

2010 ENERGY EFFICIENCY INDICATOR - HEALTHCARE SECTOR



Issue Brief

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According to new research from the American Society for Healthcare Engineering and Johnson Controls, energy efficiency continues to grow in importance in the healthcare sector as organizations do more than ever to “go green.”

BACKGROUND

In March 2010, Johnson Controls’ Institute for Building Efficiency, the International Facility Management Association (IFMA), and the American Society for Healthcare Engineering (ASHE) conducted a survey of executives and managers responsible for making investments and managing energy use in commercial buildings across the world.

As part of the Energy Efficiency Indicator (EEI) broad survey to look at the trends in energy efficiency throughout the worldwide business community, Johnson Controls wanted to include a separate analysis of responses from organizations in the healthcare industry. Of the 2,882 respondents polled worldwide, 288 operated in the healthcare industry, and 246 were ASHE members.

The EEI survey examines what healthcare organizations are doing in response to rising energy costs, what factors are motivating efficiency improvements, how many organizations are planning to make investments, what payback they expect on energy efficiency investments, and what technologies and practices they have been implementing in their facilities.

METHODOLOGY

An online survey was completed in March 2010 with energy management decision-makers in the healthcare industry. Specifically, in order to qualify, respondents had to meet the following criteria:

1. They have capital- or operations-related budget responsibility’ for their company’s facilities, and
2. Job responsibilities include 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 efficient.

The majority of the healthcare decision-makers were ASHE members, access through that organization. Other decision-makers in the healthcare industry came from an executive research panel and IFMA membership.

Throughout the report, the responses of healthcare decision-makers are compared to those of North American respondents across all industries, for comparison.

Where applicable, 2010 results have been compared with those for 2008 to identify trends. However, new questions were added to the 2010 survey, so historic data is not available for all questions.

‘Don’t know’ responses have been excluded from some questions and, in those cases, responses may add up to less than 100%.

WHO WERE THE RESPONDENTS?

Respondent Profile

The vast majority of healthcare respondents (90%) are ASHE members.

Source	Healthcare		All Industries
	2008	2010	2010
	(335)	(255)	(1,435)
ASHE	83%	90%	38%
Other	12%	4%	28%
IFMA	5%	6%	34%

Most of the healthcare respondents held a VP/Director of Facilities or a Facility Manager role.

Position	Healthcare		All Industries
	2008	2010	2010
	(335)	(289)	(1,434)
VP or Director of Facilities	40%	44%	19%
Facility Manager	39%	35%	24%
CEO	4%	6%	22%
General Manager	3%	4%	10%
COO or VP/Director of Operations	3%	2%	3%
CFO	1%	0%	2%
Other	11%	9%	20%

Healthcare respondents manage larger facility areas than the general sample, on average. Relatively few healthcare decision-makers (13%) are responsible for less than 100,000 square feet.

Area of Responsibility	Healthcare		All Industries
	2008	2010	2010
	(335)	(289)	(1,410)
Less than 100,000 sq. ft.	14%	13%	47%
100,000 to 499,999 sq. ft.	33%	28%	22%
500,000 to 999,999 sq. ft.	22%	20%	12%
1 million to 1.99 million sq. ft.	16%	20%	9%
2 million to 4.99 million sq. ft.	10%	16%	6%
5 million or more sq. ft.	4%	5%	4%
Don't know	*	0%	1%

The vast majority of the healthcare organizations represented in the survey have between 100 and 10,000 employees, making them larger entities on average than those in general sample.

Number of Employees	Healthcare		All Industries
	2008	2010	2010
	(335)	(288)	(1,431)
Less than 100	8%	7%	41%
100 – 499	18%	15%	12%
500 – 999	14%	13%	9%
1,000 – 4,999	39%	41%	19%
5,000 – 9,999	11%	16%	7%
10,000 – 49,999	8%	7%	7%
50,000 or more	1%	1%	4%
Don't know	1%	1%	1%

More than half the respondents did not know (or, perhaps, refused to disclose) their organizations' revenue. Healthcare respondents come from organizations with a wide range of annual revenue levels, but tend to have higher revenues than the general sample of other industries.

Company Revenue	Healthcare		All Industries
	2008	2010	2010
	(318)	(117)	(707)
Less than \$100K	3%	2%	9%
\$100K – less than \$500K	2%	1%	7%
\$500K – less than \$1 million	1%	1%	3%
\$1 million – less than \$5 million	2%	2%	8%
\$5 million – less than \$10 million	3%	1%	3%
\$10 million – less than \$50 million	8%	6%	8%
\$50 million – less than \$100 million	3%	5%	3%
\$100 million – less than \$500 million	12%	9%	6%
\$500 million – less than \$1 billion	5%	3%	2%
\$1 billion or more	4%	10%	4%
Don't know	57%	59%	49%

The majority of the healthcare organizations represented are in the private sector.

