Preview of the Ameren Illinois Utilities Gas Portfolio

Gas Stakeholder's Meeting
January 17, 2008

Ameren
Illinois Utilities

Agenda

- **Review of Ameren Illinois gas rate case proposal**
  - Funding and savings ranges
- **Recap of December 20 meeting**
  - Additional measure screening
  - Approach to cost-effectiveness
  - Consideration of carbon
- **Measure screening update**
- **Initial portfolio structure and cost-effectiveness**
- **Discussion of program design**

Review of Ameren Illinois Utilities Gas Rate Case Proposal

- **Craig D. Nelson, VP Regulatory Affairs & Financial Services**
  - Proposal to spend up to $6.5 million per year on natural gas energy efficiency initiatives linked to Companies' request for gas decoupling
- **Phillip Q. Hanser, The Brattle Group**
  - Phased in approach in natural gas energy efficiency spending in the near term in the range of $4.0 to $6.5 million per year is reasonable
  - About 3% to 5% of energy efficiency budgets should be devoted to measurement and verification
  - Typical natural gas energy efficiency programs yield reduction in sales from 0.1% to 1.0% per year
  - Integration of both the electric and natural gas energy efficiency plans is important

Ameren Illinois Utilities Proposed Natural Gas Load Reduction and Budget Goals

	2008	2009	2010
Budget (millions)	$4.0	$5.0	$6.5
Load Reduction Goals- % of sales	0.1%	0.2%	0.3%

December 20 Recap

- **This phase of the analysis would look only at incremental gas savings and incremental costs.**
  - Gas programs need to be able to stand on their own
  - Once the program set is identified, we can explore economies of scale/scope that could result from integrated delivery
- **We have added furnaces for single family residences and boilers for multifamily and small commercial buildings.**
- **We have added $15/ton CO_2 to the gas avoided cost to reflect the value of avoided emissions at end use.**
  - No significant impact on screening results

