MuirfieldEnergy
Energy Solutions for Your Business

Products, Services, and Solutions

Your Business is Unique.
So is Your Energy Solution.

Company Highlights

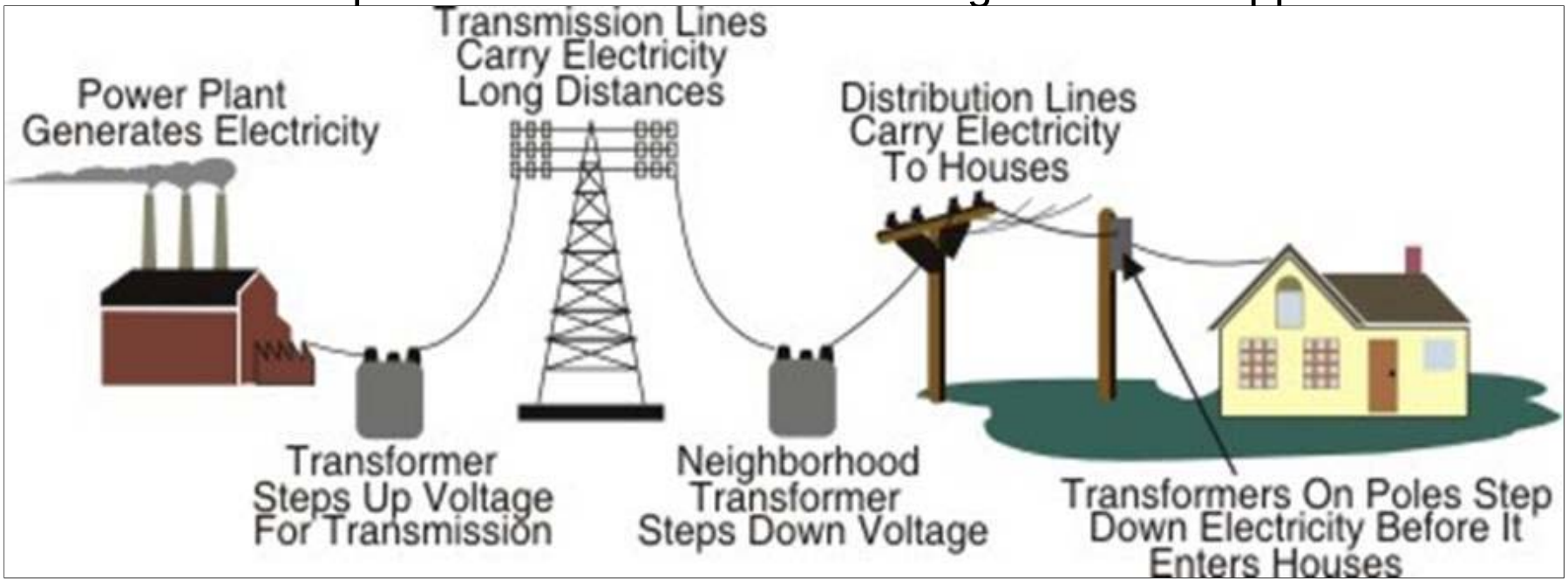
Muirfield Energy was founded in 2009 by President, Perry Oman. He has **30+ years** of energy industry experience along with commodity trading. Perry is a founding member of Energy Professionals of Ohio (EPO). "Our goal is to represent customer and select the best supplier to **lower energy costs**."

Our local energy consultants offer **customized services** to **reduce energy costs** and help manage businesses' energy needs. We work with many electric and natural gas suppliers to simplify and manage your energy risk.

Deregulation - The Players and The Market

Deregulation

- Deregulation means businesses have choices for natural gas and electricity supply
- Businesses will remain with their current utility service
- Businesses should obtain and compare competitive retail suppliers' energy prices
- Provides separation between utilities and generation suppliers



Deregulation: The Players

- **Electric Distribution Company or EDC** - Another term for Utility. Examples: AEP/Columbus Southern, Toledo Edison, Penn Power, CEI, Ohio Edison, Duquesne, Penelec, Ohio Power, Duke, PPL

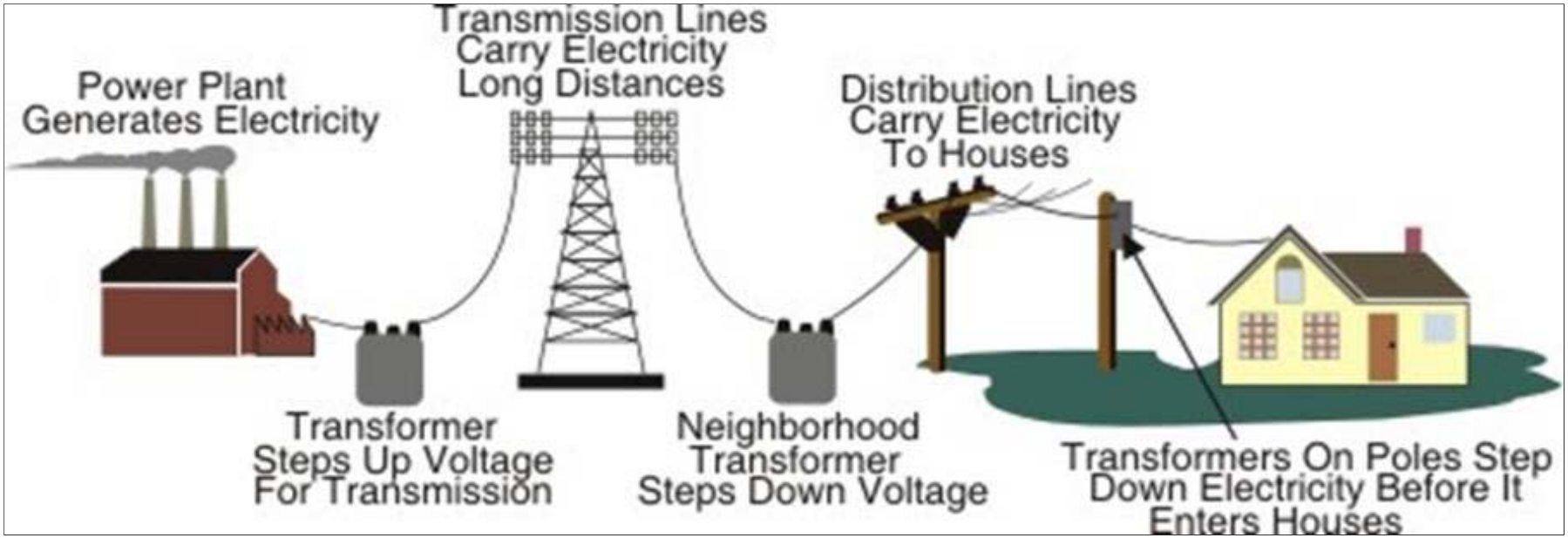
- **Supplier -** Separate entity that owns physical generation, has access to another company's generation assets, or solely trades energy in the wholesale market. Examples: Direct Energy, Constellation, FirstEnergy Solutions, MP2, Suez, Champion, Kona

- **Broker –** Services company that provides access to multiple suppliers. Inexpensive sales channel for suppliers. There are many more broker companies than suppliers. They operate with a varying degree of customer experience, product knowledge, and supplier bias.

