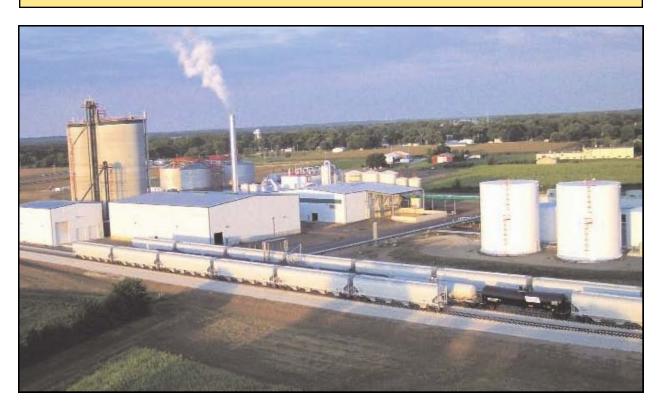


Building a Biofuel Plant in Illinois:

A Guide to Permit Requirements, Funding Opportunities, and Other Considerations



January 2008



TABLE OF CONTENTS

SECTION I. INTRODUCTION	1
SECTION II. ENVIRONMENTAL CONTROLS AND PERMITS	1
Air Pollution Controls and Permits	1
Water Pollution Controls and Permits	2
SECTION III. AVAILABLE STATE RESOURCES	3
Department of Commerce and Economic Opportunity	3
Illinois Department of Transportation	4
Other State Resources	5
State and Federal Policy	6
SECTION IV. SITING CONSIDERATIONS	7
Summary of Site/Location Factors	7
Brownfield Siting Opportunities	7
Using Landfill Gas as Alternative Energy Source	8
APPENDIX A. ILLINOIS MAPS	9
Major Sand and Gravel Aquifers	9
Major Bedrock Aquifers	10
Industrial and Commercial Groundwater Pumpage	11
Community Well Pumpage	12
Illinois Natural Gas Pipelines	13
Illinois Rail Transportation Routes	14
APPENDIX B. FEDERAL, STATE, AND LOCAL PERMIT REQUIREMENTS	15
APPENDIX C. FUNDING OPPORTUNITIES AND BUSINESS INCENTIVES	20
APPENDIX D. BEST PRACTICES FOR BIOFUEL PLANTS	22
APPENDIX E. CONTACT INFORMATION	23

SECTION I. INTRODUCTION

Biofuel's benefits are well documented: it is renewable, reduces dependence on foreign oil, supports the agricultural economy, provides a net reduction in green house gases, and is cleaner-burning for carbon monoxide, particulates, and air toxins, as compared to typical gasoline. Renewable Fuels Standards and various state tax incentives have helped propel the recent rapid growth in biofuel production in Illinois. However, biofuel production from traditional feedstocks is ultimately limited in production potential.

To meet Governor Blagojevich's goal of offsetting 50 percent of Illinois transportation fuel consumption with instate production of biofuel by 2017, both traditional and next-generation technology will be required. Therefore, new plants will need to maximize energy efficiency or produce higher value products. The State of Illinois wants to help companies build new biofuel plants that are both energy efficient and profitable. With this in mind, the Illinois Environmental Protection Agency (Illinois EPA) has developed *Building a Biofuel Plant in Illinois*.

Developers seeking to build biofuel plants are encouraged to seek assistance from engineering and environmental professionals familiar with current best practices and next generation technology for facility design and permitting. Developers are also encouraged to work with various state agencies throughout all stages of project development in order to learn more about permitting issues and business incentives that are available.

SECTION II. ENVIRONMENTAL CONTROLS AND PERMITS

This section focuses on the most common air and water pollution controls and permits that may be required for a biofuel plant in Illinois. Appendix B includes a complete list of air, water, and land permits that may be required to build and operate a biofuel plant. However, for most plants, only a few of these permits will be necessary. In order to enhance energy efficiency while reducing a biofuel plant's "environmental footprint," we encourage companies to use environmental best practices for biofuel plants. A summary of these practices can be found in Appendix D.

Air Pollution Controls and Permits

In general, companies should consider the most effective controls that are available at the time the plant is developed, based on guarantees from the contractors. At a minimum, for the principal process operations, consider the use of an afterburner or combustion-type control system for feed dryers and a high efficiency scrubber(s) for fermentation. Other routine control measures include internal floating roofs for storage tanks and the use of good work practices to minimize dust and abate odors. In addition to pollution control efficiencies, companies should also assess reliability and durability.

Biofuel plants must first get an air pollution construction permit before getting an operating permit. The construction permit establishes, among other things, emission limits for individual pollutants and production limitations, and associated testing and record keeping, reporting, and monitoring. Plants can open with only an approved construction permit, but an operating permit is needed for long-term operation.

Companies must submit a construction permit application that includes, but not limited to, a general description of the proposed plant, emission units and air pollution control equipment, and detailed information on the expected and maximum emissions generated by all emission units, including handling of wet cake, emergency engines, and methanators. Applicants must cite all applicable emissions standards and control requirements that apply, and indicate how emissions will be minimized to prevent an air pollution nuisance such as odors or dust.

After receiving a complete construction permit application, the Illinois EPA has up to 180 days to process the application. A fee is required upon submittal of the application. Expect a fee of between \$15,000 and \$40,000 depending on whether the proposed plant would be considered a major source of emissions. When the Illinois EPA has prepared a draft construction permit, the Illinois EPA will likely need to provide a public comment period with the possibility of a public hearing if one is requested.

"Major" sources of emissions are subject to more stringent and complex air pollution control requirements and the permitting process takes more time than for a non-major source. As a result, new biofuel plants in Illinois are being developed to keep emissions below the emissions thresholds at which a new plant would be considered a major source.

Whether a proposed biofuel plant is considered a major source depends on the amount of different pollutants that it would be permitted for and allowed to emit, and whether the plant would be located in the Greater Chicago or Metro-East St. Louis metropolitan area or outside of these areas. For

emissions of hazardous air pollutants like acetaldehyde, a new plant would be major if permitted for annual emissions of 10 tons or more per year of any individual hazardous air pollutant, or 25 tons or more per year of hazardous air pollutants in total. For emissions of other regulated pollutants a new plant would be major if permitted to emit 250 tons or more of any individual regulated pollutant. In addition if a plant would be located in either the Greater Chicago or Metro-East St. Louis metropolitan area, the major source threshold for emissions of volatile organic material, nitrogen oxides, and particulate matter is more stringent at 100 tons per year for each of these pollutants. In this case, the applicant will be required to install very stringent control measures (i.e., the Lowest Achievable Emission Rate, as determined on a caseby-case basis) and provide emission offsets for each pollutant permitted to be emitted in major amounts.

The construction permit will specify initial emissions testing that must be performed to ensure compliance with the emission limitations established within the permit. This will be required as a precondition for future long-term operation. Only when the emission test verifies that emission limits are met can an operating permit be issued. There are two types of operating permits depending on whether a plant is a "larger source" or a "smaller source." For larger sources, a federal operating permit is required by the Illinois EPA under the Clean Air Act Permit Program (CAAPP). For smaller sources, a state permit is required. A plant is considered a larger source if it is permitted to emit 100 tons or more per year of any regulated pollutant, or is otherwise considered a major source. If a plant is not a larger source, it would be a smaller source. Once Illinois EPA issues the operating permit, a renewal application will not be required for five years, unless a company constructs new equipment or modifies its existing equipment.

To learn how the new biofuel plants would control their emissions, review their air pollution construction permits at www.epa.state.il.us/air/permits/. All necessary air pollution permit application forms are available from the Illinois EPA Web site at www.epa.state.il.us/air/stateforms/. For further information, contact Illinois EPA's Air Pollution Control Permitting program at 217-782-2113.

