Hybrid And Alternative Fuel Vehicles Third Edition

[Truncated abstract] This thesis is set in the context of falling oil reserves and rising prices. It deals first with the complexity of the oil market and the evidence that peak oil is already here. As demand increases, the adoption of substitutes and more efficient technologies can be expected to reduce the heavy reliance of the transport sector on oil-based fuel. LPG is widely available in Australia while ethanol and biodiesel are commercially available on a small scale. LPG and blends of ethanol (E20) and biodiesel (B20) were included in the choice scenarios presented to survey respondents. Hybrid petrol electric vehicles were included as a new technology and also potentially viable hybrids using LPG and E20. A household survey with optional on-line or mail back response provided the data for stated choice modelling and elasticity estimation. The results were used to address the following questions: 1. Are major changes in vehicle choice likely to occur among households? 2. Are fleets changing their vehicle mix to include alternative fuel vehicles and hybrid vehicles? 3. What impact would rising fuel prices have on household vehicle demand? 4. Are alternative fuel vehicles and hybrids likely to become mainstream vehicles in the near future? The Nested Logit model results indicate the importance of fuel price and vehicle purchase price in the choice of vehicles. In absolute magnitude, the estimated choice elasticities with respect to fuel price are much bigger than those for vehicle purchase price. Females are more likely to choose alternative fuels as well as hybrid cars while males are more attracted to diesel engines. As for the age coefficient, it supports the common perception that as people get older they tend to rely on long experience and are reluctant to try new options especially if little is known about them. The results from a two-class Latent Class Model for households show that there is a substantial group of people (Class 1) who take more action towards reducing their fuel consumption. Class 1 members prefer fuel-efficient vehicles and favour LPG. They also prefer manual transmission, which is consistent with their preference for fuel efficiency. Endogenous weighting has been applied to the choice model to generate choice elasticities at the population level. When demand elasticities are inferred from these, the resulting estimate of the elasticity of demand for conventional petrol vehicles with respect to petrol price is -0.46, which is similar to a number of estimates of the elasticity of demand for petrol alone. Further calculations indicate that household vehicle demand with respect to vehicle purchase price is very inelastic. Two potential future price scenarios were tested, one with a 40% increase in the real price of petrol, 30% in diesel, 20% in E20 and 10% in B20 and LPG. The second scenario assumes an 80% increase in petrol price, 60% in diesel, 40% in E20 and 30% in B20 and LPG. In both scenarios, a 10% real income increase is assumed; the application of the demand matrices, with symmetry corrections, results in projected demand increases for E20, B20 and LPG vehicles, despite the rise in fuel prices. In these projections, demand for standard petrol vehicles decreases substantially but demand for hybrid petrol cars also decreases...

Despite growing energy security and environmental concerns about dependence on oil as a transportation fuel, gasoline remains the overwhelmingly dominant fuel used by the US automotive fleet. Numerous previous efforts to introduce alternative fuel vehicles (AFVs) fueled by hydrogen, biofuels and electricity have failed, and significant barriers to a rapid transition to AFVs remain. One technology that has achieved considerable success in the US is the gasoline hybrid-electric vehicle (HEV), which integrate gasoline and electric powertrain components to significantly improve the efficiency of gasoline use. Since their introduction in 1999, over 2 million HEVs have been sold in the US, with more than 30 HEV models available to consumers today. In this dissertation I explore the dynamics of adoption of HEVs, examining factors influencing consumer adoption of HEVs to date, and, looking forward, the role of HEVs in the emerging market for plug-in electric vehicles (EVs). In Essay 1, I examine the market for the iconic Toyota Prius HEV. While more than 1 million Prius vehicles have been sold in the US, this market has been characterized by long wait lists at Toyota dealerships, evidence of supply constraints influencing the diffusion process. The innovation diffusion literature says relatively little about supply constraints, representing diffusion as a fundamentally demand-side process. Here I develop a model of innovation diffusion that incorporates production capacity and dealer inventory. Inclusion of supply constraints improves the explanatory power of the model in the Prius case, and demonstrates that the failure to model supply constraints can bias diffusion model parameter estimates. Essay 2 is motivated by the observation that Prius sales are not uniform geographically. Sales of the Prius have clustered in regions such as the West Coast, around Washington DC and through New England, with many fewer sales of the Prius in the south and mid-west. I propose two alternative hypotheses to explain the emergence of these clusters: 1) contagion through consumers' social networks; and 2) market heterogeneity that influences consumers' adoption thresholds. I develop a model of spatial innovation diffusion that captures spatial information generation between regions and consumer discrete choice between technologies. I find that in the Prius case, adoption clustering is explained by social contagion at the local level, which amplifies heterogeneous adoption thresholds. In Essay 3, I explore the future role of HEVs as a transitional technology in the emerging market for plug-in EVs, which hold the potential to achieve deep cuts in oil consumption and greenhouse gas emissions. The technology strategy literature suggests that hybrids technologies help the transition to radical technologies, accumulating producer learning, consumer familiarity and complementary assets that spillover to the radical technology. However, EVs remain expensive, have a limited electric range and lack a ubiquitous recharging infrastructure, while HEVs are relatively cheaper and refuel from the existing gasoline refueling infrastructure. I develop a model of hybrid and electric vehicle diffusion with multiple competing entrants, finding that the smooth transition from HEVs to EVs is possible but not assured, identifying public policy and firm strategy decisions that have the potential to accelerate this transition.

