Weatherization
A Holistic Approach

Claire Betze & Jon Riley

BUILDINGWORKS
A Holistic Integrative Approach to Building Performance

Casco Bay INSULATION

“House as a System” Approach Proactively Addresses:

Moisture & Ventilation

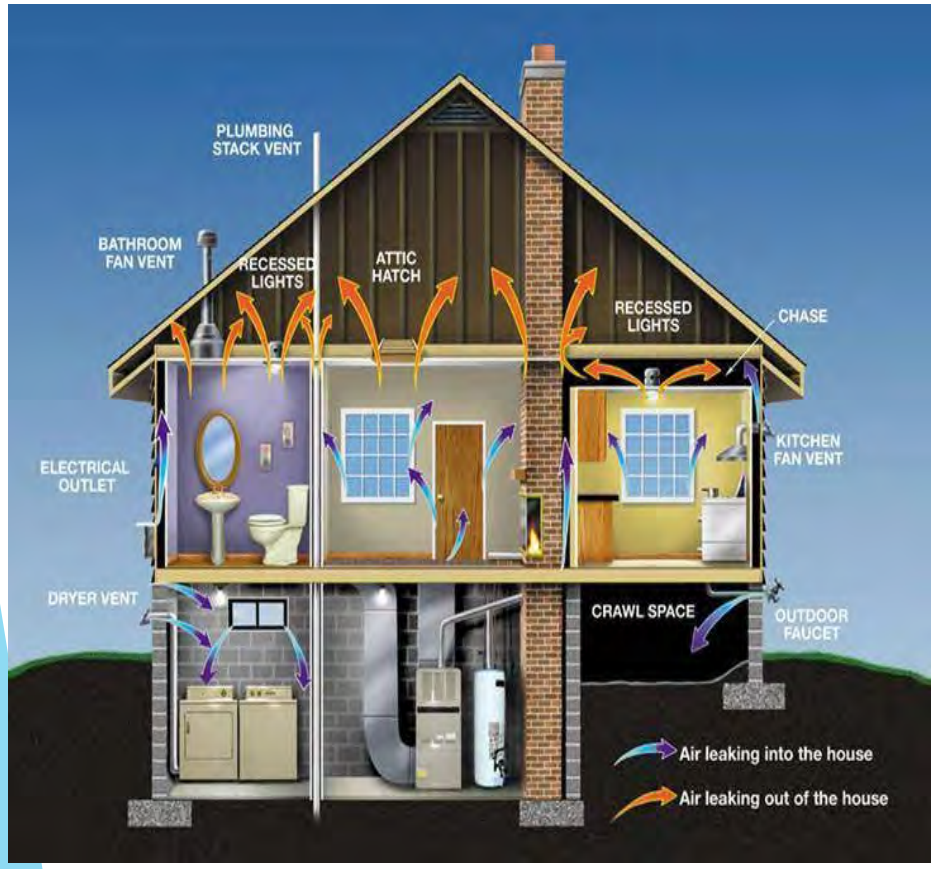
Air Infiltration

Insulation

Heating & Cooling

Combustion Safety

Pre and Post Weatherization Envelope



How can we achieve this dramatic change safely?

Proactively Improve Moisture Management BEFORE you Weatherize

Wet basements and crawlspaces must be addressed…

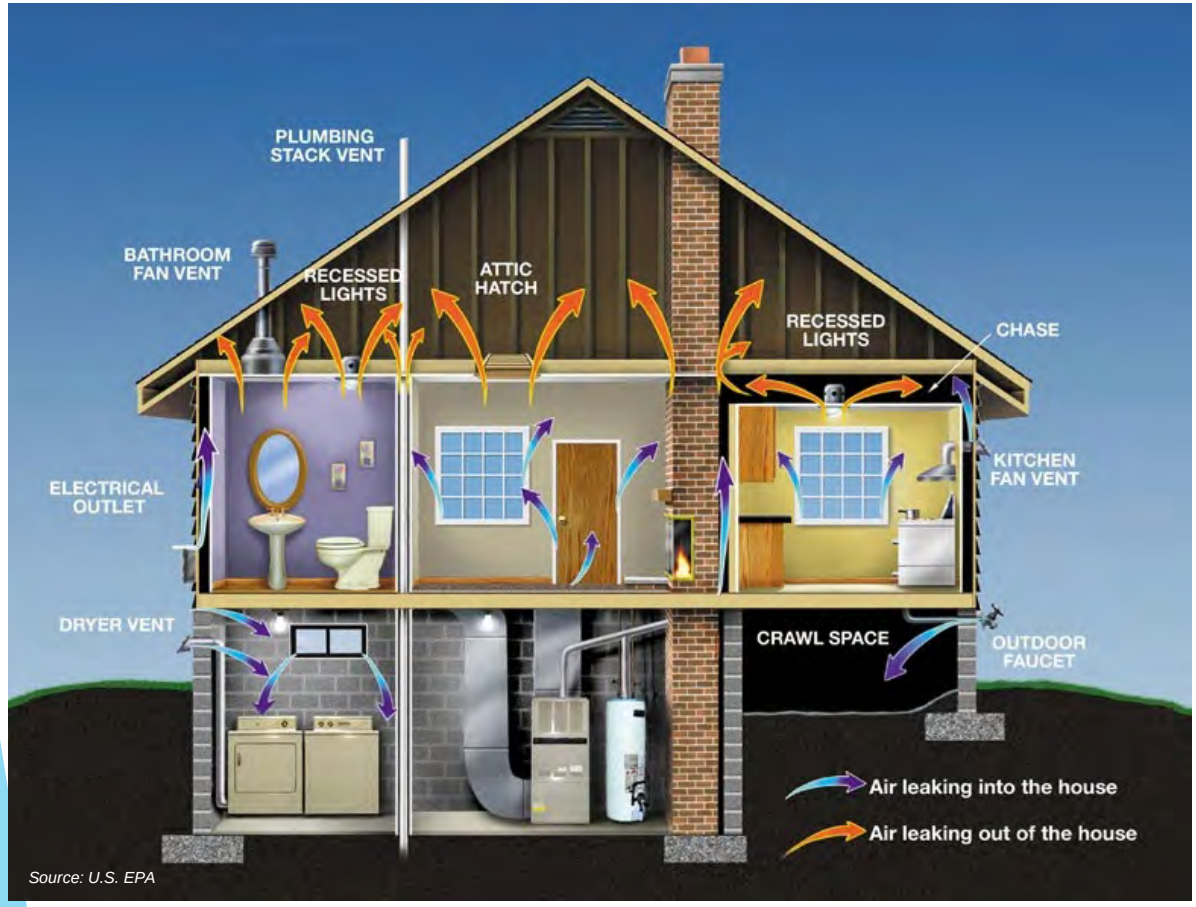
Moisture & Ventilation are a BIG Deal!

And bath exhaust fans should be installed or upgraded…

Or We Suffer the Consequences!

Green Building Advisor/Reuben Saltzman, Structure Tech

Air Leakage has the Greatest Impact on Comfort and Building Durability



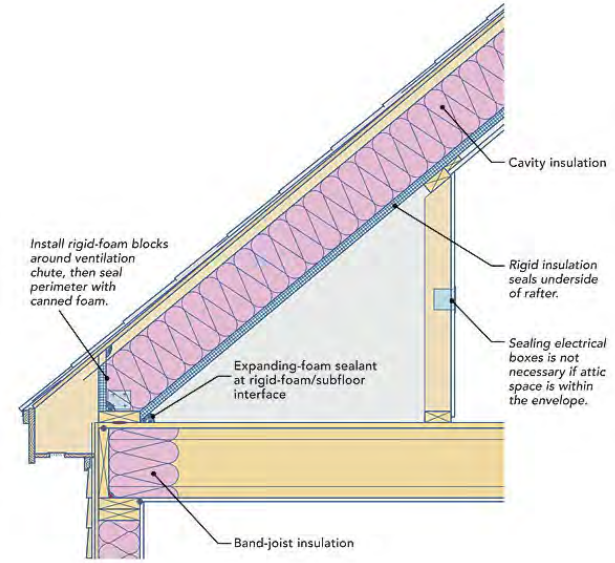
"Stack Effect"

The heated air inside the home is naturally buoyant and puts pressure on the upper envelope of the home

The positive pressure forces the heated air out through gaps and cracks in the pressure barrier

For every cubic foot of heated air that leaves through the top, a cubic foot of cold, unconditioned air must enter from below

Insulation has the 2nd Greatest Impact on Comfort and Building Durability

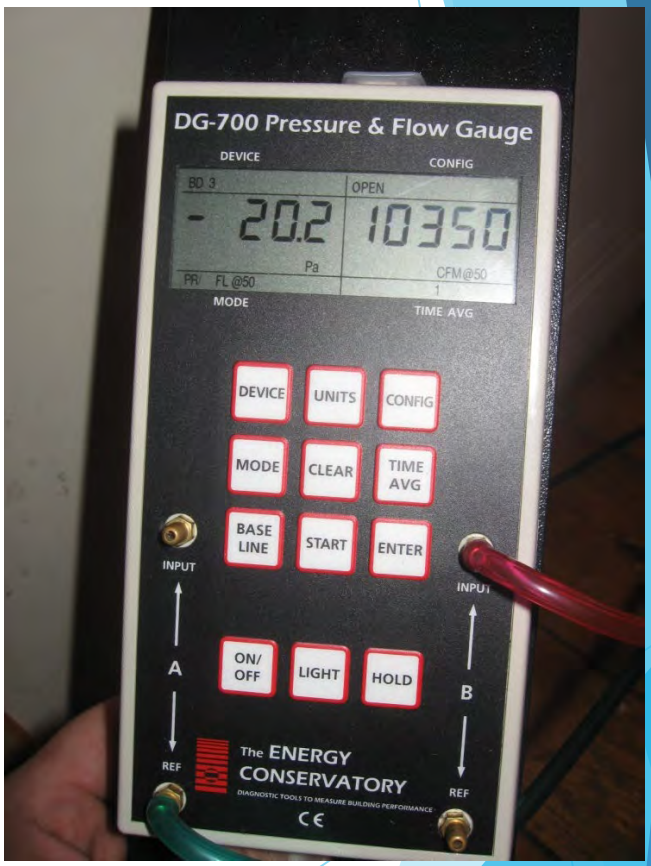


Source: Fine Home Building

Source: U.S. EPA

What type, how much, and where the heck do I put it?

Start with an Energy Audit



Independent or “all-in-one”?

Site Conditions Survey

Site Drainage

Roof Water Management

Ice Dams

Vegetation

Exterior Vents

Opportunities for Solar?

Basement and Crawlspaces

These areas are connected to the living space above - Yuk!

A wide open basement bulkhead entry

Impacts to Indoor Air Quality

Indoor air quality offenders in the basement negatively impact indoor air quality throughout the home

Health & Safety Issues

Unvented gas log sets

Knob & Tube wiring

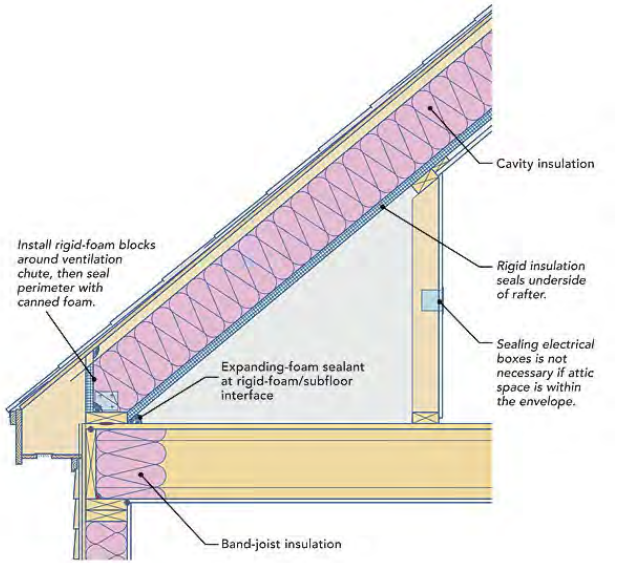
Vermiculite

Asbestos

Combustion Safety

Attics

- Safety
- Insulation Type
- Location
- Attic Access



Big Holes = Big Heat Loss

Where Do the Bath Fans Vent?

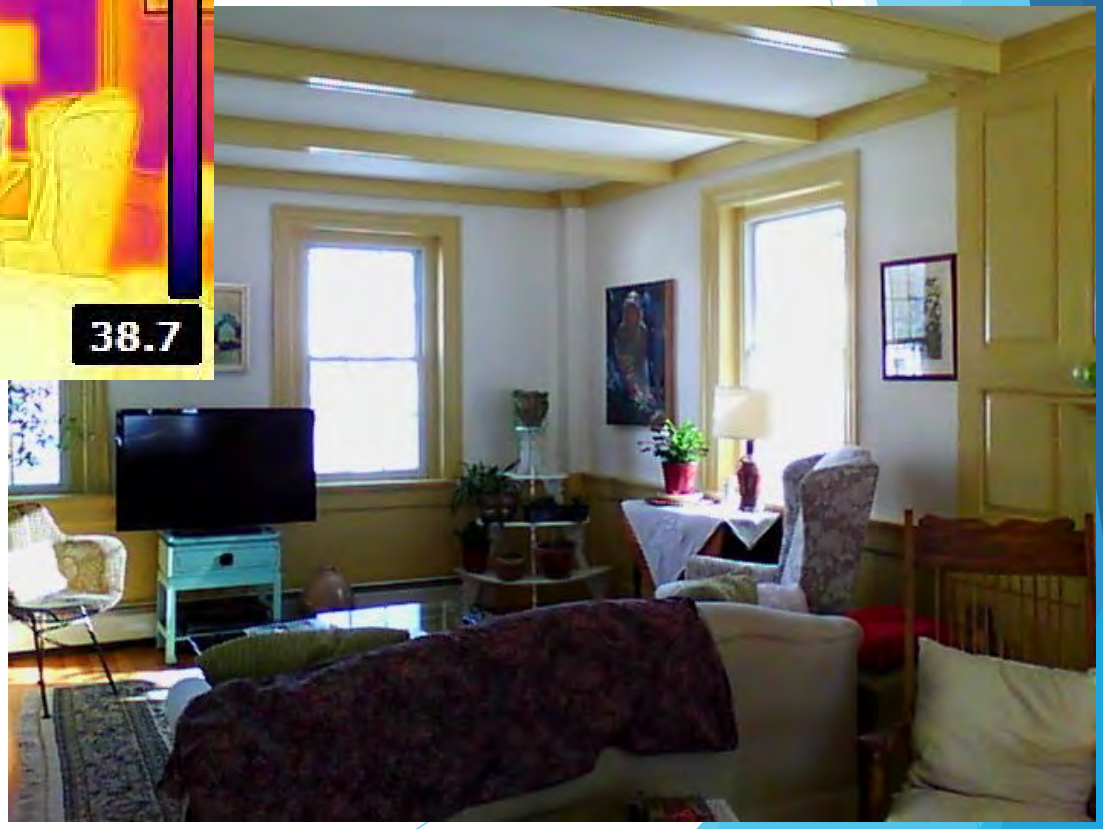
Nowhere!

Dirty Fiberglass = Air Movement

Blower Door Testing

Thermal Imaging With Infrared Camera

No insulation in the exterior wall assembly



Existing Mechanical Systems

Aging, inefficient equipment for space heating and hot water

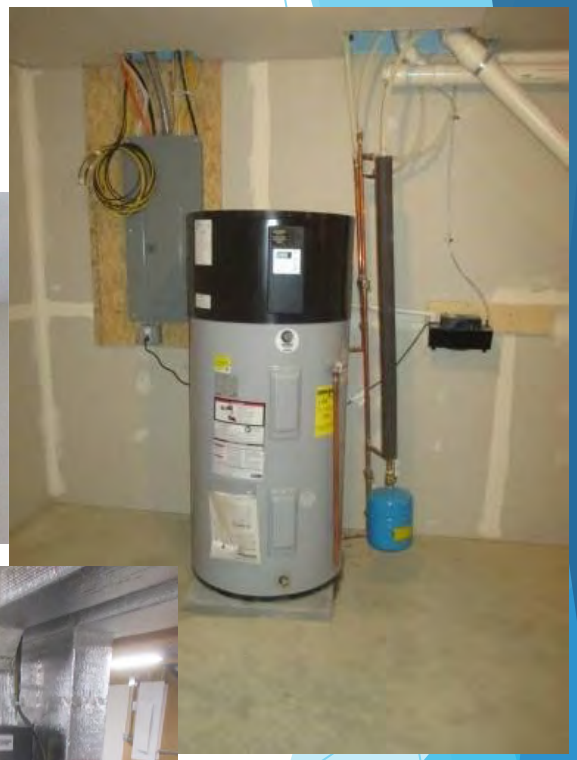
Combustion Safety

When we weatherize leaky basements….

Combustion air is often needed

New Mechanical System Opportunities

Best paired with a weatherized building envelope



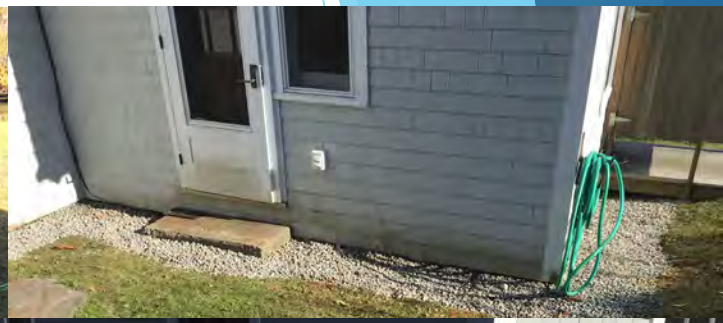
Building Envelope Weatherization Measures

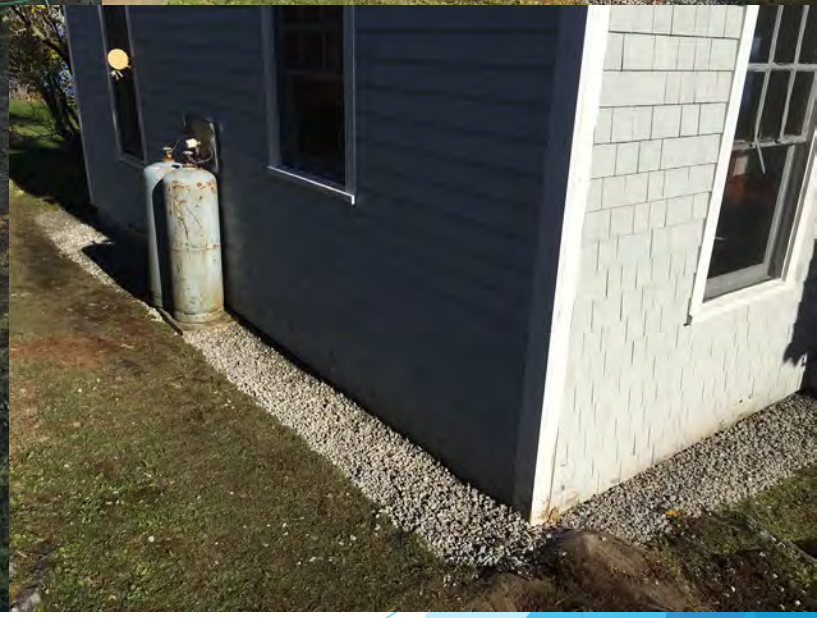
Weatherize the Basement

Basements and crawlspaces should generally be included in the building envelope

To do this safely, we need to mitigate moisture first...

Moisture Mitigation



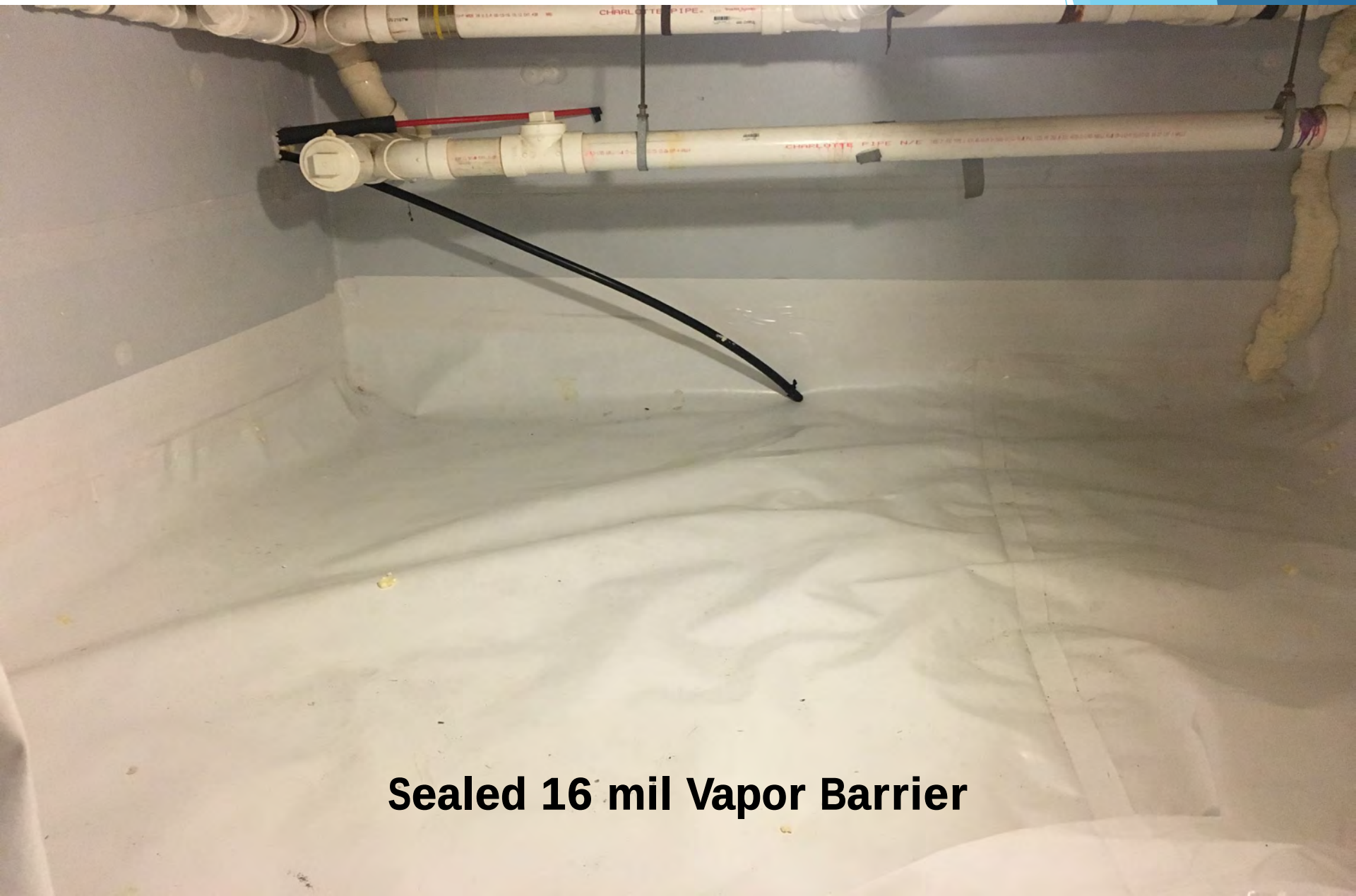


First step – direct roof water away from the foundation walls

Moisture Mitigation – Sump Basins

Sealed Sump Basins Should Be Installed

Moisture Mitigation - Encapsulation



Poured Foundation Walls

2” White Faced Thermax Rigid Foam Board, R-13

Rubble Foundation Walls

2” Closed Cell Spray Foam with Thermal Barrier, R-13

Crawlspaces – Clean and Encapsulate

Replace the Basement/Crawlspace Door

Therma-Tru Smooth-Star

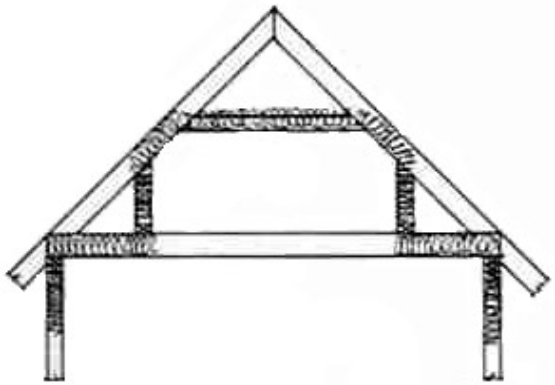
Insulated

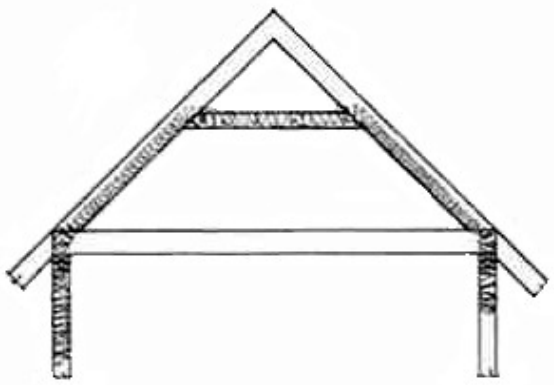
Fiberglass – no rust

Composite jamb options

To the Attic!

How is the attic space being used?





What is the most effective way to define the building envelope?

Clean the Space

Fiberglass does not effectively stop air movement (heat loss)

Identify Air Sealing Opportunities….

And Seal Them Up

Don’t Forget the Chimney…

Verify and/or Install Attic Venting

If possible….

Treat the Attic Hatch

Insulation Dam

Rigid Foam Applied to Hatch Cover

Weatherstripping Applied to Hatch Opening

Upgrade the Bath Exhaust Fan

May require an electrician

Should be ducted to the closest gable end wall, if possible

Use rigid metal ductwork, sealed with mastic

Install Cellulose

16” Loose Fill Cellulose, R-49

Existing Exterior Walls

After the attic and basement have been weatherized

Ideally completed as part of a larger siding or renovation project

Thank You !

BUILDINGWORKS
A Holistic Integrative Approach to Building Performance

Casco Bay
INSULATION