

# MINI E PROGRAM



Richard Steinberg  
Manager, MINI E Program

# MINI E PROGRAM TOPICS

- Program Overview
- Infrastructure Progress
- Industry Standardization
- Technical Questions
- Customer Feedback
- Key Learnings/Next Steps

# MINI E PROGRAM

## PROGRAM OVERVIEW

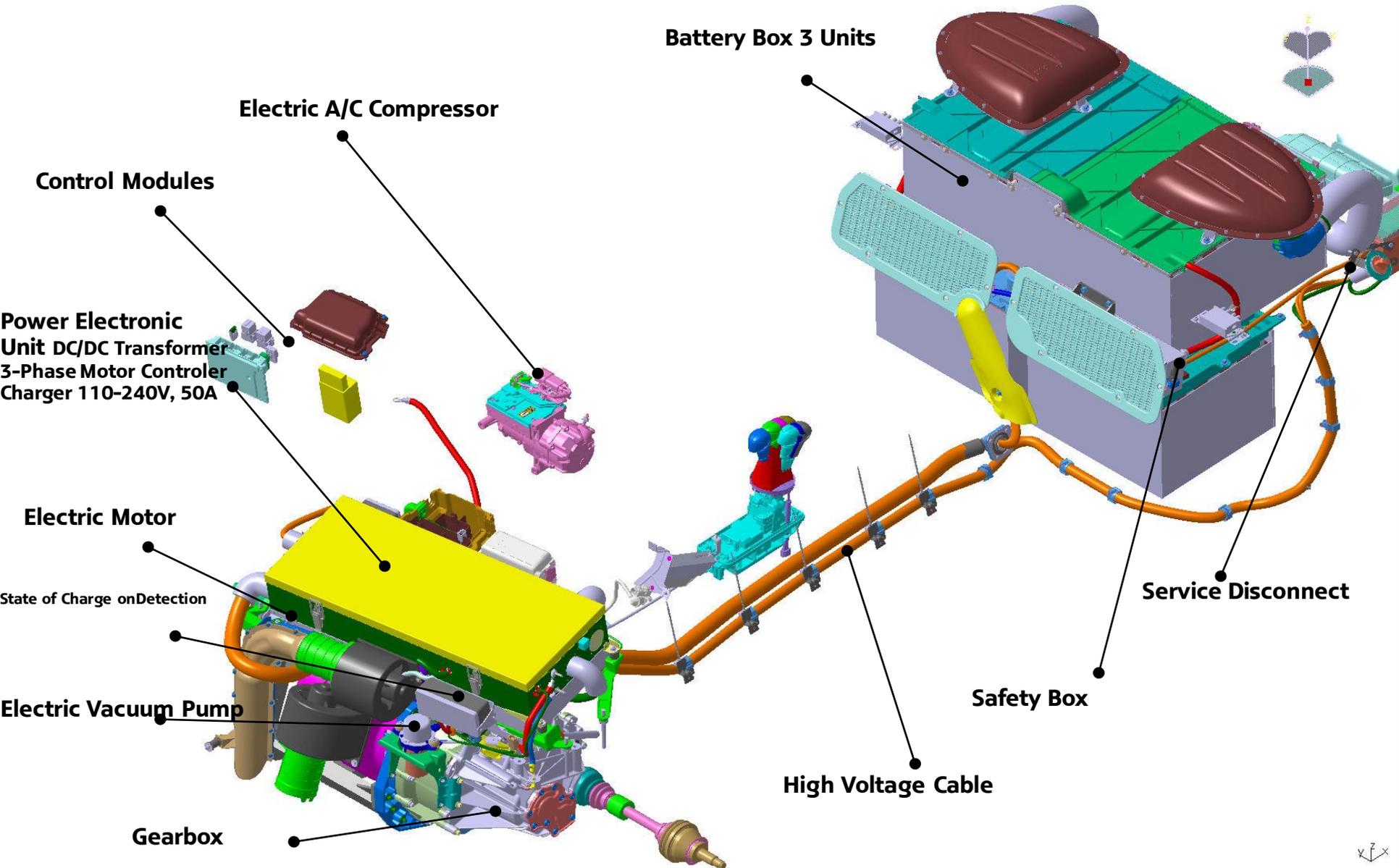
- BMW Group is committed to BEV technology
- Project i is focused on meeting the sustainability needs of Mega Cities around the world
- MINI E program is first product out of Project i
- MINI E program came to fruition quite quickly
  - Initial discussions began in spring 2008
  - CARB ZEV mandate played key role in this fast development
  - BMW/MINI is in the car business; BEVs placed us in the infrastructure business
- Learnings from the MINI E program will be applied to future products out of Project i

