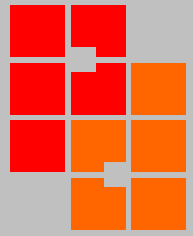


# Delivering Predictable Result in an Unpredictable Business Environment

A petroleum industry example of balancing risk and reward

John I. Howell III  
President  
Portfolio Decisions, Inc.



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# Delivering Predictable Results

## Results from Petroleum Industry

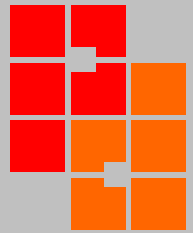
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- **What** constitutes Predictable Business Performance?
- **Who** in the organization is responsible for predictable performance?
- **How** do you manage trade-offs between growth and predictability?

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# What constitutes Predictable Business Performance

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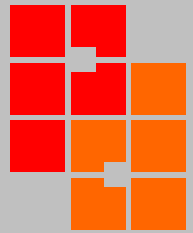
- High confidence in delivering strategic goals
  - Operational and financial targets
  - Multi-year
  - What is “high confidence”
- Minimize downside exposure
  - Magnitude of disappointment

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# Who: What level owns decisions?

## Technical teams, BU, Corporate?

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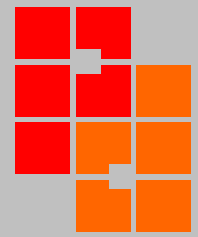


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\$25B Petroleum Company

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- Producing Properties (\$11 B)
- Developing Properties (\$5B)
- Exploration Properties (\$9B)



# Who: What level owns decisions? Technical teams, BU, Corporate?

## Uncertainty exposure for \$25B Petroleum Company

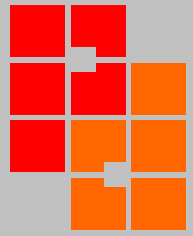
- **Producing Properties (\$11 B)**
  - Political uncertainty (- \$2-5B)
  - Market uncertainty (+/- \$2B)
  - Operational uncertainty (- \$1-3B)
  - Commodity Price uncertainty (+/- \$3B)
- **Developing Properties (\$5B)**
  - Cost uncertainty (-\$2B)
  - Operational uncertainty (- \$1B)
  - Commodity price uncertainty (+/- \$1B)
- **Exploration Properties (\$9B)**
  - Capture uncertainty (+/- \$5B)
  - Technical uncertainty (+/- \$2B)
  - Commodity price uncertainty (+/- \$4B)

Manage uncertainties at the lowest level possible such that adequate diversification can be achieved.

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# How: Portfolio Process for Context

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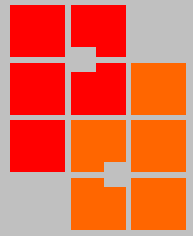


- Reference all decisions to corporations strategic goals
- Describe all projects in terms of full point-forward economics
- Integrate project uncertainties into analysis using economic outcome models and probabilities
- Understand all ‘scenarios’ relative to their impact on corporate performance
- Explore the composition of ‘acceptable’ scenarios

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# How: Portfolio Process for Context

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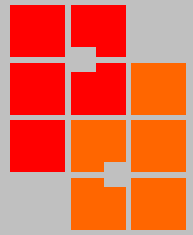


1. Understand corporate goals and confidence limits
2. Ensure all significant uncertainties are described “in an acceptable manner”
3. Provide high confidence results with balanced investments
4. Explore alternate investment scenarios relative to their impact on confidence levels for the corporate portfolio

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# How: Portfolio Process for Context

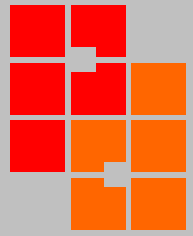
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- Decision-Maker Engagement
  - Willing to define and refine strategic issues
  - Willing to discuss critical uncertainties
  - Willing to participate in discussions
- Strategic Goals
  - Clearly defined goals operational and financial goals
- Decision-maker Commitment to goals

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# How: Portfolio Process for Context



## Data and analysis

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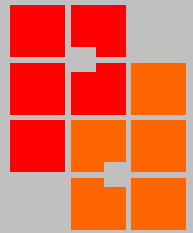
- Collect consistent economic data
  - Multi-metric (operational and financial)
  - Full life-cycle (time-series) data
- Describe “appropriate uncertainties”
- Characterize scenarios that explore executive issues and business fidelity
- Present data to executives to facilitate conversations

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# Managing Uncertainty

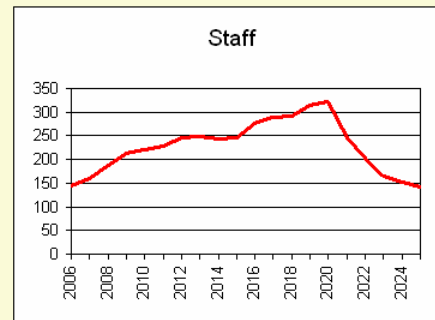
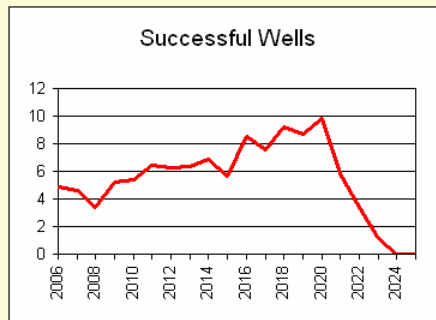
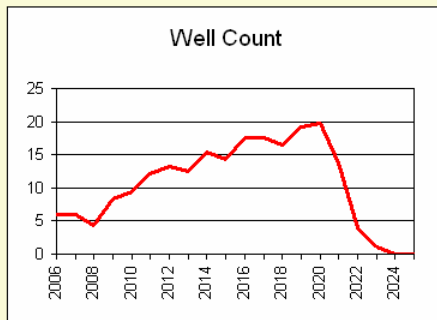
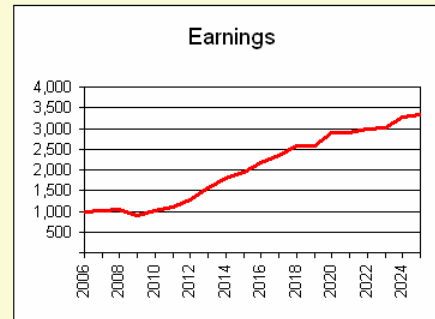
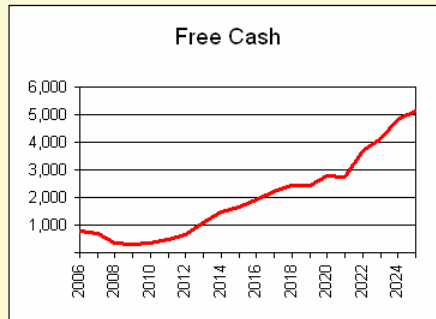
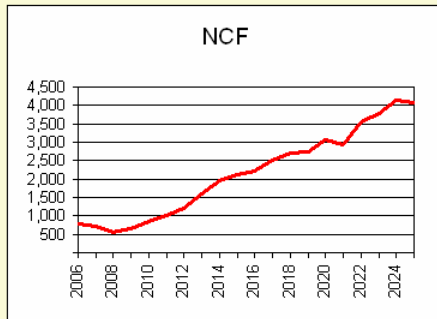
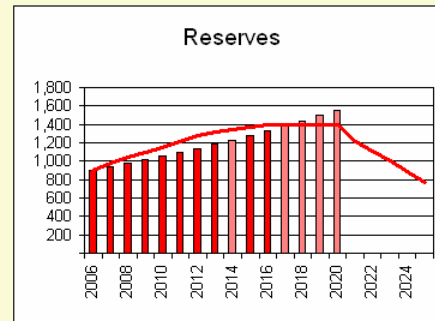
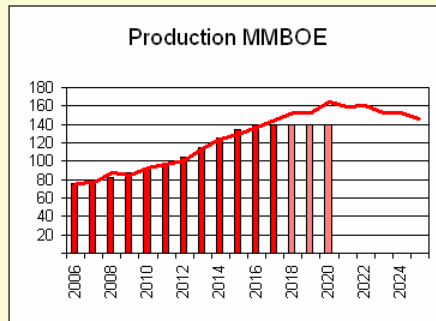
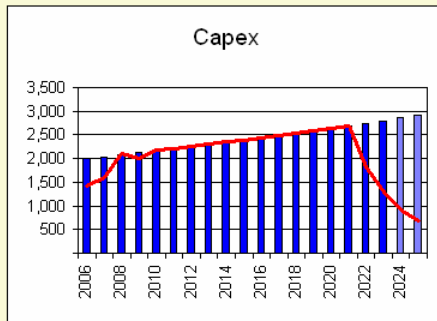
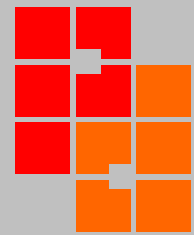
## Example

