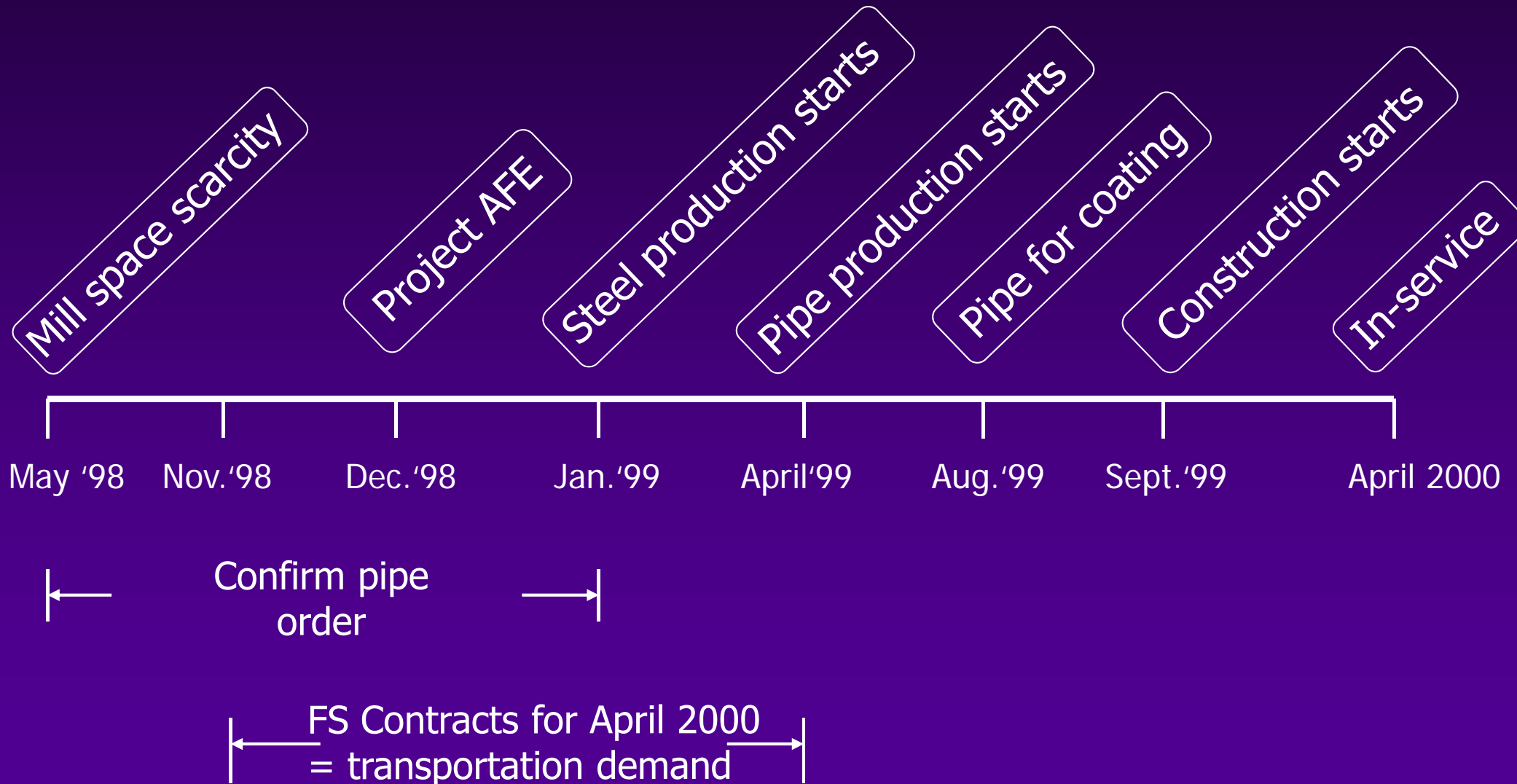# Background of Project

- Rising Cost and Decreasing Availability of Pipe

- Uncertain Pipe Requirements in May '98

- Pipe would be used after September '99

What Action Should We Take?

