ATMOS energy

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PUBLIC SERVICE COMMISSION

November 18, 2011

Jeff DeRouen
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, Kentucky 40601

RE: Case No. 2011-00395; Demand-Side Management Program

Dear Mr. DeRouen,

Atmos Energy Corporation (Company) herewith submits an original and six copies of the Company's responses to the Commission Staff's first set of informational requests per the above referenced case.

Please feel free to contact me at 270.685.8024 if you have any questions and/or need any additional information.

Sincerely,

Mark A. Martin
Vice President, Rates & Regulatory Affairs

Enclosures

cc: Randy Hutchinson
Dennis Howard

Atmos Energy Corporation
3275 Highland Pointe Drive, Owensboro, KY 42303-2114
P 270-685-8000 F 270-685-8052 atmosenergy.com

Atmos Energy Corporation
Kentucky

Case No. 2011-00395

RESPONSES TO COMMISSION STAFF'S FIRST DATA REQUEST

VERIFICATION

I, Mark A. Martin, being duly sworn under oath, state that I am Vice President of Rates and Regulatory Affairs for Atmos Energy Corporation, Kentucky/Midstates Division, and that the statements contained in the following Responses are true and accurate to the best of my knowledge, information and belief formed after a reasonable inquiry.

Mark A. Martin

Mark A. Martin

CERTIFICATE OF SERVICE

I hereby certify that on the 18 day of November, 2011, the original of the Company's attached Responses, together with seven (7) copies were filed with the Kentucky Public Service Commission, 211 Sower Blvd, P.O. Box 615, Frankfort, Kentucky 40206 and a copy was also served on Dennis Howard, Office of the Attorney General, 1024 Capital Center Drive, Suite 200, Frankfort, Kentucky 40601.

Mark R. Hutchinson

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 1
Witness: Mark A. Martin

REQUEST:

The Commission's final Order in Case No. 2010-00305, finding paragraph 4, required Atmos to file certain information with its next Demand-Side Management ("DSM") case.[1] Specifically, that Order required Atmos to file: 1) The number of households provided weatherization assistance from $1 to $1,500 and $1,500 to $2,500; 2) The number of households that received $3,000 in assistance from September 2, 2009 through the date of that Order; and 3) The number of households that were eligible for $3,000 from the date of that Order to the date of the next application. Explain where this information is included in Atmos's Application. If this information is not included as ordered by the Commission, explain why and provide it.

RESPONSE:

Atmos inadvertently failed to include this information in our application. It was an unintentional oversight for which we apologize. The number of households that received weatherization assistance of $1 to $1,500 was 108; 62 households received such assistance between $1,500 and $2,500; and, 36 households received $3,000. There were also 54 households that received $2,500 to $3,000. No households were eligible for $3,000 once the order was issued since the limit was reduced to $2,500.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 2
Witness: Mark A. Martin

REQUEST:

In paragraph 8, page 2, of Atmos's Application, it states that the cost of weatherization has continued to increase since the last renewal of its program. Atmos included the same statement in its last DSM Application in Case No. 2008-00499.[2]

a. Explain the individual components provided to weatherization program participants as part of the weatherization process.

b. Provide average weatherization costs per household, broken down by individual components of the weatherization process identified above, from the inception of the program through September 29, 2011.

c. Provide any other support and/or calculations available which justify raising the average funding available per qualifying low-income household from the current $2,500 to $3,000.

RESPONSE:

a. Atmos Energy serves as the funding partner, with the actual processing and administration of the program being performed by the various community action agencies serving our service territory. Except for the information contained in the invoices for reimbursement from the agencies administering the program, we are not privy to the actual protocols or processes used by the agencies, including the individual components provided to program participants. According to the U.S. Department of Energy's website an applicant contacts the administering agency; an application is submitted; an eligibility determination is made; a professional energy consultation determines the most cost effective energy efficiency measures (insulation, duct sealing, appliance tune-up/replacement, weather stripping, window treatments, etc.); and, finally the workers show up to complete the most cost effective energy efficiency measures. Atmos is then invoiced by the agency for reimbursement.

b. Average weatherization costs per home since the program inception in January 2000 through September 2011 is $1,515.07. The average since September 2009 through September 2011 is $1,919.06. These averages include the period when households were eligible for $3,000. The data needed to break down by the components is neither maintained by Atmos nor readily accessible to Atmos.

c. Aside from the nearly 27% increase in the average invoice cost during the last two years as compared to the average over an eleven year period, ARRA funding recognized the need for higher limits per home so that the most cost effective measures could be installed. The limit per home under ARRA is $6,500. Actual invoices since 2009 indicate a significant increase in costs over $2,500 or even $3,000. Furthermore, weatherization programs in other jurisdictions in which Atmos operates either do not have a specified limit or it is equal to or greater than $3,000 per home. Atmos anticipates that increases in the cost of weatherization will continue in the future.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 3
Witness: Mark A. Martin

REQUEST:

Atmos's proposal to increase the average funding per qualified low-income household from $2,500 to $3,000 while increasing the annual cap from $350,000 to $375,000 will, on average, reduce the annual maximum number of weatherized homes from 140 to 125. Explain why Atmos is proposing a decrease in the number of weatherization participants, considering the fact that Tab 2, page 9 of 27, shows that 136 homes participated in the weatherization program in 2010.

