



The American  
Institute  
of Architects



# 2030 by the numbers

The 2016 summary of the  
AIA 2030 commitment

July 2017





In the context of a rapidly shifting global landscape on climate change, including the June 2017 announcement that the United States would start the process to formally withdraw from the Paris Climate Agreement, the role of the private sector in a low-carbon future is more pronounced than ever. The design of the built environment is a crucial part of that future.

Therefore, all progress we collectively make toward meeting our 2030 Commitment targets is a step in the right direction. As the 2016 numbers show, we've seen growth in the program and progress toward goals, though not yet at the pace required by the urgency of climate change. This report provides a snapshot of what we've accomplished, while also demonstrating the need to accelerate our efforts.

### **The program is growing**

In 2016, 175 firms—representing sole practitioners to companies with more than 1,000 employees—demonstrated their commitment to reaching our collective goals by aggregating and sharing their project data, a 15% increase in reporting firms from 2015. Additionally, 53 new firms joined the Commitment, bringing the overall number of signatories to more than 400.

### **Our goals are ambitious - but achievable**

The average predicted energy use intensity (pEUI) percent savings increased again this year, climbing to 42% from 38% in 2015. While more work is needed to reach the current overall target of 70% or more, there are firms and projects demonstrating that this is possible: In 2016, six firms reported an overall pEUI reduction of 70% or greater for their portfolio, and across the board, 331 individual projects representing a variety of sizes and use types also met this ambitious target.

### **The impact is significant**

Taken together, the potential energy savings from 2016 projects represent approximately 16.7 million metric tons of greenhouse gas emissions, the equivalent of running almost five coal-fired power plants or powering 1.76 million homes in a year\*. These designed project savings represent progress for our environment—and good news for our economy. In the U.S. alone, 2016 projects as designed represent a projected annual cost savings of approximately \$1.43 billion\*\*.

### **Energy modeling is key**

Our numbers continue to demonstrate that energy modeling is an essential component of success. The numbers also indicate that we must better understand the strategies, tools, and resources necessary to integrate energy modeling into the design culture of architecture firms.

As we look to 2017 and beyond, the importance of voluntary efforts like the 2030 Commitment will remain critical catalysts for a carbon-neutral future, helping to reduce the threat of climate change facing future generations. To learn more about the 2030 Commitment, including how to become a signatory, as well as upcoming in-depth reports and case studies on the 2016 numbers, visit the 2030 Commitment page on [aia.org](http://aia.org).

\* EPA Greenhouse Gas Equivalencies Calculator

\*\* Calculated using U.S. average commercial rates for electricity and natural gas for all project types

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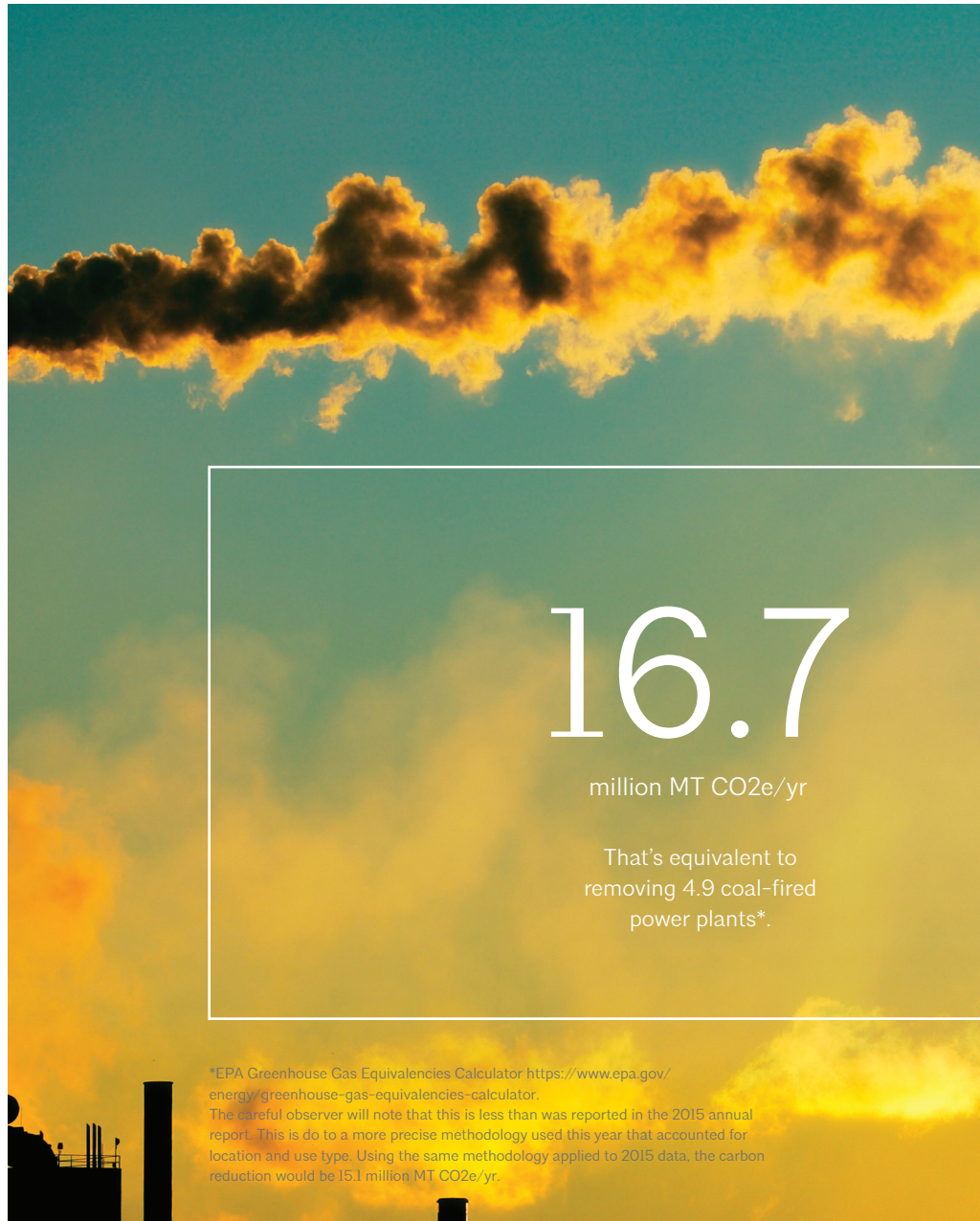
*AIA 2030 Commitment Working Group & Co-chairs*  
Greg Mella, FAIA—Smithgroup JJR  
Heather Gayle Holdridge—Lake | Flato Architects



