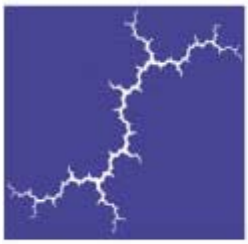


# Reply Comments Regarding Implementation of Energy Efficiency and DSM Programs in North Carolina

## Docket No. E-100, Sub 110

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# 1. Introduction and Summary

The opening of this docket has presented this Commission with the opportunity to ensure that North Carolina's investor-owned utilities (IOUs) implement substantial, cost-effective energy efficiency and load management (DSM) programs for the benefit of North Carolina ratepayers. Whether or not new generation such as the Cliffside Project comes online, the need for the Commission's intervention to ensure that energy efficiency is indeed the "fifth fuel" as James Rogers, CEO of Duke Energy says so often, is obvious. And with this Commission's intervention we can do even better than that, we can make energy efficiency North Carolina's "first fuel." Last year's IRP proceedings before this Commission made clear that there is little the Commission can do to require the IOUs to implement cost-effective DSM within the context of those proceedings. Similarly, the Commission cannot require the IOUs to implement cost-effective energy efficiency within the context of certificate of public convenience and necessity (CPCN) cases such as the Cliffside docket.

The utility disincentive to do DSM is also obvious as evidenced by the fact that Duke Energy's planning for the Cliffside Project both pre and post-50% cost increase included no additional DSM. And if the CPCN for one or both Cliffside units is denied, there will be a need to begin implementation of energy efficiency as a substitute, the potential of which is addressed through the GDS Associates Study and the testimony of David Schlissel and Anna Sommer in the Cliffside docket. In sum, the Commission's intervention is critical.

Our reply comments continue to address the four issues raised by the Commission:

1) the appropriate tests for DSM cost-effectiveness;
2) whether to require a further study of demand-side management ("DSM") potential;
3) whether DSM programs and/or incentives should be developed through collaboratives or some other way (in addition to that we also comment on the appropriate structure of collaboratives and the scope of appropriate utility incentives for energy efficiency); and
4) possible funding mechanisms and administrative options for such programs.

These comments are meant to address areas where the Commission can, through its statutory authority, remedy these issues. Finally, we recommend that evidentiary hearings be held to further flesh out these issues.

# 2. Tests of DSM Cost-Effectiveness

## 2.1 Description of Cost-Effectiveness Tests

The costs and benefits of energy efficiency are qualitatively different from those of supply-side resources, and have different implications for different parties. As a result,

five tests have been developed to consider efficiency costs and benefits from different perspectives. These tests are described below and summarized in Table 1.[1]

- The Participant Test. The goal of this test is to determine the impact of efficiency on the customer that participates in the efficiency program. The costs include all the direct expenses incurred by the customer to purchase, install and operate an efficiency measure. The benefits include the reduction in the customer's electricity bills, as well as any financial incentive paid by the program administrator.[2] This test tends to be the least restrictive of the tests, because electric rates tend to be higher than avoided costs, and participating customers see the greatest benefit from the efficiency programs.

- The Utility Cost Test. The goal of this test is to determine the impact of efficiency on the total direct cost of providing electricity (or natural gas, in the case of gas utilities). This test is most consistent with the way that supply-side resources are evaluated by vertically-integrated utilities. The costs include all expenditures by the program implementer (or program administrator) to design, plan, administer, monitor and evaluate efficiency programs. The benefits include all the avoided electric generation (or natural gas acquisition) costs, as well as avoided transmission and distribution costs.

- The Total Resource Cost (TRC) Test. The goal of this test is to determine the total cash costs and benefits of the efficiency program, regardless of who pays and benefits from it. The costs include all the expenditures by the program administrator, plus all the direct costs incurred by the customer. The benefits include all the avoided utility costs, plus any other cost savings for the customer such as avoided water costs, avoided oil costs, reduced operations and maintenance costs to the customer, or non-energy benefits.[3] For most efficiency measures, this test tends to be more restrictive than the Energy System Test, because customer contributions to energy efficiency measures (the additional costs considered) are easier to identify than the additional benefits not considered in the Energy System test.

- The Societal Cost Test. The goal of this test is to determine the total costs and benefits of efficiency to all of society, including more difficult to quantify benefits such as environmental benefits and economic development impacts. The costs and benefits are the same as for the TRC Test, except that the benefits also include

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[1] These tests are defined slightly differently by different Public Utilities Commissions. For the most comprehensive description and discussion of these tests, see CA PUC 2001 and LBL 1988.

[2] Throughout this paper we use the term program administrator to refer to the entity that implements energy efficiency programs, whether it be a vertically-integrated utility, a distribution utility or a third party administrator.

[3] Non-energy benefits include, for example, greater comfort levels due to better climate control and lighting design, increased productivity or decreased illness due to greater comfort levels, reduced bad debt expense for utilities, reduced demand for low income fuel assistance, reduced working capital and risk hedging requirements and greater competitiveness and customer appeal for more efficient businesses, and many more tangible and intangible benefits. These non-energy benefits are rarely quantified.

monetized values of environmental and economic development benefits. If environmental and economic development benefits are properly calculated, this test tends to be the least restrictive of them all, with the possible exception of the Participant Test.

- The Ratepayer Impact Measure (RIM) Test.[4] The goal of this test is to determine the impact on those customers that do not participate in the energy efficiency programs, by measuring the impact on electric or gas rates. The costs include all the expenditures by the program administrator, plus the "lost revenues" to the utility as a result of having to recover fixed costs over fewer sales.[5] The benefits include the avoided utility costs. This test tends to be the most restrictive of all the efficiency tests, because the lost revenues have a large impact on the cost calculation.