	Healthcare		All Industries
	2008	2010	2010
	(335)	(286)	(1,368)
Private sector	84%	86%	90%
Public/government-owned	16%	14%	10%

Nearly all healthcare respondents' responsibilities are limited to a single state. The global sample is more likely to include decision-makers with national or international responsibilities.

Number of States Responsible In	Healthcare		All Industries
	2008	2010	2010
	(1,249)	(288)	(1,427)
One	92%	81%	81%
More than one	8%	16%	12%
All 50/Contiguous 48	2%	3%	7%

Respondents within the healthcare sector and across all industries come from nearly all regions across North America. The regions with the highest representation within the sample of healthcare decision-makers are the East North Central, South Atlantic, and West North Central census regions.

Company Region	Healthcare	All Industries
	2010	2010
	(243)	(1,236)
Pacific	11%	16%
Mountain	4%	8%
West North Central	14%	9%
West South Central	12%	8%
East North Central	21%	19%
East South Central	5%	4%
Middle Atlantic	10%	13%
South Atlantic	17%	14%
New England	5%	5%
Western Canada	-	2%
Eastern Canada	1%	2%
Northern Canada	-	-

The healthcare organizations represented in the survey spend considerably more on energy than the organizations across all industries. The average healthcare organization surveyed spends \$6.4 million per year on energy, compared to a mean annual expenditure of \$5.5 million among all respondents.

Amount Spent on Energy Last Year	Healthcare		All Industries
	2008	2010	2010
	(318)	(283)	(810)
Less than \$100K	4%	5%	24%
\$100K but less than \$500K	10%	8%	8%
\$500K but less than \$1,000,000	10%	8%	5%
\$1,000,000 but less than \$5,000,000	31%	29%	12%
More than \$5,000,000	14%	20%	10%
Don't know	31%	30%	42%

SUMMARY

Current Emphasis on and Motivations for Energy Efficiency

- Energy efficiency is getting more attention among healthcare facility leaders. Sixty-six percent of respondents from the healthcare sector say they are paying more attention to energy efficiency in 2010 than they were one year ago.
- Energy management is more important to healthcare leaders than to executives surveyed in other industry sectors. The survey found that 59% of healthcare organizations believe energy management is extremely or very important, compared to 52% of respondents across all industries.
- Energy cost savings is the most significant factor motivating energy efficiency investment among healthcare organizations, with 88% saying cost savings is very or extremely important, and 99% saying it is at least somewhat important. Enhancing public image and taking advantage of government and/or utility incentives are the next most important motivating factors.
- It is no surprise that energy cost savings is such a significant motivator. As with other industries, nearly two-thirds of healthcare decision-makers expect their energy prices to increase over the next 12 months. On average, healthcare leaders surveyed expect prices to increase by 5% over this period.
- Climate change continues to be an important motivator. About 37% of those in the healthcare industry believe significant legislation mandating energy efficiency or carbon reduction is *extremely* or *very likely* in the next two years, up from 32% in 2008. Another 40% believe such legislation is somewhat likely.
- Eight percent of healthcare organizations have a publicly stated carbon reduction goal, up from 5% of healthcare respondents in 2008. Nearly 50% of healthcare decision-makers identify improving energy efficiency in their buildings as their organization's top strategy for reducing greenhouse gas emissions. Energy efficiency in buildings was selected more than 10 times more often than the next most common selections: installing onsite renewable energy systems (3%), and purchasing renewable power (3%).

Energy Efficiency Investment Plans and Financial Criteria

- The recession had a mixed impact on energy efficiency investment across all sectors. Over the last 12 months, 55% of healthcare respondents have invested less, whereas 45% have invested the same or more in energy efficiency as a result of the recession.
- Given the increased importance of, and attention to, energy efficiency within the healthcare sector, it will come as no surprise that healthcare organizations are more likely to be planning to make capital investments (67%) and operating expenditures (72%) in energy efficiency over the next 12 months, in comparison to other industries. These percentages exceed the overall percentage for North America by a 12-15% margin.
- While healthcare organizations are more likely than those in other industries to plan capital and operating expenditures in energy efficiency this year, they do not expect to spend a higher proportion of either budget on these improvements than do organizations in other industries. On average they expect to spend 7% of their facilities-related capital budget and 5% of their facilities-related operating budget on such improvements.
- Healthcare organizations appear to be tightening their investment criteria for energy efficiency projects. The average maximum allowable payback period among healthcare decision-makers in 2010 is 3.3 years, down from 4.2 years in 2008. This compares with a 3.2-year payback required, on average, across all North American industry sectors.
- The top barriers preventing healthcare organizations from capturing potential energy savings are a lack of internal capital to fund projects (45%) and the inability to identify projects with a sufficient ROI (21%), very consistent responses from other industry sectors. Scarcity of capital is a particularly significant barrier for healthcare organizations.

