

Policies and Processes to Facilitate System Efficiency

ACEEE Market Transformation Conference
April 3, 2017
Arlington, VA



National Institute of
BUILDING SCIENCES

*An Authoritative Source of Innovative Solutions
for the Built Environment*

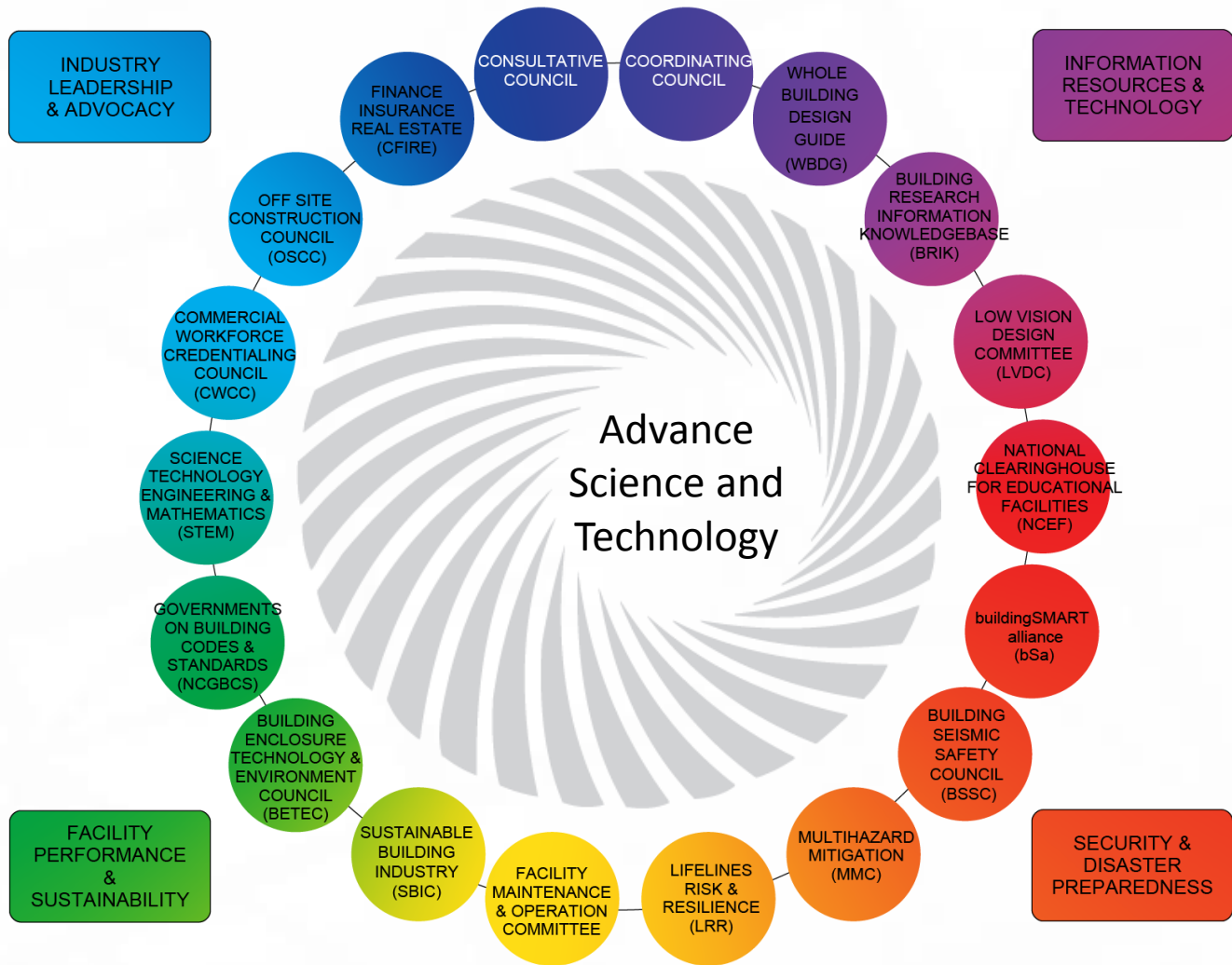
Public Law 93-383, Sect. 809

Congress directed the Institute to “exercise its functions and responsibilities in four general areas.....”

