

Florida's Bioenergy Success Stories

Mary Ellen Hogan and Kathy Baughman-McLeod
World BioEnergy Conference 26 May 2010

Bryant
Miller
Olive

OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



www.bmolaw.com



Presentation Roadmap What to Expect

- Brief Facts about Florida – why FL is unique and why biofuels work
- Florida Biofuels Reality
- Incentives for Florida Biofuels
- Quick Overview of Pending Federal Legislation on Climate Change



Know-How to Show-How in Florida What is Required?

- Strong University Bioenergy Research Programs that move research from the laboratory into the private sector
- Government RPS mandates or goals that encourage renewable energy projects in state
- Close proximity of processing facility to feedstocks
- Strong transportation system
- Strong export connections and international trade





The State of Florida: An Overview

- Florida – “Feast of Flowers”
- Florida – Fourth largest US State with over 19 million residents
 - About the same population as Sweden, Norway and Denmark combined
- Florida encompasses approximately 58,000 square miles (93,000 km) – roughly the size of Portugal
- In the Southeastern United States, Florida is a peninsula bordered on 3 sides by water with the Gulf of Mexico to Florida’s west & south, the Atlantic Ocean to the east
- Approximately 1,200 miles of coastline with over 650 miles of pristine beaches – slightly more coast than either Portugal or Ireland

Bryant
Miller
Olive

Southeastern United State – Florida's Location





Historical International Influence

- Florida is true international state having flown under 5 nation's flags:
 - United States of America,
 - Confederate States,
 - Spain,
 - France
 - Britain
- The City of St. Augustine is the oldest colonized city in the United States dating to 1565
- Florida is the primary entry point to North America for the entire Latin American and South American marketplace

Florida Geographic Position Caribbean, South and Central America

OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



The Caribbean



Latin and South American Gateway to North America

- Florida is approximately 90 miles from Cuba and within close proximity to the entire Latin and South American business world
- Miami, Florida is often referred to as the “Capital of South America” with significant Latin American banking conducted in this international city



Bryant
Miller
Olive

Miami



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.





Florida's Economy

- Florida's annual State Domestic Product exceeds \$740 billion – approximately equal to the Gross Domestic Product of the Netherlands
- Florida produced over \$59 billion in goods and merchandise in 2009
- Florida imported over \$43 billion in goods and merchandise in 2009
- Leading international trading partner is Brazil
- Looking ahead to new position for China post-Panama Canal widening

Bryant
Miller
Olive

Florida History – Fruit Packing Company of BMO Attorney's Family



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



Bryant
Miller
Olive

Florida History – Fruit Packing Company of BMO Attorney's Family



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



Major Centers of Commerce

- Tampa
- Miami
- Jacksonville
- Orlando



Visitors and Business Flock to Florida

- According to Travel Channel Beach Expert, Dr. Beach, Florida's beaches annually rank among the very best in the world
- Florida has over 82 million visitors annually – more than the entire population of Germany
- Travel Trends Survey ranks Orlando, Florida as the world's number one tourist destination



Florida's Temperate Climate

- Florida's Everglades is the largest subtropical wilderness in the United States – the 1.5 million acre area is characterized as a “River of Grass”
- Florida has a temperate subtropical climate in North and Central regions of the State with a tropical climate in South Florida



Bryant
Miller
Olive

Florida's Everglades



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



Florida Transportation

- Approximately 3,000 miles of rail
- Jacksonville, the “Bold New City of the South,” serves as the state’s rail hub and the headquarters for CSX Railroad Company
- Development of a statewide high-speed train with the first leg connecting Tampa and Orlando



Bryant
Miller
Olive

High-Speed Rail



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



Bryant
Miller
Olive

Florida has approximately 1,500 miles of
Federal Interstate Highways



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



Major Florida Ports \$60 Billion in International Trade

- Port of Jacksonville
- Port of Tampa
- Port Canaveral
- Port Everglades
- Port of Miami
- Port of Fernandina
- Port of Fort Pierce
- Port of Key West
- Port Manatee
- Port of Palm Beach
- Port of Panama City
- Port of Pensacola
- Port of Port St Joe
- Port of St. Petersburg



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.