Water Pollution Controls and Permits

There are two basic wastewater permit programs administered by Illinois EPA that are applicable to wastewater from biofuel plants: the National Pollutant Discharge Elimination System (NPDES) permit and the state Water Pollution Control (WPC) permit program. See Appendix B for these and other applicable permits.

The NPDES permit program regulates discharges to waters of the state (surface waters), and there are three kinds of NPDES permits that may be required for biofuel plants: (i) NPDES Permit for Wastewater Discharges to Surface Waters, (ii) NPDES General Storm Water Permit for Construction Site Activities (for storm water runoff), and (iii) NPDES General Storm Water Permits for Industrial Activity (for storm water runoff).

A NPDES permit for construction site activities must be obtained prior to the start of facility construction. If it is determined that a NPDES permit is required for the discharge of process and/or non-process wastewater, the appropriate application forms should be submitted to Illinois EPA at least 180 days prior to the anticipated discharge date. When Illinois EPA has approved a draft NPDES permit, public notice must be provided, with the possibility of a public hearing if one is requested. The application must include an antidegradation analysis, which states that alternatives and impacts of any proposed discharge must be evaluated. NPDES discharge permits will establish pollutant limitations, monitoring requirements, and special conditions governing discharges from the facility. The duration of NPDES permits cannot be any longer than five years. Individual NPDES permit fees for process and non-process discharges from biofuel plants could range from \$1,000 to \$50,000 with a typical fee being \$10,000 per year based on state-permitted biofuel facilities to date.

Storm water permits have an annual fee of \$500, with the first year's fee due with the initial application. Storm water construction site activity NPDES permits may be obtained by submitting a "Notice of Intent" form to Illinois EPA at least 30 days prior to start of construction and should be terminated at the completion of construction to avoid unnecessary annual fees. You will be notified of your fee prior to the public notice of your NPDES permit.

Storm water permits for industrial activity may be required for biofuel plants if raw materials, finished products (or by-products), or manufacturing processes are exposed to storm water at the site. If none of these materials or processes are exposed to storm water, a "No Exposure Certification" form must be submitted to Illinois EPA so that development of a storm water pollution prevention

plan would not be required. Note that discharges of industrial storm water might be covered under the same permit as discharges of process and non-process wastewater.

The state WPC permit program regulates discharges to Publicly Owned Treatment Plants (POTWs), subsurface discharges, and land application of treated wastewater and solids (sludge). State WPC permit applications for discharges to sanitary sewers or POTWs should be submitted 45 days prior to the anticipated discharge date. A one-time permit fee can range from \$1,000 to \$6,000, depending on whether or not your facility requires pretreatment for toxic pollutants.

A construction permit is also necessary for construction of equipment that reduces pollutant loads either by pretreating discharge before it goes to a POTW, or treating it prior to surface or subsurface discharge. Construction permit applications for equipment that discharges to the subsurface should be submitted 90 days prior to expected discharge date, and require no fee. Construction permit applications for treatment equipment that discharges to surface waters should be submitted at the same time as the NPDES permit application. No fee is required for this permit.

If process wastewater will be discharged from your facility, this wastewater discharge may fall under the "Federal Categorical Standards for Manufactures of Organic Chemicals, Plastics, and Synthetic Fibers." If so, a state WPC permit is required. If process wastewater is recycled back into the process, these regulations will not apply. Other discharges, such as cooling tower or boiler blow down reverse osmosis concentrates, would most likely not be considered process wastewater, but would still require a state WPC permit.

All necessary water permit application forms are available from the Illinois EPA Web site at www.epa.state.il.us/ water/permits/wastewater/index.html. For further information, call Illinois EPA's Division of Water Pollution Control Permit Program at 217-782-0610.

SECTION III. AVAILABLE STATE RESOURCES

<u>Department of Commerce and Economic</u> <u>Opportunity</u>

DCEO manages a number of research, demonstration and grant programs in order to promote and expand the use of biofuel as clean, renewable transportation fuel. Illinois is a leader in biofuel production, and DCEO works with the state's agricultural community to increase demand for and production of biofuel.

Renewable Fuels Research, Development and Demonstration Program (RFDP)

This program provides grants for the construction of new biofuel production facilities in Illinois. The RFDP is designed to:

- enhance the economy of Illinois;
- expand rural economic development;
- create new, permanent jobs in the state;
- provide increased income to Illinois grain farmers; and
- improve air quality by reducing emissions.

A Project Labor Agreement is required to be eligible to receive a grant award. The RFDP provides up to a \$5.5 million incentive for the construction of a new biofuel production facility or for the expansion/modification of an existing facility by at least 30 million gallons per year. The total grant award cannot exceed 10 percent of the total construction costs of the facility, or \$0.10 per gallon of the new production.

Biofuel Planning Grants

DCEO provides planning grants of up to \$25,000 to potential biofuel production facilities for developing business plans, engineering/architectural design plans and studies, permitting costs, or legal fees associated with these plans. A feasibility study is required to be eligible for a grant award.

Demonstration Projects

DCEO has funded a series of demonstrations to develop and test a new ethanol-blended diesel fuel known as "E-diesel" fuel. E-diesel is a blend of #2 diesel fuel, up to 15 percent ethanol, and a special blending additive package that significantly reduces black smoke emissions from diesel engines. Laboratory and field testing is currently underway with John Deere and Co. to thoroughly test and evaluate the use of this fuel in diesel engines and equipment. The current market for diesel fuel in this country is over 50 billion gallons per year, and the commercialization of E-diesel could help reduce our dependence on foreign oil as well as reduce harmful diesel exhaust emissions.

DCEO and the U.S. Department of Energy cofunded the development of a ethanol-powered fuel cell through a joint project with Caterpillar, Aventine Renewable Energy, Inc., and Nuvera Fuel Cells. The fuel cell developed under this project provided electrical power for the Aventine Renewable Energy Visitor's Center in Pekin.

Research

DCEO sponsors the research and development of new and innovative technologies to help reduce biofuel production costs, and to develop new value-added products. DCEO helped fund the National Ethanol Research Pilot Plant at Southern Illinois University-Edwardsville. The pilot plant, which produces ethanol, also leases space and time to private companies and academia for technological testing.

<u>Illinois Department of Transportation</u> (IDOT)

Transportation infrastructure is a major siting factor for prospective biofuel plant builders. Normal modes of transportation for a biofuel plant's products and by-products include road, rail, and water. In many cases the transportation infrastructure of a proposed site needs upgraded. IDOT has several programs that meet this need.

Economic Development Program (EDP)

The EDP is a reimbursement program designed to provide up to 50 percent state matching funds for eligible local agency roadway-related construction and engineering to improve highway access to new or expanding industrial distribution or tourism developments. The EDP targets those projects that will expand the state's existing job base or create new employment opportunities.

Priority considerations include:

- need for the highway improvement and time of development;
- compatibility of the proposed roadway with the design of the existing roadway system;
- primary jobs created or retained in Illinois and total developer site cost estimate;
- commitment of the industrial and distribution development to the site to be served by facility;
 and
- willingness of the sponsoring local government to participate in the local share of the improvement cost.

Matching funds may be comprised of the local jurisdiction's motor fuel tax allocation, local road and bridge tax funds, or other local revenues. In some cases, local acceptance of the jurisdictional transfer of a state-owned unmarked highway may be used as in-kind payment toward the local share of the total project cost. Truck Access Route Program

funds can also be applied towards the local matching funds. Local matching funds cannot include grant funds received from other state agencies. This basic funding arrangement may be altered on a case-by-case basis for projects involving improvements to roads under state jurisdiction.

