

# Statement of Qualifications

BBI Consulting Services  
308 Second Ave. N., Suite 304  
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### BBI Consulting Services

BBI Consulting Services (BBI) is a joint venture between two of the leading companies in the bioenergy industry, BBI International and NEAtech, LLC (NEAtech). BBI originally started as a bioenergy consulting firm in 1995 and has since grown into a successful media and events company focused on promoting the bioenergy industry. NEAtech is a successful engineering and consulting firm operating since 2009. Having already helped hundreds of companies plan and execute successful projects, this new joint venture will reintroduce BBI's consulting service to thousands of new businesses worldwide.

BBI Consulting Services is a technology-based engineering and consulting services company specializing in advanced biofuels projects, biomass energy projects and other renewable energy projects. With involvement in more than 335 previous studies in the biomass and renewable energy sector, the BBI Team will provide the most current, accurate, reputable, and unbiased reports and project services in the industry. We assist our clients in the development of renewable energy and biotechnology projects worldwide. The BBI team members have long-established reputations within the biomass, biofuels and bioenergy sectors. The BBI team has the experience and expertise to help make your project a success.

BBI's technical team have focused and honed their skills on the research, development, deployment and commercialization of renewable energy projects. From research of microorganisms, enzymes, anaerobic digestion, geothermal systems, cellulosic fuels and biomass power to project management of multi-million dollar projects, market assessments and business plans, BBI provides to the novice entrant as well as to the experienced project owner the best of services available in the renewable energy industry.

### Market Focus

BBI's market focus relies on providing clients with the benefits of its collective experience in renewable energy and biotechnology by targeting new as well as commercial renewable energy projects and technologies. Based on the established credentials of our team members in the bioenergy sector, BBI is well-positioned to support its clients in the development and deployment of 2nd and 3rd generation renewable energy technologies. Your project can benefit from BBI's expertise in feasibility studies, process engineering, technology development, technology deployment, project development, as well as supporting clients with government reporting requirements and proposal preparation. With expertise in research and management of government and publicly-funded energy projects, BBI is prepared to assist our clients in identifying grant and loan guarantee opportunities.

BBI assists clients worldwide in the development of advanced biofuels and biomass-based alternative energy projects. Services we provide include:

- Engineering studies and financial analysis
- Conceptual and preliminary designs
- Feasibility studies
- Plant technology upgrades and alternative products
- Evaluation and selection of renewable energy technologies
- Economic impact analysis
- Due diligence engineering review for project lenders and investors
- Technology assessments
- Feedstock analyses
- Biomass resource assessments
- Market analyses
- Renewable fuels supply chain systems analysis

## BBI Consulting Services Qualifications

- Development of financial strategies and financial analyses
- Development of business strategies and business plans
- Expert witness services for mediation, arbitration and legal actions



## BBI Consulting Services Management Team



### **Joe Bryan, Chief Executive Officer**

Joe joined BBI International in 1999 as Associate Editor of the *The Energy Independent*, now known as *Ethanol Producer Magazine*. Since then, Joe has become CEO and President of BBI International. He has successfully managed the growth of his company which produces globally recognized bioenergy events and trade magazines. In addition to the International Biomass Conference & Expo and its allied regional events, BBI owns and operates the largest, longest-running ethanol conference in the world -- the International Fuel Ethanol Workshop & Expo (FEW) -- and the International Biorefining Conference & Trade Show. The company publishes *Biomass Power & Thermal*, *Ethanol Producer Magazine*, *Biorefining Magazine*, and *Biodiesel Magazine*, as well as a number of ancillary products including maps, directories, e-newsletters and other web-based industry resources. As CEO of BBI Consulting Services, Joe brings a wealth of industry knowledge and experience to the team.



