

The Automotive Industry: Disruptive Times – Big Opportunities for the Southern States

Simon Cobb,
NCCAR
August 18, 2009

The Automotive Scene Today....

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- Scarce customers
- Improving capital
- “Cash for Clunkers” stimulus
- Massive Industry restructuring
- Survival mode for suppliers
- Federal loans
- Future investment challenges
- Product definition unclear

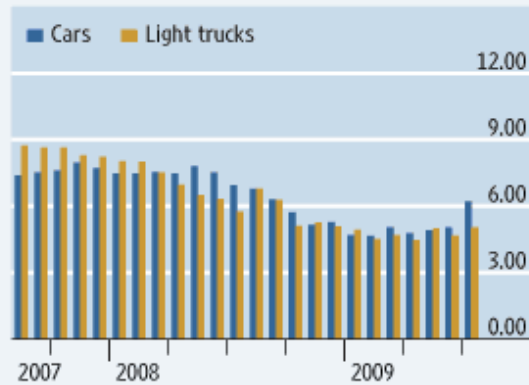


A Closer Look...

What's Moving: U.S. Auto Sales

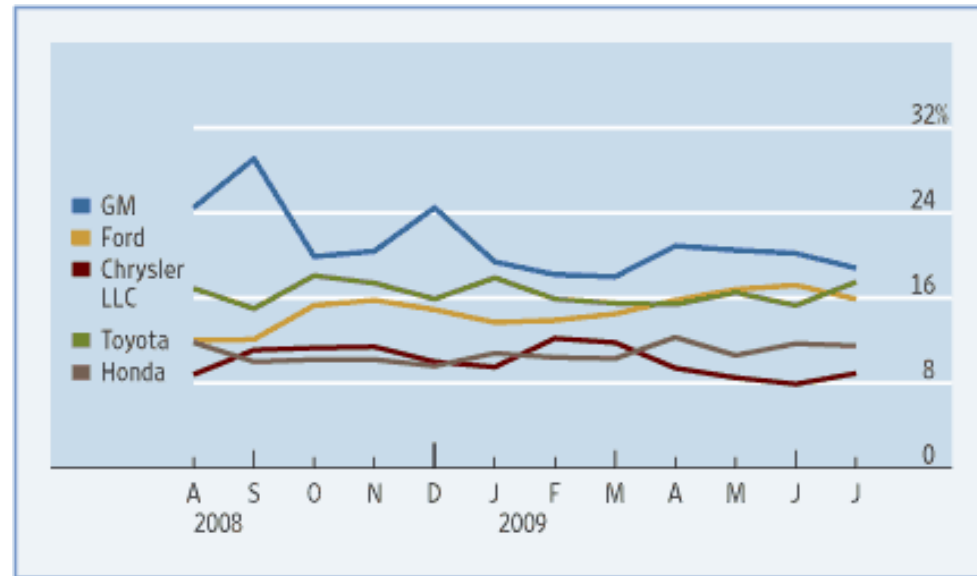
Kicking the tires

Sales of cars and light trucks in the U.S. retail market; in millions of units at seasonally adjusted annual rate.



At the pump

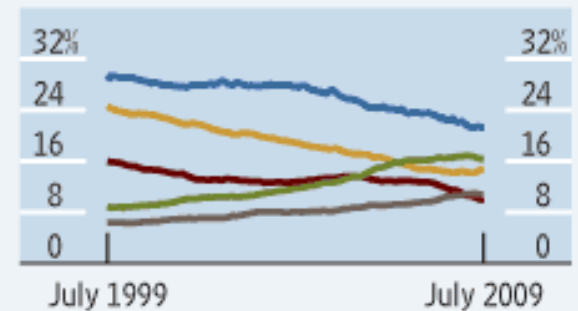
Unleaded gasoline, average weekly retail price per gallon



The U.S. market

The big five

Share of the total U.S. market for each month. At right, 12-month rolling averages from Jul. 1999 through Jul. 2009; below, for the past year.



What are the Effects?

- Restructuring
- Survival
- “Clunker” volume issues
- Dealership closings
- Development stagnation
- Product consolidation





Recession-hit AvtoVAZ has stopped production in Togliatti

Russia may extend new-car import duties
 MOSCOW (Reuters) – Russia is likely to extend a 30 percent import duty on new foreign cars rather than let it lapse on September 1, a Russian business newspaper reported on Monday. This is the latest move by the Russian government to try to protect local auto producers that have been hit hard by the country's first recession in a decade. The governmental commission for protective measures in foreign trade will meet at the end of August to decide whether to extend the duty. Kommersant business newspaper reported that the move could have a positive impact on local producers to ...