- **RTO -** Provides independent governance of EDCs and suppliers. Example – PJM

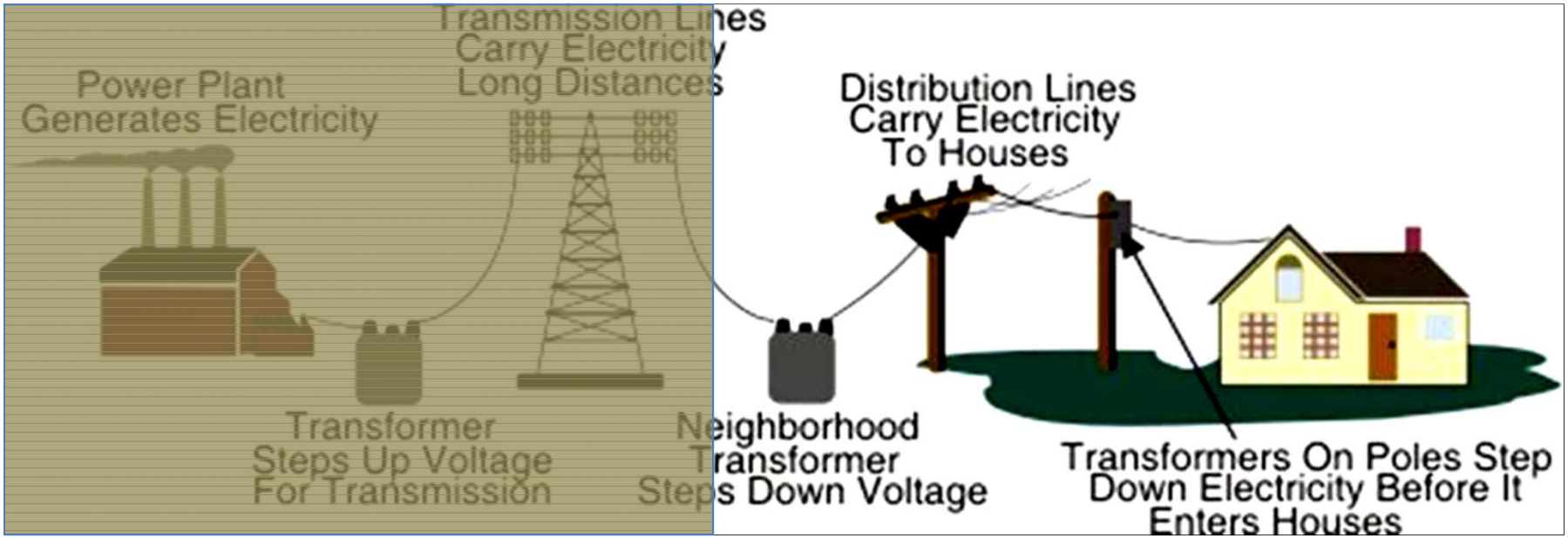
Utility = EDC

- EDCs operate as a monopoly for distribution. No choice. Rates are calculated each month based on a cost based tariff that is approved by the state Public Utilities Commission. Rate class, usage in kWh, peak demand, and facility voltage are inputs.



The EDC's Role:

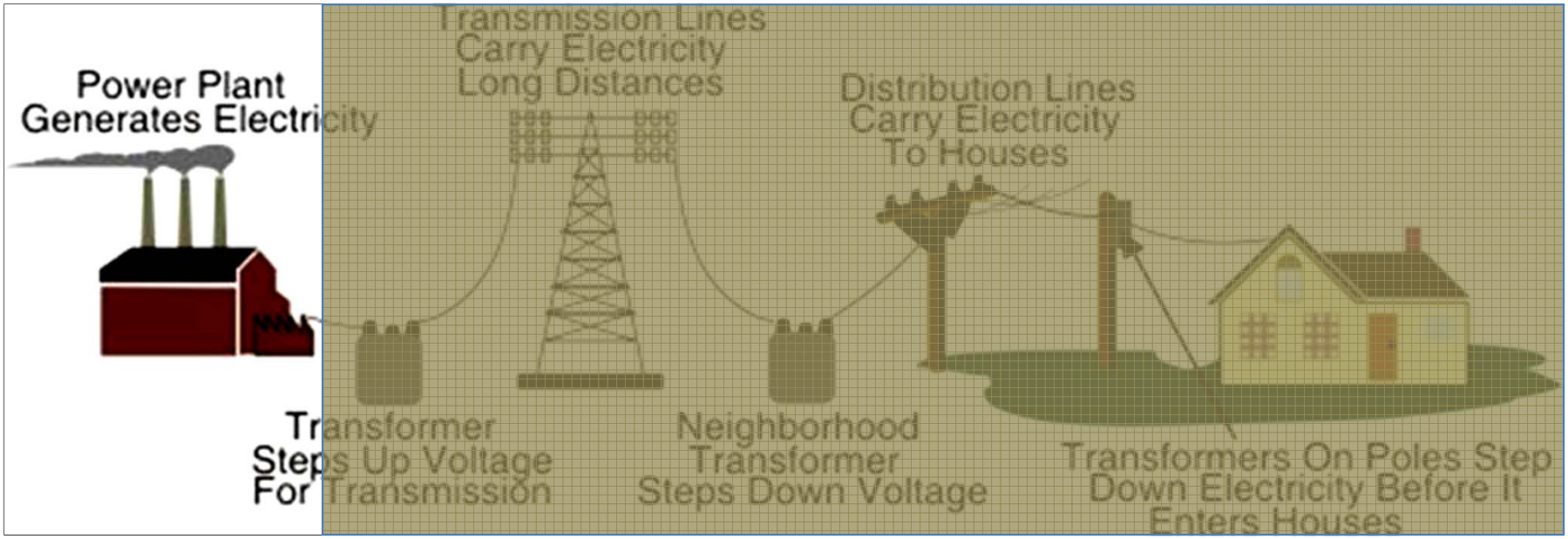
- Own and maintain local transmission lines, transformers, and meters
- Responsible for Quality of Service
- Billing and collecting distribution charges. May also provide the ability to include supplier generation charges
- Completely independent of where/how you buy energy supply



Supplier

- Separate entity that owns physical generation, has access to another company's generation assets, or solely trades energy in the wholesale market.

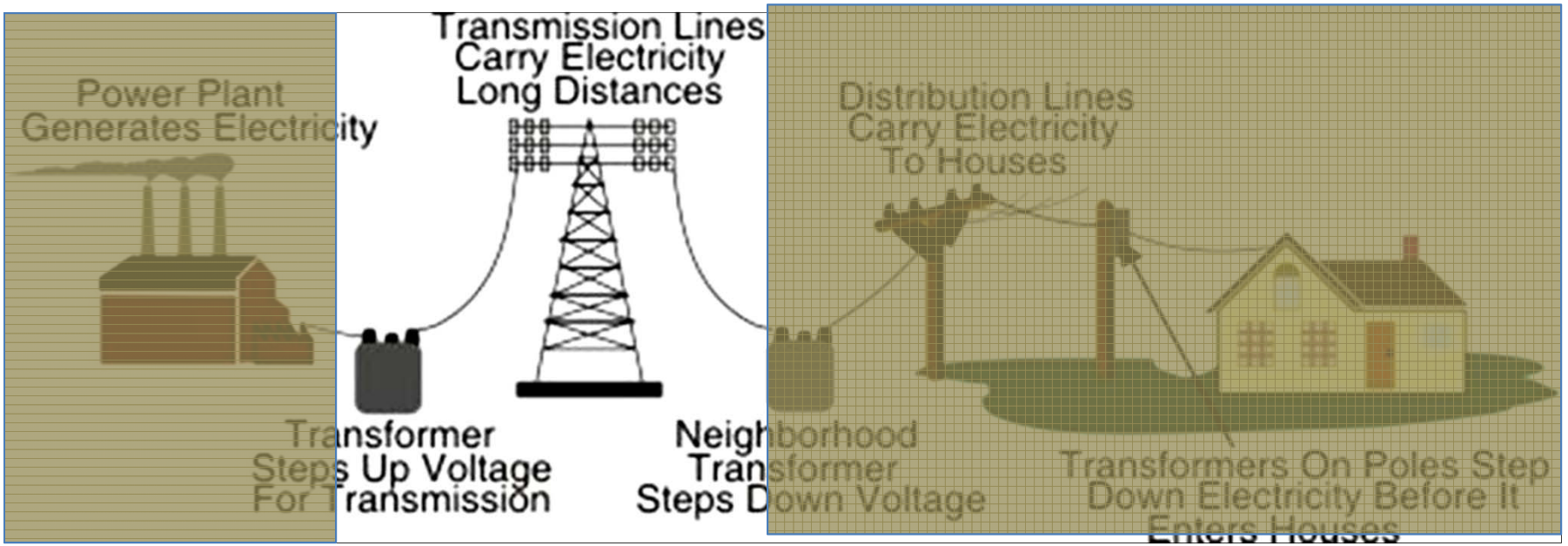
- Many investor owned utilities have separate generation supplier subsidiaries that are owned by the parent company. For example, AEP Energy and FirstEnergy Solutions



RTO : (Regional Transmission Organization)

- “The Police”

