Johnson Controls Energy Efficiency Indicator
North America – March 28, 2008

Background

In 2007 Johnson Controls conducted research within the North American business community to look at the impact of rising energy prices on organizations. This survey of executives examined what companies were doing in response to rising energy costs, what sort of payback they expected on investments in energy efficiency, to what extent they were motivated by concerns about the environment vs. purely economics, etc. The project has been repeated in 2008 and the results compared to 2007 in order to determine whether businesses are changing their thinking and actions regarding energy efficiency.

Methodology

An online survey was completed with energy management decision makers. Specifically, in order to qualify, respondents had to meet the following criteria:

- Job responsibilities included 'reviewing or monitoring the amount of energy used by their company's facilities, or proposing or approving initiatives to make their company's facilities more energy efficient.'
- They had 'capital- or operations-related budget responsibility' for their company's facilities.

In North America, respondents included company executives, identified from an executive panel, and facilities professionals who are International Facility Management Association (IFMA) members. They represent a wide range of facility types, sizes and locations.

Interviews were conducted in March 2008. About 1,150 interviews were completed in North America in 2008, 1,250 in 2007.

Throughout the survey, respondents were asked to consider energy as being specifically natural gas, electricity, and fuel oil.

Throughout the report, 'Don't know' responses have been excluded from some questions. For questions in which a single response was required, the total of the responses for those questions may add up to less than 100%.

Where applicable, data for 2008 have been compared with that for 2007. However, new questions were added in 2008 and some other questions were modified significantly and for these questions only 2008 data are shown.

Who Were the Respondents?

Respondent Profile

- Consistent with 2007, the majority (72%) of respondents were facility managers, CEOs, VPs/directors of facilities, or general managers.

Position	2008 (1145) %	2007 (1249) %
Facility Manager	19	22
CEO	28	18
VP or Director of Facilities	14	16
General Manager	11	12
COO or VP/Director of Operations	6	9
CFO	3	7
Other	19	16

- As in 2007, a wide variety of industries were represented.

Industry	2008 (1146) %	2007 (1249) %
Service industry	12	9
Finance, insurance, and banking	10	11
Manufacturing	9	14
Retail	6	5
Real estate	6	4
Education	5	10
K-12	3	NA
Higher education	2	NA
Healthcare	5	7
Government and public administration	5	6
Construction	5	4
Communications	4	4
Wholesale	3	3
Hospitality	3	2
Transportation and logistics	3	2
Consumer products	2	NA
Other	22	20

- The types of facilities represented were consistent with 2007, with office space being, by far, the most common type of responsibility.

- Manufacturing, warehousing, and retail were also a key responsibility for at least 10% of respondents.

Primary Type of Building	2008 (1136) %	2007 (1249) %
Office space	66	63
Industrial/manufacturing/plant	16	18
Warehouse/storage	18	18
Retail	13	10
Education campus	6	9
Research center/laboratory	6	8
Hospital/healthcare facility/clinic	5	7
Hotels/hospitality	6	5
Other	10	10

- The vast majority of respondents in both years are from the private sector.

	2008 (1138) %	2007 (1228) %
Private sector	91	88
Public/government-owned	7	12
Both (education only)	2	NA

- Fewer of the 2008 respondents have responsibilities for facilities in multiple states.

Number of States Responsible In	2008 (1118) %	2007 (1249) %
One	84	72
More than one	16	27
All 50/Contiguous 48	2	6
Not answered	-	1

Detailed Findings

Current Energy Use, Expectations and Plans

- A large number of respondents did not know the total amount their company spends on energy and this was even more so in 2008 than in 2007.

Amount on Energy Last Yr	2008 (1090) %	2007 (1207) %
Less than $100K	28	26
$100K but less than $500	8	13
$500K but less than $1,000,000	4	6
$1,000,000 but less than $5,000,000	7	9
More than $5,000,000	5	5
Don't know	49	42

- Most frequently, energy expenses account for between 1% and 9% of total company expenses and on average they account for 10%, which is slightly higher than in 2007.

