RISK MANAGEMENT AS APPLIED TO THE NEXT GENERATION OF REACTOR REGULATIONS

Frank Gillespie

FPG@nrc.gov

May 9, 2002

FPG@NRC.gov

Perspectives on Time

- For current plants with License Renewal any new structure will set the stage for the next 45 years
- For a new plant any new structure sets the scope for new design certifications with a 60 to 80 year Impact.
- There is time to consider all views and make very measured decisions.

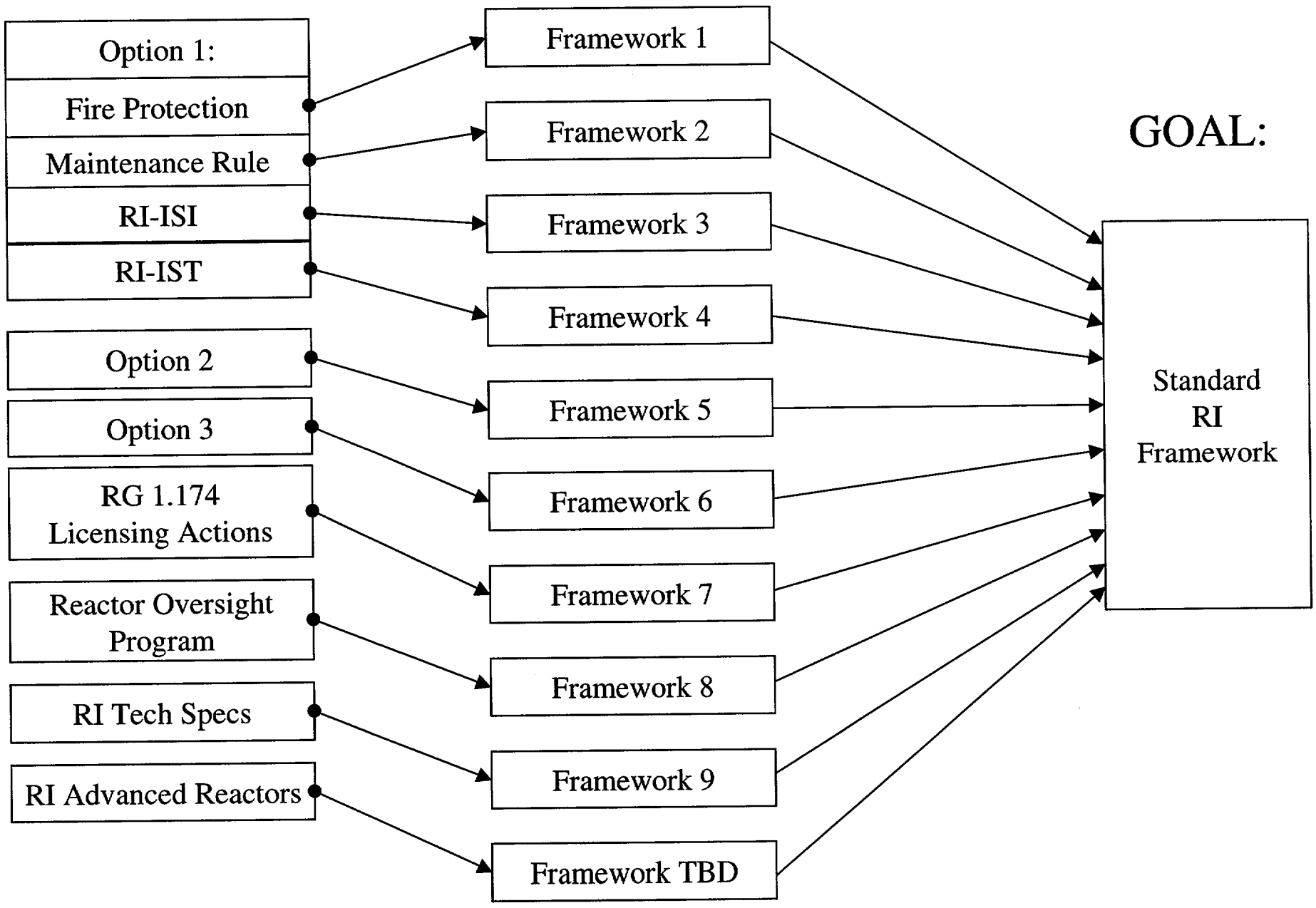
Problem Definition

- Safety requirements are uneven
- Stakeholders have not been communicating
- Too many solutions to the same problem
- The process has not taken maximum advantage of evolving knowledge gains

Supporting Data

- Operating Experience from the current reactors.
- Operating experience from other industrial applications.
- Data will be the corner stone for setting reliability objects.