- **Develop and maintain** performance criteria for maintenance of life, safety, health, and public welfare for the built environment
- **Evaluate and prequalify** building technology and products
- **Conduct** related and needed investigations
- **Assemble, store, and disseminate** technical data and related information



National Institute of
BUILDING SCIENCES



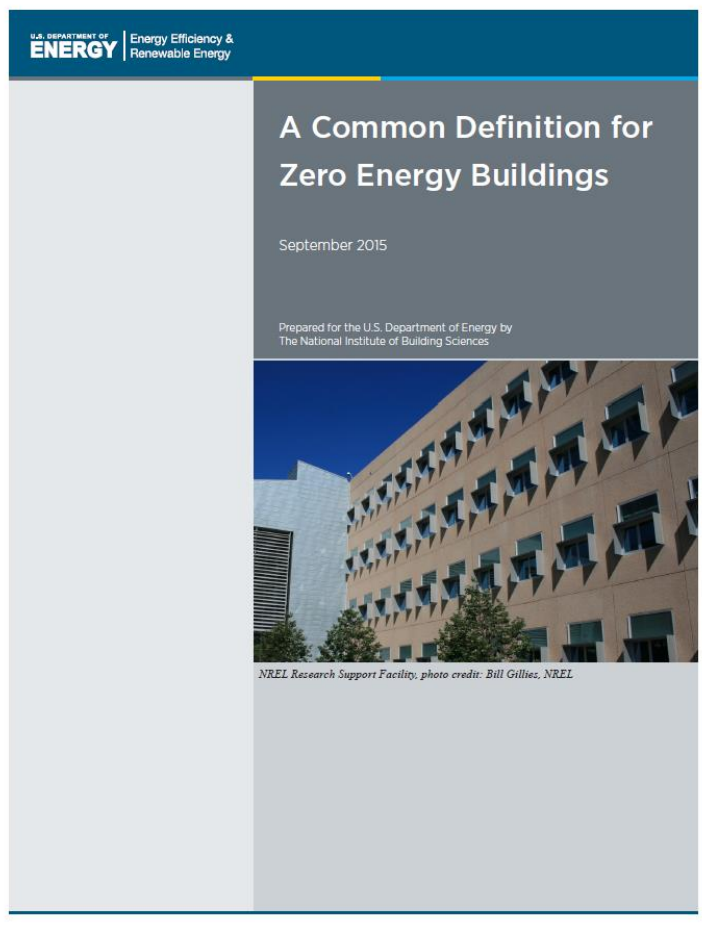


High-Performance Buildings Defined

High-Performance building means a building that integrates and optimizes on a life-cycle basis all major high-performance attributes, including energy [and water] conservation, environment, safety, security, durability, accessibility, cost-benefit, productivity, sustainability, functionality, and operational considerations.

-Energy Independence and Security Act of 2007 §401 (PL 110-140)

