electric Vehicle Operation License" necessary for rail transportation, drivers were dispatched to railway companies nationwide for training.

Test Runs

In preparation for a safe opening and operation, test runs began on November 17, 2022, to ensure smooth operation without any issues.

Familiarization Runs

After the completion of the "test runs," "familiarization runs" were conducted to ensure transportation safety.
These runs included verifying actual operating times for commercial operations and conducting repetitive training on customer handling at stations.

3 Overview of the JR Utsunomiya East Area Project

3-3 Promoting Understanding Among Citizens, Residents, and Businesses

In this region, given the car-centric lifestyle and lack of tram culture, it was essential to promote understanding of the need for a public transportation network and the role of the Light Rail Transit(LRT) as the core public transportation system from east to west.
To achieve this, we have disseminated information through media such as pamphlets and conducted initiatives to promote understanding, such as open houses, briefings, and tours of construction sites and vehicles in line with the progress of the project.

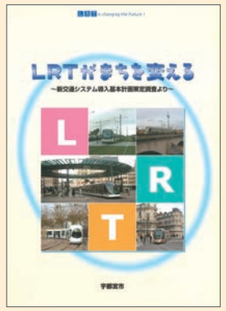
Promoting Understanding of the New Transportation System

When the introduction of the new transportation system began to be considered in the 1990s, the concept was not very familiar to citizens.
Therefore, to promote understanding of the new transportation system, we created pamphlets that clearly introduced the next-generation tram system(LRT) and initiatives such as park and ride, incorporating examples from overseas.
These were used to disseminate information at public briefings and other events.

▲Pamphlet for promoting understanding of the new transportation system

Promoting Understanding of LRT and Urban Development

Entering the 2000s, discussions on the introduction of LRT began to be integrated with urban development and comprehensive transportation policies.
To help citizens envision the changes LRT would bring to the city and understand their future urban development needs, we distributed pamphlets featuring road space layouts and perspective drawings after the LRT introduction to every household in the city.
Additionally, we actively engaged in efforts to directly exchange opinions with citizens by holding community discussions on transportation and urban development, citizen and town hall meetings, outreach lectures, and open houses.



▲Pamphlet for promoting understanding of LRT


▲"LRT Exhibition in the World and Japan"

Fostering Momentum Towards Realizing LRT

In the 2010s, as considerations for LRT introduction became more serious, efforts were made to build momentum for urban development through LRT alongside citizens. We distributed pamphlets with return postcards concerning urban development and the public transportation network to every household, and from 2011 to 2013, we held a total of 14 citizen forums and 177 days of open houses, actively exchanging opinions.
Based on the feedback gathered from these activities, we formulated the "Basic Policy on Core East-West Public Transportation," further advancing the LRT project in collaboration with citizens.

▲Pamphlet for promoting understanding of LRT


▲Citizen Forum


▲Open House

Full-scale development of the project and interactive efforts

After the formulation of the basic policy in 2013, efforts to obtain approval for the LRT project progressed, and active exchange of opinions with local residents and companies along the route intensified.
Starting with regional briefing sessions for all 39 district federation associations in Utsunomiya City, LRT project briefing sessions for the areas along the route were also held. At times, the mayor personally visited the local areas to provide detailed explanations.
In addition, legal procedures were carried out, such as soliciting public comments on the regional public transportation network formation plan required for obtaining a permit for the rail project, and holding citizen briefings and public hearings on the draft urban planning.


▲Federation Association Briefing Session


▲LRT Route Area Briefing Session


▲September 2017
"Civic Rally Aiming for Early Start of LRT Construction"


▲From 2017~
"LRT Experiential Tour to Toyama City"

Fostering a sense of "my rail" and citizen participation

To further boost the momentum toward opening after obtaining a permit for the rail project, we added new initiatives to previous efforts, such as establishing a permanent information dissemination base called "Utsunomiya Open Square - Future Transport City" and forming a citizen support group "teamNEXT" aimed at spreading information through word of mouth.
These efforts were made to foster a sense of "my rail" among various people, including children, to become familiar with the Light Rail.
In 2018, construction work began, including road improvements and rail construction, and based on the progress of these works, construction briefing sessions were held for nearby residents and businesses along the route, and construction information was disseminated through newsletters, radio, and flyers.In addition, in collaboration with the citizens, the designs and nicknames of the vehicles, the names of the stops, and the selection of individualized wall decorations for the stops were decided.


▲Utsunomiya Open Square - Future Transport City


▲Team NEXT member bands


Vehicle-shaped paper craft ▶


▲Construction information awareness leaflet


▲Scene from the workshop

Implementation of experiential events using vehicles and facilities before opening

In 2020, construction of rail facilities and other works began, and as new facilities such as vehicles, tracks, and stops were completed, experiential events, including site tours of vehicles and bridges, were held based on the progress of the work.


▲Scene from the bridge construction site tour


▲Scene from the track construction site tour (Kiyohara)

LRT and new traffic rules

From 2022, trial runs and familiarization operations began, and the Light Rail started running in the city, shifting citizens' interest toward a lifestyle assuming the use of the LRT.
Therefore, in regions without a culture of trams, efforts were made to familiarize both cars and people with the new town rules with LRT through various opportunities to publicize traffic rules and usage methods.
Awareness leaflets were distributed to all households in the city, and awareness videos were broadcasted at license centers.
Additionally, staff visited elementary and junior high schools to conduct safety classes and vehicle use workshops.


▲Scene from the Light Rail Usage Workshop(East Station Exit)

▲Traffic rules awareness leaflet

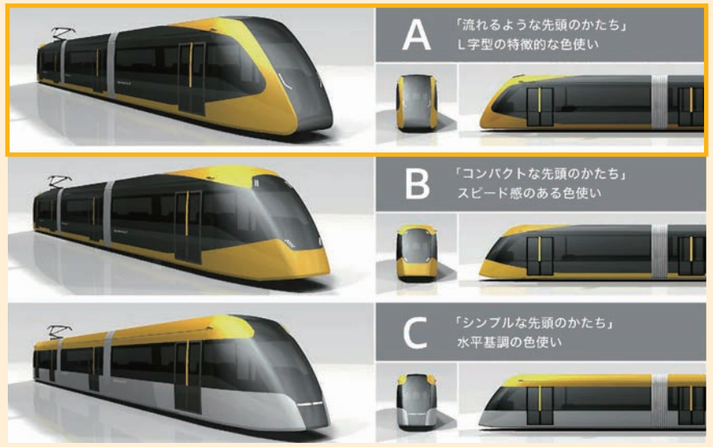
3 Overview of the JR Utsunomiya East Area Project

3-4 Collaboration with Citizens, Townspeople, and Companies

In order for "Lightline" to become an attractive public transportation option that will be loved and supported by the community in the long term, various collaborative efforts with citizens, townspeople, and companies were carried out at different stages of building the project from scratch.