Projects must be constructed to motor fuel tax standards and must have a local government sponsor (a county, municipality, township, or other taxing body). If selected for funding, a joint local-state agreement must be executed to serve as the basis of understanding for financial responsibilities.

Examples of ineligible items include:

- land acquisition,
- building demolition,
- landscaping or sidewalks,
- street lighting, and
- utility adjustments.

Information required to apply for EDP funds includes:

- name of company, type of product, and total company site investment;
- location (include a map showing the location of the site) and general description of improvement;
- estimate of the number of primary jobs created and/or retained;
- anticipated opening date for the company;
- letter of commitment from the company to expand or locate;
- engineer's cost estimate for the improvement;
- extent of local participation and source of local matching funds; and
- completed Employment Reporting Form.

An economic development pre-application form entitled "Notification of Intent to Apply for Economic Development Funds" is available on-line at www.dot.il.gov/edpapp.pdf. However, the pre-application form is being utilized as an initial notification for your project. IDOT will require additional information before EDP funds can be committed

The local sponsor should apply for funding as soon as possible after the project site and an appropriate range of access needs are identified. Notification to IDOT's Bureau of Statewide Program Planning will trigger a site evaluation process, which must occur before review of the funding application can begin. An application can be submitted before all of the details of firm cost estimates and local participation have been finalized. This advance effort can help to

expedite final review and disposition of the application.

Two copies of each submittal should be forwarded to IDOT, Bureau of Statewide Program Planning, EDP, 2300 South Dirksen Parkway, Room 307, Springfield, Illinois, 62764. An additional copy should be forwarded to the local district IDOT office. General questions concerning the EDP can also be directed to 1-800-493-3434.

Truck Access Route Program (TARP)

The purpose of TARP is to help local governments upgrade roads to accommodate 80,000-pound trucks. These routes provide access to points of loading and unloading, and access to facilities for food, fuel, truck repair, and driver rest. Projects must connect to a truck route and end at another truck route or truck generator. IDOT will provide up to \$30,000 per lane mile and \$15,000 per intersection. The state participation will not exceed 50 percent of the total construction cost or \$600,000, whichever is less. Every fall IDOT solicits local projects that can be constructed during the upcoming fiscal year. Inquires and requests for assistance may be addressed at the local county IDOT district engineer's office.

Information needed for application includes:

- general description of the project and map showing project site and connections to existing truck routes;
- total mileage, including lane miles and number of intersections;
- description of truck generators and number of trucks per day;
- total cost of the project along with the local funding share; and
- anticipated letting date.

For additional information on this program, contact IDOT's Truck Access Route Program at 217-782-3805 or www.dot.state.il.us/tarp.html.

Rail Freight Program (RFP)

The purpose of the RFP is to provide capital assistance to communities, railroads, and shippers to preserve and improve rail freight service in Illinois. IDOT will generally provide low interest loans to finance rail improvements and, in some cases, provide grants. The focus is on projects with the greatest potential for improving access to markets and maintaining transportation cost savings, and where state participation will leverage private investment to foster permanent solutions to rail service problems. A benefit/cost ratio is used to

evaluate rail freight projects.

Information needed to request RFP funds includes:

- general description of the project and a location map depicting the beginning and ending points;
- benefits expected from the project (e.g., job creation/retention, transportation savings);
- name of the industries involved, and principal contact information; and
- engineer's cost estimate, if available.

For more information on the program contact IDOT's Bureau of Railroads at 217-782-2835 or www.dot.state.il.us/rfp.html.

Other State Resources

Illinois Commerce Commission (ICC)

If there is a railroad crossing within the limits of the proposed access improvement, additional funding may be available from the ICC's Grade Crossing Protection fund. For more information on this program, please contact the ICC's Manager of Railroad Safety at 217-782-7660.

Illinois Finance Authority

The Illinois Finance Authority (IFA) is a self-financed, state authority principally engaged in issuing taxable and tax-exempt bonds, making loans, and investing capital for businesses, non-profit corporations, agriculture, and local government units statewide. IFA's mission is "to foster economic development to public and private institutions that create and retain jobs and improve the quality of life in Illinois by providing access to capital."

One of IFA's most important tools for encouraging economic development is the issuance of municipal bonds. Interest earned on these bonds is exempt from federal income tax. Borrowers using municipal bonds have realized interest rate savings that encourage economic development by dramatically reducing interest expense and improving returns to investors.

Eligibility for tax-exempt financing is primarily determined by guidelines established by the IRS. While the IRS significantly limits opportunities to finance privately owned and operated projects with municipal bonds, it does permit the use of Solid Waste Disposal Facilities Revenue Bonds.

These bonds are used to finance privately owned and operated facilities that collect, store, treat, transport, utilize, process, or provide for the final disposal of solid waste. Developers of a number of biofuel plants have recently used these bonds to finance

facilities that process distiller's grains in addition to other qualifying costs.

Arranging financing for biofuel plants, particularly those with no operating history, is a very time consuming, costly, and uncertain process that is subject to fluctuating investor and lender perceptions of industry economics, funding availability and appetite for risk.

A complete application must be submitted to initiate a request for IFA financing. Applicants are required to certify to the project's ongoing compliance with the Prevailing Wage Act. In addition to other requirements, a feasibility study from a recognized consultant will be required prior to issuance of the bonds.

For additional information on these bonds contact Illinois Finance Authority at 312-651-1331 or www.il-fa.com.

National Corn-To-Ethanol Research Center (NCERC)

The NCERC is a not-for-profit research center focused on the validation of near term technologies for enhancing the economics and sustainability of renewable fuel production. Alternate use of the facility for bioprocessing scale up or validation is also possible. The NCERC:

- conducts work for industrial or institutional clients under confidentiality agreement on a fee -for-service basis;
- conducts its own research in areas of unmet need by leading or participating in collaborative grant funded research;
- provides education and information to the public on the importance of renewable fuels;
- provides training opportunities to those interested in a career in the industry.

This small-scale facility has all of the unit operations and laboratory capabilities of a commercial facility, making the facility ideal for validating commercial concepts, improving biofuel production, generating co-products for feeding trials or process streams for further development, toll use of individual or collective unit operations for other bioprocessing needs, and developing laboratory methods or analytical services. For more information visit www.ethanolresearch.com/.

Illinois Ethanol Pre-feasibility Evaluator

Illinois is committed to helping interested parties learn more about the possibilities of producing ethanol. On behalf of the Illinois Corn Growers Association, USDA Rural Development, and DCEO, a Web site was designed to enable visitors to explore in limited detail the dynamics of the ethanol

business. The Web site, www.iletohprefeas.com, provides an introduction to the business issues surrounding ethanol production. Its aim is to inform interested individuals and groups about the potential of building ethanol plants.

Market conditions, grain supply and prices, transportation choices, environmental issues, energy costs, federal and state incentives, and funding alternatives are some of the many variables which must be understood and managed prior to embarking upon an ethanol venture. This Web site can aid in understanding how these economic factors operate in successful, and less successful combinations, with an in-depth analysis of specific opportunities.

State and Federal Policy

Illinois is the leading producer of soybeans and the second leading producer of corn in the U.S., agricultural commodities used in the production of renewable fuels such as E-85 and biodiesel. Governor Blagojevich by Executive Order Number 7 (2004) instituted the use of E-85 and biodiesel-blend fuels in flexible fuel vehicles and diesel powered vehicles in the State of Illinois fleet.

The Illinois Department of Central Management Services was directed to investigate ways to strengthen the infrastructure for increasing the availability of B2 and E-85 for the state's flexible fuel fleet. In addition, DCEO was directed to develop a plan designed to facilitate usage of E-85 and B2 in the state's flexible fuels vehicle fleet, and actively pursue the establishment of additional E-85 and biodiesel refueling facilities at public retail outlets

The Illinois Renewable Fuels Development Program Act (P.A. 93-15) charged DCEO to develop the Illinois Renewable Fuels Development Program to assist in the construction, modification, alteration, or retrofitting of renewable fuel plants in Illinois. This program will increase the cost competitiveness of E-85 and biodiesel blends for the people of Illinois.

