





The ultimate electric car:

The new IONIQ 5

Offering new experience everyday and on special occasions.



IONIQ 5 Digital Catalogue (PC/Tablet)



IONIQ 5 Digital Catalogue (Mobile)

^{*} Scan the QR code to explore the IONIQ 5.

Exterior

The past-meets-future design and Parametric Pixels come together to create an unrivaled style.





Exterior Take a closer look



Full LED headlamps(projection type)





Digital side mirror 20-inch alloy wheels & tires

Interior



Interior

The interior feels more spacious than ever thanks to the incorporation of a "comfortable living space" motif.





Dual-zone full automatic air conditioning Ambient mood lighting



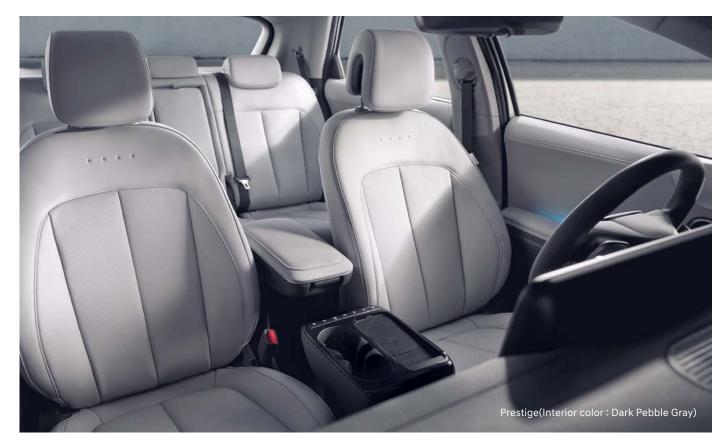
12.3-inch cluster / 12.3-inch navigation system



 $\mbox{\ensuremath{^{\star}}}$ The screen layout/design of the infotainment system may change with the updates.

Space

Features such as the Universal Island and Relaxation Comfort Seat make it easy to arrange the interior in several different ways based on need.



Natural leather seats, Power-adjustable 1st row seat(leg rest, relaxation comfort seat), Integrated Memory System





Universal Island

Can be moved back as far as 140 millimeters, allowing for efficient use of space

Memory function(for all seats) / 2nd row electric sliding seats

The memory function allows the desired locations of the passenger and second-row seats to be saved. The second-row seats, which can slide forward or backward electrically, maximize the use of space.

N Line

An elegant, sporty design that embodies an innovative style.





 $[\]ensuremath{^\star}$ The screen layout/design of the infotainment system may change with the updates.



N Line Take a closer look









Front bumper

The sporty, N Line-exclusive design gives the front bumper a high-performance look.

Rear bumper

The rear bumper's N Line-exclusive design accentuates the vehicle's sportiness.



Garnish hidden lighting(with charging indicator light)

The lighting pattern, which is unique to the N Line model, gives the vehicle a unique image.

20-inch alloy wheels(with N Line wheel caps) / Body-colored wheel arch moldings

The stylish, N Line-exclusive wheel design and elegant body color molding come together to convey power.



N Line-exclusive seats(including exclusive emblem) / Red stitching

The leather seats, which incorporate Alcantara, and red stitching applied throughout the interior offer a sleek, unrivaled aesthetic. (N Line-exclusive leather seats are provided as a basic option.)

Metallic pedal & footrest

Function

Fortified cutting-edge technologies and amenities offer an experience that surpasses rivals.



Wireless phone charger

The wireless charging system is positioned above the Universal Island to make it easily accessible to all passengers.





Digital center mirror

An exclusive camera gives the driver a clear, sharp rear view.

Digital key 2

The vehicle can be locked or unlocked or the ignition turned on via iPhone, Apple Watch, or Android smartphone(such as a Samsung phone). The digital key can be shared with up to 15 devices.





OTA Software Update

If the vehicle is not equipped with the latest software version, once the ignition is turned off, a wireless software update will begin, with the driver's consent.