(if any)

Sequence of Events

Mill space scarcity

Project AFE

Steel production starts

Pipe production starts

Pipe for coating

Construction starts

In-service

May '98   Nov.'98   Dec.'98   Jan.'99   April'99   Aug.'99   Sept.'99   April 2000

Confirm pipe order

FS Contracts for April 2000 = transportation demand

Main Issues

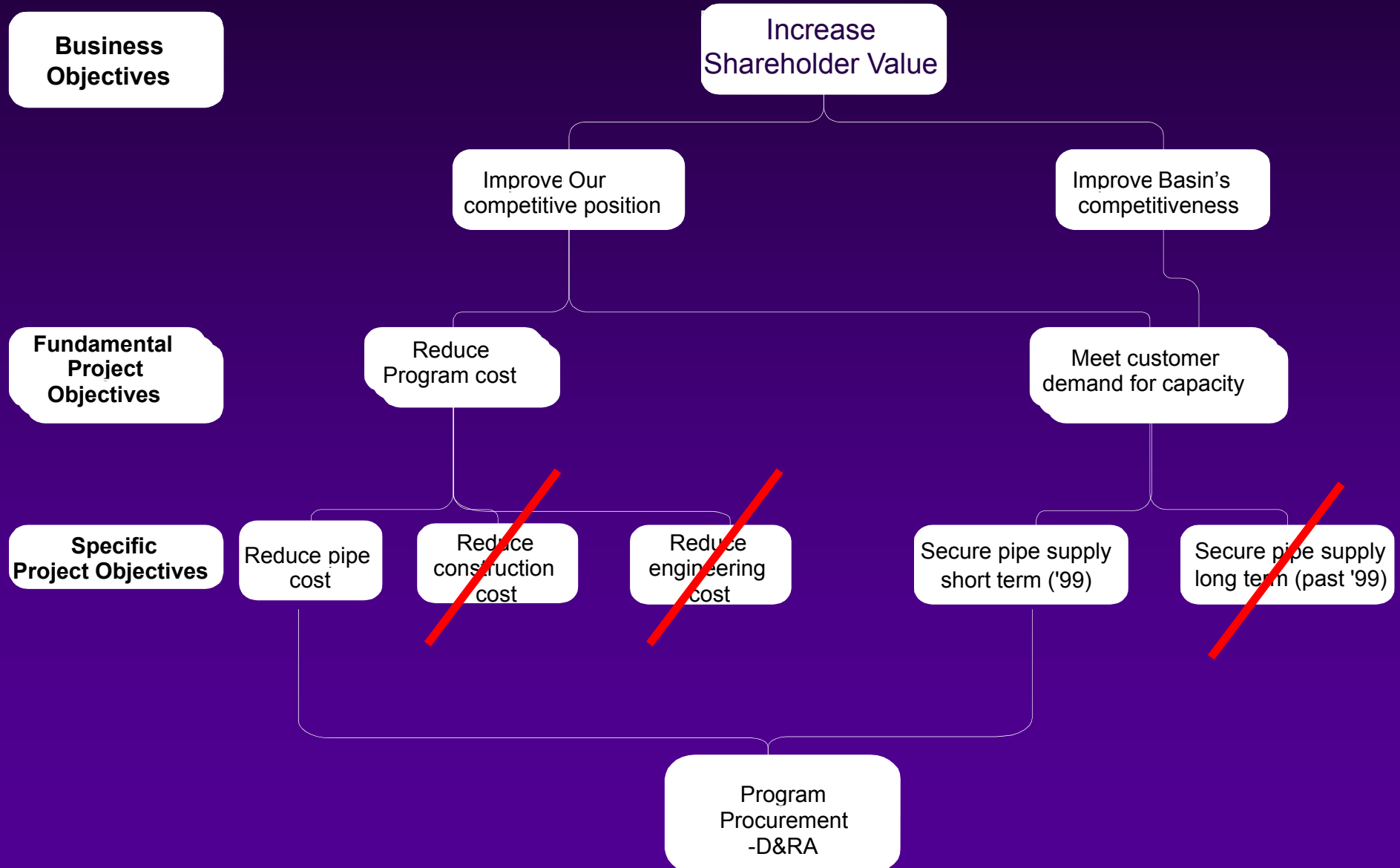Uncertain Demands for Capacity

Impact of Competition

Our Competitive Strategy

Ensure a secure supply of pipe at reasonable cost without committing to an uncertain capital program

