



RENEWABLE ENERGY FACT SHEET

URBAN BIOENERGY

Whether motivated by the desire to protect the environment, reduce utility expenses, or localize energy sources and jobs, Michigan's interest in renewable energy is growing. In recent years, local jurisdictions have experienced an increased number of requests for renewable energy installments, and this trend is expected to continue. With renewable energy on the rise, now is the time for counties, cities, villages, and townships to prepare and determine how renewable energy installations can best fit into your community.

WHAT IS URBAN BIOENERGY?

A bioenergy, or "biomass energy," power facility produces energy from biomass feedstocks, such as agricultural crops and crop residues, wood and wood waste, yard waste, food and food processing waste, biosolids, and biogas. Biomass is any organic matter available on a renewable basis through natural processes or as a by-product of human activity. Biomass can be converted into energy through many different processes, including but not limited to combustion (burning), gasification, fermentation, and anaerobic digestion. To minimize the cost of transporting biomass resources, biomass energy facilities are best located in close proximity to the feedstock source.

Bioenergy facilities achieve the greatest efficiency by using these resources to generate both heat and electricity, in what are known as combined heat and power (CHP) projects. CHP projects typically generate electricity and use the waste heat recovered for water heating, space heating, cooling, or industrial process applications on-site or within an area like a neighborhood or campus.

An urban bioenergy facility can be operated as an independent energy generation facility, as an accessory use to a business or campus, or integrated into municipal functions. The power produced can be used on-site or sold through a power purchase agreement (PPA).

BENEFITS OF URBAN BIOENERGY

Reduced waste. Biomass feedstocks can be a by-product, residue, or waste product of many farming, animal husbandry, forestry, and industrial/manufacturing processes. When these resources are harnessed for energy production, they are diverted from landfills. This may result in reduced waste disposal costs.

Local economic growth/development. Bioenergy generation supports existing and future local businesses that produce feedstock, that utilize feedstock for power generation (for use on-site or off-site), and that utilize the new by-products of this energy production as inputs in other processes. For example, the sale of feedstock can provide new revenue to

businesses from what otherwise may have been considered a waste product. For the local community, direct jobs are provided at the production facility, and businesses that serve as links in the bioenergy supply chain are also supported. Additionally, utilizing a local energy supply means that dollars spent on energy now remain in the local economy.

Reduced greenhouse gas emissions (GHG).

Biomass is renewable, and using it to produce heat and power can be environmentally beneficial when best practices are used. Bioenergy projects such as anaerobic digesters and landfill-gas-to-energy (LFGTE) projects can reduce methane emissions, a more potent GHG than CO₂.

Baseload capable. Bioenergy plants operate continuously and can adjust their fuel mix as biomass resources change, thus providing

predictable, reliable baseload power. Industrial organic waste and manure are typically available year-round, and more seasonal feedstock can be managed according to the circumstances.

SITING AND REGULATORY CONSIDERATIONS FOR BIOENERGY

Proper siting is essential to the successful integration of bioenergy production facilities into a community. Access to a sufficient and reliable supply of locally available biomass feedstock(s) — both current and future potential — is critical, as it is not cost-effective to transport biomass resources over long distances.

Further, siting is important in addressing odor, pollution, property value, and increased truck traffic, which are some of the top community concerns associated with urban bioenergy plants. Depending on the feedstock choice and conversion process, several of these issues may not be problems, though

Opportunity fuels (such as biomass waste materials) are by-products that would otherwise be thrown away. A bioenergy facility offers the opportunity to use these otherwise unused materials to generate power.

MICHIGAN BIOENERGY OPPORTUNITIES

Consumers Energy Company has announced plans to launch a new standard offer Biomass Energy program as part of their 20-year Renewable Energy Plan. Under the standard offer program the utility will offer to purchase as much as 2,360 kilowatts of electric power generated by methane formed by anaerobic digestion technology for up to 20 years. The utility expects to announce details of the program later this fall and begin accepting applications this winter. The program is expected to operate similar to the utility's solar based Experimental Advanced Renewable Program (EARP-Solar).

they may be perceived as potential issues by residents. Thoughtful siting and site design requirements typically address any real issues and ease community concerns.

