Implications of Green Building & Energy Efficiency on the Construction Workforce

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Total U.S. Construction = 5.5% of US GDP in 2010

Value of Nonresidential Building Construction

## U.S. Total Construction Starts

<table>
<thead>
<tr>
<th>Billions of Dollars</th>
<th>2007</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Construction</strong></td>
<td>641.0</td>
<td>428.6</td>
<td>409.8</td>
<td>411.8</td>
</tr>
<tr>
<td></td>
<td>-7%</td>
<td>+1%</td>
<td>-4%</td>
<td>-0%</td>
</tr>
<tr>
<td><strong>Commercial Bldgs.</strong></td>
<td>100.8</td>
<td>41.3</td>
<td>43.9</td>
<td>47.4</td>
</tr>
<tr>
<td></td>
<td>+9%</td>
<td>-12%</td>
<td>+6%</td>
<td>+8%</td>
</tr>
<tr>
<td><strong>Institutional Bldgs.</strong></td>
<td>117.7</td>
<td>109.7</td>
<td>93.6</td>
<td>92.1</td>
</tr>
<tr>
<td></td>
<td>+6%</td>
<td>-2%</td>
<td>-15%</td>
<td>-2%</td>
</tr>
<tr>
<td><strong>Manufacturing Bldgs.</strong></td>
<td>20.8</td>
<td>9.2</td>
<td>12.4</td>
<td>12.9</td>
</tr>
<tr>
<td></td>
<td>+51%</td>
<td>-5%</td>
<td>+35%</td>
<td>+4%</td>
</tr>
<tr>
<td><strong>Single Family Housing</strong></td>
<td>201.2</td>
<td>100.0</td>
<td>94.7</td>
<td>104.6</td>
</tr>
<tr>
<td></td>
<td>-26%</td>
<td>+6%</td>
<td>-5%</td>
<td>+10%</td>
</tr>
<tr>
<td><strong>Multifamily Housing</strong></td>
<td>60.3</td>
<td>21.0</td>
<td>23.6</td>
<td>28.0</td>
</tr>
<tr>
<td></td>
<td>-13%</td>
<td>+17%</td>
<td>+13%</td>
<td>+18%</td>
</tr>
<tr>
<td><strong>Public Works</strong></td>
<td>121.3</td>
<td>119.0</td>
<td>99.6</td>
<td>94.8</td>
</tr>
<tr>
<td></td>
<td>+8%</td>
<td>-4%</td>
<td>-16%</td>
<td>-5%</td>
</tr>
<tr>
<td><strong>Electric Utilities</strong></td>
<td>19.0</td>
<td>28.5</td>
<td>42.0</td>
<td>32.0</td>
</tr>
<tr>
<td></td>
<td>+7%</td>
<td>+34%</td>
<td>+48%</td>
<td>-24%</td>
</tr>
</tbody>
</table>


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A **Green Building Project** is...

- One built to LEED or other green building standard

  **OR**

- Is **Energy-efficient** and **Water-efficient** as well as...
  - Resource-efficient (e.g., recycling, reuse, rapidly renewable materials)

  **AND/OR**

  - Improves indoor air quality
2015 Offers Significant Opportunity for Green Building in Nonresidential Starts

- **Nonresidential Market**
  - 2005: $172 billion
  - 2008: $151 billion
  - 2010: $137 billion
  - 2011: $212 billion
  - 2015: $258 billion

- **Green Market**
  - 2008: $3 billion
  - 2010: $47 billion
  - 2011: $52 billion
  - 2015: $124 billion

Most Commercial Projects Are Retrofit & Renovation

Projected **Major Renovation/Retrofit Market Size for Energy Efficiency & Green**

![Diagram showing projected major renovation/retrofit market size for energy efficiency and green](chart.png)

**Source:** *Green Outlook 2011*, McGraw-Hill Construction Dodge Analytics, 2010
Green Share of U.S. Nonresidential Buildings

Green Building Share of Office Starts

- **2008**: $28 billion
  - Office: $16 billion
  - Green Share: $8 billion (30% of market)
- **2010**: $16 billion
  - Office: $16 billion
  - Green Share: $8 billion (48% of market)

