

KEY TRENDS IN CONSTRUCTION MANAGEMENT & PROJECT DELIVERY

CONSTRUCTION OWNER PERSPECTIVES



NORTHERN ARIZONA UNIVERSITY SCIENCE AND HEALTH BUILDING

TAKING THE LONG VIEW: CONSTRUCTION OWNERS ADDRESS THEIR CHALLENGES AND PRIORITIES

To understand issues on the minds of construction owners, we surveyed construction owners at the COAA Leadership Conferences in 2015. Participants showed a deep enthusiasm for incorporating BIM and VDC, but a reluctance to implement them under current conventions, and for improving project delivery through more collaboration. They also described the real demands they face to reduce costs and gain efficiencies. We are pleased to share these insights with you as new methodologies continue to shape the industry.

COVER PHOTO: NORTHERN ARIZONA UNIVERSITY SCIENCE AND HEALTH BUILDING

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KEY FINDINGS:

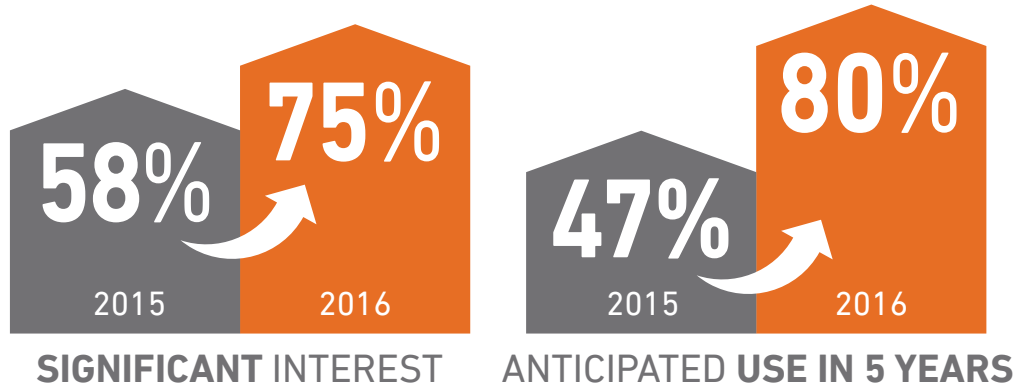
- Owners want to utilize best-practices tools, especially to support successful project execution and closeout.
- They also wish they had better, more assessable information and standards. To address this concern, there is growing interest in using BIM/VDC as a facilities management tool.
- Owners face significant time pressures and are interested in applying lean concepts to their design and construction processes.
- Interest in Integrated Project Delivery (IPD) remains high. However, the majority of owners prefer to follow the principles of IPD within a more traditional delivery contract approach, rather than entering into a formal multi-party IPD contract.