The federal Energy Independence and Security Act of 2007 ushered in a new era in the way America produces and uses energy. The Act requires the adoption of new technologies as well as the continued investment in renewable energy industries with a proven record in helping to mitigate global climate change and reduce dependence on foreign oil. This law will ensure that the renewable fuels industry continues to prosper. By requiring that nearly 60 percent of the new Renewable Fuels Standard be met by advanced biofuels, Congress has provided the necessary assurance for producers and investors that a market for their products will exist.

SECTION IV. SITING CONSIDERATIONS

Summary of Site/Location Factors

Listed below is a summary of the many factors that should be considered when choosing a biofuel plant location.

Feedstock

- historic prices of feedstock
- competition for feedstock from other businesses
- sufficient feedstock availability or easy acceptance and handling of unit trains proximity of feedstock to plant
- seasonality of the feedstock
- storability
- regional collection and delivery to plant

Water

- city water (contracts can be expensive)
- well water (actual availability and water quality must be thoroughly investigated)
- river water (for non-contact cooling)
- water quality (mineral content)
- adequate wastewater disposal options

Energy

- proximity to energy source (natural gas, coal, other)
- low utility rates
- availability of good long term contracts
- access to technological established alternative energy sources (e.g., geothermal, lignin from cellulose conversion, landfill gases)
- locate so plant can act as a steam host to other industrial facilities

Transportation

- access to rail for larger biofuel plants close proximity to "mainline" of rail systems
- access to good roads and interstate
- minimal seasonal road restrictions
- ability to generate back-hauls for truckers
- track siding (away from the main building for biofuel loading)
- railcar switching performed by rail service provider or by plant

Market Access – Biofuel

- geographical market potential (e.g., RFG areas, non-attainment areas, oxygenated mandate areas, major and secondary metropolitan areas)
- proximity to gasoline blending terminals
- adequate trucking/rail/barge services

Market Access - Co-products

- wet market versus dry market for distillers grains
- proximity to cattle/dairy/poultry feeding areas for dry-mill co products
- potential for carbon dioxide market or proximity to processor

Site Size

- ample room for future capacity expansion
- provisions for future co product systems (e.g., aquaculture, hydroponics)
- adequate space for truck and rail traffic to move with ease
- adequate space for feedstock storage
- space for water treatment facility if required
- space for run-off lagoon, if required, on the plant property
- proper biofuel and denaturant storage facilities with adequate storage volumes
- ample space for efficient biofuel and coproduct loading facilities

Proximity to Residential Areas

The closer a site is to residential areas and schools, the more likely it is to face local opposition.

Brownfield Siting Opportunities for Biofuel Plants

Brownfields are abandoned or under-used industrial and commercial properties with actual or perceived contamination and an active potential for redevelopment. Illinois EPA manages the brownfields grant and loan programs and offers technical support to communities through the services of its brownfields representatives. Brownfields representatives work directly with communities to explain cleanup options, regulatory programs and requirements and guide municipalities through the municipal brownfields cleanup and redevelopment process.

A number of brownfields sites in Illinois may be well suited for a biofuel plant as they offer significant acreage along with rail and highway access. Some of these sites include:

Site Location: Silvis

County: Rock Island

Contact: Mayor, 309-792-4804

Description: This 133-acre site has received a "No Further Remediation" (NFR) letter from the Illinois EPA. It has rail lines on site and has major roadway

access close by.

Site Location: Carbon Cliff

County: Rock Island

Contact: Village Clerk, 309-792-8235

Description: This 250-acre site is close to receiving NFR letter. It has rail lines on site and has major

roadway access close by.

Site Location: Sterling

County: Whiteside

Contact: City Administrator, 815-632-6621 Description: This 730-acre site was the former location of Northwestern Steel & Wire. One-half of the acreage has been parceled out. The site has direct rail service. Its most recent redevelopment is a one million bushel grain facility.

Site Location: Rantoul

County: Champaign

Contact: Community Development Director, 217

-893-1661, ext. 2224

Description: This 2,100-acre site was the former location of Chanute Air Force Base. FSRS is still working on the site. There is a rail spur on site and

it has access from Interstate 57.

Site Location: Savanna Area

County: Carroll

Contact: Exec. Director Jo-Carroll Local Redevelopment Authority, 815-273-4371,

www.lrasavanna.com.

Description: This 2,930-acre site was the former location of Savanna Army Depot. It is on the Mississippi River and has rail access (twin line of Union Pacific).

Site Location: Dixon/Amboy Area

County: Lee

Contact: First Industrial Corp., 815-284-3375 Description: This 130-acre site was the former location of the Green River Ordinance Plant. It lies

in close proximity to Interstate 88.

Site Location: Pana

County: Christian

Contact: Illinois EPA Project Manager,

217-558-6046

Description: This 93-acre site is an old petroleum refinery. It is located on Route 51 just south of

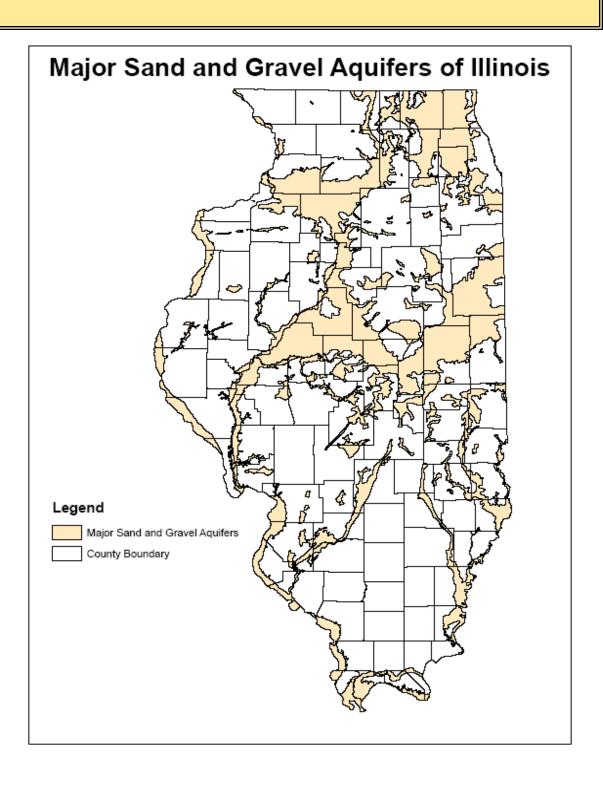
Pana.

