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Residential Energy Efficiency Stakeholder Meeting

Wednesday, February 29, 2012 – Austin, Texas



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Agenda

2011 REVIEW

STRATEGIC
GOALS

IDENTIFY & REVIEW
NEW GAPS

COLLABORATION &
2012 PLAN

QUESTIONS & DISCUSSION

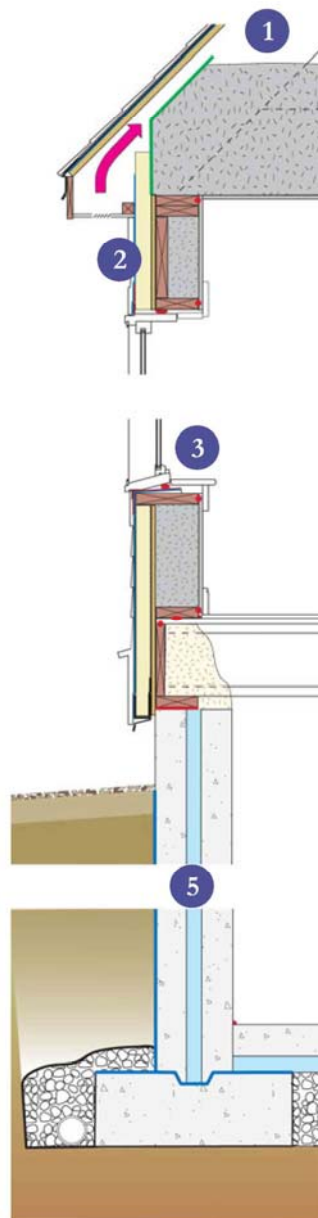
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2011 REVIEW

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Categories

- New + Existing, Single + Multi-Family
 - ROOFS
 - WALLS
 - FOUNDATIONS
 - FENESTRATIONS
 - AIRTIGHTNESS
 - MATERIALS
 - OTHER



ENCLOSURE DESIGN

1 Roof Assembly: Rafter framed vented attic with R-50 blown cellulose insulation. Dropped perimeter ceiling soffits were used to maintain the thickness of the insulation near the perimeter and still be able to provide higher ceilings in areas such as the master bedroom.

2 Wall Assembly: 2x6 wall at 24" O.C. with R-19 damp spray cellulose cavity insulation and 2" (R-13) of foil-faced polyisocyanurate insulating sheathing. The wall drainage plane was provided by Tyvek homewrap installed over the insulating sheathing.

3 Window Specifications: Harvey Vicon double hung vinyl Low-E Argon with contour grid windows ($U=0.32$, $SHGC = 0.27$). Windows were installed in a pan flashed and drained manner with a sloped sill drained to the exterior and the head and jams integrated into the drainage plane through the use membrane flashing.