Energy Management Practices and Technologies

- Ninety-three percent of healthcare facility leaders track energy use on at least a monthly basis, compared to 83% of all North American respondents across all industries.
- Consistent with energy efficiency being even more important to them than to those in other industries, healthcare organizations are more likely to have implemented numerous measures to reduce energy use and costs in their buildings over the past 12 months:
 - Staff-related:* They are more likely to send staff to energy management seminars and more likely to have hired an energy manager.
 - Equipment and Systems:* They are more likely to have replaced inefficient equipment before the end of its useful life, to have upgraded or installed a building management system, and to have installed variable-speed drives to reduce energy use.
 - Lighting:* The vast majority of healthcare organizations have switched to energy-efficient lighting, and they are considerably more likely to have installed occupancy or daylight sensors compared to North American facility leaders surveyed in other industries.
 - Building Design:* More healthcare organizations have installed energy-saving glass and re-roofed with white roofing, whereas others sectors were more likely to increase insulation.
 - Energy Supply:* Considerably more healthcare organizations have negotiated energy contracts, put energy price hedging strategies in place, participated in demand response programs, and conducted utility bill validation.

- An increasing number of healthcare organizations have at least one certified green building, up from 4% in 2008 to 11% in 2010. Healthcare organizations are less interested in green building certification for both new construction and existing building retrofit projects, relative to other industries. Only 18% of healthcare decision-makers are targeting green certification for their newly constructed buildings. However, the majority of healthcare organizations seek to at least include green elements (80%).
- Healthcare respondents tend to believe that lighting and smart building technologies will be the clean energy technologies that see the greatest performance-to-price ratio improvements over the next 10 years. The overall North American sample is more likely to believe solar photovoltaic energy and electric vehicle technology will improve in cost-effectiveness over that period.

DETAILED FINDINGS

Current Emphasis on and Motivations for Energy Efficiency

Sixty-six percent of healthcare decision-makers say they are paying more attention to energy efficiency in 2010 than they were one year ago, and this is true for other industries, too.

Attention Paid to Energy Efficiency Vs. Year Ago	Healthcare		All Industries
	2008	2010	2010
	(335)	(176)	(335)
Paying a lot more attention now (5)	23%	29%	25%
Paying a little more attention now (4)	47%	37%	40%
Paying about the same attention (3)	27%	31%	31%
Paying a little less attention now (2)	1%	2%	2%
Paying a lot less attention now (1)	-	-	1%
Don't know	2%	1%	1%
<i>Average</i>	<i>3.92</i>	<i>3.94</i>	<i>3.87</i>

Energy management continues to be at least somewhat important to 95% of healthcare respondents. Healthcare organizations are more likely to consider energy management very or extremely important (59%) compared with the average among all industries (52%).

Importance of Energy Management to Company	Healthcare		All Industries
	2008	2010	2010
	(334)	(289)	(1,435)
Extremely/very important	65%	59%	52%
Extremely important (5)	18%	17%	15%
Very important (4)	47%	42%	37%
Somewhat important (3)	31%	36%	38%
Not very important (2)	4%	4%	8%
Not at all important (1)	*	2%	2%
Mean	3.78	3.71	3.55

Consistent with 2008, more than 80% of healthcare organizations planning new construction or retrofit projects say that energy efficiency is a design priority. This percentage is identical to responses from decision-makers across all industries.

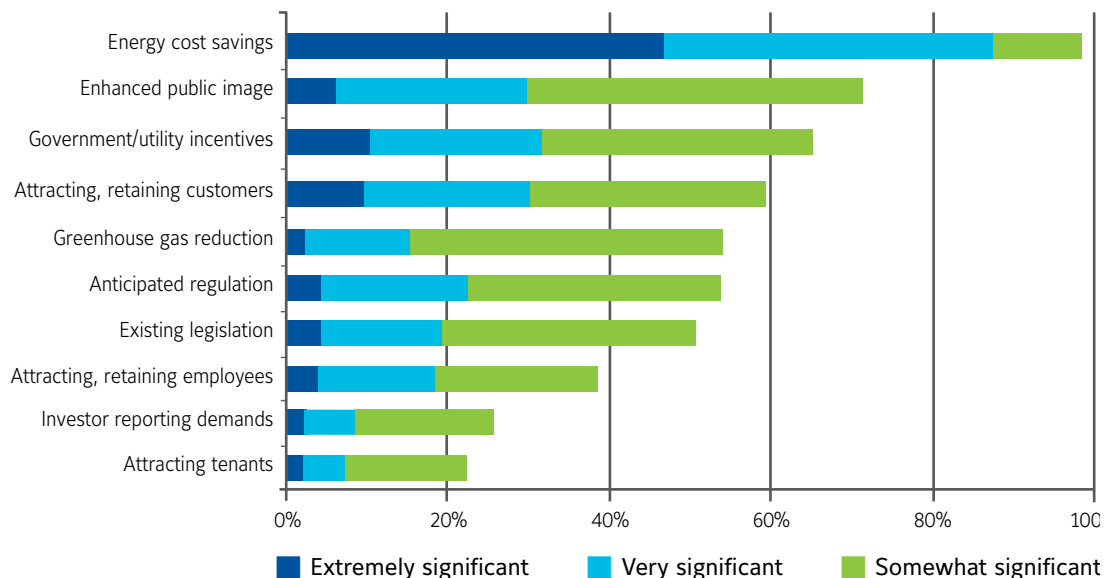
Consideration of Efficiency in Construction Projects	Healthcare		All Industries
	2008	2010	2010
	(246)	(207)	(644)
Energy efficiency was/will be a design priority	85%	84%	84%
Energy efficiency was not/won't be a priority	13%	14%	14%
Don't know	2%	2%	2%