% of Total Expenses Energy Accounts for	2008 (1143) %	2007 (1249) %
Less than 1%	7	11
1% - 4%	17	22
5% - 9%	24	21
10% - 14%	17	14
15% - 19%	8	7
20% - 24%	6	5
25% or more	6	6
Don't know	15	15
Average	*10%*	*9%*

- 80% of respondents believe that natural gas and electricity prices will rise over the next year, statistically consistent with one year ago.

Believe Price of Energy Will…	2008 (1146) %	2007 (1249) %
Increase over the next year	80	79
Decrease over the next year	4	3
Not change significantly	16	18

- Relatively few expect energy prices to rise more than 20%. On average the expectation is for prices to rise just less than 14%. The size of the increase expected has grown slightly in the past year.

Anticipated Increase	2008 (909) %	2007 (973) %
1% - 5%	16	20
6% - 10%	24	30
11% - 20%	24	23
21% - 40%	8	7
More than 40%	2	3
Don't know	26	18
Mean anticipated increase	*13.79%*	*13.25%*

- Consistent with one year ago, close to 60% expect to make energy efficiency improvements funded by capital expenditures in the next year.

Expectations – Capital Budget	2008 (1146) %	2007 (1249) %
Expect to make energy efficiency improvements with capital expenditures in the next year	56	57
Do not expect to make improvements with capital expenditures in the next year	23	26
Don't know	21	17

- Most frequently, companies expect to invest between 1% and 9% of their facilities-related capital budget in energy efficiency measures. In 2008, on average they expect to invest 9%, which marks a slight increase from 8% in 2007.

% of Capital Budget Expect to Invest	2008 (636) %	2007 (712) %
Less than 1%	7	10
1% - 4%	25	28
5% - 9%	26	26
10% - 14%	18	14
15% - 19%	7	7
20% - 24%	5	4
25% or more	5	4
Don't know	6	7
Mean expectation	*9%*	*8%*

- Just over 60% expect to make energy efficiency improvements funded by their operating budget in the next year.

Expectations – Operating Budget	2008 (1146) %	2007 (1249) %
Expect to make energy efficiency improvements with operating expenditures in the next year	61	64
Do not expect to make improvements with operating expenditures in the next year	18	21
Don't know	21	16

- Consistent with year ago, companies most frequently expect to invest up to 9% of their facilities-related operating budget on energy efficiency measures. On average they expect to invest 7%, which is a slight increase compared to year ago.

% of Operating Budget Expect to Invest	2008 (698) %	2007 (791) %
Less than 1%	8	16
1% - 4%	33	36
5% - 9%	27	23
10% - 14%	13	10
15% - 19%	5	4
20% - 24%	3	3
25% or more	2	1
Don't know	8	7
Mean expectation	*7%*	*6%*

- Companies most commonly expect to use between 1% and 9% less energy as a result of their anticipated investments in energy efficiency. On average they expect to use 9% less energy as a result of these investments, which is an increase from 8% one year ago.

Anticipated Resultant Consumption Reduction	2008 (1034) %	2007 (1123) %
Less than 1%	6	7
1% - 4%	23	27
5% - 9%	27	28
10% - 19%	17	16
20% - 29%	6	4
30% or more	2	2
Don't know	18	15
Mean expectation	*9%*	*8%*

- Of those making energy efficiency improvements, only about one-third expect to see a decrease in the amount they pay per square foot of facilities as a result.

	2008 (850) %	2007 (948) %
Dollars paid per square foot will increase	37	35
Dollars paid per square foot will decrease	33	30
Dollars paid per square foot will not change significantly	31	35

Company's Emphasis on Energy Management

- In 2008 energy management has grown in importance compared to one year ago. 20% of companies now see it as *extremely* important, compared to 15% in 2007.

