Report to the
Arkansas Public Service Commission

A Collaborative Stakeholder Process Addressing Energy Efficiency in Arkansas Pursuant to Docket 06-004-R

Compiled by Richard Sedano
The Regulatory Assistance Project
October 31, 2006

ERRATA November 2, 2006

1. Page 6	A sentence is removed – editing artifact
2. Page 10	Restate paragraph to more accurately attribute coalition supporting severely inefficient home quick start program
3. Page D-1	Restate introduction to Appendix D consistent with item 2.
4. Page D-9	An updated version of the severely inefficiency housing quick start program had been created prior to October 31, but a prior draft was included in the report. The correct draft has a replacement for bullet 6 under Program Design, replacements for bullets 3, 4 and 8 under Administration, a replacement for bullet 4 under Cost-Benefit, and the tables have been removed.

TABLE OF CONTENTS

Report of a Collaborative Stakeholder Process Addressing Energy Efficiency in Arkansas Pursuant to Docket 06-004-R

Introduction

The Arkansas Public Service Commission initiated this proceeding to investigate energy efficiency on January 12, 2006 with reliance on the Energy Conservation Endorsement Act of 1977.[1] See Order No. 1.

On February 21, 2006, the Commission hosted a day long public meeting – presentations are available on the PSC website. This was followed by introductory comments by interested stakeholders. These are also available on the PSC website.

This phase of the docket was initiated on June 30 with Order No. 3. The Commission determined that it would convene a collaborative process to address the following topics regarding energy efficiency programs in Arkansas:

1. The nature and design of energy efficiency and conservation programs that can be started quickly and produce near-term benefits for Arkansans.

2. The appropriate incentives and standards for customers and utilities.

3. The development of energy efficiency market structure principles and guidelines.

4. The advantages of fostering cooperative gas and electric energy efficiency program templates.

5. Possible development of a "deemed savings approach" for Arkansas.

6. The development of uniform standards and mechanisms for evaluating, measuring and validating energy efficiency programs.

7. The proper economic tests to use in determining whether a program is in the public interest.

The Commission no doubt anticipated that other relevant and important topics would emerge during the collaborative. The Commission wants these issues explicated in the process, but does not want the process to stop there. The Commission also wants to see draft rules reflecting the discussion and its conclusions. The Commission indicated that it is encouraging consensus among the parties, but is resolved to make choices among alternatives if the parties do not achieve consensus.

[1] Ark. Code Ann. Sec. 23-3-401 et seq. The Act is reproduced in Appendix F.

Some matters are imperative to resolve, at least provisionally, in order to start comprehensive programs. Other matters are important to the long term quality and success of energy efficiency programs in Arkansas, but are not important to resolve in this report. These matters will be identified and discussed in sections 8 and 9. A few topics of interest to the collaborative appear to require legislative attention, and these are discussed in section 10.

Several appendices list collaborative participants and references used in the process.

A draft rule drawn from this report accompanies this report to the Commission.

The collaborative met five times over nine days from August 28, 2006 through October 27, 2006. While the process duration was short, coverage of the important matters related to program administration and implementation were discussed, and the views of many different parties made for a rich discussion. Still, inexperience with various aspects of energy efficiency on the part of many indicated that more time for learning and processing will be necessary and this will have to occur in other forums. With the delivery of this report and the associated draft rule, efforts to further create and refine new energy efficiency programs in Arkansas will move to comments directly to the commission by the parties in this docket.

As the collaborative was beginning, the U.S. Department of Energy and the U.S. Environmental Protection Agency issued the National Action Plan for Energy Efficiency, a set of recommendations from a broad-based group of stakeholders, supported by a lengthy report on how to stimulate energy efficiency investments across the country.[2]

Other formative documents for this process include a 2003 report by the National Petroleum Council,[3] and the report of the Department of Energy in response to Section 139(c) of the Energy Policy Act of 2005.[4]

In the midst of the collaborative, the North American Electric Reliability Council released its 2006 Long Term Reliability Assessment. The report warns of a decline in reliability as forecasted growth in energy use exceeds the forecasted ability to maintain sufficient resources to serve demand. The report points to the potential for increased demand side resources that can slow growth and improve reliability. This report underscores the importance and timeliness of this collaborative process and the actions to follow.[5]

This collaborative began with perhaps the most important ingredient for successful energy efficiency programs: leadership. The hard work of the collaborative participants, listed in Appendix A, has provided the material to build on that leadership.

---

[2] http://www.epa.gov/cleanenergy/actionplan/eeactionplan.htm (NAPEE Report) (October 30, 2006)
[3] *Balancing Natural Gas Policy, Fueling the Demands of a Growing Economy,* http://npc.org/reports/NG_Volume_1.pdf, National Petroleum Council, 2003. (October 30, 2006)
[4] http://oe.energy.gov/energy_policy_act.htm (October 30, 2006)
[5] ftp://www.nerc.com/pub/sys/all_updl/docs/pubs/LTRA2006.pdf (October 30, 2006)

1. The nature and design of energy efficiency and conservation programs that can be started quickly and produce near-term benefits for Arkansans.

Programs – It is important at the outset to note that some electric and gas program opportunities may be distinct in Arkansas, and so aspects of them will be discussed separately. Initially, electric and gas programs should be substantially similar to the extent reasonable.

The collaborative also discussed the merits and challenges of coordinating programs statewide. Generally, utilities are less interested in coordination than some other participants, though they accept that there may be some tendency to coordinate on their own over time. There was some interest in some unified public information program, perhaps involving by the Arkansas Energy Office.

The collaborative members with the exception of the Attorney General generally favored the creation of a pre-reviewed list of programs. The PSC Staff suggested a list that appears in a text box with some amendments. The list is intended to encompass most of the programs that will be offered in Arkansas for electric and gas customers. The collaborative suggests that upon acceptance of this report, the PSC should identify the initial program administrator and should direct program administrators to provide evidence needed to "characterize" these programs, indicating that specific utility programs that are consistent will have a presumption of prudence. Characterizing a program means identifying the services provided, the expected target population of customers, the way barriers to investment by the customer are addressed (including any limits on financial incentives), the goals of the program and the indicators of success, the way performance of the program will be measured, and how the program will be evaluated and improved, if appropriate. The programs would also be justified by providing the Commission with benefit/cost test results. See section 7 on benefit/cost tests.

The Attorney General argues that each program should get a complete benefit/cost review before it is implemented and should have evaluated program results before any cost recovery decision is made.

The issue of who should administer energy efficiency programs is taken up later in this section. The administrator should have the ability to recommend program plan modifications from time to time, and to be able to introduce new programs not on the pre-reviewed list, with the specific permission of the Commission.

Implementing pre-reviewed programs as planned would provide support for cost-recovery – this will discussed further elsewhere in the report. Administrators would have flexibility within this list to deliver the most appropriate programs for the service area at the time.

There is little enthusiasm for a specific list of programs for each sector that all utilities in that sector would have to deliver.

PSC Staff's Recommended List of Initial Program Categories

Education: This would include the education of customers of all classes on energy efficiency and conservation. It should, to the greatest extent possible, be a consistent statewide group of messages. It should include education of builders and installers of equipment. All messages should be fuel neutral. The messages should encourage the efficient use of electricity and gas. The messages should increase awareness of opportunities to use electricity and natural gas more efficiently. This category of programs would apply to all customer classes.

Energy Audits, Evaluations leading to savings: This would include home and commercial energy audits and audits of commercial and industrial processes and equipment. The audits and evaluations would produce recommendations for opportunities to implement site specific efficiency and conservation measures. Programs would be designed for audits to lead to savings results, and could include cost-effective and economically justified customer incentives to encourage the implementation of site specific measures. This category of programs would apply to all customer classes. A training component to increase the number and quality of auditors will be needed.

Inspection and tune up of heating and air conditioning systems: This would be applicable to residential, commercial, and industrial systems. This category of programs would apply to all customer classes.

Lighting: Improved lighting for residential, commercial, and industrial customers. This category of programs would apply to all customer classes.

Increased deployment of demand response programs: Many programs already exist. This would look for additional opportunities to offer demand response programs including interruptible service, curtailment service, off-peak service, etc. In the near term, this category of programs would apply to commercial and industrial customer classes and may eventually extend to residential customers.

Weatherization: A Residential weatherization program that would be based solely on efficiency criteria, targeting least efficient homes first. Establish clear criteria to target the least efficient homes first. This category of programs would apply to the residential customer class.

Commercial and industrial process improvement program: This program would target the least efficient commercial (including institutional and public sector customers) and industrial processes, providing some funding for technical assistance and improvements.

Some parties, however, prefer a third-party program administrator independent of the utilities. Such an entity, which is used in some other states, would presumably offer a consistent menu of programs throughout the state. The Attorney General emphasizes the importance of coordination. Consistency may be helpful to both customers and providers

of energy efficiency products and services. The Attorney General suggests that program offerings should be limited to programs that can be coordinated, especially if utility administration is chosen.

The collaborative discussion has revealed the need for balance between program flexibility and consistency.

Participants recognize the importance of selecting programs that will have a high probability of producing aggregate ratepayer benefits for the majority of customers[6] and will be available to all classes of customers in all utility territories. This will have the effect of demonstrating the value of the programs to Arkansans who might demand more evidence, and will also contribute to assuring the immediate costs per saved kWh or ccf are acceptable despite some significant start-up costs that will not produce direct savings. On the other hand, participants also seem to support some percentage of the program budget going to market transforming programs, from which savings may develop slowly. Initially, education programs will likely be the only "transforming" program that will have a high probability of producing aggregate ratepayer benefits for the majority of customers (though most energy efficiency programs have some transforming qualities).

The collaborative discussed the possibility that a popular program could exhaust resources allocated to it during the program year. Program plans should anticipate this possibility and explain what action the administrator will take in this event.

As many states operate energy efficiency programs, the issue of importing programs from elsewhere has emerged. Utilities and other participants are interested in learning from other states, but want to ensure that programs will provide benefits for Arkansas and do not want to simply copy programs from elsewhere.

All utilities advocate that programs should pass a benefit/cost test (this subject is addressed elsewhere in this report).

To avoid competitive issues at this early stage of program development, the collaborative participants are generally supportive of a program approach that seeks to make existing end uses more efficient in a fuel neutral way without encouraging fuel switching, at least for the near future. The Attorney General expressly opposes load building. Some gas company and renewable participants would prefer to leave this issue open. Participants were supportive of program designs that encouraged multiple measures at a premise and a holistic approach to building energy efficiency. Initial programs should present customers with a listing of available options from which the customer can select the items that he or she determines to be most desirable or affordable.

Issues related to coordinating electric and gas programs will be discussed in section 4, though fuel neutrality between electricity and gas is also discussed in this section.

[6] This phrase is used many times in this report and elaborates on the meaning of "cost-effective."

It is likely that contractors will be deployed by program administrators, especially to launch programs quickly, but the collaborative did not focus on this much. Out-sourcing would enable smaller utilities to draw quality experience to Arkansas. The collaborative discussed the value of developing an in-state workforce to support energy efficiency programs, but beyond the training components of some programs, came to no recommendations on this point.

Programs, Generally – The utilities suggest that program options be evaluated using a "program prioritization process" that includes:

- measuring the relative benefit/cost tests;
- expected savings;
- how fast results can be achieved; and
- risks and uncertainty around expected results.

Public information is a program focal point that all parties seem to support. The collaborative identified three categories that the Commission may find useful:

- general information about energy efficiency that the state would financially support;
- utility specific energy efficiency messages that the utility would support from general revenues; and
- energy efficiency program specific information that would be supported by program funds.

Some participants favor an all-utility approach to public information (organized by utilities, perhaps involving the Energy Office) to ensure some consistency and coordination, while the electric and gas utilities wish to focus on energy efficiency within their own sectors. Advocates for a statewide public information effort suggest that the Commission can articulate situations in which generic statewide messages would be appropriate. These criteria might include:

- capability of the Energy Office or other appropriate group to manage the message;
- economies of scale in delivering the message with a statewide focus;
- distinct advantages of a statewide approach as compared to utility-specific strategies, like use of a logo or a catch-phrase, or specific promotions at stores in many utility territories;
- cooperative initiatives that utilities develop themselves.

This report will discuss public information on energy efficiency in each of the electric and gas program sub-sections, touching on opportunities to merge efforts.

The Attorney General does not have confidence that general energy efficiency messages can be successfully coordinated under gas and electric utility administration due to the stress of conflicting messages among the companies.

The collaborative discussed the role of the Commission to review messages to assure that they are consistent with the public interest purpose of energy efficiency. Some felt strongly that utilities should have the opportunity to communicate what they wish to

customers. The coops argued against placing the commission in the position of approving communications with their customers. Others, while not disagreeing, asserted that cost recovery for the expenses associated with these communications should depend on meeting some public interest standard that only the Commission can judge. Objective standards, like Energy Star, would provide tools to make judging these messages easier, but these are not yet comprehensively available.

The collaborative discussed the pros and cons of programs specifically designed for low income families in recognition of distinct barrier to energy efficiency investments that they tend to face. As discussed later in the report, the collaborative concluded that it cannot recommend a low income-specific program to the Commission due to ambiguous legal grounds for it to order any low income oriented program, though Centerpoint demurred from this conclusion.[7]

Public schools represent a statewide initiative that can capture the attention of the public in a positive way, and make a difference in the operating budgets of school systems. Recognizing that school construction is expressly handled elsewhere in state government, the collaborative recommends that the Commission and the Energy Office communicate with the appropriate state officials about any new energy efficiency opportunities which may be available for new school construction. Schools will come up as well in the following discussion on consumer education energy efficiency programs.[8]

Some, including the Attorney General, suggested that the popular success of retail point of sale discount or rebate programs in other states indicates that it would be a good choice for Arkansas if it is used for a strategic number of products,[9] if the promotions are managed and updated as necessary, and if Energy Star is used to support promotions. Such programs are run by program administrators, and rely on cooperation from retailers (Wal-Mart indicated that expecting such cooperation is reasonable). Training for personnel in stores cooperating with point of sale programs is important.

Other participants expressed doubt about this program choice. They are concerned that they would cost too much to make a difference in customer behavior compared with other opportunities to improve construction skills and provide widespread efficiency messages. Another challenge is assuring that a given customer's utility gets credit for savings from a sale in a store which could draw customers from many utilities, though the collaborative clear ways to meet this challenge. An added factor are increased appliance efficiency

[7] See Arkansas Gas Consumers, Inc. v. Arkansas Public Service Commission, 354 Ark. 37.118 S.W. 3d 109 (2003)

[8] Ark. Code Ann. §6-20-405 permits schools to contract for energy savings, conservation, and efficiency measures. Programs addressing school should make use of this authority and avoid conflict.

[9] The Attorney General suggest some particularly promising opportunities:

- retail purchase of off-the-shelf "plug and play" equipment and appliances (refrigerators, washers/dryers, dishwashers, room air conditioning units, lighting products (bulbs, lamps, and to a lesser extent fixtures);
- installation of energy efficient equipment and weatherization materials (central air conditioners and furnaces, water heaters; insulation, windows, weather-stripping); and
- new construction (residential and commercial).

standards which appear to narrow the savings available from point of sale initiatives. One suggestion was to begin a process of training appliance installers and sellers, and bring on a point of sale program later.

Entergy offered three "quick start" program templates that could be offered by utilities and joined with a group of other participants on a fourth. The three Entergy proposals address commercial air conditioning, industrial processes and public education. The fourth addresses severely inefficient homes. All four can be found in their entirety in Appendix D. The severely inefficient homes proposal was developed in concert with the Community Action Agencies, AWG and AOG and is discussed in more detail later in this section. In total, they represent templates that could be fleshed out and approved by the commission. Utilities would be able to design programs consistent with these templates.

The Energy Office discussed the value of including home energy ratings and mortgage lenders in residential programs.[10] Gas companies expressed concern that home energy rating systems should have no bias between fuel types and discouraged reliance on this tool if concerns about bias are not resolved.

The PSC Staff provided a list of general programs. The list identifies categories of programs the Commission could establish. The initial Commission order would establish the initial program categories and direct the utilities to offer specific programs within each category. All programs filed should have a high probability of providing aggregate ratepayer benefits to the majority of customers. Individual utilities would file programs within the categories. All programs should be fuel neutral. Gas and electric programs would be consistent.

During the Collaborative the participants discussed the possibility of "pre approved" programs. Most participants agreed that it would be unlikely that a specific menu of programs ready to implement could be developed in this process.

To address the Commission's expressed desire to implement programs quickly, the PSC Staff proposed a process whereby the Commission could identify a limited number of "quick start pilot programs". Based upon the Commission's stated intention of entering an order around the beginning of 2007 (roughly two months from the date of this report), the PSC Staff observed that the Commission could, in that order, identify "quick start pilot programs". If an order is issued at the beginning of 2007, and if utilities are given administrative responsibility, utilities could make filings in April 2007 proposing utility-specific implementation of the "quick start pilot programs". The Commission could then provide a schedule for the review, analysis, and consideration of those programs. A schedule that would permit implementation by September 2007 would be reasonable. Some compression of this time may be possible, but care must be taken to make these initial efforts successful.

[10] Efficiency Vermont offers through its Home Performance with Energy Star program a reduction of 3.5% on the interest rate for energy efficiency home improvement financing. Efficiency Vermont makes a lump sum payment to the cooperating financing institution to buy down the interest rate, so the administrator is not acting as a bank, but is directly addressing a barrier to energy efficiency.

The utility specific "quick start pilot programs" would have to include some evidentiary support demonstrating that the programs had a high probability of providing aggregate ratepayer benefits to the majority of ratepayers. The Commission could require a modified cost effectiveness showing for the "quick start pilot programs". Because the programs would be pilots, the Commission may not require the full battery of benefit / cost tests included in its rules. Instead, an alternative showing, such as an avoided cost comparison exclusively, may be deemed sufficient for the pilot programs. The utilities could provide additional information if it were available. Owing to the pilot status of the programs, the utilities would provide clear questions that program results can address which will be applicable to up-scaled and new programs in the future. The "quick start pilot programs" could be introduced quickly while the more detailed program plans could be more thoroughly developed and filed in 2009.

The PSC Staff suggested the "quick start pilot programs" in the text box in this section. The numbers of "quick start pilot programs" should be limited in order to enable implementation during 2007. The "quick start pilot programs" could serve to provide valuable information regarding the effectiveness of the programs, experience in delivering programs, potential customer response to conservation and energy efficiency programs, and other information.

In addition to the discussion of the "quick start pilot programs", Entergy and other utilities raised the possibility of the development of a template of programs and common inputs that the utilities could develop jointly and present to the Commission for pre-review. If approved, each utility would then be able to submit a utility-specific filing consistent with the approved template and common input items. All the utility would be required to add would be the utility specific cost information and implementation criteria. This approach could simplify the review of the utility specific program filings, because the templates and common input items would be reviewed in a single joint proceeding. The utilities indicated an interest and willingness to participate in the joint development of such templates. The Attorney General prefers focusing all review on the actual program plan proposals. The participants agreed that it would not be necessary for the rules to address that process.

Gas Programs - The gas utilities offered a straw proposal of "fast-track" programs to build on in order to develop a list of programs. They support a public awareness campaign to promote energy conservation and available programs. Examples of media include educational fact sheets; public awareness campaigns using television or radio advertisements; bill inserts; direct mail; educational seminars; email/fax campaigns; and website promotions. Educational and public awareness materials on energy efficiency should be developed and provided to both end-use customers (residential and commercial/industrial) and to business partners such as mechanical contractors and consulting engineers that may influence a customer's decision on energy efficiency.

They suggest several programs that would be pre-reviewed should be considered for implementation at some near future time, such as:

- incentives for residential high-efficiency furnaces, boilers and water heaters;
- weatherization and replacement of inefficient appliances in inefficient homes in collaboration with the Community Action Agencies;
- residential low-flow showerheads and faucet aerators;
- commercial heating system incentives; and
- commercial foodservice incentives.

Other suggestions for programs include wrapping water heaters and providing energy audits.

The gas companies indicate that implementation of rebate programs will take time to ramp up and implement in Arkansas primarily because of the need to engage third party trade allies and various vendors of goods and services; therefore, while they have a relatively swift development phase, they appear not to meet the fast-track expectations for implementation in Arkansas. Others are more optimistic that some rebate programs can work quickly. In any cases where rebates are used, they must be demonstrated to be a component of a cost-effective program, as discussed in detail in section 7.

Electric Programs – The electric companies point out that some of them have significant energy efficiency and demand response programs underway now (see text box). They suggest several program initiatives that can be started quickly and produce near-term benefits for Arkansas.

The electric utilities also support the inclusion of energy efficiency communications and educational programs among pre-reviewed energy efficiency programs. The electric companies suggest that benefit tests for these expenditures are not meaningful and should not be required, since direct savings cannot be tracked. Others suggest implementing immediate surveys to provide a baseline to evaluate changes in customer behavior attributable to these programs. Additional support for efficiency education may be found in Ark. Code Ann. § 23-4-207 (c) (4) statute.[11] While the statute pertains to the recovery of "advertising costs", the statute supports the concept that efficiency education is encouraged by Arkansas law and should be recoverable in rates.

The electric cooperative utilities prefer to engage in education that is directed to their own consumers and do not wish to participate in a joint "statewide" educational mandate. A menu of public education topics includes:

- Residential, commercial, and industrial efficiency audits for existing and proposed construction
- Field investigations for high usage and high bill complaints
- The construction and demonstration of model homes which stress efficient construction methods and efficient appliance selection (including heating and cooling)[12]
- Public seminars and programs offering energy efficiency information

[11] Ark. Code Ann. § 23-4-207 (c) (4)

[12] This is a current practice of some cooperatives. As a program, this idea produced some strong negative reactions for its tendency to drift toward a fuel bias toward electric uses.

- Working with schools to educate students regarding the benefits of energy efficiency
- Education of builders and installers and support for trade organizations stressing efficient sizing and proper installation of heating and cooling units
- Educational efforts directed toward efficient appliances (ground source heat pumps, high efficiency water heating, and high efficiency air-to-air heat pumps, etc.)
- Education about Energy Star rated appliances
- Mass media efforts stressing the benefits of energy efficiency, proper construction, and retrofit methods
- Making books, pamphlets, electronic energy efficiency educational materials available to schools, public libraries, and consumers
- An energy efficiency web-site
- Provide consumers with information regarding warm and cool room retrofits inside existing homes
- Educate consumers about available savings through existing demand response rates or credits

Note that some of these, like audits, or Energy Star appliance information, may better fit in other programs that offer specific energy efficiency services and incentives. Additional purposes of a public information program that the collaborative discussed are: assembling lists of contractors and promoting energy efficiency behavior in school children. Administrators would have to evaluate priorities in terms of benefit/cost, time to implement and savings potential. Please see the gas-electric coordination section of the report on whether and how fuel options available to the customer should be handled.

Acknowledging the prior discussion on point of sale rebates, the electric utilities suggest a menu of non-educational energy efficiency programs:

- Home weatherization programs and measures, including rebate programs,[13] including:
    - Insulation
    - Air infiltration sealing
    - Heater / Air Conditioner tune-up
    - Programmable thermostats
    - Duct system replacement or retrofit
    - Replacement of inefficient appliances;
- Purchase or lease of high efficiency water heating appliances;

[13] During the collaborative's discussion of rebates, participants addressed the challenge of fuel neutrality with respect to end uses in common with electric and gas. The collaborative acknowledged that rebates should not introduce an undue bias to fuel selection by customers, especially with utility administered programs, concluding that programs should be fuel neutral. Associated messages should give customers information to help make informed choices based on their needs. Some observed, however, that if the customer wants to fuel switch and improve the efficiency of the end use in the process, and the only barrier is money, then energy efficiency programs should be able to make that happen. This scenario underscores the importance of resolving the full fuel-cycle efficiency issue and how it influences program design.

- Geo-thermal heat pumps;
- High efficiency air to air heat pumps;
- High efficiency air conditioners exceeding federal standards;
- Energy efficiency loan programs;
- Promotion and sale of high efficiency and compact fluorescent lighting;
- Commercial lighting replacement or retrofit.

Energy Efficiency Programs Underway by Some Arkansas Electric Utilities

- Free or low cost energy audits for existing and planned construction
- A model home program stressing efficient construction methods and efficient appliance selection (including ground source heating and cooling)
- Public seminars teaching energy efficiency
- Some utilities offer energy efficiency loans
- Mass media education stressing energy efficient construction methods and appliance selection
- Education in schools
- Public education and the sale of compact florescent lighting
- Some utilities offer a leasing/sales program for ultra efficient water heating
- Field investigations for high usage

The electric utilities are also interested in improved use of demand response. The PSC Staff list includes this category, which could be expanded include investments in devices on the customers' premises that support demand response, such as smart thermostats. In addition to demand response programs that may be initiated or expanded in this docket, addressing rate designs that influence consumption on peak is addressed elsewhere in this report.

Further Discussion of Programs, Generally – The collaborative spent significant time discussing an inefficient homes program. The discussion focused on the potential to address a significant reservoir of inefficient energy use in a manner consistent with Ark. Code Ann. Section 23-3-403(1).

Because the state weatherization program addresses inefficient homes today, some, led by the community action agencies and some utilities, suggested that this delivery system would work well for a statewide inefficient homes program. The community action agencies would be able to do more with the expertise they have amassed, and they would allocate the costs of services they would provide between federally-funded weatherization and consumer-funded energy efficiency. The community action agencies and the Attorney General point out how quickly the agencies could mobilize to implement this program. The agencies would deliver the program on behalf of the program administrators, which would retain overall responsibility and report results as part of overall reporting requirements. Proponents also suggested that the program should be more comprehensive in each home than the current weatherization program. The community action agencies report that they spend an average of $2800 per home with the weatherization program at the roughly 1100 homes they treat per year. They suggested an

expected budget average of $3500 per home with the inefficient homes program; the difference is greater attention to replacing inefficient appliances.

Some participants expressed several different concerns.

- Some were concerned that the appearance of the community action agencies delivering the program and the state's human service agency administrative responsibilities would leave an unresolvable suspicion that the program is a means tested service, regardless of how it is billed;
- Some were concerned at the administrative costs;
- Some wanted the chance for administrators to choose implementers other than the community action agencies;
- There was also a discussion whether the program should extend to even more homes, rather than striving to be comprehensive, but serve just 1100 additional homes;
- The cooperatives expressed concern about a third-party interrupting their relationship with their customers.

A scaled back version of the inefficient homes program appears in the group of quick start programs offered by Entergy in Appendix D of this report. The collaborative fielded suggestions from participants, including a full fledged proposal from the PSC Staff, but there was no consensus on a specific residential weatherization program. Both proposals appear in Appendix E.

State and local government can set an example for others to invest in energy efficiency. State and local governments in other states rely on energy efficiency programs especially ones directed at the commercial class, for significant technical support and incentives. One program that can be mobilized quickly with local government is an investment in LED traffic signals.

CLEAResult suggested the following criteria for quick start programs:

- Consideration of programs that can be implemented relatively quickly either due to the program nature or for the conditions present in Arkansas that allow for quick implementation of the program.
- No consideration of whether the programs could be implemented by a third-party program implementer or by the utility.
- Consideration of available measurable savings in the period in which the program expenses were incurred.
- Consideration of market segments that are particularly attractive or important to Arkansas.
- Consideration of programs that could be leveraged by both electric and gas utilities

Program suggestions appear in text boxes above with comments on some from other collaborative participants. Note that the PSC Staff proposal is more limited than the CLEAResult lists. PSC staff recommends that the initial effort start small and implement

programs that are very clearly cost-effective.[14] In the discussion of the collaborative, the group coalesced around the PSC Staff list, identifying reasons why some of the CLEAResult ideas would be best left to be implemented later.

CLEAResult discourages residential new construction, residential lighting programs and residential windows programs. They suggest that housing starts are slow, that compact fluorescent bulbs are available in mainstream stores at reasonable prices, and that energy efficient windows are the norm in home stores.

CLEAResult Suggestions for Commercial and Industrial Quick Start Programs

Programs for both Electric and Gas

- **Retrocommissioning** – This program focuses on re-commissioning buildings to operate as efficiently as they were intended to operate. This program usually has very high returns with fast paybacks. This program provides incentives for efficiency measures implemented, training to building owners and operators, as well as improving the skills of technicians providing services to building owners. This program can identify efficiency improvements for both electric and gas technologies, however the savings will be more heavily weighted to the electric technologies.

- **Schools Conserving Resources (SCORE) Program** – This program focuses on improving k-12 public school districts' energy performance and provides incentives for energy efficiency upgrades that are completed. This complements existing capital needs of schools throughout Arkansas. This program is popular in Texas.

- **Prescriptive Incentive Programs** – These programs offer a fixed-dollar incentive for multiple defined prescriptive measures such as lighting, HVAC replacements, occupancy sensors, motors, etc. Program participants are provided incentive levels and participation forms, and small businesses select their own contractors or service providers to install the efficiency measures.

Programs for Electric Only

- **A/C Tune-Ups** – This program focuses on improving the performance of commercial A/C systems. Based on national studies, over 67% of A/C systems are installed incorrectly with improperly charged refrigerant and improper airflow across the coil. Over time, system performance further degrades and A/C systems become even more energy intensive. For commercial programs such as this one, training to improve service skills should be provided to contractors. Large savings are achievable for relatively low costs for this type of programs. Savings will lag until training is complete.

Industrial

- **Compressed Air Programs** – These programs provide auditing and incentives for improving the performance of compressed air systems. Compressed air systems usually leak substantially, and training and awareness of more efficient systems offers high returns for both the utility and the customer. This program can be leveraged with the U.S. Department of Energy Compressed Air Challenge Program.

- **Industrial Process Programs** – These programs focus on improving the energy efficiency of industrial processes. Industrial customers are worked with on an individual basis to identify opportunities for energy savings that are specific to their circumstances and operations.

[14] In describing cost-effective, PSC Staff used the following term, "high probability of providing aggregate ratepayer benefits for a majority of customers."

CLEAResult Residential Quick Start Program Suggestions

Residential Programs for Electric and Gas

- **Home Performance with ENERGY STAR** – This program focuses on improving the whole-house energy performance of existing homes by evaluating the envelope tightness, insulation, ducts, windows, and HVAC systems.

- **Appliance Programs** – These programs provide incentives to consumers for the purchase of high-efficiency appliances. Such appliances are usually required to meet or exceed ENERGY STAR standards. These programs are usually limited to clothes washers, refrigerators, and/or hot water heaters. Gas companies have pointed to the limitations of Energy Star for gas.

- **Manufactured Housing Tune-Up** – These programs usually focus on sealing the ducts in manufactured housing and improving energy performance. This program offers excellent savings returns for the utilities and for the program participants.

- **Low-Income Programs** – These programs focus on improving energy performance for low-income customers and can be leveraged with existing Weatherization Assistance Programs (WAP). While the returns on these programs may not be as attractive as other programs, they target the consumer group with the highest need for energy efficiency and cost savings. The collaborative has been clear that a means tested program is not possible in Arkansas at this time.

Residential Programs for Electric Only

- **A/C Tune-Ups** – This program focuses on improving the performance of existing A/C systems, which have similar problems as commercial systems regarding installation and maintenance. Performance degrades over time. In addition to training service providers, the program works with the residential new construction market to insure that new systems are installed and commissioned properly. Tuning up existing A/C systems can save up to 50% of an A/C unit's total energy use.

- **A/C Replacement Programs** – This program provides incentives for the replacement of existing A/C systems with new high efficiency systems. This program can be offered as a market transformation program to include training for HVAC industry professionals that achieves lasting market change or through a prescriptive approach. The collaborative discussed the value of a time limited opportunity to stimulate response and control costs.

Administration – There were distinct views within the collaborative on how to organize energy efficiency program administration.[15] The utilities had several reasons for favoring utility administration. They agreed that energy efficiency is a utility service, they hope to use energy efficiency programs to improve customer relations, and they hope to earn incentives if implementation is successful. Utility administration is the norm in most states. Centerpoint argues that the wording of the statute leads to utility administration.

[15] For more on energy efficiency program administration, see Who Should Deliver Ratepayer Funded Energy Efficiency? A Survey and Discussion Paper, Cheryl Harrington and Cathie Murray, Regulatory Assistance Project, May 2003.
http://www.raponline.org/Pubs/RatePayerFundedEE/RatePayerFundedEEFull.pdf (October 30, 2006)

There was a different view on the part of some participants, favoring third-party administration independent of the utilities. This was a foundational point for the Attorney General. Advocates of this perspective express concern that the connection between utility sales and utility profits is a fundamental handicap attached with utility administration, that utilities in some other jurisdictions have been found to overstate savings, and that there are examples elsewhere, including where utilities are vertically integrated, where independent administration is working well under appropriate supervision and producing superior results. They also note the possible reduction in regulatory burden if there is a single state administrator as compared with overseeing the programs of each electric and gas utility. The Commission can delegate the administration of energy efficiency programs, as in Vermont, without relieving utilities of the statutory responsibility. For a quick rollout of programs, creation of a new entity or contractor for this purpose statewide would be a challenge, but the Attorney General argues that it is more important and fundamental to get the right system at the beginning than to assume Arkansas can change it later. Centerpoint argues that the energy conservation act mandates utility administration.

Regardless of administration, out-sourcing to contractors or other utilities can provide an opportunity to avoid burdening existing staff, and it should be expected that some level of program contracting is likely for most utilities. Out-sourcing does bring contractors from elsewhere, and may cause leakage of economic development benefits and expertise from energy efficiency programs.

The position of the Attorney General in this collaborative on many issues was contingent of the outcome of the administration issue. The Attorney General's process requirements were less with independent administration due to several concerns

During the collaborative discussion, larger consumers suggested that energy efficiency programs include an option for customers already committed to energy efficiency to "self-direct" the monies they would otherwise pay in rates for Commission supervised programs. These customers object to paying for energy efficiency services that they do not expect to use. The funds would go instead to energy efficiency investment that the customer would direct, and the customer would forego service from the consumer-funded program. The customers appear to agree that there must be significant criteria, a high bar, to allow this option, including compliance with EM&V reporting and specific approval by the PSC, perhaps annually.[16]

Others flatly opposed allowing this option. Reasons for this include the value to all customers of energy efficiency as a resource, potential inconsistency between customers' investments, the broad-based programs available to all customer classes that should be offered, the uncertainty introduced in program management if program budgets change due to customer choice to self-direct, and the fact that all consumers benefit to some

[16] Wal-Mart's representative to the collaborative responded to a request for criteria by suggesting that retail customers utilizing the "self-directed" option be approved by the PSC, and that approved customers can self-direct funds on approval of the utility (the utility would have 30 days to reply to a request).

extent from energy efficiency investments. This last issue could be managed by only allowing a customer to opt out of part of the charge it would otherwise pay.

Participants heard that self-direction is allowed in some other states, and that this option is designed so that only very large customers are eligible, and those choosing the option must meet high standards, such as a detailed demonstration of significant and regular efficient and sustainable facility investments, pressure from foreign competition, and reporting to the state's commission on a regular basis to maintain eligibility.

Scale of the Energy Efficiency Programs – Generally, the following issues have been covered:

- There is an interest among participants to gauge the size of the portfolio of programs to a residential bill effect, expressed as "a cost per month." The discussion seemed to find comfort within a range of $0.25 and $1.00 per month, with more comfort at the lower half of the range.[17] See Tables 1 and 2. (note: annualized numbers are used – the first year spending may actually be for a fraction of a calendar or program year so figures should be adjusted accordingly)
- There is an interest in doing all cost-effective energy efficiency, but also a recognition that for most if not all utility territories, there will be more cost-effective program opportunities than is likely to be afforded by the likely approved budget levels. In the meantime, programs should be clear winners with a high probability of system benefits for all customers.
- Parties favor starting relatively small with an expectation to learn lessons and grow over time as appropriate. Even a relatively small commitment to energy efficiency may appear to be a lot to cooperatives, according to them.
- The severely inefficient homes program (see Appendix D for the quick start version and Appendix E for two longer term proposals) has a statewide budget

[17] The collaborative members had use of a spreadsheet tool that related monthly residential bill effect to total program budget and percentage of net utility revenue in two ways. See Appendix C-3.

- One way assumed that the amount that would be raised from residential customer would be grossed up based on the proportion of **sales** to residential customers as compared with total sales. So if residential sales are 50% of the total sales, this calculated amount is doubled. This is consistent with the idea that the more energy a customer uses, the more value the customer gets from energy efficiency, both as a resource and as a service.
- Another way assumed that the amount that would be raised from residential customer would be grossed up based on the proportion of residential **customers** to all customers. So if residential customers are 80% of the total customer count, this calculated amount is increased by 25%. In other words, the budget would be based on an **average** bill effect to **all** customers.

Based on this tool, a residential monthly bill effect of $0.50 for electric and gas customers would produce by the first method a statewide annual total of nearly $24 million for energy efficiency programs. This represents 0.83% of net revenues for electric companies and 0.90% of net revenues for gas companies. By the second method, a residential monthly bill effect of $0.50 for electric and gas customers would produce a statewide annual total of around $13.4 million for energy efficiency programs. This represents 0.35% of net revenues for electric companies and 0.54% of net revenues for gas companies.

One particular anomaly among the utilities is important to note for the Commission. Mississippi County Cooperative industrial sales represent almost 98% of its total 2004 sales. This is the only utility with more than 50% of sales to industrial customers. Any general approach to the scale of energy efficiency programs should be examined from the perspective of this utility to see if an exception may be warranted.

attached. At lower total budget amounts, the inefficient homes program either dominates the programs, or it must be significantly curtailed or scrapped.

- While there may be an interest in scaling the programs to produce a certain amount of savings, there is insufficient experience and information to choose a savings target at this time.
- There is a tension between letting utilities have varying budgets and forcing budget uniformity, at least at the beginning.
- Other states scale their energy efficiency budgets based on a percentage of net revenue. This method appears not to be favored by the collaborative, but this measure as an outcome to the scale method is a useful comparison to the programs of other states.

Table 1: This table shows sales-driven results from the spreadsheet tool. Based on a desired monthly rate effect on residential customers, a total budget is estimated by grossing up the total in proportion to 2004 sales to all customer classes. Note: if C&I customers have their payments for energy efficiency capped, or if some elect to "self-direct" and "opt out" to some extent, the program budgets will be reduced based on this method.

		Electric Program Budget	Gas Program Budget
Dollars per month on Residential Utility Bill	$0.25	$8,935,161	$3,075,027
	$0.50	$17,870,322	$6,150,415
	$1.00	$35,740,643	$12,300,830

Table 2: This table shows customer count-driven results from the spreadsheet tool. Based on a desired average monthly rate effect on all customers, based on 2004 data.

		Electric Program Budget	Gas Program Budget
Average Dollars per month on Utility Bills	$0.25	$3,820,069	$1,863,060
	$0.50	$7,640,178	$3,726,120
	$1.00	$15,280,356	$7,452,240

One caveat raised in the discussion is to assure that critical mass of a given program is maintained at a minimum, or else it would not be worth doing. Some programs may be dubbed "pilot programs." In such instances, there should be specific questions that the pilot is designed to answer with the expectation of implementing the answers and potentially upscaling the program.

The collaborative also discussed but came to no consensus on whether the Commission should establish a funding plan for multiple years, say three years. The approach would give administrators and others maximum certainty about how activity will evolve from the start and several parties were supportive for this reason. On the other hand, there is so much uncertainty at the start that perhaps it is best to budget one year at a time.

2. The appropriate incentives and standards for customers and utilities.

This topic will be divided into two, the first applying to customers, the second applying to utilities

Incentives for Customers – Customer incentives include information, education, on-going technical assistance, and various financial devices, including cash incentives as part of cost-effective program, as described in section 7.

The range of incentives offered to participate should be initially determined at the time of the program design. For some programs, a prescriptive incentive may be offered to all participating customers. For other programs, the incentive level may vary based on the specific situation. Wal-Mart suggested that the Commission consider assuring that customer incentives do not create a bias that favors participation by any class of customer. The electric utilities believe that the following menu of incentives might be useful. From this menu the utility would choose the best options for its consumers.

- Rebates to encourage the purchase or installation of energy efficient measures;
- Leasing programs to encourage the installation of energy efficient appliances;
- Weatherization loans with either market or below market terms;
- Free or low cost energy audits and utility counseling;
- Cost justified rates or credits;
- Free or low cost efficiency education and educational materials (it may also be necessary to provide food, door prizes, or other inducements to encourage attendance);
- Energy efficiency give-a-ways (direct installed compact florescent lights for example); and
- Free or low cost weatherization.

As discussed in the program section, rebate-based programs may be complex.

The collaborative participants with the exception of Centerpoint acknowledge that most feel that these incentives will not be offered in an income sensitive way, owing to an Arkansas Supreme Court decision on this point.[18] Most utilities agree that there should not be statewide uniform standards for consumer programs or consumer incentives. Proponents of the inefficient homes program acknowledge this exception, as they would apply this program to all utilities, and the Attorney General argues for a statewide third party administrator with a statewide plan for customer incentives. The electric utilities prefer a utility-by-utility approach. Each utility should have the option to pick and choose the best incentives to meet its consumers' needs.

Collaborative participants agree that incentives should be as low as possible to cause the desired energy efficiency result, and that incentives should be managed as energy efficiency markets transform.

[18] Arkansas Gas Consumers, Inc. (2003)

The collaborative discussed the fact that trade allies may also need incentives to stock and promote energy efficiency products and services, and programs may include this feature. PSC Staff did not support this view.

Incentives should be justified and capped based on the value of the programs.

Incentives for Utilities – This section weaves together two related issues. The first part addresses cost recovery of energy efficiency costs. The second addresses a disincentive to utilities supporting energy efficiency, net lost revenues, and goes on to address options for positive financial incentives.

The collaborative was clear on several matters related to utilities and incentives. Of utmost importance, clarity and certainty regarding cost recovery would be important to produce the best effort from utility program administrators. Yet the public interest requires a reasonable level of scrutiny of program costs before recovery is assured. Striking this balance in a manner that is efficient and effective should be an important objective of the Commission.

The collaborative also discussed the pros and cons of lost net revenue recovery and financial incentives for expected and superior program performance. The utilities and the community action agencies supported these and envision a scale relating different performance levels and incentives. The PSC Staff and the Attorney General did not support them. Reasons will be discussed later in this section.

In considering the various utility energy efficiency program cost and incentive recovery issues addressed below, it is helpful to first outline a potential overall regulatory process for such recovery. In the event administration is assigned to the utilities, cost recovery for each utility would be separately adjudicated. Many in the collaborative with experience in other states agreed that energy efficiency costs tend to be the most examined of all utility costs. First, this report reviews the process to develop energy efficiency programs. This discussion assumes utility administration, acknowledging that some participants advocate an independent statewide administrator, which would lead to a somewhat different process.

- Commission Approval of Energy Efficiency Program Rules, Schedules of Pre-Reviewed Programs (Templates), Cost Recovery-related Parameters (Deemed Savings, Protocols, etc.) – The Commission would review, revise if appropriate, and pre-review the above elements for inclusion in utility energy efficiency program plans and implementation.
- Utility Energy Efficiency Plan Filing – Each utility would file a periodic plan of its anticipated energy efficiency activities for the upcoming "Energy Efficiency Plan Cycle". This plan should allow for some flexibility in program emphasis among the portfolio of programs. The Commission would review, revise if appropriate, and approve this plan for implementation. That approval would form the basis for "pre-approval" of certain of the elements discussed below. A

corresponding energy efficiency cost recovery factor may also be approved for implementation, as discussed later in this section.

- Utility Energy Efficiency Program Implementation – The utility would implement energy efficiency programs in accordance with its approved plan, would accrue related expenses, and may be collecting an approved cost recovery factor (see below).
- Verification / Reconciliation / True-Up Proceeding – At the end of an "Energy Efficiency Plan Cycle," a procedure would take place during which actual utility energy efficiency program implementation performance would be compared to the approved plan. Evaluation reporting would form the basis for this. Reconciliation adjustments could be calculated, to be implemented on a going-forward basis.
- Commission Approval of Revisions (if any) to Schedules of Pre-Reviewed Programs (Templates), Cost Recovery-related Parameters (Deemed Savings, etc.) -- From time to time, the Commission would review, revise if appropriate, and approve any suggested updates / revisions to these elements for inclusion in utility EE program plans / implementation. These revisions would apply only on a going-forward basis, for the next "Plan Cycle". They would not be used retroactively in the Verification / Reconciliation / True-Up Proceeding.
- Start of Next Utility "Energy Efficiency Plan Cycle" – Approved updated parameters could be incorporated in a utility's next Energy Efficiency Plan Cycle. The prior cycle's reconciliation adjustment would be reflected in cost recovery calculations for this cycle. A new utility energy efficiency plan would be filed, approved and implemented, followed by another reconciliation, etc.
- Alternative "Energy Efficiency Plan Cycles" – These general steps could be followed whether the "Energy Efficiency Plan Cycle" simply represented time between general rate cases, or was a pre-defined period, such as a year. Energy Efficiency-related regulatory activities could be timed to coincide with fuel factor related filings, but they should not be merged.

The following addresses qualification of energy efficiency program costs for recovery.

- Programs consistent in all respects in a Commission pre-reviewed list (if such is developed) would qualify, as they would fit a template already found to be cost-effective. Other programs not included on a pre-reviewed list must be evaluated for cost-effectiveness and for how they support the overall program portfolio. All programs for which utility cost recovery is desired may be pre-reviewed, such as through a utility energy efficiency plan filing.
    - There is some disagreement on the implication of such "qualification".
        - Utilities believe that such qualification for cost recovery should be essentially automatic subject to full review by the Commission. Several said this level of confidence would be critical for them. Utilities also advocate that if they follow the program plan and savings do not meet plan expectations then cost recovery should not be affected. They note that power generation costs go into rates subject to expected production, and rates are adjusted later based on actual production.

        - Attorney General and PSC Staff cannot agree to a regime where the costs of pre-reviewed programs shall qualify for recovery subject to verification and reconciliation and instead support a process for routine review of relevant costs as with other utility costs. The Attorney General would also expect a review of program performance. A third party administrator would improve the process from this perspective.
- Expenditures and other recovery elements for such pre-reviewed programs shall automatically qualify for recovery, subject to verification / reconciliation. The nature of that verification and reconciliation may involve standard filings by the utilities, a rebuttable presumption of recovery, opportunities for discovery by the Attorney General and others, and opportunities for audit by the Commission. The Attorney General objects to any presumption.
- The standards for cost recovery should include cost-effectiveness tests, which are discussed later in this report.
- In some cases, energy efficiency programs produce incidental public interest benefits [e.g., an inefficient homes program may support the state's weatherization program, or the portfolio of energy efficiency programs may increase the gross state product and employment, or programs focused on peak may improve air quality]. Some in the collaborative believe that while these incidental public interest benefits should have no role in the quantitative evaluation of energy efficiency programs, the Commission can consider these benefits to the extent already allowed by statute in the weight of the evidence in its deliberations. Others in the collaborative believe these factors should not be considered at all. Others in the collaborative think quantifiable public benefits should be included in the analysis of energy efficiency programs, including economic analysis.

The following defines direct energy efficiency costs.

- For approved programs and measures, all incremental direct energy efficiency program costs (material, labor, installation, third party services, funding of any multi-party or statewide programs, etc.) should be eligible for recovery.
- For approved programs and measures, all incremental amounts incurred for energy efficiency program administration cost and evaluation cost should also be eligible for recovery.[19]
    - Incremental Rulemaking Collaborative-Related Expenses have been identified as eligible for recovery. Parties expect the process to be consistent with a prior Commission investigation in electric restructuring and retail electric competition.[20]
    - Attorney General believes that costs of regulatory filings and other expenses related to administrative compliance should be handled in the same manner as all Commission-related legal and administrative costs. Utilities believe that they should be recovered specifically as part of

[19] Some utilities are preparing rate case filings, and would appreciate speedy guidance on treatment of Rulemaking Collaborative-Related Expenses, i.e., whether to incorporate them into their rate case filings.
[20] APSC Docket No. 00-190-U.

energy efficiency cost and incentive recovery; see Ark. Code citation below, "… recover any costs incurred…"

- PSC Staff advocates that the recovery should be limited to incremental costs only. Significant portions of the cost of administration and the collaborative process are included in rates currently. For example, the salaries of most collaborative participants, some level of legal expense, some level of travel, etc.[21] On the other hand, with energy efficiency as a new task, utilities may reorganize to supply full time equivalent support from existing and new staff.
- All participants agree that double recovery for administrative costs in general rates and in an energy efficiency factor adjustment is not acceptable. Allocation conventions will be necessary to assure that double recovery does not occur.

Addressing the accounting of utility energy efficiency program expenses:

- While tending to favor expensing, utilities in the collaborative wish to retain the option to request the Commission grant cost recovery by either expensing or capitalizing. Each method has pros and cons.
  - Expensing enables program administrating utilities to remain current on cost recovery, avoiding the need to create and expand regulatory assets, which financial analysts see as a non-performing use of capital subject to risk of non-recovery, and which adds tax-related carrying costs to consumer bills over time to significant amounts. Most utilities preferred expensing energy efficiency costs.
  - Capitalizing enables program administrators to add costs to rates slowly, and may improve the outcome of the ratepayer impact measure (RIM) test (benefit/cost tests are discussed earlier). Also, capitalizing allows the payment for the resource to match the useful (program) life of the investment. Capitalizing is one way (incentives are another) to allow the utilities to make energy efficiency a profitable investment. If there is a routine level of energy efficiency expense, however, PSC staff points to an inconsistency between capitalizing and established ratemaking practice in Arkansas, and both the PSC Staff and Attorney General object to financial incentives.

The collaborative considered addressing any lost **net** revenues, meaning net of any offsetting costs arising from reduced sales due to energy efficiency program implementation.[22][23]

---

[21] In Order No. 3 of this docket, the Commission indicated that collaborative-related expenses would be considered as part of the implementation costs of future energy efficiency programs. Utilities interpret this to mean that they will be able to allocate general and administrative costs, such as salaries of collaborative participants, to an energy efficiency account eligible for recovery, so long as there is no double recovery of those costs. The PSC Staff objects to recovery of costs that are not incremental to the companies. Actual cost recovery claims when invited by the Commission will reveal if there is a distinction without a difference on this point.

[22] Irrespective of the discussion on energy efficiency in this docket, the gas companies observe that usage per customer is trending clearly and significantly down. They point out the connection between this trend

- There is disagreement as to whether lost net revenues should be recoverable. (Attorney General opposes recovery. Utilities and the community action agencies believe full recovery is appropriate. PSC staff expresses concern about calculating lost net revenue recovery and whether it will affect utility earnings.)
    - "Pro" Lost Net Revenue Recovery Arguments:
        - As a policy, energy efficiency is unusual because it intends for the utility to sell less of its product.
        - Observations suggest that where public and private incentives are aligned, energy efficiency program performance improves.
        - The loss of net revenues acts as a disincentive to utilities to implement energy efficiency programs, unless they can be fully recovered with certainty.
        - Recovery of lost net revenues simply represents restoration of "revenue neutrality" for utilities, not a positive incentive.
        - See Ark. Code citation below, "… recover <u>any costs</u> incurred by the public utility company as a result of its engaging in any such program or measure." (emphasis added)
        - NARUC and the National Action Plan for Energy Efficiency have identified recovery of lost net revenues as a way to overcome the "throughput disincentive" that would stand in the way of successful energy efficiency programs.
        - Inclusion of net revenue loss recovery mechanism will reduce regulatory expenses and the need to file frequent rate cases.
        - The Energy Conservation Endorsement Act requires that the implementation of energy efficiency programs be beneficial to utilities.
    - "Anti" Lost Net Revenue Recovery Arguments:
        - Energy efficiency is a utility service that benefits customers and the utility system. Utilities should engage in energy efficiency programs for these reasons without the need to recover "lost net revenues."
        - At least for electric companies, there are no real "lost net revenues" that diminish contributions to fixed costs and earnings. Rather, due to the persistent electric load growth which is expected to continue, energy efficiency only reduces the rate of growth and the rate of marginal "found revenues."
        - Aligning public and private incentives can be accomplished in better ways (decoupling, for example) without addressing lost net revenues.

---

and the ability to support the fixed costs embedded in their systems, and they point out that a policy that encourages their customers to use still less, while in the public interest, adds to the financial pressure they already face. The gas utilities felt that this trend should be an important consideration for the Commission, while others, including PSC staff, felt this issue, generally known as "attrition," should be dealt with on its own merits and should not influence decisions in this docket.

[23] NAPEE Report discusses the net lost revenue issue, see http://www.epa.gov/cleanenergy/pdf/napee/napee_chap2.pdf , page 2-6. (October 30, 2006)

- There may be benefits created by energy efficiency programs or measures that outweigh any lost net revenue. For example, retaining customers is a benefit to both the utility and other customers. The utility benefits by retaining those revenues and the associated cost recovery.
- The statute addressing cost recovery may not permit utilities to adjust rates to recover lost net revenues.[24]
- Lost net revenues caused by a specific program are hard to measure with any degree of accuracy and can take significant time to resolve.
- For gas utilities, there are other factors contributing to lost revenues that outweigh any effects of energy efficiency programs.
- Initially, given the expected size of initial stage programs, it is likely that lost net revenue will not be sufficient to alter the overall earned return of a utility. There is an adequate opportunity to analyze and address the issue more thoroughly.
- Utilities should be required to demonstrate a material loss of revenues directly related to Commission approved energy efficiency programs. There may be other factors that contribute to revenue losses that should not be included in any program cost recovery. For gas utilities, there are other factors, such as increasingly efficient end uses and recent price increases, contributing to lost net revenues that are of greater magnitude than any effects of energy efficiency programs.

- Calculation of lost net revenues, if allowed, can be carried out either as a stand-alone adjustment or as part of a broader approach, e.g., "decoupling" of total net revenues from sales volumes.
  - A stand-alone adjustment could initially be straightforwardly calculated from appropriate tariff parameters, and EE program estimated energy & demand savings (e.g., deemed savings). The drawbacks of this approach, however, are that (1) not all utility funded conservation efforts that lead to declining usage and revenues (e.g., utility funded energy audits and energy efficiency promotional campaigns and education efforts) will be captured in a stand-alone adjustment; (2) unilateral conservation efforts by consumers would also not be captured in a stand-alone adjustment, and (3) the gas usage savings resulting from the installation of Energy Star electric appliances will also not be captured in a stand-alone adjustment. The gas utilities see no rational basis for excluding these savings from a net revenue loss adjustment and believe that a full decoupling mechanism that considers all cost drivers in making a net revenue loss adjustment is required.
  - The gas utilities' position – In general, the gas utilities support rules addressing lost net revenue recovery and endorsing decoupling. Full decoupling of total net revenues from sales volumes is administratively

[24] Ark. Code Ann. 23-3-405(a)(3)

easier to implement and track than a stand-alone adjustment, will permit a revenue adjustment to capture total net revenue losses and gains that would not otherwise be captured by a stand-alone adjustment, and importantly, is completely consistent with the scope of energy efficiency program startup.

- The remaining collaborative participants recognize that decoupling and recovery of lost net revenue are issues that must ultimately be resolved. However, the majority felt that decoupling and lost net revenue recovery were better left to further development and refinement in continuing collaborative efforts and individual utility rate cases following careful consideration of the potential effects on ratepayers and an analysis of actual experience from specific programs. A proposal to include a "first-order" lost net revenue calculation, which is very simple to perform, at this stage was offered and discussed.

The collaborative considered utility financial incentives for energy efficiency performance:

- There is disagreement as to whether utility financial incentives should be provided as an energy efficiency program cost recovery element. (Attorney General opposes recovery and believes utilities should be motivated by existing regulatory incentives; PSC Staff suggests that they should not be necessary; Utilities and the community action agencies believe recovery of incentives is appropriate and necessary to promote the best performance.)[25]
  - "Pro" Financial Incentive Arguments:
    - If energy efficiency program expenses were capitalized (as generation, a substitute for energy efficiency, would be), those investments would be entitled to earn a return – a financial incentive -- beyond simple recovery.
    - Providing a financial incentive to utilities (above recovery of expenses and removal of the lost net revenue disincentive through recovery of same) will provide a positive incentive to utilities to implement EE programs and can neutralize any bias that may exist to invest in supply alternatives if comparable incentives (similar bottom line scale, but different manner of operating) are designed for this purpose.
    - Appropriate utility financial incentives will lead to "win-win" results for both consumers and utilities, maximizing energy savings opportunities for consumers and earnings opportunities for utilities.
    - Financial incentives would be based on the achievement of measurable performance standards consistent with the public interest (so the public gets value). Some participants advocate that incentives should be available only for achieving "stretch" goals representing superior performance.

[25] NAPEE Report, page 2-9.

        - Utilities indicate that they do not have an obligation to provide energy efficiency services unless they have an opportunity to earn an incentive, in addition to receiving cost recovery.
    - "Anti" Financial Incentive Arguments:
        - If the energy efficiency program is in the best interests of its ratepayers and it is a utility service, then utility should not require any additional financial incentive to implement it.
        - The statute provides for cost recovery.[26] The statute does not provide for any incentive. If a program is beneficial to the utility and its customers, and cost recovery is provided, there should be no further need for incentives. PSC Staff is concerned that capitalizing energy efficiency expenses may not be permitted. The PSC Staff does not see a connection between whether costs are capitalized or expensed and whether utilities should be entitled to earn a financial incentive, and it objects to any return on expenses either directly or recast as an incentive.
        - The Attorney General argues that incentives do not sufficiently motivate utilities to reduce customer usage.[27]

- Mechanisms for Determining Appropriate Utility Financial Incentives (if any):
    - Share of Estimated Savings from energy efficiency program implementation
        - A shared-savings approach, such as a percentage of savings, directly ties a utility's incentive to an energy efficiency program's economic value. It is also fairly straightforward to calculate with an effective EM&V plan.
        - For energy efficiency programs with no readily definable savings, such as informational programs, a financial incentive could be set at a percentage of program costs, or some other metric representing superior performance can be identified.
    - ROE on energy efficiency investments (for any energy efficiency expenditures that are capitalized).
    - Adder on a utility's overall approved ROE, if permitted by statute.
    - Other mechanisms
- A Performance-Based financial incentive approach, if allowed by statute, would provide further incentives to utilities to implement energy efficiency programs effectively. An example of such an incentive would be a sliding-scale percentage of program savings, perhaps above some minimum, with the percentage dependent on the level of results achieved. The range of incentive might start below target program savings and end above it.[28]

How energy efficiency costs may be recovered:

[26] Ark. Code Ann. §23-3-405(a)(3)
[27] William B. Marcus. Cynthia K. Mitchell Critical Thinking on California IOU Energy Efficiency Performance Incentives from a Consumer Advocate's Perspective, ACEEE, August 2006.
[28] See Rhode Island PUC Docket 3463 and incentive structure for Narragansett Electric.

- There are two basic approaches to implementing utility energy efficiency program cost recovery,[29] namely, an independent energy efficiency program cost recovery factor, and recovery through a general rate case. In either case, energy efficiency program cost recovery should apply to all customers and be non-bypassable.[30]
- Energy Efficiency Program Cost Recovery Factor
    - Offers more timely cost recovery to utilities.
    - Offers more certainty of cost recovery to utilities.
    - Avoids carrying costs on accrued expenses and incentives between rate cases.
    - Flexible, especially when amounts of energy efficiency implemented are likely to vary significantly over time.
    - Can be periodically adjusted, trued-up, reset when rate case filed.
    - Procedurally, could create an account similar to the fuel adjustment clause that would handle all energy efficiency costs.
    - There is disagreement as to when implementation of any recovery factor should commence. (Utilities believe factor implementation simultaneous with program implementation, providing contemporaneous cost recovery, is appropriate. Attorney General believes cost recovery should be allowed only after-the-fact, following independent cost effectiveness evaluation, creating some degree of regulatory lag.)
        - Relevant Arkansas Code citation:
          "At the time any programs or measures are approved and ordered into effect, the Commission shall also order that the affected public utility company be allowed to increase its rates or charges as necessary to recover any costs incurred by the public utility company as a result of its engaging in any such program or measure." Ark. Code § 23-3-405(a)(3)
- Rate Case Treatment
    - Energy efficiency costs can be considered for recovery in routine utility rate cases. Evidence can be subjected to discovery. The public can have high confidence that costs are recoverable by normal regulatory standards.
- Only SWEPCO and some electric cooperatives advocated for energy efficiency charges to be separately listed on customer bills. Others prefer energy efficiency costs not to appear separately, or are indifferent.[31]

The collaborative discussed allocation of approved costs

- Allocation to customer classes
    - There are two basic alternatives: (1) aggregate all energy efficiency program expenses and allocate to all customer classes, or (2) allocate costs of individual EE programs only to the benefiting class.
    - Aggregate program expenses allocated to all customer classes:

[29] In this context, cost recovery includes whatever the Commission decides is recoverable.
[30] Non-bypassable means all customers pay their share of energy efficiency costs. If self-direction is allowed, as discussed in section 1, this would represent an exception.
[31] States with energy efficiency listed separately on the bill are typically ones with retail competition or a third party administrator.

        - The "system" benefits of an energy efficiency program (avoided system costs) accrue to the benefit of all customers, not just that program's participants.
        - Common EE expenses (e.g., Collaborative-related expenses) collected from all customers
            - Especially relevant during start-up phase of Arkansas initiative, when fewer programs may be implemented, with fewer direct beneficiaries.
    - The collaborative generally recommends starting with an across the board allocation to all customers.
    - Consistent with the previous bullet, the PSC staff recommends that costs can be allocated to the customer classes using a 50/50 demand/energy allocator and the most recent cost of service study for each utility.
    - Wal-Mart suggested that there be a cap on how much any customer spends in rates for energy efficiency. Other collaborative participants opposed this, generally on similar grounds to the self-direction suggestion in section 1. No other cost element is treated this way. There was no further progress on this issue.

3. The development of energy efficiency market structure principles and guidelines.

This section of the report collects statements that have emerged from the collaborative. These may be useful in the energy efficiency rules as overarching principles to support the choices that the Commission will make.

- Energy efficiency helps gas and electric consumers manage their bills.
- Energy efficiency may serve to exert downward pressure on energy prices.
- Energy efficiency is a resource for utilities, as it may have capacity and energy value, and may avoid other investments, especially if it is deployed strategically.
- Energy efficiency programs should have the effect of contributing to the state's energy security.
- Energy efficiency is a utility service. [32]
- There is a balance between program flexibility, which will enable utilities to make the most of their specific circumstances and foster innovation, with consistency, which will promote efficiencies and common expectations among customers and trade allies.
- An energy efficiency portfolio should provide cost-effective, verified, and sustained savings in capacity and/or energy, and it should strive to stabilize the cost of fuels and defer more costly infrastructure requirements.

[32] Utilities were uncomfortable with this statement. The utilities do not agree that they have an obligation to provide energy efficiency service without appropriate levels of cost recovery and incentives. They preferred the following alternative: "Energy efficiency represents a utility service business opportunity that can be advantageous to both customers and utility investors." In the end, the collaborative rests on the language of Ark Stat. Ann Section 23-3-004 for utility obligations concerning energy efficiency.

- Energy efficiency programs should address barriers to consumers deploying cost-effective energy efficiency measures. Strategies to address these barriers should be managed as markets and technologies change.
- Peak hour demand savings from energy efficiency and demand response are of particular interest to electric companies due to their effect on capacity-driven investments,[33] but energy savings and other benefits are also important. (Some were uncomfortable with this level of emphasis, suggesting the value of energy and capacity should drive program selection.) Peak day demand savings are less valuable to gas utilities in the near term.
- Energy efficiency programs should have specific objectives including performance objectives where applicable. Any incentives for utilities should key off these performance objectives. Programs should have specific evaluation, measurement and verification provisions to determine whether objectives are met.
- Energy efficiency programs should be available to all customers.
- Energy efficiency programs should address opportunities when and where customers are making decisions about new energy uses, and should endeavor to make energy efficiency a part of energy consumers' normal decision making process. Programs should attempt to have those measures become part of the normal decision making mix
- Energy efficiency programs provide customers with information that helps them understand the impact of their daily energy use on their total energy consumption.
- Energy efficiency funding levels should be set after considering many factors, including the potential for energy and capacity savings, rate effects and prudent program administration.
- Acknowledging that implementing energy efficiency measures is always at the customer's choice, energy efficiency programs should promote multiple cost-effective measures per customer contact and discourage implementing only the most cost-effective measure at a premise.
- Energy efficiency can promote customer retention.
- Energy efficiency can promote energy affordability for all customers.
- Energy efficiency programs should encourage contacts between customers and businesses selling energy efficiency products and services, and among such businesses.
- Energy efficiency programs should promote a building design, construction and operating workforce in Arkansas that implements energy efficiency skills and practices and builds on expertise already in the community.
- As soon as program experience allows, utilities should have program savings goals driven by resource planning data and achievable savings estimates from energy efficiency programs.
- Statewide or sector-wide issues with energy efficiency programs and their oversight may be dealt with through a multi-stakeholder collaborative process, an advisory group to the Commission, or a utility sector working group. These bodies could be standing bodies or form voluntarily to address specific issues.

[33] NERC page 7

Some in the collaborative are interested in assuring that discussion momentum built in this process not be lost.

- The Commission should use information from several methods of measuring cost-effectiveness when considering whether to pre-approve an energy efficiency program, The Commission rules should identify the tests that will be used in that evaluation.
- Ancillary benefits to buildings that make them safer and more habitable and comfortable are factors that the PSC can consider.
- While utility administration of energy efficiency programs is a clear path toward implementing energy efficiency programs in a few months, the Commission should consider the issue of independent administration of energy efficiency programs at the earliest time when program experience allows.
- Utility program managers should file annual plans for energy efficiency programs, and annual reports on energy efficiency results. The Commission may decide to require energy efficiency program plan on a less frequent schedule once it finds that the administrator has sufficient experience to merit this level of oversight. Program plans should be consistent with utility electric resource plans and natural gas procurement plans.
- Utility program administrators can contract with firms expert in matters essential to effective management and delivery of energy efficiency programs.
- Utility program administrators are encouraged to offer public education programs for energy efficiency.

The collaborative discussed the idea of making energy efficiency the most profitable investment a utility can make, but there was no consensus that this idea was an appropriate consideration.

The Attorney General objects to making a quick implementation schedule more important than considering administration more carefully. As the Attorney General believes that effective energy efficiency programs can only be achieved through an independent administrator, the Attorney General would rather support a prompt consideration of this issue first before implementing programs.

4. The advantages of fostering cooperative gas and electric energy efficiency program templates.

Coordinating Electric and Gas Programs – The collaborative recognized the benefit from the customer perspective of coordinating electric and natural gas programs. The customer would get a clear and comprehensive set of recommendations and incentives, enabling a clear strategy for accomplishing energy efficiency in the building. All programs should be designed to be fuel neutral.

A third party administrator would internalize coordination.[34] With utility administration, challenges to this approach arise from the following points:

- in some instances electric and gas utilities are competitors, i.e., where their products are substitutes;
- most utilities have an interest in delivering program themselves.

As noted in Section 1, the PSC Staff has offered a list of pre-reviewed programs, and this list offers vehicles for both electric and gas programs. Also in section 1 is a brief discussion about criteria for statewide cooperation with public information and education, and a discussion of a statewide inefficient homes program.

There were two issues addressed within this topic:

- Are there programs that will provide distinct overall benefits if they are offered statewide, rather through the distinct efforts of electric and gas companies?
- What are the appropriate safeguards against programs being discriminatory or competitive between gas and electric utilities?

Three others issues were identified, but no significant progress was made:

- Identifying specific opportunities for cooperation;
- Scoring savings from building envelope improvements;
- Preventing duplication of effort.

Programs with Overall Benefits for a Quick Start – In keeping with the overall Collaborative objective of identifying potential quick start programs, residential weatherization and statewide education are the recommended programs which will provide benefits for both gas and electric customers. The collaborative worked on describing the conditions that would promote effective statewide efforts.

A statewide inefficient homes program would address electric and gas end uses. Issues related to such a program are discussed in Section 1.

The Commission expressed interest in a statewide education program to increase consumer awareness and education of energy efficiency. This program can provide overall benefits from a coordinated effort. The cost recovery mechanism approved by the energy efficiency rulemaking should include education programs. The Commission will have to decide whether general energy efficiency messages not supporting specific programs should be an energy efficiency expense recoverable through an energy efficiency cost recovery mechanism, if one exists, or an advertising expense recoverable in normal course of a rate case (the costs of corporate image messages are not recoverable in any case).

---

[34] Fred Gordon, Oregon Energy Trust, Dave Robison, Stellar Processes, *We All Did It- Attribution of Savings in an Environment with Many Helpers*, ACEEE, August 2006.

Other program areas that may lend themselves to cooperation across electric and gas end uses in the future include:

- Energy audits;
- Commercial / industrial consumer process audits;
- Heating and air system inspections and tune ups.

Safeguards Against Discriminatory and Competitive Programs -- Adoption of a standard offer template for energy efficiency programs is one approach through which it may be possible to address the concerns associated with competitive issues between electricity and gas. This will be particularly challenging for new construction, where builders face a choice and neither fuel has the advantage of "incumbency." Resolving this challenge in time for initial stage programs may not be possible.

All programs should be designed to be fuel neutral. For 2007 programs, programs whose primary objectives are fuel switching, load retention or load building should be excluded, except for designs intended to reduce the number of account terminations for non-payment. This exclusion should continue until the Commission has an opportunity to reconsider these issues.

The terms in pre-reviewed programs could be designed to prevent discriminatory and competitive actions and to be fuel neutral. An illustrative example can be found in the U.S. DOE Weatherization Assistance Program which includes a prohibition against fuel switching (though this program applies only to existing structures). Because the Commission will consider these issues and resolve them through the process of promulgating pre-reviewed programs, it should not be necessary for individual programs to later meet the requirements of the Promotional Practices Rules provided the programs offered by each utility fall within the pre-reviewed scope.

Should a utility wish to propose to the Commission an energy efficiency program not yet considered, then the utility and Commission must review the program pursuant to the criteria established in the energy efficiency program rules.

Additionally, where their service territories overlap, any cooperation between gas and electric utilities in the development, implementation and/or administration of programs or measures should be specifically sanctioned by the Commission to avoid any potential antitrust problems (i.e., for the "state action doctrine" to apply).

5. Development of a "deemed savings approach" for Arkansas.

Most collaborative parties favor developing and adopting a deemed savings manual for Arkansas. The participants do differ across a range of views on the degree of commitment and reliance on deemed savings. Experience may address some concerns.

Deemed savings values are generally based upon engineering calculations. Market research or reasonable assumptions must be made regarding the hours of use and patterns

of use for various types of equipment. Baseline studies or reasonable assumptions are used to determine the type of equipment that a consumer might purchase and install when an incentive from an energy efficiency program is not available. The differences in energy usage and demand between standard efficiency equipment and energy efficient equipment (e.g., equipment with an Energy Star rating) can be estimated based on data available from trade organizations, professional engineering organizations (e.g., ASHRAE), consumer organizations (e.g., ACEEE), energy efficiency program evaluation studies sponsored by utilities, and government sources (including the US EPA and the California Energy Commission). The Commission should assure that as it orders the initiation of programs, it also directs the baseline energy surveys that will form the basis of sound deemed savings calculation. Values vary by climate zone. The collaborative heard that Arkansas has four climate zones.

The collaborative discussed a difference in deemed savings calculations between a retrofit program, where end uses are replaced before the end of their useful lives, and new construction and new equipment programs.

- In the new construction and new equipment situations, the customer is deciding between the standard new system, and an energy efficient option. These define the "delta" for such programs.
- In the retrofit situation, the customer is deciding between the existing end use (which may be less efficient than the standard now on the market) and an energy efficient option. These define the "delta" for such programs.

In other states, use of "deemed savings" has been a fundamental tool to provide a reasonable estimate of the energy savings and peak demand reduction that are likely to result from common energy efficiency measures. Deemed savings values can be used as the basis for screening program cost-effectiveness and for determining incentive payments to program participants.[35]

[35] In Texas, "deemed savings" has proven popular with utilities and regulators over the six years of programs implemented since the start of retail electric competition. Nearly all of the measures that have been implemented through the Residential and Small Commercial Standard Offer Program and the Hard-to-Reach Standard Offer Program have used deemed savings values approved by the Public Utility Commission of Texas.

In Texas, deemed savings have been developed for following measures:

- Duct sealing
- Installation of a high efficiency air conditioner in lieu of standard efficiency equipment
- Installation of Energy Star windows in lieu of standard efficiency windows
- Purchase of Energy Star kitchen appliances in lieu of standard efficiency appliances
- Photovoltaic systems
- Solar water heaters
- Installation of a high efficiency commercial chiller in lieu of standard efficiency equipment
- Energy efficient lighting equipment
- Installation of insulation
- Water saving measures (e.g., low-flow showerheads and faucet aerators)
- Air infiltration reduction measures
- Installation of high efficiency motors in lieu of standard efficiency equipment

The use of deemed savings values may provide an inexpensive alternative to other ways to measure and verify the impacts of energy efficiency measures. The application of deemed savings values may be justified in situations where the same measure will yield similar savings when installed in a wide variety of different settings, and in situations where more extensive measurement and verification activities (metering or surveys, for example) would prove cost prohibitive.

There is some error when deemed savings are used. In any particular installation, energy efficient equipment might be used more or less than the times assumed in the calculation of the deemed savings. Actual weather may differ from the climate data used in the calculation of deemed savings for weather-sensitive measures. However, deemed savings can be developed to estimate a reasonable "average" impact of the measure. The Attorney General is concerned that sufficient actual measurements be used to verify the suitability of deemed savings values.

The collaborative has not expressed a distinct view on how weather variations should be accounted for. Options include maintaining engineering savings values over time relying on variable weather to average out over time, or choosing those programs that will have weather-sensitive savings and applying some normalization factor to adjust scored savings from year to year. Note that if annual savings goals are used as performance targets, the former approach is a more stable measure of utility effort.

For weather-sensitive energy efficiency measures, different deemed savings values must be calculated for different climate zones. Values may also differ by the size of equipment being installed or replaced.

Some in the collaborative would like to see statewide deemed savings values independent of utility. They reason that the real issue is how prevailing end uses can be made more efficient. They acknowledge that prevailing climate will influence savings for some programs, but that essentially arbitrary utility barriers will not. Others in the

---

The single largest source of deemed savings data is the Database for Energy Efficient Resources (DEER) sponsored by the California Energy Commission (CEC) and California Public Utilities Commission (CPUC). This database is designed to provide estimates of energy and peak demand savings for particular energy efficiency measures as well as to measure the costs of energy efficiency steps and their effective useful life. These values are available on the internet, assuring public accessibility. In California, deemed savings values are updated based on experience.

The deemed savings values applicable in the Xcel Energy/Southwestern Public Service Company service area for the residential and small commercial customer sector can be found at: http://www.xcelefficiency.com/Res-HTR/Xcel-ResHTR-Manual_2006_A_Deemed%20Savings.pdf (October 30, 2006)

Measurement and verification standards and deemed savings values for certain types of projects undertaken at the premises of large commercial and industrial customers can be found at: http://www.xcelefficiency.com/CI/Xcel%202006%20C&I%20M&V%20Guidelines_SecIII.pdf (October 30, 2006)

collaborative see utility-specific deemed savings as important, apparently justified by anticipated differences in programs among utilities.

Deemed savings are less applicable for commercial and industrial energy efficiency measures, where savings may vary greatly depending upon the firm's production process and technology. In the absence of deemed savings values, some form of measurement and verification (M&V) must be done, possibly including pre- and post-metering of actual energy use of the identified measure(s). This should be laid out in the program plan. In those instances where M&V must be done, the costs may be significant. In a few cases, the project may not be undertaken due to the increased cost and therefore, the longer payback.

The International Performance Measurement and Verification Protocol (IPMVP) may offer Arkansas a standard place to start that is used by many program administrators, and is advocated by some collaborative participants. IPMVP offers a method that can apply for programs when deemed savings calculation are not applicable.

There is strong support in the collaborative for public education on energy efficiency as part of the portfolio of programs. It is unlikely that deemed savings will be applicable to these programs.

Energy Star, a designation for buildings, equipment and appliances managed by the U.S. EPA and the U.S. DOE, can help to identify energy efficiency opportunities that should have deemed savings calculations. Energy Star is primarily a tool for electric end uses.

Some participants in the collaborative caution that externalities, if they are applied, should appear elsewhere in the program evaluation process. Deemed savings tables should be purely engineering estimates of measure savings.

Deemed savings values must be periodically updated to reflect program experience gleaned from the EM&V process, new technologies introduced into the marketplace, new federal energy efficiency standards for appliances and equipment, and new codes. Texas' experience suggests that deemed savings values should not be "codified" in Commission rules, which may be difficult to change or update later.

During the collaborative, participants received an unsolicited proposal from an experienced contractor to provide a deemed savings manual for Arkansas. The product could be available three months from a commitment, based on the proposal. The Commission can choose to ask administrators to develop initial phase programs based on their own estimates of savings, with the expectation that estimates may be adjusted with the arrival of the deemed savings manual, or it can wait until a deemed savings manual is available. Funding a statewide manual would probably need cooperation by and funding from the utilities as part of the start-up category of funds. The potential for such cooperation was discussed during the collaborative. Utilities were generally positive about cooperatively funding such an effort. Further private discussions will be needed to determine if this option will be realized, and wording of subsequent Commission orders

in this docket may also affect whether this initiative moves quickly or not. The proposal is included as Appendix G. Collaborative members were comfortable with the list of measures in the proposal conducive to deemed savings, though emphasis should be reasonably placed on those measures which will be delivered by quick start programs.

The Arkansas PSC should conduct its own review of the material and information identified above, and then determine the appropriate eligible measures for which deemed savings might be developed and accepted. It would be reasonable to direct stakeholders in this collaborative to develop this set of values as soon as possible, given technical and Commission process requirements. Collaborative participants anticipate that the Commission would have to approve initial deemed savings values and any revisions, but did not discuss the nature or intensity of such process.

Stakeholders or the PSC may decide to reduce each eligible measure's deemed savings values by some margin of conservatism to take a safe approach to the values that are finally accepted. Subsequent audits can reset deemed savings values based on real experience in Arkansas. In addition, there may be interactive effects for certain measures that should be considered (e.g., more efficient lighting may reduce internal heat gain, which in turn will reduce the air conditioning load for certain building types). All of these should be taken into consideration.

For now, a widely held view in the collaborative is that deemed savings should be calculated for end use measures and replacements that use the same fuel. The collaborative did discuss the issue that for some end uses, fuel switching could be evaluated and could be included as a program option, and full fuel cycle efficiency could be used in the evaluation of programs. The gas utilities favored this view. The prevailing view, however, is that fuel switching and full cycle efficiency should not be applied at this stage of Arkansas energy efficiency program development. This is discussed further in section 8.

An effort to develop initial deemed savings values could be initiated with joint support of the utility companies.

6. The development of uniform standards and mechanisms for evaluating, measuring and validating energy efficiency programs.

Evaluation, monitoring and verification are part of any energy efficiency program. The parties agreed that a uniform standard and mechanism for evaluating energy efficiency programs in Arkansas is necessary for verifying program performance and enabling continuous improvement. That said, there are many reasons for this standard and mechanism to have flexibility to consider geographic and utility-specific circumstances.

Introduction -- Evaluation, measurement and verification (EM&V) of energy savings will be critical for the design of any successful energy efficiency program. An EM&V approach should be chosen that best matches i) projected costs and magnitude and nature

of savings, ii) technology-specific requirements, and iii) risk allocation among participating customers, ratepayers and utility shareholders.

EM&V Administration – The collaborative participants agree that credible EM&V is essential for successful energy efficiency programs, noting that this concern is typical in US energy efficiency programs.

For some participants, a critical element for a rigorous and reliable EM&V program is a structurally independent administrator.[36] An independent EM&V administrator would receive input from all parties, including utility companies, and would be free of ties that would prevent a rigorous and objective review of costs versus savings. An independent administrator could have a statewide scope, and should be selected by an entity that does not have a financial stake in the process, such as the Public Service Commission, with input from all interested parties. One concern supporting this proposal is the possibility that a utility administrator might over-report savings compared with actual program results, assuming this would not be discovered, to receive cost recovery for program costs as well as margins on sales that were made due to deficient programs. There is experience with this in other states.

For other participants, the objective of effective EM&V can be accomplished by utility program administrators. Utilities can contract out this function, or they can set up internal organizational controls that create the arms length relationship between those with program responsibilities and those with EM&V responsibilities. They point out that this flexibility allows effective EM&V to be accomplished with minimum expense while avoiding redundancy, and caution that value from EE programs can leak away with high EM&V costs. Finally, they suggest that the Commission can routinely audit the EM&V process to verify its results, and investigate at any time using experienced contractors that would find the truth. Utilities suggest that EM&V should assure that program plans were implemented appropriately, that savings are measured with reasonable accuracy, and the lessons from the EM&V activity are plowed back into programs.

Rigorous and reliable EM&V is essential to the goal of energy efficiency for three interrelated reasons:

- The EM&V framework should be designed to generate accurate and reliable data.
- In order for an energy efficiency program to succeed, all stakeholders must have some assurance that the energy efficiency program is itself efficient. The EM&V program must ensure that energy customers, utility shareholders, and ratepayers get a good energy efficiency return for the dollars expended. Ratepayers should rest assured that well-run, independent and effective energy efficiency programs will ultimately result in lower customer bills.
- The EM&V program must be as transparent as possible to ensure that the best program designs are adopted and that the best program implementers are selected.

[36] See California PUC Rulemaking Docket R.01-08-028, Decision D05-01-055 at p. 111, January 27, 2005. http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/43628-04.htm#P509_192162 (October 30, 2006)

EM&V Protocols and EM&V Cycle – The Commission should develop EM&V protocols and a cycle for EM&V that is integrated into program plans and resource plans. The goal of this effort should be to:

a) Produce a standardized process for evaluating programs, reporting results and acting on results;
b) Provide credible and objective information on program impacts and performance;
c) Produce recommendations to improve program performance;
d) Produce an accurate assessment of future opportunities to save energy; and
e) Produce results that meet the needs of resource planners in order for energy efficiency to be a viable resource.

In addition, EM&V efforts should be structured so that they can: 1) inform the program selection process, 2) provide early feedback to program implementers, 3) produce calculations of performance basis at the end of the funding period, and 4) feed back into the planning process for the next program cycle and prompt modifications to deemed savings calculations based on experience. The reliability of the reported energy savings is critical link for EE to be a viable resource in the utilities' resource portfolios. EM&V is vital for energy efficiency program cost recovery, but participants have different reasons for this. Some link cost recovery to savings results and expect EM&V to show whether goals are met, thus justifying cost recovery. Others link cost recovery to following the program plans, and do not believe that failure to meet savings goals should be cause for cost disallowance since there can be good faith reasons for such an outcome. For them, EM&V is about improving programs, validating claims for incentives, if offered, and linking their results to resource planning

To maximize the benefits of program evaluation, the energy efficiency implementer should be working closely with the program evaluator from the start to:

(i) co-develop data reporting requirements,
(ii) set up infrastructure for data tracking, and on an ongoing basis,
(ii) review program progress, and
(iv) implement changes to enhance program effectiveness.

The International Performance Measurement and Verification Protocol (IPMVP) offers Arkansas a standard place to start that is used by many program administrators elsewhere. Some collaborative participants advocate its use in Arkansas. IPMVP offers a method that can apply for programs when deemed savings calculation are not applicable.

Establishing Energy Efficiency Savings – Energy (kW, kWh, therm) savings are determined by comparing measured energy use before and after implementation of an energy savings measure.

Most participants support using deemed or estimated energy savings rather than undertaking actual savings calculations in whatever applications are appropriate consistent with the right balance of ratepayer protection and efficient program administration. This is discussed at length elsewhere in this report. This approach is less

precise, relying on engineering estimates rather than installation specific savings measurements, but is less costly than measuring actual savings and provides sufficient precision in many states. The most likely situations for using the deemed savings approach would be those energy efficiency measures and/or programs for which reliable, objective and independent energy savings data already exists and for which there are relatively few external factors that could compromise energy savings. Residential programs are likely to be conducive to using deemed savings in the EM&V process. Costs versus savings should be tested to ensure that the estimated savings are actually being achieved. Where a deemed savings approach is not applicable, the administrator should estimate savings for the approved program and include an M&V plan and budget. M&V should consist of verification of installation by the utility and collection of pre- and post-measure data.

Others advocate undertaking actual energy savings verification measurements, either on a comprehensive basis or by sampling. This approach has the virtue of being more reliable but the costs of implementing the after-the-fact true up to compare costs versus savings are higher.

EM&V Plan – Program administrators (utilities, if they are the administrators) should develop a proposed EM&V plan and associated budget for the energy efficiency programs to be implemented. The plan should focus on demonstrating how program objectives are met. A technical advisory committee of interested stakeholders should assist in the development of the EM&V plans.[37] The Attorney General believes that this committee should be set up by the Commission or some entity other than program administrators. The EM&V plan should specify the method for verification of program costs, the number, types and quality of measures installed, and procedures and methods for verifying actual savings. The EM&V plan should include sufficient funding for evaluation of costs versus savings to be able to ensure the integrity of the energy efficiency efforts. The record keeping should not be limited to energy savings only. Since the objective of programs should be to provide benefits to all ratepayers, the EM&V process should be geared to confirming whether that objective has been achieved. A centralized EM&V administrator could be assigned these tasks.

A number of participants suggested that for indirect impact or market transformation programs, such as public information campaigns, M&V will consist of verification of program implementation based on the plan.

One participant suggests that every energy efficiency services provider should provide adequate documentation for an M&V plan that meets the requirements of the IPMVP. This would apply to any customer that chooses to self-direct energy efficiency investments, if that practice is authorized by the Commission.

[37] Consultant costs should be considered as part of the overall EM&V budget discussed in the subsequent section.

The Attorney General offers the following list of items that EM&V plans should contain:

- A table for classifying each proposed program, based on characteristics such as program size, market segment, whether it involves new construction or retrofit applications, in order to establish the type of EM&V analysis necessary.
- A table showing the type of study or studies required for each program classification and the specific outputs that will be generated. For example, the outputs of an engineering analysis to evaluate gross load impacts would include the load shape and level of savings per unit. The outputs of a participation verification study would include the types and numbers of measures and equipment installed.
- A protocol that describes the frequency for each type of study, by program classification, and annual reports to the Commission. The combination of this protocol and table of studies in the previous item should provide a schedule for how frequently specific performance parameters (e.g., first year energy savings, program participation, expected useful measure lives, net-to-gross ratios, technical degradation factors, etc.) will be updated.
- Quality control protocols that provide directions on how to gather and analyze information for major study parameters, including acceptable methods for estimating load impacts, sample design and billing data requirements (as applicable), acceptable data collection methods, acceptable confidence levels, approaches for dealing with uncertainty, recommended techniques for assessing and minimizing potential bias, among others.
- A schematic and accompanying description that illustrates the "integrated EM&V cycle", that is, how the required studies will inform the program planning and integrated resource planning process. This document should indicate when studies will be completed, how they will be submitted/made available for public review, and describe how the resulting updated information will feed into the next energy efficiency program planning cycle (for example, to cause an adjustment in deemed savings tables) and/or resource planning cycles.

Periodically, the Commission should audit program results, including the performance of the program EM&V. This can be a desk audit or a field audit. The Attorney General believes that some field audit is essential. A firm independent of program activities in Arkansas and companies delivering programs in Arkansas should be used for this purpose. In a desk audit, processes are examined to see that staff does what was expected of them. For example, the audit would check that savings were measured based on pre-determined procedures. A field audit would be to determine savings reported are actually in place. Some in the collaborative caution that 2007 programs may be simplified, so a Commission audit should wait until programs mature and can be fairly evaluated.

PSC Staff proposes a framework for EM&V that appears in a text box.

Suggested Framework for Initial EM&V from PSC Staff

Commission would prescribe initial data collection and reporting requirements. This would probably involve identifying the specific measures and data requirements for each initial program. This would likely be superior to developing a complex generic manual or procedure.

Utilities would gather the prescribed data and calculate the prescribed measures. The utilities would file periodic reports (annually) presenting the required information.