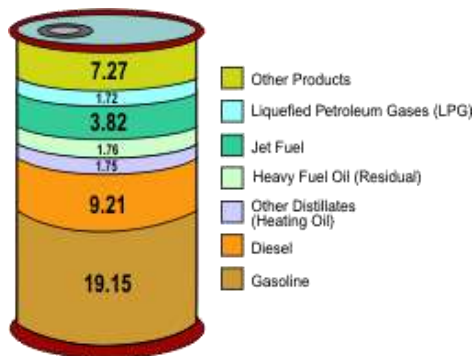
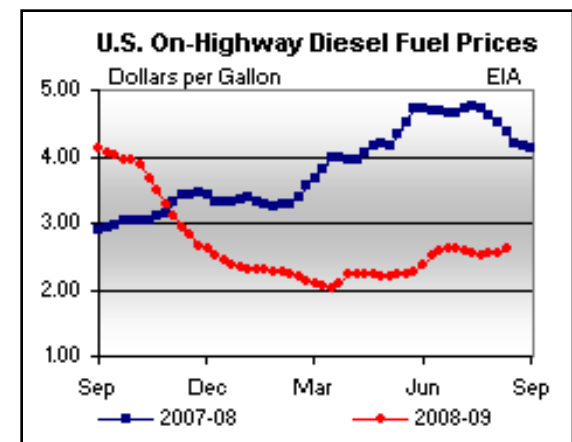
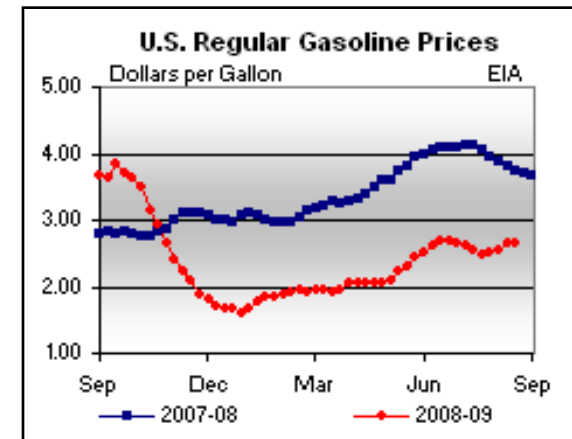
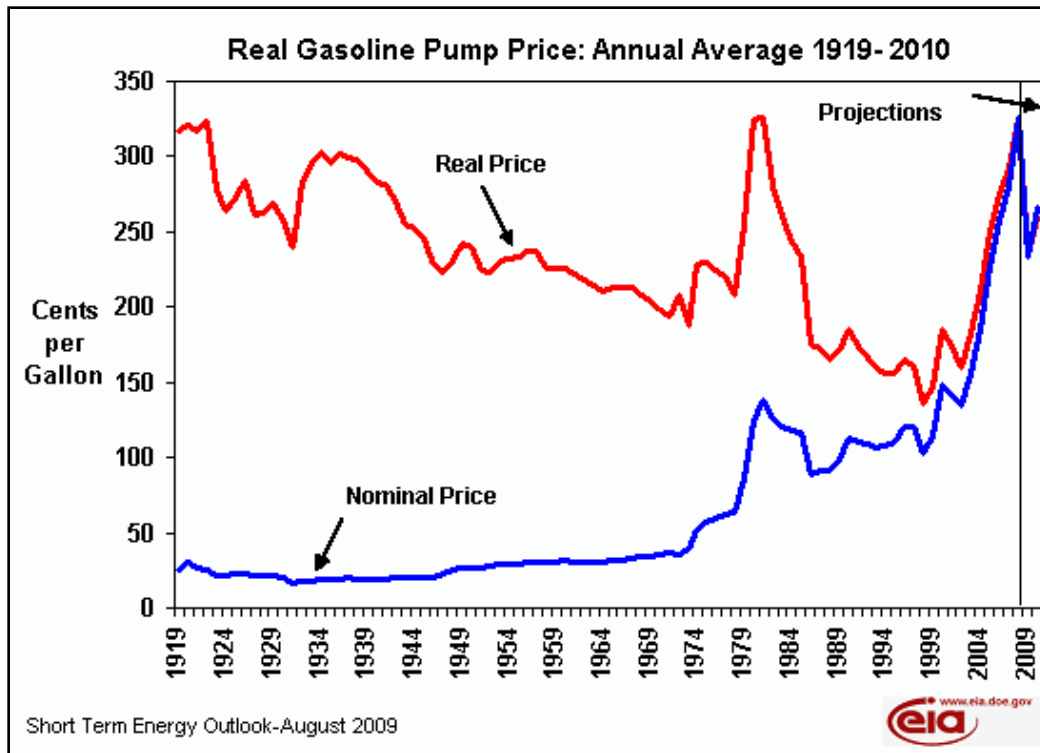
The screenshot shows an article titled "Lutz: Despite good cars, Saturn probably dies" by Jamie Lareau. The article is dated February 16, 2009. The text includes: "DETROIT — Bob Lutz says General Motors' struggling Saturn brand probably won't survive." and "My personal favorite would be to see Saturn survive and prosper," GM's vice chairman told Automotive News. "But frankly, the reality is that that is probably not going to be the outcome." There is also a photo of Bob Lutz with a car.

ENLARGE

Michigan Dodge dealer Wes Lutz was down to six vehicles last week.

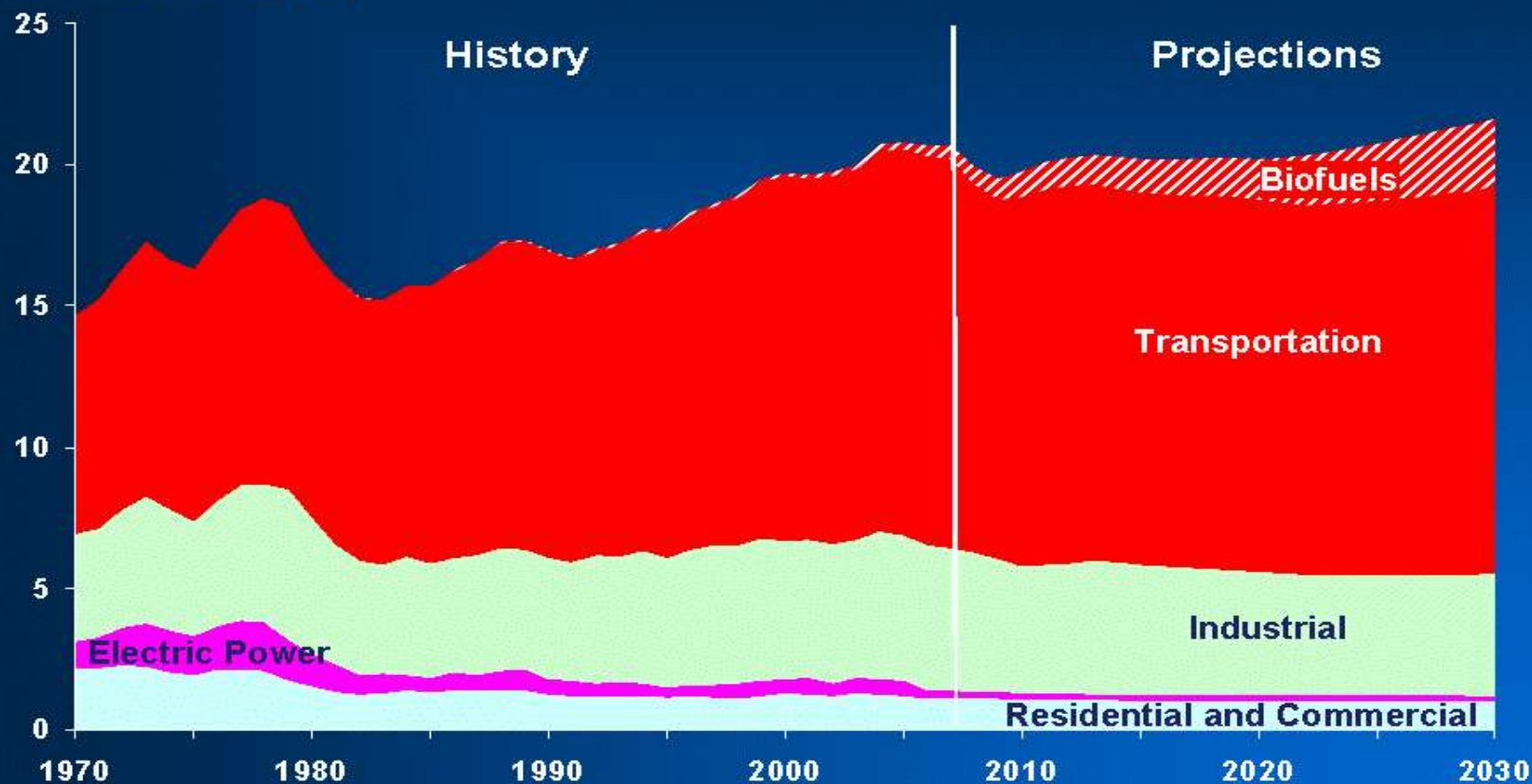
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Is It All About US Oil Supplies / Costs?

