

Energy Diversification

Mitigating Risk with an Integrated Energy Plan

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CONSULTING | ENGINEERING | CONSTRUCTION
ENERGY MANAGEMENT



Think: what would you do?

- Would you invest your 401k in a single stock or fund?
- Would you encourage your kids to only learn 1 career skill?
- Would you start a business with a single client base with a narrowly focused business plan?
- Would you encourage you're young kids to only learn 1 sport?



Think: what would you do?

- How do you gamble at a craps table?
- Would you install a solar PV system on your home?
- Would you install a biomass system in your business if you had natural gas?
- Should you diversify your energy portfolio?

*Do we see things the way they are or
the way they should be?*



Our Myopic View of Energy

“give me the courage to change the things which can and ought to be changed, the serenity to accept the things which cannot be changed, the wisdom to know the difference.”



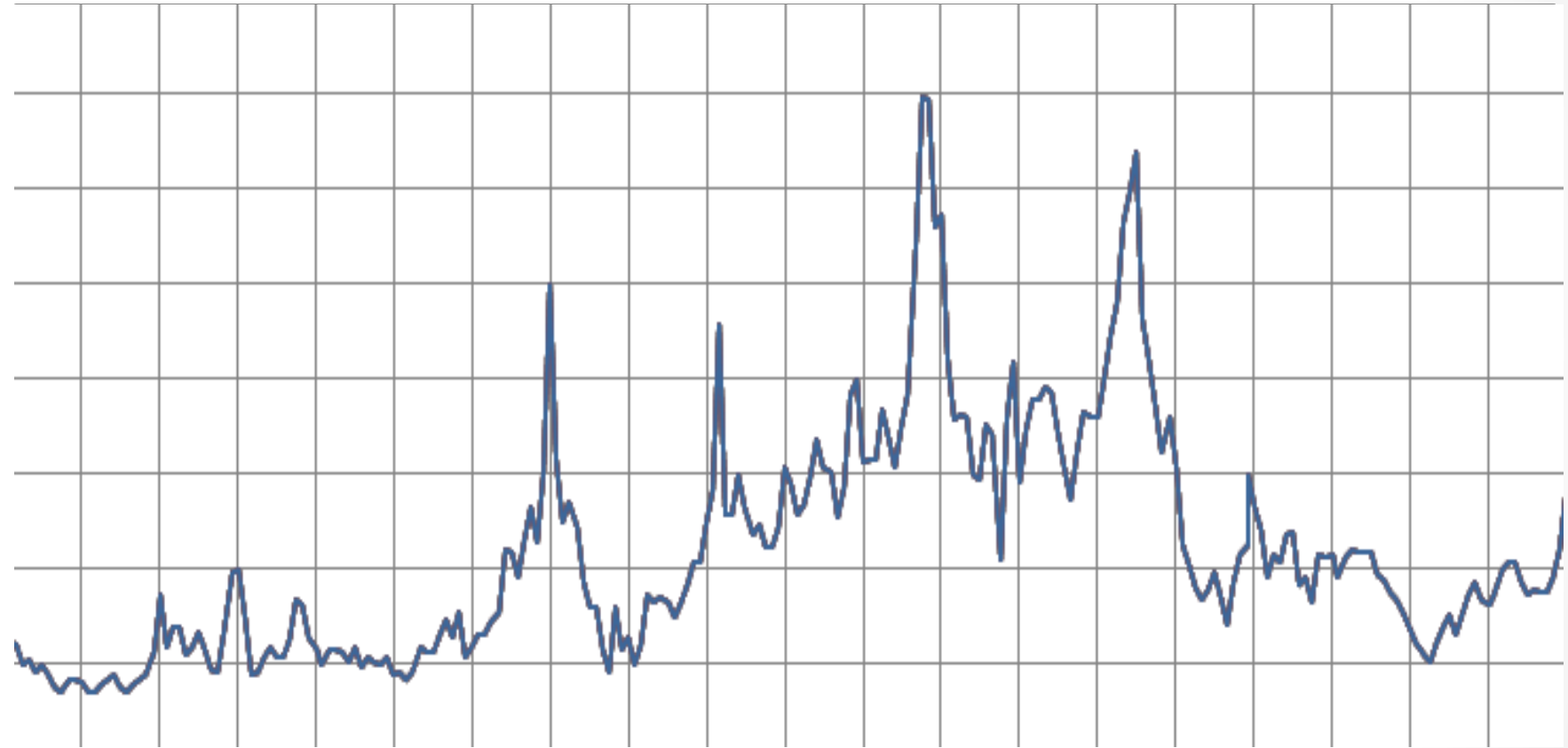
History of Utilities



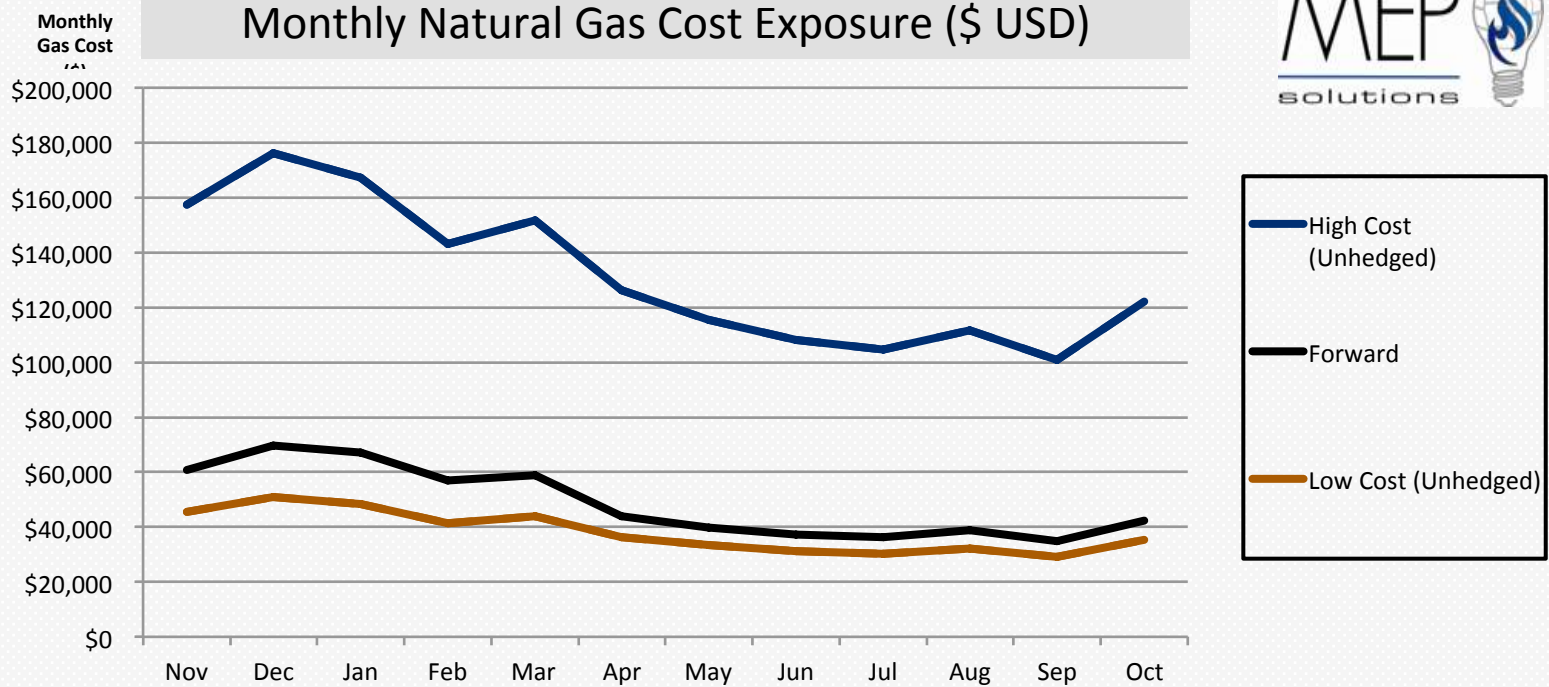
Why diversify our energy portfolio?

