Growing SIPs Market Penetration:

Getting Past 150-Year-Old Enclosure Technology

Sam Rashkin

SelectSIPs Expo 2023

March 6-8, 2023

Growing SIPs Market Penetration Outline

- Opportunity
- Builder Pitch
- SIPA True Cost Bidding Tool
- Recommendations

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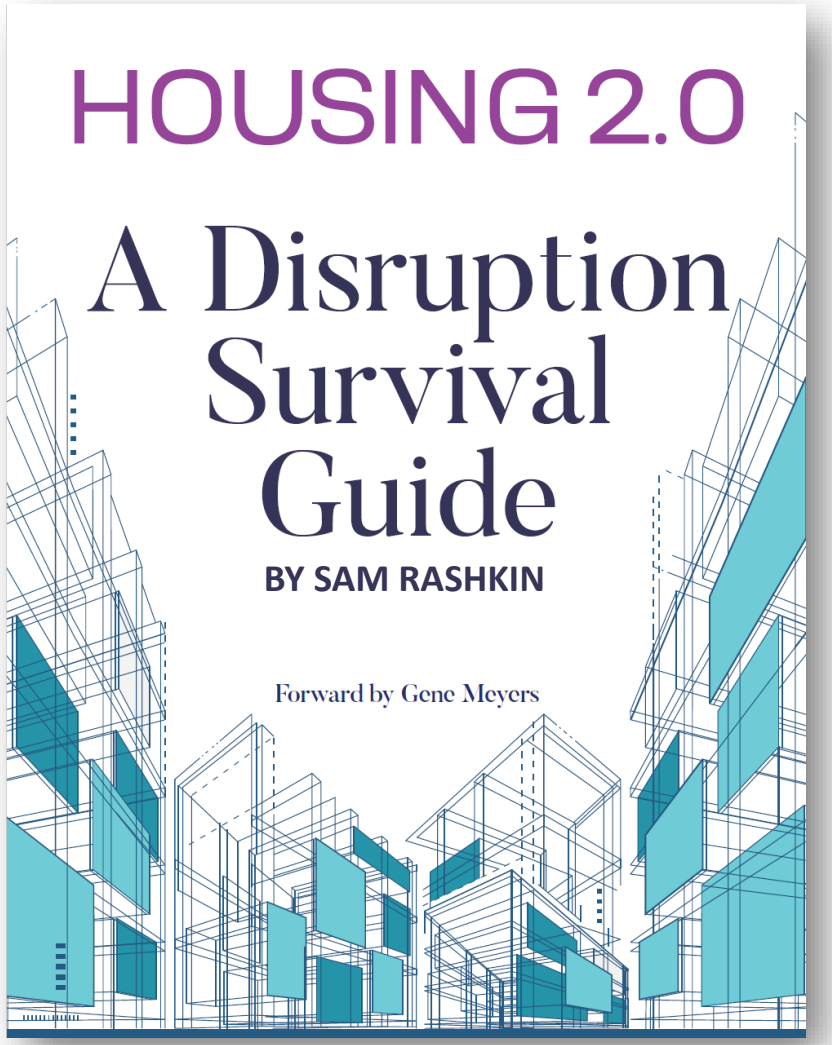
Resource



Goal:

Make high-performance housing professionals UX leaders including:

- 420+ pages
- 150+ UX best practices
- 100's graphics
- 360+ citations
- 7 guest expert essays
- 5-plus years vetting with 100's housing executives

Website:

https://www.greenbuildermedia.com/housing-2.0

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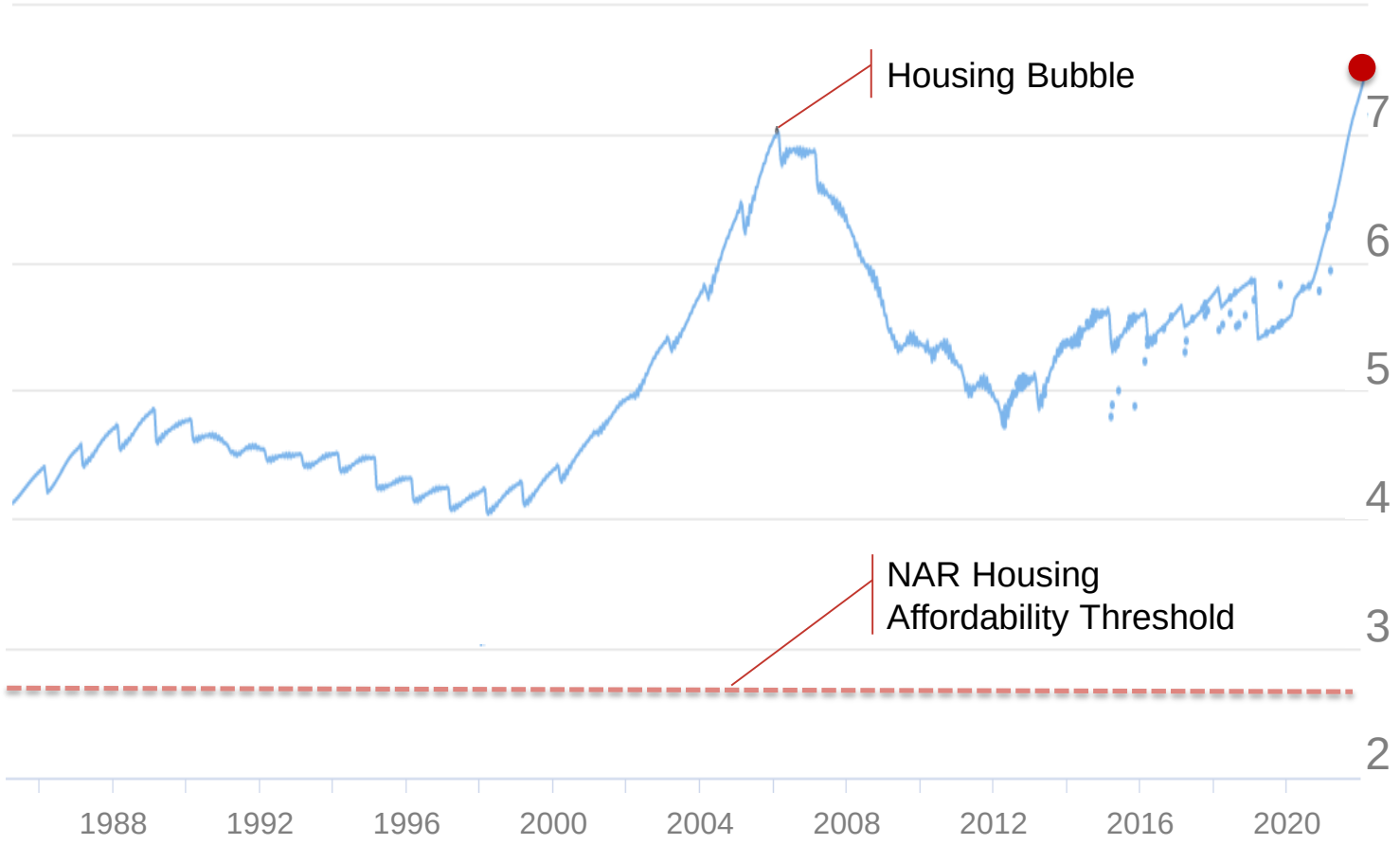
Growing SIPs Market Penetration:

Opportunity

Housing Crisis: Lack of Affordability

Median Home Price / Median Household Income Ratio



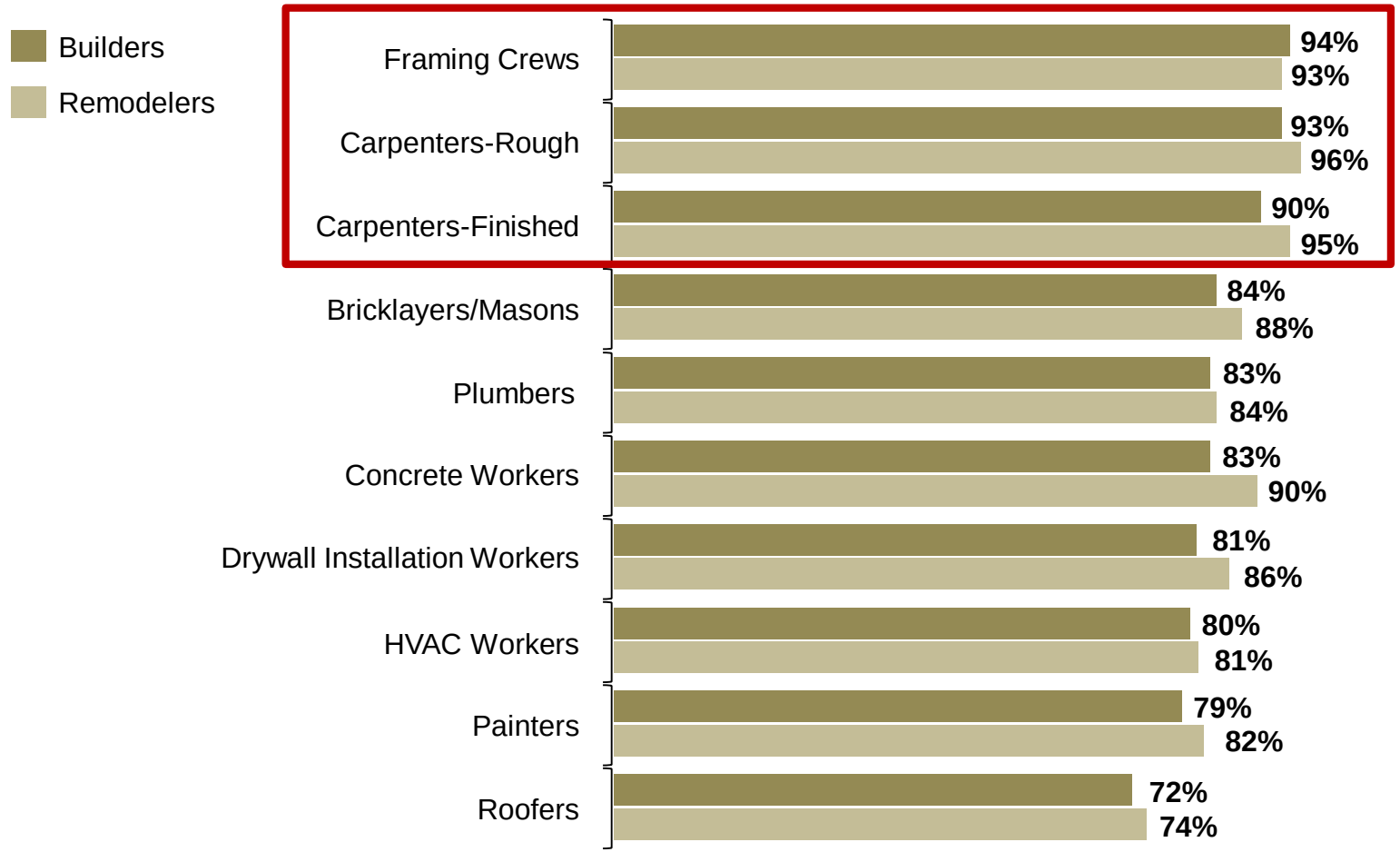
7.4

Median Home Price to Median Household Income Ratio (11/21)

Source: Joint Center for Housing Studies of Harvard University

Housing Crisis: Lack of Trades Now

Percent of Builders & Remodelers Reporting Subcontractor Shortages



90+%

of builders report framing crew and carpenter shortages in 2022

Source: *"The Home Builder Institute (HBI) Construction Labor Market Report,"* Fall 2022

Housing Crisis: Lack of Trades in Foreseeable Future

Posted on: October 14, 2022

BUILDER

HBI: SLOWDOWN IN HOUSING WILL NOT SOLVE CONSTRUCTION WORKER SHORTAGE

Adobe Stock/Andy Dean Photography

The softening of the U.S. housing market means short-term demand for construction labor will likely also soften, according to a new report from the Home Builders Institute (HBI). As part of the Fall 2022 HBI Construction Labor Market Report, the estimated number of construction worker growth required for the sector is approximately 740,000. This estimate is level with the figure from the organization's Spring 2022 report.