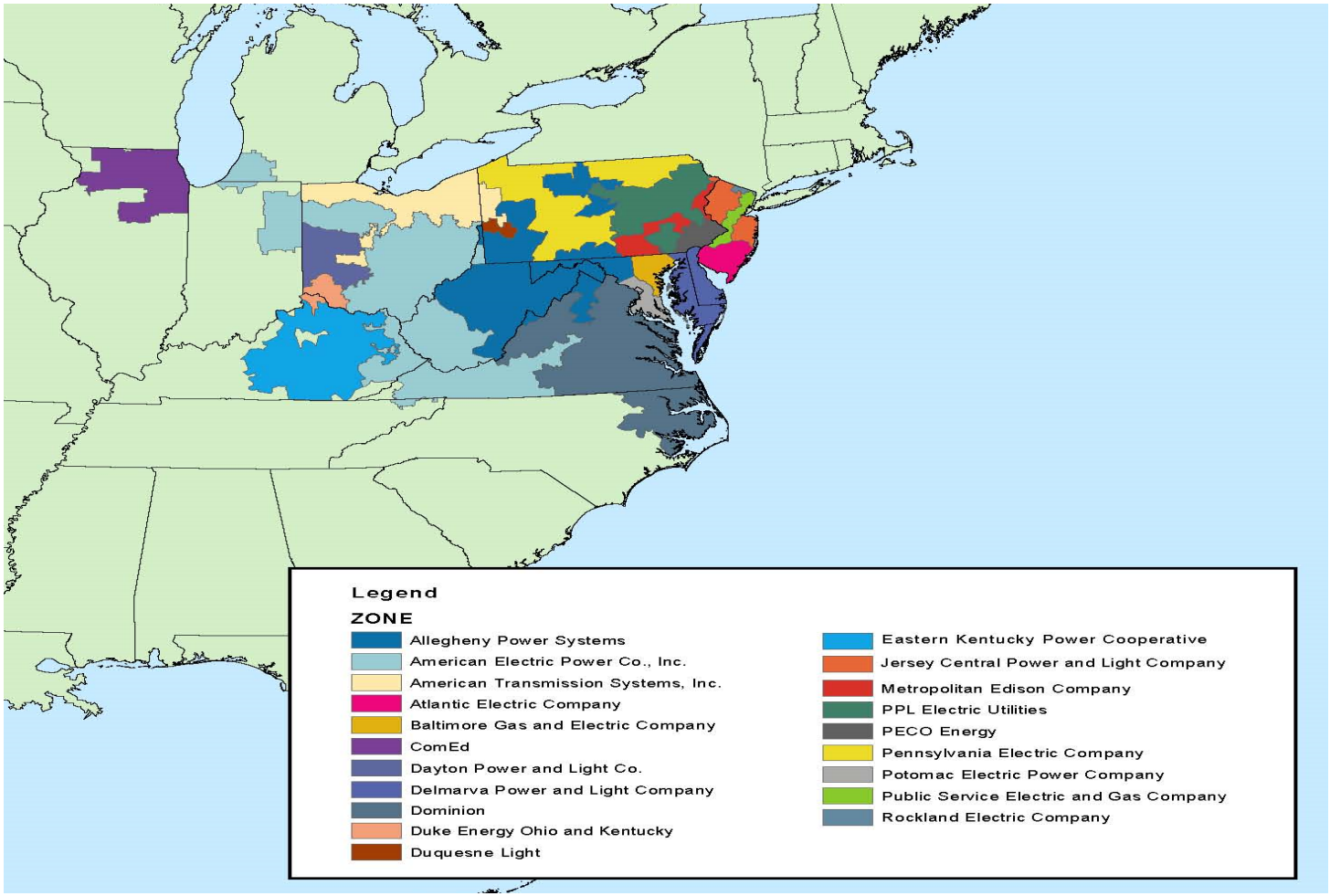
- Provides independent governance of EDCs and suppliers



The Regional Transmission Organization's Role

- Serves as the marketplace for the region's wholesale electric generation supply
- Responsible for resource planning, load balancing, voltage and frequency regulation, and transmission congestion mitigation
- Accountable to a region of several states and EDCs as directed by FERC (Federal Energy Regulatory Commission)

The PJM RTO Service Area



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Why Deregulate?

- Generation assets exist outside of your EDC and are already connected via the grid.
- Deregulation facilitates an open market for utilizing generation assets more efficiently than having the EDC try to predict and procure the entire utility's needs.
- EDCs are shifting focus to more stable forms of revenue. Distribution has less risk and consistent rates of return that are often secured by the PUC.
- Consumers gain more clarity on future costs and have more control.

Energy Supply Challenges

- Can’t be stored on a utility scale efficiently
- Must be produced as it’s consumed
- Produce too little – blackouts and brownouts
- Produce too much – wasted fuel and increased costs

Understanding Electric Supply Rates

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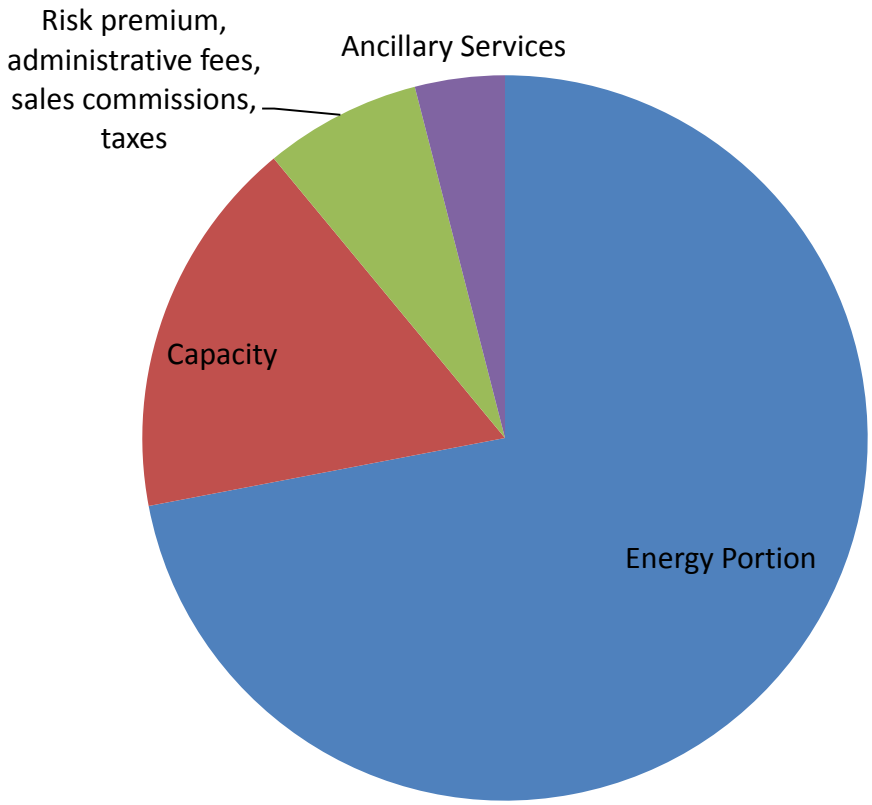
Components of Generation Supply Costs



