

# **NISSAN'S ZERO-EMISSION FUTURE**

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# 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.



NISSAN  
GREEN PROGRAM

**Zero Emission**

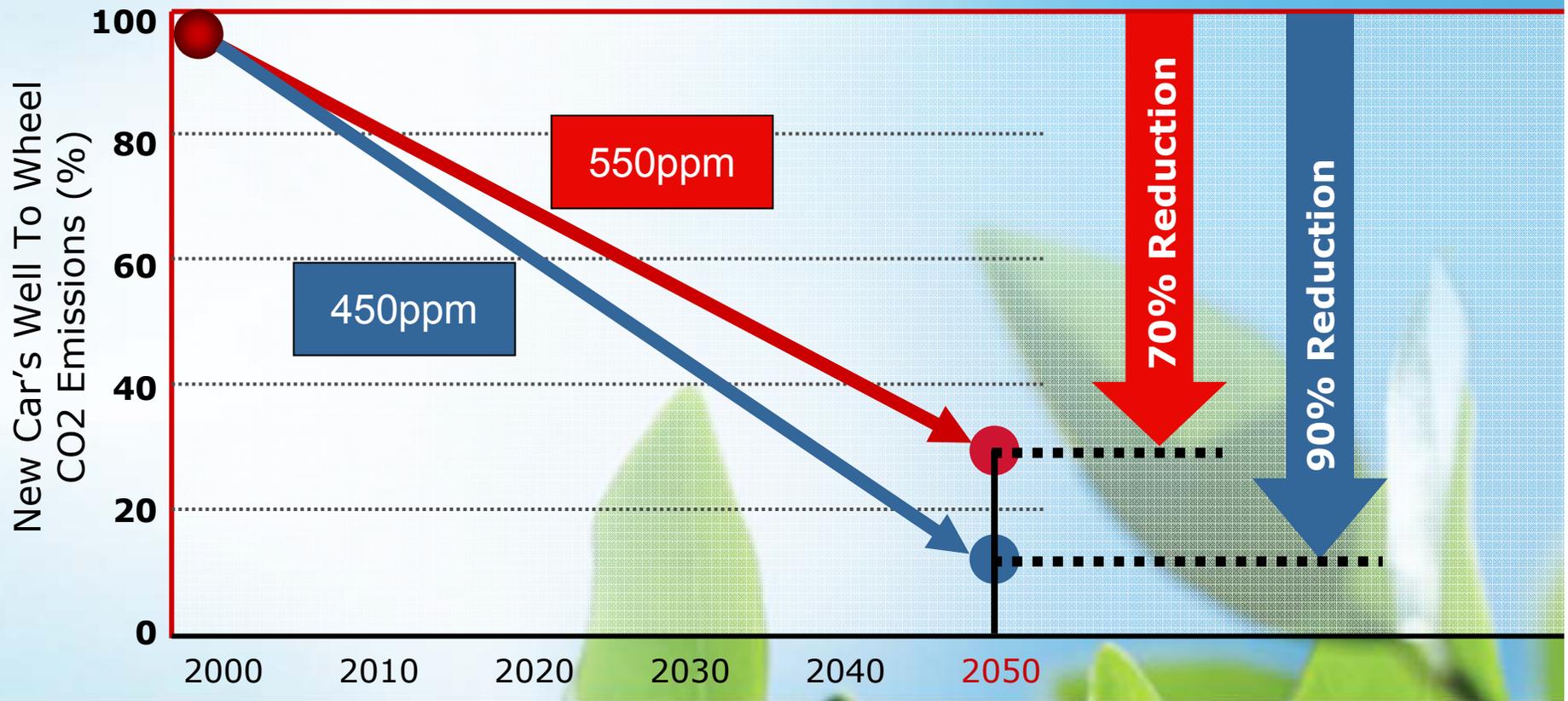


# LONG-TERM GOAL FOR REDUCING CO2



Intergovernmental Panel for Climate Change (IPCC) study:

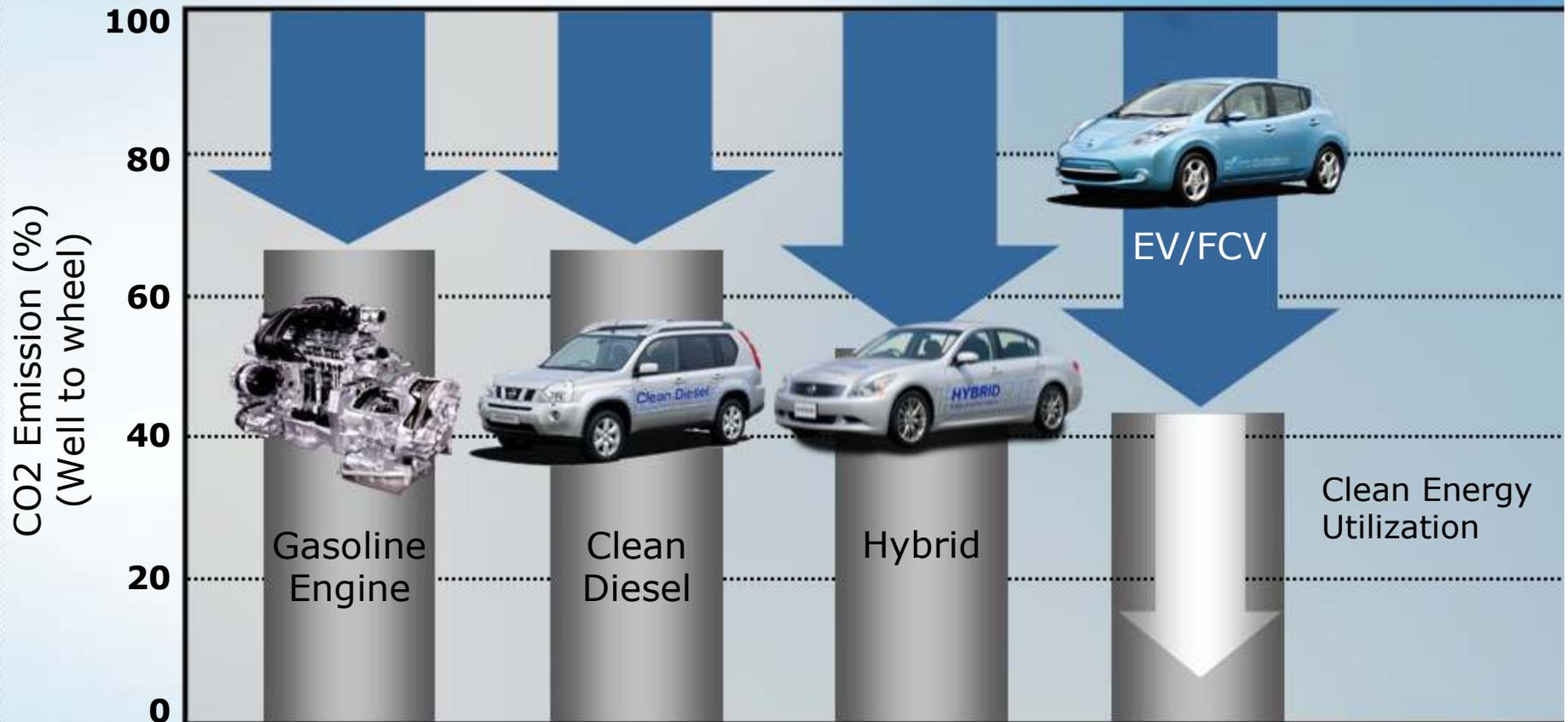
- By 2050 CO2 emissions must be reduced by 70%~90% vs. 2000 levels



