

Initial Big Squeeze Analysis (2011)

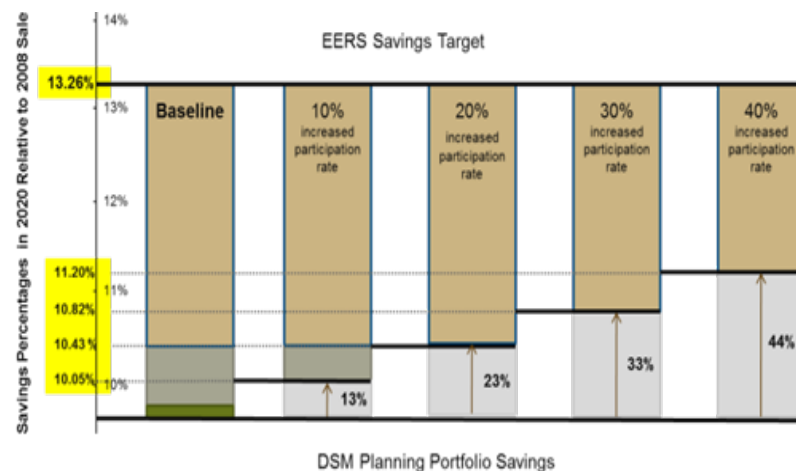


- Objective: To assess the “savings gap” between state-mandated saving targets, i.e. EERS, and current DSM portfolios, and examine options to fill it
- Methodology: Modeled a typical DSM portfolio against a typical EERS target
 1. ICF’s EEPM model used as the “engine”
 2. Built a generic DSM portfolio based on ICF client experience
 3. Used ACEEE data to calculate a typical EERS target
 4. Established a baseline scenario and “savings gap”
 5. Re-estimated the baseline and gap with federal lighting and appliance standards
 6. Developed several “gap-filler” scenarios