Importance of Energy Management to Company		2008 (1145) %	2007 (1249) %
Extremely/very important		57	51
Extremely important	(5)	20	15
Very important	(4)	37	36
Somewhat important	(3)	35	38
Not very important	(2)	7	9
Not at all important	(1)	2	2
Mean		*3.66*	*3.53*

- Monthly continues to be the most common frequency for companies to review energy *consumption*, and on average companies review consumption slightly more than once a month. Average frequency of reviewing consumption data has declined slightly since one year ago.

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Frequency of Reviewing Consumption Data		2008 (1145) %	2007 (1249) %
Daily	(265)	2	3
Weekly	(52)	5	6
Monthly	(12)	47	40
Quarterly	(4)	17	19
Twice a year	(2)	9	7
Annually	(1)	11	14
Less than once a year	(0.5)	6	8
Don't know		3	3
Avg. times per year		*15.0*	*17.1*

- Companies typically review their energy use *forecasts* monthly, quarterly, or annually; meaning that on average forecasts tend to be reviewed considerably less frequently than actual energy use. On average, forecasts are reviewed about seven times per year – slightly less than they were one year ago.

Frequency of Reviewing Forecasts		2008 (1141) %	2007 (1249) %
Daily	(265)	1	1
Weekly	(52)	2	3
Monthly	(12)	22	20
Quarterly	(4)	24	25
Twice a year	(2)	13	10
Annually	(1)	21	25
Less than once a year	(0.5)	10	9
Don't know		6	7
Avg. times per year		*7.2*	*8.1*

- Companies are paying more attention to energy efficiency than they were one year ago. 72% say they are paying a lot or a little more attention than year ago, compared to 62% reported in 2007.

Attention Paid to Energy Efficiency Vs. Year Ago		2008 (1146) %	2007 (1249) %
Paying a lot more attention now	(5)	30	23
Paying a little more attention now	(4)	42	39
Paying about the same attention	(3)	24	33
Paying a little less attention now	(2)	1	2
Paying a lot less attention now	(1)	*	*
Don't know		2	3
Average		*4.03*	*3.86*

- When it comes to how long companies will allow for a payback on their investments in energy efficiency, the vast majority (72%) have a tolerance of between one and six years. For 43% it is less than three years but few insist on their energy efficiency investment seeing a return in less than one year. The average tolerance is about three-and-a-half years.

Tolerance for ROI on Energy Efficiency Investment		2008 (1136) %
Less than a year	(0.75)	5
1 but less than 2 years	(1.5)	16
2 but less than 3 years	(2.5)	22
3 but less than 4 years	(3.5)	16
4 but less than 6 years	(5.0)	18
6 but less than 10 years	(8.0)	6
10 years or more	(10.0)	3
Would not require ROI		4
Average Maximum ROI period		*3.6 years*

- About one-fifth of companies will allow a longer payback on their investment than they would have done five years ago and this has not changed significantly since last year.

ROI Tolerance Compared to 5-Years Ago	2008 (1136) %	2007 (1249) %
Company will allow longer payback period today	21	18
Allowable payback period has not changed	38	45
Company allowed longer payback 5-years ago	10	10
Don't know	31	26

- For all their professed consideration of energy efficiency, very few (8%) companies claim to have any certified green buildings. About 40% say they have buildings with green elements but just as many say they do not.

Current Status Vis-à-vis Green Facilities	2008 (1144) %
Have at least one green certified building	8
Have buildings with elements but no certification	40
Have no buildings that incorporate green elements	43
Don't know	9

- But increasingly, energy efficiency is considered a priority in construction and retrofit projects. For the vast majority, it is a priority in new construction and retrofit projects and this number (88%) is significantly higher than just one year ago.

Consideration of Efficiency in Construction Projects	2008 (482) %	2007 (664) %
Energy efficiency was/will be a design priority	88	77
Energy efficiency was not/won't be a priority	10	18
Don't know	2	5

- Green certification is considerably more likely to be the goal for new construction projects than for retrofits. One-third of those with current or planned new construction have a goal of green certification, compared to only one-fifth for retrofits.
- However, the more likely goal in either case is to have some green elements but not to seek green certification. About 60% of those with retrofit projects and about half of those with new construction projects describe their company's goal as this.

