ICIS - Global Presence, Local Insight

Weekly contact with thousands of market participants

Over **100,000** industry customers

Customers include virtually every major chemical company

17,000+ annual news stories

More than **30 years** of industry insight and data

Over **9,200** price assessments in **1,200** reports covering **180** commodities

~800 global employees

ICIS

Chemicals Energy Fertilizers

Prices | News | Analysis | Consulting

ICIS

Market intelligence for the energy, chemical and fertilizer industries

ICIS Purchasing Advisory Service

Presented by James Ray

ICIS Purchasing Advisory Service

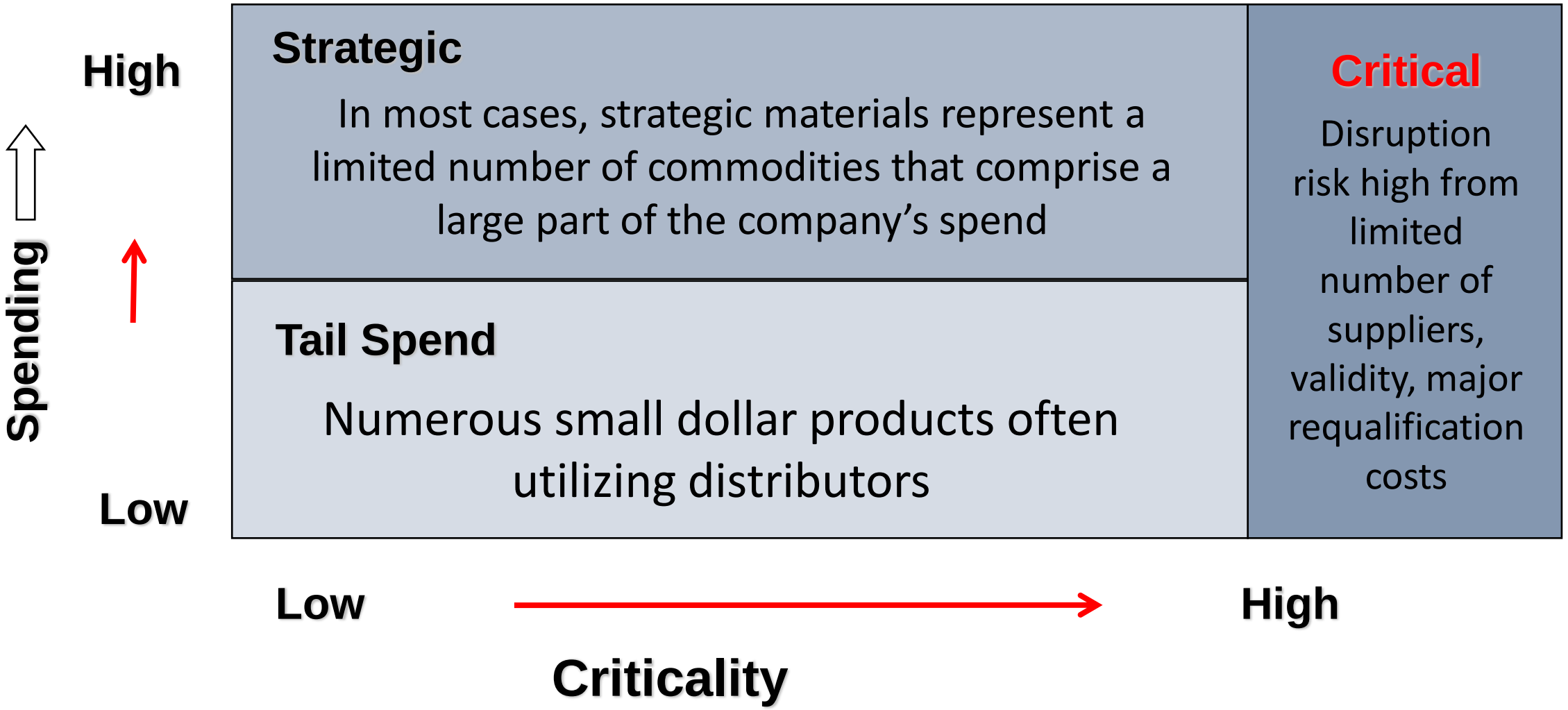
1. ICIS is a global leader in helping purchasing professionals
2. ICIS Purchasing Advisory has saved clients over $100 million globally
3. Purchased feedstock and/or raw materials represent the largest percentage of cost, therein lies the largest opportunity that justifies retaining professional assistance
4. Reduced costs improve your bottom line, competitive position, sales growth and the overall health of the business

ICIS Purchasing Advisory Service

In today’s markets, you don’t just walk in to a negotiation and get the best price

It takes market intelligence, analytics, strategic planning and years of preparation

Spend Classification



A one size fits all purchasing strategy will NOT work.

Purchasing Vision

Strategic Sourcing to insure the lowest cost

- I’m selling you a product:

5,000,000	Units/year
$3.00	Price per Unit ($1.95 cost from your cost modeling)
$15,000,000	Revenue
35%	Gross Margin
$5,250,000	$ Profit

But I want a 5% or $750,000 increase.

You tell me that I will lose 25% of my business if I enforce such an increase AND from past experience, I have no doubt its true.

Strategic Sourcing to insure the lowest cost

- What am I going to do now?

5,000,000	Units	3,750,000	New Volume - Units
$3.00	Price per Unit	$3.15	New Price per Unit
$15,000,000	Revenue	$11,812,500	New Revenue
35%	Gross Margin		
$5,250,000	$ Profit	$4,500,000	New $ Profit

If I'm smart, I will realize that **my profit has dropped $750,000**.

Guess what?

No increase, because you have a strategic plan in place to insure the lowest cost.

But how do we get there?

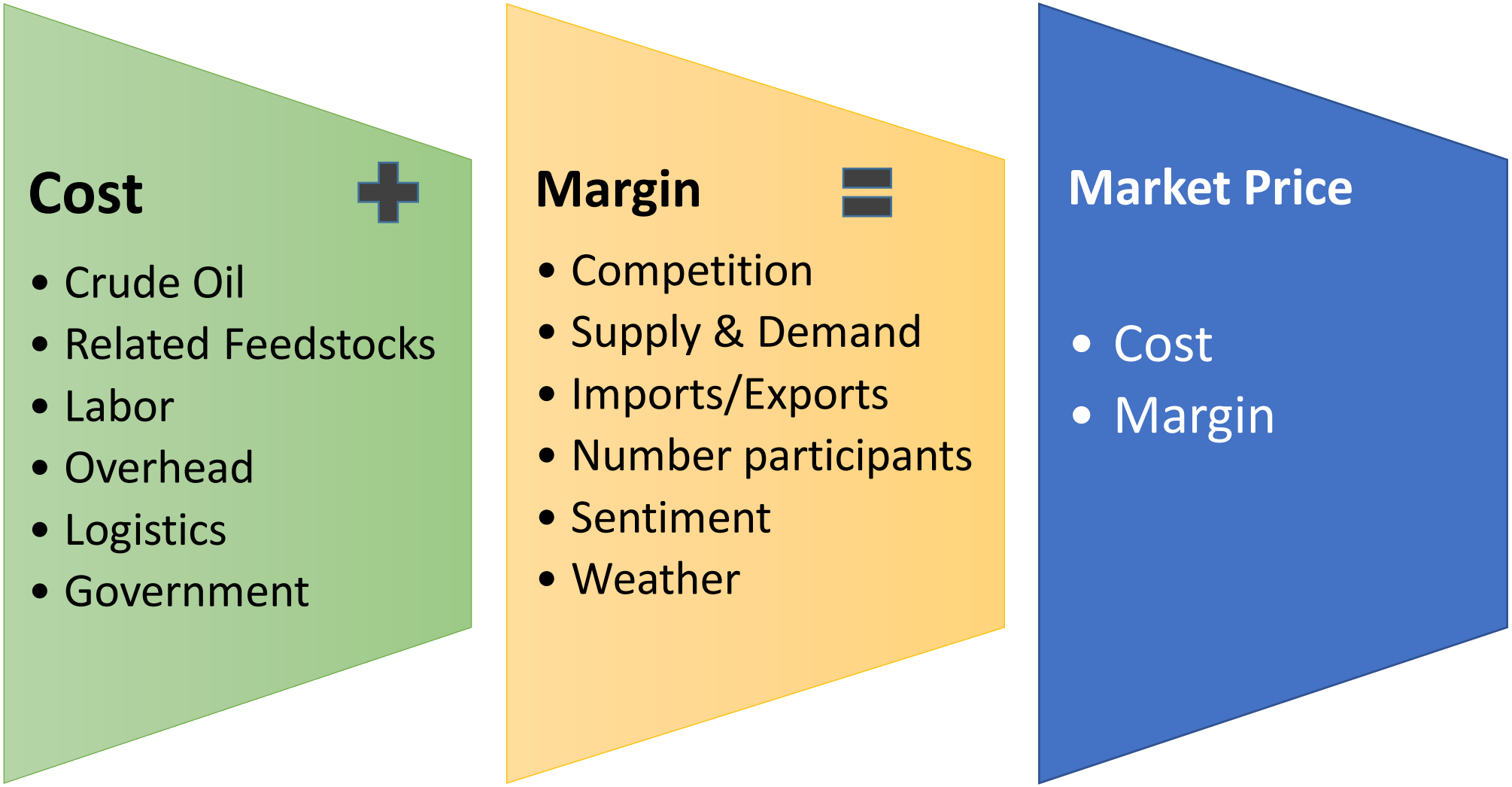
Now lets turn it around

- Looking at your pricing, we need a 5% decrease.

Agree		**Disagree**	
5,000,000	Units	3,750,000	25% Less Units
$2.85	Price per Unit	$3.00	Price per Unit
$14,250,000	Revenue	$11,250,000	Revenue
$4,500,000	$ Profit	$3,937,500	$ Profit
($750,000)	Profit loss	($1,312,500)	$ Profit loss

Now we are negotiating when the decrease will be implemented with our much more cooperative supplier.

