



Month	Execution Method	Execution Platform	Commodity	Issue	Error Discovered By	Count
Jan 17	Automated	Exchange	Natural Gas	Total Trades		31
Jan 17	Manual Entry	Broker	Natural Gas	Total Trades		34
Jan 17	Manual Entry	Broker	Crude	Total Trades		4
Jan 17	Manual Entry	Exchange	Products	Total Trades		36
Jan 17	Manual Entry	Broker	Products	Total Trades		113
Jan 17	Manual Entry	Broker	Crude	Total Trades		34
Jan 17	Manual Entry	Broker	Crude	Total Trades		49
Jan 17	Manual Entry	Exchange	Crude	Total Trades		35
Feb 17	Automated	Exchange	Natural Gas	Total Trades		233
Feb 17	Manual Entry	Broker	Natural Gas	Total Trades		107
Feb 17	Manual Entry	Broker	Crude	Total Trades		3
Feb 17	Manual Entry	Exchange	Products	Total Trades		134
Feb 17	Manual Entry	Broker	Products	Total Trades		89
Feb 17	Manual Entry	Exchange	Crude	Total Trades		42
Feb 17	Manual Entry	Broker	Crude	Total Trades		37
Feb 17	Manual Entry	Exchange	Crude	Total Trades		104
Mar 17	Automated	Exchange	Natural Gas	Total Trades		35
Mar 17	Manual Entry	Broker	Natural Gas	Total Trades		124
Mar 17	Manual Entry	Exchange	Crude	Total Trades		14
Mar 17	Manual Entry	Exchange	Crude	Total Trades		124
Mar 17	Manual Entry	Broker	Products	Total Trades		14
Mar 17	Manual Entry	Exchange	Products	Total Trades		68
Jan 17	Automated	Exchange	Natural Gas	Edited Trades	Self	0
Jan 17	Manual Entry	Broker	Natural Gas	Edited Trades	Self	1
Jan 17	Manual Entry	Exchange	Crude	Edited Trades	Self	0
Jan 17	Manual Entry	Exchange	Crude	Edited Trades	Confirm	0
Jan 17	Manual Entry	Broker	Products	Edited Trades	Self	0
Jan 17	Manual Entry	Broker	Products	Edited Trades	Confirm	0
Jan 17	Manual Entry	Broker	Crude	Edited Trades	Self	0
Jan 17	Manual Entry	Broker	Crude	Edited Trades	Confirm	0
Jan 17	Manual Entry	Exchange	Natural Gas	Edited Trades	Self	1
Feb 17	Manual Entry	Broker	Natural Gas	Edited Trades	Self	0
Feb 17	Manual Entry	Exchange	Crude	Edited Trades	Confirm	0
Feb 17	Manual Entry	Exchange	Crude	Edited Trades	Self	0
Feb 17	Manual Entry	Exchange	Crude	Edited Trades	Settlement	1
Feb 17	Manual Entry	Broker	Crude	Edited Trades	Self	0
Feb 17	Manual Entry	Broker	Crude	Edited Trades	Self	0

# THE KRI BENCHMARKING INITIATIVE

CCRO MARCH 2018 MEETING

A Spin-off of the Risk Metrics Working Group

# Today's Discussion

## 1. KRIs & Our Proof of Concept Initiative

1. The value proposition of peer benchmarking
2. Emergent benchmark service: Proof of Concept to Live

## 2. Insights from (Preliminary) KRI Data

1. Never-seen-before peer data: expect the unexpected
2. Draft charts & tables draw-out intriguing questions for next steps

## 3. Discussion of Next Steps

1. Grow Participation
2. Work together on analyses, charts, & reports

# The Value Proposition of Peer Benchmarking

3

## □ Co. internal views of KRIs provide some insights:



Publish recommended KRI list and related practices



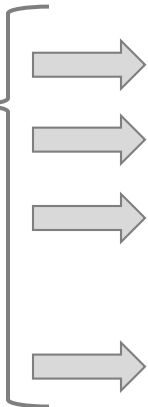
- I can measure & report appropriate KRIs
- I can look at my internal trends

## □ Benchmarking brings many more insights:

### ▣ Am I really “good” at managing this KRI ...



KRI benchmarking service, using member-shared data



- How do I compare to peers? What industry quartile?



- Are others getting better? At what pace?



- Are my problems with managing this KRI external? (ie. does everyone have the same problem?)