Energy cost savings is the most significant factor motivating energy efficiency investment among healthcare organizations, with 88% saying cost savings is very or extremely important, and 99% of saying it is at least somewhat important. Enhancing public image and taking advantage of government and/or utility incentives are the next most important motivating factors.

The broader North American sample across all industries is more likely to consider greenhouse gas emission reductions significant, whereas brand/public image concerns are a stronger motivator for healthcare organizations.

Significance in Organization's Energy Efficiency Decisions	Very or Extremely Important		Somewhat, Very, or Extremely Important	
	Healthcare	All Industries	Healthcare	All Industries
	2010	2010	2010	2010
	(287)	(1,430)	(287)	(1,430)
Energy cost savings	88%	80%	99%	97%
Greenhouse gas emission footprint reduction	15%	25%	54%	62%
Enhanced brand or public image	30%	29%	72%	63%
Customer attraction/retention	30%	27%	59%	56%
Investor reporting demands	9%	14%	26%	34%
Attracting, retaining employees	19%	15%	39%	38%
Attracting tenants, rent premiums	7%	10%	22%	25%
Government/utility incentives	32%	31%	62%	65%
Existing legislation	19%	21%	51%	51%
Pending/anticipated regulation	23%	22%	54%	52%

How significant an influence are the following in your organization's energy efficiency decisions?
(Among 488 healthcare sector respondents)



Consistent with other industries, cost savings are a greater motivation for energy efficiency than environmental responsibility for two thirds of healthcare organizations. Having said that, cost savings rarely account for 100% of the motivation for healthcare organizations.

Relative Influence of Cost Savings/Environment	Healthcare		All Industries
	2008	2010	2010
	(325)	(288)	(1,429)
100% cost savings (7)	7%	8%	7%
Mostly for cost savings (6)	26%	29%	23%
Somewhat more for cost savings (5)	26%	27%	22%
50% cost savings/50% environmental (4)	32%	28%	33%
Somewhat more for environment (3)	6%	7%	9%
Mostly for environmental responsibility (2)	2%	1%	5%
100% environmental responsibility (1)	*	0%	1%
Mean	4.88	5.00	4.67

It is no surprise energy costs are such a significant factor. As with other industries, nearly two-thirds of healthcare decision-makers expect their energy prices to increase over the next year.

Believe Price of Energy Will...	Healthcare		All Industries
	2008	2010	2010
	(355)	(289)	(1,435)
Increase over the next year	88%	61%	64%
Decrease over the next year	3%	11%	8%
Not change significantly	10%	28%	28%

There is wide variation among healthcare decision-makers as to how much energy prices will increase over the next 12 months. The average anticipated price change for healthcare facilities is 5% increase, compared to a 7% increase expected on average across all industries.

Anticipated Increase	Healthcare	All Industries
	2010	2010
	(288)	(1,435)
Increase don't know	11%	14%
Increase more than 40%	2%	1%
Increase 21% - 40%	2%	3%
Increase 11% - 20%	7%	11%
Increase 6% - 10%	21%	18%
Increase 1% - 5%	17%	15%
No change	28%	28%
Decrease 1% - 5%	4%	2%
Decrease 6% - 10%	2%	2%
Decrease 11% - 20%	-	1%
Decrease 21% - 40%	1%	1%
Decrease More than 40%	1%	-
Decrease don't know	3%	2%
<i>Mean anticipated increase</i>	<i>5.2%</i>	<i>6.9%</i>

Consistent with other industries, incentives are *very* or *extremely* influential for over one-third of healthcare organizations in making energy efficiency decisions. For another one-third of respondents, incentives are a *somewhat* influential factor in decision-making.