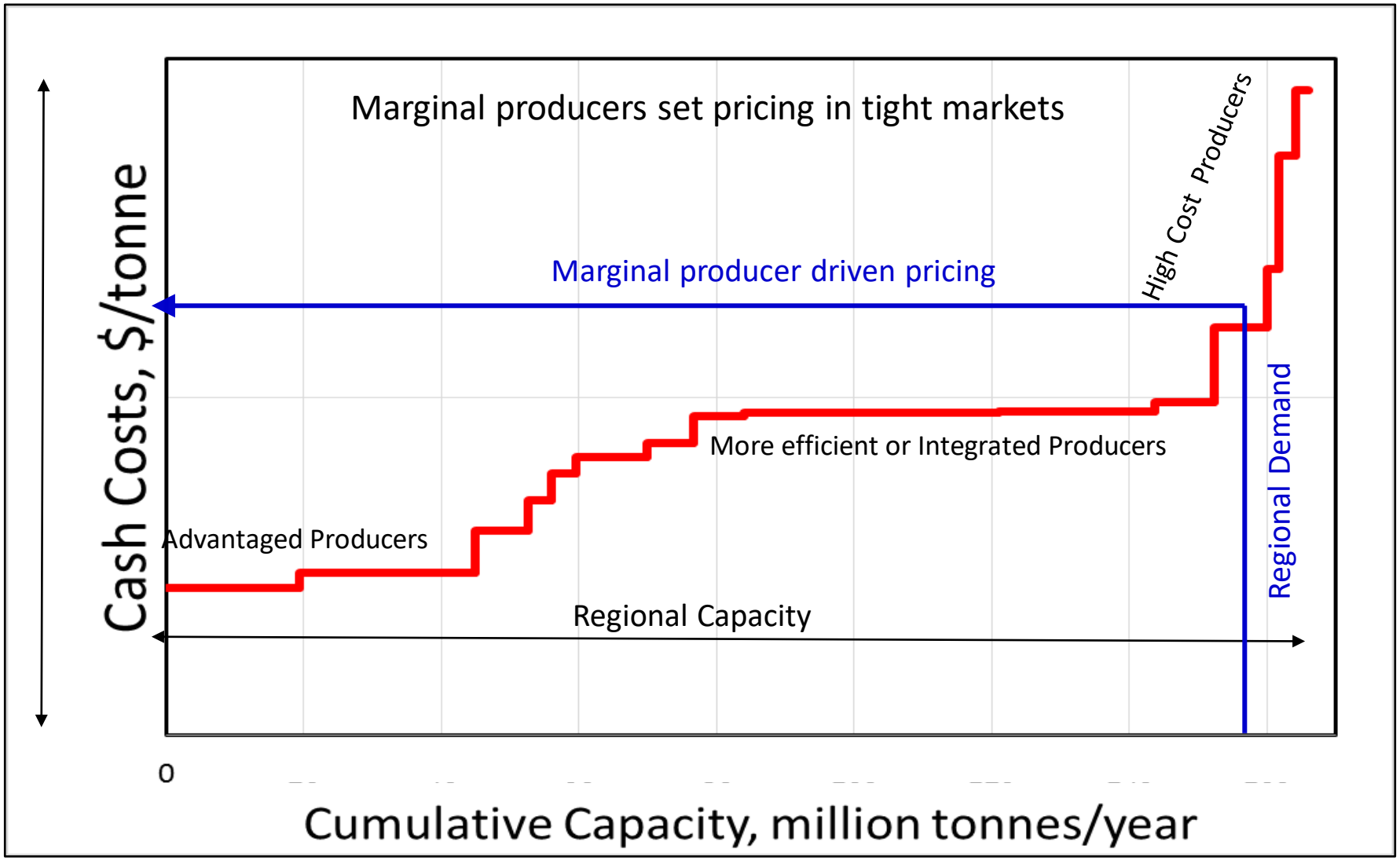
Understanding Market Prices



Margin is the most negotiable portion and therefore the largest opportunity for savings.

Source: ICIS Purchasing Advisory Service

At ICIS, we understand markets in detail

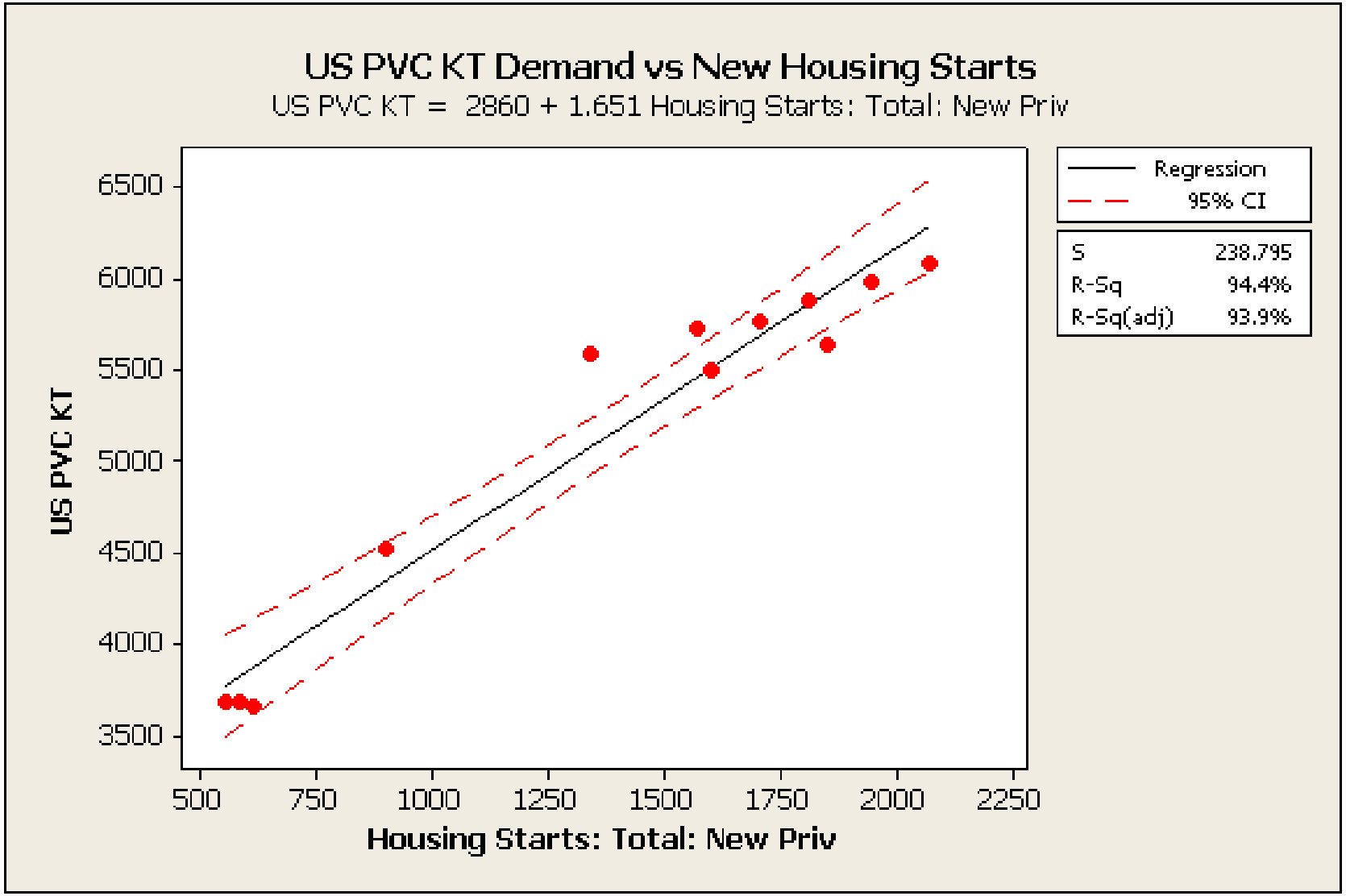


Advantaged producers benefit from higher margins and have no problem selling their lower cost product

Source: ICIS Advanced Purchasing Course

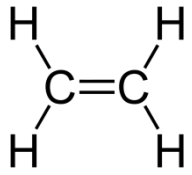
At ICIS, we understand markets in detail

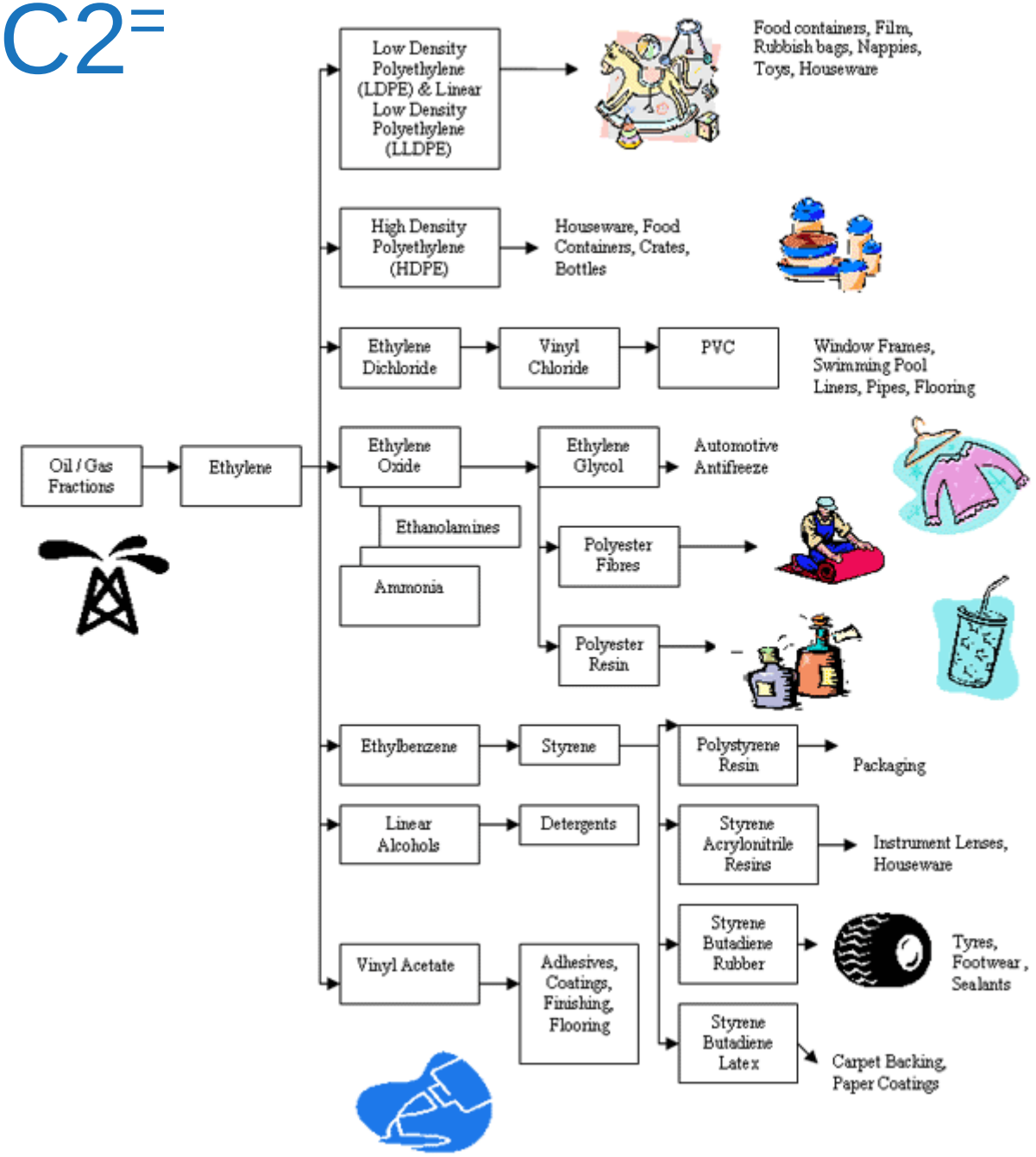
Housing Permits are a leading indicator for **Housing Starts**, which is a leading indicator for an increase in demand and price for **PVC** and other construction related products.