- Participation creates incentive to develop the internal dataset & enable drill-down below the published KRI

# Our “KRI Advancement” Initiative of 2016/17 has Spun-off: An Exciting KRI Benchmarking Service Concept for 2018...

4

Original Initiative:  
We want to develop KRI list & publish leading practices related to:

1. The what & why of KRIs
2. Identifying KRIs appropriate for your business
3. Gathering your KRI data
4. Standardized calculations
5. Internal reporting bests
6. Actionable KRIs – how to respond with mitigations

Our Practical Initiative:  
KRI Benchmarking Service for CCRO Members

- ▣ Supports 1. thru 6.
- ▣ **“Proof of concept”**
  - **Start simple**
  - **Learn by doing/involvement**
  - **Real data**
  - **Immediate value to members**
- ▣ POC Success = new on-going service provision for CCRO members

# How the CCRO “Proof of Concept” Works Today

## The Data

5

- Two KRIs to start (ie. crawl, walk, run)
  - ▣ Late trade entries
  - ▣ Edited trades
- Data template available for internal data to gather
  - ▣ 2016 & 2017
  - ▣ All transactions
- CCRO collects, aggregates into anonymous data
  - ▣ Submit by e-mail
  - ▣ Each participant = ID #
  - ▣ Anonymized Db sent to Cube Logic
- Viewer updated

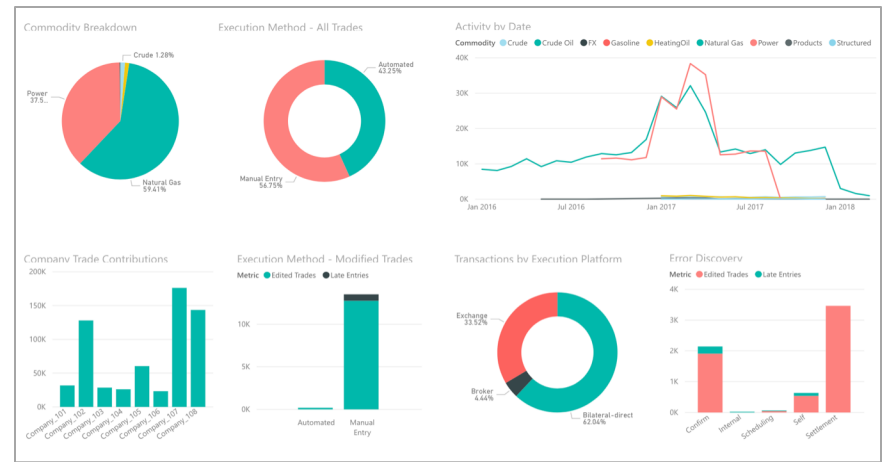
Month (MM/YYYY)	Execution Method	Execution Platform	Commodity	Metric	Error Discovered By	Count
Jan-17	Automated	Exchange	Natural Gas	Total Trades		16
Jan-17	Manual Entry	Bilateral-direct	Natural Gas	Total Trades		19
Jan-17	Manual Entry	Bilateral-direct	Crude	Total Trades		4
Jan-17	Manual Entry	Exchange	Products	Total Trades		90
Jan-17	Manual Entry	Broker	Products	Total Trades		113
Jan-17	Manual Entry	Bilateral-direct	Products	Total Trades		35
Jan-17	Manual Entry	Broker	Crude	Total Trades		47
Jan-17	Manual Entry	Bilateral-direct	Crude	Total Trades		99
Feb-17	Automated	Exchange	Natural Gas	Total Trades		231
Feb-17	Manual Entry	Bilateral-direct	Natural Gas	Total Trades		207
Feb-17	Manual Entry	Bilateral-direct	Crude	Total Trades		3
Feb-17	Manual Entry	Exchange	Products	Total Trades		198
Feb-17	Manual Entry	Broker	Products	Total Trades		89
Feb-17	Manual Entry	Bilateral-direct	Products	Total Trades		42
Feb-17	Manual Entry	Broker	Crude	Total Trades		37
Feb-17	Manual Entry	Bilateral-direct	Crude	Total Trades		106
Mar-17	Automated	Exchange	Natural Gas	Total Trades		361
Mar-17	Manual Entry	Bilateral-direct	Natural Gas	Total Trades		254
Mar-17	Manual Entry	Bilateral-direct	Crude	Total Trades		8
Mar-17	Manual Entry	Exchange	Products	Total Trades		142
Mar-17	Manual Entry	Broker	Products	Total Trades		124
Mar-17	Manual Entry	Bilateral-direct	Products	Total Trades		66
Jan-17	Automated	Exchange	Natural Gas	Edited Trades		0
Jan-17	Manual Entry	Bilateral-direct	Natural Gas	Edited Trades	Self	2
Jan-17	Manual Entry	Bilateral-direct	Crude	Edited Trades		0
Jan-17	Manual Entry	Exchange	Products	Edited Trades		0
Jan-17	Manual Entry	Broker	Products	Edited Trades	Confirm	1
Jan-17	Manual Entry	Bilateral-direct	Products	Edited Trades		0
Jan-17	Manual Entry	Broker	Crude	Edited Trades		0
Jan-17	Manual Entry	Bilateral-direct	Crude	Edited Trades		0
Feb-17	Automated	Exchange	Natural Gas	Edited Trades		0
Feb-17	Manual Entry	Bilateral-direct	Natural Gas	Edited Trades	Self	3
Feb-17	Manual Entry	Bilateral-direct	Crude	Edited Trades	Confirm	6
Feb-17	Manual Entry	Exchange	Products	Edited Trades		0
Feb-17	Manual Entry	Broker	Products	Edited Trades		0
Feb-17	Manual Entry	Bilateral-direct	Products	Edited Trades	Settlement	1
Feb-17	Manual Entry	Broker	Crude	Edited Trades		0
Feb-17	Manual Entry	Bilateral-direct	Crude	Edited Trades		0