From 2022 to 2024, the construction industry net new hires needed:

2.2 Million

Source: Spring 2022 HBI Construction Labor Market Report

Housing Crisis: Glacial Productivity

150+ Years

1877

Source: Wood frame house on a Omaha Reservation in Nebraska, The National Archives, Smithsonian Institution)

2021

Source: Wall Street Journal, *Construction Workers 'Left the Business and They Didn't Come Back'*, Oct. 13, 2015

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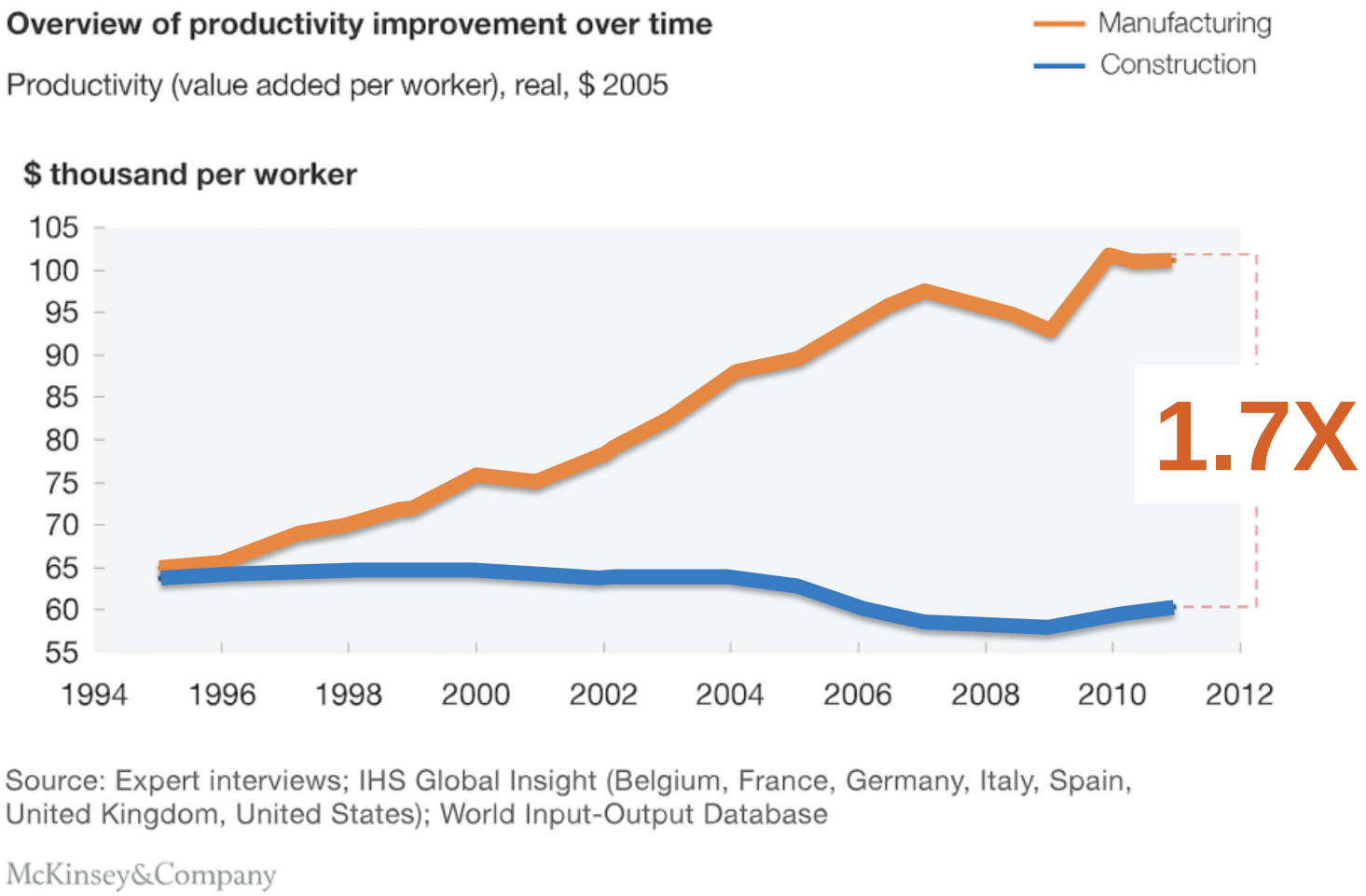
Housing Crisis: Glacial Productivity



Source: Expert interviews; IHS Global Insight (Belgium, France, Germany, Italy, Spain, United Kingdom, United States); World Input-Output Database

McKinsey&Company

Resources Adding Value:

10%

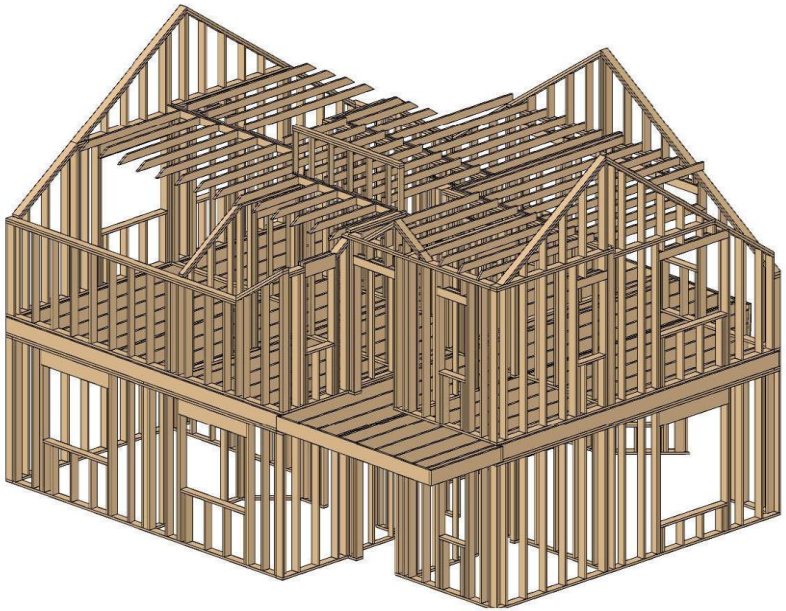
in construction

62%

in manufacturing

Source: "Owners and Contractors – Still Lagging in Construction Productivity and Technology Use," Building Information Management, World Press, March 31, 2015

Opportunity: Housing Crisis Pain Relief with SIPs



150-Year-Old
Enclosure Technology

- **Faster**
- **Better**
- **Cheaper**

Advanced Enclosure
Technology

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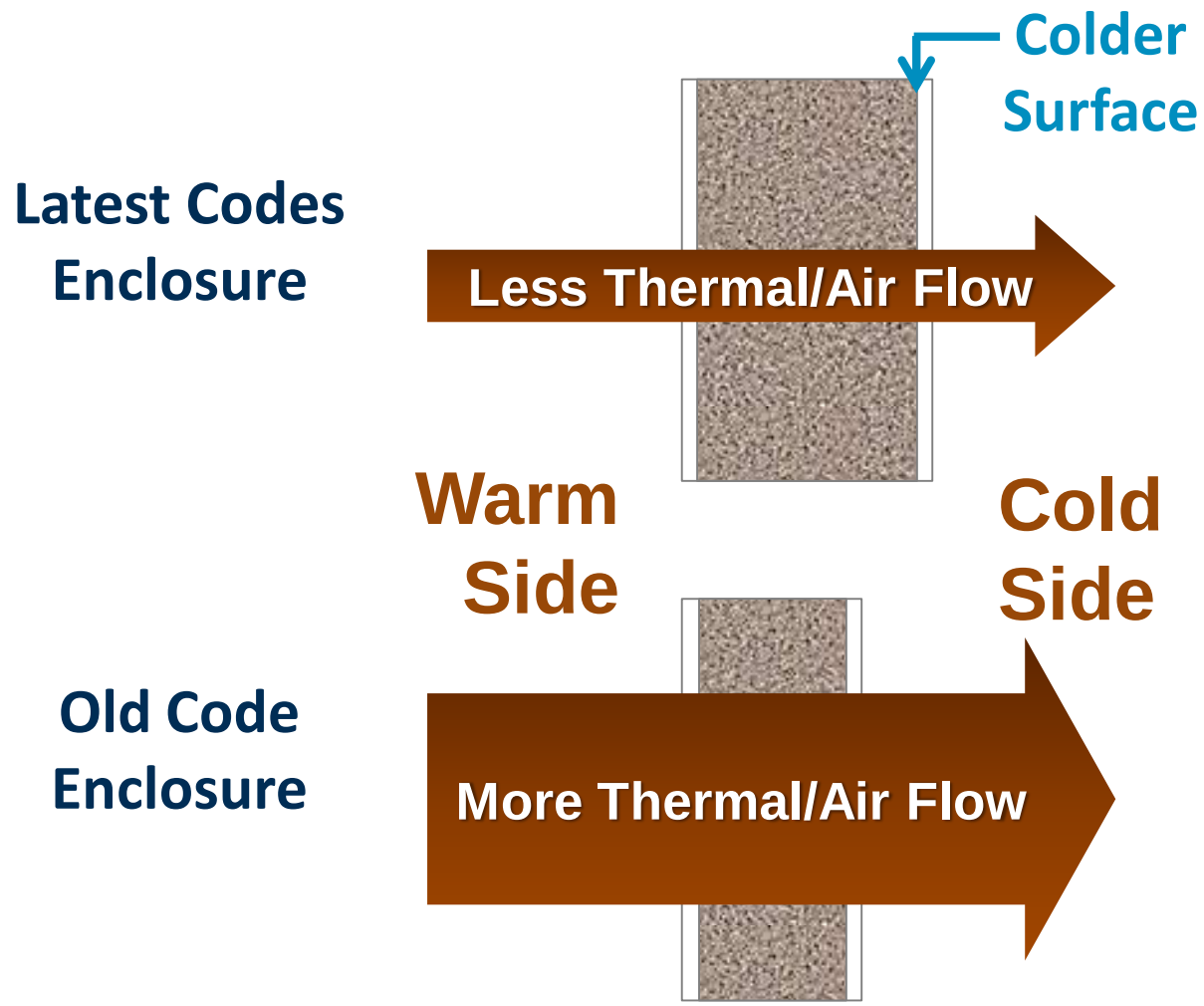
Growing SIPs Market Penetration:

Builder Pitch

Housing New Reality: Greater Risk



Problems:

- Moisture Failures Easier
  - More Wetting Potential
  - Less Drying Potential
- Trade Quality/Availability

Solutions:

- Optimized Enclosure:
  - Thermal Flow Control
  - Air Flow Control
  - Moisture Flow Control
- Quality Assured Systems
- Less Reliance on Trades

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Thermal Flow Control: Greater Accountability

Optimizing Thermal Flow Control

Optimize:

- Quality of Insulation Installation
- Control of Thermal Bridging

Thermal Flow Control: Installation Quality Challenges

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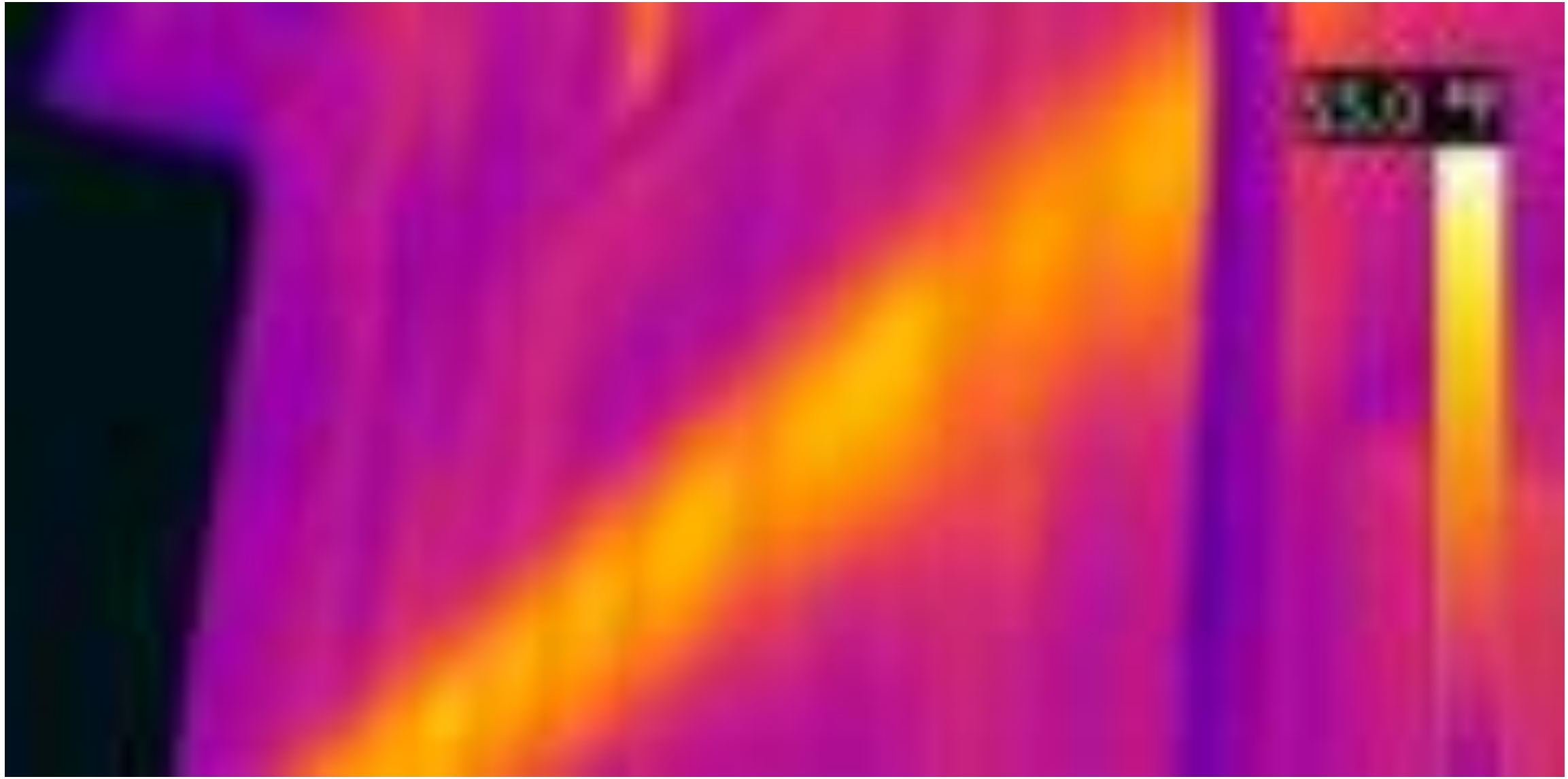
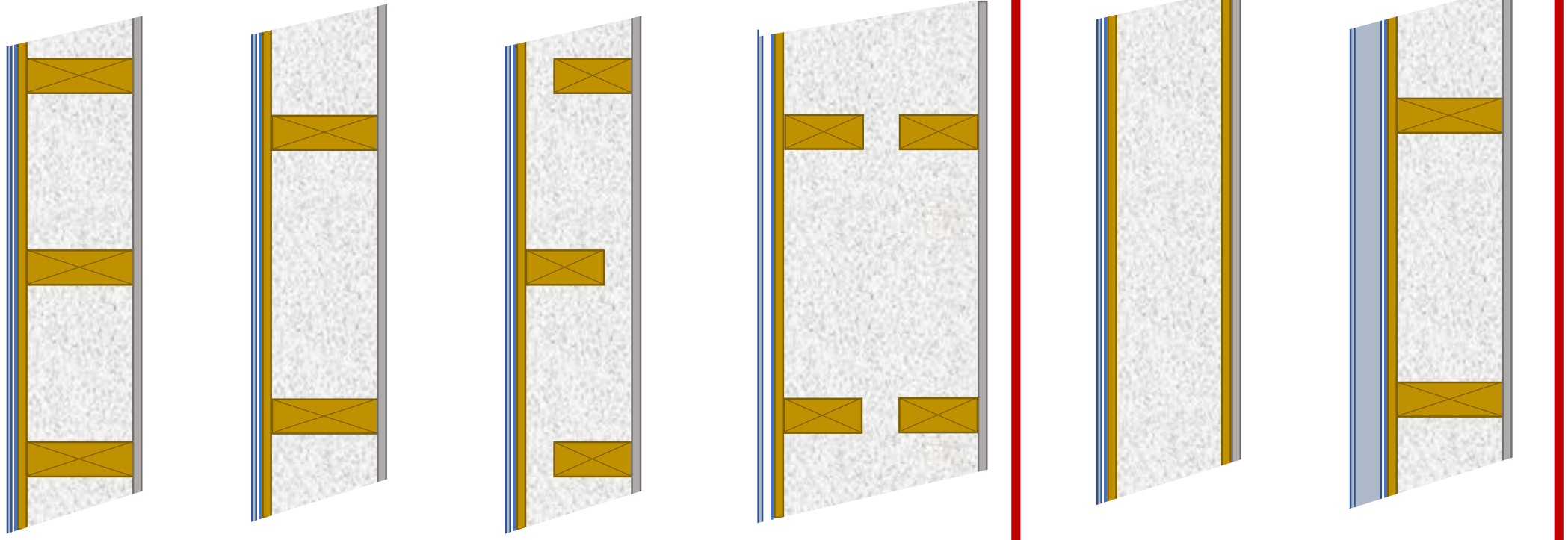
Thermal Flow Control: Installation Quality Challenges



Thermal Flow Control: Thermal Bridging



Conventional Framing 25-30% F.F.

Advanced Framing 19% F.F.

Staggered Stud Framing 12% F.F.

Double-Wall Framing 10% F.F.

Structural Insulated Panels 5% F.F.

Rigid Insul. Sheathing 2% F.F.

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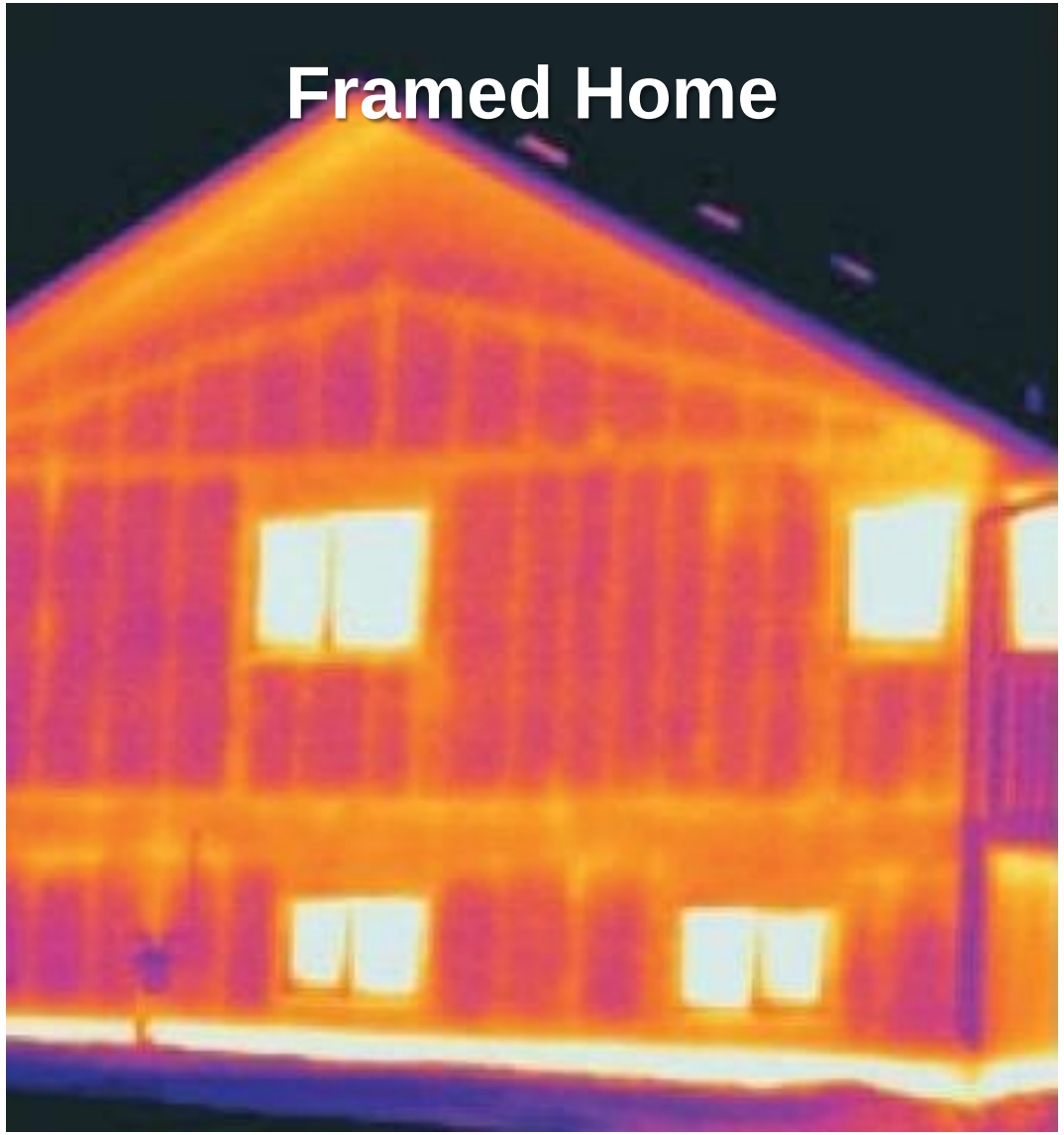
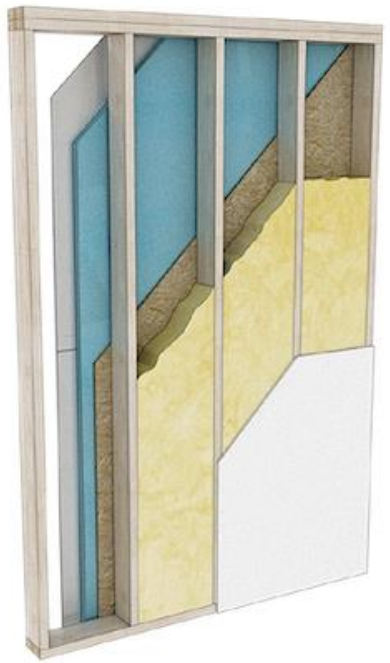
Thermal Flow Control: Thermal Bridging



Optimizing Thermal Flow Control with SIPs



150-Year-Old
Enclosure Technology

Advanced Enclosure
Technology

Faster

- Insulated Enclosure
- No Quality Inspections
- No Rework

Better

- No Gaps
- No Voids
- No Misalignment
- No Vapor Flow
- Minimal Thermal Bridging

Cheaper

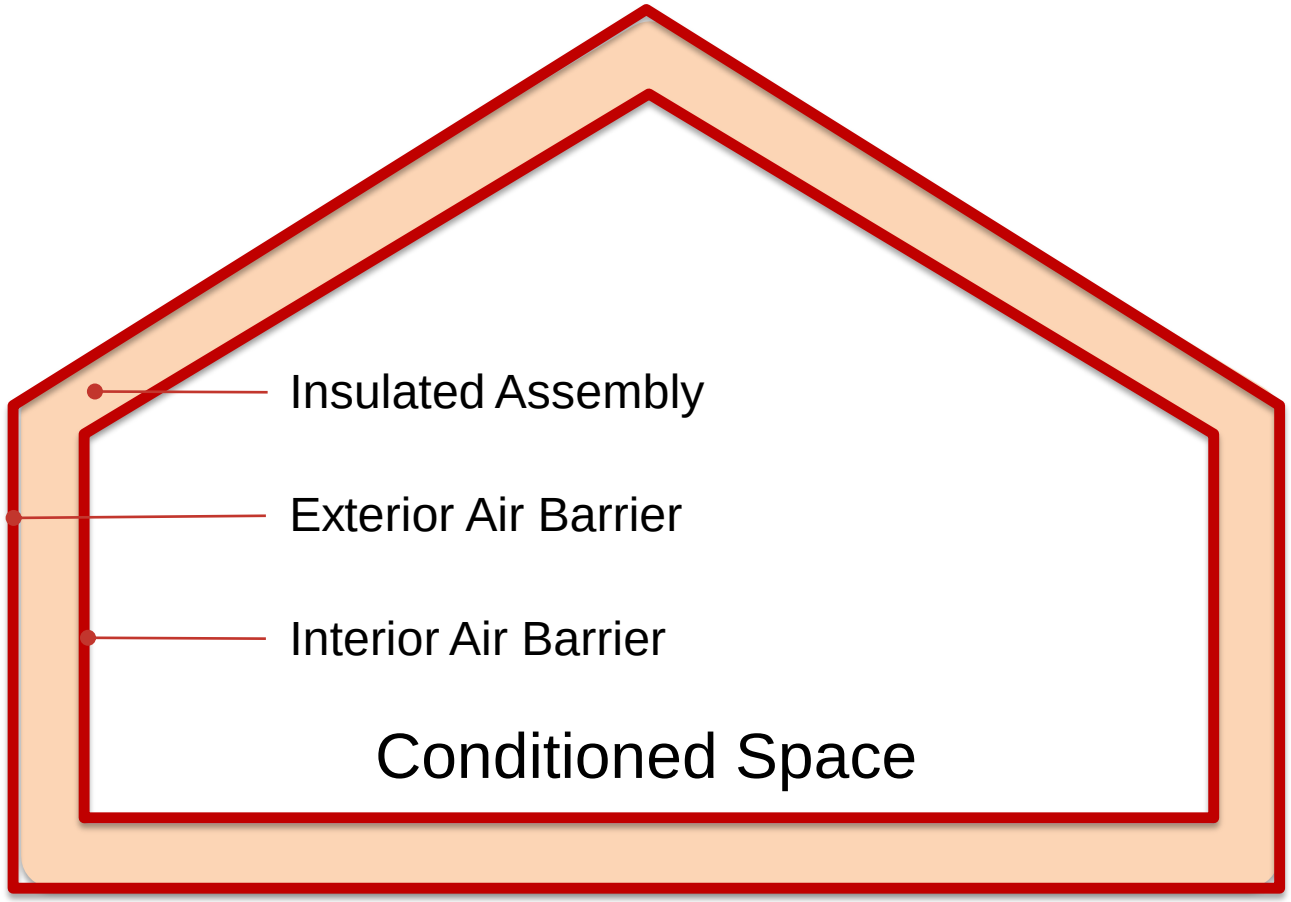
- Less Cycle Time
- Less Inspections/Rework
- Less Waste

Optimizing Air Flow Control

Comprehensive:

- Air Barriers
- Air Sealing

Optimizing Air Flow Control: Complete Air Barriers



Red Line Test

for complete air barrier aligned with thermal control layer to ensure air and vapor flow control

Air Flow Control: Framing Air Barrier Checklist

Boundaries Between Condition and Unconditioned Spaces

Walls

- ❑ Showers and Tubs
- ❑ Fireplaces
- ❑ Attic Knee Walls
- ❑ Skylight Shaft Walls
- ❑ Adjoining Porch Roof
- ❑ Staircase Ext. Walls
- ❑ Double Walls
- ❑ Rim/Band Joists

Shafts

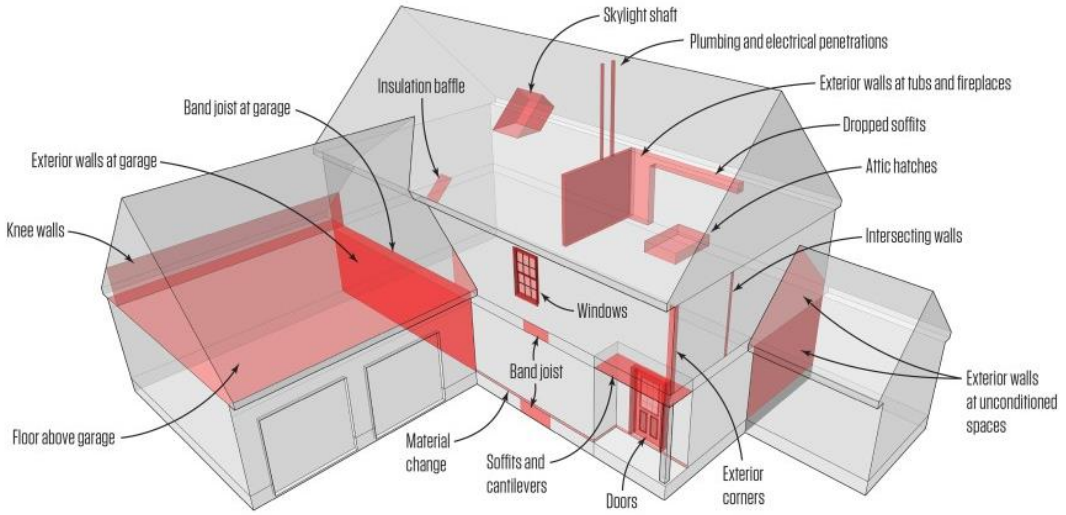
- ❑ Duct Shaft
- ❑ Piping Shaft
- ❑ Flue Shaft

Attic/Ceiling

- ❑ Attic Access Panel
- ❑ Attic Drop-Down Stair
- ❑ Raised Ceilings
- ❑ Dropped Ceilings
- ❑ Wind Baffles at Eaves
- ❑ Recessed Lights
- ❑ Whole-House Fan

Floors

- ❑ Floors Above Garage
- ❑ Cantilevered Floor
- ❑ Unconditioned Space Floor
- ❑ Floor Framing into Garage



Air Flow Control: SIPs Air Barrier Checklist

Boundaries Between Condition and Unconditioned Spaces

Walls

- ☐ Showers and Tubs
- ☐ Fireplaces
- ☐ Attic Knee Walls
- ☐ Skylight Shaft Walls
- ☐ Adjoining Porch Roof
- ☐ Staircase Ext. Walls
- ☐ Double Walls
- ☐ Rim/Band Joists

Shafts

- ☐ Duct Shaft
- ☐ Piping Shaft
- ☐ Flue Shaft

Attic/Ceiling

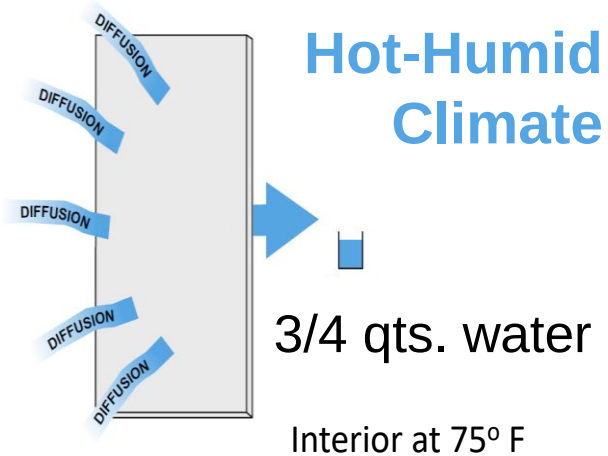
- ☐ Attic Access Panel
- ☐ Attic Drop-Down Stair
- ☐ Raised Ceilings
- ☐ Dropped Ceilings
- ☐ Wind Baffles at Eaves
- ☐ Recessed Lights
- ☐ Whole-House Fan

Floors

- ☐ Floors Above Garage
- ☐ Cantilevered Floor
- ☐ Unconditioned Space Floor
- ☐ Floor Framing into Garage

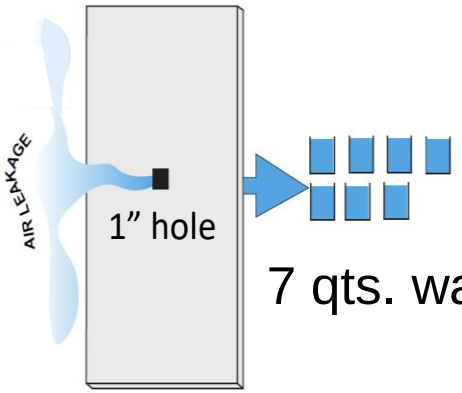
Moisture Vapor Flow Control: Air Leakage Critical

Hot-Humid Climate



3/4 qts. water

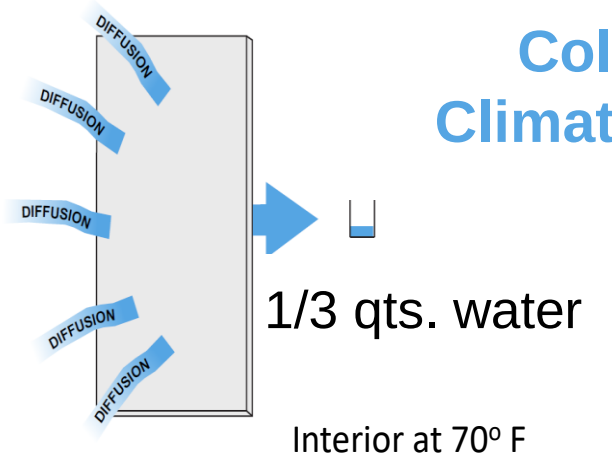
Interior at 75º F and 50% RH



7 qts. water

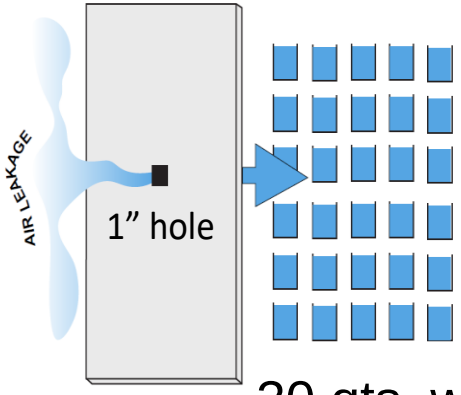
Moisture vapor flow over Spring, Summer, and Fall from the exterior to interior with 5 Pascal pressure difference

Cold Climate



1/3 qts. water

Interior at 70º F and 40% RH



30 qts. water

Moisture vapor flow over Winter from the interior to exterior with 5 Pascal pressure difference

Air Flow Critical

Moisture flow due to air leakage vs. diffusion:

~10X Greater
in Hot-Humid Climate

~100X Greater
in Cold Climate

Optimizing Air Flow Control: Air Sealing Target

Climate Zones	ACH50 Requirements/Targets			
	Zero Energy Ready	ENERGY STAR V3	2012 IECC	Passive House
1-2	3.0	6.0	5. 0	0.6
3-4	2.5	5.0	3.0	0.6
5-7	2.0	4.0	3.0	0.6
8	1.5	3.0	3.0	0.6

Air Flow Control: Air Sealing Checklist with Framing

Penetrations:

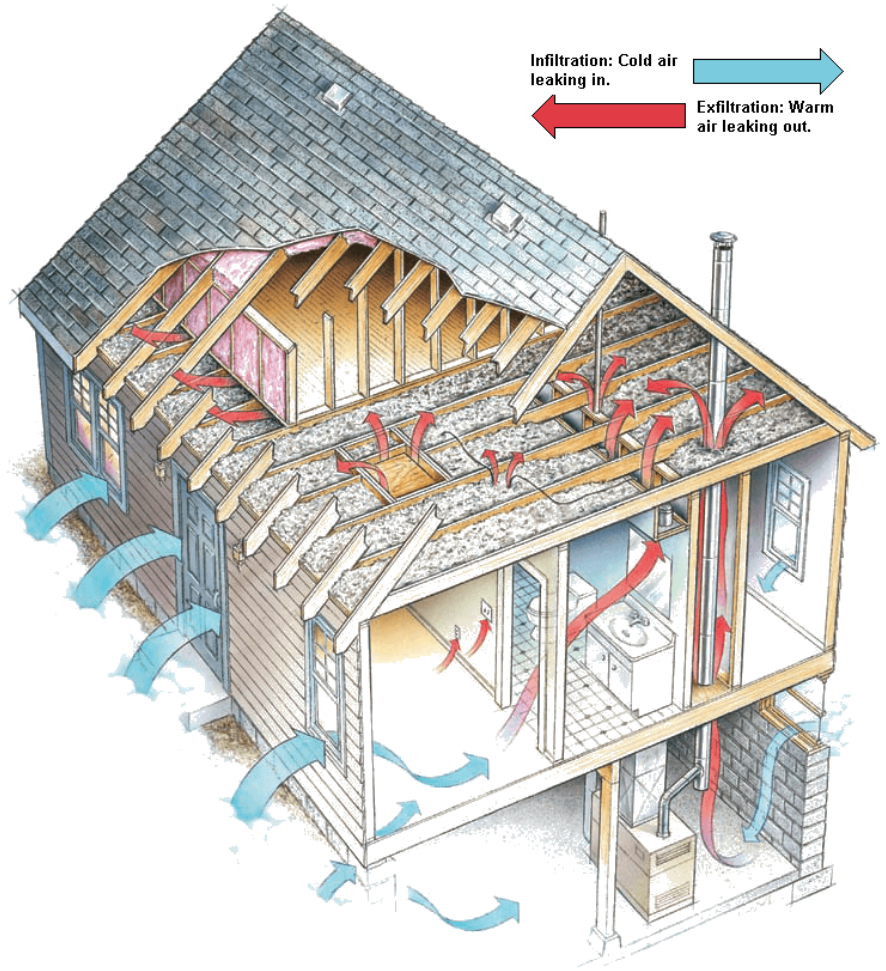
- ❑ Plumbing
- ❑ Wiring
- ❑ Recessed Lights
- ❑ Vents
- ❑ Flues
- ❑ HVAC Duct Boots

Odd Geometry:

- ❑ Cantilevers
- ❑ Knee-walls

Cracks:

- ❑ Sill Plates
- ❑ Foundation/Framing
- ❑ Windows & Doors
- ❑ Drywall at Top Plate
- ❑ Access Panels
- ❑ Sheathing Joints
- ❑ Air Barriers (see Air Barrier Checklist)



Air Flow Control: Air Sealing Checklist with SIPs

Penetrations:

- ~~☐ Plumbing~~
- ~~☐ Wiring~~
- ~~☐ Recessed Lights~~
- ☐ Vents
- ☐ Flues
- ~~☐ HVAC Duct Boots~~

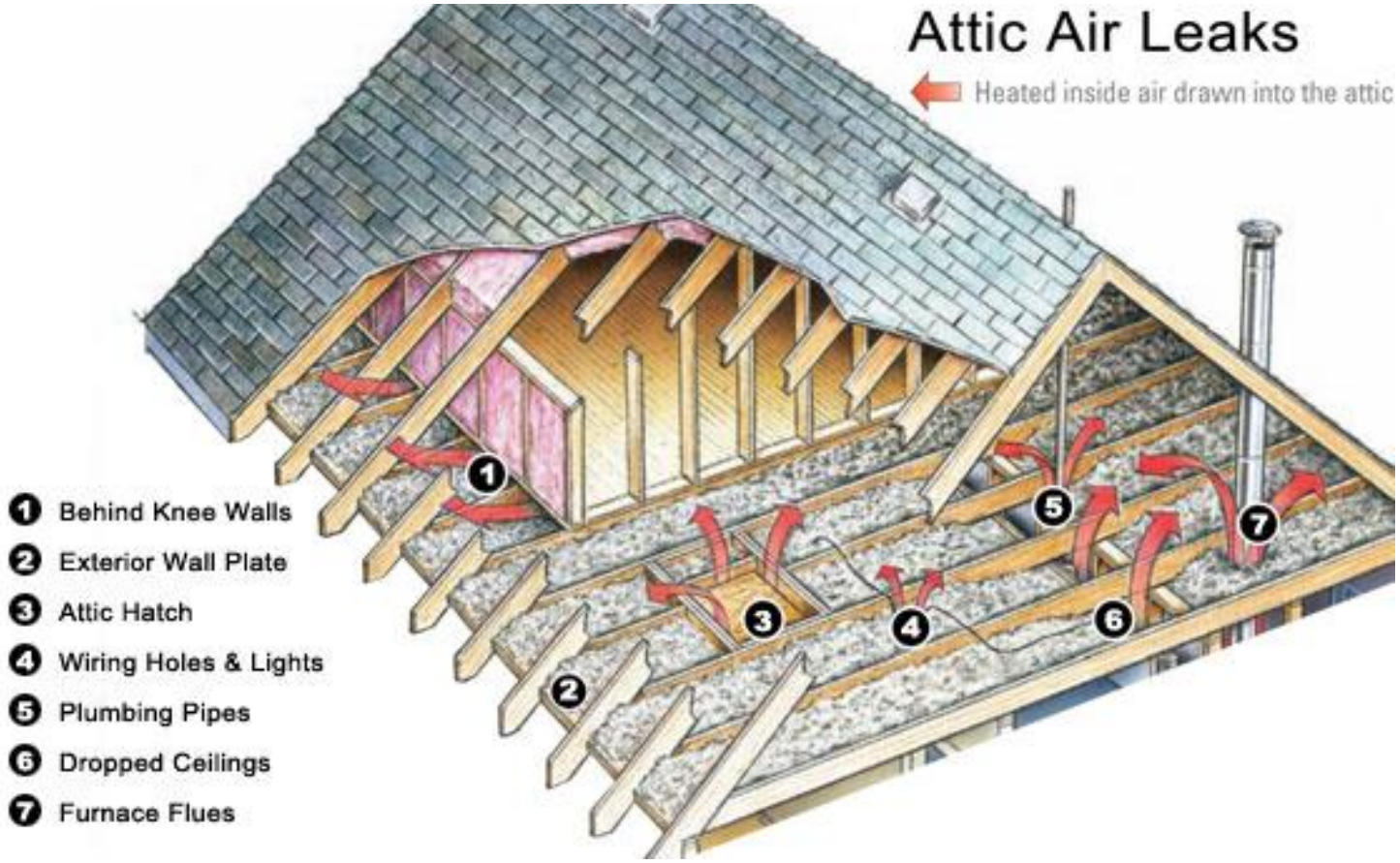
~~Odd Geometry:~~

- ~~☐ Cantilevers~~
- ~~☐ Knee-walls~~

Cracks:

- ☐ Sill Plates
- ☐ Windows & Doors
- ☐ Foundation/Framing
- ~~☐ Drywall at Top Plate~~
- ~~☐ Access Panels~~
- ☐ Less Sheathing Joints
- ~~☐ Air Barriers (see Air Barrier Checklist)~~

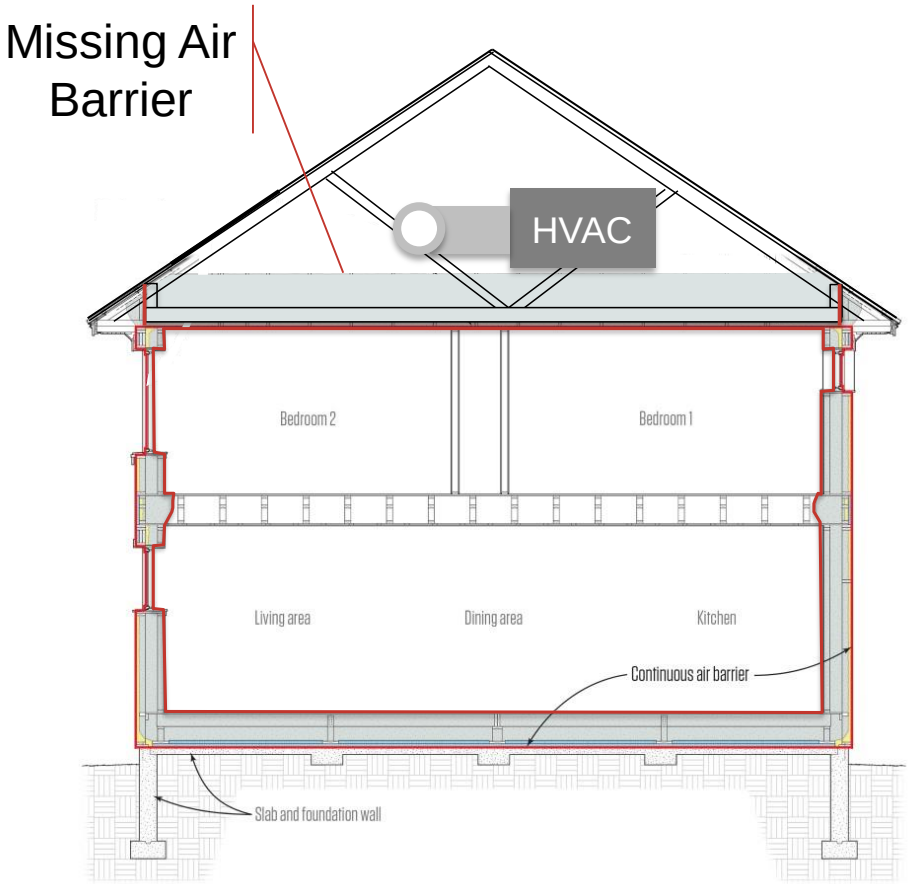
Optimizing Air Flow Control: Most Egregious Interface



Attic/Ceiling:

- Delta T
- Pressure (Stack Effect)
- Air Barriers
  - Knee Walls
  - Dropped/Raised Ceilings
  - Shafts
  - Wind Baffles
- Air Leakage:
  - Penetrations
  - Duct Boots
  - Access Panels
  - Drywall to Top Plate
- HVAC Location

Optimizing Air Flow Control: Most Egregious Interface



Conventional Framing

Source: *'Air-Barrier Basics,'* Steve Bazcek, The Journal of Light Construction, January 9, 2019

Mitigating Housing Crises: SIPs Faster – Cycle Time

Offsite Construction Schedule

Site-Built Construction Schedule

Source: *'Special Report: Modular Construction and Design Demand Evolved Business Models,'* Joe Bousquin, Building Forward, January 22, 2019

Mitigating Housing Crises: SIPs Cheaper- Cycle Time

Days Saved for SIPs vs. Framing Example:

16 Days

Cost Savings Per Day Saved:

$500 - $800/Day*

Cost Savings:

$8,000 - $12,800

Source: *'The Cost of Quality',* IBACOS research

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Mitigating Housing Crises: SIPs Better - Quality

Average Construction Cost Variance:

$1,850 (as high as $7,000)

Source: *'The Cost of Quality',* IBACOS research

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Mitigating Housing Crises: SIPs Cheaper - Quality

Average # of service requests per home: **15**

Cost per warranty service call: **$250**

Assume 6 fewer calls with SIPs:

6 fewer calls x $250/call = **$1,500/home**

Source: *'The Cost of Quality',* IBACOS research

Mitigating Housing Crises: SIPs Cheaper – Quality

Research results suggest builders could save

$3,800+ per house

(on average) with just a

1% improvement in quality

across eight areas of their business.

Source: *'The Cost of Quality',* IBACOS research

Mitigating Housing Crises: SIPs Cheaper - Oversight

Trades Eliminated:

- Exterior Framing
- Insulation
- Air Barriers
- Air Sealing

Trade Work Reduced:

- Interior Framing
- Drywall
- Finishes

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Mitigating Housing Crises: SIPs Cheaper - Waste

Typical Construction Waste:

8,000 lbs.