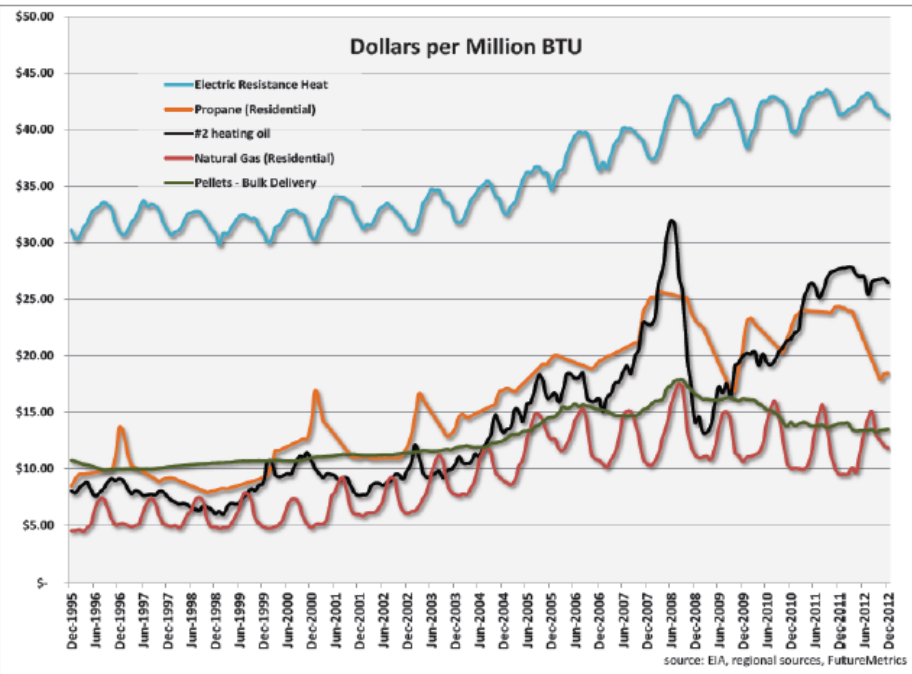


What is this graph?



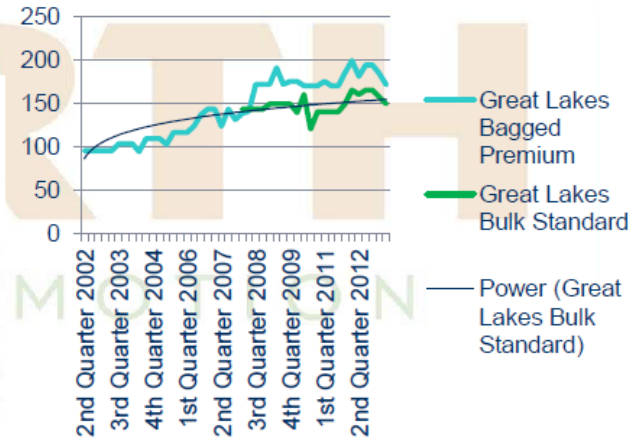
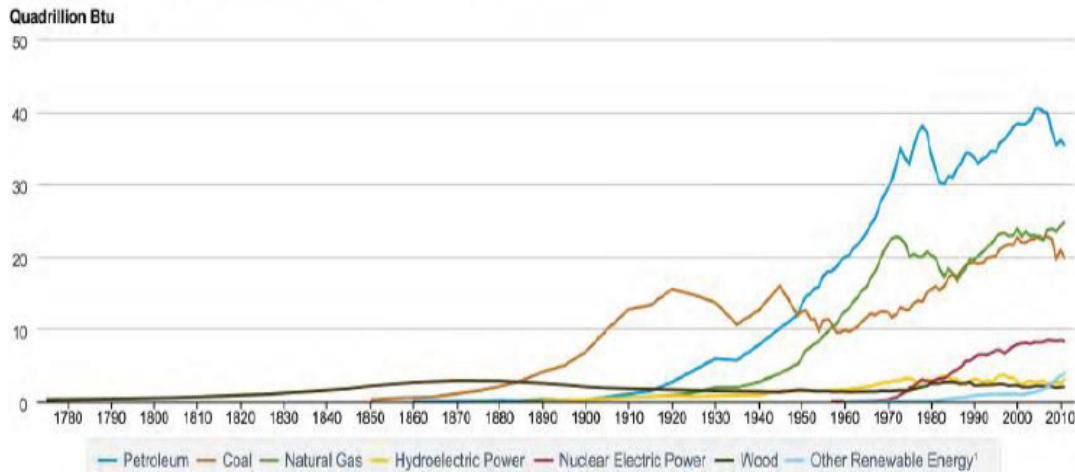
Risk Exposure