RESPONSE:

Atmos apologizes for any confusion as it was not the Company's intent to decrease the number of weatherization participants. The Company has averaged 119 homes per year during the existence of its weatherization program with a high of 156 homes in 2001 and a low of 73 homes in 2008. The Company appreciates the Staff making us aware of that particular deficiency within our filing. Since our recent history indicates that it is highly unlikely that each household would receive the maximum of $3,000 we are confident that we could serve 140 households with the proposed overall funding cap of $375,000. If the proposed cap is divided by 140 households, then the resultant $2,679 should be adequate based on our recent history.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 4
Witness: Mark A. Martin

REQUEST:

Atmos is proposing to tier residential appliance rebates so that higher efficiency appliances receive higher rebates. Reconcile this proposal with Atmos's statement in Case No. 2008-00499 that indexing the level of benefits to the size of the unit installed would give customers an incentive to buy larger furnaces or other appliances that they need and thereby consume more energy than necessary.[3] Will size be a component of the tiering, or efficiency only?

RESPONSE:

The size of the unit will not be a component of the tiering, only energy efficiency ratings (AFUE or EF). The more efficient a properly sized appliance, the less energy is used. In the 2008 case the issue was about offering higher incentives based on unit size. Improperly sized appliances could not only lead to greater energy consumption then needed, but could actually lead to reduced energy efficiency and comfort. According to the U.S. Environmental Protection Agency's EnergyStar website improperly sized/installed units can "cause an average of a 30 percent loss in (the) new systems' energy efficiency."

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 5
Witness: Mark A. Martin

REQUEST:

Provide the expected expiration date of American Recovery and Reinvestment Act funding for weatherization.

RESPONSE:

The Company believes that the expected expiration date of the American Recovery and Reinvestment Act funding for weatherization is on or around March 31, 2012.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 6
Witness: Mark A. Martin

REQUEST:

Refer to the Application, Tab 1, page 4, where Atmos states its proposal to continue to administer the education program with company personnel. Explain whether employee costs or the costs associated with the positions were included in Atmos's most recent test year, whether these employee costs are included in the DSM Cost Recovery-Current calculation, and if these costs are related to employees hired since its last rate case or whether they are existing employee costs.

RESPONSE:

The Company administers its education component with existing company personnel. The Company has not hired any additional staff related to its DSM program since the last rate case. See Tab 2 page 4 Program Overhead. The $12,900 represents the employee costs for the program prorated between the residential and commercial class. These costs have not changed since our last DSM filing. The Company believes that those employees who assist in administering the program were included in the Company's most recent test year; however, the Company's most recent rate case was a "black box" settlement.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 7
Witness: Mark A. Martin

REQUEST:

Explain why Atmos decided to expand its education program to all grade levels as well as adults, including any expected increases in costs and benefits.

RESPONSE:

The Company decided to propose the expansion of its education program to all grade levels as well as adults based on feedback, in general, from schools as well as local help agencies. Schools in our footprint have been teaching students about energy and energy efficiency and the Company wanted to be able to spread the word to any interested grade levels. While meeting with local help agencies to see how the Company could provide greater assistance, education was one of those items listed. The Company believes that through its education component, it can help educate more people, including direct customers, on how to be more energy efficient. Although we are not requesting any additional funding beyond the $20,000 approved in the 2008-00499 case, we do believe that benefits will be greater since we will be reaching out to a larger audience.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 8
Witness: Mark A. Martin

REQUEST:

Refer to the Application, Tab 1 at page 9, explanation of the High Efficiency Water Heater Program. Explain the increase in the Tankless Model rebate, from $300 for a 99 percent efficient model, to $400 for a model with efficiency greater than 82 percent.

RESPONSE:

The $300 rebate is for a tank water heater with an energy factor (EF) of .67 or greater. The $400 rebate is for a tankless water heater with an EF of .82 or greater. The tab and page reference provided in this data request indicate that the $300 rebate is for a tank water heater with an EF of .67 or greater and the $400 rebate is for a tankless water heater with an EF of .82 or greater. It appears the 99% was a typo in our 2008 DSM application (Tab 1, page 8). The $100 difference provides a greater incentive for the tankless water heater since the gas savings are greater and the incremental cost for tankless water heaters are also greater.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 9
Witness: Mark A. Martin

REQUEST:

Refer to the Application, Tab 1 at page 11, explanation of the Commercial Cooking program. Explain why the rebate for each equipment type is proposed to be $500 when there is such a variation in energy savings among the equipment types, as shown on page 3 of 27 of Tab 2.

