



Building the Biomass Supply Chain: Strategies for Rural Areas

Incorporating Bioenergy in Sustainable Landscape Designs

Workshop Two: Agricultural Landscapes

Jun. 24-26, 2014 • Argonne, IL

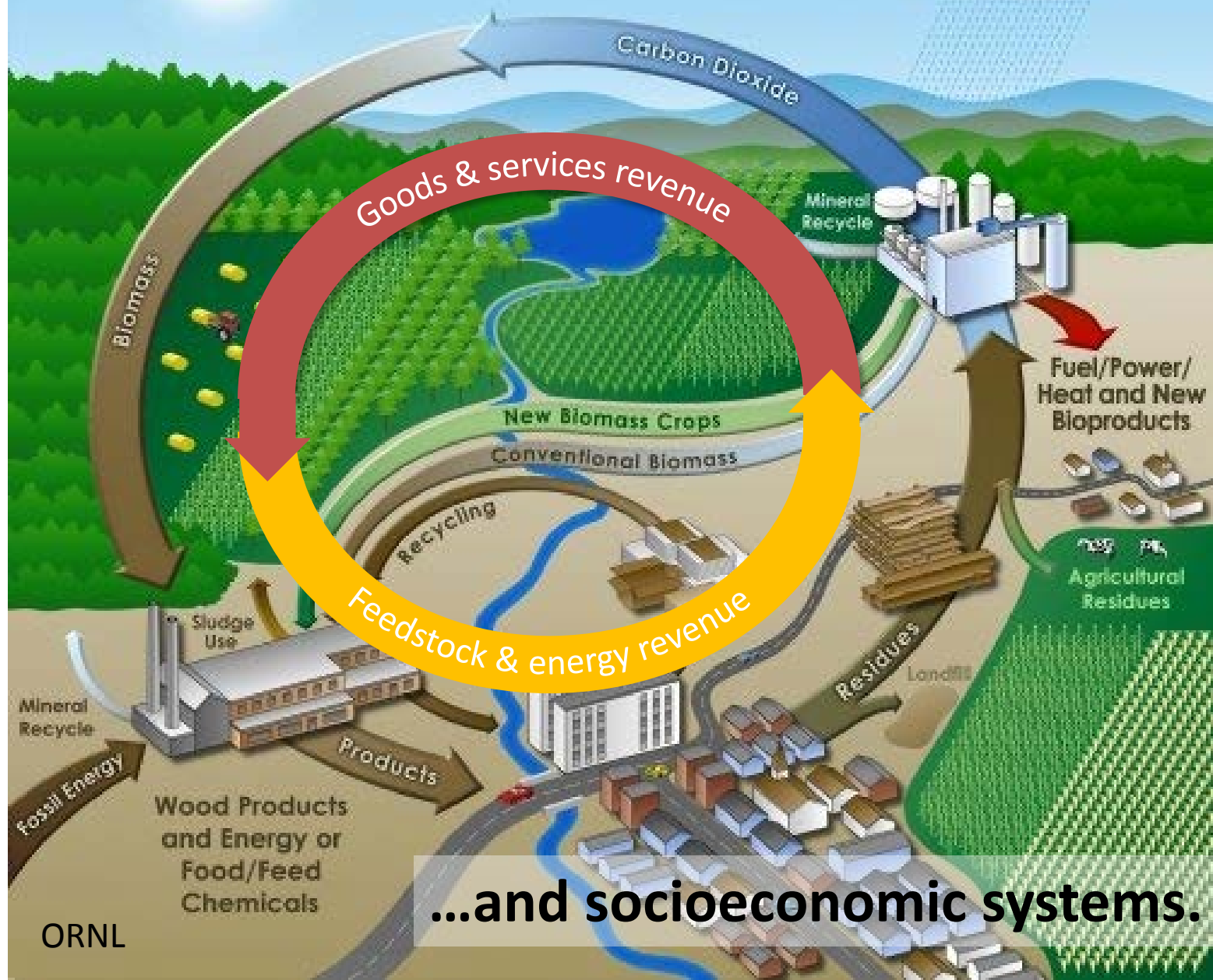


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Fred Iutzi, MS

Illinois Institute for Rural Affairs

Closing the loop on biophysical systems...



...and socioeconomic systems.

Economic development “bucket”

A. Exports

Economic Base brings dollars into the local economy by exporting goods out of the local economy