**Woody Biomass fuels
are much more
consistent for users
short term and long
term**

U.S. Primary Energy Consumption Estimates by Source, 1775-2011



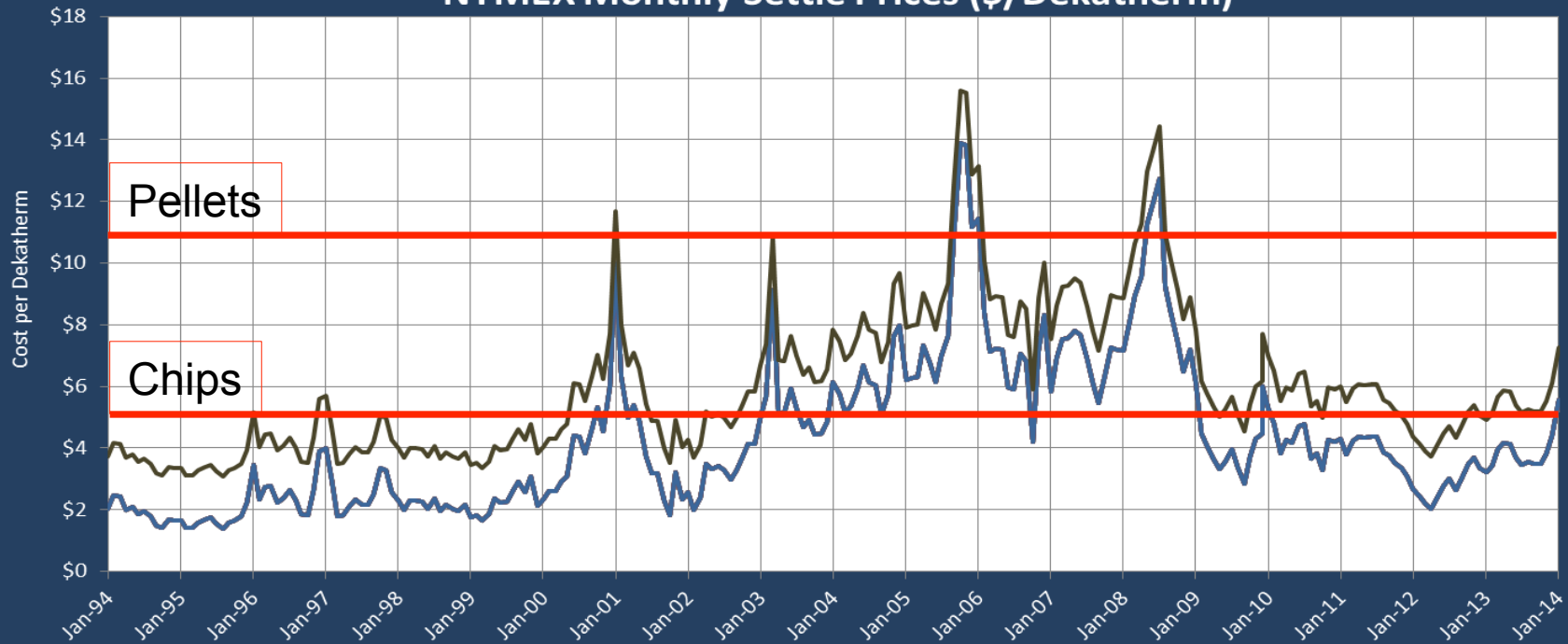
Energy Cost Comparison

Fuel Characteristics				
	Propane	Natural Gas	Wood Chips	Wood pellets
Btu Content	92,000/gallon	100,000/therm	10,000,000/ton	16,000,000/ton
Price	\$2.40/gallon	\$8/DTH	\$50/ton	\$180/ton
Price/MMBTU	\$26	\$8	\$5	\$11

You would not buy health insurance for a company based upon the first year cost alone, so why have this mindset with energy?