Influence of Utilities/ Government Incentives on Energy Efficiency Decisions	Healthcare		All Industries
	2008	2010	2010
	(333)	(287)	(1,462)
Extremely/very influential	37%	31%	31%
Extremely influential (5)	11%	10%	9%
Very influential (4)	27%	21%	22%
Somewhat influential (3)	39%	33%	31%
Not very influential (2)	16%	16%	16%
Not at all influential (1)	5%	8%	9%
<i>Mean</i>	<i>3.23</i>	<i>3.10</i>	<i>3.07</i>

Climate change is at least somewhat significant to 82% of healthcare respondents, although this factor is slightly less influential on decisions in the healthcare industry than it is in other industries.

Influence of Climate Change on Energy Efficiency Decisions	Healthcare		All Industries
	2008	2010	2010
	(332)	(286)	(1,423)
Extremely/very significant	20%	2%	5%
Extremely significant (5)	3%	13%	20%
Very significant (4)	17%	38%	37%
Somewhat significant (3)	30%	31%	23%
Not very significant (2)	29%	13%	11%
Not at all significant (1)	17%	2%	4%
<i>Mean</i>	2.59	3.48	3.61

About 37% of those in the healthcare industry believe significant legislation mandating energy efficiency or carbon reduction is *extremely* or *very* likely in the next two years, up from 32% in 2008. Another 40% believe such legislation is somewhat likely. These percentages are very consistent with policy expectations seen in other industries.

Expectation of Significant Legislation Mandating Energy Efficiency or Carbon Reduction in Next 2 Years	Healthcare		All Industries
	2008	2010	2010
	(334)	(289)	(1,432)
Extremely/very likely	32%	37%	36%
Extremely likely (5)	6%	8%	9%
Very likely (4)	26%	29%	27%
Somewhat likely (3)	38%	39%	38%
Not very likely (2)	23%	18%	16%
Not at all likely (1)	4%	4%	4%
<i>Mean</i>	3.07	3.19	3.22

Only 8% of healthcare decision-makers surveyed say their organizations have a publicly stated carbon-reduction goal, whereas 14% of those surveyed across all industries have such a goal. This percentage continues to grow over time, up from 5% of healthcare respondents in 2008.

	Healthcare		All Industries
	2008	2010	2010
	(333)	(288)	(1,432)
Have a publicly stated carbon-reduction goal	5%	8%	14%
Don't have stated carbon-reduction goal	84%	79%	78%
Don't know	10%	13%	9%

Nearly one-half of healthcare decision-makers identify improving energy efficiency in their buildings as their organization's top strategy for reducing greenhouse gas emissions, compared to 38% of the global sample. Energy efficiency was selected more than 10 times more often than the next most common selections: installing onsite renewable energy systems (3%), and purchasing renewable power (3%). About 44% of healthcare organizations don't know what their top carbon reduction strategy is or have not yet prioritized among strategies.

Strategy for Reducing Carbon Footprint	Healthcare	All Industries
	2010	2010
	(289)	(1,435)
Install onsite renewable energy systems	3%	4%
Purchase renewable power	3%	4%
Improve energy efficiency in buildings	45%	38%
Improve efficiency in vehicle fleet	1%	3%
Use alternative transportation fuels	1%	2%
Real estate portfolio consolidation	1%	1%
Purchase carbon offsets	-	1%
Supply chain carbon reductions	-	1%
Implement alternative ways of working, e.g., telecommuting, virtual meetings, etc.	2%	5%
No prioritization amongst strategies	25%	26%
Don't know	19%	15%

Energy Efficiency Investment Plans and Financial Criteria

A new question was added to the 2010 survey to determine the impact of the global recession on energy management spending. The recession had a mixed impact on energy efficiency investment for the health-care organizations, consistent with other sectors. Over the last 12 months, 40 percent of healthcare respondents have invested less, 21 percent have invested at historically consistent levels, and 24 percent have invested more in energy efficiency as a result of the recession.

Impact on Energy Investment	Healthcare	All Industries
	2010	2010
	(287)	(1,431)
Made no investment	16%	22%
Invested much less	19%	17%
Invested somewhat less	21%	15%
Invested same	21%	21%
Invested somewhat more	20%	10%
Invested much more	4%	5%

Healthcare organizations are more likely to make capital investments in energy efficiency improvements in the coming year (68%), compared with only 52% overall in North America.

Energy Efficiency Capital Investment in Next 12 Months	Healthcare		All Industries
	2008	2010	2010
	(335)	(289)	(1,435)
Expect to make capital investments in EE	67%	68%	52%
Do not expect to capital investments in EE	23%	21%	30%
Don't know	10%	11%	18%

While healthcare organizations are more likely to make capital investments in energy efficiency, those investments will represent a smaller percentage of facilities-related capital budgets compared to those planning energy efficiency capital investments in other sectors. This finding is understandable due to the special healthcare delivery-related building systems required by healthcare organizations.