Teach environmental studies and global warming in the inclusive classroom with these unique informational books. Available in two reading levels with identical covers, so striving readers do not feel "singled out," each title methodically explains the tough problems faced by our planet plus solutions large and small. Features include: Reading level 3

books are Fountas-Pinnell level O, P, and Q; reading level 6 books are Fountas-Pinnell level W. Scientific terms are defined in context. Identical dramatic four-color covers (back cover band identifies books that are lower level). Teacher's Guides with reproducible activities allow students to work from either text. Glossary defines difficult terms. "Did You Know?" sections contain interesting facts. End-of-book "Facts & Figures" section summarizes critical information. The index takes students directly to topics of interest.

There has never been a Hybrid Electric Vehicles Guide like this. It contains 110 answers, much more than you can imagine; comprehensive answers and extensive details and references, with insights that have never before been offered in print. Get the information you need--fast! This all-embracing guide offers a thorough view of key knowledge and detailed insight. This Guide introduces what you want to know about Hybrid Electric Vehicles. A quick look inside of some of the subjects covered: Hyundai Motor Company - Electric vehicles, Hydrogen vehicle - Plug-in hybrids, Lithium polymer battery - Electric vehicles, Plug-in electric vehicles in the UK - Purchase incentives, Plug-in electric car, Electric vehicle warning sounds - Regulations, All-electric car - Regenerative braking, Alternative fuel car - Hybrid, BYD Auto - Products, Motor vehicle, Hybrid electric vehicles in the United States - Markets and sales, Ford Motor Corporation - Hybrid electric vehicles, Plug-in hybrid electric vehicle, Henney Kilowatt - Designers and developers, Petroleum fuel - Alternatives to petroleum-based vehicle fuels, Plug-in electric vehicles in the UK - Cost-effectiveness of carbon reductions, Government incentives for plug-in electric vehicles - Japan, Hydrogen (car) - Plug-in hybrids, Battery swapping, Electric vehicle warning sounds - Enhanced Vehicle Acoustics, Electric vehicle - Efficiency, Plug-in electric vehicle - Air pollution and greenhouse gas emissions, Plug-in electric vehicle fire incidents, The Hype about Hydrogen - Critical reception, Environmental technology - Alternative and clean power, Plug-in hybrid - Greenhouse gas emissions, Green technologies - Alternative and clean power, Altairnano - Battery technology, High-occupancy vehicle lane - Qualifying vehicles, Honda Insight - United States, and much more...

Alternative Fuel Vehicles gives full coverage of all associated qualifications and awards in the emerging field of alternative fuels. It is an essential introduction to the ever-growing demand for vehicles that operate using non-conventional fuels. This first book on AFVs endorsed by the IMI begins with an overview of the subject, ideal for beginners, before outlining what is meant by alternative fuels, why they are necessary, and why climate change and associated legislation are key drivers. Details of how alternative fuels are made, the supply infrastructure, and how these vehicles work are all included. A chapter on fuel cells introduces learners to the use of hydrogen, and one on engines and engine management includes coverage of combustion as an aid to understanding why changing the type of engine fuel is complex. Some basic engine technology is included to help readers new to the subject. Real-life case studies and examples are used to illustrate different technologies in current use, and to speculate on new developments. This book is an ideal companion to any unit of study on alternative fuel, but will also be of interest to working technicians and keen amateurs.

