



**Better Buildings Residential Network
Peer Exchange Call Series:
Horror Stories from the Field
October 28, 2018**

Agenda and Ground Rules

- Agenda Review and Ground Rules
- Opening Poll
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers:
 - **Kevin Powell**, Redhorse Corporation
 - **Hector Moreno**, Green & Healthy Homes Initiative
 - **Reuven Walder**, Ecobeco
- Open Discussion
- Closing Poll and Announcements

Ground Rules:

1. **Sales of services and commercial messages are not appropriate** during Peer Exchange Calls.
2. Calls are a safe place for discussion; **please do not attribute information to individuals** on the call.

Better Buildings Residential Network

Join the Network

Member Benefits:

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- Solution Center guided tours

Commitment:

- Members only need to provide *one number*: their organization's number of residential energy upgrades per year

Upcoming calls:

- November 8th: This Year I'm Grateful For... Cyber Security
- December 13th: All I Want for the Holidays Is...

Peer Exchange Call summaries are posted on the Better Buildings [website](#) a few weeks after the call

For more information or to join, for no cost, email bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn & click Join



Kevin Powell
Redhorse Corporation

Halloween Horrors from Government Contractors' Perspective



5

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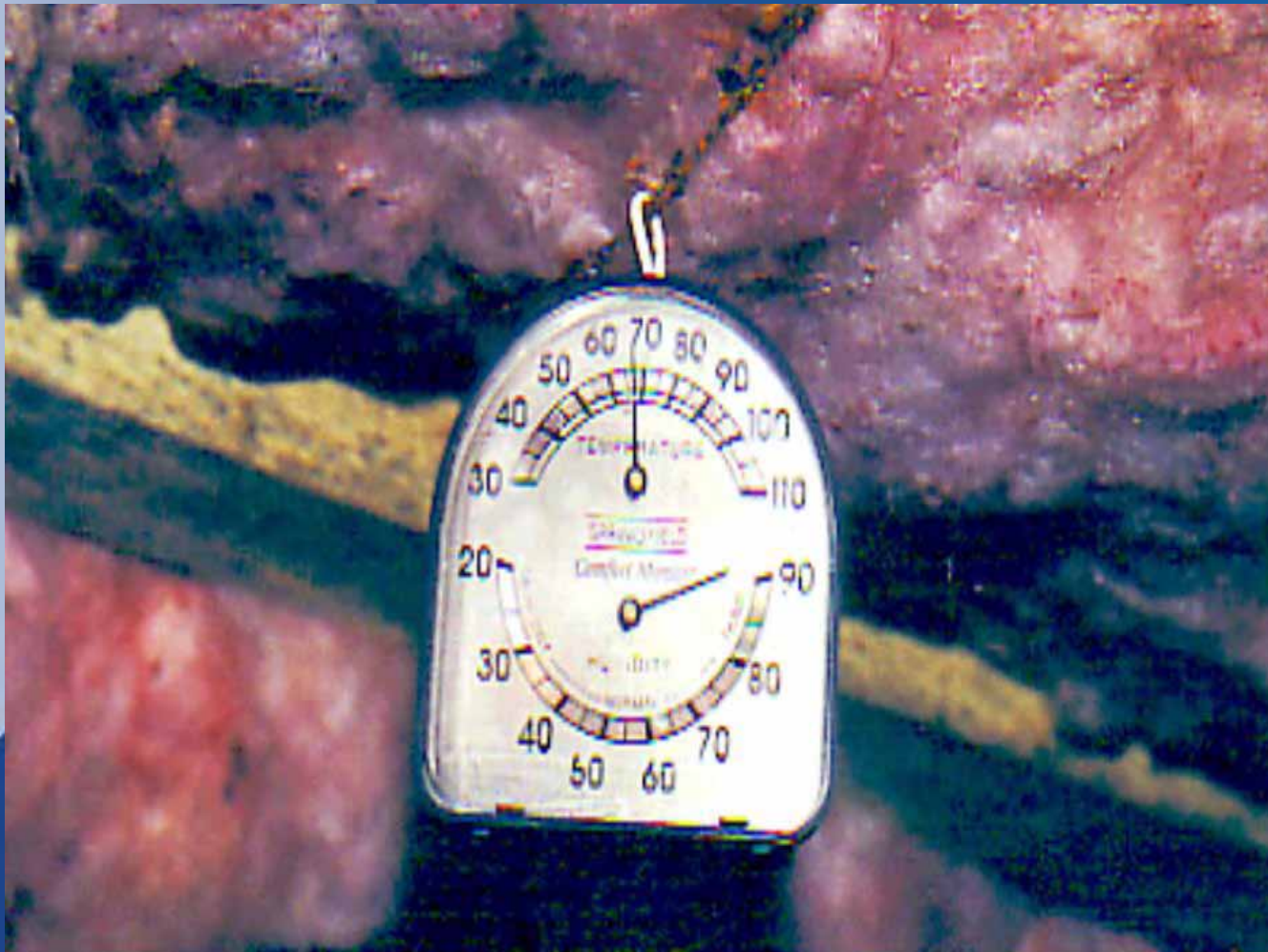
Contributors