Periodically, an independent party could be hired to evaluate, audit, and verify the accuracy of the utilities' reports.

This general framework is similar to the process used by the Commission for many other issues. This enables monitoring of the programs to ensure that the stated benefits are realized.

Each program should identify a specific list of objectives. The EM&V process for each program should be structured to verify that the stated objectives were met. If the objectives were met, it may be appropriate to expand the program. If not, it may be appropriate to end the program.

Initially, the EM&V process should be kept as simple and straightforward as possible. It must be comprehensive enough to ensure thorough scrutiny of all programs but not unduly burdensome.

EM&V Budget – The level of funding should be sufficient to cover the costs of verifying program participation and program expenditures, conducting load impact studies when necessary, and periodic persistence studies and process evaluations. As with all aspects of the energy efficiency budget, care should be taken to balance costs necessary for effective EM&V with concern for a favorable benefit/cost analysis. The program administrator should provide to the Commission a proposed EM&V budget to assist the Commission in adopting a specific EM&V funding level. The collaborative would discourage placing a specific cap on EM&V spending. The Commission would monitor the percent of costs attributed to EM&V to assure that the appropriate balance between efficiency and administration, including EM&V, is maintained. The Commission can look to EM&V spending in other states for comparison purposes. During the collaborative, participants reported a range of 3% to 5% of program budget for EM&V. Initial EM&V costs will be higher than in later years due to the need to create and establish new management systems.

7. The proper economic tests to use in determining whether a program is in the public interest.

The parties to the collaborative have disparate views on the way to apply benefit-cost tests to energy efficiency programs. Most participants support an approach that diminishes the importance of any one economic test. This approach would have the Commission use several tests, as well as a comparison to an applicable avoided cost to identify programs that are likely to be cost-effective in Arkansas. Use of avoided cost in this way on a permanent basis is a concern for PSC Staff, though use in review of "quick start" programs is more acceptable, as discussed in Section 1 of this report. These programs would be fleshed out sufficiently with economic details so that the various economic tests can be applied, and the Commission can judge the programs worthy of "pre-reviewed" status. These programs would be deemed cost-effective. Administrator-specific programs conforming to pre-reviewed programs would be approved. The tests can be adapted to include or exclude external costs and benefits. There is a premise here that energy efficiency is a utility resource.

Issues Regarding Energy Efficiency Program Qualification Criteria: Introduction – As with all utility costs or investments for which cost recovery[38] from ratepayers is sought, there must be clear criteria as to which costs may qualify for such recovery. In the case of this docket, this presents a potential dilemma. In order to achieve practical results quickly, such criteria should be relatively broad in nature. However, the economic evaluation of Energy Efficiency programs is inherently complex. What is needed, then, is an approach that retains sufficient rigor while being relatively simple to apply (attributes can be added later as stakeholders gain experience).

It is contemplated that introducing energy efficiency programs in Arkansas will proceed in stages. An initial stage will primarily encompass programs that are well understood, and have been widely and successfully implemented elsewhere. The initial stage will also serve as a learning experience with lessons learned applied in later stages. Given this approach, it is appropriate to define criteria for the initial stage rather broadly at this time, while keeping in mind that this issue will be revisited when advancing to later stages, at which time more comprehensive criteria may be considered.

Another relevant aspect of this initiative is that it is contemplated that there will be a list of "pre-reviewed" measures or programs that may be considered for inclusion in Energy Efficiency plans, as well as provision for the inclusion of additional measures/programs on a case-by-case basis. Different criteria may apply to these two types of programs, e.g., common statewide economic evaluation using common statewide parameters and values for the former, perhaps more utility-specific economic evaluations for the latter. (There will likely be non-economic criteria, as well.) Any other commonly-implemented statewide programs would also utilize common statewide economic evaluation using common statewide parameters and values.

[38] Cost recovery here refers to all related costs, including administration, net lost revenues, if allowed, and incentives, if offered.

The following presents a summary of some of the major issues in this area in Question and Comment format. (It is understood that the scope of this docket and report can encompass programs whose aim is primarily energy efficiency, as well as whose aim is primarily demand reduction, and the Comments are meant to apply to both).

Specific Program Qualification Issues Summarized

Q1. What are the initiative's overall objectives and what types of criteria should be used to measure success?

Q2. What type of criteria should be used for various types of individual programs?

Q3. At what level should criteria be applied? To individual measures? To multi-measure programs? To multi-program utility portfolios or plans?

Q4. How should the various benefit/cost perspectives be balanced?

Q5. What elements should be included in the various benefit/cost tests?

Q6. What values should be used for the elements included?

Q7. What time periods should be applied in such benefit/cost tests?

Q8. Should there be a "tight" definition of elements/values/time periods, or should flexibility in their selection be allowed?

Q1. WHAT ARE THE INITIATIVE'S OVERALL OBJECTIVES, AND WHAT TYPES OF CRITERIA SHOULD BE USED TO MEASURE SUCCESS?

Overall objectives will likely include such items as the aggregate scale of EE programs (savings achieved, dollars spent); a range of programs available for equitable participation by a range of customers/classes; and others. Longer term objectives could include downward pressure on commodity fuel prices, including natural gas.

For the aggregate scale, criteria could analyze budget sizes, either in absolute dollar terms, or as a percentage of revenue (either total revenue, or of revenue less fuel cost, which tends to be more stable, especially for gas utilities), or monthly bill increases. Note that the issue of program scale is also discussed in the program section of the report. Projected load reductions (energy and capacity) could be compared with projected load and consumption growth. Criteria could establish minimums, maximums, or both. These overall targets could be subject to a requirement that only cost-effective programs be implemented.

For the range of programs offered, guidelines for budget allocation to various customer sectors could be established over some period of time. It should be noted that even customers who do not participate in any programs will enjoy the system benefits of all programs, regardless of who they draw on as participants. Thus it is not unfair for non-

participants to pay for overall initiative implementation, even if they do not directly benefit from program energy savings. Because the collaborative agreed on the principle that programs should be available to all customers, all customers may eventually become participants of energy efficiency programs.

Appropriate cost-effectiveness requirements should also be incorporated.

Q2. WHAT TYPE OF CRITERIA SHOULD BE USED FOR VARIOUS TYPES OF PROGRAMS?

There will probably need to be different criteria, including distinct cost recovery test criteria, for "soft" programs (i.e., those whose results cannot be readily quantified), such as informational and educational programs, vs. "hard" programs (i.e., those with readily quantifiable results).

Objectives / criteria for "soft" programs might include: a percentage allocation of the overall EE budget; number of persons estimated to be reached; or others. Appropriately designed "pre" and "post" customer surveys could be used to help determine program effectiveness, and potentially to improve the program on a going-forward basis. Note that this was also discussed in the program section of the report.

Criteria for individual "hard" programs could be based on the standard DSM economic analysis tests, or another could be specifically developed for this purpose.

Different criteria may be appropriate for individual "hard" electric utility programs vs. gas utility programs since commodity fuel costs make up such a different proportion of aggregate customer bills for the two, because of different market forces affecting the two, and for other reasons.

Q3. AT WHAT LEVEL SHOULD CRITERIA BE APPLIED? TO INDIVIDUAL MEASURES? TO MULTI-MEASURE PROGRAMS? TO MULTI-PROGRAM UTILITY PORTFOLIOS OR PLANS?

A "measure" generally consists of a single action or device (or multiples of a similar device, such as light bulbs); a "program" generally consists of collections of measures, which can be "delivered" to customers at a lower total cost than the sum of the costs of the individual measures if separately "delivered". (A program could also consist of only a single measure). A "portfolio" consists of a collection of one or more programs, intended to ensure broader coverage than the individual programs.

Should there be a requirement that every measure in a given program must meet cost effectiveness criteria on its own (after adjusting for the economies of "delivery" resulting from its inclusion in a program), or could some additional measures be included, so long as the overall program meets the criteria? Likewise for "portfolios". There may be justification for delivering cost ineffective measures in some circumstances. If cost

ineffective measures are allowed to be included, some explanation of the basis for their inclusion should be provided.

The collaborative favored a system in which Arkansas would expect to see a healthy benefit from the overall portfolio of programs, while at the same time expecting a range of performance from individual programs, including some that might have marginal economic benefits but have other favorable attributes (like safety, habitability, comfort, etc.).[39] Participants favored flexibility in constructing a program portfolio to gain experience and assure that a range of programs would be initiated.

Q4. HOW SHOULD THE VARIOUS BENEFIT/COST PERSPECTIVES BE BALANCED?

The "standard" economic benefit/cost tests are designed to look at program cost effectiveness from a variety of different perspectives and each provides useful information. The TRC test adopts the perspective of the aggregate of the utility and all of its customers, taking into account cost and benefit elements based on the current resource planning environment (current environmental regulations, etc.). The Utility Cost test is similar, but excludes costs borne solely by program participants. The Societal Cost test is similar to the TRC test, but can include additional avoided cost items or selected social benefits. The RIM (rate impact measure) test adopts the perspective of a non-participating customer, to see whether the "costs" of savings to participants (bill savings or lost net revenue, and any utility-paid incentive) outweigh the "system" benefits for non-participants.[40] Finally, the Participant Cost test adopts the perspective of a participating customer, to see whether their short-term savings (bill savings plus incentives) will be sufficient to offset any participant measure cost, and induce them to participate.[41]

One or more of these existing standard tests, or an alternative specially developed test, could be used as an absolute criterion, or a multi-part criterion could be established, such as passing the TRC test, with a minimum RIM test value of, say, 0.75.

A specific criterion or approach could be specified, or flexibility could be allowed, permitting somewhat different criteria for individual "hard" programs. (See, for example,

[39] There are various instances in the U.S. with a portfolio benefit/cost ratio using the total resource test exceeding 2, which include programs with benefit/cost ratios using the same test ranging from around 1 to numbers as high as 7 or even more.
While quantifying the value of other favorable attributes is not always feasible, some commissions, Vermont, for example, apply a percentage adjustment that roughly and directionally allows these attributes to factor in the analysis.

[40] Participants in the collaborative brought different views about subsidies or external factors that are routinely included in the RIM test. The point is to reinforce the idea that these tests are guides and are not substitutes for affirmative public interest-driven decision-making about the Commission and program administrators.

[41] Distinct among collaborative participants, the Arkansas Electric Consumers and Gas Consumers groups argued for exclusive use of the RIM test. Others pointed out that a standard of no rate effect may be too high for most programs, and is not how other resources with general benefits are evaluated.

"An Electric System Resource Planning Approach to Using the Standard DSM Cost-Effectiveness Tests").

Q5. WHAT ELEMENTS SHOULD BE INCLUDED IN THE VARIOUS BENEFIT/COST TESTS?

The economic test calculations are somewhat broadly defined, and there is a very wide range of elements that could be (and have been, elsewhere) considered for inclusion in them. The table "Potential Cost Effectiveness Test Elements" identifies and offers comments on an assortment of such elements. This spreadsheet is included in Appendix C-1. The collaborative participants appreciate that this should be used as a guide for the Commission in this initial stage, subject to changes with experience.

The specific elements would differ for gas and electric utilities.

The Attorney General recommends that, to the extent one program leads to savings benefits for both electric and gas, the joint benefit should be considered in applying a benefit-cost test.

The collaborative discussed the approach that Texas used, in which an avoided cost approximating the carrying cost of a combustion turbine was used to value capacity. Participants favored an approach that included the various so-called "California tests" listed in the response to Q4, above.

Q6. WHAT VALUES SHOULD BE USED FOR THE ELEMENTS INCLUDED? SHOULD VALUES BE UTILITY-SPECIFIC OR COMMON? SHORT-TERM OR LONG-TERM?

Some general values, such as inflation and commodity fuel escalation rates, should probably be common for all analyses. Statewide programs would likely use common values, which may require averaging of some diverse data.

For utility-based programs, utility-specific input information, such as avoided capacity and energy costs, may be useful, thought some participants expressed concern about the resources that might be required to do so many utility specific analyses. There are good arguments to be made for using each approach at different times, and there was interest in developing approximate "default" values that could avoid the need for a costly analysis.[42]

There is a balance here which must accommodate the imperative of assuring sufficient review of all costs that go into utility rates. The concern of utilities for certainty of cost recovery stands with ratepayers' need for certainty of benefit. Resolving this set of issues

[42] For example, considering avoided costs, some systems may not need additional capacity resources for some time, while others may have such needs earlier. There may be structural reasons why one system's cost for a particular element are higher or lower than another's. On the other hand, the less uniform such assumptions are, the more difficult it becomes to compare and analyze results across systems.

may rely most on societal values, which a multi-stakeholder collaborative or the legislature may be well-situated to address.

Considering short and long term values, on the one hand, programs that are implemented in the near future will be affected by current and near-term market conditions for various cost elements during their first years of implementation. Down the road, however, longer term factors will be more applicable. The collaborative acknowledges that both avoided capacity and energy costs are likely to rise over the next several years (though all reserve the right to be wrong, but supply and demand resources will be evaluated with similar long term forecasts). Economic evaluations performed over a multi-year time period can take this into account, but are more complex to specify and to implement. One way to do economic analysis is to annualize costs over the analysis period or measure life. In this way, costs and benefits can be fairly compared.

Q7. WHAT TIME PERIODS SHOULD BE APPLIED IN SUCH BENEFIT/COST TESTS?

How long should any analysis period be? (Costs and benefits can be effectively annualized so that one-time vs. ongoing costs can be appropriately reflected even for short analysis periods). Should it be keyed to the expected life of the specific program/measure (some rather short, others quite long)? Should a standard analysis period, say on the order of 10 years, be established for all economic evaluations? The collaborative discussed setting an arbitrary period for economic analysis of ten years. This period has the following virtues.

- It captures the long term benefits of energy efficiency programs.
- Benefits that occur beyond 10 years out are so heavily discounted in the analysis that they scarcely influence it.
- It is a plausible average length of program measures, which last from a year to over 20 years, based on experience elsewhere.
- It is a duration that allows some confidence of commodity and construction forecasts. And it simplifies the process of doing the analysis across all programs.

Gas companies note that as gas efficiency measures may have a longer life on average than electric measures, if a standard is used, a 15 year period may be more suitable, though forecasts are increasingly influenced by unknowns further in the future.

PSC Staff does not agree that an arbitrary default period should be set. At this point, the collaborative has not come to agreement on this approach.

If a simplified economic evaluation approach is followed, should long-term or short-term values be used? This answer can be program-specific. As discussed earlier, program start-up costs should be eligible for cost recovery – the process should fairly reflect their importance to the lifespan of the program. If these costs are allowed to burden the year one analysis, this could severely limit the programs that pass the start up phase.

Q8. SHOULD THERE BE A "TIGHT" DEFINITION OF ELEMENTS/VALUES/TIME PERIODS, OR SHOULD FLEXIBILITY IN THEIR SELECTION BE ALLOWED?

On the one hand, "tight" definitions promote uniformity of analyses and comparability of results. On the other hand, flexibility allows for the possibility of differences that are the result of structural differences between individual systems. The ultimate in "tight" definitions would be to have a single party perform all economic evaluations using a single model with a single set of parameters and values. Advocates of utility administration envision a more flexible approach.

Commission rules should identify not just the benefit/cost tests that will evaluate proposed programs, but also the inputs that would be expected for proposed program plans.

For details about how program inputs and other factors considered in this section can be incorporated in the EE program screening process, including a range of benefit/cost tests, an Excel Spreadsheet, Cost Test Elements2, as added to this report as Appendix C-2.

8. Other Topics relating to energy efficiency important for immediate attention, though not in this docket.

Rates – Many participants identified a connection between retail rates and the choices customers make to buy and use energy. Like most things people buy, electricity has a demand elasticity – customers do respond to price.[43] This is not to dispute that some electric consumption is essential and will be consumed at any price. Quite a lot of consumption, however is price sensitive – higher prices will lead customers to find other, cheaper ways to accomplish the same object, or to go without. Conversely, lower prices send the message to many that more consumption is an easy financial burden.

On the supply side, the cost of make a unit of electricity can vary quite a bit from time to time.

Flat rates tell customers nothing about the cost of making electricity, and prompt no reaction from customers if the cost of electricity goes up on any given day. Rates that decline at higher volumes, declining block rates, suggest to users that the more electricity is demanded, the cheaper it becomes. On many days, notably the higher priced and demand constrained days, this is the opposite of what is true.

If customers paid rates that reflected to some extent the production prices at times when they are high, and when they are low, customers might learn to avoid uses at times that tend to be high. Since these times correlate well with times when loads are at their highest, this pricing structure can accomplish some peak load reductions purely through behavioral changes stimulated by rates. Approaches employed elsewhere include

[43] Gas is subject to elasticity, but time-sensitive rates do not apply well to gas since it is supplied to local distribution companies on a daily basis. Inclining block rates could be useful for gas companies, however.

seasonal rates, time-of-use rates, real time prices, and inclining block rates. There are some costs to some of these approaches for advanced metering and meter reading, but these investments produce ancillary benefits to the system that can be evaluated.[44] The community action agencies point out that residential customers may not be responsive to time-sensitive rate options as compared with business customers.[45]

The collaborative parties appreciate that this docket is intended to launch energy efficiency programs. The collaborative reports that its participants are interested in exploring the merits of time-sensitive rates that will influence customer behavior in ways that may lead to a conservation effect at peak, adding to the peak effects accomplished by energy efficiency programs. Participants acknowledge that this work may be best done in a rate investigation in order to evaluate the effects of rate changes on all customer classes, and most agree that this should be considered a longer term issue for development. Representatives of larger consumers find this a more urgent matter.

The collaborative heard about one other rate issue. For some customers, the applicable tariff is driven by usage levels. There are apparently instances where reducing usage moves a customer to a different tariff which is disadvantageous to the customer.[46] The collaborative supports examining in a rate case context utility tariff structures to identify these instances and determine if they can be redesigned so that energy efficiency does not cause inadvertent harm to participating customers.

Decoupling – The collaborative recognizes the influence of traditional regulation on utility incentives concerning sales. There is an inherent "throughput incentive." Utility net income tends to go up if sales go up, since marginal revenues tend to exceed marginal costs. As part of this collaborative, this report in section 2 covers the issues and methods to address net contributions to fixed costs and net income that are lost when utilities engage in energy efficiency programs. That discussion focuses on reversing the specific effects of implemented programs.

The throughput incentive can be addressed in a more comprehensive way to better align the companies' financial incentives with the public interest. The amount of revenue needed to cover utility fixed costs and net income as defined by the allowed return on equity investment, can be calculated in a rate case, forecasted for a modest period forward, and delivered from consumers to the utility through periodic adjustments in rates that true up actual results to pre-determined levels. This process, generally, is called "decoupling" because it decouples profits and coverage of fixed costs from sales.[47]

---

[44] For a broad range of information on this, see the Advanced Metering Toolbox created by the Mid-Atlantic Distributed Resources Initiative, http://www.energetics.com/madri/toolbox/ (October 20, 2006)

[45] This intuitive observation is refuted anecdotally by a pilot retail real time pricing program in Chicago, IL run by the Community Energy Cooperative. See http://www.energycooperative.org (October 30, 2006), and http://www.energetics.com/madri/pdfs/real-time_pricing_is_the_real_deal.pdf . (October 30,2006)

[46] According to Wal-Mart, Entergy's Rate 8, for customers with a load greater than 1000 kW, has a lower demand charge that Rate 6. Efficiency that causes a customer to change from Rate 8 to Rate 6 leads to a higher demand charge and eroded savings. Wal-Mart also reports that OG&E tariffs do not exhibit this pattern.

[47] See NAPEE Report page 2-2

Decoupling addresses utility disincentives to energy efficiency inherent in traditional regulation, but offers no incentives for such investments. Retail rate design is a wholly separate issue and does not change with decoupling.

Decoupling has the virtue of being able to address all causes of sales variation, including energy efficiency. Some causes of variation, like weather, can be included or not. Natural gas utilities report experiencing a trend of sales attrition, and decoupling has been considered in other jurisdictions as a way to assure that existing physical plant necessary for service is supported financially in an orderly way. The issue of attrition is complex and some see advocacy of decoupling as a quick fix to an issue that needs more study.

If utility risk is materially reduced by decoupling, that can be reflected in the allowed cost of capital.[48] As energy commodity prices are going up, as natural gas sales are going down, as the next wave of energy supplies appears to be more expensive than the last, there has been more interest in assuring that utilities are not inherently motivated to increase sales, so more jurisdictions are assessing decoupling.[49] The collaborative notes that changes to the risk of utility cash flow may justify a change in the utility cost of capital and the allowed cost of equity.

Because decoupling is a fundamental change in the way regulation works and has many facets unrelated to energy efficiency, the collaborative recognizes that addressing decoupling directly should not happen in this process and should be done deliberately. Natural gas utilities do suggest with emphasis that the Commission encourage a decoupling proposal from these companies in their next rate case. They argue that adding successful energy efficiency investments in the face of a trend of attrition adds financial stress that may be difficult to bear under the current system.

Other collaborative participants, notably the electric utilities and the PSC Staff, recommend that decoupling be more thoroughly evaluated before any position is taken. There are no inherent downsides to decoupling, but it can be poorly executed, as it was in a few states in the early 1990s. The primary concerns are the magnitude of rate true ups and what causes true ups. Measuring the utility risk reduction and factoring it into a cost of capital adjustment is also not settled in regulatory cases. Avoiding repeating errors in these mechanisms should be a key objective in designing any new system.[50] The Attorney

---

[48] Cost of capital can be adjusted by adjusting the allowed return on equity, or the debt-equity ratio.

[49] Dockets are underway in Idaho and Vermont (docket 7176) to consider decoupling for electric companies. All large investor-owned electric and gas companies in California have decoupling mechanisms in place. Philadelphia Gas Works, a municipally-owned company, has proposed a decoupling mechanism. New Jersey BPU recently approved decoupling plans for two natural gas companies. http://www.bpu.state.nj.us/home/news.shtml?37-06 (October 30, 2006). Connecticut considered and rejected decoupling in 2005, but the Department of Public Utility Control found that because 3% of net electric utility revenues is going to energy efficiency, and utilities can earn incentives for successful program implementation, they decided that the throughput incentive was not keeping energy efficiency from happening. Gas companies have a limited form of decoupling in place, called a Conservation Adjustment Mechanism. Order in docket NO. 05-09-09, JANUARY 18, 2006.

[50] NAPEE Report page 2-5

General notes that decoupling may not be sufficient to adequately address the throughput incentive.[51]

Full Fuel Cycle Energy Efficiency – The gas company participants in the collaborative have observed that there are two ways to look at efficiency. One way is to consider the delivery and upstream energy conversion of the original fuel as well as the efficiency of the end use at the customers' premises. A different way is to look only at the customer premise or end use efficiency. The gas company participants, as well as the renewable energy participant, supports the former approach, pointing out that this measures the ultimate efficiency of the fuel used to produce energy. They feel that this principle would affect many issues, including energy efficiency program design, and rate design. OGE indicated that an accurate analysis upstream requires knowledge of marginal generation units, which change seasonally.

There was not general acceptance by the collaborative participants that full fuel cycle energy efficiency should be incorporated into education programs or the evaluation of programs at this time. The collaborative participants agree that this line of thinking raises the issue of whether fuel switching is an energy efficiency strategy.[52] Because fuel switching raises competitive issues between the electric and gas sectors that would take significant effort to resolve, and because there are programs that can be started quickly that would improve efficiency for both electric and gas end uses, the collaborative participants recognize the merits of deferring taking on this matter now. The collaborative participants accept that programs should avoid side by side comparisons between electric and gas use, and that the Commission should ensure energy efficiency messages and incentives should be fuel neutral. Collaborative members acknowledged that for new construction, where the customer is making a choice of fuels for the building, it would help to have this issue resolved.

Distributed Generation – The docket is not intended to address distributed generation (DG). DG did come up during the collaborative discussion since it is a customer resource, and it can have a bearing on on-site fuel choice. The collaborative suggests that the Commission evaluate the connections between energy efficiency rules and distributed generation incentives and disincentives at some future time, and that this be addressed in the context of integrated resource plans.

Air Quality – The collaborative discussed what participants knew about the status of NOx attainment under the federal clean air act. Where non-attainment is a risk or a reality, there is potential for economic disadvantage as new economic development may be limited in various ways. Arkansas has some risk of non-attainment. The collaborative

---

[51] Marcus.

[52] Fuel switching programs are based on the premise that there are inherent efficiencies in converting an end use from one fuel to another. For example, in Vermont in the early 1990s, electric resistance heat was the subject of a fuel switching program. Customers were given information and incentives by the electric utility to remove electric resistance heat and replace it with propane or gas fired hot water space heating systems.

discussed the possibility of targeting programs to parts of the state where non-attainment is a possibility. This may be an enhancement to future programs.[53]

The collaborative also expressed interest in seeing savings from energy efficiency programs translated into avoided pollution and carbon. Public information about marginal generating units at various times would be sufficient to develop approximate conversions from avoided power generation to avoided tons of key gases (this is the second instance in this report where information about marginal electric generation is found to be useful). While there was some concern about assembling sufficiently accurate information, there was broad interest in recording and reporting this information if possible.

Regional Interaction – In its role overseeing energy efficiency programs in Arkansas, the Commission may take note of efficiency programs in other states within the regional electric market. Coordination may enhance the effectiveness of Arkansas programs.[54]

The Internet – In other states, the website of the utility Commission is an important gateway for information and services. Some attention to using best practices from other jurisdictions would reinforce energy efficiency program effectiveness.[55]

The Commission may also use its status as collector of program plans and performance reports to maintain a public database of programs and their performance among the many utilities, if utility administration is selected. Basic information on success stories can be collected, as we saw on the website of the Oregon Energy Trust and the Iowa Utilities Board.[56]

Commission Rules – This report will support the creation of a PSC rule addressing energy efficiency.

9. Matters that may need attention later.

There are several matters important to the long term quality of energy efficiency programs in Arkansas that can be safely deferred for now. This allows Arkansas and its PSC to initiate a good set of programs immediately, while also recognizing that more work can and should be done to improve and refine the choices the Commission will make now. This section reviews some of those issues.

---

[53] The U.S. EPA attainment rules allow for a small portion of the state implementation plan (SIP) requirements to met with energy efficiency. EPA has published guidance on how to translate energy efficiency results to a SIP.

[54] For example, eight Midwestern states are collaborating toward an objective to reduce electric energy use with the objective of reducing natural gas prices through a significant reduction demand for natural gas fuel electricity. Arkansas can become associated with this effort and acquire insights into how these eight states are increasing or initiating energy efficiency efforts in those places.

[55] The collaborative reviewed the Iowa Utilities Board website as an example, http://www.state.ia.us/government/com/util/ee.html (October 30, 2006)

[56] http://www.energytrust.org/library/case_studies/index.html (October 30, 2006)

Solar Hot Water – These systems may contribute to energy efficiency, but would cut into utility sales. In some states, energy efficiency programs do provide this conversion option for customers as part of energy efficiency programs. The Commission may elect to examine this issue at a later time once more basic programs are underway.

Tradable Credits – One participant raised the prospect of creating tradable credits for demand response, energy efficiency, and renewable energy. Roughly half the states have some tradable credit program. Most focus on renewable energy only, but some include demand side resources (sometimes, credits from these resources are known as "white tags"). An essential element to this program is a requirement on the utilities to acquire a certain amount of credits each year. There are many implementation issues, including how credits are generated, setting the annual requirement, and assuring that a trading market forms. A higher level of consensus appears to be necessary before embarking on this idea, which may require legislation.

10. Legislation.

This section is here because some discussions of the collaborative came up against constraints that seemed movable only by actions of the Arkansas legislature.

Low Income Program – some collaborative participants have been concerned about perceived limitations to the Commission's authority to implement a program that has an income sensitivity test, such as a low income energy efficiency program.[57] Such a program is important in the portfolios of other states because this population of consumers experiences distinct barriers to participating in energy efficiency programs. Some argue that a program portfolio that does not target this sub-class of residential customers may inadvertently discriminate against them since the effect of the program offerings may tend to favor residential customer with sufficient means to participate. If a low income energy efficiency program is a priority, to the extent that the Commission is limited in its authority, or requires clarification of its authority, these participants suggest that the legislature correct these deficiencies in the statute.

Building Codes – the collaborative discussed current Arkansas building codes and the rate of compliance. Energy efficiency programs can, over time, raise the awareness of builders, home inspectors and customers of new homes on the merits of meeting or exceeding code. In lieu of simply mandating better enforcement, legislation could clarify that the code implies a warranty of performance, and a homeowner could have legal recourse if the home is subsequently found to be inferior compared with the code.

Other Initiatives – Other legislative initiatives that may emerge from the collaborative include:

- Expanding the U.S. DOE-funded Weatherization Assistance Program;
- school curriculum including efficiency;

[57] See Arkansas Gas Consumers, Inc. v. Arkansas Public Service Commission, 354 Ark. 37.118 S.W. 3d 109 (2003)

- requirements for school building energy efficiency measures;
- renewable portfolio standards;
- clarification of legislative intent concerning utility financial incentives for energy efficiency, net lost revenues and other performance objectives.

Appendix A: List of Collaborative Process Participants

Participants in APSC Docket No. 06-004-R Collaborative

Participants	Representing
Alan Henry	Centerpoint
Alan Stewart	AWG
Alice Wright	PSC Staff
Angela Beehler	Wal-Mart
Angie Kline	Centerpoint
Bill Brooks	Frontier
Bill Conine	SCAEC
Bill Rue	AVECC
Bill Wilkerson	OGE
Billly G. Berny	SWEPCO
Billy Martin	Woodruff Electric
Bob Drawe	OGE
Bob Lyford	AECC
Brian Donahue	AEEC/AGC
Brian Duncan	Craighead
Bruce Bennet	Consultant
C. Wayne Whitaker	SWREA
Carl Horton	Woodruff
Chris Benson	Energy Office
Cynthia Mitchell	For the AG
Dan Baw	Individual
Dane Cowling	Baldor Electric
Daryl Bassett	PSC
Dave Slaton	PSC
David Lewis	PSC
David Matthews	SWEPCO
David Smith	Clay County Electric
Denise Baker	AEEC
Don Moncrief	SWEPCO
Doug White	AECC
Elizabeth Stephens	SWEPCO
Fred Kirkwood	AOG
Garrett Stone	Brickfield, Burchette, Ritts & Stone
Gene Sweat	Farmers Coop
Glenn Garland	CLEAResult
Greg Smith	C&L Electric
Harry Hamlin	Mitchell, Williams, Selig
Holly Whitcombe	AEEC/AGC
James Sanders	Carroll Electric
James Sowerby	Entergy
James Thompson	Entergy
Jamie Stringfellow	Entergy
Jeff Dangeau	AWG

Jerrold Oppenheim	CAA
Jerry Estes	North Arkansas Electric
Jerry L. Johnson	SWEPCO
Jess Galura	Wal-Mart
Jim Stimmel	CLEAResult
Joe Bryson	US EPA
John Bethel	PSC Staff
John Malinowski	Baldor Electric
John Rogers	AWG
Judy Gallo Assante	SWEPCO
Karen McKee	North Arkansas Electric
Kelly Lassiter	SWEPCO
Ken Grant	OGE
Ken Baker	Wal-Mart
Kenny Henderson	Centerpoint
Konnie Coleman	North Arkansas Electric
Lana Deville	SWEPCO
Larry Chisenhal	AOG
Larry Hellums	Mississippi County Electric Coop
Laura Wiltshire	NUCOR
Lean Rowel	North Arkansas Electric
Leon Howell	OGE
Linda Barnes	Entergy
Linda Baynham	Entergy
Lori Burrows	PSC Staff
Mark Cayce	OECC
Mel Coleman	North Arkansas Electric
Mickey Moon	Centerpoint
Mike Callan	AOG
Mike Gier	OGE
Mitchell Johnson	Ozark
Myron Adams	SWEPCO
Neal Frizzell	First Electric
Nick Manatt	Clay County
Paul Dougan	Ozark
Paul Ford	Entergy
Paul Means	Entergy
Perry Johnson	OECC
Phil Watkins	SWEPCO
Randy Bynum	PSC
Rich Sedano	RAP
Ricky Gunter	SWN
Rob Boaz	Carroll
Robert Booth	PSC Staff
Robert Shields	AECC
Ronald S. Moore	Ashley-Chicot
Rose Adams	CAA
Russell Hooks	CAA
Sam Bratton	Individual
Sam Loudenslager	PSC

Sandra Hochstetter	PSC
Sarah Tacker	AG
Scott Kennedy	SWREA
Scott Rorex	Clay County
Shawn McMurray	AG
Sheri Moore	Centerpoint
Sherry Jackson	North Arkansas
Sherry McCormack	Empire
Stacy Angel	US EPA
Stephanie Self	AOG
Stephen Williams	AECC
Steve Strickland	Entergy
Susan D'auteuil	PSC Staff
Susan Davidson	Entergy
Syd Briggs	SWREA
Terri Gallup	SWEPCO
Theo MacGregor	CAA
Tom Nowlin	Petit Jean
Tony Wilson	Arkansas Valley
Valerie Boyce	PSC Staff
Victoria Noble	AECC
W.H. Frizzell	C&L
Wally Nixon	Agents of Change
Wayne Honeycutt	Craighead
William Ball	Stellar Sun
William Ecked	Wal-Mart
William H. Peters	AVECC

Appendix B: Documents Used During the Collaborative

Excel Spreadsheets

- Arkansas Energy Efficiency Workbook (Sales) (See Appendix C-3)
- Arkansas Energy Efficiency Workbook (Customers) (See Appendix C-3)
- EconEval1e (See Appendix C-2)
- Cost Test Elements3 (See Appendix C-1)
- Energy Efficiency Reporting Form from Iowa

Powerpoint Presentations

- Energy Efficiency Programs Theresa Gross (Meeting #2)
- The Texas Energy Efficiency: What's Working, What Isn't Jay Zarnikau (#2)
- National Action Plan for Energy Efficiency Joe Bryson (#2)
- Energy Star Joe Bryson (#2)
- Oregon Energy Trust Website (#3)
- Adaptation of M&V Primer (#3)
- Arkansas Weatherization Overview Rose Adams (#4)
- New Orleans Energy Efficiency Plan Wally Nixon (#4)
- Energy Efficiency in Iowa (#4)
- Iowa Utilities Board Energy Efficiency Website (#4) (showed actual html file)
- Mid-American Energy Website (#4) (showed actual html file)
- Average Residential Consumption 2000 - 2006 for AWG (#5)

Word and PDF Documents

- Weatherization Program Proposal
- PSC Staff Weatherization Program
- Arkansas Deemed Savings Proposal (Frontier Associates)
- ACEEEGasPriceEfficiency (pdf) – A study by ACEEE on the relationship between reducing electric consumption, especially on peak, and regional natural gas prices.
- Kentucky Power Company Demand Side Management Programs
- Regulation of Gas Distribution Companies with Declining Use per Customer (pdf) (US Association for Energy Economics)
- Impacts of Energy Efficiency and Renewable Energy on Natural Gas Markets: Updated and Expanded Analysis (pdf) (ACEEE)
- Examining the Potential for Energy Efficiency to Help Address the Natural Gas Crisis in the Midwest (pdf) (ACEEE)
- Easing the Natural Gas Crisis: Reducing Natural Gas Prices through Increased Deployment of Renewable Energy and Energy Efficiency (pdf) (LBNL)
- Exhibit JAR-9 from APSC docket 05-111-P (pdf)

- Source and Energy Emission Factors for Residential Energy Consumption (pdf) (AGA)
- Independent Audit of Texas Energy Efficiency Programs in 2003 and 2004 Public Review Draft (Summit Blue)
- The 2004 Arkansas Energy Code for New Building Construction (pdf)
- California Standard Practice Manual (October 2001) (California PUC)
- National Action Plan for Energy Efficiency (pdf) (US DOE and US EPA)
- Energy Efficiency Policy Toolkit (pdf) (RAP)
- Balancing Natural Gas Policy, Fueling the Demands of a Growing Economy (pdf) (National Petroleum Council)
- North American Electric Reliability Council Long Term Reliability Assessment (pdf)
- Who Should Deliver Ratepayer Funded Energy Efficiency? A Survey and Discussion Paper (pdf) (RAP)
- Critical Thinking on California IOU Energy Efficiency Performance Incentives from a Consumer Advocate's Perspective (pdf) (Marcus, Mitchell for ACEEE)
- We All Did It- Attribution of Savings in an Environment with Many Helpers (pdf) (Gordon, Robison for ACEEE)
- Database for Energy Efficiency Resources (DEER) (pdf) (California PUC and California Energy Commission

Appendix C-1: Benefit Cost Spreadsheet

ARKANSAS ENERGY EFFICIENCY INITIATIVE

VARIOUS DSM PROGRAM COST AND BENEFIT TEST ELEMENTS

ELEMENT	Electric/ Gas / Both	COMMENTS		CALIFORNIA STANDARD TESTS TRC	RIM	SOCIET	PARTIC	UTILITY		OTHER TEST?
"TRADITIONAL" ELEMENTS										
► MEASURE-RELATED ITEMS	B			√	√	√	√	√		
► MEASURE CONSUMPTION AND LOAD IMPACT	B	Measure consumption and load impacts (and measure costs) depend on a comparison of the measure being considered, and the participant's assumed alternative action. These can vary widely, but averages single estimates (or at most a few) simplify the analysis. For example, "High Efficiency Refrigerators": For load impacts, what size? What usage pattern? What efficiency level for the alternative refrigerator? (The relevant load impact for economic analysis purposes is the difference between the loads of the two options.)								
► MEASURE COST	B	Similar to the preceding. For the "High Efficiency Refrigerator" example, what features? What costs for each? (The relevant cost for economic analysis purposes is the difference between the costs of the two options.)								
► PROGRAM COSTS & UTILITY INCENTIVES	B									
► Program Direct Costs & Overheads	B	Program direct costs, including contractors' fees and potential common implementation charges, as well as administrative and evaluation cost allowances.								
► - Utility Share	B	Utility / Participant shares of program costs is a program design item. Costs tend to be largely assigned to participants, although some programs, such as direct control programs, require significant utility costs (e.g., for communication and control systems).		√	√	√	-	√		
► - Participant Share	B	Same as preceding.		√	-	√	√	-		
► (Interim) Lost Revenue Recovery (assuming no decoupling)	B	Same value as participant bill savings. Inclusion of avoided energy cost properly results in net lost revenues in economic test calculations.		-	√	-	*	-		
► Utility Financial Incentive (if any)	B	This item, as well as Lost Revenue Recovery, is treated as a cost item in some tests, but as a self-canceling transfer payment in others. (Coops may treat this differently, since they don't have shareholders to earn any such incentives.)		-	√	-	-	-		
► PARTICIPANT ELEMENTS	B									
► Bill Savings	B	Customer bill savings, calculated from estimated program demand and energy savings, and appropriate tariff parameters. May include projected tariff parameter growth over time, either specific or generic. Same value used for utility lost revenue.		-	*	-	√	-		

► Utility-Paid Incentives	B	Incentive paid to participants to induce them to participate. Can take a variety of forms. Based on experience, calculation (from participant's perspective) or both. If it is too low, participation will suffer. If it is too high, program economics will suffer.		-	√	-	√	√		
► Other Incentives (e.g., tax credits)	B	Certain measures may qualify for participant tax savings, manufacturer's rebates, etc. These items should be taken into account when considering appropriate utility-paid incentive levels.		-	-	-	√	-		
► SYSTEM BENEFITS		The program participant will reduce their energy consumption (probably including a reduction in their consumption at time of system peak); this is the primary benefit of the program. Reduced peak consumption results in savings in facilities, or in contractual charges, required as a result of growth in peak demand.								
► AVOIDED DEMAND COST	B	Savings in facilities, or in contractual charges, required as a result of growth in peak demand.								
► Generation Supply	E	Savings in generation facilities, in contractual charges, or in capacity market purchase costs required as a result of growth in peak demand. (Coops more likely to face contractual charges for this element.)								
► Short-Term	E	If utility is not building, likely to be determined by capacity market prices or contractual charges. May be considerably below long-term cost, in times of market surplus.								
► Long-Term	E	Should relate to construction cost of "pure" capacity; cost of a CT generally used as a proxy for this. (Other capacity types yield benefits other than "pure" capacity, and should not be used to set avoided capacity cost.) Coops may face long-term contractual capacity charges.								
► Generation Interconnection Cost	E	Cost of "local" transmission facilities required to interconnect a new generating unit. Should not include extensive transmission system upgrades -- those should be considered separately.								
► Transmission System Facilities; Distribution System Facilities	E	May be appropriate to consider including something in specific instances, but generally cannot be avoided. Transmission facilities, especially, are added for many reasons other than overall load growth, which the DSM program could mitigate somewhat.								
► T&D System Demand Losses	E	Program load impacts are cited at the customer level. Generation requirements are based on total system load, including T&D losses. Therefore Program load impacts should be scaled up accordingly when calculating avoided demand costs.								

► Generation Reserve Req't	E	Generation requirements are based on total load plus a reserve requirement. Therefore Program load impacts should be scaled up accordingly when calculating avoided demand costs. NOTE: The party specifying the system's generation reserve requirement, such as an ISO, will specify at what time such calculation is performed. That time is the time of interest when evaluating program peak demands.									
► Add'l pipeline, compression, other gas distribution system expansion costs	G	Gas System Improvements: If peak demand growth is slowed sufficiently, this could be reflected in gas supply and capacity plans and result in avoided costs related to expansions or improvements to transmission lines, compressors, and storage.									
► Add'l demand / reservation charges	G	Demand /reservation Charges: If peak demand growth is slowed sufficiently, this could be reflected in gas supply and capacity plans and result in avoided demand charges when gas purchase, storage, and transportation contracts are renewed. This benefit may be partially offset by a short term increase in the customer's gas costs because gas supply and pipeline demand charges will be recovered over lower volumes until contract demand is adjusted.									
► AVOIDED ENERGY COST	B	The program participant will reduce their energy consumption (probably including a reduction in their consumption at time of system peak); this is the primary benefit of the program. Reduced customer consumption results in reduced energy generation / transmission / distribution.									
► Gas commodity cost (various contracts and spot purchases)	G	Reduced commodity purchase requirements.									
► System Fuel and Variable O&M	E	"Economic dispatch"- determined marginal system energy cost over time. Could be a mixture of generation, committed purchases, and market purchases. NOTE: The energy production cost of the avoided capacity resource cannot be used directly as the basis for the avoided energy cost, which is based on all of the energy resources available to the system.									
► Current Emission Cost Adder	E	Systems' economic dispatches generally take into account the cost of mitigating currently regulated emissions (such as SO2 allowance costs). Such regulations, and their corresponding costs, may vary by jurisdiction.									
► T&D System Energy Losses	E	Similar to T&D System Demand Losses discussion above, except for energy losses.									

ADDITIONAL ELEMENTS

► Fuel Price Elasticity Effect	B	Overall fuel market prices are determined at least in part by the overall market supply/demand balance. Actions which reduce demand, such as energy efficiency programs, could theoretically affect this balance sufficiently to cause a decrease in the market clearing price. One would have to assume significant action by a large number of market participants for this to occur in practice. However, credit could then be claimed for the benefits of such a price decrease even on market participants taking no action. Studies are available that have analyzed and estimated such effects. From AWG: A primary goal of energy efficiency programs is to put downward pressure on energy prices. Fuel market prices are determined at least in part by the overall market supply/demand balance. Recent studies by the ACEEE project that national or regional or regional efforts to promote energy efficiency will result in a substantial downward move in natural gas market prices.* A 2005 ACEEE study projects the Midwest Natural Gas Initiative resulting in a 2% reduction in natural gas prices in 2006, moving to a 13% reduction in 2013. A 2% price reduction would produce over $39,000,000 in benefits to Arkansas electric and gas customers with statewide consumption at 220 BCF and prices at $9/Mcf. * See Impacts of Energy Efficiency and Renewable Energy on Natural Gas Markets: Updated and Expanded Analysis, Report Number E052, R. Neal Elliott, Ph.D., P.E., Anna Monis Shipley, April 2005; and Examining the Potential for Energy Efficiency To Help Address the Natural Gas Crisis in the Midwest, Martin Kushler, Ph.D., Dan York, Ph.D., and Patti Witte, M.A., January 2005, Report Number U051								
► Value of Retained Customers	B	Applies primarily to gas since electric customers are unlikely to completely terminate service. All customers benefit from the retained customer's payment of customer charges, delivery charges, and demand charges included in gas costs, as well as avoidance of disconnect costs and uncollectable accounts.									
► Avoided Costs of Disconnects / Reconnects	B	Energy efficiency programs reduce customers' energy consumption, and, correspondingly, their energy bills. This bill reduction could theoretically spell the difference between falling so far in arrears that service is disconnected, and not, for certain customers. The utility's unreimbursed costs associated with such disconnections, and potential later reconnections, would represent a cost savings attributable to the program.									
► Currently Unregulated Environmental Costs	E	There are emissions and other environmental effects of power generation that are currently unregulated, but for which future regulation may be considered. Costs associated with such potential regulation may be considered, particularly as the likelihood of such regulation approaches certainty, and if there is broad agreement on the likely costs of such regulation. This can be considered on a "sensitivity case" basis.									
► Other Currently Unregulated Costs	B	Similar to the above. The analyst may wish to explore the effect of including costs for other unregulated items, especially on a "sensitivity case" basis.									
► "Free Riders"	B	Program participants who would have taken participatory action in any event. They increase program cost while not increasing program benefits. An estimate for such individuals can be incorporated in the analysis.									

► "Free Drivers"	B	Program participants who took participatory action in response to the program, but fail to take advantage of the customer incentive (e.g., fail to apply for or cash a rebate). They increase program benefits while not increasing program incentive costs. An estimate for such individuals can be incorporated in the analysis.									
► Economic Development Benefits	B	Energy efficiency programs create jobs for auditors, contractors, electricians, plumbers, energy service companies, etc., and the multiplier effects that more jobs create should be taken into account. Also economic multiplier from bill reductions.									
Reduction in utility bad debt	B	As customer bills are reduced, they are able to pay more of the utility bill and pay in a more timely fashion. Also carrying costs of arrears, and A&G.									
Avoided cost of saved water	B	For measures that save water as well as a utility fuel, such as low-flow shower heads or faucet aerators, water savings should be counted as an avoided cost of a resource									
Avoided cost of other fuel saved	B	Where customer heats with propane, wood, kerosene or other fuel, weatherizing the home would save that fuel (although it might lead to increased use of gas or electricity if alternative fuel was used after disconnection from a utility service)									
Environmental benefits	B	Health and other benefits from reduced emissions									
Participant benefits	B	Value to participants of bill reductions, continuous service, healthier and safer homes, increased property value, reduced fires, etc.									
Taxpayer benefits	B	Increased tax base, reduced burden on public health and fire services, etc.									

Appendix C-2: Benefit Cost Evaluation Tool

Model Overview:

ARKANSAS ENERGY EFFICIENCY INITIATIVE
EE MEASURE/PROGRAM/PORTFOLIO ECONOMIC EVALUATION MODEL EXAMPLE

MODEL OVERVIEW

MODEL DESCRIPTION

- Performs 10-year benefit/cost analysis of selected energy efficiency measure/program/portfolios (one at a time).
- Actual "action" being evaluated is relatively short-term, until significant modifications are made. The intent is to take a longer-term look at the consequences of a short-term program, rather than to evaluate a specific long-term program.
- Calculates the Standard Cost Effectiveness tests (and their underlying input factors), as well as budget figures.
- Incorporates a range of potential effects, and alternative input parameter formulations
- Uses "annualization" of installed costs (and of one-time participant incentive payments) to deal with differences in specific measure/program/portfolio lifetimes, and to provide a reasonable analysis period, as described below.
- The inputs are intended to be flexible enough for the model to be applicable to gas as well as electric systems, and to cooperatively-owned as well as IOU systems.
- The inputs are intended to be flexible enough to accommodate a wide range of factors of potential interest to various parties.
- Several modeled effects, such as the effects of performance "degradation", can be effectively excluded by entering parameter values of "0" or "1", as appropriate.
- NOTE: A "UTILITY FINANCIAL OUTLOOK" CALCULATION IS ALSO INCLUDED. THIS IS NOT INTENDED AS A "TEST" CRITERION FOR MEASURES TO PASS OR FAIL, BUT RATHER AS AN INDICATOR OF HOW A UTILITY MIGHT VIEW A PARTICULAR MEASURE'S OVERALL FINANCIAL VIABILITY. IT IS A MODIFICATION OF THE STANDARD "UTILITY TEST" THAT ADDS LOST REVENUES TO THE COSTS, AND ADDS LOST REVENUE RECOVERY AND UTILITY FINANCIAL INCENTIVE TO THE BENEFITS.

MODEL (WORKBOOK) STRUCTURE

- The first two worksheets present the required input parameter values; "Global" and "System" parameters (a single page), followed by "Measure (/ Program / Portfolio" parameters (a separate page), as described below.
- The next worksheet, "CALC-Test Elements" performs the detailed calculations required to develop the numerous inputs required for the various benefit/cost tests, budget calculation, financial outlook, etc. They repeat some of the key input parameters, and are meant to be readily decipherable.
- The next worksheet, "CALC-Tests", first repeats the results of the test element calculations, and then applies them as appropriate to develop the standard benefit/cost tests, budget calculation, financial outlook, etc.
  - The benefit/cost tests are carried out on an annual basis, as well as a 10-year cumulative present worth basis, and presented in terms of net savings or loss, as well as benefit/cost ratio.
- The final worksheet, "SUMMARY", simply repeats some of the input description and assumptions, and results of the benefit/cost tests.
- A package of outputs for covering a system's proposed EE plan contents might consist of:
  - A" SUMMARY" page for each Measure/Program/Portfolio included in a "Report", plus an appendix containing:
  - A single copy of the "INPUTS-Global&System" page (since this is common for all Measures/Programs/Portfolios),
  - and copies of the "INPUTS-Measure" "CALC-Test Elements", and "CALC-Tests" pages for each Measure included.

MODEL INPUTS

- Inputs broken down into three categories: "Global", "System" and "Measure(/Program/Portfolio)
  - "Global" inputs are meant to be parameters that should be similar from system to system.
  - "System" inputs should be common for all Measures(/Programs/Portfolios) for a given system. They should be consistent with the "Global" input values.
  - "Measure(/Program/Portfolio)" inputs are meant to be specific to a particular Measure for a given system.
  - The "Global" and "System" input page should be identical for all measures for a given system.

ANNUALIZATION

- "Annualization" uses a discount rate and a specific lifetime to calculate an equivalent "annualization" factor.
  - This is essentially a "return-less" carrying charge rate approach.
- Assumes interim replacements during evaluation period for analysis purposes; actual program may or may not provide for such replacements.

ARKANSAS ENERGY EFFICIENCY INITIATIVE
EE MEASURE/PROGRAM/PORTFOLIO ECONOMIC EVALUATION MODEL EXAMPLE
GLOBAL AND SYSTEM INPUT PARAMETERS

GLOBAL | **"CASE" DESCRIPTION**: Test Case with non-real input values

					UTIL/ADMIN	PARTICIPAN
ANALYSIS START YEAR	2007	GENERAL INFLATION RATE	5.00%	DISCOUNT RATE	7.00%	8.00%
SUPPLY RESERVE REQUIREMENT (% OF PEAK DEMAND)			12.00%			

UNDERLYING FUEL FORECAST BASIS: _____

UTILITY FINANCIAL INCENTIVE (one or more of the following):		for Prog. Type		UTILITY NET LOST REVENUE RECOVERY	50.00%
"Flat" $	100	2005	e.g., Informational programs		
% TRC Savings(gross)	5.00%		e.g., "Hard" results programs		
$ per kwh Saved(Year)	0.001	2005	etc.		
% Installed+O&M+Admin+Eval Cost		5.00%	etc.		
1	2	3	4	5	6

SYSTEM | ENERGY UNIT (kwh, Therm): kwh | PEAK USAGE UNIT (kw, PkTherm): kw

CUSTOMER TARIFFS

Tariff Number	Customer Class	Tariff Code	Tariff Charges: Customer $/mo	Demand $/kw-mo	Energy $/kwh	(Year)	Projected Tariff Growth Rate %/yr: Customer	Demand	Energy	Associated T&D Loss Factor: Demand	Energy
1	RESID	RES 1	0.00	2.00	0.0900	2005	0.00%	4.00%	3.00%	7.00%	5.00%
2	*(Data for other customer classes / tariffs that may be affected by other measures/programs/portfolios)*										
3											
4											
5											
6											
1	2	3	4	5	6	7	8	9	10	11	12

YEAR - SEQUENTIAL	1	2	3	4	5	6	7	8	9	10
YEAR - CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016

AVOIDED SUPPLY COSTS (TRC and Societal)

Demand $ per kw/year										
Element "A"	50	70	90	100	105	110	115	121	128	135
" "B"										
" "C"										
SUM	50	70	90	100	105	110	115	121	128	135
Energy $ per kwh										
Element "A"	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07
" "B"										
" "C"										
SUM	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07

AVOIDED EXTERNALITY COSTS (Societal)

Demand $ per kw/year										
Element "A"	5	7	9	10	10.5	11	11.5	12.1	12.8	13.5
" "B"										
" "C"										
SUM	5	7	9	10	10.5	11	11.5	12.1	12.8	13.5
Energy $ per kwh										
Element "A"	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.003
" "B"										
" "C"										
SUM	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.003
	1	2	3	4	5	6	7	8	9	10

ARKANSAS ENERGY EFFICIENCY INITIATIVE
EE MEASURE/PROGRAM/PORTFOLIO ECONOMIC EVALUATION MODEL EXAMPLE

MEASURE (/ PROGRAM / PORTFOLIO) INPUTS

MEASURE (/ PROGRAM / PORTFOLIO) NAME, DESCRIPTION

NAME: Mathematical Test Example 1

MEASURE TYPE: Test all parameter types

DESCRIPTION: Values input for test purposes only, without relation to any particular measure/program.

LOAD IMPACTS Demand: kw per install: 2.50 Coincidence Factor: 1.00
Annual Energy: kwh per install: 1,234
(Coincident with avoided supply demand-related cost driver, e.g., coincident with power pool summer peak demand.)

LIFETIME, DEGRADATION Expected Life - Yrs: 3 Degradation Rate %/year: 10.00%
(i.e., Loss of paricipants and/or load impact over time)

TARGET CUSTOMERS Tariff No.: 1 CustClass: RESID Tariff Code: RES 1

PROG. DEVELOPMENT Ramp-Up Phase: No. of Yrs: 4 No. of New Install's / Year: 5,000
Free Riders - %: 5.00% Free Drivers - %: 3.00%
(Free Riders would have installed measure without program; Free Drivers install measure, but do not take advantage of paricipant incentive.)