Risk-Informed Framework Convergence

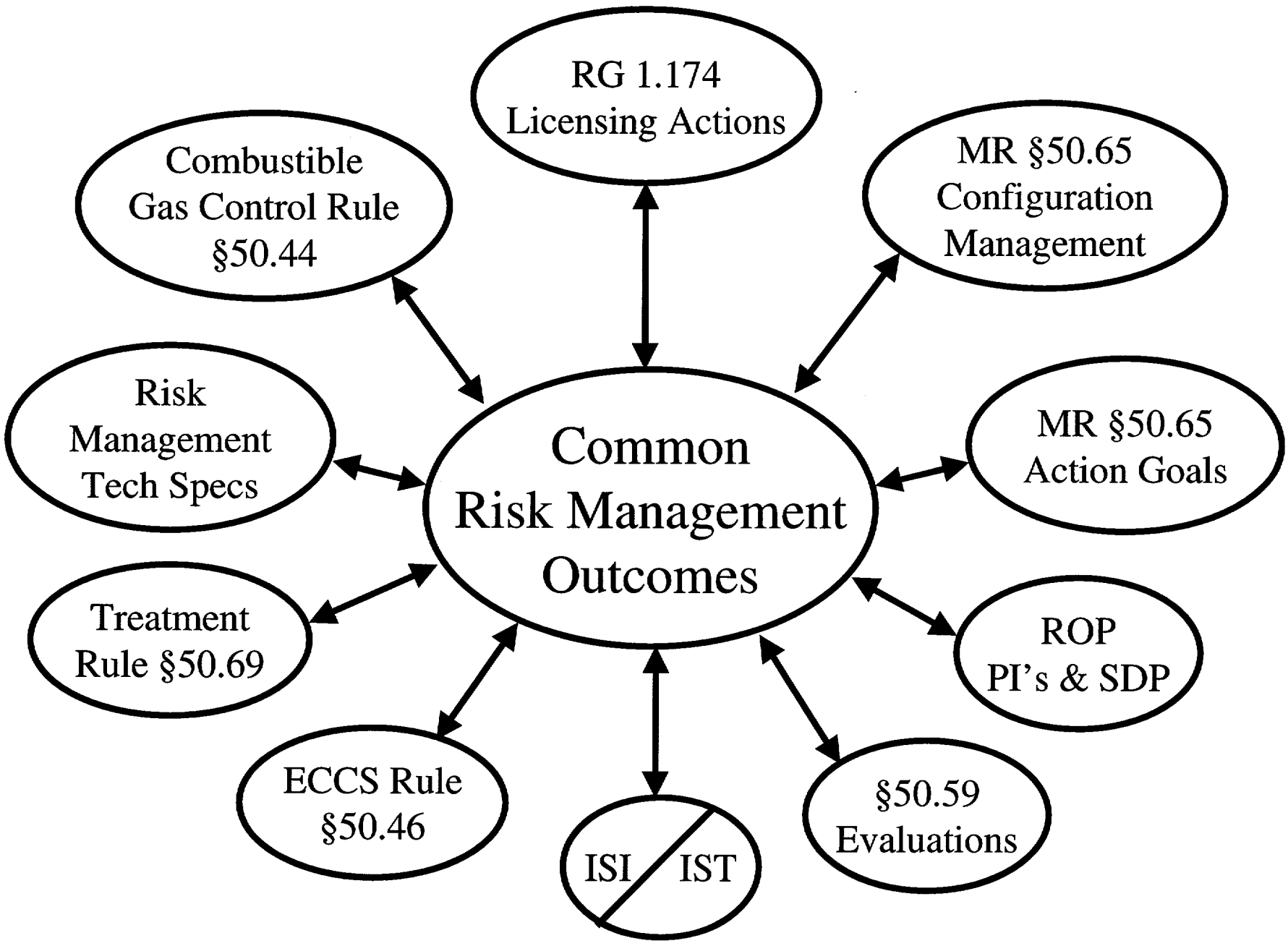


Near term Goals

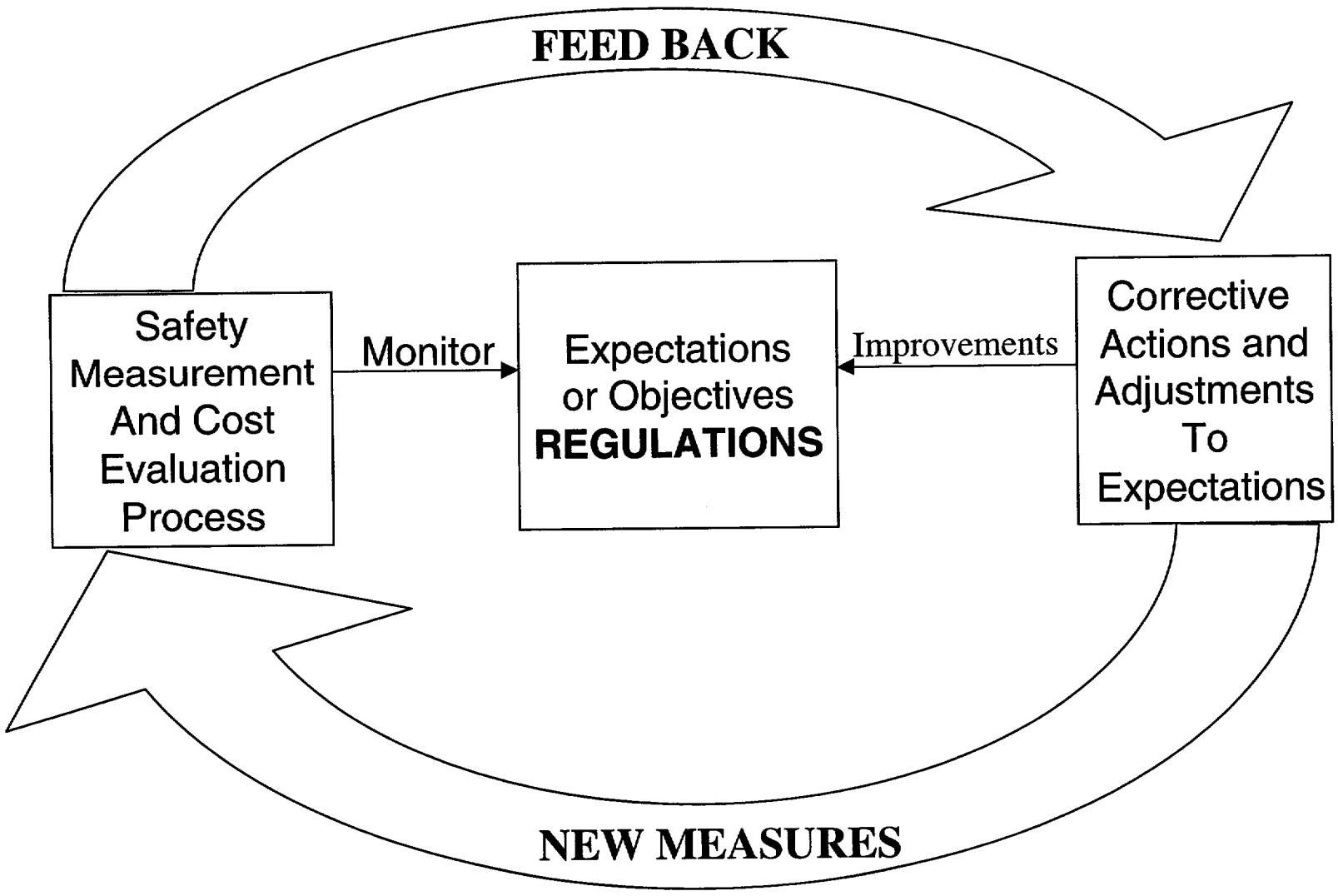
- Common objectives for activities
- Stakeholder buy-in
- Use of “risk-management” vs. “risk-informed ”

Long Term Goal

Maintain the current high level of safety throughout the industry, while maximizing the licensee or applicants ability to make design, construction and operational decisions in a more open and transparent environment than currently exist.