2016 CONSTRUCTION OWNERS' PERSPECTIVES



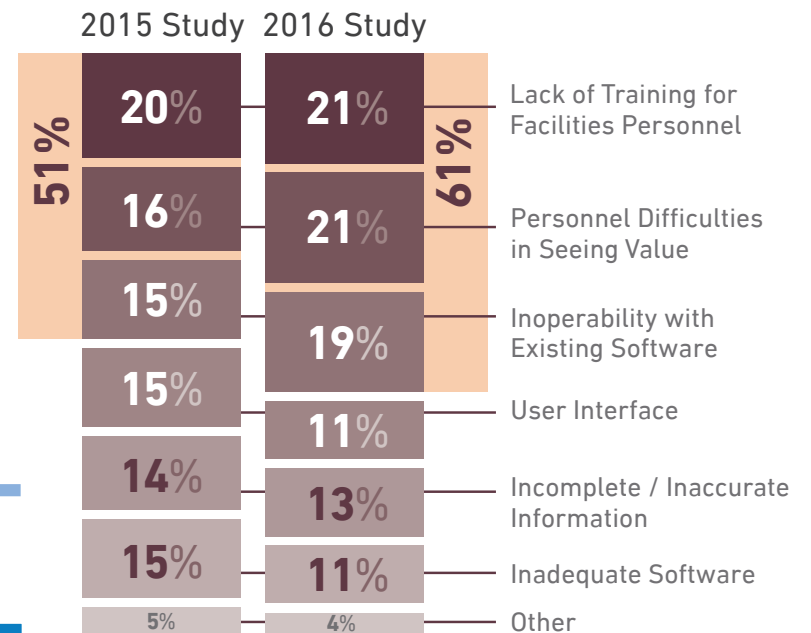
A GROWING INTEREST FOR BIM & VDC

[Building Information Modeling & Virtual Design and Construction]



The potential for BIM & VDC as a **FACILITIES MANAGEMENT TOOL** GAINS MOMENTUM

WHY NOT? BIM & VDC USE COMMONLY HINDERED BY:

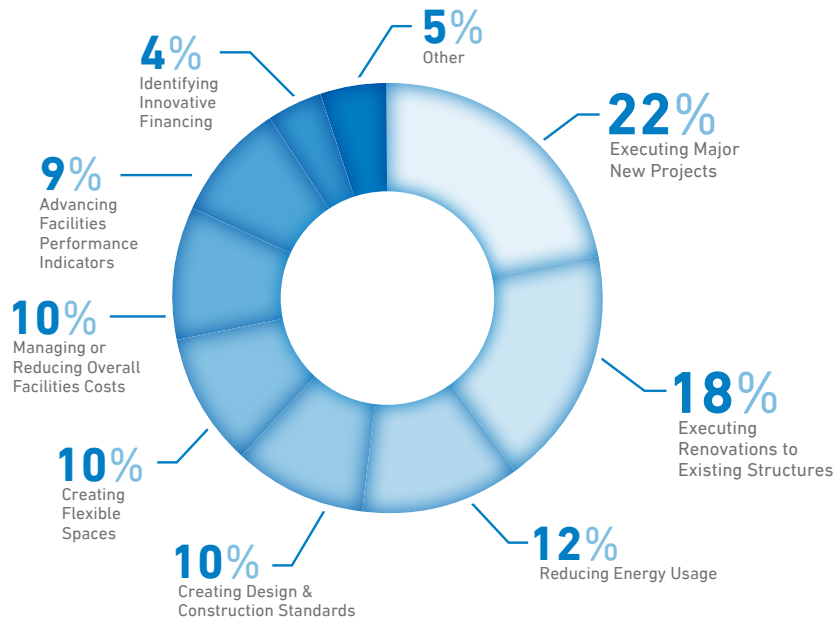


TOP PRIORITY: ENSURING SUCCESSFUL PROJECT EXECUTION

Successful project execution is a top priority for many owners. Secondary priorities span areas such as energy efficiency, performance indicators, and facilities cost management.

#1 priority **4 in 10 OWNERS** = **SUCCESSFUL PROJECT EXECUTION**

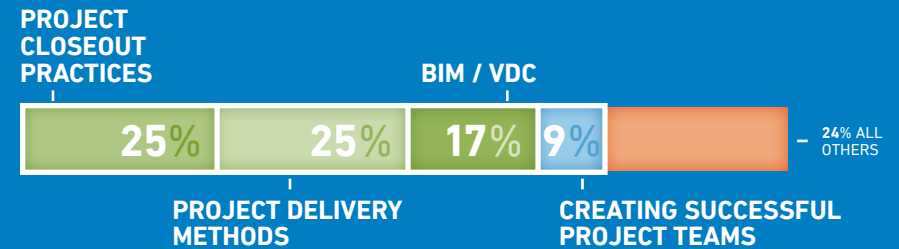
WHAT ARE YOUR TOP TWO FACILITIES-RELATED PRIORITIES?



When asked what topics they'd most want to discuss with their peers, owners' top four answers were all related to tools and practices that support successful project delivery (see below).