Resource Base

Land, Labor, Natural Resources, Technology, Capital

Multiplier Effect

Re-circulation in local economy

D. Economic Activity

Local Production and Consumption of Goods and Services

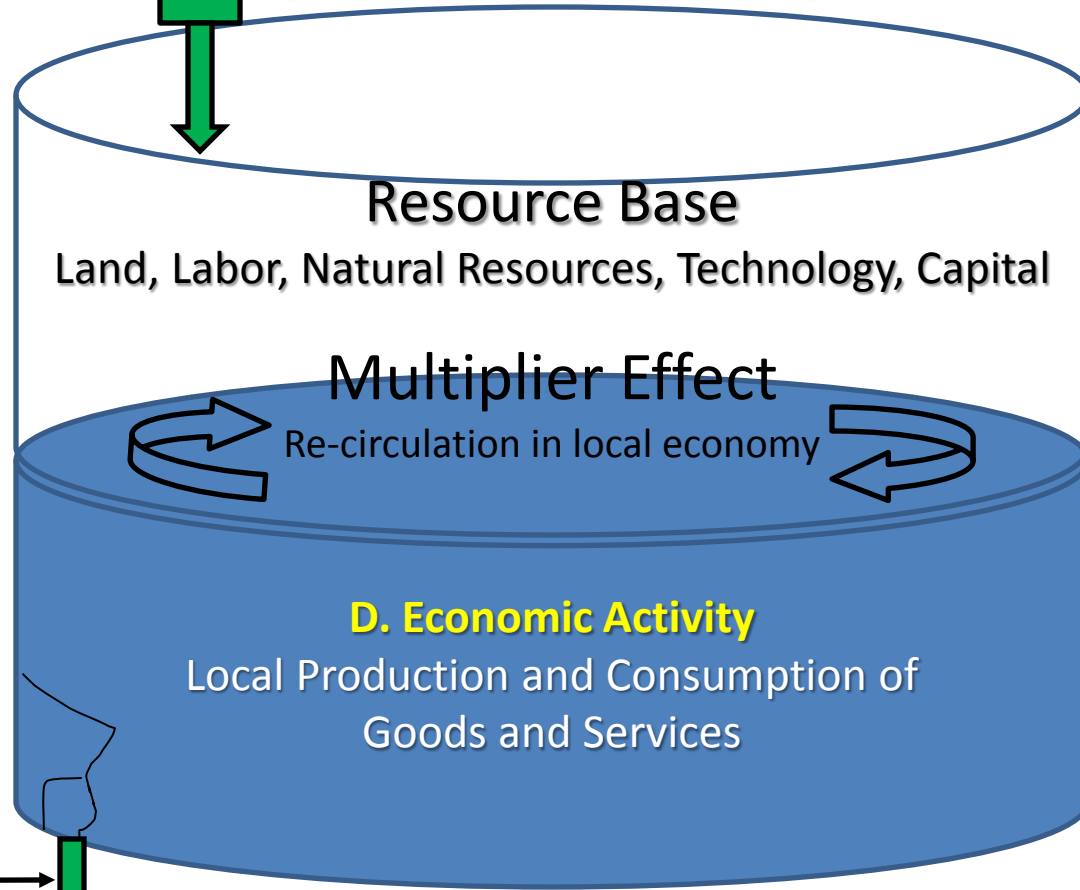
C. Resource Depletion

B. Imports

Dollars lost out of the local economy by importing goods into the economy

$$A - B - C = D$$

*Adapted by Merrett (2011)
from Hearn & Tanner (2009)*

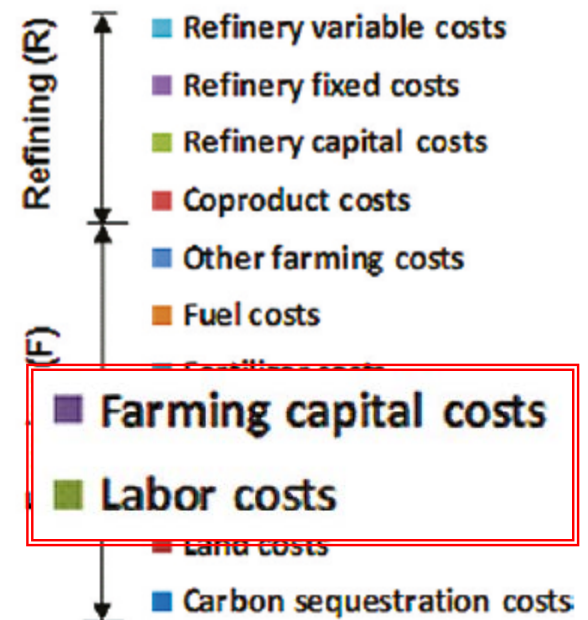
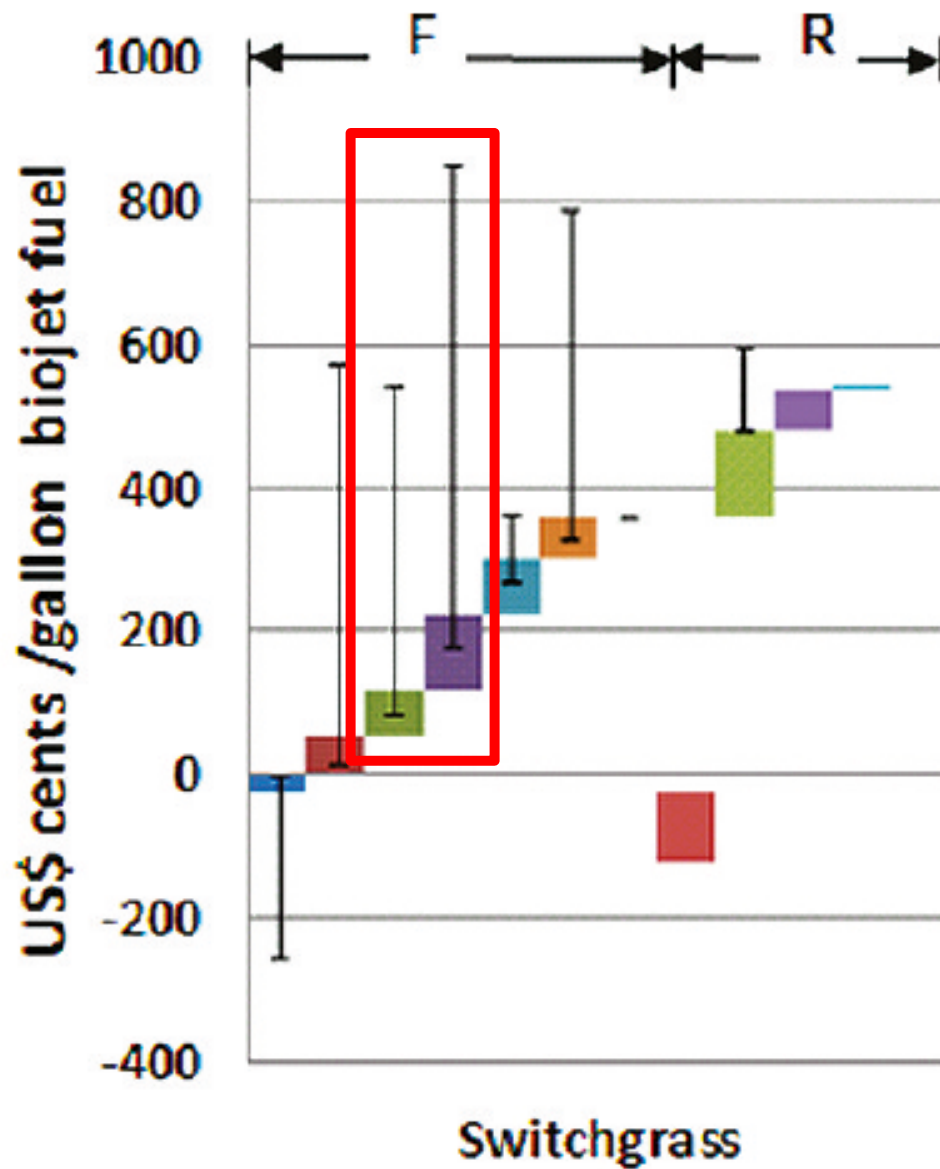