### **Mark Yancey, Vice President**

As previous CEO of BBI International's startup cellulosic ethanol company, BBI BioVentures, and Vice President of BBI's Engineering and Consulting Group, Mark oversaw development of 2<sup>nd</sup> generation biofuels technologies as well as all ethanol and biodiesel project development activities for BBI. From 2001 to 2008 Mark's group completed over 250 projects ranging from feasibility studies to more complex cellulosic ethanol technical and business analyses. Mark's team completed project development from concept to construction for six ethanol plants and one biodiesel plant in the US and Canada representing over 300 million annual gallons of biofuels production. By the end of 2008, Mark's team had contributed to the development of 50 of the 200 ethanol plants in the US.

Prior to joining BBI, Mark was the industrial partnership team leader for the Biofuels Program at the National Renewable Energy Laboratory (NREL) in Golden, Colorado. Mark's NREL duties included identifying and analyzing new opportunities for the application of technologies for the production of ethanol from lignocellulosic biomass. During his nine years at NREL, Mark managed a wide variety of projects including the technical and economic evaluation of converting forest residues, wood waste, wheat straw, rice straw and spent brewers grain to ethanol. Mark has a detailed understanding of ethanol production from both starch and sugar based feedstocks as well as cellulosic feedstocks.

Mark has 35 years experience in the fields of renewable energy and environmental engineering; he obtained his Bachelor of Science Degree in Chemical Engineering from Stanford University.



### **Rafael Nieves, Managing Director**

Dr. Rafael Nieves has worked in the renewable energy sector for over 28 years. Dr. Nieves is experienced in management of national and international collaborations as well as project management and financial analysis of large technical projects. His formal technical training is in biotechnology with emphasis on the biofuels, biomass and bioindustry sector. He is an experienced energy market specialist and has served as a senior technical advisor. Successful client collaborations have been well-served by his R&D technical skills and business experience. Dr. Nieves has extensive experience nationally and internationally managing bioenergy projects in the U.S., Mexico, the Dominican Republic, El Salvador, Puerto Rico, Brazil, Australia, Philippines, Ghana, Armenia, Indonesia and the Ukraine. Rafael's technical expertise is in the hydrolysis and fermentation sciences of biomass conversion.

Dr. Nieves was the recipient of a 2004 R&D 100 award for his work as the lead technical director for a \$35 million proteomics and genomics cellulase improvement program sponsored by the U.S. Department of Energy. Within the public and private sector, over the last 10 years he has developed, obtained and managed multi-million dollar contracts and has supervised national and international research and business teams in the renewable energy industry. He is an author and co-author on 3 enzyme patents and has published over 20 peer-reviewed technical articles. He possesses a Ph.D. from Colorado State University and a M.B.A. from the Daniels College of Business at the University of Denver.

## **BBI Experience and Expertise**

### **Ethanol Feasibility Studies and Project Development**

BBI's technical team is experienced in moving a biofuels project from conceptual ideas in the feasibility stage to full project development, assisting in raising financing and ultimately getting the project to financial closure. BBI has completed advanced biofuel, ethanol and biodiesel feasibility studies, business plans, and/or project development services for clients in over thirty states. The following are ethanol projects completed by BBI:



- Arkalon Energy, LLC 100 million gallon per year (mmgy) ethanol plant in Liberal, Kansas
- Bonanza BioEnergy, LLC 55 mmgy ethanol plant in Garden City, Kansas
- Western New York Energy, LLC 50 mmgy ethanol plant in Shelby, New York
- Front Range Energy, LLC 40 mmgy ethanol plant in Windsor, Colorado
- Prairie Horizon Agri-Energy, LLC 40 mmgy ethanol plant in Phillipsburg, Kansas
- Multiple international feasibility studies for clients in Mexico, Ecuador, Ghana, Ukraine, Canada, Armenia and Australia

BBI has experience with the following biofuel feedstocks:

- Corn
- Sugarcane and sugarcane molasses
- Sugar beets and sugar beet molasses
- Grain sorghum
- Sweet sorghum
- Barley
- Wheat
- Potato waste
- Triticale
- Lignocellulosic feedstocks