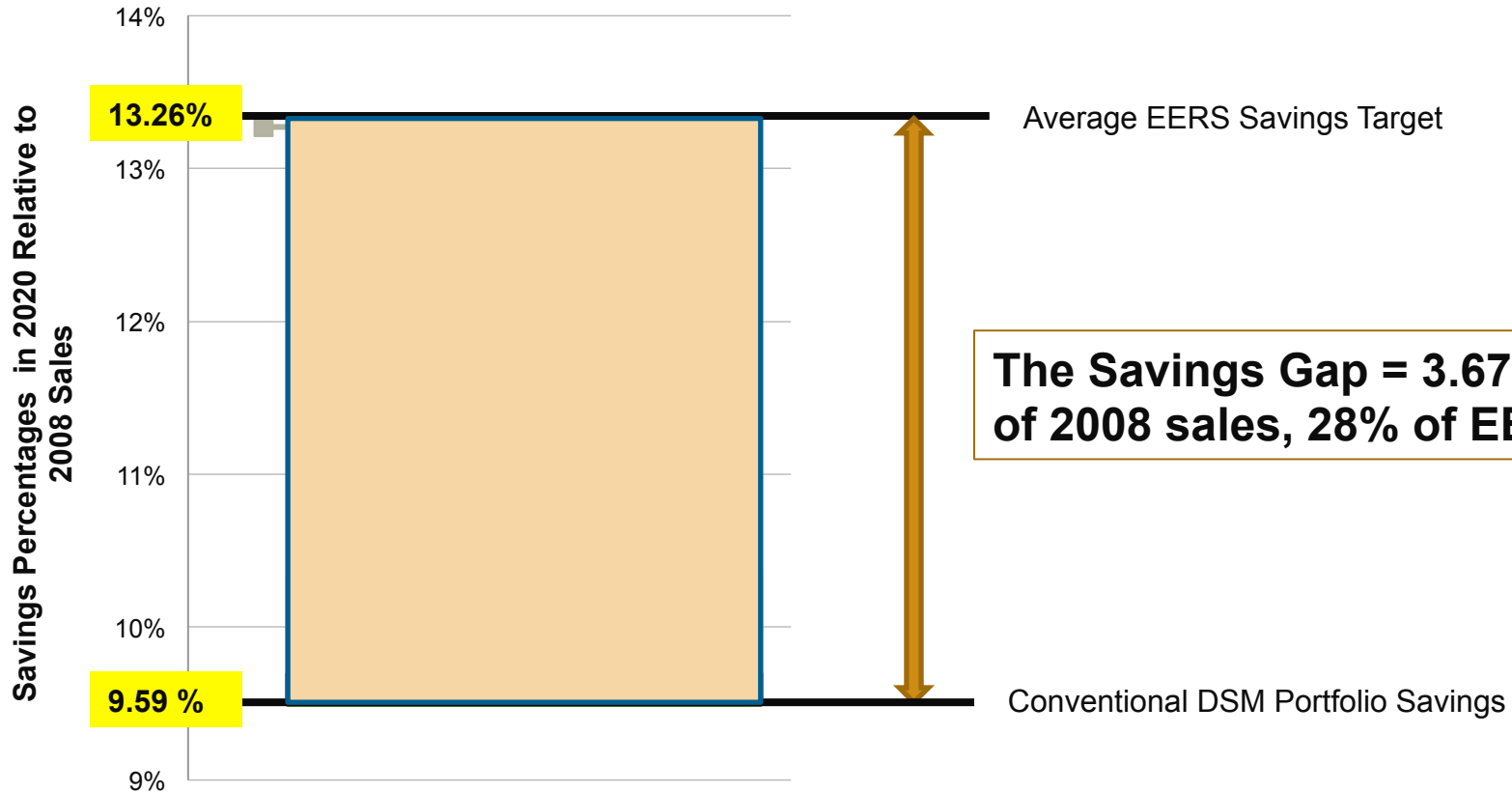


- **“Big Squeeze II”:**

1. Used the same DSM portfolio as the baseline
2. Thorough review of existing literature and recent evaluation data
3. Used a more robust statistical technique – Monte Carlo simulation through @Risk software
4. Quantified how various feedback types can fill the savings gap estimated previously