# MINI E PROGRAM PRODUCT SPECS

- Lithium Ion batteries
  - 5,088 individual cells
  - 35 kWh (30 kWh usable)
  - Air cooled
- Power: 200 HP
- Torque: 220 NM
- Weight: 3230 lbs. (batteries = 573 lbs.)
- Acceleration (0-62 mph): 8.5 seconds
- Top Speed: 95 mph
- Range: typically 100 – 120 miles
- Charging Time:
  - 60 Amp Commercial Wallbox: 2-3hrs
  - 40 Amp Residential Wallbox: 3-5hrs
  - 110Volt, 12Amp wall outlet: 24hrs +



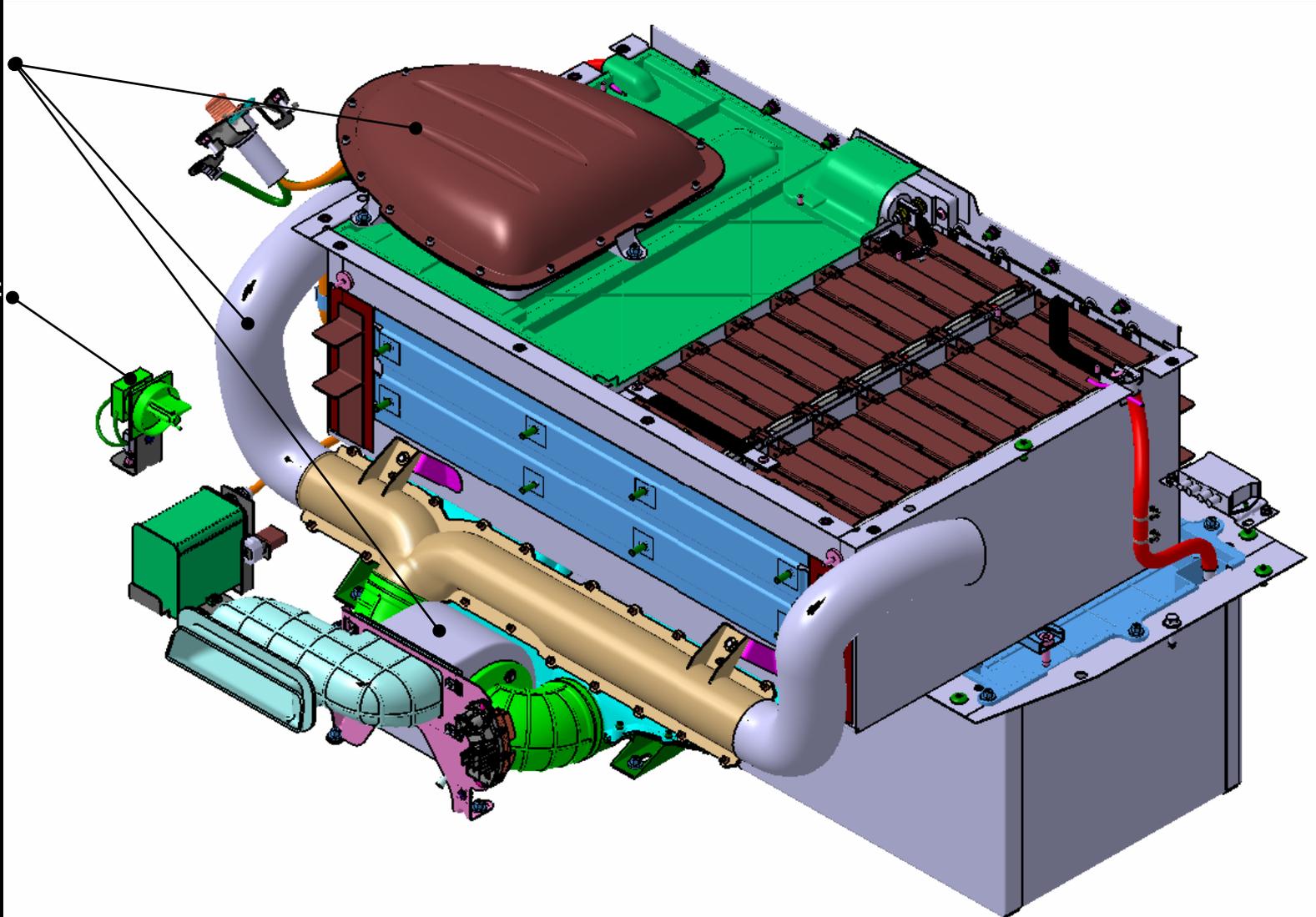
# MINI E PROGRAM PRODUCT SPECS



# MINI E PROGRAM PRODUCT SPECS

Cooling System

Service Disconnect



# MINI E PROGRAM TEASER



LEARN

BUILD

SHOP

PLAY

STAY IN THE LOOP

Find a Dealer / Keyword Search

> GO

## MINI E FIELD TRIAL

As part of our broader commitment to MINIMALISM and the future of motoring, we're excited to announce the limited introduction of the MINI E: a 100% electric, zero-emission premium vehicle ready for every-day driver use.

### FIELD TRIAL PARAMETERS:

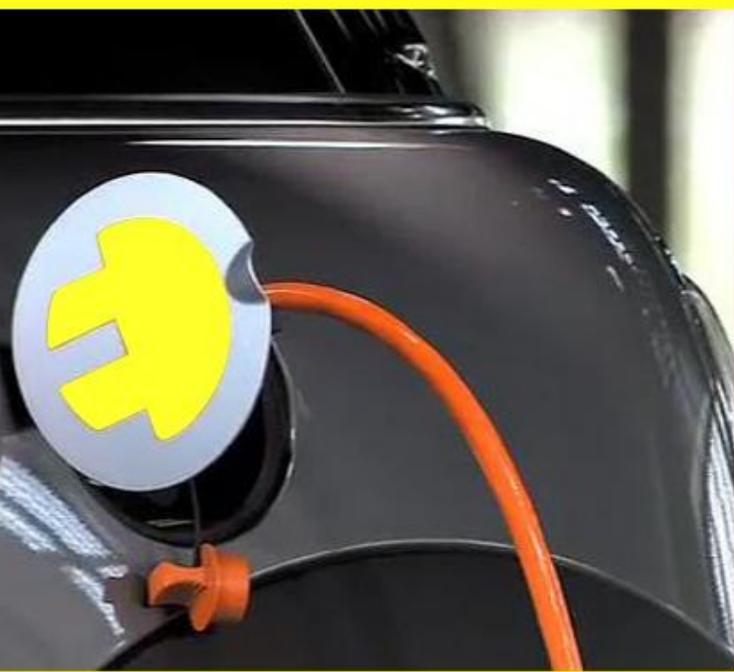
