STANDARDS FOR RISK MANAGEMENT EFFECTIVENESS

North American Power Credit Association

SAN DIEGO, CA ◦ February 26, 2016

Today's Speakers

- ## Morgan Davies

Morgan is a Managing Director of the Alliance Risk Group and brings more than 20 years of experience in the areas of risk management primarily in the energy and financial services industries.

Morgan has been responsible for leading and developing credit risk practices and liquidity enhancing structures for leading energy companies (IPP, regulated utility, unregulated utility subsidiary) and has significant Big 4 public accounting experience within the financial services industry.

Morgan is a CPA in South Carolina and a Chartered Accountant in Canada. Morgan holds a double major BA in Management Economics from the University of Guelph in Ontario.

- ## Bob Anderson

Mr. Anderson is the Executive Director of the Committee of Chief Risk Officers and has over 20 years management experience with the design, implementation, and operations of risk management in the energy industry.

Bob brings a unique combination of leadership experience at two of the most sophisticated energy trading entities, advisory experience with a prominent management consulting firm, and experience as chief executive at the premier industry group for risk management practices.

Bob holds a Masters degree in Business Administration from Duke's Fuqua School of Business, and an engineering degree from Vanderbilt University.

The Committee of Chief Risk Officers ("CCRO")

- The CCRO is an independent non-profit corporation
- Professional risk managers at energy companies formed the CCRO in 2002
  - To facilitate on-going cooperative initiatives
  - To produce and publish original content
  - To advance the industry's risk management practices
- Member companies come from all parts of energy industry and in all sizes

CCRO Operations

- The CCRO
  - Publishes white papers
  - Hosts webcasts
  - Holds members-only meetings
  - Holds conferences open to industry
- Works closely with key stakeholders
  - CCRO represents energy risk interests on the CFTC's Market Risk Advisory Committee
  - FERC Technical Conferences on Risk
  - PUCs and retail risk mgt standards initiative

Topics for Today's Discussion

By looking at current industry practices, we distill a list of "takeaways" - things companies should be doing to ensure an effective risk management function.

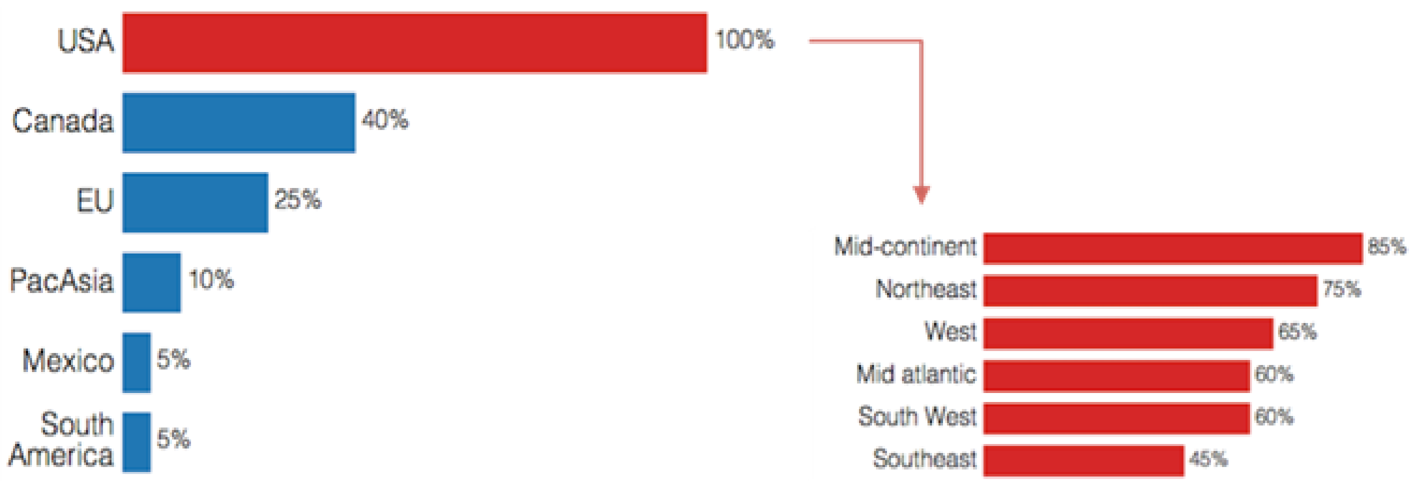
- Current State of Risk Practices – the CCRO Survey

  - *Organizational Design* → Takeaways
  - *Governance and Practices* → Takeaways
  - *Risk Metrics and Measurement* → Takeaways
  - *Internal Reporting Practices* → Takeaways
  - *Risk Systems* → Takeaways
- Risk Operational Considerations for Effectiveness
- A Note: The CCRO and the CFTC's Market Risk Adv. Committee

Overview of 2014 CCRO Energy Industry Risk Practices Survey

Note: Our new Survey 2016 is open now for all to participate in…

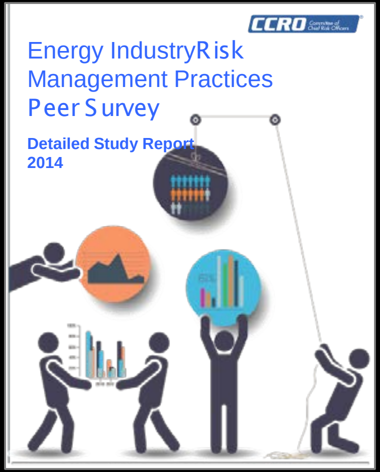
- Broad industry participation included twenty companies representing:
  - Power & Gas, Trading and Marketing, Utilities/LDCs, REP's, Oil and Refined Products and End Users
- Participants were geographically diverse:



Topics for Today's Discussion

By looking at current industry practices, we distill a list of "takeaways" - things companies should be doing to ensure an effective risk management function.

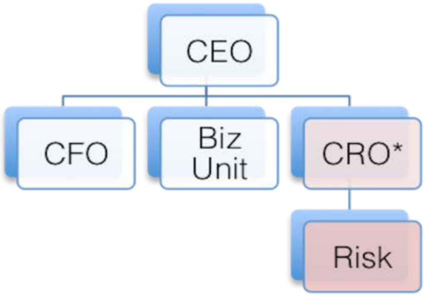
- Current State of Risk Practices – the CCRO Survey



  - *Organizational Design* → Takeaways
  - *Governance and Practices* → Takeaways
  - *Risk Metrics and Measurement* → Takeaways
  - *Internal Reporting Practices* → Takeaways
  - *Risk Systems* → Takeaways
- Risk Operational Considerations for Effectiveness
- A Note: The CCRO and the CFTC's Market Risk Adv. Committee

Organizational Fit for Risk Management

CCRO std. recommend risk reporting lines independent from commercial functions



28%

The Risk function reporting line to the CEO

47%

Just under half the respondents indicated Risk reporting to the CFO

“Other”

- Commercial/BU President
- Chief Accounting Officer
- Treasurer
- Head of Middle Office
- Head of Strategy and Planning

