Non-Energy Benefits (NEBs) – The New "Standard" in Comprehensive Estimation and Modeling of NEBs for Commercial & Residential Programs

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This poster session leverages the results of several recent projects comprising the most comprehensive meta-study of non-energy benefits (NEB) conducted to date. Attendees will receive summaries of the work, and will be able to use a working computer model to estimate more than 40 categories of NEBs for a program of their design.

Non-energy benefits (NEBs) are a long-recognized auxiliary benefit to energy programs. However, most of the work on NEBs has focused on hypothetical lists or estimated just a few benefit categories. The potential to apply NEB results to practical planning and policy issues led the author to develop a flexible spreadsheet modeling tool that incorporated "best literature" and estimated more than 40 individual categories of benefits assembled into three distinct perspectives based on valuation method – utility/ratepayer, societal/environmental, and participant perspectives. Starting in 1995, and updating continuously since then, the author developed flexible spreadsheet models that computed estimates of these NEBs – and adapted estimates based on: (1) program type (weatherization, education, loan, rebate, etc.); (2) customer target sector (residential, low income residential, or commercial/industrial); (3) program measures included; and (4) utility characteristics, and other distinctions between programs.

The model uses a combination of (1) primary data, (2) utility information on costs and occurrences, and (3) secondary information from the literature – primarily expected changes induced by the program. Several unique features distinguish the estimation work:

- Adjusts and apportions dollar values of impacts based on measures included,
- Automatically adjusts NEBs to account for small vs. large-scale programs – including adjusting for gas-only measures or programs with few measures,
- Allows user input on estimation method, discount rates, and other options, but allows use of "default" values to simplify use, and
- Incorporates estimates of participant-side benefits, e.g. hardship, comfort, and similar benefits for residents, and safety, productivity, and other benefits for commercial programs.

The work in participant-side NEBs is valued based on 3 measurement approaches: willingness to pay; relative valuation; and scaling techniques adapted from state-of-the-art academic literature. Quantitative estimates for participant-side benefits (commercial and residential) are adapted from more than 1,000 special participant surveys in California, the Northeast, and the Northwest conducted by SERA.

The work examined and assessed more than 320 evaluations and NEB-related studies; and assembled information from interviews and/or peer-review comments with more than 35 experts in the field. The modeling work brings together transferable information and approaches from NEB projects the author conducted for 7 utilities, 9 programs, and 3 sectors (residential, commercial, and low income). The detailed NEB estimates can be used to: (1) adjust program design and measures included to maximize all or selected program benefits, (2) minimize program budgets given NEB totals, (3) aid retention and help utilities and customers understand the value of NEBs from the program – in **participant-valued** terms, (4) reduce the time and data needed to estimate NEBs, and (5) examine more inclusive benefit-cost ratios. Pieces of a previous version of the model developed by the author were used as the NEB computer module for the revised Low Income Public Purpose Test (LIPPT) for California.