In this limited introduction, we will be seeking up to 500 pioneers to lease the MINI E for a one-year period and provide feedback to our research team. In turn, this critical learning about the MINI E's performance in real-world settings will help inform BMW Group's future engineering of alternative drivetrain vehicles viable for mass-production.

The short application period (roughly 3-4 weeks) to become one of the select participants begins in mid-November and will only be open to U.S. residents within limited geographical areas of Southern California, New York and New Jersey.

Be sure to check back in mid-November for more details.

> [MORE INFO ABOUT THE MINI E](#)

> [GET AN EMAIL REMINDER](#)



MINI Hardtop



MINI Convertible



MINI Clubman



MINI John Cooper Works

[MINI FINANCIAL SERVICES](#)

[ACCESSORIES](#)

[CONTACT & FAQ](#)

[PRIVACY & LEGAL](#)

[SITE MAP](#)

[MINI.COM](#)

[OWNERS' LOUNGE](#)

# MINI E PROGRAM WEB APPLICATION QUESTIONS



## MINI E FIELD TRIAL

[ALL ABOUT THE MINI E ▶](#)

[APPLY FOR BETA PROGRAM](#)

[FAQS ▶](#)

[JOIN EMAIL LIST](#)

### APPLICATION: MANDATORIES

To apply for participation in the MINI E Field Trial, you'll need to agree that if chosen, you can meet these requirements:

- 1** You have access to a garage. If you are selected for the Field Trial program, an electrician will visit your home to determine if any upgrades to the wiring system of your house are needed. MINI will cover the costs for the basic installation of the wallbox (charging station), however, while most homes built after 1990 will probably be OK, if any electrical work is necessary, you will need to pay for it. The cost of upgrades may exceed \$1,000.
- 2** You live near one of the participating dealers located in NJ, NY Metro & LA Metro.
- 3** You must register the MINI E in NJ, NY or CA.
- 4** You must sign a closed-end 1-year, \$850 per month lease<sup>2</sup> and return the car and the wallbox at the end of the Field Trial program.
- 5** While collision coverage is included in the lease, you will need to obtain automobile liability insurance.<sup>3</sup>
- 6** You must have had your driver's license for more than 5 years and must have a clean driving record.
- 7** You must be willing to bring your MINI E in for a scheduled maintenance appointment at 6-months or 3,000 miles, whichever comes first.

# MINI E PROGRAM

## PROGRAM OVERVIEW

- Application window opened from mid-November (LA Motor Show) through late-December (Christmas Eve)
  - Over 1,800 applications received
  - 1,010 leads were forwarded to dealers in mid-January
- 450 vehicles placed into service by June 30<sup>th</sup>
  - 250 Southern California
  - 200 New York/New Jersey
    - Customer Leases
    - Municipal/Non-profit/NGO Fleets
    - Additional vehicles are running in an ATDP, including loans to NYC/LA/CARB

# MINI E PROGRAM

## INFRASTRUCTURE PROGRESS

- MINI E program focused exclusively on private installations
- Clean Fuel Connections Inc. (CFCI) was engaged to conduct wallbox installations
- Infrastructure issues represent one of the biggest hurdles towards mass acceptance of BEVs



# MINI E PROGRAM INFRASTRUCTURE PROGRESS

- UL issues
  - Clipper Creek wallbox had UL listing, but connector and cable were manufactured separately
  - UL listed cable was sourced but UL certification of connector was very time consuming.
  - Standardization of charging equipment (SAE vs ISO?) is crucial
- Customer expectation management
  - Process is time consuming
  - Upgrades may be required
  - Coordination with electricians and inspectors can be frustrating
- Inspection/permitting standards vary widely
- Utility options/requirements also vary
  - SCE Time of Use (TOU) meters
  - Secondary meter can be used to avoid panel upgrade



### Time-of-Use Electric Vehicle Rate

**Customer Quick Reference Guide**

**OVERVIEW**  
Southern California Edison (SCE) commends you on your interest in the California BMW MINI E Pilot Project. Selected participants will enable BMW to conduct the research necessary to realize our shared vision of cleaner air, a better climate and improved energy efficiency for the future.

If you are chosen to participate in the pilot, SCE offers a special Time-of-Use Electric Vehicle (TOU-EV1) rate for plug-in electric vehicle owners. This rate may be advantageous to you, depending on your electricity usage levels and vehicle charging needs. Contact SCE's Customer Service Call Center at 800-239-2865 to request a rate analysis and determine whether the TOU-EV1 rate is beneficial for you.

**WHAT IS THE TIME-OF-USE ELECTRIC VEHICLE RATE?**  
SCE's residential TOU-EV1 rate offers potential cost savings for charging your plug-in electric vehicle during off-peak hours, when overall demand for electricity is lowest. In addition to the possible cost-saving benefit of a lower TOU-EV1 rate, charging during off-peak hours also helps to further reduce electricity demand during peak hours.

For residential EV charging Time-of-Use rates, "time" is defined as follows:

- On-peak: 12:00 noon – 9:00 p.m. daily, year-round
- Off-peak: all other hours – daily, year-round

During on-peak hours (noon – 9:00 p.m. daily, year-round) the TOU-EV1 rate has a higher per kilowatt-hour cost (kWh).

To be eligible for the TOU-EV1 rate, plug-in electric vehicle owners should consult with SCE to have a second electricity meter installed at the residential charging location, in addition to the household meter already in place. The additional meter records only the amount of energy used to charge the plug-in electric vehicle.