50 Cu. Yds.

Source: NAHB Study

Mitigating Housing Crises: SIPs Cheaper - Waste

Typical Construction Site Dumpster:

$300 - 500 Usable Materials

Average Cost Per Dumpster Haul: **$560***

Average Dumpsters Per Home: **3****

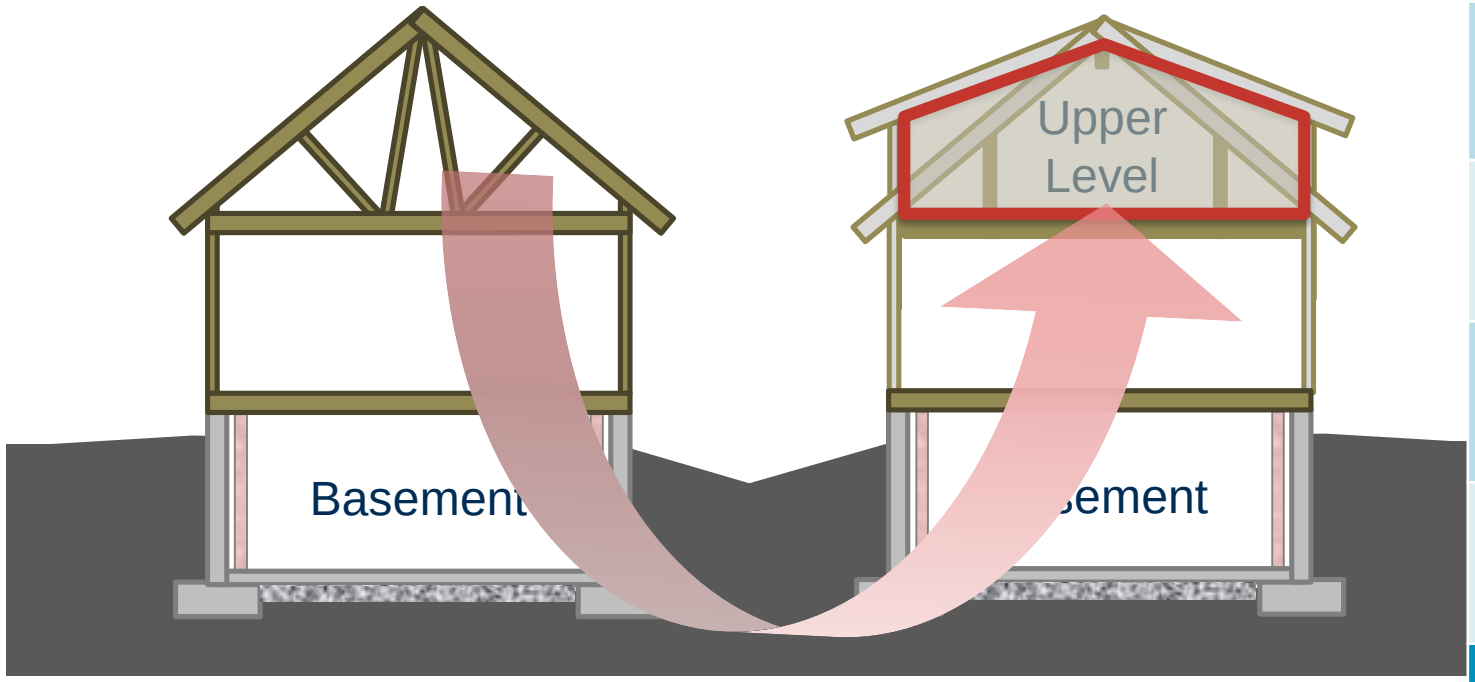
Assume 1 Dumpster with SIPs

2 Dumpsters x $560 = **$1,120/home**

***Source:** *'The Cost of Quality',* IBACOS research

Source: Dumpsters.com

Mitigating Housing Crises: SIPs Cost Savings/Value



Cost Savings	
Air Seal/Barriers	**$1K - $2K**
Attic Venting	**$1K - $1.5K**
Reduced Waste	**$1K - $2K**
Time (3 days)	**$1.5K - $2.5K**
Added Value	
Upper-Level Space	**$160K - $200K**

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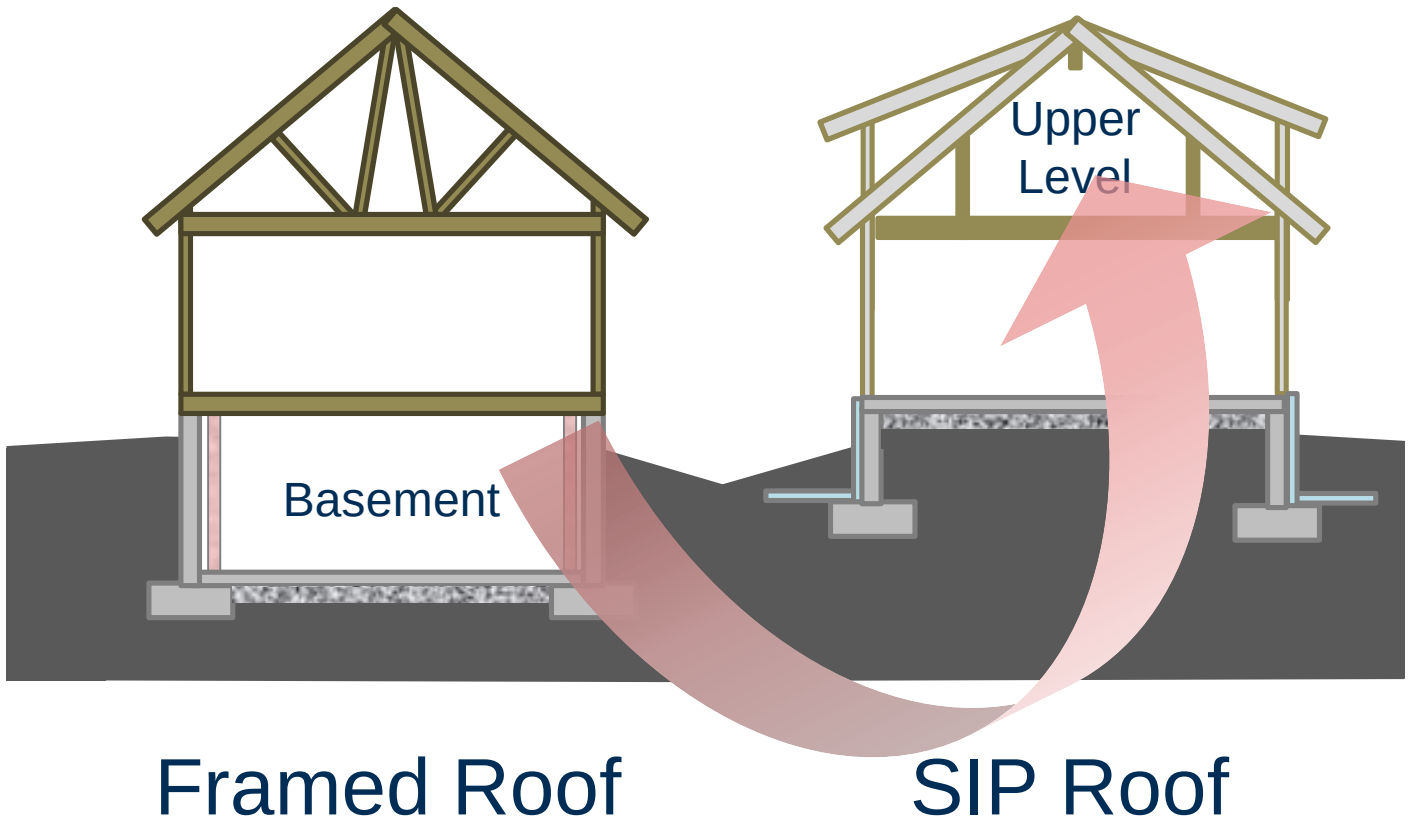
Mitigating Housing Crises: SIPs Cheaper and Better



Cost Savings	
Foundation[1]	up to **$6K**
Wall Framing	**$1K - $2K**
Egress Windows	**$1K - $2K**
Air Seal/Barriers	**$1K - $2K**
Attic Venting	**$1K - $1.5K**
Reduced Waste	**$1K - $2K**
Time (3 days)	**$1.5K - $2.5**
Added Value	
Upper-Level Space vs. Basement	**$60K - $100K**

[1] "Frost-Protected Shallow Foundations, NAHB Research Center, 4/30/04

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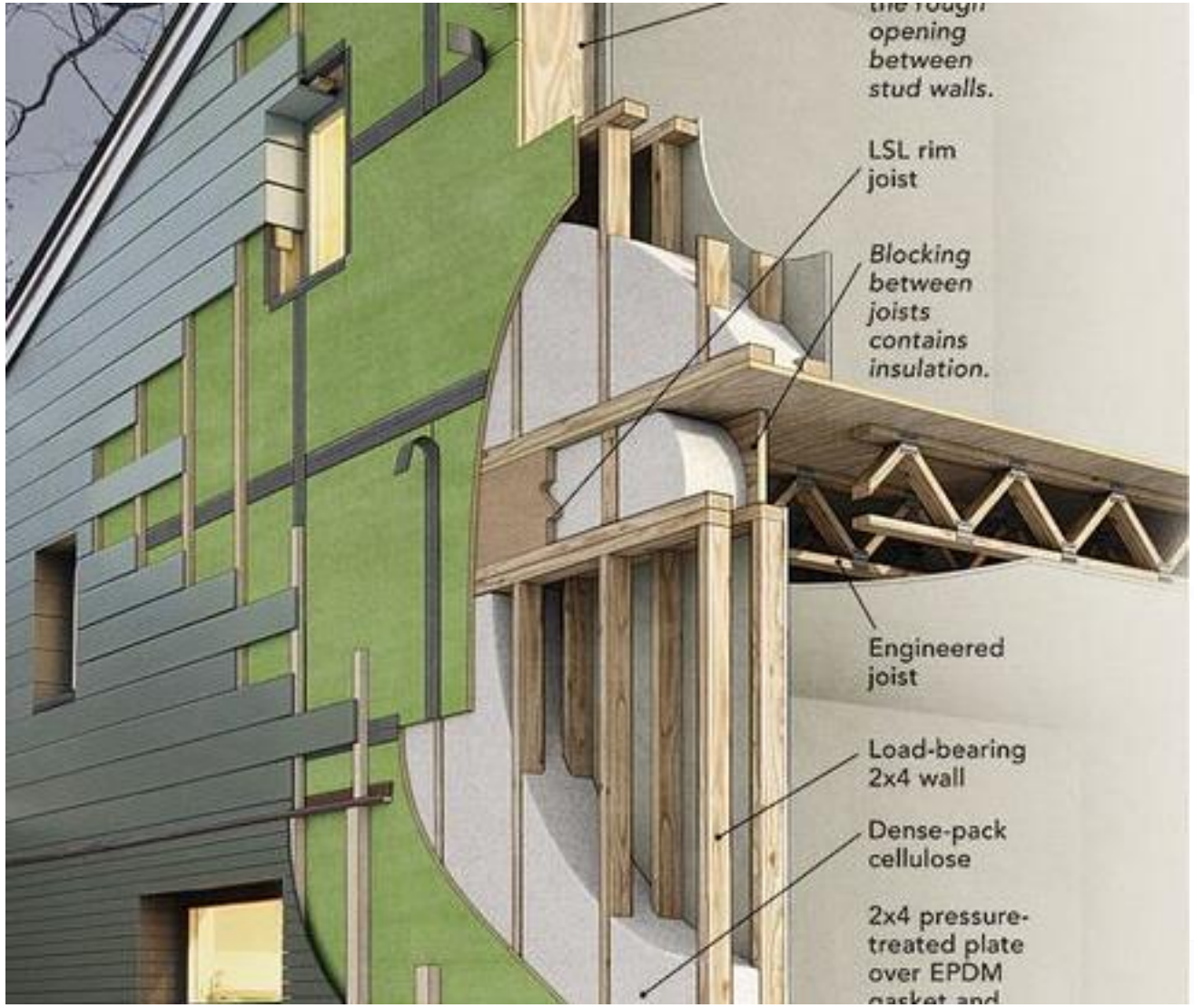
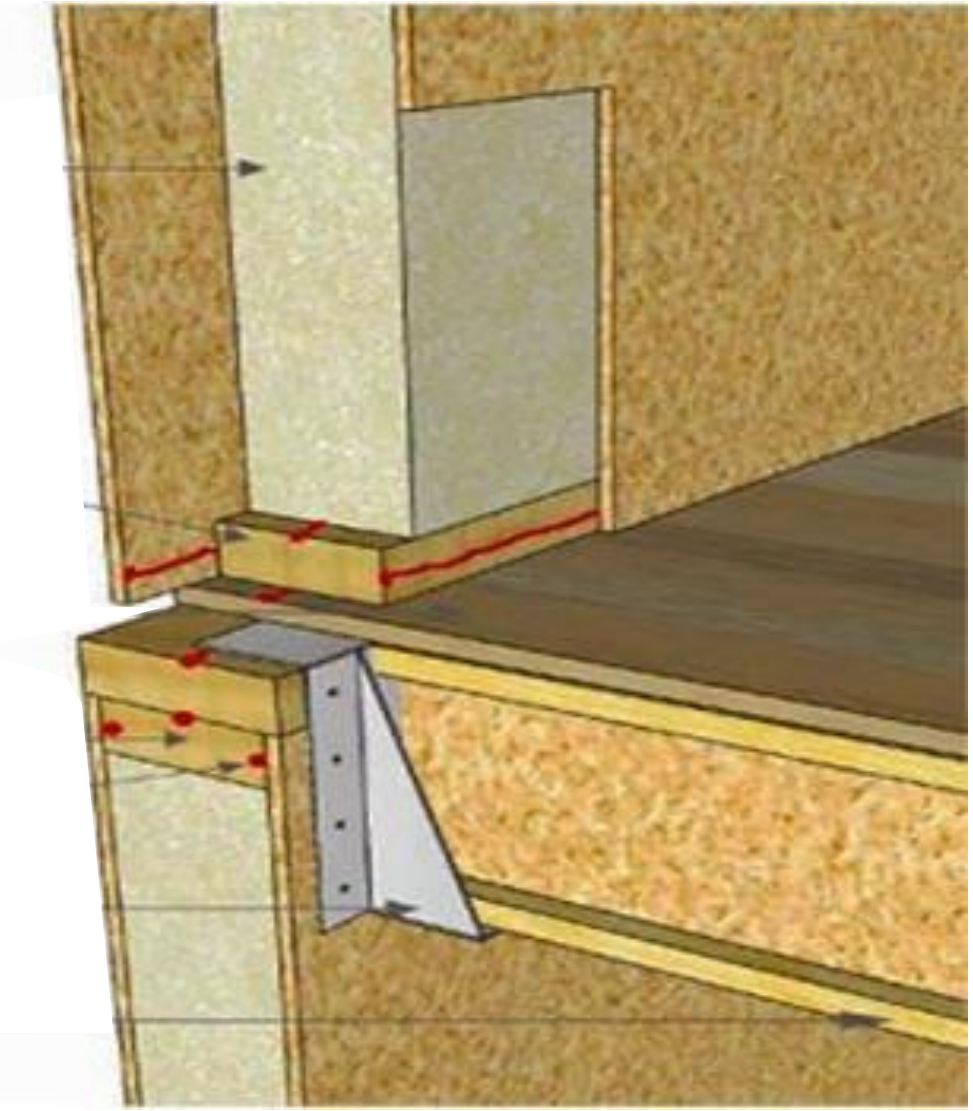
Mitigating Housing Crises: SIPs Cheaper - Simple