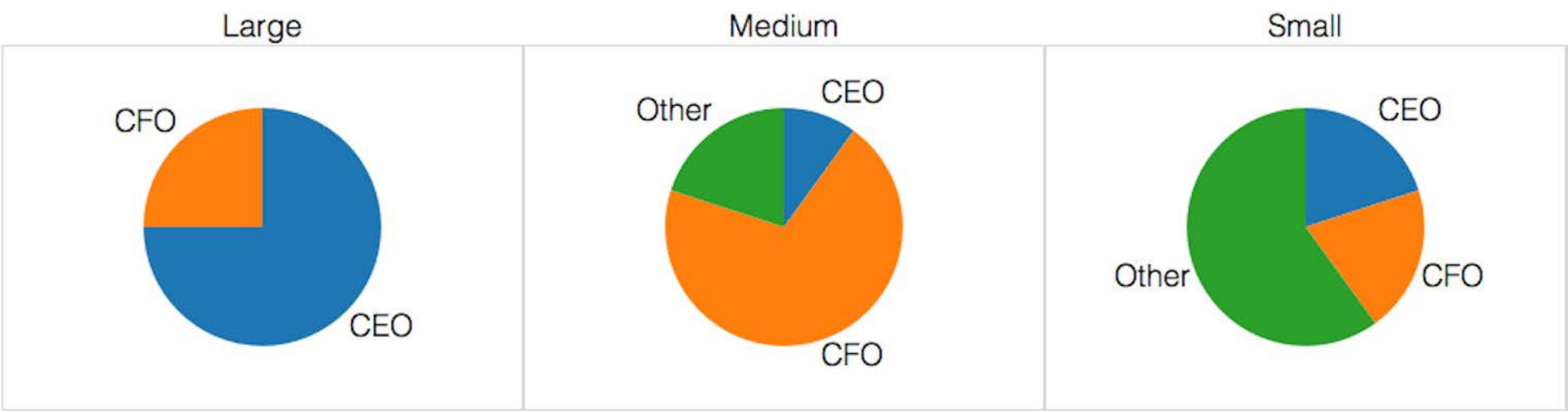
25%

- 75% of our participants’ have set the risk function’s reporting line to CFO or CEO.

Organizational Fit for Risk Management (cont'd)

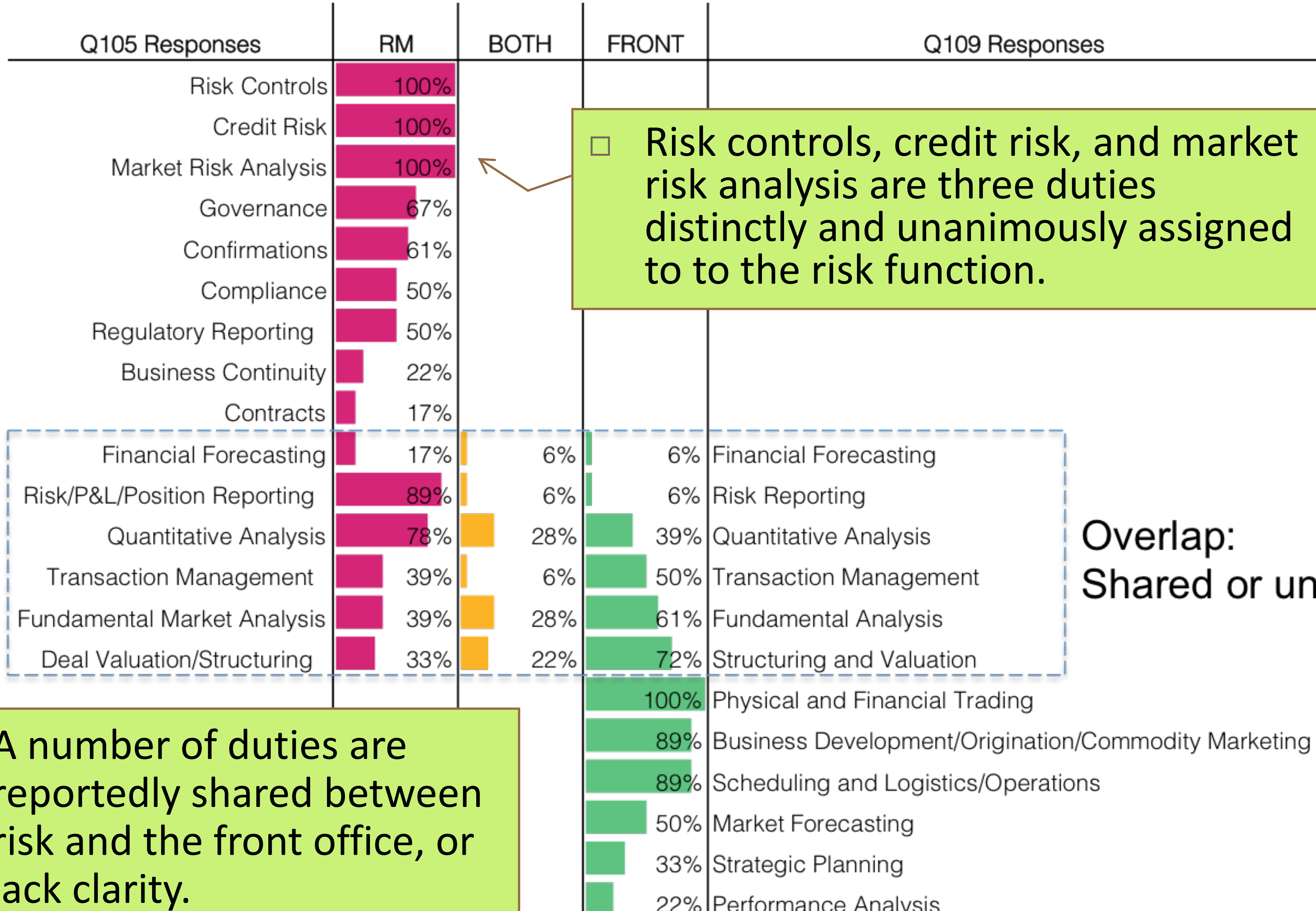
CCRO std. recommend risk reporting lines independent from commercial functions

- Smaller participant companies indicate reporting lines inconsistent with CCRO published best practices.



CCRO Survey: Duties of Risk Mgt vs Front Office

CCRO std. recommend accountability for risk-related duties be clearly defined



- Risk controls, credit risk, and market risk analysis are three duties distinctly and unanimously assigned to to the risk function.

Overlap:
Shared or unclear?

- A number of duties are reportedly shared between risk and the front office, or lack clarity.

Duties of the Risk Function by Industry Segment

CCRO std. recommend risk management duties are agnostic regarding industry

- Duties for risk management in some segments are inconsistent with others.

	Electricity	Natural Gas	Retail Energy	Trading and Marketing	Utility/LDC	C&I End User	Oil and Refined Products
Risk Controls	100%	100%	100%	100%	100%	100%	100%
Credit Risk	100%	100%	100%	100%	100%	100%	100%
Market Risk Analysis	100%	100%	100%	100%	100%	100%	100%
Risk/P&L/Position Reporting	87%	82%	100%	82%	100%	100%	100%
Quantitative Analysis	73%	82%	100%	82%	100%	67%	67%
Governance	67%	82%	80%	82%	50%	100%	67%
Confirmations	60%	64%	80%	73%	50%	67%	67%
Regulatory Reporting	47%	64%	60%	64%	75%	100%	67%
Compliance	47%	55%	60%	55%	50%	33%	33%
Transaction Management	40%	45%	60%	45%	25%	100%	33%
Fundamental Market Analysis	33%	45%	60%	45%	75%	67%	0%
Deal Valuation/Structuring	27%	36%	60%	36%	75%	67%	0%
Business Continuity	20%	27%	40%	27%	50%	33%	0%
Financial Forecasting	13%	27%	40%	18%	25%	67%	0%
Contracts	13%	18%	0%	9%	0%	33%	33%

CCRO Survey: Regulatory Compliance Monitoring

CCRO std. recommend transparency through sharing, with clear accountability to one

- The risk, legal, and compliance functions are the primary groups involved in regulatory compliance monitoring.