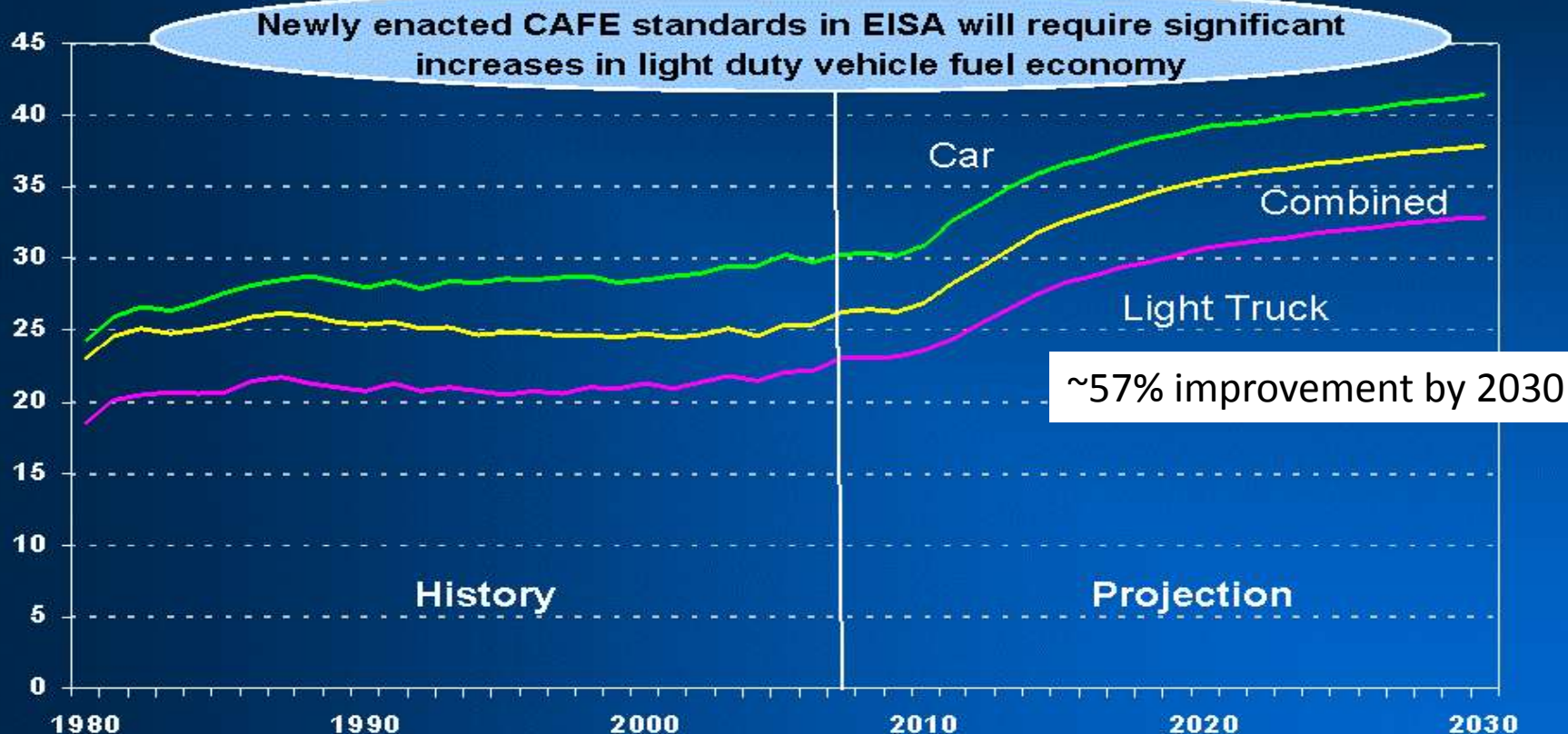


Petroleum-based liquids consumption is projected to be flat as biofuels use grows