Integrated biomass development

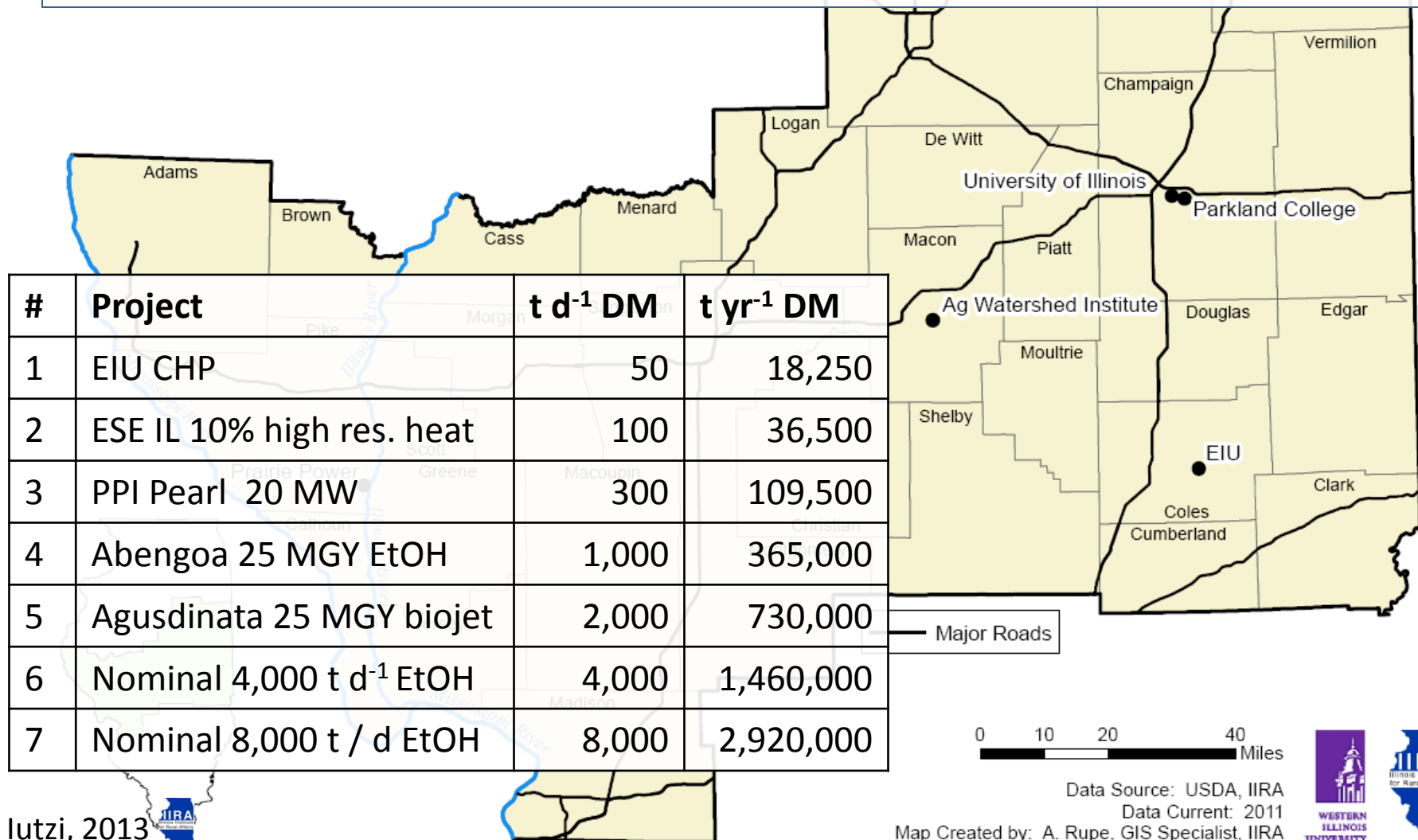


Biomass development priority:
Leverage a (mostly) common supply chain among heat, power, liquid fuels, & bioproducts.