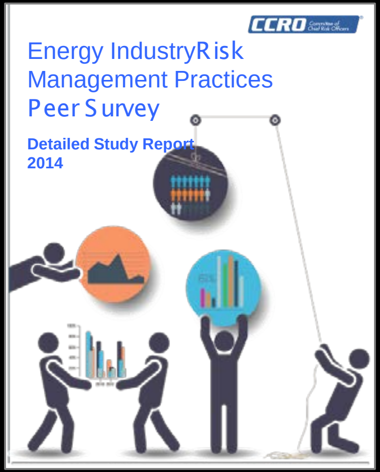
Organizational Design →Takeaways

- Risk function reporting lines independent from commercial functions
  - Credit risk part of this reporting line
- Accountability for risk-related duties be clearly defined
  - Certain duties are clearly the purview of the risk function
- Risk management duties are agnostic regarding which industry segment
  - Duties are consistent across BU's
- Transparency through sharing duties with other company functions, yet clear accountability to one

Topics for Today's Discussion

By looking at current industry practices, we distill a list of "takeaways" - things companies should be doing to ensure an effective risk management function.

- Current State of Risk Practices – the CCRO Survey

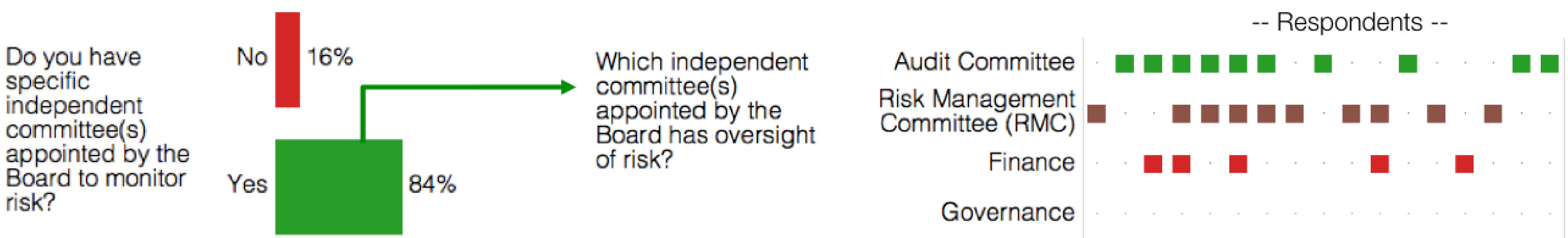


  - *Organizational Design* → Takeaways
  - *Governance and Policies* → Takeaways
  - *Risk Metrics and Measurement* → Takeaways
  - *Internal Reporting Practices* → Takeaways
  - *Risk Systems* → Takeaways
- Risk Operational Considerations for Effectiveness
- A Note: The CCRO and the CFTC's Market Risk Adv. Committee

Board Approved Risk Committee

The CCRO recommends the Governing Body delegate responsibilities to a risk committee

- Eighty-four percent have a Board appointed risk committee.



Frequency of Risk Function Duties

The CCRO recommends a risk policy set specific expectations for risk reporting

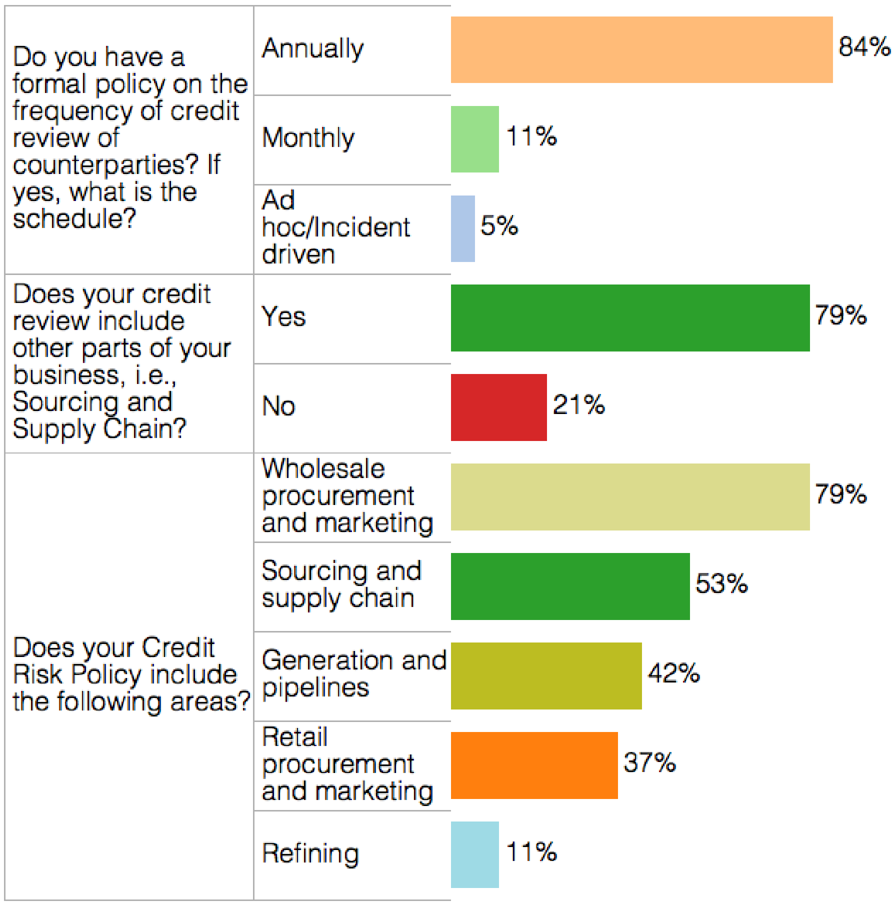
- With the exception of daily P&L, risk managers indicate they are engaged in many "longer-term" analyses, including monthly, quarterly, and annual cycles for reporting and analysis

	Daily basis	Weekly basis	Twice per month	Monthly	Quarterly	Annually	1-3 years	Ad hoc/ Incident driven	Daily.
Do you have a formal policy on the frequency of credit review of counterparties? If yes, what is the schedule?				11%		84%		5%	
How often do you back test these measures?				11%	26%	21%		16%	5%
How often do you stress test your portfolios or specific risk factors?		5%	5%	21%	21%	16%		21%	
How often do you report profit and loss for all portfolios?	84%	5%		11%					
Please indicate your typical time for reviewing capital allocation:				5%	21%	37%	5%		

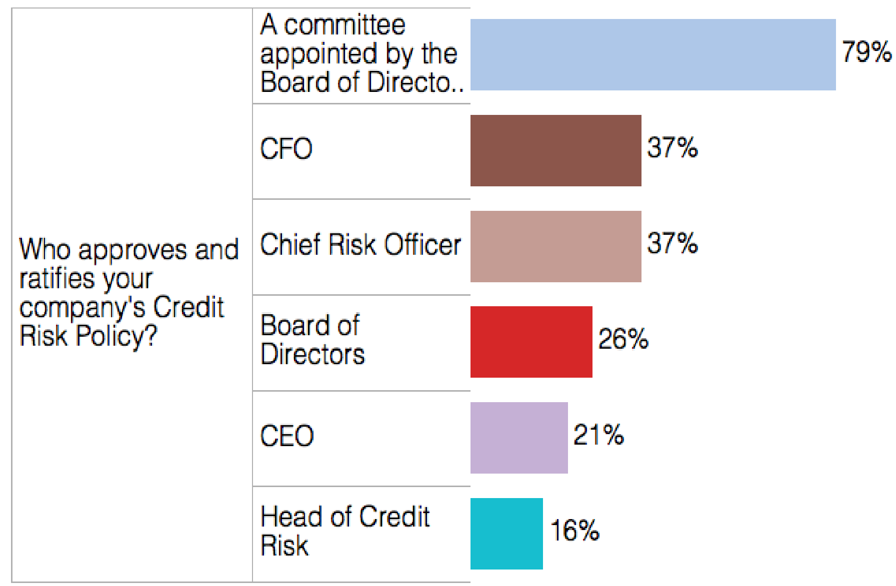
CCRO Survey: Credit Policies & Approval

The CCRO recommends a Board-approved risk policy that is enterprise-wide in scope

Credit Policy Attributes



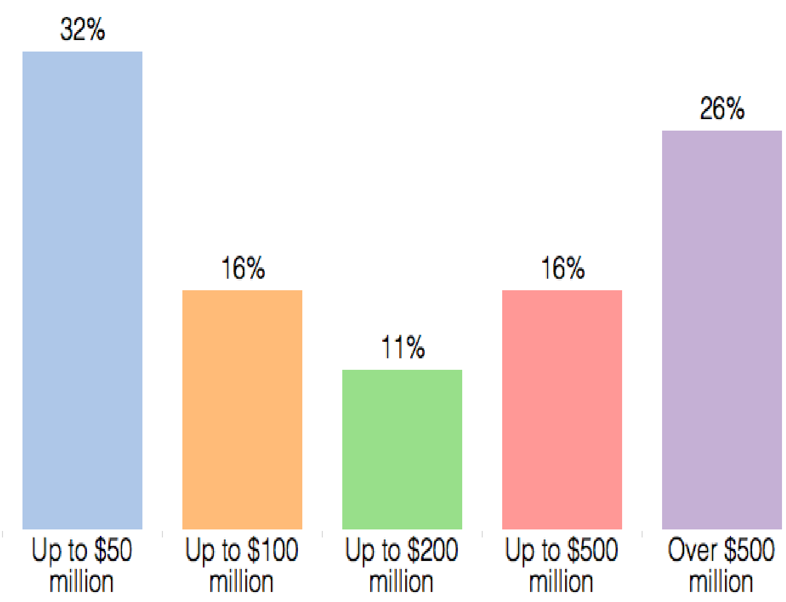
Credit Policy Approval



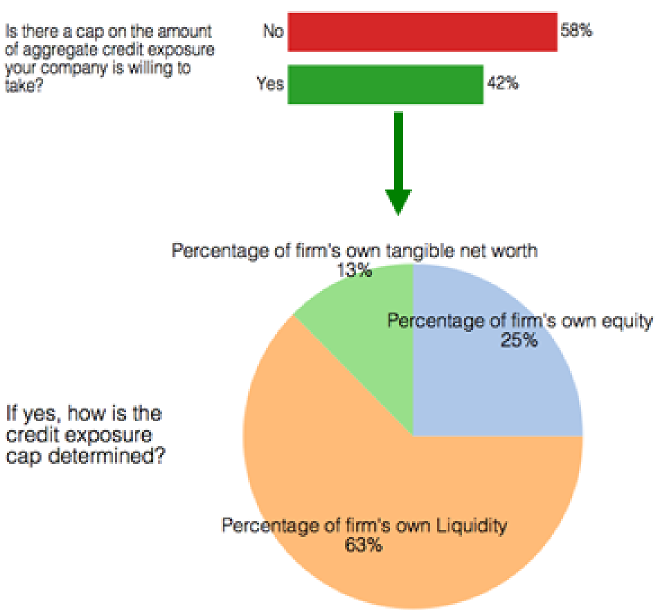
CCRO Survey: Governing Body Credit Limits

The CCRO recommends setting corporate-wide and contract-specific limits on credit

BOD Approval for Contracts



Corporate Credit Exposure Cap

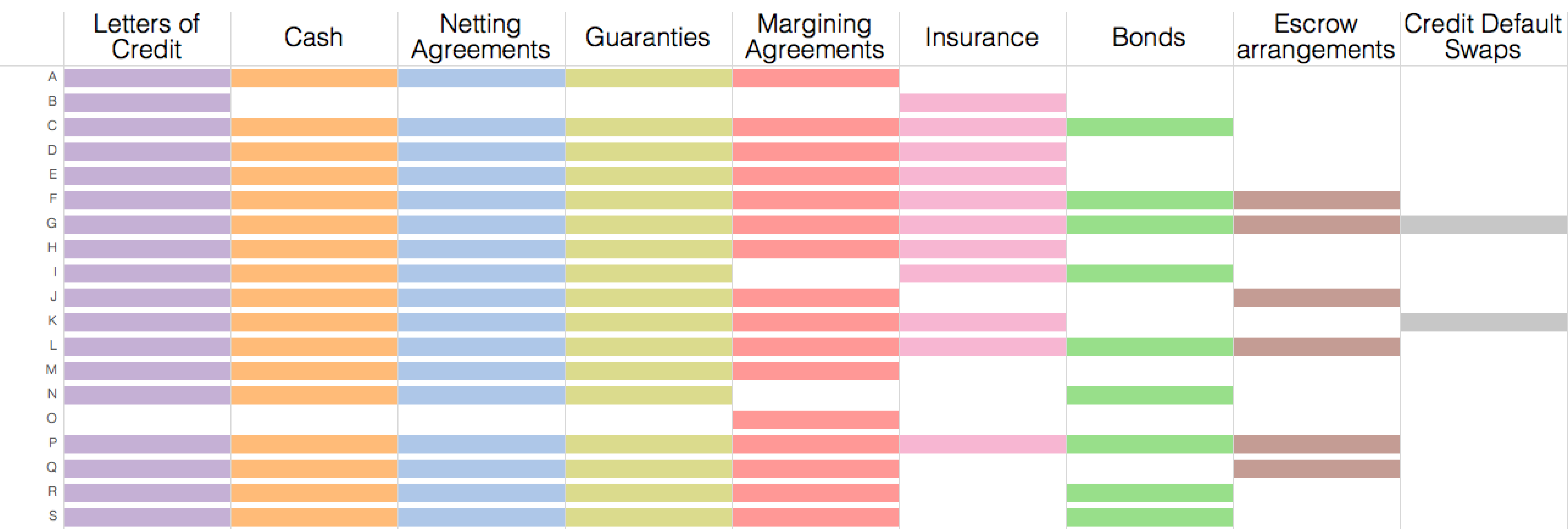


- Use of a credit cap is common, but not prominent.
- No strong consensus yet on best determinant for the credit cap.

Instruments Used for Credit Risk Mitigation

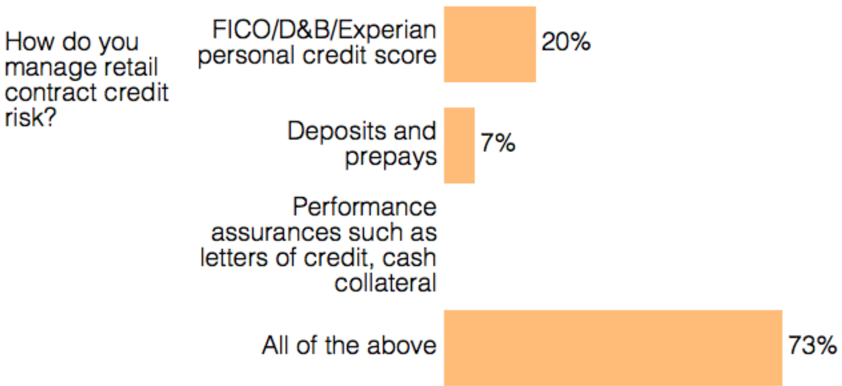
The CCRO recommends use of a variety of credit mitigation instruments

- The use of credit default swaps or escrows are not common
- Almost all companies use a variety of credit risk mitigation instruments.