NYMEX Monthly Settle Prices (\$/Dekatherm)



What is a
practical
solution?



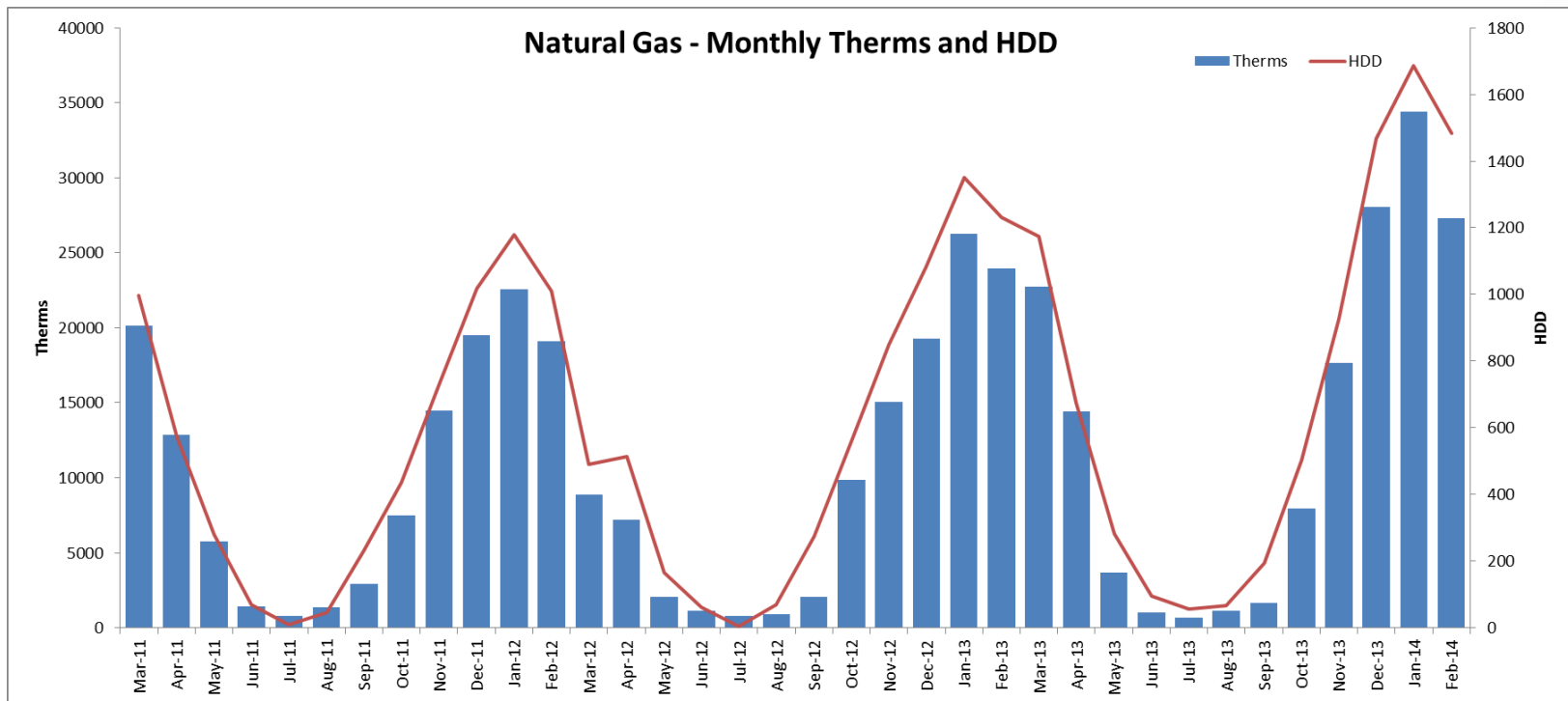
Your Metaphorical Options

Which should you buy?