CHATHAM UNIVERSITY EDEN HALL CAMPUS

# IMPACT

# Projected CO<sup>2</sup> emissions reduction in 2016 projects



# Projected savings in 2016 projects



\$1.4B  
in the U.S.



The energy reduction projections from 2016 projects aren't only good for the environment – they are good for the economy as well. Based on the average U.S. commercial rates for electricity and natural gas, the projected carbon reductions translate into a potential annual savings of \$1.4 billion for domestic projects, and \$3.1 billion when considering domestic and international projects together.

\$3.1B  
U.S. & global

\* Design energy projected cost savings calculation: 1) The project use type was used to determine the percentage of electricity and natural gas for each project in the United States and Canada [1]; 2) the whole building and interior only project projected energy savings were totaled; 3) The electricity and natural gas design energy savings were multiplied by the US average commercial rate for electricity [2] and natural gas [3].

[1] – ENERGY STAR Portfolio Manager: Technical Reference: Estimating Fuel Mix and Energy Cost (August 2016). hyperlink – <https://portfoliomanager.energystar.gov/pdf/reference/FuelMixandCost.pdf>

[2] – EIA Electricity US Average – [https://www.eia.gov/electricity/monthly/epm\\_table\\_grapher.php?t=epmt\\_5\\_6\\_a](https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_5_6_a)

[3] – EIA Natural Gas US Average – [https://www.eia.gov/naturalgas/monthly/pdf/table\\_03.pdf](https://www.eia.gov/naturalgas/monthly/pdf/table_03.pdf)

# Every improvement makes a difference



Taken in context of a typical 100,000 sq ft commercial building, **a building designed to perform 70% better than the 2030 baseline would lead to \$140,000 in projected energy cost savings\***, and ~688 metric tons CO<sub>2</sub>e savings annually (equivalent to removing 145 passenger cars from the road for a year).\*\*



For every **100 kBtu of electricity saved**, just over **15 kg of CO<sub>2</sub> equivalent emissions are eliminated**. The energy cost savings are: \$4.11 for a residential building, \$3.34 for a commercial building, and \$2.15 for an industrial building.



For every **100 kBtu of natural gas saved**, **5.3 kg of CO<sub>2</sub> equivalent emissions are eliminated**, with cost savings from \$1.04 to \$0.39, depending on building type.

\*Using 56% electricity and 44% natural gas

\*\*EPA Greenhouse Gas Equivalencies Calculator <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>



# Ambitious, but achievable, goals

In 2006 Architecture2030 set an ambitious road map to achieve carbon neutrality in new buildings by 2030 with incremental targets increasing every 5 years. Since 2009 the AIA 2030 Commitment has provided an actionable tool to track progress.

A key challenge facing the 2030 Commitment is how to accelerate our progress to meet the target, especially as firms and projects demonstrate that meeting the target is possible.

**6 firms**

reported an average pEUI savings of 70% or greater across their portfolio

**16 firms**

reported portfolio average pEUI savings between 60 and 70%

**331 projects**

met the target of at least 70% pEUI savings—and over a third of those projects were 100,000 sq.ft. or greater