The Savings Gap



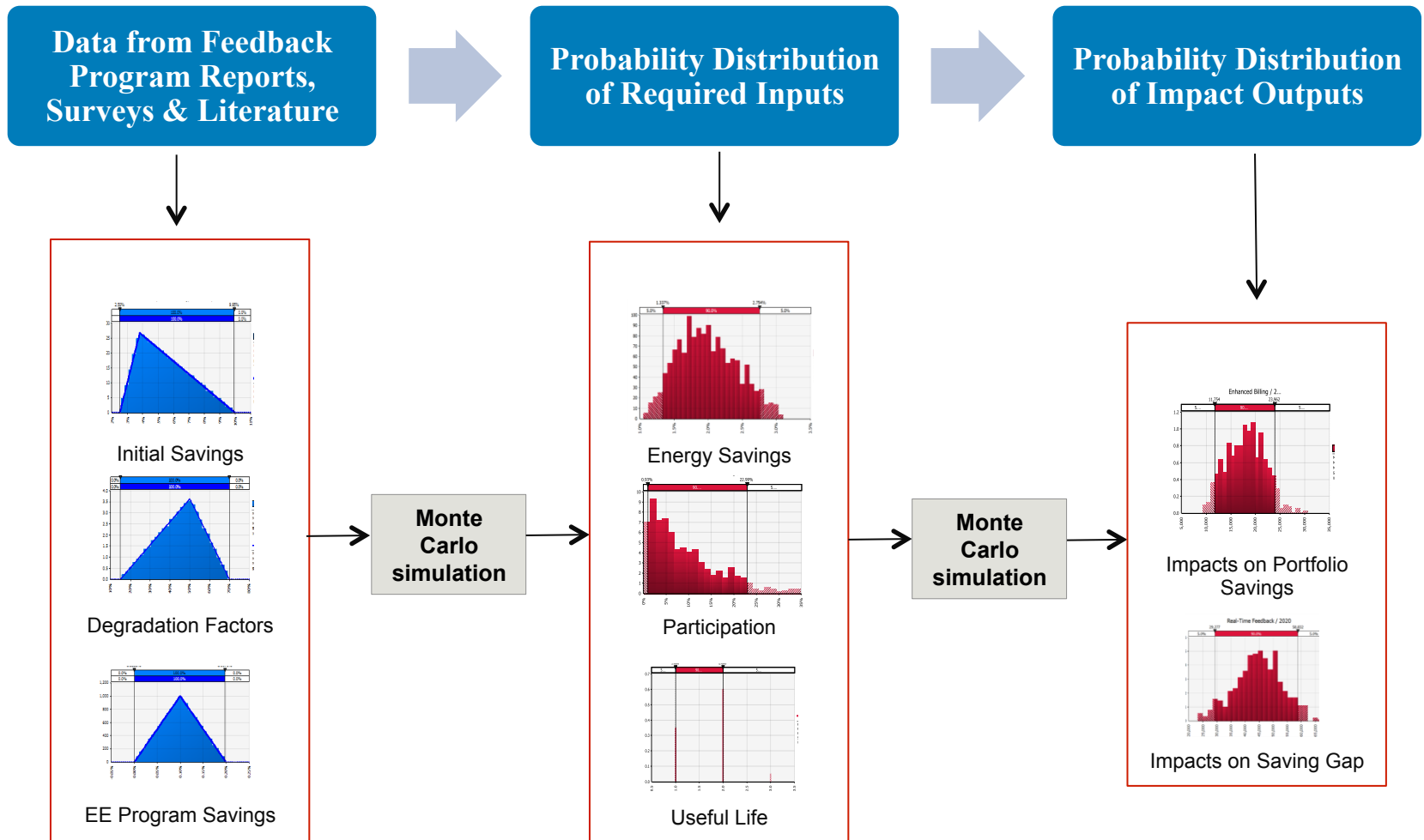
- ❑ By 2020, conventional DSM would likely fall 28% short of an average EERS target