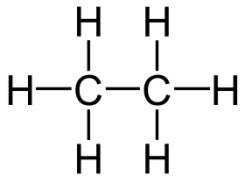


Source: ICIS Advanced Purchasing Course

Ethylene, $C2^{=}$





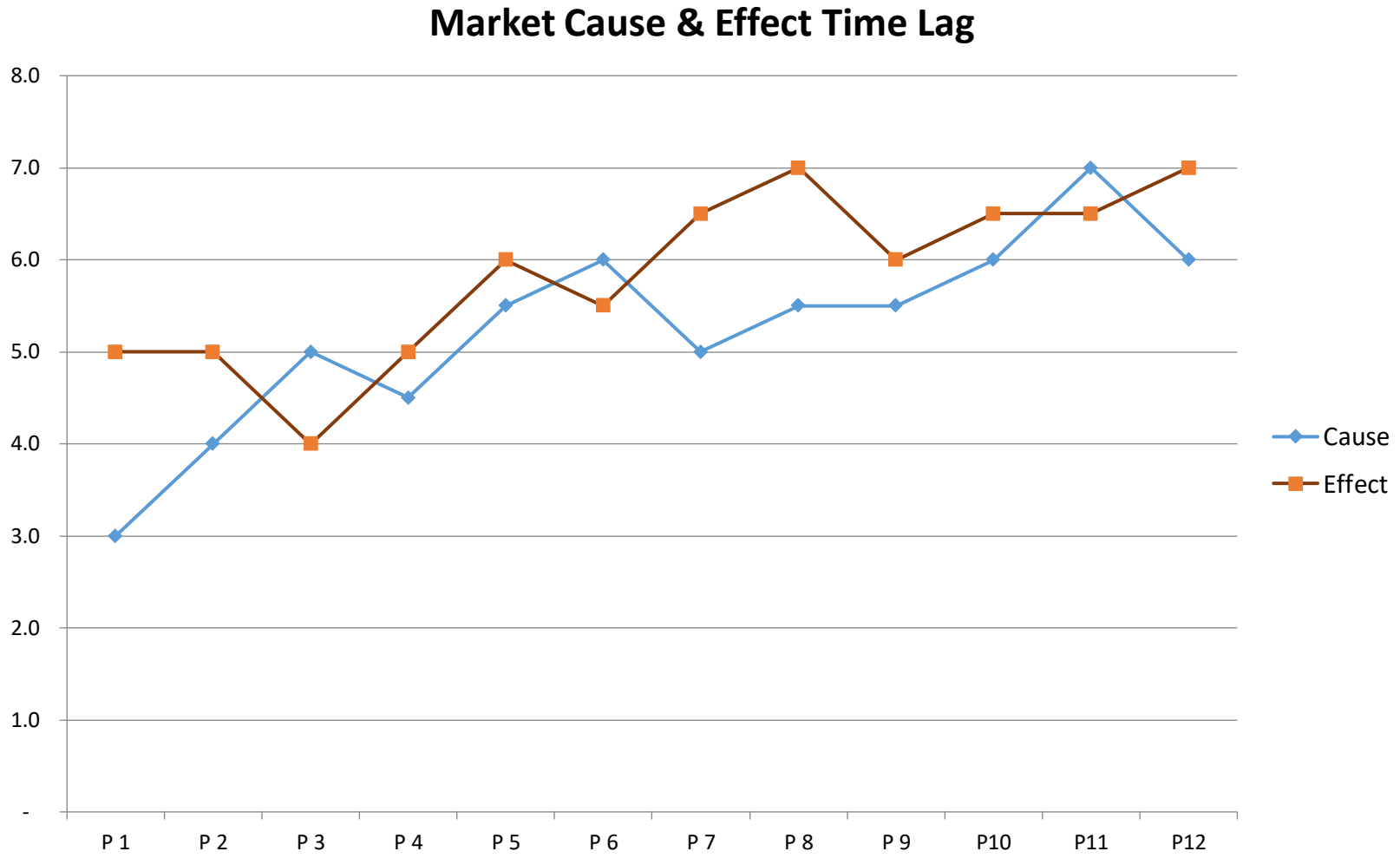


Ethane C2

At ICIS, we understand the value chain and how it impacts your business

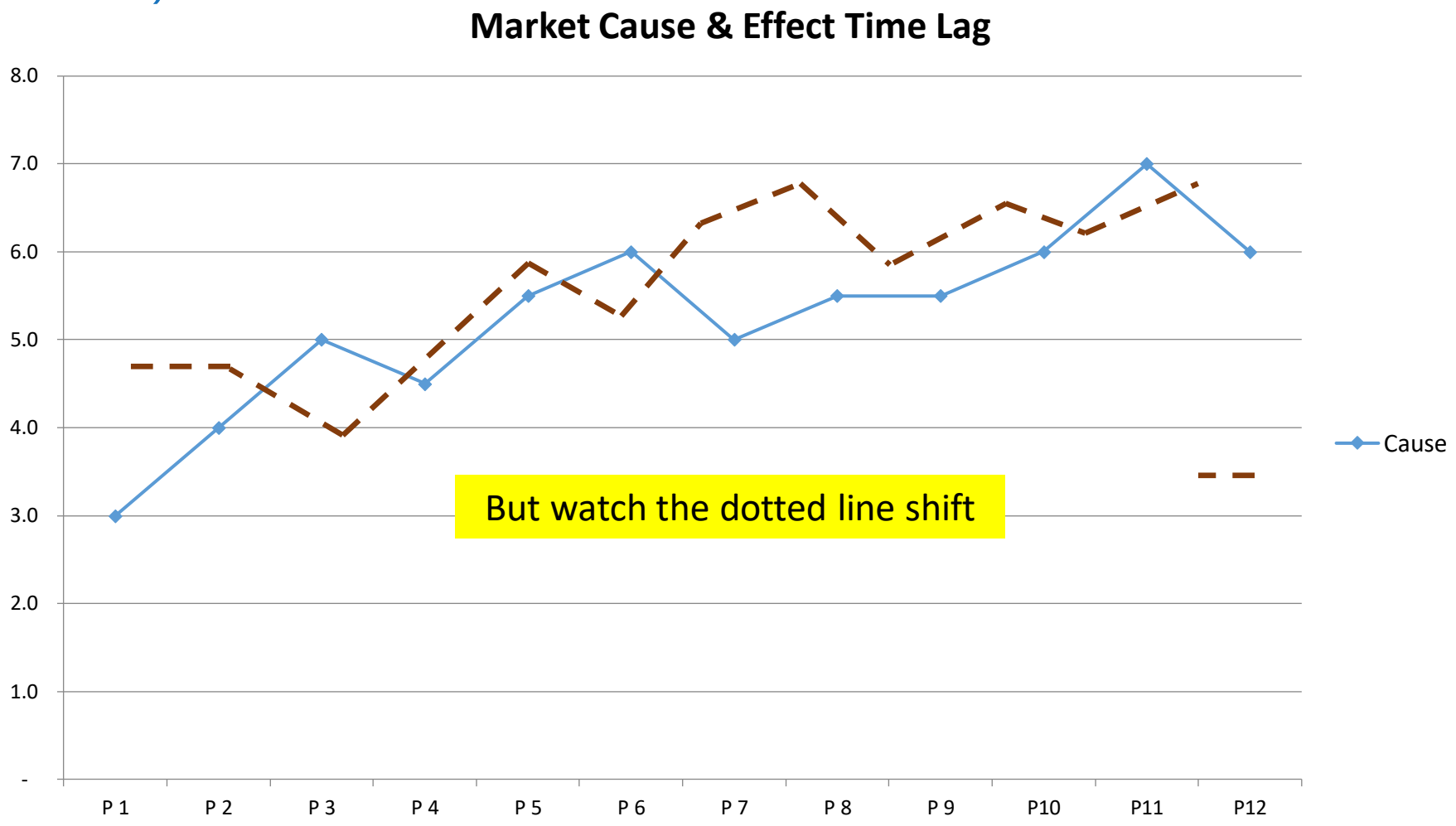
Source: ICIS Advanced Purchasing Course

Understanding market time lags
(Leading indicators)



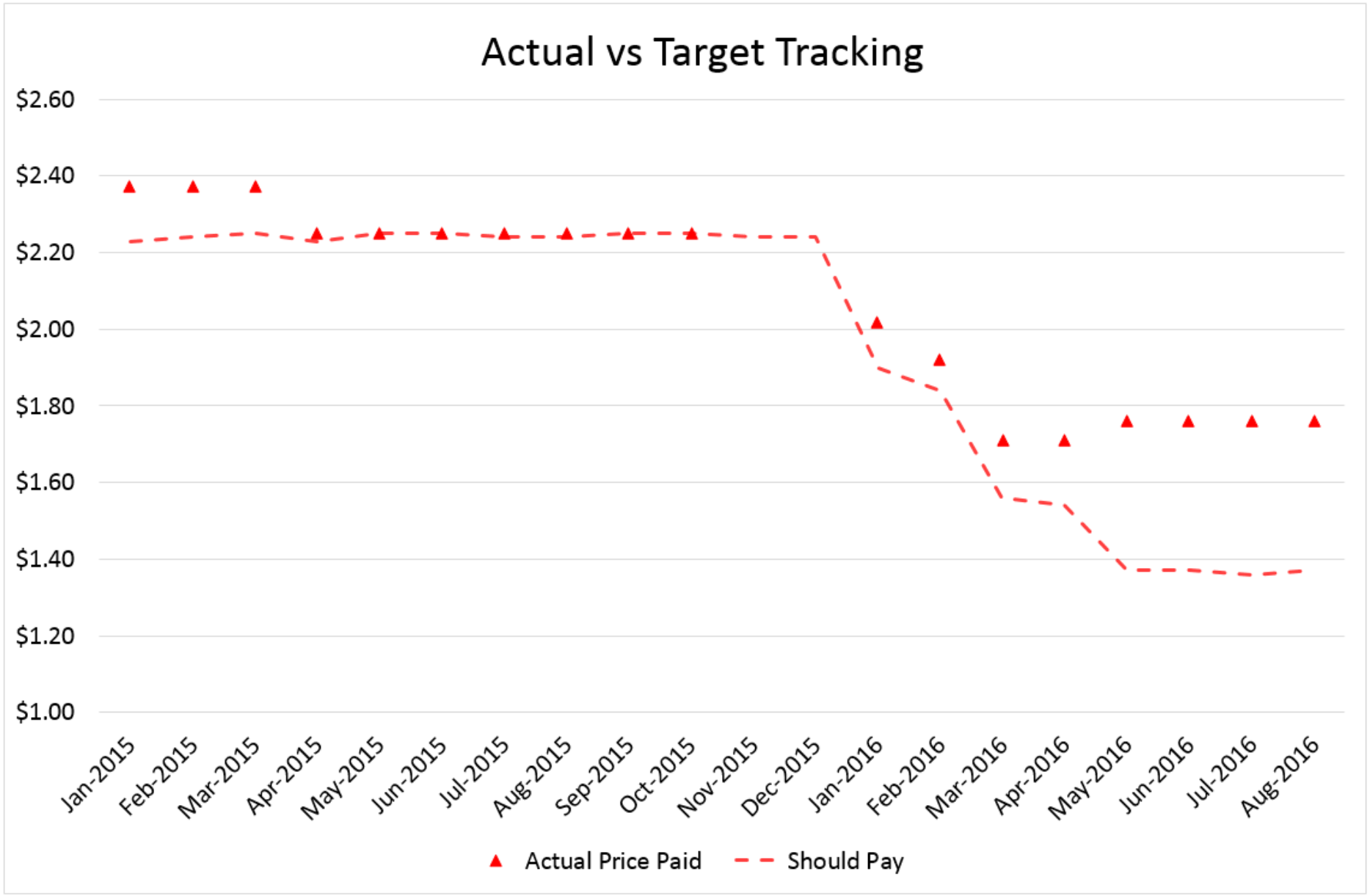
These two lines do NOT fit well

Understanding market time lags
(Leading indicators)



Cause & Effect lines fit well when adjusted for time lag

What should you be paying?



Source: ICIS Advanced Purchasing Course

Do you know when your suppliers have increased their margins on you?

You may not be able to prevent it, but if you know its happening and have a opportunity to monitor and later recover it.

COST MODELING

POLYPROPYLENE VIA UOP OLEFLEX PROPANE DEHYDROGENATION

Capital Investment, $ Million					
Fixed Investment	396		350	Thousand Tonnes annual capacity	
Working Capital	35		8,000	Hours per Year basis	
Total	431		91%	= Lbs->	701,974,000
Raw Material Costs	**Units/Tonne PP**	**Units**	**Price**	**Units**	**Costs / PP Tonne**
Propane Feedstock	1.26	Ratio	**0.90**	Gal	$ 592.26
Catalysts & Chemicals, Royalties (.7%)	1	Unit	**13.3**	$/Tonne	$ 13.30
Other	0	lbs.	**0**	$/lb	$ -
Total					$ 605.56
Operating Costs					
Utilities:	**Units/Tonne PP**	**Units**	**Price**	**Units**	**Costs / PP Tonne**
Electricity	149.00	kWH	**0.048**	$/kWH	$ 7.15
Boiler Feed Water	0.06	Mgal	**1.300**	$Mgal	$ 0.08
Cooling Water	36.20	Mgal	**0.135**	$/Mgal	$ 4.89
Natural Gas	1.19	MM Btu	**3.301**	$/MM Btu	$ 3.93
Labor: (around the clock, excl Maint.)					
Wage	6	Persons	**26.40**	$/Hr	$ 3.979
Salary	4	Persons	**99,400**	$/Yr	$ 1.248
Benefits			50	% Persons	$ 2.614
Maintenance	3.0	% of Fixed Investment			$ 33.94
Plant Overhead	2.0	% of Fixed Investment			$ 22.63
Taxes & Insurance	3.0	% of Fixed Investment			$ 33.94
Handling & Distribution Costs					$ 44.08
Polymerization to PP Costs			0.123	$ / lb	$ 271.09
Total Operating Costs					$ 429.57
General & Administrative	17.0	% Potential Cash Cost			$ 173.93
Total Cash Cost			$ 0.55	$/lb	**$ 1,209.07**
Revenues	**Units/Tonne PP**	**Units**	**Price**	**Units**	**Costs / PP Tonne**
By Products					$ -
Hydrogen					$ -
C4 Mix Stream					$ -
C5 Mix Stream					
Polypropylene Market Sales			**$ 0.70**	$ / Lb	$ 1,542.80
Total Revenues					$ 1,542.80
EBIDTA per Lb / Tonne			$ 0.15	$/lb	$ 333.73
			28%	Gross Margin	
KEY					
Market Price Fields to update monthly					
Cost fields to update annually					

Cost models help us know where to prioritize our time and resources.