Percent of Capital Budget Expect to Invest in Energy Efficiency	Healthcare		All Industries
	2008	2010	2010
	(224)	(289)	(1,435)
Less than 1%	11%	14%	9%
1% - 4%	34%	35%	28%
5% - 9%	21%	20%	24%
10% - 14%	11%	12%	14%
15% - 19%	7%	4%	6%
20% - 24%	3%	5%	5%
25% or more	6%	3%	6%
Don't know	8%	7%	8%
<i>Mean expectation</i>	<i>8%</i>	<i>7%</i>	<i>9%</i>

Healthcare organizations are also more likely than the overall North American respondent pool to be planning operating budget expenditures on energy efficiency programs and projects over the next 12 months, with 72% of healthcare organizations planning to make such investments.

Energy Efficiency Operating Expenditures in Next 12 Months	Healthcare		All Industries
	2008	2010	2010
	(335)	(289)	(1,435)
Expect to make EE investments using operating budgets	68%	72%	60%
Do not expect to make EE investments with operating budgets	19%	17%	23%
Don't know	13%	11%	17%

But again, while healthcare organizations are more likely to make operating budget expenditures, those organizations expect to invest a smaller proportion of their operating budget in energy efficiency than do organizations in other industries planning such investments.

Percent of Operating Budget Expect to Invest	Healthcare		All Industries
	2008	2010	2010
	(225)	(208)	(681)
Less than 1%	16%	17%	15%
1% - 4%	38%	40%	33%
5% - 9%	21%	19%	22%
10% - 14%	10%	12%	12%
15% - 19%	2%	3%	4%
20% - 24%	4%	3%	3%
25% or more	1%	0%	2%
Don't know	8%	6%	9%
<i>Mean expectation</i>	6%	5%	6%

On average, healthcare organizations expect to see a reduction in energy consumption of 5% as a result of their energy efficiency investments, consistent with expectations of respondents in other industries, who expect to see a 6% consumption reduction as a result of their investments.

Anticipated Resultant Consumption Reduction	Healthcare		All Industries
	2008	2010	2010
	(311)	(289)	(1,435)
Less than 1%	9%	16%	17%
1% - 4%	35%	37%	26%
5% - 9%	27%	23%	24%
10% - 19%	9%	11%	13%
20% - 29%	5%	3%	4%
30% or more	1%	1%	2%
Don't know	15%	10%	12%
<i>Mean expectation</i>	6%	5%	6%

When asked how they plan to fund energy efficiency and/or renewable energy investments, the vast majority of healthcare decision-makers (76%) report that they plan to use internal facilities capital budgets. In addition, 21 percent plan to fund projects using grants or tax credits, and 18 percent plan to procure efficiency improvements using energy savings performance contracts. Other sectors are more likely to have energy- or climate-related budget set-asides (9%) than the healthcare sector (6%). Healthcare organizations are more likely to consider “shared-savings” agreements provided by energy services companies and third-party ownership companies.

Payment Options for Energy Projects	Healthcare	All Industries
	2010	2010
	(289)	(1,427)
Facilities capital budget	76%	48%
Energy or climate-specific set-asides within capital budget	6%	9%
Traditional debt financing	6%	7%
Energy savings performance contract	18%	14%
Capital or municipal lease	3%	3%
Shared savings agreement	7%	5%
Utility on-bill financing (OBF)	-	3%
Property assessed clean energy (PACE) loans/tax lien financing	1%	1%
Power purchase agreement (PPA)	10%	8%
Energy-efficient mortgage	-	1%
Grants or tax credits	21%	20%

Healthcare organizations appear to be tightening their investment criteria for energy efficiency projects. The average maximum allowable payback period among healthcare decision-makers in 2010 is 3.3 years, down from 4.2 years in 2008. This compares with a 3.2-year payback required, on average, across all North American industry sectors.

Maximum Allowable Payback for Energy Efficiency Investments	Healthcare		All Industries
	2008	2010	2010
	(335)	(288)	(1,432)
Less than a year (0.75)	1%	3%	4%
1 but less than 2 years (1.5)	7%	18%	16%
2 but less than 3 years (2.5)	22%	28%	24%
3 but less than 4 years (3.5)	21%	18%	17%
4 but less than 6 years (5.0)	27%	23%	19%
6 but less than 10 years (8.0)	11%	8%	6%
10 years or more (10.0)	2%	1%	2%
Would not require ROI	2%	1%	2%
<i>Average Maximum ROI period</i>	<i>4.2 years</i>	<i>3.3 years</i>	<i>3.2 years</i>

A new question was added in 2010 to identify key energy efficiency barriers. The top barriers preventing healthcare organizations from capturing potential energy savings are a lack of internal capital to fund projects and the inability to identify projects with a sufficient ROI, very consistent responses from other industry sectors. Scarcity of capital appears to be a particularly significant barrier for healthcare organizations.

