

# High Performance Based Design for the Building Envelope

HPBC Workshop for Industry Feedback

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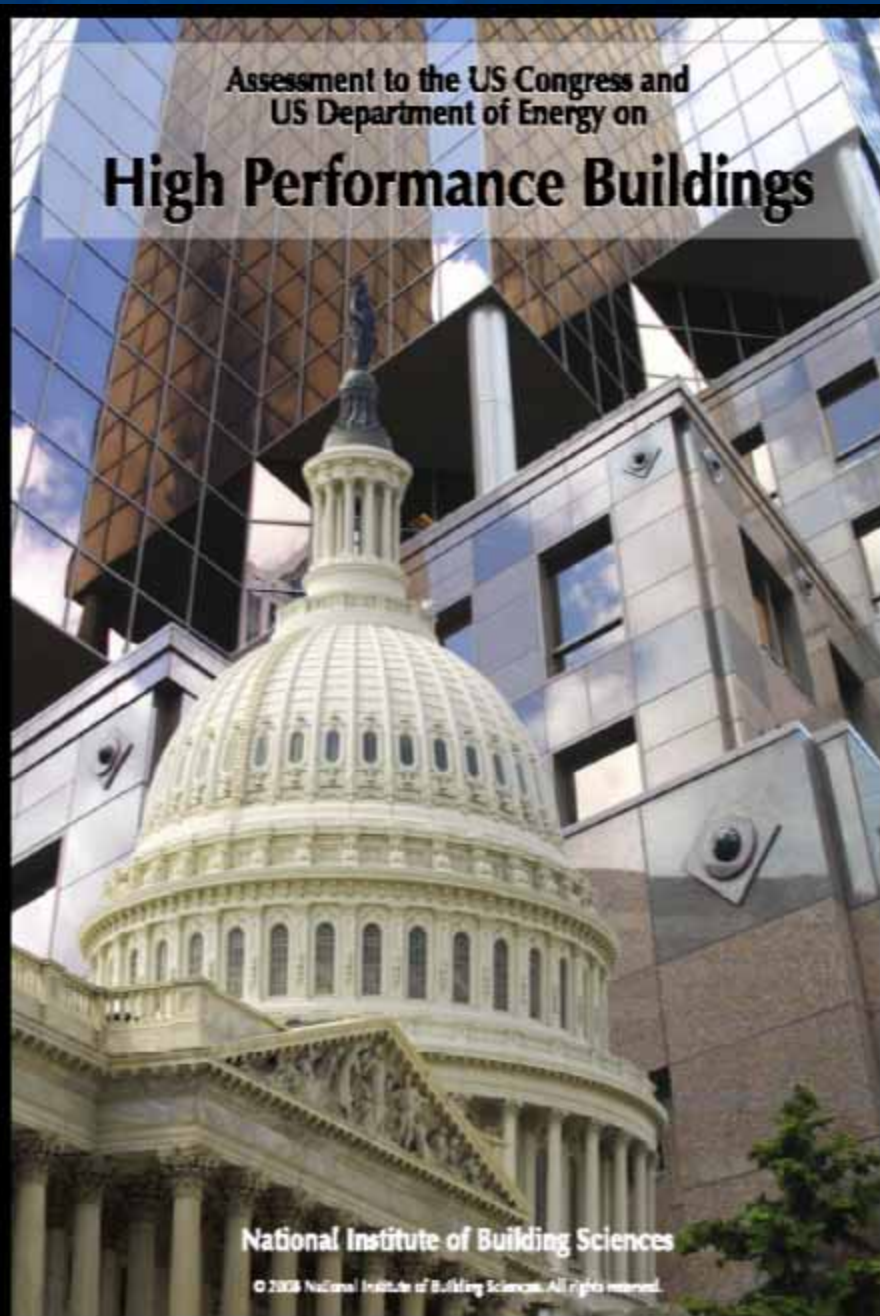
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# Energy Policy Act of 2005

## Sec. 914. BUILDING STANDARDS.

(a) DEFINITION OF HIGH PERFORMANCE BUILDINGS. – In this section, the term “high performance building” means a building that integrates and optimizes all major high-performance building attributes, including energy efficiency, durability, life-cycle performance, and occupant productivity.