Call for Vehicle Design Proposals (May - June 2018)

The vehicle design, which would become the new "face of the city," was selected based on the results of a survey mainly targeting citizens and townspeople, aiming for them to feel a sense of attachment and pride in the LRT running through their town.
Among the three design proposals that directly expressed and embodied the total design concept of "Uniqueness," "Lightning Flash," and "Advancement," the design proposal A, which received the most votes, was selected for reasons such as "feeling the lightning flash" and "feeling newness."




▲Scene of voting in the survey

Reasons for voting for "Design Proposal A"

- "Because it feels new" (31.6%)
- "Because it feels like a lightning flash"(29.7%)
- "Because it is unique" (15.9%), etc.

Call for Vehicle Nickname Proposals (December 2020 - January 2021)

The LRT vehicle is a symbolic presence in the city, and to ensure that many people, including users, feel close to and familiar with the LRT vehicles, the design was selected based on the results of a survey mainly targeting citizens and townspeople.
The nickname candidates were selected from four options, considering criteria such as being easy to understand, remember, and pronounce, while also reflecting the total design concept. Based on reasons such as "easy to pronounce and remember" and "well represents the concept," the vehicle nickname "Lightline" was selected, which received the most votes.

	Nickname candidates:	Main Intent	Number of Votes
A	Lightline (LIGHTLINE)	Raito + LINE (route/connection)	19,840 votes (48.8%) …Highest number) of votes
B	Welight (WELIGHT)	West and East + Raito We + Raito	3,653 votes (9.0%)
C	Miride (MIRIDE)	Future + Raito + RIDE	10,497 votes (25.8%)
D	Milightrun (MILIGHTRUN)	Future + Raito + RUN	6,678 votes (16.4%)

Reasons for voting for "Lightline (LIGHTLINE)"

- "Because it is easy to pronounce and remember"(46.9)
- "Because it well represents the concept"(24.4%)
- "Because it matches the vehicle design" (16.1%), etc.

LIGHTLINE
Haga Utsunomiya LRT

Selection of Stop Names (From December 2020)

Regarding the stop names, the "Stop Name Examination Committee," composed of local committee members selected from the regional town planning council and knowledgeable experts, selected several candidate names based on criteria such as "clarity of location," "public nature as a public facility," and "permanence for continuous use."
Since stops are facilities intended for the community to use continuously with familiarity, a survey targeting residents of each area along the stops (federation associations) was conducted to foster a "my rail" mindset among the community.


▲Scene from the Stop Name Examination Committee

Name Selection Criteria

- The town name of the stop's location
- A name representing the area where the stop is located
- The name of a public facility near the stop (a facility established based on laws and regulations)
- The name of a historical or cultural facility near the stop
- The name of an intersection near the stop
- The name of a railway station near the stop
- A name that combines the above names with wording indicating location (direction, etc.)

※Avoid difficult-to-read names, easily confused names, long names, and names of specific individuals or corporations (including groups).

▲Stop Name Survey

Collaborative Efforts Including Donations (From December 2020)

August 2022: Call for stop name naming rights

We introduced naming rights for the sub stop names, providing opportunities for corporations to participate, and displayed the sub stop names (corporate names) on stop signs, etc.

Stops	Sub Stop Names
Utsunomiya Station East Exit	Light Cube Utsunomiya Front
East Station Park Front	Tochigi Bank Utsunomiya East Branch Front
Mine	CDP Japan Headquarters Front
Yoto 3-chome	New Utsunomiya Rehabilitation Hospital Front
Utsunomiya University Yoto Campus	Bell Mall Front
Tobiyama Castle Ruins	Akimo Front
Seiryo High School Front	Sakushin University and Sakushin Junior College Front
Green Stadium Front	Canon Front
Yuinomori West	Akutsu Maintenance Front
Yuinomori East	Honda Cars Tochigi Chuo Yuinomori Store Front
Haga Town Industrial Park Management Center Front	Livedo Corporation Tochigi Haga Factory Front

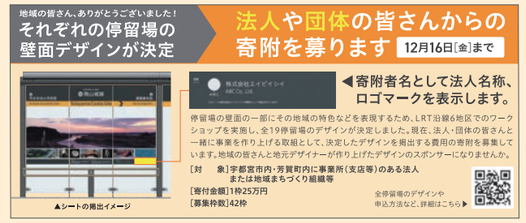
※From August 2023 to August 2028

September 2022: Call for stop bench donations

We invited partners to donate the costs for installing benches at the stops and placed plaques with the donors' names and messages on the benches.

December 2022: Call for donations for personalized stop wall surfaces

We also invited partners to donate for the posting costs of personalized sheets created in collaboration with the community, displaying corporate names, etc., within the sheets.the benches.



3 Overview of the JR Utsunomiya East Area Project

3-5 Opening Commemorative Events

About the Opening Commemorative Events

Opening commemorative logo mark

Scenes from commercial facilities along the lineThe opening of the Lightline was seen as an excellent opportunity to maximize attention and expectations from both inside and outside the country, including from Haga Town and Utsunomiya City.
Various opening commemorative events were held with the aim of fostering a sense of attachment to the Lightline ("My Rail" mindset), promoting the use (and conversion) to public transportation, and highlighting various attractions of the area and revitalizing the community, such as regional branding and town development.

The state of commercial facilities along the line

Opening Ceremony, Departure Ceremony, Parade

On August 26, 2023, an opening ceremony at the East Exit of JR Utsunomiya Station, attended by national and local representatives, as well as a departure ceremony for the first train, were held. The events were attended by approximately 20,000 visitors who celebrated the opening, making it a great success.
During the parade held on the east side (Kinu Avenue), traffic regulations were implemented with the cooperation of the prefectural police, local residents, and businesses, and performances were conducted by local school brass bands, cheerleading squads, and dance clubs.

