

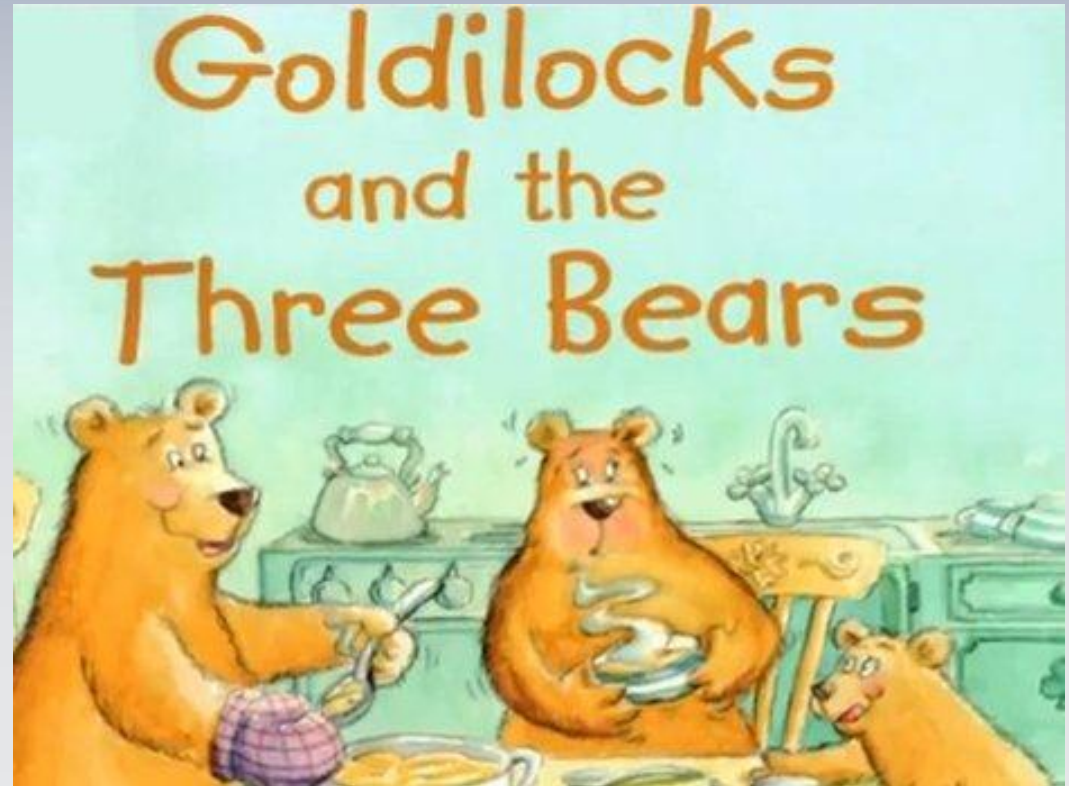
Realizing the Reliability and Resource Adequacy Benefits of Energy Efficiency in Power Planning

Tom Eckman
Manager, Conservation Resources
Northwest Power and Conservation Council

