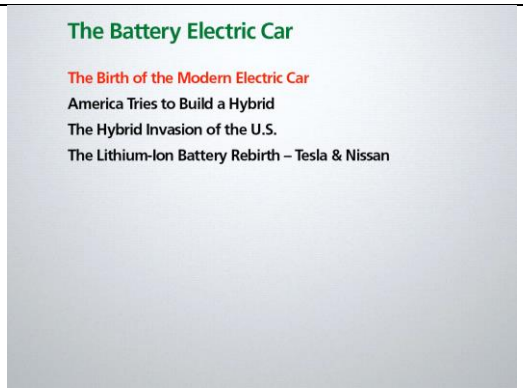
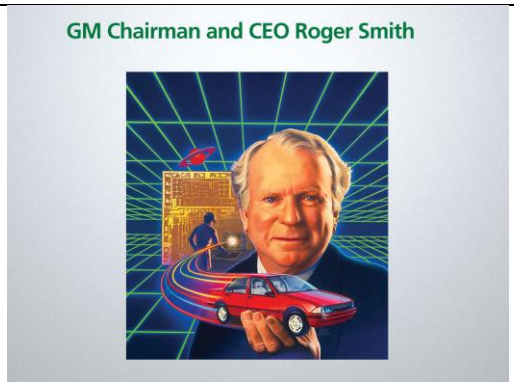
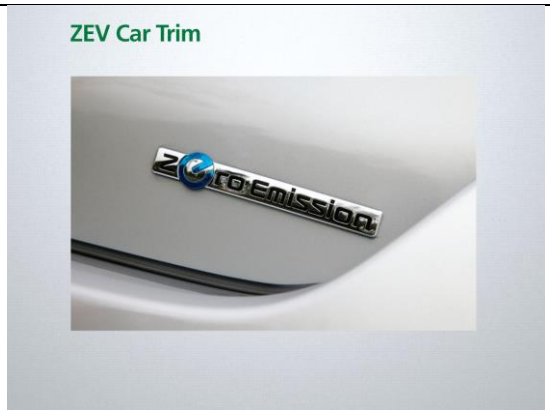
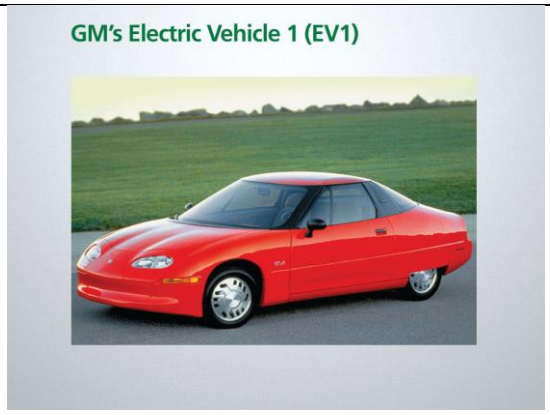
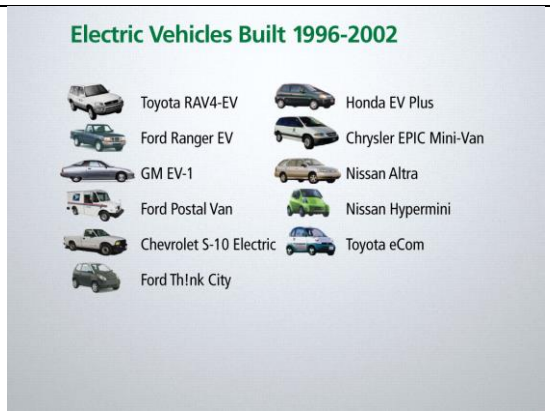
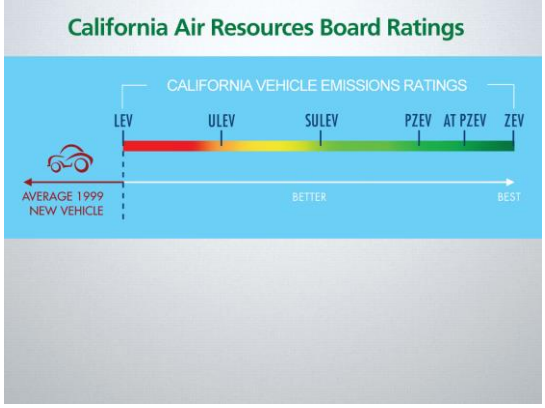
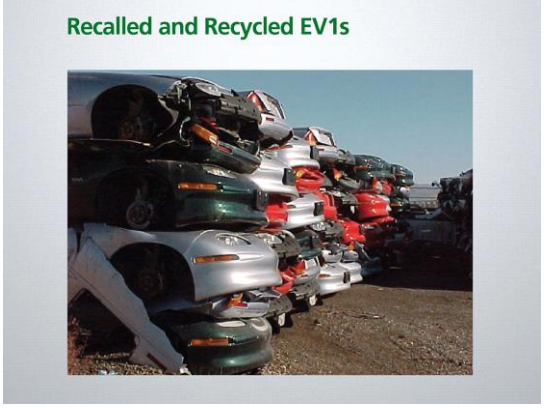
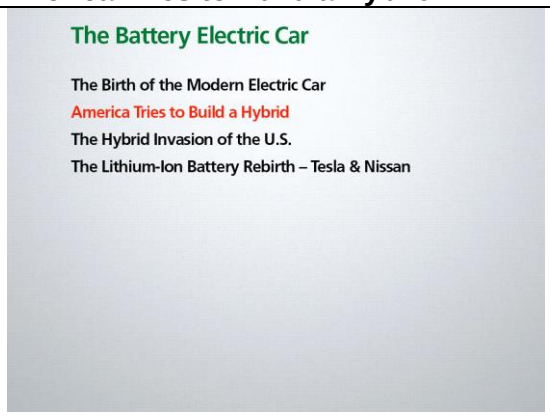
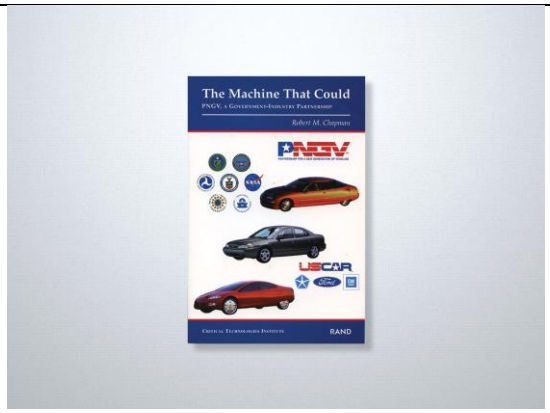
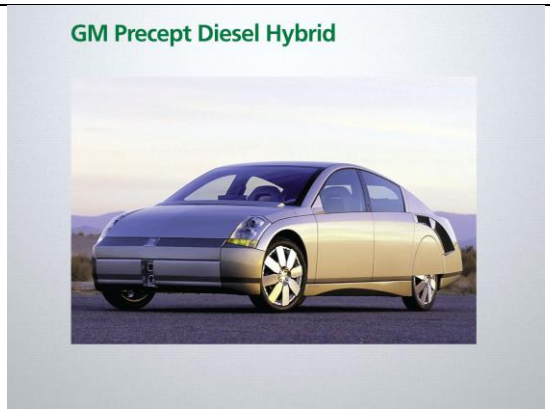
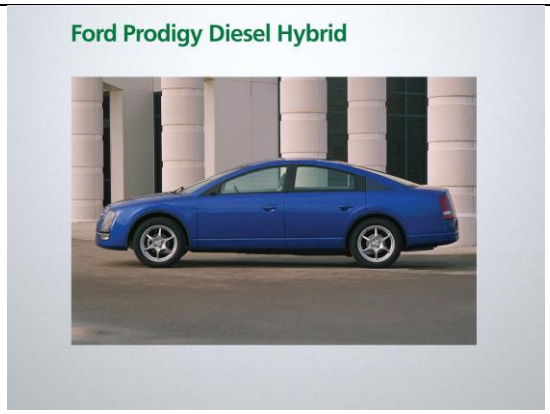
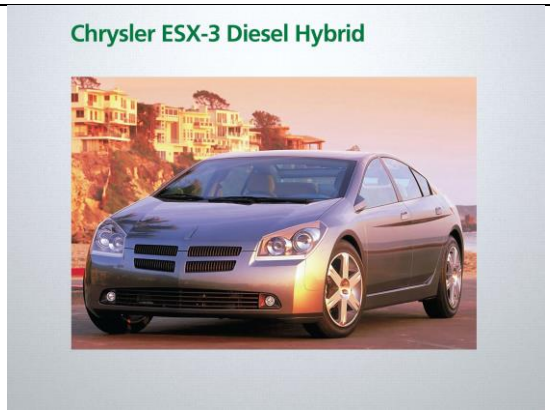
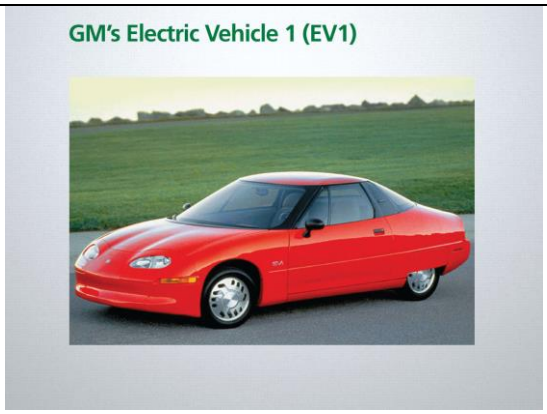
Part 2A: The Battery Electric Car – The Birth of the Modern Electric Car		
B1	The Birth of the Modern Electric Car, often called an EV or a plug-in began 25 years ago.	
B2	One of the most high-profile cars in automobile history was the General Motors Impact electric concept car that debuted at the 1990 Los Angeles Auto Show.	
B3	Roger Smith, then chairman and CEO of General Motors, made the decision to build a production version of the Impact to be called the GM Electric Vehicle One or EV1.	
B4	The California Air Resources Board (known as CARB) was pleased with GM's decision and developed a Low Emissions Vehicle Standard that required auto companies to build cars that were powered only by batteries.	