**HOW DO I APPLY FOR SERVICE?**  
If you are selected for the pilot, once you have discussed electrical requirements and meter installation options with an electrician and have decided to apply for the TOU-EV1 charging rate, contact SCE's Customer Service Call Center at 800-239-2865. A Customer Service Representative will walk you through the application process. An SCE service planner will then contact you to schedule an appointment to install the plug-in electric vehicle adapter and meter.

**HOW CAN I GET ADDITIONAL INFORMATION?**  
To request a rate analysis, apply for service or get answers to additional questions, contact SCE's Customer Service Call Center at 800-239-2865.

For more information about SCE's Electric Transportation Programs, please visit [www.sce.com/ev](http://www.sce.com/ev)

**SOUTHERN CALIFORNIA EDISON**  
AN EDISON INTERNATIONAL COMPANY

8/28/11-028

FOR OVER 100 YEARS...LIFE. POWERED BY EDISON.

# MINI E PROGRAM INFRASTRUCTURE PROGRESS



- Wallbox installation delays have been experienced
  - Lease payment waivers provided pending the installation of a fully-operational wallbox
  - Fleet customers have demonstrated no urgency in identifying potential wallbox locations
- Post-installation servicing and troubleshooting is a murky area
  - If the car isn't charging properly, is it the:
    - Car?
    - Charger?
    - Ground Fault Indicator (GFI) on the 110V cable?
    - GFI on the outlet?
    - Circuit breaker?
    - Service to the home from the utility?
  - Who pays for a service visit?
  - 24/7 access?

# MINI E PROGRAM INFRASTRUCTURE PROGRESS



- Second Wallbox option offered to existing customers
  - We provide the wallbox, customer pays for installation
  - Several public locations have been identified
- Public infrastructure will be prioritized with next generation products
  - Assuming J1772 and ISO standards are harmonized, which is still a BIG IF
  - In cooperation with other manufacturers, service providers and utilities



# MINI E PROGRAM INDUSTRY STANDARDIZATION

- EVSE Connectivity standards
- Monroney labels/MPG equivalency
- HOV/EZPass confusion
- Federal tax credits (for leases)

**LET'S MOTOR®**

**2008 MINI E**

<p><b>Manufacturer's Suggested Retail Price</b> \$ 49,340.00</p> <p><b>Options and Additional Charges</b> Custom equipment cost</p> <p><b>Manufacturer's suggested accessories</b> Check with your authorized Mini dealer.</p> <p><b>Dark Over metallic paint</b> Included</p> <p><b>Interchange Yellow Osh Leah</b> Included</p> <p><b>Quadlock Wi-Fi based transceiver</b> Included</p> <p><b>Xenon headlights</b> Included</p> <p><b>1748 steel model</b> Included</p> <p><b>Destination Charge</b> \$ 600.00</p> <p><b>Total Suggested Retail Price</b> \$ 49,940.00</p>	<p><b>STANDARD FEATURES</b></p> <ul style="list-style-type: none"> <li>• Electric AC motor with 20 HP and 220Nm torque</li> <li>• Electric drive shafts with fixed transmission ratio</li> <li>• Dynamic Stability Control (DSC)</li> <li>• 4-wheel disc brakes (front vented/rear solid)</li> <li>• Anti-lock Braking System (ABS)</li> <li>• Corner Brake Control (CBC)</li> <li>• Electronic Brakeforce Distribution (EBD)</li> <li>• Brake energy regeneration</li> <li>• Electric Power Assisted Steering (EPS)</li> <li>• MacPherson strut front/multi-link rear suspension</li> <li>• 17" 5-spoke aluminum alloy wheels, 195/55 R16</li> <li>• Performance tires</li> <li>• Tire Pressure Monitor (TPM)</li> <li>• Pure Silver metallic roof</li> <li>• MINI E appliques</li> </ul> <p><b>MINI DELIVERY QUALITY ASSURANCE</b></p> <p>This MINI vehicle has been designed, engineered and manufactured under strict quality control guidelines. It has been prepared and inspected to ensure that it is free of defects in workmanship and materials in accordance with the MINI New Passenger Car Limited Warranty issued by the MINI Division of BMW of North America, LLC.</p> <p><b>THE MINI ADVANTAGE</b></p> <ul style="list-style-type: none"> <li>• 3 year/36,000 mile Full Maintenance Program</li> <li>• 4 year/50,000 mile limited warranty</li> <li>• 72 hour road performance limited warranty</li> <li>• 4 year/unlimited mile MINI Roadside Assistance Program</li> </ul>
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**MINI DELIVERY QUALITY ASSURANCE**

