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Hugh Gilbert Peach, Ph.D.

Reasons why the Utility Cost Test is preferable to the Total Resource Cost Test and a Note on the Special Case of Low-Income Programs

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Note: Hugh (Gil) Peach was DSM Evaluation Manager for one of the regional power companies when the TRC test was introduced in the 1980’s and guided the demand-side of one of the first Integrated Resource Plans in the region. He has been an independent consultant since 1988, working primarily in the Northeast, Southeast, Mid-West and Canada. He completed sixteen DSM program portfolios for potential studies for gas, electric, and combined utilities since 2005. He is currently an evaluation advisor to the New York commission staff, the Savings Verification consultant for the Nova Scotia commission and is completing a low-income evaluation of the Cascade Natural Gas Oregon low-income programs.

1. **Should Commission continue to use the Total Resource Cost (TRC), or switch to using the Utility Cost Test (UCT), to evaluate the cost-effectiveness of the portfolio of natural gas conservation programs?**

Long ago, in the 1980’s, the Total Resource Cost Test (TRC) was developed to meet the needs of a specific organizational situation. Up until that time gas and electric utilities treated various fuels as resources but as a “given” did not cross to the customer side of the meter to secure efficiency as a resource. When, years before that, early energy conservation programs were instituted following the 1973 oil shock organized by the Organization of Petroleum Exporting Countries (OPEC), they were conceived of as public purpose emergency programs to accomplish energy conservation. The early efforts where characterized by a sense of “doing without” and “doing with less” for the greater good, due to shortages. These early efforts generally did not attempt to preserve amenity levels.

When the TRC and other tests were introduced in the California Standard Practice Manual in the 1980’s the tests provided a coherent framework for understanding that systematic Demand-Side Management (DSM) programs could be treated as a new kind of resource. That concept and a set of calculation formulas to operationalize the cost-effective implementation of DSM programs were critically important to securing utility funding and implementation of serious DSM programs.

In that now long-gone era, thinking about energy efficiency as a resource was a novel concept. In the early days of DSM – because the tests were being implemented by utilities within a regulated resource procurement environment – the primary test was either the societal version of the TRC or a “vanilla” TRC as specified in the California Standard Practice Manual. The societal version of the TRC was never fully developed (except, perhaps today in Massachusetts where it is referred to as a TRC). In the second wave of DSM that followed the deregulation/restructuring era, the “vanilla” TRC emerged as the primary test, though with some modifications in different jurisdictions.

From the beginning, however, the primary defect of the TRC was likely a necessary condition for its introduction and acceptance. This is the perspective that the only benefit value to be taken into account is the present value of the projection of energy savings due to the DSM program, but that cost includes the present value of the sum of all customer costs plus the sum of all utility costs for the purchase of units of conserved energy. So, only one benefit was counted (sometimes with slight modification as in the token Pacific Northwest environmental adder) and all costs – clearly a flawed benefit/cost ratio.

Without this initial distortion of a fair test (to disregard all benefits other than energy while treating the customer contribution as if it were the same as the cost to the utility), it would probably have been much more difficult to introduce the TRC to utility resource planning.

# The UTC is inherently a Fair test; the TRC is inherently Biased

When we consider utility purchase of fuel resource from a market, there is no concern on the part of the utility for any special arrangements that the seller makes to enable the sale. If it is possible for one vendor to undersell another, only the price to the utility is considered, not the total cost to the seller (including any special arrangements or interests internal to the seller that make a lower price possible). So, from the beginning, the TRC was defective in that it was not balanced to be the actual equivalent to a fuel purchase. Instead, all costs of DSM were considered energy costs and only the energy benefit was treated. Of course, in the Pacific Northwest, the test was modified to provide a token percentage adder for other benefits. But, in retrospect, this small adder did not change the essential nature of the TRC.

The Utility Cost Test (UCT) has the advantage that it considers only the cost to the utility. The cost to the customer (and any third-party cost) is simply intelligent use of leverage and it is not included in the test. The UCT permits the utility the freedom to operate in a manner similar to other businesses. If, for example, the customer wants to upgrade windows or install a new, more energy efficient, assembly process in a plant the utility can opt to pay for the energy efficiency portion of the project without having to face the TRC penalty of loading all customer costs into the analysis. If a residential customer values windows for many other reasons and is willing to pay the balance, everything works for the customer and for the utility. Similarly, plant management will upgrade machines or parts of operations for general reasons of overall business efficiency (which includes energy efficiency as a subcomponent). If the utility pays for the energy efficiency portion of the project and the business or industrial customer is willing to pay for the balance (for their own internal reasons), everything works for the customer and for the utility. Note that with the UTC the dilemma of counting one benefit and all costs in the TRC is solved by reducing the problem to the energy benefit to the utility (one benefit) and the cost to the utility (one cost). This provides a fair and intuitively clean benefit to cost ratio from the utility perspective.

# The UTC is Opens the Potential for more Energy Efficiency than the TRC

Generally, the UTC makes much more vigorous collaborative or coordinated programs possible because it respects the fact that a community (or society) is made up of many members and institutions, each with their own interests. In their role as customers, many want to do projects primarily for other reasons than energy efficiency; yet these projects have energy efficiency components. The UTC inherently recognizes the nature of free society by permitting cooperation of entities (customers, utilities and others) with different but overlapping interests to coordinate in jointly funding projects. It treats the utility’s ability to coordinate energy efficiency acquisition with dollars put forward by customers to accomplish other goals as a kind of leverage. For the customer, the utility cost is leverage. For the utility, the customer contribution is leverage because without it the project could not be done. This perspective opens up a much broader set of potentials for resource acquisition than the current perspective on programs.

# The UTC is a better fit for Climate Change than the TRC

If the problem for DSM in the 1980’s was establishing the concept of efficiency as a resource, that problem has long been solved. The overarching problem as we look ahead for the next forty years is climate change. Since the US and other nations did not invest to prevent climate change, it is now too late to prevent it. It has started and will accelerate. This means that forced and voluntary investment (public and private) will be increasingly necessary to repair damages and adjust to changes in order to stay viable at the levels of individual homes, of enterprises, of utility systems and of society.

We already have new climate effects: intensifying heat and rain storms; intensifying drought; stationary storms that persist and move very slowly, more significant snow storms, decrease in agricultural productivity (corn, grasses, cattle), increased hunger in poorer countries leading to local rebellions and wars; and extending ranges of diseases and pestilence far beyond their old ranges worldwide (for example, malaria, yellow fever, Lyme disease, avian malaria, pine beetles). With increasing and sustained drought, dust storms have recently become a fact of life in Idaho and Arizona. Animals and plants are trying to migrate towards areas with more favorable conditions. Migrations of people will follow shortly. The federal government will finally be forced by the scale, frequency and increasing force of climate impacts to substantially address climate change. Then, there will be a strong national reallocation of dollars from private consumption to public and private investment to deal with disasters, to adapt to climate change, and to reduce the causes of climate change. Moving to the UCT will enable utilities to help play a reasonable part in the effort of society to adapt. The resource efficiency portion of building and equipment upgrades will be essential in adapting to a harsher environment.

While we do not have a full picture of climate change impacts, we know enough to be able to look ahead to a future in which it will be much better to have a built environment that is more energy self-sufficient in that buildings can operate efficiently and safely under changed conditions. This big picture reality is the context in which we should consider the selection of the best cost test for the next set of years. The UCT as the primary test would immediately align utilities for these changes in which they can play a significant role, while keeping within viable and cost-effective resource plans.

# The Present Value Dimension of the Tests should be Removed

While the current tests, whether TRC or UCT use present valuing, thus privileging the present moment and discounting the value of the future to essentially zero by about year 17 or 18, depending on the discount rate, the reality of climate change supports the reversal of this feature of the tests. Our problem is that we likely have more resources now to influence adaptation to climate change than we will have in the future, as things generally become more difficult. And, our goal in adaptation is to enable a reasonably decent life for the future years under increasingly more harsh conditions than we face today.

For this reason, the discounting of the future by present valuing should not be included in the selected test. We can look ahead and see the problem and project what needs to be in place and we can work out how buildings should function over the next forty years to permit adaptation. Given the actual, material context of accelerating climate change, the purpose of the investment is not to achieve the highest current present value but to provide value equally over the weighted measure life of a DSM program. In the future we will be coping with multiple emergencies and so the future will have less capability than the present. So we need to be able to act now in making investments to preserve the future. Moving to the UCT and not discounting is likely adequate for now for insuring the maximum utility participation in what will have to be a much larger effort.