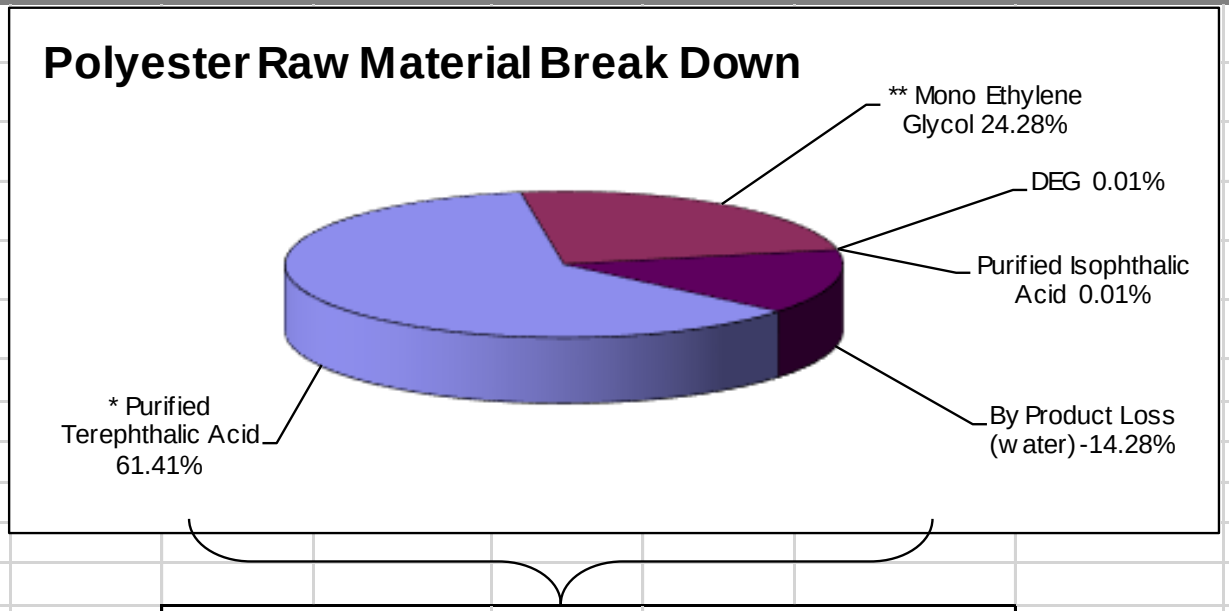
We are going to focus more time and effort on products with high margins to avoid wasting time elsewhere.

In cases where our sellers margins are low, we are alerted to potential supplier viability concerns and can investigate this to avoid unexpected disruptions

Product Cost Management: Polyester

Cost Breakdown

	% Breakdown
* Purified Terephthalic Acid	86.0%
** Mono Ethylene Glycol	34.0%
Purified Isophthalic Acid	0.02%
DEG	0.02%
By Product Loss (water)	-20.00%
Materials	100.0%



Other Costs		Avg Annual Inflation
Raw Materials	42.94%	0.00%
Labor % of COGS	7.00%	0.00%
Over Head %	25.10%	0.00%
Margin	25.00%	0.00%
Total Cost %	100.0%	

Raw Material Represents 42.94% of Total Cost

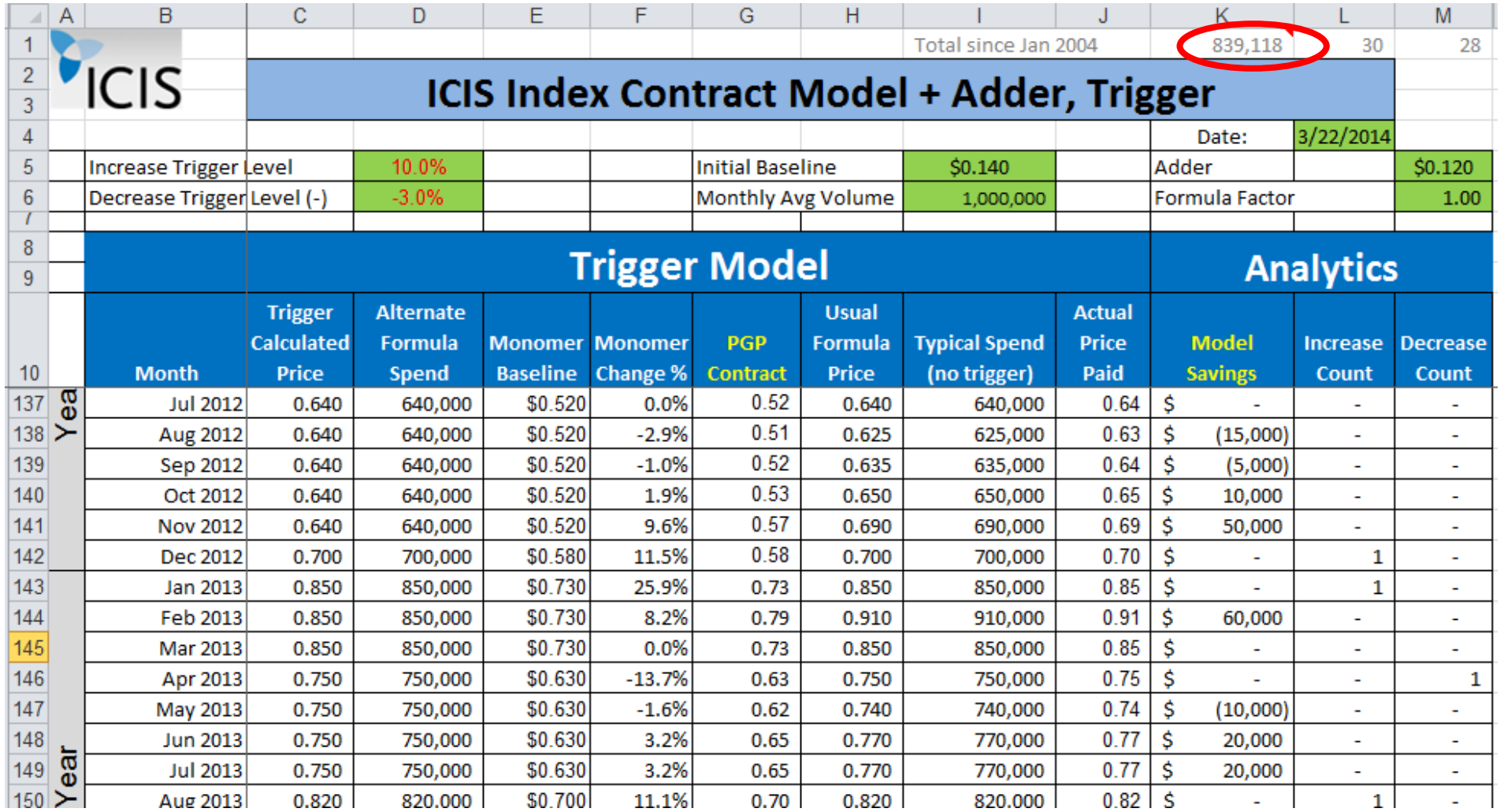
Cost Adjustment Model

Chemical	Base Line Price / lb	Current Price / lb	Index Change	Chemical Breakdown	Formula Cost Change	Raw Matl Net Chg $	Other Costs	Other % of COGS	Other Costs	Total Change	Annual Spend	Final Cost Impact US$
	7/1/14	8/1/15	per lb	(Recipe)	per lb - %		Change		Net Chg %	%	US $	
* Purified Terephthalic Acid	$0.600	$0.490	-$0.110	86.0%								
** Mono Ethylene Glycol	$0.680	$0.410	-$0.270	34.0%	-29.3%	$ (0.19)	0.00%	57.06%	0.00%	**-12.57%**	$1,000,000	-$125,675
Other	$1.000	$1.000	$0.000	0.0%								

