

Managing Diesel Risk for Pellet Manufacturers

De-Risking Wood Prices

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Pellet Fuels Institute

Foxwoods Resort & Casino

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Innovative Natural Resource Solutions LLC

- Based in New Hampshire and Maine, a region with 25+ years of continuous biomass experience
- Based in the forest industry – work at the intersection of forest industry, energy and economic development
- One area of focus is on feedstock supply for biomass electric, thermal, pellet and liquid fuel projects
 - Conducted over 75 wood supply assessments, ranging from schools to portfolios of power plants
- Clients include utilities, merchant generators, investors, developers, and industries
- Conducted work in all regions of the country
- www.inrsllc.com



Diesel as a Component of Pellet Feedstock

- Diesel is used in every stage of biomass (and roundwood) feedstock production
 - Harvesting
 - Skidding
 - Chipping
 - Trucking
- End users pay for diesel indirectly through wood prices



INRS Diesel Calculator

- Developed using actual diesel use from 4 logging firms in the Northeast, using different equipment configurations
- Key variables of miles, diesel cost, tons per load
 - Can be modified to include double handing, backhauls, roundwood / chips, etc.
- Used to estimate per ton – and thus total – monthly exposure to diesel price risk



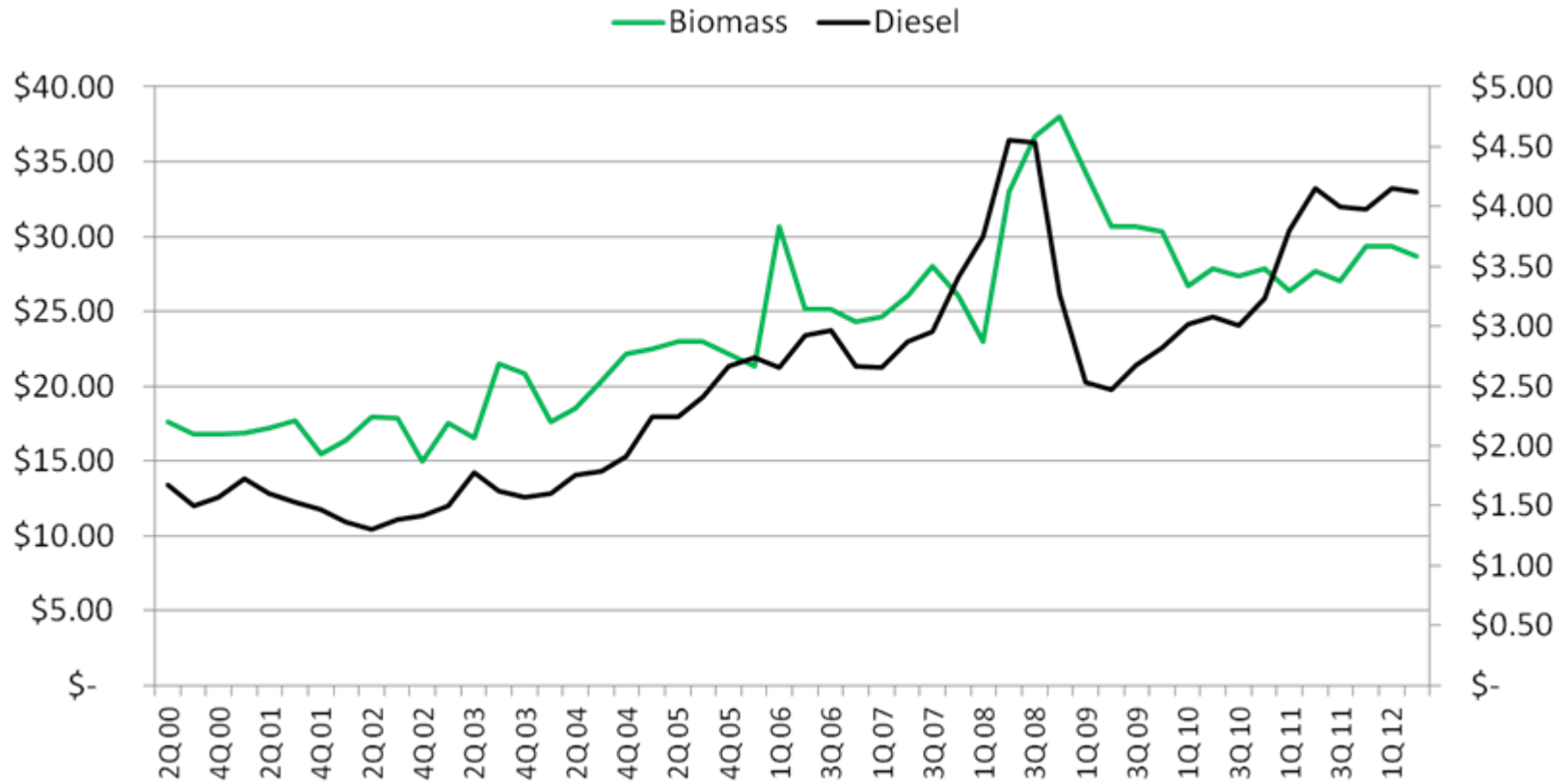
INRS Diesel Calculator

Miles (one way)		75	variable	insert distance from logging site to market, road miles
Diesel (\$ / gallon)	\$	4.20	variable	insert current price of diesel
Tons per Load (tons)		30	variable	insert assumed payload per delivery
Road Gallons			calculation	gallons used for transport of load of chips to market (round trip)
Road Diesel Cost	\$		calculation	dollars of diesel to transport load of chips to and from market
Road Diesel \$ / ton	\$		calculation	dollars used per ton of wood chips to transport biomass fuel
Chipping (\$/ton)	\$		calculation	dollars of diesel fuel used to chip a single ton of biomass fuel
Landing costs (\$/ton)	\$		calculation	dollars of diesel used to handle a tons of biomass at a log landing
In-woods (\$/ton)	\$		calculation	dollars of diesel used to fell and skid a ton of biomass
Total Woods Cost (\$/ton)	\$		calculation	dollars of diesel used - all in woods operations for biomass fuel
Total Diesel Cost (\$/ton)	\$		estimate	cost of diesel per ton of fuel, delivered
Total Diesel (gallon/ton)			estimate	gallons of diesel used in production of a green tons of chips