# TECHNOLOGY POTENTIAL FOR REDUCING CO2



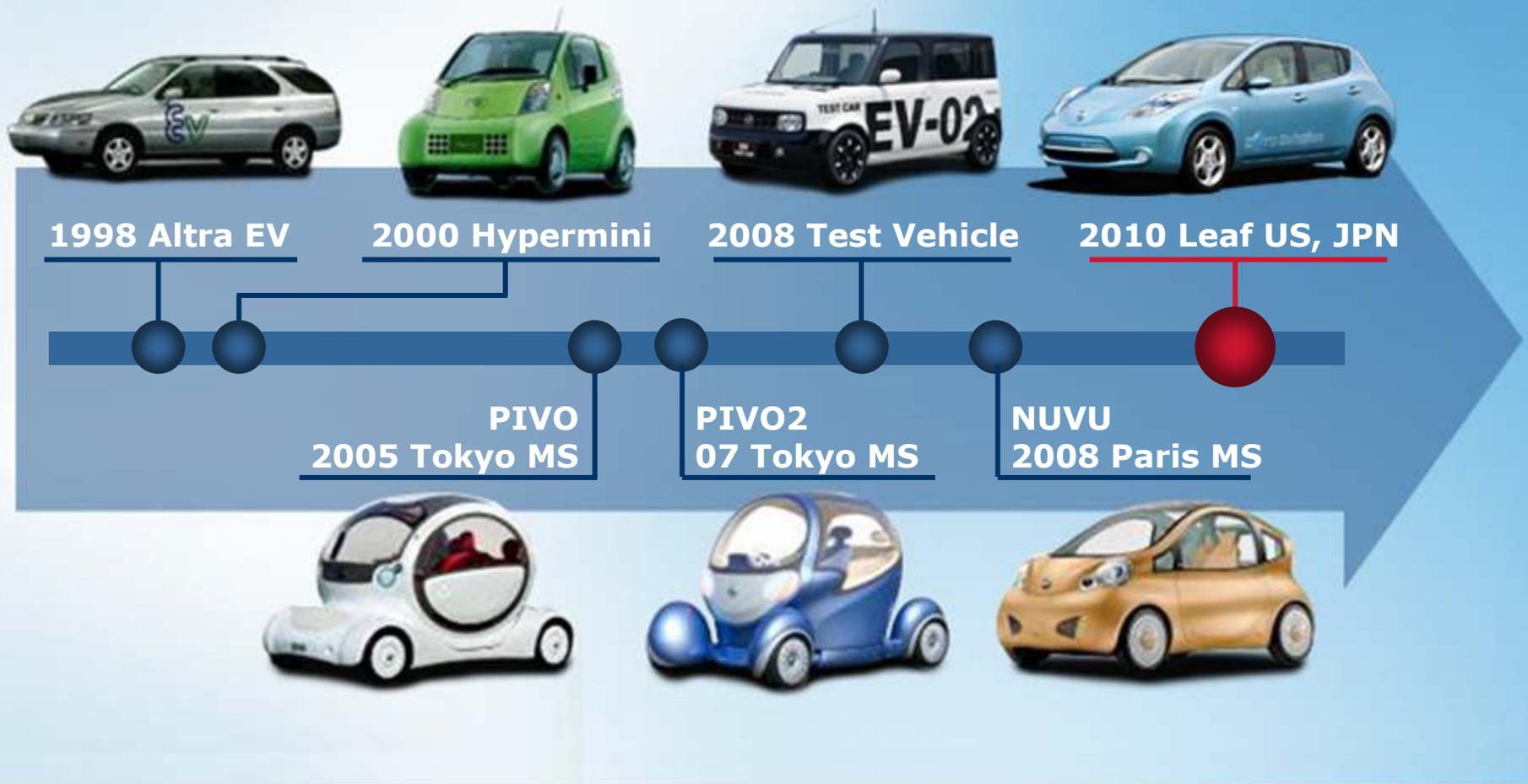
EV/FCV are the ultimate solution for zero-emissions



# HISTORY OF NISSAN'S EV



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



**Zero Emission**

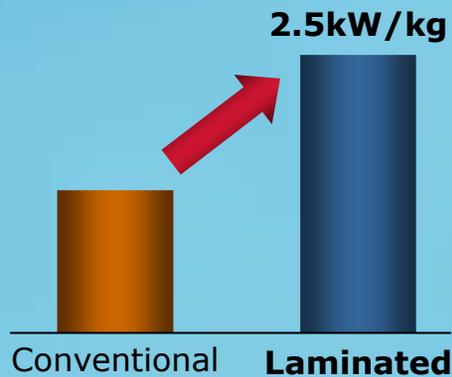


# LITHIUM-ION BATTERY

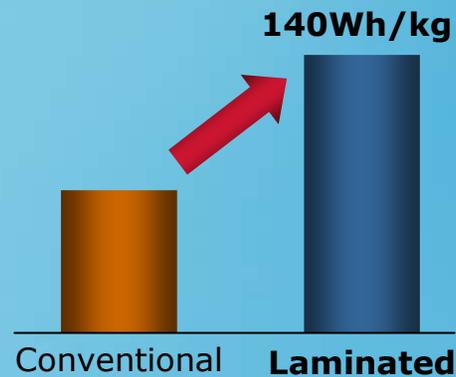


- High reliability in automotive applications
- Ready for mass production

## 2X POWER



## 2X ENERGY

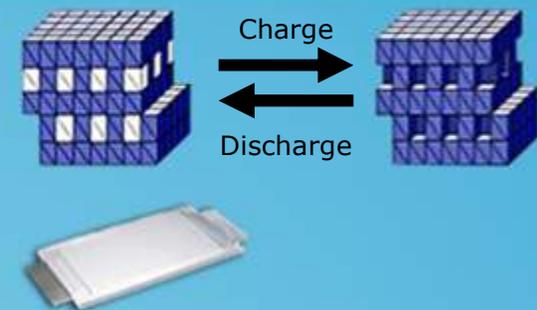


## 1/2 SIZE



## Achieved High Reliability

- High heat stability with the use of manganese positive electrodes
- Enhanced cooling performance by lamination