## BBI Consulting Services Qualifications



- Agricultural residues
- Fruit processing waste
- Municipal solid waste
- Spent brewers grain

### Biodiesel

BBI has experience in biodiesel feasibility studies for projects in Colorado, Iowa, Maryland, Minnesota, Missouri, Nebraska, Oregon, Pennsylvania, South Dakota, Louisiana, South Carolina, Texas, and Washington. Internationally, BBI's experience includes biodiesel feasibility studies in Canada, Indonesia, Singapore and Colombia. BBI has developed a database of biodiesel production technologies and market data similar to our ethanol database.



Feedstocks for biodiesel projects include:

- Soybeans and soybean oil
- Palm oil
- Corn oil
- Canola
- Mustard seeds
- Coconut oil
- Rapeseeds
- Microalgae and Algae
- Fats, oils, and grease
- Various recycled feedstocks
- Various "waste" feedstocks

### Advanced Biofuels Technologies and Technology Assessments

BBI's technical team has over 50 years of combined "hands on" experience in the conversion of lignocellulosic biomass to fuels, chemicals and power including extensive biomass research and process development experience. The technical experts of BBI have performed numerous cellulosic biofuels feasibility and risk assessment studies and technology reviews that have considered various feedstocks as well as different technology applications. BBI's technical team has also vetted numerous technologies for private investors. From feedstock collection and composition to fermentation and process operating parameters, BBI has a comprehensive understanding of the infrastructure and unit operation requirements.

### Biomass Power and Anaerobic Digestion

Construction of new biomass power projects continues worldwide. BBI's technical experts provide feasibility studies for new, stand alone biomass power facilities as well as modifications to existing facilities. In many countries power generation through anaerobic digestion addresses waste management and power needs and its application continues to expand. BBI's experts are able to perform feasibility studies, perform technology assessments and evaluate the economic impacts of these projects.



### Process Engineering

At BBI we work with clients to develop process design packages for the production of fuels, feed, energy, and chemicals from biomass. Our company brings over 40 years combined experience in the design, demonstration, and deployment of fuel ethanol projects and biomass utilization. Our focus is developing process design packages for biomass utilization and renewable energy products. Our core strengths are in biotechnology, fermentation, feedstock handling and preparation, pretreatment, enzymatic and thermo-chemical hydrolysis, sterilization, solids separations, distillation, evaporation and product purification. These strengths include most unit operations common to the biomass-based renewable energy technologies such as anaerobic digestion, landfill gas recovery, biomass power/cogeneration and chemical process industries.

### Economic Impact Studies

BBI is adept in evaluating the impacts of regulations and government policy on bioenergy businesses. IMPLAN is used to evaluate the potential economic impacts of renewable energy projects to local communities, counties and states. Studies include:

- Economic impacts of a new bioenergy industry in Mississippi
- Policy impacts and policy options for REDDI of Pennsylvania (biodiesel)
- The Missouri Corn Growers (ethanol) and other groups and organizations
- Return on investment for numerous state incentives

Economic impact studies of biofuels plant construction and operations have been performed in Illinois, Wisconsin, New York, Kansas, Idaho, Iowa, Oregon and Hawaii. These studies include:

- The impact on state balance of trade
- Value added to agricultural products
- Increased investment in plant and equipment
- Job creation and other fiscal impacts due to increased biofuels production within a state

### International Studies

The BBI technical team has performed ethanol and biodiesel feasibility studies in Canada, Mexico, Africa, Australia, Indonesia, Singapore, Philippines, Colombia, Vietnam, Armenia and the Ukraine.