Example Facility

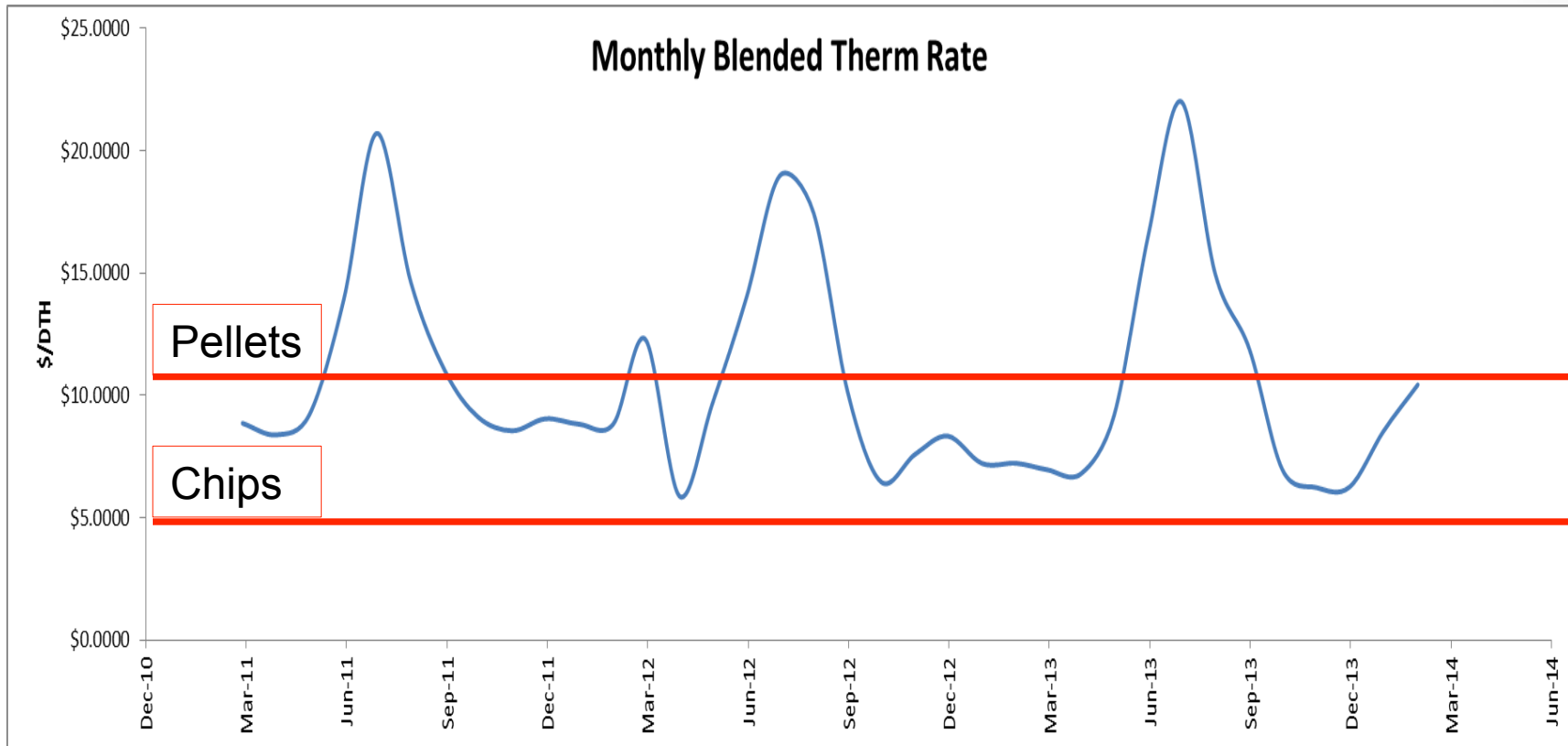
- This facility has 2, 2 MMBTU natural gas boilers on site. One unit is fit to be replaced this summer. What are some boiler options available for this 'risk adverse' client?