Goal for 'Greenness' of New Construction/Retrofits	Construction Projects (245) %	Retrofit Projects (301) %
To be certified to a recognized green standard	34	20
To have green elements but not green certification	48	59
No goal for them to be green buildings	12	18
Don't know	5	3

Motivations for Energy Efficiency

- Cost savings are a considerably greater motivation for achieving energy efficiency than is environmental responsibility, however the environment is usually at least partly the reason:
  - 41% of respondents believe energy efficiency is mostly or somewhat more for cost savings but few believe it is entirely for cost savings
  - About one-third believe environmental responsibility and cost savings are equally behind decisions to improve energy efficiency.
- There has been a slight increase in the relative importance of the environment over the past year.

Relative Influence of Cost Savings/Environment		2008 (1130) %	2007 (1183) %
More for cost savings		47	53
100% cost savings	(7)	6	6
Mostly for cost savings	(6)	20	24
Somewhat more for cost savings	(5)	21	22
50% cost savings/50% environmental	(4)	36	35
Somewhat more for environment	(3)	10	7
Mostly for environmental responsibility	(2)	5	5
100% environmental responsibility	(1)	1	1
Mean		*4.57*	*4.68*

- 28% of respondents believe that climate change is an *extremely* or *very* significant influence on their company's energy efficiency decisions and 31% believe it is *somewhat* significant; meaning that about 60% believe it is at least *somewhat* significant.

Influence of Climate Change on Energy Efficiency Decisions		2008 (1143) %
Extremely/very significant		28
Extremely significant	(5)	9
Very significant	(4)	19
Somewhat significant	(3)	31
Not very significant	(2)	24
Not at all significant	(1)	14
Mean		*2.84*

- 38% of respondents believe that incentives are *extremely* or *very* influential on their company's energy efficiency decisions.

Influence of Utilities/Gov. Incentives on Energy Efficiency Decisions		2008 (1143) %
Extremely/very influential		38
Extremely influential	(5)	13
Very influential	(4)	25
Somewhat influential	(3)	37
Not very influential	(2)	14
Not at all influential	(1)	8
Mean		*3.22*

- 38% believe their company feels it is *extremely* or *very* important to minimize its dependence on traditional energy such as gas, oil, and electricity.

Importance of Minimizing Dependence on Traditional Energy		2008 (1139) %
Extremely/very important		38
Extremely important	(5)	12
Very important	(4)	26
Somewhat important	(3)	39
Not very important	(2)	15
Not at all important	(1)	5
Mean		*3.26*

- Almost one-third of respondents believe that green buildings will be *extremely* or *very* important in attracting and retaining future employees.

Perceived Importance of Green Buildings in Attracting and Retaining Employees		2008 (1136) %
Extremely/very important		31
Extremely important	(5)	11
Very important	(4)	20
Somewhat important	(3)	36
Not very important	(2)	20
Not at all important	(1)	9
Mean		*3.05*

- Close to 40% believe it is *extremely* or *very* likely that in the next two years there will be significant legislation mandating energy efficiency and/or carbon reduction.

Expectation of Significant Legislation Mandating Energy Efficiency or Carbon Reduction in Next 2 Years		2008 (1140) %
Extremely/very likely		39
Extremely likely	(5)	11
Very likely	(4)	28
Somewhat likely	(3)	37
Not very likely	(2)	16
Not at all likely	(1)	3
Mean		*3.29*

Energy Management Measures Already in Place

- Education of staff and other facility users is a very commonly implemented tool for increasing energy efficiency – around 70% of companies appear to do this.
- In 2008, fewer companies and organizations have sent staff to energy management seminars or hired an energy consultant.

