**1998 Toyota RAV4 EV w/NiMH**

**VEHICLE SPECIFICATIONS**

### PURPOSE-BUILT VEHICLE

- **Base Vehicle:** 1998 Toyota RAV4
- **VIN:** JT3GS10V0W0001009
- **Seatbelt Positions:** Five

### Standard Features:

- AM/FM Stereo Radio
- Tilt Steering Wheel
- Air Conditioning (Gas Injection Heat Pump)
- Heater (Gas Injection Heat Pump)
- Front Wheel Drive
- Dual Air Bags
- Power Steering (Rack & Pinion, hydraulic)
- Power Brakes
- Four Wheel Disc Brakes
- Four Wheel Anti-Lock Brakes
- Regenerative Braking
- Power Windows
- Space Saver Spare
- Aluminum Wheels
- Low Rolling Resistance Tires

### BATTERY

- **Manufacturer:** Panasonic
- **Type:** Nickel Metal Hydride
- **Number of Modules:** 24
- **Weight of Module:** 18.75 kg
- **Weight of Pack(s):** 461 kg
- **Pack Locations:** Underbody
- **Nominal Module Voltage:** 12 V
- **Nominal System Voltage:** 288 V
- **Nominal Capacity (C/3):** 95 Ah

### WEIGHTS

- **Design Curb Weight:** 3480 lbs
- **Delivered Curb Weight:** 3507 lbs
- **Distribution F/R:** 52/48%
- **GVWR:** 4266 lbs
- **GAWR F/R:** 2138/2128 lbs
- **Payload:** 786 lbs
- **Performance Goal:** 700 lbs

### DIMENSIONS

- **Wheelbase:** 94.6 inches
- **Track F/R:** 57.6/56.9 inches
- **Length:** 156.6 inches
- **Width:** 67.1 inches
- **Height:** 65.0 inches
- **Ground Clearance:** 6.7 inches at GVWR
- **Performance Goal:** 5.0 inches at GVWR

### CHARGER

- **Location:** On-board w/Off-Board PCS
- **Type:** Conductive
- **Input Voltages:** 90 to 264 VAC

### TIRES

- **Tire Mfg:** Bridgestone
- **Tire Model:** Ecopia EP02 Radial
- **Tire Size:** 195/80R16
- **Tire Pressure F/R:** 44/44 psi
- **Spare Installed:** Yes

### TEST NOTES:

1. Design payload value; value as delivered (and tested) was 759 lbs.
2. This vehicle requires a Power Control Station (PCS), which cannot be used with a GFCI protected circuit.
3. All testing was terminated upon receipt of the Flashing SOC telltale.
4. Total range achieved until vehicle could not maintain profile was 116.9 miles.
5. Charge time will be periodically extended 2 hours after a predetermined number of charge cycles has occurred, and when certain battery temperature or voltage conditions exist.
6. Performance Goal: 8 hours

### CHARGING EFFICIENCY

- **Efficiency:** 432 Wh/AC-mile
- **Energy Cost @ 10 ¢/kWh:** 4.32 ¢/mile

### BRKING FROM 60 mph

- **Controlled Dry:** 157.0 feet
- **Controlled Wet:** 183.2 feet
- **Panic Wet:** 200.1 feet
- **Course Deviation:** 0.0 feet

### HANDLING

- **Avg Time @ 90% SOC:** 59.8 sec
- **Avg Time @ 50% SOC:** 58.8 sec
- **Avg Time @ 20% SOC:** 58.8 sec
- **Avg 8-10 ICE Time:** 59.8 sec
- **Performance Goal:** 15 Min from 50% SOC

### GRADEABILITY (Calculated)

- **Maximum Speed @ 3%:** 75.4 mph
- **Maximum Speed @ 6%:** 63.6 mph
- **Maximum Grade:** 30.2%
- **Time on 3% Grade:** 21 min 37 sec

### DRIVING CYCLE RANGE

- **Range per SAE J1634:** 94.0 miles
- **Energy Used:** 23.01 kWh
- **Average Power:** 6.88 kW
- **Efficiency:** 243 Wh/mile
- **Specific Energy:** 59.6 Wh/kg
- **Performance Goal:** 60 miles

### PERFORMANCE STATISTICS

### ACCELERATION 0-50 mph

- **At 100% SOC:** 12.8 sec
- **At 50% SOC:** 12.9 sec
- **Max. Power:** 57.3 kW

### MAXIMUM SPEED @ 50% SOC

- **At 1/4 Mile:** 63.5 mph
- **At 1 Mile:** 78.8 mph

### CONSTANT SPEED RANGE @ 45 mph

- **Range:** 110.9 miles
- **Energy Used:** 23.34 kWh
- **Average Power:** 9.55 kW
- **Efficiency:** 210 Wh/mile
- **Specific Energy:** 50.8 Wh/kg

### CONSTANT SPEED RANGE @ 60 mph

- **Range:** 86.9 miles
- **Energy Used:** 27.47 kWh
- **Average Power:** 18.81 kW
- **Efficiency:** 243 Wh/mile
- **Specific Energy:** 59.6 Wh/kg

### DRIVE CYCLE RANGE

- **Range:** 60 miles

### CHARGER

- **Max Charger Ground Current:** <10 mA
- **Max Battery Leakage Current:** 0.01 MA
- **Max DC Charge Current:** 14.51 Amps
- **Max AC Charge Current:** 26.25 Amps
- **Power Factor:** 0.828
- **THDI:** 8.2%
- **Peak Demand:** 4.45 kW
- **Time to Recharge:** 6 hrs 47 min
- **Performance Goal:** 8 hours

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This vehicle meets the following EV America Minimum Requirements:

1. Vehicle has a payload of at least 400 pounds.
2. The OEM GVWR has not been increased.
3. The OEM GAWRs have not been increased.
4. Seating capacity is a least two (2) occupants.
5. A battery recycling plan has been submitted.
6. The OEM passenger space has not been intruded upon by the electrical conversion materials.
7. The vehicle has a parking mechanism or parking brake as required by 49 CFR 571.105.
8. The vehicle has a minimum range between charges of at least 50 miles when loaded with two 166-pound occupants and operated at a constant 45 mph.
9. The vehicle manufacturer has certified that this vehicle complies with the Federal Motor Vehicle Safety Standards (FMVSS) applicable on the date of manufacture.
10. The vehicle manufacturer has certified the batteries and battery enclosures comply with SAE J1766 and 49 CFR 571.301.
11. Batteries comply with the requirements of SAE J1718 and NEC 625 for charging in enclosed spaces without vent fans.
12. The vehicle manufacturer has certified that concentrations of explosive gases in the battery box do not exceed 25% of the Lower Explosive Limit (LEL) during and following normal or abnormal charging and operation of the vehicle.
13. The vehicle has a parking mechanism or parking brake as required by 49 CFR 571.105.
14. The vehicle has a state of charge indicator for the main propulsion batteries.
15. Propulsion power is isolated from the vehicle chassis and battery leakage is less than 0.5 MIU under static conditions.
16. The vehicle complies with the requirements of 49 CFR 571.301 for fuel fired heaters.
17. The vehicle has an on-board Battery Energy Management System (BMS).

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