Command for the first train

Opening ceremony

Ribbon cutting

Parade on Kinu Avenue

Welcome for the First Train, Lightline Flag Presentation Ceremony

The first train, which started running alongside the parade, was warmly welcomed by many people at each stop from the "Higashi Shukugo" stop to the final "Haga-Takanezawa Industrial Park" stop.
Additionally, at the "Hiraishi," "Kiyohara District Citizen Center Front," and "Haga-Takanezawa Industrial Park" stops, Lightline flags with messages written by the community were handed out to local residents.

Welcome from the children's association of the Mukaihara neighborhood association in the Mine district

Scene from the flag presentation ceremony

3 Overview of the JR Utsunomiya East Area Project

3-6 Situation after Opening

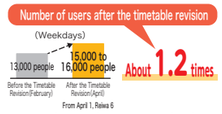
Changes in the Number of Users

Since its opening, Lightline has been utilized by a wide range of people, from children to the elderly, both from inside and outside the city and town.

Daily Users(July, Reiwa 6)

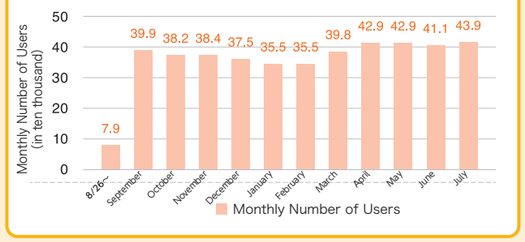
Weekdays **Approximately 15,000 to 18,000 people per day**
About 1.2 to 1.4 times the predicted 12,800 people

Weekends **Approximately 10,000 people per day**
About 2.3 times the predicted 4,400 people



On July 2, the 312th day after opening, the cumulative number of users reached 4 million.

Monthly Usage Trends



Daily Use

The Lightline has been established as a local transportation option, used for various purposes such as commuting to work and school, shopping, and hospital visits.

Scenes during peak commuting hours

Scenes of personal use(such as shopping)

Various Events along the Line

For the first month after opening, various events were held in collaboration with Lightline along the line as part of the Opening Special Monthly. Additionally, on weekends, Lightline plays a significant role as a means of transportation for events using facilities along the line, such as Kiyohara Central Park, and for professional sports games held at Utsunomiya Gymnasium, Green Stadium, etc.

LIGHTLINE Manpuku Food Festival

Cherry Blossom Festival

3 Overview of the JR Utsunomiya East Area Project

3-7 Development Effects

To understand the various effects of the Lightline development, continuous surveys and verifications are being conducted.

Town Changes

Population along the Lightline

Increase of about 5,000 people (8%)

While the overall population of Utsunomiya City is decreasing, the population along the Lightline is increasing
(H24: approx. 59,000 people ⇒ R6: approx. 64,000 people)

Source: Utsunomiya City "Basic Resident Register"

Social increase in the population along the Lightline

Net migration gain of about 1,300 people

【Social increase/decrease】(Cumulative from R3.6 to R6.3)

Inside the Lightline Area	Outside the Lightline Area	Utsunomiya City
1,288 (+2.01%)	▲952 (▲0.21%)	336 (+0.06%)

Source: Utsunomiya City "Basic Resident Register"

Land prices along the Lightline

Commercial land increased by about 6%

residential land by about 11%

Land prices along the Lightline have continued to rise since H25, when the project was confirmed to be implemented.

Source: Ministry of Land, Infrastructure, Transport and Tourism "Land Price Publication"

New investment amount in Kiyohara Industrial Park

Over approximately 110 billion yen + α

In Kiyohara Industrial Park, over 110 billion yen has been invested in factory construction and other developments, even just considering the publicly announced figures, before and after the opening of the Lightline.

Source: Excerpt from press release materials from each company (5 companies)

Number of migration consultations

Increased by about 10 times from

R2 (55 cases) ▶ R5 (556 cases)

Number of migrants

Increased by about 14 times from

R2 (26 people) ▶ R5 (364 people)

Lifestyle Changes

In a survey conducted before and after the opening targeting all residents of Haga Town, Utsunomiya City, and the Lightline area, positive lifestyle changes were confirmed.

Outing rate on survey days

Increased by about **5.7** points: 75.7% → 81.4%

Interaction opportunities such as dining and entertainment for Lightline area residents

Increased by about **11** points: 28.8% → 39.7%

Burden of transportation for medical visits and nursing care for Lightline area residents

Decrease of about **7.5** points: 47.5% → 40.0%

Average number of steps

Compared to before the opening, for those aged 40 and over within the Lightline area

Increase of **349** steps (7%)

Annual suppression effect on medical expenses due to increased steps

approximately 290 million to 330 million yen

Based on the "Guidelines for Walking Amount (Number of Steps) Surveys to Understand the Health Promotion Effects in Town Development" (Ministry of Land, Infrastructure, Transport and Tourism, Urban Bureau), calculations were made on the expected health promotion effects due to increased steps for those aged 40 and over, including the effect of suppressing medical expenses per step.

Changes in Satisfaction with Mobility

In a survey conducted with Lightline users, those who responded "satisfied" or "somewhat satisfied" with their mobility satisfaction before and after the opening increased significantly after the opening.

Students

Increased by about **58** points: 18.3% → 76.1%

Shopping, medical visits, etc.

Increased by about **59** points: 27.9% → 86.9%

Commuters

Increased by about **19** points: 33.8% → 52.9%

Child-rearing generations and wheelchair users, etc.

Increased by about **43** points: 26.2% → 69.0%

4 "Zero Carbon Transport" and Promotion of Decarbonization along the Lightline Route

The Lightline has achieved "Zero Carbon Transport" by running on 100% locally sourced renewable energy generated from household waste incineration and residential solar power. Additionally, the introduction of electric buses and other measures have been implemented to create a "Zero Carbon Move," aiming to decarbonize the public transportation network and reduce CO2 emissions in the transportation sector.
Furthermore, along the "Lightline Route," solar power generation and storage batteries are being maximized in public and private facilities.
In addition, Utsunomiya Light Power Co., Ltd., a new regional electric power company, has installed large-scale storage batteries at the Lightline's receiving points, optimizing power supply by utilizing these facilities.