Seminar paper from the year 2002 in the subject Business economics - Marketing, Corporate Communication, CRM, Market Research, Social Media, grade: AA, Middle East Technical University (Business Administration), course: Managing Technology and Innovation, 83 entries in the bibliography, language: English, abstract: In the twentieth century the automobile – perhaps more than any other invention – profoundly changed the way we live. The Ford Model T, then the dominant design, accounted for 3?4 of all cars in America in 1912. Wheels, an engine and bodywork were sufficient to broaden our horizons, expand our opportunities and dramatically redefined our definition of community. The freedom and mobility that came with the new technology changed societies. This is true in the developed economies of North America and Europe as well as in the developing nations of the world. It is in the latter, the automobile is arguably of even greater benefit to society, playing a key role in helping economies start up the difficult road toward prosperity and an improved quality of life. And once society has achieved value it won’t easy let go of it! However, alongside these benefits, we also have to witness the emergence of global environmental issues such as global warming and the dwindling of natural resources since the latter half of the 20th century until today. It is an undeniable fact that the automobile has been one of the elements inflicting environmental impact on the earth besides industry. Since society cannot or is not willing to step back, we must strive by all means to achieve a harmonious balance on earth. A greener car is a better idea. It is a new twist on familiar technologies, like gasoline and diesel power. Moreover, it is new technologies – like fuel cell and hybrid. Nevertheless, it is not easy to achieve this. Automakers made progress in reducing tailpipe emissions and making vehicles cleaner, supporting standards for cleaner fuel, increasing vehicles safety features, improving fuel efficiency and diversity, and building vehicles with less production waste and higher levels of recycling, but nevertheless the motor vehicle industry is facing a period of change and challenge. Global consolidation and alliances among companies continue to occur. Companies are fiercely competing for business and on environmental, vehicle safety and energy efficiency advances. Technological advances are occurring at a faster pace than ever before. Regulatory hurdles are set higher and higher. Partnerships with government and allies flourish. Consumers are demanding new features and enhanced performance as they choose new vehicles. [...]

For a century, almost all light-duty vehicles (LDVs) have been powered by internal combustion engines operating on petroleum fuels. Energy security concerns about petroleum imports and the effect of greenhouse gas (GHG) emissions on global climate are driving interest in alternatives. Transitions to Alternative Vehicles and Fuels assesses the potential for reducing petroleum consumption and GHG emissions by 80 percent across the U.S. LDV fleet by 2050, relative to 2005. This report examines the current capability and estimated future performance and costs for each vehicle type and non-petroleum-based fuel technology as options that could significantly contribute to these goals. By analyzing scenarios that combine various fuel and vehicle pathways, the report also identifies barriers to implementation of these technologies and suggests policies to achieve the desired reductions. Several scenarios are promising, but strong, and effective policies such as research and development, subsidies, energy taxes, or regulations will be necessary to overcome barriers, such as cost and consumer choice.

Please note that the content of this book primarily consists of articles available from Wikipedia or other free sources online. This book is the fourth volume of a series on sustainable living. It discusses sustainability in general and the role of fossil fuels like gasoline in global warming. It gives an explanation and history of a variety of alternative fuel vehicles, including electric, hybrid, solar, biofuel, autogas, and steam vehicles, as well as a more efficient use of natural gas as fuel. Project Webster represents a new publishing paradigm, allowing disparate content sources to be curated into cohesive, relevant, and informative books. To date, this content has been curated from Wikipedia articles and images under Creative Commons licensing, although as Project Webster continues to increase in scope and dimension, more licensed and public domain content is being added. We believe books such as this represent a new and exciting lexicon in the sharing of human knowledge.

