

The Cascadia Capital Report
Volume 2, Number 3
March 5, 2008

Biofuel 2.0

*Taking Advantage of the Next Wave of Opportunities Will Require a New
Focus on Capital and Technology Efficiencies*

*By Michael Butler, Ted Bernhard and Jamie Boyd
Cascadia Capital*

The New Energy Economy is becoming a reality thanks to solid financing, strong commitment and bold innovation. But that doesn't mean there's been an absence of hurdles and setbacks along the way.

Recently, for example, Science magazine and The New York Times published stories that called the economic and environmental benefits of alternative fuels into question. The articles cited respected and mainstream economists, who assert that alternative fuels' excessive dependence on land use negatively skews efficiencies and emissions.

We believe the academics and media make a good point here, and they have influenced our thinking as we consider the future of alternative fuels and look to take advantage of the next wave of opportunities in this market. Our bottom line is that Biofuel 2.0 can deliver robust returns if investors focus on capital and technology efficiencies.

Cascadia Capital's view of alternative fuels, which guides us as we consider fresh investment possibilities in this area, consists of five key insights:

- There is no end all and be all alternative fuel solution – Unlike the Internet revolution, the New Energy Economy won't offer up a killer app; there will be many small answers this time. We have been chastened after falling in love with ethanol, thinking it would single-handedly lead us to alternative fuel Nirvana. The harsh truth about this particular fuel was that it didn't work in all vehicles, it had a hugely negative impact on a gamut of related commodity prices, and it wasn't all that efficient. In fact, biodiesel gets better miles per gallon and delivers more output per unit of input than ethanol.
- We can't live off the land – The latest econometric models for alternative fuels show us their negative environmental impact, particularly with feedstocks that destroy palm farms or the rainforest. There is also a negative economic impact in the form of rising food prices. In addition, it's important to remember that even if we use all

the arable land in the United States for alternative fuel production, we'll only be able to replace a fraction of the diesel fuel the nation currently uses.

- Waste or waste by-products are the most sensible alternative fuel inputs – There's far less pricing pressure associated with sludge or algae versus corn as long as proven technologies are harnessed. And we've also seen that efficiencies soar off the charts if the right waste products are utilized as feedstock.
- Think of this as a recycling story rather than an alternative energy play – If we use animal tallow from dead carcasses to generate fuel, for example, we are also recycling a waste product that too often ends up in land fills or as a pollutant.
- The Pacific Northwest has a bright future in alternative fuel development – While alternative energy players and agri-businesses in the Midwest have been focused on soil, plants, land and feedstocks in an effort to till the post-petroleum future, entrepreneurs in Oregon and Washington have been busy developing both technology solutions and market innovations that help enhance and enable alternative fuel processes. This dual emphasis in the Pacific Northwest is largely because of the region's lack of abundant and traditional feedstocks.

The alternative fuel revolution is about change – in essence, altering consumption patterns and behaviors that have become ingrained over the past 150 years of petroleum use. And the emphasis is now about flexibility and experimentation – finding the best, most workable and efficient solutions possible. Despite several misguided stumbles, we are still believers and look forward to the revenue and profits that Biofuel 2.0 is certainly capable of generating.