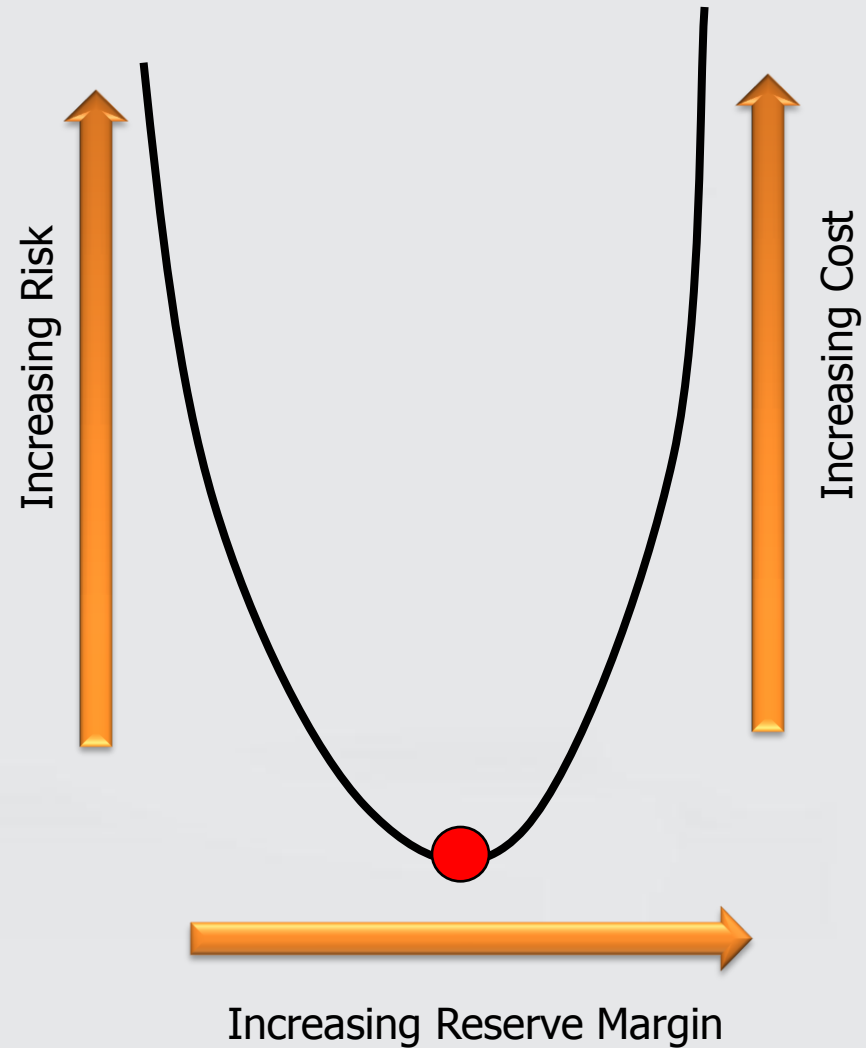
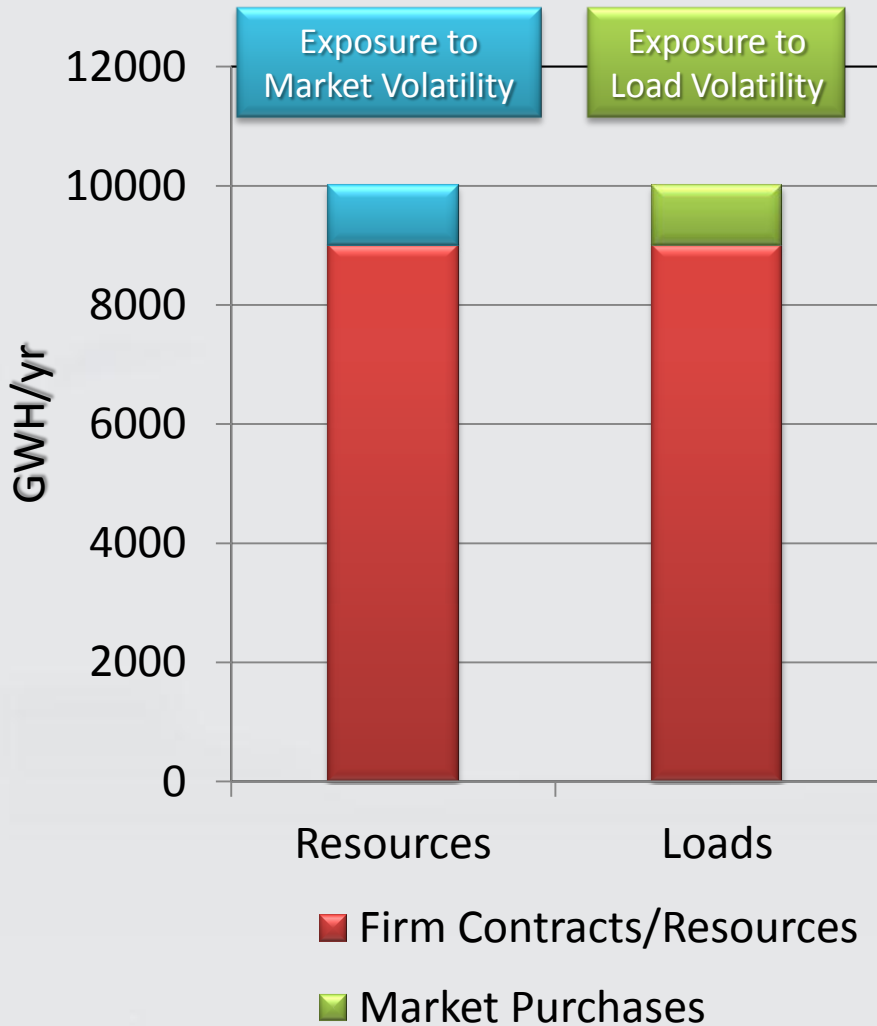
IEA-NRCan-CEA-CGA Roundtable on Multiple Benefits of Energy Efficiency for
Energy Providers and Consumers,
October 15-16 , 2013
Ottawa, Canada