Hybrid and Alternative Fuel VehiclesPrentice Hall

This comprehensive and up-to-date book provides a unique guide to natural gas vehicles, compiling ten official documents with details of every aspect of the issue: CNG and LNG designs, success stories, references, information on safety and refueling issues, and much more. Contents include: Part 1: UPS CNG Truck Fleet Final Results, Alternative Fuel Truck Evaluation Project * Part 2: Clean Cities 2010 Vehicle Buyer's Guide - Natural Gas, Propane, Hybrid Electric, Ethanol, Biodiesel * Part 3: Natural Gas Vehicles: Status, Barriers, and Opportunities * Part 4: White Paper on Natural Gas Vehicles: Status, Barriers, and Opportunities * Part 5: Natural Gas Passenger Vehicles: Availability, Cost, and Performance * Part 6: Clean Alternative Fuels: Compressed Natural Gas * Part 7: Clean Alternative Fuels: Liquefied Natural Gas * Part 8: EPA Case Study: Tests Demonstrate Safety of Natural-Gas Vehicles for King County Police * Part 9: Resource Guide for Heavy-Duty LNG Vehicles, Infrastructure, and Support Operations * Part 10: Senate Hearing - Usage of Natural Gas - To Assess the Opportunities For, Current Level of Investment In, and Barriers to the Expanded Usage of Natural Gas as a Fuel for Transportation (2012) While natural gas is often used as the energy source for residential, commercial, and industrial processes, engines designed to run on gasoline or diesel can also be modified to operate on natural gas - a clean burning fuel. Natural gas vehicles (NGVs) can be dedicated to natural gas as a fuel source, or they can be bi-fuel, running on either natural gas or gasoline, or natural gas or diesel, although most natural gas engines are spark ignited. Natural gas engine technologies can differ in the following ways: the method used to ignite the fuel in the cylinders, the air-fuel ratio, the compression ratio, and the resulting performance and emissions capabilities. Natural gas has a high octane rating, which in spark ignition engines (usual for CNG) allows an increase in power. However, natural gas occupies a larger volume in the cylinder than liquid fuels, reducing the number of oxygen molecules (share of air in the cylinder), which reduces power. The net effect on natural gas power vs. gasoline is relatively neutral. However, since it is a gaseous fuel at atmospheric pressure and occupies a considerably larger storage volume per unit of energy than refined petroleum liquids, it is stored on-board the vehicle in either a compressed gaseous or liquefied state. The storage requirements are still much greater than for refined petroleum products. This increases vehicle weight, which tends to reduce fuel economy. To become compressed natural gas (CNG), it is pressurized in a tank at up to 3,600 pounds per square inch. Typically, in sedans, the tank is mounted in the trunk or replaces the existing fuel tank; on trucks, the tank is mounted on the frame; and on buses, it is mounted on top of the roof. Although tanks can be made completely from metal, they are typically composed of metal liners reinforced by a wrap of composite fiber material with pressure-relief devices designed to withstand impact. Tanks do increase the vehicle weight, and with the lower energy density of natural gas, vehicle ranges are generally reduced. To become liquefied natural gas (LNG), natural gas is cooled to -260 °F and filtered to remove impurities. LNG is stored in double-wall, vacuum-insulated pressure tanks and is primarily used on heavy-duty trucks, providing increased range over CNG. NGVs and their respective fueling systems must meet stringent industry and government standards for compression, storage, and fueling. They are designed to perform safely during both normal operations and crash situations. Nozzles and vehicle receptacles are designed to keep fuel from escaping.

This is a student supplement associated with: Hybrid and Alternative Fuel Vehicles, 3/e James D. Halderman Tony Martin, Wellesley College ISBN: 013278484X

This guide lists relevant sources of information on alternative fuel vehicles and includes electric vehicles, hybrid vehicles, and personal transportation vehicles, as well as the technology of fuel economy and alternative fuels. It also includes advanced autoignition and lean-burn combustion processes for improving engine fuel economy.

The U.S. transportation sector relies almost exclusively on oil; as a result, it causes about a third of the nation's greenhouse gas emissions. Advanced technology vehicles powered by alternative fuels, such as electricity and ethanol, are one way to reduce oil consumption. The fed. gov¿t. set a goal for fed. agencies to use plug-in hybrid electric vehicles -- vehicles that run on both gasoline and batteries charged by connecting a plug into an electric power source -- as they become available at a reasonable cost. This report examined the: (1) potential benefits of plug-ins; (2) factors affecting the availability of plug-ins; and (3) challenges to incorporating plug-ins into the fed. fleet. Illustrations.