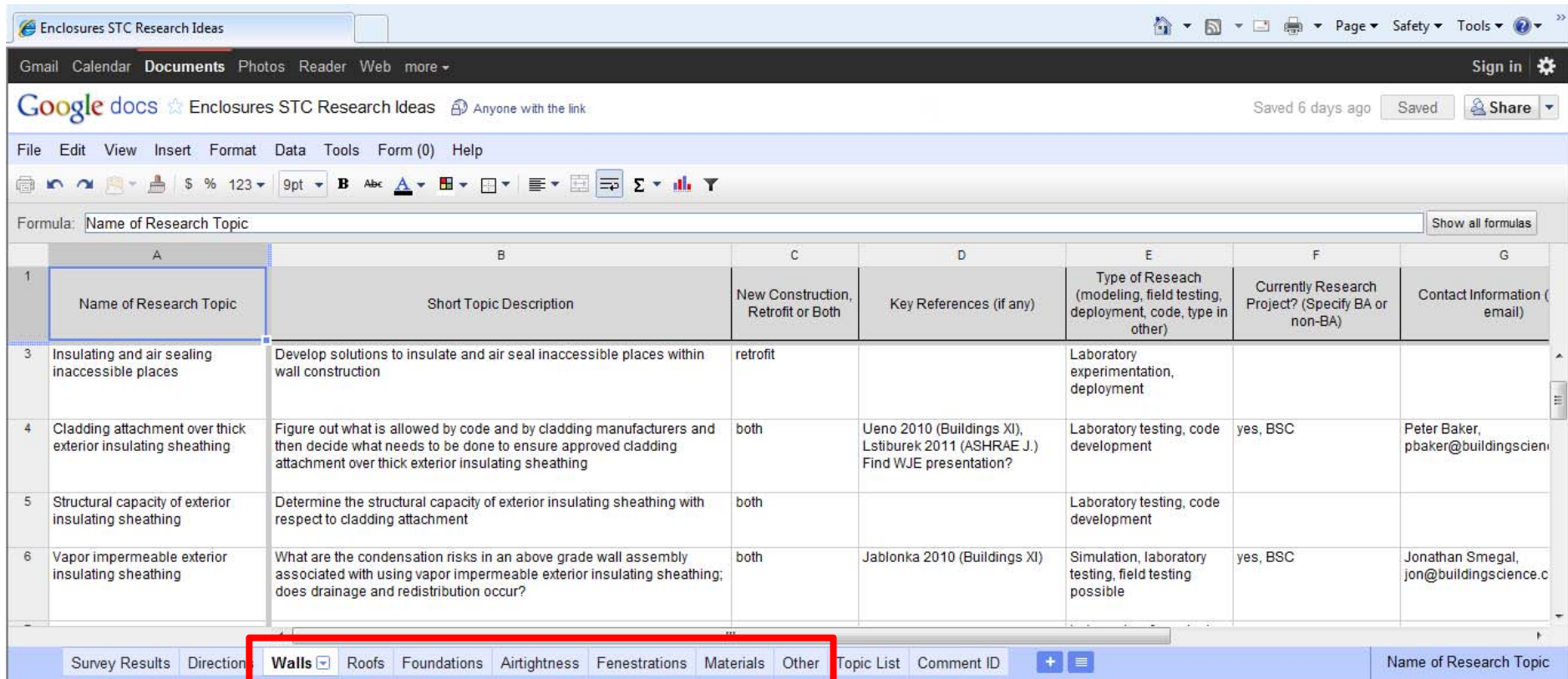
4 Floor Assembly: TJI floor framing with 1" closed cell spray foam flash seal with the remaining cavity filled with fiberglass batts.

5 Foundation Assembly: Conditioned basement with 2" (R-10) XPS cast into 10" concrete walls (Thermomass® System). 2" (R-10) XPS insulation installed below the concrete slab.

Infiltration: Maximum 2.5 in² of leakage areas per 100ft² of enclosure area. Critical seal air sealing approach with primary air barrier maintained at interior gypsum walls and ceiling. Closed cell spray foam installed at rim joists and band joists, under floors over unconditioned areas, in the attic on top of partition walls and electrical penetrations through the ceiling plane, around windows and doors, and at any mechanical and electrical penetration through the enclosure.

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Google Doc



Enclosures STC Research Ideas

Google docs Enclosures STC Research Ideas Anyone with the link

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Formula: Name of Research Topic Show all formulas

	A	B	C	D	E	F	G
	Name of Research Topic	Short Topic Description	New Construction, Retrofit or Both	Key References (if any)	Type of Research (modeling, field testing, deployment, code, type in other)	Currently Research Project? (Specify BA or non-BA)	Contact Information (email)
3	Insulating and air sealing inaccessible places	Develop solutions to insulate and air seal inaccessible places within wall construction	retrofit		Laboratory experimentation, deployment		
4	Cladding attachment over thick exterior insulating sheathing	Figure out what is allowed by code and by cladding manufacturers and then decide what needs to be done to ensure approved cladding attachment over thick exterior insulating sheathing	both	Ueno 2010 (Buildings XI), Lstiburek 2011 (ASHRAE J.) Find WJE presentation?	Laboratory testing, code development	yes, BSC	Peter Baker, pbaker@buildingscience.org
5	Structural capacity of exterior insulating sheathing	Determine the structural capacity of exterior insulating sheathing with respect to cladding attachment	both		Laboratory testing, code development		
6	Vapor impermeable exterior insulating sheathing	What are the condensation risks in an above grade wall assembly associated with using vapor impermeable exterior insulating sheathing; does drainage and redistribution occur?	both	Jablonka 2010 (Buildings XI)	Simulation, laboratory testing, field testing possible	yes, BSC	Jonathan Smegal, jon@buildingscience.org

Survey Results Direction **Walls** Roofs Foundations Airtightness Fenestrations Materials Other Topic List Comment ID + Name of Research Topic