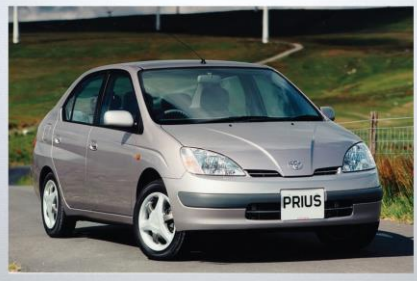
B5	They were designated as Zero Emissions Vehicles.	
B6	In December 1996, the first GM EV1 production model was shipped.	
B7	Eleven different electric vehicle models were built by six major auto manufacturers from 1996 through 2002. About 6,000 electric cars were sold or leased during that six-year period.	
B8	But electric car sales were far below expectations. So in 2001 CARB began giving credits for new gasoline hybrid cars from Japan in order to meet its mandate.	

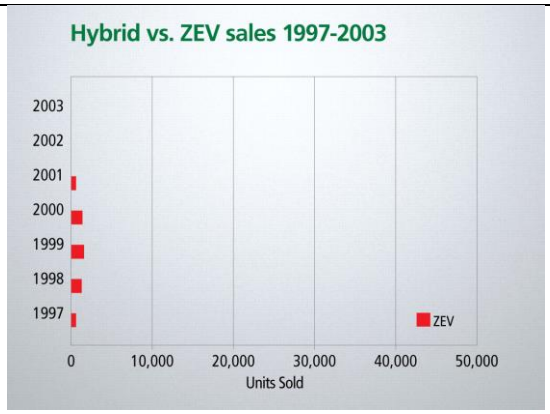
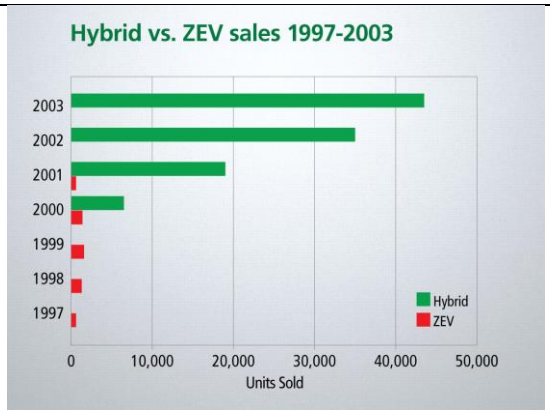
B9	Car companies were opposed to the CARB decision that included foreign hybrids. In 2002, General Motors and Daimler Chrysler filed a lawsuit against the state of California challenging the new ZEV rules.	
B10	CARB dropped the ZEV requirement, and car companies stopped building electric cars. Since most had been leased, the majority were recalled and scrapped.	
B11	The EV1 and other electric cars were the first attempt to build modern electric cars in the United States. One of the main reasons for their limited success was growing acceptance of Japanese conventional hybrid cars.	

