

400a An Idea Whose Time Has Come: Converging Perspectives on the Future of the Biorefinery

John J. Sheehan

These are exciting times for biomass. We are witnessing a true sea change when it comes to our attitudes about energy and the need for transitioning our economy to more sustainable energy resources. At the same time, there is growing consensus about the role that biomass can play as a part of a sustainable energy future. These perspectives are by no means unanimous. We still find conflicting opinions in the media about the sustainability of biofuels. But many technologists and energy and environmental policy advocates are beginning to build a new understanding of the long term potential of biomass. Is biomass the answer? Of course not. But most thoughtful experts do not seriously entertain ideas of some grand, monolithic solution to our immense energy problem. In a nutshell, the strategic role of biomass is as a renewable source of organic matter—particularly as a substitute for petroleum.

What constitutes this sustainable vision for biomass? It can be broken down into several key elements: · The relative availability and impact of biomass as a replacement for fossil energy resources (aka the myth of “food versus fuel”) · The technological and economic future of the biorefinery · The environmental impacts of a large scale biomass industry I will summarize the changing views on each of aspects.

As policymakers begin to recognize the future benefits of biomass, they are quick to move to the next important questions: When will the bioindustry become a reality? What will it take to make the bioindustry a reality? How can we accelerate the path forward? In closing, I will summarize some “thought experiments” we have been conducting using the powerful tools of system dynamics to address these questions.