7 Categories separate tabs in Google Doc

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Top 10 Enclosure Research Ideas

- **72** research topics in 7 categories:
 - Roofs-10, Walls-22, Foundations-14, Fenestrations-7, Airtightness-4, Materials-10, Other-5
 - 145 people took survey from 6/29 – 7/15

The screenshot shows a Google search result for 'Top 10 Enclosure Research Ideas'. The search bar at the top contains the text 'Top 10 Enclosure Research Ideas'. Below the search bar, the survey title 'Top 10 Enclosure Research Ideas' is displayed in a blue header bar. The survey content is titled '*Please choose your top 10 enclosure research ideas:' and lists six research topics, each with a checkbox:

- ☐ Roofs: Insulating Unvented Flat or Low Slope Roofs - develop solutions for insulating unvented flat or low slope roofs
- ☐ Roofs: Attic Space Conversion - address QC, condensation and water intrusion when converting attic and attic knee-wall space to conditioned area
- ☐ Roofs: Leaking Roof Material Retrofits - identify moisture damage risks associated with retrofitting a roof with a known leaky material (ie. slate and tile) without doing complete roof tear-off
- ☐ Roofs: Spray Foam Under Plywood and OSB Roof Decks - identify risks associated with installing spray foam under plywood and OSB roof decks
- ☐ Roofs: Metal Roof Guidelines - develop guidelines for metal roof installation that address detailing, thermal expansion, wind resistance, clip spacing, condensation protection and sub-roof design
- ☐ Roofs: Insulation Layer Above Roof Deck - standardize retrofit details for adding insulation above roof deck and minimum amount of interior insulation below deck to meet 2009 IECC

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Top 10 Enclosure Research Ideas – 1 to 5

Rank	Topic
1	Roofs: Spray Foam Under Plywood and OSB Roof Decks - identify risks associated with installing spray foam under plywood and OSB roof decks
2	Walls: Thermal Bridging in Residential Codes - determine the best way to address thermal bridging in residential building codes
3	Airtightness: Airtightness Strategies - strategies related to "good, better, best" airtightness goals
4	Walls: Vapor Impermeable Exterior Insulating Sheathing - identify condensation risks associated with using vapor impermeable exterior insulating sheathing in an above grade wall assembly
5	Airtightness: Air Leakage Paths - identify relative contributions of specific air leakage paths

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Top 10 Enclosure Research Ideas – 6 to 10

Rank	Topic
6	Walls: Moisture Management Limits for High-R Walls - determine vapor diffusion and air leakage limits for high R-value wall assemblies, focus on cold and hot-humid climates
7	Walls: Cladding Attachment Over Thick Exterior Insulating Sheathing - determine the structural capacity of exterior insulating sheathing with respect to cladding attachment
8	Materials: Material Durability and System Durability Metrics - develop metrics (example, taping insulating sheathing as drainage plane, tape is the material, taped foam as drainage plane is component
9	Foundations: Basement Slab and Slab on Grade Heat Loss - develop more consistent recommendations for basement slab and slab on grade insulation
10	Walls: Risk Assessment Techniques for Adding Exterior Insulation - develop ways to evaluate the performance and potential risk of exterior insulation over an existing insulated wall assembly

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Strategic Plan 2 Pagers

#1 – Roofs: Spray Foam Under Plywood and OSB Roof Decks

Identify risks associated with installing spray foam under plywood and OSB roof decks

Check all that apply:

BA Enclosures		BA Hot Water		House Type	
Walls		Test Standards		New	✓
Roof/Ceiling	✓	Distribution		Existing	✓
Foundations		Condensing/Tankless		Single Family	✓
Moisture		Heat Pump Water Heater		Multi Family	✓
Windows		Combined Space & DHW Heating		DOE Emerging Technologies	
Other:		Other:		Walls and Windows	
BA Space Conditioning		BA Miscellaneous Loads		Efficient Appliances	
Heating		Home Energy Management		Advanced Heating & Cooling Fluids	
Cooling		Lighting		Solar Heating & Cooling	
Dehumidification		Large MELs (pools, etc.)		Geothermal Heat Pumps	
Distribution		Small MELs (TVs, VCRs, etc.)		Solid State Lighting	
Ventilation		Other:		Bulk Purchase	
Other:				Onsite Renewables (Building-Integrated Photovoltaic, onsite cogen)	
Testing Methods/Protocols		BA Implementation			
House Simulation Protocol		Quality Control/Quality Assurance			