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**THE MINI ADVANTAGE**

- 3 year/36,000 mile Full Maintenance Program
- 4 year/50,000 mile limited warranty
- 72 hour road performance limited warranty
- 4 year/unlimited mile MINI Roadside Assistance Program

**STANDARD FEATURES**

- Mirror caps in Interchange Yellow
- Interior surface Interchange Yellow
- Door beads in Interchange Yellow
- Ambient light package
- Air conditioning with recirculator and air-recirculation
- CD audio system with AM/FM radio, presets and auxiliary input
- Leather three-spoke steering wheel
- 6-way adjustable seats (front/rear) w/leather and passenger height adjustment
- Remote keyless entry
- Power windows with "one-touch" up and down
- On-board computer
- Six airbags, including side curtain airbags
- Adjustable 18" telescoping steering wheel

**PARTS CONTENT INFORMATION**

For Vehicles in the Car Line:

US/Canadian Parts Content: 5%

Major Source of Foreign Parts Content:

**UNITED KINGDOM: 55%**

**GERMANY: 25%**

Note: Parts content does not include the assembly, distribution of other car-to-car sales.

For this Vehicle:

Final Assembly Point: **OXFORD, UNITED KINGDOM**

Country of Origin: **UNITED STATES**

Engine: **GERMANY**

Transmission: **GERMANY**

**GOVERNMENT SAFETY RATINGS**

Frontal		Driver		Not Rated	
Crash	Passenger	Not Rated			

Star ratings based on the risk of injury in a frontal impact.

Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Side		Front seat		Not Rated	
Crash	Rear seat	Not Rated			

Star ratings based on the risk of injury in a side impact.

Rollover		Not Rated	
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Star ratings based on the risk of rollover in a single vehicle crash.

Star Ratings range from 1 to 5 stars (★★★★★) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA).

www.safercar.gov or 1-888-432-4256

**EPA ESTIMATED ENERGY CONSUMPTION INFORMATION**

CITY		Electric Vehicles		HWY	
33	MPG	36	MPG	36	MPG
(Equivalent to 102 MPGe)		(Equivalent to 96 MPGe)		(Equivalent to 96 MPGe)	
Based on 1400/100 miles		Based on 1400/100 miles		Based on 1400/100 miles	

**Actual consumption and range may vary** depending on how you drive and operate your vehicle, particularly affected by ambient temperature and the use of headlights and air conditioning.

**ESTIMATED ANNUAL ELECTRICITY COST:** \$118 at 10 cents per kWh  
\$102 at 20 cents per kWh  
\$102 at 30 cents per kWh

This estimate is based on a vehicle's energy consumption averaging 14,000 miles per year. For comparison, the estimated annual fuel cost would be \$2,196 for a gasoline vehicle averaging 28 mpg at \$4.10 per gallon.

**Electric Range** 100 Miles

**Combined Energy Consumption** 34 kWh/100 miles

See the **FUELS Full Economy Guide** at [www.fuelsofamerica.com](http://www.fuelsofamerica.com)

MINI Division of BMW of North America, LLC  
Woodcliff Lake, NJ 07077  
VFC Location: OXFORD, CALIFORNIA

## Environmental Performance

Protect the environment, choose vehicles with higher scores:

**Global Warming Score**

10  
Average new vehicle

**Smog Score**

10  
Average new vehicle

Using alternative fuels may improve scores. See [www.DriveClean.ca.gov](http://www.DriveClean.ca.gov)

Vehicle emissions are a primary contributor to global warming and smog. Scores are determined by the California Air Resources Board based on this vehicle's measured emissions. Please visit [www.DriveClean.ca.gov](http://www.DriveClean.ca.gov) for more information. California Department of Transportation  
AIR RESOURCES BOARD

