Overview

• Georgia’s Centers of Innovation
• Drivers
• Regional Strength
• Current Research and Development
• Considerations
• State of the Industry
What is a Center of Innovation?

The Georgia Centers of Innovation are the critical link between strategic industries, research universities, financial resources, and the regulatory community.
Georgia Centers of Innovation

Agriculture

Manufacturing

Aerospace

Logistics

Energy

Life Science
Our Mission

“To increase production and use of renewable energy and alternative fuels in Georgia”
The Governor’s Directive

- Grow the Feedstock in Georgia
- Produce the Fuel in Georgia
- Use the Fuel in Georgia
One Stop Shop

- Pre-screened
- Invitation only
- Contact Info
- Permitting Checklist
- One Hour
  - -- Present
  - -- Q & A
  - -- Roundtable
One Stop Shop

- Energy Innovation
- Agriculture Innovation
- Governor’s Office
- Lieutenant Governor’s Office
- GA Environmental Facilities Authority (GEFA)
- GA Department of Agriculture
- GA Department of Natural Resources
- GA Department of Revenue
- U.S. Environmental Protection Agency
- GA Department of Community Affairs
- GA Department of Economic Development
- Division

- GA EPD Small Business Environmental Assistance Program
- GA EPD Air Protection Branch
- GA Forestry
- Herty Advanced Materials Development Center
- State Fire Marshall
- United States Department of Agriculture
- University of Georgia
- Georgia Tech
- Georgia Railroad Association
- UGA Small Business Development Center
Regional Strength

Not one market – but several each focused on a primary renewable energy source for region.
Forests Dominate Georgia’s Land Use

Georgia Forestry = Biomass Energy
Biomass to Electric

- Twelve biomass to electricity projects have been announced in Georgia
- Total of 689 megawatts of renewable energy
- $1.8 billion investment
- 570 direct jobs / 1700 indirect jobs
Fifteen alternative fuel companies launched

372 million gallons of production capacity

215 direct jobs / 645 indirect jobs
Laboratory Research Emphasis

• Biochemical - Enzymatic & Microbial, Fermentation

• Thermochemical – Acid hydrolysis, Gassification, Pyrolysis, Torrefaction

• Gas to Liquids
Field Research Emphasis

- Genetics / Genomics
- Energy Crops
  - Short Rotation – Grasses/Woody
  - Trees
  - Modified Food Crops
  - Algae
  - Oil Crops
Considerations

- Greenhouse Gases (GHG)
- Environmental Constraints – Air & Water
- Permitting Issues
- Competing Land Use
- Diversion of Food Crops
American Recovery & Reinvestment Act

- $400 M to add electric technologies to vehicles
- $300 M to support Alternative Fueled Vehicles Pilot Grant Program
- $300 M Federal acquisition of greener vehicles
- http://www.recovery.gov/
- Alternative Fuels and Advanced Vehicles Data Center http://www.afdc.energy.gov/afdc/
# State of the Bioenergy Industry

## Ethanol

<table>
<thead>
<tr>
<th>Company</th>
<th>Location / County</th>
<th>Feedstock</th>
<th>Production Capacity (gallons/year)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>First United Ethanol</td>
<td>Camilla / Mitchell</td>
<td>Corn</td>
<td>110 Million</td>
<td>Operational</td>
</tr>
<tr>
<td>US Ethanol</td>
<td>Cordele / Crisp</td>
<td>Waste Liquid</td>
<td>4 Million</td>
<td>Operational</td>
</tr>
<tr>
<td>Windgap Farms</td>
<td>Baconton / Mitchell</td>
<td>Yeast</td>
<td>.05 Million</td>
<td>Operational</td>
</tr>
</tbody>
</table>

## Pellets

<table>
<thead>
<tr>
<th>Company</th>
<th>Location / County</th>
<th>Feedstock</th>
<th>Production Capacity (tons/year)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fram Fuels</td>
<td>Baxley / Appling</td>
<td>Dirty &amp; Clean Chips</td>
<td>145,000 Tons</td>
<td>Operational</td>
</tr>
<tr>
<td>Woodlands Alternative Fuels</td>
<td>Meigs / Thomas</td>
<td>Sawmill residue</td>
<td>150,000 Tons</td>
<td>June, 2009</td>
</tr>
</tbody>
</table>