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Discussion Groups

- Critically review topic 2 pager
 - What has been answered?
 - What has not been answered?
 - What is missing from the 2 pager?
 - Report back to the committee
- #1 Roofs: Spray Foam Under Plywood and OSB Roof Decks
- #2 Walls: Thermal Bridging in Residential Codes
- #3 Airtightness: Airtightness Strategies
- #4 Walls: Vapor Impermeable Exterior Insulating Sheathing

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Sign up on Google Doc Discussion Groups Tab

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Enclosures STC Research Ideas ☆ [Share](#)

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fx #4 Walls: Vapor Impermeable Exterior Insulating Sheathing Show all formulas ✕

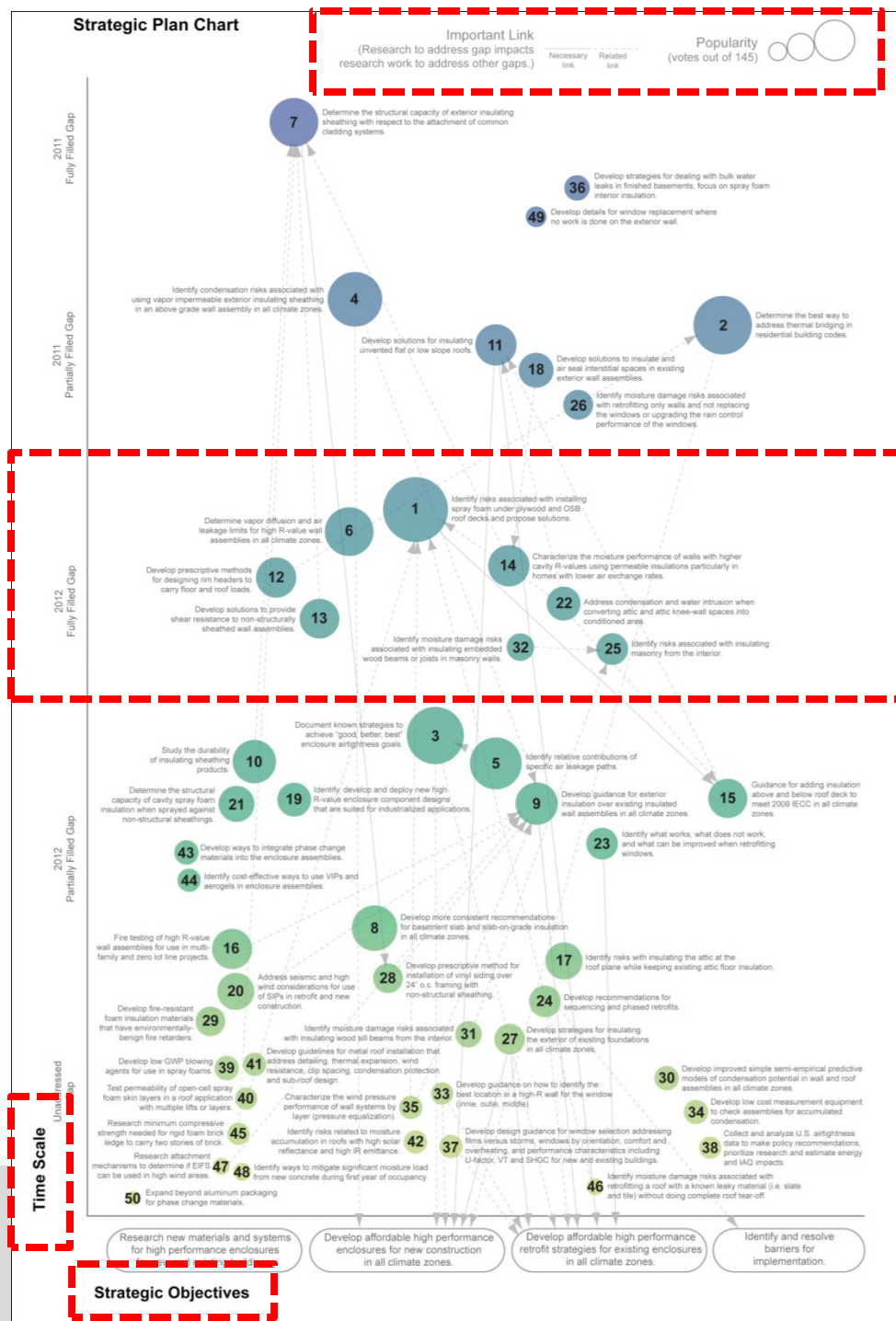
	A	B	C	D
1	#1 Roofs: Spray Foam Under Plywood and OSB Roof Decks	#2 Walls: Thermal Bridging in Residential Codes	#3 Airtightness: Airtightness Strategies	#4 Walls: Vapor Impermeable Exterior Insulating Sheathing
2	Discussion Leader: Joseph Lstiburek	Discussion Leader: Peter Baker	Discussion Leader: Chris Schumacher	Discussion Leader: Jonathan Smegal
3	Discussion Date & Time: Mon., Sept. 12, 1 pm ET	Discussion Date & Time: Fri., Sept. 30, 1 pm ET	Discussion Date & Time: Wed., Nov. 9, 1 pm ET	Discussion Date & Time: Fri., Dec. 2, 1 pm ET