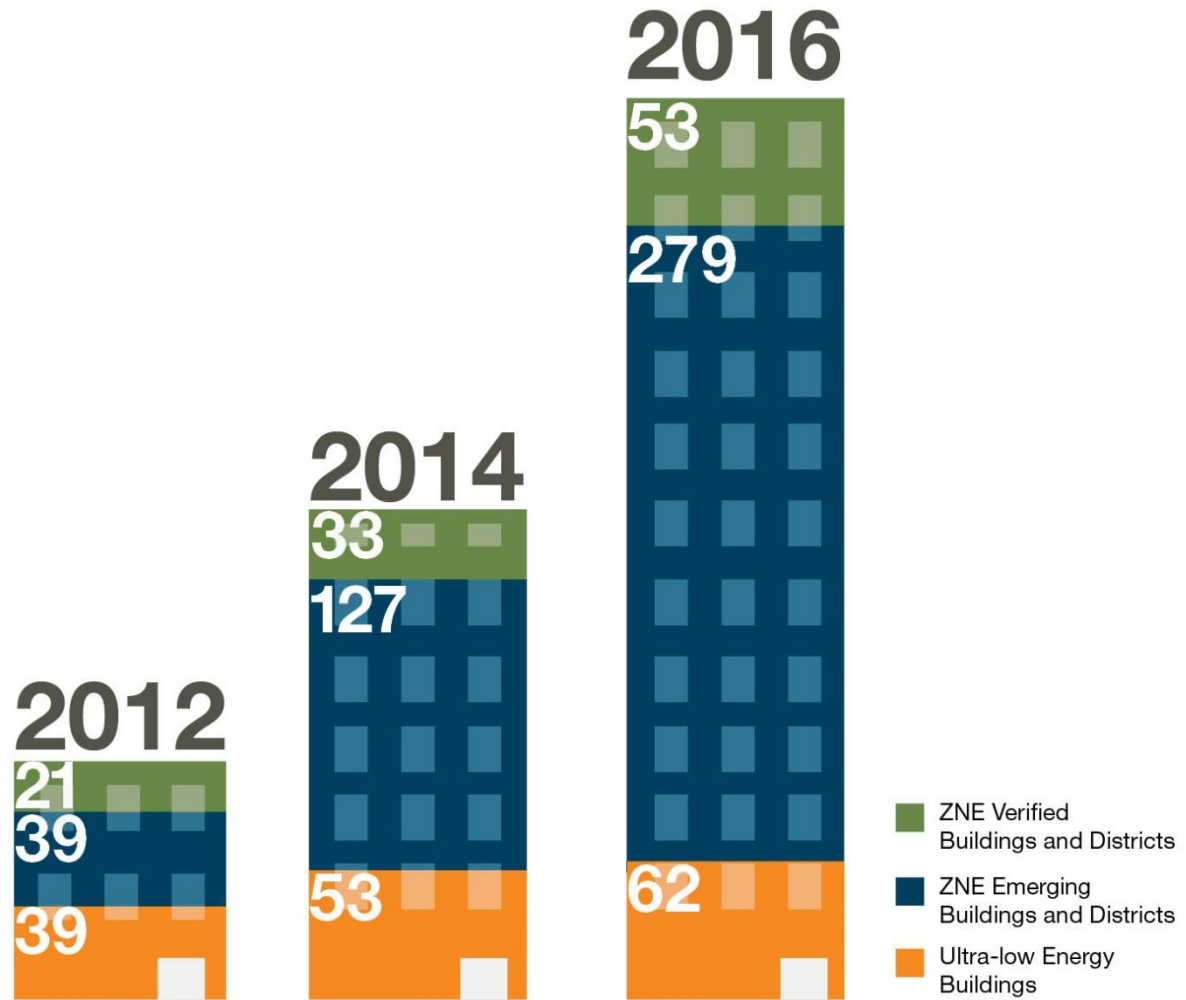
Common Definition for ZEB



- Zero Energy Building (ZEB):
 - An energy-efficient **building** where, on a **source energy** basis, the **actual annual delivered energy** is less than or equal to the on-site renewable **exported energy**.
- The designation *Zero Energy Building (ZEB)* should be used only for *buildings* that have demonstrated through **actual annual measurements** that the *delivered energy* is less than or equal to the *on-site renewable exported energy*.