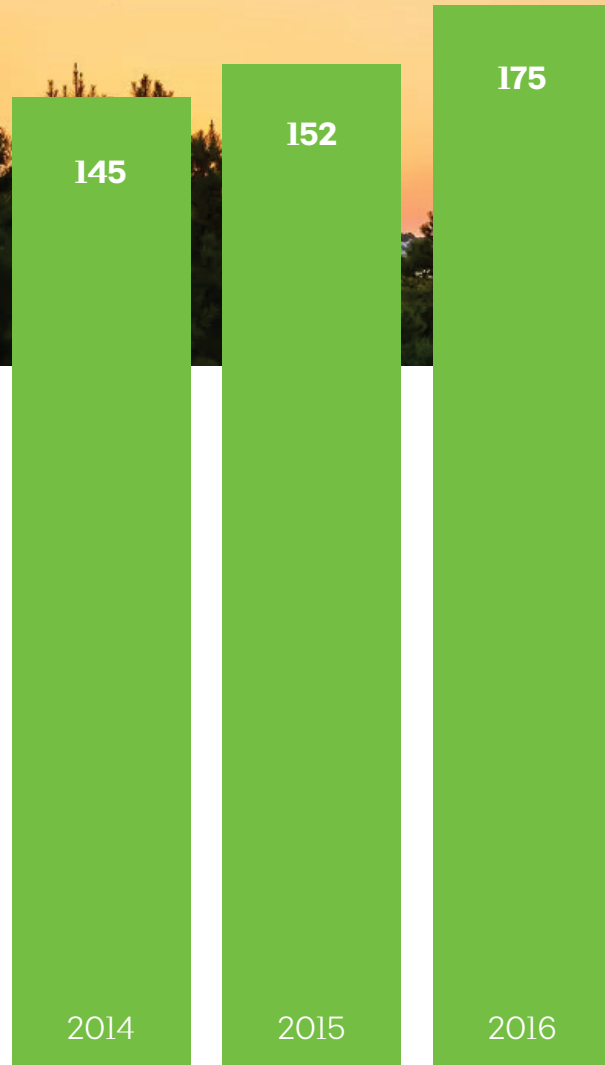




STANFORD UNIVERSITY CENTER

GROWTH

# Growth in firm engagement



## 15% increase in reporting firms

Over 400 firms have signed the AIA 2030 Commitment

# Who's participating-AIA 2030 Commitment engaged signatories

## 5 + years reporting

Adrian Smith + Gordon Gill Architecture  
 Albert Kahn Associates  
 Alliance (formerly Architectural Alliance)  
 Ayers/Saint/Gross  
 Bergmeyer Associates  
 BNIM Architects  
 Bora Architects  
 CallisonRTKL  
 CannonDesign  
 Cooper Carry  
 Cunningham | Quill Architects  
 DLR Group  
 EHDD  
 English + Associates Architects, Inc.  
 Epstein  
 Eskew+Dumez+Ripple  
 EYP  
 FXFOWLE  
 Gensler  
 GGLO  
 Goettsch Partners  
 Gresham Smith and Partners  
 Hahnfeld Hoffer Stanford  
 Harley Ellis Devereaux  
 High Plains  
 HKS  
 HOK  
 Hord Coplan Macht  
 IKM Incorporated  
 Jones Studio, Inc.  
 Kipnis Architecture and Planning  
 KMD Architects  
 L.M. Holder III, FAIA  
 Lake|Flato Architects  
 Landon Bone Baker Architects  
 Leddy Maytum Stacy Architects  
 Legat Architects  
 Lehrer Architects LA, Inc.  
 Little Diversified Architectural Consulting  
 Lord, Aeck & Sargent  
 LPA, Inc.  
 LS3P  
 Mahlum  
 Mazzetti Nash Lipsey Burch  
 Mithun  
 Moseley Architects  
 NBBJ  
 Orcutt Winslow  
 Page  
 Paul Poirier + Associates Architects  
 Payette Associates, Inc.  
 Pei Cobb Freed & Partners Architects LLC  
 Perkins+Will  
 Pickard Chilton  
 Quattrocchi Kwok Architects  
 Quinn Evans Architects  
 RVK Architects, Inc.  
 SERA Architects  
 Serena Sturm Architects, Ltd.  
 SHP Leading Design  
 SmithGroupJJR  
 Solomon Cordwell Buenz  
 SOM (Skidmore, Owings & Merrill) LLP  
 STUDIOS Architecture  
 The Beck Group  
 The Miller Hull Partnership  
 The Sheward Partnership, LLC  
 The SLAM Collaborative  
 TLC Engineering for Architecture  
 TRO Jung | Brannen  
 Valerio Dewalt Train Associates  
 Vanderweil Engineers  
 Weber Thompson  
 Wight & Company

William Rawn Associates, Architects, Inc.  
 WLC Architects, Inc.  
 Yost Grube Hall Architecture  
 ZeroEnergy Design  
 ZGF

## 3-4 years reporting

Ann Beha Architects  
 ARC/Architectural Resources Cambridge, Inc.  
 Archimania  
 Atelier Ten  
 Bard, Rao + Athanas Consulting Engineers LLC  
 Braun and Steidl (formerly Braun+Yoshida Architects, PC.)  
 Buro Happold Consulting Engineers Inc.  
 BWBR  
 Coolearth Architecture Inc.  
 Cuningham Group Architecture, Inc.  
 Dattner Architects  
 Davis Partnership Architects  
 Dewberry  
 DSGN Associates, Inc.  
 DWL Architects + Planners  
 Ellenzweig  
 Engberg Anderson  
 Farr Associates  
 Goody Clancy  
 Guidon Design  
 GWWO, Inc./Architects  
 Hacker (Formerly known as THA Architecture)  
 Hartshorne Plunkard Architecture  
 HDR, Inc.  
 Helix Architecture + Design  
 HMC Architects  
 Jacobs Global Buildings