^{*} The screen layout/design of the infotainment system may change with the updates.



Function Take a closer look



Smart power tailgate

If the driver stands close to the rear of the vehicle with the smart key on their person, the tailgate will open automatically, after a short period of time, making it easier to load and unload luggage. The extent to which the tailgate opens may be adjusted according to the driver's height or unloading environment.



Blind-spot View Monitor

Engaging the turn signal in either direction shows the driver video footage of what's next to and behind the car in the instrument cluster.





Augmented reality navigation

Intuitively provides the many types of information needed while driving(e.g. destination, vehicle-to-vehicle distance, FVSA for vehicle in front) on the AR display.

Surround View Monitor

Offers a clear view of the vehicle's immediate vicinity while driving or parking through high-resolution cameras and digital video transmission techniques.

* The screen layout/design of the infotainment system may change with the updates.

Driving

Driving Take a closer look

Can drive farther due to the use of a higher-capacity battery.



Maximum driving distance for one charging 485km

The 84.0kWh battery pack enables long-distance driving without having to worry about battery life.

(2WD, 19-inch, without built-in cam)

Max. Power / Max. Torque 239kW(325PS)/605Nm

The IONIQ 5's 239kW output makes it fun and dynamic to drive. (based on total AWD capacity)

Exclusive EV platform(E-GMP)

E-GMP is an electric vehicle-dedicated platform for which all functions have been upgraded, including battery, motor, vehicle body, and chassis structure. To guarantee passenger protection and battery safety, extruded aluminum was applied inside the vehicle's side seal for structural safety.

HTRAC

Delivers an exciting driving experience by redistributing front/rear-wheel driving force depending on the situation through the addition of a FWD motor equipped with a 2WD disconnector.

- *The above driving range was calculated based on the standard driving mode of the Ministry of Trade, Industry and Energy's certification criteria. It may vary depending on driving conditions, driving style, loaded weight, vehicle's condition, and outdoor temperature.
- * A significant drop in the outdoor temperature(i.e. winter) may reduce the battery's performance and, therefore, decrease the driving range.

Charging

Quick and convenient charging services for everyone.

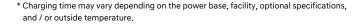


Charging Take a closer look



How to charge IONIQ 5 ultra-fast in 18 minutes

Drivers can utilize a diverse charging infrastructure through a multi-high-speed charging system(400V/800V). A rapid charger(350kW) can charge a battery from 10% to 80% in only 18 minutes.



PnC(Plug and Charge)

Authentication and charging start as soon as the charging cable is connected to the vehicle. Payment is made automatically after charging is complete.







Indoor V2L

The indoor V2L feature(located under the middle second row seats) enables the unrestricted use of electronic devices inside the vehicle.

Outdoor V2L

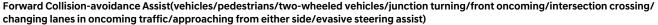
Passengers can use a wide selection of electronic devices outside the vehicle as well as inside through the outdoor V2L function. The outdoor V2L function ensures a comfortable experience for passengers during outdoor activities in virtually any environment.

 * Indoor/outdoor V2L can only be used when the battery pack is 20~100% charged.

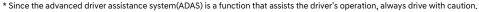
Hyundai SmartSense

Hyundai SmartSense keeps the driver and passengers safe and protected.





This function, after scanning the vehicle's immediate surroundings, issues warnings when a collision risk is detected. If, after a warning is issued, the vehicle in front suddenly slows down or the risk of(frontal) collision with a car, motorcycle, pedestrian, or bicycle increases, automatic braking is activated. If, while making a left turn at an intersection with the turn signal on, there is increased risk of collision with a car or motorcycle approaching from the opposite side or with a car approaching from the left or right while going straight through an intersection, automatic braking is activated to help the driver control the vehicle. Automatic control is also activated if, while driving in one's lane, a high risk of collision with a vehicle approaching from the opposite lane is detected. The Forward Collision-avoidance Assist automatically activates avoidance steering if, while changing lanes, there is a risk of collision with a vehicle, two-wheeled vehicle, or two-wheeled/preceding vehicle in the neighboring lane. Avoidance steering is also automatically activated if there is a risk of collision with a vehicle, two-wheeled vehicle, pedestrian, or cyclist at the periphery of the lane in front or, while changing lanes, with a vehicle or two-wheeled vehicle next to or behind the car.