Achieving "Zero Carbon Transport"

"Clean Park Mobara"
※Biomass power generation

Residential solar power generation, etc

Procurement

Utsunomiya Lightpower Inc

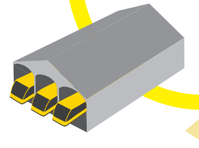
A regional new power company jointly funded by the public and private sectors to promote CO2 reduction and local production and consumption of renewable energy

Supply

Renewable Energy 100% Certificate

Vehicles

LRT



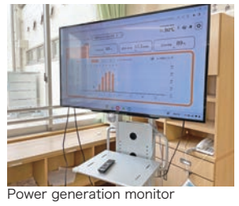
Vehicle depot

Stops

Introduction of Solar Power Generation Equipment, etc., in Public and Private Facilities

At Yuinomori Elementary School, solar power generation and storage batteries have been introduced.
Additionally, by utilizing the CO2 reduction credits generated by solar power from citizens, a zero-carbon school (net zero CO2 emissions) has been achieved.
Solar power generation equipment and storage batteries are also being introduced in private facilities along the route.

Solar power generation equipment (on the school building roof)



Power generation monitor

Environmental learning for children to learn about power generation status and the mechanism of solar power generation

Building a Zero Carbon Move

Towards the construction of a "Zero Carbon Move" to decarbonize the public transportation network, efforts are being made to promote the electrification of regional transport and route buses (158 units) by 2030.

Five EV buses were introduced in FY Reiwa 5

In the future, regional transportation will also be electrified

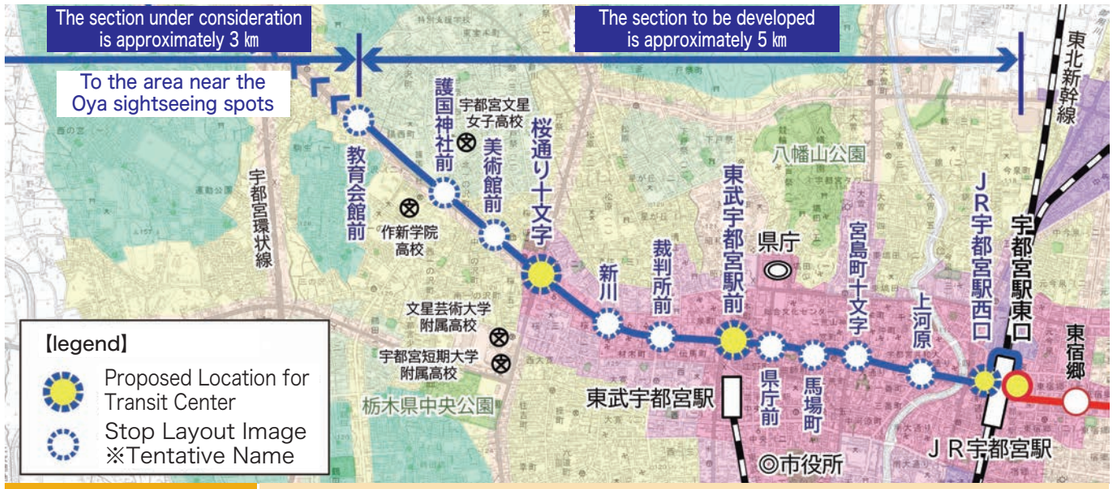
Bus operators install solar power generation equipment at their depots and charge electric buses with the generated renewable energy

5 Status of Considerations on the West Side of JR Utsunomiya StationTarget Schedule

Extension to the West Side of the Station

Regarding the westward extension of the Lightline, the section from Utsunomiya Station East Exit to the vicinity of the Education Hall has been designated as the development section (approximately 5 km).
Aiming for opening in the early 2030s, various studies are being conducted in conjunction with town development.

Examination and Development Section of the Lightline on the West Side of the Station



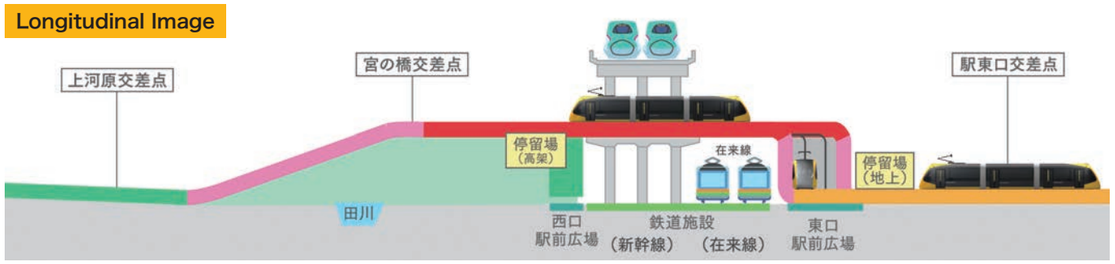
Target schedule FY 2025 ▶ Application for Track Business License Early 2030s ▶ Opening

Crossing JR Utsunomiya Station

The Lightline track (rail) will be elevated, crossing between the Shinkansen elevated track (3rd-floor level of the station building) on the north side of the station building and the conventional line (1st-floor level of the station building) (2nd-floor level of the station building).

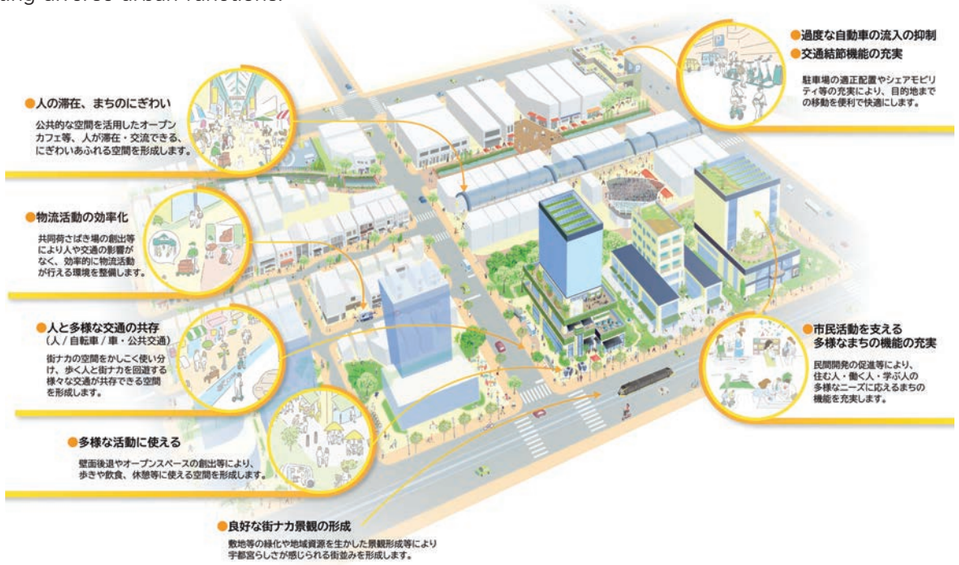
Selected Route for Crossing JR Utsunomiya Station(Photo Image)

Longitudinal Image



Human-Centered Walkable Urban Development in the City Center

In forming the NCC, we are promoting the development of "urban hubs" that drive the vitality of the entire city. To further this effort, we are focusing on creating walkable urban spaces where "city center spaces" transform into comfortable environments centered on people, while coexisting with various modes of transportation and supporting diverse urban functions.