Krueck+Sexton Architects  
 Leers Weinzapfel Associates  
 mode associates  
 MSR  
 OPN Architects  
 Overland Partners  
 Perkins Eastman  
 RB+B Architects, Inc.  
 Sasaki  
 Shepley Bulfinch  
 Smith Seckman Reid  
 SMMA  
 Willoughby Engineering LLC  
 Wilson Architects  
 WRNS Studio

## 1-2 years reporting

Ankrom Moisan  
 BAR Architects  
 BLT Architects  
 Bohlin Cywinski Jackson  
 Booth Hansen  
 Boulder Associates  
 Bruner/Cott  
 CBT Architects, INC  
 Clark Nexsen  
 CO Architects  
 Coulson  
 David Baker  
 DiMella Shaffer  
 DRAW architecture + urban design (formerly Davison Architecture + Urban Design)  
 greenspaces  
 Handel Architects  
 HarrisonKornberg Architects  
 Hastings  
 Hennebery Design  
 HGA Architects & Engineers  
 HMFH Architects  
 JAHN  
 Lionakis  
 McGranahan Architects  
 Miller Dyer Spears  
 Moody Nolan  
 NADAAA  
 Opsi Architecture  
 Pelli Clarke Pelli  
 RATIO ARCHITECTS  
 RMW  
 RNL  
 Robert AM Stern  
 Shive-Hattery  
 Siegel & Strain  
 Snow Kreilich Architects  
 SRG Partnership  
 Studio Nigro  
 Ziger/Snead Architects

# Who's participating-AIA 2030 Commitment new signatories

## 2016 Signatories

4240 Architecture Inc.  
AC Martin Partners, Inc.  
Aecis Arkitektura  
Architecture is Fun, Inc.  
Arkin Tilt Architects  
Arrowstreet  
Bernardon  
Beyer Blinder Belle  
Blackbird Architects  
BLGY Inc.  
BROOKS + SCARPA  
Browning Day Mullins Dierdorf  
CTA Architects Engineers  
Dake Wells Architecture  
Dekker Perich Sabatini  
Dore & Whittier  
Elizabeth Eason Architecture LLC  
Elkus Manfredi  
Emersion Design  
Feldman Architecture  
Finegold Alexander Architects  
Flad Architects  
GarthShaw  
GBD Architects Incorporated  
Grimm+Parker  
GSBS Architects  
Holly & Smith Architects  
ICON Architecture  
Interface Engineering-Chicago  
INVISION  
Jer Greene, AIA + CPHC  
LHB, Inc.  
Limbacher & Godfrey Architects  
Maryann Thompson Architects  
Murphy Burnham & Buttrick  
Neumann Monson

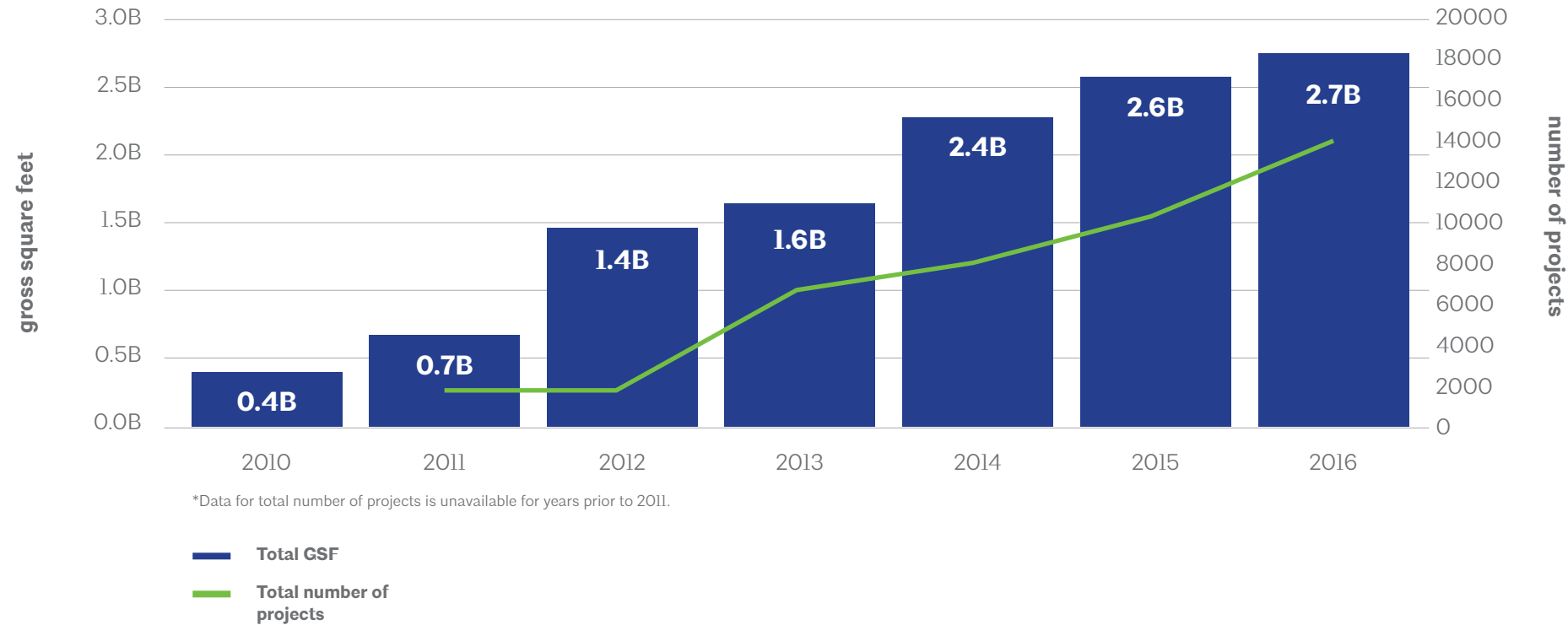
Office for Local Architecture (OLA)  
Perry Dean Rogers Partners Architects  
Ryall Porter Seridan Architects  
Sheldon Pennoyer Architects  
Sink Combs Dethlefs  
Spector Group  
Stanley Studio  
Stephen Tilly, Architect  
TBDA  
The Design Alliance  
The Green Engineer Inc.  
TK-Architecture  
Touloukian Touloukian Inc.  
Trapolin-Peer Architects  
VMDO Architects  
WDG  
Wiemann Lamphere Architects



