Renewable Energy Report

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Prosperity Region 3
Renewable Energy
Proposed Five Year Action Plan

Introduction

The energy sector as a whole includes mainstream sources of energy – fossil fuels, hydropower, nuclear, etc. – as well as new and alternative renewable sources such as wind, solar, geothermal, biomass conversion, and other experimental technologies. Employment associated with the energy sector includes extraction, processing and delivery of fossil fuels, research and manufacturing of energy producing equipment, sales, installation, support, and maintenance of various energy systems.

The high cost of energy both in residential and commercial applications justifies significant expenditures on energy efficiency, also included as a part of the energy sector. The American Council for an Energy-Efficient Economy (ACEEE) estimates potential savings of $1.2 trilling by 2020 from investment in energy efficiency, and effort that could create 1.3 to 1.9 million jobs in the US[1] Energy efficiency comprises jobs and technology including mass transit, building materials and design, lighting, appliances, electric vehicles and batteries, and water management as well as a range of design, analysis, and other professional services.

Energy investment and production in Region 3 range from very large scale companies – locally Consumers Energy, Presque Isle Electric and Gas Cooperative – to individuals and families assembling their own solar panels, hot water processors, and windmills. Employment in the industry likewise includes a broad range, from traditional industry positions in engineering and maintenance, to small entrepreneurs and retailers supplying a do-it-yourself market.

In general, the renewable energy sector offers opportunities for significant growth. The Environment Study Institute report of June 2013 estimated approximately 1,000,000 jobs nationally in clean energy[2], and forecast significant jobs growth for the near and long term in every component of the renewable energy sector.

In Region 3, renewable energy has provided some important new growth opportunities in recent years. In 2014, Alpena Biorefinery began shipping ethanol produced from byproduct of DPI, an adjacent panel processing facility, which itself uses local wood industry byproducts. Electric generation plants use wood biomass for fuel in Hillman, Grayling, and Lincoln. Wind power facilities operate in Mackinaw City and the thumb area (not quite all in Region 3, but close enough to note). New landfill gas generation facilities are in development in Monmorency County.

Statistics for small-scale electric generation are not readily available, but solar panels, solar hot water systems, electric cars, and other such devices appear throughout the area. The Amish community in Mio makes significant use of off-the-grid electric generation. Michigan continues to offer tax credits and net-metering opportunities that should provide the basis for increased sales, installation, and service as the efficiency of distributed power generation systems continues to improve, and the cost continues to decline.

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[1] http://www.renewableenergyworld.com/rea/news/article/2014/01/new-solar-job-statistics-released-but-other-renewables-are-growing-too

[2] http://www.eesi.org/papers/view/fact-sheet-jobs-in-renewable-energy-and-energy-efficiency?/fact-sheet-jobs-renewable-energy-and-energy-efficiency-11-jun-2013#2

Overview of the Renewable Energy Sector

Renewable energy include a variety of approaches to generating electricity or transportable fuels, including:

- Solar panels, a series of connected photovoltaic modules attached to a supporting structure;
- Wind power, a process of rotating turbines to drive a generator;
- Geothermal generation, which uses deep groundwater at a higher temperature to create motion that generates electricity;
- Biomass electric generation, in which waste products – woody biomass, landfill waste, etc. – are burned to drive a steam generator;
- Biomass gasification, in which the waste products are heated to create a gas, which is then burned to drive a steam generator;
- Biomass fuel conversion, as multistage process that converts woody biomass to ethanol or diesel fuel.

New technologies and applications continue to develop, and some of the research is promising; the list above represents the major approaches in use at this time.

These technologies may apply on a utility scale – an electric generation plant that feeds power into the grid – or on a more limited scale – a home, a business, a school or other public building, or a small neighborhood. Distributing power generation has the advantages of creating system redundancy, as well as avoiding transportation costs of fuel (i.e., biomass) to a large generating facility.