* The function may not operate smoothly or properly depending on the surrounding environment and driving conditions. In addition, the function may operate with restrictions depending on the regulation related to the certification of the advanced driver assistance system.

For details, refer to the owner's manual, * The above specifications are applied differently depending on the trim, powertrain, and specifications directly selected by the vehicle purchaser in consideration of price and preference.





Blind-spot Collision-avoidance Assist

A warning is issued if danger of collision with the vehicle next to or behind the car is detected while the driver is using the turn signal to change lanes, If a risk of collision with the vehicle next to or behind the car is detected(and increases) while attempting a forward exit from a parallel-parked position, automatic braking is activated.

Safety Exit Assist

A warning is sounded in the event that a vehicle is detected approaching from the side or rear when the passenger is opening the door to get out of the car(while parked). If a risk of collision with a vehicle approaching from the side or rear is detected when pressing the Electronic Child Safety Lock while parked, a warning is sounded and Electronic Child Safety Lock will automatically stay locked.



Hyundai SmartSense Take a closer look





This system helps to not only maintain a safe distance with the vehicle in front on a highway or a regular road by driving at a uniform speed but also to keep the vehicle in the center of the lane on a curved road. If you engage the turn signal (while holding the steering wheel) in the direction you wish to change lanes in, the vehicle will automatically move over(HDA 2 only works above a certain speed).

Navigation-based Smart Cruise Control(safe/curve/access road)

This function helps the driver, in response to situational factors, maintain a safe speed while driving on a motorway or highway and also automatically slows the vehicle down just before entering a section of road with a lower speed limit, curved part of the road, or a ramp. After having passed through such section, the vehicle is returned to the previous speed.





Lane Following Assist 2

This system keeps the car in the center of the lane.

Rear Cross-Traffic Collision-avoidance Assist

If a collision risk is detected from the left or right while driving in reverse, the driver is issued a collision warning. If the collision risk increases after the warning, the brakes are activated automatically.

- * Since the advanced driver assistance system(ADAS) is a function that assists the driver's operation, always drive with caution.
- * The function may not operate smoothly or properly depending on the surrounding environment and driving conditions. In addition, the function may operate with restrictions depending on the regulation related to the certification of the advanced driver assistance system.

 For details, refer to the owner's manual. * The above specifications are applied differently depending on the trim, powertrain, and specifications directly selected by the vehicle purchaser in consideration of price and preference.

Colors









synthetic leather seats

Dark Pebble Gray

Fabric seats

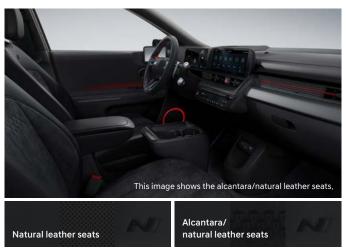


Heritage Brown



Dark Teal

natural leather seats



Black one-tone/Red stitching(N Line-exclusive)



Colors Take a closer look



Color combination chart

Exterior Interior	Cyber Gray Metallic(C5G)	Ecotronic Gray Pearl(PE2)	Atlas White (SAW)	Lucid Blue Pearl (U3P)	Digital Teal Green Pearl(M9U)	Abyss Black Pearl (A2B)	Ecotronic Gray Matte Matte color(NET)	Atlas White Matte Matte color(WAM)	Gravity Gold Matte Matte color(W3T)	Ultimate Red Metallic(R2P)
Black one-tone(Fabric seats)	•	•	•	-	-	•	-	-	-	-
Dark Pebble Gray(Fabric seats)	•	•	•	-	-	•	-	-	-	-
Black one-tone(Eco-processed synthetic leather seats)	•	•	•	•	•	•	•	•	•	-
Dark Pebble Gray(Eco-processed synthetic leather seats)	•	•	•	•	•	•	•	•	•	-
Black one-tone(Eco-processed natural leather seats)	•	•	•	•	•	•	•	•	•	-
Dark Pebble Gray(Eco-processed natural leather seats)	•	•	•	•	•	•	•	•	•	-
Dark Teal(Eco-processed natural leather seats)	•	•	•	-	•	•	•	•	•	-
Mud Gray(Eco-processed natural leather seats)	•	•	•	•	-	•	•	•	•	-
Heritage Brown(Eco-processed natural leather seats)	•	•	•	-	-	•	•	•	•	-
Black one-tone/Red stitching(N Line-exclusive natural leather seats)	•	•	•	-	-	•	•	•	•	•
Black one-tone/Red stitching(N Line-exclusive alcantara/natural leather seats)	•	•	•	-	-	•	•	•	•	•

^{*} Because the above colors are printed on paper, they may look different from the color applied to the vehicle. * Ultimate Red Metallic is N Line-exclusive. Lucid Blue Pearl and Digital Teal-Green Pearl are not available for N Line.

^{*} For further information on colors, please refer to our digital catalogue.

E-Lite / E-Value + / Exclusive



19-inch alloy wheels





Exclusive(Atlas White)



Outside mirror(heating, power-folding, power adjustment, LED turn signal lamps) LED interior lamp(map lamp, room lamp, sun visor lamp, and luggage lamp)

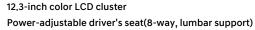




Double-glazed soundproof glass (windshield, 1st/2nd row doors) 2nd row seat air vent











ECM room mirror 2nd row 60/40-split folding/sliding and reclining seat

- * The E-Lite trim does not include some features such as Double-glazed soundproof glass(1st/2nd row doors) and Power-adjustable driver's seat(8-way, lumbar support).
- * The specifications in this brochure may vary by model and options included. For detailed specifications, please refer to the price list for the relevant month.

Prestige







20-inch alloy wheels



Prestige(Gravity Gold Matte)



LED turn signal lamps Electronic Child Safety Lock





Vision roof Metallic pedal & footrest





Integrated Memory System Metallic door scuff plate





Power-adjustable front passenger's seat(8-way, lumbar support, leg rest, and relaxation comfort seat)

2nd row manual door curtain

^{*} The specifications in this brochure may vary by model and options included. For detailed specifications, please refer to the price list for the relevant month.

H Genuine Accessories

H Genuine Accessories offer a wide range of amenities and leisure products for the needs and lifestyles of customers who desire high-quality customization.

New car options

Luggage package





Luggage screen

Luggage net

Aftermarket-exclusive goods

Camping & Picnic



Picnic mat and cooler bag

Camping trunk



Air mat



Lightweight chair



Multi curtain



Car refrigerator

Moving office



Multi tray

- * The multi-tray, an aftermarket exclusive, cannot be used while driving. ※ The car fridge, an aftermarket exclusive, can be used only by a car applied with indoor V2L.
- * Aftermarket exclusives can be purchased at the Hyundai Shop(Shop,Hyundai.com) under the Hyundai Brand Pavilion.

Bluelink







service registration



plans and prices



Bluelink app

Hyundai Motors' connected service that makes car maintenance easy no matter the place or time of day



Safety security

- · Automatic notification of airbag deployment
- SOS emergency response
- · Theft tracking
- Theft alert
- Driver Attention Warning
- Advanced Rear Occupant Alert
- Electric car battery monitoring
 - *Battery malfunction alert (for Bluelink members only)

Remote control

- · Remote air conditioner control
- Remote charging control
- Remote door open/lock
- · Remote window control
- Parked location confirmation
- · Destination data sending, and more!