million barrels per day

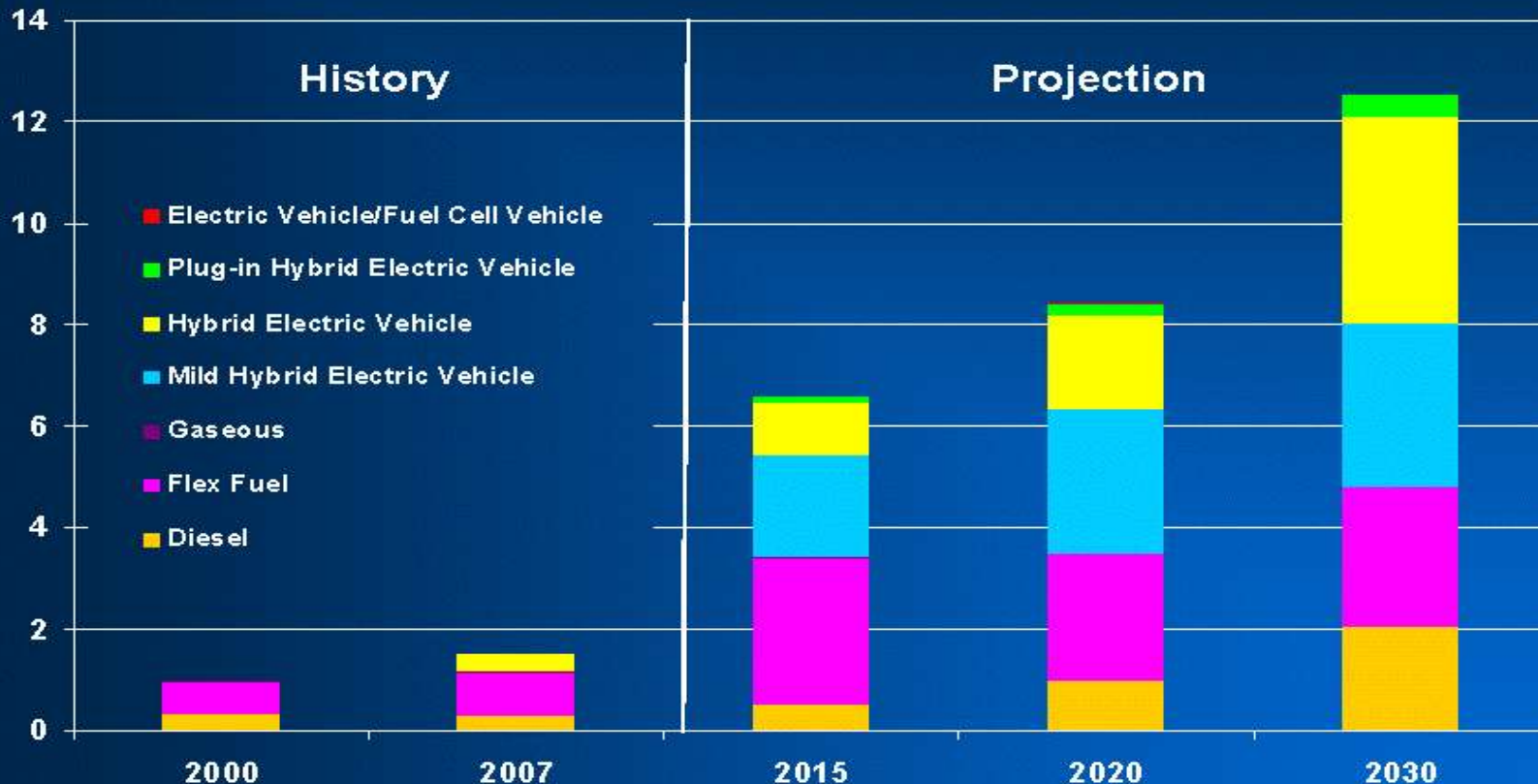


New Light Duty Vehicle Fuel Economy (miles per gallon, based on CAFE test)

