BEFORE THE STATE CORPORATION COMMISSION

OF THE STATE OF KANSAS

07-AQLG-431-RTS

In the Matter of the Application of Aquila, Inc.,) d/b/a Aquila Networks-KGO, For Approval of) the Commission to Make Certain Changes) in its Rates For Natural Gas Service.)	Docket No. _____

Direct Testimony of Matthew E. Daunis

Manager, Energy Efficiency Programs

Aquila, Inc.

Energy Efficiency Programs

November 2006

1 **Q. Please state your name and business address.**

2 A. My name is Matthew E. Daunis. My business address is 20 West Ninth Street,

3 Kansas City, MO 64105.

4

5 **Q. By whom are you presently employed and in what capacity?**

6 A. I am employed as Manager of Energy Efficiency Programs for Aquila, Inc. I am

7 testifying on behalf of Aquila, Inc. d/b/a Aquila Networks - KGO ("Aquila").

8

9 **Q. What is your educational background?**

10 A. I received a Bachelor's degree in Mechanical Engineering from the University of

11 Maine in 1976. I received a Masters degree in Business Administration from the

12 University of Nebraska in 1985.

13

14 **Q. Please describe your professional experience.**

15 A. I have been employed in the utility industry in positions requiring knowledge of

16 Demand Side Management, customer service, and marketing for about 20 years.

17 Prior to that, I was employed by a major HVAC manufacturer for ten years in

18 various marketing and sales positions.

19

20 ## Summary of Testimony

21 **Q. What is the purpose of your testimony?**

22 A. The purpose of my testimony is to present Aquila's proposed Demand-Side

23 Management (DSM) programs and their costs.

1

2   **Q.**   **Please summarize your testimony.**

3   A.   In my testimony I will testify that:

4   1) Demand side resources should be considered on an equivalent basis to

5   supply side resources as encouraged by both NARUC and Federal legislation

6   and recovered through rates, and

7   2) Cost effectiveness should be determined by considering the impacts on the

8   total resource costs, the utility's costs, the participant's benefits as well as

9   potential rate impacts.

10   3) The program costs should be recovered through a tariff rider.

11   4) The programs proposed will provide a net benefit to our customers in Kansas.

12

13   # Demand and Supply Side Resources

14   **Q.**   **Please define supply-side and demand-side resources.**

15   A.   In general the distinction between demand-side and supply-side can be thought

16   of as which side of the meter the resource is on. If it is on the Company's side of

17   the meter it is supply-side. If it is on the customers' side of the meter it is

18   demand-side. However, there is also an element of control or dispatch ability in

19   the definitions. Both supply-side and demand-side resources can be used to

20   meet the customer's energy needs.

21

22

1　Q.　**Has the National Association of Regulatory Commissioners (NARUC)**

2　　　**addressed demand side resources for natural gas utilities?**

3

4　A.　Yes. NARUC has issued two recent resolutions specifically addressing the need

5　　　for energy efficiency programs for natural gas utilities. In its "Resolution on Gas

6　　　and Electric Energy Efficiency" adopted by the NARUC Board of Directors on July

7　　　14, 2004 NARUC encouraged State commissions to "address regulatory

8　　　incentives to address inefficient use of gas and electricity". In the same resolution

9　　　they encouraged State commissions to review and consider the recommendations

10　　　in the "*Joint Statement of the American Gas Association, the Natural Resources*

11　　　*Defense Council, and the American Council for an Energy Efficient Economy*".