DESCRIBE THE AREA YOU ARE MOST INTERESTED IN NETWORKING WITH PEERS.

(Coded open-ended responses)



I'D MOST LIKE TO NETWORK ABOUT...

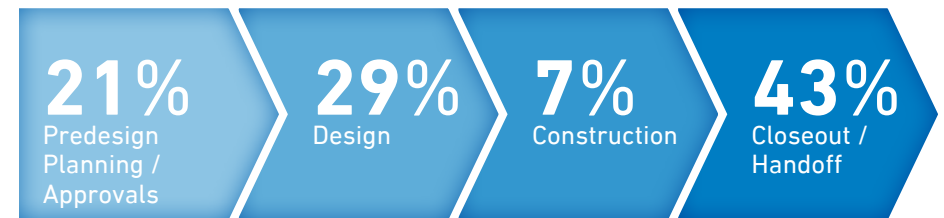
- "...how to determine the best delivery methods for each type of project."
- "...project close-out, and also documenting the value of Integrated Project Delivery with metrics from actual projects."
- "...collaborative models with owner, design and construction teams."



#1 CHALLENGE: PROJECT CLOSEOUT

In our survey, project closeout was cited as the most difficult project phase.

WHAT STAGE OF A MAJOR PROJECT IS THE MOST DIFFICULT TO SUCCESSFULLY EXECUTE?



TO IMPROVE THE CLOSEOUT / HANDOFF STAGE, WE...

- “...start planning for closeout at the beginning of design.”
- “...adopt a standardized information exchange for the transfer of managed facilities assets from construction to operations.”
- “...hire a commissioning manager to oversee all third party commissioning.”

BETTER RESULTS THROUGH EARLIER COLLABORATION

Forming teams early in the overall design and construction process can help ensure their success. For example, many owners advocate for general contractor involvement during the design phase. This approach generally results in a better overall design and tends to diminish conflict and bolster the creative process.

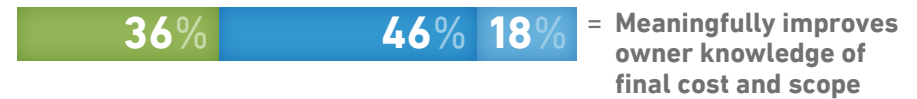
However, about one-third of owners feel that early contractor involvement can result in too much emphasis on cost. This highlights the need to take a balanced approach during this important stage.



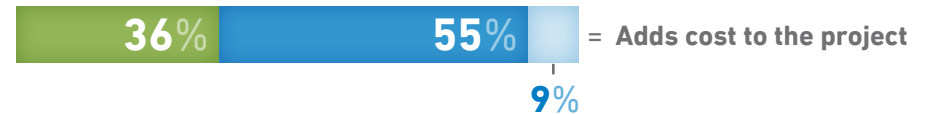
CORNELL COLLEGE DOWS/TARR RESIDENCE HALL RENOVATION

GENERAL CONTRACTOR / CM INVOLVEMENT DURING THE DESIGN PHASE...

■ ALWAYS ■ USUALLY ■ OCCASIONALLY ■ RARELY



■ RARELY ■ OCCASIONALLY ■ USUALLY ■ ALWAYS



THE BIGGEST OBSTACLE I FACE IS...

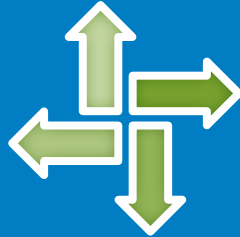
(Coded open-ended responses)

Not enough time!



25%

Poor information!



20%

Other responses

(Each accounting for 10-15% of responses)

Poor collaboration



Maintenance



No qualified partners



Project handoff / closeout



GROWTH OPPORTUNITY: INFORMATION MANAGEMENT

“Not enough time” was identified as an issue for many owners—and they recognize that the implementation of better information systems designed to help manage project execution and maintenance tasks could alleviate the time crunch.