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- \$12B company wants to grow as measured by production, reserves and earnings
- 85% confidence level
- Company wants to fund all growth initiatives from operating cash flow
- Strategic Issue: Can joint venture opportunity fit
  - Very profitable
  - Large near-term investment
  - Opens many additional opportunities
  - “Considerable” political and commercial uncertainty
  - JV is considered “Strategic”

# Example Initial Plan



10 Yr investment  
Plan

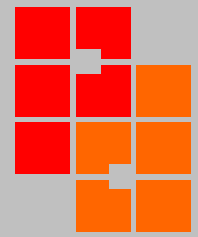
Enpv = \$15.9B

Program is self  
Funding

6% Production  
Growth

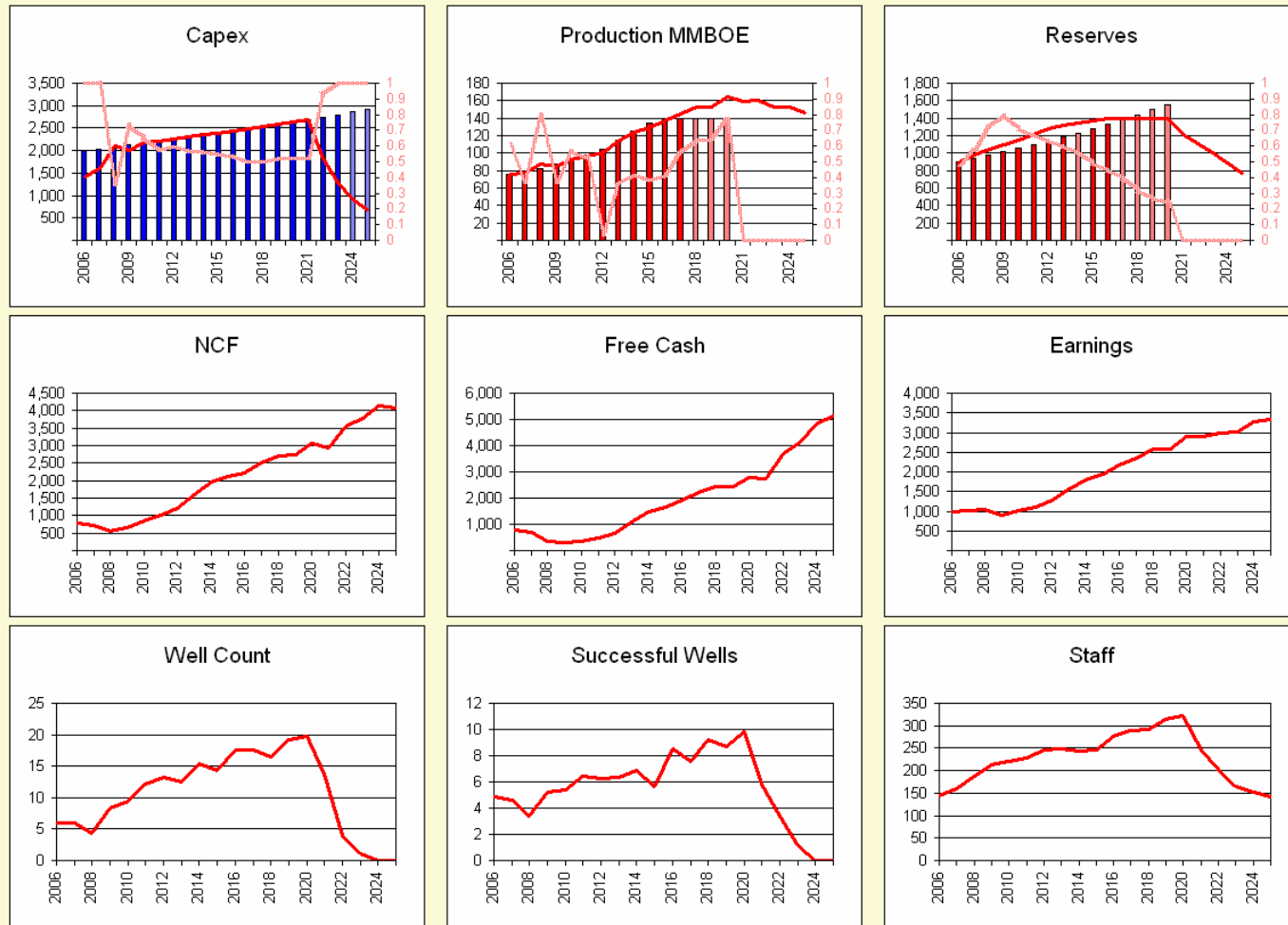
1.3 Avg. Reserve  
Replacement

1 Very large,  
high-risk JV  
Project in 2006



# Example

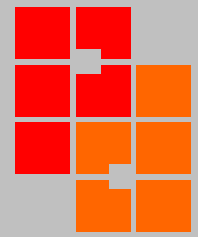
## Initial Plan with probability of meeting goals



