2014 PMKC Webinar

PM Series
The Business Case for the 2030 Challenge

For audio, please listen through your computer or refer to your registration confirmation to listen by phone.
The Copyright Thing

This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of the speaker is prohibited.
The Disclaimer Stuff

This program is registered with the AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to constitute approval, sponsorship or endorsement by the AIA of any method, product, service, enterprise or organization. The statements expressed by speakers, panelists, and other participants reflect their own views and do not necessarily reflect the views or positions of The American Institute of Architects or of AIA components, or those of their respective officers, directors, members, employees, or other organizations, groups or individuals associated with them. Questions related to specific products and services may be addressed at the conclusion of this presentation.
PMKC Webinar

The Business Case for the 2030 Challenge

Moderator:
David Barkin, AIA
Chief Architect
State of Connecticut
DAS / Division of Construction Services
PMKC Advisory Group
PMKC Webinar

The Business Case for the 2030 Challenge

Presenter:
Rico Quirindongo, AIA
Architect
DLR Group
NW Region
PMKC Webinar

The Business Case for the 2030 Challenge

Presenter:
Premnath Sundharam, AIA
Architect / Principal
DLR Group
Phoenix, AZ
PMKC Webinar

The Business Case for the 2030 Challenge

Presenter:
Nathan Kipnis, AIA
Principal
Kipnis Architecture + Planning
Evanston, IL
learning objectives

• Acquire an understanding of where the design community is with 2030 Challenge goals.
• Adopt a framework for leveraging the 2030 Commitment to build long-lasting ‘trusted-advisor’ relationships with clients.
• Learn about updated 2030 Commitment design metrics and tools that inform the design process.
• Develop an outline of the value added proposition that can serve as an executive summary for firm leadership, decision-makers, in-house design teams, and client stakeholders to facilitate buy-in and support for investing project budget time that supports the 2030 Commitment.
Presenter:

Rico Quirindongo, AIA
Architect
DLR Group
NW Region
agenda

• 2030 challenge & 2030 commitment
• AIA aggregate overview
• why your firm should participate?
  • moral prerogative
  • business case
GETTING US TO 2030

THE PROGRAMS EXPLAINED

Architecture 2030

2030 Challenge
- Energy efficiency targets
  - Initiated in 2006 globally for building industry entities, planners, & products

Local Organizers
- eg. Pittsburgh Green Building Alliance

American Institute of Architects (AIA)

2030 Districts
- Urban districts that adopt 2030 energy targets
- Independent local initiatives with support from Architecture 2030
  - Some include additional targets like water use, transportation, and air quality; eg. Pittsburgh, Cleveland, Seattle

AIA 2030 Commitment
- Energy efficiency targets, plus indoor air quality, water efficiency, recycling and purchasing
- National framework with standardized reporting format to help firms evaluate the impact design decisions have on an individual project's energy performance

AIA+2030
- Comprehensive national curriculum for building industry professionals
- Ten-course series offered by AIA chapters (eg. Pittsburgh)

© EvolveEA 2013

the 2030 universe
1. Sign the letter
2. Create an green office strategy (overhead)
3. Operational strategy (projects)
4. Analysis and reporting
Baseline building consumption
2003 CBECs (commercial) | 2001 RECS (residential)
DESIGN STRATEGIES
The largest energy reductions can be achieved through design.

TECHNOLOGIES AND SYSTEMS
Including on-site renewable energy systems.

OFF-SITE RENEWABLE ENERGY
20% maximum.

Meeting the 2030 Challenge

Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved.

strategy : reduce before produce
2030 commitment

• 2013 reporting

Percent Total GSF Modeled vs. Non-Modeled

goal: transforming the design process
2030 commitment

- 2013 reporting

average pEUI Reduction by Modeling.