# How the Proof of Concept Works Today

## The Anonymous Analysis Viewer

6

- Advocate member Cube Logic is developing visualization
  - ▣ On-line secure reporting
  - ▣ Live while in development
- **Participation Required:** only POC participants discuss results & steer next steps to advance towards live service
  - ▣ Share insights & new ideas:
    - Analyses
    - Expanded KRIs
    - Viewer functions
    - KRI definitions & rules
    - etc.
  - ▣ No cost for members to participate in the POC



# Proof of Concept Participation as of Today

7

## Company Members

- **American Municipal Power**
  - Chris Easton
- **Koch Ag & Energy**
  - Don Weaver
- **BP Energy Company**
  - Gary Taylor
- **Eni Trading & Shipping**
  - Christian DeSantis
  - Pritesh Patel
- **Powerex**
  - Amit Budhwar
- **Direct Energy**
  - Bill Rutherford
  - John Adams
- **Munich Re Trading LLC**
  - Niraj Shah
- **EQT**
  - Joe Zappia
- **Nalcor Energy**
  - Angelina Hayes
  - Suzanne Kenney
- **Emera Inc.**
  - Tom Birmingham
- **Enbridge**
  - Kristen Murray
- **The Energy Authority**
  - Malinda Prudencio
  - William C Rust
  - Carrie Carrigan
- **Washington Gas (WGL)**
  - Nigeria Bloczynski
  - James Waweru
- **New York Power Authority**
  - Soubhagya Parija
  - Thomas Spencer
- **National Grid**
  - Alex Zhukovsky
- **Brookfield Energy Mktg**
  - Frederic Verlez
- **The AES Corporation**
  - Leonardo Moreno
  - Chris Fitzgerald
- **CPS Energy**
  - Mario Guzman
  - Anthony Werland
- **Gas South, LLC**
  - Freddy Cardozo
- **Golden Spread Coop**
  - Margaret Rupert
  - Chris Lang
- **Engie NA (+ Resources)**
  - John Funk
  - Bill Jordan
- **Deca Energy**
  - Michael Sergeev
- **Hess**
  - Beth Creller
  - Liza Abad
- **Just Energy**
  - Amir Andani
- **Mansfield Energy**
  - Steven Brown
- **Motiva**
  - Monty Burton
- **PSEG**
  - Laurent Pommier
- **EDF Trading**
  - Christine Galaty
- **Source Energy**
  - Sean Andrews
- **Tacoma Power**
  - Ray Johnson

About 50% of members are participating (or have indicated they will be)

- Today, data in-hand from 9 of these
- More CCRO member participation alone could move the program past the tipping point to a live service...