### Emerging Technologies

Based on the established credentials of the technical experts at BBI, the company is well positioned to analyze and develop emerging renewable energy processes and projects. Projects include:

- Evaluation of front-end fractionation integration for biofuels facilities
- Renewable Identification Number (RIN) supply chain analysis
- Numerous technology assessment and feasibility studies for cellulosic biofuels technologies
- Integration of anaerobic digestion of feedlot manure with ethanol plants in California, New Mexico, Canada and Australia
- Biomass energy study encompassing N. California and Southern Oregon for the Ore-Cal RC&D
- Biomass resource assessment and biomass ethanol feasibility study for the Oregon Energy Office.
- Cellulosic ethanol study for the State of Maine
- Coal and biomass co-firing study for the National Renewable Energy Laboratory

### Additional Information

Additional information on BBI Consulting Services is available on our web site at [www.bbiinternational.com](http://www.bbiinternational.com).

Resumes for the BBI Consulting Services management team follow.

# Mark A. Yancey

Vice President, BBI Consulting Services  
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## Qualifications

Mark has 35 years of experience in the fields of renewable energy and environmental engineering including extensive experience in project development and economic analysis for first and second generation biofuels facilities. Mark's expertise is in the development of renewable energy projects including development of business strategies and financial, market and technical analyses of projects and renewable energy opportunities. Mark has excellent management skills and his strengths include business development, project planning, financial analysis, and project development in addition to his excellent communications and interpersonal skills. Mark has presented at well over 100 conferences and workshops worldwide during his tenure at BBI International and NREL. He is a recognized expert in the development of biofuels projects.

## Experience

### *BBI Consulting Services, Vice President, January 2012 – present*

Mark and the BBI Consulting Team assist clients in the development of renewable energy and biotechnology projects worldwide. Areas of expertise include technical analysis and due diligence for renewable energy technologies, feasibility studies, business plans, financial modeling and financial analysis, market studies, expert witness for litigation and arbitration, and project development services.

### *NEAtech, LLC, Senior Vice President, January 2009 - present*

Mark is currently the Senior Vice President of NEAtech, LLC. Developing New Energy Alternatives is the focus and mission of NEAtech. NEAtech assists government and private sector clients worldwide in the evaluation and development of advanced biofuels technologies, biomass based alternative energy, wind and solar projects.

### *BBI BioVentures, LLC, CEO, June 2008 – January 2009*

As CEO of BBI BioVentures, LLC, a subsidiary of BBI International created in 2008 to commercialize BBI's cellulosic ethanol technologies, Mark was responsible for all aspects of the company startup and development of the company's strategic plan. Mark was responsible for carrying out BBI BioVentures' multi-plant strategy for the development and operation of several cellulose-based ethanol plants utilizing spent brewers grains for the production of ethanol and a high protein animal feed by-product.

### *BBI International, Vice President of Project Development, March 2001 – June 2008*

As vice president of BBI's Project Development Division, Mark managed all renewable energy project development activities for BBI. Mark grew the Project Development Division from two people in 2001 to over 20 dedicated employees in 2008. BBI's Project Development Division was recognized as one of the most successful and knowledgeable biofuels consulting organizations in the US under Mark's leadership. Mark's team performed feasibility studies, prepared and executed business plans, conducted feedstock resource assessments, performed lender due diligence and construction progress inspections, and negotiated offtake and design/build contracts for approximately 25% of the US biofuels industry. While at BBI, Mark's team completed over 250 projects ranging from simple pre-feasibility studies to more complex cellulosic ethanol technical and business analyses. Mark's team completed project development from concept to construction for six ethanol plants and one biodiesel plant in the US and Canada representing over 300 million annual gallons of biofuels production.

### *National Renewable Energy Laboratory, Senior Project Leader, 1992 – 2001*

At NREL Mark held positions as project manager and team leader for the Biofuels Industrial Partnerships Team, the NREL/Coors CRADA Project and the Biofuels Program Management and Operations Team.