4				
5	Name, Company	Name, Company	Name, Company	Name, Company
6				
7	James Petersen, Petersen Engineering, Inc.		James Petersen, Petersen Engineering, Inc.	
8	Michelle Roberts, Owens Corning	Michelle Roberts, Owens Corning	Michelle Roberts, Owens Corning	Michelle Roberts, Owens Corning
9	Eric Werling, DOE	Eric Werling, DOE	Eric Werling, DOE	Eric Werling, DOE
10	Anthony Grisolia IBACOS	Al Landers, Huber Engineered Woods	Al Landers, Huber Engineered Woods	Anthony Grisolia IBACOS
11	Ann McIntyre Ferris State Univ	Anthony Grisolia IBACOS	Anthony Grisolia IBACOS	Ann McIntyre Ferris State Univ
12	Mike Gestwick, NREL	Ann McIntyre Ferris State Univ	Ann McIntyre Ferris State Univ	Mike Gestwick, NREL
13	Paul Eldrenkamp, Byggmeister, Inc.	Mike Gestwick, NREL (tentative)	Mike Gestwick, NREL	Amber Wood, NAHB Research Center
14	Amber Wood, NAHB Research Center	Amber Wood, NAHB Research Center	Paul Eldrenkamp, Byggmeister, Inc.	Vladimir Kochkin, NAHB Research Center
15	Vladimir Kochkin, NAHB Research Center	Vladimir Kochkin, NAHB Research Center	Amber Wood, NAHB Research Center	Joe Wiehagen, NAHB Research Center
16	Joe Wiehagen, NAHB Research Center	Joe Wiehagen, NAHB Research Center	Vladimir Kochkin, NAHB Research Center	John Yi, CFDA