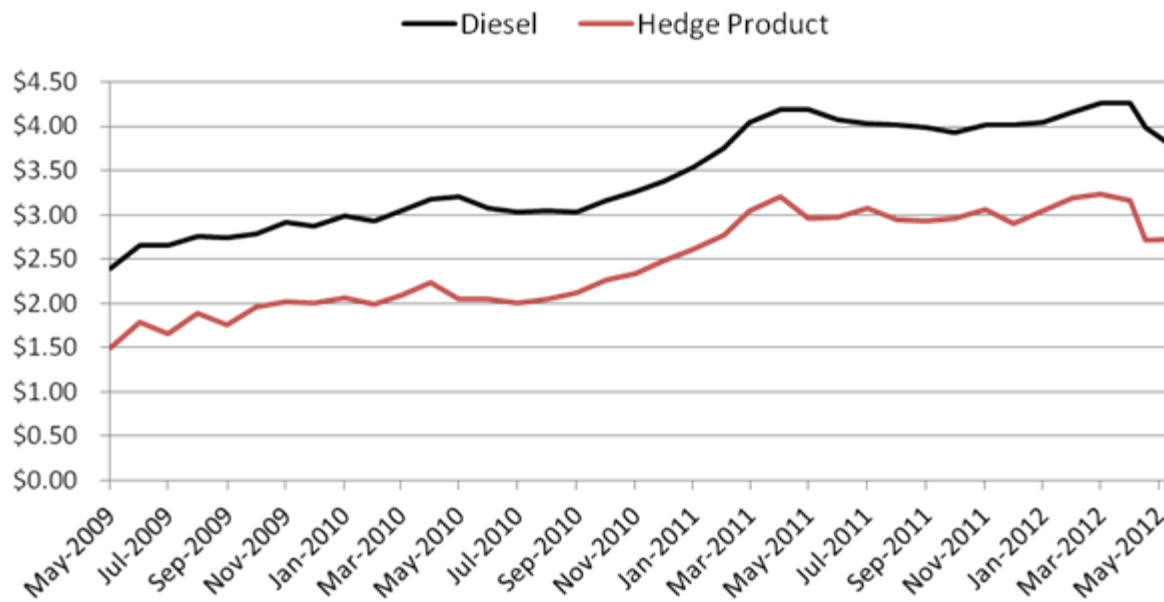
Diesel and Wood Fuel Costs are Related

Correlate at the 0.80 level since 2000



Using This Relationship to Manage Risk

- Existing over-the-counter product exists to manage diesel risk – highly correlated with diesel prices
- Traded electronically, handled by many brokerages, highly liquid market



Example

- Pellet mill using 16,500 green tons per month (all month purchases assumed even in this example) of wood for feedstock & fuel
- Diesel exposure of 2.5 gallons per green ton
- Diesel exposure of 41,250 gallons per month

