



Rural HIGHLIGHTS

Local News from Rural Electric Convenience Cooperative

Meet the Volkswagen ID.4 Electric SUV

After years of consideration, the cooperative has purchased its first all-electric vehicle, and the timing couldn't have been better. Battery technology has improved and driving ranges have increased substantially. The EV infrastructure is taking shape and is expanding across the country. Charging times have decreased and will get faster in the future. EVs are getting larger and can now accommodate the needs of SUV drivers. Several new models are available, and prices are starting to align with gas-powered vehicles. The \$7,500 Federal Tax Credit is still available, and most EV models qualify.

RECC chose the ID.4 Pro S, Volkswagen's first all-electric SUV because of its size, range and style. It was a popular choice and had to be pre-ordered through the VW website; look for that to change once their Chattanooga, Tenn. plant starts production in 2022. The online purchase was simple and estimated delivery time was 6-8 weeks. We received notifications when our vehicle was being built, left the factory, and cleared customs.

There were two rear-wheel-drive models to choose from, the Pro for \$39,995 and the Pro S for \$44,495. The all-wheel-drive option added \$3,680 but also included a hitch and a heated windshield. The destination charge of \$1,195 was not included in the MSRP price. All models would qualify for the \$7,500 Federal Tax Credit.

The Pro S model was chosen because it contained the features that most members prefer in a



new vehicle. Rear-wheel-drive was selected over AWD because it provided better range and is currently in production. The following information pertains only to the ID.4 Pro S model that was purchased by the cooperative. Details on the Pro and all-wheel-drive models can be found on vw.com/en/models/id-4.html.

The EPA estimated fuel economy is 104 MPGe for city driving, 89 MPGe highway and 97 MPGe combined. The term MPGe, or miles per gallon of gasoline equivalent, is an EPA calculation that compares consumption energy to traditional gas-powered cars. When compared to an average gas vehicle, VW claims the ID.4 can provide up to \$3,500 in estimated fuel cost savings in five years. Hopefully, that can be verified in the next few years.

An 82 kWh battery pack powers the 201 horsepower engine. The electric motor is located just above the rear axle and transfers its torque to a two-stage gearbox. The location is ideal for handling and traction. The electric drive unit weighs about 200 pounds and could fit into a duffel bag. This design frees up space inside the car, leaving the under-hood area for just the radiator, 12 volt battery, and air conditioning components. The motor is so quiet that synthetic sounds were added for pedestrian awareness when driving under 20 mph.

The battery weighs 1,087 pounds and is composed of 288 pouch cells in 12 modules. Its underbody position creates a low center of gravity and evenly distributes the weight. One-fifth of the



weight comes from the battery's aluminum housing, which is bolted to the frame to strengthen the bodyshell. The extruded frame wraps around the entire system to prevent battery damage during a collision. A separate panel protects the battery from road hazards below. The flat design also eliminates the floor hump in the rear passenger area.

The ID.4 is a nimble SUV with a turning radius of 33.5 feet. Driving performance can be customized individually or by use of the Eco, Comfort or Sport presets. Regenerative brakes recover energy as the speed is decreased and feeds power back into the battery.

The exterior is sleek and the radiator grill is replaced by intake scoops. They funnel air into the car and open electrically when cooling is needed. LED light strips are used for running lights and shine through the VW logos. Illuminated door handles feature an electric release. The 19-inch aluminum-alloy wheels have a flat aerodynamic design with low rolling resistance tires. Aluminum is used to lighten weight and the flat underbody reduces drag.

The interior has a modern design and is controlled mostly by touch or voice control but does have a few actual buttons. The driver's cockpit is located on the steering column and replaces the traditional instrument cluster. This screen is operated by touch-sensitive steering wheel controls with haptic feedback. It displays battery power, range, lane assist status and other driving information. The gear selector is a large toggle switch and is also attached to the steering column.

A 12-inch touchscreen is used for navigation, entertainment, vehicle settings and other driver preferences. Menus can be moved using gestures or by the swipe of a hand in front of the screen. Many adjustments can also be made by voice command. Separate sliders are located below the display for adjustment of temperature and volume.

The ID. Light system is a light strip that runs below the windshield and provides the driver with intuitive support. It uses various light pulses to signal turn instructions, brake prompts and incoming phone calls. The lights will also pulsate to show

battery level when plugged into a charging station.

The interior's ambient lighting can be customized with the choice of 30 different colors. The illuminated charging pad allows convenient wireless charging of most handheld devices. Wireless App-Connect allows smartphone apps to run directly on the vehicle's display through Apple CarPlay, Android Auto and MirrorLink. USB-C ports are also available throughout.

The ID.4 is unusually quiet due to its aero-acoustic design. The panoramic roof is enormous and allows plenty of light to flow through the cabin, but the electric sunshade can be closed with the swipe of a finger. The 12-way power seats include adjustable lumbar, massaging and two memory positions. The seats are also heated, just like the steering wheel, side mirrors and washer nozzles. Other convenient features include keyless entry, proximity access, power tailgate, rain-sensing wipers, dual-zone climate control and under-floor storage.