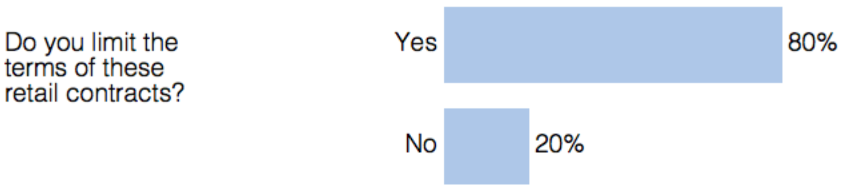


Instruments Used for Credit Risk Mitigation: Retail

The CCRO recommends use of a variety of credit mitigation instruments

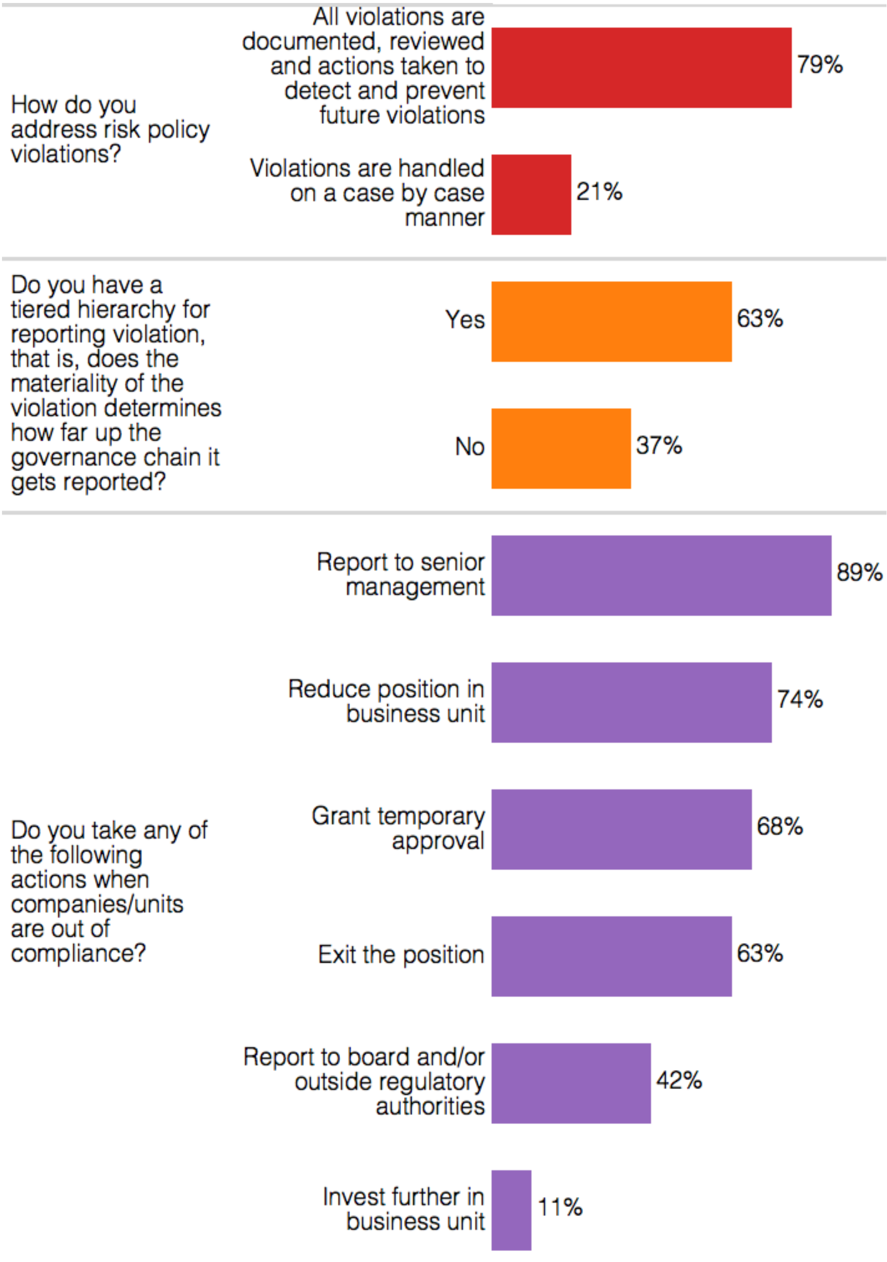


- Majority utilize all credit mitigation practices possible for retail.



- Retail contract term is limited by most

Risk Policy and Violations (1)



The CCRO recommends a formal violation response process, including a tiered engagement of management levels

- A regimented approach to handling policy violations is most common.

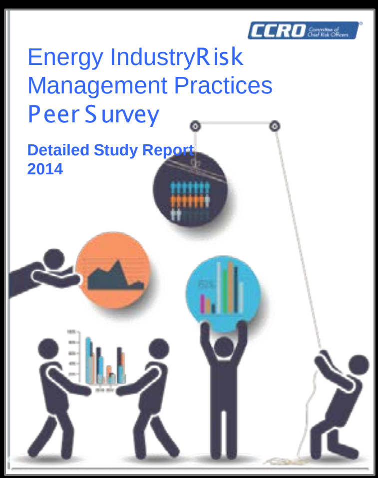
Governance and Policies→ Takeaways

- The Governing Body delegate responsibilities to a risk committee
- A risk policy that sets specific expectations for risk reporting
- A Board-approved risk policy that is enterprise-wide in scope
- Setting corporate-wide and contract-specific limits on credit
- The use of a variety of credit mitigation instruments
- A formal violation response process, including a tiered engagement of management levels

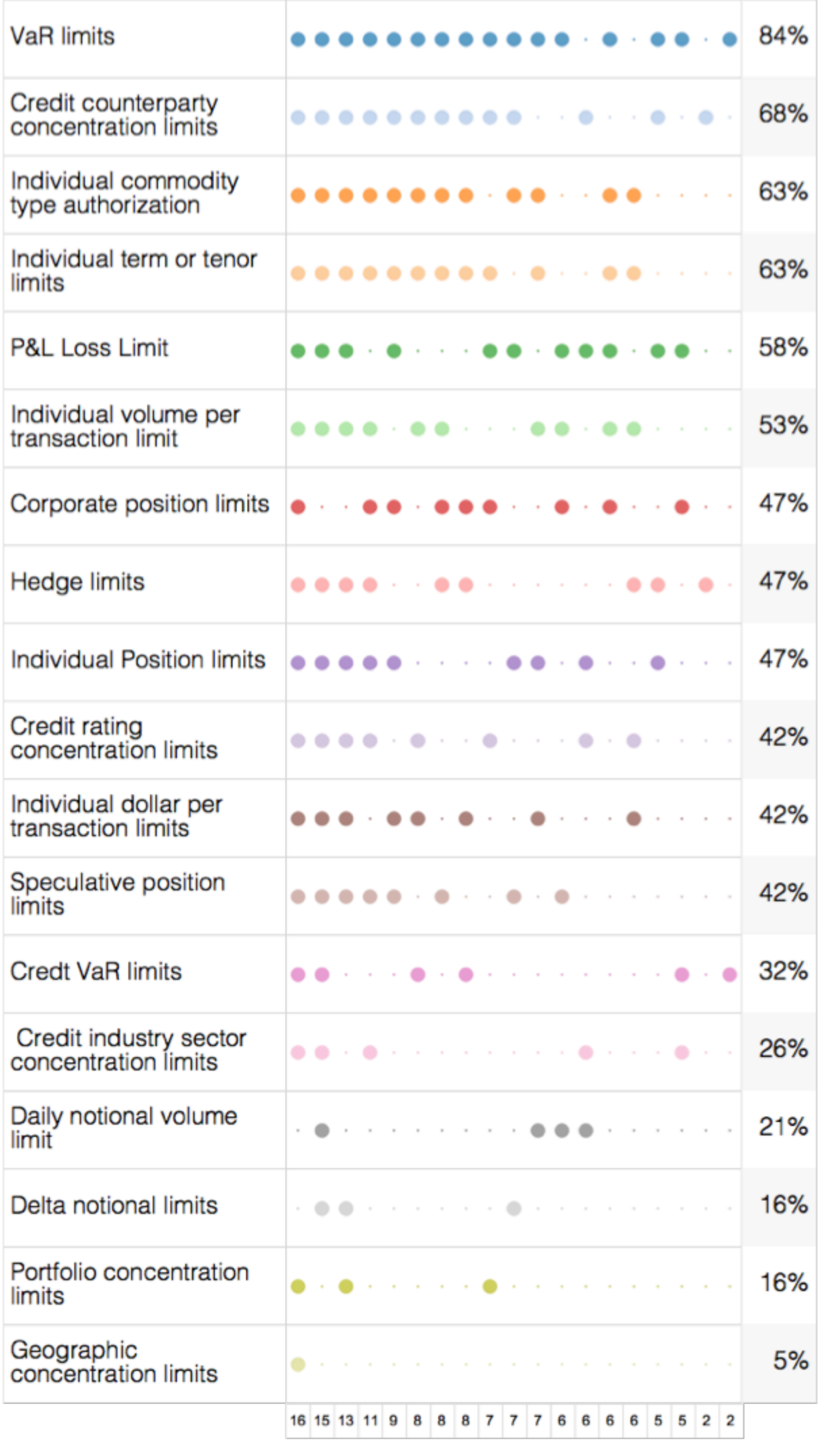
Topics for Today's Discussion

By looking at current industry practices, we distill a list of "takeaways" - things companies should be doing to ensure an effective risk management function.