Blue Background denotes frequent user fields for data entry

Source: ICIS Advanced Purchasing Course

Formula pricing

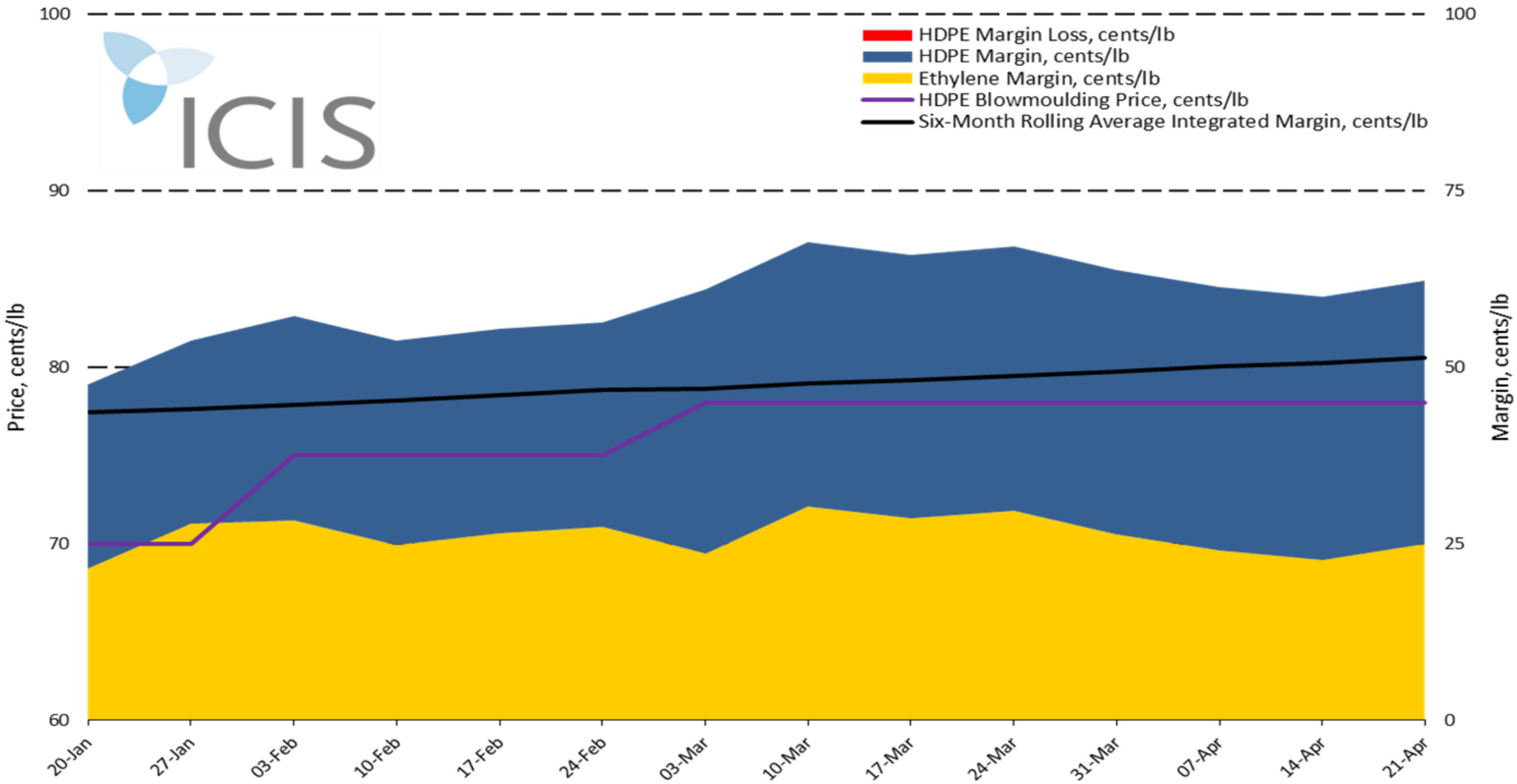


ICIS Index Contract Model + Adder, Trigger

										Total since Jan 2004	839,118	30	28
										Date:	3/22/2014		
		Increase Trigger Level	10.0%			Initial Baseline	$0.140			Adder		$0.120	
		Decrease Trigger Level (-)	-3.0%			Monthly Avg Volume	1,000,000			Formula Factor		1.00	
		Trigger Model								Analytics			
		Month	Trigger Calculated Price	Alternate Formula Spend	Monomer Baseline	Monomer Change %	PGP Contract	Usual Formula Price	Typical Spend (no trigger)	Actual Price Paid	Model Savings	Increase Count	Decrease Count
137	Yea	Jul 2012	0.640	640,000	$0.520	0.0%	0.52	0.640	640,000	0.64	$ -	-	-
138		Aug 2012	0.640	640,000	$0.520	-2.9%	0.51	0.625	625,000	0.63	$ (15,000)	-	-
139		Sep 2012	0.640	640,000	$0.520	-1.0%	0.52	0.635	635,000	0.64	$ (5,000)	-	-
140		Oct 2012	0.640	640,000	$0.520	1.9%	0.53	0.650	650,000	0.65	$ 10,000	-	-
141		Nov 2012	0.640	640,000	$0.520	9.6%	0.57	0.690	690,000	0.69	$ 50,000	-	-
142		Dec 2012	0.700	700,000	$0.580	11.5%	0.58	0.700	700,000	0.70	$ -	1	-
143	Year	Jan 2013	0.850	850,000	$0.730	25.9%	0.73	0.850	850,000	0.85	$ -	1	-
144		Feb 2013	0.850	850,000	$0.730	8.2%	0.79	0.910	910,000	0.91	$ 60,000	-	-
145		Mar 2013	0.850	850,000	$0.730	0.0%	0.73	0.850	850,000	0.85	$ -	-	-
146		Apr 2013	0.750	750,000	$0.630	-13.7%	0.63	0.750	750,000	0.75	$ -	-	1
147		May 2013	0.750	750,000	$0.630	-1.6%	0.62	0.740	740,000	0.74	$ (10,000)	-	-
148		Jun 2013	0.750	750,000	$0.630	3.2%	0.65	0.770	770,000	0.77	$ 20,000	-	-
149		Jul 2013	0.750	750,000	$0.630	3.2%	0.65	0.770	770,000	0.77	$ 20,000	-	-
150	Year	Aug 2013	0.820	820,000	$0.700	11.1%	0.70	0.820	820,000	0.82	$ -	1	-

Modeling contract formula prices over 10 years history
and 10 year forecast demonstrates their long term impact

Naphtha-Based Contract HDPE Margins



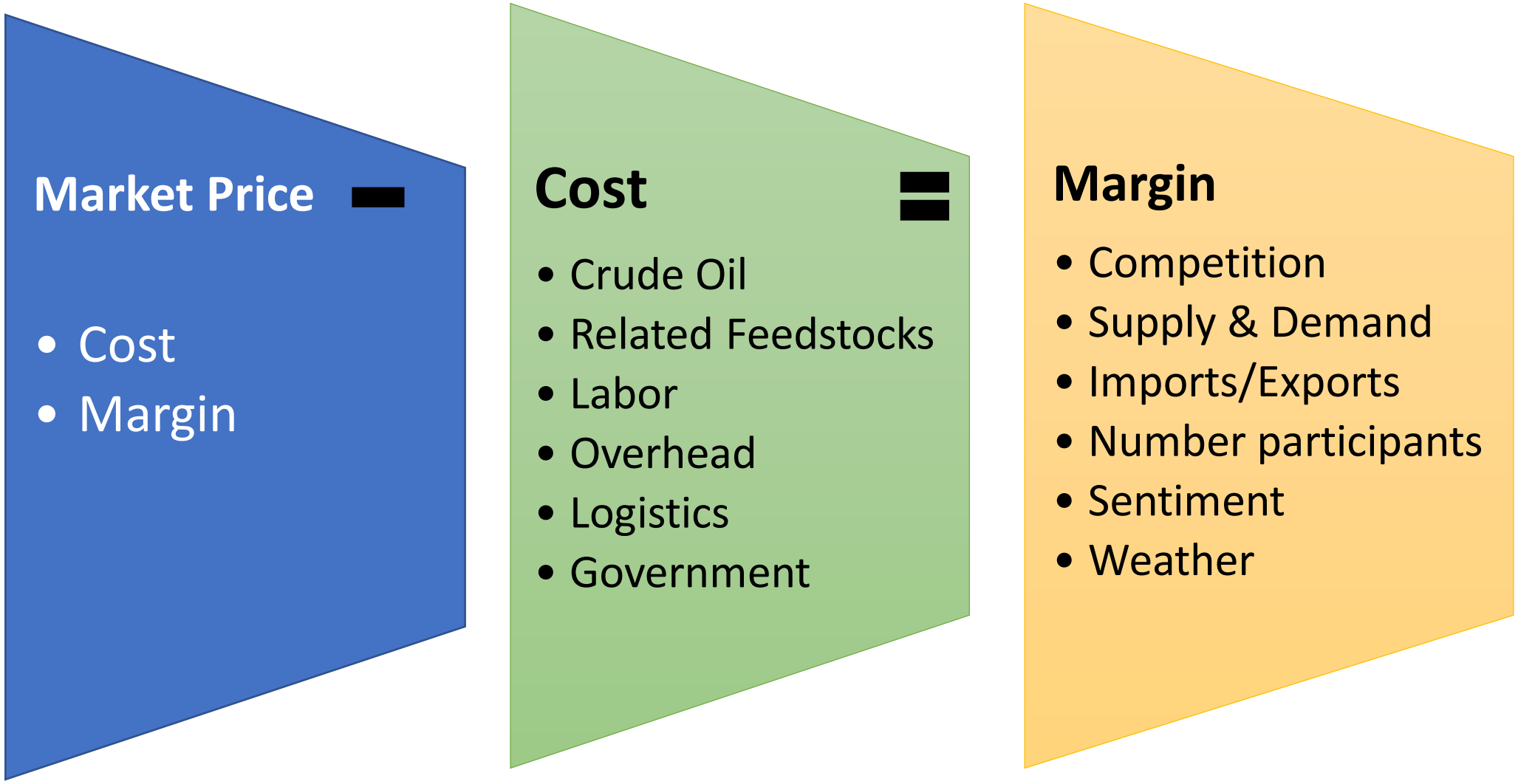
Source: ICIS Consulting

We start by identifying opportunities

Sample Opportunity Analysis					
Summary Totals	**$ 2,054**	**1.4**		**$ 814**	
Opportunity Description	**Potential Annual Savings($000)**	**Effort / Manpower**	**Probability of Success**	**Prorated Benefit ($000)**	**25% Time Allocation**
Project A	$ 205	5%	80%	**$ 164**	
Project F	$ 263	15%	100%	**$ 263**	$ 427
Project D	$ 415	15%	50%	**$ 207**	
Project E	$ 124	10%	50%	**$ 62**	$ 269
Project C	$ 234	10%	20%	**$ 47**	
Project H	$ 93	15%	40%	**$ 37**	$ 84
Project B	$ 707	40%	4%	**$ 28**	
Project G	$ 14	30%	40%	**$ 6**	$ 34

We consider – time & resources required, probability of success and other factors that help prioritize them to deliver the most bang for the buck.