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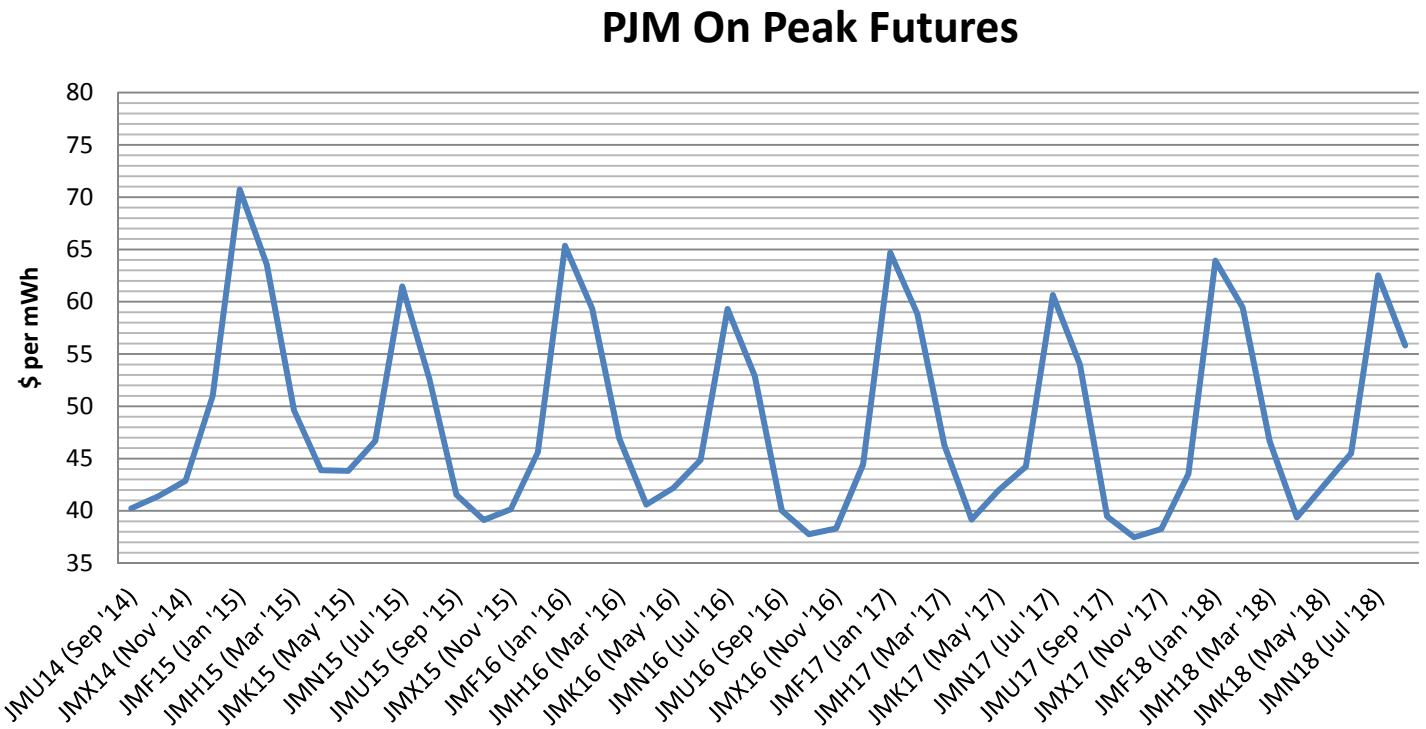
Energy Portion

- **Consists of a weighted average of a facility's expected load and current future rates**



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Capacity Portion of Supply Rates

What is Capacity?

Capacity is the total amount of electric generation available on the grid at any one time.

- Helps ensure that generators are producing enough power to meet peak demands within the grid.
- One of the many electric service components affecting energy prices.

Why is it Important?

- The 2nd most costly component of electric supply.
- Rates established through an annual auction conducted by the RTO 3 years in advance.

What is the Effect?

- Capacity cost component can vary greatly year after year.

*Annual auction from June 1 - May 31 every three years prior. Current auction prices have been set for FY 2017 - 2018.

PJM RPM Capacity Auction Results

August 2015

Delivery Point	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
AEP (OH)	$104.82	$182.85	$116.16	$16.75	$28.45	$128.38	$135.72	$98.29	$147.50	$162.44
Allegheny (MD)	$193.80	$182.85	$116.16	$16.46	$27.73	$125.94	$165.78	$158.68	$147.61	$215.97*
BGE (MD)	$224.93	$182.85	$116.16	$136.95	$232.62	$137.52	$166.40	$158.68	$147.61	$156.03
ComEd (IL)	$104.82	$182.85	$116.16	$16.75	$28.45	$128.38	$135.72	$98.29	$147.50	$208.46**
Dayton P&L (OH)	$104.82	$182.85	$116.16	$16.75	$28.45	$128.38	$135.72	$98.29	$147.50	$162.44
Delmarva (MD/DE)	$193.71	$187.34	$116.16	$177.27	$251.80	$145.37	$166.40	$158.68	$147.61	$215.97*
Duke (OH)			$116.16	$16.74	$28.45	$128.38	$135.72	$98.29	$147.50	$162.44
First Energy (OH)			$108.89	$20.46	$28.45	$128.38	$295.97	$129.25	$147.50	$162.44
PECO				$148.03	$251.80	$137.53	$166.40	$158.68	$147.61	$215.97
Penelec / Met-Ed / Wellsboro				$136.95	$233.98	$137.52	$166.40	$158.68	$147.61	$162.44
Penn Power				$20.46	$28.45	$128.38	$295.97	$129.25	$147.50	$162.44
PEPCO (MD/DC)	$224.78	$182.85	$116.16	$136.95	$252.02	$137.52	$166.40	$158.68	$147.61	$154.74
PPL / Citizens'				$136.95	$233.98	$137.52	$166.40	$158.68	$145.87	$152.44
PSE&G								$218.65	$202.89	$215.97 *
West Penn / Duquesne				$16.75	$28.45	$128.38	$135.72	$98.29	$147.50	$162.44

Includes: *$7.13 Base Zonal Credit **$4.21 Base Zonal Credit

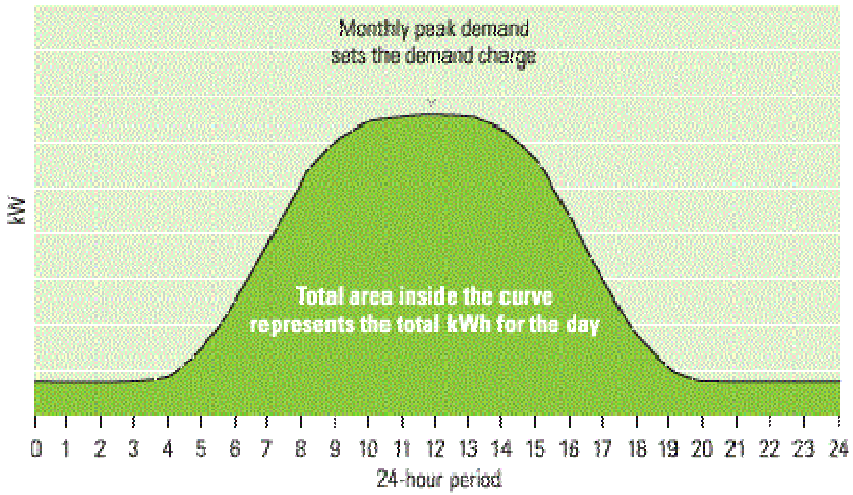
PJM RPM Capacity Auction Result Differentials
August 2015

	2016-2017 $/MW - Day				2017-2018 $/MW - Day		
Delivery Point	**Base Capacity**	**Post CP Auction**	**Difference**		**Base Capacity**	**Post CP Auction**	**Difference**
AEP (OH)	$59.37	$98.29	$38.92		$119.81	$147.50	$27.69
Allegheny (MD)	$59.37	$158.68	$99.31		$119.92	$147.61	$27.69
BGE (MD)	$118.89	$158.68	$39.79		$119.92	$147.61	$27.69
ComEd (IL)	$59.37	$98.29	$38.92		$119.81	$147.50	$27.69
Dayton P&L (OH)	$59.37	$98.29	$38.92		$119.81	$147.50	$27.69
Delmarva (MD/DE)	$118.89	$158.68	$39.79		$119.92	$147.61	$27.69
Duke (OH)	$59.37	$98.29	$38.92		$119.81	$147.50	$27.69
First Energy (OH)	$90.54	$129.25*	$38.71		$119.81	$147.50	$27.69
PECO	$118.89	$158.68	$39.79		$119.92	$147.61	$27.69
Penelec / Met-Ed / Wellsboro	$118.89	$158.68	$39.79		$119.92	$147.61	$27.69
Penn Power	$90.54	$129.25*	$38.71		$119.81	$147.50	$27.69
PEPCO (MD/DC)	$118.89	$158.68	$39.79		$119.92	$147.61	$27.69
PPL / Citizens'	$118.89	$158.68	$39.79		$118.18	$145.87	$27.69
PSE&G	$177.61	$218.65**	$41.04		$175.20	$202.90 ***	$27.69
West Penn / Duquesne	$59.37	$98.29	$38.92		$119.81	$147.50	$27.69

Includes: *$13.86 Base Zonal Credit **39.94 Base Zonal Credit ***39.72 Base Zonal Credit

