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Nota di contenuto	ENERGIZING OUR FUTURE; CONTENTS; Preface; Acknowledgment; Introduction: Rising Energy Costs; PART I A TRILOGY OF POPULAR MISCONCEPTIONS; 1 Global Warming; Conventional Wisdom; CO(2) and the Carbon Cycle; The Greenhouse Effect; Recent Climate Changes; Carbon Dioxide; Other Global Warming "Forcing Agents"; Water Vapor; Methane; Nitrous Oxide; Ozone; Sulfur; Other Pollutants; Carbon-Based and Other Particulates; Solar Influences-Insolation and Irradiance; Global Net Primary Productivity (NPP); Intergovernmental Panel on Climate Change; IPCC Report Conclusions; Footnote on the IPCC Dealing with Global WarmingCan Anything Be Done?; The Kyoto Protocol; 2 The Hydrogen Economy (Aka, the Impossible Dream); The Promise of Hydrogen; The Scale of the Task-Why Replace Gasoline?; Replacing Fuels Other than Gasoline; Hydrogen as an Alternative Fuel; Hydrogen Production Methods; Water-Splitting Processes-Overview; Hydrogen from Electrolysis; Electrolytic Hydrogen Production; Oxygen By-products; Energy Consumption and Electrolyzer Efficiency; Electrolysis: Emissions; Electrolysis: Economics; Hydrogen from Hydrocarbons; Thermal and Catalytic Reforming from Natural Gas

Catalytic Thermochemical ReformingScaling Issues-Up and Down; Combustion CO(2) from Reforming; Hydrogen Production Costs; Natural Gas Reserves and Hydrogen; Natural Gas and Hydrogen Manufacture; Other Hydrogen Production Methods; Photoelectrolysis; Biomass Conversion to Hydrogen; Hydrogen Production-Summary; Safety Considerations; Transporting and Distributing Hydrogen; Compressing Hydrogen; Liquid Hydrogen; Pipelining Hydrogen; Pipeline Leakage Losses; Road Tanker Transportation of Hydrogen; Hydrogen Leakage Losses; Transportation and Distribution Alternatives
Distributed Manufacturing of HydrogenBy Electrolysis; By Reforming; Hydrogen Reformer Reliability; Hydrogen Reformer Safety; Onboard Manufacture of Hydrogen; Hydrogen Storage; Hydrogen Storage Approaches; Compressed Hydrogen Gas: Containment Technologies for 5000-10,000 psig; Liquid Hydrogen: Cryogenic Containment; Storage in Metals and Metal Hydrides; Background on Metal Hydrides; Complex Hydrides; Catalyzed Hydrogen Adsorption and/or Desorption; Feasibility of Metal Hydrides as Storage Media; Hydrogen Adsorption/Desorption: ''Chemical Hydrides''
Hydride Slurries for Hydrogen Storage and TransportationPossible Nonmetal Hydrides/Hydrogen Carriers; Hydrocarbons via Partial Dehydrogenation; Carbon-Based Adsorption Systems; Graphite; Graphitic Nanotubes; Zeolites; Novel Hydrogen Storage Methods; Hydrogen Carriers; Ammonia; Methanol; Hydrogen Storage and DOE Criteria; Storage Implications for Light-Duty Vehicles; Hydrogen Storage with No Gravimetric or Volumetric Capacity Constraints; Hydrogen Storage Assessment; Hydrogen Safety; Some Additional Safety Issues; Summary of Hydrogen Issues; 3 Nuclear Energy and the Plutonium Economy
The Influence of Nuclear Energy

Sommario/riassunto

This important new book presents a comprehensive review of practical alternative energy choices for the twenty-first century. It addresses three critical energy-related topics that are causing great confusion in public debate-global warming, the hydrogen economy, and nuclear power-and gives readers an opportunity to form a grounded, factually correct foundation for understanding the energy challenge and develop their own informed and actionable opinion.