Pipe Availability

Pipe Unit Cost

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OBJECTIVE HIERARCHY

Business Objectives

Increase Shareholder Value

Improve Our competitive position

Improve Basin's competitiveness

Fundamental Project Objectives

Reduce Program cost

Meet customer demand for capacity

Specific Project Objectives

Reduce pipe cost

Reduce construction cost

Reduce engineering cost

Secure pipe supply short term ('99)

Secure pipe supply long term (past '99)

Program Procurement -D&RA

Conflicting Project Objectives

Reduce Program Pipe Cost

Secure Program Pipe Supply

Decision Hierarchy

POLICY (given)

Decision criteria are:
- profit to company
- cost to customer

Make decision by May 6, 1998

Meet target level of delivery reliability

STRATEGY (now)

- **Buy pipe now or postpone?**
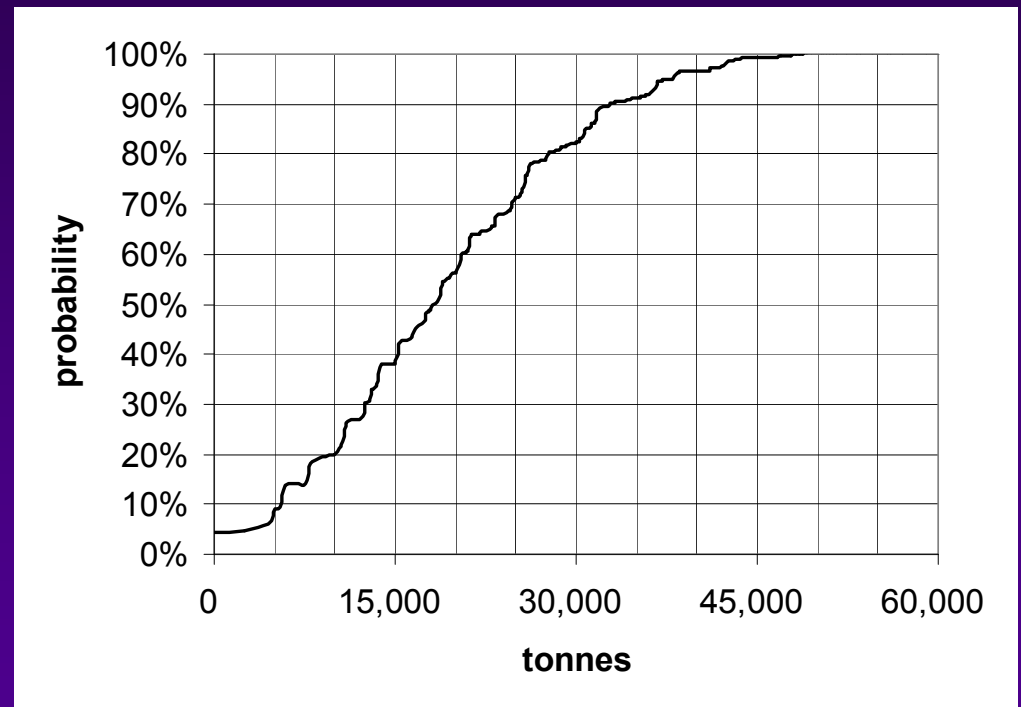- **If buy pipe now, how much?**

TACTICS (later)

- detailed pipe order (specifications)
- which pipe supplier
- quality issues

Probability of Projects and Usage of Pipe

H	B	L	Project Name	Chance of required on-stream April 2000
☞	☞	☞	Project A (North Lateral)	10%
☞	☞		Project B (GPML)	35%
☞	☞		Project C (GPML)	50%
☞	☞	☞	Project D (WAS)	60%
☞	☞	☞	Project E (WAS)	33%
☞	☞		Project F (EAS)	10%
☞	☞		Project G (Edson)	25%
☞	☞		Project H (Edson)	65%
☞			Project I (Edson)	50%
☞			Project J (Edson)	40%

Cumulative Probability for <u>Tonnage</u> of Pipe

- "L" is "Low Case": 18,000 t
- "B" is Base Case": 33,500 t
- "H" is "High Case": 61,000 t

- expected value: 19,200 t
- 10%ile: approx.   6,000 t
- 50%ile: approx.   18,300 t
- 90%ile: approx.   33,000 t

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Decisions Made

" Book Mill Space for 50%ile "