RESPONSE:

According to the Consortium for Energy Efficiency's (CEE) "Commercial Kitchens Program Summary – May 2011" rebates for natural gas kitchen appliance equipment ranged anywhere from $50 to $3,000. The document provides incentive information for nearly 150 kitchen equipment energy efficiency programs throughout the United States. For griddles the range was $50 to $2,100 with $500 being the most common. The range for ovens was $400 to $3,000 and the most common was $1,000. Fryers ranged between $225 and $2,500 with the most common being $500. Finally, for steamers the range was $400 to $2,000 with the most common being $750 followed closely with a $500 incentive. In short, based on what appears to be the best practices in the industry for this type of program, a standard $500 rebate for each appliance is being proposed.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 10
Witness: Mark A. Martin

REQUEST:

Explain why Atmos decided to expand its DSM program offerings to commercial customers.

RESPONSE:

The Company decided to propose the expansion of rebates to our commercial class for a couple of reasons. The first reason is that the Company has commercial customers that are very similar to residential customers in terms of usage volumes and we wanted those customers to be able to have the same opportunity to participate. It appears that a tremendous amount of savings could be generated through commercial cooking equipment (see Tab 2, page 3).

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 11
Witness: Mark A. Martin

REQUEST:

Explain any DSM programs considered by Atmos and its collaborative that were not chosen for inclusion in Atmos's program.

RESPONSE:

The DSM program modifications the Company proposed to the collaborative for their consideration were all approved. The collaborative did not reject any of Atmos' proposed modifications. The Company is unaware of any other programs that were considered by the collaborative.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 12
Witness: Mark A. Martin

REQUEST:

Tab 2, page 8 of 27, shows estimated cost of furnaces, boilers, water heaters and thermostats, but does not include costs for commercial gas cooking equipment; the information provided appears to be incremental costs only. Provide estimated product costs for inefficient and high efficiency equipment for each commercial cooking equipment type for which a rebate is proposed.

RESPONSE:

Atmos has made a diligent search to locate a reliable source for the cost of standard (inefficient) and high efficiency commercial kitchen equipment. We contacted Cadmus and Frontier (two leading consultants in the energy efficiency field) and researched various internet resources but still did not find the information. Presumably the primary purpose of identifying these costs is to determine the incremental cost of going to higher efficiency equipment. It is the incremental cost that drives the calculations of cost effectiveness in the California tests. Since the EnergyStar source provided the incremental cost for the equipment, the needed input was provided for the cost analysis. It is industry practice to cite EnergyStar source data when available.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 13
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, page 1 of 27. All of the California Test Benefit/Cost Ratios have increased since the same information was filed in Case No. 2008-00499 except for the Ratepayer Impact Test ("RIM"). In case No. 2008-00499, the RIM ratio was 2.01, while in the current case the ratio is 0.67. Explain why this measure of Atmos's DSM program cost-effectiveness has not only decreased, but is now less than 1.

RESPONSE:

The Ratepayer Impact Measure (RIM) test examines the potential impact the energy efficiency program may have on overall rates. Basically, program benefits (avoided gas costs) are compared with costs (program and loss revenues). When the actual measure's life was used (in this application) instead of the fixed 10 year life (in 2008 filing), this had a substantial impact on the test results. Furthermore, the program costs in the 2008 application used a one year period and should have used the 10 year period used in that application. Finally, a higher discount rate in this filing also lowered the cost effectiveness of the test results. These, factors caused the RIM test results to fall to 0.67. It should be noted that many, if not most, energy efficiency programs fail to pass the RIM test.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 14
Witness: Mark A. Martin

REQUEST:

Explain whether Atmos performed California Tests on the individual components of its DSM program. If so, provide the results. If not, explain why not.

RESPONSE:

The California Tests were not performed on the individual components of the DSM program. Atmos Energy believes that the total portfolio should be evaluated. Certain components would not pass the Total Resource Cost (TRC) test. Weatherization and public education almost never pass these tests. However, these programs are essential to serving persons with the greatest need and spreading the word to as many persons as possible about the benefits of conserving energy. In some jurisdictions weatherization is actually excluded from the analysis (Iowa) because helping persons with the greatest need and the least resources serves a greater public purpose. Education programs assists with market transformation but is extremely difficult to quantify in terms of energy savings.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 15
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, page 2 of 27. Explain the basis for the estimates of residential and commercial participants in the various programs, and provide the number of participants in Atmos's existing programs from the time of the individual program's inceptions.

RESPONSE:

Participant estimates are our best approximation at this time of the number of customers that may partake in the rebate offering. Since the DSM charge is trued up annually we tried to estimate on the high side. We felt this would provide the PSC and any intervener a clearer picture of the rebate program's potential. Naturally past experience with the weatherization and residential rebate programs assisted with the estimation. Since January 2000 through September 2011, 1,414 homes have been weatherized. The following provides the number of participants for the rebate programs between December 2009 and September 2011.

KY Appliance Rebates December 2009 thru September 2011

Month	Boilers	Furnaces	Tank W/H	Tankless W/H	Monthly Totals
Dec-09		18		2	20
Jan-10	1	21	3	1	26
Feb-10		85	6	2	93
Mar-10	1	28	13	7	49
Apr-10		60	16	16	92
May-10		46	21	17	84
Jun-10		68	31	16	115
Jul-10		84	22	14	120
Aug-10		57	25	20	102
Sep-10	1	55	28	20	104
Oct-10		55	18	6	79
Nov-10		46	14	7	67
Dec-10		108	18	14	140
Jan-11	2	65	20	25	112
Feb-11		72	22	33	127
Mar-11		53	18	19	90
Apr-11		32	30	10	72
May-11		48	18	25	91
Jun-11		28	29	12	69
Jul-11		40	12	18	70
Aug-11		30	9	11	50
Sep-11		12	15	6	33
Totals	**5**	**1,111**	**388**	**301**	**1,805**
22 Month Average	0.2	50.5	17.6	13.7	82.0
%age of Total	0.28%	61.55%	21.50%	16.68%	100.00%

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 16
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, page 3 of 27. Provide the source of the deemed savings and explain whether the deemed savings shown are over the life of each measure or if this is annual savings.

RESPONSE:

The deemed savings are annual. The deemed savings for furnaces, water heaters, boilers and thermostats were calculated using industry accepted algorithms adjusted for Kentucky. Deemed savings for the commercial kitchen equipment were derived from "EnergyStar's Commercial Kitchen Equipment Savings Calculator Updated January 2011." Weatherization savings were calculated using U.S. Department of Energy information. Attached is the workbook that provides this information.

		Kentucky	
Measure	Efficiency Level	Savings (CCF)	Savings (Therm)
Forced Air Furnace	92% AFUE	126.6	130.3
Forced Air Furnace	94% AFUE	141.6	145.8
Forced Air Furnace	96% AFUE	156.0	160.6
Boiler	85% AFUE	49.0	50.4
Boiler	90% AFUE	92.5	95.1
Tank Water Heater	0.62 EF or greater	8.7	8.9
Tank Water Heater	0.67 EF or greater	23.4	24.1
Tankless Water Heater	0.82 - .90 EF	56.9	58.6
Tankless Water Heater	0.91 EF or greater	71.7	73.8
Programmable Thermostat	Manual	26.7	27.4
Condensing Water Heater	0.90 EF or greater	70.2	72.3
Weatherization	30% Savings	252.9	275.7
Fryer	EnergyStar	490.8	505.0
Griddle	EnergyStar	143.8	148.0
Oven	EnergyStar	297.4	306.0
Steamer	EnergyStar	1,036.0	1,066.0

Furnace

	Value		Description
Δtherms	=	FLHHEAT * BtuH * (1- AFUEBASE/AFUEEFF) * 10^-5	
92% AFUE	130.3	Therms	
94% AFUE	145.8	Therms	
96% AFUE	160.6	Therms	

Sources

Ohio TRM - http://drafttrm.ohiotrm.org/Condensing+Furnaces-Residential+%28Time+of+Sale%29

FLHHEAT	951	KY Atmos - Equivalent Full Load Heating Hours
FLHheat - adjusted	1,469	Adjustment - Full load hours in Albany, NY
HDD - Adjusted	6,608	Adjustment - HDD in Albany, NY with 65 deg base
HDD KY	4,280	HDD in Atmos KY Territory with 65 deg base
BtuH	90,000	Size of equipment in Btuh
AFUEBASE	0.78	Annual Fuel Utilization Efficiency % for the baseline equipment
AFUEEFF		
92% AFUE	0.92	Annual Fuel Utilization Efficiency % for the efficient equipment
94% AFUE	0.94	Annual Fuel Utilization Efficiency % for the efficient equipment
96% AFUE	0.96	Annual Fuel Utilization Efficiency % for the efficient equipment

NY - TRM - New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs, Oct 15th, 2010
ASHRAE Fundamentals 2009 Design Characteristics
NOAA Monthly Station Normals per Atmos KY WNA Model for FY 2011

Boiler

	Value	Description
Δtherms	=	FLHHEAT * BtuH * (1- AFUEBASE/AFUEEFF) * 10^-5
85% AFUE	50.4	Therms
90% AFUE	95.1	Therms

FLHHEAT	951	KY Atmos - Equivalent Full Load Heating Hours
FLHheat - adjusted	1,469	Adjustment - Full load hours in Albany, NY
HDD - Adjusted	6,608	Adjustment - HDD in Albany, NY with 65 deg base
HDD KY	4,280	HDD in Atmos KY Territory with 65 deg base
BtuH	90,000	Size of equipment in Btuh
AFUEBASE	0.8	Annual Fuel Utilization Efficiency % for the baseline equipment
AFUEEFF		
85% AFUE	0.85	Annual Fuel Utilization Efficiency % for the efficient equipment
90% AFUE	0.9	Annual Fuel Utilization Efficiency % for the efficient equipment

Sources

Ohio TRM - http://drafttrm.ohiotrm.org/Condensing+Furnaces-Residential+%28Time+of+Sale%29