Comparing Price Points

With a biomass secondary fuel you can:

- Set a collar price structure (at least a ceiling)
- Have more flexibility hedging your natural gas
- Lower gas basis costs



I need Money



Financing – think like Wall Street

- Use your equity [Mortgage]
- Municipal Bonds / State Trust Fund Loans
- Revolving Loan Funds
- PACE Financing
- Performance Contracting



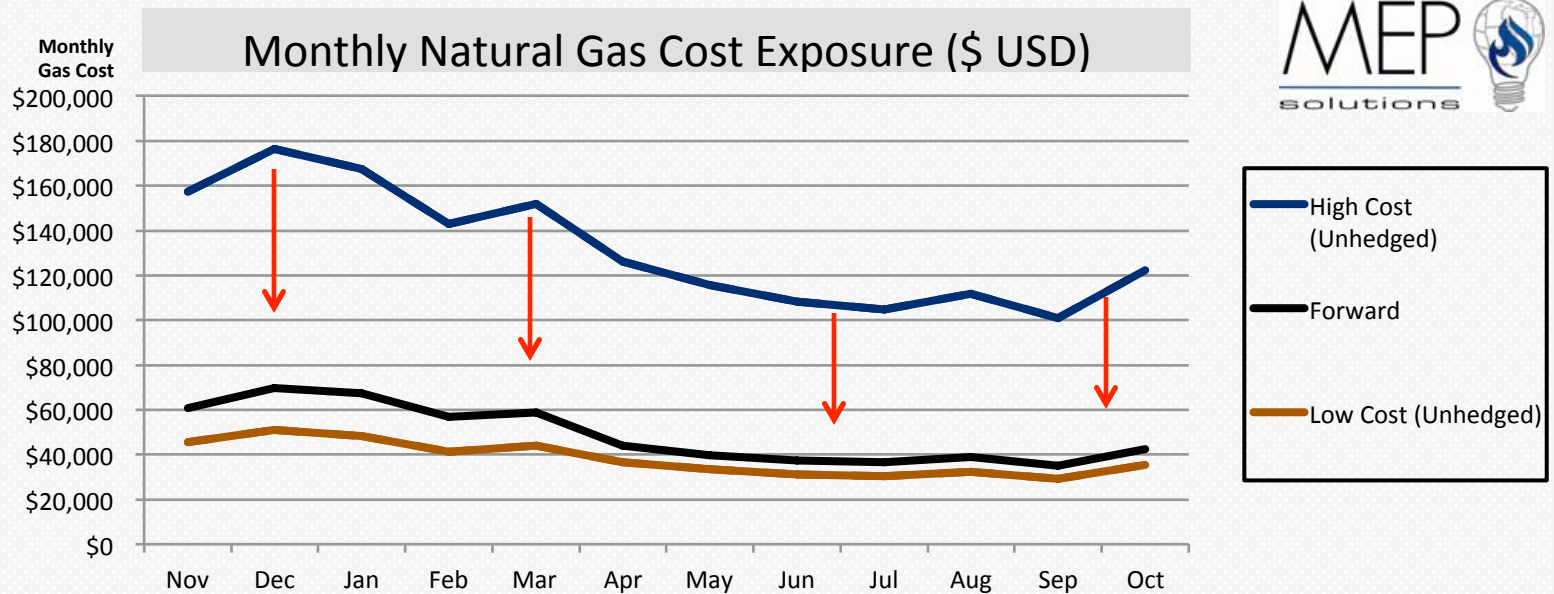
So....Would you invest?

A biomass energy project costs \$1 million dollars. It will save the entity \$25,000 annual in savings. The simple payback is 40 years. Is this a good investment? Do you have all the facts to make a judgment call?



Conclusion

- With energy variation you can mitigate risk (Collar Price)
- Energy variation can be financially feasible
- Energy should be approached like other areas of ones life



Questions?

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