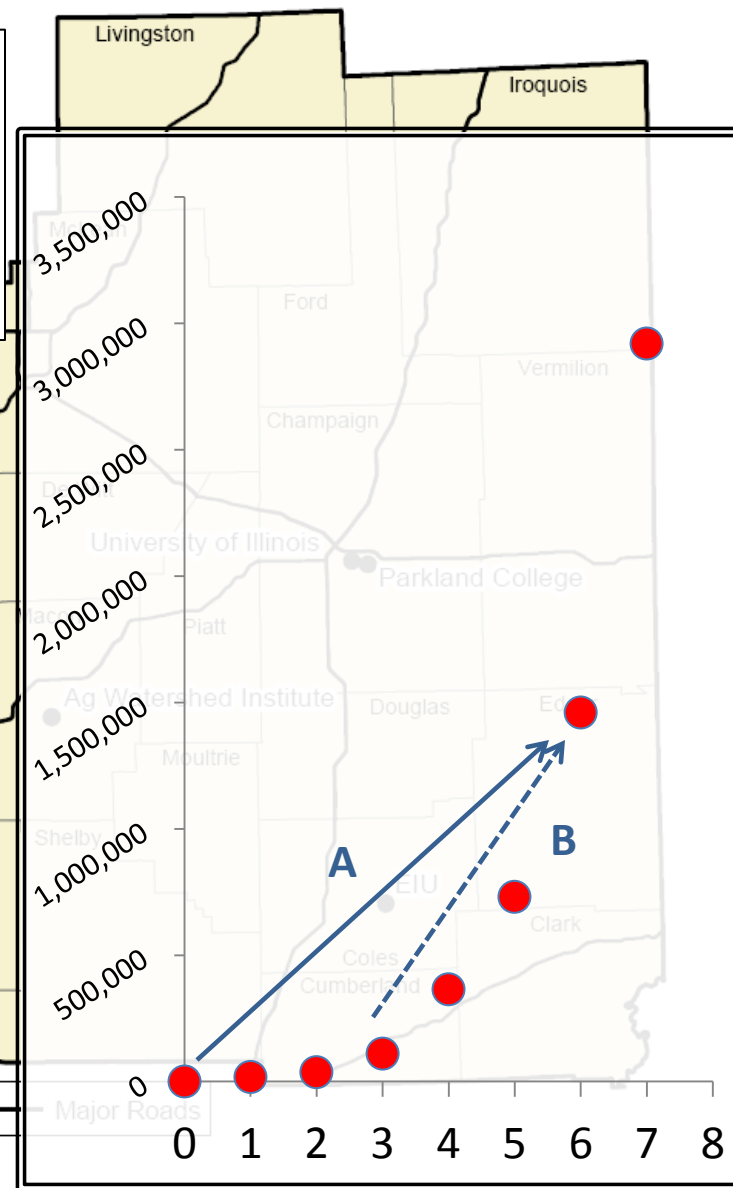
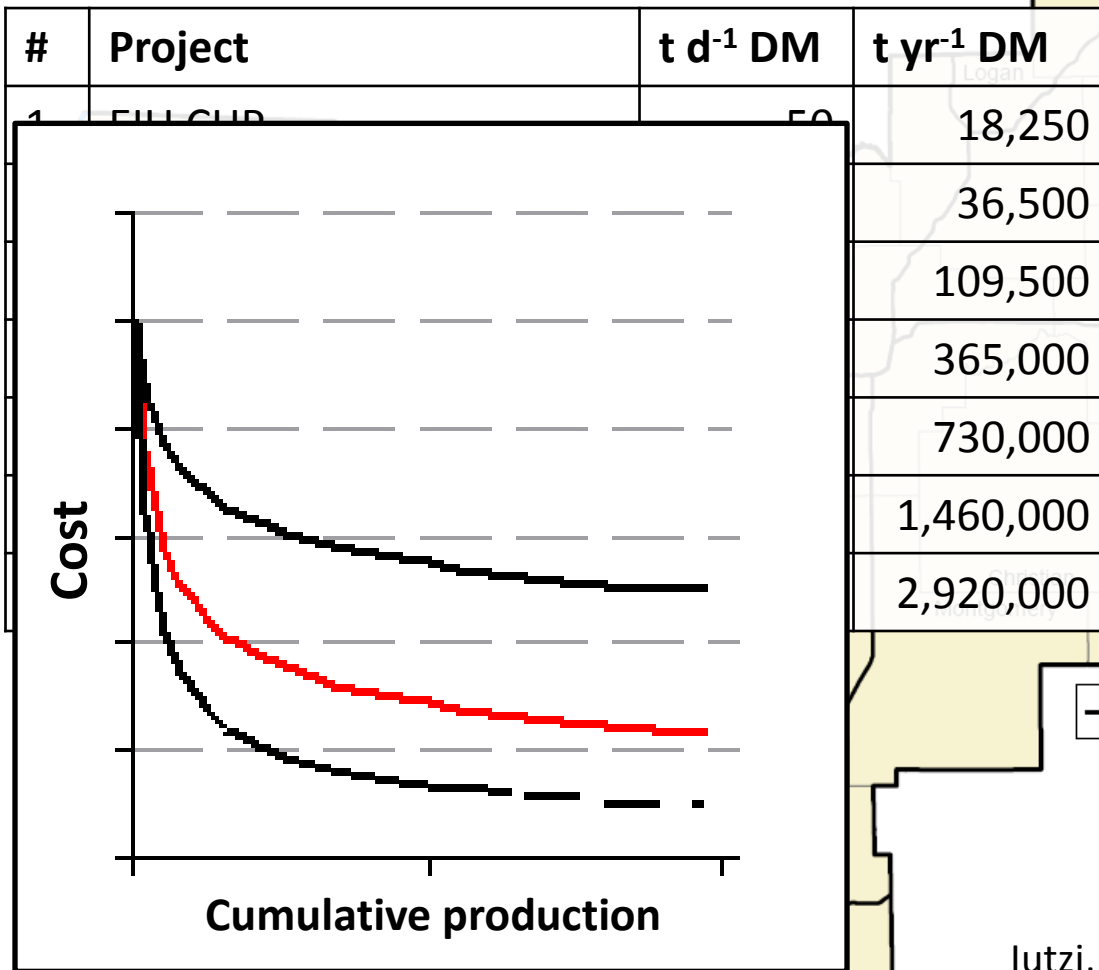
Feedstock cost level & variability