- Modeled: 38.26%
- Non-modeled: 29.90%
- All: 34.19%
- Certified: 44.12%

Goal: transforming the design process
2030 commitment

• 2013 reporting

number of reporting firms by staff size

79 firms reporting

goal: transforming the design process
2030 commitment

- AIA aggregate process

<table>
<thead>
<tr>
<th>Year</th>
<th>Total GSF of Active Design Projects Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>384.9M</td>
</tr>
<tr>
<td>2011</td>
<td>656.2M</td>
</tr>
<tr>
<td>2012</td>
<td>1.4B</td>
</tr>
<tr>
<td>2013</td>
<td>1.6B</td>
</tr>
</tbody>
</table>
2030 commitment

- 2013 reporting

Signatory Firm Reporting Rates by Size by Year
86 firms reporting
2030 commitment

- Performance of design projects reported by year

<table>
<thead>
<tr>
<th>Year</th>
<th>PEUI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>35%</td>
</tr>
<tr>
<td>2011</td>
<td>35%</td>
</tr>
<tr>
<td>2012</td>
<td>37%</td>
</tr>
<tr>
<td>2013</td>
<td>34%</td>
</tr>
</tbody>
</table>
moral prerogative
Transitioning to the business case
business case

• trusted advisor for client base
• framework for energy independence
• competitiveness
• high performance design outcome
• impact triple bottom line (PPP)
Presenter:
Premnath Sundharam, AIA
Architect / Principal
DLR Group
Phoenix, AZ
business case: competitiveness

• 2030 Challenge – mind set change
• AIA 2030 Commitment – process change
2030 PRINCIPLE 1
PRACTICE INTEGRATED DESIGN + SUSTAINABILITY

2030 PRINCIPLE 2
SET ENERGY PERFORMANCE GOALS

2030 PRINCIPLE 3
OPTIMIZE BUILDING DESIGN PERFORMANCE

2030 PRINCIPLE 4
VERIFY THROUGH MODELING AND TESTING

2030 PRINCIPLE 5
ASSESS RENEWABLE ENERGY OPPORTUNITIES

business case: competitiveness
2030 Principle 6
ENCOURAGE
POST OCCUPANCY
ENERGY MEASUREMENT & VERIFICATION

2030 Principle 7
LIVE SUSTAINABLY
IN OUR
OFFICES

2030 Principle 8
TELL
OUR
STORY

2030 Principle 9
LEAD
THIS
CHALLENGE

business case: competitiveness
Mindset utility, meet performance.

zero emissions.

zero compromises.

Tesla Model S

Tesla Model X

Tesla Model T

bucket 1

bucket 2

bucket 3

progress

start here

consumer mindset

utility, meet performance

zero emissions.

zero compromises

pure performance
bucket 1

- meet energy code

bucket 2

- exceed energy code - firm wide standard

bucket 3

- optimize your design through energy model

effort

- internal mindset: business as usual
- external mindset: performance irrelevant

- integrated design
- want to be green but don’t reinvent
- integrated design on steroids
- want to be green but need help
business case: competitiveness

- recognition for good design
- awards – energy criteria
- rankings – firm’s performance
business case: energy framework

- tax incentives and rebates (DSIRE)
- energy master plan

The 2030 Challenge

Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved.
*Using no fossil fuel GHG-emitting energy to operate.
business case: design outcome

- business intelligence with data
DESIGN

DESIGN LOOP

CONSTRUCTION

POST OCCUPANCY
business case: design outcome
business case: design outcome
Presenter:
Nathan Kipnis, AIA
Principal
Kipnis Architecture + Planning
Evanston, IL
business case: triple bottom line
How are Coffee Farms and Climate Change Linked?

The Starbucks and Conservation International relationship supports coffee farmers in mitigating the impacts of climate change. Watch a video

Sources: U.S. Department of Agriculture; Bloomberg
Why it's important
EUI is a key indicator of building performance. It is useful for comparing performance of buildings. The 2030 Challenge has specific EUI goals for different building types.