12　　　In its "Resolution Supporting the National Action Plan on Energy Efficiency"

13　　　adopted by the NARUC Board of Directors on August 2, 2006 NARUC endorses

14　　　"the principal objectives and recommendations of the *National Action Plan on*

15　　　*Energy Efficiency*, and commends to its member commissions a state-specific,

16　　　and where appropriate, regional review of the elements and potential applicability

17　　　of energy efficiency policy recommendations outlined in the Plan, in an effort to

18　　　identify potential improvements in energy efficiency policy nationwide." The

19　　　resolution cites five key elements of the *Plan*: 1) Recognize energy efficiency as a

20　　　high priority energy resource; 2) Make a strong, long-term commitment to cost-

21　　　effective energy efficiency as a resource; 3) Broadly communicate the benefits of

22　　　and opportunities for energy efficiency; 4) Promote sufficient, timely, and stable

23　　　program funding to deliver energy efficiency where cost-effective; and 5) Modify

1   policies to align utility incentives with the delivery of cost-effective energy efficiency

2   and modify ratemaking practices to promote energy efficiency investments.

3

4   Q.   Does the "*Joint Statement of the American Gas Association and the Natural*

5   *Resources Defense Council*" list the benefits of natural gas energy efficiency

6   programs?

7   A.   Yes. The statement lists several benefits:

8   • Customers could save money by using less natural gas

9   • Reduced overall use would help push down short-term prices at times when

10   markets are under stress, reducing costs for all customers (whether or not

11   they participate in utility energy efficiency programs)

12   • State policies to encourage economic development would be enhanced by

13   increased energy efficiency and lower business energy costs

14   • State regulatory commissions would be able to support larger state policy

15   objectives

16

17 Q.   Does the Energy Policy Act of 2005 address demand side resources?

18 A.   Yes. Section 139 of the Act directs the Secretary of Energy, in association with

19   NARUC and the state energy offices, to study the impact of state policies that

20   encourage energy efficiency including:

21   (1) performance standards for achieving energy use and demand reduction

22   targets;

23   (2) funding sources, including rate surcharges;

1   (3) infrastructure planning approaches (including energy efficiency programs)

2   and infrastructure improvements;

3   (4) the costs and benefits of consumer education programs conducted by State

4   and local governments and local utilities to increase consumer awareness of

5   energy efficiency technologies and measures; and

6   (5) methods of—

7   (A) removing disincentives for utilities to implement energy efficiency

8   programs;

9   (B) encouraging utilities to undertake voluntary energy efficiency

10   programs; and

11   (C) ensuring appropriate returns on energy efficiency programs.

12   Further, Section 123(b) states that each state's energy efficiency plan should

13   have a goal of achieving a 25% improvement in the efficiency of energy use by

14   2012 over a 1990 baseline.

15

16 **Q.**   **Has the State of Kansas addressed the appropriateness of energy**

17   **efficiency?**

18 **A.**   Yes. Governor Sebelius issued Executive Order 2004-05 that created the

19   Kansas Energy Council. The Council prepared the Kansas Energy Report for

20   2006 that identified the following core priorities:

21   • To ensure a low-cost, reliable and secure energy supply,

22   • To increase energy conservation and efficiency,

6

1   • To extend the life of existing energy resources, and

2   • To develop a balanced renewable energy policy.

3

4   Q.   **Regarding energy efficiency, did the Council's report have any**

5   **recommendations?**

6   A.   Yes. The Council's report had several recommendations directed at increasing

7   conservation and efficiency including:

8   • Endow and facilitate a revolving low-interest loan program to make energy-
9   efficient upgrades (including renewable energy projects) in residential homes
10   and small commercial businesses.
11

12   • Provide tax or other incentive benefits to landlords when they bring rental
13   properties to minimum energy efficiency standards, in recognition of the fact
14   that rental properties are often some of the least energy efficient housing
15   units.
16

17   • Increase spending on current energy-related technical assistance and public
18   education.
19

20   • Efforts that promote the efficient utilization of all energy resources.
21

22   • Investigate an energy-efficiency program similar to Efficiency Vermont. Such
23   a program would be dedicated to reducing load and helping individuals,
24   businesses, and industries use less energy. A report with a recommendation
25   to the KEC should be completed no later than August 1, 2006.
26