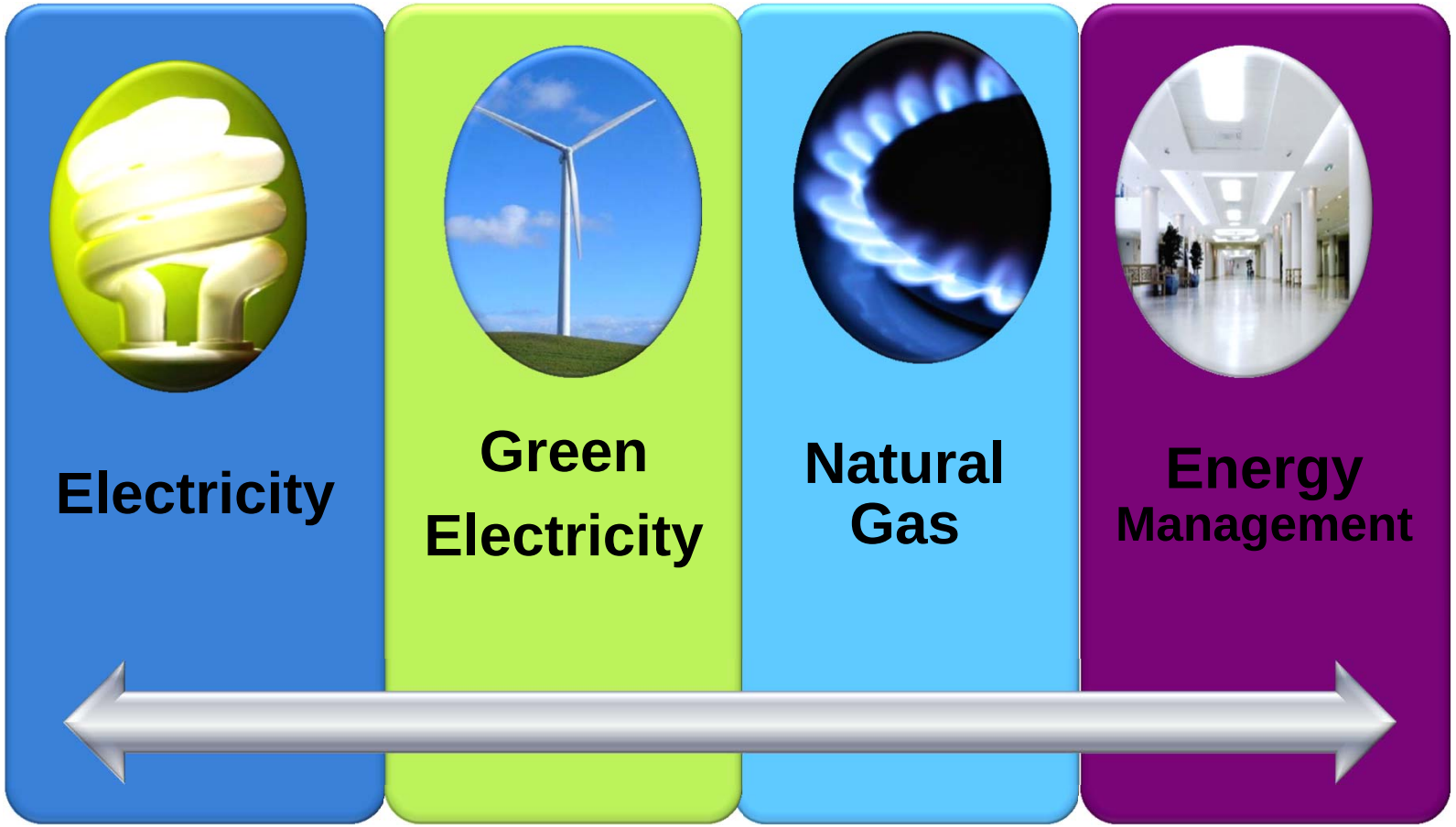
Factors Affecting Supplier Offers

- Commodity and Transmission/Transport Costs
- Load Shape and Predictability
- Volumetric and Pricing Risks (weather affect)
- Credit Risks
- Hedge, Timing, and Execution

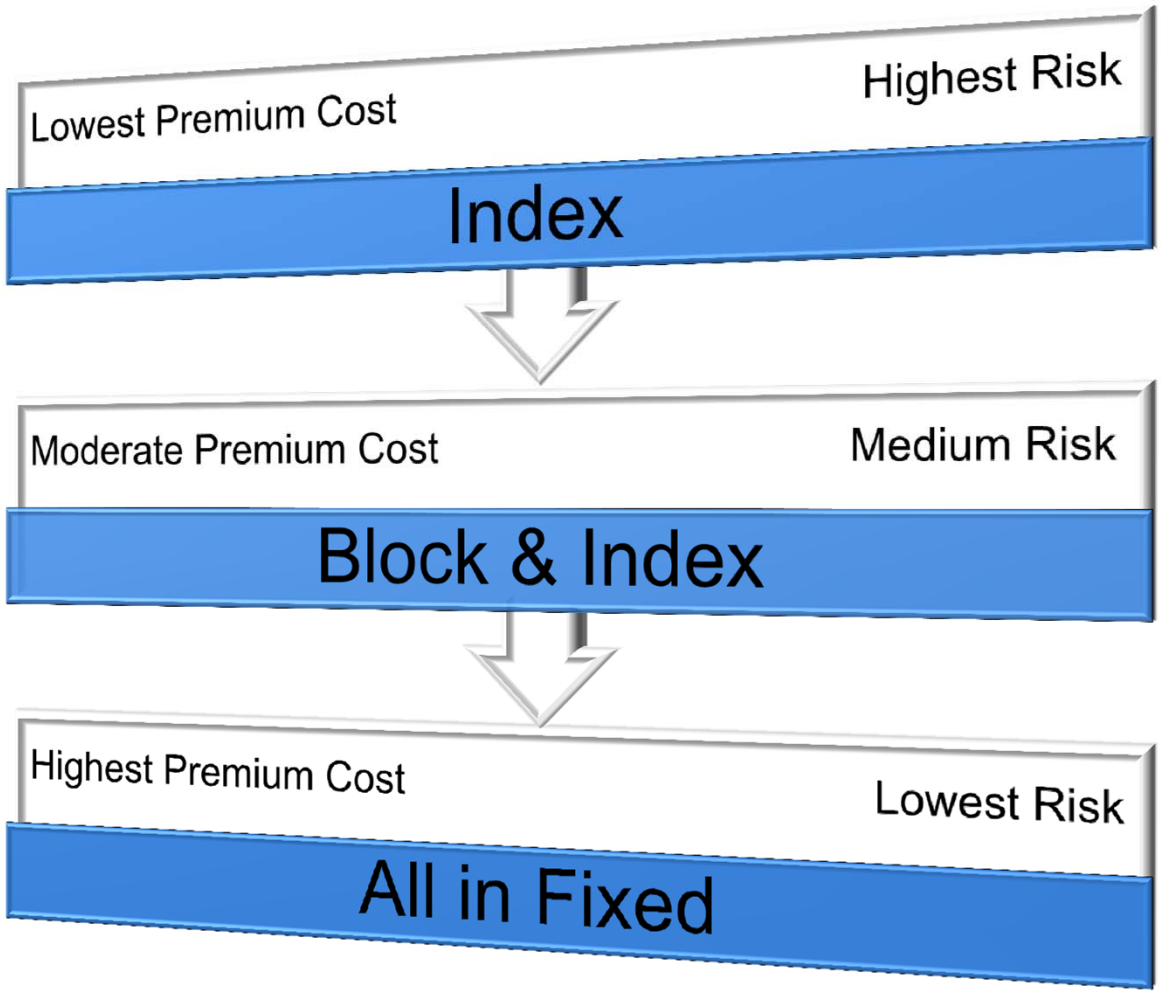


Notes: kW = kilowatt; kWh = kilowatt-hour.

Energy Products



Electricity Product Plans



Determining Factors

- Usage (kWh)
- Demand (Kw/Mw)
- Load Shape
- Futures Market

- Index products are ideal for medium to large businesses to maximize flexibility
- Businesses can adjust their electricity usage according to market conditions
- Expect significant changes in businesses' usage patterns

Highlights

- Price transparency
- Ability to react to market price signals quickly
- Tolerant of market price changes over the agreement term
- Ability to lock in blocks of energy or capacity and transmission.

