The Northwest Power and Conservation Council's 5th Power Plan – Overview and Status

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What's the plan supposed to do?

- What the Northwest Power Act says...a REGIONAL conservation and electric power plan
  - Priority to **cost-effective** 1) conservation 2) renewables 3) high efficiency 4) all other
  - General scheme for implementing conservation and developing resources to meet administrator's load, giving due consideration for:
    - Environmental Quality
    - Compatibility with existing power system
    - Protection, mitigation, enhancement of F&W including sufficient flows

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Requirements

- Conservation program & model standards
- R&D recommendations
- Quantifiable environmental costs and benefits
- 20 year demand forecast
- Forecast of power resources and types needed
- Reserve and reliability requirements and cost-effective means of providing

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Also an opportunity...

for the Council to help address important policy issues facing region's power system

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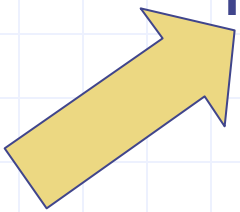
Directions for the 5th power plan

- Address some of the key policy issues from the 2000-2001 experience
  - Making the reality of a mix of regulated retail service and a competitive wholesale market work efficiently, effectively and equitably
- Provide insights in how to better manage risk through resource choices



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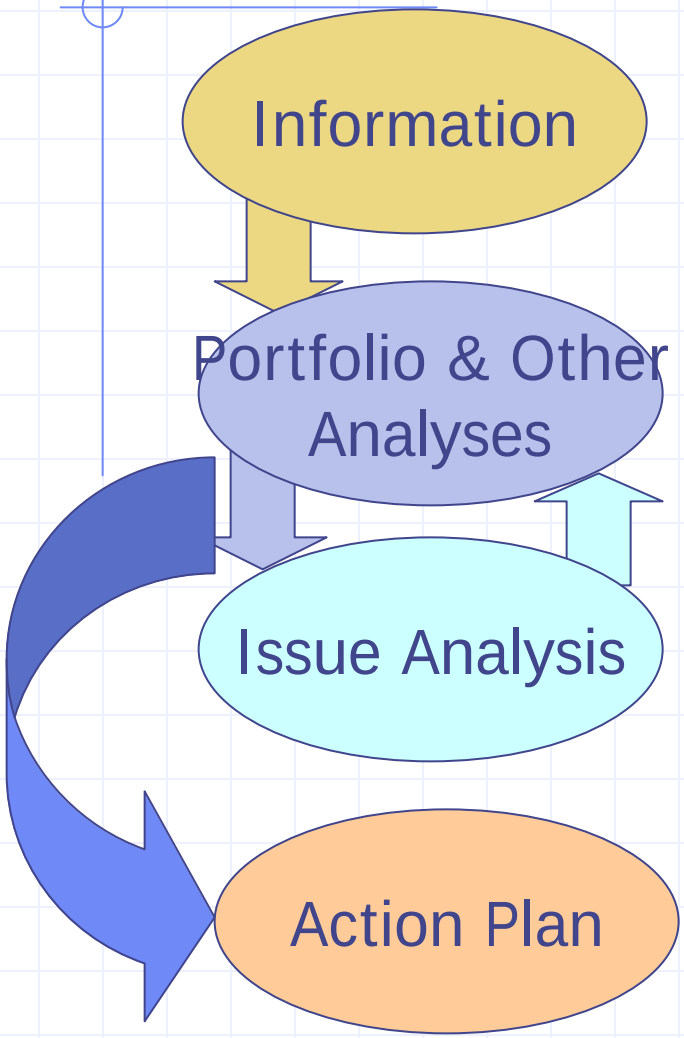
The Basic Elements of a Plan



Loads, resource availability, resource characteristics, fuel prices....

What's the mix of resources over planning horizon that yield lowest cost, acceptable risk, other objectives; Analysis of specific issues

How are key issues best addressed

Who needs to do what, when to make it all happen

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Risk....