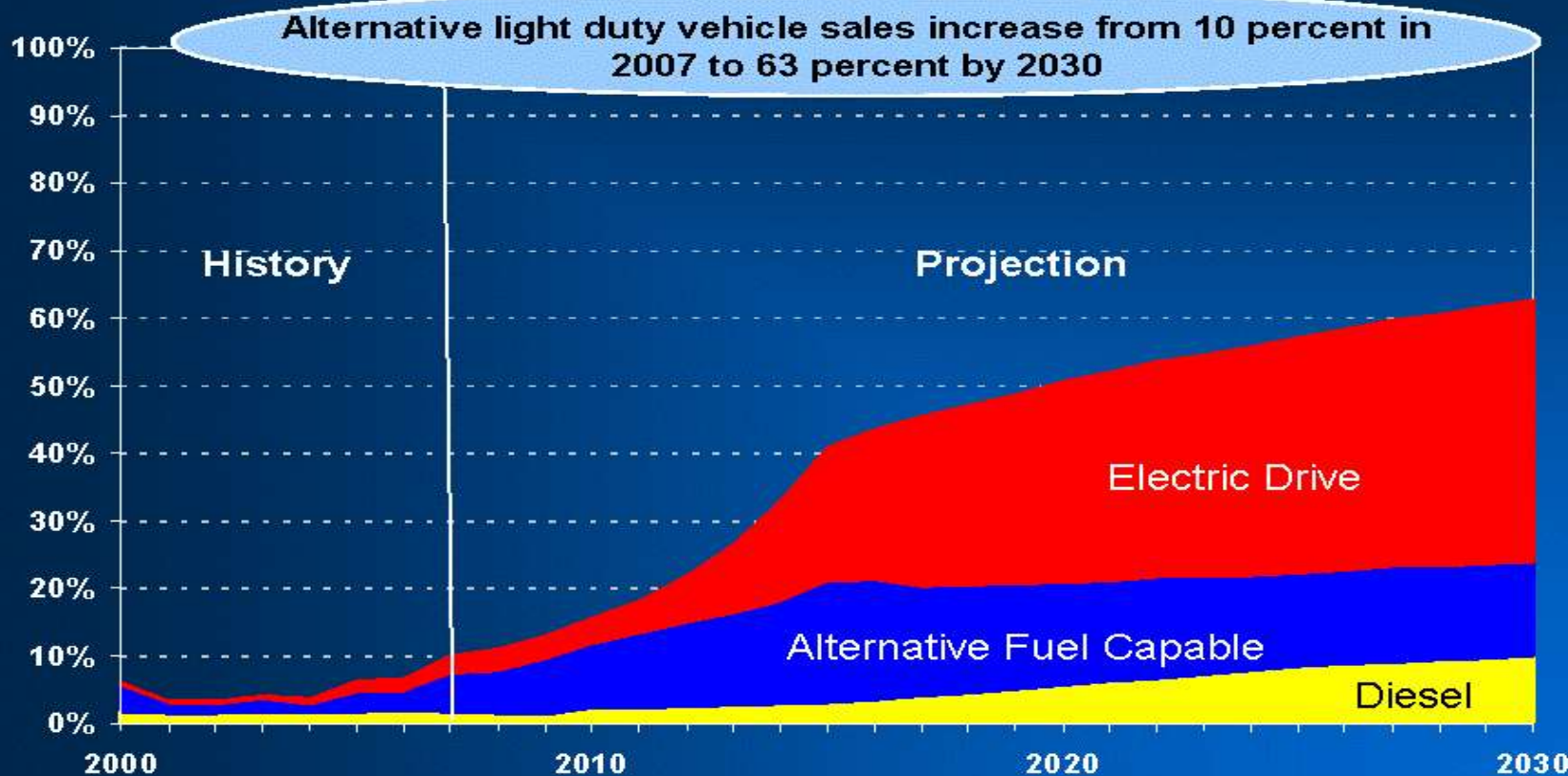


Mild and full hybrid systems dominate new light-duty vehicle sales by 2030

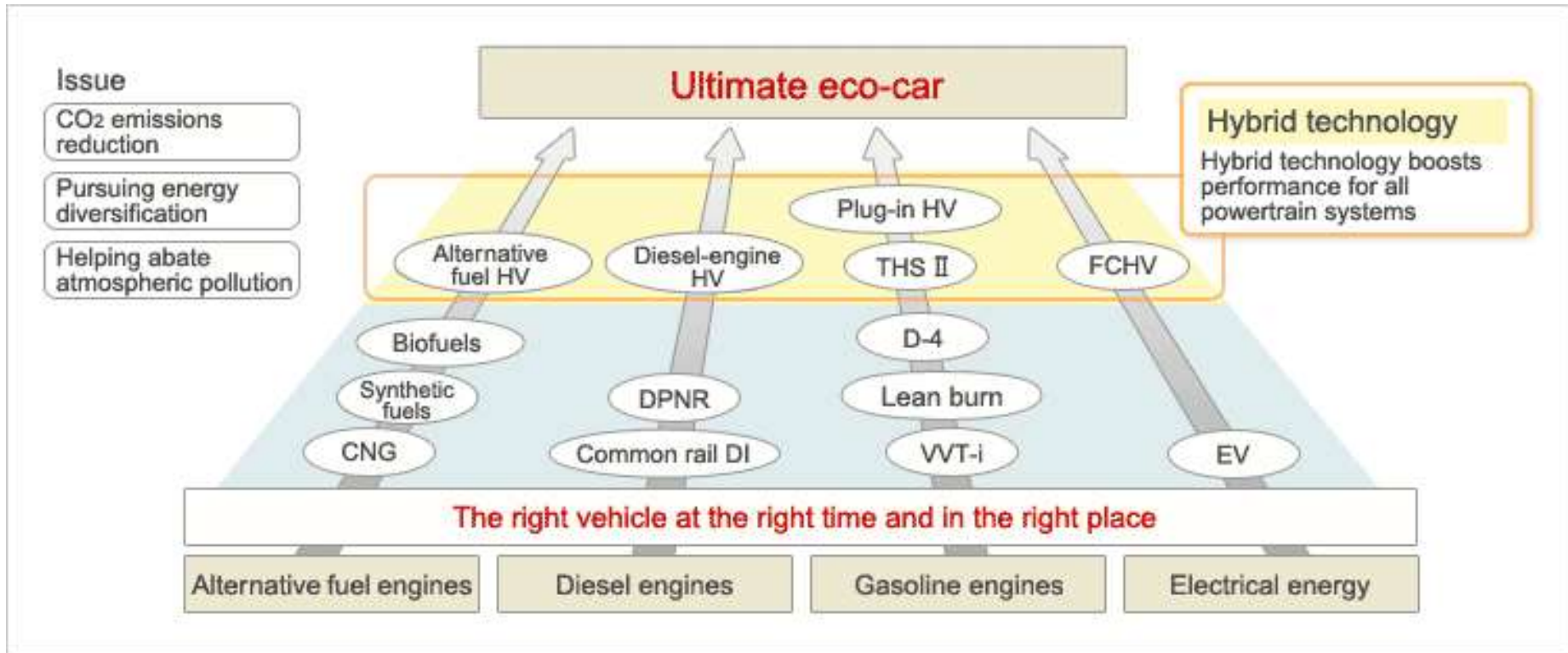
millions of sales



New Alternative Light Vehicle Sales (percent of total sales)



Automotive Technology Roadmap



- Many technology paths to evaluate
- Not all are possible by each manufacturer
- Market fragmentation

New Products – Geneva Show...

- Muscle



- Opulence



- Frugality



- Ecological



“To inspire a new generation of viable, super-efficient vehicles that help break our addiction to oil and stem the effects of climate change. “

- 111 entrants for 2010 Automotive X Prize
- 100MPGe
- 125 g/mile of CO₂
- US emissions standards
- FMVSS
- 10,000 units per capable
- Tata & Tesla only “conventional” auto companies



The Battery Electric Craze...

From Tesla Roadster to Chevy Volt & beyond!



Commercial Battery Electric...