The Resource Planner's Problem

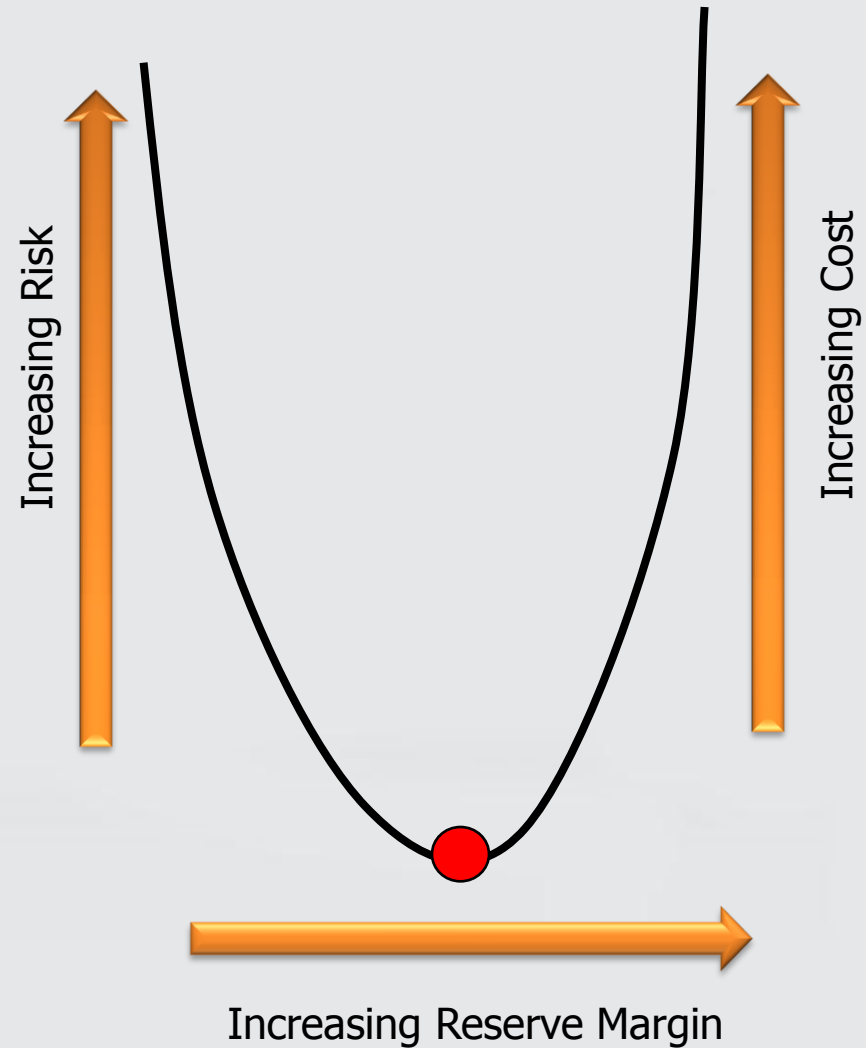
- Don't have too many resources
- Don't have too few resources
- Have "just the right amount" of resources