The ID.4 has a 4-year/50,000-mile bumper-to-bumper warranty and the

high-voltage battery has coverage for 8 years/100,000 miles of 70 percent capacity. The Carefree Maintenance Program provides 2 years/20,000 miles of free maintenance. Roadside assistance and free charging are also included for a limited time.

The driver assistance package, which Volkswagen calls IQ.DRIVE, provides even more technology. VW describes it as, "advanced driver assistance with hands-on semi-automated capability." Most auto manufacturers use similar technology and many of these features may become standard in the future.

The ID.4 utilizes a front radar, front camera, two rear radars, and eight ultrasound sensors to collect data from the surrounding area, enabling Forward Collision Warning and Autonomous Emergency Braking with Pedestrian Monitoring; Blind Spot Monitor; Rear Traffic Alert; Adaptive Cruise Control; Lane Keeping System; Travel Assist; and Emergency Assist. In addition, the ID.4 includes Dynamic Road Sign Display; Park Distance Control; and High Beam Control or Light Assist.

Forward Collision Warning is intended to warn drivers of potential frontal collisions with vehicles and pedestrians. When traveling above 18 mph, it uses both acoustic and visual warnings to alert before an automatic brake jolt is applied. If the driver fails to brake, Autonomous Emergency Braking is activated to help slow the vehicle. Below 18 mph, the Autonomous Emergency Braking activates without a warning to avoid a collision. If the brake pedal is applied too lightly by the driver, Breaking Support will increase the brake pressure.

Blind Spot Monitoring uses two radar sensors at the rear of the vehicle to scan the approaching traffic. A warning symbol will flash on the mirror housing if a vehicle is detected in a blind spot. In certain situations, the system will counter-steer to prevent a lane change, even with the turn

signal turned on. If the driver still tries to steer out of the lane, the system will warn with an additional vibration of the steering wheel.

Rear Traffic Alert warns if a potential collision is detected while in reverse. If the driver does not respond to the warning, the brakes may be applied automatically to prevent a collision.

Adaptive Cruise Control uses radar to maintain a safe distance to the vehicle ahead, slow down, or even stop if the vehicle in front does.

Lane Keeping System is active when driving above 40 mph and system cameras recognize visible lane markings. If certain conditions are met, the lane assist will counter-steer to help keep the vehicle in the lane.

Travel Assist enables Level 2 partially-automated hands-on driving from 0 to 95 mph by using the steering wheel buttons to activate adaptive cruise and lane assist. The features will help steer, accelerate, and brake while responding to changing traffic conditions. The driver is still in control of the vehicle, but mundane driving tasks are made easier. To ensure alertness, the system monitors the capacitive steering wheel to make sure the driver's hands are in frequent contact with the wheel.

Emergency Assist constantly monitors the driver's attentiveness to the steering wheel. If the system does not detect driver input, a series of warnings and brake jolts will occur. If the driver is incapacitated and no input is detected, Emergency Assist

will slow the vehicle to a gradual stop in its own lane.

Park Distance Control uses ultrasonic bumper sensors to monitor the front and rear of the vehicle when parking. This feature will not park the car, but it does provide guidance when driving into tight spaces.

Maneuver Braking is a park distance feature that helps prevent collisions with stationary obstacles in the front and rear as the vehicle is maneuvered. The brake maneuvering system is active between 1-6 mph. If a stationary object is detected, it can apply the brakes automatically to help prevent a collision.

Dynamic Road Sign Display uses a forward-facing camera to detect and read road signs and verifies the information with signage data in the onboard navigation, then displays the speed limit sign for the driver.

High Beam Control automatically switches on the high beams above 37 mph on poorly lit roads if no oncoming traffic detected. Below 18 mph, the high beams switch off.

Charging Stations



The battery charger is part of the car's electrical system and can accept a variety of different voltages. The charging station or plug-in device determines the type of voltage and the amount of power that the car's charger will receive. There are three categories or levels of charging



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stations and charging times can range between 30 minutes and three days.

Level 1 is the slowest and ideal for supplemental charging. These charging units are included with the EV purchase and the cable plugs into a standard 120 volt outlet. It provides an output of 1.1 kW and adds 2-3 miles of range per hour.

Level 2 units will fully charge an EV overnight or in 8-10 hours. These are recommended for daily home charging and commonly found in public spaces and parking lots for office buildings or shopping centers. Level 2 charging stations require 220 volt AC to operate and will supply 3.3 kW–11 kW and increase the range by 20-30 miles per hour.

Level 3 is often referred to as DC Fast Charging and is the best choice for recharging on a road trip. The output of a level 3 is 25 kW–350 kW DC and can fully recharge most batteries within 30 minutes. DC fast-charging stations require three-phase voltage, are expensive to install, and somewhat difficult to find in many areas.

More than 90 percent of charging is done at home. Costs can be easily



calculated by multiplying the electric rate by the kWh used to replenish the battery. The variable is the number of miles that will be produced by the fully charged battery, which is dependent upon driving habits and outside temperatures. If the charger uses 1.2 kWh to replenish 3 miles, it would cost less than 5 cents per mile on RECC's residential rate. Charging 250 miles will be around \$12.50.