Concept of a Public Transportation Network Based on Lightline on the West Side of the Station

1 Reorganization of Bus Routes in Coordination with Urban Development

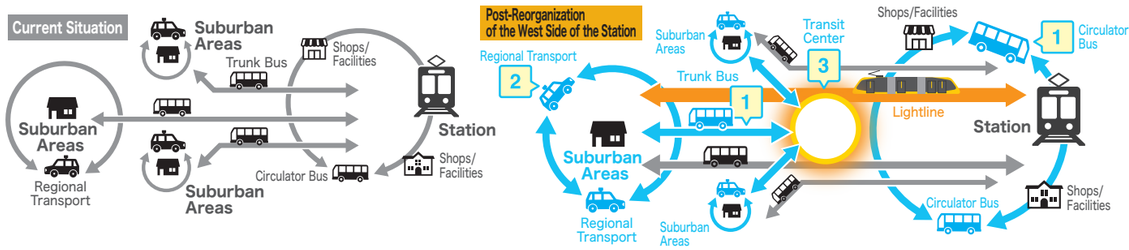
By reallocating some bus routes that overlap with the Lightline on major roads, we aim to enhance trunk buses that connect suburban areas with the city center and circulator buses within the city center.

2 Enhancement of Regional Transport

In cooperation with buses and taxis, we are promoting the introduction of regional transportation such as shared taxis that cover the area as a means of daily transportation for commuting to hospitals, shopping, etc., while appropriately setting transfer points with Lightline and buses.

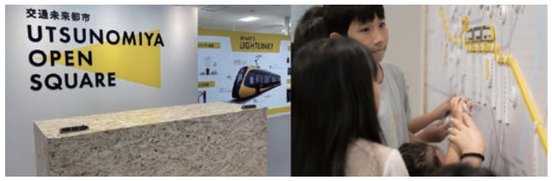
3 Strengthening Transportation Hub Functions

To ensure smooth and convenient transfers, we are considering facilities at transportation hubs such as around Tobu Utsunomiya Station and near Sakura-dori Crossroads, where various modes of transportation, including Lightline, buses, and cars, can be seamlessly connected.



Promotion of Understanding on the West Side of the Station

In addition to town development-related organizations, we are carefully exchanging opinions with many people, including those along the Lightline route, regarding the use of road spaces, such as pedestrian areas, loading zones, and stops that are closely related to your daily life.



Scenes from the Open Square on the West Side of the Station

Scenes from the "Lightline Experience and Opinion Exchange Meeting"

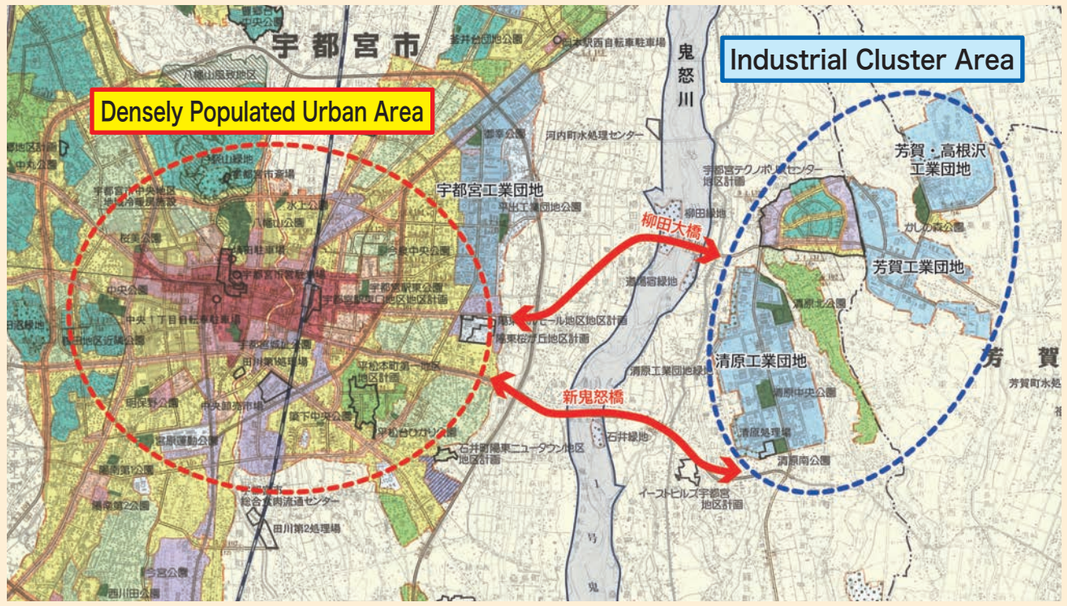
6 Project Progress

6-1 1990s: Mass Transit Measures as a Countermeasure to Traffic Congestion

Development of Industrial Parks and Emergence of Traffic Congestion Issues

In Utsunomiya City, the Utsunomiya Urban Development Association led the development of the Utsunomiya Industrial Park starting in 1960 and the Kiyohara Industrial Park, the largest inland industrial park, starting in 1973. Additionally, in Haga Town, the development of the Haga Industrial Park began in 1971, and the Haga-Takanezawa Industrial Park in 1973. These efforts created significant industrial hubs in the eastern Utsunomiya region, which support city and town employment and tax revenues.
Furthermore, in 1984, the area was designated as "Utsunomiya Technopolis" by the national government, promoting city development organically linking industry, academia, and residential areas.
On the other hand, about 80% of the approximately 30,000 industrial park workers commute by car, leading to severe traffic congestion during peak commuting hours in the morning and evening from Utsunomiya City to the industrial parks. Resolving traffic congestion in the eastern Utsunomiya region was an urgent issue.