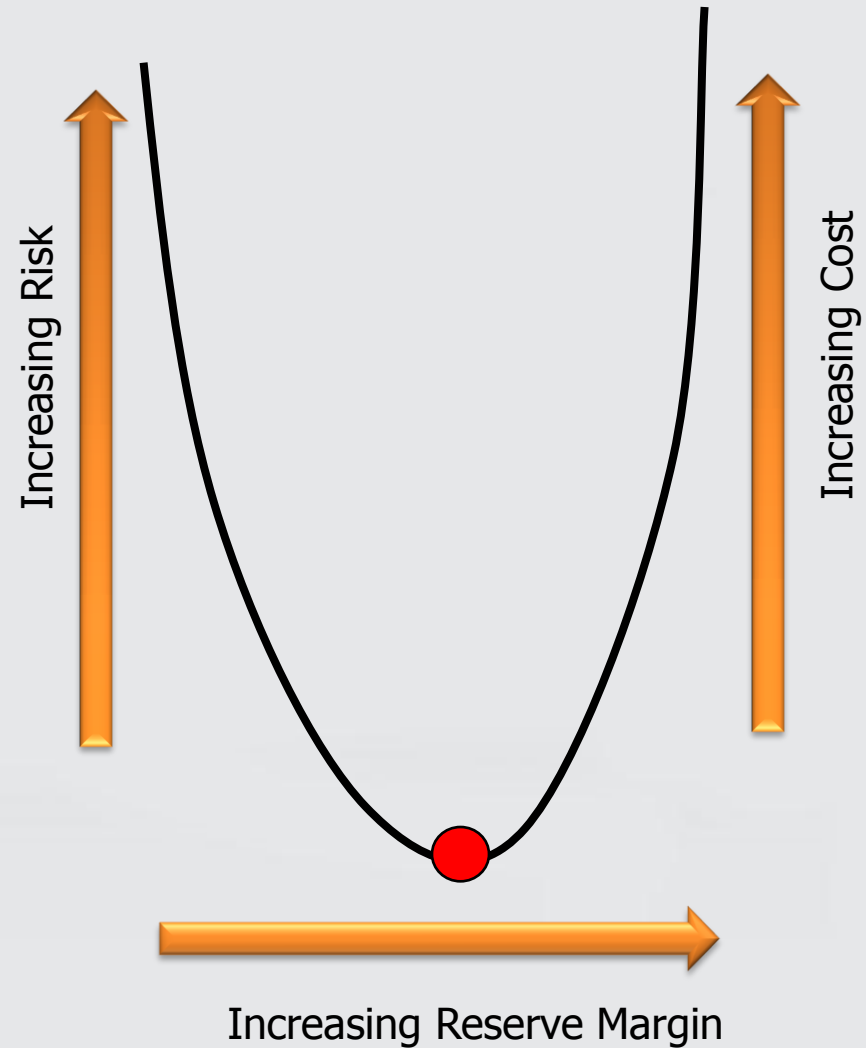
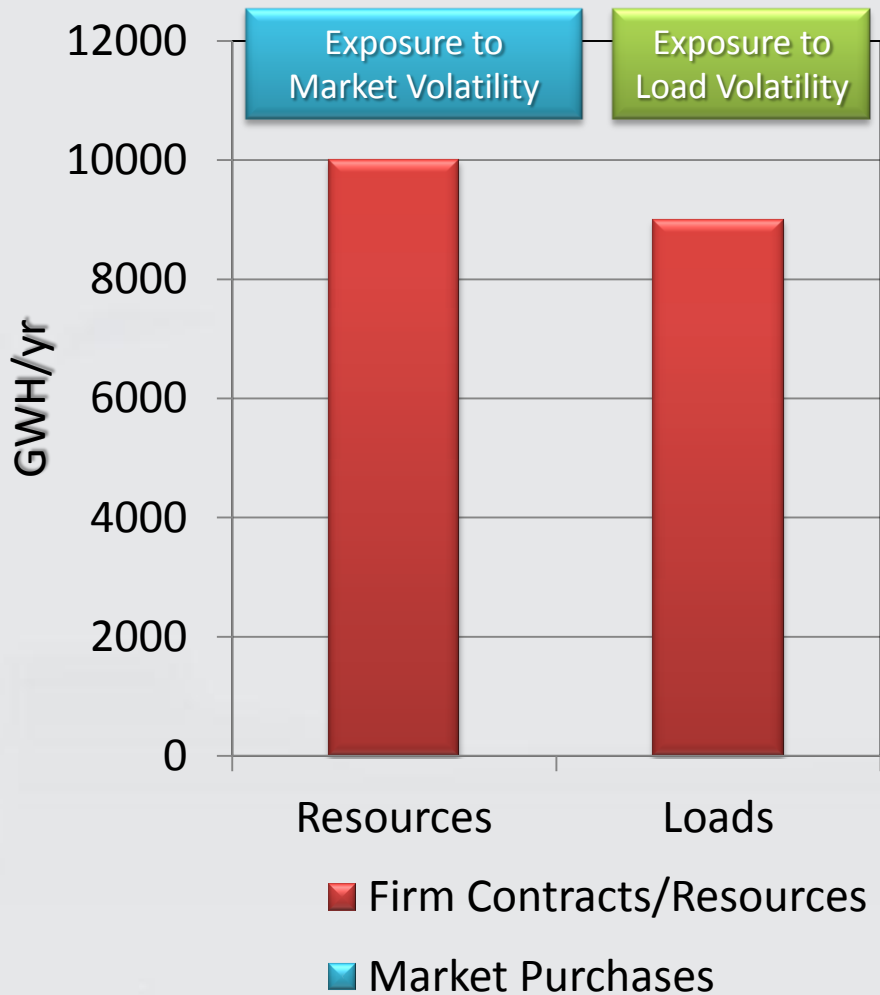
As A Plan's Resource Mix Changes So Does It's Cost and Risk



Decreasing Firm Contracts/Resources Increases Market Risk...