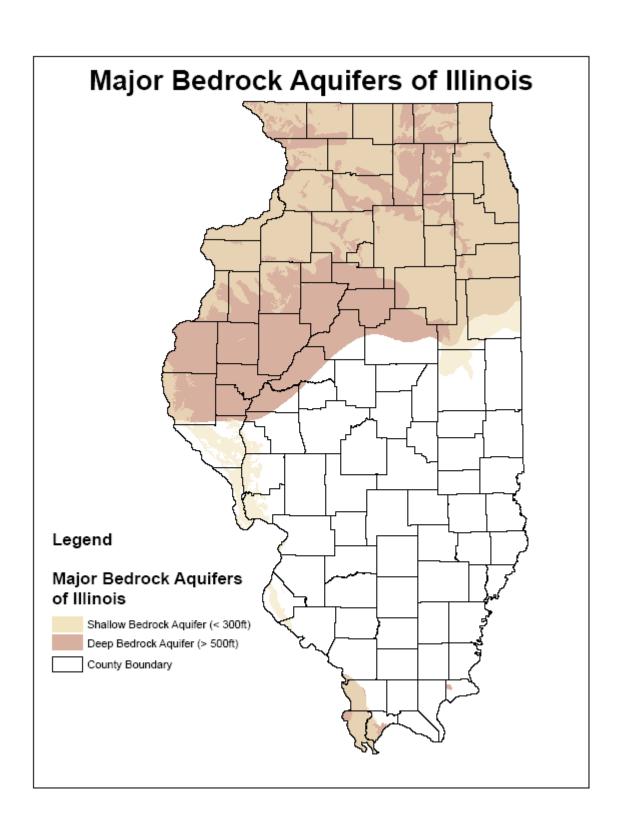
Using Landfill Gas as an Alternative Energy Source

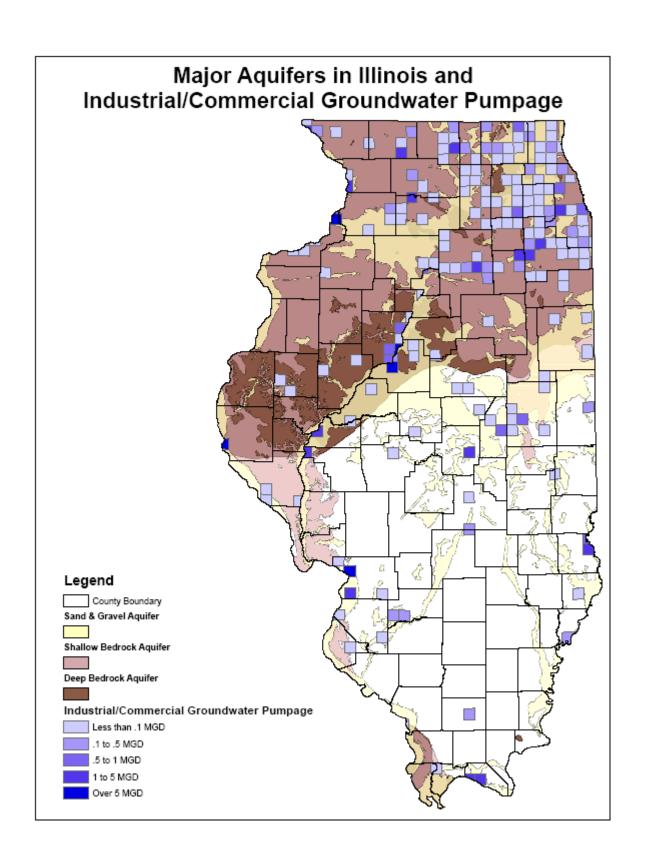
Companies may want to explore the potential for using methane gas from landfills as an alternative energy source. The landfills listed below currently capture methane.

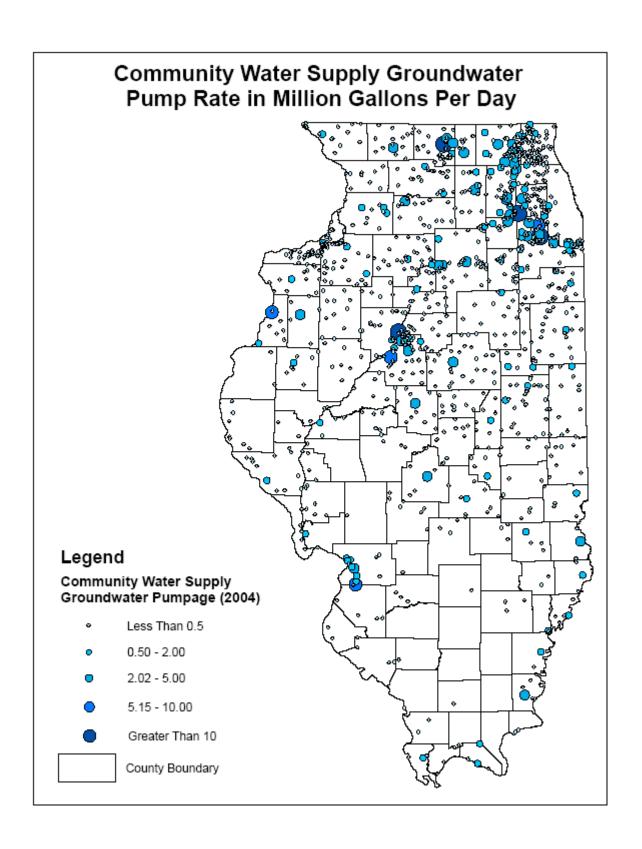
Municipality	Landfill
Greenville	D & L Landfill
Taylorville	Five Oaks (Waste Management of IL)
Clinton	Clinton Landfill
Effingham	Landfill 33 Ltd.
Morris	Environtech Allied
Iroquois County	K & H Mod #7
Wataga	Knox County Landfill # 3
Ottawa	SLIC # 2
Bloomington	McLean County Landfill
Decatur	Macon County Landfill
Granite City	Chain of Rocks – North
Litchfield/Hillsboro	American Disposal
Baylis	Pike County Landfill
East Moline	Upper Rock Island County Landfill
Granite City	Chain of Rocks – South
Harrisburg	Saline County Landfill