The most common place to site an urban bioenergy facility is within existing industrial parks. By doing so, several jurisdictions have found that little or no zoning ordinance changes are necessary. Regulations for these districts typically already have limitations for noise, vibration, smoke, dust, odor, and glare. Additionally, regulations from the U.S. Environmental Protection Agency and Michigan Department of Environmental Quality address and enforce local air quality, odor, and other issues.

PERMITTING CONSIDERATIONS FOR URBAN BIOENERGY PROJECTS

The following recommendations will help jurisdictions to prepare and streamline the siting, permitting, and installation processes associated with urban bioenergy projects.

1 Coordinate planning efforts with neighboring jurisdictions

A regional planning approach is necessary, as the community with a bioenergy plant and adjacent communities with businesses providing feedstock will be impacted. The master plans of adjacent municipalities should be coordinated and updated with a regional vision for incorporating renewable energy generation. Important considerations include a vision for local economic resilience, quality of life priorities, future land use maps, truck routes, and site buffering.

2 Develop a site plan approval process checklist

Creating a site plan approval checklist is a proactive approach to assist new or expanding businesses with the zoning regulations specific to industrial uses. Documentation from the petitioner that addresses required performance characteristics such as vehicular equipment and routes, air quality, odor, and water usage and disposal should be required early in the approval process. Making this information readily available to the public will ensure transparency in the review process and facilitate a more predictable approval timeline.

3 Review zoning regulations and update if necessary to protect adjacent and conflicting land uses

Zoning ordinance updates that may be helpful in maintaining or increasing adjacent property values could include landscaping, setbacks and height of structures, outdoor storage, equipment parking, and performance characteristics (noise, vibration, smoke, dust, odor, glare, and radiation). Adherence to performance characteristics may change over time, so a method for periodic review and enforcement needs to accompany these additional requirements.

4 Provide ample and timely information to community residents

As initial planning begins for a power generation facility or when considering industrial zoning changes, community residents need to be informed, and their concerns should be earnestly and transparently addressed by both local government and company representatives. Early engagement can mitigate potential concerns and prevent unnecessary project delays.

FINANCIAL INCENTIVES FOR BIOENERGY

Funding and financing opportunities for bioenergy plants are available through utilities, the State of Michigan, and the federal government:

- Michigan Renewable Portfolio Standard incentives through local utility companies
- Michigan Biomass Energy Program
- Environmental Protection Agency (EPA), combined heat & power/biomass funding: <http://www.epa.gov/chp/policies/index.html>
- U.S. Department of Agriculture (USDA) grants and loan guarantees: http://www.usda.gov/wps/portal/usda/usdahome?navid=GRANTS_LOANS
- Federal and state tax incentives: www.dsireusa.org
- Federal Grants: www.grants.gov

INFORMATION AND REFERENCES

American Planning Association (APA) PAS Essential Info Packet, Planning and Zoning for Renewable Energy. <http://www.planning.org/pas/infopackets/subscribers/pdf/EIP18.pdf>

APA. Integrating Energy and Climate into Planning. <http://www.planning.org/pas/memo/open/jan2009/>

U.S. Department of Energy, Bioenergy Technologies Office. <http://www1.eere.energy.gov/biomass/>

U. S. Environment Protection Agency (EPA). State Bioenergy Primer. <http://www.epa.gov/statelocalclimate/documents/pdf/bioenergy.pdf>

Michigan Department of Environment Quality (MDEQ), Guide to Environmental, Health, and Safety Regulations (April 2012). http://www.michigan.gov/deq/0,4561,7-135-3310_4148-15820-,00.html

Michigan Biomass Energy Program. <http://www.michigan.gov/biomass>