This book reviews the status of vehicles powered by electric batteries, fuel cells, and alternative fuels. It also discusses the development of hybrid vehicles and high efficiency gasoline and diesel engines. Finally, it gives an overview of mass transportation technologies and assesses the potential of telecommuting and intelligent transportation systems in solving the country's transportation dilemmas. This book is of interest to practicing mechanical engineers in the following fields: Technology and Society, Advanced Energy Systems, Internal Combustion Engines, Transportation, and Environmental Issues, as well as government officials and policy makers concerned with transportation issues.

The Alternative Fuels for Vehicles Fleet Demonstration Program (AFV-FDP) was a multiyear effort to collect technical data for use in determining the costs and benefits of alternative-fuel vehicles in typical applications in New York State. During 3 years of collecting data, 7.3 million miles of driving were accumulated, 1,003 chassis-dynamometer emissions tests were performed, 862,000 gallons of conventional fuel were saved, and unique information was developed about garage safety recommendations, vehicle performance, and other topics. Findings are organized by vehicle and fuel type. For light-duty compressed natural gas (CNG) vehicles, technology has evolved rapidly and closed-loop, electronically-controlled fuel systems provide performance and emissions advantages over open-loop, mechanical systems. The best CNG technology produces consistently low tailpipe emissions versus gasoline, and can eliminate evaporative emissions. Reduced driving range remains the largest physical drawback. Fuel cost is low ($/Btu) but capital costs are high, indicating that economics are best with vehicles that are used intensively. Propane produces impacts similar to CNG and is less expensive to implement, but fuel cost is higher than gasoline and safety codes limit use in urban areas. Light-duty methanol/ethanol vehicles provide performance and emissions benefits over gasoline with little impact on capital costs, but fuel costs are high. Heavy-duty CNG engines are evolving rapidly and provide large reductions in emissions versus diesel. Capital costs are high for CNG buses and fuel efficiency is reduced, but the fuel is less expensive and overall operating costs are about equal to those of diesel buses. Methanol buses provide performance and emissions benefits versus diesel, but fuel costs are high. Other emerging technologies were also evaluated, including electric vehicles, hybrid-electric vehicles, and fuel cells.

Annotation A collection of nine contributions that cover such topics of alternative fuel technologies as liquified petroleum gas, electric and hybrid vehicles, fuel cells. Specific subjects discussed include clean fuel technology, alkaline fuel cells for road traction, manufacturing challenges of alternative fuelled vehicles (AFCs), and the development of the AFC market. All of the discussions of policy and programs are drawn from the UK. Distributed by ASME. Annotation c. Book News, Inc., Portland, OR (booknews.com)

This illustrated history chronicles electric and hybrid cars from the late 19th century to today’s fuel cell and plug-in automobiles. It describes the politics, technology, marketing strategies, and environmental issues that have impacted electric and hybrid cars’ research and development. The important marketing shift from a “woman’s car” to “going green” is discussed. Milestone projects and technologies such as early batteries, hydrogen and bio-mass fuel cells, the upsurge of hybrid vehicles, and the various regulations and market forces that have shaped the industry are also covered.

This is the first and only book that covers hybrid vehicles in a practical way and is designed for the service technician or automotive student. Beginning with an explanation of the

fundamentals, the book discusses historical trends and concerns for the environment, and then moves on to more detailed concepts of systems. It devotes separate chapters to each system and then highlights products from leading manufacturers, making the information easy to incorporate into an existing course. Special features are included that apply material to the service training field and photos and illustrations are ample throughout.

This report explores consumer preferences among four different alternative-fuel vehicles (AFVs): hybrid electric vehicles (HEVs), compressed natural gas (CNG) vehicles, hydrogen fuel cell (HFC) vehicles, and electric vehicles (EVs). Although researchers have been interested in understanding consumer preferences for AFVs for more than three decades, it is important to update our estimates of the trade-offs people are willing to make between cost, environmental performance, vehicle range, and refueling convenience. We conducted a nationwide, Internet-based survey to assess consumer preferences for AFVs. Respondents participated in a stated-preference ranking exercise in which they ranked a series of five vehicles (four AFVs and a traditional gasoline-fueled vehicle) that differ primarily in fuel type, price, environmental performance, vehicle range, and refueling convenience. Our findings indicate that, in general, gasoline-fueled vehicles are still preferred over AFVs, however there is a strong interest in AFVs. No AFV type is overwhelmingly preferred, although HEVs seem to have an edge. Using a panel rank-ordered mixed logit model, we assessed the trade-offs people make between key AFV characteristics. We found that, in order to leave a person's utility unchanged, a $1,000 increase in AFV cost needs to be compensated by either: (1) a $300 savings in driving cost over 12,000 miles; (2) a 17.5 mile increase in vehicle range; or (3) a 7.8-minute decrease in total refueling time (e.g. finding a gas station and refueling).

