

Connecticut Center for Economic Analysis



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History and Mission

- Founded in 1992 via grant from the Department of Economic and Community Development
- Formalized as a University Center in 1994
- An outreach service of the University of Connecticut to the state
- Makes economic expertise available to the public

Other CCEA Work

- Statistical forecast of CT employment and GSP
- Benchmarking MetroHartford performance
- Comparative policy analysis
- Benchmarking manufacturing competitiveness
- Coincident & leading employment indicators for CT

Other CCEA Work:

- Industrial cluster identification with CERC, DECD & DoL
- Benchmarking CT performance in the 'New Economy'
- Develop Connecticut CPI ACCRA style
 - Four regions
- Publish *The Connecticut Economy Quarterly*

**Diagnosing Connecticut's
Addiction to Casino Gaming**

**Dissecting Connecticut's
Health Care Spending**

**Decomposing
the State's
Future Job
Growth**



Biodiesel: Fuel for Thought, Fuel for Connecticut's Future

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Biodiesel: Fuel for Thought

- Biodiesel = vegetable or animal oil + methanol/ethanol (catalyst)
- Byproducts = glycerine + fertilizer (soy mash) + recovered alcohol
- Biodiesel also produced from algae
- Biodiesel burns in diesel engines, gas turbines and heating plants

Biodiesel: Fuel for Thought

- Biodiesel produces less pollution
 - 100% less sulfur dioxide
 - 37% less unburned hydrocarbons
 - 46% less carbon monoxide
 - 84% less particulate matter^[1]
- Biodiesel has greater lubricity
 - Helps low-sulfur petro-diesel

^[1] National Biodiesel Board, Lifecycle Summary,
http://www.biodiesel.org/pdf_files/LifeCycle_Summary.PDF

Biodiesel: Fuel for Thought

- Biodiesel is produced from a variety of seed oils and rendered animal oils.
- Ethyl alcohol is produced from corn.
- Methyl alcohol is produced from biomass decomposition.
- Idle farmland could become productive:
 - Reduce dependence on oil imports
 - Build energy reserves
 - Preserve green space

Biodiesel: Fuel for Thought

- Burning biodiesel reduces pollution and total carbon output.
 - Burning fossil fuel releases ancient carbon
 - Burning biodiesel doesn't tilt carbon balance
- Biodiesel's total *fossil* energy efficiency ratio (i.e., total fuel energy/total fossil energy used in production, manufacture, transportation, and distribution) shows that *biodiesel is four times as efficient as diesel fuel in utilizing fossil energy*.
 - 3.215 for biodiesel vs. 0.8337 for diesel^[1]

^[1] Biodiesel Lifecycle Inventory Study, U.S. Department of Energy and U.S. Department of Agriculture, May 1998.

Biodiesel: Fuel for Thought

- Biodiesel blends well with fuel oil and diesel:
 - Burns in diesel engines without mods.
 - Burns in gas turbines and heating plants with minor mods.
 - Pollutants vary in these intermittent vs. continuous burn applications.

Biodiesel: Fuel for Thought

- Connecticut ranks 9th most susceptible to cancer risks associated with air quality. [\[1\]](#)
- 75,000 children and 202,800 adults in Connecticut suffer from asthma.
- Reports suggest that in one year smog is responsible for 2,500 hospital visits and 100,000 asthma attacks. [\[2\]](#)
- According to a study conducted in Los Angeles, ozone toxins are the known cause of between 10 and 20% (and up to 50% on bad days) of hospital admissions for respiratory illness. [\[3\]](#)

[\[1\] http://www.scorecard.org/env-releases/hap/rank-states.tcl](http://www.scorecard.org/env-releases/hap/rank-states.tcl). Also see, “Diesel and Health in America: The Lingering Threat,” www.catf.us/goto/dieselhealth.