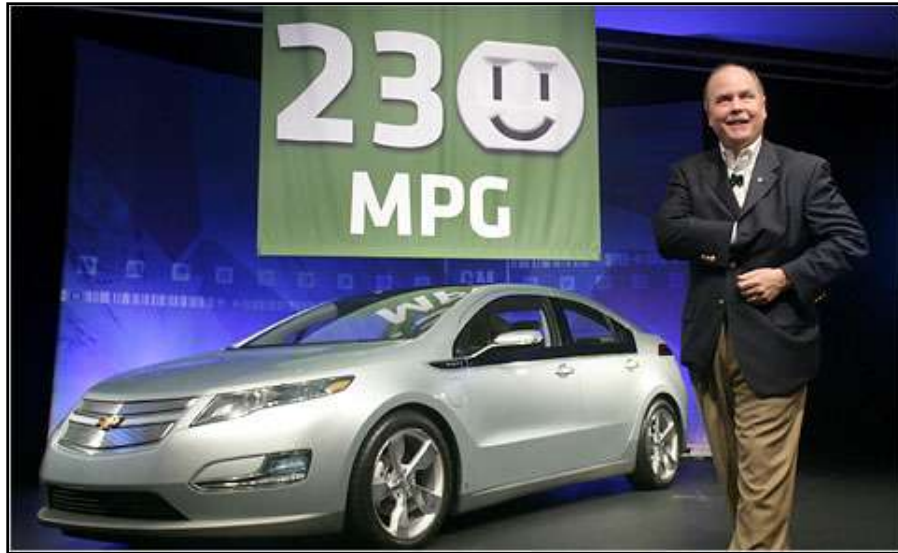
Significant Challenges:

- Battery pack source, cost, life & disposal
- Control system complexity & cost
- Thermal management
- Vehicle weight
- Range anxiety
- Recharging
- “Smart Grid”
- Shortage of key skills



Extreme Fuel Economy...

Chevy Volt – Extended
Range Electric: 230 mpg



The World's Most Fuel Efficient Car:
285 mpg (not a hybrid!)

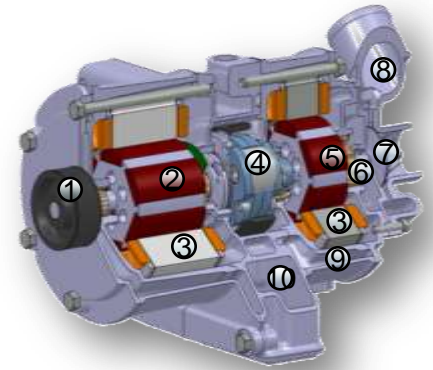


Tesla – Battery Electric: 241 mpg



New Engine Technologies:

- Down-sizing (e.g. Ford's EcoBoost)
- Turbo-charging
- Common rail diesels
- Kinetic energy recovery
- Optimized flex fuel usage
- GDI
- HCCI



Toyota Prius Hybrid Powertrain System



New Vehicle Technologies...



- Driver aids – rear view; heads up display
- Lane departure warnings
- Virtually connected vehicles
- Data sharing between vehicle and traffic systems
- Accident avoidance systems



2009 MANAGEMENT BRIEFING SEMINARS

Michigan bids to be connected-vehicle research center

JAMES B. TREECE
AUTOMOTIVE NEWS
AUGUST 4, 2009 - 4:10 PM ET

TRAVERSE CITY, Mich. – Michigan is bidding to become the equivalent of Silicon Valley in the field of connected vehicles, panelists told the Management Briefing Seminars here today.

"We're engaged to make sure Michigan is the center of all of this research," said Kirk Stuedde, director of the Michigan Department of Transportation. The state has set up connected-vehicle partnerships with Sweden, Wales, Taiwan, Canada and Australia.

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IBM's Global Automotive Insights
[IdealWatch Automotive: Business](#)



Vehicle Electronics....

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- Electronics 25% of vehicle cost base in 2004 rising to 40% in 2010
- Semi-conductor content \$20B in 2008 rising to \$22.5B in 2014
- Infotainment systems (Ford “Sync”) growing fast & attracting customers
- Consumer demand increasing - navigation (30 M in 2007 to 61M in 2012), communications, assistive technologies, internet access etc.



What is NCCAR?

NCCAR

- High wage automotive jobs stimulator
- Independent test & research facility
- Market research driven features
- Research & development
 - “Enabling technologies”
 - Advanced vehicle controls
 - Sustainable transportation
 - University & college collaboration
- 620 acre green field site



NCCAR Content...



The AVRC design in conjunction with Lotus Engineering services could be the Best-in-Class testing facility

Facility Qualifiers

- Match TRC surfaces – FMVSS correlation
- Michelin is wet surfaces benchmark
- Significant elevation changes
- Long straight-away (>1.25 miles)
- Large VDA
- Various surfaces, shoulders
- Hill with various grades
- Off-road/camber testing (sand, gravel)
- Private garages

+

Facility Differentiators

- World class road course required to create a destination... Nürburgring...industry buzz
- Lotus Engineering on-site expertise
 - *Test and development support (e.g., advanced chassis lab)*
- Exceptional privacy & security
- Facilities and layout to maximize engineering productivity and efficiency
- Wireless communications infrastructure – including off-site data transfer
- Differentiated on-site user amenities
 - *Lodging, food, down-time activities, team building*



Best-in-Class Vehicle Development Facility

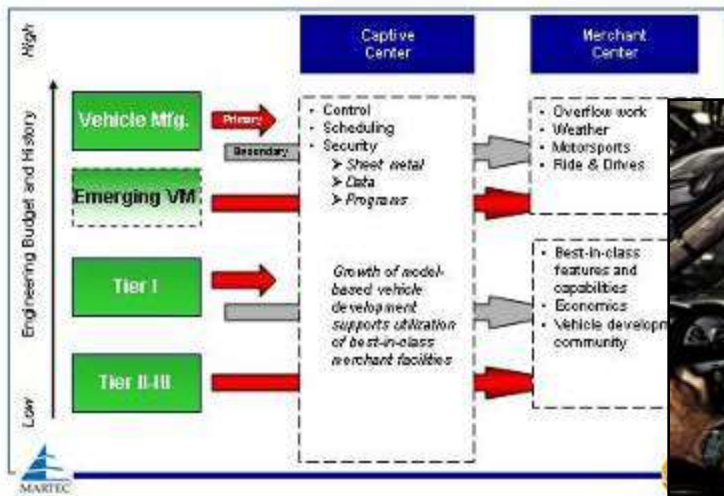


18

Total of 128 personal interviews / questionnaires:

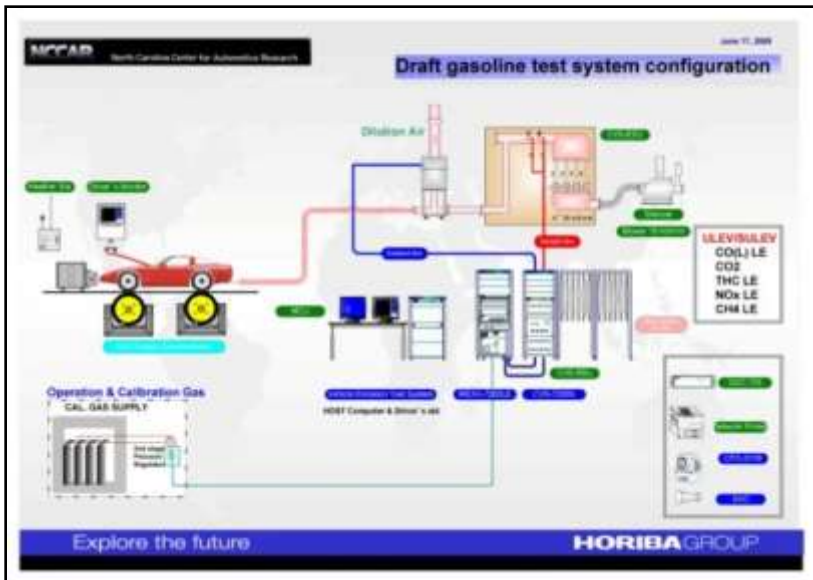
- Logistical requirements study by Walbridge Aldinger (39)
- USA market demand study by Martec. (65)
- Non-USA market demand study by University of Michigan Team (24)

Industry trends favor a best-in-class merchant center like AVRC.



NCCAR Features...

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aktai ARCHITECTURE
INTERIOR DESIGN
ASSOCIATES, P.C.

FACE CHAMBER BUILDING
NCCAR
NORTH CAROLINA CENTER FOR AUTOMOTIVE RESEARCH
300 TECHNOLOGY DRIVE
GARNSBURG, NC 27626

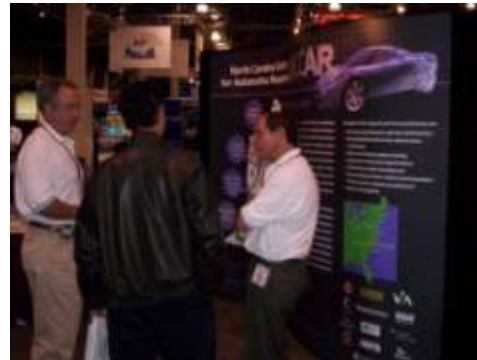
BRUNNEN
ELEVATION

- NSF GOALI project – driver assist technology – NC State University; New Jersey Institute of Technology; Lotus
- Lithium ion battery research project – entrepreneurs & industry collaboration
- Advanced site-wide IT infrastructure under development - NC State Centennial Networking Laboratory & Cisco Systems.
- Driverless vehicle development – collaboration with Lotus & NC State University
- NIST Recovery Act - PACE Chamber application – collaborative application with 11 researchers from 5 universities & 2 auto companies

NCCAR Marketing



www.nccar.us



- “One-on-one” industry dialogue
- Targeting key clients
- Selecting emerging leaders
- Emphasizing broad application
- 660 business contacts (11 countries)
- Trade shows (Detroit & Germany)

Thank You !

NCCAR Design – Phase 1A (& 1B)