RG 1.174
Licensing Actions
Combustible
Gas Control Rule
§50.44
MR §50.65
Configuration
Management
Risk
Management
Tech Specs
Common
Risk Management
Outcomes
MR §50.65
Action Goals
Treatment
Rule §50.69
ROP
PI's & SDP
ECCS Rule
§50.46
ISI
IST
§50.59
Evaluations

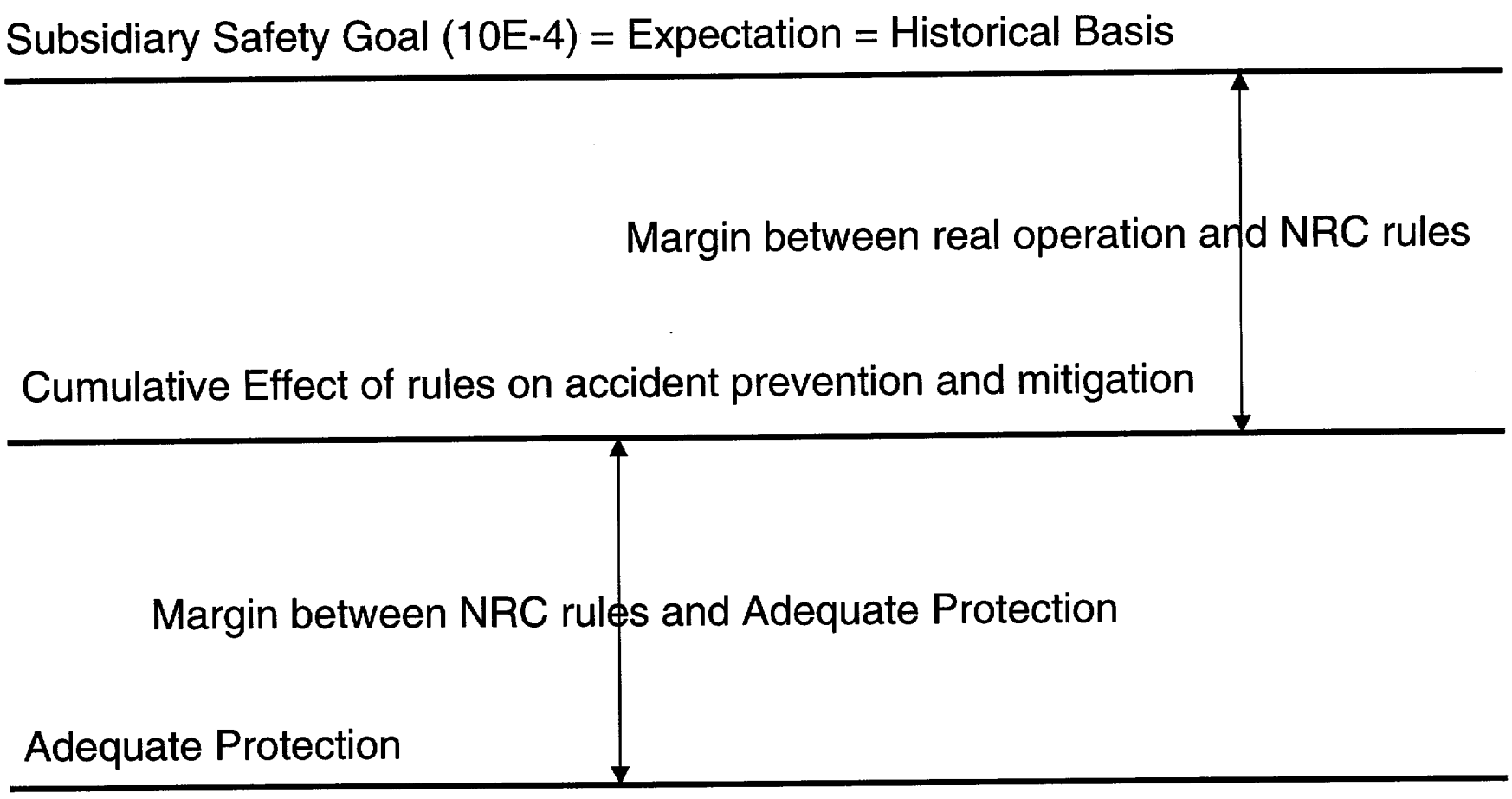
Outcome Driven Process



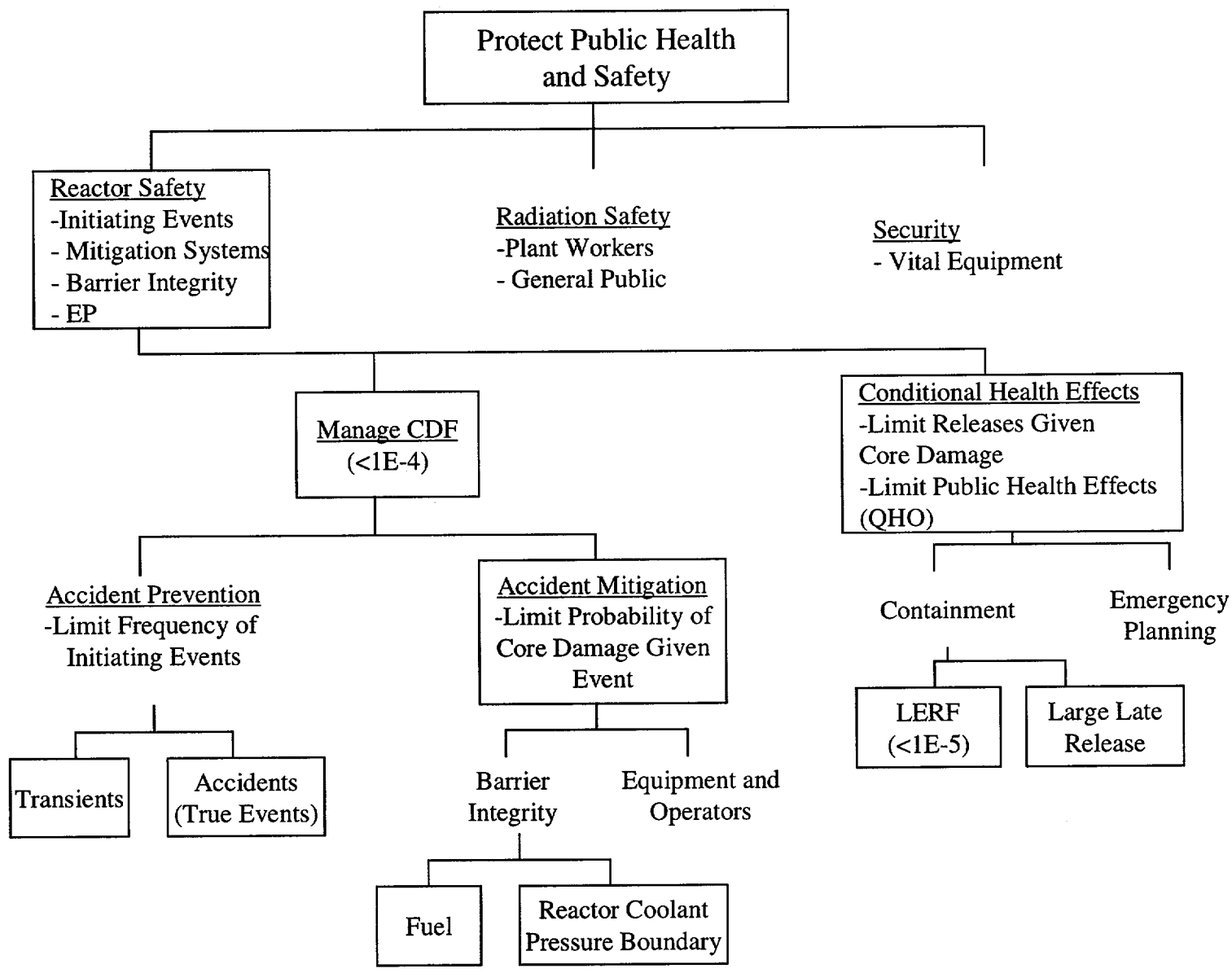
Plan

- Structured, systematic framework that integrates:
  - Option 3 Framework
  - Advanced reactors
  - Convergence SRM
- Objectives for each cornerstone
- Focus on convergence