- The expectation of loss. It is a function of the probability and the consequences of harm.
- We accept risk in our everyday lives and we routinely pay something to mitigate that risk,e.g. insurance
- Plan must assess risk and costs of mitigating

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Council pioneered treatment of risk

- Early plans focused on:
  - The financial risk associated with capital intensive, long lead time resources arising from uncertainty regarding future demand
  - Financial risk associated with uncertain future fuel prices

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Now: Uncertainty AND Volatility

- Uncertainty --
  - About future load trends, fuel price trends, market price trends
  - About policy and regulation, e.g., CO2 regulation
  - Technology
- Variability/volatility – on top of overall trend
  - Hydro, Fuel prices, Market prices, Loads
- Correlations among the them

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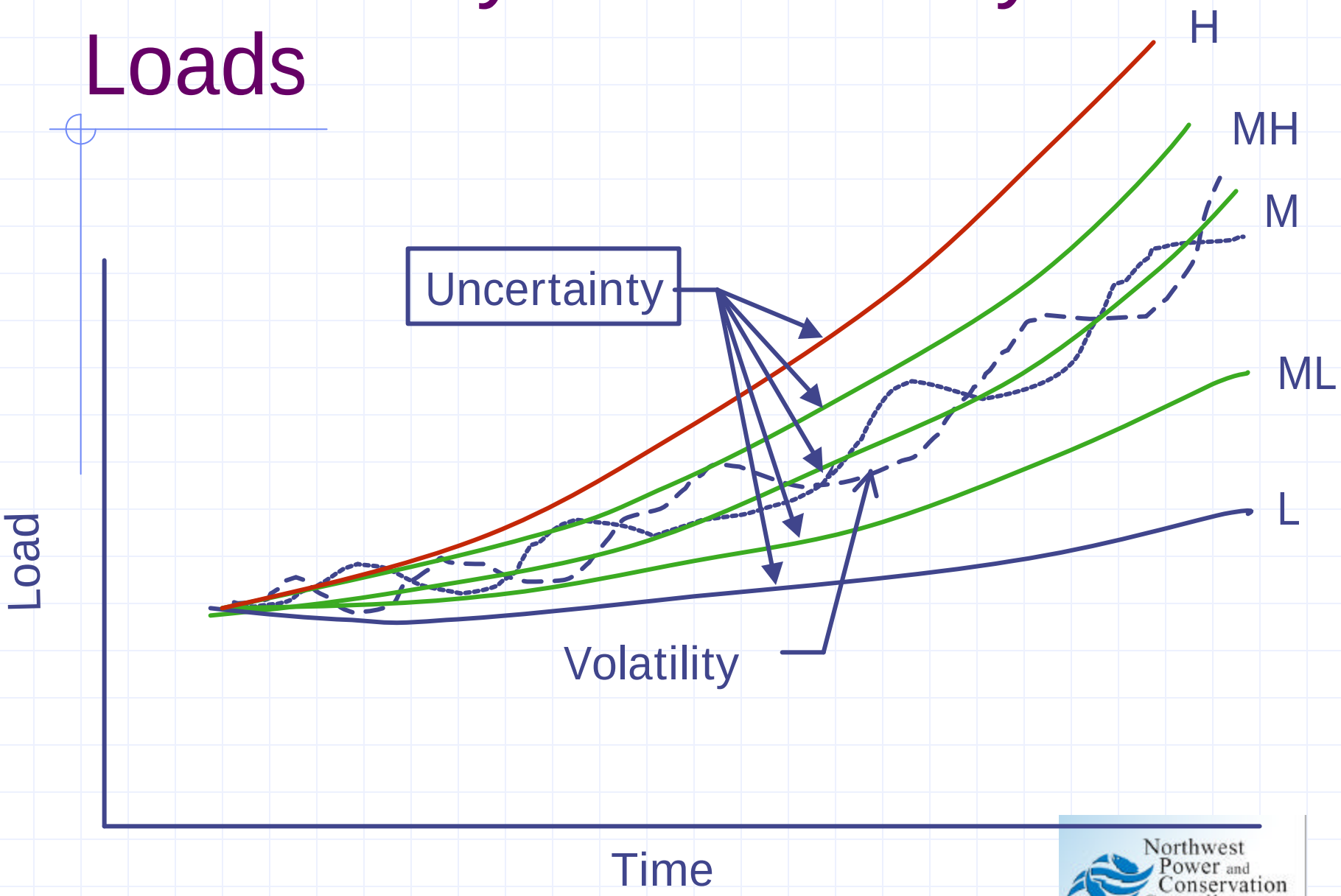
Uncertainty and Volatility -- Loads



