



# American Academy of Actuaries

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## Applying a Principles-Based Approach to Valuation and Capital Requirements

Life Financial Soundness  
and Risk Management Committee



# Definition of Principles-based Reserves and RBC

A principles-based approach:

- Uses risk analysis and risk management techniques to quantify Risk
- Captures all identifiable material risks, benefits and guarantees of the contract/Company
- Permits the use of company-specific experience based on the availability of relevant experience and its degree of credibility



# Definition of Principles-based Reserves and RBC

In contrast, a “rules-based” approach:

- Relies on a static formula that may not capture all of the risks of the contract.
- Uses prescribed valuation assumptions that are the same across all companies, regardless of differences in the risk profile of companies.





# Life Insurance Issues

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## ■ Underlying Forces Driving Change

- Increased Complexity in Product Design
- Advances in Risk Measurement Theory
- Advances in Computer Processing
- Advances in Actuarial Modeling Software
- Limited Capital Resources
- Competition through Risk Management
- Consumer Demanded Asset Accumulation





# Life Insurance Issues

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- **Regulatory Impact of Underlying Forces**

- Increased Regulations for Complex Products
- Law & Regulations do not address all the Risks
- As Regulations increase less State Uniformity
- Complex Regulations become Convolutated
- Statutory Law may inhibit Product Design
- Needed Regulations may not have a Statutory Basis



# Key Observations of Moving to a Principles-based Approach

- “Right-sizes” reserves and capital
- Is consistent with the global trend toward Enterprise Risk Management
- Relies more on actuarial judgment
- Requires more sophisticated tools
- Requires that a strong governance process be in place