Figure: Traffic Congestion during Commuting Hours



Start of Consideration for Introducing a New Transportation System (1992–1995)

Due to the progression of motorization and rapid population growth in the Utsunomiya metropolitan area, the "2nd Utsunomiya Metropolitan Area Person Trip Survey" was conducted to understand the actual conditions of worsening traffic congestion.
Based on the data obtained regarding the traffic conditions, the "New Transportation System Study Group" was established to analyze the data and began considering the introduction of a new transportation system to address urban transportation issues in the Utsunomiya metropolitan area.
These issues included alleviating traffic congestion on roads connecting the established urban area of Utsunomiya with the new city on the left bank of the Kinugawa plateau and strengthening traffic access to the Technopolis Center area (now Yuinomori area).
In addition, based on the results obtained from the Person Trip Survey, the "Urban Transportation Master Plan for the Utsunomiya Metropolitan Area" was formulated, establishing two "transportation system policies" : the "formation of a structural traffic axis," including the strengthening of the east-west traffic axis, and the "formation of an urban traffic network" through the appropriate arrangement of traffic networks.

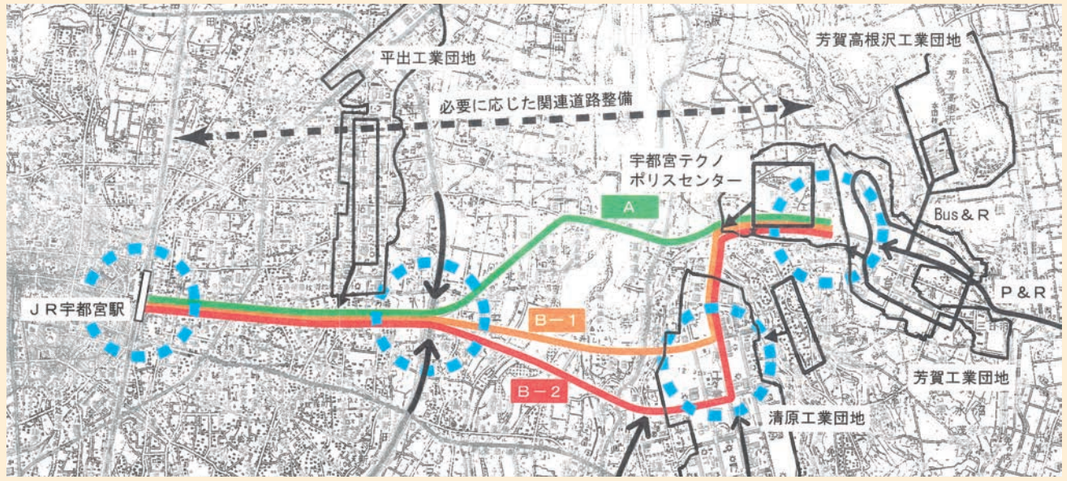
Comparison of Various New Transportation Systems (1996–1998)

Regarding the new transportation system to be introduced in the Utsunomiya metropolitan area, a comparative study of the characteristics of backbone buses, LRT, and guideway buses was conducted. Additionally, research on the feasibility of introducing a new transportation system was carried out, including an image of phased development, the impact on surrounding roads, future demand, and introduction challenges.
Furthermore, three routes were set from Utsunomiya Station East Exit to the Technopolis Center area, which is a blank area for rail-based transportation.
Comparisons were made between ground-level and elevated operations in terms of business profitability, potential demand, and other factors.
However, business profitability remained a challenge in all cases.

Method	Monorail System	Elevated System	LRT System	GuidewayBus System
Representative Examples	 Tokyo Monorail	 Yurikamome	 LRT in Strasbourg	 Yutorito Line
Suitability Based on Population Size	△ Generally suitable for populations of 1 million or more	△ Generally suitable for populations of 1 million or more	◎ Generally suitable for populations of 300,000 or more	△ Only in Nagoya City in Japan (2.1 million people)
Transport Capacity (Peak Demand Forecast: approx.1,800people/hour)	△ Overcapacity relative to demand (4,000–26,000 people/hour)	△ Overcapacity relative to demand (2,000–20,000 people/hour)	◎ Suitable for demand (2,000–5,000 people/hour)	◎ Suitable for demand (2,000–3,000 people/hour)
Punctuality and Speed	◎ Excellent punctuality due to dedicated elevated track	◎ Excellent punctuality due to dedicated elevated track	○ Ensuring punctuality with dedicated lanes and other measures	○ Punctuality ensured with elevated structure in congested sections
Impact on Road Traffic	◎ No significant impact	◎ No significant impact	△ Two lanes of road reduced	○ No impact in elevated sections
Environmental Impact and Accessibility	△ ・Significant impact on urban landscape and sunlight due to elevated structure ・High burden on boarding and alighting due to elevated structure	△ ・Significant impact on urban landscape and sunlight due to elevated structure ・High burden on boarding and alighting due to elevated structure	◎ ・Good accessibility due to ground-level operation (Active as a city symbol overseas)	△ ・Significant impact on urban landscape and sunlight due to elevated structure ・High burden on boarding and alighting due to elevated structure
Construction Cost	△ 8 to 15 billion yen/km	△ 6 to 16 billion yen/km	◎ 2 to 3 billion yen/km	○ 4 to 6 billion yen/km
Overall Evaluation	△	△	◎	○

Start of Consideration Based on LRT (1999–2000)

Based on previous feasibility studies, current conditions were assessed, including population and land use distribution, road structure, and traffic demand in the eastern Utsunomiya area.
In addition, related measures such as park-and-ride and cycle-and-ride were investigated and considered to secure broad demand. A "Draft Proposal for the Introduction of a New Transportation System" was developed, combining route plans and these related measures.
To further refine the draft proposal, a "Traffic Awareness Survey" was conducted targeting residents, workers, schools, and shoppers in the eastern Utsunomiya area and the left bank area of the Kinugawa River. The survey aimed to estimate a transportation mode share model and set conditions for demand forecasts based on future population frame estimates. Various considerations, including a comparison and analysis of introduction methods (LRT and other new transportation systems), related road development, operational entities, and business profitability, were conducted.
As a result, a "Basic Policy for the Introduction of a New Transportation System," primarily focusing on the introduction of LRT, was formulated, and three routes were selected as draft proposals for consideration.