- Current State of Risk Practices – the CCRO Survey



  - *Organizational Design* → Takeaways
  - *Governance and Policies* → Takeaways
  - ***Risk Metrics and Measurement*** **→ Takeaways**
  - *Internal Reporting Practices* → Takeaways
  - *Risk Systems* → Takeaways
- Risk Operational Considerations for Effectiveness
- A Note: The CCRO and the CFTC's Market Risk Adv. Committee



Metrics Used for Limits

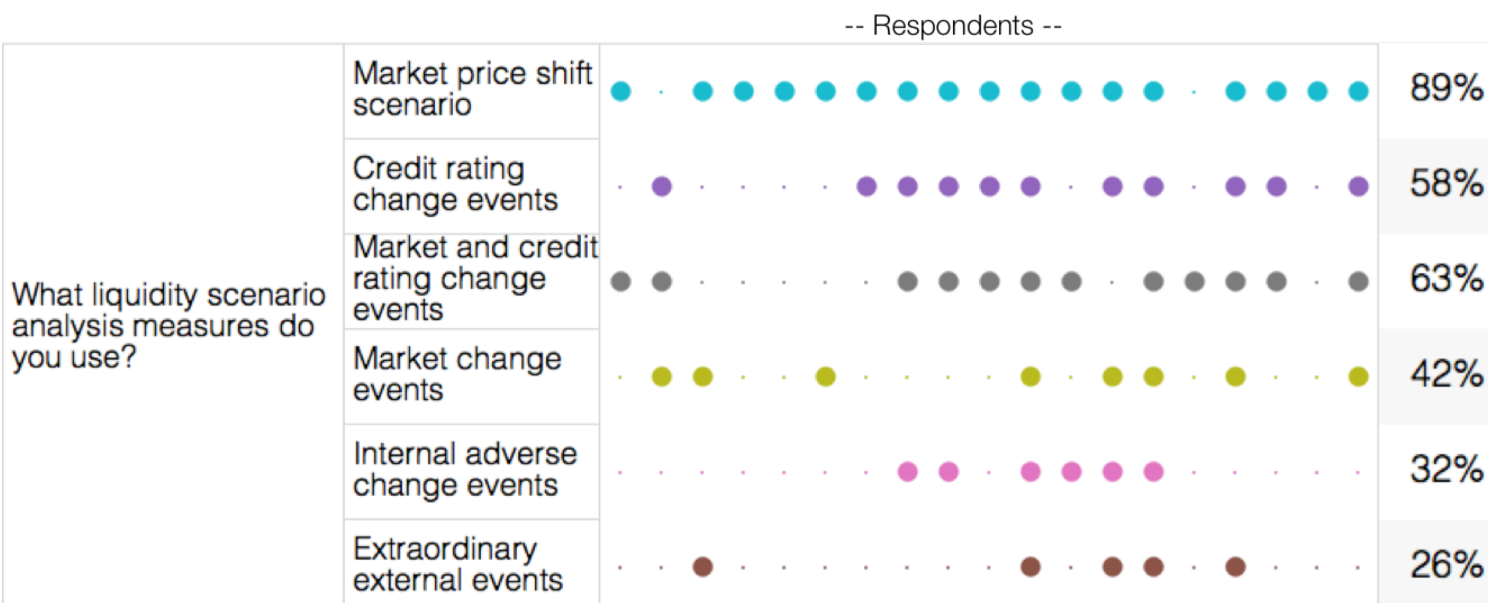
The CCRO recommends limits only on the most robust actionable metrics with a framework designed to avoid unintended consequences

- Six metrics are predominant, with over 50% use.
- Most companies report 6 to 8 limit metrics.

Stress Testing and Scenario Analyses (types)

The CCRO recommends specific methods and uses for stress testing & scenario analysis

- Market price shift scenarios are almost universally used.
- Extraordinary external and internal adverse event scenarios are less common
- Most companies study multiple types of scenarios



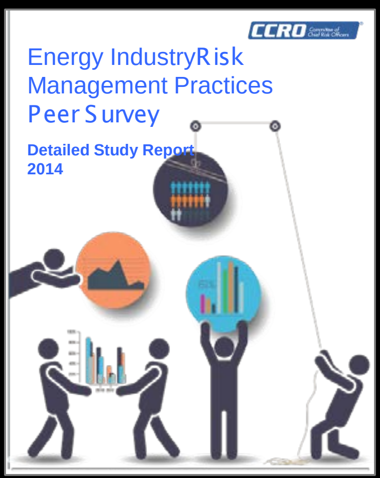
Risk Metrics & Measurement → Takeaways

- The CCRO recommends limits only on the most robust actionable metrics with a framework to avoid unintended consequences
- Specific methods and uses for stress testing & scenario analysis will ensure effectiveness
  - Coordination of Market and Credit risk is important
  - Understanding the risk drivers of metrics will bring insights
    - Know how the market risk numbers are derived
    - Stress the credit portfolio in coordination with market risk (i.e. HR shocks, NYMEX shocks and impact on liquidity)
    - Credit should be "at the table" providing metric insights to management for financial and strategic planning (ie. capital allocation, CFaR, etc.)
    - Understand market risk, so as to understand the impact of contract terms when modeling contracts in the trade capture system
  - For smaller risk organizations, ensure access to personnel with strong analytical skills (i.e. Excel) to automate and process metrics and stress scenarios