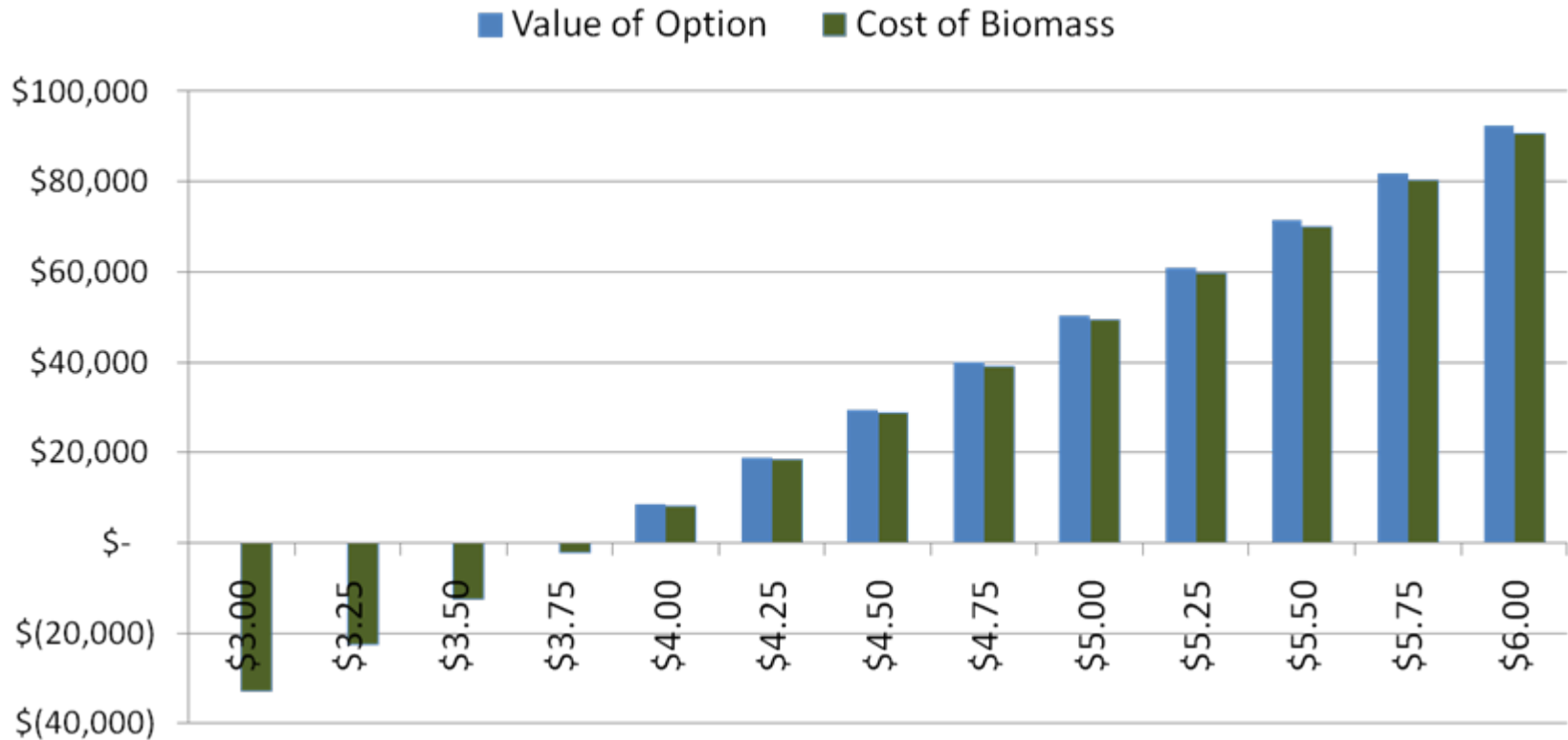


Example (A)

- November 2012 option at a correlated price of \$3.82 per gallon
- Option (call option) at \$7,572 plus \$70 RT brokerage fee (buy and sell)
- Total option cost \$7,642
- Cost per ton of \$0.46 (assuming 16,500 tons, 2.5 gallons / ton)



Anticipated Value Changes at a Range of Diesel Prices (Strike Price @ \$3.82 / gallon)