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Mitigating Housing Crises: SIPs Cheaper - Simple

Thermal Control [Key Insulation Options]	Framing Structure Required	Required Building Science Control Layers			
		Thermal Bridging Flow	Air Flow	Moisture Vapor Flow	Bulk Moisture Flow
Fibrous Insulation					
OC Spray Foam					

Mitigating Housing Crises: True Cost Comparison

150-Year-Old
Enclosure Technology

Advanced Enclosure
Technology

Faster

- Insulated Enclosure
- Air Sealing/Air Barriers
- Attic Venting
- Drywall/Trim

Better

- Superior Control Layers:
  - Air Flow
  - Thermal Flow
  - Moisture Vapor Flow
- Dimensional Accuracy
- Greater Resilience/Strength
- Resource Efficiency
- Added Conditioned Space

Cheaper

- Less Cycle Time
- Less Inspections/Rework
- Less Waste

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Start Building Faster, Better, Cheaper …

Get a True Cost Bid from a SIPs Provider

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Growing SIPs Market Penetration:

SIPA True Cost Bidding Tool

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SIPA Working Group: Cost Savings

Time	• Framing • Drywall • Trim
Air Flow	• Air Sealing • Air Barriers • Attic Venting
Quality	• Interior Trim (rework) • Reserves for Callbacks • Inspections (inherent QA) • Rework
Waste	• Framing • Drywall • Trim

Significant cost savings identified building with SIPs

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SIPA Working Group: Added Value

Savings	• Waiting Time • Utility Bills • Insurance	
Livability	• Comfort • Quiet • Higher Ceilings	
Quality	• Dimensional Accuracy • Solid Construction	
Resilience	• Wildfires • Impact • Earthquake	• Pests • Post-Event Occupancy
Added Volume	• Unvented Attics • Thinner Walls & Roofs / R-value	

Significant added value identified for SIPs homeowners

SIPA True Cost Bidding Tool: Translate Savings & Value

Cost Assumptions:	Metrics:	Source
Carrying Cost per day of construction	$ 400	Cost of Quality, Glenn Cottrell w/IBACOS - $500 - $800/day
Percent Cost Savings Installing Drywall w/SIPS	2%	Estimate
Pecent Cost Savings Installing Cabinets w/SIPs	1%	Estimate
Percent Cost Savings Installing Trim w/SIPS	1%	Estimate
Framing Waste in # Dumpsters Per 1,000 Sq. ft.	2.0	Cost of Quality, Glenn Cottrell w/IBACOS - $500 - $800/day
SIPs Waste in # Dumpsters Per 1,000 Sq. ft.	0.67	SIPA Meeting
Cost Per Dumpster	$ 500	Cost of Quality, Glenn Cottrell w/IBACOS - $500 - $800/day
Cost of Schematics for Optimizing MEP with SIPs	$ 1,000	

SIPs Added Value Assumptions:	Metrics:	Source
Base Price of Home	$ 450,000	Builder
Conditioned Square Feet of Home	2000	Builder
Retail Cost per Sq. Ft. Above-Grade Condtioned space	$ 250	Builder
Retail Cost per Sq. Ft. Below-Grade Condtioned space	$ 130	Builder
Additional Conditioned Square Feet with Thinner Walls	25	Take-Off
Sq. Ft. of SIP Attic Traded Off for Basement	0	Take-Off
Additional Conditioned Square Feet with SIP Attic	0	Take-Off
Annual Home Insurance Cost	$ 1,200	Insurance Company

Summary: SIPs Savings/Value vs. Conventional Framing

Cost Savings	Added Value	Total
$ 13,175	$ 13,000	$ 26,175

This cost comparison is based on an actual bid for SIPs and estimated costs for conventional framing based on standard cost data available. Work with your SIPs sales rep to integrate actual bids for conventional framing to get a more precise comparison for your project.

Stairs	$950	$950		
Attic Venting	$750	$750		
Concrete Foundation - Material and Labor	$12,000	$12,000		
Insulation	**$7,304**	**$0.00**	**4.0**	**0.0**
Wall - Cavity	$7,304	$0		
Wall - Rigid	$0	$0		
Attic Ceiling	$0	$0		
Band Joists	$0	$0		
Air Flow Control	**$2,750**	**$1,350**	**3.0**	**1.0**
Air Barriers	$1,000	$700		
Air Sealing	$1,500	$400		

Higher Appraisals to Base Price	$ 450,000	$0
Reduced Home Insurance Annual Insurance Cost	$ 1,200	$0
Additional Square Footage with Thinner Walls	25	$6,250
Sq. Ft. of SIP Attic Traded Off for Basement	0	$0
Additional Conditioned Space with SIP Attic	0	$0
45 L Tax Credit		$0
Utility Rebate		$0
30-year Energy Savings		$0

SIPA True Cost Bidding Tool: Builder Focus Group

	Key Criteria Scores		
Attendees	Completeness	Credibility	Usefulness
Average	**3.8**	**4.4**	**4.8**
Brandon	4	5	5
Mike Funk	4	4.5	5
Glenna	4	5	5
Carl Hansen	3	4.5	5
John Friesenhahn	4	4	5
Paul Kalkbrenner	3	5	5
Stephen Kamrass	4	5	5
Jordan Luhn	4	4	5
Carol Orona	4	5	5
Dave Philips	4	4	5
Dave Rai	4	3	4
Doug Tarry	4	5	5
Todd Usher	3	3	4

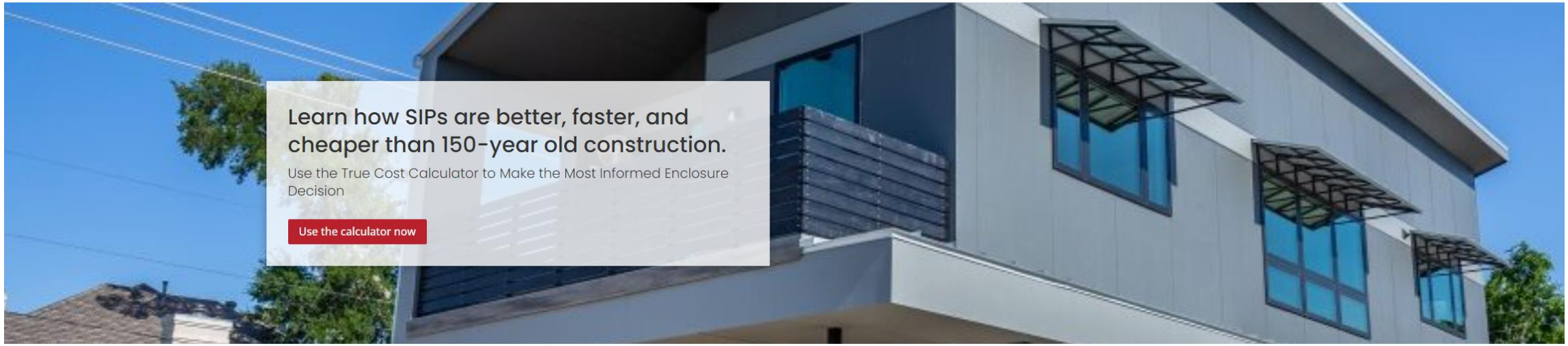
Results:

Tool output is complete, credible, and useful making HPH enclosure decisions.

SIPA True Cost Bidding Tool: Website Resource

Structural Insulated Panel Association

SIPA TrueBid Calculator Sample Project



Choose how to interact.

Start from scratch.
Are you prepared with bids? Use our calculator to compare the true benefits (value + cost savings) of using SIPs vs. conventional framing.

Use the calculator.

Start on a sample project.
Not ready to input your own project? Use our sample project to experiment with how simple changes can affect the bottom line.

View a sample project.

SIPA True Cost Bidding Tool: Website Resource

Project Information | Cost Assumptions | Home Details | Bid Information: Structure | Bid Information: Insulation | Bid Information: Air Flow Control | Bid Information: Interior Finishes | Bid Information: MEP | Bid Information: QC Control and Lean Construction | Summary

Project Information

Please provide the following information.

Your Information

Name *

Sam Rashkin

Email Address *

sam@truhomefacts.com

Company Name

Retooling the U.S. Housing Ind

Project Information

Project Name

Willows Creek

Builder

Live Better Homes

SIP Provider

ACME SIPs

SIPA True Cost Bidding Tool: Website Resource

retooling the U.S. Housing Industry

Project Information | Cost Assumptions | Home Details | Bid Information: Structure | Bid Information: Insulation | Bid Information: Air Flow Control | Bid Information: Interior Finishes | Bid Information: MEP | Bid Information: QC Control and Lean Construction | Summary

PROJECT DASHBOARD: Willows Creek

Cost Comparison	SIPs Improved User Experience	Value of Time Saved	Total SIPs Savings + Value
$ 4,590	$ 133,650	$ 5,640	$ 143,880

Bid Information: Air Flow Control

Please enter the following information based on the bids you received. Include both materials and labor costs in the estimate.