Topics for Today's Discussion

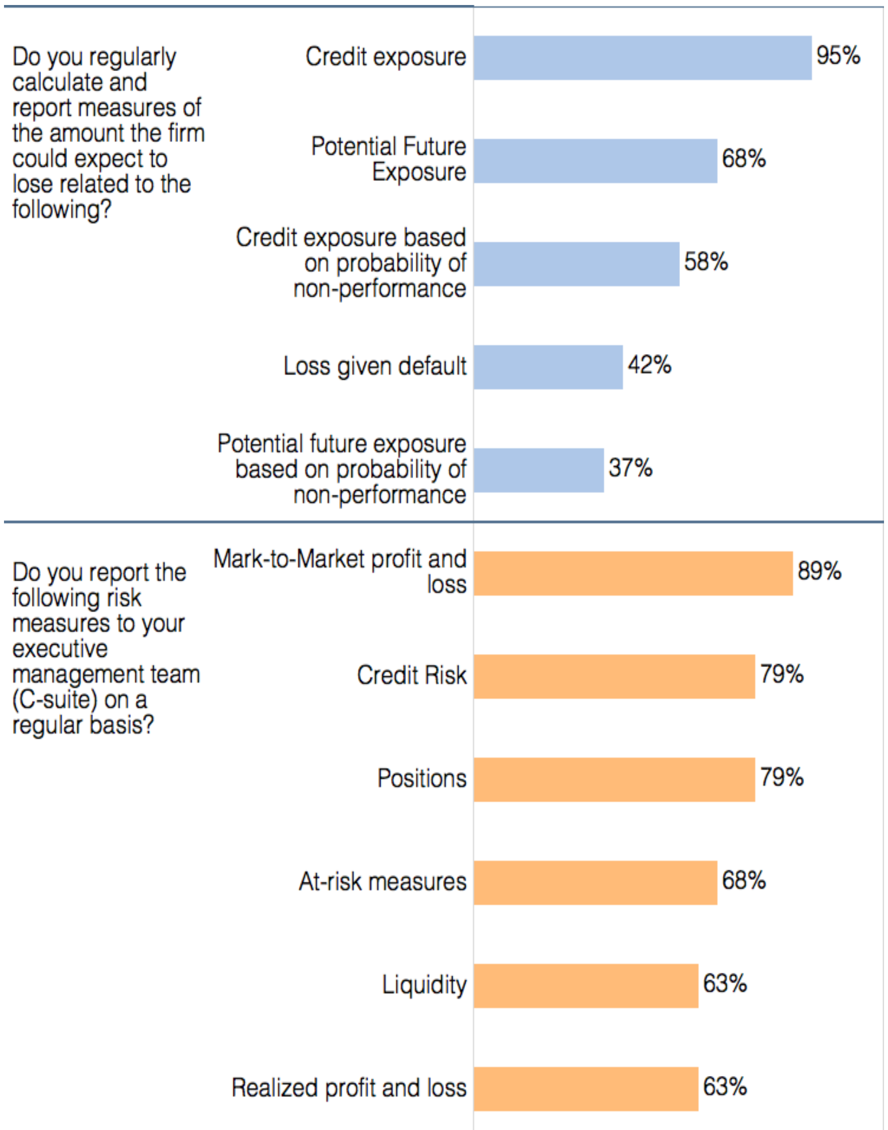
By looking at current industry practices, we distill a list of "takeaways" - things companies should be doing to ensure an effective risk management function.

- Current State of Risk Practices – the CCRO Survey



  - *Organizational Design* → Takeaways
  - *Governance and Policies* → Takeaways
  - *Risk Metrics and Measurement* → Takeaways
  - *Internal Reporting Practices* → Takeaways
  - *Risk Systems* → Takeaways
- Risk Operational Considerations for Effectiveness
- A Note: The CCRO and the CFTC's Market Risk Adv. Committee

Internal Risk Reporting Practices (metrics used)



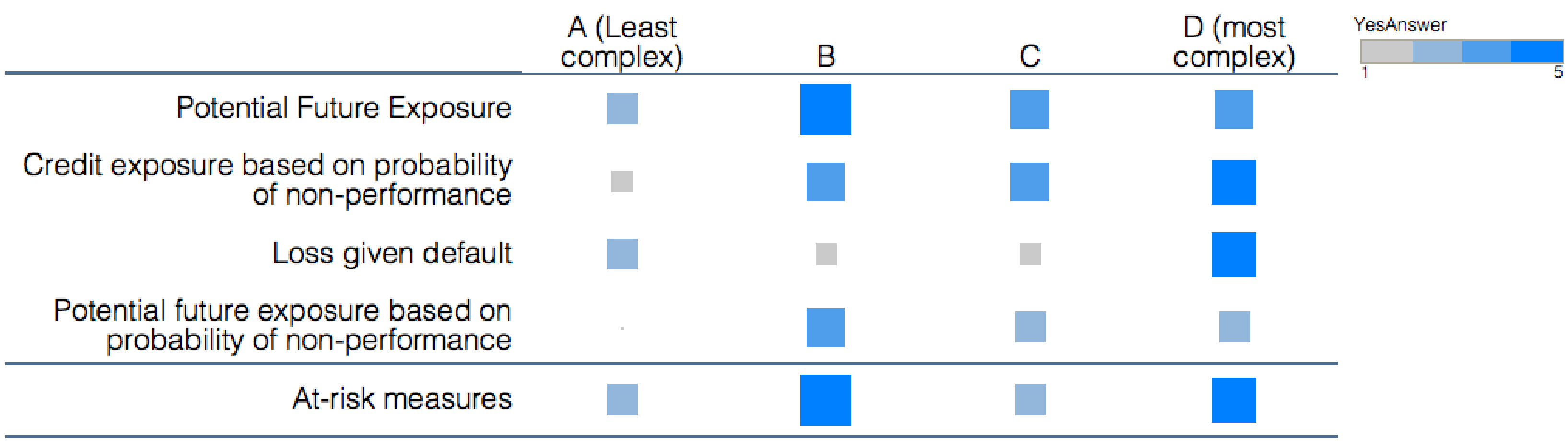
The CCRO recommends risk reporting to senior management include statistical measures of market, credit, and enterprise risk

- A majority of respondents regularly report statistical credit measures like PFE and LGD
- Credit risk ranks near the top of measures reported to c-suite management

Internal Risk Reporting Practices (by complexity)

The CCRO recommends specific credit metric practices utilizing probabilistic methods

- High complexity businesses are most likely to report at-risk type measures.



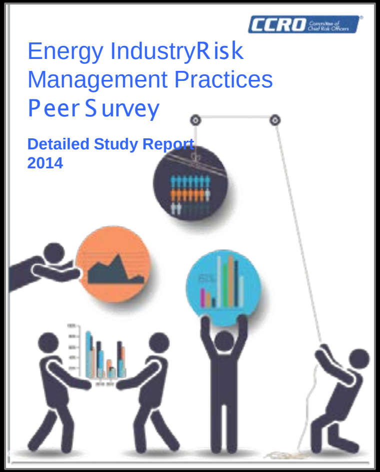
Internal Reporting Practices → Takeaways

- Risk reporting to senior management should include statistical measures of market, credit, and enterprise risk
- Specific credit metric practices that utilize well established probabilistic methods
  - Loss Given Default
  - Potential Future Exposure
  - Expected Loss

Topics for Today's Discussion

By looking at current industry practices, we distill a list of "takeaways" - things companies should be doing to ensure an effective risk management function.

- Current State of Risk Practices – the CCRO Survey



  - *Organizational Design* → Takeaways
  - *Governance and Policies* → Takeaways
  - *Risk Metrics and Measurement* → Takeaways
  - *Internal Reporting Practices* → Takeaways
  - *Risk Systems* → Takeaways
- Risk Operational Considerations for Effectiveness
- A Note: The CCRO and the CFTC's Market Risk Adv. Committee

Systems Choices and the Transaction Lifecycle

The CCRO recommends prudent use of spreadsheets where great flexibility is required