Can small heat or power projects stimulate useful technological learning?



Depending on experience curve, path B may be much cheaper and easier than path A.



0 10 20 40 Miles

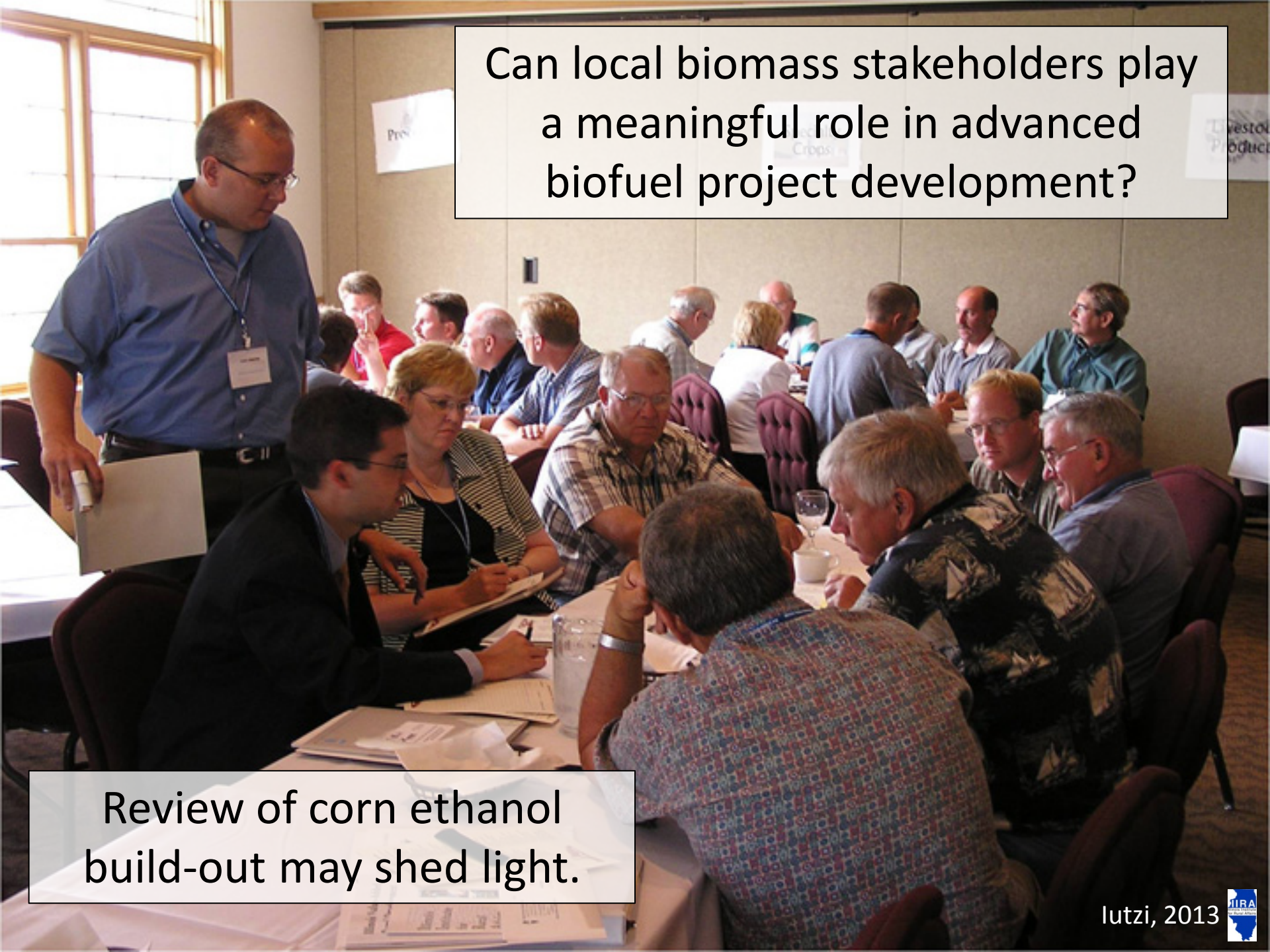
lutzi, 2013

Data Source: USDA, IIRA

Data Current: 2011

by: A. Rupe, GIS Specialist, IIRA

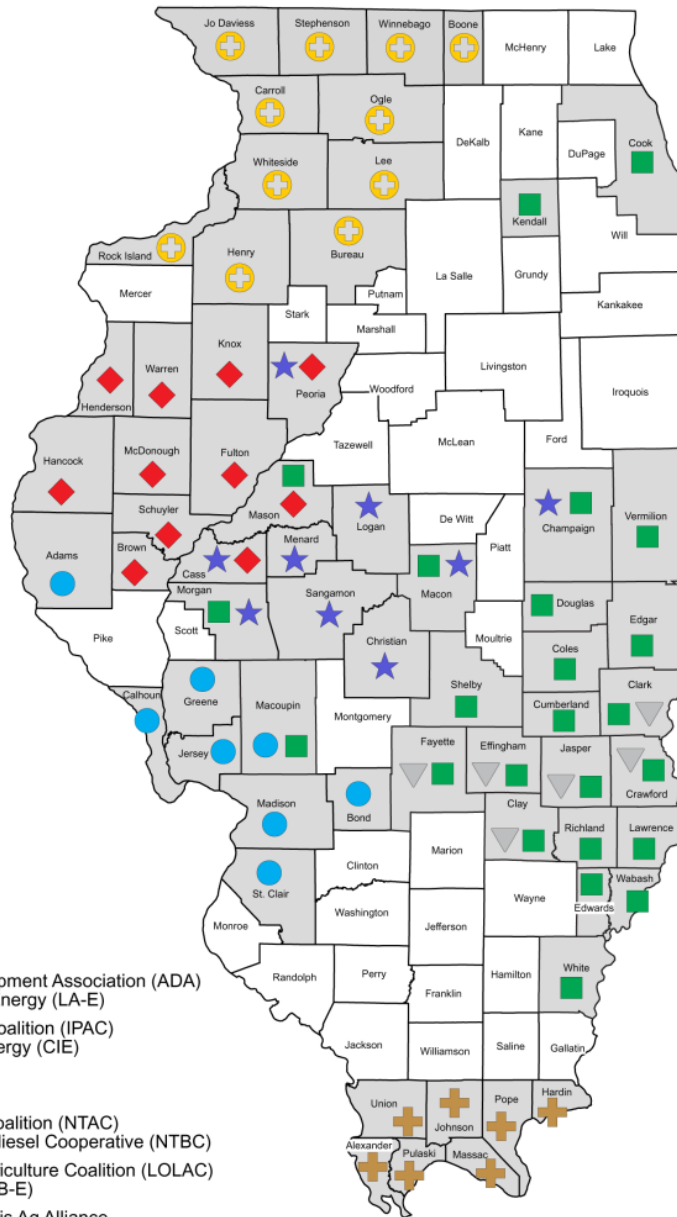


A photograph of a meeting in progress. A man in a blue shirt and glasses stands on the left, holding a whiteboard and addressing a group of people seated at long tables. The room has large windows on the left and a wall with posters in the background. The posters include the words 'Pro', 'Crops', and 'Livestock Products'.

Can local biomass stakeholders play
a meaningful role in advanced
biofuel project development?

Review of corn ethanol