11 functions

Vehicle management . Journey report

- · Car diagnostics test
- Over-the-Air update
- · Low battery notification
- Safe driving habits
- Remote smart diagnosis



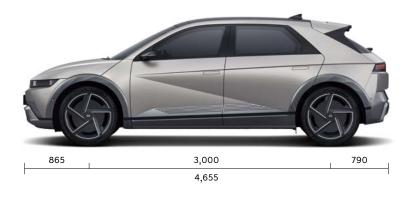
- Navigation Road directions (Bluelink)
 - Provision of traffic information
 - · Portal site search of surrounding area
 - Sharing of current car location
 - · Directions to destination

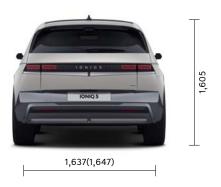


- *Car purchasers who are also first-time Bluelink members will receive Basic Service free of charge for five years from the date of membership application. For the subsequent five years, they will be provided with Light Service (SOS emergency response, automatic notification of airbag deployment, traffic information, electric car battery monitoring, and etc.) free of charge.
- *All of the above-named services (e.g. Hyundai Digital Key 2, In-car Payment, OTA software update, and electric car battery monitoring) can be used by Bluelink members only.
- *Electric car battery monitoring: In the event a battery malfunction is detected, a notification is sent to the driver (Bluelink members only),
- *High-quality audio and OTT & video streaming are add-on services that require a separate purchase of Bluelink's streaming data plan, You must also link your streaming platform (Genie Music , Melon, WATCHA, Wavve, or YouTube Premium) accounts to the app or the car. Standard Youtube and U+ Mobile TV can be used without logging in.
- *Inquiries: Bluelink KakaoTalk Customer Service Center (enter 'Bluelink' in KakaoTalk search screen and add as friend)

Dimensions







Unit: mm, Wheel tread measurement made using 255/45R20 tires

* () in the tread figure is based on 19-inch wheels

Model	Fuel type	Rated voltage of storage battery(V) / Capacity(Ah)	Max,Power (kW/PS)	Curb weight (kg)	Tire (inch)	Fuel efficiency reported to the government(fuel efficiency)			Maximum driving distance for one charging		
Model						City(km/kWh)	Highway(km/kWh)	Combined(km/kWh)	City(km)	Highway(km)	Combined(km)
Standard 2WD	Electricity	523 / 120.6	124.9/170	1,890	19	5.7	4.6	5.1	405	322	368
Long Range 2WD (without built-in cam)	Electricity	697 / 120.6	168 / 229	2,015	19	5.8	4.6	5.2	533	426	485
Long Range 2WD	Electricity	697 / 120.6	168 / 229	2,015	19	5.6	4.5	5.1	524	422	478
	Electricity	697 / 120.6	168 / 229	2,025	20	5.3	4.4	4.9	492	406	453
Long Range AWD	Electricity	697 / 120.6	239 / 325	2,120	19	5.2	4.3	4.8	487	406	451
Long Range AWD	Electricity	697 / 120.6	239 / 325	2,130	20	4.9	4.0	4.5	461	380	425
N Line 2WD	Electricity	697 / 120.6	168 / 229	2,055	20	5.2	4.1	4.7	486	385	441
N Line AWD	Electricity	697 / 120.6	239 / 325	2,160	20	4.8	3.9	4.4	447	367	411

Classification	Standard 2WD	Long Range 2WD	Long Range AWD	
Overall Length(mm)	4,655	←	←	
Overall Width(mm)	1,890	←	←	
Overall Height(mm)	1,605	←	←	
Wheel Base(mm)	3,000	←	←	
Wheel Tread, Front(mm)	1,638	1,638(19") / 1,628(20")	←	
Wheel Tread, Rear(mm)	1,647	1,647(19") / 1,637(20")	←	
Battery type	Lithium-ion	←	←	
Battery capacity(kWh)	63.0	84.0	←	
Max.Power(kW)	124.9	168	239	
Max.Torque(Nm)	350	←	605	

** The maximum power of an AWD vehicle is based on the combined output of the front and rear wheels ** All figures satisfy standards designated by the Ministry of Trade, Industry & Energy.