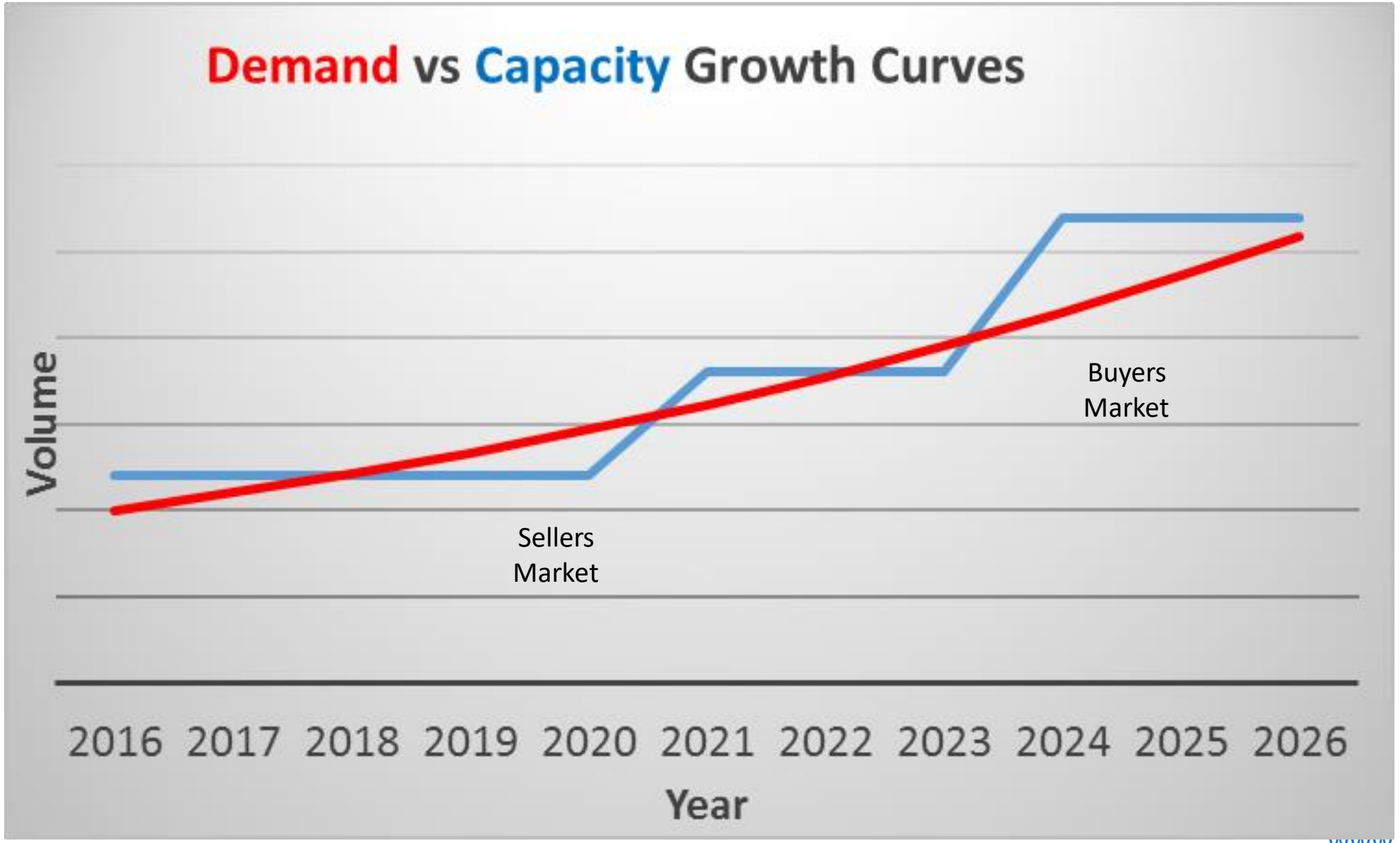
Understanding Market Prices



A Buyers market perform differently

Source: ICIS Purchasing Advisory Service

Strategic sourcing to ensure the lowest cost



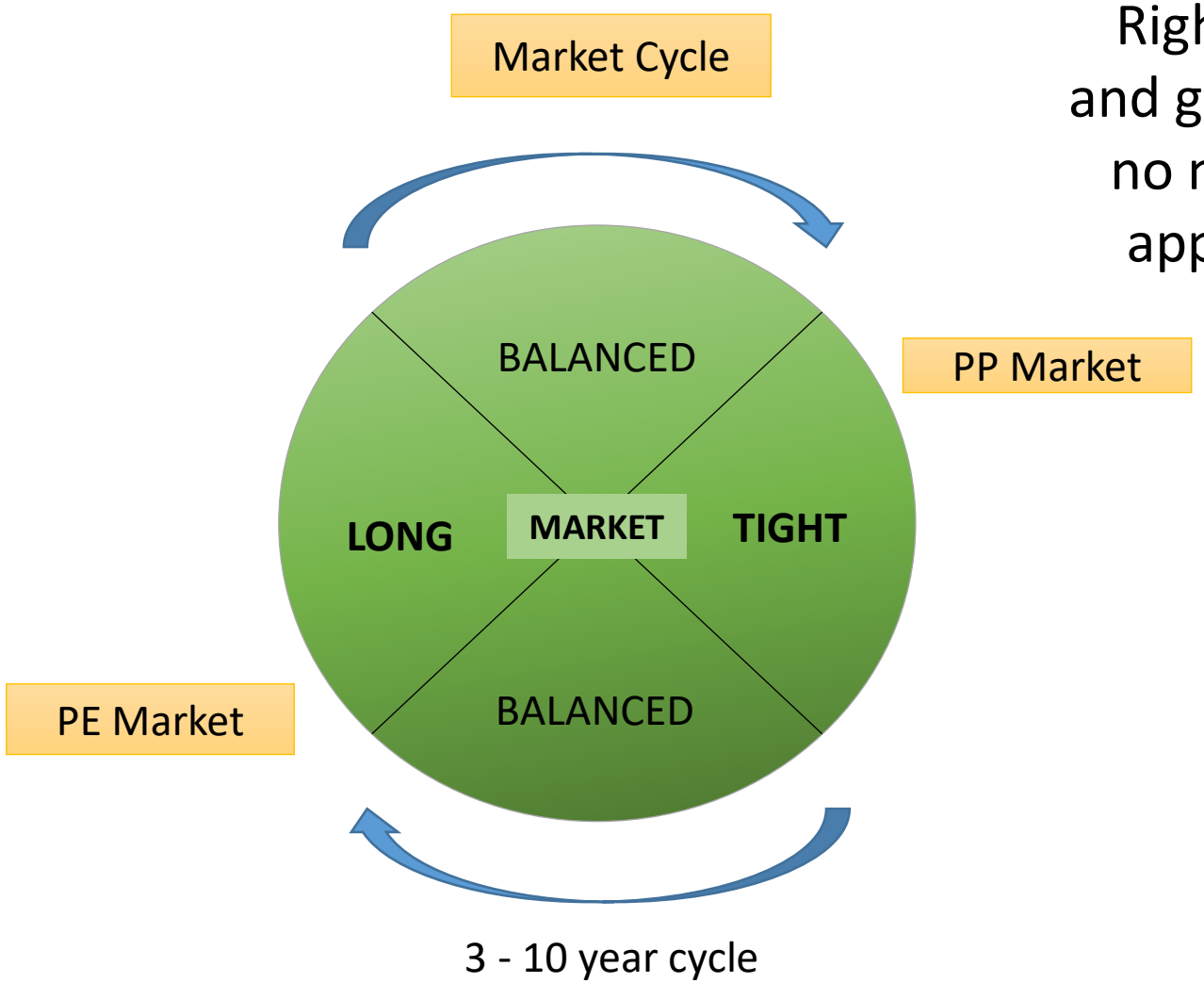
Source: ICIS Advanced Purchasing Course

Supply & Demand Cycles

Most markets go through a cycle of:

1. Tight
2. Balanced
3. Long supply

Over several years which will affect your buy/sell strategy

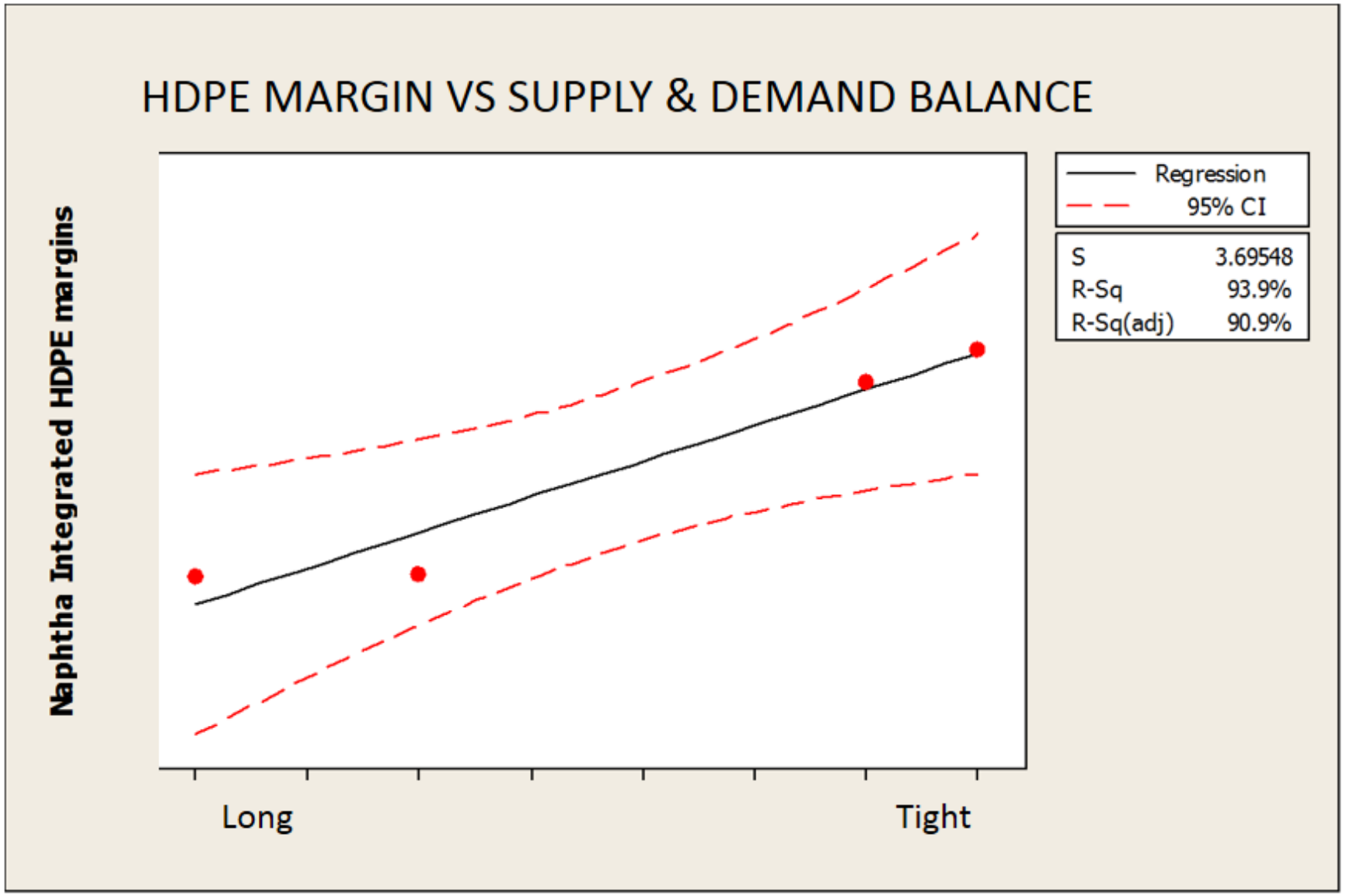


Right now, PP is tight and growing tighter with no new capacity until approximately 2020

PE on the other hand is slightly long and growing longer

Source: ICIS Purchasing Advisory Service

Margin analysis



Source: ICIS Purchasing Advisory Service

Lower utilization historically leads to lower margins & adders

Higher utilization leads to higher margins and adders

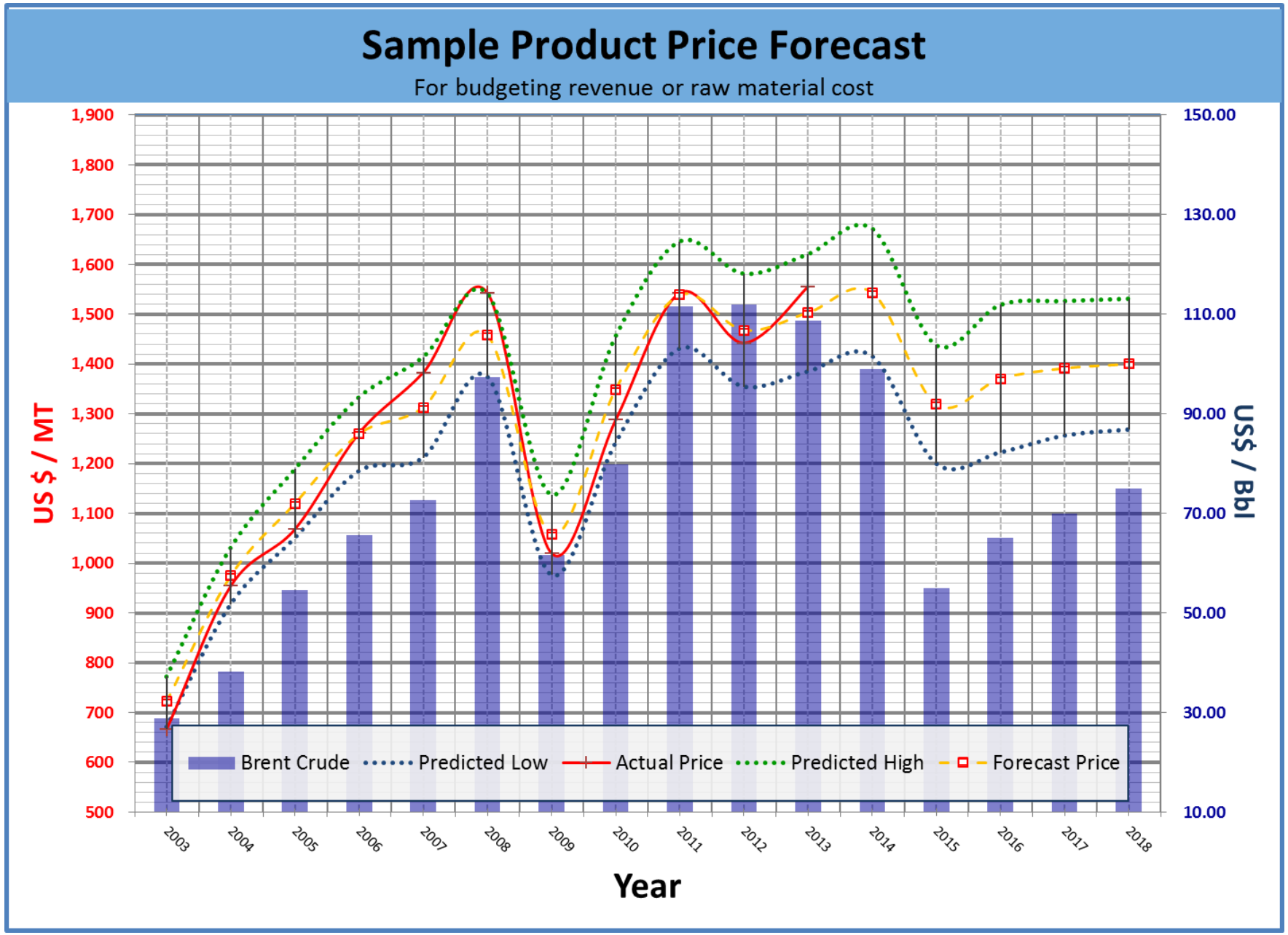
Quality Supply & Demand intelligence is a good indicator to adders and margins

Using High and Low Risk

Supply Risk		
Factor	**Value**	**Comment**
Contract Price / Unit	$ 425.00	Contract Price
Forecast Best Case Scenario	$ 500.00	Best Case Scenario
Forecast Worst case Scenario	$ 300.00	Worst Case Scenario
	7,500	Metric Tonnes / Year
	90.0%	90% Confidence Interval
Up Side	$506,250	Best Case Scenario
Down Side	-$843,750	Worst Case Scenario
	-$168,750	Midpoint
* Light Blue background denotes user entered fields		

1. Offered a long term contract at $425/Tonne, should I accept it?
2. Given a forecast with a 90% confidence interval of $300 to $500/tonne,
3. The answers is NO; I should NOT accept it as I have too much downside, and limited upside.

