

Building Sustainable Aviation Biofuel Options “State by State” via “Farm to Fly” 2.0

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SOAPP Jet Webinar

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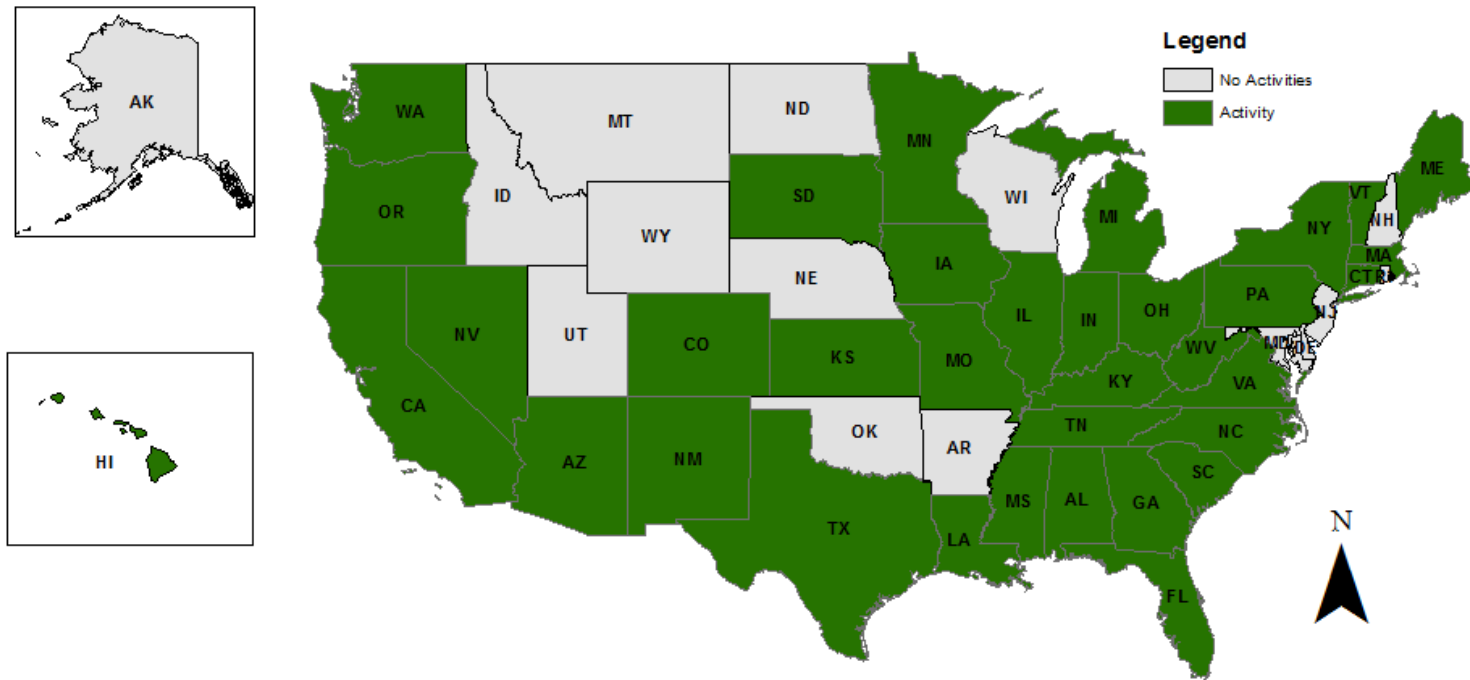
Sustainable Biofuel Industry

... enabled by Aviation “State by State”

- **Breadth of Sustainable Biofuel Projects**
- **The CAAFI Coalition as catalyst, lead customer**
- **USDA/CAAFI “Farm to Fly” 2.0 building a future**
- **F2F2 – Focus on State and Local Projects**
 - **Locations - Mono to Poly-economic focus**
 - **FRL 4 + research through deployment**
 - **Local leaders ... strong feedstock links**
- **Common Denominators / Next Steps**

U.S. Sustainable Biofuels Opportunity

Includes F2F2 State initiatives, DOE Biorefineries, DPA Phase II awards*, Commercial Operations



* Defense Production Act , Title 2, 2014 Awards

Aviation Leaders in Sustainable Biofuel?