**Table 1. Components of the Energy Efficiency Cost-Effectiveness Tests**

| | Partici-pant Test | Utility Cost Test | TRC Test | Societal Test | RIM Test |
|---|---|---|---|---|---|
| **Energy Efficiency Program Benefits:** | | | | | |
| Financial Incentive to Customer | X | --- | --- | --- | --- |
| Customer Bill Savings | X | --- | --- | --- | --- |
| Avoided Generation Costs | --- | X | X | X | X |
| Avoided Transmission and Distribution Costs | --- | X | X | X | X |
| Resource Benefits (e.g. oil, gas, water) | --- | --- | X | X | --- |
| Non-Resource Benefits (e.g. O&M savings) | --- | --- | X | X | --- |
| Benefits to Low-Income Customers | --- | --- | X | X | --- |
| Avoided Environmental Costs | --- | --- | --- | X | --- |
| Economic Benefits | --- | --- | --- | X | --- |
| **Energy Efficiency Program Costs:** | | | | | |
| Program Administrator Costs | --- | X | X | X | X |
| Participating Customer Costs | X | --- | X | X | |
| Lost Revenues to the Utility | --- | --- | | | X |

*Benefits to low-income customers are a subset of the resource and non-resource benefits.*

In theory, all of these tests should be considered in the evaluation of energy efficiency resources. Some programs will require trading-off one perspective versus another – e.g., some programs might not pass the Rate Impact Measure (RIM) test but offer substantial benefits according to the other tests.

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[4] This has previously been referred to as the Non-Participant test and the No-Losers test.

[5] In some situations, efficiency program outlays and customer bill savings can result in secondary sales growth that can offset some of these "lost revenues." Such rate lowering effects of program driven secondary sales are usually counted in support of economic development discount rates and should be considered here as well.

In practice, regulators tend to adopt one of these tests as the primary guideline for screening energy efficiency programs. The remaining tests can then be used, if needed, to provide additional information about programs that might be marginally cost-effective. In recent years, many jurisdictions have evaluated their programs using two or more of these tests in order to consider their cost-effectiveness from a variety of perspectives. Primarily those tests are the Participant test, Utility Cost test, Total Resource Cost Test and Societal Cost test.

## 2.2 Recommendations on Cost-Effectiveness Tests

The Societal Cost test is the best standard for evaluating the cost-effectiveness of efficiency programs. This is the only test that includes all benefits and costs to all members of society. Ideally, environmental impacts from avoided resources (generation, transmission and distribution) should be quantified, monetized and included as part of the avoided costs of energy efficiency. If environmental costs are not monetized, then a proxy for avoided environmental costs could be used instead.

The Utility Cost test is the next best standard for evaluating the cost-effectiveness of efficiency programs. This test indicates the extent to which total electricity costs will be reduced as a result of the program administrator's efficiency investments.[6] This test is consistent with the methodology that vertically-integrated utilities use to evaluate the cost-effectiveness of various power supply resources. In general, this test will result in a greater amount of cost-effective efficiency measures than the TRC test, because it does not include the participant costs.

Despite its popularity, the TRC test is less appropriate than the Societal test or the Utility Cost test. The TRC test purports to account for "all" the costs and benefits of developing energy efficiency programs, by including a broader list of benefits and costs. However, by excluding the avoided environmental costs the TRC test presents a skewed estimate of "all" the costs and benefits. The TRC test can be described as a flawed version of the Societal Cost test, i.e., it captures only part of the societal costs. In general, the TRC test will result in less cost-effective efficiency measures than the Utility Cost test, because the participant costs are easy to quantify and can be quite large, while the other benefits (resource, non-resource, low-income) are difficult to quantify and thus are often estimated to be less than the participant costs.

### Proper Use of the RIM Test

The RIM test should not be used for determining the cost-effectiveness of energy efficiency programs for the following reasons.

- The RIM test will not result in the lowest cost to society.
- Rate impacts and lost revenues are not a true cost to society. Rate impacts and lost revenues represent a *transfer payment* between non-participants and participants.

[6] If the local utility is vertically integrated, this test indicates the amount that revenue requirements will be reduced as a result of the program administrator's efficiency investments. This is key from the perspective of consumer advocates.

Consequently, they are not a new cost, and should not be applied as such in screening a new energy efficiency resource. Rate impacts and lost revenues may create equity issues between customers. However, these equity issues should not be addressed through the screening of efficiency programs, but through other means, as described below.

- Screening efficiency programs with the RIM test is inconsistent with the way that supply-side resources are screened and fails to create a level playing field for the consideration of supply- and demand-side resources. There are many instances where utilities invest in new power plants or transmission and distribution facilities in order to meet the needs of a subset of customers, (e.g., new residential divisions, an expanding industrial base, geographically-based upgrades). These supply-side resources are not evaluated on the basis of their equity effects, nor are the "non-participants" seen as cross-subsidizing the "participants." Energy efficiency resources should not be subject to different screening criteria than supply-side resources.
- Consumers, in the end, are more affected by the size of their electric bills (the product of rates and usage) than by the rates alone. The RIM test does not provide any information about what happens to electric bills as a result of program implementation.
- A strict application of the RIM test can result in the rejection of large amounts of energy savings and the opportunity for large reductions in many customers' bills in order to avoid very small, *de minimus* impacts on non-participants' bills. From a public policy perspective, such a trade-off is illogical and inappropriate.

While the RIM test should not be used to screen energy efficiency programs, there are two other rate effect issues that may be of concern to utilities and policy-makers: (1) the potential importance of rate impacts of considerable size, and (2) concerns about equity between efficiency program participants and non-participants.

The first issue should be addressed by:

- Evaluating the package of energy efficiency programs as a whole, including those programs that might increase rates and those that might decrease rates.
- Including all avoided costs in the rate impact estimate: avoided energy, avoided capacity, and avoided T&D. Also, the potential for increased off-system sales should be considered.
- Quantifying the potential rate impacts over time. Efficiency programs will have lower (and, possibly, downward) rate impacts in later years.
- Presenting the rate impacts in terms of percent increase, per year, by sector. This is necessary to make a meaningful assessment of the impacts on customers.

These rate impacts should then be compared to the expected reductions in total electricity costs, so that the utility planners and regulators can evaluate the trade-off that might have to be made between lower costs and higher rates. Experience with energy efficiency

programs in the past has demonstrated that significant reductions in costs can be achieved with very small increases in electricity rates.

The second issue is the equity effects between efficiency program participants and non-participants. While this should not be a driving factor in selecting electricity resources, it is nonetheless good public policy to mitigate inequity between customers. There are several ways that the equity impacts of energy efficiency programs can be mitigated or eliminated through efficiency program design and implementation, including:

- Efficiency programs should be designed to provide opportunities to all customer classes and subclasses, and to address as many electric end-uses and technologies as possible within cost-effectiveness guidelines.
- Efficiency programs should be designed to minimize the costs incurred by the program administrator. To the extent that customer contributions can be secured without adversely affecting the level of program participation, rate impacts can be lessened.
- Efficiency programs should be designed to maximize the long-term avoided costs savings for the electricity system.
- Efficiency programs that result in lower rates should be combined with those that might increase rates, to lower the overall rate impact.
- If equity concerns are important enough, budgets for efficiency programs targeted to a specific customer class (i.e., low-income, residential, commercial, industrial) could be based on the amount of revenues that each class contributes to the efficiency funds.

As efficiency programs are expanded, there will be more participants and fewer non-participants, thereby mitigating the equity problem.

The chapter on "Energy Efficiency Program Best Practices" in the National Action Plan for Energy Efficiency reviewed the efficiency programs of NYSERDA (NY), Efficiency Vermont (VT), the Massachusetts utilities, WI Department of Administration, the California utilities, the Nevada utilities, the Connecticut utilities, the Sacramento Municipal Utility District, Seattle City Light, Austin Energy, the Bonneville Power Administration and the Minnesota electric and gas utilities. *None* of these utilities used the RIM test as the primary decision-making test for energy efficiency.[7]

# 3. DSM Potential Studies

Most of the initial commenters argued that the GDS Associates study is sufficient for the purposes of evaluating the potential for DSM in North Carolina. We agree. While the GDS Associates study focuses on energy efficiency as opposed to energy efficiency and load management (collectively known as "DSM"), the Commission's intervention is most

[7] National Action Plan for Energy Efficiency, page 6-22.

needed in the area of energy efficiency and the GDS Associates study is sufficient to address that potential.

At this point, efforts to duplicate those studies, such as Duke's recent RFP for consultants to do a study specific to its service territory are unlikely to result in any new, substantive information and are more likely to result in a delay in the start of efficiency programs.

# 4. DSM Programs and Collaboratives

## 4.1 A DSM Collaborative Must be Based on Best Practices

The Commission's request specifically sought comments on "whether DSM or incentive programs should be developed through collaboratives or in some other way." This request raises additional issues including the proper structure of collaboratives, the scope of utility incentives for energy efficiency and methods for cost recovery. As such, this section addresses all these issues.

Energy efficiency programs certainly have been developed with assistance from collaborative groups of stakeholders in other states. The success of these groups is driven in large part by the structure and mandate of the group. For example, a well functioning collaborative can present periodic efficiency program plans and evaluation reports to its respective Commission with near total consensus of the group. A poorly functioning collaborative might miss significant opportunities for cost-effective energy efficiency savings, and create the misleading appearance that all stakeholders agree on this outcome.

Experience to date indicates that there are certain "best practice" characteristics shared by successful DSM collaboratives. The key best practices are summarized in the following section. SACE, EDF and SELC support the use of collaboratives to develop DSM programs in North Carolina, as long as those collaboratives comply with these best practices. In the absence of these best practice characteristics, a DSM collaborative in North Carolina can do more harm than good by creating the misleading impression that there is less need for regulatory oversight of the utilities' DSM programs.

## 4.2 Best Practices for Multi-Party Decision-Making Groups

### Identify the Purpose and Goals of the Group

Clarity on the roles and function of the Group will help it to reach decisions efficiently, with a minimum of divisiveness, and will help the Group to ensure it does not overlook important oversight responsibilities. If the Group is charged with recommending conceptual program designs, but is not responsible for overseeing implementation or planning monitoring and evaluation, it will function very differently than if it has those additional duties. To take another example, if the Group's role is only advisory in some or all areas, it will function very differently than if it is a decision-making, consensus-seeking body. It is also important to clarify the work products or deliverables of the Group, including whether meeting minutes or other ongoing records will be maintained.

### Identify the Purpose and Goals of the Energy Efficiency Programs

This is a critical provision for a successful multi-party decision-making process. If the purpose for the programs being designed or overseen is unclear or ambiguous, it will be very difficult for the Group to reach consensus. In fact, even if consensus is possible, it may be driven more by the least common denominator of what parties can agree to, rather than any public policy or public interest priorities.

Clarity regarding externally imposed constraints or requirements is also necessary. For example, if maximizing benefits to all ratepayers is a requirement, but environmental benefits are not to be counted in that calculation (for the sake of argument), the Group's process will be much more efficient and much less contentious than if it has to debate what yardstick to use in comparing programs.

### Identify the Proper Membership of the Group

Clarity regarding the entities that are voting members of the decision-making group, alternates, observers, advisory attendees and so on naturally helps the group operate smoothly. It is also valuable to consider whether any key players are missing from the group and how group decisions will be made. If unanimity is not required, voting procedures should be settled in advance.

### Identify the Proper Decision-Making Process of the Group

It is important that the Group have a clear understanding of what types of decisions are to be made by the participating parties, if any. Is the goal of the Group to reach a consensus? To file a settlement? To achieve a set of recommendations based on majority votes? How are dissenting opinions to be addressed and recognized?

It is also important that the Group have a clear understanding on how the decisions are to be made. This could be achieved through a chairperson, a moderator, an external mediator, or some other means. Whatever approach is used, it is important that all participating parties have an equitable role in the decision-making process, that dissenting opinions are given a voice, and that no party or parties are allowed to dominate the decision-making process over the objections of other parties.