Moderate Premium Cost

Medium Risk

Block & Index

•Block & Index products are ideal for businesses with medium tolerance for risk
•Combines a balance of budget stability and price flexibility
•Fixed price is for the consistent, 'base load' of energy combined with an index price for the remainder

Highlights

•Budget stability on the fixed load
•Hedge against market exposure
•Flexibility to fix any portion of consumption
•Does incur lost opportunity risk

High Premium Cost

Lowest Risk

All In Fixed

•All in Fixed products are ideal for any size business seeking price protection versus paying fluctuating rates from the utility
•This plan stabilizes supply components at a locked in rate

Highlights

•Stable price over a set period
•Flexible term lengths
•Can secure price over a long term

Green Electricity Plan

Muirfield Energy offers Green-e® Energy certified products with a percentage (5%-100%)of renewable products.

Renewable energy technologies produce sustainable, clean energy from sources such as the sun, wind, plants, and water.

A **green** energy strategy will:			
- Enhance businesses' competitive advantage	- Satisfy the demand for environmental responsibility	- Build a market for renewable electricity	- Reduce future greenhouse gas emissions

Natural Gas Products and Pricing

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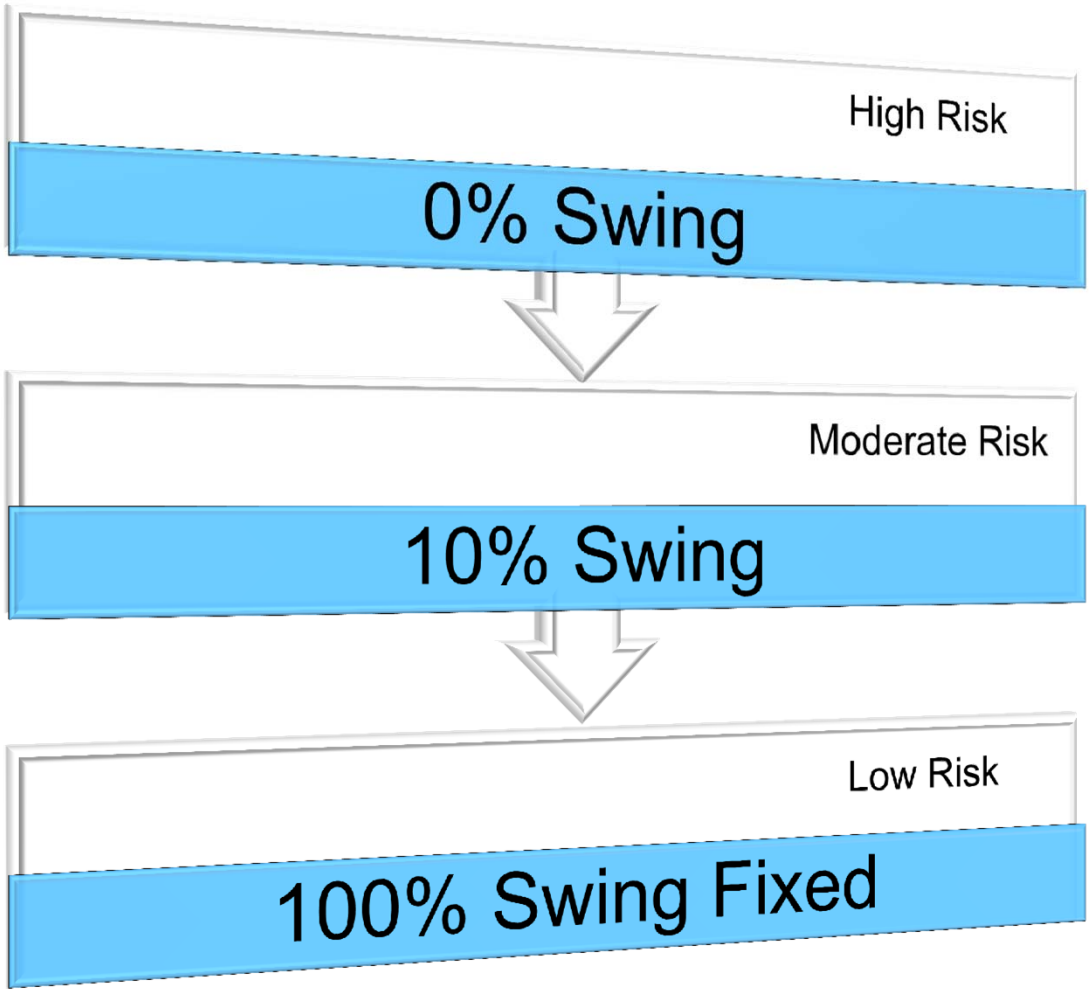
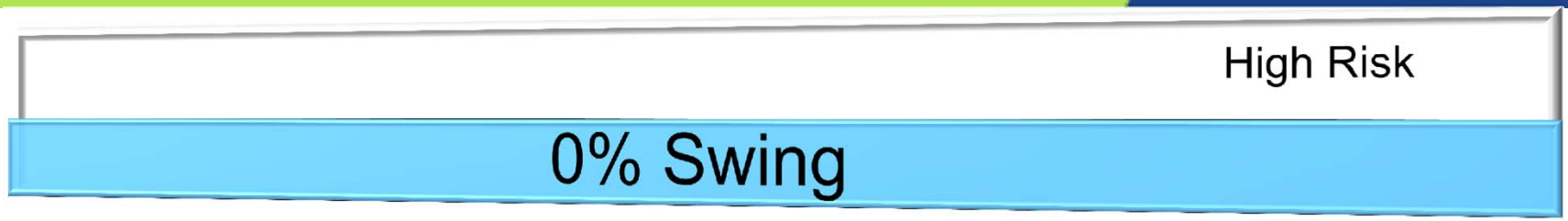
Natural Gas Product Bandwidth