Maintain a constant speed to drive more efficiently.

■ The fuel economy described above is based on the standard model and may differ during actual driving depending on road conditions, driving technique, cargo load, vehicle maintenance, and outdoor temperature. ■ Some of the images presented here include optional specifications, so their appearance may differ from the car you purchase. ■ The specifications, colors, and sources presented here may be modified to improve vehicle exterior and performance. ■ Leather(seats, wrapped parts) is partially mixed with synthetic leather and/or other materials(e.g., fabric). ■ Vehicle colors presented here may differ from actual appearance. ■ priving range may vary depending on the driver's habits, road conditions, outdoor temperature(in winter months) may result in a shorter range due to a decrease in battery performance. ■ Hyundai Motor Company is committed to fair trade practices, with the same price and quality of vehicles nationwide. ■ For more information about the new technologies and specifications described in this brochure, please refer to a user's manual.

The images presented here are intended to inform customers and display the best models and options. The specifications described above vary by option, package, powertrain, and exterior color. For detailed specifications, please refer to the price list for the relevant month.

How to purchase an electric car

Sign a car sales contract

- Car contract

② Apply for subsidy

- Fill out electric car subsidy application for the local government of jurisdiction
 Submit application
- Receive results

③ Get information on home charger

- Consultation available for those who wish to install a charger at home
- Information on one-stop consulting services, connection to
 Hyundai Motor partner company

Car allocation, car release

- Check is made on eligibility for and amount of electric car subsidy (from local government of jurisdiction) by 10 days before
- car allocation

 Car will be released if there are no outstanding issues

(5) Apply for payment of subsidy

- Application process for payment(wire transfer) of subsidy to the local government of jurisdiction must be completed within 10 days of the car's release
- Once subsidy is confirmed to have been wire-transferred to Hyundai Motor, subsidy amount is subtracted from price that needs to be paid by customer

6 Install charger

- Home charger will be installed for customers
- who requested it
 Final check will be done to
 ensure that the customer is
 satisfied with the car.

IONIQ 5 Warranty information

- Warranty period for separately-insured electric car parts:
 10 years, 160,000km ※ High voltage battery: 10 years, 200,000km
- Related parts: Drive motor, Reducer, High voltage battery, Inverter, ICCU(LDC+OBC), Electric vehicle system control device(VCU)

For when thinking of buying, and maintaining my car!

Hyundai Motors' various services are prepared to assist from start to finish!

Convenient test drive service

Step 1: Make a test drive reservation (website, phone, and car coordinator)

Step 2: Fill out a consent form at the relevant driving center

Step 3: Go on a test drive

Step 4: Receive a purchase consultation (e.g. estimate, and purchase conditions)

Test drive reservation

New vehicle purchase benefits

- Bluemembers points are accrued at a fixed rate depending on the number of new vehicles purchased
- * Eligible types: Passenger, SUV, MPV (STARIA), Light Commercial Vehicle (PORTER), and ST1
- * Rates for individual members: 0.7 to 3.0% for individual/small business owners,
- 0.7% for private taxis, and 0.3% for renting/leasing (non-corporate) (for both first-time and repeat purchasers)

**** Rate for corporate members:** 0.3% (for both first-time and repeat purchasers)

For rental/lease companies pre-designated by Hyundai Motor: 0.2%

Extra 0.1% in points for long-term drivers applying for Bluemembers membership for the first time

Smart car maintenance

1. Car Life services

- Services that can be applied for via myHyundai app: MyHyundai Car Life, Pickup-and-Charge, EV Safety Care, Lucky Pass H, and charging discounts for EVs



2. Warranties and services

- Warranty system in which customers can choose scope and/or duration, Bodycare, Warranty Plus, and EV Plus Care

3. Preventative and inspection services

- To assist keeping your car in top shape: Blue Basic Check, and Before Service on Wheels

4. Emergencies and maintenance services

- For an emergency or when receiving your car: SOS emergency response, on-site charging, and Home-to-Home
- For more assurance when using your car: excessive repair fee prevention program, and car support services

Tip Anyone who has a driver's license and is at least 21 years old can apply for a test drive.