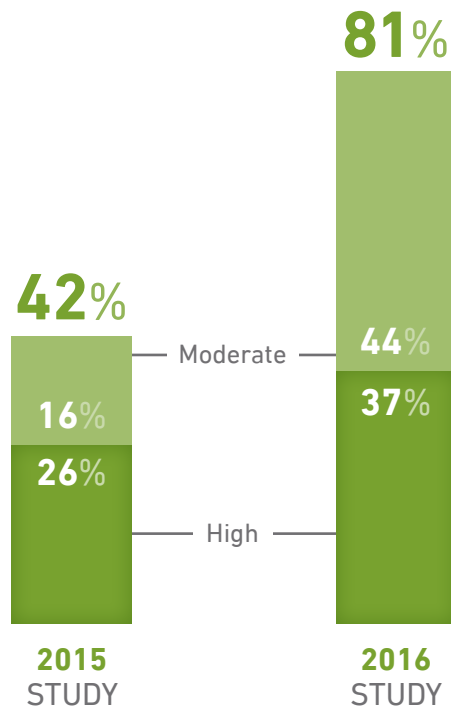
THE BIGGEST OBSTACLES I FACE ARE...

- “...time to market expectations for new projects are much too fast.”
- “...not enough time to provide the very best quality processes and documents.”
- “...finding time and resources to transition to a digital information environment.”
- “...lack of clear, comprehensive information standards. Lack of an easy way to comply with these standards.”
- “...collaboration among A/E and contractor entities.”
- “...finding qualified contractors.”

GOING LEAN TO DRIVE EFFICIENCY

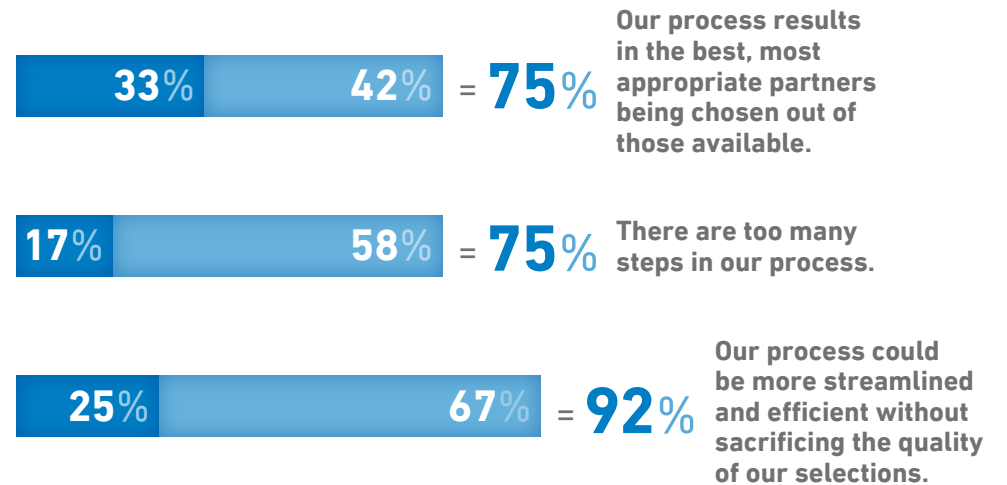
There was a noticeable increase over the last year in the number of owners interested in applying lean methodologies to improve the efficiency of their design and construction processes. Respondents also agreed that there are opportunities to make the partner selection process more streamlined and efficient.

WHAT IS YOUR ORGANIZATION'S LEVEL OF INTEREST IN **APPLYING LEAN METHODOLOGIES** TO YOUR DESIGN AND CONSTRUCTION PRACTICES?



HOW EFFECTIVE IS THE PROCESS WE UTILIZE TO SELECT PARTNERS FOR PROJECTS?