### Provide for the Commission as Recourse for Settling Differences

While one of the key objectives of a multi-party decision-making group is to avoid litigation before the regulatory commission, it is important that this option be preserved if needed. If the Group is unable to reach consensus, or if one or more parties are unwilling to agree to a majority decision, or if one or more parties feel strongly about voicing a dissenting opinion, then there should be an opportunity to bring forth unresolved issues to the commission for resolution. The ability of any one party to make its case before the commission puts pressure on the entire Group to reach agreement, in order to minimize litigation and minimize contentious issues. On the other hand, each party would be aware that a single dissention – within a consensus, settlement, or other form of multi-party agreement – may not be sufficient to convince the commission to adopt its position. This on-going tension between the persuasive power of the Group and the persuasive power of

a dissenting party (or parties) gives legitimacy to the Group but also provides leverage for each participating party.

### Provide for Stakeholder Review and Acceptance of Programs prior to Implementation

Effective stakeholder processes have made provision for thorough review and acceptance of energy efficiency program designs prior to implementation including, if needed, resolution of disputes by the Commission. Such reviews should include access by stakeholders to all program materials (manuals, program design and field implementation screening tools, customer materials, incentive packages, etc.) planning assumptions, cost-benefit projections, market research, and all underlying data and models. Similar review and approval should occur for new programs, for major modifications or discontinuation of programs, and for all programs at intervals, say every three years. Such review and acceptance not only enhances program support and credibility, but helps to avoid design errors.

### Identify Obligations for Program Reporting to the Commission

Proper reporting and documentation is critical for successful energy efficiency program design, implementation and oversight. Program reporting needs to be performed in a manner that is transparent and credible to all stakeholders if programs are to be credible and sustainable. Ideally, the Group should be charged with specifying the manner in which complete and transparent reporting will be done, how often, and who will do it, as well as what supporting data will be provided.[8] Stakeholders should be provided with access to all program materials and data used, including raw data from program evaluations.[9]

### Provide Ability to Make Multi-Year Plans, Budgets and Contracts

Most government or government-initiated programs are financed and planned on an annual basis. However, energy programs, especially energy efficiency and renewable energy programs, can be hobbled by annual planning and budgeting. Stable, multi-year budgets have been found to be essential to allow energy efficiency and renewable energy programs to plan programs, staff them, and deliver services effectively. In addition, trade allies (contractors, hardware stores, building supply yards, distributors and others with whom programs must work to ensure availability of goods and services to implement programs) are difficult to educate, recruit and mobilize for short run programs.[10]

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[8] If the managing entity is not already required to have regular financial audits, this should be considered and record-keeping should be designed up front to support this. If the managing entity is required to have routine financial audits, its audit standards, frequency and procedures should be reviewed to ensure that they are fit for auditing energy efficiency programs, including contracted funds.

[9] Consumer-specific program and evaluation data should be available under confidentiality protections if needed.

[10] Good energy efficiency program planning and delivery requires considerable lead time and ramp-up, especially for staffing. Many essential programs require multi-year marketing and market transformation efforts to bear fruit; large customer programs and some new construction programs often require more than one year to conduct audits or design work, arrange contracting services, install upgrades, commission equipment and buildings, and measure results. Therefore, most programs require multi-year plans and budgets to reach optimum cost-effectiveness; shorter planning and budgeting

Experience has shown that a three-year planning and budgeting cycle does a good job of providing the necessary stability. This is not to say that program budgets, directions and emphases cannot be changed as warranted, based on process and early impact evaluations, but continuity is important.

### Provide for Expert Technical Support for the Design of Efficiency Programs

While energy efficiency programs are no longer a novelty, the knowledge and skills needed to design and evaluate such programs remains an area of specialization. In fact, the very maturity of many such programs means that there is a considerable body of specialized experience about the most effective designs and how to evaluate program success. This knowledge and experience is quite distinct from that common in policy and legislative analysis, grant making, and public education, on the one hand, and from utility customer service and consumer education, on the other.

Most successful and cost-effective energy efficiency programs have been designed by combining stakeholder oversight with independent, specialized, and competitively selected design consultation services. Aspects of program design work that benefit from such a combination of specialization and stakeholder oversight include efficiency measure selection, packaging of measures into programs for varied client groups, incentive design to maximize participation while maintaining cost-effectiveness, planning data collection for program management, monitoring and evaluation, marketing, and direct service delivery. Programs that utilize trade allies (e.g., point of sale promotions and coupons, stocking incentives, contractor education and incentives) need their own specialized design expertise familiar with those distribution channels.

### Provide Funding for Some Stakeholders in the Group

If some stakeholders in the Group are new to the types of programs being considered or lack technical staff to carry or check analyses of potential, cost-effectiveness, etc., it can be difficult for the Group to reach consensus or even to put the right proposals on the table.[11] Setting aside funding for non-utility stakeholders to seek this assistance can be instrumental in helping the parties reach consensus.

### Identify the Scope of Functions to be Outsourced

The decisions regarding what elements of efficiency programs should be outsourced to independent entities can have a great influence on how the program design process is carried out, how monitoring and evaluation or auditing are performed, and how program

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cycles can encourage cream skimming or other forms of short-sighted program design and delivery. A planning and budgeting cycle that covers three years commencing with the start of program delivery would address these concerns in almost all cases.

[11] Some collaborative efforts have included defined funding for the use of public interest stakeholders. This funding is usually based on a negotiated budget that is sufficient to allow at least one or a few public interest stakeholders to retain private expert advice. The most common such stakeholder is the jurisdiction's public advocate; less often funding is also provided for or shared with public interest intervenors. Groups representing specific consumer groups are not typically funded. This advice is sometimes seen as needed in order that that stakeholder (or stakeholders) will be able to "hold their own" in oversight of and negotiations flowing from technical studies, surveys, policy studies, etc.

delivery is done. It can be helpful to agree (or have mandated) in advance what is and is not to be considered for outsourcing, as well as the arrangements that may be used for oversight of outsourced functions.

### Provide Proper Program Evaluation Studies

Formal, independent program evaluation has been seen to be crucial to both program success and program credibility and should include an appropriate set of process, impact and cost-effectiveness evaluations.[12] In addition, detailed and accurate data collection for financial and service delivery monitoring should be in place.[13] Stakeholders should satisfy themselves that sound monitoring and evaluation plans are in place and funded. They should also require data systems that will support proper monitoring and evaluation, oversee the selection and work of independent evaluators, and require regular reporting on the execution and results of monitoring and evaluation.

### Provide Energy Efficiency Potential Studies As Needed

Often, similarly independent and specialized energy efficiency potential studies are needed prior to undertaking program design work, especially in jurisdictions where that job has not been done already. To properly support program and measure selection and program targeting, end use survey data may need to be collected if the utility does not already do so and may need to include assessments of building and equipment ages and the technologies in use. In the large industrial sector, surveys of process technologies may also be needed, depending on the mix of businesses in the service territory.

### North Carolina Efficiency Collaboratives in Comparison

To our knowledge, the Duke collaborative is the only currently active efficiency collaborative in the State. The Commission has no oversight of the collaborative and so virtually nothing about the collaborative can be seen as imposing a requirement upon the members to work proactively towards the development of energy efficiency programs.

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[12] Program evaluations may be viewed as falling to three categories, each of which contributes to program success and credibility. These categories are: process evaluation, impact evaluation, and cost-effectiveness evaluation. Process evaluation examines program delivery and typically includes both review of records and observation of service delivery. Process evaluation concentrates on (1) whether program delivery is following the program design, and (2) whether there are any unanticipated problems in program delivery from the view point of either staff or service recipients. Its purpose is to allow program delivery to be fine tuned or improved "on the fly" and should happen frequently for a new or previously unevaluated program and from time to time for established programs. Impact evaluation measures the quantity of services delivered *and* the effectiveness of those services. In this context, it would include the quantity of energy efficiency measures installed and the amount of energy and peak load saved. Cost-effectiveness evaluation measures the net benefit in dollars of the services delivered. Impact evaluation may be carried out as often as monthly or as little as once a year, depending on whether it is being used just for formal reporting or is tapped by management for active oversight. Cost-effectiveness evaluation is sometimes performed quarterly, for example, but is more often carried out annually as many cost factors, such as timing of ad campaigns, can distort quarterly results.

[13] Income and expense data should ideally include both actual outlays and amounts committed to be paid later (typical in programs that do audits and then sign up the customer to have a set of measures installed at a later date; this can be a real problem when the installation lag time is more than a month or so and overlaps fiscal years.)

Indeed, it can hardly be termed a "collaborative" if Duke Energy is telling the members "who, what and where." Second, given that North Carolina lacks any recent history in administering energy efficiency programs it would be highly optimistic to expect the collaborative members to be able to develop a comprehensive, well-run set of efficiency programs in a timely manner without expert, technical assistance.

Finally, Duke's comments on the success of its DSM collaborative in Indiana ring hollow. The "collaborative" in that state has primarily resulted in an agreement on an outside consultant to author a study of DSM potential in Duke Energy Indiana's service territory.[14] Input from stakeholders is really only heard to the extent that the programs are litigated before the Indiana Utility Regulatory Commission, the outcome of which has been lackluster performance on energy efficiency.

# 5. DSM Funding, Cost Recovery and Administration

## 5.1 Funding and Cost Recovery

One continuing theme of the initial comments from the utilities was that "the DSM regulatory recovery structure should be set in a way that makes an investment in energy efficiency at least as attractive as an equivalent investment in new generation."[15] Cost recovery and the definition of what is meant by "cost" are really at the heart of the conflict between energy efficiency as a low cost resource on the one hand and the utility disincentive to do energy efficiency on the other.

In testimony before the Commission in the Cliffside docket, we've repeatedly heard the phrase "appropriate regulatory treatment" from Duke Energy Carolinas. James Rogers has declined to define specifically what that means but as noted in the testimony of David Schlissel and Anna Sommer in that same docket, nearly 3 years ago, Duke Energy Indiana asked for lost revenues and shared savings incentives that would have equaled 144% of program costs in 2009.[16]Clearly if Duke and/or any of the other investor-owned utilities hold this up as "appropriate regulatory treatment" there will be significant disagreement on the issue of cost recovery.

There are multiple remedies to address this conflict. Certainly there are states that have granted incentives to utilities for the provision of energy efficiency programs. There are other states, however, who have chosen to avoid that battle and simply taken the function of administering efficiency programs away from the distribution utilities as discussed below. In broad terms, the following sections describe funding and utility incentives for energy efficiency in other states and funding of energy efficiency.

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[14] The other result of the collaborative has been to mail out a survey followed with a "personal energy report" on how customers can reduce energy usage.

[15] Comments of Progress Energy Carolinas at page 10 and Duke Energy Carolinas at page 8.

[16] Testimony of David Schlissel and Anna Sommer in Docket E-7, Sub 790, page 28.

### Public Benefits Fund

A public benefits fund (PBF)[17] is a mechanism for supporting energy efficiency programs using funds that are collected from all customers in the state. The charge would be applied to each kWh of electricity consumed by customers and would be collected through local utility companies.

A PBF offers the best means of implementing energy efficiency programs, regardless of whether a state has restructured its electricity industry, or whether it is likely to restructure in the future. For those states that have not restructured, a PBF provides a secure source of funding for energy efficiency initiatives, and creates certainty regarding the level of efficiency that will be implemented. For those states that have, or might, restructure, a PBF provides a competitively-neutral source of funding from all customers, regardless of which competitive supplier serves each customer.

The PBF should be allowed to persist for a sufficient number of years to ensure that energy efficiency markets can be adequately transformed. Many PBFs established to date have a limited term (e.g., five years), at which point in time a study can be conducted to determine whether to extend the charge. A better approach is to create a PBF with an unlimited term, but with periodic reviews to determine whether any changes are warranted, based on the evolution of the energy and energy efficiency markets. The level of the public benefits charge should also be sufficient to make a substantial impact on the energy efficiency industry. Ideally, the charge would be large enough to support all cost-effective energy efficiency programs, and to achieve market transformation of key efficiency measures.

A PBF can be used to support energy efficiency programs operated by any type of program administrator (vertically-integrated utilities, distribution utilities, third party administrators).

One of the side benefits of the PBF is that it makes some controversial efficiency policies much less controversial. For example, utilities have been less inclined to fight about the cost effectiveness tests once they were given a pre-determined amount of how much money they had to spend on energy efficiency programs. Similarly, there seems to be less fighting for lost revenue recovery when the efficiency budgets are set at a pre-determined amount.

Note, however, that the PBF does not have to be a cap on utility efficiency expenditures. The PBF should be seen as a minimum amount – typically set by legislators without a clear sense of the full cost-effective potential. Utilities should use integrated resource planning and portfolio management techniques on a regular basis to assess whether additional funding should be used to capture more of the cost-effective efficiency potential.

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[17] Also known as a system benefits charge (SBC).

We recommend that the commission establish a public benefits charge of $3/MWh, to be applied to the distribution charges of all North Carolina investor owned utilities, and to be in place for at least ten years. After ten years, the commission should review the size of the fund, but the presumption should be that it will continue for another ten years.

### Lost Revenues

Energy efficiency programs reduce electricity sales, and thereby reduce the revenues earned by utilities. In most cases, a utility's prices (projected costs divided by projected sales) are set using a sales forecast that does not account for future energy efficiency savings.[18] As a result, when sales are reduced by energy efficiency the electricity prices are not high enough to recover all the costs incurred by the utility. The utility's variable costs will be reduced along with the lower sales, but the fixed costs will not. Therefore, there is said to be "lost revenues" created by the energy efficiency programs; these lost revenues are generally said to be equal to the amount of energy saved times the fixed cost portion of a utility's electricity price.

The amount of lost revenues calculated this way can become quite large over time. Efficiency measures installed in any one year tend to save energy for seven, fifteen or even twenty years. As efficiency programs operate over several years, the lost revenues from every year's activities accumulate over time and become very large. However, as soon as the utility has a rate case, the new rates are based on sales estimates that account for all efficiency savings from the previous years, and the lost revenues are set to zero for the current year. They then begin to grow again with the next year's efficiency savings.[19]

Ideally, utilities should not be allowed to recover lost revenues, because such collections either increase rates or reduce the amount of funding available for efficiency. Also, a direct calculation of lost revenues (i.e., efficiency savings times the fixed component of rates) can significantly overstate the amount of revenues actually lost by the utility because (a) they can frequently sell the power from the freed-up generation off-system at a price that can cover some or all of the associated fixed costs, and (b) sales growth (i.e., from economic activity or weather patterns) can offset the lost revenues. Nonetheless, recovery of lost revenues tends to be very important to utilities because of the fact that the more energy they save, the more revenues they lose, and the more profits are reduced – all else being equal.

If the efficiency programs are implemented by a third party administrator, then there is no need to provide local utilities with recovery of lost revenues. The "efficiency utility" would be seen as a competitor to the electric utilities – equivalent to the way that gas utilities and oil companies currently compete with some electric end-uses – and thus the

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[18] Most utilities/states use a historic "test year" for setting rates, which typically is the most recently completed calendar year. Some use a future test year for setting rates, but even these only look forward for one year and do not account for efficiency savings beyond that.

[19] The lost revenues are linked to the price impacts, depending upon the timing of rate cases. If there are no rate cases for a long period of time, then there are no rate impacts of efficiency programs but there are high lost revenues. If there are frequent rate cases (or revenue caps), then the rate impacts are higher but there is less lost revenue.

utility would not need to be compensated for lost revenues from its activities. Eliminating the need for lost revenue recovery payments to utilities is one of the benefits of a third party administrator.

If efficiency programs are implemented by a utility, then the utility should only be allowed to collect lost revenues under certain conditions.[20] The best way to address lost revenue concerns is to establish a net revenue cap approach to setting electricity prices. Under this approach, a utility's rates are adjusted (reconciled) periodically to account for changing conditions over time (weather, load growth, efficiency savings, etc.). In this way, a utility's net revenues are "decoupled" from its sales levels, and there will be no lost revenues from energy efficiency programs. Using a revenue cap approach to address lost revenues is better than a direct calculation and recovery, because it can account for other factors that will offset lost revenues, especially load growth.

In the absence of a revenue cap approach to ratemaking, utilities should not be allowed to recover lost revenues directly associated with their efficiency programs. As noted above, direct calculations of lost revenues can significantly overstate the actual lost revenues that are experienced by a utility. Similarly, some utilities may be experiencing great returns on equity and may not need to have additional lost revenue recovery to maintain a reasonable return. The comments of CIGFUR seem to suggest that this is already happening for North Carolina IOUs. Also, recovery of lost revenues will require a significant amount of funding from ratepayers – funding which could instead be used to pay for efficiency programs or to keep rate impacts down.

As with all incentives for DSM, if third-party administration is chosen, the Commission will not have to concern itself with these issues, let alone mediate a potential battle over how such incentives are determined.

### Utility Shareholder Incentives

Utilities frequently seek some form of shareholder incentive to help offset the financial disincentives associated with efficiency programs. They argue that they should at least be able to make as much profit from efficiency as they do from investments in supply-side facilities – to help level the playing field.

If the efficiency programs are implemented by a third party administrator, then there is no need to provide the program administrator or the local utilities with shareholder incentives. Eliminating the need for shareholder incentives is one of the benefits of a third party administrator.

