

Accepted Manuscript

The costs of production of alternative jet fuel: a harmonized stochastic assessment

Seamus J. Bann, Robert Malina, Mark D. Staples, Pooja Suresh, Matthew Pearlson, Wallace E. Tyner, James I. Hileman, Steven Barrett

PII: S0960-8524(16)31691-1
DOI: <http://dx.doi.org/10.1016/j.biortech.2016.12.032>
Reference: BITE 17408

To appear in: *Bioresource Technology*

Received Date: 26 October 2016
Revised Date: 7 December 2016
Accepted Date: 8 December 2016

Please cite this article as: Bann, S.J., Malina, R., Staples, M.D., Suresh, P., Pearlson, M., Tyner, W.E., Hileman, J.I., Barrett, S., The costs of production of alternative jet fuel: a harmonized stochastic assessment, *Bioresource Technology* (2016), doi: <http://dx.doi.org/10.1016/j.biortech.2016.12.032>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



The costs of production of alternative jet fuel: a harmonized stochastic assessment

Seamus J. Bann^a, Robert Malina^{a,b,1}, Mark D. Staples^a, Pooja Suresh^a, Matthew Pearlson^a,
Wallace E. Tyner^c, James I. Hileman^d, Steven Barrett^a

^a *Laboratory for Aviation and the Environment, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, Massachusetts 02139, United States*

^b *Center for Environmental Sciences, Hasselt University, Martelarenlaan 42, 3500 Hasselt, Belgium*

^c *Department of Agricultural Economics, Purdue University, 403 W. State Street, West Lafayette, IN 47907, United States*

^d *United States Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C., United States*

Abstract: This study quantifies and compares the costs of production for six alternative jet fuel pathways using consistent financial and technical assumptions. Uncertainty was propagated through the analysis using Monte Carlo simulations. The six processes assessed were HEFA, advanced fermentation, Fischer-Tropsch, aqueous phase processing, hydrothermal liquefaction, and fast pyrolysis. The results indicate that none of the six processes would be profitable in the absence of government incentives, with HEFA using yellow grease, HEFA using tallow, and FT revealing the lowest mean jet fuel prices at \$0.91/liter (\$0.66/liter-\$1.24/liter), \$1.06/liter (\$0.79/liter-\$1.42/liter), and \$1.15/liter (\$0.95/liter-\$1.39/liter), respectively. This study also quantifies plant performance in the United States with a Renewable Fuel Standard policy analysis. Results indicate that some pathways could achieve positive NPV with relatively high likelihood under existing policy supports, with HEFA and FPH revealing the highest probability of positive NPV at 94.9% and 99.7%, respectively, in the best-case scenario.

Keywords: Alternative jet fuel; techno-economic analysis; Monte-Carlo simulation; United States alternative fuel policy; Renewable Fuel Standard

¹ Corresponding author, Email: robert.malina@uhasselt.be Tel.: +32-11-268687

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات