



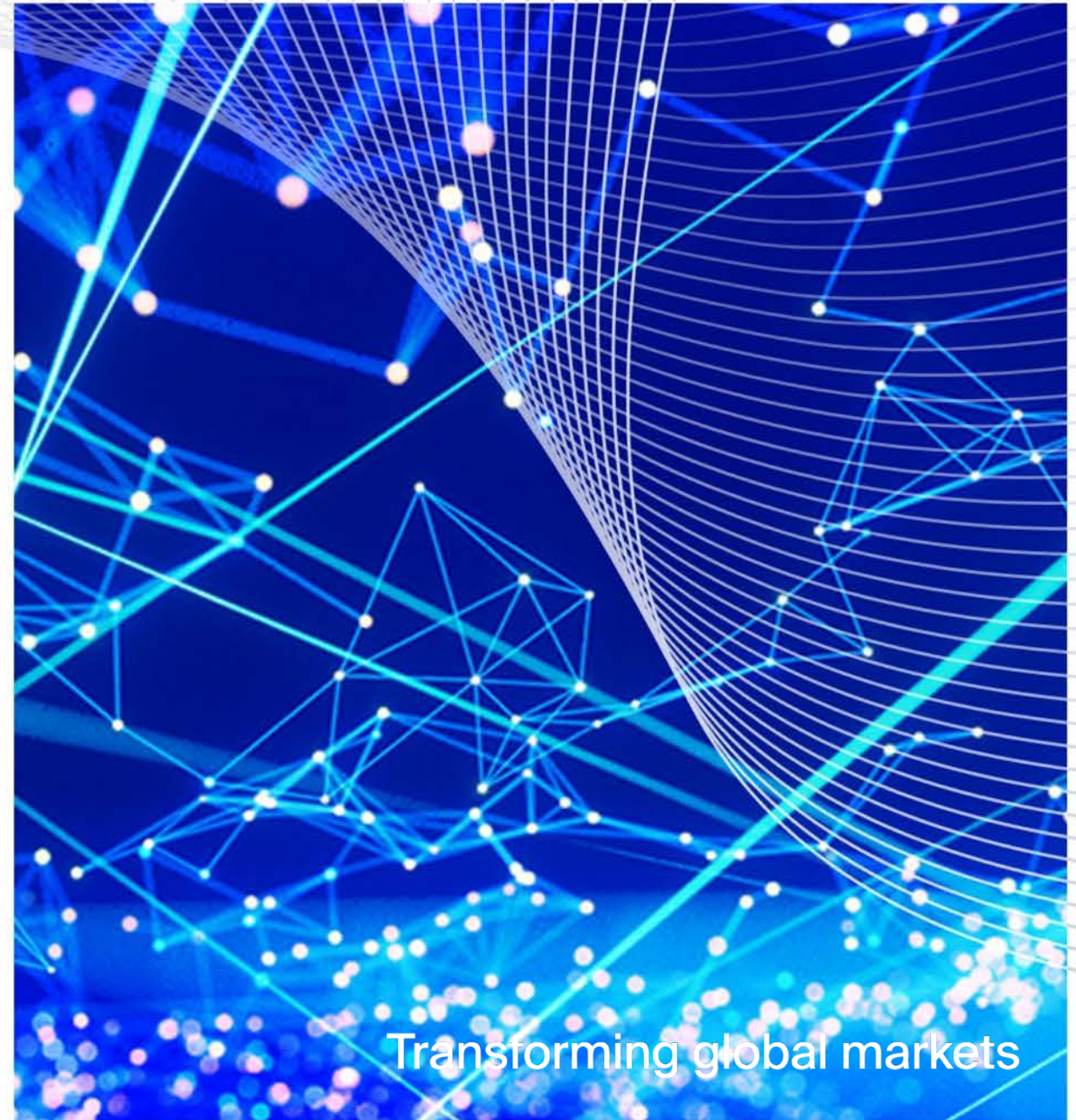
# ICE NGX

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## Clearinghouse Overview

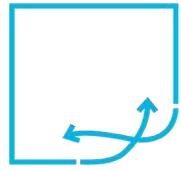
Q4 2018



Transforming global markets

Intercontinental Exchange (NYSE: ICE)  
builds, operates and transforms global  
markets through information,  
technology and expertise

# We connect global participants to an ecosystem covering data, trading, clearing and capital raising



## Markets

### FUTURE EXCHANGES



### SECURITIES EXCHANGES



### OTC MARKETS



### LISTINGS



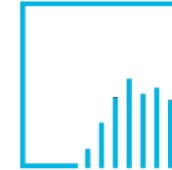
## Clearing

### CENTRAL CLEARING HOUSES



### LOCALLY REGULATED CLEARING HOUSES IN:

US  
UK  
EUROPE  
CANADA  
SINGAPORE



## Data

### PRICING & ANALYTICS



### DESKTOPS & CONNECTIVITY



### EXCHANGE DATA



Agriculture

Connectivity

Desktops

Energy

Fixed Income & futures Reference Data

ICE Chat

Interest Rates

Analytics

Corporate listings

Digital currencies

Equities / Index / Options

FX

ICE Mobile

Precious Metals

Bonds

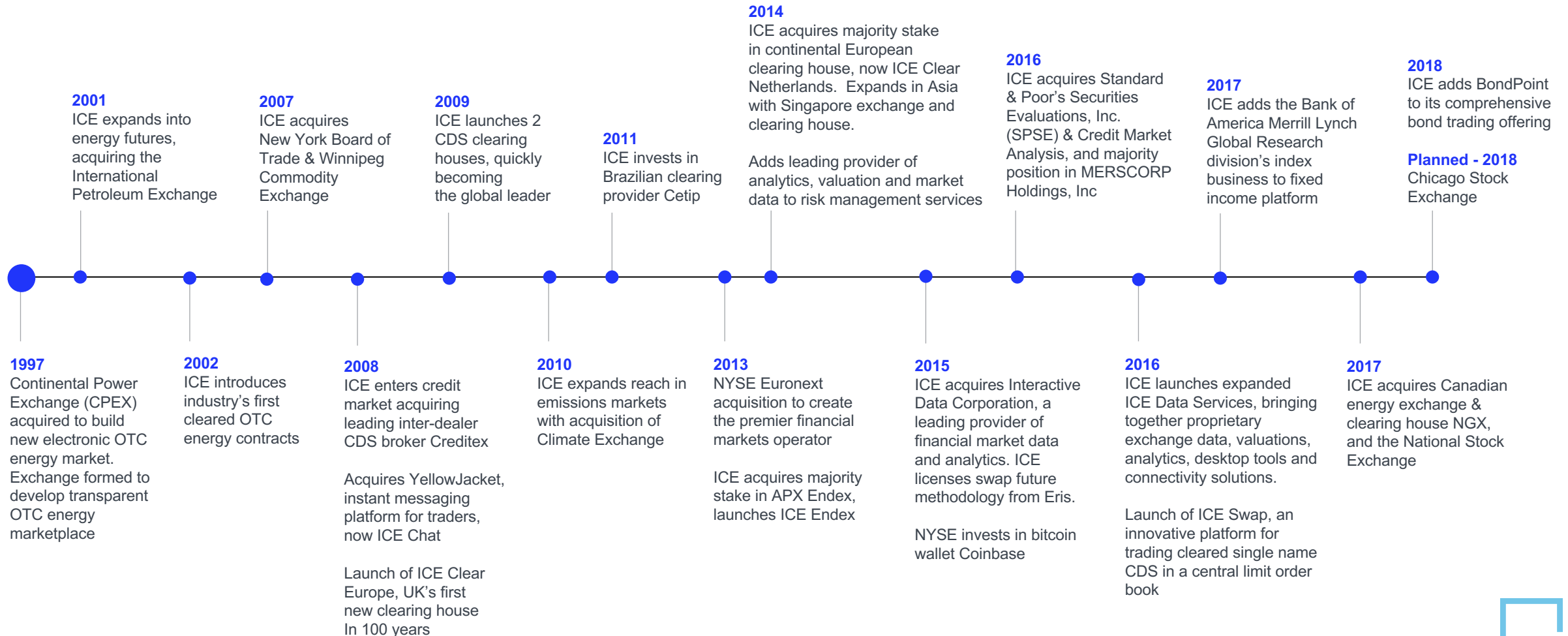
Credit Derivatives

End-of-Day & Real-Time pricing

Exchange Traded products

Indices

# We began with transforming energy markets and expanded through innovation into new asset classes



The background features a series of thin, parallel blue lines that curve and flow from the top right towards the bottom right, creating a sense of movement and depth. The lines are more densely packed in some areas, creating a gradient of blue intensity.

# ICE NGX - Introduction

# Introduction to ICE NGX

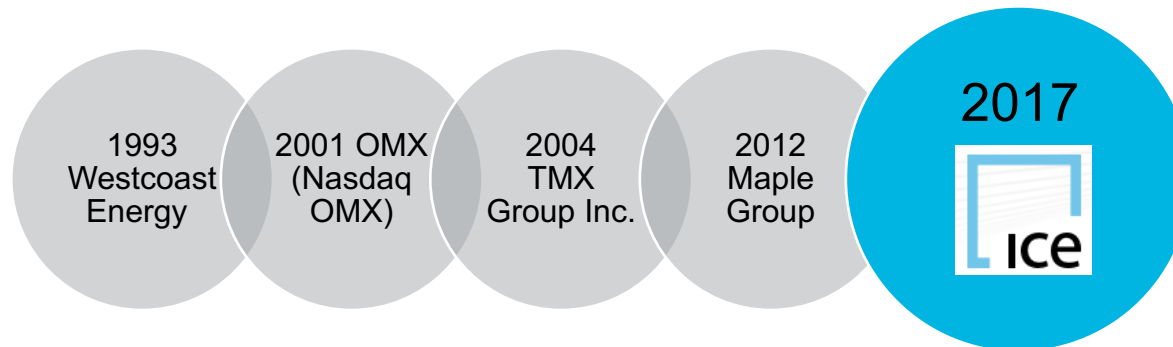
Leading physical energy exchange and clearinghouse - Natural Gas, Power and Crude Oil

Est. 1993 - Headquartered in Calgary, Alberta, office in Houston, Texas.

Physical Delivery - End-to-end delivery with physical backstopping.

Wholly owned indirect subsidiary of Intercontinental Exchange, Inc.

ICE Alliance – All major ICE NGX markets available on ICE's global platform



# ICE NGX a key player in physical energy markets

<b>275+</b>	Contracting Parties
<b>Over \$35BN</b>	Annual notional transactions cleared
<b>\$500M - \$1BN</b>	Average monthly settlement amount
<b>45 Bcf</b>	Approximate daily energy volumes transacted
<b>30 Bcf</b>	Approximate daily deliveries
<b>90+</b>	Cleared products in NA – 93 natural gas (20 Canadian, 73 US), 5 crude oil, 3 power regions

# Introduction to ICE NGX

## Markets

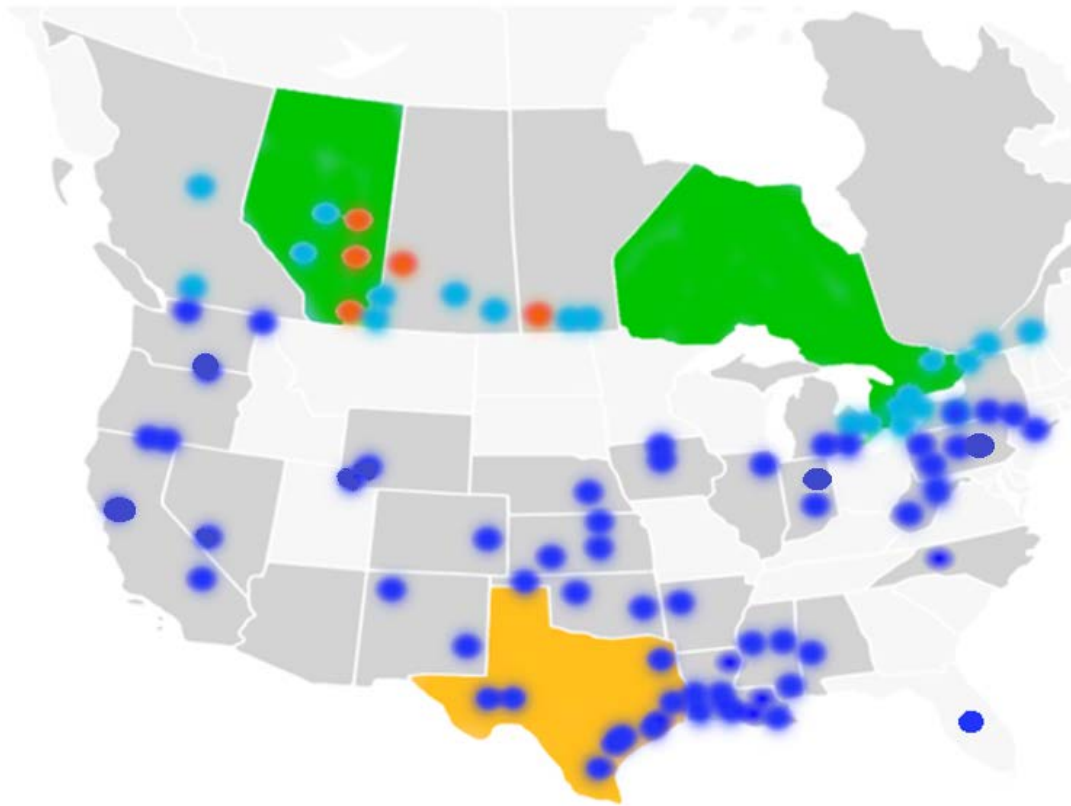
- 80-90% market share of Canadian physical spot gas and financial power
- ICE NGX's physical natural gas and power indices are the Canadian benchmarks
- ICE NGX markets also include Canadian crude oil and U.S. physical power
- U.S. Natural Gas – ICE NGX is exclusive clearinghouse for ICE's OTC natural gas markets. Market share varies by hub - average of 10% cleared.
- ICE NGX's trading primarily transacted on ICE trading platform with some OTC and auction volumes

## Clearing House

- Clear physical and financial energy products across North America
- No clearinghouse defaults since inception in 1994
- Managed through major failures including Lehman and Enron
- \$2-\$4Bn in collateral holdings with 80% LCs and remainder cash
- Unique direct clearing model - no clearing members (non-mutualized)
- ICE NGX manages complete physical delivery process

# ICE NGX product locations

ICE NGX clears energy in 99 locations, including expansion into the ERCOT electricity markets in Texas.



## Canadian Physical Gas

AB-NIT/AECO  
Chippawa  
APC-ATP  
Dawn  
East Hereford  
Emerson 1/Viking  
Emerson 2/Great Lakes  
Empress  
Enbridge CDA  
Enbridge EDA  
GMI EDA  
Huntington  
Iroquois  
Niagara Falls  
Parkway  
St. Clair  
Station #2  
Stuffield  
TEP

## Canadian Physical Crude

Cromer  
Edmonton  
Hardisty  
Kerrobert  
Milk River

## Canadian Financial

Alberta Financial Gas  
Alberta Financial Power  
Ontario Financial Power  
Ontario Intertie

## US Physical Power

ERCOT

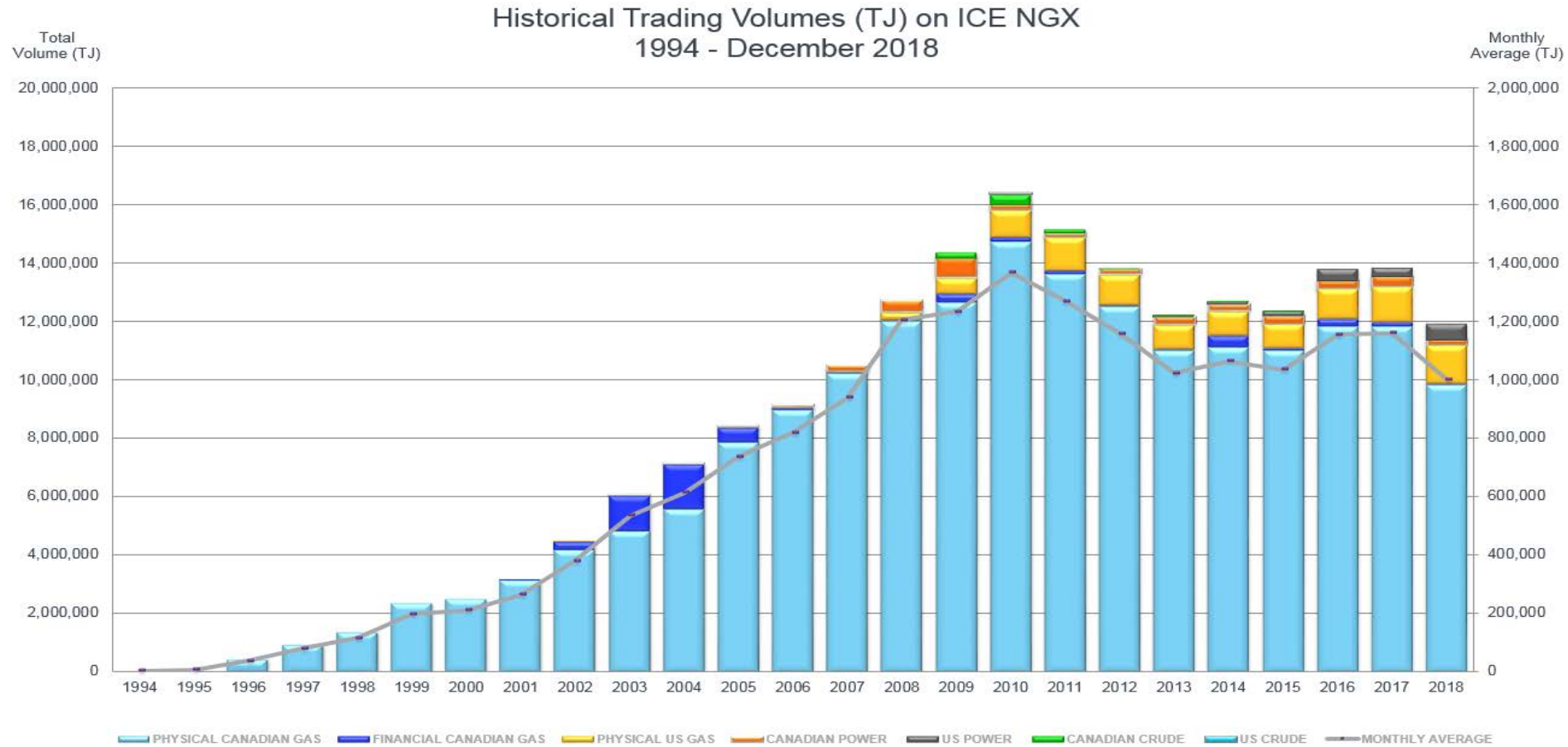
## US Physical Gas

ANR SE  
ANR SW  
APC-ACE  
CG Mainline  
CG Onshore  
Cheyenne  
Consumers  
Cove Point  
Demarc  
Dominion North  
Dominion South  
ENABLE-Flex  
EP Keystone  
EP San Juan  
FGT-Z3  
Henry Hub  
Houston Ship Channel  
Iroquois-US  
Katy Enstor  
Katy Oasis  
Kingsgate  
KRGT-Del Pool  
KRGT-Rec Pool  
Leidy - Transco  
Malin  
Michcon  
Millennium East  
Moss Bluff  
NGPL-Nipsco  
NGPL Midcontinent  
NGPL STX  
NGPL TXOK  
NGPL-Nicor  
NBPL Ventura  
NNG Ventura  
Oasis Waha

## ONEOK

Opal  
Panhandle East  
PG&G Citygate  
REX East ANR  
Social Citygate  
Stagecoach  
Stanfield  
Sonat-Z0 South  
TCO  
TCO A04  
TETCO ELA  
TETCO M3  
TETCO M1 30  
TETCO M2  
TETCO STX  
TETCO WLA  
TGP 500  
TGP 800  
TGP Z0N  
TGP Z0S  
TGT SL  
TGT Mainline  
TGT North LA  
Transco 30  
Transco 65  
Transco 85  
Transco Z5 South  
Transco Z6 (NY)  
Transco Z6 (NNY)  
Transco Z6 (NNY N)  
Transco Z6 (NNY N ML)  
Transco Z6 Sta-210  
Trunkline ELA  
Trunkline WLA  
Trunkline Z1A  
Waha

# ICE NGX Volume history



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# Overview of ICE NGX Clearinghouse Structure

# Overview of risk – ICE NGX Clearing Operations

## ICE NGX Clearinghouse Role

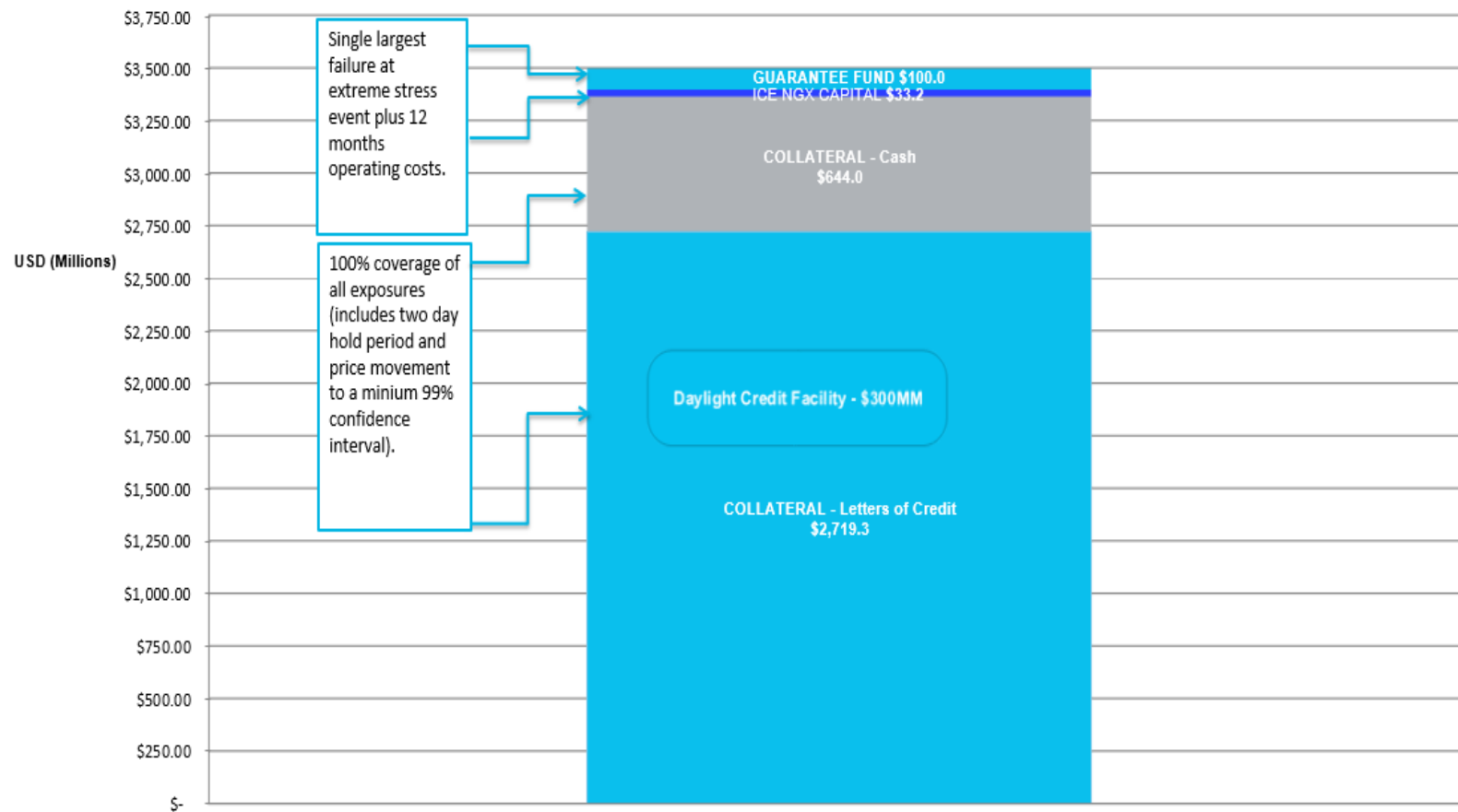
- Buyer to every seller and vice versa on a fully collateralized basis
- Fully anonymous trading
- Complete physical delivery (firm delivery in key markets)



## Private Clearing Operation

- No mutualized or legal relationship amongst counterparties
- All collateral segregated and for owner usage only
- Do not require access through clearing member

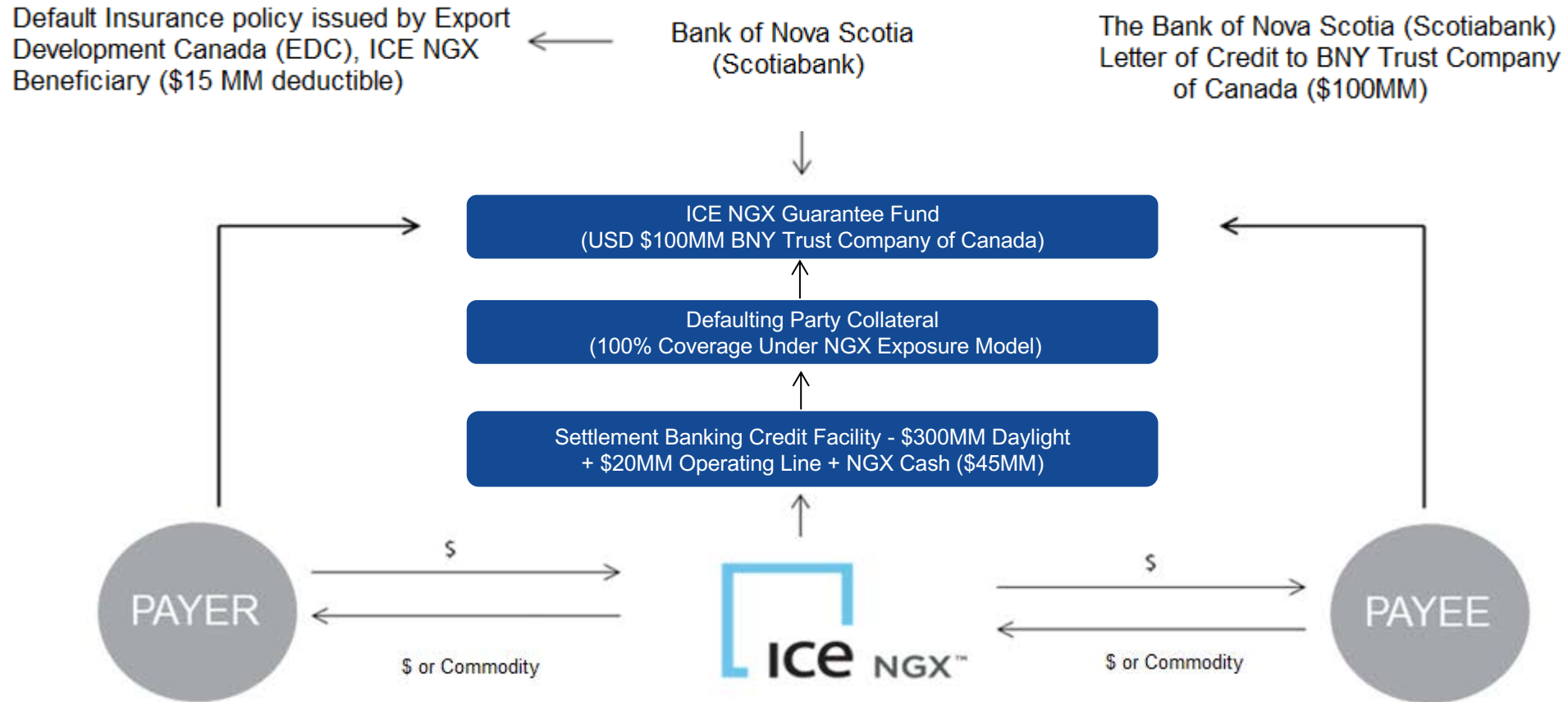
# ICE NGX Financial Resources (as at December 31, 2018)



Funds Available for DCO Default Waterfall (Millions USD):	
A) ICE NGX Capital	\$ 33.2
B) Default Insurance*	\$ 82.9
<b>TOTAL FINANCIAL RESOURCES</b>	<b>\$ 116.1</b>

\*Default Insurance of \$100MM adjusted for deductible and potential liquidity risk

# ICE NGX Clearing Backstop Model



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# Clearing Requirements and Risk Management

# Contracting Party (CP) Performance Obligations

## Make/Take Delivery

- ICE NGX is exposed to the price at which an alternative supply/market can be found
- Risk is managed with backstopping contracts, penalty mechanisms, collateral requirements and credit policy

## Make Payment

- ICE NGX is exposed to receivables risk on settlement dates
- Risk is managed with penalty mechanisms, collateral requirements and credit policy

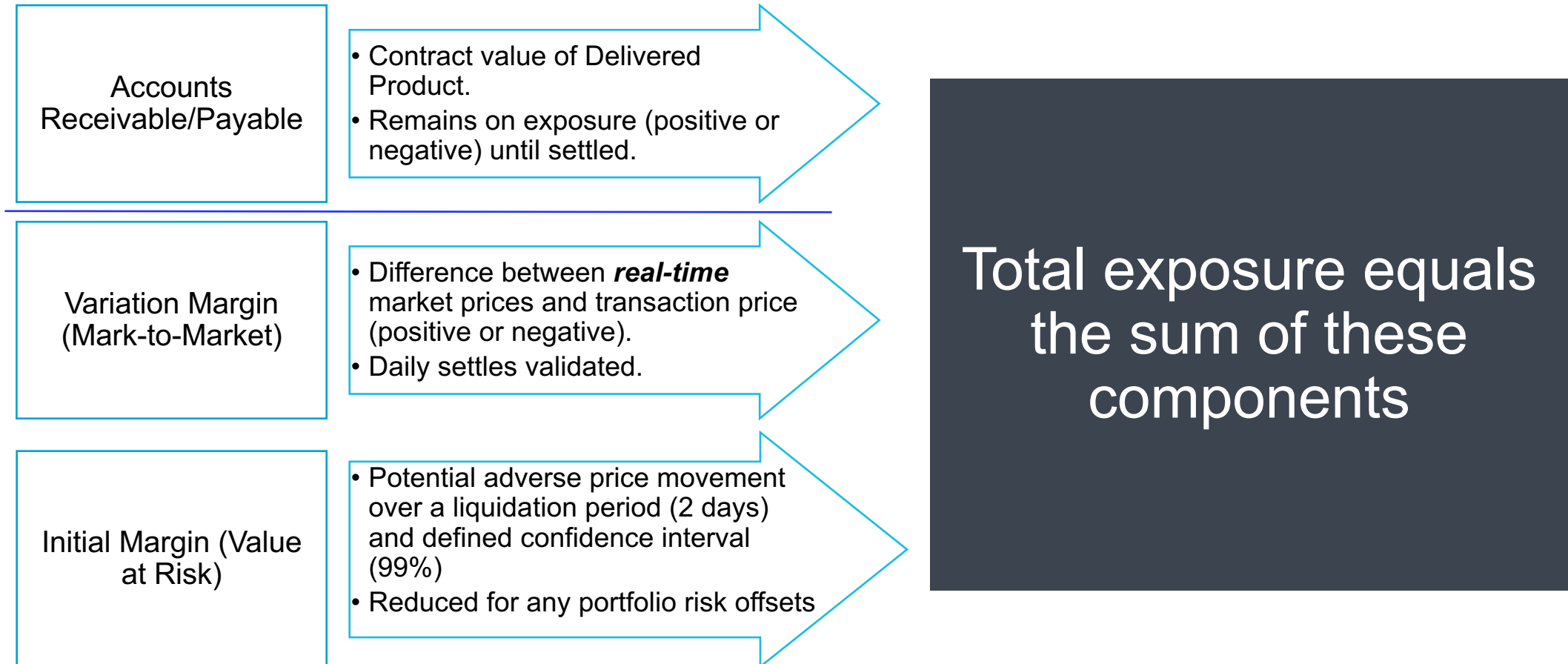
## Provide Collateral

- ICE NGX is exposed to the risk that Contracting Parties will not provide sufficient collateral to manage their risks
- Risk is managed with liquidation provisions