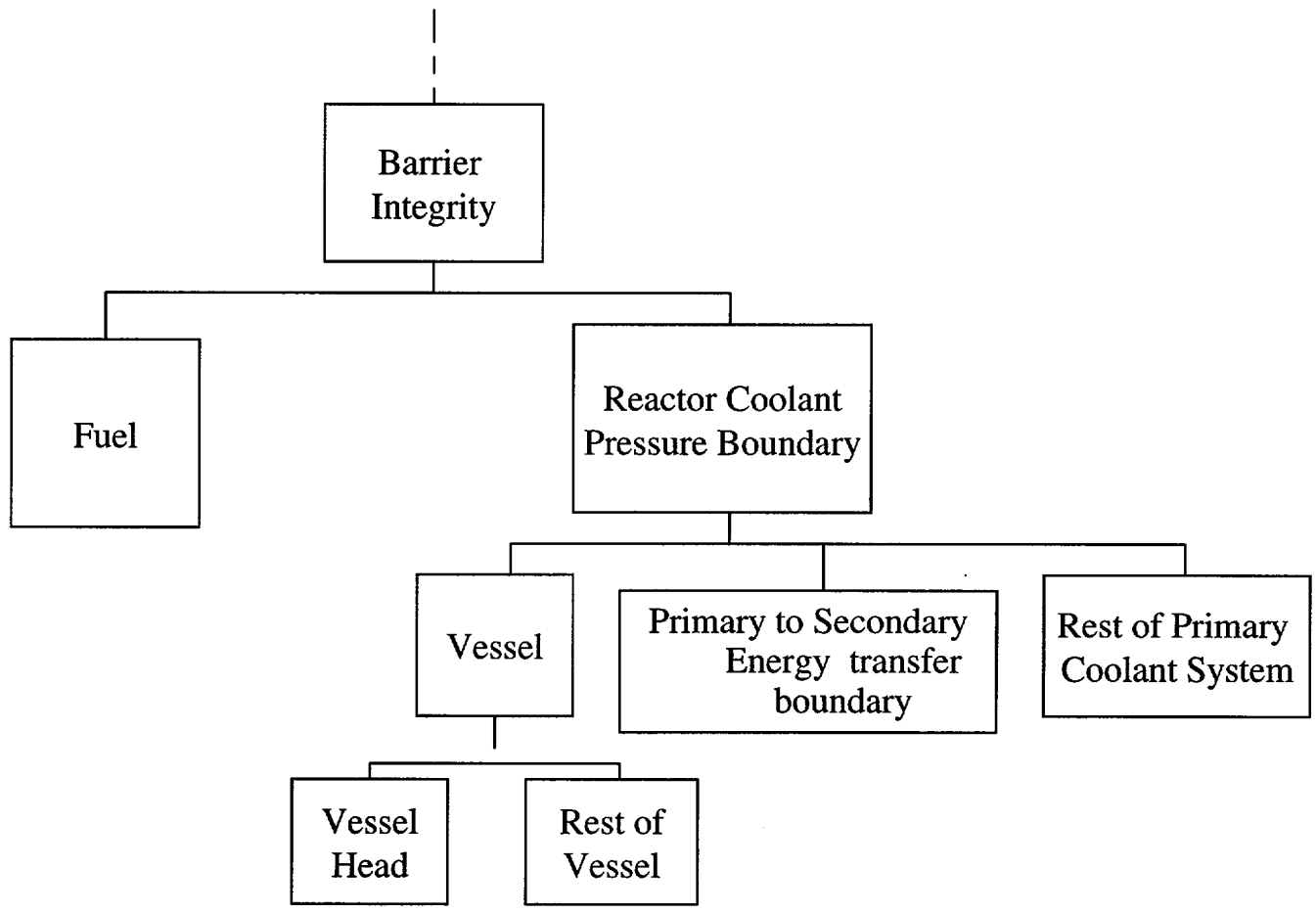
Maintain CDF < 10E-4



Develop Common Risk-Management Objectives



Possible Stakeholder Interaction Result



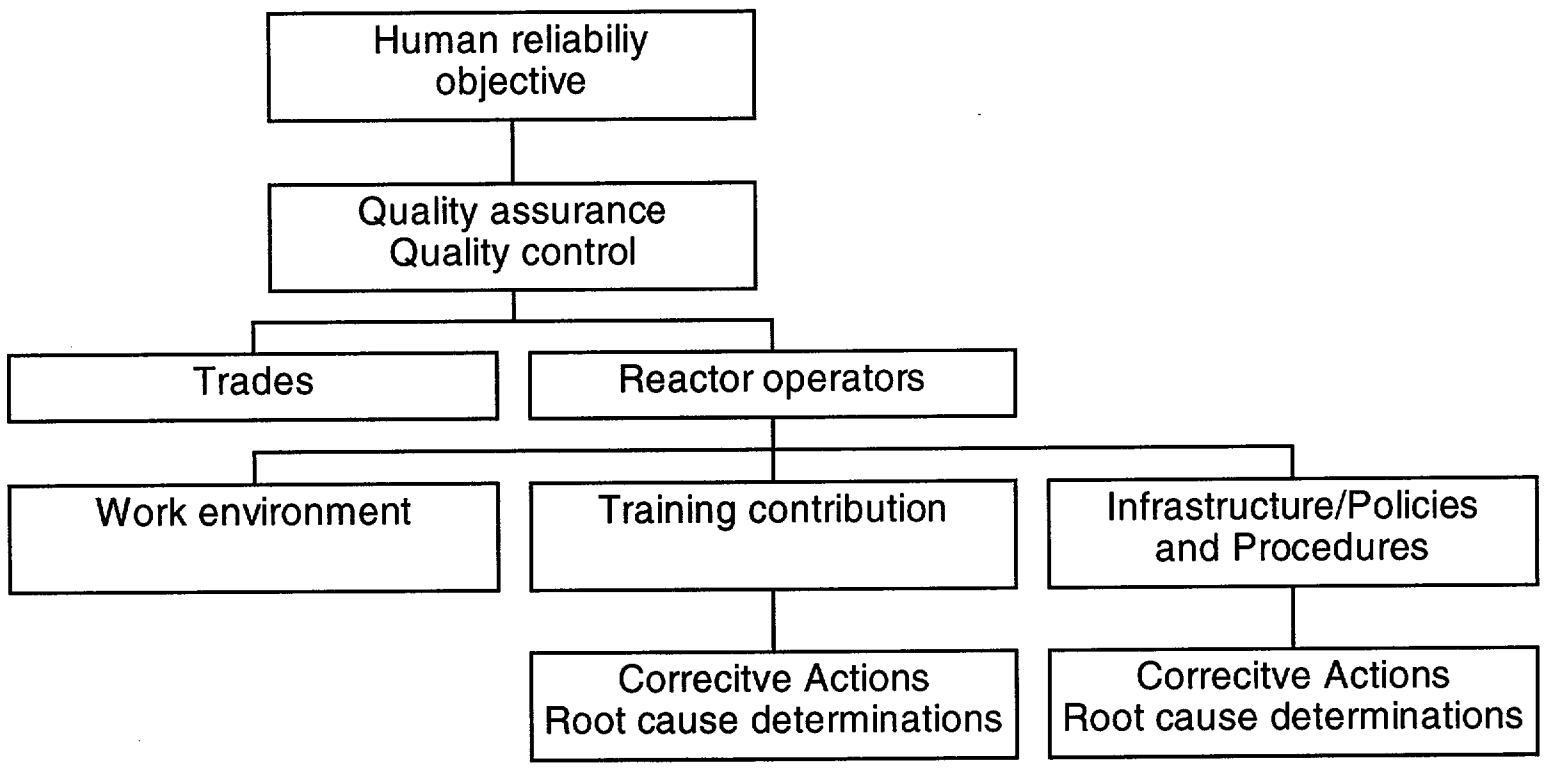
Sample Objectives - Transients

- Current ROP
  - Limit frequency of those events that upset plant stability and challenge critical safety functions, during shutdown as well as power operations…
- RBPI
  - General transient frequency < .96/yr
  - Loss of feedwater < 6.8E-2/yr

Human System

- Just as a hierarchical structure is purposed for the plant hardware systems and interfaces the human as a system has to be addressed.
- This should support the assumptions used in the risk analysis.
- The lack of certainty my call for the continuation program requirements versus objective ones