Using High and Low Risk



Target pricing example

Description: Plastic Gift	**Product:** Marketing Promotion									
Annual Volume: 150,000 units	**Quotation Based On:**			A = 100,000 units			B = 200,000 units			C = 300,000 units
General	**Quotations**									
Information	**Supplier X**			**Supplier Y**			**Supplier Z**			**TARGET**
Previous Price	$29.50			No Quote			No Quote			No Quote
Product Cost Breakdown	**A**	**B**	**C**	**A**	**B**	**C**	**A**	**B**	**C**	**C**
Materials										
High Density Polyethylene	8.11	8.11	**8.11**	~~10.35~~	~~10.35~~	~~10.35~~	~~14.87~~	~~14.87~~	~~14.87~~	8.11
Colorant	0.94	0.94	0.94	0.70	0.70	**0.70**	~~1.38~~	~~1.38~~	~~1.38~~	0.70
Total Material	9.05	9.05	9.05	10.85	10.85	10.85	16.25	16.25	16.25	*8.81*
Labor Cost				5.60	5.50	5.50	6.19	6.19	**6.15**	6.15
Overhead & Profit	13.33	13.06	12.79	5.07	4.65	**4.55**	7.37	7.37	6.31	4.55
Packaging	1.40	1.40	1.40	1.35	1.35	1.35	1.00	1.00	**1.00**	1.00
Total Price (ex works)	32.83	32.56	32.29	33.92	33.40	33.30	47.06	47.06	45.96	*20.51*
Transportation	*1.10*	*1.10*	*1.10*	*1.70*	*1.70*	*1.70*	*0.69*	*0.69*	***0.69***	*0.69*
TOTAL PRICE	**33.93**	**33.66**	**33.39**	**35.62**	**35.10**	**35.00**	**47.75**	**47.75**	**46.65**	***21.20***

I'm sure we have all see the piece price break down, but do you see anything that concerns you?

Negotiating Strategies are organized

Negotiation Plan - Team Projects

EVERY Tuesday @ 1:30 PM CDST 937-610-2663 Code XXXX

Team Members: Team Members Here

Team Leader: **Your team leader**

SORT

Summary Status: Green

Updated : 9/19/2017

Green = Minimal Risk

Yellow = Moderate Risk

Red = High Risk

Instructions: Update Progress Symbols, Summary Status & Date

Action has been assigned ◊	Action is initiated 25% Progress	Resources have been obtained/activities are in progress (50%)	Action is near completion 75% Progress	Action complete 100% ■

$0

A. Item Number	B. What	C. Who Responsible	D. When Commitment Date	D. When REVISED Due Date	E. Priority	F. Action Item	G. Comments / Ongoing Efforts	H. POTENTIAL Annual Savings	I. Status
5	Develop Alternate Suppliers for leverage	Name			High	Establish price benchmark for added volume before supplier seeks to increase adder.			▒
6	Continue to resist the increase	Name			High		Once we stop resisting, there is no chance we will avoid an increase.		▒
7	**Esclate Negotiations to a higher authority**	Name			High				◊
8	Advise of business relationship damage and risks it carries.	Name			Med	Biggest Club to resist / minimize increase			◊
9	Accept some increase nego amount + others requests	Name			Low	Counter with1/2 cent increase & triggers & prior month monomer base.	If we resist too long, we run out of time to negotiate it lower or for other concessions.		◊

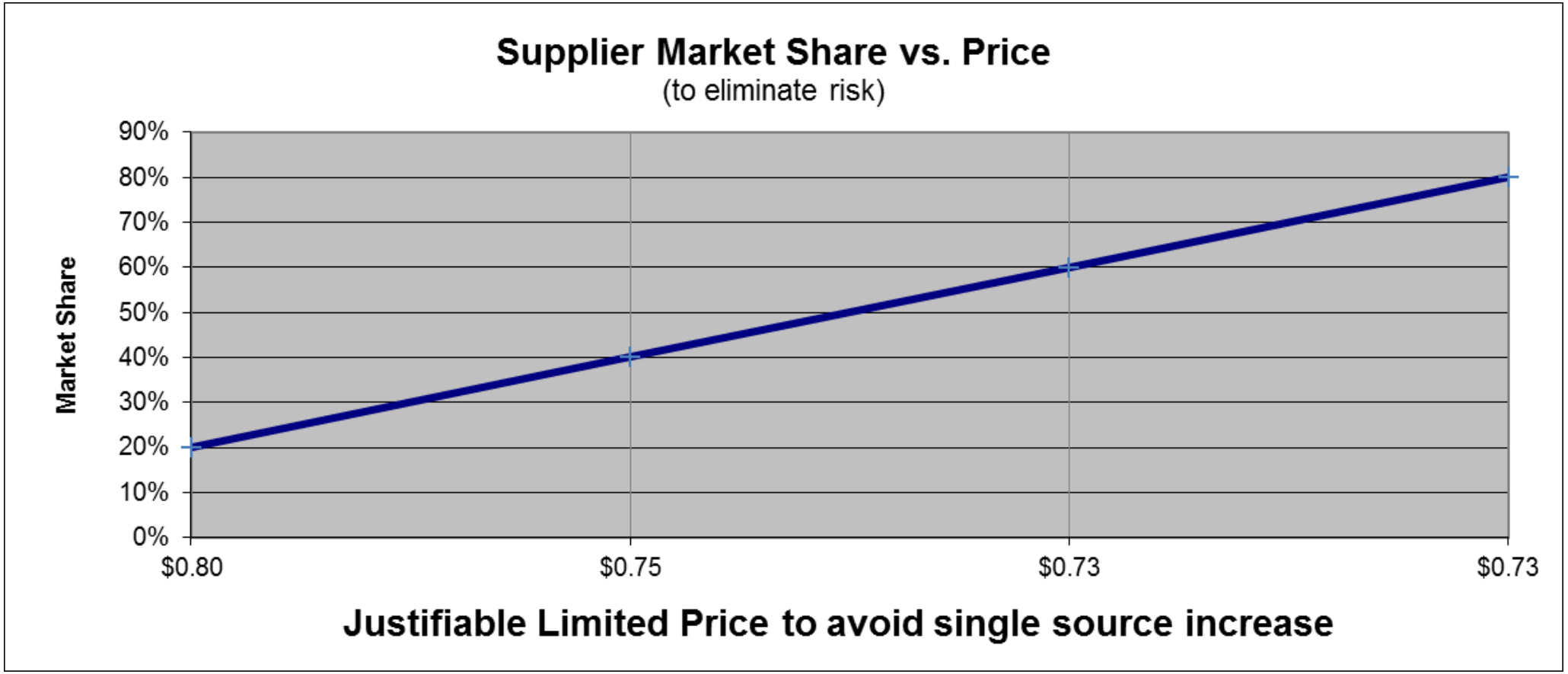
Once we identify opportunities, we plan our implementation and negotiating strategies.

Strategic Sourcing to insure the lowest cost

Supply Risk		
Factor	**Value**	**Comment**
Current Price / Unit	$ 0.70	$/Lb
Probability of Failure (annually)	100.0%	$0.02/lb Increase
Cost of Failure (annually)	$1,000,000	Price Increase
Annual Volume	50,000,000	Pounds per Year
Prorated Failure Cost / Unit	$ 0.02	

1. Negotiating price with your sole supplier is difficult
2. The only thing more difficult is negotiating with them, when they KNOW you have **no alternatives**.
3. A good sourcing plan plays out over 3-5 years to insure the lowest total cost.

Strategic Sourcing to insure the lowest cost



Paying an alternate supplier more to have leverage in negotiations with the primary supplier is justified to avoid paying a single source premium.

Projects are tracked

Action Plan - SCM Projects

Summary Status: Yellow

EVERY Thursday @ 2:00 PM 800 555 1212 Code 555 1234

Updated : 9/19/2017

Team Members: List of Team Members

Team Leader: **Your Name Here**

Green = On Schedule

Yellow = Behind, but expect to recover

Red = Behind, not expected to recover

Instructions: Update Progress Symbols, Summary Status & Date

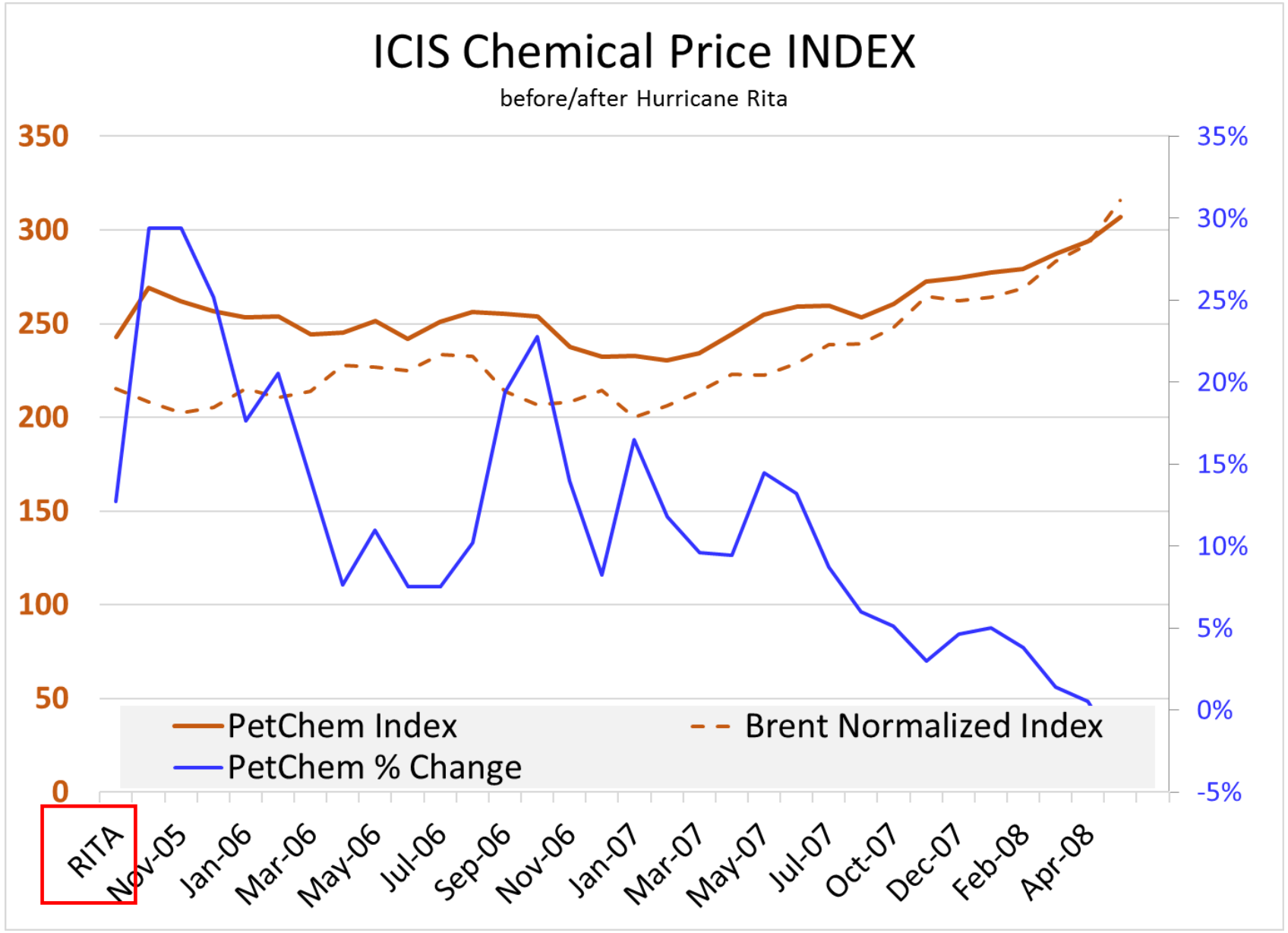
Action has been assigned ◊	Action is initiated 25% Progress	Resources have been obtained/activities are in progress (50%)	Action is near completion 75% Progress	Action complete 100%