## Remain Solvent

- Risk is managed with margin triggers and liquidation provisions

# Risk Measurement – Margin Requirement



Collateral requirements are netted across products and commodities

# CPA margin triggers

## Collateral Utilization

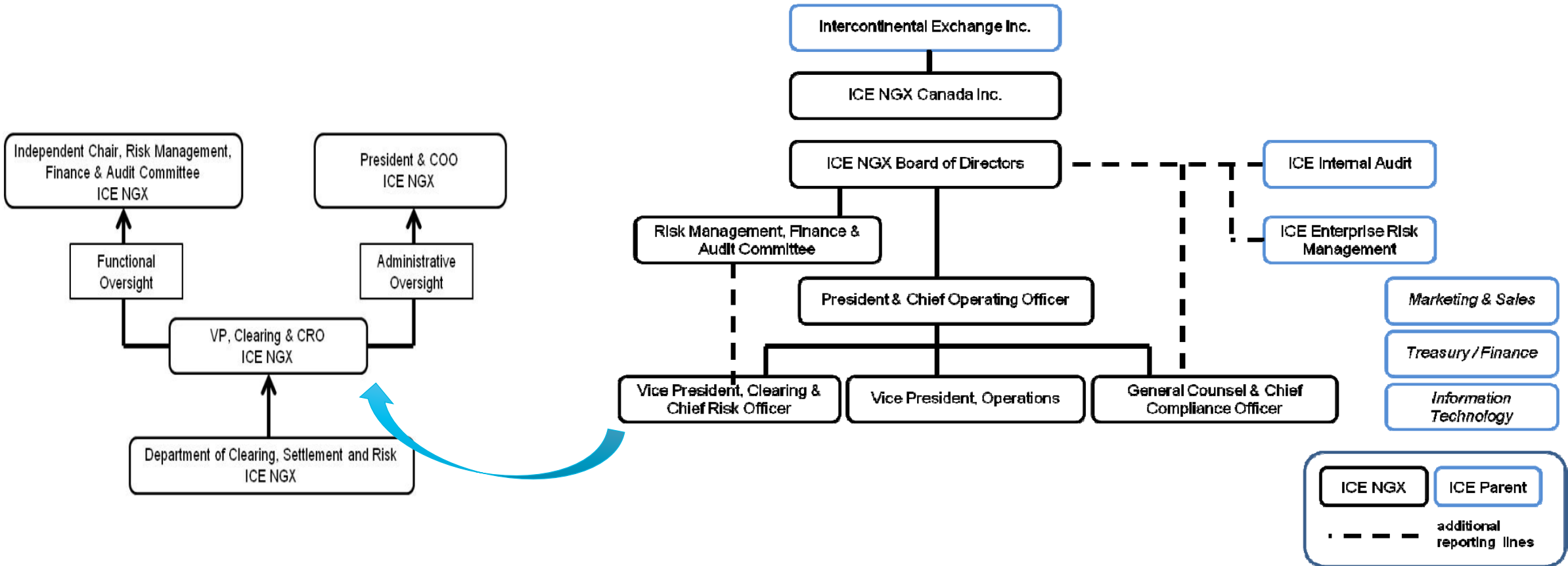
- Unlike mutualized clearinghouses, margin collected *prior* to exposure
- A margin call may be made when margin requirement reaches **80%** of collateral on deposit
- If margin requirement reaches 90% of collateral on deposit permissions may be restricted
- If margin requirement reaches **95%** of collateral on deposit permissions may be halted and liquidation rights invoked
- Additional collateral must be received next business day

## Minimum Available Margin

- If available margin is less than the minimum threshold, CP's permissions may be restricted until additional collateral is received
- Minimum available margin thresholds are:
  - Gas - \$500K
  - Oil/Power - \$1MM
  - Options - \$2MM

FCM's provide margin buffer at mutualized clearinghouses. The cost of such intermediation services however are borne by the customer.

# ICE NGX Governance Structure



# Risk Management



## Risk Management

- ICE NGX maintains a team of clearing personnel that monitor all positions on a real-time basis.
- Ability to halt immediately as required.



## Fully Collateralized Model

- All CP positions must be fully collateralized – there are no unsecured positions.
- ICE NGX triggers margin calls when CP exposures reach 80% of collateral held (discretion below 90% applied)
- ICE NGX only accepts cash and Letters of Credit from 'A' rated or higher banks.



## Physical Delivery Backstops

- Risk of physical delivery managed with backstopping contracts and penalty mechanisms for failure to take/deliver product.
- Extensive operational expertise in Canada and U.S.



## Extensive Enforcement Rights

- ICE NGX maintains a uniform Contracting Party Agreement with all parties.
- Effective and immediate remedies available to deal with any potential risk situations.

# Risk Management Continued



## Contracting Party Collateral

- All CPs must maintain minimum financial requirements of \$5MM in equity or \$25MM in assets.
- All CP risk limits are assigned & monitored according to DCO rules.
- Threshold collateral requirements in addition to collateral required to cover.



## Contracting Party Reviews

- ICE NGX undertakes an annual financial review of every Contracting Party.
- Over 75% of ICE NGX's exposures to CPs of investment grade rating.



## Stress Testing

- ICE NGX undertakes weekly, monthly and quarterly stress tests to determine exposures under “extreme but plausible” market conditions.
- Regulatory requirement to maintain sufficient capital to manage single largest default under stress scenario as well as 12 months operating.



## Back-Testing

- Daily back-testing to ensure that initial margin rates appropriate for actual market price movements.
- Back-testing independently reviewed on a quarterly basis.

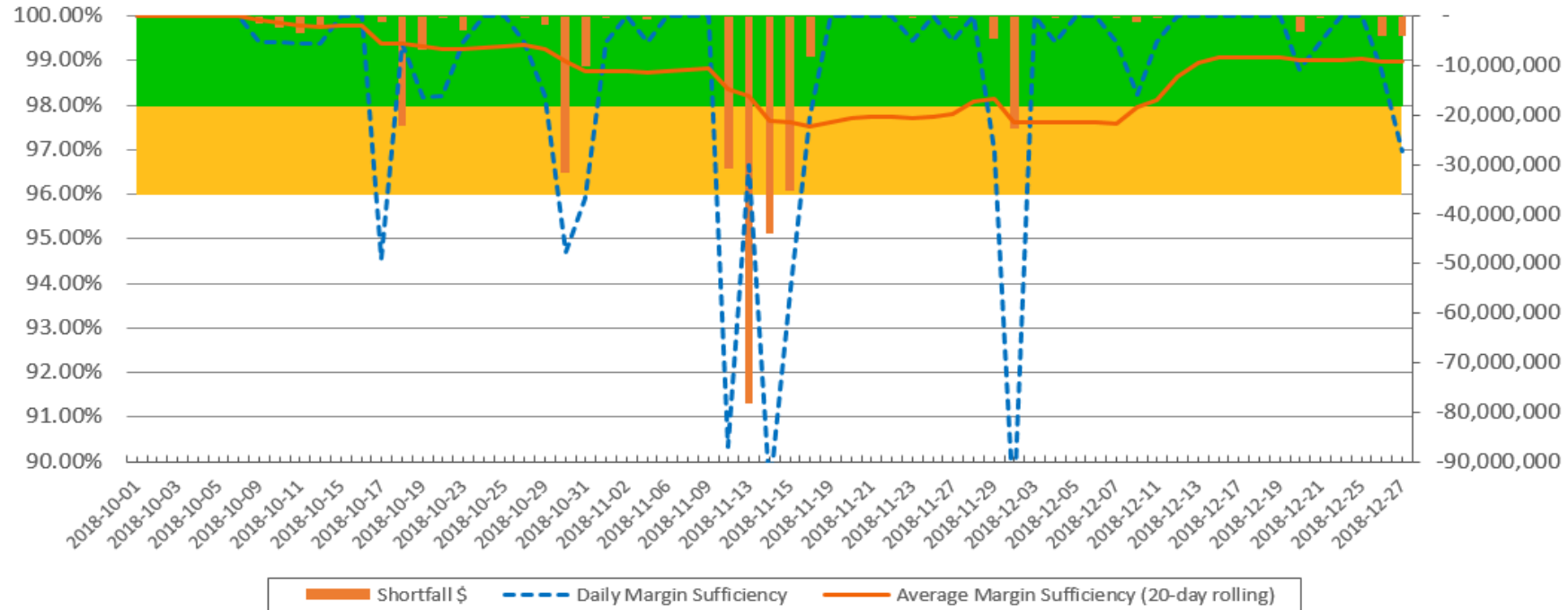
# Market Risk Management

- New market price backtesting tools developed in 2015 to provide more timely and accurate results.
- Performance of ICE NGX margin models and collateral rules are measured daily at all levels:
  - Product margin
  - Portfolio margin
  - Total Collateral
- Apply 2-day holding period on 99% confidence interval. Regulatory minimum is 1 day 99% threshold, however, physical futures liquidity far lower than financial futures.
- ICE NGX also added new stress testing tools in 2015 to stress markets across 20 different “extreme but plausible” events (polar vortex, locational price movements, breakdown in product correlations, etc.)
- Stress test results form basis of measuring backstop adequacy and are reported to regulators quarterly.