build-out may shed light.

Illinois Value-Added Rural Development Center



What does the Agricultural Community Action Process (ACAP) look like?

START HERE!



Preparation

Meet with local steering committee

Discuss sponsorship, participation, and logistics

Session 1

What do we know?

What are some value-added opportunities we can consider for the area?

Session 2

What do we want to do?

Prioritize desired results and outcomes.

Session 3

How will we accomplish our goals?

Identify specific objectives and organize to achieve short- and long-range goals.

Session 4

Team Meetings

Make it happen!

Individual project teams meet on their own to further specify objectives and tasks..

Session 5

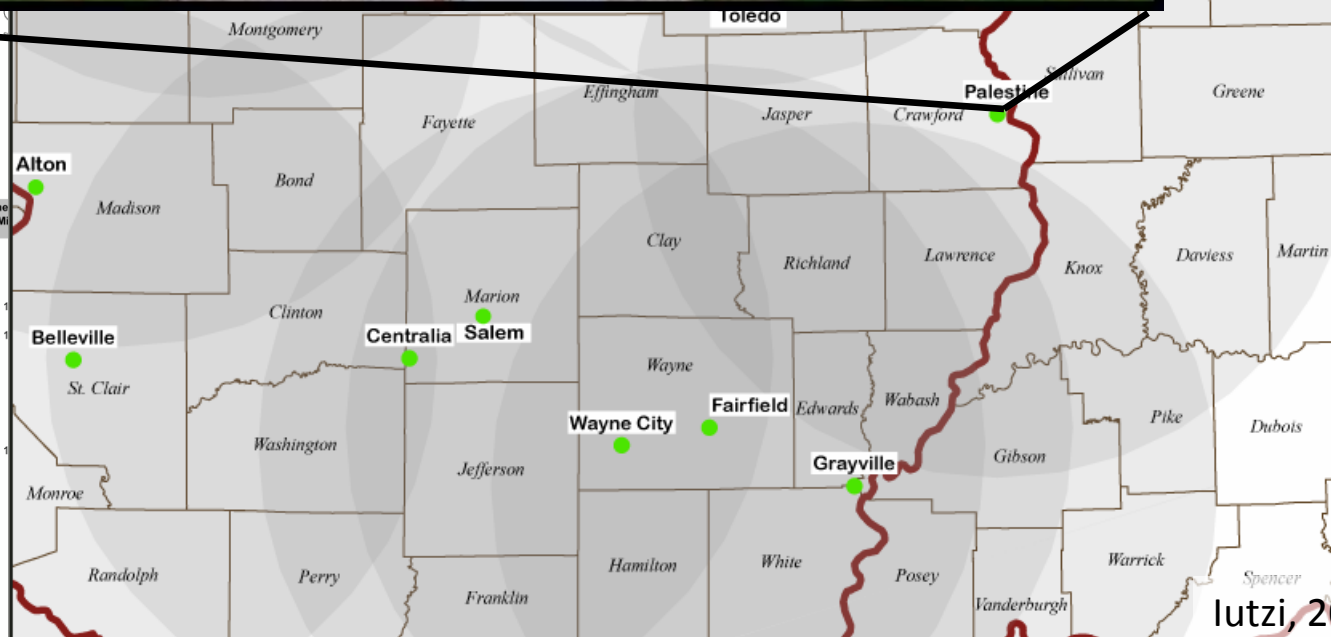
Review and agree on a plan of Action



It's Your Choice!