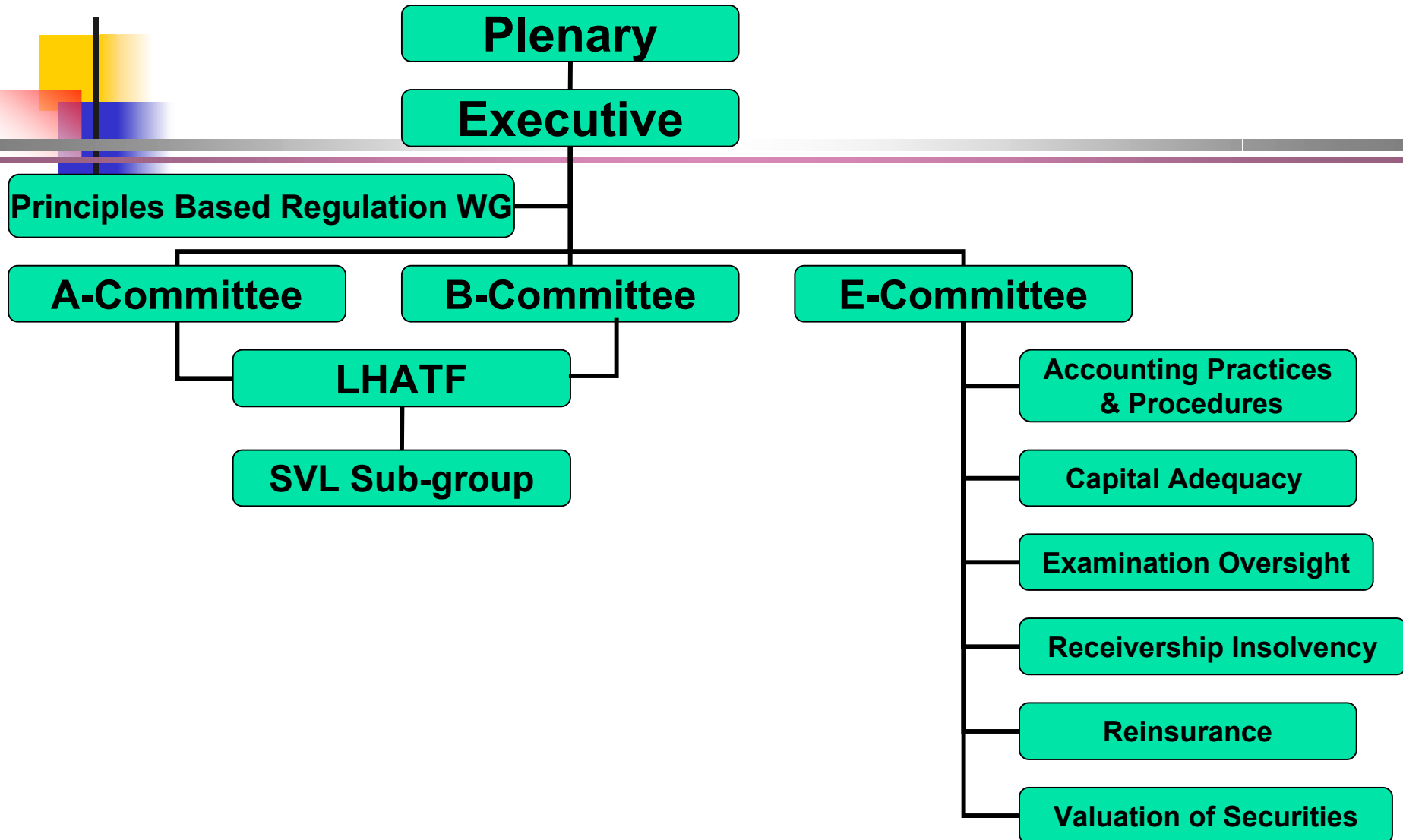


# Goal – Integrate More With Management of Business

- Not just regulatory requirement
- Set reserves that are appropriate, considering actual company experience
- Greater discipline around the valuation and financial reporting process
- Increasing communication and education to management and outside audience
- Would be more relevant to company management and should lead to intelligent risk taking (better companies could have lower reserves)