BRISTOL COMMUNITY COLLEGE

# 33% increase in reported projects

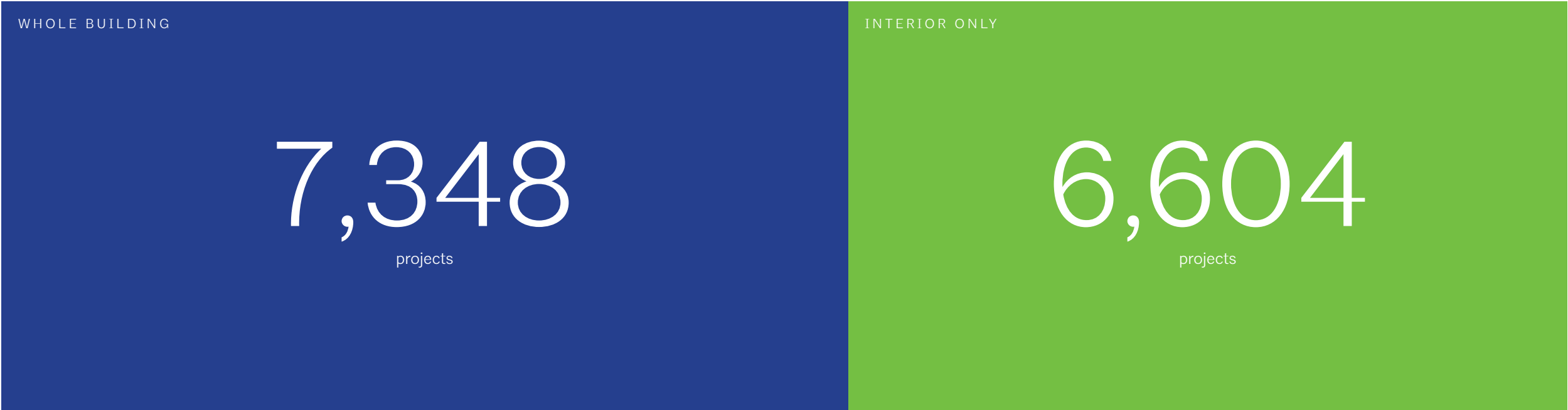
Total reported area (GSF) of projects  
& total number of projects