■ STRONGLY AGREE ■ AGREE



BIM / VDC FOR FACILITIES MANAGEMENT: INTEREST IS GROWING, BUT ADOPTION IS DIFFICULT

The value of BIM/VDC as a design and construction tool is readily apparent to owners, and they are now showing growing interest in utilizing BIM/VDC to support facilities management. But despite this interest, only 20% of owners currently use BIM/VDC. Lack of training, difficulty in “selling” BIM/VDC, and software inoperability are all significant challenges.

% OF OWNERS WHO:

(To a “Moderate” or “High” degree)

HAVE AN INTEREST IN UTILIZING BIM / VDC AS FACILITIES MANAGEMENT TOOL



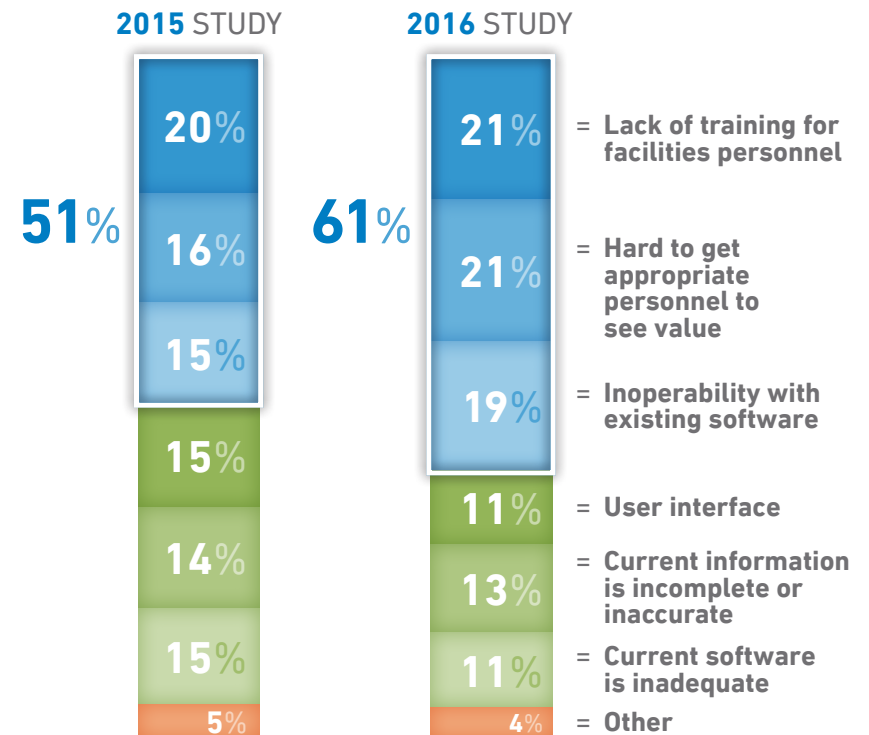
UTILIZE BIM/VDC AS A FACILITIES MANAGEMENT TOOL



ANTICIPATE UTILIZING BIM/VDC AS A FACILITIES MANAGEMENT TOOL THREE YEARS FROM NOW



WHAT HINDERS BIM / VDC AS A FACILITIES MANAGEMENT TOOL?

