Modifying California’s Traditional Resource Acquisition Benefit-Cost Analysis to Accommodate Market Transformation Programs

Richard Ridge, Ph.D.

2015 IEPEC Conference — Long Beach, California
Fellow Authors

- Brian Arthur Smith, Pacific Gas and Electric Company, San Francisco, CA
- Julie Colvin, Pacific Gas and Electric Company, San Francisco, CA
The PG&E Plug Load Portfolio Program: A Market Transformation Program

- Provides retailers with incentives to promote energy efficient appliances and consumer electronics
- Goal is to alter the behavior of key market actors throughout the supply chain to achieve sustainable savings at the market level
- Designed to run for ten years
Benefit-Cost Analysis Is Challenging for MT Programs

- Current California B/C assessment is designed for resource acquisition programs
  - Run for one to three years
  - Key parameters assumed to be fixed

- For MT Programs
  - Benefits and costs are dynamic
  - Run for 10 to 15 years
Modifications

- Rather than changing the model, we modified the calculation of the inputs
- Approach allows for key parameters to change over time
  - Benefits
  - PG&E administrative & marketing costs
  - Incremental costs
  - Incentives
- NTGR is based on a 10-year forecast of savings with and without the program
Current TRC

- **PV of Costs**
  - Administration & marketing
  - Incremental costs adjusted upward using the market-effects-adjusted net-to-gross ratio (MEA_NTGR)
  - Rebates and incentives to freeriders

- **PV of Benefits**
  - Adjusted upwards using the MEA_NTGR
Revised Benefits

- Based on a 10-year forecast of the sales using the Generalized Bass Diffusion Model
- Forecasted sales are multiplied by the associated Unit Energy Savings (UES)
- Then multiplied by the stream of avoided costs
Revised Administrative Costs

- Continue for the ten years decline over time as program operations become more efficient
- Present value is entered into B/C calculator
Revised Incremental Costs

- IMCs and retailer incentives extend over 10 years and decline
- The levelized costs for the IMC entered into E3 Calculator
Retained Retailer Incentives

- Incentives decline over time
- Retailers will retain some of the incentives and pass some percent along to the customer as a buy-down
- Percent retained based on expert judgment
- The levelized cost for the customer buy-down is entered into the E3 Calculator
- The levelized cost of the retained incentive is added to the utility incentives and the incremental costs
NTGRs

- The MEA_NTGRs, NTGRs (i.e., 1-FR) and nonparticipant spillover (NPSO) rates estimated for each product category using the same Generalized Bass Diffusion Model mentioned earlier.

- Based on a 10-year forecast of sales with and without the program

- \[ MEA_{\text{NTGR}} = \text{NTGR} + \text{NPSO} \]
Market Share Scenarios for Participating and Nonparticipating Retailers: Gas Clothes Dryers
Conclusions

- High level of uncertainty regarding gross sales of program-qualified models, the MEA_NTGR, the NTGR and the TRC
- They should be recalculated annually based on:
  - On-going theory-driven evaluation
  - Recorded customer buy-downs, retained retailer incentives, and administrative costs
  - The most recent estimates of incremental measure cost
  - The results of the on-going literature review
Resources

- [http://www.caltf.org/tf-meeting-materials](http://www.caltf.org/tf-meeting-materials)

- Search on “RPP” to find relevant documents such as:
  - Trial Phase I Evaluation Results
  - Evaluation Plan for the Phase II RPP Pilot
  - Benefit-cost documentation
  - RPP Program Theory and Logic Model
  - Net-to-gross presentation
  - Incremental measure cost presentation