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Different resource have different characteristics, costs and risks

- CCCT – low capital cost, short lead time, operating cost largely fuel, moderate carbon emissions
  - Fuel risk, moderate risk of future carbon taxes
- Coal – low operating cost, high capital costs, long lead time and high carbon emissions
  - Risk that need doesn't occur as expected; risk of carbon taxes in future
- Wind – high capital cost, short lead time, low operating cost, intermittent output
  - Some capital risk
- Reliance on the market – short lead time, no up-front capital cost
  - High market risk

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Portfolio

- In stock market, you probably shouldn't have invested everything in dot-coms
- In the power system, you probably shouldn't rely on only one resource
- You need a mix with complementary characteristics, risks

Portfolio

- A MW CC CT
- B MW Wind
- C MW Coal
- D MW Conservation
- E MW Market

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Objectives

- Identify lowest cost/acceptable risk resource portfolios
  - Regional perspective
  - Sensitivity to base resource profile, risk tolerance
  - Provide a risk analysis tool that is scalable to individual utility situation
- Identify barriers to implementation and means of overcoming

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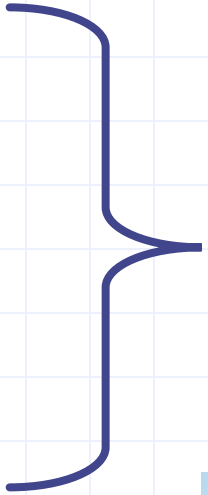
How do we evaluate a resource portfolio?

- If we knew what the future held – no risk
- Assess costs and risks by testing against hundreds of possible futures – weighted by estimated likelihood
  - Loads
  - Hydro conditions
  - Fuel Prices
  - Market prices
  - Policy options, e.g. carbon tax