Bryant
Miller
Olive



Florida Biomass

Bryant
Miller
Olive

OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



www.bmolaw.com

Florida Energy Capacity Why Biofuels are Needed

- Consumption: 4.602 Quadrillion BTU annually = 1.438 trillion kilowatt hours (2X Swedish consumption)
- Annual Production: 524 Trillion BTU annually = 153.5 million kilowatt hours
 - Approximately equal to Switzerland's production
- FL energy consumption = 4.5 % of national consumption while FL production equals only 0.7 % of national production
- Opportunity exists to grow Florida's energy resource – biofuels are important piece of this solution



Florida Biomass Feedstock

- 9.2 million acres of Farmland (the size of the Netherlands)
- 15.9 million acres of Timberland – 49% of FL and equal in size to Ireland
- **Wood and Wood Waste** contributing to 0.6% of Florida's energy production (354 Mega Watts)
- Florida is a leading American producer of citrus, sugarcane and vegetables
- Florida's farms contribute over \$60 billion annually to the State Domestic Product (SDP)
- Florida's forests contribute \$16.7 billion to the SDP
- Total agricultural impact on Florida's economy equals \$103 billion annually
- Two-Thirds of Florida land is used for forestry, ranch or farm operations



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.

Bryant
Miller
Olive



Florida Biomass

- Current – 4 million+ MWh hours produced annually from biomass in Florida
 - **Wood/Wood Waste** – 1.93 million MWh
 - Municipal Solid Waste & Landfill Gas – 1.79 MWh
 - **All Other Biomass** – 579,000 MWh
- Florida's Farm to Fuel Program
 - Florida Department of Agriculture Program
- Super Trees -New breed of tree as a mix between eucalyptus and native cottonwood – generate 32 green tons and 16 dry tons of biomass annually
- Sugar Cane and Citrus By-Product Biomass
- Wood Pellet Production
- Florida Universities Lead in Biomass Research



Bryant
Miller
Olive

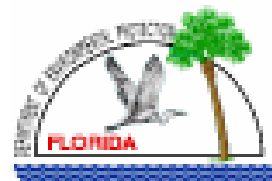
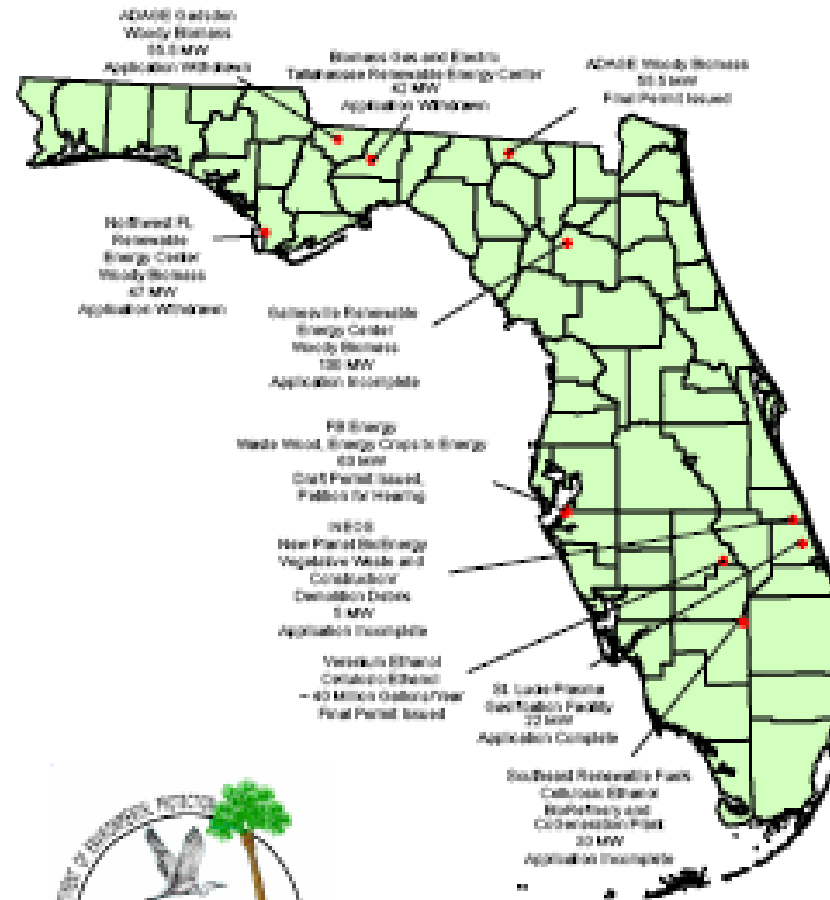


OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



Florida Biomass Potential

Florida's BioEnergy Projects



Created by: Division of Air Resource Management
 Tom McGehee
 Updated April 22, 2010

OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



Why Biomass Works in Florida

- Temperate Climate and Fast-growing Trees & Crops
- Statewide Access to a well-developed transportation network both by land and sea
- Biomass Potential: 41.8-68.7 million dry tons of biomass annually which can produce upwards of 99 million megawatts annually given the correct incentive structure



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.

Bryant
Miller
Olive



www.bmolaw.com

Incentives for Florida Biofuel Production

Bryant
Miller
Olive

OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



www.bmolaw.com



Florida Energy Consortium

“Universities Addressing Florida’s Energy Needs”

- Group of all major Florida Universities working together on energy projects most relevant to Florida – biomass and solar
- Provides a system approach to energy issues in a way not possible by single university
- Partners with entities inside and outside Florida to respond to proposals like Energy Secretary HUBS program
- Includes a Department dedicated to assisting researchers with know-how on how to patent inventions, obtain capital funding and proceed from demonstration to commercialization

State and Federal Grant or Revolving Loan Programs

- Florida Energy and Climate Commission
 - State Energy Grant Program: \$15 million in 2008 for renewable and energy efficient technologies with at least \$8 million to bio-energy production
- Department of Energy Section 1705 Revolving Loan Program
 - Innovative Programs
 - \$8.5 billion in loan guarantees
- ARRA Renewable Energy Grants
 - \$2.5 billion in renewable energy demonstration programs
 - Green Jobs Training Programs: \$500 million
 - Funding State's Energy Program (SEP): \$3.1 billion (\$126 million to Florida)
- Qualified Energy Conservation Bonds: Florida received \$190 million allocation
- New Clean Renewable Energy Bonds: \$1.6 billion
- Department of Energy Grant for Co-Production of Power Fuels via Biomass Mixtures:
- DOE and USDA Grant for Development of Bio-fuel and Biomass conversion technology: \$33 million





State and Federal Production Tax Credit

- Florida Corporate Production Tax Credit –
 - .01 per kilowatt hour produced up to \$5 million annually
 - Unused credits may be carried forward 5 years
 - Program began January 1, 2007 and expires June 30, 2010
- Federal Production Tax Credit, Section 45 of the Internal Revenue Code
 - 1.5 cent tax credit per kilowatt hour adjusted for inflation (cut in half by 2005 Energy Act)
 - Eligible projects include wind, solar, municipal waste, closed and open loop biomass, geothermal and hydropower
 - Must be placed in service prior to January 1, 2013
- Florida Renewable Energy Equipment Sales Tax Exemption



State and Federal Investment Tax Credit

- Florida Corporate Energy Technologies Investment Tax Credit –
 - Eligible Projects: Ethanol, Biodiesel and hydrogen fuel cells
 - 75% of all capital costs in hydrogen vehicles or fueling stations from January 1, 2006 to June 30, 2010 with an annual limit of \$3 million in credits
 - 75% of all capital costs for investment in production of bio-diesel and ethanol from January 1, 2006 to June 30, 2010 with an annual limit of \$6.5 million per year
 - Tax Credit can be stripped and sold separate from property after January 1, 2009
- Federal Investment Tax Credit, Section 48 of the Internal Revenue Code
 - 30% of costs of investment in renewable energy production including biomass
 - Differing tax treatment for closed loop vs. open loop biomass

Direct Cash Payment in Lieu of Tax Credit

- CASH IN HAND
- Projects placed in service or with 5% of construction complete as of December 31, 2010 that are also eligible for the Investment Tax Credit or Production Tax Credit may elect to take a 30% direct payment from the Department of the Treasury in lieu of the tax credit for the renewable project