Green Building Share of Education Starts

- **2008**: $58 billion
  - Education: $47 billion
  - Green Share: $9 billion (15% of market)
- **2010**: $47 billion
  - Education: $47 billion
  - Green Share: $17 billion (36% of market)

Green Building Share of Healthcare Starts

- **2008**: $30 billion
  - Healthcare: $23 billion
  - Green Share: $4 billion (13% of market)
- **2010**: $23 billion
  - Healthcare: $23 billion
  - Green Share: $8 billion (33% of market)

Green Building Share of Retail Starts

- **2010**: $13 billion
  - Retail: $10 billion
  - Green Share: $3 billion (27% of market)

Source: McGraw-Hill Construction, October 2011
Reduction in U.S. Non-Residential Construction Labor Force since 2008

**TRADES**  (in thousands)  **Down by 22%**

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2,557</td>
<td>2,197</td>
<td>1,999</td>
</tr>
</tbody>
</table>

**CONTRACTORS**  (in thousands)  **Down by 20%**

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>826</td>
<td>719</td>
<td>660</td>
</tr>
</tbody>
</table>

**A/E FIRMS**  (in thousands)  **Down by 13%**

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,330</td>
<td>1,215</td>
<td>1,158</td>
</tr>
</tbody>
</table>

**ALL NON-RESIDENTIAL**  (in thousands)  **Down by 19%**

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4,712</td>
<td>4,131</td>
<td>3,817</td>
</tr>
</tbody>
</table>

Source: Bureau of Labor Statistics

Down by 22%  Down by 20%  Down by 13%  Down by 19%
Looking Forward: U.S. Construction Facing a Workforce Shortage

- 69% of AEC firms expect workforce shortages in next three years

- Key Areas of Concern in Filling Shortage:
  - Retirement of Senior Staff: 62%
  - Shortage of current students in pipeline: 54%
  - Lack of interest by next generation: 60%

45% of GCs Expect Workforce Shortages in the Trades

Top Trades with Major Shortage of Skilled Workers Expected by 2014
(According to General Contractors)

1. Carpentry & Millwork
2. Electricians
3. Concrete Finisher / Cement Mason
4. HVAC / Boilermakers

McGraw-Hill Construction Definition

A **Green Construction Job**…

→ Comprises more than 50% of green building project work (for architects, engineers and general contractors)

  **OR**

→ Requires significant training or different skills to meet green goals (for craft workers and subcontractors)

  **OR**

→ Involves designing or installing a uniquely green system

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**Green Jobs in design and construction are not:**

- Administrative or non-construction professions
- Manufacturing or producing green products jobs
Unemployed Workers in Construction Industry Looking for Opportunity in Green Jobs

- 60% seek a green job
- 17% exclusively seek a green job
- 34% are seeking a green job in a different field
- 31% are more interested in a green job as they are in a non-green job

Unemployed Demographics
- 61% Architects
- 12% Engineers
- 22% GCs
- 5% Trades

Formal Training and Professional Green/Energy-Efficient Accreditations Are Critical

- **Certified employees** expand green business opportunity—according to 68% of firms

- Formal Training is becoming more critical for professionals to **acquire needed skills** in green and energy-efficiency:
  
  - **Trades workers**: 33% in 2014, up from 21% this year
  
  - **Architects, engineers and contractors**: 41% in 2014, up from 37% this year

Firms that Report Having Green Construction Industry Jobs

National Average Reporting Green Jobs
- Architects/Engineers: 47%
- Contractors: 39%

West South Central—Lowest % of architects/engineers report green jobs: 40%

Mid-Atlantic—Highest % report green jobs:
- Architects/Engineers: 58%
- Contractors: 46%

New England—Lowest % of architects/engineers report green jobs: 36%

Green Jobs Key to Future Construction Workforce

Number of AEC Construction Jobs (in thousands)

- **2011 (July)**
  - Total Jobs: 1869.0
  - Green Jobs: 661.0 (35.4%)

- **2014 (est)**
  - Total Jobs: 1975.3
  - Green Jobs: 881.6 (44.6%)

Trades:
- 15% in 2011
- 25% in 2014

Thank You!

MHC Resource Websites:

- construction.com
  - construction.com/events
  - construction.com/market_research
- analytics.construction.com
- sweets.com
- bim.construction.com
- greensourcemag.com
- archrecord.com
- enr.com