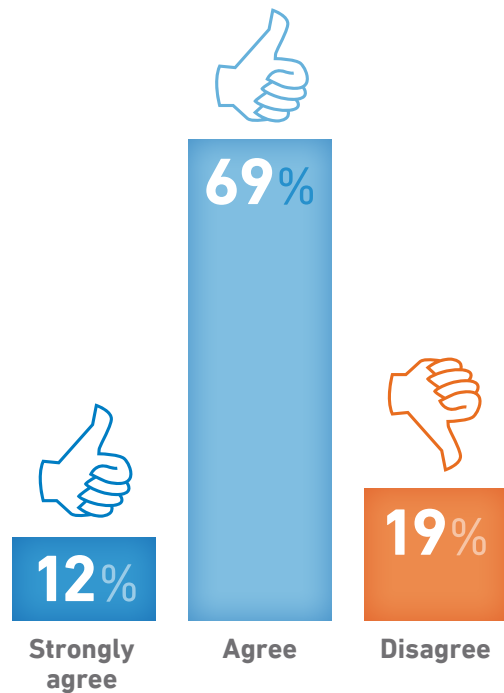


EMBRACING THE SPIRIT OF IPD

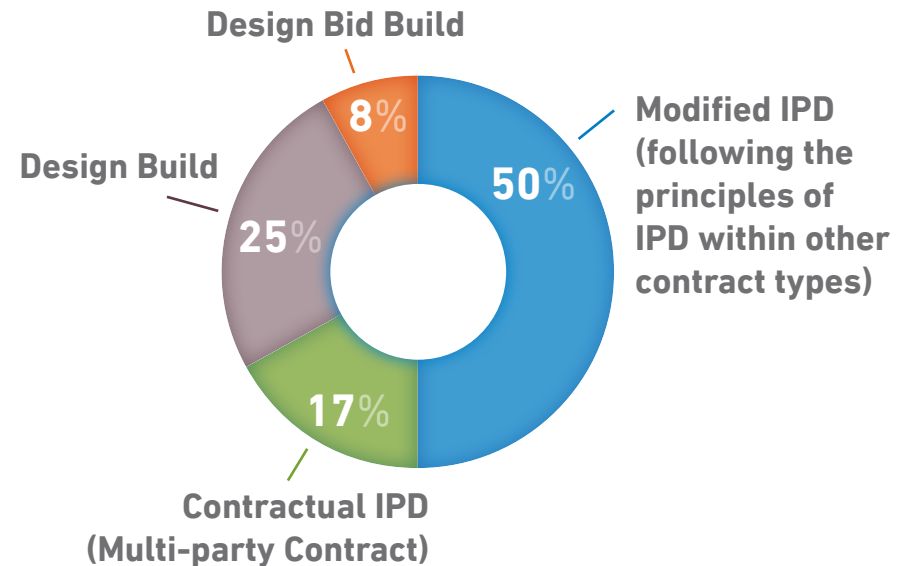
Interest in Integrated Project Delivery (IPD) remains. In fact, when we asked owners to name the most exciting trend in facilities management today, 37% of owners said IPD.

However, the process of arriving at a single, multi-party IPD contract is difficult. For this reason, many owners have an interest in following the principles of IPD (collaboration, shared goals, etc.) within a more traditional delivery contract.

THE PROCESS OF ARRIVING AT A SINGLE, MULTI-PARTY IPD CONTRACT IS **COMPLICATED?**



WHICH WOULD YOU PREFER TO UTILIZE FOR A MAJOR PROJECT?



LEED: THE REVIEWS ARE MIXED

Owners appear to have conflicting views about LEED and its impact on facility efficiency. Whereas two-thirds of owners believe LEED improves building performance, an equal proportion feels LEED has become more of a buzzword that doesn't necessarily produce many benefits on its own.

The LEED certification process can be costly and time consuming. Three-quarters of owners feel it makes best business sense to adhere to the principles of LEED without obtaining actual LEED certification.

REGARDING LEED...