- Glenn Dickey, Allegheny Science and Technology
- Kevin Powell, Redhorse Corporation

Horror from Underground



Horror from Underground



Horror from Underground



Horror from Underground



Exorcism

- Soil moisture retarder
- Reduced foundation ventilation
- Reinstalled insulation
- Dehumidifier (short term)

Attic Atrocities



Attic Atrocities



Attic Atrocities



Attic Atrocities



Breath-Taking Tales



Breath-Taking Tales



Breath-Taking Tales



Breath-Taking Tales



Breath-Taking Tales



Ghosts in the Resulting from the Machine



Ghosts in the Resulting from the Machine



Ghosts in the Resulting from the Machine



Quick Scare



Quick Scare



Next Holiday Presentation



Key Takeaways: Kevin Powell

- Ventilation ducts are often installed poorly. It is relatively challenging to install them properly as they are often obscured.
- Builders and others attempt to prevent problems but, without a foundational understanding of building science, it is easy to make things worse.
- In addition to the house itself, it's important to maintain materials. Be sure to store and transport them properly so that they remain useful.



Hector Moreno
Green & Healthy Homes
Initiative



HORROR STORIES FROM THE FIELD

Hector E. Moreno

Subject Matter Expert in Building Performance & Environmental Health

Green & Healthy Homes Initiative

Baltimore, MD

October 25th, 2018



SCARY SURPRISE # 1









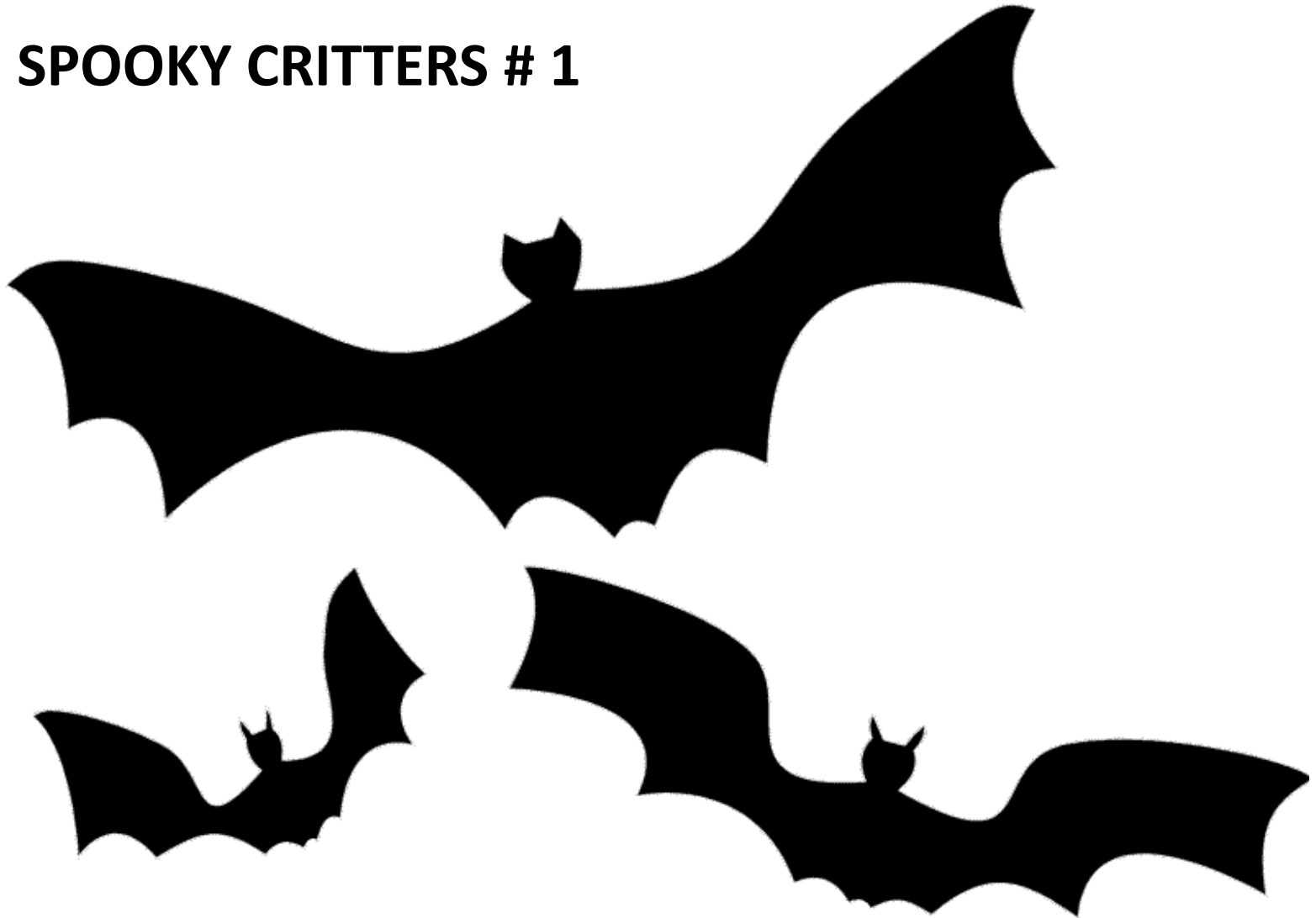
SCARY SURPRISE # 2







SPOOKY CRITTERS # 1



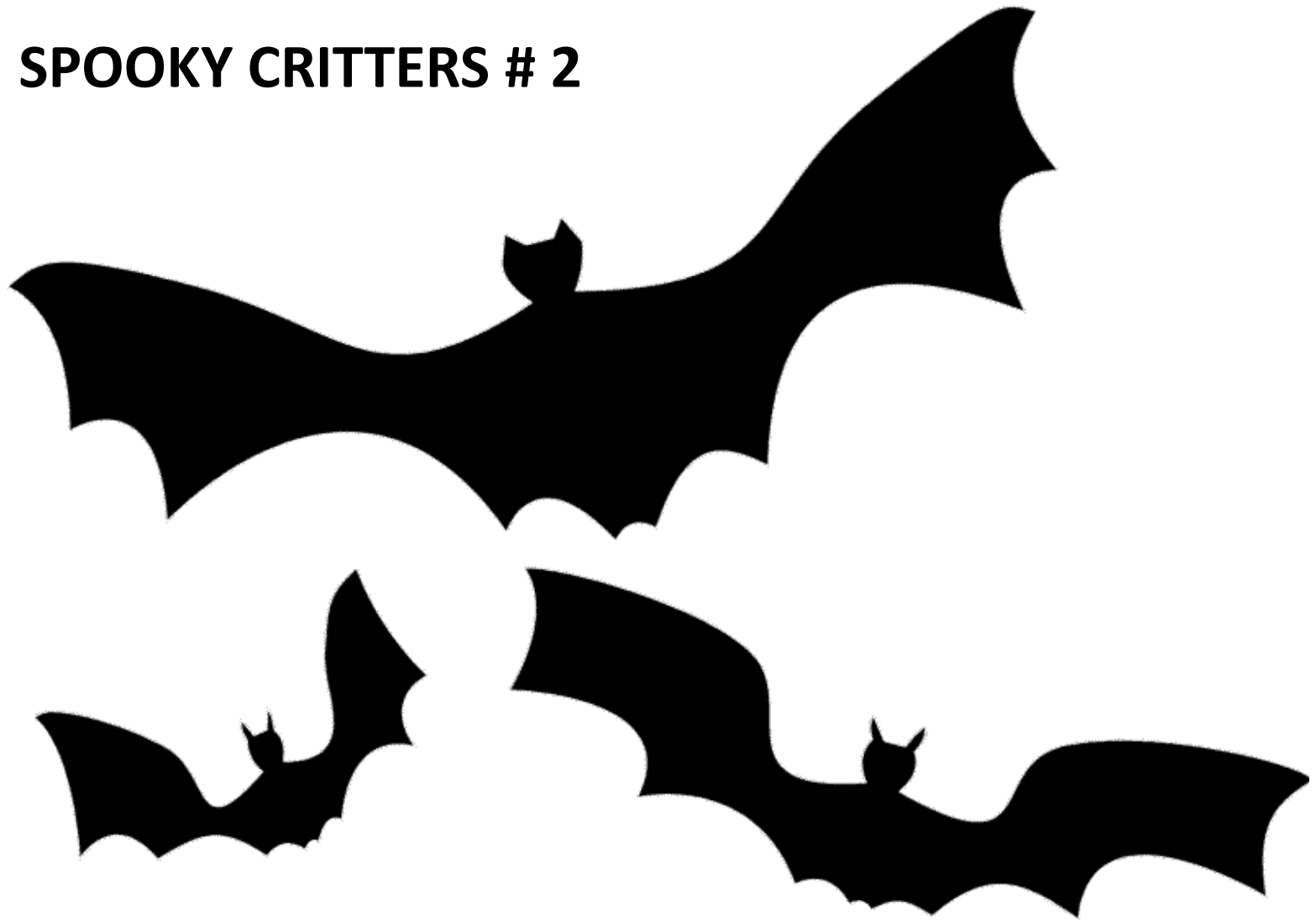








SPOOKY CRITTERS # 2









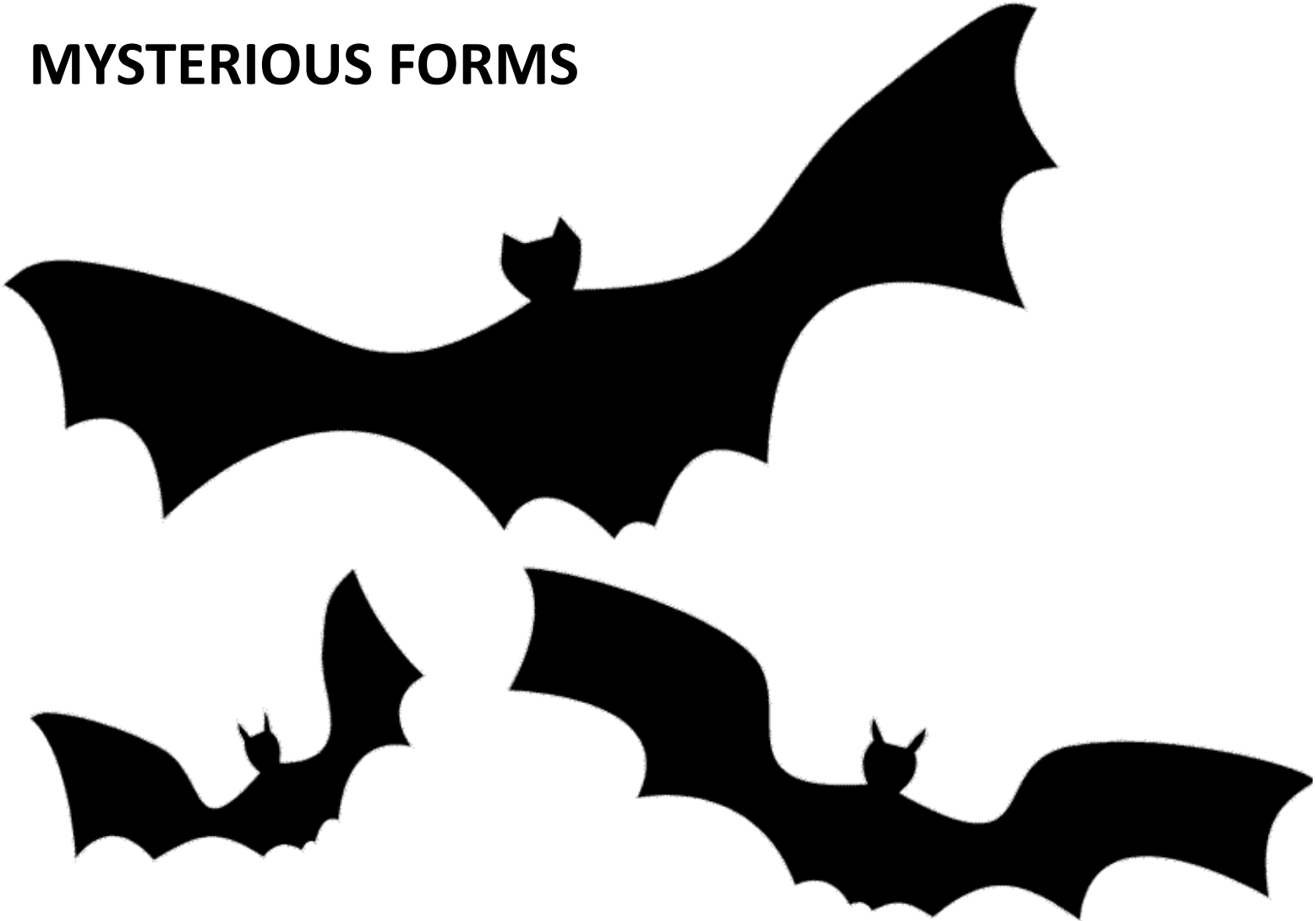
HIDDEN MONSTERS







MYSTERIOUS FORMS







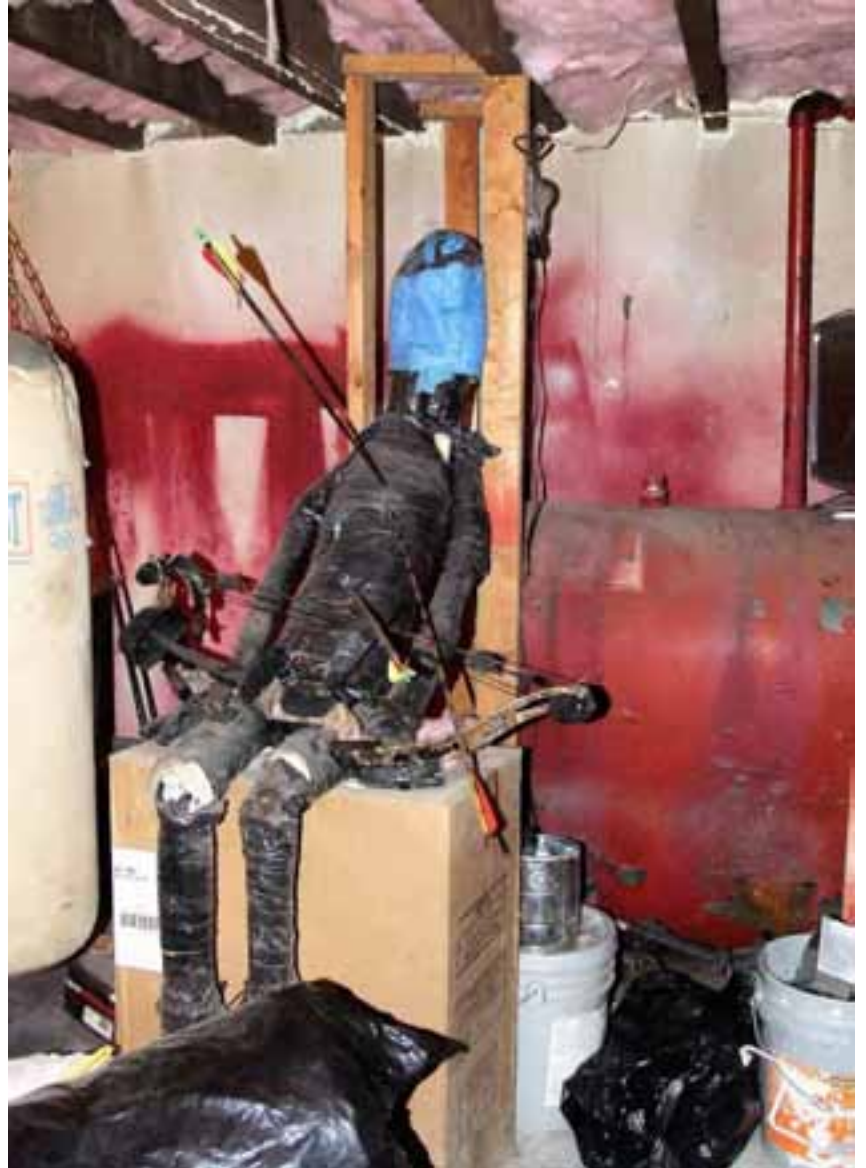




FRIENDLY GHOULS ALONG THE WAY









HAPPY HALLOWEEN!



Contact:
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www.ghhi.org

Key Takeaways: Hector Moreno

- Critters of all kinds have been spotted during assessments, squirrels, spiders and birds included.
- Homeowners sometimes get creative attempting to improve their houses. For example, a homeowner once insulated with cardboard boxes. It is important to encourage homeowners to consult with professionals to prevent unintended problems.
- Keep an eye out for hidden health hazards. Carpet, in particular, may harbor germs, mold and other issues.