# The Pattern of Gas Pricing implies an Imperative to Preserve DSM

Retrospectively, the pattern of gas supply price has been characterized by marked peaks and valleys. Each time, as we approached a peak it was assumed that the pattern might continue. Similarly, we now have a dramatic drop in the price of gas supply due to fracking. But we do not know if fracking will constitute a cause for a continuing decrease or if it will be seen retrospectively within a few years as a kind of bubble. Additionally, there have been peaks for major hurricanes and the frequency and intensity of hurricanes are increasing due to climate change. The value of the natural gas DSM programs for customers, utilities, and society is high. And, considering that the overarching problem we face is adaptation to climate change we dare not weaken these programs or constitute them on an “on and off” basis. Given the pattern in the data, it would be prudent to move to the UCT test and to continue current funding.

# The Special Case of Low-Income and Moderate-Income Programs

As stated in the Notice of March 22, 2013, “The provision of energy-efficiency services to low-income customers is in the public interest, even when such measures do not meet the commission’s primary cost effectiveness test. …Utilities should remove low-income programs from their portfolio-level cost-test analysis, and instead analyze such programs using savings-to-investment ratios.”

Low-income weatherization programs are well known. Generally, gas companies should provide coordinated funding to Community Action Agencies that implement the federal/state Weatherization Assistance Program (WAP). These programs have been long-established, are coordinated statewide, are subject to federal/state guidelines (including health & safety), incorporate staff training and certification and provide quality control. Eligibility for households is usually defined at 200% of poverty. A moderate-income program would be the same program except for households with income insufficiency above 200% of poverty as calculated by the method developed by Diana Pearce of the University of Washington (household budget method). Households within these income groups are not able to provide for weatherization. Health and safety measures and gas furnace replacement are often not possible due to income barriers. These WAP services are primarily funded by means of severely inadequate and often delayed annual federal discretionary budget allocations. The participation of natural gas companies in the coordinated funding of WAP is an essential customer service obligation of the utility.

Currently gas utility participation in WAP is supported by tariff designated measures and related costs (for example, administration). Public purpose funding is collected for natural gas utility participation in WAP by means of a rate rider. Low-income programs use a federally approved method called the Savings-to-Investment Ratio (SIR) to determine eligible measures for a home, rather than the TRC or the UCT. Federal/state guidelines also require the testing of all gas appliances and provide for some repairs to enable weatherization measures to be installed. The SIR approach is a reliable method. While low-income measures were originally approved in tariffs based on Integrated Resource Plans and updates to the plans, the coordinated expenditures through WAP are by nature not DSM per se, but public purpose expenditures.

It would be both prudent and productive to continue public purpose funding for gas utility low-income weatherization through Community Action Agencies and the WAP program at somewhat more enhanced levels. At the same time, these gas utility programs could be greatly simplified by moving from a partial rebate per approved measure approach to a whole house approach. This would enable the Community Action Agencies to treat a gas heated home from start to finish using funds provided by the natural gas utility subject only to federal/state guidelines (including administration, health & safety, possible furnace replacement and necessary repairs). Currently, due to the supplementary nature of gas funding, the CAAs need to find other funding to start and finish natural gas jobs. This creates a bottleneck that sometimes leads to the inability to use available utility public purpose funding. It would greatly simplify the work of the CAAs if gas funding could be made available on the same basis as federal funding (that is, as a fully public purpose effort rather than as a partial DSM per measure effort). The control tool would cease to be stated rebate levels for specific measures as stated in a tariff. Instead the control tools would be the federal/state guidelines, internal quality control, and the SIR. This would greatly improve the efficiency of natural gas funded weatherization by the Community Action Agencies through the WAP program.

Additionally, for low-income programs, in particular, the present-valuing of energy savings should not be computed. Low-income homes will remain low-income homes for the lives of the homes. For that reason, every year will affect the affordability of energy for low-income households and there is no justification for discounting the future. During the American Recovery and Reinvestment Act period, there was no discounting. That precedent was intelligent and should be institutionalized by the commission and continued.

1. **What criteria should be met before stopping a portfolio of programs?**

All of the criteria stated in the March 22, 2013 Notice should be included. In addition, the utility should be required to state how the stopping of a portfolio of programs fits with their projection of climate change effects in their service territory.