$351,700

A. Item Number	B. What	C. Who Responsible	D. When Commitment Date	D. When REVISED Due Date	E. Priority	F. Action Item	G. Comments / Ongoing Efforts	H. Potential Annual Savings	K. Status
3	Replace Brand X with Brand Y	Joe Sales	9/19/2017	9/26/2017	1	Run cost sheet to present to customer & get approval		$351,700	
3a	Order samples of Brand Y	Jane Buyer	9/19/2017	9/26/2017		Order free brand Y samples			
3b	Test Brand Y	Bud Production	9/26/2017	10/3/2017		Produce product using brand Y			◊
3c	Obtain Approvals on Samples	Jim Quality	10/3/2017	10/17/2017		Internally test, PPAP & obtain customer approval.			◊

Projects are tracked; saving realized and verified.
This allows You to improve your competitive position in the market.

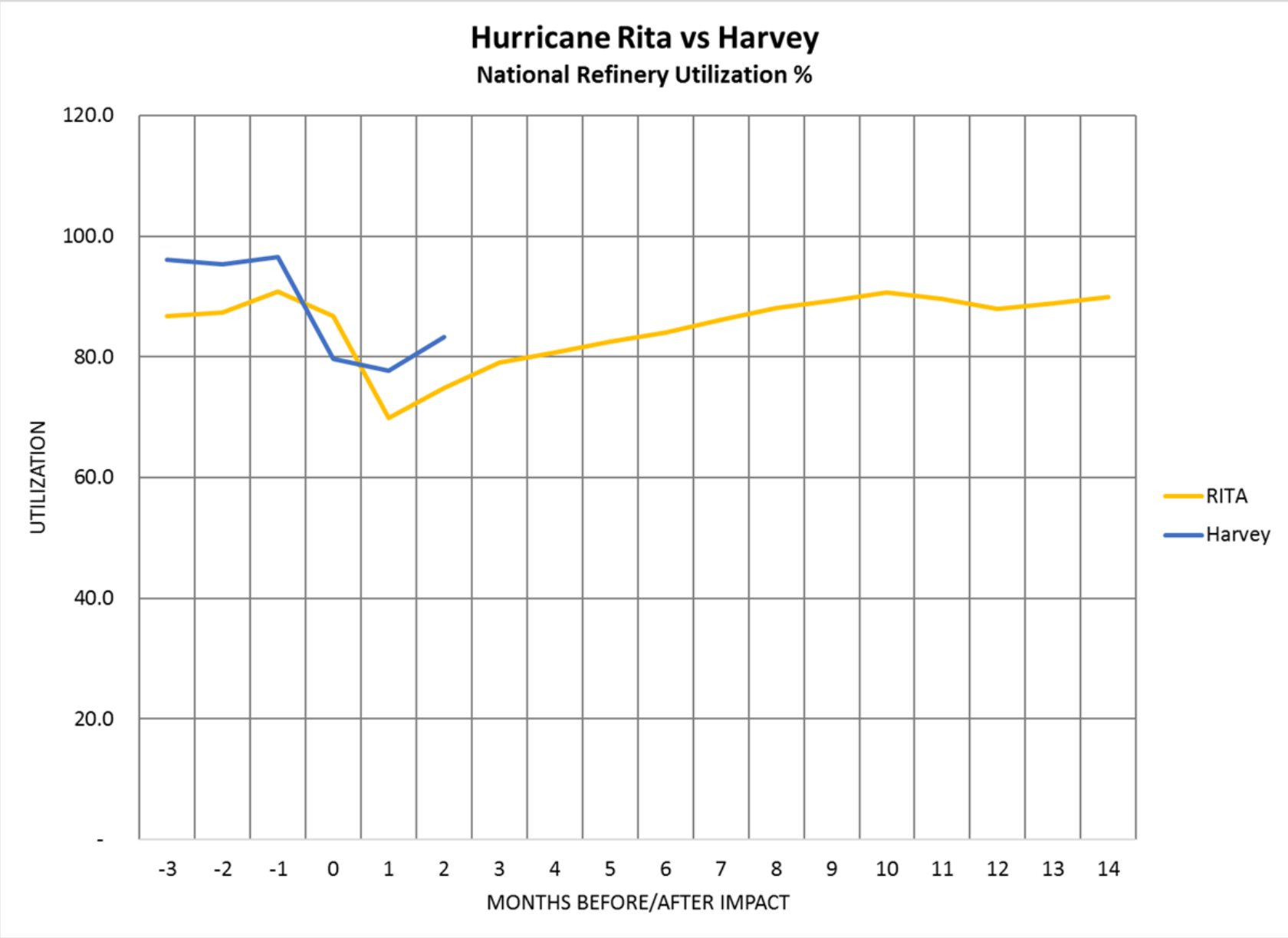
Hurricane Impact on budgets



Prices increased 30% after Hurricane Rita and did not return to normal until 32 months later

Lessons learned could reduce the impact, or it could be worse this time

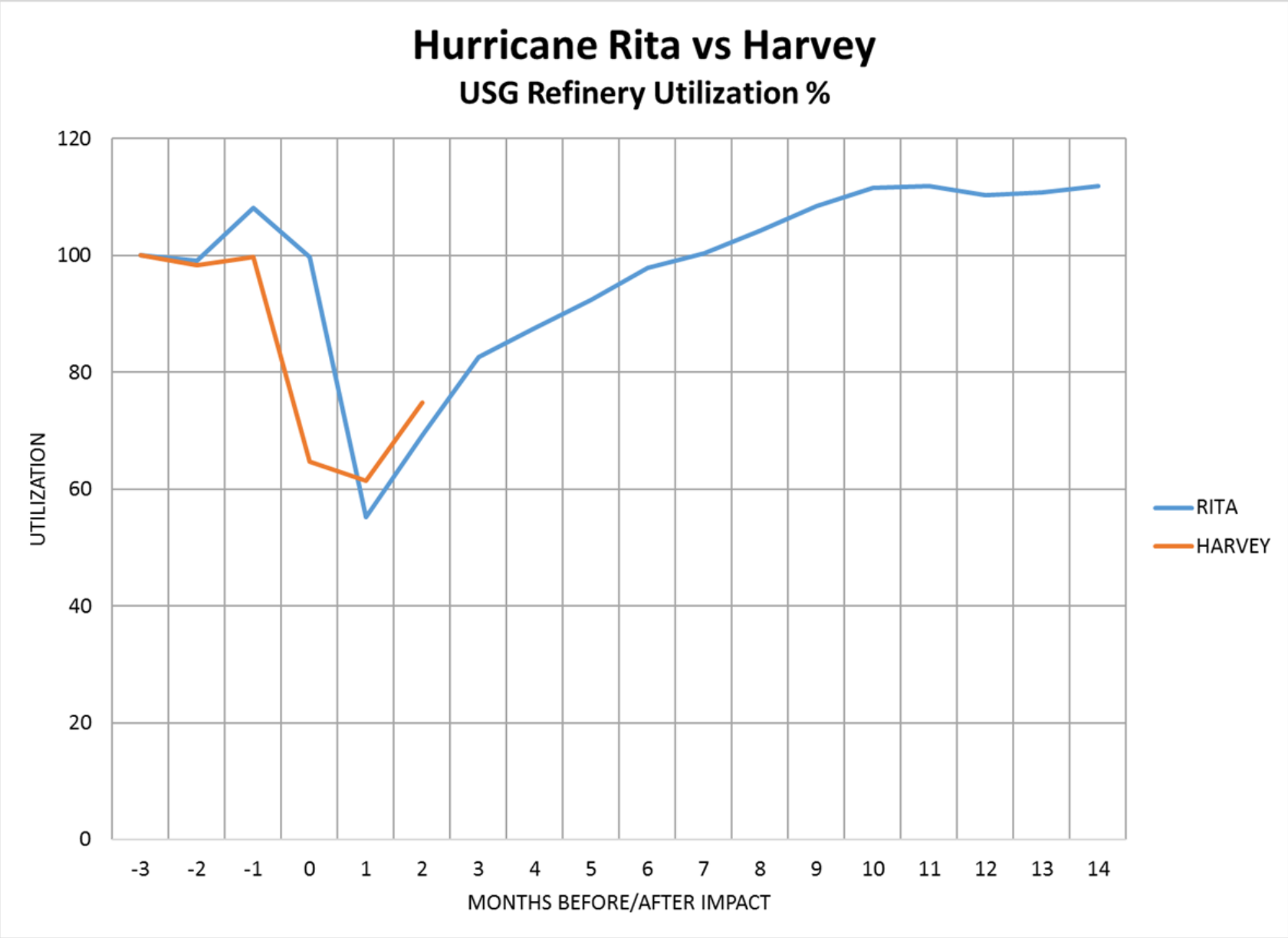
Hurricane Impact on budgets



US Refinery Utilization after Harvey is at the same recovery rate as it was after Hurricane Rita.

This suggests Rita is a good model of what we might expect.

Hurricane Impact on budgets



The US Gulf Coast recovery further suggests that Rita is a good model of what we might expect.

Hurricane Mitigation

Sample 1	1	15	$ 10,000	$ 1,000,000	$ 2,740	1	20	$ 54,795	$ 5,479	7
Sample 2	1	15	$ 2,000	$ 10,000,000	$ 1,000,000	1	20	$ 20,000,000	$ 2,000,000	125
Sample 3										

1	Risk is measured on a product by product basis
2	Sources are the number of suppliers that could be used within a period of time equivalent to your qualification time line
3	Minimum Days on Hand (DoH) Inventory Level kept in stock at your site
4	Dollar value of 1 day on hand of inventory. Total $ volume used per year/365 if you operate 7 days per week; divide by 260 if you operate 5 days per week
5	Days on Hand (DoH) Inventory Level available at other sites except the suppliers
6	Annual Revenue $ impacted by this product
7	Disruption cost per day
8	Number of disruptions over the past 10 years
9	Average duration of disruption in Days
10	Calculated cost per disruption ($)
11	Calculated disruption cost per year
12	Calculated DoH to break even based on disruption cost

Risk Mitigation starts with quantifying the risk and where it is the greatest.

Summary

1. ICIS has been helping Purchasing Professionals make better, more informed business decisions since the 1970’s

2. The ICIS Purchasing Advisory Service continues this tradition, and takes it to the next level, by utilizing our extensive market intelligence, years of experience, and proven methods to drive improvements to your bottom line.

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