If the efficiency programs are implemented by a utility, then it may be appropriate to allow utilities a reasonable amount of shareholder incentives for aggressive, well-designed programs. The primary rationale for the incentive is to encourage utility upper

[20] Note that many states, e.g. most New England states, do not allow recovery of lost revenues.

management to provide the institutional support necessary for effective efficiency programs.[21]

There are many options for providing shareholder incentives. One is to allow utilities to put their efficiency expenditures in rate base and earn a return equal to the return from supply-side investments. The problems with this approach are (a) utilities tend to want to recover their DSM costs as soon as possible (i.e., to expense them): (b) it is not consistent with a PBF (which is nearly equivalent to expensing them); and (c) it rewards them for spending the money but not necessarily for saving energy.

A better option is the shared savings approach, where the utility is allowed to recover a portion of the net benefits of the efficiency programs (i.e., program benefits less program costs). This provides the utility with an incentive to lower costs, increase benefits, or both.

Either way, the amount of the shareholder incentives should be kept as small as possible, in order to allow more funds to be spent on efficiency. Shareholder incentives should be explicitly capped and should not exceed 10% of DSM program budgets. Also, the amount of that capped incentive should be driven by performance, for example in terms of energy and peak load savings, market transformation, or (perhaps) cost per unit energy savings. Five percent of program budgets is a more reasonable balance between providing a meaningful signal to management and maintaining most of the DSM program funds.

Table 2 presents a summary of state policies that provide investor-owned electric utilities with shareholder incentives for implementing energy efficiency programs.

[21] Some utilities argue that the shareholder incentive is needed to offset the risk of implementing energy efficiency programs. In most cases, especially with an SBC, the risks of implementing efficiency programs are very small, if they exist at all.

**Table 2. Summary of Current Shareholder Incentives for Energy Efficiency Programs**[22]

| State | Performance Incentive Type | Basis for Performance Metric? | Amount of Compensation Available (Max Value of % of Program Expenses | Process/Ease of Application |
|---|---|---|---|---|
| AZ | Specific financial reward | Share of net benefits | 10% of program budget | Funding cycle not completed yet; part of general rate cases. |
| CT | Specific financial reward | Savings goals and other program goals | Up to 8% of program costs before taxes | Fairly straight-forward. Good track record. |
| MA | Specific financial reward | Multi-factor performance targets: savings, value and performance | Up to 9% of program costs before taxes (5.5% after taxes) | Fairly straight-forward. Good track record. |
| MN | Proportion of overall net benefits | Energy savings goals | Up to 30% of program costs for reaching 150% of program targets. | A little more complex than most. Good track record. |
| NV | Increased rate of return on equity | Program spending goals | Extra 5% return on equity for EE investments | Somewhat complex. New, no record yet. |
| NH | Specific financial reward. | Savings and cost-effectiveness goals | 8-12% of program budgets | Fairly straightforward. Good track record. |
| RI | Specific financial reward. | Savings and cost-effectiveness goals | 5.5% of program costs | Fairly straightforward. Good track record. |
| VT | Performance goals: administration & delivery | Multi-factor performance targets: program results, market effects, and activity milestones | About 2% of total contract | Assessed and awarded over length of contract period – 3 years. |
| WI | Allowed to earn same rate of return as for supply-side investments | Determined in rate cases; not specified | Not available | Part of much larger process – rate cases |

In general, these mechanisms are reasonable ways of providing shareholder incentives, in those cases where incentives are necessary. The Connecticut and Rhode Island mechanisms are preferable, as they reserve more funding for the energy efficiency programs and provide a smaller portion of the maximum savings for performance that just meets the minimum threshold.

Like lost revenues, shareholder incentives should only be provided in return for aggressive, well-designed efficiency programs. In addition, they should only be provided for utility programs that receive sufficient regulatory oversight and stakeholder input

[22] Excerpt of Table A-1 in Kushler, Martin, et. al, "Aligning Utility Interests with Energy Efficiency Objectives: A Review of Recent Efforts at Decoupling and Performance Incentives." October 2006.

(e.g., through a meaningful collaborative process). Finally, they should only be collected for programs that have been subject to proper monitoring and evaluation studies, and the amount of the incentives must be based on the post-evaluation estimates of efficiency savings.

## 5.2 Utility Administration

Utility energy efficiency programs have long been funded by flowing program costs into rates as part of general rate cases or true up mechanisms. A more recent trend in states that have adopted retail choice and some that have not is to establish a separate, non-bypassable charge on energy bills to fund public purpose programs, primarily energy efficiency, but sometimes including renewable energy development and universal service programs. Such charges are often called a system benefits charge (SBC, this is the same as a public benefits fund charge).

In the past, many regulators required electric utilities to implement energy efficiency programs. Utilities were chosen for this important task because they and their customers could benefit from the reduced electricity costs, they have the necessary infrastructure for raising funds, and they could be encouraged through the regulatory ratemaking process. However, experience with utility-run efficiency programs in the past has demonstrated that utilities are reluctant to implement energy efficiency programs because efficiency savings lead to lower sales which can, in turn, lead to lower utility profits. Energy efficiency programs work directly against the central mission and primary motivating factor of many electric utilities: the maximization of profits. Utilities have been unwilling to implement successful efficiency programs without aggressive regulatory pressure combined with ratemaking policies to overcome the financial disincentives to efficiency programs.

There are certainly examples of successful utility administration of efficiency programs despite the utility disincentives. However, the choice between utility administration and third party administration in North Carolina's case, ought be informed by the answers to the following questions:

1. Is there a solid history of utility involvement and success in delivering DSM programs? Have utilities steadily improved the comprehensiveness, effectiveness and responsiveness of their programs?
2. Is there an established and effective structure of regulatory performance incentives in place?
3. Do the utilities in question have a history of incorporating energy efficiency resources into their supply planning and portfolio management?
4. Is there an experienced and competent utility DSM staff in place?