" Lock in Pipe Unit Price "
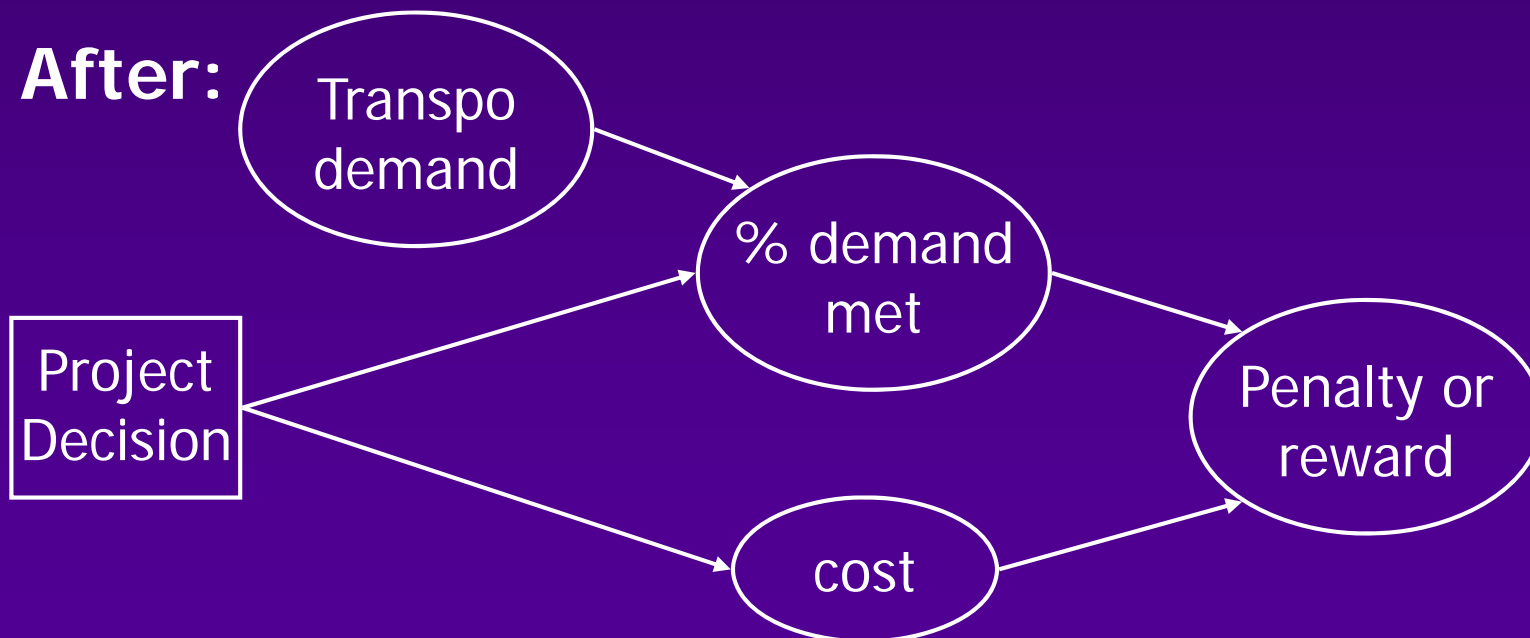
" No Further Analysis Needed "

Insights

- **Do not buy pipe - buy option on mill space**

- **Search and destroy qualitative descriptions of probability**

- **We took more risk without reward when design cycle was changed**

- **New Capital Management Process required**

Change of Design Cycle from 27 to 18-5 Months Made Old Project Approval Process Obsolete

Before:

```
┌─────────────────┐     ┌─────────────────┐     ┌─────────────────┐
│  Single point   │     │  System Design  │     │     Project     │
│  supply/demand  │ ──> │  Optimization   │ ──> │  Authorization  │
│    forecast     │     │                 │     │                 │
└─────────────────┘     └─────────────────┘     └─────────────────┘
```

After:

Transpo demand → % demand met

Project Decision → % demand met

Project Decision → cost

% demand met → Penalty or reward

cost → Penalty or reward

Outcomes

- **Option on mill space at no cost**
- **First pipeline company to ask for options**
- **Options not exercised after all**
- **New Capital Management Process in place**

Unresolved Question

- **How to treat mixture of decisions and uncertainties in a practical manner without violating "theory", or worse, developing the wrong frame?**

Influence Diagram

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