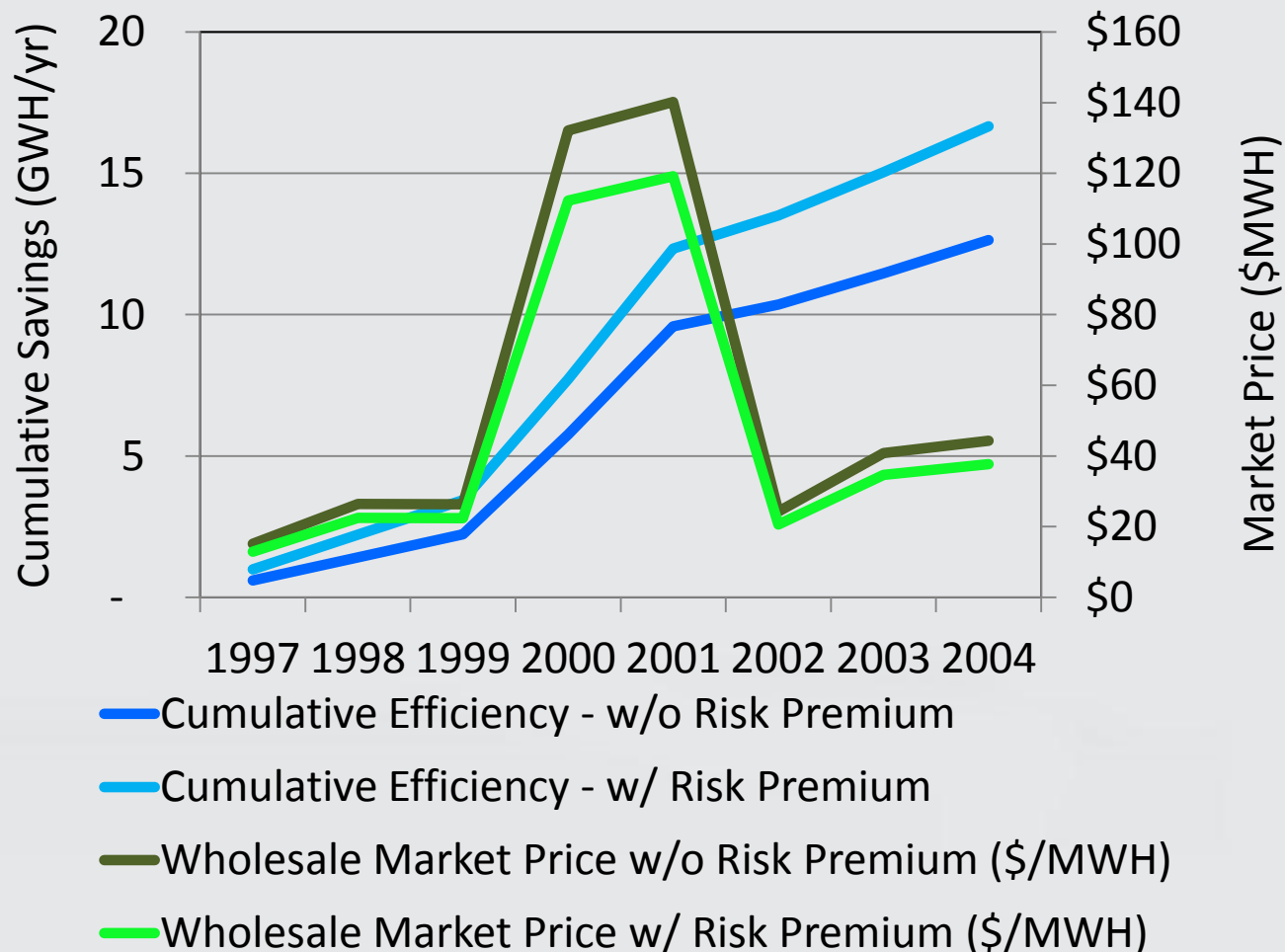
Increasing Firm Contracts/Resources Increases Load Volatility Risk