6 Project Progress

6-2 2000s: Public Transportation as a Core of Urban Development

Urban Development and LRT

In the 2000s, the population in Utsunomiya City was decreasing in the city center and increasing in the suburbs. Due to suburbanization, low-density urban areas expanded, leading to a decline in vitality in the city center. Meanwhile, the number of workers significantly increased in the eastern area where industrial parks were developed, resulting in an increase in trips from the city center to the eastern area.
Additionally, as public transportation was not adequately developed in the eastern area, car dependency increased, leading to traffic congestion. The LRT project was initially started to alleviate the congestion in the eastern Utsunomiya area caused by these changes in population distribution and increased car dependency. However, it has been positioned as an east-west backbone public transportation system to enable sustainable urban development in the future, and consideration for its introduction began to progress.

The Need for Backbone Public Transportation to Address Urban Policy Issues (2001–)

In the Utsunomiya city area, urban policy issues included "strengthening the urban axis" that connects the city center with the left bank area of the Kinugawa River, "coordinating city center revitalization with hub development" to functionally integrate the activation of the city center and hub formation, and "promoting a lifestyle that does not overly depend on cars" to curb suburbanization of urban functions.
To comprehensively address these urban development challenges and integrated transportation policy issues, such as congestion mitigation, the "Study for Formulating a Basic Plan for the Introduction of a New Transportation System" was conducted. This study summarized the basic concepts and challenges of the LRT, which was to be the new backbone public transportation, and formulated the "Basic Plan for the Introduction of a New Transportation System," deepening the study based on the route passing through the Kiyohara Industrial Park.

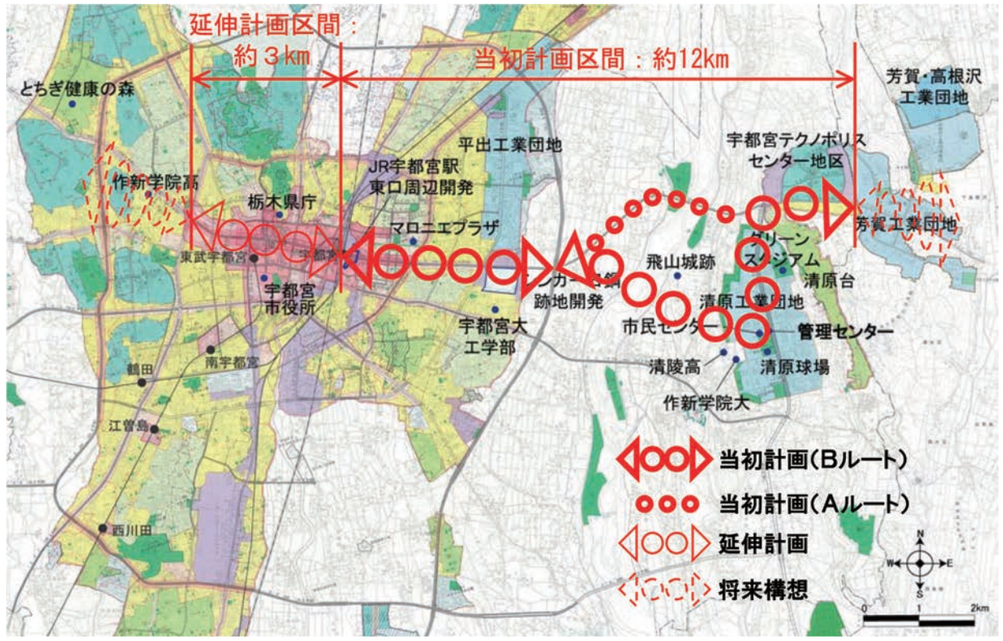


Figure: Introduction Routes and Concept of Phased Development

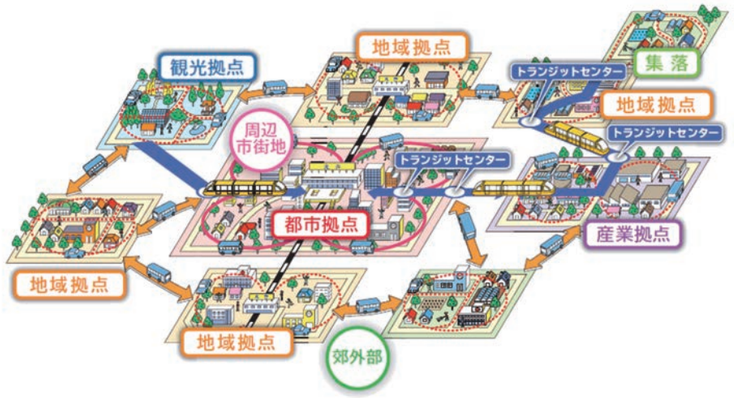
A comparison of the LRT introduction routes was made between Route A, which passes through the Yanagida Bridge, and Route B, which passes through the Kiyohara Industrial Park. Route B, which passes through the Kiyohara Industrial Park, was considered superior in terms of demand stimulation through improved access to facilities along the route, such as schools and Green Stadium.

East-West Backbone Public Transportation (LRT) as a Priority Project (From 2007)

With the enactment of the Regional Revitalization Law in Japan, it became possible to operate rail businesses under a "publicly funded, vertically separated system," and subsidy programs related to LRT development have been expanded annually. These measures have broadened efforts to support public transportation.
As a result of examining business and operation methods based on this "publicly funded, vertically separated system," it was confirmed that the cost burden required for initial investment in track development could be reduced. This findingindicates that the business profitability, which had been a challenge, could be addressed, potentially enabling stable management.
To further implement LRT as a concrete policy, the "5th Utsunomiya City Comprehensive Plan" was developed, setting NCC as the future vision for the city and positioning the introduction of East-West backbone public transportation (LRT) as a priority project. Additionally, the plan was included in various other plans, such as the "Utsunomiya Urban Transportation Strategy" and the "2nd Utsunomiya City Urban Planning Master Plan.

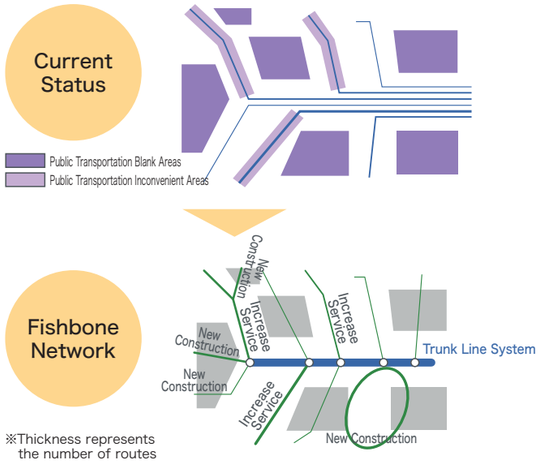
NCC Image

NCC aims to form various hubs (urban hubs, regional hubs, industrial hubs, tourism hubs) based on regional characteristics and to facilitate smooth movement between hubs by constructing a hierarchical public transportation network and road network.
This will create a "multi-core interconnected urban structure" where each hub complements the roles of others, which is the envisioned future for Utsunomiya.