Top Barrier to Improving Energy Efficiency	Healthcare		All Industries
	2008	2010	2010
	(58)	(289)	(1,432)
Lack of internal capital budget	55%	45%	38%
Insufficient payback/ROI	14%	21%	21%
Uncertainty of payback/ROI	n/a	13%	16%
Lack of buy-in from senior leaders	3%	8%	5%
Lack of technical expertise	5%	3%	6%
Lack of dedicated attention, ownership	3%	3%	4%
Landlord/tenant split incentives	14%	0%	5%
Lack of credit rating, collateral, or balance sheet debt capacity to secure financing	n/a	2%	3%
Other	5%	4%	4%

Energy Management Practices and Technologies

Most of the EEI respondents track their energy usage on a monthly basis. About 93 percent of healthcare facility leaders track energy use on at least a monthly basis, compared to 83% of all North American respondents. Compared to 2008, fewer respondents track this energy information on only an annual or quarterly basis.

Frequency of Tracking Energy Usage Data	Healthcare		All Industries
	2008	2010	2010
	(335)	(289)	(1,434)
Sub-hourly	6%	3%	3%
Hourly		7%	4%
Daily		8%	7%
Weekly	8%	7%	7%
Monthly	57%	68%	62%
Quarterly	12%	2%	6%
Twice a year	4%	3%	6%
Annually	7%	-	-
Less than once a year	4%	-	-
Don't know	2%	2%	5%

Over the past 12 months, healthcare organizations were as likely as those in other industries to have educated staff on how they can reduce energy usage, and they were considerably more likely to have attended or sent others to energy management seminars. One-fourth of healthcare organizations have hired an energy consultant, which is more than in other industries.

Staff-related Measures Adopted in the Past 12 Months	Healthcare		All Industries
	2008	2010	2010
	(334)	(289)	(1,431)
Educated facilities staff on what they can do to reduce energy use	67%	72%	63%
Educated occupants or users on what they can do to reduce energy use	67%	61%	61%
Attended or sent staff to energy management seminars	44%	61%	61%
Hired an energy consultant to find ways to improve energy efficiency	25%	29%	18%
Hired an energy manager	8%	7%	5%
None	13%	7%	15%

Organizations in the healthcare industry are also considerably more likely than others to have implemented a number of systems-related measures to improve energy efficiency. Most notably, the majority of healthcare organizations have installed variable-speed drives or upgraded an existing building management system. Almost all the healthcare organizations had adopted at least one of the listed items.

Equipment and Systems-related Measures Adopted in the Past 12 Months	Healthcare		All Industries
	2008	2010	2010
	(334)	(288)	(1,433)
Adjusted HVAC temperature controls to reduce time that heating/AC runs	55%	57%	56%
Replaced inefficient equipment before the end of its useful life	48%	41%	36%
Increased preventive maintenance schedules	26%	23%	25%
Increased frequency of monitoring consumption	34%	33%	30%
Upgraded or improved an existing building management system	60%	56%	33%
Installed variable-speed/frequency drives (VSDs)	67%	52%	25%
Installed a building management system where there was not one before	28%	11%	12%
Captured waste energy (such as heat & steam)	16%	9%	7%
Re-commissioned building systems and equipment	16%	23%	12%
Other	8%	3%	2%
None	4%	7%	15%

About three-quarters of the healthcare respondents have switched to energy-efficient lighting, consistent with other sectors. Healthcare organizations are more likely to have installed occupancy or daylight sensors to reduce lighting energy use (56%), compared to other industries (40%).

Lighting-related Measures Implemented in the Past 12 Months	Healthcare		All Industries
	2008	2010	2010
	(334)	(274)	(1,390)
Switched to energy-efficient lighting	87%	73%	72%
Installed occupancy or daylight sensors	56%	56%	40%
Installed or adjusted time clocks to turn lights on/off at specified times	27%	27%	27%
Other	4%	1%	2%
None	5%	14%	15%

A much smaller percentage of organizations have implemented building envelope improvements to save energy over the past year. Organizations in the healthcare industry are more likely than other industries to have installed energy-saving glass and reflective white roof membranes, whereas other industries are more likely to have increased building insulation.