- Project Implementation
- Benchmarking
- Continuous Improvement

Beyond the Farm Gate—3



Name	Town	Millions of Gallons Per Year	Bushe (M)
A-1 Ethanol+	Paxton	53	
Adkins Energy Cooperative	McConnell	40	
Aventine Renewable Energy, Inc	Pekin	100	
Big River Resources	W. Burlington	40	
Center Oil Co.	St. Louis	40-50	
Central Illinois Ag Coalition	Canton	30	
Chestin Farms	Grayville	40-50	
CSS, Inc	Belleville	40	
Cumberland Economic Development	Toledo	50	
DDS&T	Alton	50	
Douglas County Farm Bureau	Tuscola	40	
Economic Development Agency	Fairfield		
Egyptian Bio-Energy	Murphysboro	20	
Energy Partners LLC	Rushville		
Energy Resources	Camp Point	30-50	
Ethanol Venture Partners, LLC	Sauget	50	
Gordon & Price	Murphysboro	40	
HMH	Hennepin	50	
Illini Bio-Energy	Springfield	40	
Illinois River Energy	Rochelle	50	
Illinois Valley Ethanol	Morris	50	



Map produced by:
the Illinois Institute for Rural Affairs at Western Illinois University
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Revised December, 2005

Iutzi, 2013







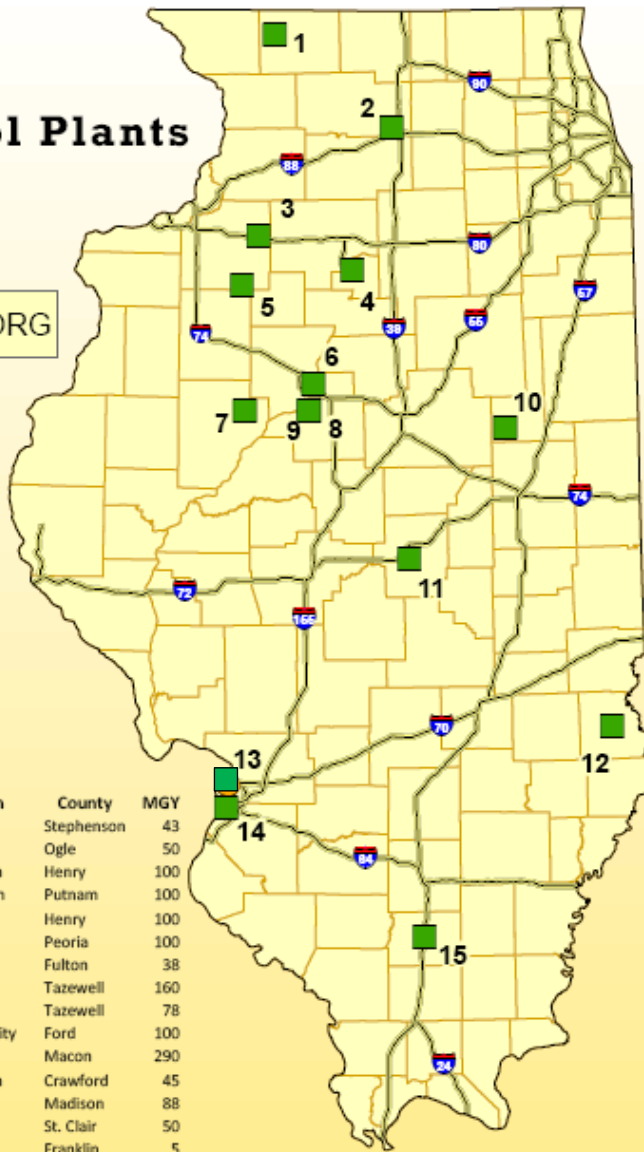
Illinois Ethanol Plants

WWW.VALUE-ADDED.ORG

Construction Status

-  Building
-  Completed

Key	Plant Name	Town	County	MGY
1	Adkins Energy LLC	Lena	Stephenson	43
2	Illinois River Energy LLC	Rochelle	Ogle	50
3	Patriot Renewable Fuels LLC	Annawan	Henry	100
4	Marquis Energy LLC	Hennepin	Putnam	100
5	Big River Resources Galva LLC	Galva	Henry	100
6	Archer Daniels Midland Co.	Peoria	Peoria	100
7	Riverland Biofuels LLC	Canton	Fulton	38
8	Aventine Renewable Energy Inc.	Pekin	Tazewell	160
9	MGP Ingredients Inc.	Pekin	Tazewell	78
10	One Earth Energy	Gibson City	Ford	100
11	Archer Daniels Midland Co.	Decatur	Macon	290
12	Lincolnland Agri-Energy LLC	Robinson	Crawford	45
13	Abengoa Bioenergy	Madison	Madison	88
14	Center Ethanol Co. LLC	Sauget	St. Clair	50
15	Ag Energy Resources Inc.	Benton	Franklin	5