+ ≡ Survey Results Directions Walls Roofs Foundations Airtightness Fenestrations Materials **Discussion Groups** Other Comment ID Topic List #4 Walls: Vapor

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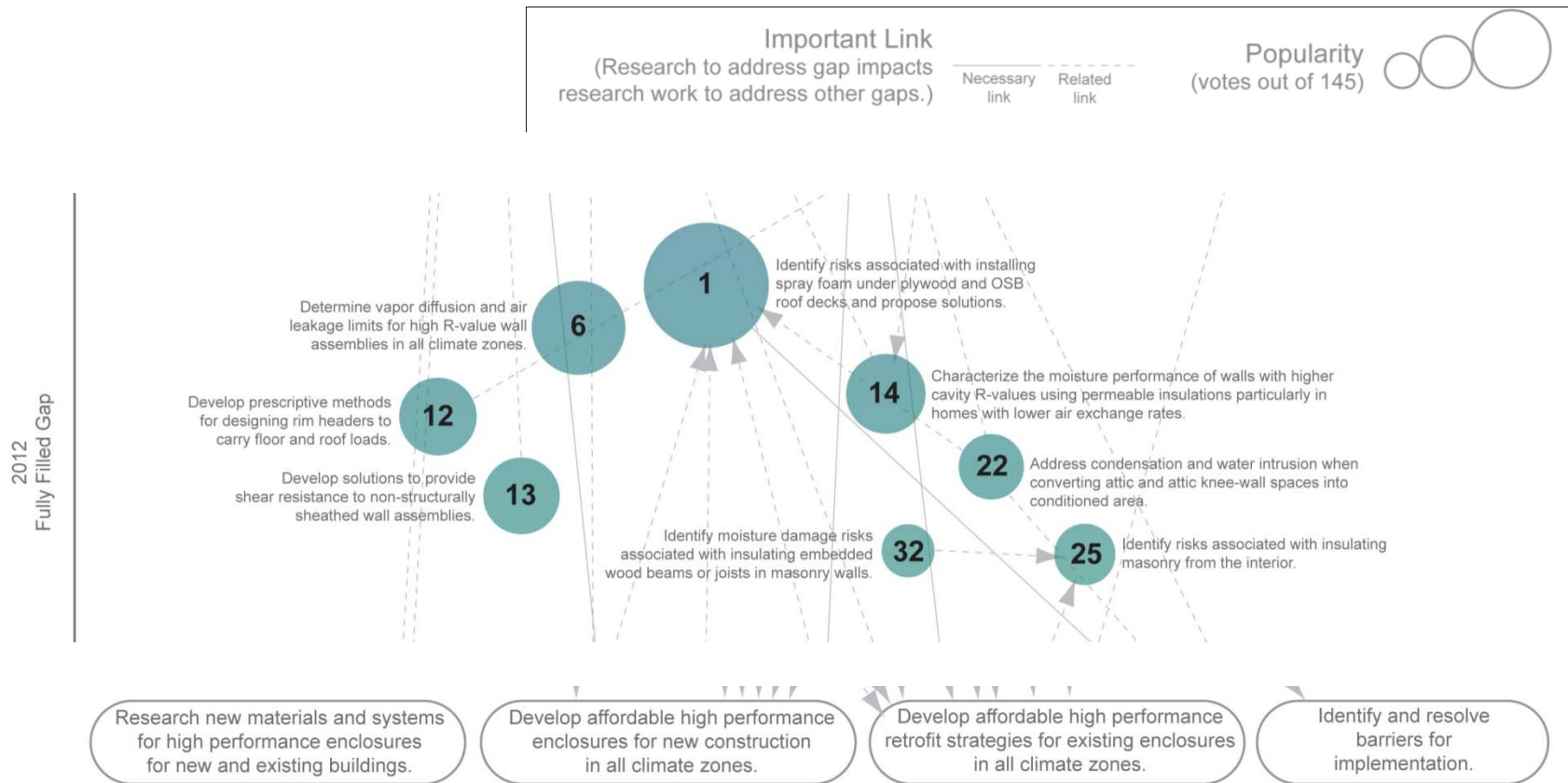
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STRATEGIC GOALS



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Strategic Plan Chart



Strategic Objectives

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Strategic Goals

Research new materials and systems for high performance enclosures for new and existing buildings.

Develop affordable high performance enclosures for new construction in all climate zones.

* Develop affordable high performance retrofit strategies for existing enclosures in all climate zones.

Identify and resolve barriers for implementation.

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**IDENTIFY & REVIEW
NEW GAPS**

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Identify & Review New Gaps

- Describe why the gap is important
- Describe how the gap relates to the Strategic Goals
- Identify interested parties (product manufacturers, builders, homeowners)

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COLLABORATION & 2012 PLAN

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Building America: Enclosures Standing Technical Committee

About

Announcements

Calendar

To-Dos

Working Documents

Meeting Documents

Strategic Plan Documents


Sitemap

3

days until

Next Annual Meeting


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Building America: Enclosures Standing Technical Committee



Announcements

[New Coordination Website is Up!](#) Please subscribe to the RSS feed from our ANNOUNCEMENTS page to stay up-to-date with all BA Enclosure STC updates! Thanks for your participation!
Posted Jan 17, 2012 11:18 AM by Building America

Showing posts 1 - 1 of 1. [View more »](#)

To-Dos

Owner	Description	Due Date	Complete
Building America	STC Meeting at BA Stakeholder Meeting/RESNET	February 29, 2012	

Showing 1 items from page [To-Dos](#) sorted by edit time. [View more »](#)

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QUESTIONS &
DISCUSSION

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Interested in joining?

katie@buildingscience.com

NEXT MEETING FRIDAY, MARCH 23RD

1:00 pm – 2:00 pm ET

CONFERENCE CALL & WEBINAR