# Portfolio Backtesting

Percentage of clearing accounts with sufficient initial margin by day:

## 2018 Q4 Daily Backtest Exceptions

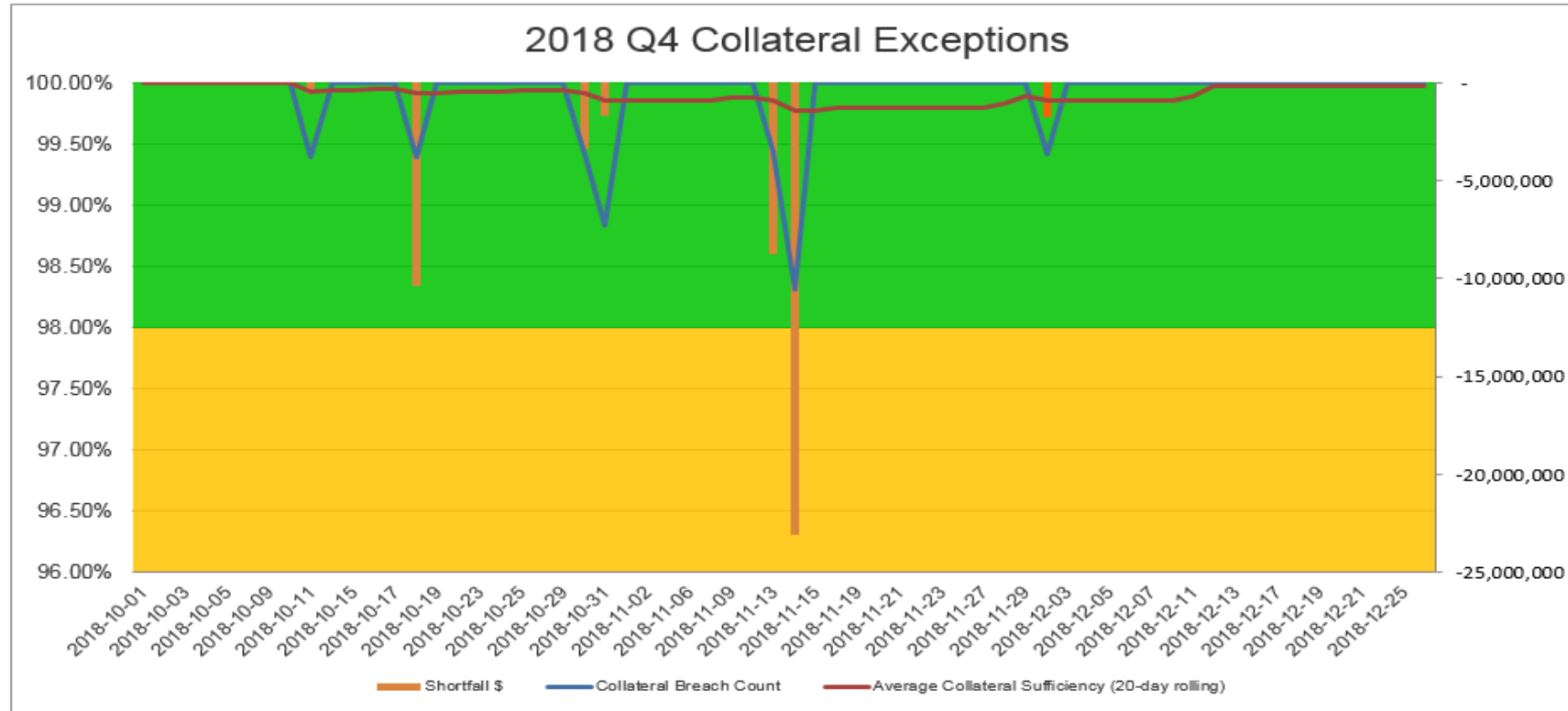


99% Sufficiency= less than 2 exceptions  
 98% Sufficiency= less than 4 exceptions  
 97% Sufficiency= less than 5 exceptions  
 96% Sufficiency= less than 7 exceptions

Note: Portfolio margin performance prior to collateral application

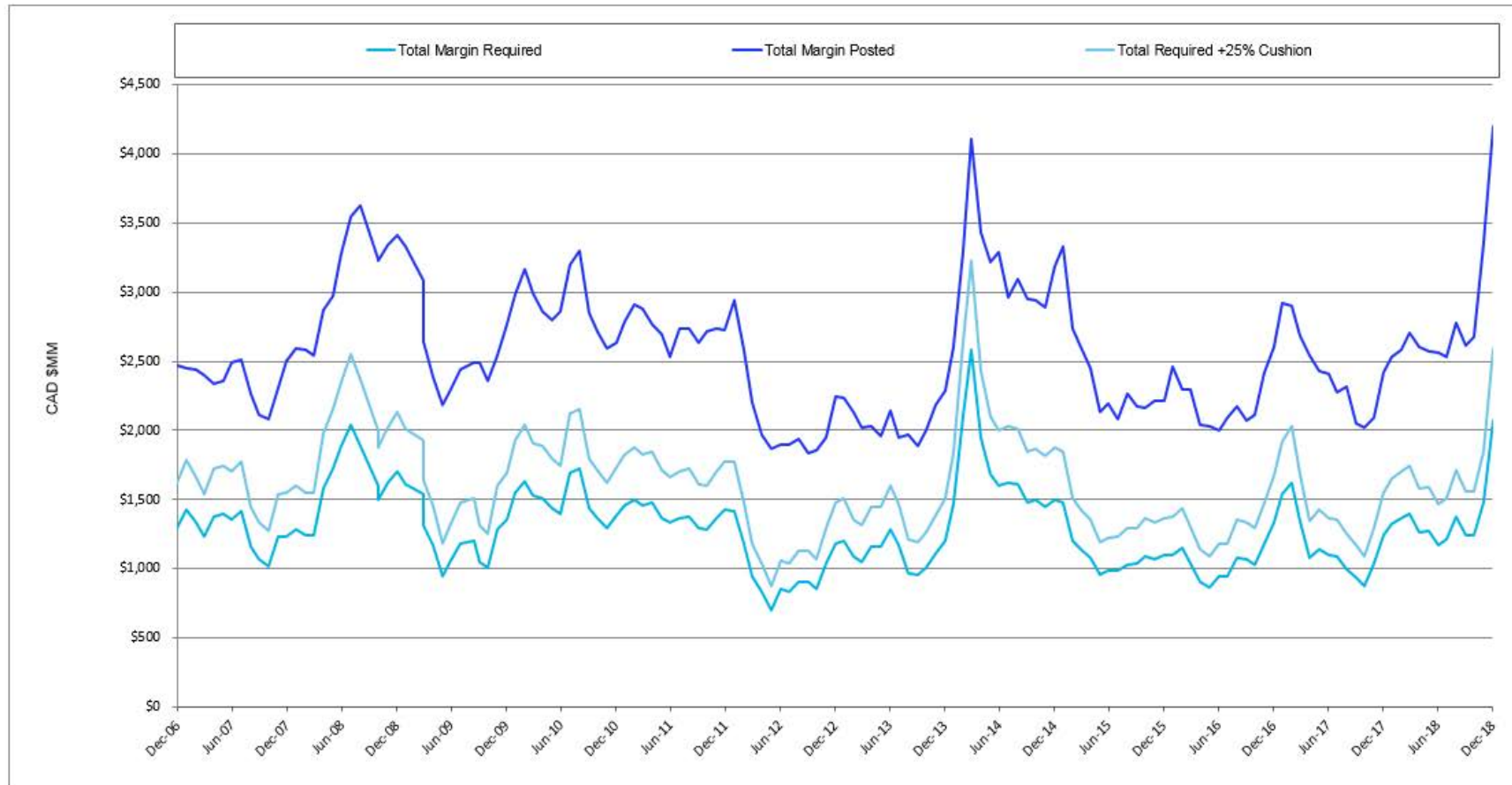
# Collateral Sufficiency

Percentage of clearing accounts with sufficient collateral by day:

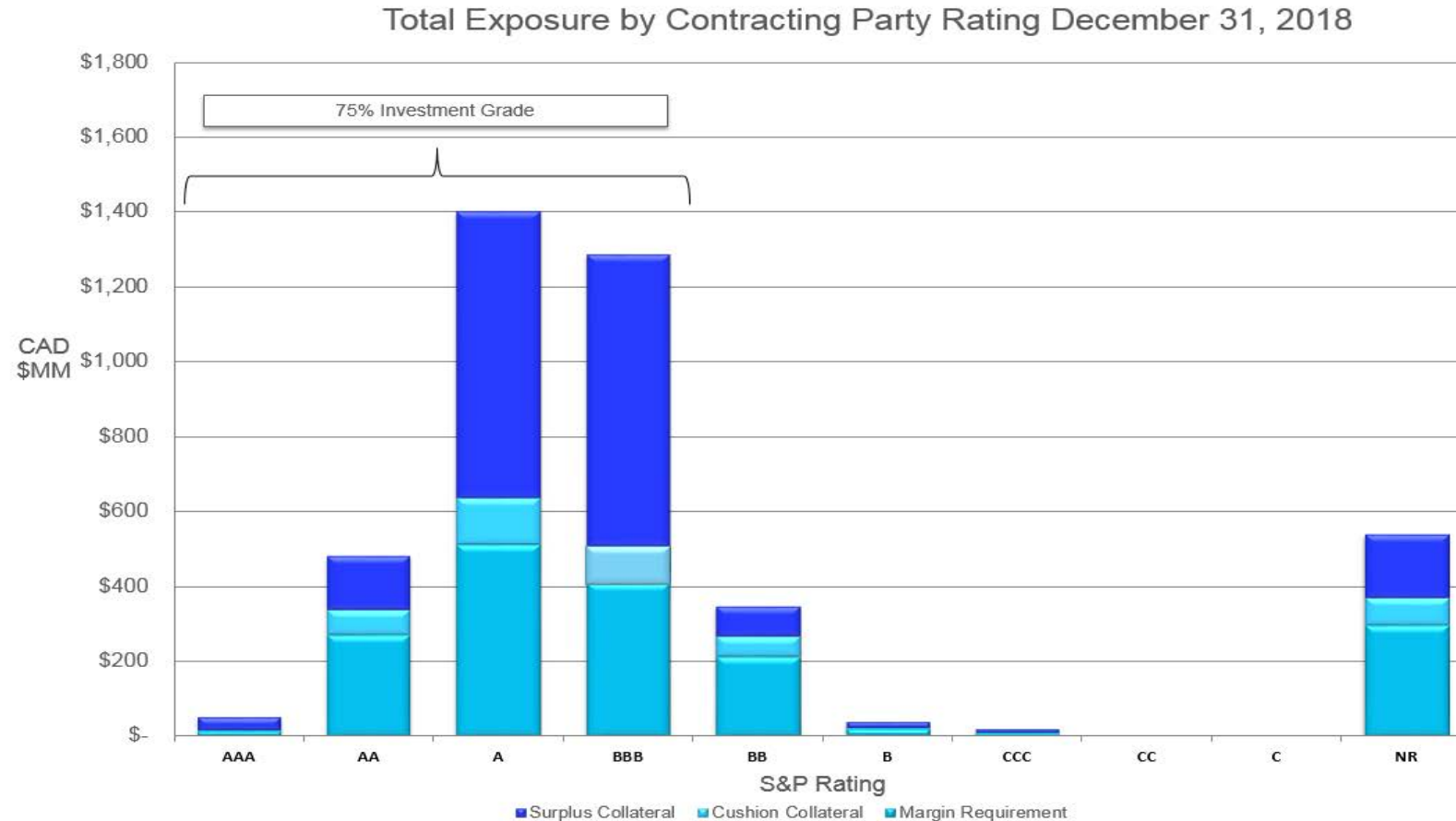


99% Sufficiency= less than 2 exceptions  
98% Sufficiency= less than 4 exceptions  
97% Sufficiency= less than 5 exceptions  
96% Sufficiency= less than 7 exceptions

# Aggregate Margin Requirement vs. Margin Held

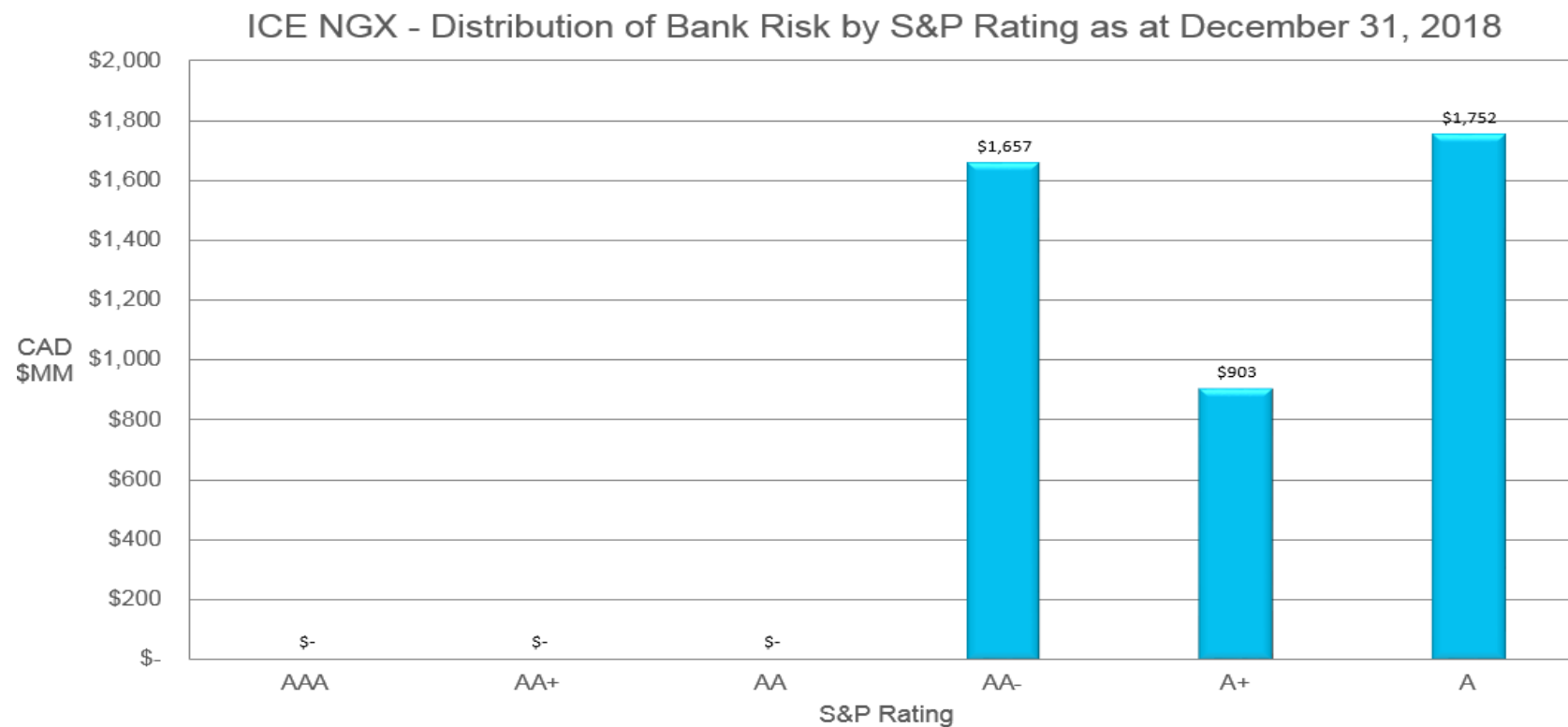


# Contracting Party Risk by Rating



Note: CP rating based on the Senior Unsecured rating, issuer rating, or if unavailable, the issue rating. If the CP is not rated, and is a directly/indirectly wholly-owned subsidiary of a rated company, we have used the parent company's issuer rating, or if unavailable, the issue rating.