[\[2\]](#) “Connecticut’s Air is Not Healthy,” Clean Car Alliance and CT Environmental Fund, <http://www.cfenv.org/PDFs/11-11-03%20Health%20Issues.pdf>

[\[3\]](#) “Oil Slickers: How Petroleum Benefits at the Taxpayer’s Expense,” Institute for Local Self-Reliance, <http://www.ilsr.org/carbo/costs/truecosttoc.html>

Biodiesel: Fuel for Thought

- The Union of Concerned Scientists found the total costs of environmental externalities of U.S. oil use to be between \$54 billion and \$232 billion in 1991, or \$214 to \$920 per capita, with human mortality and morbidity accounting for over 75% of the total environmental costs (as much as \$182 billion annually).[\[4\]](#)
- Our study estimates the net benefit to CT of switching to biodiesel for home heating and in on-road and off-road heavy duty vehicles based on the difference between the cost of diesel and B20 biodiesel (the spread) = \$20,000,000.

[\[4\]](#) “Subsidizing Big Oil,” Union of Concerned Scientists, http://www.ucsusa.org/clean_vehicles/archive/page.cfm?pageID=817

Biodiesel: Fuel for Thought

- Biodiesel is environmentally safer than diesel:
 - Nontoxic (table salt is 10X more toxic);
 - Produces less skin irritation than soap & water;
 - Degrades 4X faster than petro-diesel (about as fast as sugar);
 - Its flash point is significantly higher than that of petro-diesel, making it safer to store and handle;
- So, in the event of a spill or leak, compared to conventional diesel, biodiesel is less likely to explode or hurt humans, animals or fish.

Biodiesel: Fuel for Thought

- Connecticut's neighbors use biodiesel in school buses and school heating systems.
 - In Feb. 2004, EPA gave a \$15,000 grant to the RI Department of Environmental Management (DEM).
 - DEM & New England Asthma Regional Council (ARC) prepared information packets about the risks that petro-diesel-powered school buses pose to children.
 - This effort is part of the Clean, Green School Bus Awareness Program to educate individuals about risks petro-diesel exhaust poses.

Biodiesel: Fuel for Thought

- Warwick, RI uses B20 in its school boilers and school busses.
- They found that B20 outperformed a control school burning petro-diesel in terms of combustion efficiency & emissions.
- Warwick found a way to make this initiative cost effective by investing in oil futures that alleviated the cost of using B20.

Biodiesel: Fuel for Thought

- The Warwick school system is implementing a curriculum that focuses on biodiesel.
 - They amended the curriculum based on a program created by the Northeast Sustainable Energy Association called Cars of Tomorrow and the American Community.[\[1\]](#)
 - This should produce a new generation of citizens keenly aware of the benefits of cleaner, more efficient, renewable fuel.

[\[1\]](#) “Back to School with Biodiesel,” National Biodiesel Board, News release: October 6, 2003.

Biodiesel: Fuel for Thought

- Under the Regional Greenhouse Gas Initiative (RGGI), seven Northeast states have agreed to implement a cap-and-trade program to lower carbon dioxide (CO₂) emissions, which are a major contributor to global warming. This is the first mandatory cap-and-trade program for CO₂ emission in U.S. history. In addition to New York, other states signing the regional Memorandum of Understanding for RGGI are: Connecticut, Delaware, Maine, New Hampshire, New Jersey, and Vermont (Dec. 20, 2005 Gov. Pataki press release).[1]

[1] <http://www.ny.gov/governor/press/05/1220052.htm>

Biodiesel: Fuel for Thought

- Economic impacts:
 - New jobs for biodiesel plant operations
 - New externally funded research in plant and algae science and engineering disciplines
 - New startups to facilitate conversion, production and distribution (use WVO from CT confectionaries & restaurants)
 - Fallow land made productive can remain in public trust (preserve green space)
 - Build energy reserves
 - Reduce dependence on imports
 - Cleaner air reduces health care costs, increases worker/student productivity
 - Links with fuel cells (H_2 from glycerine)
 - For more info: <http://www.biodiesel.org/>