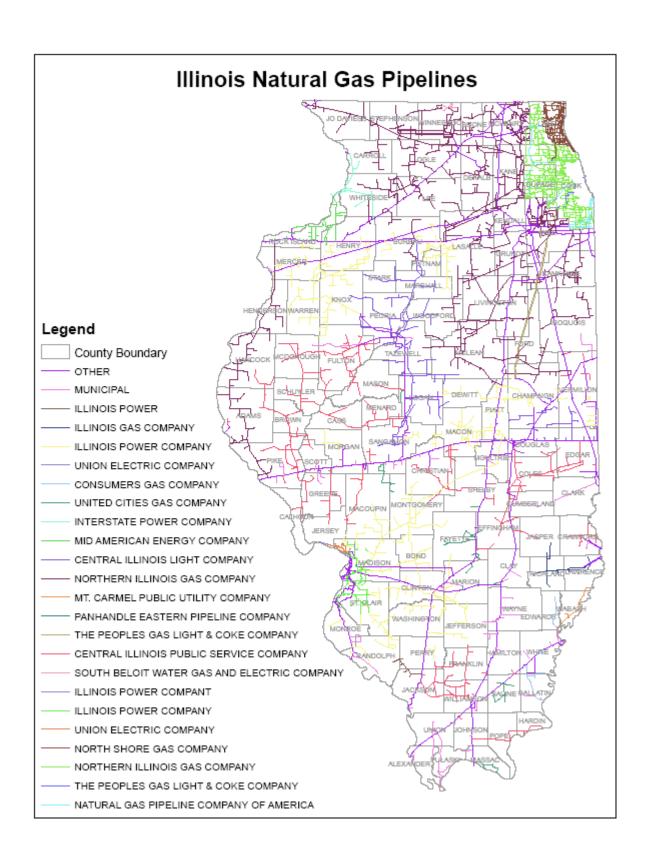
APPENDIX A. ILLINOIS MAPS

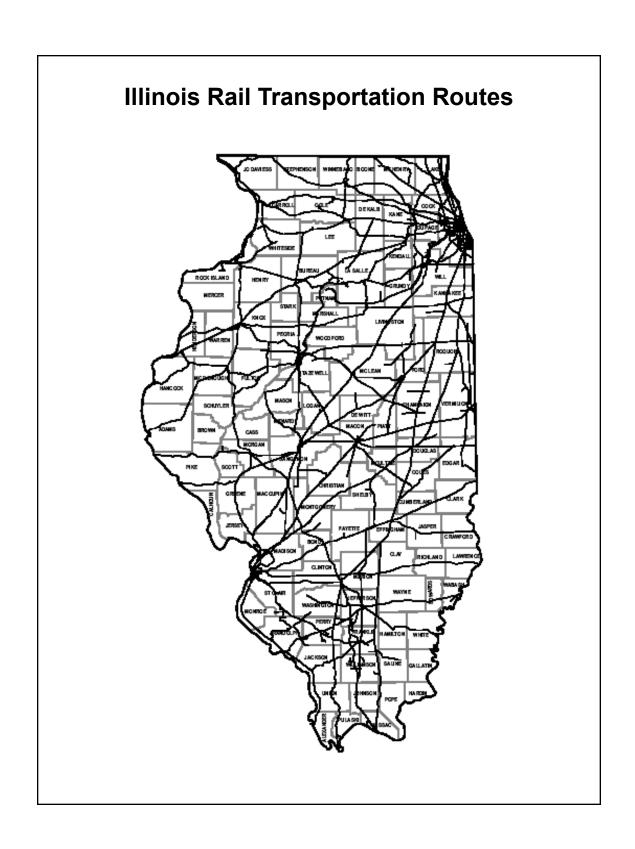












APPENDIX B. FEDERAL, STATE, AND LOCAL PERMIT REQUIREMENTS

Air Permits and Approvals			
Name and Description	Required Information	Contact	
Construction Permit/PSD Approval A comprehensive air quality construction permit for new major sources of emissions or a major modification of existing sources, which is required before beginning construction. It implements the federal permit required by the Prevention of Significant Deterioration (PSD) rules (40 CFR 52.21).	 Process and operating data Air pollution emissions and control equipment data Process flow diagrams Evaluation of applicable regulatory requirements Locations and dimensions of principle structures Air quality impact modeling Detailed BACT/LAER ¹/MACT demonstration Identification of emission offsets Compliance plan for ERMS ² 	Illinois EPA Bureau of Air 1021 N. Grand Ave. East P.O. Box 19276 Springfield, IL 62694-9506 Ph: 217-782-2113 www.epa.state.il.us/air/	
Construction Permit w/out PSD Approval Construction of minor sources of emissions or a minor project at a major source; required before beginning construction	 Process and operating data Air pollution emissions and control equipment data Evaluation of applicable regulatory requirements Compliance monitoring provisions Compliance certification 		
Federal Operating Permit (CAAPP Permit) Operating permit pursuant to Clean Air Act Permit Program (CAAPP); Title V Permit for larger sources; required for continuing operation following the period of initial operation allowed by a Construction Permit/PSD Approval	 Process and operating data Air pollution emissions and control equipment data Evaluation of applicable regulatory requirements Description of plot plan/ process flow drawings 		
State Air Operating Permit Operation of smaller sources of emissions; not applicable if a source needs a CAAPP permit	Information confirming compliance as established by construction permit(s)		
Acid Rain Notification Designation by the source of a Designated Representative and alternative for the federal Acid Rain Program; required to be submitted concurrent with Acid Rain Permit Application (40 CFR Part 72)	 Contact information Plaint information DOE IROS number for plant 		

Application (40 CFR Part 72)

Applicable in ozone nonattainment area for a proposed source that would be major for VOM or NOx emission

² Applicable in Chicago ozone nonattainment area for major VOM source

Air Permits and Approvals (continued)			
Name and Description	Required Information	Contact	
Acid Rain Permit Operating permit pursuant to Clean Air Act Title IV, for an affected source; submittal required 2 years before starting operation (or permit must be issued prior to start of operation); permit can be applied for and processed at the same time as a Construction Permit/PSD Approval	 Completed Acid Rain Notification NOx and SO2 compliance plan 	Illinois EPA Bureau of Air 1021 N. Grand Ave. East P.O. Box 19276 Springfield, IL 62694-9506 Ph: 217-782-2113 www.epa.state.il.us/air/	
Budget Permit Operating permit pursuant to the regional NOx Trading Program; permit can be applied for and processed at the same time as a Construction Permit/PSD Approval	 Completed Account Certificate of Representation Identification of affected units 		
Certification of Continuous Emission Monitoring System (CEMS) Approval on installation of SO2 and NOx CEMS and in compliance with Acid Rain Emission Monitoring requirements (40 CFR Part 75)	 Relative accuracy and bias test Calibration error test Cycle response time test Linearity test 		
Qualifying Facility Certification Cogeneration facilities; Form 556; necessary for rating benefits to sell power at wholesale	Self-certification should be based on a determination if facility qualifies	Federal Energy Regulatory Commission 888 First St. N.E. Washington, DC 20585 Ph: 202-208-2168 www.fe.doe.gov/programs_coalpwr	
Risk Management Plan Plan must be submitted to U.S. EPA and found complete prior to storage or use of hazardous air pollutants (such as ammonia); in quantities greater than threshold amounts (40 CFR Part 68)	Chemical inventory including maximum storage capacity	First Contact: Illinois EPA U.S. EPA CEPPO Risk Management Plan Reporting Center P.O. Box 3346 Merrifield, VA 22116-9280 www.epa/gpv/ceppo	
	Water Permits and Approvals		
Name and Description	Required Information	Contact	
National Pollutant Discharge Elimination System (NPDES) Permit Provides permit coverage for wastewater discharges to waters of the nation; federal Clean Water Act (CWA) Section 402	 Water balance diagram Expected wastewater flow and characteristics Water pollution control equipment and systems 	Illinois EPA Bureau of Water Div. of Water Pollution Control 1021 N. Grand Ave. East P.O. Box 19276 Springfield, IL 62694-9276 Ph: 271-782-3362 www.epa.state.il.us/water	

Water Permits and Approvals (continued)			
Name and Description	Required Information	Contact	
NPDES Storm Water General Permit/Construction Site Provides permit coverage for storm water runoff from construction areas; required before construction.	Storm Water Pollution Prevention Plan, including: • Site description • Pollution and erosion control measures • Maintenance procedures	Illinois EPA Bureau of Water Div. of Water Pollution Control 1021 N. Grand Ave. East P.O. Box 19276 Springfield, IL 62694-9276 Ph: 271-782-3362 www.epa.state.il.us/water	
NPDES Storm Water General Permit/Industrial Site Provides permit coverage for industrial storm water runoff from the site. This permit is required prior to operation.	Storm Water Pollution Prevention Plan, including: • Site description • Pollution and erosion control measures • Maintenance procedures		
Sewer Connection Permits Construction and operation of connection to public sewer system; required prior to construction	Design drawing of sewer connection Description of wastewater and treatment equipment		
Wastewater Facility Construction Approval Construction of wastewater treatment equipment (oil separators, etc.); required prior to construction	Design information Expected raw and treated wastewater characteristics		
Water Quality Certificate Triggered by application for U.S. Army Corps of Engineers Construction Permit (Section 404 only); Section 401 of CWA	 Design drawings for facility Description of overall project Delineation of wetland areas EIS would require information on existing environment, expected impacts, and alternatives 	Illinois EPA Bureau of Water Watershed Management 1021 N. Grand Ave. East P.O. Box 19276 Springfield, IL 62694-9276 Ph: 271-782-3362 www.epa.state.il.us/water	
Water Supply Connection Permits Construction and operation of connection to public water supply; two permits – one required prior to construction, another for operation of system; permits typically issued to municipal water supplier, but obtained by the project developer	 Design drawings of water connection Description of water use plans 	Illinois EPA Bureau of Water Div. of Public Water Supply 1021 N. Grand Ave. East P.O. Box 19276 Springfield, IL 62694-9276 Ph: 271-782-9470 www.epa.state.il.us/water	