10 Yr investment  
Plan

Enpv = \$15.90B

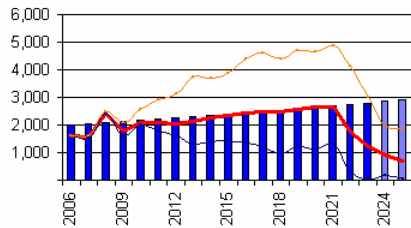
The Plan fails to meet  
executive expectations  
from the start



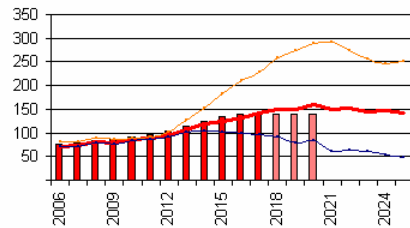
# Example

## Initial Plan with p0 and p100 ranges

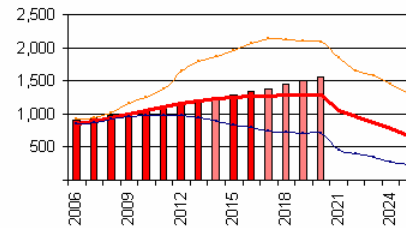
Capex



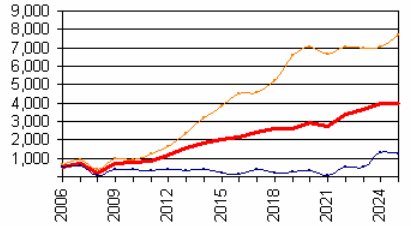
Production MMBOE



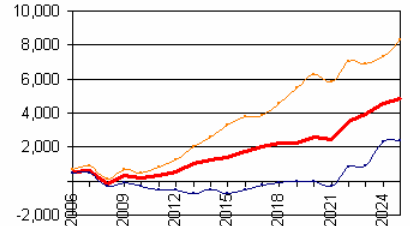
Reserves



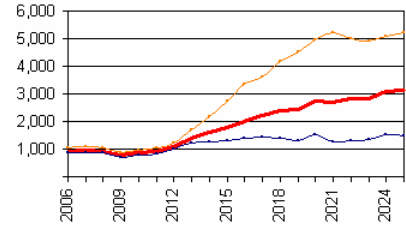
NCF



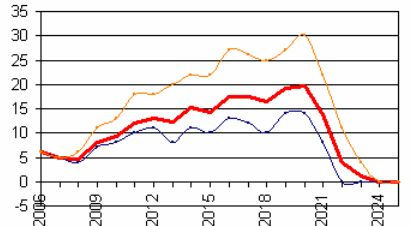
Free Cash



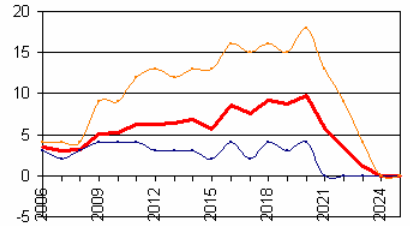
Earnings



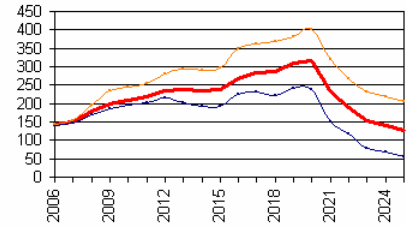
Well Count



Successful Wells



Staff



10 Yr investment  
Plan

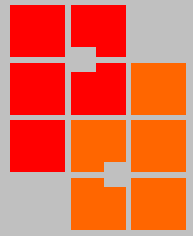
Enpv = \$15.90B

The Plan has  
considerable down-side  
exposure in Production  
and Reserves

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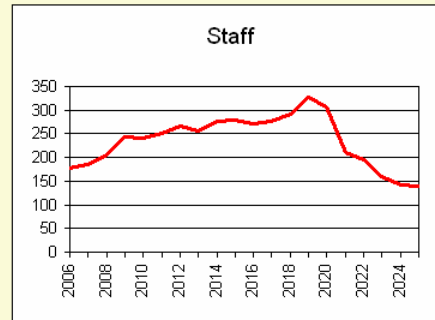
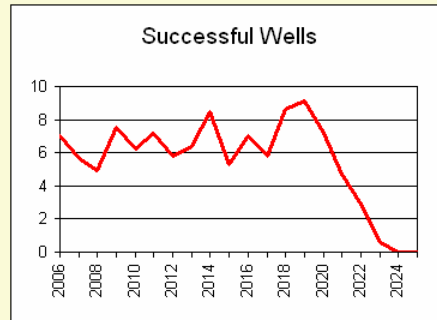
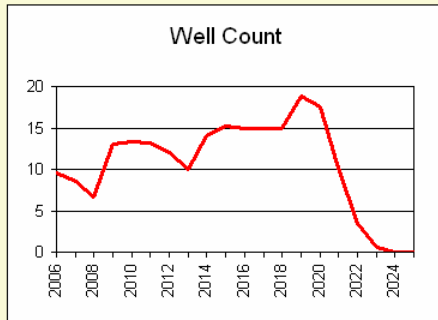
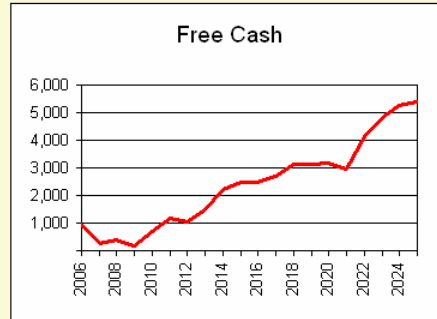
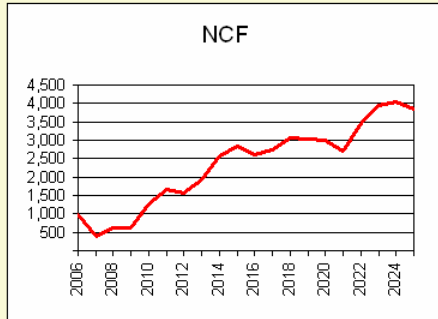
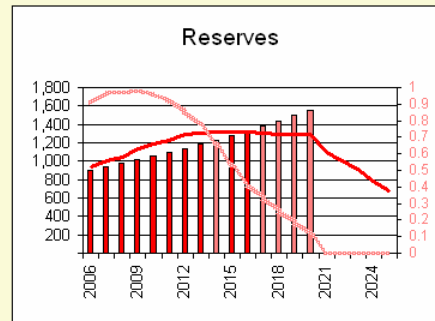
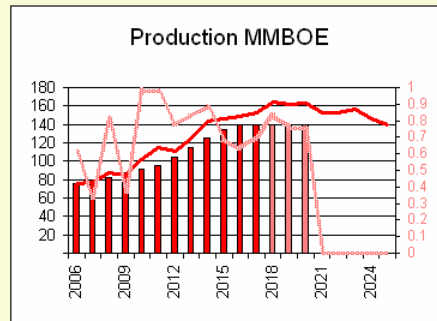
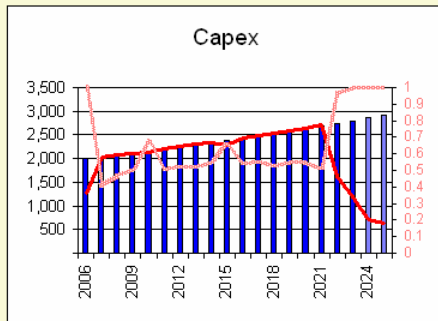
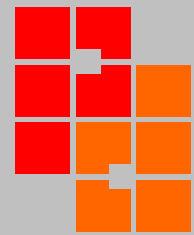
# How: Predictable Business Performance