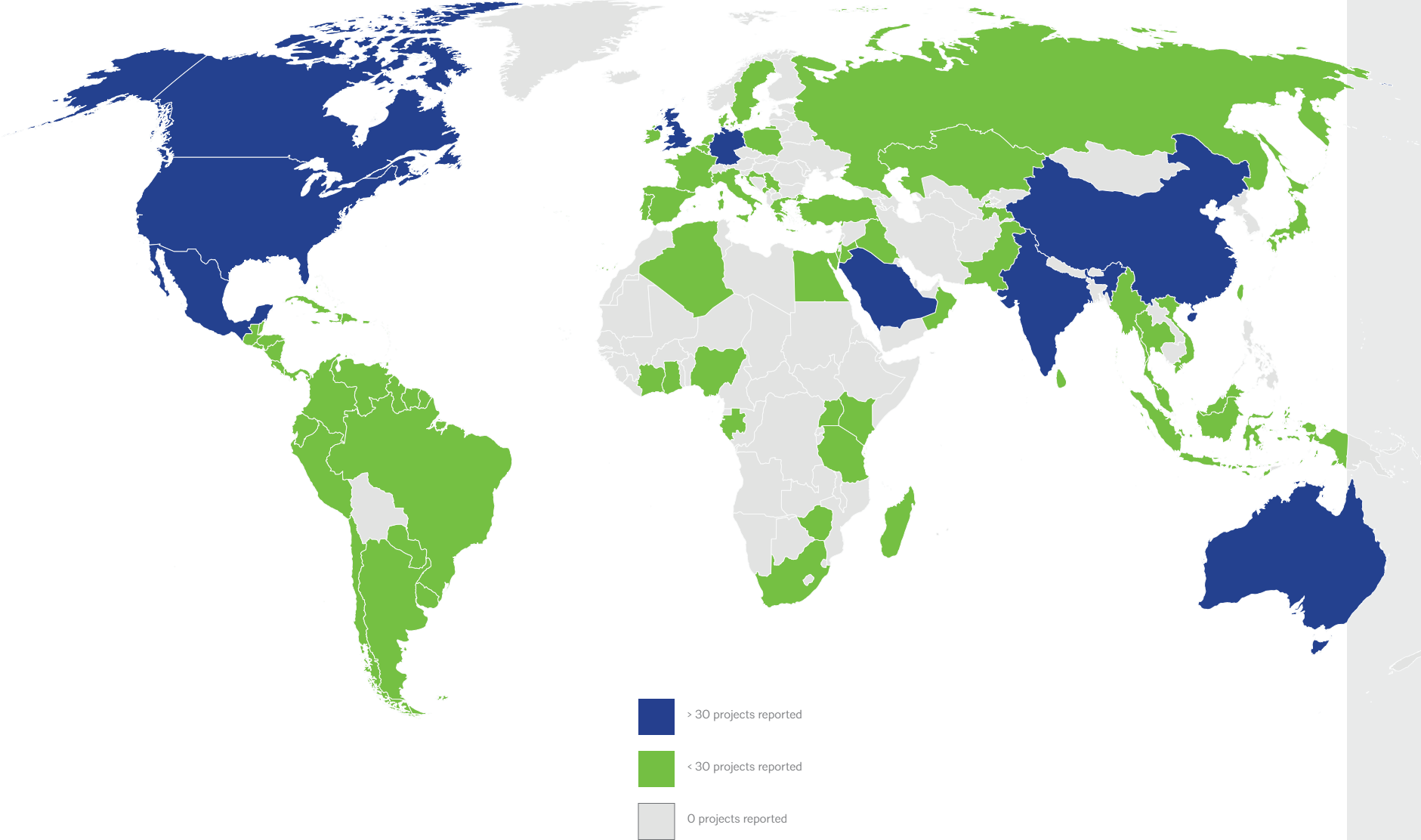
While both overall reported project area (GSF) and the total number of projects continued to grow, the number of projects increased at a greater rate. This reflects an increased reporting of smaller-size projects, with the median size of whole building projects moving from 109k GSF in 2015 to 90k GSF in 2016.

# Whole building versus interior projects

33% growth in overall number of project reported in 2016, while interior-only projects increased by 48%.



# Growth in number of countries



**24%**  
growth in number of countries represented, with projects representing 94 countries reported in 2016

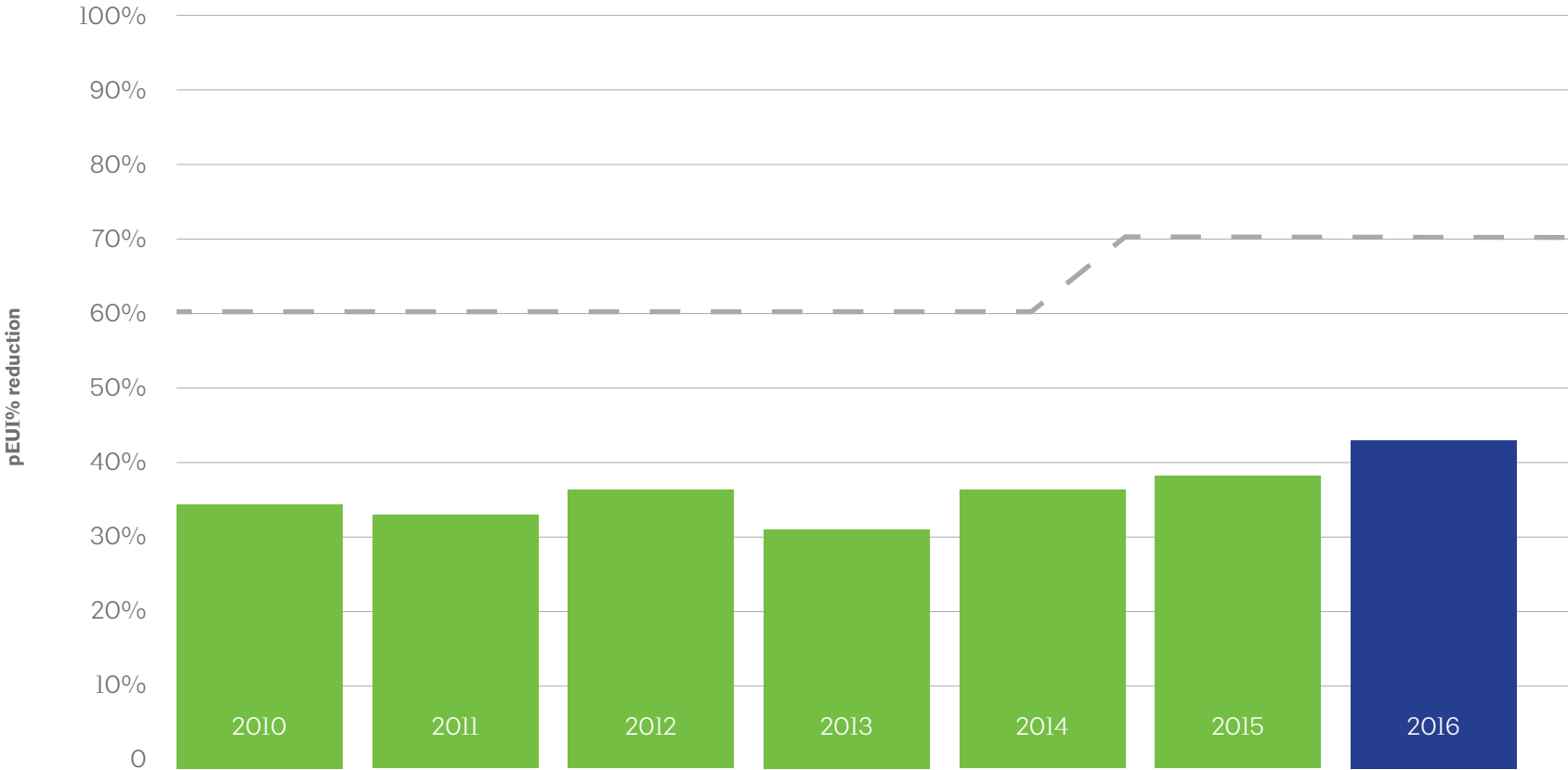
International projects tend to be much larger than domestic projects. While only 10% of all reported projects were international, these projects represent 42% of the overall GSF.