# MINI E PROGRAM

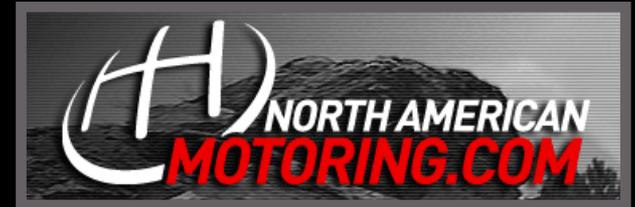
## TECHNICAL QUESTIONS

- MINI E Program is a field trial
- Purpose of the program is to evaluate BEVs in real world conditions
  - Effects of:
    - Temperature
    - Weather conditions
    - Differing driving behaviors
  - On:
    - Range
    - Reliability
      - Batteries
      - PEU
    - Charging Status
  - Driver perceptions of living with an EV



# MINI E PROGRAM CUSTOMER FEEDBACK

- MINI E community is extremely active, bordering on evangelical
- Multiple feedback channels exist
  - eLog Book
  - UC Davis Study
  - Facebook community
  - [www.NorthAmericanMotoring.com](http://www.NorthAmericanMotoring.com)
  - Individual blogs
  - Shared charging network  
[www.waterway4.com/mini-e](http://www.waterway4.com/mini-e)
- Majority are thrilled to be involved in the program, but vocal minority are extremely critical



# MINI E PROGRAM CUSTOMER FEEDBACK

- eLog Book
  - Program requirement
  - Private network/password protected
  - Feedback mechanisms include:
    - Ad Hoc journal
    - Formal Questionnaire
    - Log Book entries

The screenshot displays the MINI E Field Trial website interface. On the left is a sidebar menu with the following sections: **MINI E FIELD TRIAL**, **USER INFORMATION**, **CONTACT US**, **LOGOUT**, and **MY MINI E JOURNAL**. The **MY MINI E JOURNAL** section includes a text input field for "Title", a larger text area for "Where do you usually take your MINI E?", and buttons for "> JOURNAL HISTORY (1)" and "> SUBMIT".

The main content area features a navigation bar with three items: **01. EXPERIENCE AND FEEDBACK COLLECTION: YOUR MINI E JOURNAL** (marked **COMPLETE**), **02. MINI E PIONEER SURVEY** (marked **COMPLETE**), and **03. AUDITORY SYSTEMS ANALYSIS** (marked **UPCOMING**).

The selected section, **Experience and Feedback Collection: Your MINI E Journal**, contains the following text:  
Welcome to the official site for MINI E Field Trial participants.  
Collecting direct feedback and documenting the experiences of our select MINI E Pioneers is a vital element of the program, so there are a couple different ways that we'll be collecting your valuable input. First, as you've already discovered, we'll be notifying you by email and asking you to make occasional visits to this site. In addition, a few months from now you should receive a survey in the mail from our friends at the University of California at Davis – a world leader in the field of advanced vehicles.  
So, to get things started, we'd love to hear how the first few weeks have gone by introducing you to your online MINI E Journal. How did delivery of the vehicle go? Have people been staring or asking questions? Have you taken your friends for a ride yet? Have you gotten used to the car's quick and quiet feel?  
For this first entry, we've suggested a few targeted topics. But moving forward, our hope is that your entries become more freeform and that you'll use the journal to jot down thoughts and noteworthy experiences with your MINI E on a regular basis. Be they lengthy dissertations or simple one-sentence observations about the existential experience of watching a bug hit your windshield or your ruminations on solving the global energy crisis.

A central notification box states: **MY MINI E JOURNAL - TASK 01 COMPLETE**  
Thanks for completing your first entry!  
From now on, you can use the MY MINI E JOURNAL section at the left to make new entries, jot down notes, and view your journal history.

# MINI E PROGRAM

## CUSTOMER FEEDBACK

- UC Davis Study
  - Developed in conjunction with EU BEV program
  - 50 self-selected MINI E drivers
    - Online travel diaries
    - Written questionnaires
    - In-depth face-to-face interviews
  - Focused on expectations, perceptions, driving habits and impressions of EV motoring



# MINI E PROGRAM CUSTOMER FEEDBACK

- Informal feedback loop consists of:
  - Facebook community
    - 232 members
  - Blogs
    - Currently tracking 30+ individual MINI E blogs
  - Shared charging network ([www.waterway4.com/mini-e](http://www.waterway4.com/mini-e))
    - 22 East Coast locations
    - 34 West Coast Locations

facebook.