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- Define a high confidence solution
- Assess impact of large uncertainty projects
- Facilitate Executive discussions

# Provide high confidence results Maximum NPV

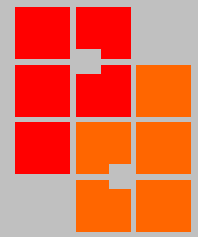


10 Yr Investment Program

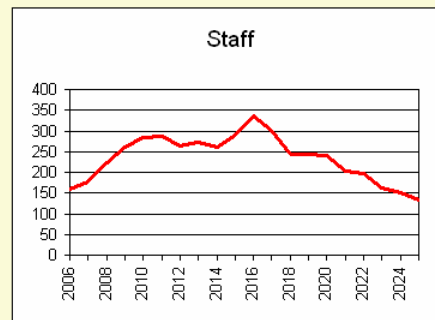
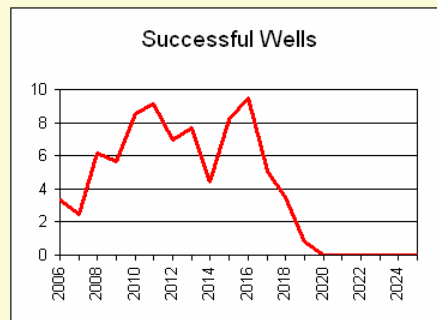
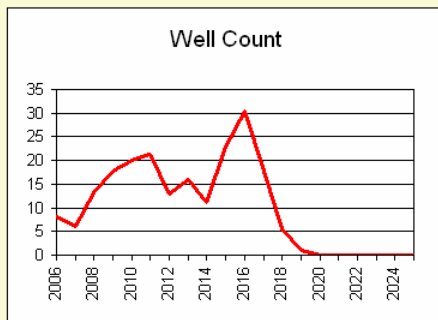
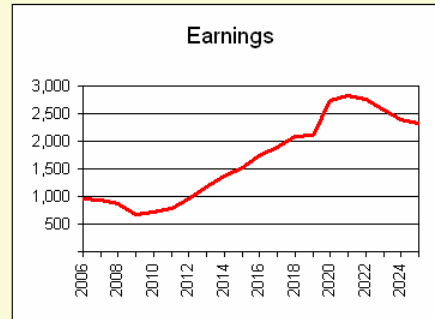
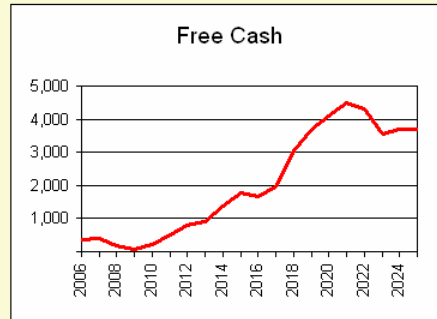
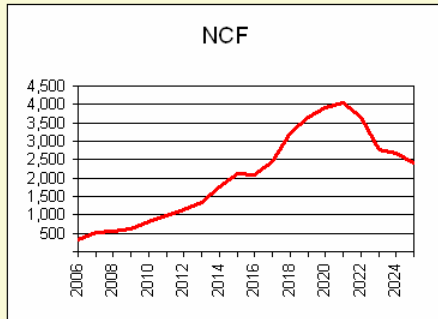
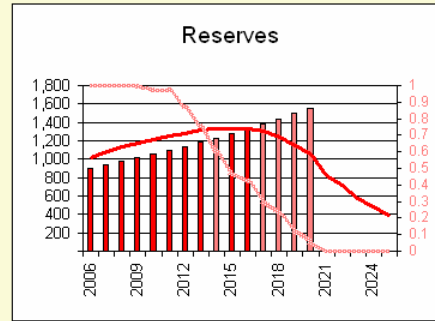
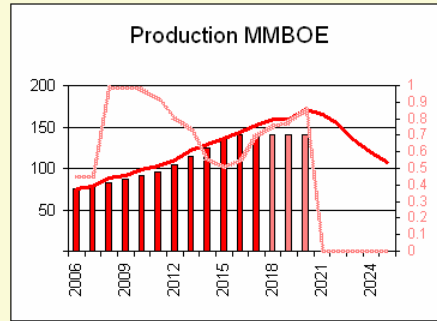
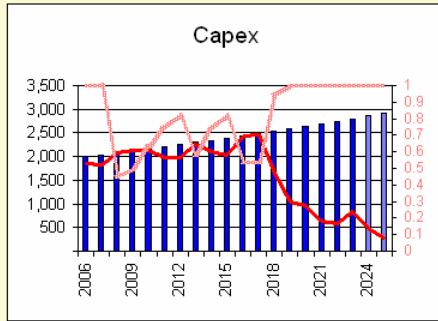
NPV = \$16.76B