Part 2B: The Battery Electric Car – America Tries to Build a Hybrid		
B12	Part 1 - The Battery Electric Car At the same time as the Zero Emissions Vehicles were being developed, the US and Japan began developing hybrid power trains.	
B13	In 1993, the Clinton administration formed a joint government/industry program called the “Partnership for a New Generation of Vehicles” with Ford, General Motors and Chrysler.	
B14	The partnership’s objective was to build hybrid cars powered by diesel fuel that got 80 miles-per-gallon, three times the fuel economy of the average car at that time.	
B15	Three prototype diesel hybrid vehicles were built through the Partnership. General Motors hybrid Precept’s fuel economy was 80 miles per gallon.	

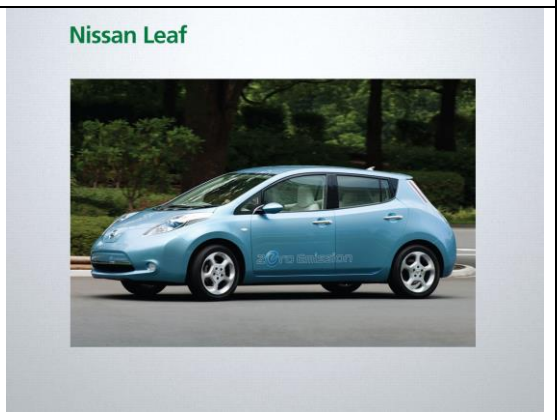
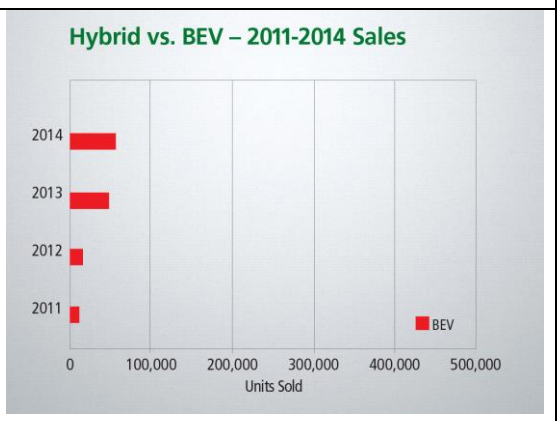
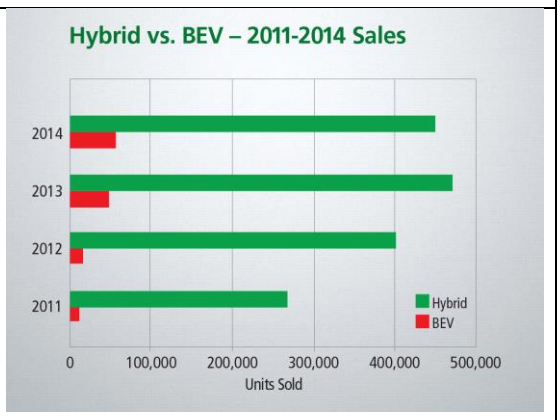
B16	The Ford Prodigy achieved 72 miles per gallon.	
B17	The Chrysler ESX-3 fuel economy rating was also 72 miles per gallon.	
B18	In 2001, the incoming Bush administration, with the support of U.S. car companies, redirected the nation's efforts away from hybrid cars toward fuel-cell vehicles. But that was not the end of the hybrid car.	
B19	Toyota had applied to join the US Partnership for a New Generation of Vehicles program at its inception in 1993 but was turned down.	

