
Author Biographies

Nigel Clark
Energy Consultant to Future Fuel Strategies

Nigel Clark holds a B.Sc. in Chemical Engineering and a Ph.D. in Engineering from the University of Natal in South Africa. His broad expertise is in energy systems research and development, with emphasis on engines, fuels, emissions, and transportation. He has served on the faculty of West Virginia University (WVU) for 34 years, is the George Berry Chair Emeritus in the Statler College of Engineering and Mineral Resources, and continues to support funded programs as a Research Professor of Mechanical and Aerospace Engineering at WVU. Early in his academic career, Professor Clark was honored as a National Science Foundation Presidential Young Investigator by George H.W. Bush.

As a research leader, he has conducted programs for the Departments of Energy, Defense and Transportation, the EPA, NASA, CARB, numerous state governments, federal government laboratories, the Environmental Defense Fund, the World Bank, the International Council for Clean Transportation, the Coordinating Research Council, and major energy corporations and engine manufacturers. These programs have addressed conventional and alternative fuels for light-duty vehicles, trucks, buses and locomotives, as well as stationary and marine engines. He has extensive experience in the deployment of natural gas and renewable fuels for transportation, and holds patents in engine design and emissions control.

Dr. Clark has also held central administrative positions as the WVU Associate Vice President for Academic Strategic Planning and as Campus Provost of the WVU Institute of Technology. He has consulted to government, industry and nonprofit entities, providing analysis, modeling, review, seminars, expert opinion and business evaluations. He is currently a member of two National Academies committees addressing vehicle fuel efficiency, is a Fellow of the Society of Automotive Engineers, and has authored or co-authored 500 papers and technical presentations.

Selected Publications & Studies

Tammy Klein, Principal
Future Fuel Strategies

Tammy Klein, is the principal consultant for Future Fuel Strategies (www.futurefuelstrategies.com) and the author of the Future Fuels Outlook. She provides market and policy intelligence with unique insight and analysis on transportation fuels to help clients assess strategic opportunities and threats to their businesses. She is an expert on global conventional, biofuels and alternative fuels market and policy issues. Tammy serves clients in the auto, oil and associated industries, as well as governments and NGOs, and helps them understand current and future fuels trends and issues; or in the case of government and NGOs, the best policies to develop and implement on fuels and vehicles.

She was formerly Senior Vice President for Stratas Advisors/Hart Energy and in that capacity was responsible for overseeing all aspects of its fuels and transport-related research, products, services, staff, and consultancy while continuing to work as a senior analyst in the firm. Prior to that she was the Executive Director of the Global Biofuels Center, a service of Hart Energy which she co-created, that tracks, monitors and analyzes biofuels market, policy and technology developments in more than 70 countries. She also created, oversaw and was the lead author of the company’s annual outlook and forecast for global biofuels supply and demand. Tammy also helped launch Hart’s International Fuel Quality Center (IFQC), a service covering global fuel quality issues, and served as a senior analyst for the Americas region covering market and policy issues for many years.

Tammy continues to serve as a consultant and advisor to many companies, governments and NGOs on transportation fuels issues. She has advised the Organization of Petroleum Exporting Countries (OPEC), International Petroleum Industry Environmental Conservation Association (IPIECA), Energy Management Authority (EMA) of Singapore and Natural Resources Defense Council (NRDC) and the International Energy Agency (IEA), among others. Prior to her time at Hart Energy, she was an associate at Venable LLP specializing in environmental and administrative law matters. She was a board member of the National Renewable Energy Laboratory’s Biofuels Technical Review panel from 2011-2014 and served as a member of the Western Governor’s Association’s Alternative Transportation Fuels for the Future Advisory Committee from 2007-2008. In 2001, Klein helped found and was an initial steering committee member of what has become the Partnership for Cleaner Fuels and Vehicles. She holds a J.D. from the Georgetown University Law Center (2003) and a B.S. in journalism from the University of Florida (1995). Klein is a member of the District of Columbia and Virginia bars, as well as ASTM and SAE.