Water Permits and Approvals (continued)			
Name and Description	Required Information	Contact	
Septic Permit Construction and operation of a septic system; required prior to construction	Design drawings of septic system [Note: Illinois EPA issues permits for septic systems > 15,000 gallons/day, serving more than one building, and/ or containing non-domestic wastewater.]	Local County Public Health Department	
Well Water Withdrawal Permit Installation of new groundwater wells used for non-public drinking water system; required prior to construction	 Design drawings for wells Plans for disinfections and sampling 		
Wetland Review Requires that all projects receiving state support shall meet the state goal of no overall net loss of the state's existing wetland acres. Projects shall be submitted to the IDNR for a wetland impact assessment; Illinois Wetland Policy Act of 1989 (20 ILCS 830)	 Name and address of the supporting agency Project design plans Wetland delineation of the project areas as prescribed by the COE 1987 Manual 	Illinois Dept. of Natural Resources Div. of Resource Review and Coordination One Natural Resources Way Springfield, IL 62702-1271 Ph: 217-785-5500 www.dnr.state.il.us/orep/nrrc	
State Endangered Species/Natural Areas Consultation State agencies and local governments which authorize, fund, or perform actions altering environmental conditions must consult Illinois Dept. of DNR and use their authority to avoid or minimize adverse impacts	Map and legal description of location Project conceptual or design plans		
Well Installation Permit Installation of new groundwater wells used for non-public drinking water system; required before construction	 Design drawings of water connections Plans for disinfections and sampling 	Illinois Department of Public Health 525 W. Jefferson Springfield, IL 62762 Ph: 217-782-5830 www.idph.state.il.us	
Nationwide Permits Construction of specified types of structures (e.g. intake/discharge structures) in lakes, streams, wetlands; (33 CFR 330)	 Design drawings for structures and shoreline protection Description of overall project 	U.S. Army Corps of Engineers St. Louis District Attn: CEMVS-CO-F 1222 Spruce Street St. Louis, MO 63103-2833 Ph: 314-331-8185 www.mvs.usace.army.mil	
Federal Endangered Species Consultation Issuance of COE Construction permit if it has potential effects to federally listed species or critical habitat; Section 10 (Exceptions) of the Endangered Species Act	Detailed biological assessment of potential impacts	U.S. Fish and Wildlife Service Ecological Services Operations Bishop Henry Federal Bldg. One Federal Drive Ft. Snelling, MN 55111-4056 Ph: 612-713-5308 www.nfwf.org	

Name and Description	Required Information	Contact
Conditional Use Permit/Zoning Construction of a facility not specifically allowed by local zoning ordinances; required prior to construction	Description of projectSite development plans	Local County Board
Local Road Construction Permit Construction of access road connection to a local road; required before construction	 Design drawings for highway connection Traffic control plans 	Local County or Township Highway Department
Building/Occupancy Permits Construction of plant buildings; required prior to construction	Building design plans	Local County Building Commissioner
Storage Tank Construction Construction of above ground oil storage tanks; required before construction	Design drawings for storage tanks	Illinois State Fire Marshal Fire Prevention Division 100 W. Randolph Street Suite 11-800 Chicago, IL 60601 Ph: 312-814-2693 www.state.il.us/osfm
Highway Alteration Permit Construction of access road connection to a state highway; required before construction	 Design drawings for highway connection Traffic control plans 	Illinois Department of Transportation 2300 S. Dirksen Parkway Springfield, IL 62764-0002 Ph: 217-782-7526 www.dot.state.il.us
Determination of Obstruction Hazard Construction of tall structures; required if facility structures higher than 200 feet or located less than 20,000 feet from airport	• Locations and dimensions of stacks and other tall structures Submit FAA Form 7460-I to: FAA-Great Lakes Regional Office Air Traffic Division, AGL-520 2300 E Devon Ave. Des Plaines, IL 60018 Ph: 847-294-7568	Illinois Department of Transportation Division of Aeronautics 1 Langhorne Bond Drive Springfield, Illinois 62707-8415 Ph: 217-524-1580 www.dot.state.il.us/aero/ avaioforms.html www.mvs.usace.army.mil
Historic Preservation Approval Construction of industrial facilities require review of historical archaeological resources.	Location and nature of the project	Illinois Historic Preservation Agency Preservation Services Division One Old State Capitol Plaza Springfield, IL 62701 Ph: 217-785-5027

APPENDIX C. FUNDING OPPORTUNITIES AND BUSINESS INCENTIVES

Department of Commerce and Economic Opportunity

Renewable Fuels Development Program (RFDP)

This program provides grants for the construction of new biofuel facilities or for the expansion/modification of existing facilities. The minimum eligible facility size is 30 million gallons per year. Total grant award cannot exceed 10 percent of the total construction costs of the facility, or 10 cents/gallon of the new production. The maximum RFDP grant award is \$5.5 million.

Illinois Enterprise Zone Program

This program is designed to stimulate economic growth and neighborhood revitalization in economically depressed areas of the state. Businesses that choose to locate or located in a designated enterprise zone can become eligible to obtain special state and local tax incentives, regulatory relief, and improved governmental services. These benefits have various requirements.

Property Tax Abatement

Local taxing districts may abate a portion of the property taxes on new facilities for a period not to exceed 10 years for a project designated as a "high impact business." Enterprise zone property tax abatement may be available for eligible projects. Contact the local enterprise zone administrator to find out if abatements for this project type are available.

Economic Development for a Growing Economy (EDGE)

Businesses newly locating or expanding a facility in Illinois may receive tax credits calculated from personal income tax collected on salaries paid for created and/or retaining jobs. The credits may be taken as a non-refundable corporate state income tax credit assessed over a period of not more than ten taxable years.

First-Stop Business Information Center of Illinois

The business information center provides access to information and referral assistance for the permitting, licensing, and regulatory processes for starting a new business or operating an existing business in Illinois.

Community Development Assistance Program (CDAP) Economic Development Component

This federally funded program assists units of local governments (population < 50,000) that are not located within one of eight large urban counties that receive funds directly form the federal government. Funds are targeted toward economic development projects that benefit low- to moderate-income people.

Industrial Training Program

This program assists Illinois companies in training new workers and retaining or upgrading skills of the existing workforce. Grants can reimburse companies for up to 50 percent of the cost of training their employees. Trainees must have been employed by the company before implementation of the training program.

Illinois Department of Transportation

Economic Development Program (EDP)

This program provides up to 50 percent in matching state funds for highway improvements that are needed to provide access to new or expanding existing industrial, distribution or tourism departments. Applicants must make a commitment to expand or locate in Illinois and create or retain primary jobs in Illinois. Retail and future speculative projects are not eligible.

Truck Access Route Program (TARP)

This program provides \$20,000 per lane mile and \$10,000 per intersection, or up to 50 percent of the total project cost, to upgrade roads to accommodate 80,000-pound trucks to access points of loading and unloading. Local government agencies may apply. Roads must connect to a truck route and end at another truck route or truck generator.

Rail Freight Program (RFD)

This program furnishes low interest loans or grants to finance rail improvements. Communities, railroads and shippers may apply. Projects should focus on achieving statewide economic development, improving access to markets, maintaining transportation costs savings and/or leveraging private investments to foster permanent solutions to rail service problems.

Illinois Finance Authority

The Illinois Finance Authority issues tax-exempt solid waste disposal revenue bonds on behalf of privately owned solid waste disposal companies that provide services to the general public. Bond proceeds can be used to finance the acquisition of fixed assets such as land, buildings, and equipment as well as building construction or renovation.

Issuance of bonds is subject to a number of prerequisites, including: completing the application, engaging a manager for the financing process manager, maintaining relationships with IFA and other state agencies, soliciting credit enhancements and funding from lenders, engaging a recognized bond counsel, and engaging a recognized independent consultant to prepare a customarily-required comprehensive feasibility study.