Corn ethanol in Illinois

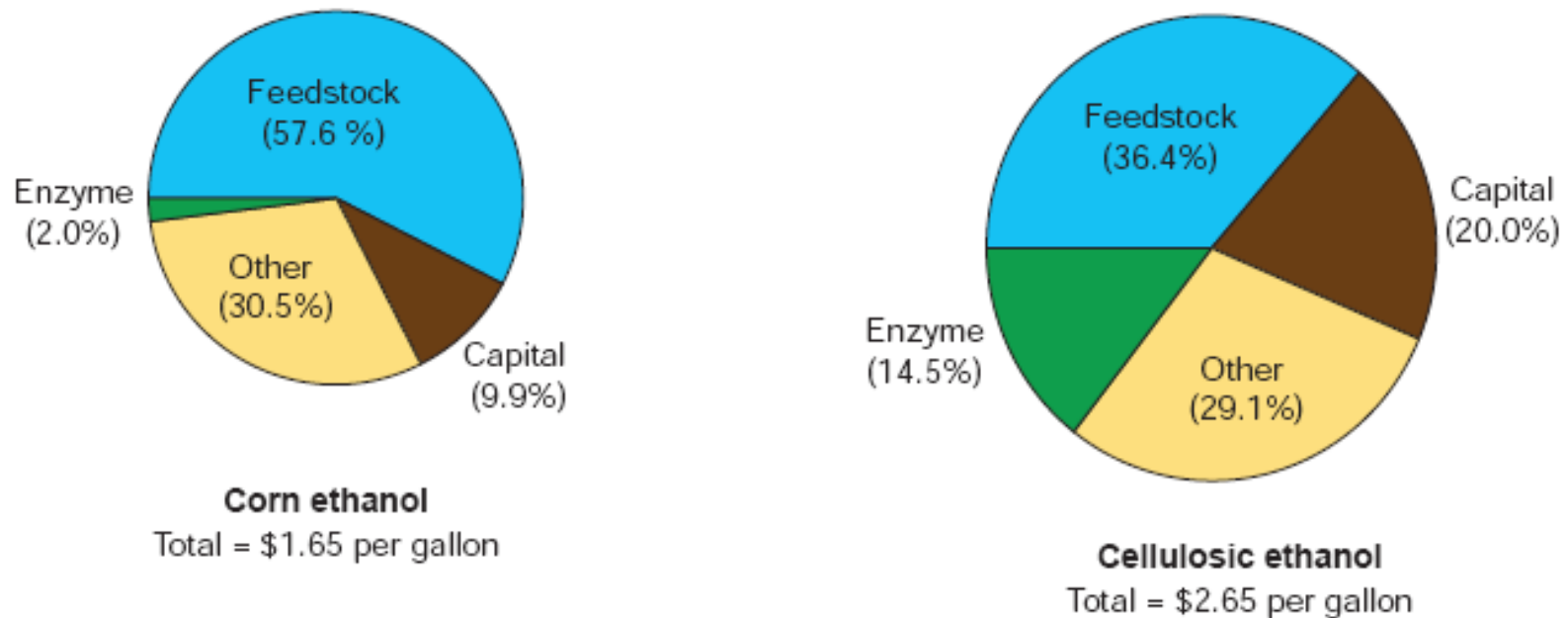
- 15 plants built, 13 operational
- 1,304 MGY installed capacity (390 wet mill + 914 dry grind)
- Most of the dry grind plants had substantial local involvement.

Photo: Illinois River Energy, courtesy ILRFA

Higher capital costs differentiate advanced biofuels from corn ethanol, but....

Figure 5

Comparing corn and cellulosic ethanol production costs



Source: Keith Collins, Chief Economist, USDA. *The New World of Biofuels: Implications for Agriculture*. Presentation at Energy Information Administration (EIA) Energy Outlook, Modeling, and Data Conference, March 28, 2007.

Coyle (USDA), 2010

....smaller initial plant sizes may put the costs in the same ballpark.

Figure 5

Comparing corn and cellulosic ethanol production costs

	Corn	Cellulosic
Production cost, \$ gal ⁻¹ (BNEF, 2013)	\$2.54	\$3.55
Assumed capex	10%	40%
Capex cost per unit, \$ gal ⁻¹	\$0.254	\$1.42
Project size scenario, MGY	100	25
Capex costs, \$ yr ⁻¹	\$25.4M	\$35.5M
Initial outlay, \$ (BNEF, 2013)	\$215M	\$300M

Total = \$1.65 per gallon

Cellulosic ethanol

Total = \$2.65 per gallon

Source: Keith Collins, Chief Economist, USDA. *The New World of Biofuels: Implications for Agriculture*. Presentation at Energy Information Administration (EIA) Energy Outlook, Modeling, and Data Conference, March 28, 2007.



Linking farmers, businesses, researchers, and agencies to accelerate development of a sustainable, profitable biomass energy sector in Illinois.

www.IllinoisBiomass.org

IBWG participation base

- Attendance at IBWG events to date: 514
- Names in IBWG email list: 317



Website

IllinoisBiomass.org

Email list

Contact:

info@illinoisbiomass.org



The Illinois Renewable Energy Conference



July 16, 2014, Normal, IL



July 16, 2014 • Bloomington-Normal, IL

bit.ly/ILREC14



**WESTERN
ILLINOIS
UNIVERSITY**

Illinois Institute for Rural Affairs

Western Illinois University

1 University Circle

Macomb, IL 61455-1390

Tel 309-298-1453 or 800-526-9943

f-iutzi@wiu.edu www.iira.org

Fred Iutzi

Program Manager

Value-Added Sustainable Development Center