JV project is not selected

Selected projects diversify production and reserves uncertainties



# Provide high confidence results Max Prob of Production in 2009



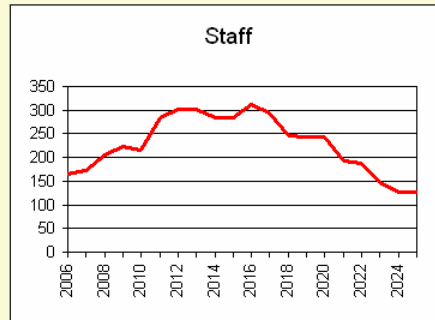
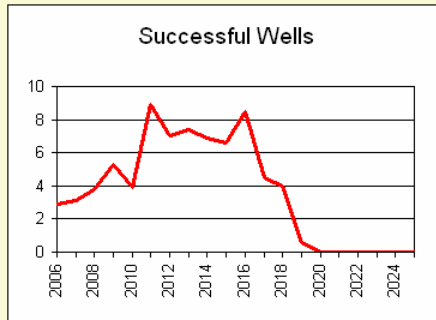
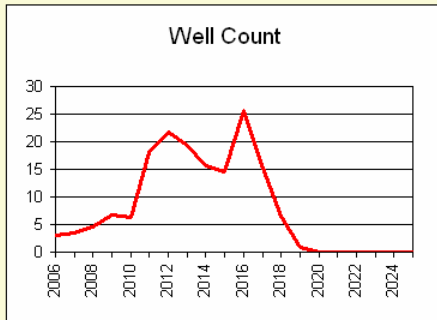
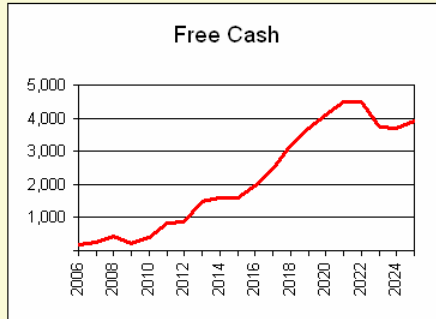
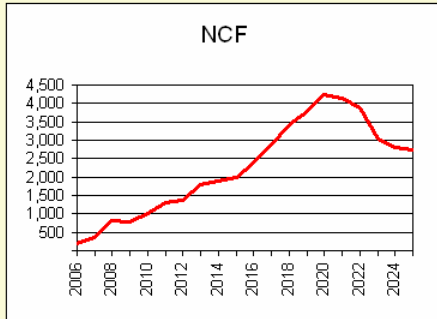
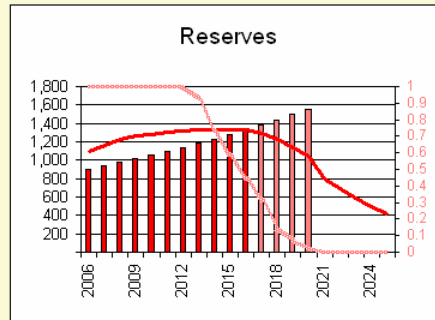
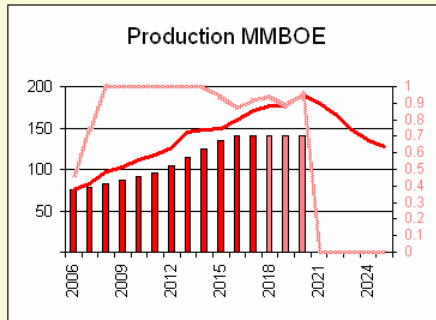
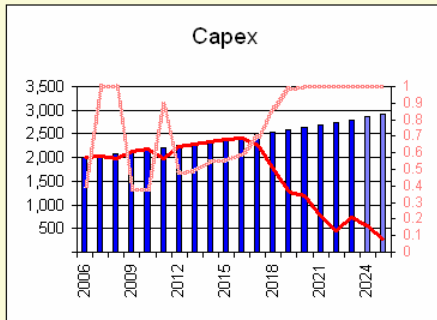
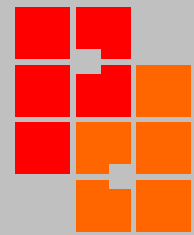
NPV = \$13.94B

JV project is not selected

Selected projects diversify production and reserves uncertainties

# Provide high confidence results

## Maximize Production in 2013



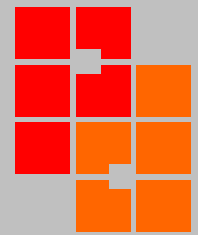
NPV = \$14.78B

JV project is not selected

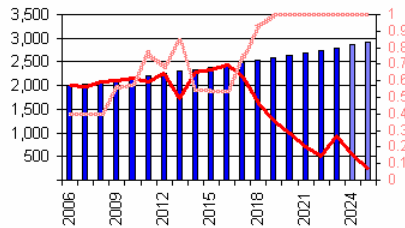
Selected projects diversify production and reserves uncertainties

This defines the investment standard

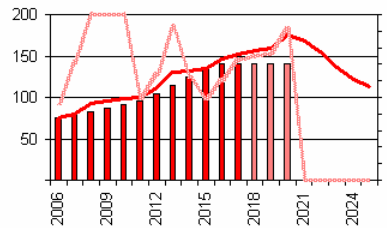
# Provide High Confidence Results



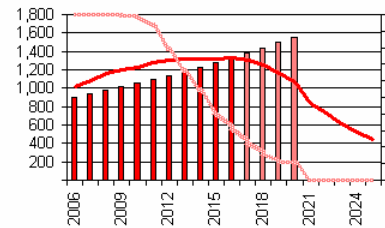
Capex



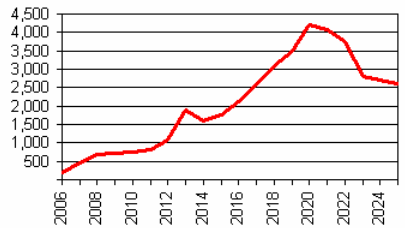
Production MMBOE



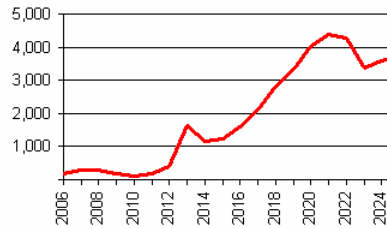
Reserves



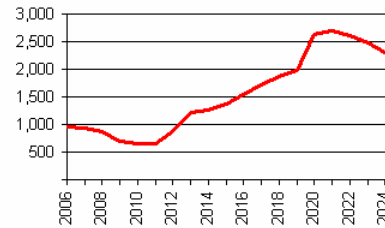
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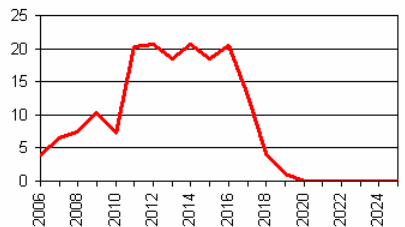
Free Cash