NY - TRM - New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs, Oct 15th, 2010
ASHRAE Fundamentals 2009 Design Characteristics
NOAA Monthly Station Normals per Atmos KY WNA Model for FY 2011

DOE - http://www.standardsasap.org/federal.htm

Storage Water Heater

	Value		Description	Sources
Δtherm	=		GPD X 365 X 8.3 X ΔTw / 100000 X (1/Efbase - 1/Efee)	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf
EF = 0.62		8.9	Therms	
EF = 0.67		24.1	Therms	
GPD		23	average daily water consumption (gallons/day) per person	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf
		2.45	people per home - Kentucky	http://ksdc.louisville.edu/census/2010demoprofiles/Kentucky_dp2010.pdf
ΔTw		73.7	average difference between the cold inlet temperature and the hot water delivery temperature (degF)	HOTCALC Commercial Water Heating Performance Simulation Tool, Ver 1.0
Ti		56.3	Avg. Cold Water Inlet Temperature for Louisville, KY	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf
To		130	Water heater setpoint for residential buildings	
Efbase		0.594	baseline water heater energy factor	Federal standard
Efee		0.62	efficient water heater energy factor - Storage Tank	
Efee		0.67	efficient water heater energy factor - Storage Tank	
V		40	Rated volume in gallons	
Conversion Factors		100000	conversion factor (Btu/therm)	
		365	conversion factor (days/yr)	
		8.33	conversion factor (Btu/gallon-degF)	

$$\Delta\text{therm} = units \times \frac{GPD \times 365 \times 8.3 \times \overline{\Delta T_w}}{100{,}000} \times \left[\frac{1}{EF_{base}} - \frac{1}{EF_{ee}}\right]$$

where:

ΔkW	= gross coincident demand savings
ΔkWh	= gross annual energy savings
Δtherm	= gross annual gas savings
units	= number of high efficiency water heaters installed under the program
UA_{base}	= overall heat loss coefficient of base water heater (Btu/hr-°F)
UA_{ee}	= overall heat loss coefficient of efficient water heater (Btu/hr-°F)
ΔT_s	= temperature difference between the stored hot water and the surrounding air (°F)
GPD	= average daily water consumption (gallons/day)
$\overline{\Delta T_w}$	= average difference between the cold inlet temperature and the hot water delivery temperature (°F)
EF_{base}	= baseline water heater energy factor
EF_{ee}	= efficient water heater energy factor
DF	= demand diversity factor
CF	= coincidence factor
3413	= conversion factor (Btu/kWh)
8.3	= conversion factor (Btu/gallon-°F)
100,000	= conversion factor (Btu/therm)
365	= conversion factor (days/yr)

Tankless Water Heater

	Value	Description	Sources
Δtherm	=	GPD X 365 X 8.3 X ΔTw / 100000 X (1/Efbase - 1/Efee)	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf
EF = 0.82	58.6	Therms	
EF = 0.91	73.8	Therms	

GPD	23	average daily water consumption (gallons/day) per person	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf
	2.45	people per home - Kentucky	http://ksdc.louisville.edu/census/2010demoprofiles/Kentucky_dp2010.pdf
		average difference between the cold inlet temperature and the	
ΔTw	73.7	hot water delivery temperature (degF)	HOTCALC Commercial Water Heating Performance Simulation Tool, Ver 1.0
Ti	56.3	Avg. Cold Water Inlet Temperature for Louisville, KY	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf
To	130	Water heater setpoint for residential buildings	
Efbase	0.594	baseline water heater energy factor	Federal standard - Storage tank as baseline (40 gal)
Efee	0.82	efficient water heater energy factor - Tankless	
Efee	0.91	efficient water heater energy factor - Tankless	
V	40	Rated volume in gallons	
Conversion Factors	100000	conversion factor (Btu/therm)	
	365	conversion factor (days/yr)	
	8.33	conversion factor (Btu/gallon-degF)	

$$\Delta\text{therm} = \textit{units} \times \frac{GPD \times 365 \times 8.3 \times \overline{\Delta T_w}}{100{,}000} \times \left[\frac{1}{EF_{base}} - \frac{1}{EF_{ee}}\right]$$

where:

ΔkW	= gross coincident demand savings
ΔkWh	= gross annual energy savings
Δtherm	= gross annual gas savings
units	= number of high efficiency water heaters installed under the program
UA_{base}	= overall heat loss coefficient of base water heater (Btu/hr-°F)
UA_{ee}	= overall heat loss coefficient of efficient water heater (Btu/hr-°F)
ΔT_e	= temperature difference between the stored hot water and the surrounding air (°F)
GPD	= average daily water consumption (gallons/day)
$\overline{\Delta T_w}$	= average difference between the cold inlet temperature and the hot water delivery temperature (°F)
EF_{base}	= baseline water heater energy factor
EF_{ee}	= efficient water heater energy factor
DF	= demand diversity factor
CF	= coincidence factor
3413	= conversion factor (Btu/kWh)
8.3	= conversion factor (Btu/gallon-°F)
100,000	= conversion factor (Btu/therm)
365	= conversion factor (days/yr)

Condensing Water Heater

	Value	Description	Sources
Δtherm	=	GPD X 365 X 8.3 X ΔTw / 100000 X (1/Efbase - 1/Efee)	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf
EF = 0.82	72.3	Therms	

GPD	23	average daily water consumption (gallons/day) per person	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf http://ksdc.louisville.edu/census/2010demoprofiles/Kentucky_dp2010.pdf
	2.45	people per home - Kentucky	
		average difference between the cold inlet temperature and the	
ΔTw	73.7	hot water delivery temperature (degF)	HOTCALC Commercial Water Heating Performance Simulation Tool, Ver 1.0
Ti	56.3	Avg. Cold Water Inlet Temperature for Louisville, KY	NY TRM - http://www.dps.state.ny.us/TechManualNYRevised10-15-10.pdf
To	130	Water heater setpoint for residential buildings	
Efbase	0.594	baseline water heater energy factor	Federal standard - Storage tank as baseline (40 gal)
Efee	0.9	efficient water heater energy factor - Tankless	
V	40	Rated volume in gallons	
Conversion Factors	100000	conversion factor (Btu/therm)	
	365	conversion factor (days/yr)	
	8.33	conversion factor (Btu/gallon-degF)	

$$\Delta therm = units \times \frac{GPD \times 365 \times 8.3 \times \overline{\Delta T_w}}{100{,}000} \times \left[\frac{1}{EF_{base}} - \frac{1}{EF_{ee}}\right]$$

where:

ΔkW	= gross coincident demand savings
ΔkWh	= gross annual energy savings
Δtherm	= gross annual gas savings
units	= number of high efficiency water heaters installed under the program
UA_{base}	= overall heat loss coefficient of base water heater (Btu/hr-°F)
UA_{ee}	= overall heat loss coefficient of efficient water heater (Btu/hr-°F)
ΔT_s	= temperature difference between the stored hot water and the surrounding air (°F)
GPD	= average daily water consumption (gallons/day)
$\overline{\Delta T_w}$	= average difference between the cold inlet temperature and the hot water delivery temperature (°F)
EF_{base}	= baseline water heater energy factor
EF_{ee}	= efficient water heater energy factor
DF	= demand diversity factor
CF	= coincidence factor
3413	= conversion factor (Btu/kWh)
8.3	= conversion factor (Btu/gallon-°F)
100,000	= conversion factor (Btu/therm)
365	= conversion factor (days/yr)

Programmable Thermostat

	Value		Description	Sources
Δtherms	=		FLHHEAT * BtuH * 10^-5 / AFUEBASE * SavingFactor	
Program T-Stat		27	Therms	
SavingsFactor		2.5%		Various Studies - Behavioral measure; savings can range from negative to 10% depending on sources. Assumed educational component is included and setting of daily program to occupancy schedule. Assumed 2.5% based on comprehensive study of the energy use of 299 single-family owner operated homes in Wisconsin.
FLHHEAT		951	KY Atmos - Equivalent Full Load Heating Hours	NY - TRM - New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs, Oct 15th, 2010
FLHheat - adjusted		1,469	Adjustment - Full load hours in Albany, NY	ASHRAE Fundamentals 2009 Design Characteristics
HDD - Adjusted		6,608	Adjustment - HDD in Albany, NY with 65 deg base	NOAA Monthly Station Normals per Atmos KY WNA Model for FY 2011
HDD Kentucky		4,280	HDD in Atmos KY Territory with 65 deg base	
BtuH		90,000	Size of equipment in Btuh	
AFUEBASE		0.78	Annual Fuel Utilization Efficiency % for the baseline equipment	DOE - http://www.standardsasap.org/federal.htm
AFUEEFF				
92% AFUE		0.92	Annual Fuel Utilization Efficiency % for the efficient equipment	

Annual Commercial Kitchen Equipment Usage and Savings in Therms*

Appliance	Conventional	EnergyStar	Savings	Percentage
Fryer	1,627	1,122	505	31.0%
Griddle	1,212	1,064	148	12.2%
Oven	1,052	746	306	29.1%
Steamer	2,027	961	1,066	52.6%

*Source: EnergyStar's Commercial Kitchen Equipment Savings Calculator Updated January 2011

Weatherization Savings

Annual Ccf Usage[1]	Percentage Savings[2]	Savings in Ccf
843	0.3	252.9

[1]Source: American Gas Association, Residential Natural Gas Market Survey, January 2011

[2]http://apps1.eere.energy.gov/weatherization/reducing.cfm

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 17
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, page 4 of 27.

a. Explain why Program Costs related to education ($20,000 of the $395,000 total cost) are allocated only to the G-1 Residential class and none to the G-1 Commercial class.

b. Provide a detailed breakdown of the costs attributed to Customer Awareness, Supplies, and Program Overhead for G-1 Residential and Commercial. To the extent that these costs can be broken down among programs, provide that information.

c. Refer to the $1,542,183 and $811,466 Program Benefits as calculated in Schedule C of Tab 2 for purposes of calculating the DSM Incentive Adjustment. Explain why 25 years of data is used in the calculation of Program Benefits as opposed to the 10 years referenced by Atmos on page 14 of Tab 1 and as required by Atmos's tariff.

d. Refer to the $19,875 Cumulative Prior Years Participation Lost Sales, as calculated in Schedule B of Tab 2 for purposes of calculating the DSM Lost Sales Adjustment. Provide the calculations supporting the Total Conservation in Ccf for high Efficiency Appliance Savings and Weatherization Program for 2009, 2010, and 2011.

e. Provide all calculations supporting the over-recovery of $412,362.61 used in the calculation of the DSM Balance Adjustment.

RESPONSE:

a. We believe that virtually all of the educational meetings will occur at schools and/or various civic organizations and will relate solely to residential.

b. See Response to DR 17(a) above.

c. During the preparation of the cost analysis Cadmus brought to our attention that typically the life of the equipment is used to determine benefits and not a fixed period that may or not reflect the life of the measure. With this knowledge we used the life of the particular equipment as identified in DEER (Database for Energy Efficient Resources). This provides a more accurate analysis of the data then using a fixed period of ten years. Schedule A of Tab 2 provides the life expectancy of each measure in the next to last column. We failed to update page 14 of Tab 1 and will need to revise our tariff if the proposal is approved.

d. The savings were taken from the Atmos Cares report. The Atmos Cares report uses deemed savings (see DR 16 for explanation of deemed savings). Atmos Energy's distribution charge of $0.11/Ccf was then multiplied by the Ccf savings for each year resulting in the number in Schedule C. For 2009, 19,568 Ccf saved times $0.11 distribution charge equals $2,152 in loss sales. For 2010, 121,599 Ccf saved times $0.11 distribution charge equals $13,376 in loss sales. And, for 2011 (thru April 30), 39,518 Ccf saved times $0.11 distribution charge equals $4,347 in loss sales.

e. See the attached schedule.

ATMOS ENERGY CORPORATION
Kentucky/Mid-States Division
DSM Balancing Adjustment

DSMRC = DCRC + DLSA + DIA + DBA

		(a) DSMRC Recoveries	(b) DSMRC Costs	(c) Under/(Over) DSMRC Balance	(d) Residential Sales (Mcf)	(e) Billed Rate
Previous DBA Balancing Adjustment				$(219,763.63)		
	Oct-09	($8,182.72)	$10,901.51	$2,718.79	319,594	$0.02560
	Nov-09	(17,338.97)	14,981.10	(2,357.87)	685,849	0.02528
	Dec-09	(36,943.40)	21,200.12	(15,743.28)	1,470,249	0.02513
	Jan-10	(185,966.19)	27,627.26	(158,338.93)	2,452,496	0.07583
	Feb-10	(159,623.07)	55,221.12	(104,401.95)	2,097,830	0.07609
	Mar-10	(143,111.48)	45,657.61	(97,453.87)	1,881,991	0.07604
	Apr-10	(53,010.03)	50,308.47	(2,701.56)	696,482	0.07611
	May-10	(23,452.38)	67,371.99	43,919.61	307,749	0.07621
	Jun-10	(14,919.41)	44,972.22	30,052.81	201,582	0.07401
	Jul-10	(12,337.62)	64,071.80	51,734.18	166,829	0.07395
	Aug-10	(12,190.49)	46,027.25	33,836.76	164,948	0.07391
	Sep-10	(10,818.60)	38,174.79	27,356.19	146,325	0.07394
		($677,894.36)	$486,515.24	($411,142.75)	10,591,924	

3-month Average Commercial Paper Rate at September 2010	0.2967%	$ (1,219.86)
Total DSMRC Balance		$ (412,362.61)
Annual Expected Residential Sales (Mcf)		10,591,924
DBA = DSM Balancing Adjustment		(0.0389)
DCRC = DSM Cost Recovery - Current		0.0850
DLSA = DSM Lost Sales Adjustment		0.0012
DIA = DSM Incentive Adjustment		0.0080
DSMRC Residential Rate G-1		0.0553

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 18
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, page 8 of 27. Explain the differences in cost shown for furnaces depending on contractor location, and whether program participants are required to buy furnaces from particular vendors depending on where they live.

RESPONSE:

There is no requirement for a program participant to buy equipment from particular vendors depending on where the participant lives. The Company provided a small sampling of equipment costs based on data that was available. The Company does not believe that the equipment costs listed on page 8 of Tab 2 to be exhaustive.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 19
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, page 10 of 27. Provide the 2011 "Annual Energy Outlook" from which the numbers in the Projected Gas Cost columns are derived.

RESPONSE:

Please see the attached document.

Natural Gas Supply, Disposition, and Prices, Reference case
(trillion cubic feet, unless otherwise noted)

Supply, Disposition, and Prices	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Growth Rate (2009-2035)
Natural Gas Prices																									
(2009 dollars per thousand cubic feet)																									
Average Lower 48 Wellhead Price 11/	4.09	4.15	4.16	4.24	4.31	4.33	4.37	4.43	4.59	4.76	4.9	5.07	5.27	5.43	5.54	5.67	5.73	5.77	5.81	5.9	6.01	6.12	6.24	6.42	2.10%
Delivered Prices																									0.50%
Residential	10.44	10.39	10.28	10.39	10.5	10.61	10.74	10.9	11.16	11.38	11.55	11.75	11.96	12.15	12.31	12.51	12.63	12.74	12.85	12.99	13.14	13.33	13.52	13.76	0.50%
Commercial	9.03	8.8	8.52	8.6	8.68	8.74	8.84	8.96	9.19	9.37	9.51	9.68	9.88	10.03	10.16	10.32	10.43	10.49	10.57	10.67	10.79	10.93	11.08	11.28	1.20%
Industrial 4/	4.99	5.03	5.04	5.1	5.16	5.19	5.24	5.32	5.5	5.67	5.82	5.98	6.17	6.33	6.46	6.6	6.68	6.72	6.76	6.83	6.95	7.07	7.21	7.4	1.30%
Electric Power 7/	4.76	4.75	4.71	4.79	4.83	4.87	4.92	4.99	5.13	5.28	5.41	5.57	5.74	5.91	6.02	6.16	6.24	6.3	6.36	6.45	6.55	6.66	6.79	6.97	0.30%
Transportation 12/	12.3	12.3	12.27	12.29	12.32	12.33	12.37	12.44	12.58	12.71	12.81	12.93	13.07	13.19	13.27	13.38	13.44	13.46	13.49	13.55	13.62	13.7	13.8	13.94	

http://www.eia.doe.gov/oiaf/aeo/tablebrowser/#release=AEO2011&subject=0-AEO2011&table=13-AEO2011&region=0-0&cases=ref2011-d020911a

Prices Converted to Ccf

Delivered Prices	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Residential	1.044	1.039	1.028	1.039	1.050	1.061	1.074	1.090	1.116	1.138	1.155	1.175	1.196	1.215	1.231	1.251	1.263	1.274	1.285	1.299	1.314	1.333	1.352	1.376
Commercial	0.903	0.880	0.852	0.860	0.868	0.874	0.884	0.896	0.919	0.937	0.951	0.968	0.988	1.003	1.016	1.032	1.043	1.049	1.057	1.067	1.079	1.093	1.108	1.128

2012	1.044	0.903
2013	1.039	0.880
2014	1.028	0.852
2015	1.039	0.860
2016	1.050	0.868
2017	1.061	0.874
2018	1.074	0.884
2019	1.090	0.896
2020	1.116	0.919
2021	1.138	0.937
2022	1.155	0.951
2023	1.175	0.968
2024	1.196	0.988
2025	1.215	1.003
2026	1.231	1.016
2027	1.251	1.032
2028	1.263	1.043
2029	1.274	1.049
2030	1.285	1.057
2031	1.299	1.067
2032	1.314	1.079
2033	1.333	1.093
2034	1.352	1.108
2035	1.376	1.128

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 20
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, pages 11 through 27 of 27. Explain why 25 years of data was used in performing the California Tests as opposed to the 10 years of data used in Atmos's last DSM application.

RESPONSE:

Please see response to DR 17c.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 21
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, pages 11 through 17 of 27. Explain whether Atmos performed Participant Tests for the Residential and Commercial classes separately. If so, please provide them. If not, explain why not.

RESPONSE:

Please see response to DR 14.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 22
Witness: Mark A. Martin

REQUEST:

Refer to Tab 2, page 24 of 27. Explain how the yearly revenue losses in column (2) were derived.

RESPONSE:

The conserved energy (Ccf) for each year was multiplied by the total projected gas costs for each customer class (residential and commercial) and added together. The information can be found in Tab 2 page 13, Participant Test BR in the last column.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 23
Witness: Mark A. Martin

REQUEST:

Explain whether Atmos performed separate Ratepayer Impact Measure Tests for residential and commercial customers. If so, provide them. If not, explain why not.

RESPONSE:

Please see response to DR 14.

Atmos Energy Corporation
KSPC Initial Data Request Dated October 31, 2011
Case No. 2011-00395
Question No. 24
Witness: Mark A. Martin

REQUEST:

Refer to Tab 4. The Atmos Cares monthly reports for January through August 2011 show that the Pennyrile Agency spends more than $2,500 on average funding per qualified low-income household (according to March, April and May 2011 reports). Explain why it is more costly to weatherize a low-income home on average in the Pennyrile agency area than in the other agency areas.

RESPONSE:

We do not believe that it is more costly in the Pennyrile service area than other areas. Our funds are typically not the sole funding source for a home. Atmos Energy funds are often combined with other federal, state and local funding. It may be that in the Pennyrile area they do not have the resources that other agencies have and they rely more heavily on our funding.