# PERFORMANCE



# An ambitious pEUI% reduction target



We are making important progress, but must accelerate our pace in order to meet our goals.

In whole building projects for 2016, pEUI savings averaged 42%—a continuation of the positive trend we’ve seen over the past several years, but still short of 70% target.

\*Annual project average pEUI % reduction as compared to the Architecture2030 target

# Performance of interior projects

21%\*

projected average LPD savings in 2016

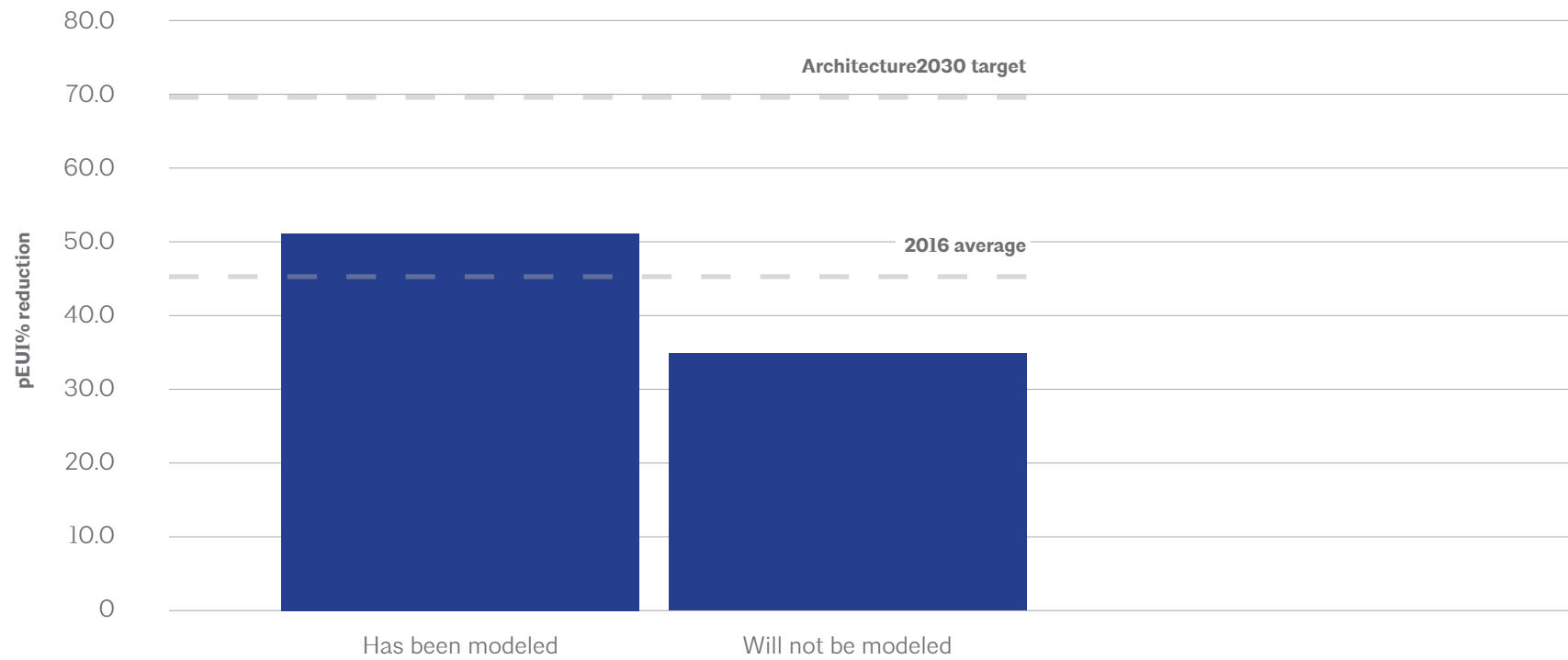
Overall, projects are coming close to meeting the 2030 Commitment target of 25% savings over ASHRAE 90.1-2007 baselines—which is not surprising, given industry improvements in efficient lighting options such as LED and the increased integration of performance-based interior design strategies, including using daylight sensors and utilizing task and ambient lighting. Code has also been a critical driver for making these improvements. Going forward, architects can drive additional improvements through advocating for further code improvements, embracing performance-based design strategies in all project types, and continuing to make calculating LPD values a priority in project reporting.