B20	In response, Toyota formed the Global Program for the 21st Century, known as G21, to build a 50 miles-per-gallon gasoline hybrid car. The first prototype was delivered in 1996 in Japan,…	
B21	…the same year that the first General Motors EV1 electric car was delivered in the United States.	
B22	The cancellation of the U.S. hybrid car program in favor of developing a fuel-cell car was a tragic mistake for American car companies. For the next eight years, Toyota and Honda sold gasoline hybrids in record numbers while U.S. companies unsuccessfully pursued fuel cell technology.	

Part 2C: The Battery Electric Car – The Hybrid Invasion of the U.S.		
B23	And then hybrid cars started coming to the United States.	The Battery Electric Car The Birth of the Modern Electric Car America Tries to Build a Hybrid The Hybrid Invasion of the U.S. The Lithium-Ion Battery Rebirth – Tesla & Nissan
B24	The first Japanese hybrid shipped to America was the two-seater Honda Insight. It was delivered in late 1999.	1999 Honda Insight 
B25	The Honda Insight was followed by the Toyota Prius in late 2000, certified by CARB as a super ultra-low emissions vehicle.	2000 Toyota Prius 
B26	The Honda Civic Hybrid, delivered to the United States in 2003, was certified by CARB as an Advanced Technology Partial Zero-Emissions Vehicle.	2003 Honda Civic Hybrid 

B27	U.S. manufacturers of Zero Emissions Vehicles began shipments in 1997. Sales started to decline in 2000 as the first hybrids from Japan arrived on American shores.	
B28	In 2000, Honda and Toyota sold 6,500 cars in the U.S., more than all the Zero Emissions Vehicles sold from 1997 through 2001. Hybrid sales grew rapidly, showing Americans interested in reducing emissions.	
B29	The electric car movement that began in 1990 with the arrival of the GM Impact concept car ended 12 years later with the manufacturers recycling most of the 6,000 cars that had been built. Electric cars did not catch on; instead consumers flocked to hybrids which are still the preferred technology for environmentally concerned drivers.	

Part 2D: The Battery Electric Car – The Lithium Ion Battery Rebirth–Tesla&Nissan		
B30	Part 1 - The Battery Electric Car But that was not the end of the electric car. Tesla Motors was founded in 2003 to build a luxury electric sports car with a price around $100,000.	**The Battery Electric Car** The Birth of the Modern Electric Car America Tries to Build a Hybrid The Hybrid Invasion of the U.S. The Lithium-Ion Battery Rebirth – Tesla & Nissan
B31	Tesla used lithium-ion batteries, an improved battery technology compared to the nickel metal hydride batteries used in most of the earlier electric cars.	**Tesla Roadster Battery Pack** 
B32	Lithium-ion batteries contain twice the power of nickel metal hydride batteries per unit of weight, providing for increased driving range.	**Nickel Metal Hybrid (NiMH) Battery** 
B33	Tesla delivered its first electric car, the Roadster, in July 2006. A total of 2,500 Roadsters were sold. The car used bodies and frames purchased from British car manufacturer, Lotus.	**Tesla Roadster Introduced in 2006** 

B34	Tesla's next car, made completely with Tesla components, was the Model S, delivered late in 2012, with a price range of $75 – 100,000. About 35,000 units were sold in the period 2012 through 2014 in the US.	
B35	Nissan was the first major manufacturer to develop a commercial electric car with lithium-ion batteries. From 2010 through 2014 about 72,000 Leafs were sold in the U.S., at a price of about $35,000. Currently the Tesla Model S and the Leaf dominate the US Battery EV market.	
B36	In the four-year period from 2011 through 2014, about 130,000 Battery Electric Vehicles were sold in the United States.	
B37	In the same four-year period, about 1.5 million conventional hybrids were sold in the U.S.	

B38	Fuel-efficient gasoline hybrids such as the Prius outperform contemporary electric cars in terms of lower price, better fuel economy and lower CO_2 emissions.	
B39	But history is not repeating itself exactly. The first effort to commercialize electric cars was driven by the state of California. Today's electric vehicle support comes from national government policies which provide massive subsidies to manufacturers and large tax breaks for consumers. In spite of this, hybrids are still preferred to electric vehicles.	