# MAJOR INVESTMENT IN BATTERY TECH



Material



Cell



Module



Pack



Vehicle



**NEC**  
**NEC/TOKIN**



Automotive Energy Supply Corporation

**NISSAN**

## **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.

**Zero Emission**



# NISSAN LEAF



All the feature customers have come to expect:

**Compact  
Car Size**

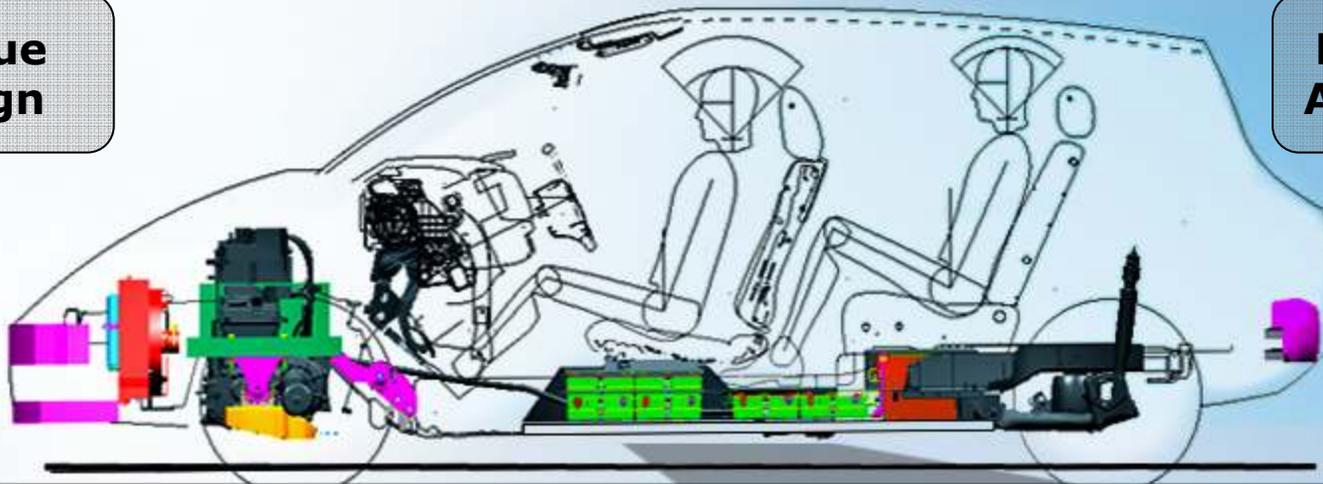
**Space For  
5 People**

**100-Mile  
Range**

**Advanced  
Safety  
Features**

**Unique  
Design**

**Premium  
Amenities**



**Zero Emission**



# NISSAN LEAF



**Zero Emission**



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# 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



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

**Zero Emission**



# NISSAN LEAF IT SOLUTIONS



# RECYCLABILITY/RECOVERABILITY



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



# 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



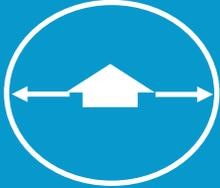
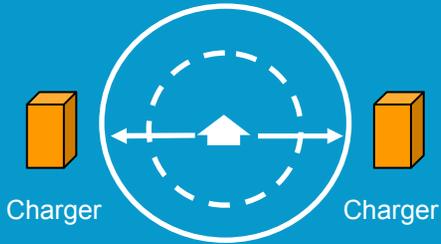
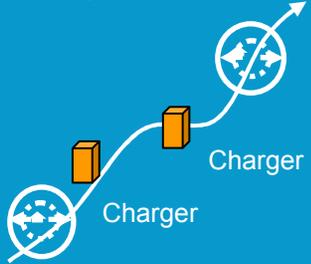
## Cost per mile comparison (15k miles):

- 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



	Charging Network		
	Home Charging	Destination Charging	Pathway Charging
EV Usage	<b>Short Distance</b> 	<b>Mid Distance</b> 	<b>Long Distance</b> 
Charger Type	Normal	Normal or Quick (depends on stay time)	Quick
Charging Site	Home	Workplace, Movie Theatre, Mall, Restaurant, or Parking Lot	Major Road Highway Service Area



# 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

2008	2009	2010	2011	2012
	Today	SOP/SOS		Mass Market Sales



# 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

## State or Region

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

A SUSTAINABLE  
FUTURE REQUIRES  
ALL STAKEHOLDERS  
WORKING TOGETHER

## Companies

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

## Utilities

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





- **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



# NISSAN LEAF



- **Real Car**
- **100 Mile Range**
- **Launching in 15 months**
- **What are you doing to get "Plug In" Ready?**

**Zero Emission**



**NISSAN LEAF**



**THANK YOU!**

**Zero Emission**