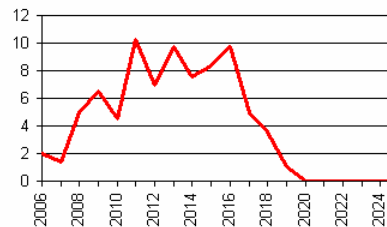
Earnings



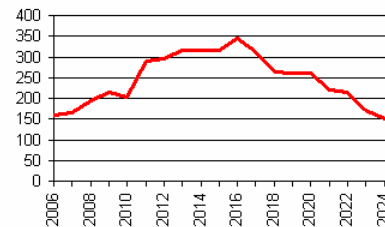
Well Count



Successful Wells



Staff



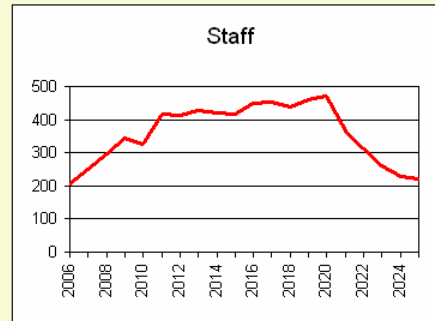
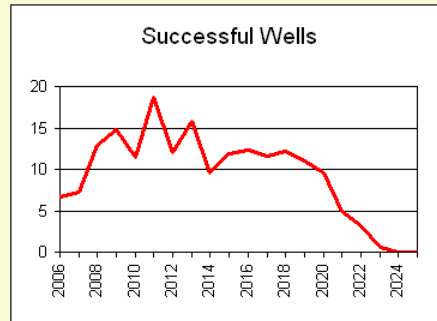
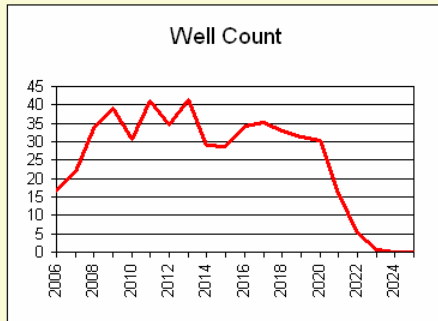
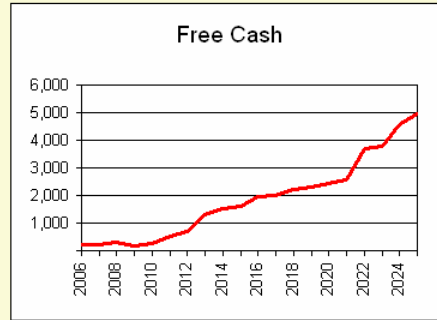
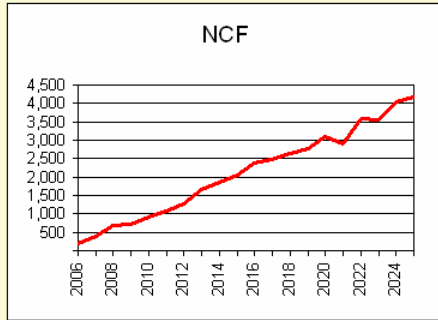
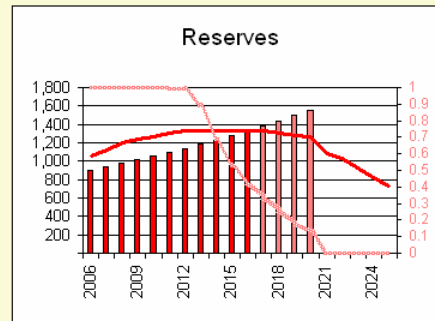
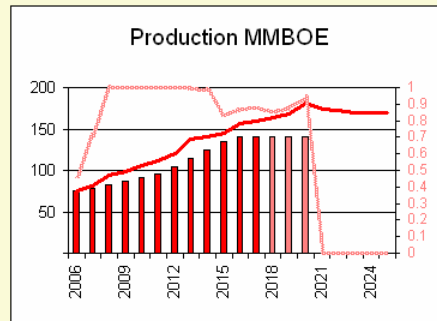
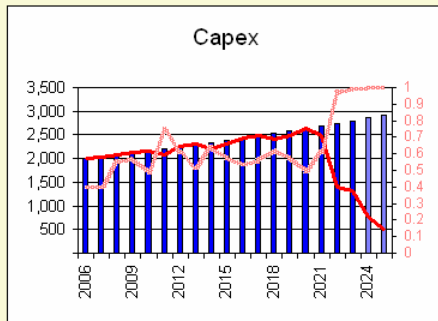
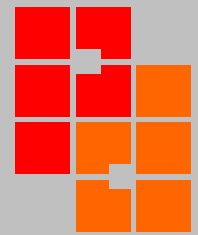
Maximize Production in 2013 with **100%** of Large high-risk project

NPV = \$13.96B

Selected projects partially diversify production and reserves uncertainties

This does not appear to be a good trade-off

# Explore impact of high risk projects



Maximize Production in 2013 with 50% of Large high-risk project

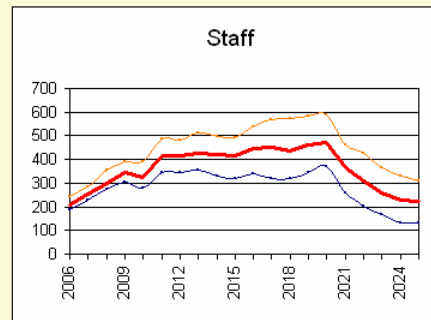
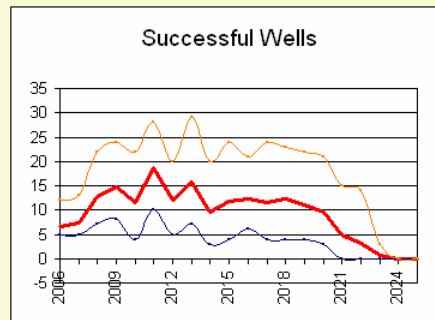
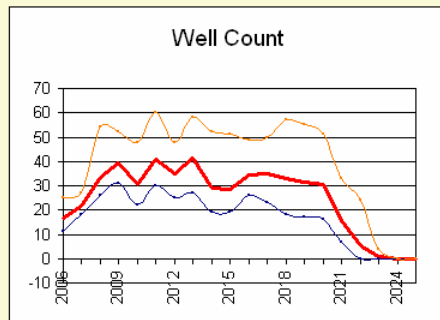
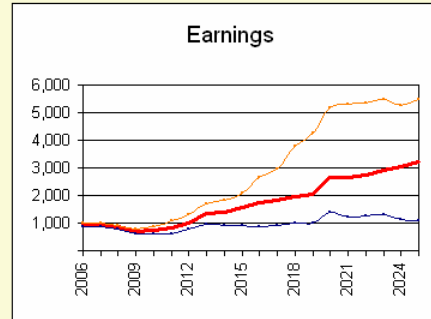
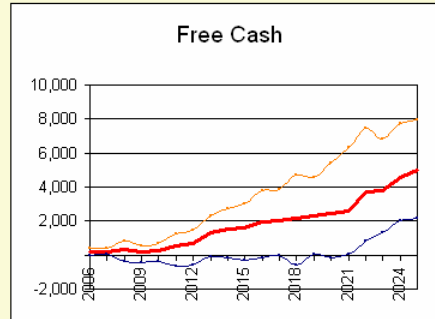
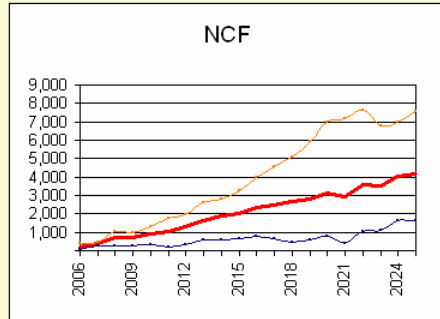
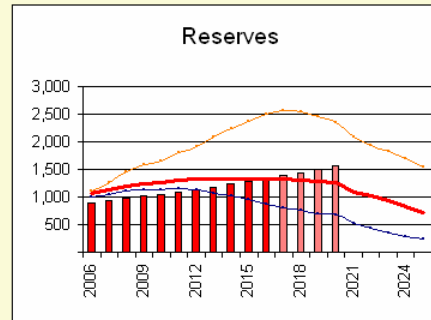
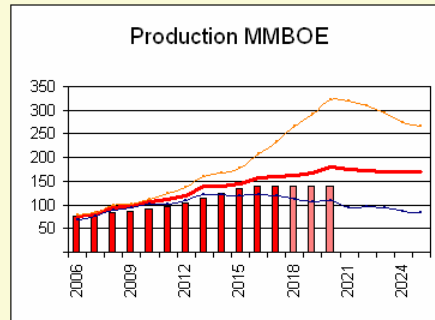
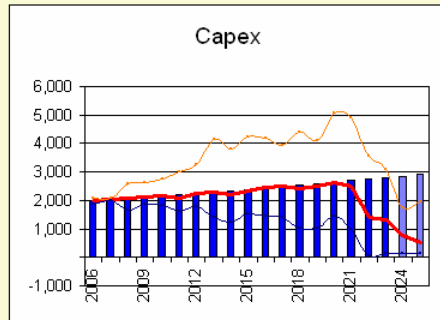
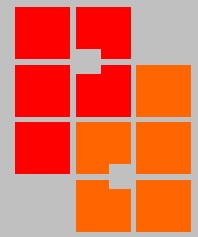
NPV = \$15.01B