Zero-Energy Buildings

Number of ZNE Projects





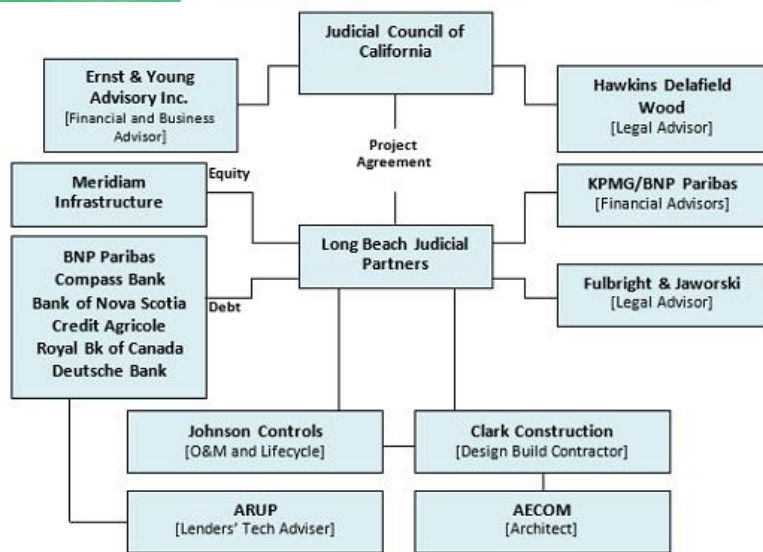
Advancing Procurement & Contracting

- Collaboration and Goal Setting Across Disciplines
 - Integrated Delivery Processes
 - Design Build
 - Design-Build-Operate-Maintain/Public-Private Partnerships
 - Performance-Based Procurements
 - Enhanced Energy Saving Performance Contracting

Governor Deukmejian Courthouse, Long Beach



- Public-Private Partnership/DBFOM
- The performance-based contract allowed the courthouse to be constructed without any public funding and provides for the ongoing maintenance and performance of the facility.
- Judicial Council can deduct a specific amount from the availability payment if components of the building do not work.
- For example, there is a \$5,000 deduct for every two hours that certain elevators are inoperable.



GSA Federal Center South

7. CLIN 0005 – M&V and Warranty Period Verification. The Government will **retain a pre-determined amount of dollars** from the overall contract award during performance evaluation. Release of **payment** for this withheld amount **will be contingent upon final confirmation that the energy performance standards for the facility (i.e. actual BTU/GSF saved) have been achieved** as verified by the M&V and Warranty Period testing to be conducted within 365 days from final completion. The basis for the pre-determined amount shall be equal to **.5%** of the proposed construction price.





Opportunities through Codes and Standards

- Current Challenges
 - Component Focused
 - Technical, Cost-Effective Limits
 - Strictly Design Focused
 - Not All Energy Uses/Influencers Covered
- Opportunities
 - Move to Outcome-Based Compliance
 - Expand Metering and Sub-Metering
 - Link through Comprehensive Building Energy Policy



Preparing the High-Performance Building Workforce

- Pre-Career
 - Enhance Collaborative Learning/Doing
 - Focus on Building Science
 - Codes, Standards and Guidance
- Career
 - Credentials Recognizing Competence
 - Fostering Collaboration and Project Focus
 - Professionalizing Operations Workforce