Accelerated Depreciation and Manufacturing Tax Credit

- Modified Accelerated Cost Recovery System: 5 year accelerated depreciation on renewable technology projects
- Bonus Depreciation in 2008-2009 (two year depreciation)
- Advanced Energy Manufacturing Tax Credit: 30% of costs in building an advanced manufacturing facility for renewable technology (Section 48C of the Internal Revenue Code)



Pending Federal Legislation

- Waxman-Markey
 - Energy and Climate Legislation approved by the United States House of Representatives
 - Cap and Trade: Emission cap of 17% of 2005 emissions by 2020 rising to 83% below 2005 emissions by 2050
 - Renewable Portfolio Standard requiring utilities to generate 25% of electricity from renewable energy sources by 2025
 - Strong allowance allocation provided for international forestry but domestic forestry was provided no allocation and weaker offset provisions than proposed Senate legislation



Federal Legislation, cont.

- Kerry-Lieberman – The American Power Act
 - Introduced May 12 in the U.S. Senate
 - Cap and Trade: Same emission caps as Waxman-Markey
 - No Renewable Portfolio Standard – replaced by allowance incentives to states that enact renewable incentive programs
 - Strong language supporting a domestic agricultural, forestry and land-based offset program
- Offset programs under either legislation would support biomass operations in Florida by allowing an additional stream of revenue (after certifying additionality)



Bryant
Miller
Olive

OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.





Effect of Renewable Portfolio Standard

- Woody Biomass contribution to Florida energy production under several RPS Models:
 - 7% RPS – 6.3 TWh (2% of production)
 - 12% RPS – 20.4 TWh (7% of production)
 - 20% RPS – 43 TWh (15% of production)
- Clearly, the 25% RPS as approved by the House of Representatives would substantially increase the overall production and value of woody biomass in Florida, a state with an abundance of the resource

Case Studies

Bryant
Miller
Olive

OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



www.bmolaw.com

Petro Algae

- Melbourne, Florida
- NASA Lab at Cape Canaveral
- Research and Development in Fellsmere, Florida
- Produces Algae on Commercial Scale for Transportation Fuel
- Scalable system for producing large quantities of fuel
- First algae system to be commercially viable
- Green Diesel Production



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.

Bryant
Miller
Olive



Sludge to Energy

- Proposed Tampa Plant
- Ocala Equine Sludge Facility
 - 100,000 tons of horse manure turned into 10.5 Megawatts of energy
- Sanford Sludge Facility
 - Will save \$8 million over 20 years
 - 1st Sludge-to-Energy Plant in North America
- MaxWest Environmental Systems, Inc.
- Possibilities for a statewide or regional sludge system



Bryant
Miller
Olive

Ocala Horse Farm



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.





Green Circle Energy

- Largest wood pellet biofuel producer in the world
- Based in Jacksonville, Florida
- Low Carbon Wood Pellet Production Process
- Opened Largest Biomass Pellet Plant in Jackson County, Florida
- 560,000 tons of wood pellets annually





Florida Sugar Cane to Biofuel

- Florida Crystals Production of Biofuels via Sugar Cane Production
- Powers 60,000 homes
- Creates cellulosic ethanol from sugarcane sucrose



Verenium and British Petroleum

- 36 million gallons of cellulosic ethanol production per year
- Highlands County, Florida
- \$7 million grant from Florida Energy and Climate Commission
- Feedstock: Straw, Miscanthus grass and other cellulose grasses grown on 20,000 surrounding acres



OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.

Bryant
Miller
Olive



City of Gainesville Woody Biomass Plant

- 100 Megawatt facility
- Awaiting approval from the state's utility commission (Vote in June)
- Saving \$212-492 million over term of 30 year power purchase agreement
- Over 500 jobs created in biomass plant and forestry related industries



LYNX Biodiesel Blending Station, Orlando, FL

- Central Florida Regional Transportation Authority (LYNX)
- Governor's Energy Office \$2.5 million grant to construct and operate the blending station for 2 years
- Replaces 800,000 gallons of diesel fuel with B20 Blend of biodiesel (plant oils + petroleum) for 290 buses
- Dedicated on May 17, 2010!



Questions and Comments

Bryant
Miller
Olive

OUR NAME IS EASY TO REMEMBER. OUR WORK IS HARD TO FORGET.



www.bmolaw.com