# Distribution of Collateral Bank Risk by Rating



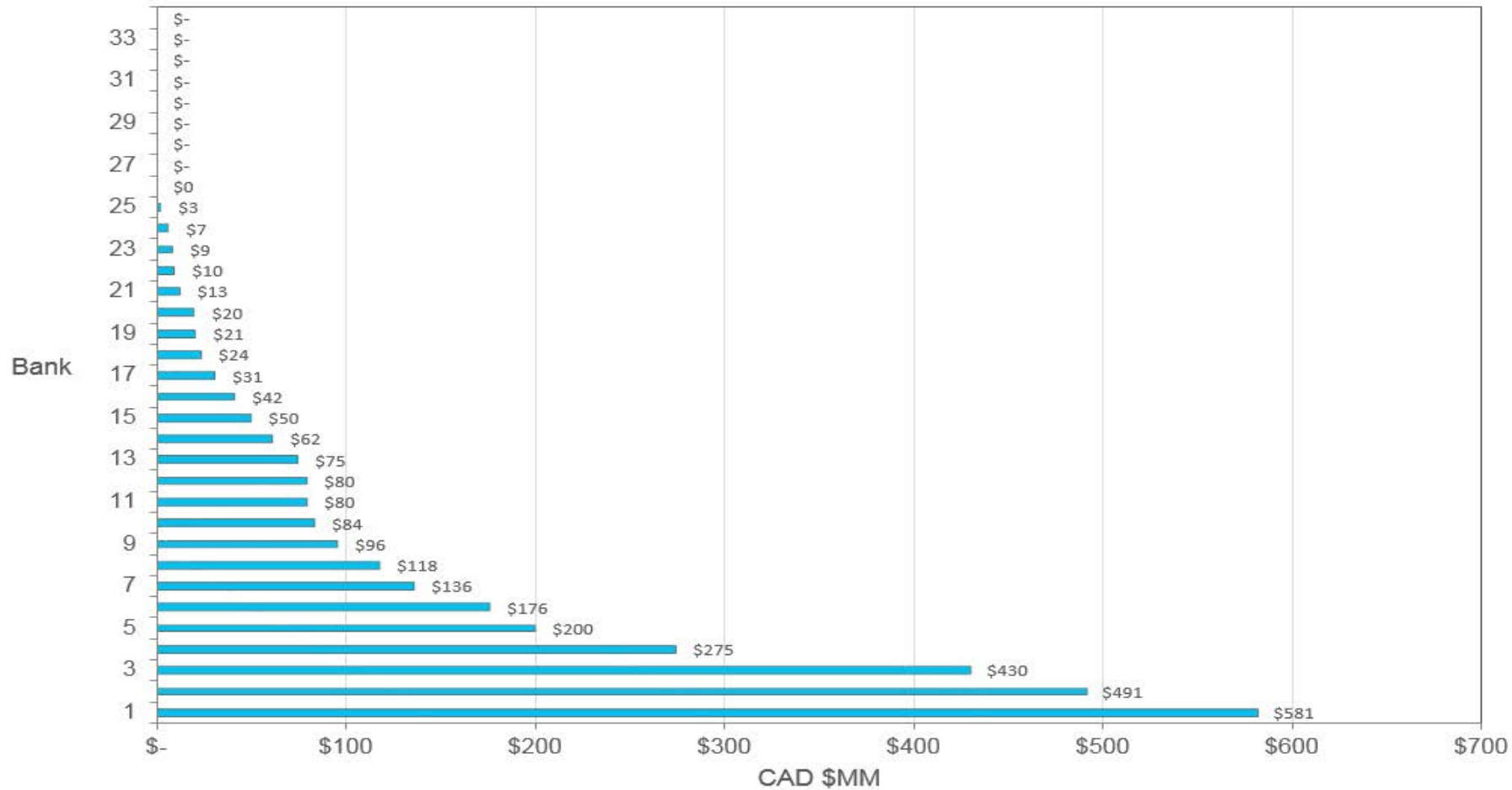
Note: Issuing Bank rating based on the Standard & Poor's senior unsecured rating

# ICE NGX Current Margin Position

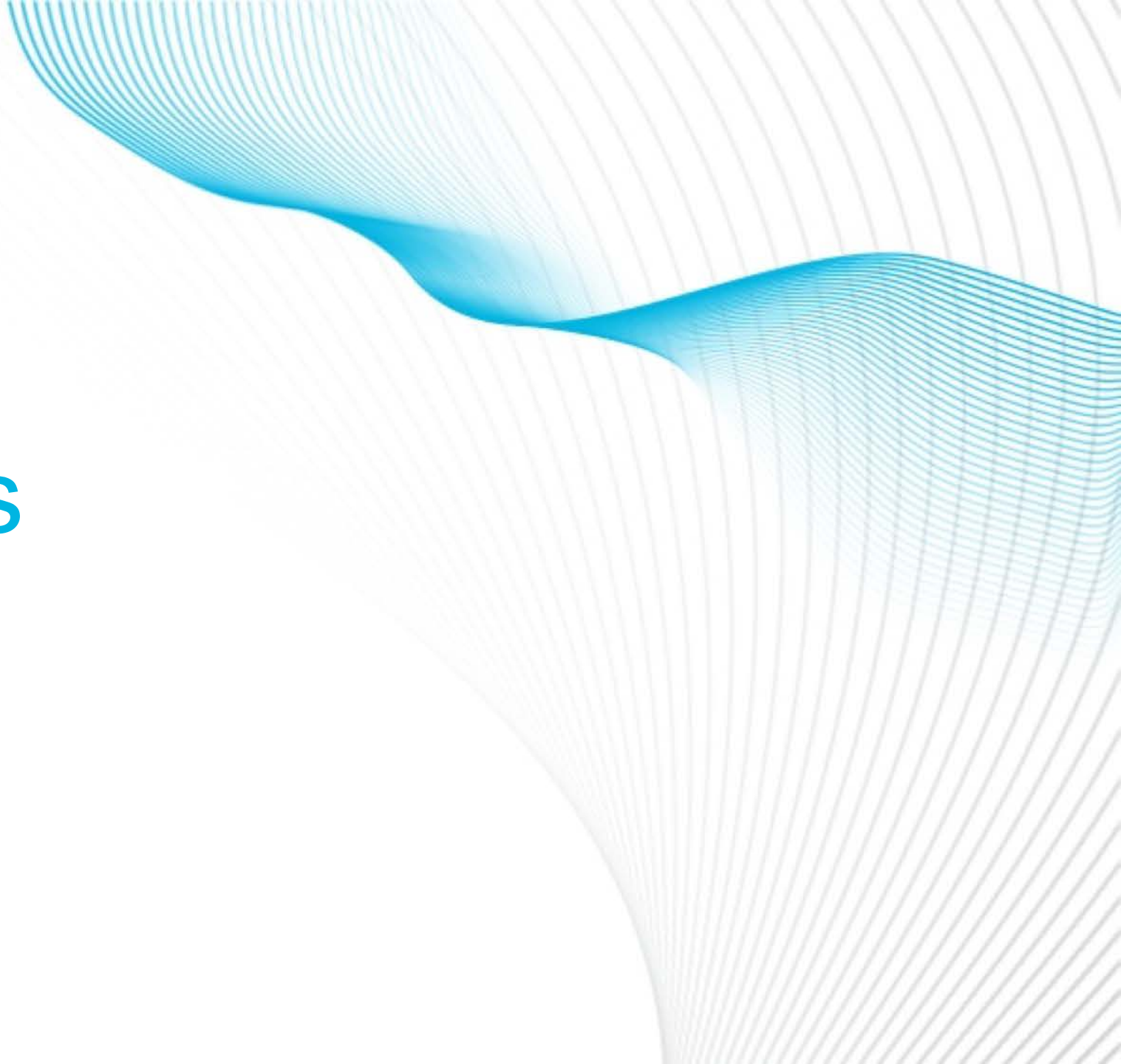


# Distribution of Collateral Issuing Bank Risk by Issuer

ICE NGX - LCs Issued by Bank as at December 31, 2018



# Regulatory Developments



# ICE NGX Regulatory Status



## In Canada

ICE NGX is recognized as an “Exchange” and “Clearing Agency” by the Alberta Securities Commission (ASC) and has applicable exemptive relief in other Canadian provinces

ASC is the “Lead (Exchange) Regulator” for ICE NGX in Canada



## In U.S. and Europe

ICE NGX recognized by the Commodity Futures Trading Commission (CFTC) as a “Derivatives Clearing Organization” (“DCO”) in December 2008

ICE NGX became an “Exempt Commercial Market” (“ECM”) in November 2002 under the U.S. Commodity Exchange Act.

ICE NGX’s ECM status replaced by Foreign Board of Trade (FBOT) status in May 2013 (1st FBOT issued by CFTC post Dodd-Frank).

ICE NGX was recognized as a third country CCP under Article 25 of EMIR in January 2016

# ICE NGX's Global Clearinghouse Recognition

- In April 2012, the Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) issued the Principles for Financial Market Infrastructures (PFMIs).
- Global members (including Canada and U.S.) committed to adopting the 24 principles (the Principles) and the five responsibilities (the Responsibilities) included in the PFMIs.
- Through implementation of the PFMIs, and as confirmed by CSA regulatory notice, ICE NGX is recognized as a Qualified Central Counterparty (QCCP).
- QCCP is the highest clearinghouse standard and allows Basel regulated entities (banks) to apply the lowest capital requirements to their QCCP dealings.



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