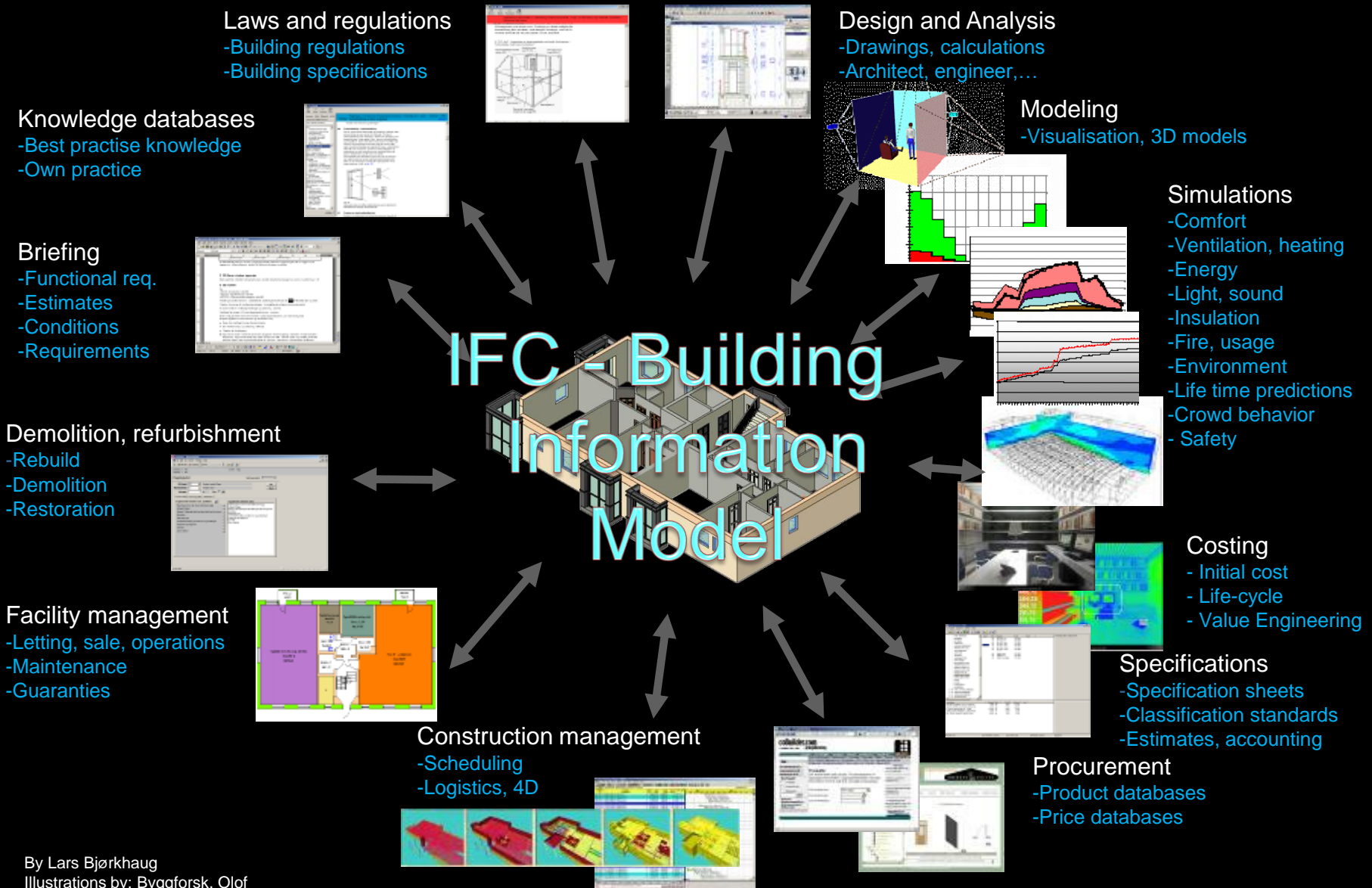
Workforce Credentials



RECOGNIZED PROGRAM

MEETS U.S. DEPARTMENT OF ENERGY GUIDELINES

Look for the Better Buildings Seal of Approval



By Lars Bjørkhaug
 Illustrations by: Byggforsk, Olof
 Granlund, NBLN University of
 California, Stanford University



Additional Policies and Practices

- Design Fee Structures
- Finance and Insurance Relation to Building Performance
- Occupant Behavior, Education, Buy-In
- Facilities as Strategic Assets
- Incorporating Performance in Incentives
- Expansion of Off-Site Construction
- Synergies and Co-Benefits Across Attributes
- Interoperability of Tools and Technologies

Policies and Processes to Facilitate System Efficiency

ACEEE Market Transformation Conference
April 3, 2017
Arlington, VA



National Institute of
BUILDING SCIENCES
*An Authoritative Source of Innovative Solutions
for the Built Environment*

Henry L. Green, Hon. AIA
President
National Institute of Building Sciences
1090 Vermont Ave., NW • Suite 700
Washington, DC 20005, USA
202-289-7800
hgreen@nibs.org