Selected Publications & Studies

- A Review of Policy and Market Dynamics in the U.S. for Renewable Diesel & Jet Fuel, May 2018 (author) [prepared for a biomass-based diesel producer]
- Profile & Analysis of Competitors in the Biomass-Based Diesel Space, June 2017 (author) [prepared for a biomass-based diesel producer]
- Consultancy Services for Development of a Fuel Quality and Biofuels Policy Framework, March 2014 (co-author, project leader) [prepared for the Zimbabwe Energy Regulatory Authority]
- Identification & Ranking of Premium Biofuels Markets, January 2012 (co-author, project leader) [prepared for Solazyme, now TerraVia]
• The Development of Bioenergy Standards, Policies and Implementation Plans in Singapore, December 2009 (co-author, project leader) [prepared for the Energy Management Authority of Singapore]
• The Global Biodiesel Market, January 2009 (co-author, project leader) [prepared for Petronas]
• The Northeast Biodiesel and Renewable Diesel Market, February 2008 (co-author, project leader) [prepared for an independent refiner]

Terrence S Higgins, President
THiggins Energy Consulting

Terrence Higgins is president of THiggins Energy Consulting, providing energy consulting services to the petroleum and related industries. His primary area of focus is on the impact of fuel quality trends on refining and application of new refining technology. With over 45 years of experience in various capacities associated with the petroleum industry, he is a recognized expert in crude/refined product markets, fuel quality and impact of quality requirements on refining, product markets and emissions. Mr. Higgins recently retired from Hart Energy where he founded Hart’s World Refining & Fuels Service. Mr. Higgins’ experience also includes 14 years as the Technical Director for the National Petrochemical and Refiners Association (NPRA) (now the American Fuel & Petrochemical Manufacturers) and assignments with an energy and environmental consulting firm, the U.S. Department of Energy and international petroleum refining companies. He has managed several projects for foreign countries related to development and implementation of fuel/air quality strategies and biofuel programs.

Selected Publications & Studies

• Development of Global Biomass Diesel Supply and Demand And Analysis Of The Impacts Of Tariffs Imposed on Argentina and Indonesia, 2018, (project leader and author for global supply and demand, co-author for economic and tariff analysis) (prepared for proprietary client).
• Development of Detailed Petroleum Supply and Demand Balances and Forecasts (at pipeline terminal level), 2018 (co-author) (prepared for U.S. refined products pipeline company)
• Evaluation of the Technical Aspects and Project Economics for Proposed Merchant Octane Production Project, May 2017 (author) (prepared for proprietary mid-stream oil company)
• The New Economics of Octane, 2017 (co-author) (prepared as subscription product in conjunction with OPIS)
• Economics of GTL Diesel Component Blending and Development of Marketing Strategy for Maximum Revenue, 2014, (co-author) (prepared for GTL operating company)
• Evaluation of MTBE to Isooctane Conversion Project, (conducted twice 2007 and 2012) (author) (prepared for SABIC)
• Technical and Policy Assistance for Biofuel Market Development in El Salvador, June 2009 (co-author)
• Global Diesel and Heavy Fuel Outlook, 2012 (co-author) (prepared as multiclient subscription report)
David McKain
Consultant to Future Fuel Strategies

David McKain directs and executes EPA certification testing of locomotives for Norfolk Southern and the American Association of Railroads. His professional responsibilities include assuring that data collection equipment, test conditions and procedures, data post-processing and reporting comply with EPA test regulations. He is also investigating lifecycle costs of public transit bus technologies for the Federal Transit Administration, particularly comparing capital, operating and maintenance costs of diesel, natural gas, hybrid-electric and battery-electric transit buses and associated infrastructure.

During his 25-year professional career he has directed and/or participated in numerous projects related to emissions and performance heavy-duty engines, vehicles, fuels and aftertreatment systems and has authored or co-authored numerous research articles. He has broad experience with fuel chemistry having conducted engine emissions and performance testing with both liquid and gaseous fuels including novel work with fuel blending and engine knock as well as comparative testing for federal and state regulatory certification. Mr. McKain currently works with the West Virginia University Research Corporation as a supervisory engineer.

Selected Publications & Studies