Selected projects diversify production and reserves uncertainties

Requires more wells at lower working interest (60% WI on average)

This does appear to be a good trade-off

# Explore impact of high risk projects



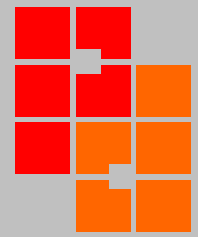
Maximize Production in 2013 with 50% of Large high-risk project

NPV = \$15.01B

Minimal downside risk with production, self funding and earnings

Requires more wells at lower working interest (60% WI on average)

This does appear to be a good trade-off

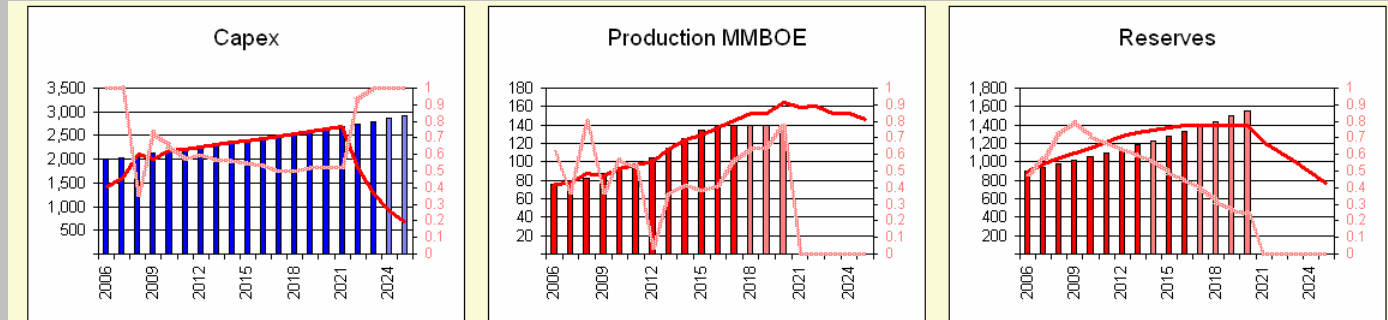


# Managing Uncertainty

## Exposure to upside, Manage downside

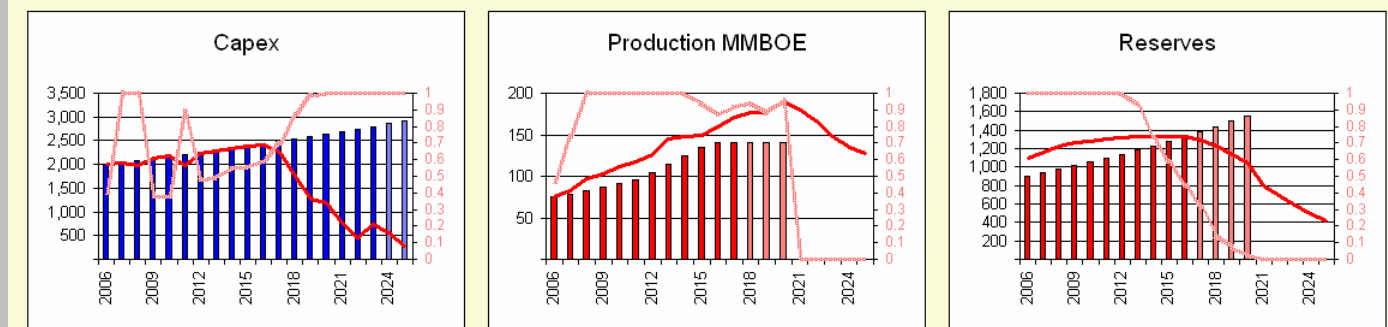
Initial solution

100% Lg Proj  
NPV = \$15.90B



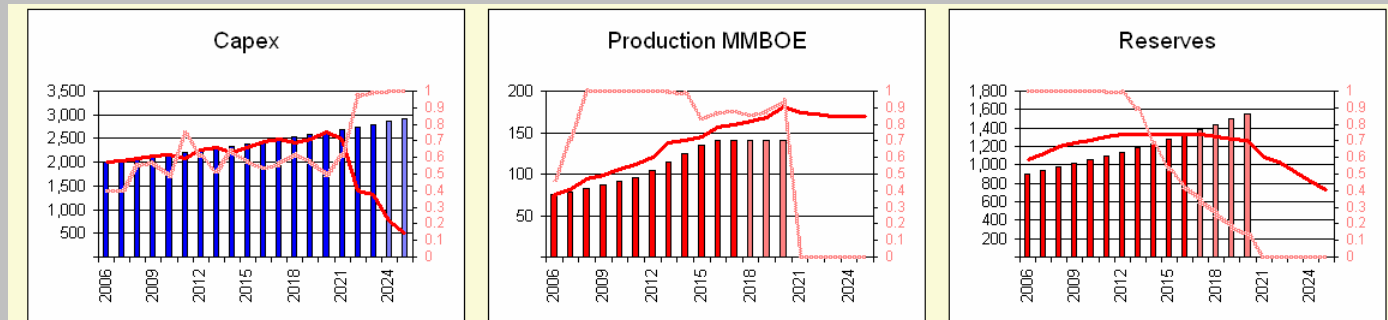
High confidence solution

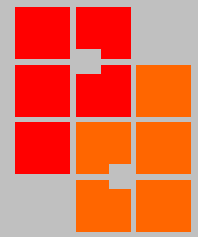
NPV = \$14.78B



Acceptable Trade-off

50% Lg Proj  
NPV = \$15.01B



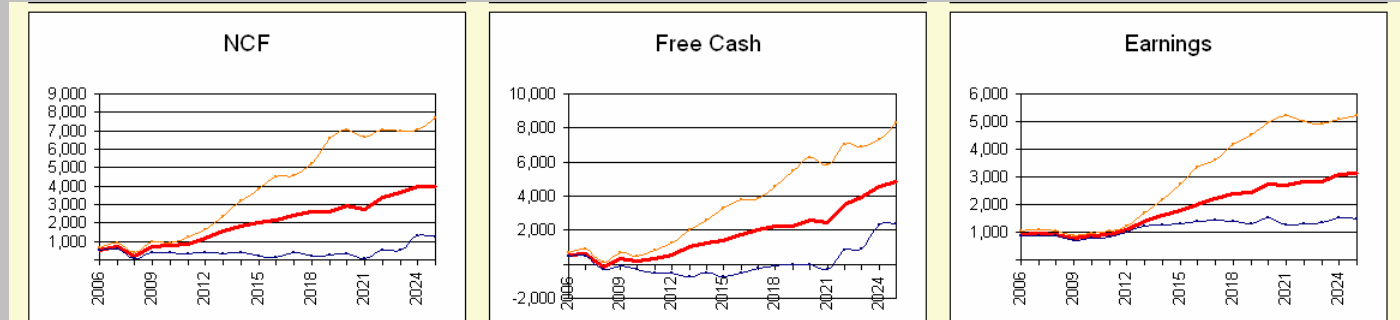


# Managing Uncertainty

## Exposure to upside, Manage downside

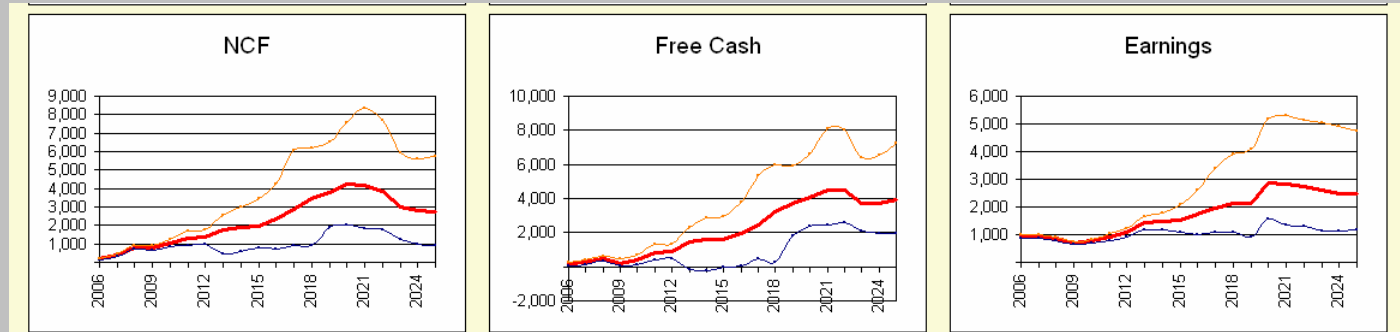
Initial solution

100% Lg Proj  
NPV = \$15.90B