■ ALWAYS ■ USUALLY ■ OCCASIONALLY

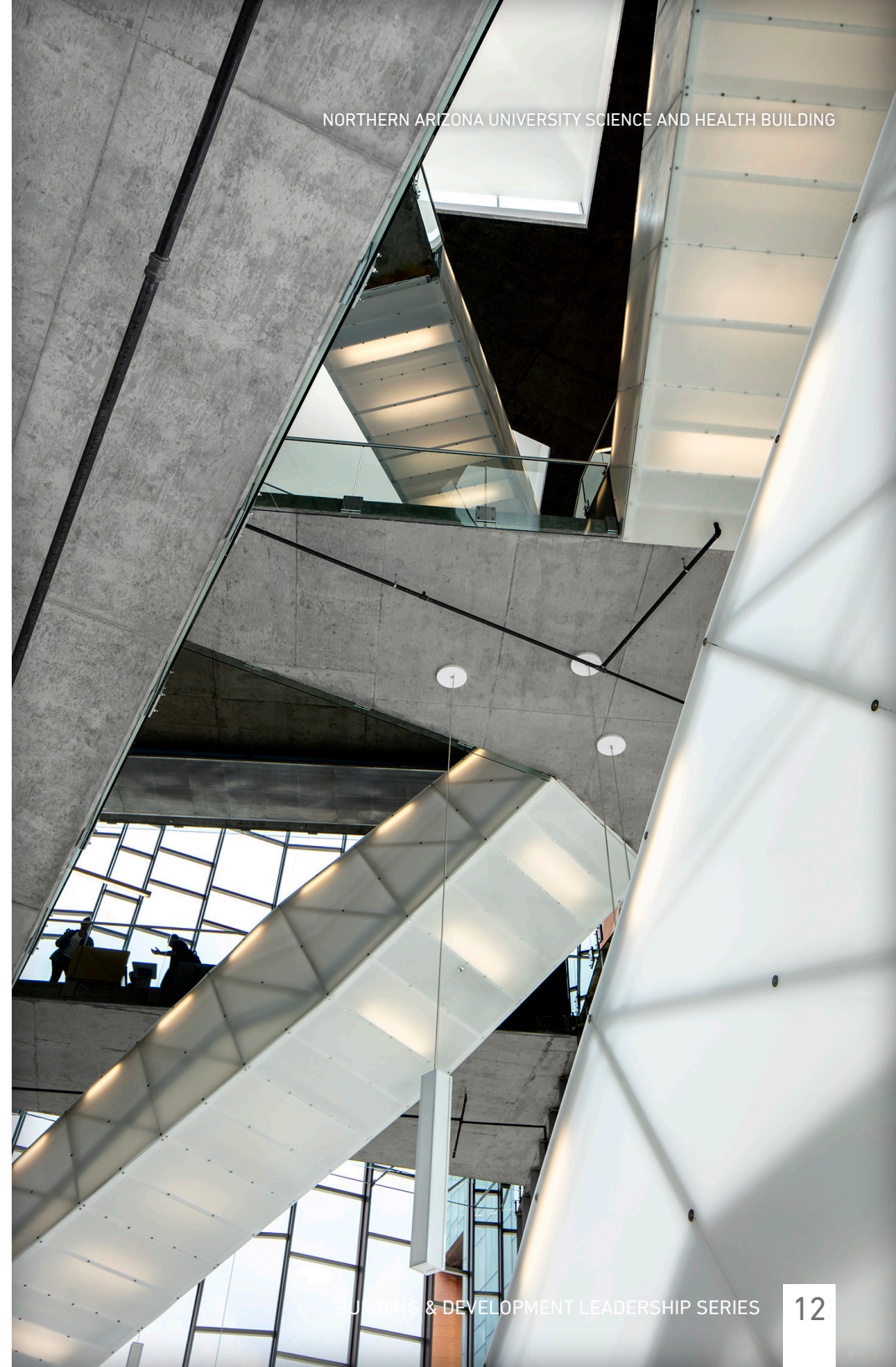
LEED improves the performance of buildings.



LEED is a buzzword that helps promote projects without providing any real benefit.



It makes best business sense to adhere to the principles / standards of LEED without obtaining the actual certification.



ON-SITE SOLAR ENERGY: APPEALING FOR SOME, CHALLENGING FOR MANY

Improved economic conditions have resulted in an unprecedented boom in solar-energy installations. However, according to the Solar Energy Industry Association, the growth is generally coming from residential and utility installations (rather than on-site commercial).

Owners mentioned several impediments keeping them from pursuing solar. For example, high upfront costs were mentioned by half of the survey respondents. But despite the barriers, a little over one-third of owners expect to complete a solar project over the next five years.