Building Envelope-related Measures Implemented in the Past 12 Months	Healthcare		All Industries
	2008	2010	2010
	(322)	(176)	(333)
Installed energy-saving glass in windows	35%	23%	19%
Increased building insulation	19%	15%	18%
Re-roofed with white roof covering to reduce heat gain	27%	18%	13%
Installed a green vegetative roof	2%	4%	5%
Other	3%	2%	2%
None	43%	58%	60%

Half of the organizations in the healthcare industry have negotiated energy contracts with suppliers, which is nearly double the proportion of organizations in other industries. Those in healthcare are also more likely to have energy price hedging strategies in place, to participate in demand response (smart grid) programs, and to have implemented a utility bill validation system or service.

Energy Supply-related Measures Adopted	Healthcare		All Industries
	2008	2010	2010
	(330)	(176)	(333)
Negotiated energy contracts with suppliers	52%	49%	29%
Put energy price hedging strategies in place	35%	28%	13%
Installed renewable energy systems (such as solar, wind, or biomass)	4%	5%	8%
Self-generate power during demand peaks	15%	12%	7%
Converted to using alternative fuels	6%	4%	5%
Participated in demand response	n/a	27%	19%
Implemented utility bill validation	n/a	20%	15%
Other	3%	0%	1%
None	30%	26%	45%

An increasing number of healthcare organizations have at least one certified green building, up from 4% in 2008 to 11% in 2010. Healthcare organizations are slightly less likely to have a green certified building than those in other industries. However, healthcare organizations are more likely to have buildings with green elements that are not green certified.

Current Status Vis-à-vis Green Facilities	Healthcare		All Industries
	2008	2010	2010
	(334)	(287)	(1,432)
Have at least one green certified building	4%	11%	12%
Have buildings with green elements but no certification	50%	47%	40%
Have no buildings that incorporate green elements	40%	37%	40%
Don't know	6%	5%	8%

Healthcare organizations are less likely to target green building certification for both new construction and existing building retrofit projects, relative to other industries. Eighteen percent of healthcare decision-makers are targeting green certification for their newly constructed buildings. However, the majority of healthcare organizations seek to at least include green elements (80%).

Goal for New Construction/Retrofits	New Construction Projects		Retrofit Projects	
	Healthcare	All Industries	Healthcare	All Industries
	2010	2010	2010	2010
	(125)	(308)	(119)	(428)
To be certified to a recognized green standard	18%	33%	8%	18%
To include green elements but not to be certified	62%	52%	53%	60%
No green building goals	18%	13%	36%	20%
Don't know	2%	2%	3%	2%

The healthcare industry is not yet sold on renewable energy. Almost two-thirds are not considering utilizing any type of renewable energy in construction or retrofit projects. Solar photovoltaic power systems and solar thermal water and space heating are the technologies considered most often.

Renewables in/ Considered in Projects	Healthcare		All Industries
	2008	2010	2010
	(244)	(176)	(333)
Solar electric	14%	16%	31%
Solar thermal	11%	14%	20%
Wind	6%	4%	13%
Geothermal	9%	9%	14%
Hydropower	2%	1%	5%
Biomass	3%	6%	7%
None of these	62%	60%	40%
Don't know	9%	8%	8%

When asked to select up to three clean energy technologies they expected to have the greatest improvement in performance relative to price over the next 10 years, healthcare respondents identified lighting, smart building, and solar photovoltaic technologies as most promising. Healthcare leaders are more likely to be optimistic about improvement in lighting and smart building technologies compared to the overall North American sample, which is more likely to select solar photovoltaic and electric vehicle technologies than the healthcare sector.

Greatest Expected Performance vs. Price Improvement over Next 10 Years	Healthcare	All Industries
	2010	2010
	(287)	(1,419)
Lighting technologies	60%	51%
Smart building technology (integration, demand response)	59%	44%
Solar photovoltaic (PV) energy	28%	38%
Electric and plug-in electric vehicles	19%	28%
Concentrating solar power (CSP)	10%	18%
Nuclear power	23%	22%
Stationary electric energy storage	7%	6%
Carbon capture and storage (CCS)	3%	3%

CONCLUSION

Healthcare organizations are more focused than ever on doing well by doing good: saving money and the environment at the same time. Even as expectations for energy price increases fall, there is more attention than ever on improving the efficiency of buildings and processes. But it is clear that good intentions are not enough to get these types of projects implemented on a large scale. There are natural barriers to an efficient market that practitioners throughout the value chain are working to correct, and with the right mix of good policy, innovative technology and new financial structures, there is hope that the efficiency of the existing healthcare building stock can be dramatically increased.

The Institute for Building Efficiency is an initiative of Johnson Controls providing information and analysis of technologies, policies, and practices for efficient, high performance buildings and smart energy systems around the world. The Institute leverages the company's 125 years of global experience providing energy efficient solutions for buildings to support and complement the efforts of nonprofit organizations and industry associations. The Institute focuses on practical solutions that are innovative, cost-effective and scalable.

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