## **BBI Consulting Services Qualifications**



Mark's NREL responsibilities included the establishment of industrial partnerships for the Biofuels Program and technical and economic evaluation of cellulosic ethanol commercialization projects including the evaluation of the conversion of wood, rice straw, corn stover, sugarcane bagasse and spent brewers grain to ethanol. During his nine years at NREL, Mark managed a wide variety of projects including the technical and economic evaluation of converting forest residues, wood waste, wheat straw, rice straw and spent brewers grain to ethanol. Mark was the technical monitor for subcontracts with BC International (now Verenum), Arkenol (now BlueFire), Lee Lynd/Dartmouth University (founder of Mascoma), YY Lee/Auburn University and many others. Mr. Yancey was also the NREL project manager for the Gridley, California rice straw to ethanol project and project manager for the CRADA with Coors while at NREL. Mr. Yancey has a detailed understanding of ethanol production from both starch and sugar based feedstocks as well as cellulosic feedstocks. Mark also held the position of Biofuels Program Deputy Program Manager for two years. Other responsibilities included Biofuels Program planning, monitoring and reporting to the Department of Energy. Mark also developed Biofuels Program annual operating plans, fieldwork proposals, cost plans, capital equipment acquisition plans, human resources plan, and Biofuels Program milestones.

### *United Engineers and Constructors, Senior Process Engineer, 1989 – 1992*

At UE&C Mark developed process designs and specifications for hazardous waste incineration plants and natural gas processing plants. Mark also developed operating manuals for gas processing plants.

### *Pacific Gas and Electric Company, Senior Chemical Engineer, 1977 – 1989*

At PG&E Mark developed and demonstrated new and innovative hydrogen sulfide abatement systems for geothermal power plants. He also designed geothermal power plant sulfur removal systems (via the Stretford process) and general plant instrumentation and controls systems. Mark also held positions as Chemical Group Leader at the Geysers Power Plant and at Moss Landing Power Plant.

## **Education**

B.S. Chemical Engineering, Stanford University, 1977

## **Awards**

Chairman's Award, Pacific Gas and Electric Company, 1988

Chairman's Award, Honorable Mention, Pacific Gas and Electric Company, 1987

DOE Customer Recognition Award for the Gridley Rice Straw Ethanol Project, 1998

# Rafael Nieves

Managing Director, BBI Consulting Services  
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## Qualifications

Dr. Rafael Nieves has worked in the renewable energy sector for over 28 years. Dr. Nieves is experienced in management of national and international collaborations as well as project management and financial analysis of large technical projects. His formal technical training is in biotechnology with emphasis on the biofuels, biomass and bioindustry sector. He is an experienced energy market specialist and has served as a senior technical advisor. Successful client collaborations have been well-served by his R&D technical skills and business experience. Dr. Nieves has extensive experience nationally and internationally managing bioenergy projects in the U.S., Mexico, the Dominican Republic, El Salvador, Puerto Rico, Brazil, Australia, Philippines, Ghana, Armenia, Indonesia and the Ukraine. Rafael's technical expertise is in the hydrolysis and fermentation sciences of biomass conversion.

Dr. Nieves was the recipient of a 2004 R&D 100 award for his work as the lead technical director for a \$35 million proteomics and genomics cellulase improvement program sponsored by the U.S. Department of Energy. Within the public and private sector, over the last 10 years he has developed, obtained and managed multi-million dollar contracts and has supervised national and international research and business teams in the renewable energy industry. He is an author and co-author on 3 enzyme patents and has published over 20 peer-reviewed technical articles. He possesses a Ph.D. from Colorado State University and a M.B.A. from the Daniels College of Business at the University of Denver.

## Experience

*BBI Consulting Services, Managing Director, January 2012 – present*

Dr. Nieves and the BBI Consulting Team assist clients in the development of renewable energy and biotechnology projects worldwide. Areas of expertise include technical analysis and due diligence for renewable energy technologies, feasibility studies, business plans, financial modeling and financial analysis, market studies, expert witness for litigation and arbitration, and project development services.