■ VERY LARGE ■ LARGE ■ MODERATE ■ NONE/NO ANSWER

HOW MUCH EFFORT HAS YOUR ORGANIZATION PUT TOWARDS CONSIDERING A SOLAR PROJECT FOR YOUR FACILITIES?



WHAT ARE THE ODDS THAT YOUR ORGANIZATION WILL COMPLETE A SOLAR PROJECT WITHIN THE NEXT 5 YEARS?



THE BIGGEST OBSTACLES TO ON-SITE SOLAR AT OUR FACILITIES ARE...

- “...our financial model requires low upfront costs.”
- “...high upfront costs and concern about longer term unknowns such as tax credits.”
- “...oftentimes there are greater facility needs that take precedence over performing feasibility analyses for technologies like this (and also automated data monitoring, BIM, etc.) that would dynamically change existing operations.”
- “...the low cost of electricity from our utilities.”
- “...a lack of internal interest.”
- “...lack of space needed to make a significant impact.”



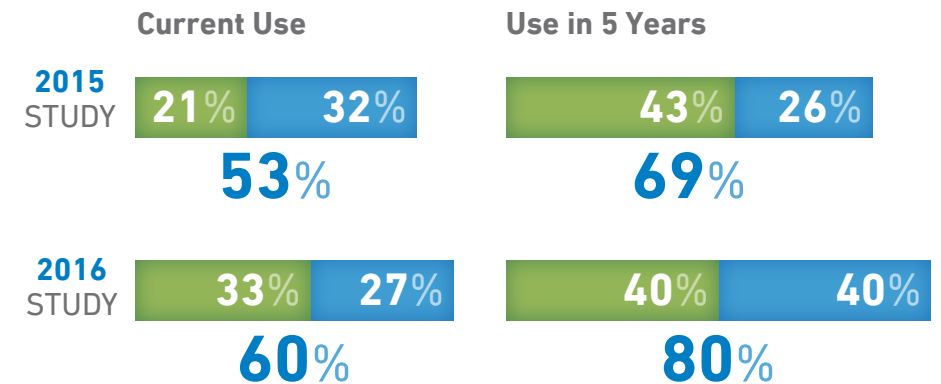
HAMPTON INN AND SUITES, DOWNTOWN

RETURN ON INVESTMENT: FOCUS ON THE LONG-TERM

Investments in areas such as energy efficiency and BIM/VDC information tools often require upfront spending that pays back over many years. Owners have a growing interest in lifecycle cost analysis that highlights the enduring benefits of these large investments. They are also interested in performance contracting as a way to become more energy efficient without incurring high upfront expenses.

REGARDING YOUR USE OF LIFECYCLE COST ANALYSIS TO EVALUATE PROJECTS...

■ SIGNIFICANT ■ MODERATE





PENN STATE INTRAMURAL ATHLETICS BUILDING ADDITION

ACKNOWLEDGEMENTS

We sincerely thank the owners who participated in this study. Our aim is to be in lockstep with customers and partners, resulting in a superior experience that's second to none. Your input is tremendously valued and greatly appreciated.

As an industry leader in BIM / VDC, Mortenson is committed to working with owners to ensure they get maximum benefits from this tool during the lifetime of their facilities*. We are also continually examining our processes with an eye to reducing waste and improving efficiencies.

We are dedicated to strong collaboration and alignment with you and your other delivery partners during each and every stage of a project.

We welcome the opportunity to share more with you about our expertise, delivery methods and unique capabilities to provide world-class quality, innovation and service to our customers.

*Several case studies are accessible at [Mortenson.com/VDC-Journey](https://www.mortenson.com/VDC-Journey)

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*Engineering, procurement and construction (EPC) — under an EPC contract, the contractor designs the installation, procures the necessary materials, and builds to project. Balance of plant (BOP) — BOP construction refers to supporting components and structures not included in the primary system itself.

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