The driver is required to carry a presentable license in person to apply for the test drive.

Bluemembers points are accrued with each Hyundai EV credit card use.

Bluemembers partner companies offer diverse mobility and lifestyle/charging benefits. Don't miss out!

* Holders of (previously issued) Bluemembers partner credit cards will continue to receive both M points and Bluemembers points.

Before Service on Wheels is available only by individuals who own (or have accumulated in one place) at least 20 Hyundai vehicles.

EV EVerycare +

From purchasing to selling, we provide assistance in each phase of the electric car lifecycle to make sure your investment is worthwhile.

Benefit 1, EV purchase benefit (choose one)

One out of the following three services provided

* Eligibility: Bluemembers customers who have purchased an IONIQ 5, IONIQ 6, or KONA Electric

1) Free 800,000 charging credits

- Recommended for those who live in multi-unit housing or use a communal charger
- 2 Free home charger (including installation cost)
- Recommended for those who live in single-unit housing or own a private parking space (* Does not include basic facility charge)
- 3 Two EV-exclusive tires

X Must apply within two months of the car's release month

Benefit 2, EV warranty extension

EV Warranty Plus and EV Body Care services are provided free of charge to ensure that all customers can use their electric cars without maintenance concerns. X Eligibility: Individuals or private business owners who have purchased an IONIQ 5, IONIQ 6, or KONA Electric

- Warranty Plus: (Extends parts warranty period by two years (or 40,000km)
- Body Care: (Guarantees repairs/changes related to exterior damage for up to one year (or 20,000km) after the car's release

Benefit 3, Free EV safety inspections (Blue Basic Inspection)

Provided annually for eight years

* Eligibility: Bluemembers customers who have purchased an EV, including passenger vehicle, SUV, MPV(STARIA), and Light Commercial Vehicle(PORTER Electric)

Benefit 4, Replacement with new vehicle

Minimize the customer's financial damage and eliminate concern about car lease in the event of a car accident, If a total loss occurs within two year of the car's release, funding is provided for the purchase of a new vehicle

Benefit 5, EV charging solutions

We offer a wide range of charging solutions, including on-site charging and Pick Up & Charge, as well as charging solutions

Benefit 6, Residual value guarantee

Need to sell your vehicle? We have it covered! We guarantee the market price of a secondhand EV between two and three years old at up to 55% of the original purchase price * Eligibility: Individuals who have purchased an IONIQ 5, IONIQ 6, or KONA Electric









IONIQ 5 Digital Catalogue (Mobile)





IONIQ 5

Homepage

Hyundai Certified Secondhand Vehicle Information on purchasing secondhand cars





Hyundai Motor Company ranked first in the 2024 National Customer Satisfaction Index (NCSI) across all segments

(compact sedans, midsize, semi-full-size, full-size, compact RVs, large RVs, and EVs).



Hyundai Motor Company ranked first in the 2024 Korean Customer Satisfaction Index (KCSI) across all survey categories (passenger vehicle, RV, compact car, EV).



2024 KS-QEI (Korea Standard-Quality Excellence Index) Ranked first in 12 categories (sedan: semi-midsize and mid- and full-size; SUV: compact, semi-midsize, and full-size; D, E, and F-segment luxury sedan; full-size SUV, EV, AS).



Ranked first place in the automobile warranty service category of the 2024 Korean Standard-Service Quality Index (KS-SQI) for 10 consecutive years

The images used in this brochure are intended to enhance customers' understanding and are focused on high-end models and optional features. The features introduced in this brochure may vary from model to model. Please refer to the monthly price table for more detailed features of each model.