NISSAN’S ZERO-EMISSION FUTURE

November 4, 2009

Nissan North America
NISSAN GREEN PROGRAM

“Seeking a symbiosis of people, vehicles, and nature”

With a goal of sustainable mobility, Nissan is taking a proactive approach to finding solutions to environmental challenges.

Reducing CO2 emissions is a major focus of the Nissan Green Program.
LONG-TERM GOAL FOR REDUCING CO2

Intergovernmental Panel for Climate Change (IPCC) study:

➢ By 2050 CO2 emissions must be reduced by 70%~90% vs. 2000 levels
TECHNOLOGY POTENTIAL FOR REDUCING CO2

EV/FCV are the ultimate solution for zero-emissions

CO2 Emission (%)
(Well to wheel)

Gasoline Engine
Clean Diesel
Hybrid
EV/FCV
Clean Energy Utilization

Zero Emission
HISTORY OF NISSAN’S EV

- 17 years of experience in lithium-ion battery/car application
- Late CY2010 launch all new pure electric vehicle

1998 Altra EV
2000 Hypermini
2008 Test Vehicle
2010 Leaf US, JPN

PIVO 2005 Tokyo MS
PIVO2 07 Tokyo MS
NUVU 2008 Paris MS
LITHIUM-ION BATTERY

- High reliability in automotive applications
- Ready for mass production

**2X POWER**
- Conventional
- Laminated
- 2.5kW/kg

**2X ENERGY**
- Conventional
- Laminated
- 140Wh/kg

**1/2 SIZE**
- Cylinder type
- Laminated type
- In 1/2 SIZE

**Achieved High Reliability**
- High heat stability with the use of manganese positive electrodes
- Enhanced cooling performance by lamination
NISSAN AND NEC JOINT VENTURE - AESC - STARTS OPERATIONS
12.0 billion yen investment to mass produce advanced lithium-ion batteries

TOKYO (May 19, 2008) – Nissan Motor Co., Ltd., NEC Corporation, and its subsidiary NEC TOKIN Corporation, today announced that its joint-venture company – Automotive Energy Supply Corporation (AESC) – has begun full operations. AESC’s start of operation follows the announcement of the joint-venture in April 2007.
NISSAN LEAF

All the feature customers have come to expect:

- Compact Car Size
- Space For 5 People
- 100-Mile Range
- Advanced Safety Features
- Unique Design
- Premium Amenities

Zero Emission
NISSAN LEAF
NISSAN LEAF PLATFORM

Zero Emission
NISSAN LEAF

Highlights
- Zero emission
- Affordable
- Stimulating acceleration
- Quietness
- 100-mile range sufficient for daily use
- Advanced intelligent transportation (IT) system

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>5-door compact hatchback</td>
</tr>
<tr>
<td>Capacity</td>
<td>4 ~ 5 Adults</td>
</tr>
<tr>
<td>Range</td>
<td>100 miles (US LA4)</td>
</tr>
<tr>
<td>Top Speed</td>
<td>~88 mph</td>
</tr>
<tr>
<td>Battery</td>
<td>Laminated Li-ion (Manufactured by AESC)</td>
</tr>
<tr>
<td>Capacity/Power</td>
<td>24 kWh/over 90kW</td>
</tr>
<tr>
<td>Motor</td>
<td>High-response synchronous AC Motor 80kW/280Nm</td>
</tr>
<tr>
<td>IT System</td>
<td>Integrated communication system</td>
</tr>
</tbody>
</table>
RECYCLABILITY/RECOVERABILITY

- Up to 99% recyclable
- Made with recycled materials, designed for recoverability

Zero Emission
BENEFITS TO THE CONSUMER

- True zero-emission vehicle
- Affordable pricing
- Lower Total Cost of Ownership than a comparable Internal Combustion Engine vehicle
- Lower maintenance costs than an ICE vehicle
  - Less complexity
  - No engine, transmission, exhaust system
  - No oil changes