27   • Set energy-efficiency goals for State agencies to reduce energy use by 10%,
28   based on the average of the last three years, by the end of Fiscal Year 2007,
29   where practical and cost effective.
30

31 Q.   **What were the findings of the Report requested by August 1, 2006?**

32 A.   The report found that energy efficiency:

1   • Reduces load, peak demand, & energy use

2   • Reduces market prices for all consumers

3   • Often is less costly and more cost-effective than supply side

4   • Is distributed (no need for transmission and distribution)

5   • Is diverse

6   • Less subject to market and fuel price volatility

7   • Less subject to security risks and interruptions

8   • Promotes environmental enhancement

9   • Provides benefits to consumers and businesses

10   • Creates jobs and improves the economy

11

12   **Q.   Do you conclude that demand side resources are an accepted and**

13   **appropriate component of Aquila's resource portfolio, consistent with the**

14   **objectives of the NARUC resolutions, the Kansas Energy Council**

15   **recommendations and the Energy Policy Act of 2005?**

16   A.   Yes.

17

18   **Cost Effectiveness**

19   **Q.   How is cost effectiveness determined?**

20   A.   A program is cost effective if the benefits from the program exceed the costs of

21   the program. There are four commonly used perspectives upon which to

22   measure these costs and benefits: 1) The Total Resource Cost perspective

23   compares the total costs of the program, including the costs of the energy

1   efficiency measures and the program administrative costs, to the total benefits of

2   the program, principally the avoided natural gas purchase costs. 2) The Utility

3   Resource Cost perspective compares just those costs incurred by the utility,

4   incentives and administrative costs, to the avoided costs. 3) The Participant

5   Cost perspective compares the costs incurred by the participant, the measure

6   costs net of any utility incentives, to the reduction in the participants' bills. 4) The

7   Rate Impact perspective compares the costs of the program, including the

8   measure costs, administrative costs and the reduction in revenues due to

9   reduced sales associated with the program to the avoided costs. Exhibit

10   _____(MED-1) is a table that illustrates these tests.

11

12   Q.   **Which test best compares the demand side programs on a consistent basis**

13   **with supply side resources?**

14   A.   The Total Resource Cost test compares demand side and supply side most

15   consistently. As an illustration, let's consider the requirements to meet a new

16   demand. That requirement would consist of the purchase of additional gas

17   supplies and potentially upgrades to the infrastructure. The costs of these

18   purchases and infrastructure upgrades would be borne by the utilities' customers

19   in their entirety through the pass-through of the purchase costs and the rate

20   recovery of the infrastructure upgrades. Similarly, the costs of energy efficiency

21   measures and the administrative costs of the programs would be borne by the

22   customers in their entirety. In the case of energy efficiency measures the costs

23   associated with program administration and utility incentives would be recovered

9

1   in rates. The remaining costs would be borne by the program participants

2   directly, through their purchase of the energy efficiency measures net of any

3   incentives provided by the program. Thus, the Total Resource Cost best

4   compares the supply side approach to the demand side approach to meeting the

5   increased energy demand. If the program passes the Total Resource Cost test,

6   then the overall costs of supplying the demand are less with the demand side

7   program than with a supply side option.

8

9 **Q. What about the rate impacts of demand side resources?**

10 A.   A program that passes the Total Resource Cost test, by definition, reduces the

11   overall costs of supplying natural gas to meet the needs of customers. It is

12   sometimes argued that a program must pass the Rate Impact test in order to be

13   considered cost effective. Let me explain why I believe that such an approach is

14   not in the customers' interest. The Rate Impact or No-Losers test has also been

15   called the "hardly anybody wins" test. A simple analysis can illustrate why.