Futures

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Performance Metrics

- Expected Cost
- Risk
- Reliability
- Emissions, e.g. carbon

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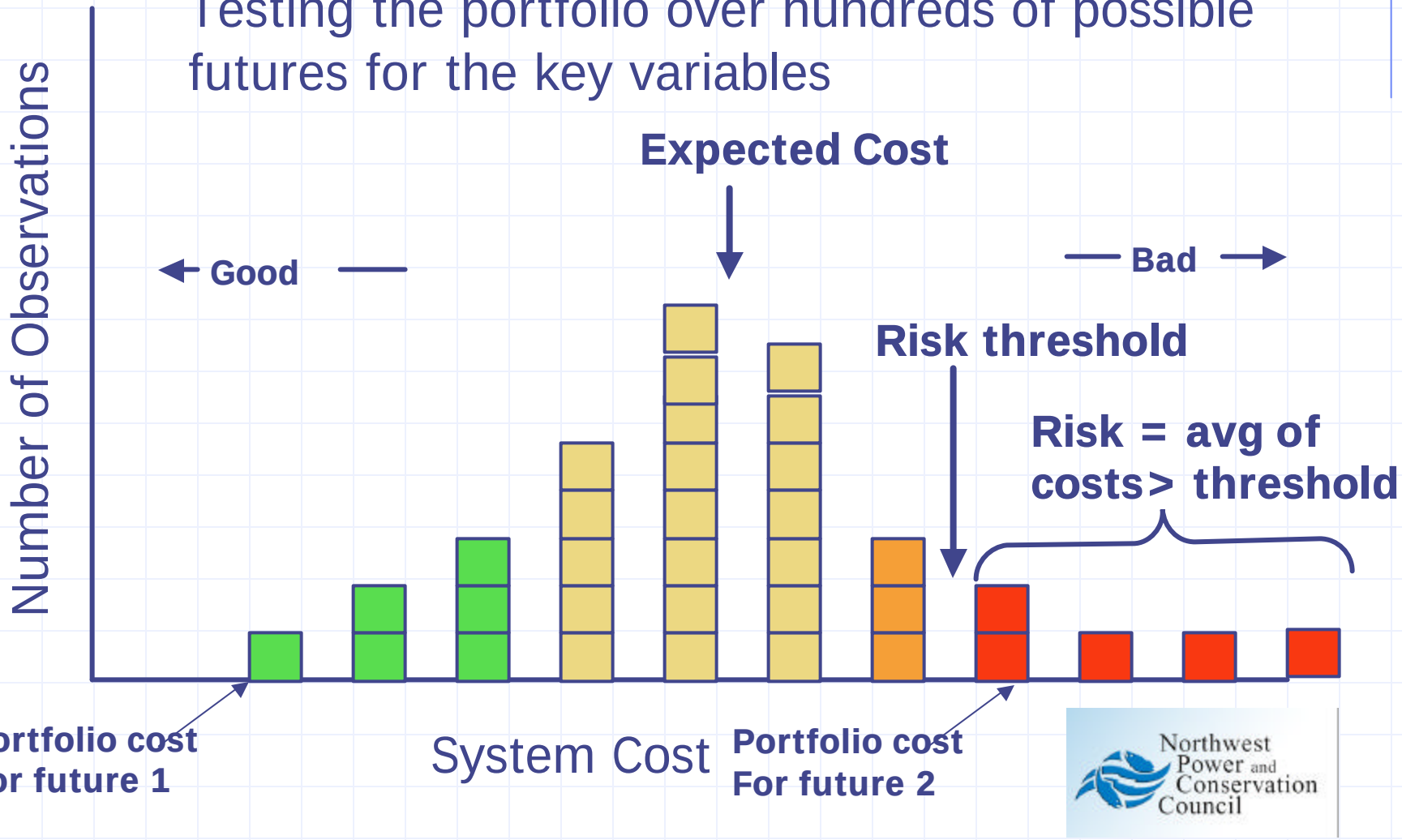
Evaluating the Portfolio