“Big Squeeze II”: Overview & Objectives

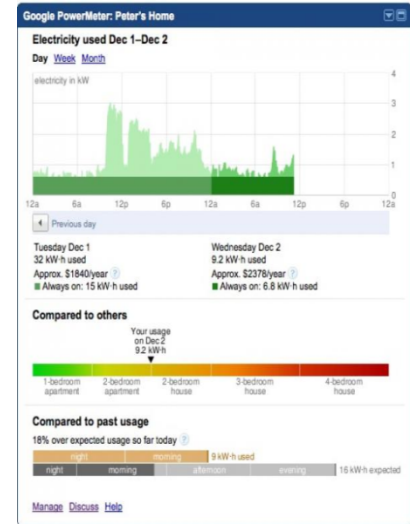
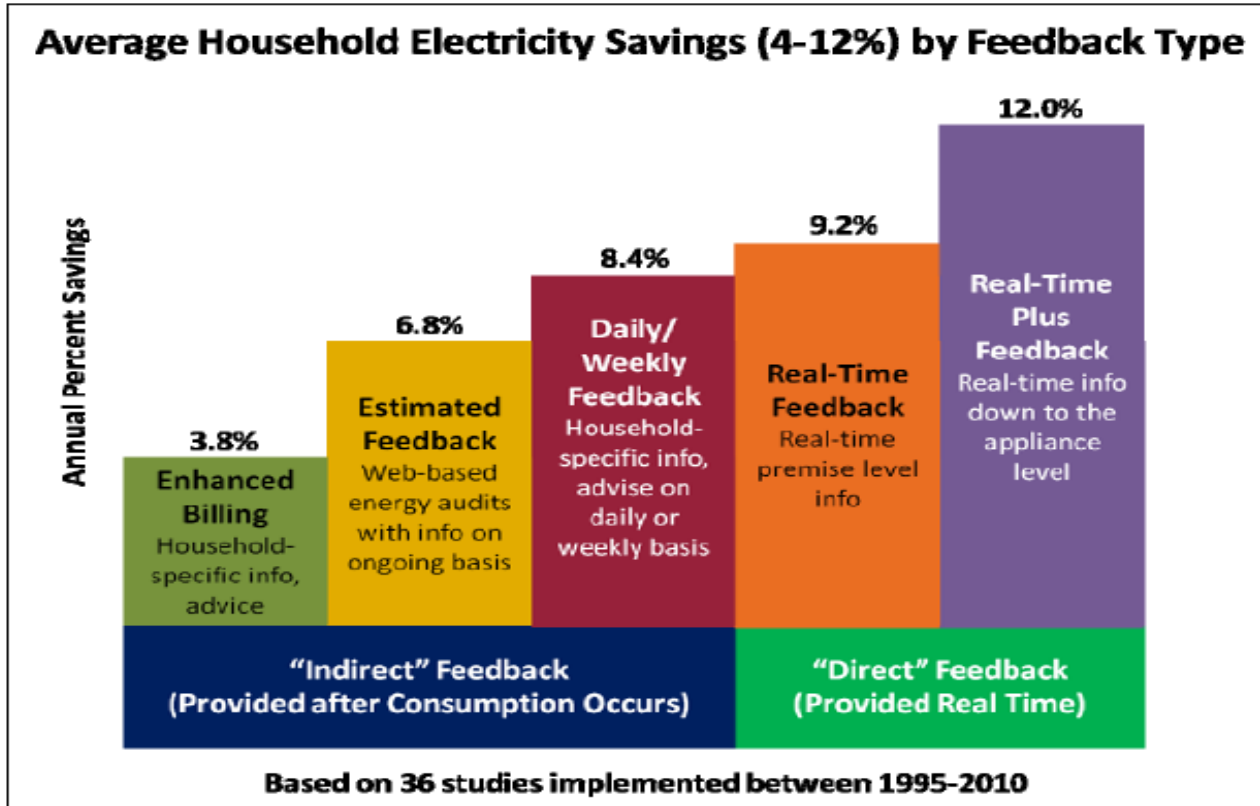


- Feedback/behavior-based programs have been recognized as a mechanism to provide deeper energy savings and higher customer satisfaction.
- Significant uncertainty associated with their performance due to the limitations of robust ex post program evaluation data
- **Objectives:**
 1. Quantify the impacts of various feedback programs within a larger DSM portfolio while explicitly accounting for uncertainties associated with their performance.
 2. Assess how these emerging programs can fill the gap between the projected savings from typical DSM portfolios and state-mandated saving targets

Uncertainty Analysis - Monte Carlo Simulation



2010 ACEEE Study – A Meta-Review



Web-based Energy Audit Tool



In-Home Energy Display Device

Five Feedback Program Scenarios



Scenario No.	Scenario Name	Feedback Type	Participation Plan	Description
Scenario 1	Enhanced Billing	Indirect	Opt-out	Household Specific Information and advice
Scenario 2	Estimated Feedback	Indirect	Opt-in	Web-based energy audits without info on ongoing basis
Scenario 3	Daily/Weekly Feedback	Indirect	Opt-in	Household specific info & advice on daily/weekly basis
Scenario 4	Real-Time Feedback	Direct	Opt-in	Real time consumption & cost info at the aggregated level
Scenario 5	Real-Time Plus Feedback	Direct	Opt-in	Real time consumption & cost info disaggregated at appliance level

- **Opt-out Participation Plan**

Broad program reach, shallow savings
High continuing costs to maintain savings
e.g. mailers

- **Opt-in Participation Plan**

Narrow program reach, deep savings
Upfront cost to acquire, low continuing cost
e.g. give email address