Normal Human System



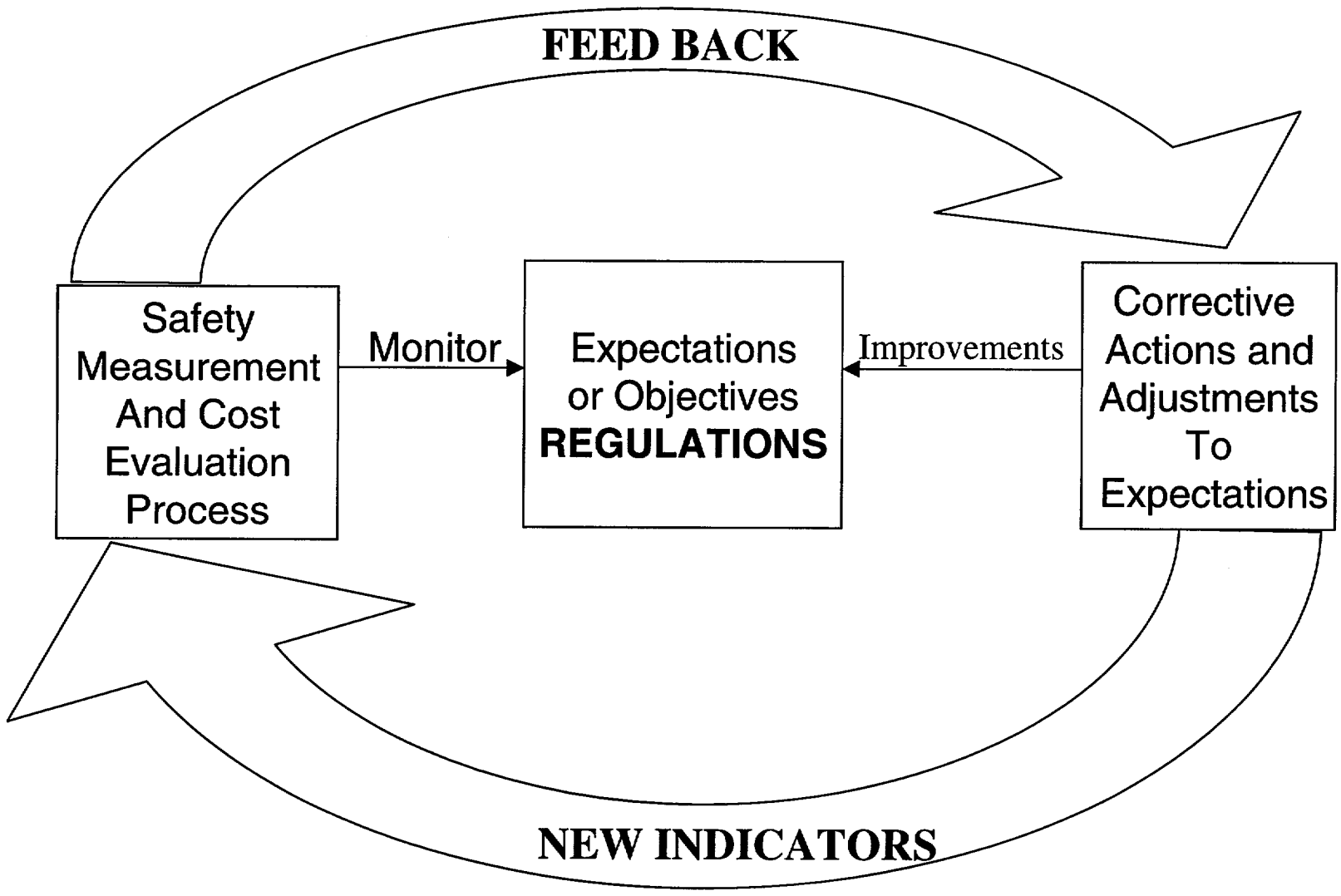
Potential Applications

- Regulations
  - Regulatory Analysis Guidelines
  - Review Standards
- Licensing Actions
- Technical Specifications
- Reactor Oversight
  - Inspection
  - Enforcement
  - Performance

Next Steps

- Communicate the staff's intent to the Commission, June 2002
- Public meeting with stakeholders in May
- Additional meetings/workshop
  - Follow ROP developments process

Outcome Driven Process



Rulemaking Application

Rule	Transients	Accidents	Fuel	Reactor Coolant Pressure Boundary	Mitigating Equipment And Operator Reliability	LERF	Large Late Release	EP
50.xx.a	X							
50.xx.b		X	X		X			
50.xx.c								X
50.yy.a				X				
50.yy.b			X					
50.yy.c						X	X	
GDC A	X	X	X	X	X	X	X	
GDC B		X	X					