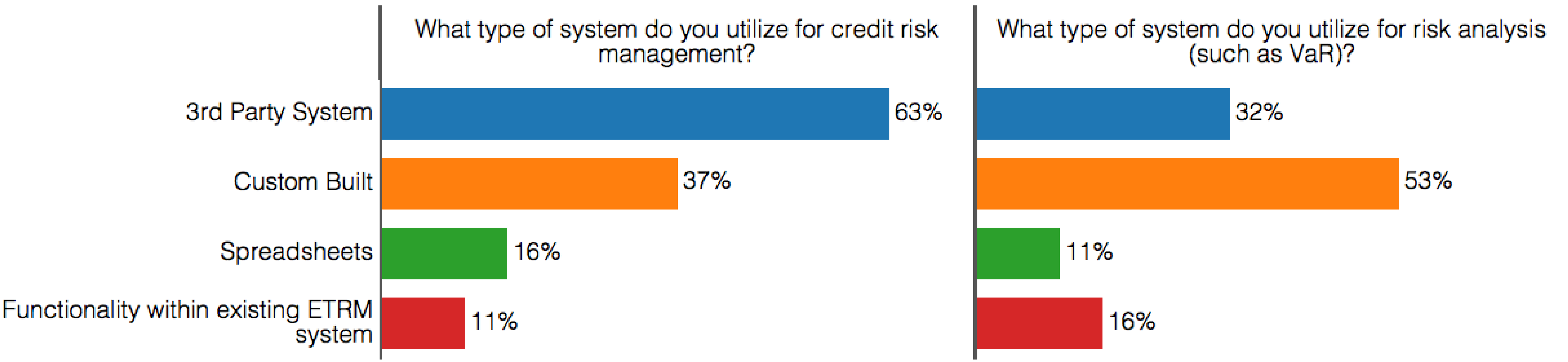
	3rd Party	Spreadsheets	Custom
Deal Capture	79%		21%
Settlements	79%		32%
Confirmations	74%		32%
Credit Risk Management	74%	16%	37%
Forward Curves	63%	16%	42%
Scheduling and Logistics	63%		32%
Accounting	53%	5%	
Risk Analysis and Reporting	53%	16%	47%
Financial Projections	32%	21%	21%
Performance Reporting	32%	26%	21%
Pre-transaction Valuation	32%	53%	21%
Regulatory Compliance Reporting	21%	16%	63%
Invoicing			
Pre-transaction Analysis		68%	
Regulatory and Company Compliance Surveillance		11%	

- Third party systems are prevalent in the fundamental transaction lifecycle stages, from deal capture to accounting.
- Custom systems are preferred (63%) in managing regulatory compliance, and are commonly used (47%) in conducting risk analysis.
- Spreadsheets are used by a majority of respondents for pre-transaction valuation (53%) and pre-transaction analysis (68%)

ETRM and Other System Functions/Capabilities

The CCRO recommends the most robust systems for critical measures like VaR and Credit

- It is less common to utilize the ETRM system for credit risk management or for risk analysis such as VaR



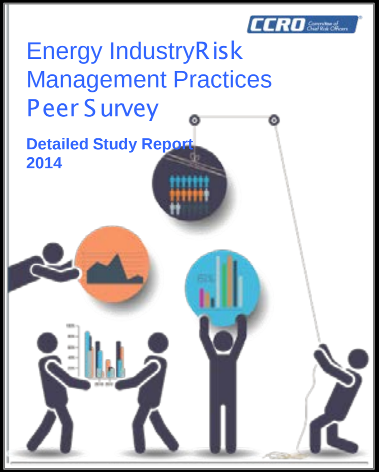
Risk Systems →Takeaways

- Important to understand the architecture of your organization's risks systems
  - What systems capture what risks?
    - Is Credit integrated or stand-alone?
  - Are all transactions captured?
  - Are all transactions valued correctly in your ETRM?
  - Are all transactions processed timely (i.e. timing of processing of new transactions, settlements)
  - Implications of transaction lifecycle on Credit Risk
    - Roll-off from Term to intra-month

Topics for Today's Discussion

By looking at current industry practices, we distill a list of "takeaways" - things companies should be doing to ensure an effective risk management function.

- Current State of Risk Practices – the CCRO Survey



  - *Organizational Design* → Takeaways
  - *Governance and Policies* → Takeaways
  - *Risk Metrics and Measurement* → Takeaways
  - *Internal Reporting Practices* → Takeaways
  - *Risk Systems* → Takeaways
- Risk Operational Considerations for Effectiveness
- A Note: The CCRO and the CFTC's Market Risk Adv. Committee

Risk Operational Considerations for Effectiveness

- Ensure that the Risk and Credit are tightly coordinated
- Understand transaction flows
  - Trading; Types of transactions, valuation, term versus cash, etc.
  - Logistics; How scheduling happens, deal entry timing, etc.
  - Settlements: Timeliness of cash application, timing of prior month activity being booked before invoice generation, etc.
- Know what systems your organization uses to manage risk
  - Ensure that those "Risk Systems" are capturing all risks you need to capture for Credit Risk
    - Is Settlements captured in the ETRM
    - Any off-system valuations
    - Intra-month captured and timely
    - Physical premium risk

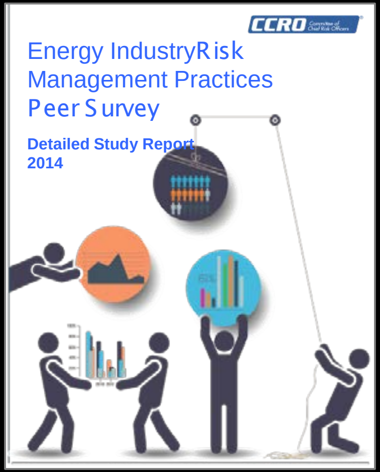
Risk Operational Considerations for Effectiveness(2)

- Have access to personnel with good analytical (i.e. Excel) skills
  - Especially for smaller shops, automating credit exposure and other metrics can save significant time
  - Use of Excel add-ons from services (i.e. Capital iQ) can allow Credit to better manage risk
    - Automate much of the information gathering process for credit reviews
    - Market indicators for changes in credit quality (CDS, bonds, etc.)
  - Understand relationship of market risk information to credit risk to assist Commercial, liquidity management, correct exposures, etc.
    - Position reporting by exchange to minimize over margining
    - Stress scenarios for CFaR (HR changes and when liquidity is exhausted, how much contingent capital does the organization need)
    - Complex instruments, off-system valuations (i.e. volatility skew on HR call options)

Topics for Today's Discussion

By looking at current industry practices, we distill a list of "takeaways" - things companies should be doing to ensure an effective risk management function.

- Current State of Risk Practices – the CCRO Survey



  - *Organizational Design* → Takeaways
  - *Governance and Policies* → Takeaways
  - *Risk Metrics and Measurement* → Takeaways
  - *Internal Reporting Practices* → Takeaways
  - *Risk Systems* → Takeaways
- Risk Operational Considerations for Effectiveness
- A Note: The CCRO and the CFTC's Market Risk Adv. Committee

CFTC Market Risk Advisory Committee “MRAC”

- Sponsored by CFTC Commissioner Bowen, formed in 2015
- Includes broad representation of interested parties
- Drafting several papers regarding recommendations
- The CCRO represents the end-user energy industry perspectives and concerns, on all issues the MRAC takes-on

32 Entities Represented

Better Markets
Committee of Chief Risk Officers
Citadel
CoBank
CME Group
Citi’s Institutional Client Group
Depository Trust and Clearing Corporation
Cargill
Federal Home Loan Bank of San Francisco
Bloomberg SEF LLC
Commodity Markets Council
Elmhurst College
Futures Industry Association Principal Traders Group
Eurex Clearing
MIT - Lab for Financial Engineering
NRG Energy
LCH.Clearnet
Federal Reserve Bank of New York
Prudential Global Funding
TriOptima
Americas for ICAP
Morgan Stanley
Tradeweb
Putnam Investments
Futures Industry Association
JP Morgan
Americans for Financial Reform
Intercontinental Exchange
BlackRock
Goldman Sachs
Chatham Financial

Market Risk Advisory Mandate

- Supports CFTC's efforts to detect and mitigate risks within the market
- Mandate is to conduct public meetings and submit reports and recommendations on matters of public concern to clearinghouses, exchanges, intermediaries, market makers, end-users and the CFTC;
  - ***regarding systemic issues that threaten the stability of the derivatives markets and other financial markets; and***
  - ***Assists the CFTC in identifying and understanding the impact and implications of an evolving market structure and movement of risk across clearinghouses, intermediaries, market makers and end-users.***

Questions?

- Contact Information:
  - Morgan Davies
    Managing Director
    The Alliance Risk Group
    (866) 531-7577 or (281) 224-2444
    morgan.davies@theallianceriskgroup.com
  - Bob Anderson
    Executive Director
    The Committee of Chief Risk Officers
    (281) 382-2538
    Bob.anderson@ccro.org