Assessment to the US Congress and  
US Department of Energy on  
**High Performance Buildings**



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# Energy Independence and Security Act of 2007

## Sec. 401. Definitions.

(12) HIGH-PERFORMANCE BUILDING – The term “high performance building” means a building that integrates and optimizes on a life cycle basis all major high performance building attributes, including energy conservation, environment, safety, security, durability, accessibility, cost-benefit, productivity, sustainability, functionality, and operational considerations.

# High Performance means?

- Greening
- Energy efficient
- Environmentally preferable products
- Sustainable
- LEED certified
- Durable
- Recyclable
- Blast resistant
- Resiliency
- Net-zero energy
- High performance green
- Return on investment
- Met owner's requirements
- Renewable energy
- Net-zero carbon emissions



**Prioritization of Building Performance Measures**

Which characteristics are most important?

**Baseline Building Design**

Introduce a Performance Enhancing Change to the Design based on Importance

Is there Cost-Savings for the given time period?

NO

YES

Are there Other Impacts?

Resiliency, Aesthetics, Accessibility, Historic Preservation, Functionality, Safety and security, Productivity, Sustainability

NO

YES

Is there a positive benefit-cost ratio?

YES

Are there other performance enhancements not yet considered?

NO

Do Not Incorporate into Building

YES

Are there other performance enhancements not yet considered?

NO

Incorporate alternative into New Baseline Building design

Incorporate into New Baseline Building Design

YES

NO

Is there alternative performance enhancement with higher benefit-cost ratio yet to be implemented?

Are there barriers to implementing it?

NO

YES

What are the barriers?

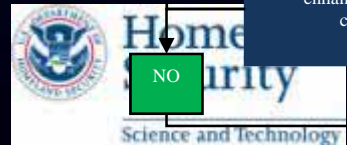
Builder/Owner Disconnect, Lack of Information

How can we remove the barriers?

Can barriers be removed?

YES

**Finalize Building Design**



**ATTRIBUTES/  
PHASE**

**A. Minimum  
standards**

**B. NOW: Existing  
standards**

**C. NEW: Stretch  
Standards**

**D. NEXT: High  
Performance  
Goal/Targets**

**1. Accessibility**

**2. Aesthetics**

**3. Cost  
Effectiveness**

**4. Operational/  
Functionality**

**5. Historic  
Preservation**

**6. Productivity**

**7. Security/Safety**

**8. Sustainability**

**9. Resilience**



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# High Performance Standards

HPBDE Attribute-Metric-Performance Summary			Metrics		Performance Standard
Attribute	Sub Attribute	Performance Benchmark	Qualitative	Quantitative	
Safety	Seismic Resistance	Calculation Baseline	extent of damage	measurement of allowable impact	To be provided from TC Report
		Life Safety/Code Comp			
		Reduced Damage Continued Operations			
	Flood Resistance	Calculation Baseline	extent of damage	measurement of allowable impact	To be provided from TC Report
		Life Safety/Code Comp			
		Reduced Damage Continued Operations			
	Wind Resistance	Calculation Baseline	extent of damage	measurement of allowable impact	To be provided from TC Report
		Life Safety/Code Comp			
		Reduced Damage Continued Operations			
	External Fire Resistance	Calculation Baseline	extent of damage	measurement of allowable impact	To be provided from TC Report
		Code Compliant			
		Reduced Damage Continued Operations			
Security	Blast Protection	Failure	extent of damage	measurement of allowable impact	To be provided from TC Report
		Major Damage			
		Moderate Damage Minor Damage			
	Ballistic Protection	No Protection	extent of damage	measurement of allowable impact	To be provided from TC Report
		Life Safety			
		Reduced Damage Continued Operations			
	External CBR Protection	No Protection	extent of vulnerability	measurement of allowable impact	To be provided from TC Report
		High Vulnerability			
		Moderate Vulnerability Low Vulnerability			

# Landmark Event

- Real Performance Metrics
  - Tangible
  - Integrated
  - Collaborative
  - Developed with Owner's Tool
- 
- Drive requirements for the Owner
  - Drive requirements for the industry

# High Performance Building Council Continuing Actions

## *Focus 1. High Performance Building Design – Envelope Project (HPBDE)*

- **Organize Industry Input**
- **Optimize Industry Focus**

## *Focus 2. Performance Matrix*

- **Stretch Standards**
- **High Performance Targets**

## *Focus 3. Highlight Initiatives*

- **PCA-IBC analysis**
- **Federal Owners' Perspectives**