Revised Measure Screening Results – Residential Sector

Division	Sub Division	Base Efficiency Definition		Efficient Technology	Efficient Efficiency Definition		Weighted Gas TRC
Residential	Detached	70% DSE		Increase duct sizes or add new ducts	Std. Baseline DSE (Varies by location ~80DSE)		1.39
Residential	Detached		0.25	Duct Leakage 5%		0.05	3.13
Residential	Detached	R-4		Duct Insulation R-8	R-8		0.38
Residential	Detached	Ceiling Insulation (R-7)		Ceiling Insulation (R-30)	Ceiling Insulation (R-30)		3.10
Residential	Multifamily	Ceiling Insulation (R-7)		Ceiling Insulation (R-30)	Ceiling Insulation (R-30)		0.67
Residential	Detached	Ceiling Insulation (R-11)		Ceiling Insulation (R-30)	Ceiling Insulation (R-30)		1.96
Residential	Multifamily	Ceiling Insulation (R-11)		Ceiling Insulation (R-30)	Ceiling Insulation (R-30)		0.42
Residential	Detached	Wall R-1.01 (Air Gap)		R-11 Wall Insulation	Wall R-11		2.50
Residential	Multifamily	Wall R-1.01 (Air Gap)		R-11 Wall Insulation	Wall R-11		2.01
Residential	Detached	R-0		Efficient Basement Insulation (Existing)	R-19		0.87
Residential	Detached	0.8 ACH		Infiltration = 0.35 ACH	0.35 ACH		4.92
Residential	Multifamily	0.8 ACH		Infiltration = 0.35 ACH	0.35 ACH		2.31
Residential	Detached	U-value 0.75/ SHGC 0.6		Single Pane Win. w/ Storm Win. (Existing)	U-value 0.65/ SHGC 0.6		0.08
Residential	Multifamily	U-value 0.75/ SHGC 0.6		Single Pane Win. w/ Storm Win. (Existing)	U-value 0.65/ SHGC 0.6		0.19
Residential	Detached	U-value 0.75/ SHGC 0.6		Low-E Windows (Existing)	U-value 0.35/ SHGC 0.35		0.68
Residential	Multifamily	U-value 0.75/ SHGC 0.6		Low-E Windows (Existing)	U-value 0.35/ SHGC 0.35		0.60
Residential	Detached	U-value 0.75/ SHGC 0.6		Efficient Windows (Existing)	U-Value: 0.30 / SHGC: 0.35		0.41
Residential	Multifamily	U-value 0.75/ SHGC 0.6		Efficient Windows (Existing)	U-Value: 0.30 / SHGC: 0.35		0.28
Residential	Detached	Summer shading = 0.75		Planting Trees on E & W (Existing)	Summer shading = 0.4		0.00
Residential	Multifamily	Summer shading = 0.75		Planting Trees on E & W (Existing)	Summer shading = 0.4		0.00
Residential	Detached	0.46 EF		ENERGY STAR Dishwasher (Existing)	0.58 EF		1.98
Residential	Multifamily	0.46 EF		ENERGY STAR Dishwasher (Existing)	0.58 EF		0.40
Residential	Detached	100% Faucet Use		Faucet Aerators (Existing)	20% reduction in Hot water faucet use		8.81
Residential	Multifamily	100% Faucet Use		Faucet Aerators (Existing)	20% reduction in Hot water faucet use		1.79
Residential	Detached	100% Hot water Shower Usage		Low Flow Shower Heads (Existing)	20% reduction in Hot water shower use		7.58
Residential	Detached	R-0		Hot Water Pipe Insulation (Existing)	R-3 around DHW storage (imitates R-3 around pipes)		1.89
Residential	Multifamily	R-0		Hot Water Pipe Insulation (Existing)	R-3 around DHW storage (imitates R-3 around pipes)		1.74
Residential	Detached	R-0		Hot Water Insulation (Existing)	R-4		18.44
Residential	Detached	R-4		Doors R-4 (Existing) to R-8	R-8		0.83
Residential	Detached	Ceiling Insulation (R-7)		Ceiling Insulation (R-38)	Ceiling Insulation (R-38)		2.61
Residential	Multifamily	Ceiling Insulation (R-7)		Ceiling Insulation (R-38)	Ceiling Insulation (R-38)		0.59
Residential	Detached	Ceiling Insulation (R-11)		Ceiling Insulation (R-38)	Ceiling Insulation (R-38)		1.37
Residential	Multifamily	Ceiling Insulation (R-11)		Ceiling Insulation (R-38)	Ceiling Insulation (R-38)		0.38
Residential	Detached	Baseline		Home Performance with ENERGY STAR (Existin	Energy Star		0.38
Residential	Multifamily	Baseline		Home Performance with ENERGY STAR (Existin	Energy Star		0.36
Residential	Detached	Baseline		ENERGY STAR Home (New)	Energy Star		2.17
Residential	Detached	78% Efficient Furnace		90% Efficient Furnace	Medium Efficient Furnace - Energy Star		1.56
Residential	Detached	78% Efficient Furnace		96% Efficient Furnace	Ultra Efficient Furnace - Energy Star Plus		1.52
Residential	Multifamily	Base Boiler		Efficient Boiler	Efficient Boiler		4.65
Residential	Detached	Base Water Heater		Efficient Water Heater	Efficient Water Heater		0.44

Revised Measure Screening Results – Commercial Sector

Division	Sub Division	Base Efficiency Definition	Efficient Technology	Efficient Efficiency Definition	Weighted Gas TRC
Non-Residential	Retail	Constant hot water temperature	Boiler-Reset	Hot Water Loop temperature control	0.83
Non-Residential	Office - Large	Constant hot water temperature	Boiler-Reset	Hot Water Loop temperature control	1.10
Non-Residential	Lodging	Vintage	Ceiling Insulation	Current Standard	0.11
Non-Residential	Retail	Vintage	Ceiling Insulation	Current Standard	0.27
Non-Residential	Office - Large	Vintage	Ceiling Insulation	Current Standard	0.61
Non-Residential	Food Service	Base Boiler	Efficient Boiler	Efficient Boiler	3.96
Non-Residential	Food Service	2.13+ GPM	Energy Efficient pre-rinse spray valve	1.6 GPM	15.61

- The small commercial sub-sector was modeled using a gas boiler.
- The following measures upgrades did not result in significant savings:
  - Ceiling insulation
  - Floor insulation

Measure Screening Results

- Residential single and multifamily homes
  - 21 of 40 measures have a TRC > 0.91
  - These include:
    - Increasing duct sizes, adding ducts, and infiltration reduction
    - Increasing ceiling insulation to R-30 and R-38, and wall insulation to R-11
    - Domestic hot water measures including pipe and tank wrap, faucet aerators, and low flow showerheads
    - ENERGY STAR Furnaces with AFUEs of 90% and 96%
    - ENERGY STAR Dishwashers
    - ENERGY STAR Homes
- Small commercial buildings
  - 3 of 7 measures have a TRC > 0.91
  - These include:
    - Efficient boiler installation
    - Boiler reset measures
    - Pre-rinse spray valves for food service

Measure Mapping

Program - Gas	Efficient Technology
Home Energy Performance	Ceiling Insulation (R-30) Ceiling Insulation (R-38) Faucet Aerators (Existing) Hot Water Insulation (Existing) Hot Water Pipe Insulation (Existing) Infiltration = 0.35 ACH Low Flow Shower Heads (Existing) R-11 Wall Insulation
ENERGY STAR Homes Program	ENERGY STAR Home (New)
Residential Lighting & Appliances	ENERGY STAR Dishwasher (Existing)
Residential Multifamily	Efficient Boiler Faucet Aerators (Existing) Hot Water Pipe Insulation (Existing) Infiltration = 0.35 ACH R-11 Wall Insulation
Residential New HVAC	90% Efficient Furnace 96% Efficient Furnace
C&I Prescriptive	Boiler-Reset Efficient Boiler
Commercial Spray Valve Program	Energy Efficient pre-rinse spray valve

Portfolio Objectives

- Align total portfolio with proposed annual budget and savings goals
- Allocate 6% of budget to low income programs consistent with electric plan allocation
- Align as possible with electric program structure to enable coordinated delivery

Initial Portfolio Results

OVERALL PERFORMANCE

	2008	2009	2010	unit
Gas Savings	113,477	198,583	288,489	MCF
Therm Savings	**1,170**	**2,047**	**2,973**	1000 therms
Total Cost	**$3.64**	**$4.91**	**$6.42**	Million $
Incentive Costs	$2.21	$3.10	$4.14	Million $
Non-Incentive Costs	$1.43	$1.81	$2.27	Million $
Carbon $ Value	**$93,655**	**$163,896**	**$238,098**	$
Avoided Emissions	6,244	10,926	15,873	Tonnes CO2

OVERALL TARGETS

MMCF Sales	105,221	105,371	105,633	MMCF
% of MMCF Sales Target	0.10%	0.20%	0.30%	
MCF Savings Target	105,221	210,741	316,898	MCF
Therms Savings Target	**1,085**	**2,172**	**3,266**	1000 therms
Maximum Cost	**$4.0**	**$5.0**	**$6.5**	Million $

Initial Portfolio

	Program Annual Therm Savings (x1000)			Total Incentive Costs (million $)			Total Program Costs (million $)			Gas Only TRC	2008 $ / therm
BY PROGRAM	**2008t**	**2009t**	**2010t**	**2008inc**	**2009inc**	**2010inc**	**2008prg**	**2009prg**	**2010prg**		
Home Energy Performance	130	173	260	$0.39	$0.52	$0.79	$0.19	$0.25	$0.38	2.08	4.48
ENERGY STAR Homes Program	13	15	17	$0.06	$0.07	$0.08	$0.04	$0.04	$0.05	1.20	7.78
Residential Lighting & Appliances	1	2	3	$0.00	$0.01	$0.01	$0.00	$0.00	$0.00	1.20	5.37
Residential Multifamily	299	597	896	$0.12	$0.25	$0.37	$0.04	$0.09	$0.13	3.45	0.56
Residential Low Income	50	62	80	$0.15	$0.19	$0.24	$0.09	$0.11	$0.15		4.85
Residential New HVAC	316	475	633	$0.73	$1.10	$1.46	$0.22	$0.33	$0.44	1.13	3.01
C&I Prescriptive	110	221	331	$0.04	$0.07	$0.11	$0.03	$0.05	$0.08	2.97	0.57
Commercial Spray Valve Program	251	503	754	$0.08	$0.16	$0.23	$0.02	$0.05	$0.07	9.60	0.40
Education				$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		
EM&V				$0.00	$0.00	$0.00	$0.10	$0.13	$0.18		
Information				$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		
Portfolio Administration				$0.00	$0.00	$0.00	$0.32	$0.31	$0.30		
TOTAL AmerenIL	**1,170**	**2,047**	**2,973**	**$2.21**	**$3.10**	**$4.14**	**$1.43**	**$1.81**	**$2.27**	**1.90**	**3.11**

- EM&V was set to 4% of total program costs in each year.
- Portfolio Administration was set to 10% of total program costs in 2008, decreasing to 7% and 5% in subsequent years.
- Realization rates and Net-to-Gross ratios were set at 0.95 and 0.80 respectively.

Basic Metrics

- All-in lifecycle cost per therm = 16.1 cents
  - ACEEE Midwest Gas study used benchmark cost of 16.7 cents
- Annual therms per $million = 31,000
  - Xcel = 166,000
  - NStar = 18,000
  - Major share of the difference is climate related – more savings per $ in colder climates.

	Participation Totals			
BY PROGRAM	**2008mt**	**2009mt**	**2010mt**	**Total #**
Home Energy Performance	473	630	945	Single Family Homes
ENERGY STAR Homes Program	126	147	168	ENERGY STAR Homes
Residential Lighting & Appliances				
Residential Multifamily	70	140	209	MF Boilers
Residential Low Income	180	225	293	Low Income Homes
Residential New HVAC	4,104	6,156	8,208	ENERGY STAR Furnaces
C&I Prescriptive	55	109	164	Com Boilers
Commercial Spray Valve Program	1,140	2,280	3,420	Spray Valves

Program:
Home Energy Performance

Description	•Provide incentives for home diagnostic and contractor-installed shell and infiltration reduction measures •Rationale is that contractor-install program produces greater savings and higher likelihood of savings
Target Market	•Existing gas-heated homes; Could target by gas usage.
Delivery Approach	•Marketed and delivered through participating contractors •Requires contractor training and formal participation agreement •Requires post-installation inspections
Measures	•Insulation (amount and location based on diagnostic) •Infiltration reduction measures •Low-cost hot water reduction measures •Furnace filter check and replace •Programmable thermostats??
Incentives	Incentive levels could vary considerably depending on program design. Existing programs show a range of from 20% to 33% of installed cost.
Cost-Effectiveness	TRC = 2.08
Options	•Could run this as a retail rebate program •Could reach more customers •Typically less expensive, but savings harder to track
Best Practice	•Vermont Gas Systems HomeBase Retrofit Program •KeySpan Energy Delivery Residential Weatherization Program

Program:
ENERGY STAR New Homes

Description	Standard ENERGY STAR new homes program targeting builders with training, rating incentives, and marketing assistance.
Target Market	New home builders in the Ameren territory; Typically seek production builders.
Delivery Approach	•Program contractor recruits builders •Program contractor arranges for HERS training to the extent infrastructure is inadequate •Contractor provides technical assistance/plan review •Incentives provided to defer the cost of the rating; Incentive pool to support cooperative marketing also provided
Measures	ENERGY STAR New Home – performance-based
Incentives	Direct incentives in the range of $300-$500 to defray rater costs; Pool of coop marketing funds
Cost-Effectiveness	TRC = 1.20
Best Practice	Wisconsin Energy Conservation Corp ENERGY STAR Homes Program CenterPoint Energy and Oncor – Texas ENERGY STAR Homes Program

Program:
Residential Appliances

Description	Provide consumer incentives for purchase of efficient dishwashers.
Target Market	All customers with gas water heating
Delivery Approach	•Consumer mail-in rebates or in-store discounts for purchase of ENERGY STAR dishwashers. •Closely coordinated with retailers in the territory, including c oop marketing and special promotions
Measures	•ENERGY STAR Dishwashers (energy factors .65 and above)
Incentives	•Dishwashers - $30 - $50 depending on energy factor
Cost-Effectiveness	TRC = 1.20
Best Practice	PG&E Mass Market Program Wisconsin Energy Conservation Corp ENERGY STAR Products Program

Program:
Multi-Family

Description	Provide a suite of energy efficiency measures for multi-family units of more than 4 units (4 and under served by single-family programs). Program would be driven by contractors
Target Market	All gas-heated multi-family buildings with more than 4 units
Delivery Approach	•Program contractor would recruit building managers/owners •Contractor would provide direct installations of low-cost/no-cost measures such as infiltration reduction measures, faucet aerators and water-conserving showerheads •Contractor would identify opportunities for shell improvements and heating and water heating system upgrades and would arrange for the appropriate specialized contractor to provide a detailed assessment. Incentives would be provide for any large project that screens as cost-effective. •Incentives for larger projects would be provided to either the contractor or the building owner.
Measures	•Wall insulation •Infiltration reduction •Low-cost/no-cost measures •Heating and water heating system replacements •Programmable thermostats??
Incentives	Incentives calculated to yield 1 year payback subject to a cap of 75% incremental cost
Cost-Effectiveness	TRC = 3.45
Best Practice	WECC Apartment and Condo Efficiency Services