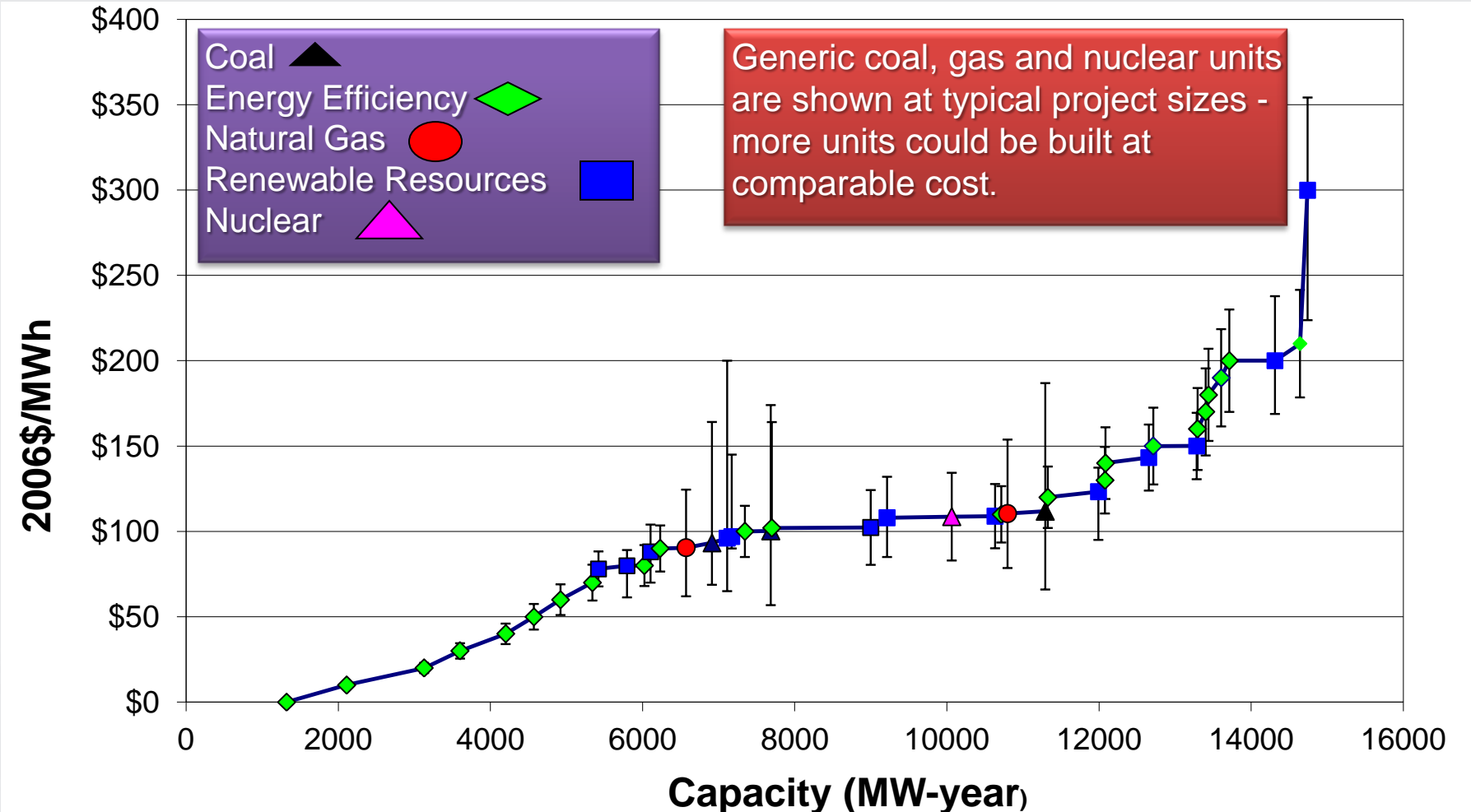
Energy Efficiency Is an Inexpensive Source of Reserve Margin

Which Reduces Market Exposure Risk & May Moderate Wholesale Price Swings

- Efficiency's value stems from "being there" when a shortage hits (high prices)
- Higher levels of efficiency (lower demands) provide price moderation



Why Is EE A Lower Risk Resource Option?