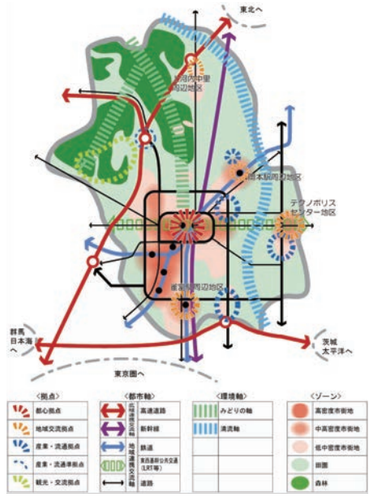
Positioned in the "Utsunomiya Urban Transportation Strategy" Fishbone Network

The "Fishbone Network" aims to improve transportation efficiency by operating LRT on main roads (trunk lines) where bus routes are concentrated. It seeks to increase the number of services and expand new routes by distributing them to branch lines away from the main, streamlined bus routes.



It is also depicted in the"Future Urban Structure Diagram" in the"2nd Utsunomiya City Urban Planning Master Plan."

The East-West backbone public transportation (LRT, etc.) was positioned as the core public transportation axis supporting the realization of NCC.



6 Project Progress

6-3 2010s: Commercialization of the Lightline

Start of Consideration for Full-scale Commercialization

The LRT, positioned as the East-West backbone public transportation essential to the future vision of Utsunomiya City (NCC), began full-scale commercialization studies, including track facility design, demand forecasting, and assessment of development effects, aiming for the acquisition of a rail business license.

Basic Policy for the Realization of East-West Backbone Public Transportation

In March 2013, the "Basic Policy for the Realization of East-West Backbone Public Transportation" was formulated, positioning LRT as the East-West backbone public transportation. The policy outlined the approach to be taken regarding the sections for introduction and the development procedures.

Main Contents of the【Basic Policy for the Realization of East-West Backbone Public Transportation】

Introduction System

To ensure smooth coordination with existing railways, buses, taxis, regional transportation, and other various transportation modes, LRT will be introduced as the East-West backbone public transportation. LRT is expected to have high transport capacity and punctuality required for East-West backbone public transportation, be friendly to people and the environment, revitalize areas along the line including the city center, promote industry, and form a wide-area network in collaboration with railways, thus ex...

Development Steps

Since the development of the entire planned section (approximately 15km) will take a certain period, and the state of public transportation development differs significantly between the east and west sides of JR Utsunomiya Station, the development will be carried out step-by-step starting from sections where the effects of the development can be realized early.

① East side of JR Utsunomiya Station(Priority Development Section)
(From JR Utsunomiya Station to Utsunomiya Technopolis Center area, approximately 12 km)
② West side of JR Utsunomiya Station
(From JR Utsunomiya Station to the vicinity of Sakura-dori Crossroads, approximately 3 km)

Planned Section

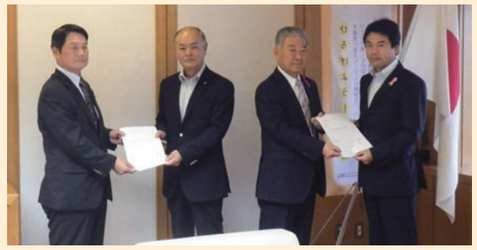
To construct a functional public transportation network and ensure coordination with urban development and stable demand, the planned section is defined as "the vicinity of Sakura-dori Crossroads to Tobu Utsunomiya Station to JR Utsunomiya Station to Utsunomiya Technopolis Center area (approximately 15 km)," connecting the city center west of JR Utsunomiya Station with industrial parks and large-scale development areas on the left bank of the Kinugawa River.

Business Scheme

To establish a transportation system that utilizes healthy and sustainable private sector vitality while ensuring public interest, continuity, and improved efficiency, a "publicly funded, vertically separated system" will be adopted. In this system, the public sector will develop and own the running space, transportation hubs, and stops, while the private operating entity will manage the operation and daily maintenance, clearly delineating the roles of the public and private sectors.

Participation of Haga Town

After formulating the basic policy, Haga Town submitted a "Request for LRT Development in Haga Town" to Utsunomiya City, requesting the extension of the section "from Utsunomiya Technopolis Center area to Haga-Takanezawa Industrial Park." In response to this, the entire planned section was defined as "the vicinity of Sakura-dori Crossroads to Haga-Takanezawa Industrial Park (approximately 18 km)," and the "priority development section" was set as "the east side of JR Utsunomiya Station to the vicinity of Haga-Takanezawa Industrial Park (approximately 15 km).



Obtaining a Rail Business License

To further advance the technical and specialized considerations for the commercialization of LRT, the "Haga-Utsunomiya Core Public Transportation Study Committee" was established, organized by experts such as university professors, administrative advisors from the national and prefectural governments, transportation operators, and observers from neighboring cities and towns. Various subcommittees for more specialized discussions were also established, leading to active discussions. In 2015, the legally mandated "Haga-Utsunomiya Eastern Area Public Transportation Revitalization Council" was established, and the "Haga-Utsunomiya Eastern Area Public Transportation Network Formation Plan" was formulated based on the Regional Revitalization Law. In this plan, the East-West backbone public transportation (LRT) was positioned as a "Rail Transport Enhancement Project" to solve transportation issues in the Haga-Utsunomiya eastern area. In January 2016, the "Rail Transport Enhancement Implementation Plan" was created and submitted to the national government, and in September 2016, a rail business license was obtained.

〈Study Organizations Related to the Commercialization of LRT〉

- Haga-Utsunomiya Core Public Transportation Study Committee — Established on November 21, 2013
  - LRT Vehicle Subcommittee — Established on February 22, 2016
  - LRT Design Subcommittee — Established on August 3, 2016
  - Transport Hub, etc. Infrastructure Development Subcommittee — ※Reorganized from the Station Intersection Infrastructure Development Subcommittee Established on June 25, 2018
  - LRT Urban Development Subcommittee — Established on September 27, 2019
  - LRT Development Effect Review Subcommittee — Established on October 29, 2021

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