Program:
Residential New HVAC

Description	Provide incentives for the installation of high efficiency gas furnaces.
Target Market	Existing gas-heated homes; multi-family residences up to 4 units.
Delivery Approach	•Program would work through HVAC dealers to advertise and deliver the program •Funds would be made available for coop advertising •Dealers would be required to sign a basic participation agreement covering quality installation standards •Rebates would be paid directly to customers
Measures	•ENERGY STAR labeled furnaces with rated efficiency 90% AFUE or higher •Programmable thermostats??
Incentives	$100-$200 depending on efficiency level
Cost-Effectiveness	TRC = 1.13
Best Practice	NW Natural Gas High Efficiency Furnace Program GasNetworks High Efficiency Heating Program

Program:
Low Income

Description	Comprehensive building shell improvement and infiltration reduction targeted at gas heating customers matching the same income guidelines as on the electric side. Key issue is how comprehensive the program's diagnostics will be and the extent to which heating systems will be replaced. Best practice programs also include an education element.
Target Market	Existing gas-heated homes; multi-family residences up to 4 units, occupied by households meeting income eligibility guidelines.
Delivery Approach	Program delivery likely would involve a grant/contract with a weatherization provider or providers to identify customers and deliver program services.
Measures	• All measures included in Home Performance Program •Provide furnace replacements where equipment in a limited number of cases (e.g. where existing furnace is not functioning properly or is, unsafe)
Incentives	No-cost to customer, direct-install
Cost-Effectiveness	TRC = Not yet screened
Best Practice	WECC Total Home Performance New Jersey Comfort Partners Program NStar Low-Income Gas Program

Program:
Small Commercial Tune-Up

Description	A variety of HVAC tune-up and controls measures are cost-effective based on gas savings alone. This program would provide prescriptive and custom incentives for a range of HVAC equipment and controls installed in small commercial establishments.
Target Market	All small commercial customers (GDS-2) in the Company's service territory
Delivery Approach	The program would be marketed through HVAC and plumbing service companies. Incentives for larger systems (e.g. boiler replacements) likely would require a project specific cost-effectiveness calculation as the basis for the incentive level. Incentives would be paid to the customer or the dealer/installer if the customer so designated. Incentives for lower-cost measures such as outdoor reset controls, pump replacements, ventilation controls and pipe insulation would be prescribed.
Measures	•Boiler system replacements •Domestic hot water system replacements •Hot water controls
Incentives	Incentives would vary depending on the measure. Boilers at less than 300 Btu/hr would be set in the range of $600-$800 (Xcel is at $750). Boilers at more than 300 kBtu/hr would be set in the range of $1000-$1200.
Cost-Effectiveness	TRC = 2.97
Best Practice	Xcel Small Business Boiler Program

Program:
Pre-Rinse Spray Valve Direct Install

Description	Replacing a typical spray valve that flows up to three gallons of water per minute (gpm) with a low-flow unit can reduce hot water use by up to 180 gallons per day and cut gas use by up to 1.5 therms per day. Under this program, the Company or its contractor would provide for direct installation of pre-rinse sprayers in food service establishments.
Target Market	Food service establishments (restaurants, schools, hospitals) in the Company's service territory within the GDS-2 rate class.
Delivery Approach	The Company would retain an implementation contractor to contact food service establishments, verify current equipment and provide one spray valve per establishment.
Measures	Pre-rinse spray valve with less than 1.6 gpm flow.
Incentives	The program would provide three valves per establishment free of charge.
Cost-Effectiveness	TRC = 9.60
Best Practice	

Redesigned Times Square New Year's Eve Ball

Utilizing LED technology the ball now features 9,576 high-power LEDs from Philips Lighting. The ball is six feet in diameter and weighs 1,200 pounds, and is now more than twice as bright as the old ball. Philips Lighting and Waterford Crystal were commissioned to create the new ball, and Philips hired Lighting Science Group to integrate the LED technologies with the crystal facets.