Clearly, the answer to all these questions is "no." We believe that there is a strong case to be made for third party administration of efficiency programs in the State of North Carolina.

## 5.3 Third Party Administration

Given utility concerns about energy efficiency, a third-party administrator will likely be far more successful in implementing cost-effective and aggressive energy efficiency programs. Third-party administrators do not face the powerful disincentives that utilities face. Instead, third-party administrators would consider the successful implementation of aggressive efficiency programs to be their central mission and overriding business objective, as opposed to being antithetical to their central mission. Many contentious and cumbersome regulatory policies will not be necessary for third-party administrators. Once the administrator has been established and operating, there will be relatively little regulatory oversight required. Energy efficiency funds that would have been set-aside for utility rewards, can instead be invested productively in efficiency measures.

There are other significant benefits to adopting third-party administrative systems. They can:

- Implement programs for multiple utilities, thereby providing consistency from one service territory to another. This can be an enormous advantage for all the "trade allies" who participate in programs (designers, engineers, retailers, installers, etc.) who would have only one set of program requirements to deal with.
- Develop much broader relationships with groups of customers (government or commercial building managers, schools, business associations), state and federal programs (state efficiency codes, Department of Energy programs, Energy Star) and trade ally groups. These partnerships help recruit program participants, but also help change efficiency practices over time.
- Deliver gas and electric efficiency in a coordinated way. There are huge potential increases in administrative efficiency and in savings to customers by having a program that addresses whole building efficiency.
- Deliver other services if they are permitted. Efficiency services can be delivered in conjunction with combined heat and power (CHP) services (especially if gas and electric DSM are being delivered). Load control and distributed renewable energy can be integrated into the offerings of an independent administrator.

Many of the top-performing states in energy efficiency have utilized a third-party administrator. Efficiency Vermont, the independent efficiency utility in the state, was established in 2000 and has achieved the following:

- In 2002, Vermont had the highest market share of any state for Energy Star room air conditioner sales (61%) despite its relatively cool climate, and in 2003 the highest statewide market share for Energy Star clothes washers, with a remarkable third-quarter market share of 62%.
- In 2002, Vermont had the highest statewide market share in the lower 48 states for Energy Star residential new construction (25%).
- All of the 74 retail appliance dealers with showroom floor space in Vermont have partnership agreements with Efficiency Vermont, promoting the sale of Energy Star appliances and offering Efficiency Vermont rebates.

- Efficiency Vermont has approximately 155 retail partners who cooperate to promote Energy Star lighting products and accept Efficiency Vermont's instant discount coupons. This is estimated to represent well over 90% of hardware stores, lighting specialty stores, home improvement stores, and electrical supply houses that sell to Vermont consumers.[23]
- Almost all new construction or substantial rehabilitation projects for multifamily affordable housing in the State now routinely partner with Efficiency Vermont to address energy efficiency (approximately 500-800 units/year). In partnership with Efficiency Vermont, both the State's Housing Finance Agency and Housing and Conservation Trust Board adopted standards in 2004 that set the efficiency level for all new affordable housing construction they support at a minimum of the Energy Star level.
- For the larger (over 25,000 square feet) new construction market, it is estimated that over 90% of all construction now engages with Efficiency Vermont and receives technical assistance and financial incentives to optimize energy efficiency. Overall, of a statewide estimated total of 500 annual permitted commercial new construction projects, Efficiency Vermont completed 142 (28%) commercial new construction projects in 2003.
- All of the architects, 80% of the engineers and 75% of the contractors surveyed as part of the State's evaluation of Efficiency Vermont in 2003 indicated that they "knew and recognized" Efficiency Vermont. Ninety percent of the engineers spontaneously identified Efficiency Vermont as the name of an organization that provides energy efficiency services in Vermont. Eighty percent of the engineers, half the designers and one third of the contractors reported using one or more services from Efficiency Vermont (Vermont Department of Public Service, 2003).

# 6. Summary of Recommendations

Our recommendations to the Commission on the four issue areas include the following:

Tests of DSM Cost-Effectiveness:

- The Commission should clarify that the Total Resource Cost test or the Societal Cost Test along with the Utility Cost test should both be used to evaluate the cost-effectiveness of DSM. The Commission should also identify in detail which types of costs should be included in each test.

- The Commission should clarify that the RIM test should not be used to evaluate the cost-effectiveness of DSM. Instead, if the utility or the commission are concerned about the potential rate impacts of a particular set of DSM programs,

[23] Penetration of the grocery and convenience store market remains low.

then the rate impacts should be properly estimated and compared with the reduction in costs associated with the DSM.

DSM Potential Studies

- The Commission should not pursue an additional DSM potential study, but should instead focus on the key next steps to develop comprehensive, aggressive efficiency programs in North Carolina.

DSM Programs and Collaboratives

- We support the use of a collaborative process to help design DSM programs in North Carolina. However, the current collaborative has not been successful, and any further collaborative efforts should be based on several key best practice characteristics, including a better definition of the goals of the group, a better definition of the decision-making process of the group, better recourse to the Commission for settling differences, better program reporting to the Commission, and financial support for technical consultants to support the design and review of DSM programs. If these items are not addressed, then we recommend that the Duke Energy DSM collaborative be discontinued.

DSM Funding, Cost Recovery and Administration

- Utilities should begin recovering DSM program costs through a system benefits charge of $3/MWh, which should be in place for at least ten years. After ten years, the Commission should review the size of the fund, but the presumption should be that it will continue for another ten years.

- The Commission should open an evidentiary hearing to establish a third-party administrator for the implementation of efficiency programs.

- If the utilities are allowed to maintain the function of administering DSM programs, they should be allowed to earn a shareholder incentive, but the incentive should be based on some indicator of performance and should be capped at 10% of DSM program costs.

- If the utilities are allowed to maintain the function of administering DSM programs, they should not be allowed to recover lost revenues or “ratebase” program costs.

We look forward to working with this Commission in pursuit of cost-effective energy efficiency in the State of North Carolina.