PHASE 1B CONSTRUCTION OVERLAY
 APPLYING OVERLAY DEPICTS FULL PHASE 1

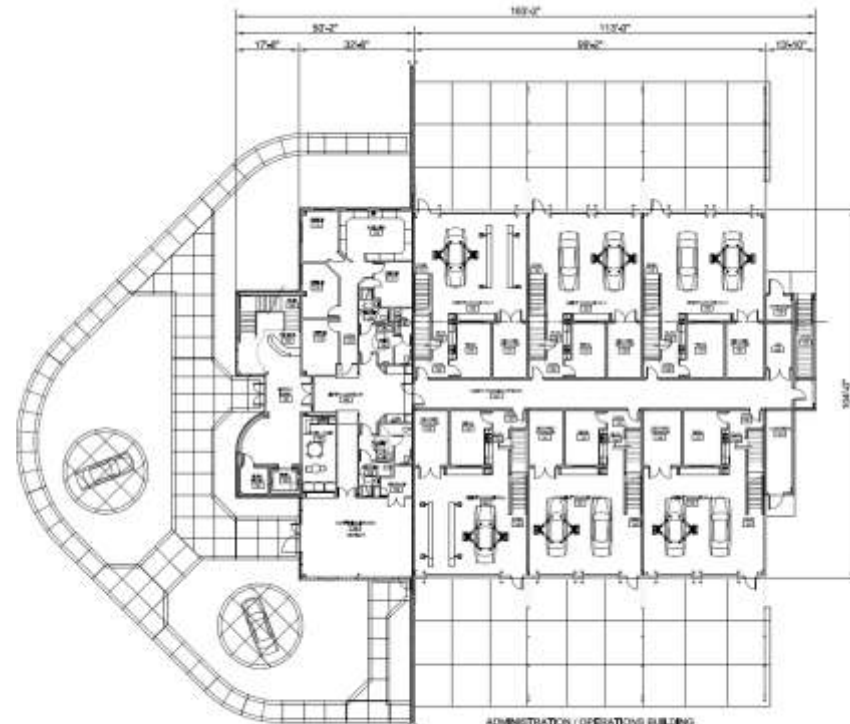
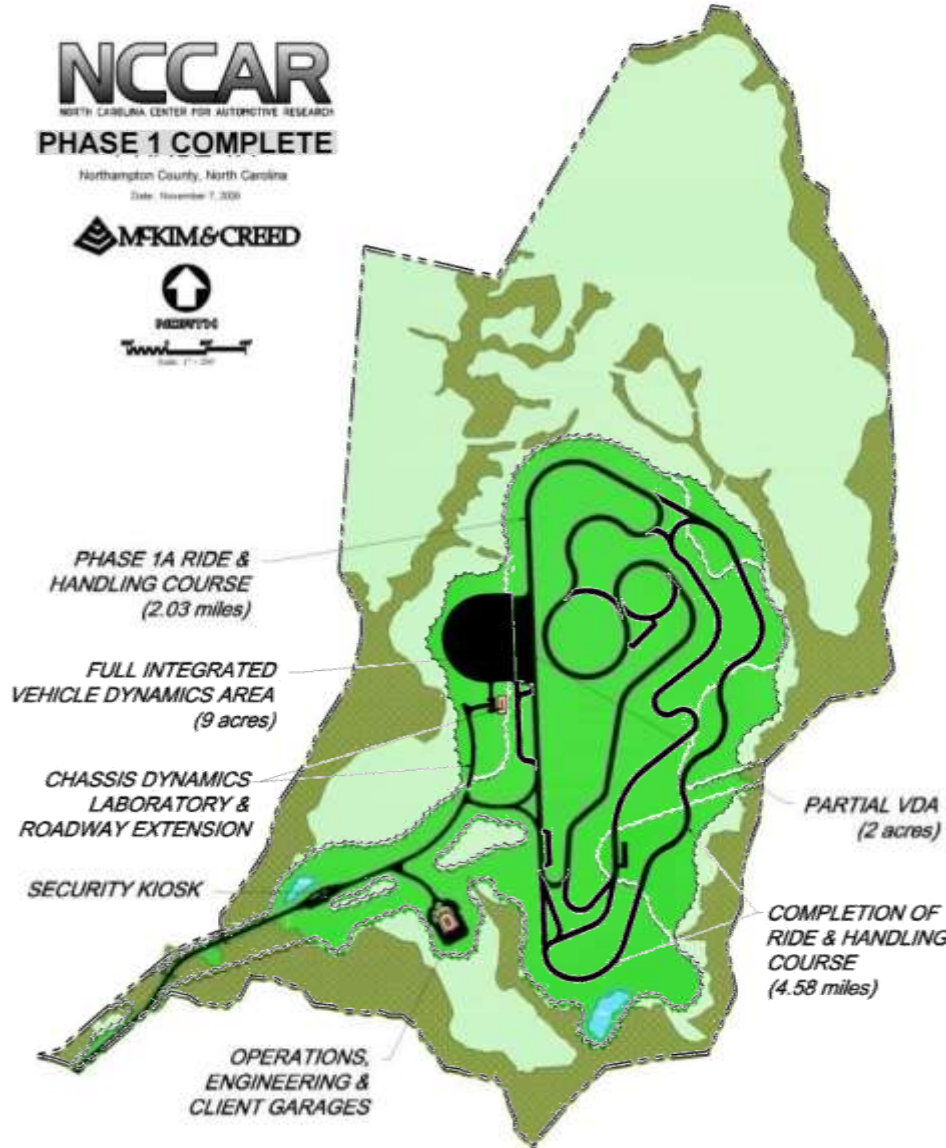
NCCAR
 NORTH CAROLINA CENTER FOR AUTOMOTIVE RESEARCH
PHASE 1 COMPLETE

Northampton County, North Carolina

Date: November 7, 2009

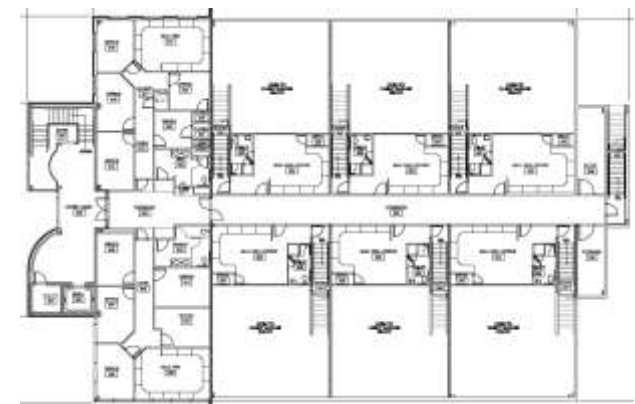


NORTH



ADMINISTRATION / OPERATIONS BUILDING
 BUILDING AREA SUMMARY

SPACE	ADMIN. / OPS.	CURRY GARAGES	TOTAL
FIRST FLOOR	4,341 SQ. FT.	10,881 SQ. FT.	15,222 SQ. FT.
SECOND FLOOR	4,341 SQ. FT.	4,341 SQ. FT.	8,682 SQ. FT.
TOTAL	8,682 SQ. FT.	15,222 SQ. FT.	23,904 SQ. FT.



Creative Entrepreneurship (in a Downturn)



Bhaskar Chakravorti is a senior lecturer in the Entrepreneurial Management unit at Harvard Business School.

“Start up investment fell 33% in Q4 2008”

- “Technology” - Motorola, Texas Instruments, HP
- “Value” – Revlon, SouthWest Airlines, Ryanair, JetBlue
- Data in uncertain conditions –, CNN, USA Today, Salesforce.com
- Retraining – University of Phoenix
- Increasing value - Fortune magazine

“In an economic downturn, consumers consume less of many products. Invariably, this creates the need for substitutes”

“I have a lot of hope for the entrepreneurial momentum that builds during a downturn”

Companies Born from Depressions (CNN Money)



	Founded / Growth	Product Logic	2008 Revenues
Proctor & Gamble	1837 & 1929	Essential Needs	\$84B
IBM	1873-1896 "The Long Depression"	Innovative Technologies	\$104B
GE	1873	New Technology	\$183B
GM	1907 "Banker's Panic"	New Automotive Group	\$ 149B
United Technologies	1929	Airlines & Airplanes	\$59B
FEDEX	1973 "Oil Crisis"	Premium Delivery	\$493B

The Rise of "Mobile" China...