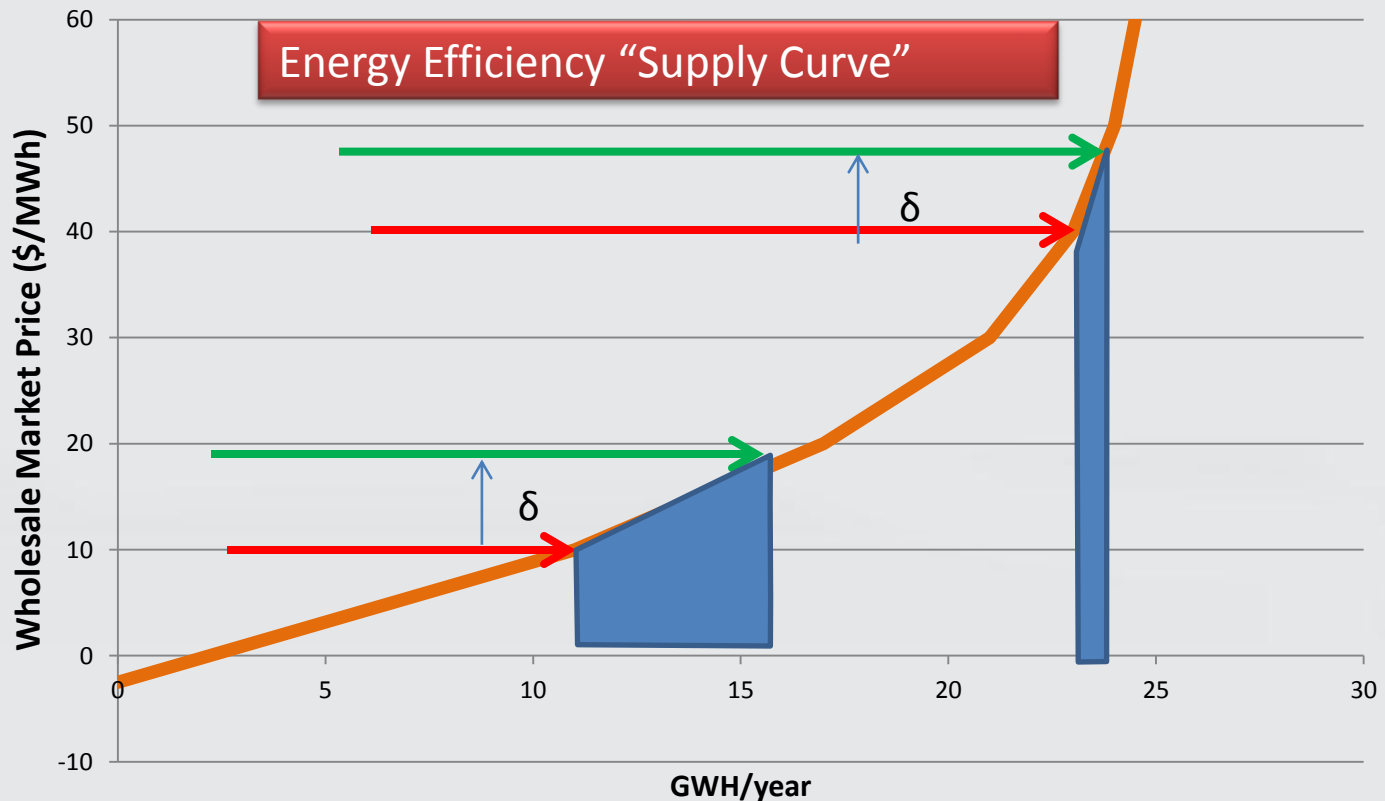


Reason 1: EE is the Lowest Cost and Lowest Cost Risk Resource

Why Is EE A Lower Cost Way of Providing Reserves?