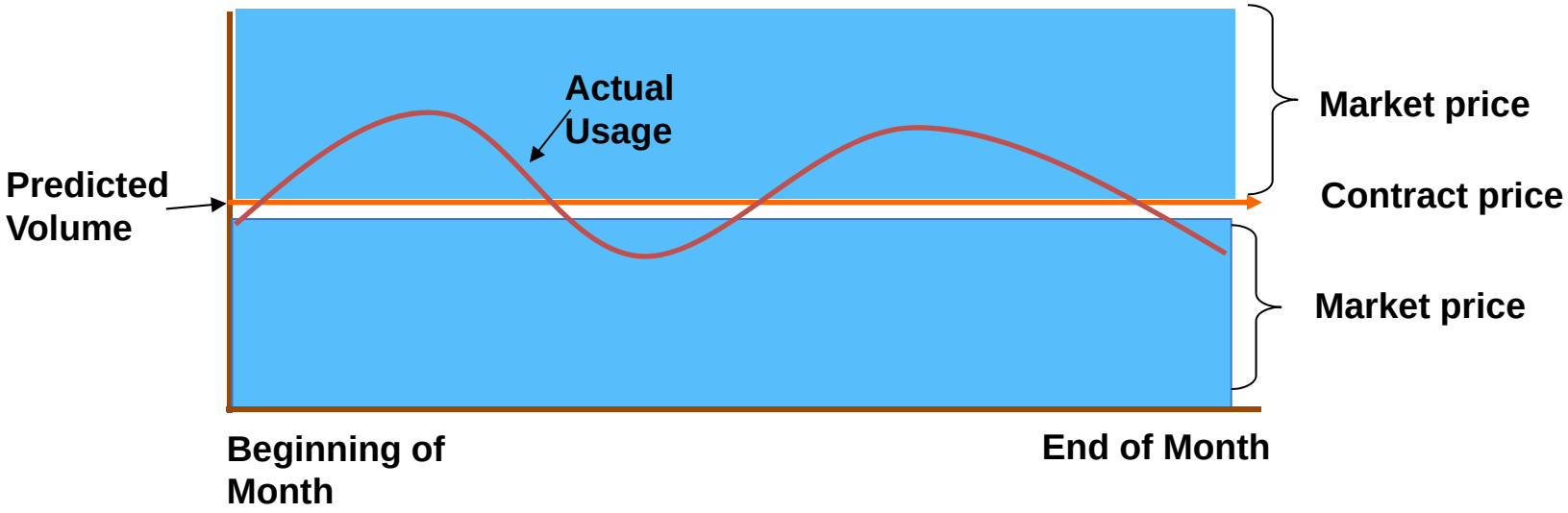


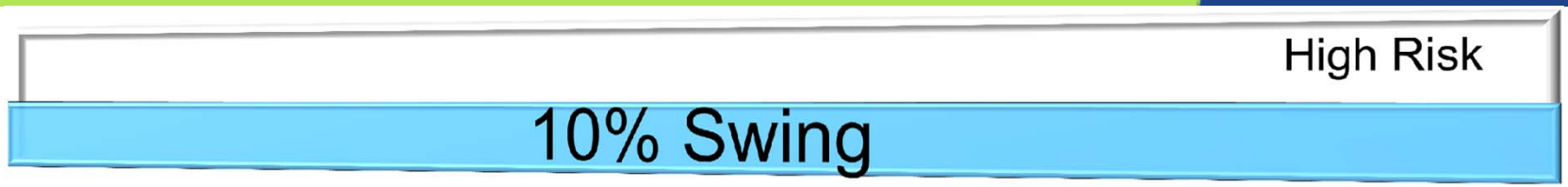
Determining Factors

- Usage (Mcf / Ccf / Therm)
- Load Shape

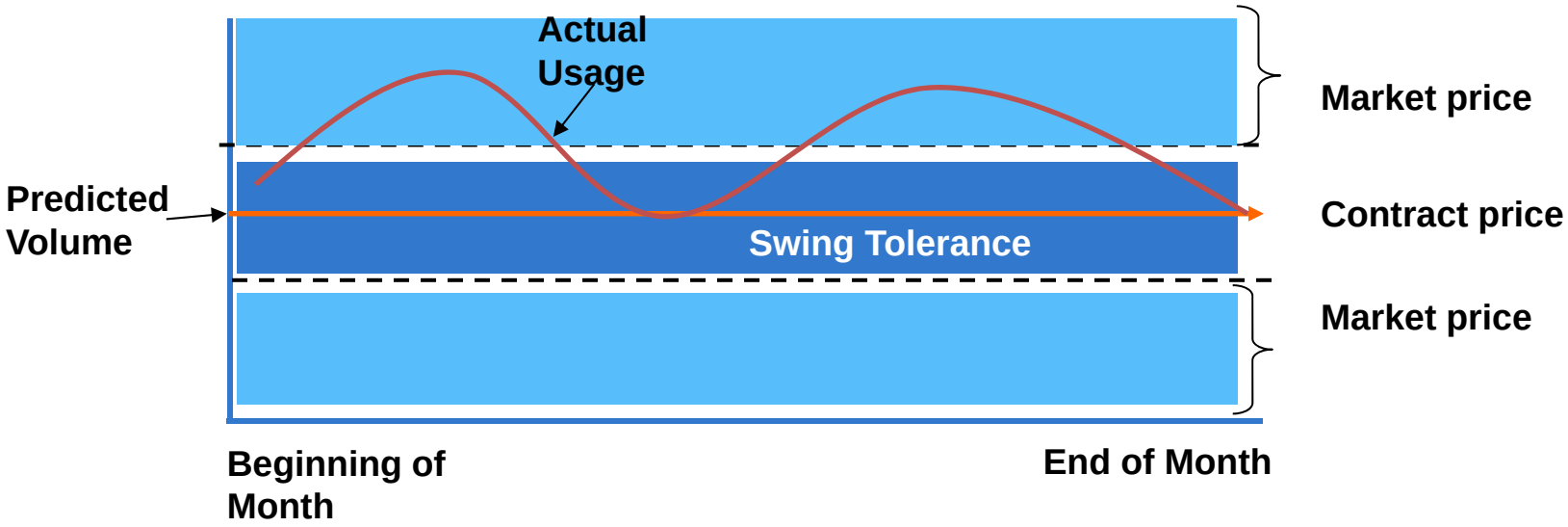


- More risk - zero premium
- Any variance from the expected volume is priced at market.
- Moves the risk from the supplier to the customer.
- The customer benefits from a lower sales price.

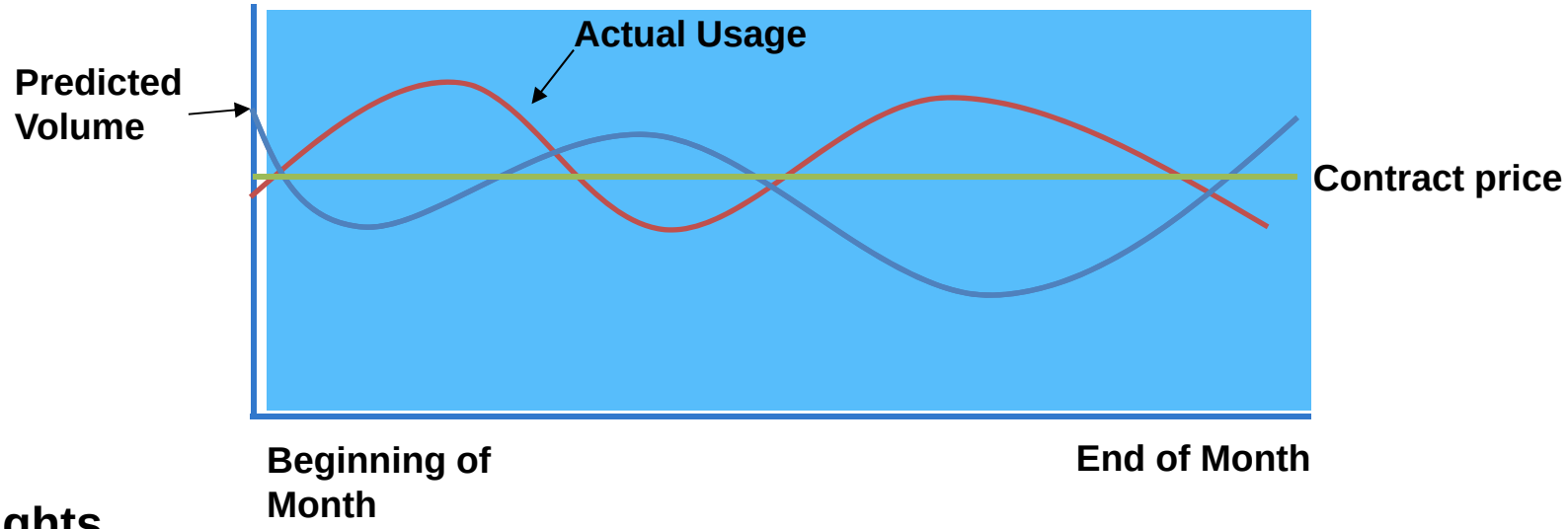




- Tolerance band tied to the swing percentage – when usage falls within this band, the customer will be billed at the contract price.
- Actual usage outside of 10% tolerance is priced at market (daily index).
- Actual usage above tolerance is a charge
- Actual usage below tolerance is a credit



