

# Preliminary Results of PG&E's Energy Efficiency Risk Assessment

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## Background

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**The California Public Utility Commission (CPUC) adopted uncertainty analysis, using the Crystal Ball software, for allocating resources for evaluating energy efficiency programs**



## CPUC's Use of Crystal Ball

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- CPUC used it to assist in allocating evaluation dollars
- Varied three key inputs to determine the greatest sources of uncertainty:
  - Net-to-gross ratios
  - Unit energy savings (kWh, kW, therms)
  - Reported installation counts
- Used results to calculate
  - Relative uncertainty
  - Utility forecasted savings to model forecast
  - Program level uncertainty

## The 3 Questions Management Asks

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	QUESTIONS
1	What is the <b>risk</b> that PG&E will not reach its portfolio kWh goal?
2	What are the (quantified) <b>key drivers</b> of this risk?
3	What (prioritized) <b>actions</b> should we take to help ensure meeting the goal?

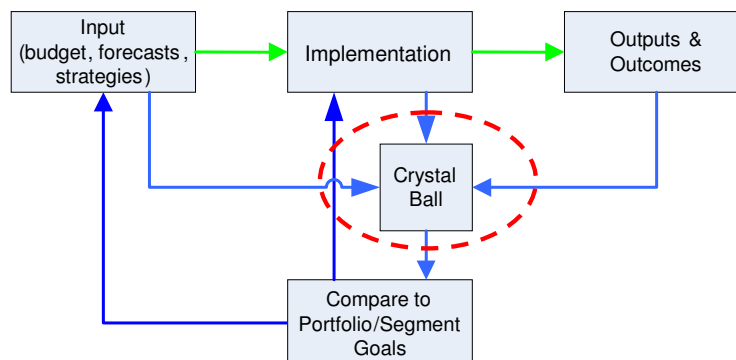
## PG&E's Crystal Ball Risk Management Assessment

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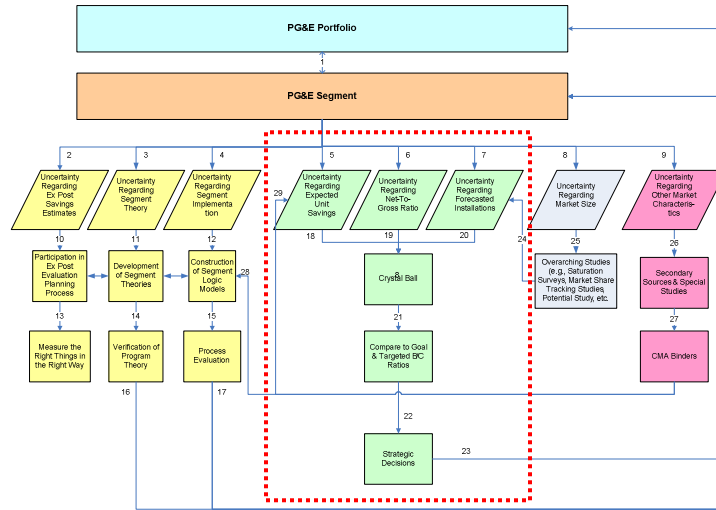
1. PG&E plans to use this uncertainty analysis as a way to manage risks for PG&E's energy efficiency (EE) portfolio
2. PG&E is developing a data-driven approach to identify, quantify, and manage the risks associated with reaching EE goals

## PG&E's Basic Model for Portfolio Optimization

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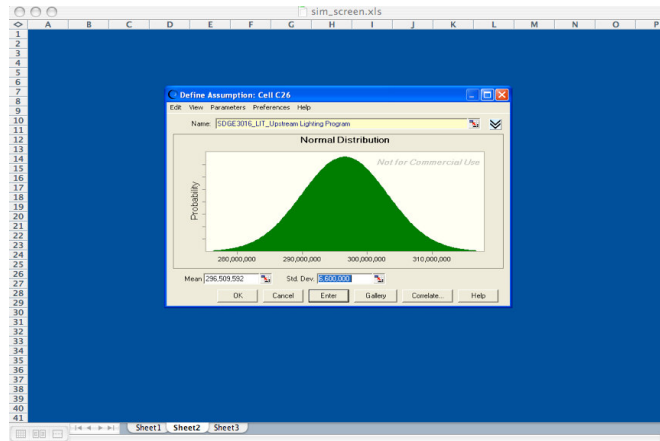
## Focus of PG&E's Portfolio Risk Mitigation Model



## Example of Calculating Forecasted kWh Savings

<b>Net kWh Savings /year</b>	=	<b>Installed Units</b>	X	<b>Gross kWh/Unit</b>	X	<b>NTG</b>
560 M	=	10 M		70		0.8
Sources of Data	"Likely Value"	Past Program Performance & Expert Judgment		DEER or DEER-Based		EE Policy Manual