Dave Simonds

68% of Biofuel makers see aviation first (3/12)
Aviation Buyers 9 of Biofuels Digest top 100 (1/15)

Visual - The Economist - October 28, 2010

Establishing Local “Poly-economy” Driver

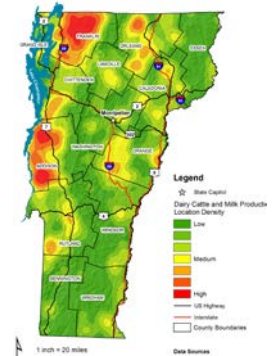
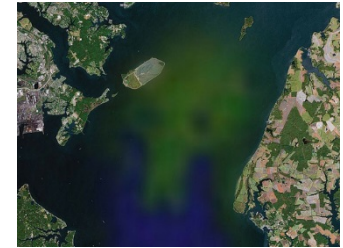
CT/NY Metro - MSW to Liquid, redeveloping 1980's MSW to Elec.

Vermont - Dairy Waste Grown – fuels and granular fertilizer, runoff mitigation

Florida – Energy Beets / Sorghum replaces citrus crop lost to infestation

Chesapeake Estuary – Six state region challenged by agricultural runoff mitigation Poultry Waste / Renderings

Appalachian Region – harvesting clean up waste / converting open pit coal mine brownfields



Transitioning from “Mono-economy”⁶ is common goal

Product Suite Enables Economic Resilancy

Diesel / Coproducts create value fill facilities

- Diesel for Trucks / Buses
- Phosphorus / Nitrogen Fertilizer
- Feed for Cattle
- High Value products (perfumes)
- Lubricants
- Green Deicing Fluid at Airports



Product Mix Tailored to Local Needs

Leadership / Teams / Goals

CT/NY Metro – **Connecticut Center for Advanced Technology (CCAT)** - five MSW to L processors/
public owned feedstock sourcing - Brownfield
deployment

Vermont - **GSR Research** – dairy farm leadership,
Newtrient, Green Mountain Power / Gaz Metro /
NGO's - scaling up manure to product suite via
digesters

Florida – **TCERDA - Treasure Coast Education and
Research & Development Authority** – citrus farms /
ranchers / four processors / four end users replacing
citrus crop lost to infestation

Leadership / Teams / Goals

South Carolina – SCCEBA Clean Energy Business Alliance, SCRA - I-95 corridor, I-85 SE woody biomass project deployment currently, 4 processors, SC Biomass council genesis / support.



Georgia - Georgia Tech – ISYE – Industrial and Systems Engineering - Deployment support for Woody biomass supply chain optimization, Fats, Oils and Greases supply chain in region (also ARA, Agrisoma, UFL, UGA, ARS and others)



Going Regional – Added support

Chesapeake Bay Estuary - Three State Alliance MD (via UM Eastern Shore), PA (via Penn State), VA (U Of VA)/CCALS (Commonwealth Center for Advanced Logistics Systems). Regional mapping to benefit both six state agriculture and Bay nutrient runoff

Added support from Chesapeake Bay Commission, Corps of Engineers, NSF, DOE Landscape possible

Appalachian Region – harvesting clean up waste / converting open pit coal mine brownfields (central) woody biomass (South). Discussions initiated with NC State, SCRA, GA tech (woody – south), DOE NETL, CCAT, WVU (reclaim conversion (central)

Added support from ARC Appalachian Regional Commission, POWER, EPA Environmental Justice, Interior Dept. AML (Abandoned Mine Land Program



F2f2 State Common Denominators

- **Bottoms up - starts from feedstocks / local engagement...**
- **Supply chain – FRL progression our role**
- **Strictly Feedstock / Process neutral - no silver bullets no biases**
- **24/7 feedstocks valued to satisfy processors**
- **Advanced biofuel and bio products fill factories.. Create resiliency, poly-economy.... Not just Jet.**
- **NGO's , environmental gain are value added partners**
- **Expanding / Leveraging public sources (fed, state) seeking private participation**

Next F2f2 State/Regional Steps

- **FL TCERDA CASE Study – Ben Devries/ today**
- **10/25 Late PM - Panel at Biannual General Meeting case templates**
 - lessons learned,
 - how to build a supply chain team,
 - 24/7 feedstock engagement
 - new regional opportunities
- **Two more SOAPP dates , if you like today!**

Sustainable Biofuels via F2F2

Build Locally



Link Nationally



Thank You!



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