## Electricity

<table>
<thead>
<tr>
<th>Company</th>
<th>Location / County</th>
<th>Feedstock</th>
<th>Production Capacity (per year)</th>
<th>Projected In Service Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rollcast</td>
<td>Heard County</td>
<td>Dirty Chips</td>
<td>50 Megawatts</td>
<td>2010</td>
</tr>
<tr>
<td>BG &amp; E</td>
<td>Cumming / Forsythe</td>
<td>Dirty Chips</td>
<td>30 Megawatts</td>
<td>2009</td>
</tr>
<tr>
<td>Decker Energy</td>
<td>Fitzgerald / Ben Hill</td>
<td>Dirty Chips</td>
<td>50 Megawatts</td>
<td>2012</td>
</tr>
<tr>
<td>Georgia Power</td>
<td>Albany / Dourghearty</td>
<td>Dirty Chips</td>
<td>96 Megawatts</td>
<td>2010</td>
</tr>
<tr>
<td>Oglethorpe Power</td>
<td>Pending 2 or 3 sites</td>
<td>Dirty Chips</td>
<td>(3) 100 Megawatts</td>
<td>2014</td>
</tr>
<tr>
<td>Rollcast</td>
<td>Lagrange / Lamar</td>
<td>Dirty Chips</td>
<td>(2) 50 Megawatts</td>
<td>2010; 2012</td>
</tr>
<tr>
<td>Summit Energy</td>
<td>Ft. Gaines / Clay</td>
<td>Dirty Chips</td>
<td>100 Megawatts</td>
<td>2010</td>
</tr>
<tr>
<td>Tyson</td>
<td>Cartersville / Bartow</td>
<td>Waste (Chicken)</td>
<td>5 Megawatts</td>
<td>2008</td>
</tr>
</tbody>
</table>

*Dirty Chips = whole tree with bark &/or leaves; manufacturing residue.  *Clean Chips = wood only
## State of the Bioenergy Industry

### Biodiesel

<table>
<thead>
<tr>
<th>Company</th>
<th>Location / County</th>
<th>Feedstock</th>
<th>Production Capacity (gallons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alterra Biofuels</td>
<td>Gordon / Williamson &amp; Plains/Sumter</td>
<td>Soy Oil</td>
<td>15 Million</td>
</tr>
<tr>
<td>Bulldog Biodiesel</td>
<td>Ellenwood / Clayton</td>
<td>All</td>
<td>25 Million</td>
</tr>
<tr>
<td>Farmers &amp; Fleet</td>
<td>Augusta / Richmond</td>
<td>All</td>
<td>5 Million</td>
</tr>
<tr>
<td>Georgia Mountain Biofuels</td>
<td>Toccoa / Stephens</td>
<td>All</td>
<td>2 Million</td>
</tr>
<tr>
<td>Inland Oil</td>
<td>Bainbridge / Decatur</td>
<td>Soy Oil</td>
<td>10 Million</td>
</tr>
<tr>
<td>Middle GA Biofuels</td>
<td>Dublin / Laurens</td>
<td>Waste Grease</td>
<td>1 Million</td>
</tr>
<tr>
<td>Soy Met</td>
<td>Rome / Floyd</td>
<td>Soy Oil</td>
<td>4 Million</td>
</tr>
<tr>
<td>Sunshine Biofuels</td>
<td>Camilla / Mitchell</td>
<td>Soy Oil</td>
<td>6 Million</td>
</tr>
<tr>
<td>U.S. Biofuels</td>
<td>Rome / Floyd</td>
<td>Chicken Fat</td>
<td>14 Million</td>
</tr>
</tbody>
</table>

### Under Construction

<table>
<thead>
<tr>
<th>Company</th>
<th>Location / County</th>
<th>Feedstock</th>
<th>Production Capacity (gallons/year)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Coast Ethanol</td>
<td>Mt. Pleasant / Banks</td>
<td>Corn</td>
<td>110 million</td>
<td>November, 2009</td>
</tr>
<tr>
<td>Georgia Alternative Energy</td>
<td>Ashburn / Turner</td>
<td>Corn</td>
<td>55 million</td>
<td>January, 2010</td>
</tr>
<tr>
<td>Range Fuels</td>
<td>Soperton / Treutlen</td>
<td>Dirty Chips</td>
<td>10 million</td>
<td>November, 2009</td>
</tr>
</tbody>
</table>
For More Information Contact:

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