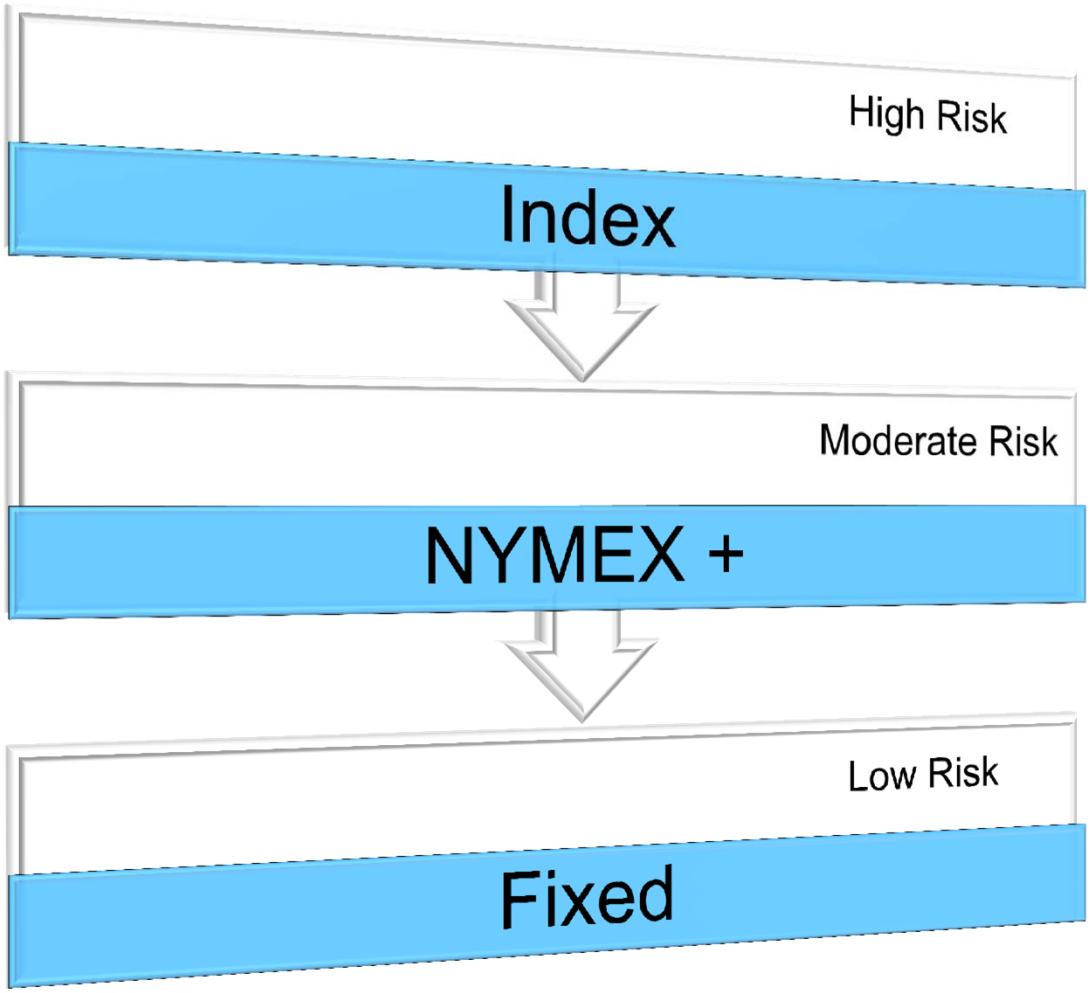
- Most expensive for the customer
- Least price risk. The only risk is the lost opportunity.
- Best for heat sensitive customers



Highlights

- All volume will be billed at the contracted sales price.
- The energy supplier carries all volumetric swing risk, so they get paid to take on the risk.

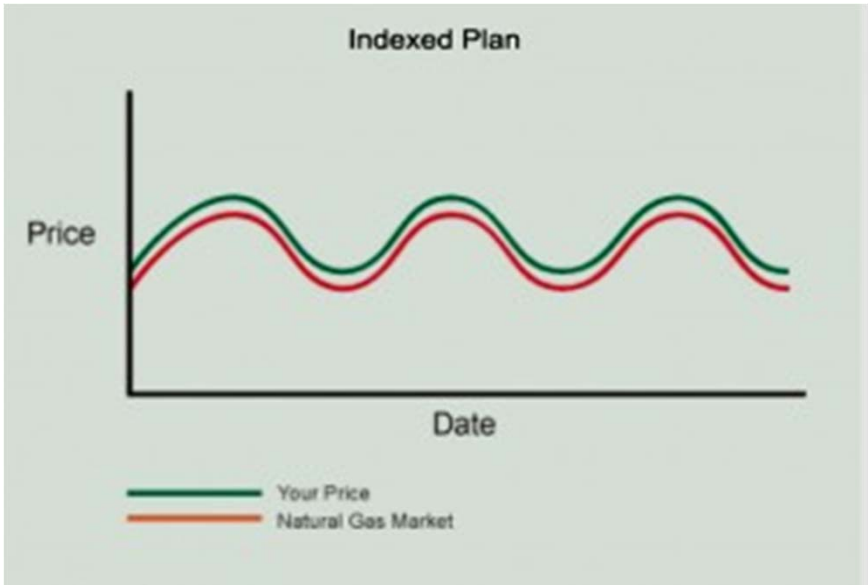
Natural Gas Products



Determining Factors

- Risk Tolerance
- Transparency
- Desire to trigger based on market conditions

- Pricing is based on an industry published delivery point index.



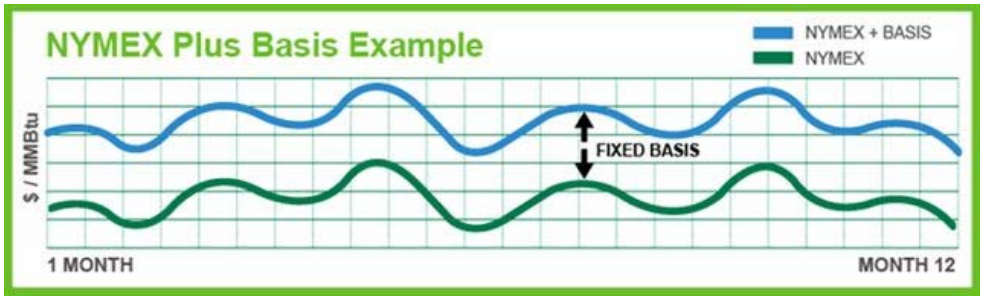
Highlights

- Variable rate
- All inclusive
- Market driven
- Triggers are an option

Moderate Risk

NYMEX +

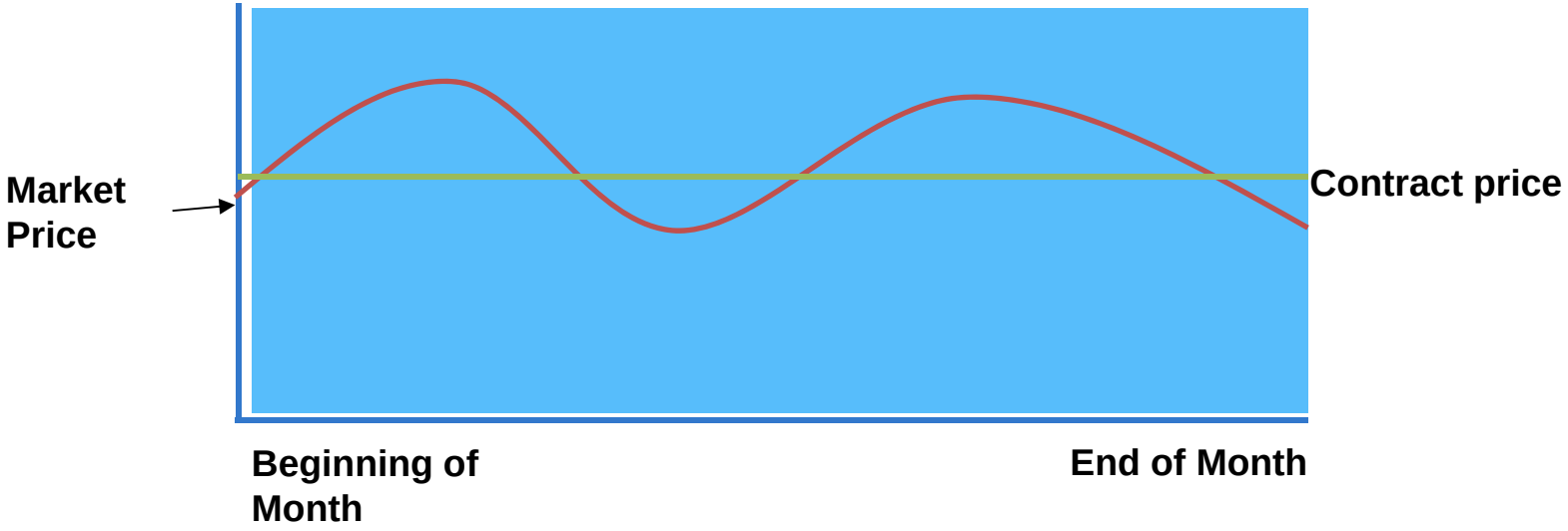
•Transportation costs make up a large portion of your natural gas bill.
•Mitigate risk by fixing your transportation “basis” cost while allowing the market to set your commodity costs.



Highlights

•Basis is the fixed cost to deliver natural gas to the utility company. It decreases exposure to rising prices.
•Opportunity to take full advantage of declining natural gas rates.
•The option to lock-in blocks of natural gas with no premium.

- Most expensive for the customer
- Least price risk. The only risk is lost opportunity.
- Best for heat sensitive customers



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Chris Rogers
Regional Manager – Sarasota
crogers@muirfieldenergy.com

Previous experience includes renewable energy development, solutions engineering, and managing industrial automation software products at Rockwell Automation. Chris has an EMBA from Case Western Reserve University's Weatherhead School of Management and he earned a bachelor's degree in electrical/computer engineering from Cleveland State University.

Back To Team View

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