Typical Values
Typical US office: 67 kBTU/ft²/yr 211 kWh/m²/yr

Typical US single-family residence, Northeast: 46 kBTU/ft²/yr 145 kWh/m²/yr

Current 2030 Challenge target for US office: 27 kBTU/ft²/yr 85 kWh/m²/yr

Current 2030 Challenge target for US single-family residence, Northeast: 18 kBTU/ft²/yr 57 kWh/m²/yr
business case: instant feedback
**ECONOMIC ANALYSIS**

Project: AIA 2030 Presentation
A 3,188 Square Foot SINGLE FAMILY RESIDENCE in Chicago Ohare Intl Ap,IL

<table>
<thead>
<tr>
<th></th>
<th>Annual Energy Costs</th>
<th>Savings Compared to Scheme 3</th>
<th>Estimated Costs of Improvements</th>
<th>Years to Pay Back Annual Energy Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>DIY</td>
<td>Contracted</td>
</tr>
<tr>
<td>1. Meets Energy Code</td>
<td>$2,993.81</td>
<td>($282.03)</td>
<td>-10%</td>
<td>$0</td>
</tr>
<tr>
<td>2. More Energy Efficient</td>
<td>$2,533.68</td>
<td>$178.09</td>
<td>7%</td>
<td>$0</td>
</tr>
<tr>
<td>3. Baseline</td>
<td>$2,711.78</td>
<td>-</td>
<td>0%</td>
<td>$0</td>
</tr>
<tr>
<td>4. Better Perimeter</td>
<td>$2,074.70</td>
<td>$637.08</td>
<td>23%</td>
<td>$0</td>
</tr>
<tr>
<td>5. Better Mechanicals</td>
<td>$1,829.43</td>
<td>$882.35</td>
<td>33%</td>
<td>$0</td>
</tr>
<tr>
<td>6. Renewables</td>
<td>$1,809.51</td>
<td>$902.27</td>
<td>33%</td>
<td>$0</td>
</tr>
<tr>
<td>7. Passive House</td>
<td>$772.77</td>
<td>$1,939.01</td>
<td>72%</td>
<td>$0</td>
</tr>
</tbody>
</table>

Type in your Estimated Cost of Improvements for either DIY (Do It Yourself) or for Contracted work. You can get estimates from your local Home Improvement store or by calling Contractors from the Yellow Pages or from the State Contractors' Boards. If the estimate is not available, type in "n.a."

Click on the scheme you want to use as the reference. Ideally it should represent your current design.

Pay Back: This is the number of years it would take this Estimated Cost to be paid back by the savings Compared to the Annual Energy Costs of your current design. To put this number in context, if you invested this same amount of money in a bank CD at 6% per year, it will pay back fully in 12 years (in both cases you will still have your principal, either as cash or as an investment in your home’s value).

Estimates Only: The California Public Utilities Commission, none of the California Utilities, the Regents of the University of California, nor the developers of this software make no warranty, expressed or implied, including but not limited to any warranty of merchant ability or fitness for any particular use or application.

---

business case: economic feedback
Levelized Cost of Energy—Rooftop Solar (Forecasted)

Rooftop solar has benefited from the rapid decline in price of both panels and key balance-of-system components (e.g., inverters, racking, etc.); while the small-scale nature and added complexity of rooftop installation limit cost reduction levels (vs. levels observed in utility-scale applications), more efficient installation techniques, lower costs of capital and improved supply chains will contribute to a lower rooftop solar LCOE over time.

<table>
<thead>
<tr>
<th>Year</th>
<th>LCOE Residential</th>
<th>LCOE C&amp;I</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014E</td>
<td>$265</td>
<td>$177</td>
</tr>
<tr>
<td>2015E</td>
<td>$224</td>
<td>$163</td>
</tr>
<tr>
<td>2016E</td>
<td>$183</td>
<td>$150</td>
</tr>
<tr>
<td>2017E</td>
<td>$151</td>
<td>$136</td>
</tr>
</tbody>
</table>

**Business Case:** forecasting trends
business case: triple bottom line
business case

• trusted advisor for client base
• framework for energy independence
• competitiveness
• high performance design outcome
• impact triple bottom line (PPP)