16   Suppose a utility has a load of 100 therms, a revenue requirement of $115 and it

17   has to meet a 1 therm increase in load. It can do so either through conservation

18   or buying additional gas. A 1 therm conservation measure that costs nothing

19   would leave rates unchanged. Any conservation that costs more than nothing will

20   raise rates. A natural gas purchase that costs $1.15 per therm would also leave

21   rates unchanged. Thus, any purchase that costs less than $1.15 per therm

22   would lower rates. To adhere to the no-losers test, a utility would have to eschew

23   *zero cost* conservation to pursue all natural gas up to $1.15 per therm. Clearly

1   this outcome makes no economic sense and discourages investments in cost-

2   effective conservation.

3

4   **Proposed Programs**

5   Q.   **What programs are being proposed by Aquila?**

6   A.   Aquila is proposing a modest initiation of programs in Kansas. The programs

7   include:

8   • Space and Water Heating Equipment Rebates

9   • Low-Income Weatherization

10   Exhibit _____(MED-2) presents a description of the programs including their

11   costs, expected savings and cost effectiveness analysis.

12

13   Q.   **How did Aquila choose these programs?**

14   A.   These programs will meet the needs of a broad range of customers, capture

15   savings opportunities that would otherwise be lost if customers install standard

16   efficiency space and water heating equipment, and provide assistance to the

17   most vulnerable energy consumers. These program efforts will help to establish

18   an infrastructure for an expanded portfolio of programs by working with local

19   trade allies and delivery partners including heating contractors, builders, and

20   local agencies.

21

22   Q.   **Are these programs cost effective?**

1   A.   Yes. The programs are cost-effective from the Total Resource Cost perspective,

2   the Utility Cost perspective and the Participant perspectives.

3

4   **Cost Recovery**

5   **Q.**   **How will the DSM program costs be recovered?**

6   A.   The Company is suggesting that a DSM Tariff rider approach be used to recover

7   the costs of demand side programs.

8

9   **Q.**   **Why is a specific cost recovery mechanism necessary for demand side**

10   **resources?**

11   A.   Demand side resources are purchased in small increments, rarely large enough to

12   warrant specific rate filings. This is unlike supply side resources that are flowed

13   through to the customer at the time they are incurred. Consequently, other

14   mechanisms are necessary for the cost recovery of demand side resources. These

15   mechanisms generally fall into one of two categories. The first category is deferral

16   and amortization. Under this mechanism the costs are accumulated in a balance

17   sheet account and deferred over a period of time. The balance on the balance

18   sheet becomes part of the rate base upon which the Company earns its authorized

19   return. The balance is amortized over a specified period of time and recovered in

20   rates. The asset that supports the balance sheet entry is not, however, tangible. It

21   is a regulatory asset. The physical asset that was purchased through the demand

22   side programs resides in multiple customer locations and is not "owned" by the

23   Company. Consequently, a second approach has been adopted in several

1		jurisdictions. This approach matches a surcharge or tariff rider with the annual
2		expenditures. Expenditures accumulate in a balancing account and are offset by
3		the collections from the tariff rider. The level of the funding mechanism is adjusted
4		on a regular basis to maintain a balance in the balancing account that is near zero.
5		
6	Q.	**Please explain.**
7	A.	The DSM Tariff Rider approach would recover the DSM program costs through a
8		line item charge. For energy efficiency the Tariff Rider is set at a particular dollar
9		level determined by the expected cost of the DSM programs identified for the
10		year following the institution of the Tariff Rider.
11		
12	Q.	**At what level are you proposing to set the Tariff Rider?**
13	A.	The total of the first year of energy efficiency expenditures to fully implement the
14		programs is $371,450 ramping up to $679,500 in the third-year at full
15		implementation. The Company proposes that the initial Tariff Rider be set
16		at approximately $500,000 for energy efficiency programs including low income
17		weatherization to recognize that there is a ramp up period during the first year of
18		implementation. Setting the level somewhat higher than the first year expected
19		costs will allow the surcharge rate to remain unchanged in the second year. This
20		surcharge would be approximately $0.0071/Therm or 0.6% of the current natural
21		gas price. For an average residential customer, the surcharge would be
22		approximately $0.44 per month or less than $5.25 per year.
23		

1   Q.   **How would the funds collected by the Tariff Rider be accounted for?**

2   A.   The funds collected would be accounted for in a balancing account. This would

3   assure that any amounts not spent in a given year would carry forward to the

4   following year. Similarly, if the amounts spent exceed the amounts collected for

5   energy efficiency in a given year the deficit would be recovered in the following

6   year. The Company would report the level of the balancing account to the

7   Commission annually. Adjustments to the Tariff Rider will be proposed in order to

8   closely match the actual Tariff Rider collections with the expected DSM

9   expenditures.

10

11 Q.   **Does this conclude your direct testimony?**

12 A.   Yes.

VERIFICATION

STATE OF ___*Missouri*___)
)ss:
COUNTY OF ___*Jackson*___)

Matthew E. Daunis, being first duly sworn, deposes and says that he is Matthew E. Daunis, referred to in the foregoing document entitled "Direct Testimony of Matthew E. Daunis" before the State Corporation Commission of the State of Kansas and the statements therein were prepared by him or under his direction and are true and correct to the best of his information, knowledge and belief.

_____
Matthew E. Daunis

SUBSCRIBED AND SWORN to before me this __17th__ day of __October__ , 2006.

_____
                                                Notary Public

My Appointment Expires:

Perspective	Benefits	Costs
TRC	Present Value of Avoided Costs	Initial Program Administrative and Marketing Cost + Participant Cost
Utility	Present Value of Avoided Costs	Program Administrative and Marketing Cost
Participant	Present Value of Bill Savings	Participant Share of Measure Cost
Rate Impact	Present Value of Avoided Costs	Program Administrative and Marketing Cost + Present Value of Lost Revenue

Aquila - Kansas Energy Efficiency Initiatives

Space and Water Heating Equipment Replacement

Project Description

This program will encourage the adoption of high-efficiency space and water heating equipment. All residential customers in Aquila's Kansas service area would be eligible for the program.

The following table shows the proposed measures that would be eligible for rebates and the proposed rebate levels. Rebates are designed to cover one-half to two-thirds of the incremental measure cost, or the cost premium for a high-efficiency technology over standard efficiency options.

Table 1. Eligible Measures

Measure Description	Rebate Level
Furnace with an Annual Fuel Utilization Efficiency (AFUE) of 92% to 93.9%	$225
Furnaces with an AFUE of 94% to 95.9%	$300
Furnace with AFUE equal to or greater than 96%	$375
Storage water heaters with EF=0.62	$40
Tankless water heaters	$100

Program Delivery and Promotion Activities

In order to meet participation goals, Aquila will conduct targeted promotional activities with customers, heating contractors, and retailers. Aquila will directly market the program to their residential customers through bill inserts, the company Web site, and other mass media outlets as appropriate (i.e., newspaper or radio advertising). Aquila will also make marketing materials and funding available for cooperative advertising through heating and plumbing contractors.

An portion of the budget has been reserved to address the particular problem of increasing participation in rental markets, where landlords often are unwilling to invest in high-efficiency equipment from which they receive little or no benefit. To deal with this problem, the program may provide an additional incentive to the owners of rental property.

Measures

A qualifying furnace is any residential furnace with an AFUE of 92% or higher. This is significantly higher than the current 78% AFUE federal minimum efficiency standard for gas furnaces.

The program will also promote high-efficiency water heaters, including storage water heaters with an EF of 0.62 or higher compared to minimum standards of 0.59 and tankless water heaters (which typically have EF ratings of 0.85 or more).

1

Target Market

The target market for the program is residential customers with gas space or water heating – in particular those customers in the process of replacing existing equipment or installing new equipment. As a special emphasis, the program will seek to achieve a higher rate of participation by owners of rental units. This may be done through targeted promotions to property owners, recognition of participating landlords or short-term bonus incentive offerings.

Participation

Participation goals for the program are shown in Table 2. The program goals begin modestly and ramp up to full implementation levels by Year 3.

Table 2. Annual Participation

Year	Participation
2007	1,000
2008	1,500
2009	2,000
2010	2,000
2011	2,000

Each participant will install different measures. The expected measure penetration rates (the percent of total participants installing a particular measure) is shown in Table 3.

Table 3. Measure Penetration Rates

Measure Description	Percent of Participants Installing
Furnace with an Annual Fuel Utilization Efficiency (AFUE) of 92% to 93.9%	80%
Furnaces with an AFUE of 94% to 95.9%	5%
Furnace with AFUE equal to or greater than 96%	3%
Storage water heaters with EF=0.62	10%
Tankless water heaters	2%

Program Budget

The proposed first year budget for the program is $265,250 and is comprised of the various components listed in Table 4. The annual budget for years 2-5 are shown in Table 5.

2

Table 4. Program Budget – Year 1 (2007)

Category	Amount
Incentives	$212,250
Program Administration	$20,000
Marketing & Communications	$10,000
Evaluation	$8,000
Trade Ally Education & Outreach	$10,000
Total	*$260,250*

Table 5. Program Budget – Years 2-5

Year	Amount
Year 2 (2008)	$380,375
Year 3 (2009)	$496,500
Year 4 (2010)	$496,500
Year 5 (2011)	$496,500

Program Impacts

Program impacts, based on the projected measure installations are shown in Table 6.

Table 6. Program Impacts

Year	Incremental Annual Impact (MCF)	Cumulative Annual Impact (MCF)
Year 1 (2007)	5,457	5,457
Year 2 (2008)	8,186	13,643
Year 3 (2009)	10,914	24,557
Year 4 (2010)	10,914	35,471
Year 5 (2011)	10,914	46,385

Program Evaluation Activities

Impact Evaluation. Aquila will assess the program impacts using engineering estimates and data collected through program tracking efforts. Baseline usage characteristics will be determined through surveying a sample of program participants. The program participant survey will be designed to collect the following information:

- Age and efficiency of existing equipment
- Size and type of dwelling
- Attitudes and awareness of efficiency options and behaviors
- Number and age of occupants
- Other information impacting energy use characteristics of participants

3

Validation of engineering estimates will be done primarily through a pre-and post- billing analysis of a sample of program participants. This will involve a comparison of weather-normalized consumption before and after installation of the energy efficiency equipment. These energy saving estimates will be compared with the engineering estimates, and the engineering estimates will be adjusted as necessary.

Process Evaluation. From a process perspective, the following areas will be assessed to support continuous improvement in program implementation:

- Effectiveness of the program in increasing the market share of high efficiency furnaces

- Efficacy of program implementation procedures and practices

- Trade ally interest and participation in the program

- Participant satisfaction with the program, trade ally interaction, and equipment performance

- Diversity within the participant population, i.e., are multi-family and manufactured housing residences participating in the program?

The primary data collection activities planned for the process assessment of the program include:

- Surveys of program participants

- Interviews with program stakeholders and trade allies

Cost-Effectiveness Results

Table 7 presents the results from the cost-effectiveness analysis based on five years of program activity. The costs represent the present value of the future stream of administrative and incentive costs and are discounted at the appropriate rates for the different tests. Benefits include the avoided cost of supplying or purchasing natural gas. Costs through 2011 are based on the NYMEX future prices at Henry Hub. Gas costs beyond 2011 are based on the Annual Energy Outlook 2006 prepared by the Departmant of Energy – Energy Information Administration.

Cost-effectiveness is measured from the various perspectives

1. *Total Resource Cost Test (TRC)*: This test examines the Program benefits and costs from Aquila's and Aquila's customer perspectives. On the benefit side, it includes reduction in the cost to supply gas to meet customers' demand. On the cost side, it includes the full cost of energy efficient technologies and any programmatic costs incurred by the utility.

2. *Utility Cost Test (UCT)*: From the company's perspective, the benefits are in the form of reduced natural gas supply costs. The costs include any program implementation costs, measure costs or incentives incurred by Aquila.

3. *Ratepayer Impact Test (RIM)*: This test includes all Aquila program costs considered in the UCT, as well as lost revenues. On the benefits side, this test includes all avoided gas supply costs.

4. *Participant Cost Test (PCT)*: This test examines the benefits from the Program participant perspective. Benefits include the participant utility bill reductions. Costs include any measure costs incurred by participants, net of any rebates received from the utility.

The results of the cost-effectiveness analysis are presented in multiple ways, including:

Net Present Value (NPV) – The difference between the discounted program benefits and discounted program costs. A net present value greater than zero would indicate benefits of the program exceed costs.

Benefit/Cost (B/C) Ratio – The ratio of program benefits to program costs. The benefits and costs are determined over the life of the program impact and discounted to reflect the time value of money. A B/C ratio greater than 1.0 indicates benefits of the program exceed costs.

Levelized Cost/MCF – Cost of achieving each MCF of savings levelized over time. The levelized cost/MCF can be compared to the cost of obtaining other resources to assess the cost-effectiveness of an efficiency investment.

Table 7. Space and Water Heating Equipment Replacement Cost-Effectiveness Results

Perspective	Total Discounted Costs ($)	Total Discounted Benefits ($)	Net Present Value ($)	Benefit/Cost Ratio	Levelized Cost/ MCF
Total Resource Cost (TRC)	$3,213,689	$4,331,844	$1,118,155	1.35	$5.92
Utility (UCT)	$1,790,310	$3,394,243	$1,603,933	1.90	$4.35
Ratepayer (RIM)	$5,355,291	$3,394,243	($1,961,048)	0.63	
Participant Cost (PCT)	$1,071,152	$3,153,025	$2,081,873	2.94	

5

Low-Income Weatherization

Program Description

The Kansas Housing Resources Corporation (KHRC) operates the federal weatherization program in cooperation with nine local agencies (sub-grantees). With a total budget of $3.4 million in 2006 from the Department of Energy, Low-Income Heating Assistance Program and other sources, KHRC plans to weatherize over 1,200 homes with average spending of $2,780. Aquila proposes to provide funding to supplement the KHRC budget. This funding will allow the local agencies to serve additional households and to provide additional services within the households currently served.

The Kansas program provides weatherization services and materials including: weatherization needs assessments; caulking; installation of insulation; storm windows; and modifications, repairs, or replacements of space and water heating systems.

The funding provided by Aquila may be used in a manner consistent with the Department of Energy's federal Weatherization Assistance Program (WAP)[1]. Aquila would encourage the installation of the most efficient equipment that is cost-effective and available. In addition, Aquila funding may be used for reasonable administrative expenses and for limited general repairs in support of successful application of efficiency measures. Aquila funding would be allocated to the sub-grantee agencies in proportion to the number of Aquila customers that each serves.

Target Market

The program would be targeted to Kansas households that receive natural gas service from Aquila and that meet the federal income guidelines for weatherization services. Households that have incomes less than 150% of the federal poverty level or 60% of the state median income, whichever is greater, would be eligible.

Participation and Program Budget

The program would initially provide funding to support weatherization of 40 homes, increasing to 60 homes per year in third program year. Table 8 shows the proposed annual budget for the program based on projected average spending per home and target participation levels.

---

[1]   U.S. Department of Energy - Weatherization Assistance Program for Low-Income Persons - Title 10, Part 440, Final Rule - Revised as of December 8, 2000.

Table 8. Annual Program Budget

Year	Number of Homes Served	Cost per Home[2]	Annual Budget
Year 1 (2007)	40	$2,780	$111,200
Year 2 (2008)	50	$2,900	$145,000
Year 3 (2009)	60	$3,050	$183,000
Year 4 (2010)	60	$3,200	$192,000
Year 5 (2011)	60	$3,360	$201,600

Program Impacts

The projected program impacts are shown in Table 9. The per household savings estimate is drawn from a meta-evaluation of the National Weatherization Assistance Program that draws from state evaluations conducted between 1993 and 2005. This is the per household savings estimate used in the development of the State of Kansas Weatherization Plan for 2006.

Table 9. Program Impacts

Year	Incremental Annual Impact (MCF)	Cumulative Annual Impact (MCF)
Year 1 (2007)	1,220	1,220
Year 2 (2008)	1,525	2,745
Year 3 (2009)	1,830	4,575
Year 4 (2010)	1,830	6,405
Year 5 (2011)	1,830	8,235

Program Cost-Effectiveness

While many states do not require benefit-cost analysis of low-income programs, Aquila believes that they can be implemented cost-effectively.

Table 10 presents the results from the cost-effectiveness analysis based on five years of program activity. The costs represent the present value of the future stream of administrative and incentive costs and are discounted at the appropriate rates for the different tests. Benefits include the avoided cost of supplying or purchasing natural gas. Costs through 2011 are based on the NYMEX future prices at Henry Hub. Gas costs beyond 2011 are based on the Annual Energy Outlook 2006 prepared by the Department of Energy – Energy Information Administration.

Cost-effectiveness is measured from the various perspectives

---

[2] Based on historical increases in spending per home allowed by DOE.

1. *Total Resource Cost Test (TRC)*: This test examines the Program benefits and costs from Aquila's and Aquila's customer perspectives. On the benefit side, it includes reduction in the cost to supply gas to meet customers' demand. On the cost side, it includes the full cost of energy efficient technologies and any programmatic costs incurred by the utility.

2. *Utility Cost Test (UCT)*: From the company's perspective, the benefits are in the form of reduced natural gas supply costs. The costs include any program implementation costs, measure costs or incentives incurred by Aquila.

3. *Ratepayer Impact Test (RIM)*: This test includes all Aquila program costs considered in the UCT, as well as lost revenues. On the benefits side, this test includes all avoided gas supply costs.

4. *Participant Cost Test (PCT)*: This test examines the benefits from the Program participant perspective. Benefits include the participant utility bill reductions. Costs include any measure costs incurred by participants, net of any rebates received from the utility. In this case, as with most the low-income programs, participants incur no measure costs, and did not receive any rebates, so a benefit/cost ratio cannot be calculated.

This results of the cost-effectiveness analysis is presented in multiple ways, including:

Net Present Value (NPV) – The difference between the discounted program benefits and discounted program costs. A net present value greater than zero would indicate benefits of the program exceed costs.

Benefit/Cost (B/C) Ratio – The ratio of program benefits to program costs. The benefits and costs are determined over the life of the program impact and discounted to reflect the time value of money. A B/C ratio greater than 1.0 indicates benefits of the program exceed costs.

Levelized Cost/MCF – Cost of achieving each MCF of savings levelized over time. The levelized cost/MCF can be compared to the cost of obtaining other resources to assess the cost-effectiveness of an efficiency investment.

**Table 10. Low-Income Weatherization
Cost-Effectiveness Results**

Perspective	Total Discounted Costs ($)	Total Discounted Benefits ($)	Net Present Value ($)	Benefit/Cost Ratio	Levelized Cost/ MCF
Total Resource Cost (TRC)	$768,562	$961,346	$192,784	1.25	$6.32
Utility (UCT)	$700,128	$714,368	$14,240	1.02	$8.00
Ratepayer (RIM)	$1,345,664	$714,368	($631,296)	0.53	
Participant Cost (PCT)	$0	$643,506	$643,506		