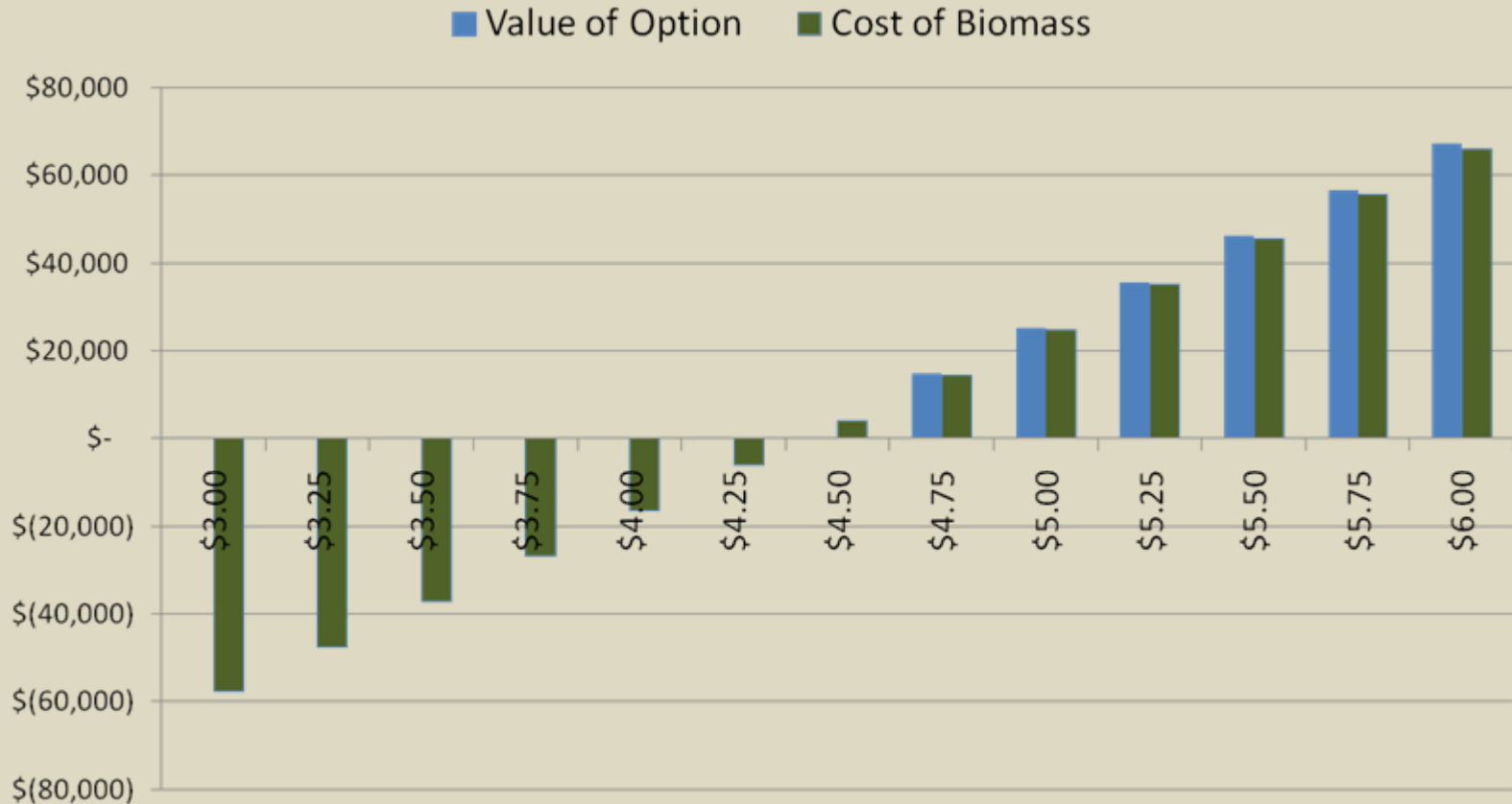
Example for Discussion Only

Example (B)

- Hedging ONLY against catastrophic price increase costs less
- November 2012 option at a correlated price of \$4.40 per gallon
- Option (call option) at \$873 plus \$70 RT brokerage fee (buy and sell)
- Total option cost \$943
- Cost per ton of \$0.06 (assuming 16,500 tons, 2.5 gallons / ton) – *40 cents less than previous*



Anticipated Value Changes at a Range of Diesel Prices (Strike Price @ \$4.40 / gallon)



Example for Discussion Only

Example Summary

November 2012

- Cost to have risk management at \$3.82 per gallon (correlated equivalent) is \$0.46 per green ton, \$0.06 per gallon at \$4.40 (November 2012)
- If price of diesel rises, option increases in value proportionately
- If price diesel falls, option becomes worthless, but user enjoys lower biomass fuel costs
- Options and wood are traded independently, but balanced to offset one another
- Under all scenarios, pays fee to purchase an option (in this example, \$0.46 per ton or \$0.06 per ton)



Considerations

- Options are sold in certain size blocks, and it is unlikely there will be a perfect fit with a users' diesel exposure
 - will likely be under- or over-hedged
- Options extend out five years; the product is more liquid as the strike date approaches
- Diesel is a major influence on price changes in biomass fuel (and pulpwood), but not the only factor. This strategy addresses only diesel
 - INRS and FutureMetrics have a broader strategy to hedge risk
- Monthly averages are just that
- INRS can work with a company to determine their diesel exposure and develop a risk management strategy, but cannot trade client funds



INRS Services

- Working with client and using client-specific information
 - Estimate diesel exposure on a monthly basis
 - For one or more products
 - Accounting for seasonal buying patterns
- Develop a hedging strategy, and provide necessary information to evaluate options, understand contracts and execute strategy
- On-going support if desired
- *Our goal is to help you de-risk your wood prices*



Other Areas of Interest

- INRS is part of a team developing a Biomass Thermal Roadmap for New York State. This effort is in its early stages, but if you would like to have the opportunity to provide information, etc. as the project gets underway, please let me know.
- If you are developing a large project (\$20+ million) in a rural area and would like to discuss opportunities with New Markets Tax Credits, please let me know.
- With our partner FutureMetrics, INRS has developed a method for managing risk beyond diesel.



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