*NEAtech, LLC, President and CEO, January 2009 - present*

Dr. Nieves is currently the CEO and President of NEAtech LLC. Developing New Energy Alternatives is the focus and mission of NEAtech. NEAtech assists government and private sector clients worldwide in the evaluation and development of advanced biofuels technologies, biomass based alternative energy, wind and solar projects.

*BBI International, Director - International Business Development, 2007 – 2009*

Dr. Nieves was the Director of international business development for BBI International's Engineering and Consulting Group. In 2008, Dr. Nieves was responsible for acquiring \$1.5 million in new contracts in national and international business for BBI International. He was technical advisor and energy specialist in bioenergy projects in the U.S., Mexico, the Dominican Republic, Puerto Rico, Brazil, Australia, Philippines, Ghana, El Salvador and the Ukraine. His duties also included managing BBI business development representatives in Mexico, Argentina, El Salvador and Hungary.

*BBI International, Project Manager/Business Development Manager, 2005 - 2007*

Dr. Nieves was the lead for BBI's business development effort. He was responsible for the negotiation and development of business contacts as well as research for ethanol and biodiesel plant feasibility studies, providing client proposals, and developing project development and feasibility study business leads. Additionally, he was the Project Manager for a 100 million gallon per year ethanol facility in the panhandle of Texas.

*National Renewable Energy Laboratory, Senior Project Leader, 1997 – 2005*

As a Senior Project Leader at the NREL Dr. Nieves developed, led and managed government contracts including sole sourced contracts, competitive contracts, funds-in collaborations with industrial partners and other institutes. He managed a yearly maximum operating budget of \$7 million to include a large number of U.S. Department of Energy and NREL subcontracts. Contracts included Novozymes Biotech Inc., Abengoa Bioenergy, BC International (now Verenum), Arkenol (now BlueFire) and HFTA (now Cobalt Technologies). Dr. Nieves was responsible for representing NREL's Biotechnology Center at national and international professional conferences. He was the recipient of a 2004 R&D 100 award for his role as technical monitor of the \$60 million DOE-funded cellulase research efforts by Novozymes Biotech, Inc. and Genencor International.

*NREL Enzyme Technology Team, Staff Scientist, Senior Scientist, 1991-1996*

As part of the Enzyme Technology Team, Dr. Nieves performed purification and characterization of novel microbial enzymes. He performed fermentations, purification and characterization of proteins utilizing HEC, SEC, IEC, and isoelectric focusing from fermentation broths and MSW anaerobic digestion sludges. He developed ELISAs and utilized other immunological techniques for enzyme detection, quantification and characterization. He also utilized molecular biology techniques to express program-relevant heterologous proteins. During this time he was author and co-author on three enzyme patents.

*Colorado State University, Medical Technologist, 1984-1990*

At CSU Rafael performed analysis of medical specimens in the areas of hematology, blood chemistry, microbiology, serology, and urinalysis (during M.S. and Ph.D. studies).

*Bayamon Regional Hospital, Medical Technologist, 1982-1984*

At Bayamon Regional Hospital, Rafael performed analysis of medical specimens in the areas of hematology, blood chemistry, microbiology, serology, and urinalysis.

**Education**

Medical Technology Degree, Universidad InterAmericana (Puerto Rico)  
M.S. and Ph.D. Microbiology, Biochemistry, Colorado State University  
M.B.A., Daniels College of Business, University of Denver

**Awards**

- Recipient of 2004 R&D 100 award as lead technical director for a \$35 million enzyme genomics and proteomics R&D effort with Novozymes Biotech Inc. sponsored by the U.S. Department of Energy.
- National Renewable Energy Laboratory Staff Award (2004)
- Puerto Rico Fomento Economico Student Scholarship Award (1984)
- Puerto Rico Fomento Economico Student Scholarship Award (1987)