Seminar paper from the year 2012 in the subject Business economics - Marketing, Corporate Communication, CRM, Market Research, Social Media, grade: 1,6, EBS European Business School gGmbH, language: English, abstract: When discussing the future of the automotive industry, there is probably just one thing politicians, corporations, and customers agree on: That there is a need to develop and establish alternative fuel vehicles (APV) in the future. There are multiple reasons to reject the conventional, petroleum-based fuels. While nobody can surely say when peak oil is reached, we cannot rely on oil forever. This and the dangerous dependency on a few oil-exporting rogue states, coerce us to look for alternatives for fuelling cars and other vehicles. The motivation for consumers to buy an alternative fuel vehicle can be economic (e. g. rising petrol prices) or ideological (e. g. energy sustainability , pollution reduction, climate change) (Byrne & Polonsky, 2012, p. 1535). This literature review will outline present findings regarding which alternative fuels possess the most potential and which factors drive consumer adoption of AFVs in general.

Alternative Fuels - Alternative Fuel Vehicles - U.S. Department of Energy. An alternative fuel vehicle is a vehicle that runs on a fuel other than "traditional" petroleum fuels (petrol or diesel); and also refers to any technology of powering an engine that does not involve solely petroleum (e.g. electric car, hybrid electric vehicles, solar powered). Because of a combination of factors, such as environmental concerns, high oil prices and the potential for peak oil, development of cleaner alternative fuels and advanced power systems for vehicles has become a high priority for many governments and vehicle manufacturers around the world. Hybrid electric vehicles such as the Toyota Prius are not actually alternative fuel vehicles, but through advanced technologies in the electric battery and motor/generator, they make a more efficient use of petroleum fuel. Other research and development efforts in alternative forms of power focus on developing all-electric and fuel cell vehicles, and even the stored energy of compressed air.

This report draws on the wealth of information housed in the U.S. Department of Energy¿s Alternative Fuels Data Center at the National Renewable Energy Laboratory. Trends and analyses are examined from data as far back as 1991. The findings of those trends and salient features are summarized. Contents: Light Duty Original Manufacturer Vehicle Offerings; Fueling Station Analysis; State and Federal Laws and Incentives; The Clean Cities Program; The National Alternative Fuels and Clean Cities Hotlines; Final Remarks; Appendices. Illustrations.

As our worldÍs population grows, so to does our need for energy. Scientists seek the next breakthrough in new technology while constantly finding ways to make current solutions cheaper and more efficient. In this title, discover what hybrid and electric vehicles are, their history, how we use them today, and how new technologies can contribute to our energy future. Learn about exciting new ways to power cars, including plug-in hybrid technology, lithium batteries, fuel cells, and solar-electric systems. Sidebars, full-color photos, full-spread diagrams, well-placed graphs, charts, and maps, stories highlighting innovations in action, and a glossary enhance this engaging title. Innovative Technologies is a series in Essential Library, an imprint of ABDO Publishing Company.

The book presents – based on the most recent research and development results worldwide - the perspectives of new propulsion concepts such as electric cars with batteries and fuel cells, and furthermore plug in hybrids with conventional and alternative fuels. The propulsion concepts are evaluated based on specific power, torque characteristic, acceleration behaviour, specific fuel consumption and pollutant emissions. The alternative fuels are discussed in terms of availability, production, technical complexity of the storage on board, costs, safety and infrastructure. The book presents summarized data about vehicles with electric and hybrid propulsion. The propulsion of future cars will be marked by diversity – from compact electric city cars and range extender vehicles for suburban and rural areas up to hybrid or plug in SUV ?s, Pick up ?s and luxury class automobiles.