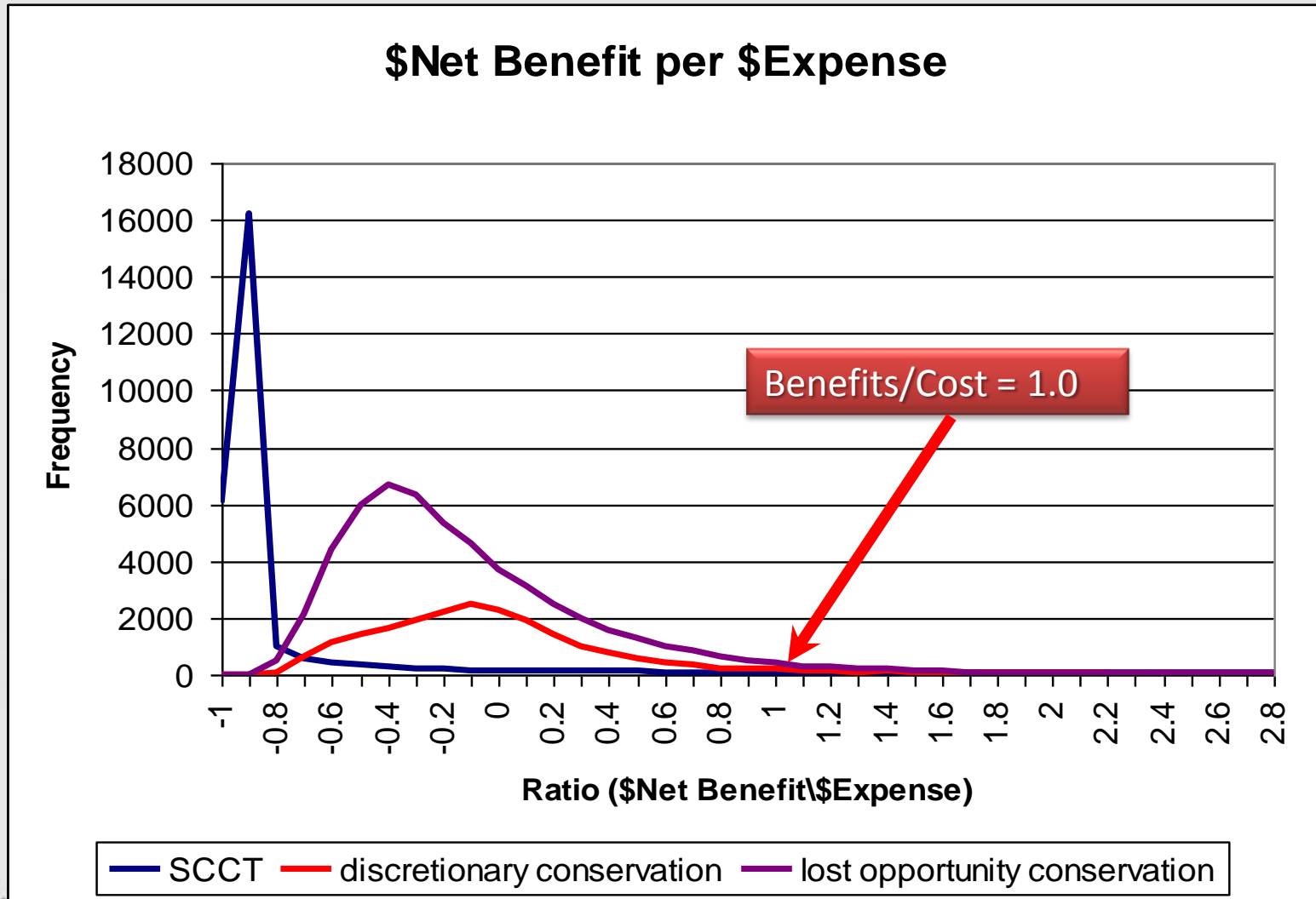
Reason 2: EE Has A Non-Linear Supply Curve

- EE Supply Curve Exhibits “Diminishing Returns”
- Acquiring EE At A Premium over Short Term Market Prices
 - Builds more EE when market prices are low
 - Does not overbuild EE when market prices are high



Why Is EE A Lower Cost Way of Providing Reserves?

Reason 3: EE Has Value Even In Low Market Price Conditions



A Bit More Explanation . . .

SCCT and Energy Efficiency Resources Serving As Reserves:

- Operate under circumstances of relatively lower electricity market prices and volatility
 - This is a direct consequence of having the additional resources that give us protection against uncertainty (i.e., “we are *never* short”)
- *Do not pay for themselves!*
 - If we want to reduce risk, we have to pay the insurance premium of extra capacity that may not be used frequently enough to cover its costs.

Take Home

- The quality of reserves provided by EE is superior to conventional resources, because:
 - EE has value under low market prices
 - EE is not subject to forced outages
 - EE is not subject to fuel price risk
 - EE is not subject to carbon control risk
- Implication - For low-risk plans, the cost-effectiveness limit for energy efficiency resources is higher than long-term view of the average wholesale market price for electricity

Setting A Cost-Effectiveness Limit Above Short-Term Market Prices, Acquires More Efficiency (Increases Reserves) and Reduces Both System Cost and Risk