Testing the portfolio over hundreds of possible futures for the key variables



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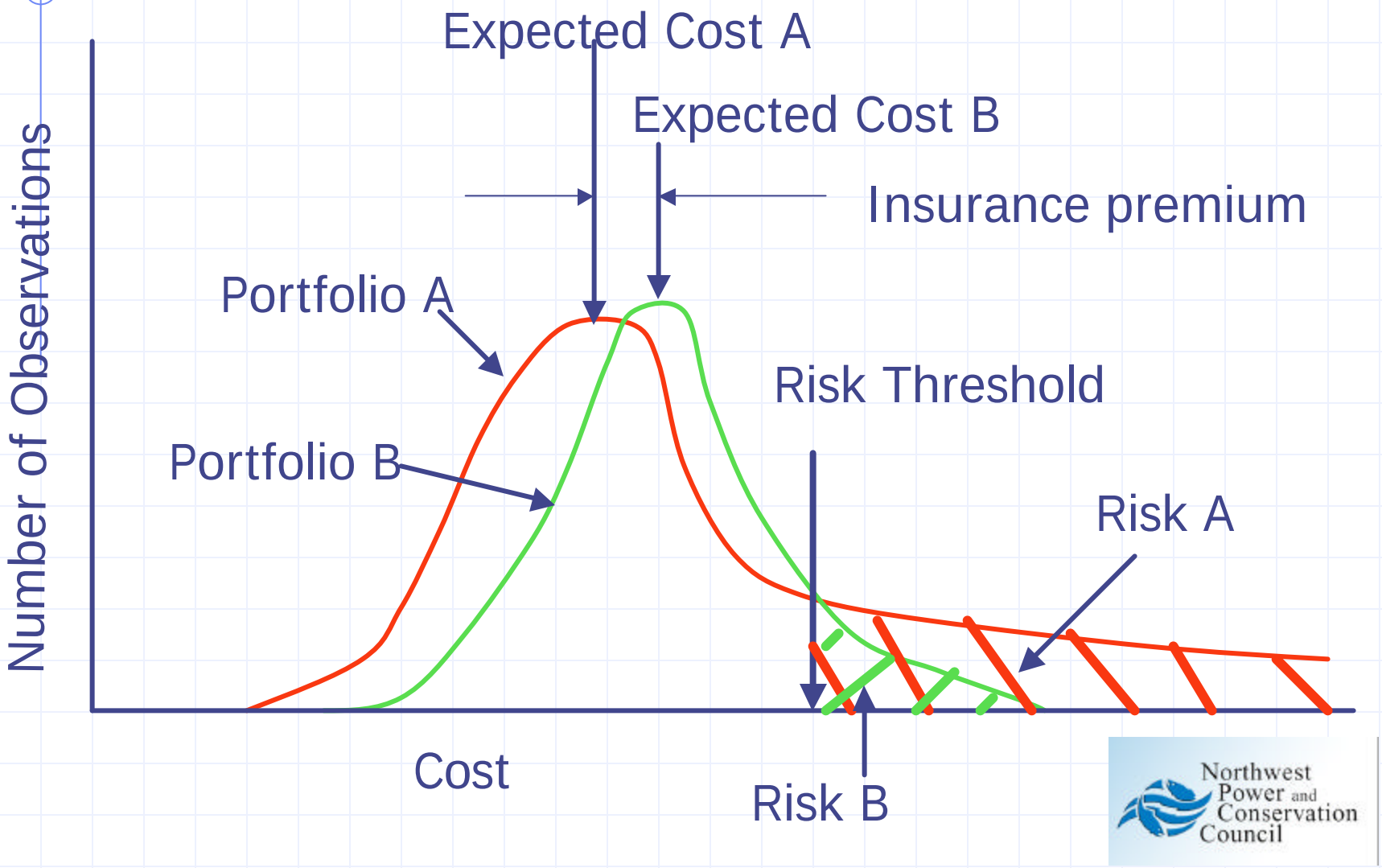
Comparing Portfolios