Cost per mile comparison (15k miles):
- Car (25mpg, $3/gal) = $0.12 per mile / $1,800
- EV ($0.11 kWh - US Avg) = $0.026 per mile / $396

Cost per mile of EVs can be 20-30% of the cost of fuel for a comparable internal combustion engine vehicle
# Charging Network Concept

<table>
<thead>
<tr>
<th>CHARGING NETWORK</th>
<th>Home Charging</th>
<th>Destination Charging</th>
<th>Pathway Charging</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EV Usage</strong></td>
<td><strong>Short Distance</strong></td>
<td><strong>Mid Distance</strong></td>
<td><strong>Long Distance</strong></td>
</tr>
<tr>
<td>Charger Type</td>
<td>Normal</td>
<td>Normal or Quick (depends on stay time)</td>
<td>Quick</td>
</tr>
<tr>
<td>Charging Site</td>
<td>Home</td>
<td>Workplace, Movie Theatre, Mall, Restaurant, or Parking Lot</td>
<td>Major Road Highway Service Area</td>
</tr>
</tbody>
</table>
**WHEN WILL NISSAN’S EV BE AVAILABLE?**

- Nissan will partner with select public and private organizations to make EVs available for fleet/commercial use in 2010 and 2011.
- Regionally, individual retail sales may begin as soon as late 2010 if the infrastructure is ready.
- EVs will be mass marketed to individual consumers in 2012.

<table>
<thead>
<tr>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Today</td>
<td>SOP/SOS</td>
<td>Fall</td>
<td>Mass Market Sales</td>
</tr>
</tbody>
</table>

Zero Emission
WHERE WILL NISSAN’S EV
BE AVAILABLE?

• Nissan is selecting early markets, not as a trial, but as real markets of opportunity.
• Early markets are selected via favorable demographics, environmental mindset, public/private support, and cooperative utilities to work together on market readiness and infrastructure rollout.
• Current partnerships include:
  • State of Tennessee
  • State of Oregon
  • San Diego
  • Sonoma County, Calif.
  • Phoenix-Tucson metro area
  • Raleigh, N.C.
  • Seattle
  • Washington, D.C.
Each partner’s strengths can be leveraged

Nissan
- Electric Vehicle
- Battery
- EV knowledge & support
- EV service and maintenance

Companies
- EV fleet vehicles
- Workplace Charging
- Promote EV awareness
- Incentives for employees

State or Region
- Promote EV awareness
- Infrastructure
- EVSE Permit Process
- Legislation/Incentives
- Public education
- EV fleet vehicles

Utilities
- Expand renewable electricity sources
- Capacity expansion
- Time of use rates
- Demand Response
- Infrastructure

A sustainable future requires all stakeholders working together.
**EV MARKET READINESS**

- **Incentives for consumers**
  - Financial (tax deduction, free permitting, subsidized charger installation)
  - Non-financial (HOV lane access, preferential parking, etc.)

- **Streamlined EVSE permit process**
  - Fast, easy permit application process (online permitting)
  - Expedient installation approvals or installer self certification

- **Charging Infrastructure**
  - Home
  - Workplace
  - Public

- **Education and Public Outreach**
  - Educate the public on environmental, social, and financial benefits of zero emission vehicles
ECONOMIC STIMULUS PACKAGE

- Up to $7,500 tax credit for first 200,000 vehicles/OEM
- Up to $2,000 tax credit for individuals (50% for businesses) to purchase and install chargers
- $1.6B loan from U.S. Department of Energy
  - Nissan to invest in its Smyrna, TN Manufacturing facility
  - New battery production facility
  - Retool plant for EV manufacturing
  - Potential capacity for 150,000 vehicles / 200,000 batteries
  - Production to begin in 2012
- $99.6M Dept. of Energy Grant to deploy charging network:
  State of Tennessee
  State of Oregon
  San Diego
  Phoenix/Tucson
  Seattle

- State Incentives
• Real Car
• 100 Mile Range
• Launching in 15 months
• What are you doing to get “Plug In” Ready?
THANK YOU!