INSTALLED AND O&M COSTS

	$Installation	(Year)	Participant Share - %
Installed Cost	$1,000	2007	50.00%
Annual O&M Cost	$100	2005	30.00%

"Technical Imprvovement" in cost (%/yr) (i.e., inflation-offsetting "disinflation", e.g., CFLs becoming cheaper): Installed Cost 4.00%; O&M Cost 3.00%

"OVERHEAD"COSTS (One or more elements for each)

	Administration				Evaluation			
	"Flat" $	$/Install	% TotInstalled	%UtilInstalled	"Flat" $	$/Install	% TotInstalled	%UtilInstalled
	1,000	10	5.00%	10.00%	1,000	10	5.00%	10.00%
(Year)	2005	Same	N/A	N/A	2005	Same	N/A	N/A

PARTICIPANT INCENTIVES

	Initial Yr $	Ongoing $/yr	(Year)
Utility / Administrator Paid	100	10	2005
Other (e.g., Tax Rebates)	50	2	2005

UTILITY FINANCIAL INCENTIVE (as appropriate, depending on Program type)

"Flat" $	(Year)	% TRC Savings(gross)	$ per kwh Saved(Year)		% Installed+O&M+Admin+Eval Cost
100	2005	5.00%	0.001	2005	5.00%
1	2	4	6	7	10

Calculation Of Elements for Cost-Effectiveness

ARKANSAS ENERGY EFFICIENCY INITIATIVE
EE MEASURE/PROGRAM/PORTFOLIO ECONOMIC EVALUATION MODEL EXAMPLE

CALCULATION OF ELEMENTS FOR COST-EFFECTIVENESS TESTS

INSTALLATIONS

YEAR-SEQUENTIAL		1	2	3	4	5	6	7	8	9	10	
YEAR-CALENDAR		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
EXPANSION PHASE		Installations / Year		5000	Years	4						
		5,000	5,000	5,000	5,000	0	0	0	0	0	0	20,000
FAILURE/REPLACEMENT												
VINTAGE Yr	1	0										0
	2		0									0
	3			0								0
	4				5,000							5,000
	5					5,000						5,000
	6						5,000					5,000
	7							10,000				10,000
	8								5,000			5,000
	9									5,000		5,000
	10										10,000	10,000
TOTAL NEW INSTALLATIONS		5,000	5,000	5,000	10,000	5,000	5,000	10,000	5,000	5,000	10,000	65,000
"ACTIVE" INSTALLATIONS		5,000	10,000	15,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	

INSTALLED COST — Base Installed Cost, Year 1,000 2007 — Inflation 5.00% — Tech Improv-Installed Cost 4.00%

	YR-SEQ	1	2	3	4	5	6	7	8	9	10	
	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
INSTALLED COST - TOTAL		1,000	1,010	1,019	1,029	1,039	1,049	1,059	1,069	1,080	1,090	
AGGREGATE INSTALLED COST -TOTAL		5,000,000	5,048,077	5,096,616	10,291,244	5,195,099	5,245,052	10,590,971	5,346,403	5,397,811	10,899,426	68,110,700
UTIL / ADMIN SHARE	50.00%	2,500,000	2,524,038	2,548,308	5,145,622	2,597,550	2,622,526	5,295,485	2,673,202	2,698,906	5,449,713	34,055,350
PARTICIPANT SHARE	50.00%	2,500,000	2,524,038	2,548,308	5,145,622	2,597,550	2,622,526	5,295,485	2,673,202	2,698,906	5,449,713	34,055,350

ANNUALIZATION FACTORS — LIFETIME: 3 — UTIL/ADMIN DISCOUNT RATE: 7.00% — ANNUALIZ FACTOR: 0.3811 — PARTICIPANT DISCOUNT RATE: 8.00% — ANNUALIZ FACTOR: 0.3880

AGGREGATE ANNUALIZED INSTALLED COST

UTIL / ADMIN SHARE	YR-SEQ	1	2	3	4	5	6	7	8	9	10	
	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
VINTAGE Yr	1	952,629	952,629	952,629	0	0	0	0	0	0	0	
	2		961,789	961,789	961,789	0	0	0	0	0	0	
	3			971,037	971,037	971,037	0	0	0	0	0	
	4				1,960,748	1,960,748	1,960,748	0	0	0	0	
	5					989,801	989,801	989,801	0	0	0	
	6						999,318	999,318	999,318	0	0	
	7							2,017,853	2,017,853	2,017,853	0	
	8								1,018,628	1,018,628	1,018,628	
	9									1,028,422	1,028,422	
	10										2,076,622	
TOTAL UTILITY / ADMIN SHARE		952,629	1,914,418	2,885,455	3,893,574	3,921,585	3,949,866	4,006,972	4,035,799	4,064,904	4,123,673	

PARTICIPANT SHARE												
VINTAGE Yr	1	970,084	970,084	970,084	0	0	0	0	0	0	0	
	2		979,412	979,412	979,412	0	0	0	0	0	0	
	3			988,829	988,829	988,829	0	0	0	0	0	
	4				1,996,674	1,996,674	1,996,674	0	0	0	0	
	5					1,007,936	1,007,936	1,007,936	0	0	0	
	6						1,017,628	1,017,628	1,017,628	0	0	
	7							2,054,826	2,054,826	2,054,826	0	
	8								1,037,292	1,037,292	1,037,292	
	9									1,047,266	1,047,266	
	10										2,114,671	
TOTAL PARTICIPANT SHARE		970,084	1,949,495	2,938,324	3,964,914	3,993,439	4,022,238	4,080,390	4,109,746	4,139,383	4,199,229	

O&M COST

Base O&M Cost, Year 100 2005 Inflation 5.00% Tech Improv-Installed Cost 3.00%

YR-SEQ	1	2	3	4	5	6	7	8	9	10	
CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
INITIAL O&M COST - TOTAL	104	106	108	110	112	114	117	119	121	124	

AGGREGATE ANNUAL O&M COST - TOTAL

VINTAGE Yr	1	2	3	4	5	6	7	8	9	10
1	519,606	545,586	572,866	0	0	0	0	0	0	0
2		529,695	556,180	583,989	0	0	0	0	0	0
3			539,981	566,980	595,329	0	0	0	0	0
4				1,100,932	1,155,978	1,213,777	0	0	0	0
5					561,155	589,212	618,673	0	0	0
6						572,051	600,653	630,686	0	0
7							1,166,317	1,224,633	1,285,864	0
8								594,482	624,206	655,416
9									606,025	636,327
10										1,235,586

AGGREGATE ANN O&M COST - TOTAL		519,606	1,075,282	1,669,027	2,251,901	2,312,462	2,375,040	2,385,643	2,449,801	2,516,096	2,527,328
UTILITY / ADMIN SHARE	70.00%	363,724	752,697	1,168,319	1,576,331	1,618,723	1,662,528	1,669,950	1,714,860	1,761,267	1,769,130
PARTICIPANT SHARE	30.00%	155,882	322,585	500,708	675,570	693,738	712,512	715,693	734,940	754,829	758,199

ADMINISTRATIVE & EVALUATION COSTS

	"Flat" $	(Year)	$/Install	(Year)	TotalInstall%	UtilInstalled
Administrative Cost	1,000	2005	10	Same	5.00%	10.00%
Evaluation Cost	1,000	2005	10	Same	5.00%	10.00%

YR-SEQ	1	2	3	4	5	6	7	8	9	10	
CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
Aggregate Administrative Cost	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
Aggregate Evaluation Cost	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	

CUSTOMER INCENTIVES

		Utility Paid			Non-Utility Paid		
		Initial	Ongoing	Year	Initial	Ongoing	Year
		100	10	2005	50	2	2005
Annualized Initial:	Utility:	38		Annualized Initial:	Participant: Utility-Paid	39	
				" "	" Non-Util Paid	19	

	YR-SEQ	1	2	3	4	5	6	7	8	9	10	
	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
Utility Paid:	Initial:	116	122	128	134	141	148	155	163	171	180	
	Ongoing	12	12	13	13	14	15	16	16	17	18	
Non-Util Paid - Initial	Initial:	58	61	64	67	70	74	78	81	86	90	
	Ongoing	2	2	3	3	3	3	3	3	3	4	

ACTUAL UTIL PAID

(INITIAL + ANN. ONGOING)	YR-SEQ	1	2	3	4	5	6	7	8	9	10	
	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
VINTAGE Yr 1		578,813	57,881	57,881	0	0	0	0	0	0	0	
2			607,753	60,775	60,775	0	0	0	0	0	0	
3				638,141	63,814	63,814	0	0	0	0	0	
4					1,340,096	134,010	134,010	0	0	0	0	
5						703,550	70,355	70,355	0	0	0	
6							738,728	73,873	73,873	0	0	
7								1,551,328	155,133	155,133	0	
8									814,447	81,445	81,445	
9										855,170	85,517	
10											1,795,856	
TOTAL ACTUAL UTIL PAID		578,813	665,634	756,797	1,464,685	901,374	943,092	1,695,556	1,043,453	1,091,747	1,962,818	

ANNUALIZED UTIL PAID

(ANNUALIZED INITIAL + ANNUAL ONGOING)	YR-SEQ	1	2	3	4	5	6	7	8	9	10	
	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
VINTAGE Yr 1		220,557	278,439	278,439	0	0	0	0	0	0	0	
2			231,585	292,361	292,361	0	0	0	0	0	0	
3				243,165	306,979	306,979	0	0	0	0	0	
4					510,646	644,655	644,655	0	0	0	0	
5						268,089	338,444	338,444	0	0	0	
6							281,493	355,366	355,366	0	0	
7								591,136	746,269	746,269	0	
8									310,347	391,791	391,791	
9										325,864	85,517	
10											684,314	
TOTAL ANNUALIZED UTIL PAID		220,557	510,024	813,964	1,109,985	1,219,723	1,264,593	1,284,946	1,411,982	1,463,924	1,161,622	

ANNUALIZED PARTICIPANT RECEIVED

(ANNUALIZED INITIAL + ANNUAL ONGOING)	YR-SEQ	1	2	3	4	5	6	7	8	9	10	
	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
VINTAGE Yr	1	336,898	406,355	406,355	0	0	0	0	0	0	0	
	2		353,743	426,673	426,673	0	0	0	0	0	0	
	3			371,430	448,007	448,007	0	0	0	0	0	
	4				780,003	940,815	940,815	0	0	0	0	
	5					409,502	493,928	493,928	0	0	0	
	6						429,977	518,624	518,624	0	0	
	7							902,951	1,089,110	1,089,110	0	
	8								474,049	571,783	571,783	
	9									497,752	600,372	
	10										1,045,279	
TOTAL ANNUALIZED PARTICIPANT		336,898	760,098	1,204,459	1,654,683	1,798,323	1,864,719	1,915,503	2,081,784	2,158,645	2,217,434	

FREE DRIVER EFFECT	YR-SEQ	1	2	3	4	5	6	7	8	9	10	
FREE DRIVERS: 3.00%	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
NET TOTAL ACTUAL UTIL PAID		561,448	645,665	734,093	1,420,744	874,333	914,800	1,644,689	1,012,149	1,058,995	1,903,933	
NET TOTAL ANNUALIZED UTIL PAID		213,941	494,723	789,545	1,076,685	1,183,131	1,226,655	1,246,398	1,369,622	1,420,006	1,126,774	

LOAD IMPACTS Diversified Peak Demand Reduction: 2.50 Annual Energy Reduction: 1,234

NOMINAL GROSS LOAD IMPACT	YR-SEQ / CALENDAR	1 2007	2 2008	3 2009	4 2010	5 2011	6 2012	7 2013	8 2014	9 2015	10 2016	TOTAL
Peak Demand Reduction		12,500	25,000	37,500	50,000	50,000	50,000	50,000	50,000	50,000	50,000	
Annual Energy Reduction		6,170,000	12,340,000	18,510,000	24,680,000	24,680,000	24,680,000	24,680,000	24,680,000	24,680,000	24,680,000	

DEGRADATION EFFECT

Degrad Rate 10.00% Peak Demand	YR-SEQ / CALENDAR	1 2007	2 2008	3 2009	4 2010	5 2011	6 2012	7 2013	8 2014	9 2015	10 2016	TOTAL
VINTAGE Yr 1		12,500	11,250	10,125	0	0	0	0	0	0	0	
2			12,500	11,250	10,125	0	0	0	0	0	0	
3				12,500	11,250	10,125	0	0	0	0	0	
4					25,000	22,500	20,250	0	0	0	0	
5						12,500	11,250	10,125	0	0	0	
6							12,500	11,250	10,125	0	0	
7								25,000	22,500	20,250	0	
8									12,500	11,250	10,125	
9										12,500	11,250	
10											25,000	
Adjusted Peak Reduction		12,500	23,750	33,875	46,375	45,125	44,000	46,375	45,125	44,000	46,375	

Degrad Rate 10.00% Annual Energy	YR-SEQ / CALENDAR	1 2007	2 2008	3 2009	4 2010	5 2011	6 2012	7 2013	8 2014	9 2015	10 2016	TOTAL
VINTAGE Yr 1		6,170,000	5,553,000	4,997,700	0	0	0	0	0	0	0	
2			6,170,000	5,553,000	4,997,700	0	0	0	0	0	0	
3				6,170,000	5,553,000	4,997,700	0	0	0	0	0	
4					12,340,000	11,106,000	9,995,400	0	0	0	0	
5						6,170,000	5,553,000	4,997,700	0	0	0	
6							6,170,000	5,553,000	4,997,700	0	0	
7								12,340,000	11,106,000	9,995,400	0	
8									6,170,000	5,553,000	4,997,700	
9										6,170,000	5,553,000	
10											12,340,000	
Adjusted Ann. Energy Reduction		6,170,000	11,723,000	16,720,700	22,890,700	22,273,700	21,718,400	22,890,700	22,273,700	21,718,400	22,890,700	

FREE RIDER EFFECT FREE RIDERS 5.00%	YR-SEQ / CALENDAR	1 2007	2 2008	3 2009	4 2010	5 2011	6 2012	7 2013	8 2014	9 2015	10 2016	TOTAL
NET LOAD REDUCTION - PEAK		11,875	22,563	32,181	44,056	42,869	41,800	44,056	42,869	41,800	44,056	
NET LOAD REDUCTION - ANN. ENERGY		5,861,500	11,136,850	15,884,665	21,746,165	21,160,015	20,632,480	21,746,165	21,160,015	20,632,480	21,746,165	

CUSTOMER BILL REDUCTIONS / UTILITY LOST REVENUES		Customer Class	1	RESID	Tariff	RES 1	Cust.Chg	0.00	Growth Rate	0.00%	
					Base Year	2005	emand Chg	2.00	" "	4.00%	
							Energy Chg	0.0900	" "	3.00%	
	YR-SEQ	1	2	3	4	5	6	7	8	9	10	
	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
Customer Charge	$/mo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Demand Charge	$/kw-mo	2.16	2.25	2.34	2.43	2.53	2.63	2.74	2.85	2.96	3.08	
Energy Charge	$/kwh	0.0955	0.0983	0.1013	0.1043	0.1075	0.1107	0.1140	0.1174	0.1210	0.1246	
CUSTOMER BILL REDUCTIONS (Gross)												
NOMINAL GROSS LOAD IMPACT												
(for use in Participant Test)												
Gross Peak Demand Reduction		12,500	25,000	37,500	50,000	50,000	50,000	50,000	50,000	50,000	50,000	
Gross Annual Energy Reduction		6,170,000	12,340,000	18,510,000	24,680,000	24,680,000	24,680,000	24,680,000	24,680,000	24,680,000	24,680,000	
Gross Bill Savings-Customer Charge		0	0	0	0	0	0	0	0	0	0	
Gross Bill Savings - Demand		324,480	674,918	1,052,873	1,459,983	1,518,383	1,579,118	1,642,283	1,707,974	1,776,293	1,847,345	
Gross Bill Savings - Energy		589,118	1,213,583	1,874,985	2,574,980	2,652,229	2,731,796	2,813,750	2,898,162	2,985,107	3,074,660	
	TOTAL	913,598	1,888,501	2,927,858	4,034,963	4,170,612	4,310,914	4,456,033	4,606,136	4,761,400	4,922,005	
UTILITY LOST REVENUE												
NET LOAD REDUCTION												
Net Peak Demand Reduction		11,875	22,563	32,181	44,056	42,869	41,800	44,056	42,869	41,800	44,056	
Net Annual Energy Reduction		5,861,500	11,136,850	15,884,665	21,746,165	21,160,015	20,632,480	21,746,165	21,160,015	20,632,480	21,746,165	
Lost Revenue - Customer Charge		0	0	0	0	0	0	0	0	0	0	
Lost Revenue - Peak		308,256	609,114	903,540	1,286,428	1,301,823	1,320,143	1,447,056	1,464,374	1,484,981	1,627,742	
Lost Revenue - Energy		559,662	1,095,258	1,609,050	2,268,879	2,273,955	2,283,781	2,479,265	2,484,812	2,495,550	2,709,160	
	TOTAL	867,918	1,704,372	2,512,590	3,555,307	3,575,778	3,603,924	3,926,322	3,949,186	3,980,531	4,336,902	
Agg.Avoid Supply Cost-Ann.Energy		188,154	357,493	679,864	930,736	1,132,061	1,103,838	1,396,104	1,358,473	1,545,373	1,628,788	
Net Lost Revenue ("First Order")		679,764	1,346,879	1,832,726	2,624,571	2,443,717	2,500,086	2,530,218	2,590,713	2,435,158	2,708,114	
RECOVERABLE	50.00%	339,882	673,440	916,363	1,312,285	1,221,859	1,250,043	1,265,109	1,295,357	1,217,579	1,354,057	

UTILITY FINANCIAL INCENTIVE		YR-SEQ	1	2	3	4	5	6	7	8	9	10	
Inflation	5.00%	CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
"Flat" $		100	110	116	122	128	134	141	148	155	163	171	
% TRC Savings(gross)		5.00%	0	0	0	0	0	0	0	0	0	-180,711	
$ per kwh Saved(Year)		0.0010	6,462	12,892	19,308	27,754	28,356	29,032	32,129	32,826	33,608	37,193	
% Installed+O&M+Admin+Eval Cost		5.00%	196,889	196,889	196,889	196,889	196,889	196,889	196,889	196,889	196,889	196,889	
TOTAL UTIL. FINANC. INCENTIVE			203,462	209,897	216,319	224,771	225,380	226,062	229,166	229,871	230,660	53,543	

Cost Effectiveness Test Calculations

ARKANSAS ENERGY EFFICIENCY INITIATIVE
EE MEASURE/PROGRAM/PORTFOLIO ECONOMIC EVALUATION MODEL EXAMPLE

COST-EFFECTIVENESS TEST CALCULATIONS

SUMMARY OF ELELMENTS

YEAR - SEQUENTIAL YEAR - CALENDAR	1 2007	2 2008	3 2009	4 2010	5 2011	6 2012	7 2013	8 2014	9 2015	10 2016	TOTAL
AGGREGATE ANNUALIZED INSTALLED COST											
TOTAL UTILITY / ADMIN SHARE	952,629	1,914,418	2,885,455	3,893,574	3,921,585	3,949,886	4,006,972	4,035,799	4,064,904	4,123,673	
TOTAL PARTICIPANT SHARE	970,084	1,949,495	2,938,324	3,964,914	3,993,439	4,022,238	4,080,390	4,109,746	4,139,383	4,199,229	
AGGREGATE ANN O&M COST - TOTAL											
UTILITY / ADMIN SHARE	363,724	752,697	1,168,319	1,576,331	1,618,723	1,662,528	1,669,950	1,714,860	1,761,267	1,769,130	
PARTICIPANT SHARE	155,882	322,585	500,708	675,570	693,738	712,512	715,693	734,940	754,829	758,199	
Aggregate Administrative Cost	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
Aggregate Evaluation Cost	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
CUSTOMER INCENTIVES											
NET TOTAL ANNUALIZED UTIL PAID	213,941	494,723	789,545	1,076,685	1,183,131	1,226,655	1,246,398	1,369,622	1,420,006	1,126,774	
TOTAL ANNUALIZED PARTICIPANT	336,898	760,098	1,204,459	1,654,683	1,798,323	1,864,719	1,915,503	2,081,784	2,158,645	2,217,434	
AVOIDED SUPPLY COSTS											
Agg. Avoid Supply Cost - Demand	684,950	1,821,967	3,341,186	5,082,329	5,192,606	5,304,253	5,844,678	5,983,860	6,172,221	6,861,144	
Agg.Avoid Supply Cost-Ann.Energy	188,154	357,493	679,864	930,736	1,132,061	1,103,838	1,396,104	1,358,473	1,545,373	1,628,788	
AVOIDED EXTERNALITY COSTS											
Agg. Avoid External Cost - Demand	68,495	182,197	334,119	508,233	519,261	530,425	584,468	598,386	617,222	686,114	
Agg.Avoid External Cost-Ann.Energy	6,272	11,916	16,997	46,537	45,282	44,154	46,537	67,924	66,230	69,805	
CUSTOMER BILL REDUCTIONS (Gross) (for use in Participant Test)	913,598	1,888,501	2,927,858	4,034,963	4,170,612	4,310,914	4,456,033	4,606,136	4,761,400	4,922,005	
UTILITY LOST REVENUE											
TOTAL	867,918	1,704,372	2,512,590	3,555,307	3,575,778	3,603,924	3,926,322	3,949,186	3,980,531	4,336,902	
NET RECOVERABLE	679,764 339,882	673,440	916,363	1,312,285	1,221,859	1,250,043	1,265,109	1,295,357	1,217,579	1,354,057	
TOTAL UTIL. FINANC. INCENTIVE	203,462	209,897	216,319	224,771	225,380	226,062	229,166	229,871	230,660	53,543	

UTILITY BUDGET VALUES

YR-SEQ	1	2	3	4	5	6	7	8	9	10	
CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
Installed Cost	2,500,000	2,524,038	2,548,308	5,145,622	2,597,550	2,622,526	5,295,485	2,673,202	2,698,906	5,449,713	
O & M Cost	363,724	752,697	1,168,319	1,576,331	1,618,723	1,662,528	1,669,950	1,714,860	1,761,267	1,769,130	
Customer Incentive	578,813	665,634	756,797	1,464,685	901,374	943,092	1,695,556	1,043,453	1,091,747	1,962,818	
SUM	3,442,537	3,942,370	4,473,424	8,186,638	5,117,647	5,228,146	8,660,991	5,431,515	5,551,920	9,181,661	
Adminimstation	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
Evaluation	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
CUM SUM	3,937,789	4,945,485	5,999,976	10,264,266	7,232,185	7,380,985	10,865,059	7,676,863	7,840,145	11,526,242	
Lost Revenue Recovery	339,882	673,440	916,363	1,312,285	1,221,859	1,250,043	1,265,109	1,295,357	1,217,579	1,354,057	
Financial Incentive	203,462	209,897	216,319	224,771	225,380	226,062	229,166	229,871	230,660	53,543	
TOTAL RECOVERY	4,481,133	5,828,822	7,132,658	11,801,323	8,679,423	8,857,090	12,359,334	9,202,091	9,288,384	12,933,842	

COST-EFFECTIVENESS TEST CALCULATIONS

YEAR - SEQUENTIAL	1	2	3	4	5	6	7	8	9	10	
YEAR - CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
Present Worth Factor		Discount Rate:		Utility	7.00%	Participant	8.00%				
Utility	1.0000	0.9346	0.8734	0.8163	0.7629	0.7130	0.6663	0.6227	0.5820	0.5439	7.5152
Participant	1.0000	0.9259	0.8573	0.7938	0.7350	0.6806	0.6302	0.5835	0.5403	0.5002	7.2469

TRC TEST

Annual Costs

AGGREGATE ANNUALIZED INSTALLED COST											
TOTAL UTILITY / ADMIN SHARE	952,629	1,914,418	2,885,455	3,893,574	3,921,585	3,949,866	4,006,972	4,035,799	4,064,904	4,123,673	
TOTAL PARTICIPANT SHARE	970,084	1,949,495	2,938,324	3,964,914	3,993,439	4,022,238	4,080,390	4,109,746	4,139,383	4,199,229	
AGGREGATE ANN O&M COST - TOTAL											
UTILITY / ADMIN SHARE	363,724	752,697	1,168,319	1,576,331	1,618,723	1,662,528	1,669,950	1,714,860	1,761,267	1,769,130	
PARTICIPANT SHARE	155,882	322,585	500,708	675,570	693,738	712,512	715,693	734,940	754,829	758,199	
Aggregate Administrative Cost	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
Aggregate Evaluation Cost	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
Less Non-Util-Paid Incentives (e.g., Tax Credits)	(122,957)	(265,375)	(414,914)	(577,998)	(615,192)	(638,084)	(669,105)	(712,161)	(738,639)	(1,090,660)	
Total Ann. Cost	2,814,614	5,676,935	8,604,444	11,610,020	11,726,832	11,861,919	12,007,968	12,128,533	12,269,970	12,104,151	
Present Worth (Util):	2,814,614	5,305,547	7,515,455	9,477,235	8,946,344	8,457,384	8,001,416	7,553,040	7,141,234	6,583,856	71,796,126
Annual Benefits											
Agg. Avoid Supply Cost - Demand	684,950	1,821,967	3,341,186	5,082,329	5,192,606	5,304,253	5,844,678	5,983,860	6,172,221	6,861,144	
Agg.Avoid Supply Cost-Ann.Energy	188,154	357,493	679,864	930,736	1,132,061	1,103,838	1,396,104	1,358,473	1,545,373	1,628,788	
SUM	873,104	2,179,460	4,021,050	6,013,065	6,324,667	6,408,090	7,240,782	7,342,333	7,717,594	8,489,932	
Total Ann. Benefit	873,104	2,179,460	4,021,050	6,013,065	6,324,667	6,408,090	7,240,782	7,342,333	7,717,594	8,489,932	
Present Worth (Util):	873,104	2,036,878	3,512,141	4,908,452	4,825,058	4,568,880	4,824,839	4,572,436	4,491,710	4,617,960	39,231,459
Net Benefit (Cost)	(1,941,510)	(3,497,476)	(4,583,395)	(5,596,955)	(5,402,166)	(5,453,828)	(4,767,186)	(4,786,199)	(4,552,375)	(3,614,219)	
Present Worth of " " " (Util)	(1,941,510)	(3,268,669)	(4,003,314)	(4,568,783)	(4,121,286)	(3,888,504)	(3,176,577)	(2,980,604)	(2,649,524)	(1,965,896)	**(32,564,667)**
Benefit/Cost Ratio (P.W.)	0.31	0.38	0.47	0.52	0.54	0.54	0.60	0.61	0.63	0.70	**0.55**

RIM TEST

Annual Costs

AGGREGATE ANNUALIZED INSTALLED COST											
TOTAL UTILITY / ADMIN SHARE	952,629	1,914,418	2,885,455	3,893,574	3,921,585	3,949,866	4,006,972	4,035,799	4,064,904	4,123,673	
AGGREGATE ANN O&M COST - TOTAL											
UTILITY / ADMIN SHARE	363,724	752,697	1,168,319	1,576,331	1,618,723	1,662,528	1,669,950	1,714,860	1,761,267	1,769,130	
Aggregate Administrative Cost	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
Aggregate Evaluation Cost	247,626	501,558	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
CUSTOMER INCENTIVES											
NET TOTAL ANNUALIZED UTIL PAID	213,941	494,723	789,545	1,076,685	1,183,131	1,226,655	1,246,398	1,369,622	1,420,006	1,126,774	
UTILITY LOST REVENUE											
TOTAL	867,918	1,704,372	2,512,590	3,555,307	3,575,778	3,603,924	3,926,322	3,949,186	3,980,531	4,336,902	
Total Ann. Cost	2,893,464	5,869,326	8,882,461	12,179,526	12,413,756	12,595,811	13,053,710	13,314,817	13,514,933	13,701,059	
Present Worth (Util):	2,893,464	5,485,352	7,758,285	9,942,121	9,470,395	8,980,640	8,698,238	8,291,799	7,865,814	7,452,468	76,838,575

Annual Benefits

Agg. Avoid Supply Cost - Demand	684,950	1,821,967	3,341,186	5,082,329	5,192,606	5,304,253	5,844,678	5,983,860	6,172,221	6,861,144	
Agg.Avoid Supply Cost-Ann.Energy	188,154	357,493	679,864	930,736	1,132,061	1,103,838	1,396,104	1,358,473	1,545,373	1,628,788	
SUM	873,104	2,179,460	4,021,050	6,013,065	6,324,667	6,408,090	7,240,782	7,342,333	7,717,594	8,489,932	
Total Ann. Benefit	873,104	2,179,460	4,021,050	6,013,065	6,324,667	6,408,090	7,240,782	7,342,333	7,717,594	8,489,932	
Present Worth (Util):	873,104	2,036,878	3,512,141	4,908,452	4,825,058	4,568,880	4,824,839	4,572,436	4,491,710	4,617,960	39,231,459
Net Benefit (Cost)	(2,020,360)	(3,689,866)	(4,861,411)	(6,166,461)	(6,089,089)	(6,187,721)	(5,812,927)	(5,972,483)	(5,797,339)	(5,211,127)	
Present Worth of " " " (Util)	(2,020,360)	(3,448,473)	(4,246,145)	(5,033,669)	(4,645,337)	(4,411,760)	(3,873,399)	(3,719,363)	(3,374,104)	(2,834,508)	**(37,607,117)**
Benefit/Cost Ratio (P.W.)	0.30	0.37	0.45	0.49	0.51	0.51	0.55	0.55	0.57	0.62	**0.51**

SOCIETAL TEST

Annual Costs											
Total Annual TRC Cost	2,814,614	5,676,935	8,604,444	11,610,020	11,726,832	11,861,919	12,007,968	12,128,533	12,269,970	12,104,151	
Total Ann. Cost	2,814,614	5,676,935	8,604,444	11,610,020	11,726,832	11,861,919	12,007,968	12,128,533	12,269,970	12,104,151	
Present Worth (Util):	2,814,614	5,305,547	7,515,455	9,477,235	8,946,344	8,457,384	8,001,416	7,553,040	7,141,234	6,583,856	71,796,126
Annual Benefits											
Total Annual TRC Benefits	873,104	2,179,460	4,021,050	6,013,065	6,324,667	6,408,090	7,240,782	7,342,333	7,717,594	8,489,932	
Agg. Avoid External Cost - Demand	68,495	182,197	334,119	508,233	519,261	530,425	584,468	598,386	617,222	666,114	
Agg.Avoid External Cost-Ann.Energy	6,272	11,916	16,997	46,537	45,282	44,154	46,537	67,924	66,230	69,805	
AVOIDED EXTERNALITY SUM	74,767	194,113	351,115	554,770	564,543	574,579	631,005	666,310	683,452	755,920	
Total Ann. Benefit	947,871	2,373,573	4,372,165	6,567,835	6,889,210	6,982,669	7,871,787	8,008,643	8,401,047	9,245,852	
Present Worth (Util):	947,871	2,218,293	3,818,818	5,361,309	5,255,745	4,978,547	5,245,304	4,987,380	4,889,486	5,029,131	42,731,883
Net Benefit (Cost)	(1,866,743)	(3,303,362)	(4,232,279)	(5,042,185)	(4,837,623)	(4,879,249)	(4,136,181)	(4,119,890)	(3,868,923)	(2,858,300)	
Present Worth of " " " (Util)	(1,866,743)	(3,087,255)	(3,696,637)	(4,115,925)	(3,690,599)	(3,478,837)	(2,756,112)	(2,565,660)	(2,251,748)	(1,554,726)	**(29,064,242)**
Benefit/Cost Ratio (P.W.)	0.34	0.42	0.51	0.57	0.59	0.59	0.66	0.66	0.68	0.76	**0.60**

PARTICIPANT TEST

Annual Costs											
AGGREGATE ANNUALIZED INSTALLED COST											
TOTAL PARTICIPANT SHARE	970,084	1,949,495	2,938,324	3,964,914	3,993,439	4,022,238	4,080,390	4,109,746	4,139,383	4,199,229	
AGGREGATE ANN O&M COST - TOTAL											
TOTAL PARTICIPANT SHARE	155,882	322,585	500,708	675,570	693,738	712,512	715,693	734,940	754,829	758,199	
Total Ann. Cost	1,125,966	2,272,080	3,439,032	4,640,484	4,687,178	4,734,750	4,796,083	4,844,686	4,894,212	4,957,428	
Present Worth (Partic):	1,125,966	2,103,778	2,948,416	3,683,766	3,445,215	3,222,391	3,022,346	2,826,828	2,644,191	2,479,948	27,502,844
Annual Benefits											
CUSTOMER INCENTIVES											
TOTAL ANNUALIZED PARTICIPANT	336,898	760,098	1,204,459	1,654,683	1,798,323	1,864,719	1,915,503	2,081,784	2,158,645	2,217,434	
CUSTOMER BILL REDUCTIONS (Gross)	913,598	1,888,501	2,927,858	4,034,963	4,170,612	4,310,914	4,456,033	4,606,136	4,761,400	4,922,005	
Total Ann. Benefit	1,250,496	2,648,599	4,132,317	5,689,646	5,968,935	6,175,633	6,371,535	6,687,920	6,920,045	7,139,439	
Present Worth (Partic):	1,250,496	2,452,407	3,542,795	4,516,625	4,387,345	4,203,032	4,015,148	3,902,337	3,738,685	3,571,497	35,580,367
Net Benefit (Cost)	124,530	376,520	693,284	1,049,162	1,281,757	1,440,883	1,575,452	1,843,234	2,025,833	2,182,011	
Present Worth of " " " (Partic)	124,530	348,629	594,380	832,858	942,130	980,641	992,802	1,075,509	1,094,495	1,091,549	**8,077,523**
Benefit/Cost Ratio (P.W.)	1.11	1.17	1.20	1.23	1.27	1.30	1.33	1.38	1.41	1.44	**1.29**

UTILITY / ADMINISTRATOR COST TEST

Annual Costs											
AGGREGATE ANNUALIZED INSTALLED COST											
TOTAL UTILITY / ADMIN SHARE	952,629	1,914,418	2,885,455	3,893,574	3,921,585	3,949,866	4,006,972	4,035,799	4,064,904	4,123,673	
AGGREGATE ANN O&M COST - TOTAL											
UTILITY / ADMIN SHARE	363,724	752,697	1,168,319	1,576,331	1,618,723	1,662,528	1,669,950	1,714,860	1,761,267	1,769,130	
Aggregate Administrative Cost	247,626	501,559	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
Aggregate Evaluation Cost	247,626	501,559	763,276	1,038,814	1,057,269	1,076,419	1,102,034	1,122,674	1,144,113	1,172,291	
CUSTOMER INCENTIVES											
NET TOTAL ANNUALIZED UTIL PAID	213,941	494,723	789,545	1,076,685	1,183,131	1,226,655	1,246,398	1,369,622	1,420,006	1,126,774	
Total Ann. Cost	2,025,546	4,164,954	6,369,871	8,624,219	8,837,978	8,991,887	9,127,388	9,365,630	9,534,402	9,364,157	
Present Worth (Util):	2,025,546	3,892,480	5,563,692	7,039,931	6,742,451	6,411,091	6,081,964	5,832,444	5,549,109	5,093,481	54,232,190
Annual Benefits											
Agg. Avoid Supply Cost - Demand	684,950	1,821,987	3,341,186	5,082,329	5,192,606	5,304,253	5,844,678	5,983,860	6,172,221	6,861,144	
Agg.Avoid Supply Cost-Ann.Energy	188,154	357,493	679,864	930,736	1,132,061	1,103,838	1,396,104	1,358,473	1,545,373	1,628,788	
SUM	873,104	2,179,480	4,021,050	6,013,065	6,324,667	6,408,090	7,240,782	7,342,333	7,717,594	8,489,932	
Total Ann. Benefit	873,104	2,179,480	4,021,050	6,013,065	6,324,667	6,408,090	7,240,782	7,342,333	7,717,594	8,489,932	
Present Worth (Util):	873,104	2,036,878	3,512,141	4,908,452	4,825,058	4,568,880	4,824,839	4,572,436	4,491,710	4,617,960	39,231,459
Net Benefit (Cost)	(1,152,442)	(1,985,494)	(2,348,821)	(2,611,154)	(2,513,311)	(2,583,797)	(1,886,606)	(2,023,297)	(1,816,808)	(874,225)	
Present Worth (Util):	(1,152,442)	(1,855,602)	(2,051,551)	(2,131,479)	(1,917,393)	(1,842,212)	(1,257,125)	(1,260,008)	(1,057,399)	(475,521)	**(15,000,732)**
Benefit/Cost Ratio (P.W.)	0.43	0.52	0.63	0.70	0.72	0.71	0.79	0.78	0.81	0.91	**0.72**

Summary

ARKANSAS ENERGY EFFICIENCY INITIATIVE
EE MEASURE/PROGRAM/PORTFOLIO ECONOMIC EVALUATION MODEL EXAMPLE

SUMMARY

NAME: Mathematical Test Example 1
MEASURE TYPE: Test all parameter types

LOAD IMPACTS Demand: kw per install 2.5 (coincident) Annual Energy: kwh per install 1,234

INSTALLED AND O&M COSTS	$Installation (Year)		Participant Share - %
Installed Cost	1,000	2007	50.00%
Annual O&M Cost	100	2005	30.00%

RESULTS

YEAR - SEQUENTIAL	1	2	3	4	5	6	7	8	9	10
YEAR - CALENDAR	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
INSTALLATIONS										
TOTAL NEW	5,000	5,000	5,000	10,000	5,000	5,000	10,000	5,000	5,000	10,000
"ACTIVE"	5,000	10,000	15,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
NET LOAD REDUCTION										
PEAK	11,875	22,563	32,181	44,056	42,869	41,800	44,056	42,869	41,800	44,056
ENERGY	5,861,500	11,136,850	15,884,665	21,746,165	21,160,015	20,632,480	21,746,165	21,160,015	20,632,480	21,746,165

UTILITY BUDGET VALUES

Installed, O&M, Cust Incent	2,863,724	3,276,736	3,716,627	6,721,953	4,216,273	4,285,054	6,965,435	4,388,062	4,460,173	7,218,843
Admin, Eval	3,937,789	4,945,485	5,999,976	10,264,266	7,232,185	7,380,985	10,865,059	7,676,863	7,840,145	11,526,242
SUM	6,801,513	8,222,221	9,716,603	16,986,219	11,448,457	11,666,039	17,830,494	12,064,926	12,300,318	18,745,085
LostRevRecovery	339,882	673,440	916,363	1,312,285	1,221,859	1,250,043	1,265,109	1,295,357	1,217,579	1,354,057
Financial Incentive	203,462	209,897	216,319	224,771	225,380	226,062	229,166	229,871	230,660	53,543
TOTAL RECOVERY	7,344,857	9,105,558	10,849,285	18,523,276	12,895,696	13,142,144	19,324,770	13,590,153	13,748,557	20,152,685

COST-EFFECTIVENESS TEST RESULTS

	NET BENEFIT	BENEFIT / COST RATIO (NPV)		
TEST	(10 Yr NPV)	10-Year	AnnMin	AnnMax
TRC	(32,564,667)	0.55	0.31	0.70
RIM	(37,607,117)	0.51	0.30	0.62
SOCIETAL	(29,064,242)	0.60	0.34	0.76
PARTICIPANT	8,077,523	1.29	1.11	1.44
UTILITY COST	(15,000,732)	0.72	0.43	0.91
UTIL FINANCIAL OUTLOOK	(28,283,602)	0.63	0.49	0.72

Appendix C-3: Arkansas Energy Efficiency Workbook

Instructions to Use the Arkansas Energy Efficiency Workbook (Sales)

This workbook will make calculations of energy efficiency program dollars for each Arkansas electric and gas utility and for the whole state.

The calculations are driven by **desired monthly consumer bill effect.**
Data for the calculations are drawn from the PSC Annual Report data for 2004, which appear in the spreadsheet called, PSC 2004 Data.

There can be a different bill effect for electric and gas companies.

The calculations produce the amount of money spent by each utility on energy efficiency programs, and the percentage of net revenues allocated to energy efficiency.

Here is how the amount of program dollars per utility is calculated:
The residential bill effect (say, $0.50 per month) is multiplied by the number of residential customers for each utility. A proportionate amount is added **based on number of customers in other customer classes** (there is no assumption on how the funds are used among the customer classes).

The worksheet also breaks out residential EE program costs for comparison to the inefficient housing program budget.

Instructions
For the **Gas** EE Programs:

- Go to the Spreadsheet called Gas
- Enter the monthly bill effect in cell D7, for example, .50
- Select cell D8 and use the dropdown menu to select the utility

For the **Electric** EE Programs

- Go to the Spreadsheet called Electric Cos A-E
- Enter the monthly bill effect in cell D7, for example .70
- If the utility name starts with A-E, select cell D8 and use the dropdown menu to select the utility

If the utility name does not start with A-E, select the appropriate spreadsheet, select cell D8 and use the dropdown menu to select the utility.

For the Electric Companies, the total program amounts are shown for each company on each electric spreadsheet for convenience.

Arkansas Energy Efficiency Collaborative
Bill Impact Analysis and Resulting Total EE Budget
Gas Utilities

Inputs		GASCOs	Total Program $
		Centerpoint ARKLA	$4,131,872
Monthly Avg. Residential Bill Effect	**$0.50**	**AR Western Gas**	$1,361,691
Utility - Select from dropdown menu	**Centerpoint ARKLA**	**AR OK Gas**	$656,852

Residential Customers	384,093
Proportion of sales by class (2004 APSC Ann. Report)	
Residential	0.557752
Commercial	0.442248
Industrial see note 1	0.000000
Other 1	0.000000
check (should=1)	1

Ann. EE Programs $ by class for	Centerpoint ARKLA
Res	$2,304,558
Commercial	$1,827,314
Industrial	$0
Other 1	$0
Total for Centerpoint ARKLA	$4,131,872

Total EE Programs $ for Arkansas Gas Cos.	$6,150,415
% of Net Retail Revenues, Average of All Gas Companies	0.90%
Total $ for Arkansas Gas Residential EE Programs	$3,302,868
Total $ for Arkansas Gas and Electric Res EE Programs	$9,893,874
Residential Monthly Bill Effect, Electric	$0.50

Note 1 C&I customers are combined for Centerpoint Arkla

Arkansas Energy Efficiency Collaborative
Bill Impact Analysis and Resulting Total EE Budget
Electric Utilities

Inputs

Monthly Avg. Residential Bill Effect	**$0.50**
Utility - Select from dropdown menu	**Entergy Ark**
Residential Customers	562,475
Proportion of sales by class (2004 APSC Ann. Report)	
Residential	0.356125076
Commercial	0.275037282
Industrial	0.354927801
public authority	0.013909841
irrigation	0
check (should=1)	1
Ann. EE Programs $ by class for	Entergy Ark
Res	$3,374,850
Commercial	$2,606,415
Industrial	$3,363,504
Other 1	$131,818
Other 2	$0
Total for Entergy Ark	$9,476,586
Total EE Programs $ for Arkansas Electric Cos.	$17,870,322
% of Net Retail Revenues	0.83%
Total $ for Arkansas Electric Residential EE Programs	$6,591,006
Total $ for Arkansas Electric and Gas Res EE Programs	$9,893,874
Residential Monthly Bill Effect, Gas	$0.50

ELECTRIC CO's	Total Program $	Res Program $
Ark Valley Coop	$439,900	$273,690.00
Ashley Chicot Coop	$35,519	$23,280.00
C&L Coop	$151,027	$111,930.00
Carrol Coop	$554,487	$357,102.00
Clay Co Coop	$115,394	$61,662.00
Craighead Coop	$180,208	$129,582.00
Empire District	$76,155	$19,434.00
Entergy Ark	$9,476,586	$3,374,850.00
Farmers Coop	$39,405	$26,208.00
First Electric Coop	$648,368	$145,284.00
MS Co Coop	$1,256,277	$21,078.00
North Ark Coop	$277,430	$185,076.00
OG&E	$1,237,400	$311,832.00
Ouachita Coop	$125,714	$51,036.00
Ozarks Coop	$380,410	$265,764.00
Petit Jean Coop	$146,723	$100,758.00
Rich Mtn Coop	$48,516	$42,906.00
So Central Coop	$122,276	$55,218.00
SW Ark Coop	$256,308	$134,394.00
Swepco	$2,141,322	$540,894.00
Woodruff Coop	$160,894	$84,138.00

Instructions to Use the Arkansas Energy Efficiency Workbook (Customers)

What this Workbook does: This workbook will make calculations of energy efficiency program dollars for each Arkansas electric and gas utility and for the whole state.

The calculations are driven by **desired monthly consumer bill effect**.

Data for the calculations are drawn from the PSC Annual Report data for 2004, which appear in the spreadsheet called, PSC 2004 Data.

There can be a different bill effect for electric and gas companies. The calculations produce the amount of money spent by each utility on energy efficiency programs, and the percentage of net revenues allocated to energy efficiency.

Here is how the amount of program dollars per utility is calculated: The residential bill effect (say, $0.50 per month) is multiplied by the number of residential customers for each utility. A proportionate amount is added **based on number of customers in other customer classes** (there is no assumption on how the funds are used among the customer classes).

The worksheet also breaks out residential EE program costs for comparison to the inefficient housing program budget.

Instructions:

For the Gas EE Programs

- Go to the Spreadsheet called Gas
- Enter the monthly bill effect in cell D7, for example, .50
- Select cell D8 and use the dropdown menu to select the utility

For the Electric EE Programs

- Go to the Spreadsheet called Electric Cos A-E
- Enter the monthly bill effect in cell D7, for example .70
- If the utility name starts with A-E, select cell D8 and use the dropdown menu to select the utility
- If the utility name does not start with A-E, select the appropriate spreadsheet, select cell D8 and use the dropdown menu to select the utility

For the Electric Companies, the total program amounts are shown for each company on each electric spreadsheet for convenience.

Do not input into shaded cells -- these cells are formulas pulling data from elsewhere.

Arkansas Energy Efficiency Collaborative
Bill Impact Analysis and Resulting Total EE Budget
Gas Utilities

Inputs		GASCOs	Total Program $
		Centerpoint	
		ARKLA	$5,190,456
Monthly Avg. Residential Bill Effect	**$1.00**	**AR Western Gas**	$1,697,820
Utility - Select from dropdown menu	**AR OK Gas**	**AR OK Gas**	$563,964

Residential Customers	41,588
Proportion of customers by class (2004 APSC Ann. Report)	
Residential	0.884908
Commercial	0.114518
Industrial see note 1	0.000532
Other 1	0.000043
check (should=1)	1

Ann. EE Programs $ by class for	AR OK Gas
Res	$499,056
Commercial	$64,584
Industrial	$300
Other 1	$24
Total for AR OK Gas	$563,964

Total EE Programs $ for Arkansas Gas Cos.	$7,452,240
% of Net Retail Revenues, Average of All Gas Companies	1.09%
Total $ for Arkansas Gas Residential EE Programs	$6,605,736
Total $ for Arkansas Gas and Electric Res EE Programs	$19,787,748
Residential Monthly Bill Effect, Electric	$1.00

Note 1 C&I customers are combined for Centerpoint Arkla

Arkansas Energy Efficiency Collaborative
Bill Impact Analysis and Resulting Total EE Budget
Electric Utilities

Inputs	
Monthly Avg. Residential Bill Effect	**$1.00**
Utility - Select from dropdown menu	**Empire District**
Residential Customers	3,239
Proportion of customers by class (2004 APSC Ann. Report)	
Residential	0.815252957
Commercial	0.162849232
Industrial	0.007550969
public authority	0.014346841
irrigation	0
check (should=1)	1
Ann. EE Programs $ by class for	Empire District
Res	$38,868
Commercial	$7,764
Industrial	$360
Other 1	$684
Other 2	$0
Total for Empire District	$47,676
Total EE Programs $ for Arkansas Electric Cos.	$15,280,356
% of Net Retail Revenues	0.71%
Total $ for Arkansas Electric Residential EE Programs	$13,182,012
Total $ for Arkansas Electric and Gas Res EE Programs	$19,787,748
Residential Monthly Bill Effect, Gas	$1.00

ELECTRIC CO's	Total Program $	Res Program $
Ark Valley Coop	$584,976	$547,380.00
Ashley Chicot Coop	$60,276	$46,560.00
C&L Coop	$249,696	$223,860.00
Carrol Coop	$765,744	$714,204.00
Clay Co Coop	$146,364	$123,324.00
Craighead Coop	$325,128	$259,164.00
Empire District	$47,676	$38,868.00
Entergy Ark	$8,012,568	$6,749,700.00
Farmers Coop	$64,392	$52,416.00
First Electric Coop	$921,984	$290,568.00
MS Co Coop	$52,404	$42,156.00
North Ark Coop	$401,364	$370,152.00
OG&E	$743,148	$623,664.00
Ouachita Coop	$113,160	$102,072.00
Ozarks Coop	$557,592	$531,528.00
Petit Jean Coop	$222,708	$201,516.00
Rich Mtn Coop	$90,168	$85,812.00
So Central Coop	$116,880	$110,436.00
SW Ark Coop	$295,152	$268,788.00
Swepco	$1,286,640	$1,081,788.00
Woodruff Coop	$222,336	$168,276.00

Appendix D: Quick Start Program Templates

In this Appendix are three program templates offered by Entergy and a fourth offered by the Community Action Agencies, Entergy, AOG and AWG designed to be operated by utilities and started quickly. They include:

- Energy Efficiency Education Quick Start Template
- Industrial Process Efficiency Improvement Quick Start Program Template
- Commercial Air Conditioning New or Replacement Quick Start Program
- Severely Energy Inefficient Homes Program – Quick Start Template

Energy Efficiency Education Quick Start Template

OBJECTIVE

- This program can be offered by electric and gas utilities
- To provide information to all customer classes that allows them to understand and evaluate the value of energy efficiency
- To make customers aware of energy efficiency information, websites, and other resources currently offered by the utility
- To make customers aware of the energy efficiency quick start programs that are available from the utility

PROGRAM DESIGN

- This program is for the development of education and information materials not currently offered by utilities
- Each utility will customize the program to reach all customer classes and make them aware of the information, resources, and programs available from the utility
- The Commission encourages the utility to reach customers through existing delivery channels. Paid advertising may be proposed, but approval is subject to Commission review and judgment.

ADMINSTRATION

- Each utility is responsible for the administration of the program.
- Each utility shall maintain records allowing an audit to demonstrate only incremental costs are included in this program, not costs associated with existing programs
- Each utility shall collect data on the number of customers reached and achievements of program

FUNDING LEVEL

- The burden is on the utility to propose a funding level for this program and to demonstrate that it is reasonable and prudent
- The utility may utilize the Energy Efficiency Funding workbook developed for the Collaborative to determine funding levels, incorporating other quick start programs approved by the Commission

COST-BENEFIT

- Unlike the installation of a piece of efficient equipment, there is no directly measurable efficiency savings from education
- Education is a necessary part of delivering efficiency services to customers and changing behavior in the use of energy
- In approving a funding level proposed by the utility, the Commission shall consider the cost versus the value of education

TIMEFRAME FOR PROGRAM

- This program shall be effective from MM/DD/2007 until such time as the Commission reviews and adopts long-term, pre-reviewed education program offerings for all customer classes pursuant to the Energy Efficiency Guidelines adopted 12/xx/2006.
- The Commission shall approve the cessation of this program, or merger into long-term programs during the next annual plan review for each utility that follows adoption of long-term programs.
- Each utility shall file an application to implement this program and for an adjustment to rates to recover costs by MM/DD/2007.

Industrial Process Efficiency Improvement Quick Start Program Template

OBJECTIVE

- This program can be offered by electric utilities
- To provide energy efficiency improvements to Industrial Class customers
- To achieve meaningful energy savings that contribute to reducing energy-costs for the end-use customer and to reduce peak demand and energy costs for the utility
- To provide a quick start energy efficiency program to industrial customers in the interim while a portfolio of long-term programs are developed and approved by the Commission

PROGRAM DESIGN

- While each industrial facility is unique, there are many efficiency measures that can be adapted to a variety of processes. Examples are:
    - High efficiency and variable speed motors
    - Reduction of air compressor leaks
    - Energy efficient lighting
    - Power factor corrections
    - Tune-up of HVAC systems
- The utility will conduct an efficiency audit of the facility and make recommendations on common cost-effective efficiency measures
- For each recommended measure installed by the customer within 90 days of receiving the audit report, the utility will pay an incentive of 50% of the measure cost, not to exceed a total cap of $xxxx for all measures installed

ADMINISTRATION

- Program administration will be the responsibility of the utility
- Utility may propose use of contractors to deliver the service
- Utility shall demonstrate administrative costs are reasonable
- Utility is responsible for maintenance of records that will allow audit of expenditures and collection of data to track savings achieved

COST-BENEFIT

- Payment of incentives toward energy efficiency improvements in industrial processes is common in many states
- Analysis in these states has found the program to be cost-effective for the customer and utility

- The attached example is illustrative of the benefits of such a program

FUNDING LEVEL

- The funding level will be specific to each utility based on the size of its small and large commercial customer classes.
- The utility may utilize the Energy Efficiency Funding workbook developed for the Collaborative to determine funding levels, incorporating other quick start programs approved by the Commission

TIMEFRAME FOR PROGRAM

- This program shall be effective from MM/DD/2007 until such time as the Commission reviews and adopts long-term, pre-reviewed program offerings for industrial customers pursuant to the Energy Efficiency Guidelines adopted 12/xx/2006.
- The Commission shall approve the cessation of this program, or merger into long-term programs during the next annual plan review for each utility that follows adoption of long-term programs.
- Each utility shall file an application to implement this program and for an adjustment to rates to recover costs by MM/DD/2007.

Industrial Process Improvement Example
based on actual audit of EAI Customer

Measure Description	**Value of Electricity Lost Annually**	**Cost of Efficiency Measure**	**Payback Period**
Air Compressor condensate line allows air to escape continually. Can be fixed with automated condensate drain valve	$11,000	$150	Less than 1 year
Repairing air leaks in compressed air system throughout plant	$4,500	Use existing maintenance staff	Less than 1 year
A storage tank to stabilize pressure in compressed air system would allow reduction in pressure from 110 psi to 90 psi.	$700	$400	Less than 1 year
Install a premium efficiency motor when a new motor is needed.	$199	$775	3.89 years
Install capacitors to correct power factor and utilize KVA metering	$6,800	$32,000	4.7 years
TOTAL:	$23,199	$33,325	

Commercial Air Conditioning New or Replacement Quick Start Program

OBJECTIVES

- This program can be offered by electric utilities
- To provide energy efficiency improvements to small and large commercial customers of electric utilities
- To achieve meaningful energy savings that contribute to reducing energy-costs for the end-use customer and to reduce peak demand and energy costs for the utility
- To provide a quick start energy efficiency program to small and large commercial customers in the interim while a portfolio of long-term programs are developed and approved by the Commission

PROGRAM DESIGN

- Customers in the Small and Large Commercial classes will be eligible
- Program will provide incentives toward installation of a new or replacement air conditioning system by Small Commercial Customers
    - New or Replacement unit must exceed Energy Star rating of 13 SEER
    - Incentive will be paid on the price differential between a 13 SEER unit and the higher SEER unit installed by the Customer
    - Incentive will be 50% of the price differential, capped at a maximum of $xxx
- Program will provide incentives toward installation of a new or replacement air conditions system by Large Commercial Customers
    - New or Replacement unit must be Tier II or higher
    - Incentive will be paid on the price differential between a Tier I unit and the Tier II unit installed by the customer
    - Incentive will be 50% of the price differential, capped at a maximum of $xxx

ADMINISTRATION

- Program administration will be the responsibility of the utility
- Utility may use contractors to deliver the service
- Utility shall demonstrate administrative costs are reasonable
- Utility is responsible for maintenance of records that will allow audit of expenditures and collection of data to track savings achieved

COST-BENEFIT

- Payment of incentives toward replacement or new high efficiency air conditioners is common in many states
- Analysis in these states has found the program to be cost-effective for the customer and utility

- The value of energy savings and peak savings for the west south-central region for the 20 year life of the project are much in excess of the cost of the incentive. (see attached table.)

FUNDING LEVEL

- The funding level will be specific to each utility based on the size of its small and large commercial customer classes.
- The utility may utilize the Energy Efficiency Funding workbook developed for the Collaborative to determine funding levels, incorporating other quick start programs approved by the Commission

TIMEFRAME FOR PROGRAM

- This program shall be effective from MM/DD/2007 until such time as the Commission reviews and adopts long-term pre-reviewed program offerings for small and large commercial customers pursuant to the Energy Efficiency Guidelines adopted 12/xx/2006.
- The Commission shall approve the cessation of this program, or merger into long-term programs during the annual plan review for each utility that follows the adoption of long-term programs.
- Each utility shall file an application to implement this program and for an adjustment to rates to recover costs by MM/DD/2007.

Per-Unit Incremental Costs and Savings of High-Efficiency Packaged Commercial A/C

Source: ACEEE 2000

Category	Units	US Average	New England	Mid-Atlantic	E.N. Central	W.N. Central	S. Atlantic	E.S. Central	W.S. Central	Mountain	Pacific	CA	FL	NY	TX
Usage adjustment factor		1.000	0.517	0.683	0.717	0.750	1.433	1.300	1.500	0.983	0.900	0.900	1.433	0.683	1.500
Design temperature adj factor		1.000	0.750	0.750	0.875	1.000	1.000	1.000	1.250	1.000	0.875	1.000	0.875	0.750	1.250
Less than 65 kBtu/hr (Weighted average of 36 kBtu/hr = 3.0 tons)															
Tier 1 Annual Electricity Savings	kWh	936	483	639	670	702	1,341	1,216	1,403	920	842	842	1,341	639	1,403
Tier 1 Summer Coincidental Peak Savings	kW	0.43	0.32	0.32	0.38	0.43	0.43	0.43	0.54	0.43	0.38	0.43	0.38	0.32	0.54
Tier 1 Incremental Cost	$	138	138	138	138	138	138	138	138	138	138	138	138	138	138
Tier 2 Annual Electricity Savings	kWh	1,296	670	886	929	972	1,858	1,685	1,944	1,275	1,167	1,167	1,858	886	1,944
Tier 2 Summer Coincidental Peak Savings	kW	0.64	0.48	0.48	0.56	0.64	0.64	0.64	0.79	0.64	0.56	0.64	0.56	0.48	0.79
Tier 2 Incremental Cost	$	207	207	207	207	207	207	207	207	207	207	207	207	207	207
65 to less than 135 kBtu/hr (Weighted average of 90 kBtu/hr = 7.5 tons)															
Tier 1 Annual Electricity Savings	kWh	2,094	1,082	1,431	1,501	1,571	3,001	2,722	3,141	2,059	1,885	1,885	3,001	1,431	3,141
Tier 1 Summer Coincidental Peak Savings	kW	1.01	0.76	0.76	0.89	1.01	1.01	1.01	1.27	1.01	0.89	1.01	0.89	0.76	1.27
Tier 1 Incremental Cost	$	405	405	405	405	405	405	405	405	405	405	405	405	405	405
Tier 2 Annual Electricity Savings	kWh	2,945	1,521	2,012	2,110	2,209	4,221	3,828	4,417	2,896	2,650	2,650	4,221	2,012	4,417
Tier 2 Summer Coincidental Peak Savings	kW	1.43	1.07	1.07	1.25	1.43	1.43	1.43	1.78	1.43	1.25	1.43	1.25	1.07	1.78
Tier 2 Incremental Cost	$	607	607	607	607	607	607	607	607	607	607	607	607	607	607
135 to 240 kBtu/hr (Weighted average of 180 kBtu/hr = 15.0 tons)															
Tier 1 Annual Electricity Savings	kWh	3,898	2,014	2,664	2,793	2,923	5,587	5,067	5,847	3,833	3,508	3,508	5,587	2,664	5,847
Tier 1 Summer Coincidental Peak Savings	kW	1.89	1.42	1.42	1.65	1.89	1.89	1.89	2.36	1.89	1.65	1.89	1.65	1.42	2.36
Tier 1 Incremental Cost	$	791	791	791	791	791	791	791	791	791	791	791	791	791	791
Tier 2 Annual Electricity Savings	kWh	6,730	3,477	4,599	4,824	5,048	9,647	8,750	10,096	6,618	6,057	6,057	9,647	4,599	10,096
Tier 2 Summer Coincidental Peak Savings	kW	3.26	2.45	2.45	2.85	3.26	3.26	3.26	4.08	3.26	2.85	3.26	2.85	2.45	4.08
Tier 2 Incremental Cost	$	1,516	1,516	1,516	1,516	1,516	1,516	1,516	1,516	1,516	1,516	1,516	1,516	1,516	1,516

Notes:

1 Usage adjustment factors are calculated based on regional energy intensity data for space cooling in CBECS1995 (EIA 1998)
2 Design temperature adjustment factor = [regional design temperature(F) - 75(F)] / [95(F) - 75(F)]. 95F is the basis of EER ratings and 75F is a typical cooling thermostat setting.
3 National average per unit kWh savings are based on annual full-load operating hours from 1994 90.1 ASHRAE analysis. Incremental costs are from NEEP survey of current prices
4 CEE Tier 1 criteria used for units under 65kBtuh is 12.0 SEER (Split Systems only)
5 kW savings = [capacity/EER(current) - capacity/EER(CEE)] / oversize factor (1.3) * Design temperature adj factor
6 Peak savings is at end-user level and does not include T&D loss or reserve margin factor
7 To estimate peak savings for equipment under 65 kBtu, we use the average EER of SEER 13, 12, and 10 units.
8 In calculating peak demand loads we assume that equipment is oversized by an average of 30% and hence that on an 95F day, equipment cycles off 30% of the time.

Severely Energy Inefficient Homes Program – Quick Start Template

OBJECTIVES

- This program is applicable to all gas and electric utilities
- To provide energy efficiency improvements to severely energy-inefficient homes
- To achieve meaningful energy savings that contribute to reducing energy-costs for the home owner and provide overall benefits for all ratepayers
- To provide a quick start energy efficiency program to residential customers in the interim while a portfolio of long-term programs is developed and approved by the Commission

PROGRAM DESIGN

- Target is severely energy-inefficient homes occupied by the current owner for at least one year
- Site-built dwellings built before 1981, when energy efficiency building codes were authorized, manufactured homes or mobile homes
- Focus on improving energy efficiency of building envelope with HVAC tune-up and compact fluorescent light bulbs
- Program to be modeled on U.S. Dept. of Energy (DOE) Weatherization Assistance Program (WAP), however open to all residential customers
- DOE protocols, standards, quality control, and audit provisions to be followed
- Maximum expenditure of $3,000 on home with owner co-pay of 50% (Maximum utility contribution is $1500 per home) exclusive of administrative costs

ADMINISTRATION

- A single point of delivery will remove the significant market barrier of customers having to coordinate utility programs on their own
- Program will be mandatory for all gas and electric utilities
- All utilities will utilize the WAP delivery network of Arkansas Department of Health and Human Services (DHHS OCS) Office of Community Services (OCS) and Community Action Agencies / Service Providers with support and coordination from the Arkansas Community Action Agencies Association (ACAAA) (“Weatherization Network”)
- Each utility will be responsible for its program and will outsource delivery to the Weatherization Network utilizing a standard contract.
- By utilizing the existing Weatherization Network for statewide training, administration, coordination, and delivery; the administrative costs will be less than if each utility develops its own individual delivery system

- For customers of both an electric and gas utility, the local agency can coordinate the programs to deliver the measures to the customer, thus removing a significant market barrier
- For those low-income customers eligible for WAP, the federal funds can be applied towards the co-pay
- The agencies shall maintain records that will allow audit of expenditures for each utility program and collect data as appropriate to indicate energy savings realized

FUNDING LEVEL

- Utilizing the Energy Efficiency Funding workbook developed for the Collaborative, the funding input will be $0.08 per average monthly residential bill effect, assuming participation by all customer classes on an equal basis per kWh or therm. Applied to all gas and electric utilities, the statewide funding will be approximately $3.8 million. Each utility's share shall be as calculated by the workbook for its total amount
- Each utility shall allocate its funds to the agencies in its service territory proportional to the number of the utility's residential customers within the service footprint of the agency
- The standard contract shall provide for Weatherization Network administrative costs within the allocated amount, not to exceed 14% of the total allocation.