In addition to generating electricity or producing fuel for a vehicle, alternative approaches may be used to create heat to warm buildings or for industrial purposes such a kilns. This process, called Combined Heat and Power (CHP) was promoted by the US Department of Energy and Environmental Protection Agency in the aftermath of the destruction of hurricane Sandy.[3] In fact, electric generation processes that utilize biomass will create as approximately 2.2 times as much heat as electricity. When the heat as well as the electricity can be captured for use, the overall efficiency and cost of the process becomes even more attractive.

Northeast Michigan benefits from optimal utilization of all of its resources, particularly when the production process remains close to the source of materials. The renewable energy sector provides excellent opportunities for job creation, as it involves new research, innovation, and technology, and startup companies opening new markets. National Bureau of Economic Research studies demonstrate that while startup companies account for only 3 percent of total jobs in the economy, they provide almost

[3] http://www1.eere.energy.gov/manufacturing/distributedenergy/pdfs/chp_for_reliability_guidance.pdf

20 percent of total job creation.[4] This includes allowing for startup failures, which remove some of the created jobs.

[4] http://www.nber.org/digest/feb11/w16300.html

Proposed Strategies

1. Vocational/Entrepreneurial Training

   Many leaders, including Michigan's Gov. Snyder, have noted that the educational system has moved away from vocational and technological training, instead emphasizing college preparation and more "academic" subjects. While this offers advantages for some students, it also has two major disadvantages: it leaves students less prepared for work if they do not continue on to college, and it leaves gaps in the workforce for jobs that require hands-on vocational skills rather than academic coursework.

   Renewable energy provides excellent work opportunities, many of which do not require extensive college education. In addition to the research and design jobs, the industry will require retail outlets, parts suppliers, installers, maintenance, transportation, and customer service, as well as entrepreneurs and administrative staff.

   A. We should encourage our community colleges to adopt appropriate and cost effective renewable energy solutions, and to offer programs that teach the basic skills required to participate in the industry.

   B. Because learning takes place throughout a lifetime, we must encourage the community colleges to offer this training to adult students who wish to update their skills and move into new jobs.

2. Technological Infrastructure

   Provide basic technological infrastructure throughout the region to support the needs of a modern business, tools for training and education, and essential lifestyle needs and residents and tourists. Every developable area within the region must have the basic technologies to compete with other areas of the state. This includes reliable high speed internet service and wireless telephone access along all of the major routes and in all business and population centers.

   We may accomplish this with persuasion and jawboning of private internet service providers, or it may require a combination of public and private grants. In any case, this investment in technological infrastructure must occur in order for any of the other plans and programs to be viable.

3. Business Facilitation – Simplify, Streamline

   One of the roadblocks to doing business in rural areas involves the patchwork of rules and regulations that may vary greatly from township to township and from county to county. This is particularly true where new and unfamiliar technologies are involved. A builder in the center of our region was recently denied an occupancy permit because the inspector did not understand the technology used in the under floor heating system. The builder/owner was forced to replace the power source in order to accommodate the inspector's lack of experience.

   We should assist renewable energy retailers and installers in educating the regulators about best practices for new technologies, and help to insure that rules and regulations for businesses throughout the region are up to date and reasonable with respect to energy systems.

   (Noted elsewhere.)
   We should undertake a study of rules and regulations for businesses throughout the region, and produce a handbook for businesses that will identify all of the agencies and offices involved. In addition, we should create a system of hotlines and ombudsmen to help new and existing businesses deal with questions and problems in the regulatory system. Our goal: Northeast Michigan should have a reputation as an exceptionally good place to do business.

4. Investment

   Almost every opportunity for maintenance and growth of existing business or establishment of new business – that is, anything that will increase employment – involves significant capital expenditure. The direct injection of public funds into new ventures seems unlikely in today's economic and political environment, and violates the sensibilities of most of the residents of this area. Unlike some other areas of the state, Northeast Michigan does not have philanthropic deep pockets on the scale of a Wege, DeVos, Van Andel, or Prince. We need to explore creative new ways of bringing investment dollars into this region.

   Crowdfunding presents a new opportunity, particularly with Michigan's new laws about intrastate equity financing. We need to develop resources for doing that well, which will require some study and expertise.