Staff-Related Measures Adopted	2008 (1144) %	2007 (1249) %
Educated staff or other facility users on what they can do to reduce energy use	72	70
Attended or sent staff to energy management seminars	26	31
Hired an energy consultant to find ways to improve energy efficiency	14	20
Hired an energy manager	7	9
None	20	17

- The majority of companies have taken the step of adjusting HVAC controls to reduce the time that heating or AC runs.
- The number of companies replacing inefficient equipment before the end of its useful life increased significantly in 2008 but the number of companies installing VSD/VFD, or installing a new building management system where they did not previously have one decreased over the same period.

Equipment and Systems-Related Measures Adopted	2008 (1143) %	2007 (1249) %
Adjusted HVAC temperature controls to reduce time that heating/AC runs	61	60
Replaced inefficient equipment before the end of its useful life	41	28
Increased preventive maintenance schedules	34	34
Increased frequency of monitoring consumption	31	31
Upgraded or improved an existing building management system	28	31
Installed variable speed/frequency drives (VSD/VFD)	20	28
Installed a building management system where there was not one	14	23
Captured waste energy (such as heat & steam)	8	NA
Re-commissioned building systems and equipment	8	NA
Other	6	6
None	14	12

- The majority of companies have switched to energy efficient lighting and this number grew significantly in 2008.
- However, in 2008 fewer companies had installed lighting sensors or installed or adjusted timers to turn lights on and off at specified times.

Lighting-Related Measures Adopted	2008 (1146) %	2007 (1249) %
Switched to energy efficient lighting	78	67
Installed lighting sensors so lights come on and off as needed	38	46
Installed or adjusted time clocks to turn lights on/off at specified times	29	35
Other	2	4
None	12	15

- Around one-fourth of companies have installed energy-saving glass or increased building insulation but, overall, relatively few have adopted any of the building design-related measures listed.

Building Design-Related Measures Adopted	2008 (1119) %	2007 (1249) %
Installed energy-saving glass in windows	26	28
Increased building insulation	24	NA
Re-roofed with white roof covering to reduce heat gain	15	13
Installed a green roof	5	NA
Other	3	7
None	50	60

- Relatively few companies have adopted any of the listed energy supply-related measures and the number that have adopted any of them actually declined in 2008. The most common measure is negotiating energy contracts but the number of companies doing this declined in 2008.

Energy Supply-Related Measures Adopted	2008 (1118) %	2007 (1249) %
Negotiated energy contracts with suppliers	25	36
Put energy price hedging strategies in place	12	14
Installed renewable energy systems (such as solar, wind, geo-thermal, or methane gas)	9	NA
Self-generate power during demand peaks	8	10
Converted to using alternative fuels	8	8
Other	2	2
None	54	47

- The most common renewable energy technology either included in new construction or retrofit projects, or being considered for such projects, is solar electric. Almost 40% of companies have included, or are considering it. The next most popular is solar thermal, which around one-fourth of companies are either implementing or considering.

Renewables in/Considered in Projects	2008 (483) %
Solar electric	38
Solar thermal	24
Wind	19
Geo-thermal	13
Hydro-power	11
Bio-mass	7
None of these	32
Don't know	9

- In 2008, as in 2007, few companies have a publicly stated carbon reduction goal.

	2008 (1139) %	2007 (1249) %
Have a publicly stated carbon-reduction goal	12	11
Don't have stated carbon-reduction goal	77	76
Don't know	11	13

- But those who expect significant legislation mandating energy efficiency or carbon-reduction are considerably more likely to have a publicly stated carbon-reduction goal.

	Legislation Extremely/ Very Likely (444) %	Legislation Somewhat Likely (423) %	Legislation Not Likely (222) %
Have a publicly stated carbon-reduction goal	19	11	4
Don't have stated carbon-reduction goal	68	79	93
Don't know	13	11	3

- And those for whom climate change is a significant influence on energy efficiency decisions are also considerably more likely to have a publicly stated carbon-reduction goal.

	Climate Change Significant Influence (312) %	Climate Change Somewhat an Influence (354) %	Climate Change Not an Influence (431) %
Have a publicly stated carbon-reduction goal	25	10	5
Don’t have stated carbon-reduction goal	62	80	89
Don’t know	13	10	7