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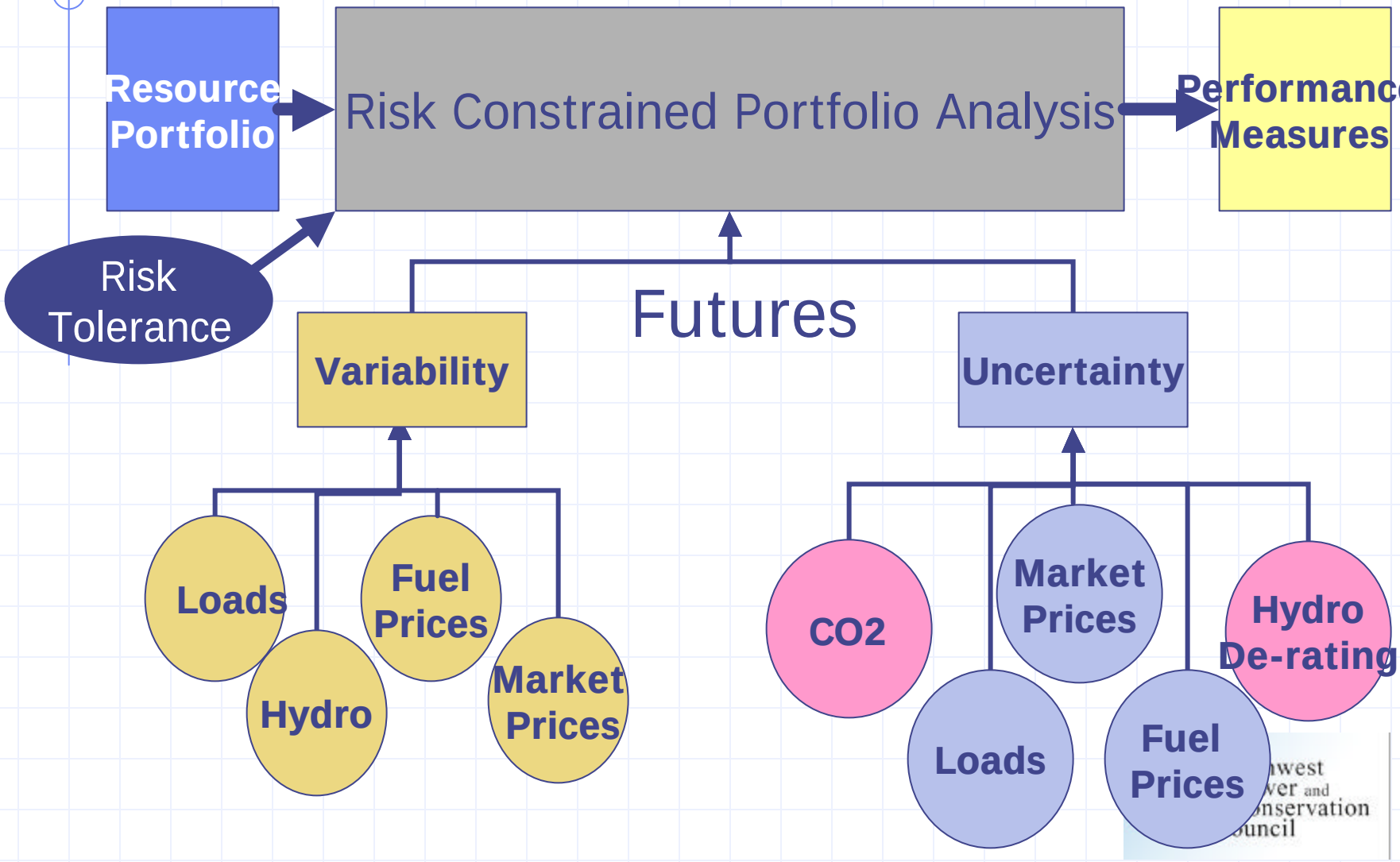
The Model -- Olivia



Where are we in the process?

- Basic data
  - Draft Fuel Price Forecast ✓
  - Draft Demand forecast ✓
  - Issue Paper on DSI Loads ✓
  - Conservation supply curve
    - Residential and Ag ✓
    - Commercial – by Sept
    - Industrial – End of Sept
  - Generating resources
    - Data complete but not documented

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Where in the process? (2)

- Portfolio model (Olivia)
  - Structure ✓
  - Underlying data correlations ✓
  - Calibrations ✓
  - Testing portfolios – Sept - Oct

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Issue Analysis

- Incentives for resource adequacy & Information requirements for resource adequacy – partial
- Demand Response
  - Issue paper ✓
  - Initial estimates of value ✓
  - Analysis in Portfolio model

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Issue Analysis (2)

- Strategies for investment in efficiency
  - Portfolio analysis Sept-Oct
- Value of diversity
  - Portfolio analysis Sept-Oct
- Transmission
  - Draft issue paper discussed by P4
  - Decision - Oct

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Issue Analysis (3)

- Fish and Power
  - Initial assessment of power impacts of spill combined with survival analysis
  - Demonstration that adequate power supply satisfies fish and wildlife constraints developed and being tested
- Climate change
  - Initial estimate of impact on hydro power done; analysis of full range of water years yet to do
  - Risks associated with carbon control measures – portfolio analysis

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Issue Analysis (4)

- Future role of Bonneville
  - Reinitiating regional dialog
  - Council recommendations to be incorporated in Plan

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Action plan

- Will come out of the Portfolio and Issue Analysis in Nov-Dec

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What you should expect

- Fairly intensive engagement with plan issues and analysis in the Oct – Jan period
- Draft plan to you next winter
- Public review late winter/spring
- Final Spring/early Summer ‘04

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