Reuven Walder
Ecobeco



Horror Stories from the Field

10/25/18

Webinar

Reuven Walder

COO

BPI BA, EP, QCI and HHE

Minnick's Ecobeco

Baltimore Split Level



Baltimore Split Level Concerns

- ▶ Comfort
- ▶ Indoor Air Quality (Daughter with Ashtma)
- ▶ Imbalanced Air Flow

Baltimore Split Level

The Scary Stuff

- ▶ 2,250 SF
- ▶ HVAC in crawl, flex ducts, some rigid.
 - One return
 - High static pressure (friction losses)
 - Air Flow (in CFM):
 - Supply > Required: 1,400; Actual: 836 (40% deficit)
 - Return > Required: 1,400; Actual: 295 (79% deficit)
 - HVAC in attic decommissioned
 - Ducts and Grills w/o Ducts into conditioned space
- ▶ Leaky House (CFM50 6288)

Baltimore Split Level

More Scary Stuff

- ▶ Poor Insulation
- ▶ Kitchen and bath fans unvented.
- ▶ Vented Crawl that floods during heavy rains

Baltimore Split Level

Poor Duct Capacity
Flooding and Sediment



Baltimore Split Level

Return was Undersized, Panned



Baltimore Split Level

Leaky House, Poor Insulation,



Baltimore Split Level

The Fixes

Sealed Cracks in Foundation



Baltimore Split Level

The Fixes

Rebuilt Duct System



Baltimore Split Level

The Fixes

Rebuilt Duct System



Baltimore Split Level

The Fixes

Increased Return Capacity to 4 returns



Baltimore Split Level

The Fixes

Encapsulated Crawl



Ecobeco Stock photo

Baltimore Split Level Summary

- ▶ HVAC in Crawl with Rigid Ducts
 - One return > Four returns throughout home
 - 3 fold reduction in static pressure (friction losses)
 - Installed Properly Sized Furnace
 - Air Flow (in CFM):
 - Supply > Required: 1,400; Actual: 1,326 (5% deficit)
 - Return > Required: 1,400; Actual: 1,111 (21% deficit)

HVAC in attic decommissioned

- Unused Ducts and Grills Removed
- ▶ Tighter House > 38% Air Leakage Reduction

Baltimore Split Level

More Summary

- ▶ Attic, basement and crawl insulation
- ▶ Kitchen and bath fans vented out
- ▶ Water-proofed crawl
- ▶ Installed central air humidifier and UV air purification
- ▶ Dehumidifier in crawl

Baltimore Split Level

Takeaways

- Ducts, Ducts, Ducts > Most duct systems are undersized - **particularly return capacity. Be bold and don't worry** about breaking open walls to solve duct issues.
- Do the right diagnostics > Energy Audit but also HVAC and Duct System Testing, and Duct Load Calculations are Critical.
- IAQ > Resolve IAQ Issues Such as Moisture Sources and install systems to maintain a more stable indoor air environment
- Shell Measures > Must Do Air Sealing and Insulation



Horror Stories from the Field

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Webinar

Thank you!

Reuven Walder

COO

BPI BA, EP, QCI and HHE

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Key Takeaways: Reuven Walder

- Most duct systems are undersized, particularly in return capacity. Be bold and don't worry about breaking open walls to solve duct issues.
- Do the right diagnostics. HVAC and duct system testing and duct load calculations are critical in addition to the energy audit.
- Resolve indoor air quality issues and install systems to maintain a more stable indoor air environment.

Upcoming Seasonal Messaging Opportunities



Image: City of Sugar Hill



The Solar Decathlon: 1 Competition, 2 Challenges, 10 Contests

The U.S. Department of Energy Solar Decathlon® is a collegiate competition, comprising 10 contests, that challenges student teams to design and build highly efficient and innovative buildings powered by renewable energy.



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Explore the Residential Program Solution Center

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- [Quick Answers](#) - provide answers and resources for common questions.
- [Proven Practices](#) posts - include lessons learned, examples, and helpful tips from successful programs.
- [Technology Solutions](#) **NEW!** - present resources on advanced technologies, **HVAC & Heat Pump Water Heaters**, including installation guidance, marketing strategies, & potential savings.



<https://rpssc.energy.gov>

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or future call topic ideas to:
bbresidentialnetwork@ee.doe.gov