Web-based Energy Audit Tool

Conclusions

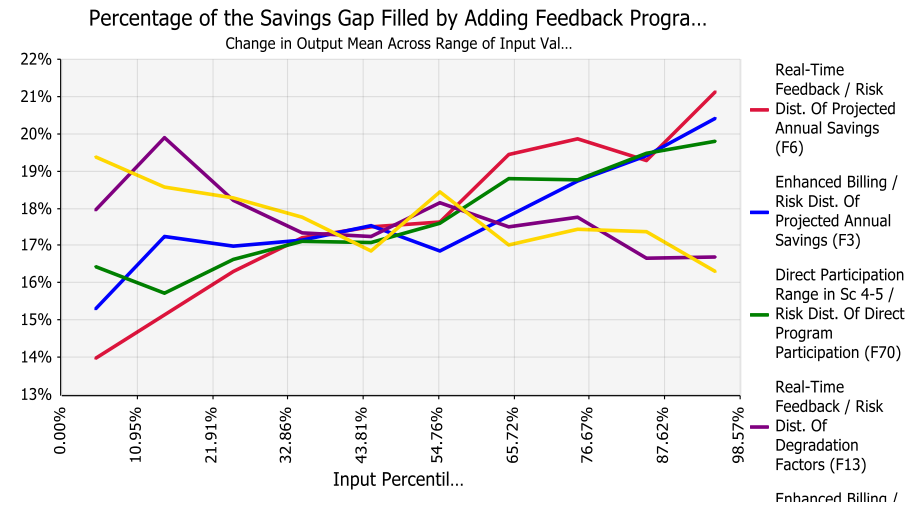
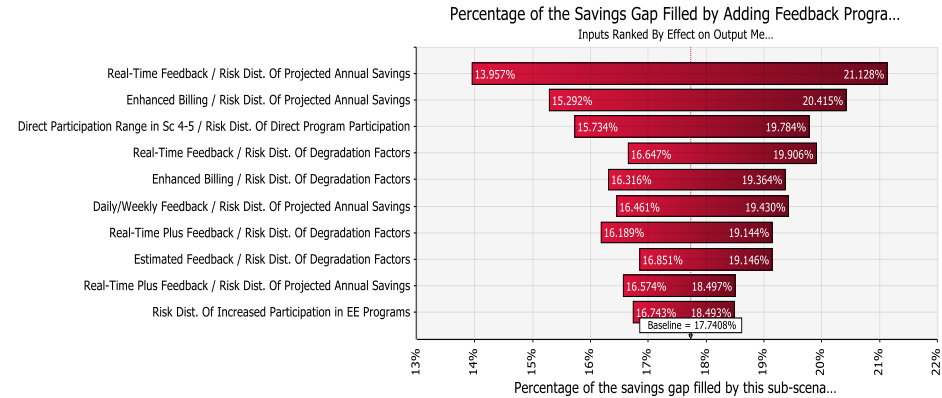


- This “Big Squeeze II” analysis confirms previous studies on the potential contributions of residential feedback programs to portfolio savings.
- By 2020, there is a 90% chance that feedback programs increase total DSM portfolio electricity savings by 2% - 14% with the average of 7%.
- By 2020, there is a 90% chance that feedback programs increase residential portfolio electricity savings by 6% - 35% with the average of 17%.
- Program planners/administrators can fill 7%-36% (average of 17%) of the 2020 EERS savings gap by integrating residential feedback programs into DSM portfolio planning.
- The impact of Enhanced Billing could be significant in **short-term** compared to other feedback types. Given its lower cost of the implementation, this approach could be a very effective short-term solution to meet the near state-mandated saving targets.

Next Steps



- Cost - effectiveness analysis (e.g. TRC test)
- Further sensitivity analysis of saving distributions to input variables and identify the level of impact
- Thorough analysis of change in patterns of final savings across the range of input variables to better understand the impact of each input on savings
- Identify & prioritize the areas of focus for program planners and administrators to more effectively unlock the potentials of feedback programs





Ali Bozorgi, PhD
alireza.bozorgi@icfi.com
404-929-8328