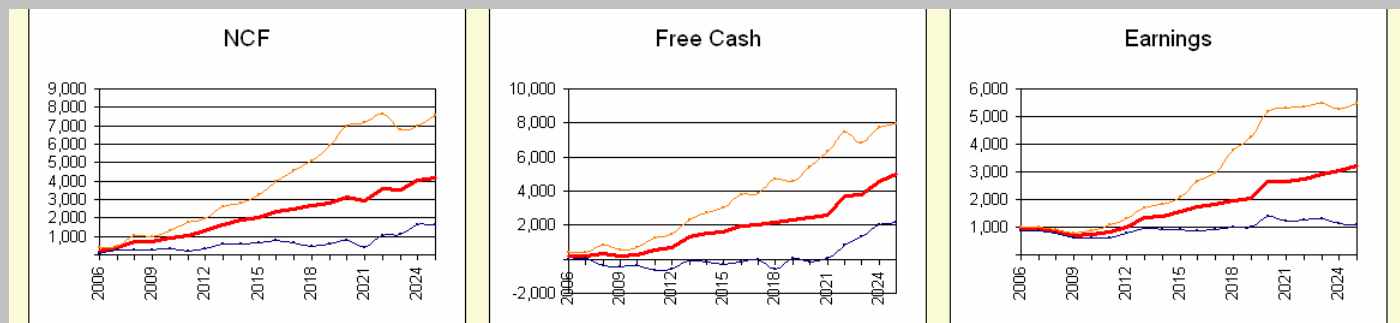
High confidence solution

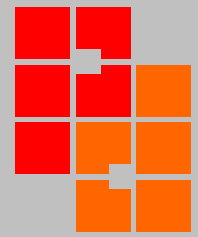
NPV = \$14.78B



Acceptable Trade-off

50% Lg Proj  
NPV = \$15.01B

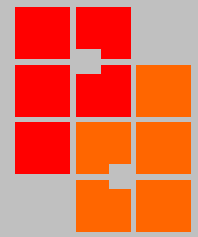




# Delivering Predictable Results

## Summary

- **What** constitutes delivering predictable results
  - High confidence in delivering strategic goals
  - Manage down-side volatility
- **Who** in the organization is responsible for predictable performance?
  - Manage at a level that can diversify the uncertainties
- **How** do you manage trade-offs between growth and predictability?
  - Use portfolio process to put scenarios in appropriate context
  - Ensure decision makers will engage
  - Ensure consistent data including uncertainty information
  - Use portfolio scenarios to facilitate decision-makers conversations



# Delivering Predictable Results

## Conclusion

Value is derived from the process, the discussions and the associated commitment...not the numerical answer

More companies fail to deliver predictable results for HUMAN reasons than for technical reasons.