Northwest Power and Conservation Council

Monday, January 08, 2007

MEMORANDUM

TO: Council Power Committee

FROM: Michael Schilmoeller

SUBJECT: Status of Olivia

Olivia is a program the Council uses to assess risk in power system operations, such as risks associated with market prices for electricity or natural gas or the future risk of a carbon tax. The Council's power planning staff used Olivia to produce the first version -- the first of many iterations -- of the regional portfolio model used to develop the Fifth Power Plan. This presentation will discuss the status of our current work with Olivia and our current plans for developing this tool, both for Council analysis and for regional utilities, regulators, and customers. No Committee action or decision is requested.

From the outset, we recognized that a tool that provided the Council with sufficient flexibility to serve the Council's modeling requirements also would be useful to regional utilities. It would permit utilities to create their own risk models. In the Power Plan, we speculated that providing such a tool to regional utilities would ensure greater regional reliability. Numerous utilities, consultants, and regulatory agencies have expressed interest in Olivia. We hoped to provide the model to them by now, but for reasons I will discuss in my presentation, progress has been slower than anticipated.

There is progress, however. To date, we have developed a new interface, which puts the model within the reach of the non-expert; restructured the data and editor; and improved error handling in the program. We also are evaluating alternatives to an add-on piece of software that we use to perform simulations of the power system. Next we will incorporate what we learned about doing risk modeling in preparing the Fifth Plan. Such lessons include, for example, modeling the various aspects of conservation, demand response, green tags, tax credits, emission taxes, and transmission; incorporating faster workbook functions; creating workbooks that are easier to understand and navigate; and including workbook utilities in the model to enable users to produce standard reports, such as "spinner graphs" and graphs of the "efficient frontier." The efficient frontier is comprised of those resource plans that are least cost for each level of risk.

The 2007 Power Division Work Plan calls for completing the interface evaluation this quarter, completing the additional necessary coding over the next two quarters, and providing a class on Olivia to regional utilities by the fourth quarter of this year. Due to uncertainties in the model development, however, the schedule should be considered tentative.

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Status of Olivia

Council Power Committee Meeting

January 16, 2007

Overview

- What exactly … is Olivia?
- What is its status?
- When will it be ready?

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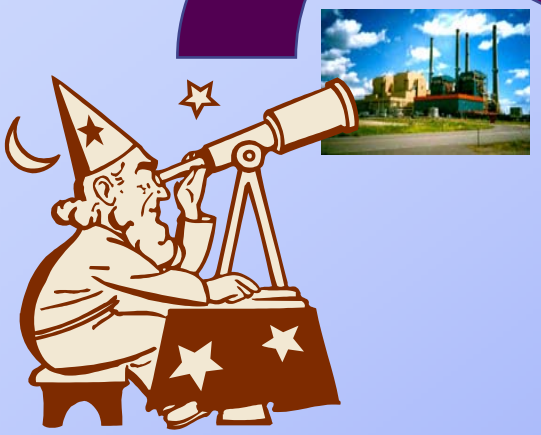
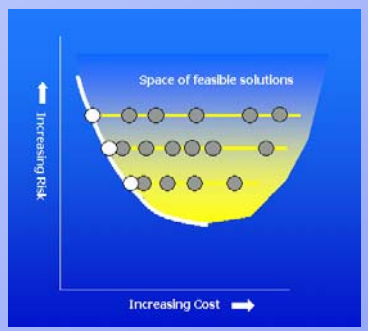
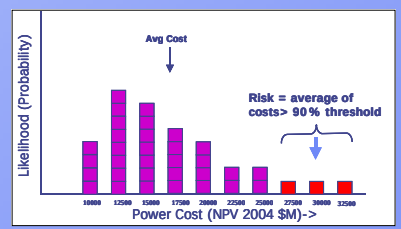
Background on the Modeling Process



The portfolio model





What is Olivia?

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Requirements

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Problem

Excel models

=

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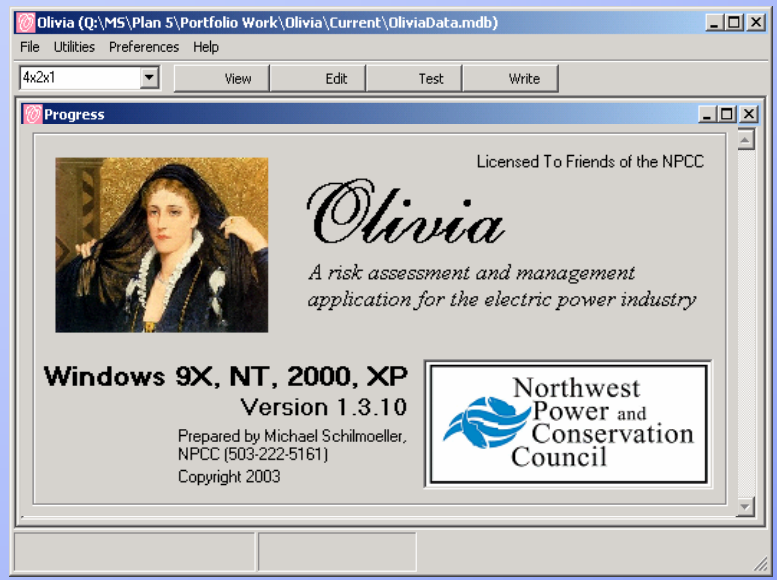
Solution: Olivia



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Importance of Olivia

- Primary tool to assist Council in the next Plan
- Helping Utilities with their IRPs

SCL	PNGC	PGE
EWEB	BPA	Northwestern Energy
PacifiCorp	PSE	Energy Trust of Oregon

- Assisting others in doing risk analysis

Oregon PUC staff	Washington UTC staff
California PUC staff	Regulatory Assistance Project
California Energy Commission staff	Dept of Industry, Australia
EPRI	U of California
EES Consulting (for CPUC)	Charles J. Black Energy Economics
Quantum Consulting	Bench Mark Heuristics
Summit Blue	Pacific Security Capital
Carl Linvill, Aspen Environmental Group	APX

Status of Olivia

- ✓ Interface design
- ✓ Restructured the data editor and database
- ✓ Improved error handling
- Alternative source of Excel add-ins
- Interface testing
- Some improved capability

The Nature of Research

- Demanding
  - 48,000 lines of compiled VB code
  - Integrates four technologies
    - Microsoft® Excel Workbooks
    - Monte Carlo simulation (Crystal Ball®, @Risk)
    - Distributed computation (CBTurbo™, RiskAccelerator®)
    - Stochastic, non-linear optimization (OptQuest®, Evolver™)

The Nature of Research

- Unpredictable
  - Unprecedented application
  - Third-party software behavior out of our control
  - Task list has been a poor predictor of time requirements.
  - Some of the most time-consuming tasks were never anticipated.

When will it be ready?

1st Quarter 2007	2nd Quarter 2007	3rd Quarter 2007	4th Quarter 2007
Finish evaluation of Palisades products Complete data editor interface and Council staff beta test	Revise writing routines to incorporate changes identified in task list	Evaluate and possibly implement transmission flow model. Prepare class materials and help files	Utility classes

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End

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