

QUOTE: “How our society uses materials is fundamental to our economic and environmental future. Global competition for finite resources will intensify as world population and economies grow. More productive and less impactful use of materials helps our society remain economically competitive, contributes to our prosperity and protects the environment in a resource-constrained future.”

Circular Economy Strategy

Overview

Systemic change has emerged to address significant global challenges: climate change, degradation of and diminishing natural resources, water supply, deforestation, etc. Focused on positive society benefits, a Circular Economy at its foundation designs out waste and pollution from product development. This model transitions to renewable energy sources and is based on three principles: design out pollution and waste; keep materials and products in use; restore natural systems. Moving to this system builds economic, natural, and social capital of finite resources.

Benefits of The Circular Economy

Following the circular economy’s principles, pollution impacts are reduced to soil, water and air, better land use management results as well as reduction of toxic substances and influences that contribute to climate change. Overall, transforming to a circular economy reduces pollution that reliance on extraction of raw materials represents.

When compared with the raw material extraction that’s common in today’s manufacturing, the circular economy model has the potential to lead to a bigger (**up to 70%**) amount of material savings. Due to the forecasted growth of the world population and middle classes the total demand for materials will increase exponentially; a circular economy leads to lower material needs, as it skips landfills, focusing on making materials’ cycles last longer.

Benefits Of the Circular Economy on Businesses

Lower input costs and in some cases creation of entirely new profit streams can be achieved by businesses that move to the circular economy model. Profit opportunities may come from new markets, cutting costs with waste and energy reductions and a continuity of material supply.

According to Ellen McArthur’s Foundation [report](#), a circular economy model has the potential to create demand for new services and new job opportunities such as:

- “Collection and reverse logistics companies that support end of life products being reintroduced into the system
- Product marketers and sales platforms that facilitate longer lives or higher utilization of products
- Parts and component remanufacturing and product refurbishment offering specialized knowledge “.

Transforming to a Circular Economy

Since 2009, the US Government has recognized the Circular Economy within the sustainable materials management programming under the U.S. Environmental Protection Agency (EPA). Emphasis has been

placed on the circular economy evolution emphasizing reducing life cycle impacts of materials, including climate impacts, reducing the use of harmful materials, and decoupling materials use from economic growth. EPA's *National Recycling Strategy* emerged and recognized the need to implement a circular economy approach for all – reducing the creation of waste with local communities in mind and implementing materials management strategies that are inclusive of all communities. Initial steps communities need to take include the following:

- A. Improve Markets for Recycling Commodities.
- B. Increase Collection and Improve Materials Management Infrastructure.
- C. Reduce Contamination in the Recycled Materials Stream.
- D. Enhance Policies to Support Recycling.
- E. Standardize Measurement and Increase Data Collection.

Advancing MSW recycling alone will not achieve a circular economy for the United States; recycling is only one action in the toolkit. Work is necessary to broadly encompass areas not addressed here, including product redesign, source reduction, and reuse. Recycling efforts in the United States are inclusive of more than just the processing of MSW at material recovery facilities and include many other materials, such electronics, textiles, cement, concrete, and food waste. Future strategies will address these and other aspects of building a circular economy for all.

Strategy: Driving a Circular Economy in Northeast Michigan

Northeast MI is lagging in the development of the basic infrastructure to support sustainable material management inherent in a circular economy. A robust materials management system is critical to supplying the feedstock for building the infrastructure to support the framework towards circularity. Most notably is the absence of a Material Recovery Facility for Alpena and nearby counties. As the region transitions to a Circular economy, the necessary foundation begins with recycling collection systems with materials transported to a MRF. Once a recycling system is in place, a MRF can then expand to fixing products, product reconstruction, reuse, and/or new product development.

Vision: Northeast MI provides for the protection and enhancement of its assets through achieving a Circular Economy.

Goal One: Establish a Materials Recovery Facility in Alpena County to serve NE MI

NEMCOG is developing a regional Materials Recovery Facility (MRF) on Alpena County Airport property to serve as the anchor for an innovation manufacturing sustainability park development on surrounding airport property dedicated to that purpose. The MRF will serve as a regional material processing facility for recyclables from a 5+county region that currently does not have the capacity for processing recyclables for use as feedstock for manufacturers in the region and state.

As part of a market development grant with state of Michigan EGLE, NEMCOG is developing strong relationships with area manufacturers seeking recycled commodities in growing numbers, including La Great Lakes Tissue (paper cups and cartons, to be made into tissue and paper towel products), Clean Tech, TABB and Plastipak (HDPE #1 and #2 plastic bottles and jugs, to be made into new bottles and

jugs), UP Paper (seeking additional cardboard to manufacture new cardboard and paper bags to meet increasing demand), LaFarge Holcim (seeking glass for making an environmentally preferable concrete), Strategic Materials International (SMI) seeking glass for a variety of end products including fiberglass insulation and sandblasting.

The MRF is designed to process recyclables from the five counties to feed industry in Michigan, creating a robust circular economy in northeast Michigan. This rural area is underserved, and it's difficult to develop cost effective solutions for recyclables processing in rural areas. This regional MRF has been designed to address this challenge. The later phase development of the surrounding Innovation Sustainability Industrial Park will provide an ideal opportunity for niche and innovative end market and upcycling opportunities to land and thrive. This Regional MRF will accept all the items currently accepted at its over-capacity recycling facility (paper, cardboard, plastics, metals, e-waste, xxx) but will add new materials including paper cartons and cups, glass containers, textiles, pallets/wood waste, etc. Examples of manufacturers and innovators that would be recruited to establish at the phase 2 Innovation Park would be OMNI, ISAIKS (textiles), Moran, and others in early discussions. The use of recyclable materials for product development in the region is good for jobs, for the economy, and for the environment. This Regional MRF will provide companies with the materials they need to manufacture more competitively and more efficiently and will further a circular economy and support development of products and services that suit clients.

Objective One: Obtain funds to build a MRF that has capacity for Alcona, Alpena, Montmorency, Oscoda and Presque Isle Counties.

Objective Two: Establish a sub-Regional Materials Management Committee comprised of the above counties to determine the collection system necessary to transport materials to the Alpena MRF.

Objective Three: Expand recycling to Alcona, Montmorency, Oscoda and Presque Isle counties.

Goal Two: Ensure comprehensive materials management systems are in place for NEMCOG region.

Objective One: Analyze Crawford, Otsego, and Cheboygan Counties existing recycling systems to determine gaps and opportunities.

Objective Two: Establish a sub-Regional Materials Management Committee comprised of the above counties to determine the collection system necessary to transport materials to the Alpena MRF.

Objective Three: Determine and implement synergistic opportunities to enhance materials management throughout the region.

Goal Three: Create an informed public that understands the transformation to a circular economy.

Objective One: Work with EGLE- Next Cycle Program to create and implement an education program that involves schools, public and policy makers.

Objective Two: Educate and inform Industry leaders in northern MI on the Circular Economy and available assistance for product redesign using materials generated in region.

Goal Four: Encourage and support Business Innovation and Transformation to the Circular Economy.

Objective One: Create a Team comprised of retired/current professionals interested in assisting the development of Innovation Centers at Emmet and Alpena MRF's.

Objective Two: Obtain funding to conduct a feasibility study to determine material(s) type and needs for product development, repair or repurposing.

Objective Three: Obtain funding for the development of a business plan for the development of the Innovation Center(s).