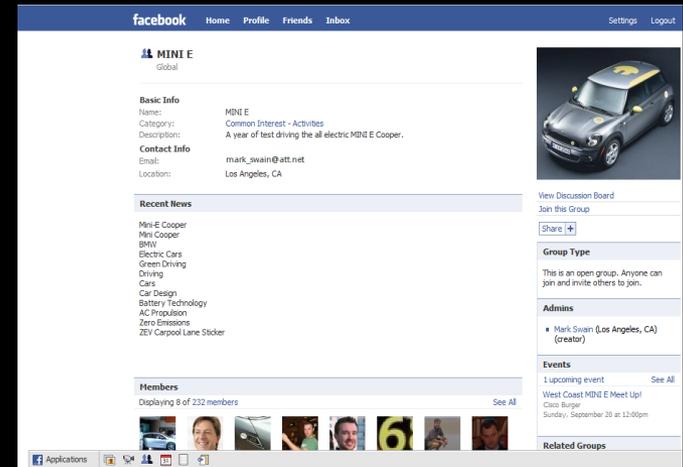


# MINI E PROGRAM

## CUSTOMER FEEDBACK

- MINI E community discusses a myriad of topics
  - Range Anxiety
  - Range maximization techniques
  - Most miles driven (overall and per charge)
  - Vehicle behavior/performance
  - Charging issues
  - Community events
  - Governmental interaction (HOV, EZPass, CARB)
  - Cost of ownership
  - Press exposure
  - EV commentary
  - Research participation
  - Dealer issues
- Weekly “Plugged In” newsletter addresses issues raised in the blogosphere

# MINI E PROGRAM FACEBOOK GROUP



- **Posting examples:**

- “I’m trying to locate a charger in Westchester County, NY. I think Ray Catena has a MINI of Westchester Dealership in White Plains. Do we know any MINI E people in that area that I could contact? “
- “Really miss the MINI-E after being on the east coast for a five days of driving a rented Ford Focus. On Sunday I wore the MINI lapel pin that MiniUSA sent in the kit to a wedding -- lots of comments. Actually, more comments about the pin in one night than I've had about the MINI-E in two months.”
- “Ambient soundscape heard while driving the mini-e in late summer on long island (no audio and no air conditioning on): cacaphony of locusts, birds chirping, rubber tires rolling on blacktop, the lovely ascending whine as my car accelerates, the percussion of the turning signal. Sweet!”
- “Finally made it to 100 miles on a single charge with 6 left over. Regen is really the key to this mileage game. Also got my power bill-spent about \$55 over 2 months for the extra power that gave me about 1200 miles, compared to over \$200 for premium BMW gas....WOW”

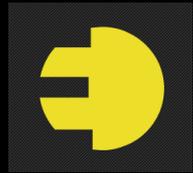
# MINI E PROGRAM

## FOLLOWING MINI E BLOGGERS

- 183 - <http://electricmini.blogspot.com/>
  - Peder describes the MINI E as “the most fun car I have ever had in my 31 years of driving”. He reports that it is easy to achieve 115 miles on a charge with conservative driving and at least 80 miles per charge with ‘enthusiastic’ driving. After 4,500 miles of driving, Peder has averaged 92 miles per charge (even with his heavy right foot).
- 217 - <http://electricride.wordpress.com/>
  - After a nervous last few miles, where the car’s ‘Reduced Performance’ icon was flashing, Pioneer 217 records 122.8 miles on 115% charge (he’d topped up his charge by 15% during the day).
- 402 - <http://mymini-e.blogspot.com/>
  - Chris reports on his first use of the MINI E’s heaters. He explains how he’s tried to resist using them for fear of reducing range, but as temperatures dipped to 55 Fahrenheit he caved in. He reports a significant reduction in range despite only heating the car for a short time.

# MINI E PROGRAM

## NEXT STEPS/KEY LEARNINGS



- Customers
  - Passionate driver community
  - Interest levels in next generation EVs is strong
- Lease End Management (under consideration)
  - Lease extensions as a “bridge” to the next generation BMW Group BEV
  - Vehicle re-deployment in other markets
- Infrastructure
  - Common connector standard (SAE J1772/ISO)
  - Proactively engage utilities and inspection authorities
  - Re-think residential charging option approach
  - More aggressive public infrastructure strategy