## E3 + Monte Carlo (Crystal Ball) = Risk Tool

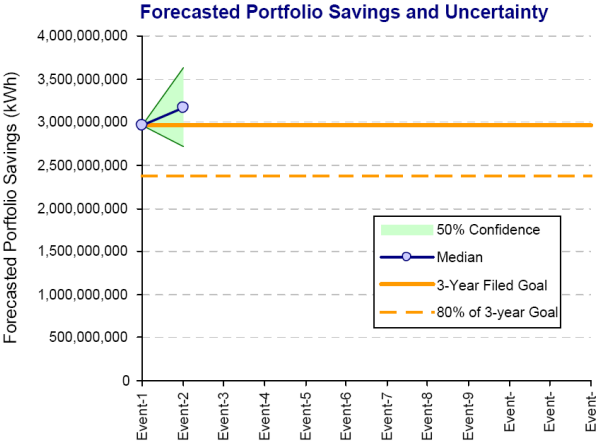


## Example of Calculating Forecasted kWh Savings with Distribution

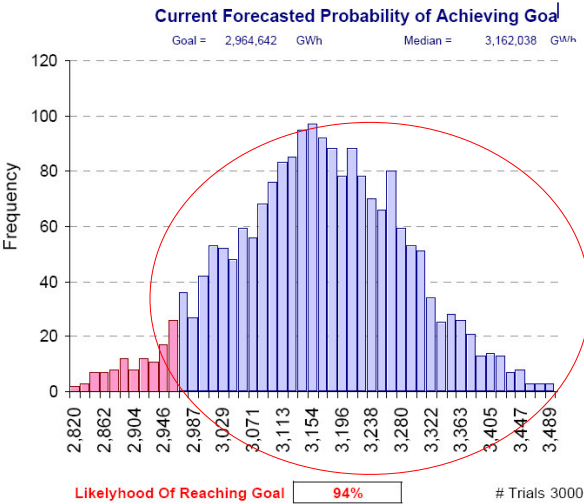
Net kWh Savings /year	=	Installed Units	X	Gross kWh/Unit	X	NTG
560 M	=	10 M		70		0.8
SOURCES OF DATA	"Likely Value"	Past Program Performance & Expert Judgment		DEER or DEER-Based		EE Policy Manual
	Shape & Width of Distribution	Quarterly EE Filings + MDSS + Original Filing		Expert Judgment & Past Studies		Expert Judgment & Past Studies



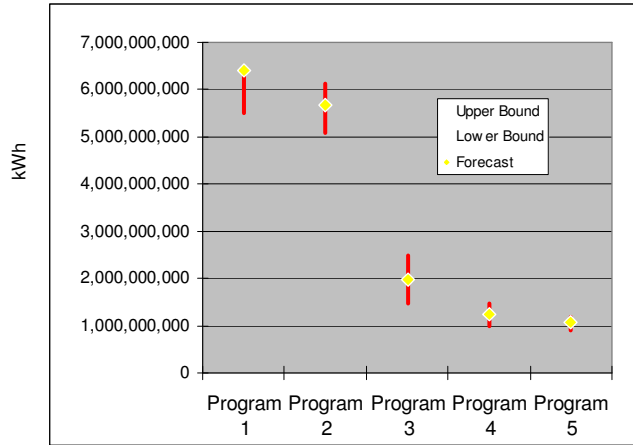
# Illustration of Energy Efficiency Portfolio kWh Savings and Uncertainty



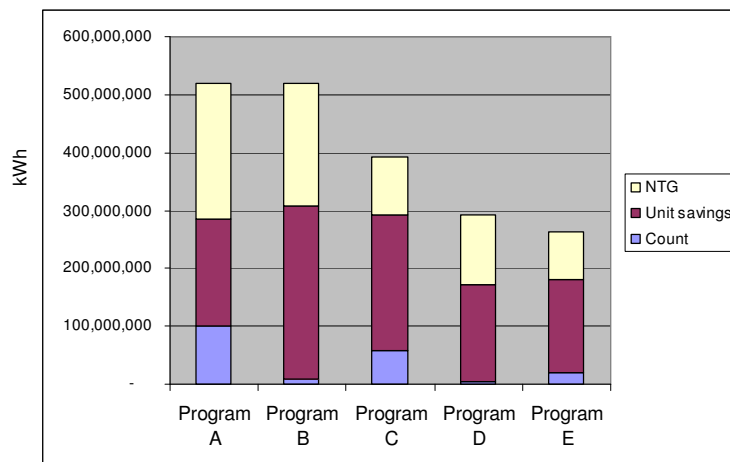
# Illustration of Portfolio Uncertainty Distribution



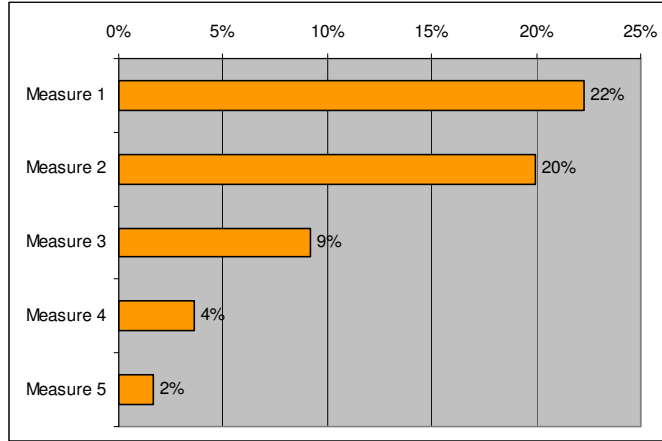
## Illustration of the Top 5 Program Level Forecasted kWh Savings and Ranges



## Illustration of the Top 5 Program Level kWh Savings Uncertainties



## Illustration of the Top 5 Measure Group Level Drivers of Risk for kWh Savings



## The Bottom Line

After identified and quantified the risks within the portfolio, now management can answer four key questions for managing these risks.

	QUESTIONS
1	What is the <b>risk</b> that PG&E will not reach its portfolio kWh goal?
2	What are the (quantified) <b>key drivers</b> of this risk?
3	What (prioritized) <b>actions</b> should we take to help ensure meeting the goal?

**Thank You!**

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**Q & A**