COST-BENEFIT

- Several studies conducted for the U.S. Dept. of Energy by Oak Ridge National Laboratory have demonstrated real savings for both customers and utilities from the WAP
- A number of states have required utility-funded programs modeled on the federal program and found those to be cost-effective
- Texas has adopted a set of "Deemed Savings" for the measures encompassed in this program and those can serve as a proxy for Arkansas
- Proponents will provide illustrative statewide cost-effectiveness analysis to show that program benefits exceed program costs.

TIMEFRAME FOR PROGRAM

- This program shall be effective from MM/DD/2007 until such time as the Commission reviews and adopts a long-term severely energy-inefficient homes program pursuant to the Energy Efficiency Guidelines adopted 12/xx/2006.
- Each utility shall file an application to implement the program and for an adjustment to rates to recover costs by MM/DD/2007.

Appendix E: Proposals for an energy efficiency program to address severely inefficient homes

- From a coalition including the Community Action Agencies and some utilities
- From the PSC staff

October 20, 2006

Collaborative Settlement Proposal for Efficiency Improvements in Severely Energy-inefficient Homes

This is a proposal by the weatherization group of the collaborative established in Arkansas PSC Docket 06-004-R. The members of the group are: the Arkansas Community Action Agencies Association Inc. (ACAAA), Arkansas-Oklahoma Gas (AOG), Arkansas Western Gas (AWG), and Entergy Arkansas (EAI).[58] The Arkansas Attorney General (AG) has participated in the group and is considering the proposal. This is a unique opportunity for a coordinated, standardized, statewide program to increase energy efficiency in severely energy-inefficient homes. Because of the overlaps of Weatherization Assistance Program ("WAP") provider territories, gas utility territories, and electric utility territories; and because of the very high potential for joint gas and electric benefits; all gas and electric utilities should be required to participate in this program.

The general purpose of this proposal is to "piggyback" a utility-funded energy efficiency program on the successful WAP already operating throughout Arkansas. WAP is wholly funded by US DOE and US HHS, administered by the Arkansas Department of Health and Human Services (DHHS) Office of Community Services (OCS) subject to DOE rules, and implemented primarily by member agencies of ACAAA. The WAP currently weatherizes about 1100 homes a year at an average expenditure per home of about $2850 (which includes some, but not all, administrative costs). The intent of this proposal is to establish a set of coordinated Arkansas utility programs that would substantially increase the number of homes treated by both programs and increase the amount per home for the utility program slightly (to about $3500, not including administrative costs), mostly in order to include electric appliance measures, such as replacement of inefficient refrigerators, but also to cost-effectively and more comprehensively address homes with major energy inefficiencies. The per-home average is the total expenditure in each home from all sources, federal funds and utility funds combined. The total proposed utility budget is thus $4.35 million, including all administration. The existing WAP targets low-income households. The proposed utility program would instead target severely energy-inefficient homes. While there may be some overlap, i.e., a particular home may be eligible under both programs, the two programs are designed to take advantage of administrative efficiencies available from "piggybacking" on the existing WAP infrastructure while remaining distinct from each other. As a result of energy efficiency expenditures through this utility-funded program, all residential, commercial and industrial customer bills will be lower than they would otherwise be in the long run.

The existing weatherization network, administered and monitored by DHHS and coordinated by ACAAA and implemented primarily by member agencies of ACAAA ("Weatherization Network"), is the agreed provider of this utility program, because it is uniquely able to quickly start up a high-quality statewide utility program. This is not only because the Weatherization Network already operates the WAP in all utility service territories, but also because it has an established administrative system in place, along with a workforce skilled in the necessary tools and techniques needed to weatherize and make more efficient severely energy-inefficient homes.

[58] No representative from Entergy was available for the last teleconference that developed this proposal.

1. Target program initially to severely energy-inefficient homes that have been occupied by the current owner for at least a year,
    a. Eligibility criteria include the following (scoring to be determined):
        i. Vintage: dwellings built before 1981
        ii. Energy efficiency condition of the home (e.g., fewer than XX inches of attic and/or wall insulation, single-pane windows, leaks from or hole(s) in roof or exterior wall.)
        iii. Mobile homes
        iv. Manufactured homes
    b. Consider later addition of tenant-occupied severely energy-inefficient homes where tenant pays for the utility service – with landlord agreement for one-year rent freeze (as in DOE program)

2. Funding from gas and electric utilities, based on further analysis consistent with collaborative cost-effectiveness test, totaling $4.35 million, including all administration (utility, state, agency, ACAAA). If all sectors contribute equally on a per-unit-of-sales basis (kWh or therms), the short-run bill impact per average residential electric customer is 9 cents per month and per average residential gas customer is 9 cents per month.
    a. State admin (5%) = $217,000
    b. Agency admin (8% =$348,000
    c. ACAAA coordination (1%)= $43,500
    d. Utility admnin = ?
    e. Measures in homes = $3,741,000 (less utility admin)

3. As modified below, follow US DOE WAP program rules, including Weatherization Plus measure menu (e.g., lighting, refrigerators) with extra funding for program gaps (health and safety, e.g., ventilation; major repairs to protect, enhance, or make possible efficiency measures, e.g., roofs) and including audit and education components (including a kit of low-cost measures).
    a. Implemented by Weatherization Network, "piggybacking" on existing WAP administration. Aggregate federal funds will be fully exhausted during each federal program year.
    b. Co-payment of perhaps 50%, depending on cost-effectiveness analysis, which can be paid by federal funds for customers eligible for the WAP. No work commenced until co-payment made in full to agency.
    c. To maintain quality control and assure energy savings, utility co-funding of audit and measures is contingent upon Weatherization Network contracting.
    d. Agencies coordinate funding for each home from multiple sources (i.e., co-payment, electric utility where appropriate, gas utility where appropriate), allocating costs and savings,[59] and billing as appropriate. In a home with electric cooling and utility gas heat, weatherization costs will initially be divided evenly. Otherwise allocations will follow the appropriate utility service. Agencies will report quarterly to each utility through Arkansas DHHS OCS, which shall be the central point for collecting data, reporting and monitoring for the Weatherization Network.

[59] A question for determination is whether utilities should be allowed to include energy savings from reduced propane use in homes weatherized to reduce electric cooling load.

e. Quality control by Weatherization Network, subject to Arkansas DHHS OCS oversight.
f. Training and contractor recruitment by Arkansas DHHS OCS and agencies with utility assistance if necessary.
g. Periodic meetings between utilities and Weatherization Network to assess and fine-tune program and program delivery
h. Utility and Arkansas DHHS OCS contracts. Arkansas DHHS OCS will subcontract with individual agencies and other service providers. However each utility remains ultimately responsible for its program.
i. Possible neighborhood programs if most efficient way to deal with particular measures, e.g., replacing operating inefficient appliances.

4. Average about $3500 per home including utility administration (plus 13% agency/Arkansas DHHS OCS administration, ACAAA fee and utility admin), additional $1500 for major repairs where required to make efficiency possible. Waiver needed from Arkansas DHHS OCS for expenditures from all sources of more than $4000 in a home.
    a. With utilities, develop mechanisms to manage demand for program service, which is expected to exceed funding.
    b. Agency admin includes contracting, coordinating funding, quality control, training, contractor recruitment, financial audit, telephone, office supplies, bookkeeping, general administration, general insurance, travel. Arkansas DHHS OCS admin includes reporting, monitoring, and training
    c. Admin does not include additional 1% to be paid to ACAAA for coordination with utilities, including participation in further collaborative meetings, assistance with and support of network, regulatory support, and other support of the program as needed.
    d. Admin does not include materials or measure related program support, such as travel to/from work site, tools, space costs (rent, insurance, maintenance, utilities), labor, personnel (director, inspector, clerical).
    e. Authorized measures include: energy audit, education and materials, air sealing (e.g., insulation, caulking, duct sealing), efficient HVAC and hot water measures and equipment, efficient appliances (e.g., refrigerators), efficient lighting (compact fluorescent lamps, fixtures, and accessories), energy-efficiency-related health and safety (e.g., ventilation), minor repairs (e.g., window pane replacement), cost-effective major air sealing that make routine efficiency or weatherization possible (e.g., roof repair), low-cost measures (e.g., low-flow aerators and showerheads).
    f. Subject to Weatherization Network start-up period of up to four months. Utility funding will include start-up equipment costs for the utility program, such as blower doors, CO monitors, infrared cameras.
    g. Fuel switching is prohibited under the program. However, restoring operation of existing gas heat equipment in a home will not be considered fuel switching even though gas supply is shut off and current heat may be provided by portable electric space heaters.
    h. Replacing equipment with more efficient equipment using the same fuel will not be considered a promotional practice since the result is to decrease sales of that fuel. However, this provision does not apply to equipment that also replaces equipment using a different fuel (e.g., an electric water heater replaced with an electric heat pump that also

displaces a gas space heating system will not comply with the prohibition against fuel switching because it would promote a switch from gas space heat to electric).

Cost recovery (all programs), subject to collaborative agreement

5. Full cost recovery in non-bypassable surcharge or rider for programs that realize proven savings, as set out in points 10-11 below.
    a. Lost revenue not dealt with in this proposal – subject to settlement within collaborative.
6. Costs allowed with interest accrued for any recovery lag.
    a. Subject to cost-effectiveness test set out in point 11 below.
    b. Periodic review and allowance at the time of the annual review set out in point 9. There must be showing of actual expenditures and of savings proven as set out in points 10-11 below.

Other general considerations (all programs) , subject to collaborative agreement

7. Utilities file annual plans with Commission including sufficient detail for approval; no major changes without approval.
8. Annual reporting, with opportunity for public review and comment.
9. Evaluation, customer, and market data-gathering will be incorporated into all programs from the beginning in order to provide inputs for measurement and verification activities. Utilities will provide data as needed.
10. For the first period of implementation, the program will use the best engineering determinations available[60], consistent with the collaborative deemed savings process and considering WAP savings history for individual measures, developed through a collaborative process if possible, until impact evaluation is available. Measure savings will be continually updated prospectively, based on the latest verification and evaluation information.
    a. Similarly, through a collaborative process if possible, standard avoided costs will be determined for saved kWh, therms, and gallons of water, as well as for other utility resource benefits, such as customer retention and decreased costs of arrears, bad debt, disconnections and reconnections.
11. The program will seek to avoid cream-skimming and to minimize lost opportunities. Among the goals of the program is the development of a statewide energy efficiency infrastructure through the Weatherization Network to achieve comprehensive savings of natural gas, electricity, propane and water in order to minimize the stranding of additional cost-effective savings as would result from incomplete programs that cream-skim or leave lost opportunities untapped.
    a. Subject to further analysis, program cost-effectiveness will be determined on a statewide basis, prior to approval and implementation, by application of a Total Resource Cost Test (TRC), which includes but is not limited to the following benefits: avoided resource costs (electricity, natural gas, propane, wood, water), downward pressure on commodity cost, customer retention, avoided utility costs (disconnections and reconnections, arrearages and bad debt), and mitigation of future environmental regulatory costs.

[60] Sometimes called "deemed savings."

12. The Parties ask the Commission to find program compliance to be "beneficial" under the Energy Conservation Endorsement Act of 1977 (Ark Code sec. 23-3-405(a)(2)), based on the substantial evidence to be filed by the Parties.
    a. Also, since efficiency/conservation is a "proper and essential function of public utilities" (Ark. Code sec. 23-3-404), the Parties ask the Commission to find that expenditures in compliance with approved efficiency or conservation programs are prudent.

October 11, 2006 (from PSC Staff)

Home Weatherization Program Targeting Severely Energy Inefficient Housing

Commission Authority

The Commission can develop a home weatherization program to improve the energy efficiency of residential structures pursuant to Ark. Code Ann. §§23-3-402 and 23-3-403.

Uniform Statewide Program

If the Commission adopts a home weatherization program as a component of its overall energy efficiency programs, the program should be a uniform program, and all utilities should be required to participate in the program.

Program Administration

Each utility would be responsible for offering the program and for administering the program. Utilities could opt to contract with a third party for the administration of the program. Third party providers could include the existing Arkansas CAP Agencies represented by the Arkansas Community Action Agencies Association. Utilities could select third parties through a bid process or bilateral or multilateral negotiations. Utilities could also group together and contract with a third party administrator. Ultimately, the responsibility for participating in the program and its administration is the responsibility of each utility.

Administrative Costs

Utilities should take all necessary steps to minimize the level of administrative costs associated with the program. The level of administrative costs should be one of the principal factors in selecting the program administrator.

Number of Homes and Maximum Dollars Spent Per Home

The program should be designed and funded to enable weatherization of up to 1,100 homes annually with a maximum expenditure per home of $2,800.

As such, the total proposed budget is a maximum of $3,080,000 not including administrative costs. Calculated as 1,100 homes * $2,800.

Work Quality Standards

All work should meet the quality standards associated with the existing Weatherization Assistance Program administered and monitored by the Arkansas Department of Health and Human Services and the Arkansas Community Action Agencies Association.

Eligibility Criteria

Eligibility is based on demonstration of a severely energy-inefficient home. The criteria would include:

1. Vintage: must have been built before 1981
2. Energy efficiency condition of the home (e.g., fewer than ? inches of attic and/or wall insulation
3. single-pane windows
4. Blower door test result of ?

5. Owner-occupied
6. Owner resided in home for at least one year
7. Mobile/manufactured homes also eligible if other criteria are met

Weatherization Measures

Weatherization measures would include: energy audit, education and materials related to the audit and weatherization measures, air sealing (e.g., insulation, caulking), window replacement / repair, installation of efficient lighting (compact fluorescent bulbs), minor repairs (e.g., window pane replacement).

Co-Payment

Co-payment of 50% required. No work commenced until co-payment made in full.

The co-payment requirement may be paid with funds from the existing Weatherization Assistance Program if an administrator of the existing Weatherization Assistance Program can demonstrate that a customer qualifies for this program and that there are Weatherization Assistance Program Funds sufficient to pay the required co-payment for the residence. Such circumstances will require coordination between the affected utility program administrator and the administrator of the Weatherization Assistance Program.

Reporting / EM&V

Annual reporting will be required.

Evaluation, customer, and market data-gathering will be incorporated into all programs from the beginning in order to provide inputs for measurement and verification activities.

Appendix F: Energy Conservation Endorsement Act of 1977

Arkansas Code

Title 23. Public Utilities and Regulated Industries
Chapter 3. Regulation of Utilities and Carriers Generally
Subchapter 4. Energy Conservation Endorsement Act of 1977

23-3-401. Title.

This subchapter shall be known and may be cited as the "Energy Conservation Endorsement Act of 1977".

History. Acts 1977, No. 748, § 1; A.S.A. 1947, § 73-2501.

23-3-402. Legislative findings.

The General Assembly finds that the United States is confronted with a severe and very real energy crisis. Simply stated, the demand for fuels has outstripped the available supplies. The President of the United States has established energy conservation as a high-priority national goal and has called on all Americans to participate in and perhaps make sacrifices toward attaining that goal. The General Assembly recognizes that enormous amounts of energy are wasted by consumers of all classes and economic levels due to inadequate insulation of buildings and other inefficiencies in the use of energy. The overriding public interest in the conservation of natural gas and oil, as well as the use of alternative forms of energy, is indisputable.

History. Acts 1977, No. 748, § 2; A.S.A. 1947, § 73-2502.

23-3-403. Energy conservation programs and measures defined.

As used in this subchapter, unless the context otherwise requires, "energy conservation programs and measures" may include, but shall not be limited to:

(1) Programs of residential, commercial, or industrial insulation, including measures to facilitate the financing of such insulation;

(2) Programs which result in the improvement of load factors, contribute to reductions in peak power demands, and promote efficient load management, including the adoption of interruptible service equipment and alternative or additional metering equipment designed to implement new rate structures; and

(3) Programs which encourage the use of renewable energy technologies or sources, including solar energy, wind power, geothermal energy, biomass conversion, or the energy available from municipal, industrial, silvicultural, or agricultural wastes.

History. Acts 1977, No. 748, § 4; A.S.A. 1947, § 73-2504.

23-3-404. Conservation a proper utility function.

It shall be considered a ***proper and essential function of public utilities*** regulated by the Arkansas Public Service Commission to engage in energy conservation programs, projects, and practices which conserve, as well as distribute, electrical energy and supplies of natural gas, oil, and other fuels. [emphasis added]

History. Acts 1977, No. 748, § 3; A.S.A. 1947, § 73-2503.

23-3-405. Authority of Arkansas Public Service Commission - Rates and charges.

(a)(1) The Arkansas Public Service Commission is authorized to propose, develop, solicit, approve, require, implement, and monitor measures by utility companies which cause the companies to incur costs of service and investments which conserve, as well as distribute, electrical energy and existing supplies of natural gas, oil, and other fuels.

(2) After proper notice and hearings, the programs and measures may be approved and ordered into effect by the commission if it determines they will be ***beneficial to the ratepayers of such public utilities and to the utilities themselves***. [emphasis added]

(3) In such instances, the commission shall declare that the cost of such conservation measures is a proper cost of providing utility service. At the time any such programs or measures are approved and ordered into effect, the commission shall also order that the affected public utility company be allowed to increase its rates or charges as necessary to recover any costs incurred by the public utility company as a result of its engaging in any such program or measure.

(b) Nothing in this subchapter shall be construed as limiting or cutting down the authority of the commission to order, require, promote, or engage in other energy conserving actions or measures.

History. Acts 1977, No. 748, §§ 3, 5; A.S.A. 1947, §§ 73-2503, 73-2505.

Appendix G: Frontier Associates Deemed Savings Proposal

Arkansas Deemed Savings

A Proposal to Establish Energy and Demand Deemed Savings for Residential and Commercial/Industrial Applications

Presented by:

Frontier Associates, LLC

1515 S Capital of Texas Hwy., Ste. 110
Austin, Texas 78746-6544
Tel: +512 372 8778
www.frontierassoc.com

with:

Nexant, Inc.

909 Fannin Street, Suite 1275
Houston, Texas 77010-1038
Tel: +1 713 982 5550

October 4, 2006

REDACTED BY RICH SEDANO FOR THE OCTOBER 9-10 COLLABORATIVE MEETING

TO FOCUS ON THE PROCESS AND SUBSTANCE ASPECTS OF THE PROPOSAL.

FULL PROPOSAL IS AVAILABLE ON REQUEST.

Table of Contents

REDACTED BY RICH SEDANO FOR THE OCTOBER 9-10 COLLABORATIVE MEETING

TO FOCUS ON THE PROCESS AND SUBSTANCE ASPECTS OF THE PROPOSAL.

FULL PROPOSAL IS AVAILABLE ON REQUEST.

Arkansas Deemed Savings

Overview

Arkansas has moved rapidly to develop a statewide electricity and gas energy efficiency initiative with the goal of introducing programs that can successfully, quickly, and cost effectively reduce energy consumption among the various classes of Arkansas' energy consumers. This proposal is intended to facilitate that goal by producing deemed savings values for a comprehensive set of measures in the residential and commercial/industrial markets. Deemed savings will serve Arkansas' goal by:

- *Increasing Certainty for Program Actors.* Program administrators, implementers, and participants can easily assign savings values to prospective measures.

- *Decreasing Administrative Overhead*. Deemed savings enable administrators to concentrate on overseeing effective outreach, installations, and reporting rather than engaging in substantial measurement and verification activities.

- *Facilitate Tracking and Reporting System*. Using standard, yet comprehensive, deemed savings specifications allows standardization of tracking, reporting, and management systems for near-instantaneous review of program progress.

Frontier Associates LLC and Nexant, Inc. (the Frontier Team) will produce a comprehensive set of residential and commercial deemed savings for utilities and the market to facilitate these objectives.

Scope

In order to meet the objectives of this project, the following major tasks are envisioned:

- Start-Up Meeting
- Refine Deemed Savings List
- Review and Rank Deemed Savings Resources
- Categorize Deemed Savings (Baseline, Weather, Market)
- Produce Deemed Savings Estimates
- Produce Draft Deemed Savings Tables
- Produce Final Report

These activities are described further below.

Task 1: Start-Up Meeting

Frontier Associates will prepare an agenda, and conduct a project initiation meeting with appropriate Arkansas stakeholders. Frontier will further introduce personnel who have been assigned to work on the study.

The purposes of the meeting are to review the proposed deemed savings list, describe the deemed savings development approach and tasks, and to receive and address feedback, recommendations, and concerns.

In preface to the startup meeting, the Frontier Team will submit an issue "brief" addressing key questions surrounding definitions of deemed savings parameters. Terms such as "weather zone," "eligible measures," "measure life," "baseline," "peak demand savings," and "energy savings" must be defined within the context of the Arkansas rulemaking.

It may also be appropriate, during the start-up phase, to define program design concepts surrounding the deemed savings approach. This would allow utilities to more quickly roll out programs and have an immediate impact in the market. It may also allow the deemed savings list to be refined or prioritized based on targeted programs.

The Frontier Team will describe data requirements, clarify current data availability and quality, discuss any issues surrounding the execution and reporting of project, develop lines of communication among parties who will be involved in this project, and discuss the detailed work plan and schedule for the tasks in the study. If significant changes in scope are required, the following work plan will be revised and submitted for approval.

Task 2: Refine Deemed Savings List

The Frontier Team's natural and most expeditious approach to developing deemed savings values is to start from the measures lists developed for recent projects. For Frontier, that includes projects in Missouri, Texas, New Mexico, and Colorado. For Nexant, recent projects developing savings estimates include Colorado, Washington, Idaho, Utah, California, Georgia and Texas.

An initial measures list is provided in Appendix A of the proposal.

Task 3: Review and Rank Deemed Savings Resources

While the Frontier Team has recently completed projects regionally proximate to Arkansas, there are other deemed savings values in the public domain that may contribute to the overall list of potential measures. The Frontier Team will examine and recommend from available resources, as appropriate. A partial listing of resources available includes:

- Texas Deemed Savings Values (a comprehensive list of residential and commercial sector measures as detailed in Appendix A).
- Bonneville Power Administration (Commercial Refrigerated Cooler Controls, LED Traffic Signals, ENERGY STAR® Commercial Clothes Washer, Refrigerator Recycling and Decommissioning, etc.)
- 2003 and 2006 Energy Efficiency and Conservation Measure Resource Assessment, Energy Trust of Oregon
- PG&E 2004 – 2005 Express Efficiency program filing
- Xcel Energy 2007-2009 Triennial Plan MN Natural Gas and Electric Conservation Improvement Plan
- California Database of Energy Efficiency Resources (DEER)
- Colorado DSM Market Potential Assessment, Xcel Energy 2006
- "Opportunities for New Appliance and Equipment Efficiency Standards: Economic Savings Beyond Current Standards Programs." Consortium for Energy Efficiency (CEE) documents, 2001
- New York State Energy Research and Development Administration (NYSERDA) Deemed Savings Measure Database, Nexant 2005

A final comprehensive list of proposed measures will be produced and a revised Appendix A submitted for review and approval by Arkansas' collaborative members.

Task 4: Categorize Deemed Savings

Several factors affect the level of effort involved in establishing reasonable energy and demand savings specific to Arkansas. The Frontier Team will investigate and resolve the following:

Baseline

Deemed savings are constructed of "delta demand and energy consumption" determined by the difference between the energy efficiency measure consumption and consumption absent the efficiency program. The "usage absent" value is the baseline. Baseline can be determined through various means, often involving considerable study.

For new construction, existing energy efficiency code is often used as proxy for the baseline case. Arkansas has established a state-specific residential building code that is less stringent than the IECC 2003, but assumed as, or more stringent than the IECC 2001 supplement, and has adopted the 2003 IECC as code for commercial buildings.

For existing construction, Census and Energy Information Administration residential and commercial building end-use survey data are frequently used as a proxy for baseline conditions. Frontier Associates has recently developed inputs for a Missouri project that can be updated and applied to the Arkansas region.

Weather Variables

Deemed savings measures can be generally categorized as weather or non-weather sensitive. Non-weather sensitive measure impacts are a function of the pattern of use. Weather sensitive measures must be further analyzed to address the interaction between the pattern of use and the weather impact.

Because weather is not the same across the entire state of Arkansas, additional analysis must determine an appropriate distinction of weather zones. Arkansas may appropriately be defined as one to six weather zones, depending on the degree of variability between those zones. The IECC 2000 and 2003 codes assigns four weather zones to the state, and the IECC 2006 assigns two weather zones to the state, with all but 12 counties in the primary zone. The smaller zone includes the northwest and north central part of the state.

Market Variables

Certain measure impacts might also vary by market. Generally, markets will be defined as residential and commercial/industrial. Within each category, additional sub-categories might be appropriate, such as single family, multifamily, or mobile home in the residential sector, or hotels, schools, and parking garages, etc., in the commercial sector.

Within the residential and commercial/industrial markets, measures may be further classified according to whether targeting the new or existing market, and within the existing market, measures may be considered retrofit (replacement of an existing, working technology), or replacement on burnout. Finally, end use heating and water heating fuel characteristics establish an additional market layer.

Task 5: Produce Deemed Savings Estimates

The Frontier Team will use the above resources, coupled with building simulation modeling techniques, to produced deemed savings values suitable for use in Arkansas. The Frontier Team will use ESPRE 2.1 and eQuest building simulation modeling tools.[61]

It is critical that key terms are defined prior to completing the simulation modeling component. In particular, definition of baseline, peak demand and energy savings, and weather zones must be established before the modeling runs can produce usable results. The Frontier Team will, to the greatest extent possible, follow International Performance Measurement and Verification Protocol (IPMVP) guidelines to estimate efficiency measure savings using engineering or statistical approaches.

The Frontier Team will use simulation calibration techniques to ensure that the demand and energy impacts are properly diversified. Calibration will ensure that savings reflect real-world behavior regarding occupancy and use patterns.

Task 6: Produce Draft Deemed Savings Tables or Tools

The Frontier Team will produce a draft report of the proposed deemed savings values and supporting documentation. The deemed savings report will describe each measure, document the baseline values, outline measure eligibility, and describe pertinent installations standards. Work papers will detail all engineering or statistical estimation assumptions and inputs.

The adopted deemed savings values can be incorporated into a variety of spreadsheet or database (desktop or online) tools for use by project participants. The costs for such tools is not included in the proposed budget.

Task 7: Produce Final Report

The Frontier Team will address and incorporate collaborative member feedback into a final deemed savings report. The final report will be provided in printed and electronic form. A follow-up activity to this study may include producing spreadsheets and online systems to calculate and report energy efficiency projects and savings.

Budget

The budget for this work is $70,520, and would produce a final report 90 days after contract initiation. This proposal is on a time and materials, not-to-exceed basis. Scope changes may affect the maximum fee. Expenses, including subcontractor fees, are passed through at cost, without markup. (Details on the consulting team, budget detail, and process milestones have been removed from this version for the purpose of the October 9-10 collaborative meeting).

[61] ESPRE is an EPRI residential building energy simulation tool. eQuest is a DOE2 building energy simulation model front end.

Appendix A

Initial Residential Deemed Savings List (envelope and water heater measures to be evaluated for both electricity and natural gas impacts)

- Central Air Conditioner Replacement
- Heat Pump - Energy Savings (Heating kWh Only)
- Furnace Efficiency Upgrade
- Ground Source Heat Pump
- Window Air Conditioners
- Ceiling Insulation
- Wall Insulation
- Floor Insulation
- ENERGY STAR® Windows
- Air Infiltration
- Solar Screens
- Duct Efficiency Improvement
- Water Heater Replacements – High Efficiency and Fuel Substitution
- Water Heater Jackets
- Water Heater Pipe Insulation
- Low-flow Showerheads
- Faucet Aerators
- ENERGY STAR ® Refrigerators
- ENERGY STAR ® Dishwashers
- ENERGY STAR ® Clothes Washers
- Compact Fluorescent Lamps
- Water Heating Replacements - Solar Water Heating
- Solar Electric (Photovoltaic) Energy Systems

Initial Commercial Deemed Savings List

- Lighting efficiency
- Lighting controls
- Motors

- Unitary AC and HP Equipment
- Evaporative coolers
- Programmable thermostats
- LED Channel letter signs
- Water chilling equipment (chillers)
- Cool Roofs
- Electronically commutated motors
- LED message center signs
- Occupancy based PTHP/PTAC controls
- Plug load occupancy sensors
- Solid door refrigerators and freezers
- Transformers
- Variable frequency drives