Bid Cost Details

	Cost with Traditional Framing (USD)	Cost Using SIPs (USD)
Air Barriers	1,000	700
Air Sealing	1,500	400
Wind Baffles	250	250

Total Air Flow Costs	Total Cost with Traditional Framing	Total Cost Using SIPs
	$ 2,750	$ 1,350

SIPA True Cost Bidding Tool: Website Resource

Project Information | Cost Assumptions | Home Details | Bid Information: Structure | Bid Information: Insulation | Bid Information: Air Flow Control | Bid Information: Interior Finishes | Bid Information: MEP | Bid Information: QC Control and Lean Construction | Summary

PROJECT DASHBOARD: Willows Creek

Cost Comparison	SIPs Improved User Experience	Value of Time Saved	Total SIPs Savings + Value
$ 4,590	$ 133,650	$ 5,640	$ 143,880

Summary: SIPs Savings/Value vs. Conventional Framing

The following are your results for cost savings and added value by using SIPS

Total SIPs Saving + Value Over Conventional Framing — **$ 143,880**

Details: Total Cost Comparison — $ 4,590

Total Costs with Traditional Framing: $185,395

Costs for Structure, Insulation, Air Flow, Finishes, MEP, Quality Control and Lean Construction with Framing

Total Costs Using SIPs: $180,805

Costs for Structure, Insulation, Air Flow, Finishes, MEP, Quality Control and Lean Construction in a SIPS build

Total Cost Savings (Framing Cost - SIPS Cost) $4,590

Total Costs with Traditional Framing - Total Cost Using SIPs

Details: SIPS Improved User Experience — $ 133,650

SIPA True Cost Bidding Tool: Website Resource

Structural Insulated Panel Association

Project: Willows Creek

SIPs Savings/Value vs. Conventional Framing

The following details outline the potential cost savings using SIPs

Total SIPs Saving + Value Over Conventional Framing:	$ 143,880
Details: Total Cost Comparison	$ 4,590
Total Costs with Traditional Framing	$ 185,395
Total Cost Using SIPs	$ 180,805
Total Cost Savings (Framing Cost - SIPS Cost)	$ 4,590
Details: SIPs Improved User Experience	$ 133,650
Stronger/More Dimensionally Accurate Enclosure	$ 3,750
Greater Resilience to Fire, Wind, Impact, Pests	$ 7,500
High Appraisals to Base Price	$ 0
Reduced Home Insurance Annual Insurance Cost	$ 0
Additional Square Footage with Thinner Walls	$ 7,200
Sq. Ft. of SIP Attic Traded Off for Basement	$ 115,200
Additional Conditioned Space with SIP Attic	$ 0
45L Tax Credit	$ 0
Utility Rebate	$ 0
30-year Energy Savings	$ 0
Total Added Value	$ 133,650

Details: Value of Construction Time Saved vs. Framing

Total Number of Construction Days	Conventional Framing	29.0
	Using SIPs	14.9
Value of Saved Days		$ 5,640

Input Information

The following is the information input into the SIPS TrueCost Tool

Project Information

Name	Sam Rashkin
Email	sam@truhomefacts.com
Company Name	Retooling the U.S. Housing Ind
Project Name	Willows Creek
Builder	Live Better Homes
SIP Provider	ACME SIPs
Sales Rep	Joe Smith

Cost Assumptions

Carrying Costs Per Day of Construction (USD)	$ 400 USD
Percent Cost Savings Installing Drywall with SIPS	2 %
Percent Cost Savings Installing Cabinets with SIPS	1 %
Percent Cost Savings Installing Trim with SIPS	1 %
Framing Waste in # of Dumpsters Per 1,000 Sq. Ft.	2.0
SIPs Waste in # of Dumpsters Per 1,000 Sq. Ft.	0.7
Cost Per Dumpster (USD)	$ 500 USD
Cost of Schematics for Optimizing MEP with SIPs	$ 1,000 USD
HVAC Cost Difference for SIPs vs Conventional Framing	$ 0 USD
Electric Cost Difference for SIPs vs Conventional Framing	$ 0 USD
Plumbing Cost Difference for SIPs vs Conventional Framing	$ 0 USD
Training Cost with Framing (% of Home Base Price)	0.35 %
SIPs % Training Cost Savings Compared to Conventional Framing	20 %
Inspection Cost with Framing (% of Home Base Price)	0.30 %
SIPS Inspection Cost Savings Compared to Conventional Framing	40 %
Framing Rework Cost (% of Home Base Price)	0.35 %
SIPs % Cost Rework Savings Compared to Conventional Framing	50 %
Framing Risk Management Reserves (% of Home Base Price)	0.50 %
SIPs % Risk Management Reserves Savings Compared to Conventional Framing	50 %

Home Details

Base Price of the Home (USD)	$ 750,000 USD
Total Conditioned Square Feet of Home (Sq. Ft.)	3,000 Sq. Ft.
Conditioned Square Feet Above Grade (Sq. Ft.)	2,200 Sq. Ft.
Conditioned Square Feet Below Grade (Sq. Ft.)	800 Sq. Ft.
Additional Conditioned Square Feet with Thinner Walls (Sq. Ft.)	25 Sq. Ft.
Retail Cost Per Sq. Ft. Above-Grade Conditioned Space (USD)	$ 288 USD
Retail Cost Per Sq. Ft. Below-Grade Conditioned Space (USD)	$ 144 USD
Square Feet of Attic Traded Off for Basement (Sq. Ft.)	0 Sq. Ft.
Additional Conditioned Sq. Ft. with SIP Attic (Sq. Ft.)	0 Sq. Ft.
Annual Home Insurance Cost (USD)	$ 1,200 USD
Discounted Home Insurance with SIPs (%)	0 %
Higher Appraisal Value (%)	0 %
Value of Greater Resilience (eg. Impact, Wind, Earthquake) (%)	1.0 %
Value of Greater Strength/ Dimensional Accuracy (%)	0.5 %
45 L Tax Credit (USD)	$ 0 USD
Utility Rebate (USD)	$ 0
30 Year Energy Savings (USD)	$ 0

Expected Timeline	Days with Conventional Framing	Days Using SIPs
Bid Information: Structure		
Time (Days) for Structure	10.0	5.0
Bid Information: Insulation		
Time (Days) for Insulation	4.0	0.0
Bid Information: Air Flow		
Time (Days) for Air Flow	3.0	1.0
Bid Information: Interior Finishes		
Time (Days) for Drywall	3.0	2.9
Time (Days) for Cabinets	2.0	2.0
Time (Days) for Interior Trim	3.0	3.0
Bid Information: MEP		
Time (Days) for Electric	0.0	0.0
Time (Days) for Plumbing	0.0	0.0
Time (Days) for HVAC	0.0	0.0
Bid Information: Quality Control and Lean Construction		
Time (Days) for QC and Lean Construction	4.0	1.0
	Days with Conv. Framing	**Days Using SIPS**
Total	29.0	14.9

Bid Cost Details	Cost with Conventional Framing	Cost Using SIPS
Bid Information: Structure		
SIPS Panels	n/a	$ 34,121 USD
Wall Framing	$ 66,086 USD	$ 41,821 USD
Floor Framing	$ 6,000 USD	$ 6,000 USD
Roof Framing	$ 8,400 USD	$ 8,400 USD
Structural Beams	$ 4,981 USD	$ 4,981 USD
Exterior Trim	$ 20,924 USD	$ 20,924 USD
Stair Framing	$ 950 USD	$ 950 USD
Attic Venting	$ 750 USD	$ 750 USD
Concrete Foundation	$ 12,000 USD	$ 12,000 USD
Bid Information: Insulation		
Wall Cavity Insulation	$ 5,804 USD	$ 0 USD
Exterior Rigid Insulation	$ 0 USD	$ 0 USD
Attic Insulation	$ 1,500 USD	$ 1,500 USD
Band Joist Insulation	$ 0 USD	$ 0 USD
Floor Insulation	$ 0 USD	$ 0 USD
Basement Insulation	$ 0 USD	$ 0 USD
Bid Information: Air Flow Control		
Air Barriers	$ 1,000 USD	$ 700 USD
Air Sealing	$ 1,500 USD	$ 400 USD
Wind Baffles	$ 250 USD	$ 250 USD
Bid Information: Interior Finishes		
Drywall	$ 12,000 USD	$ 11,760 USD
Cabinets	$ 21,000 USD	$ 20,790 USD
Interior Trim	$ 8,000 USD	$ 7,920 USD
Bid Information: MEP		
Cost of Schematics for Optimizing MEP with SIPs		$ 1,000
HVAC Cost Difference for SIPS vs Conventional Framing		$ 0
Electric Cost Difference for SIPS vs Conventional Framing		$ 0
Plumbing Cost Difference for SIPS vs Conventional Framing		$ 0
Bid Information: Quality Control and Lean Construction		
Training	$ 2,625	$ 2,100
Inspections	$ 2,250	$ 1,350
Rework	$ 2,625	$ 1,313
Reserves for Call Backs	$ 3,750	$ 1,875
Waste Removal (Dumpsters)	$ 3,000	$ 900
	Cost with Conv. Framing	**Cost Using SIPS**
Total	$ 185,395	$ 180,805

SIPA True Cost Bidding Tool: Proof-of-Concept

Non-SIPs Builder Test in Progress:

- 3 to 4 Builders
- Actual Projects Scheduled for Construction
- Actual Bids from SIPs Providers using STCBT
- Document Builder Actions/Feedback

retooling the U.S. Housing Industry

Growing SIPs Market Penetration:

Recommendations

SIPA True Cost Bidding Tool: Recommendations

Current SIPA Resources:

- Website Tool
- Website Spreadsheet

Future SIPA Resources:

- Training Manual
- Online Recorded Training
- Conference Training Sessions
- Case Studies
- Data Vault

Start Getting Trained to Use SIPA Resources and Apply Them

retooling the U.S. Housing Industry

SIPA True Cost Bidding Tool: Recommendations

Attach to Bids	Level Playing Field: • Contrast w/Actual Framing Bid • Contrast w/Estimated Framing Bid
Enhance Marketing	Feature Case Studies/Messaging in: • Web/Social Media Content • SIPs Presentations • SIPs Awards Tied to Savings/Value
Enhance Sales Process	• Identify/Target Key Savings/Value • Earn ‘Trust’ Using Builder Inputs • Target ‘Best Fit’ Builders • Create Competition Data Vault

Integrate Tool in Bidding, Sales, and Marketing

Thank You and Questions

Growing SIPs Market Penetration:

Getting Past 150-Year-Old Enclosure Technology

Sam Rashkin Info:

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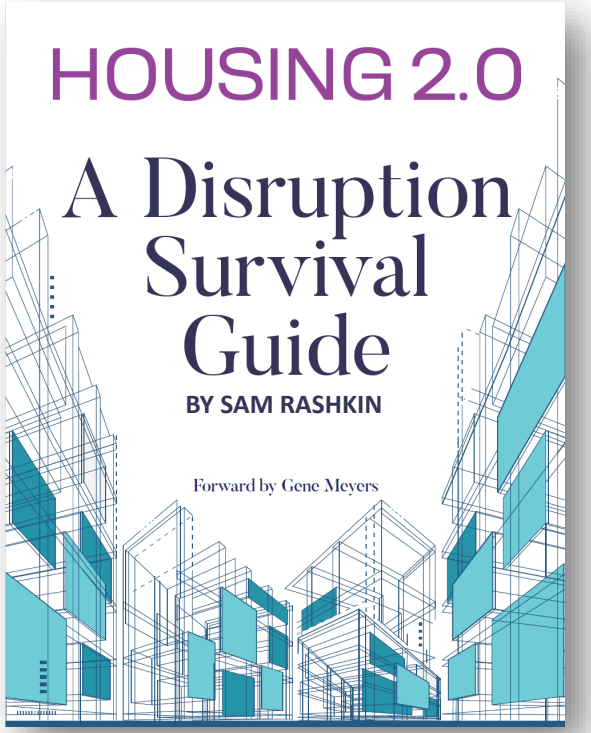
Email: sam.rashkin@truhomefacts.com

Housing 2.0 Resources:

https://www.greenbuildermedia.com/housing-2.0