\*Because of certain reporting discrepancies, the 21% projected savings reflects an adjustment to code minimum LPD % savings within eight frequently used energy design codes in the office use type, encompassing the majority of projects. The 2030 Commitment will continue to examine methods to improve reporting in this area.



BRISTOL COMMUNITY COLLEGE

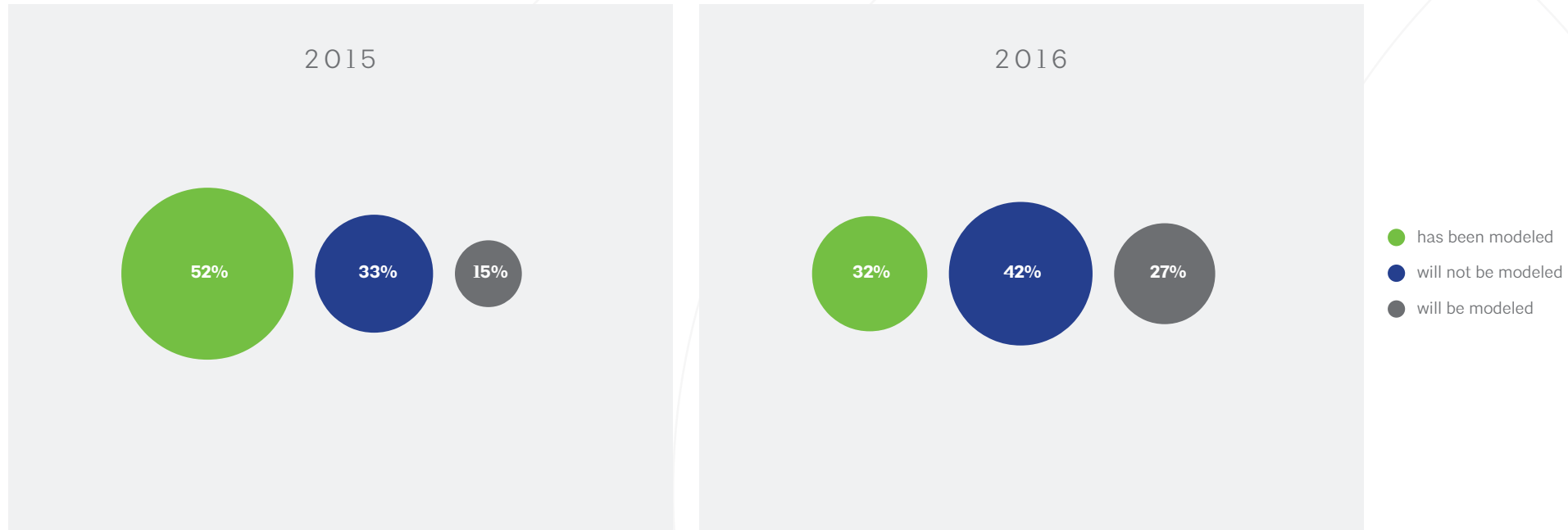
# Modeling=better performance



Projects using energy modeling predict an average of 16 percentage points more energy reduction.

Increasingly stringent codes are the driver for improvement for non-modeled projects.

# Decrease in energy modeling



Despite a decrease in the average use of energy modeling in 2016, the overall pEUI % reduction improved. This reflects the role of more stringent energy codes.

A focus of our work moving forward is understanding the barriers to modeling, strategies and tools for overcoming them, and continuing to support and advocate for adoption of more stringent energy codes.

# What you can do



## Take a step forward

If you haven't already, [join the 2030 Commitment](#)

Explore the AIA+2030 Online Series on [AIAU](#)

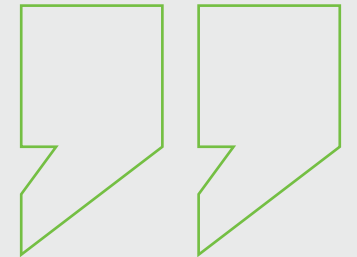
Track your firm's progress toward 2030 carbon neutral goals with the DDx ([DDx help pages](#))

Use energy modeling as well as resources in the DDx



*As signatories our firm is much more efficient and we have happier clients. The DDx allows us to take advantage of a robust set of data to enhance and inspire our design processes and focus our time and efforts in the areas that will best serve our clients.*

*Stacey White, AIA, LEED AP BD + C,  
Principal and Owner, mode associates,  
a boutique firm in San Luis Obispo, CA*



# Acknowledgments

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