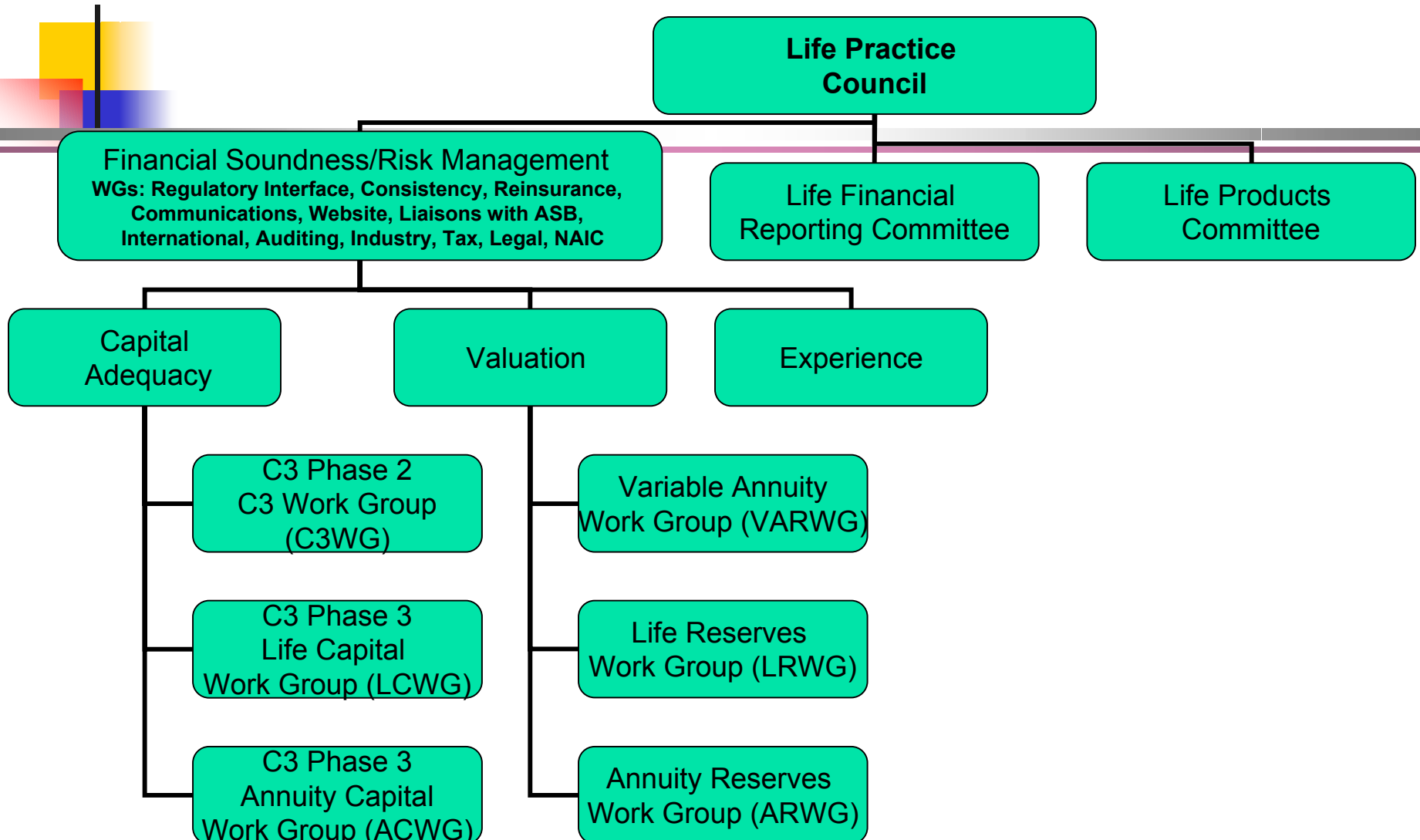


# NAIC Stakeholder Committees





# Academy Stakeholder Groups





# Evolution

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- Asset Adequacy Testing
- Equity Indexed Annuity Regulation
- RBC C-3 Phase I
- RBC C-3 Phase II
- SVL2





# Asset Adequacy Testing

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- There were formula reserves, BUT...
- Companies also tested adequacy of reserves in light of assets
- About 25% increased reserves because of this testing



# How PBA Is Different Than Asset Adequacy Testing

- PBA would have more requirements around assumptions used, e.g., certain premium patterns for Universal Life Insurance testing would be specified
- PBA would not have a minimum standard, but will likely have a “Deterministic Scenario” or “Standard Scenario” that would be required to be used





# Application of PBA

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- Expected to be applicable to all life and annuity products, and likely health products also
- Open question as to whether it would apply to new business only, or to in force also





# Timing

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- Certain aspects, like RBC C-3 Phase II, already in place
- Variable annuities may be in place by year-end
- Life Reserves - expect to have regulation available by this year-end
  - Goal is to roll out for state adoption in 2007





# Current Reserve Valuation

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- Prescribed Formulas (CRVM, CARVM)
- Prescribed Mortality
- Prescribed Interest Rate
- Prescribed CSV Floor (Aggregate)
- Prescribed Actuarial Guidelines
- Prescribed Asset Adequacy Testing





# Principles-Based Reserve Valuation

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- Process of Identifying all Risks
- Process of Generating Economic Scenarios
- Process of Determining PBE Assumptions
- Process of Determining Appropriate Margins
- Process of Modeling and Measuring Risks
- Process of Sensitivity Testing Material Risks
- Process of Documenting All Processes







# Valuation Differences

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- Process vs. Prescription Orientation
- Stochastic vs. Deterministic
- All Risks vs. Prescribed Risks View
- Company Expected vs. Industry Expected
- Aggregate vs. Seriatim
- Adequate vs. Minimum Reserve
- Audit of Process vs. Audit of Prescription





# Audit / Examination Process

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- Evaluation of Model and Model Dynamics
- Validation of Model Assumptions
- Evaluation of Margins
- Evaluation of Sensitivity Analysis
- Evaluation of Documentation
- Signoff of Acceptable Process





# Model and Model Dynamics

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- Selection and Calibration of Scenarios
- Variability of Results and Sample Size
- Model Robustness
- Granularity of Asset Classes
- Granularity of Liability Classes





# Validation of Model Assumptions

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- Evaluate Company Experience Studies
- Evaluate Experience Data Credibility
- Review Investment Policy and Hedging Strategy
- Evaluate Prudent Best Estimate Assumptions based on Experience Data, Data Credibility and Company Policies and Strategies
- Evaluate PBE Assumptions where no Credible Data is available





# Evaluation of Margins

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- Evaluate Margins in light of Uncertainty of Risk
- Evaluate Conservative End of Actuary's Confidence Interval
- Evaluate any Considerations for Adverse Deviations





# Evaluation of Sensitivity Analysis

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- Evaluate Sensitivity Runs
- Identify Key Risks that Drive Results
- Second Look at PBE Assumptions and Margins for Key Risks
- Confirm Adequate Reserve/Capital Level





# Evaluation of Documentation

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- All Processes Documented
- All Risks Documented
- All Policies and Strategies Documented
- All Assumptions Documented
- All Margins Documented
- All Results and Sensitivity Analysis Documented





# Regulatory Signoff

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- Regulatory Report Issued
- Acceptable Process Completed
- Statement of Compliance with Law / Regulation







# Current Risk Based Capital (RBC)

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- Purpose
  - Minimum amount of Surplus to support the overall business operations considering the size of risk and the risk profile of a company.
- Measure of Financial Solvency
- Formula Based
- Industry Modeled Parameters





# Current Risk Based Capital (RBC)

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## Regulatory Financial Solvency Measure

