

A decision-making tool for the University of Iowa Biomass Partnership Project

Abstract: Work continued on a plan to increase the renewable, sustainable fuel sources available to power operations at the University of Iowa in Iowa City. A team of researchers from multiple institutions collaborated to create a tool that would allow the UI to evaluate its alternative energy options more effectively.

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The University of Iowa has identified more than 20 potential biomass fuel sources. The UI is employing the triple bottom line of sustainability – environment, equity, economy – as a framework for decision-making, and applying this framework to fuel selection is an extension of that commitment. An energy sustainability fuel index that could be used by easily and effectively by power plant managers as a decision-making tool appeared to be an achievable task.



CROSS-
CUTTING

What was done and why?

The Energy Sustainability Index (ESI) project is a continuation of the Biomass Partnership Project. BPP was formed to identify and develop a bio-renewable fuel supply for the University of Iowa (UI) Main Power Plant to help reach the UI goal of 40 percent renewable energy use by 2020. The BPP has identified more than 20 potential biomass fuel sources.

The Energy Sustainability Index project was intended to develop a decision making tool for the UI to evaluate locally available renewable energy sources using the sustainability triple bottom line (TBL) accounting framework. The framework of categories and indicators in the ESI may be revised or expanded in the future to evaluate other fuel sources such as solar, wind or fossil fuels and can be made available for use by other institutions.

Overarching principles that guide ESI development include:

- Maximize financial resources while protecting natural and social capital;
- Consider the complex ecological, financial, and social systems and their inter-relatedness;
- Protect land, water, and atmospheric systems on which humans and other living species depend;
- Cultivate biomass with a precautionary and adaptive approach; and
- Identify short- and long-term needs that support prosperity for Iowans.

What did we learn?

This tool allows the UI to evaluate the broader impacts of the biomass energy supply chain and empowers decision-makers to take action at the project's beginning to mitigate future ecological and financial burdens. Other institutions, businesses, and parties interested in increasing renewable energy consumption through the use of sustainable fuels could employ the framework as a guide.