# Today's Discussion

## 1. KRIs & Our Proof of Concept Initiative

1. The value proposition of peer benchmarking
2. Emergent benchmark service: Proof of Concept to Live

## 2. Live Demo: Insights from Preliminary Data

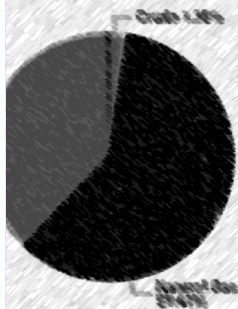
1. Never-seen-before peer data: Proof of Concept in action
2. Draft charts & tables draw-out insights & questions for next steps

## 3. Discussion of Next Steps

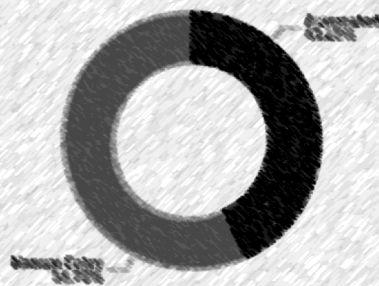
1. Grow Participation
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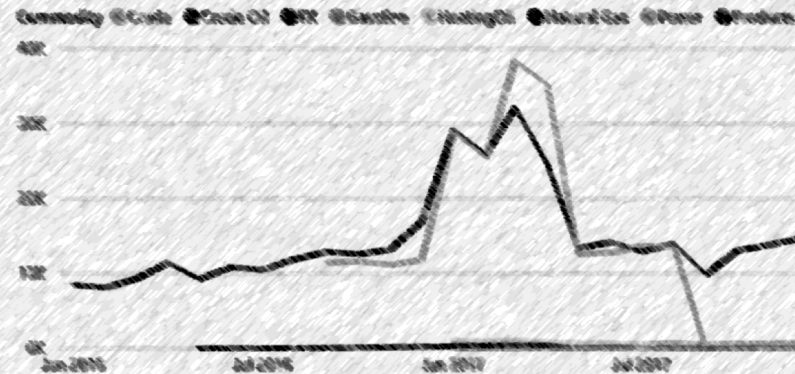
By Breakdown



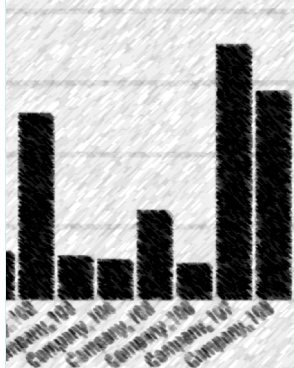
Execution Method - All Trades



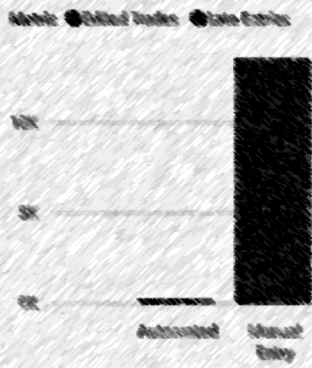
Activity by Date



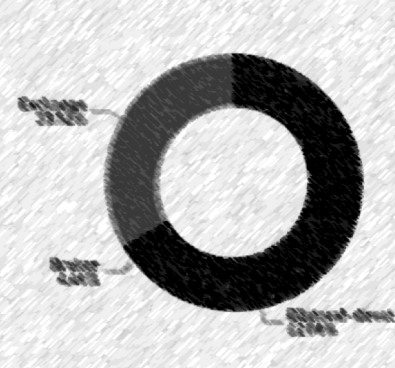
Trade Contributions



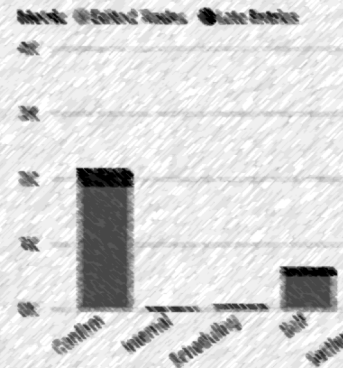
Execution Method - Identified Trades



Transactions by Execution Platform



Error Disclosure



# 9

## Live Demo of Viewer as of Today...

Don Weaver & Roderick Austin demonstrate how group participants are working to create the most useful views into the aggregated KRI data...

# Today's Discussion

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  1. The value proposition of peer benchmarking
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2. Insights from (Preliminary) KRI Data
  1. Never-seen-before peer data: Proof of Concept in action
  2. Draft charts & tables draw-out insights & questions for next steps
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  1. Grow Participation
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