U.S. Department of Agriculture

USDA Value-Added Producer Grants (VAPG) may be used for planning activities and working capital for marketing value-added agricultural products and for farm-based renewable energy. Eligible applicants include independent producers, farmer and rancher cooperatives, agricultural producer groups, and majority-controlled producer-based business ventures.

Illinois Clean Energy Community Foundation

Grants are available to charitable 501(c)(3) organizations, educational institutions, and state or local government agencies serving Illinois residents for programs designed to develop consumer demand for renewable energy. Deadlines to submit letters of inquiry for competitive grants are posted on their Web site at www.illinoiscleanenergy.org/.

APPENDIX D. BEST PRACTICES: ENERGY, ENVIRONMENT, PLANT EFFICIENCY, AND COMMUNITY RELATIONS

Heat Recovery

- Heat can be recovered for the distillation columns from the steam produced in the liquefaction portion of the process where the meal is passed through cookers at high temperatures.
- Heat should be recovered if a thermal oxidizer (rather than a regeneration thermal oxidizer) is used for the feed dryer.
- Heat recovery should be possible from the fermentation tanks.
- During the mash preparation, a new natural starch-degrading enzyme can be used to reduce the amount of heat needed and can reduce the time required in that step of the process.
 www.ars.usda.gov/is/pr/2001/010404.htm.

Alternative Energy Sources

- Utilize syrup from the evaporators as a fuel supply.
- Consider alternative fuels such as wood chips or fluidized bed biomass.
- When using an anaerobic digester system, capture the methane and use as an energy source.
- Use solar energy for some of the heat required in the distillation process.

Plant Efficiency

- New biofuel plants should recover at least 2.7 gallons of biofuel per bushel of corn processed and consume less than 32,000 BTUs per gallon of biofuel produced.
- Molecular sieves reduce distillation energy significantly in the dehydration step, where the last of the water is removed from the ethanol.
- Elimination of process wastewater from dry mill plants should be easily attainable. Zero discharge dry plants are possible by eliminating the need for live steam injection for starch conversion; and using semi-permeable membranes to remove co-products from the process water.
- Minimize compressed air use and pressure requirements in the plant design since 90 percent of input power is lost to heat. Locate necessary compressors away from heat sources

- and utilize outdoor cool air for compression.
- Utilize high efficiency electric motors and implement variable frequency drives for operations that require varying motor speeds (e.g., fans, pumps).
- Great strides in energy efficiency could be gained by minimizing the removal of water from the products. Elimination of the dryer, RTO, and evaporator would drastically reduce power consumption and save tens of millions in installation costs while reducing the annual operating expense by millions of dollars (depending upon plant size).
- When designing a biofuel production facility a Combined Heat and Power (CHP) system should be considered and evaluated for its potential to reduce electrical costs, provide a means of destroying VOCs from the dryers, and an efficient means of recovering and utilizing waste heat. U.S. EPA has established a CHP Partnership to evaluate and provide technical assistance on the design and use of CHP systems for production facilities. For more information contact U.S. EPA Combined Heat and Power Partnership at www.epa.gov/chp/ or contact the University of Illinois at Chicago's Energy Resources Center.

Outreach and Community Relations

- Hold informational meetings with the community.
- Set up a repository of information about the proposed project.
- Make sure that the company establishes a point of contact

APPENDIX E. CONTACT INFORMATION

Center for Advanced BioEnergy Research (CABER)

University of Illinois at Urbana-Champaign Animal Sciences Laboratory 1207 W. Gregory Drive, MC-630 Urbana, IL 61801 Ph: 217-244-9270 www.bioenergy.uiuc.edu/

Energy Resources Center

University of Illinois at Chicago 1309 South Halsted Street, 2nd Floor Chicago, IL 60607 Ph: 312-996-4490

www.erc.uic.edu/index.html

Federal Energy Regulatory Commission

888 First Street N.E. Washington, D.C. 20585 Ph: 202-208-2168

www.fe.doe.gov/programs coalpwr

Illinois Clean Energy Community Foundation

2 N. LaSalle Street, Suite 950 Chicago, IL 60602 Ph: 312-372-5191

www.illinoiscleanenergy.org/

Illinois Commerce Commission

Transportation Bureau/Rail Safety Section 527 E. Capitol Avenue Springfield, IL 62701 Ph: 217-782-7660 www.icc.illinois.gov/

Illinois Corn Growers

P.O. Box 1623 Bloomington, IL 61702 Ph: 309-557-3257 http://www.ilcorn.org/

Illinois Department of Commerce and Economic Opportunity

Business Development Division First Stop Business Information Center 620 E. Adams, 3rd Floor Springfield, IL 62701 Ph: 800-252-2923 www.illinoisbiz.biz

Illinois Department of Natural Resources

Division of Resource Review and Coordination One Natural Resources Way Springfield, Illinois 62702-1271 Ph: 217-785-5500 www.dnr.state.il.us/orep/nrrc

Illinois Department of Public Health

525 W. Jefferson Springfield, Illinois 62762 Ph: 217-782-5830 www.idph.state.il.us

Illinois Department of Transportation

Bureau of Local Roads and Streets

2300 S. Dirksen Parkway, Room 205 Springfield, IL 62764-0002 Ph: 217-782-3970 www.dot.state.il.us

Bureau of Railroads

2300 S. Dirksen Parkway, Room 302 Springfield, Illinois 62764-0002 Ph: 217-782-2835 www.dot.state.il.us

Bureau of Statewide Program Planning

2300 S. Dirksen Parkway, Room 307 Springfield, IL 62764-0002 Ph: 217-782-2755

www.dot.state.il.us

Illinois Environmental Protection Agency

Bureau of Water - Division of Water Pollution Control

1021 N. Grand Avenue E., P.O. Box 19276 Springfield, IL 62694-9276 Ph: 217-782-3362 www.epa.state.il.us/water

Bureau of Water - Division of Public Water Supply

1021 N. Grand Ave. E., P.O. Box 19276 Springfield, IL 62694-9276 Ph: 217-782-9470

www.epa.state.il.us/water

Bureau of Air

1021 N. Grand Ave. E., P.O. Box 19276 Springfield, IL 62694-9506

Ph: 217-782-2113 www.epa.state.il.us/air

Illinois Finance Authority

Illinois Finance Authority 180 N. Stetson, Suite 2555 Chicago, IL 60601

Ph: 312-651-1331 www.il-fa.com

Illinois Historic Preservation Agency

Preservation Services Division One Old State Capitol Plaza Springfield, IL 62701 Ph: 217-785-5027 http://www.illinoishistory.gov/

Illinois Institute for Rural Affairs (IIRA)

Western Illinois University Stipes Hall 518 Macomb, IL 61455 Ph: 309-298-1031 www.iira.org/

Illinois Soybean Association

1605 Commerce Parkway Bloomington, IL 61704 Ph: 309-663-7692 ilsoy@ilsoy.org

National Corn-To-Ethanol Research Center

400 University Park Drive Edwardsville, IL 62026 Ph: 618-659-6737

www.ethanolresearch.com/

U.S. Army Corps of Engineers

St. Louis District Attention: CEMVS-CO-F 1222 Spruce Street St. Louis, Missouri 63103-2833 Ph: 314-331-8185

www.mvs.usace.army.mil

U.S. EPA

CEPPO Risk Management Plan Reporting Center P.O. Box 3346 Merrifield, Virginia 22116-9280 www.epa.gov/ceppo

U.S. Fish and Wildlife Service

Ecological Services Operations Bishop Henry Federal Building One Federal Drive Ft. Snelling, MN 55111-4056 Ph: 612-713-5308 www.nfwf.org