- Total Adjusted Capital (TAC) compared to Authorized Control Level (ACL) risk based capital (RBC)





# Principles-Based Risk Based Capital

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- C3 Phase 1 – Interest Rate Risk
- C3 Phase 2 – Market Risk (Equity Risk, Interest Rate Risk & Expense Recovery Risk)
- C3 Phase 3 – Market Risk (Equity Risk and Interest Rate Risk)





# Principles-Based Risk Based Capital

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## C3 Phase 1 – Interest Rate Risk

- Phase I Implemented December 31, 2000 by NAIC
- Fixed Deferred Annuities and Single Premium Life
- Immediate Annuities, Structured Settlements, Guaranteed Separate Accounts, Guaranteed Investment Contracts and Funding Agreements and Products that Guarantee an Interest Rate Index
- Exemption Test





# Principles-Based Risk Based Capital

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## C3 Phase 2 – Market & Interest Rate Risk

- Phase II Implemented December 31, 2005 by NAIC
- Variable Annuities, Group Annuities with Death or Living Benefit Guarantees and Insurance Contracts with Death Benefit Floors for Equity Fund Performance





# Principles-Based Risk Based Capital

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- C3 Phase 3 – Market & Interest Rate Risk
- Not Yet Implemented - Possible Date December 31, 2007 ?
- Equity Indexed Annuities, Equity Indexed Life Insurance, Other Interest Sensitive Life Insurance



# PBA Review by Independent Third Party Actuary

- Review the “subjectivity” in PBA valuations
- Promote commonly accepted practices
- Promote consistency among companies
- Supplement and facilitate state exams
- Complement review between state exams
- Allow review on a pre-release basis
- Provide comfort to regulators, management and other users





# PBA Reviewer

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PBA reviewer needs to satisfy himself or herself that the valuation was done properly

- To the extent the valuation actuary's documentation is sufficient, that may be all that needs to be reviewed
- Where the documentation is insufficient, PBA reviewer will have to go deeper
  - More documentation (product descriptions, studies documentation, etc.)
  - Discuss with contributors (asset cash flows, studies, etc.)
- To the extent the valuation actuary relies on others, either state exam or external audit may pursue further







# Valuation Environment

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*PBA reviewer may operate in this environment:*

## **Valuation Actuary:**

- Guided by ASOPs, etc. (augmented for PBA)
- Considers all relevant issues
- Provides adequate documentation

## **External Audit:**

- Will focus on auditing

## **State Examination Process:**

- Can (likely) go beyond what valuation actuary does
- Guided by Financial Condition Examiners Handbook (augmented for PBA)





# Principles of PBA Review

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- PBA review will evaluate the valuation actuary's work
- PBA review will focus on actuarial judgment (subjectivity) rather than auditing
- PBA review will include processes (e.g., how assumptions are derived from the experience study, modeling construction process)





# Governance

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## Roles and responsibilities of Company Management

- PBA actuary
- Appointed Actuary
- Board
- Other company management
- Roles and responsibilities of Regulators
- Conflict resolution





# Current Legal Framework

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- Standard Valuation Law
  - Statute, Regulations, Actuarial Guidelines
- Risk Based Capital
  - Statute: References NAIC Risk Based Capital Instructions with effective date
  - Regulations
- Financial Statement Filing
  - Statute: References Accounting Practices and Procedures & NAIC Blanks
  - Regulations
- Examination of Financial Condition
  - Statute: References NAIC Examiners Handbook
  - Regulations: Annual Examination by Independent Certified Public Accountant of Financial Statements





# Principles-Based Legal Framework

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- Framework Goals / Objectives
  - Maintain Solvency
  - Consistent Risk Measurement Process for Capital and Reserves
  - Flexibility to address Evolving Risks
  - Auditable and Examinable
  - Consistency and Uniformity
  - Effective Resource Utilization





# Principles-Based Legal Framework

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- Legal Framework Options ?
  - Each State Filing, Certification and Examination
  - State of Domicile Filing, Certification and Examination
  - Centralized Filing, Certification and Examination (RVO or Inter-state)
  - Other ?





# Principles-Based Legal Framework

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- Single Statute to Address both Capital and Reserves ?
- Application to In Force or New Business ?
- How do you determine compliance under a principles-based system ?
- Allow Small Company Exemptions ?



# How To Find Out What's Going On

- Website: [www.actuary.org/risk.asp](http://www.actuary.org/risk.asp)
  - Updates on all work
  - Has links to reports, including C-3 Phase II
- Periodic webcasts

