Office of Sustainability
CITY OF PHILADELPHIA

A Resident's Guide to a Flood Ready Home

Take Action Today to Reduce the Impact of Flooding to Your Home and Belongings in Eastwick

If you are a resident of Eastwick, this guide is for you. Developed by the Philadelphia Office of Sustainability, this guide is created to help provide you with information on how to protect your home from flooding now.

Introduction

Who is this Guide For?

Residents of Eastwick are no strangers to flooding. Eastwick has been exposed to repetitive flooding over the years, including major storms like Tropical Storm Isaias and Hurricane Floyd. With climate change, flooding poses an increasing threat. While we cannot always prevent flooding from happening, we can act today to minimize the damages caused by flooding to the places that we care about.

There are many ways you can reduce, or "mitigate", flooding risks to your home. This guide does not include every possible option but offers suggestions about where to start in keeping your family safe and protecting your home and belongings. Keep in mind that many of the approaches included here will need to be tailored to your unique property. Reading this guide will help you better understand where to start and what options are available to take immediate action to reduce the impacts of flooding.

If you are a resident of Eastwick, this guide is for you. Read on to learn how you can protect your home from flooding and help build resilience in your community.

What is a Flood Ready Home?

Given the heightened risk of flooding in Eastwick, it's important to take action soon. This guide provides three "Flood Ready Home Strategies" with steps you can take now to reduce the risk of flooding to your home while we continue to work on larger neighborhood-wide improvements. Flood Ready Home Strategies won't stop flooding but can help minimize damages to your home and belongings while making you safer when floods happen. They also act as backups in the future while larger neighborhood-wide improvements are being planned and implemented.

Why Should I Consider a Flood Ready Home Strategy?

Flood Ready Home Strategies act as near-term safeguards to minimize the impacts of flood damage to your home and belongings. Neighborhood-wide strategies, like levees, take a long time to build, and flooding can happen at any time, so taking immediate action is important. Many Eastwick residents are already taking such proactive steps to protect their homes, because they recognize these steps reduce the cost of repairs and replacing belongings when the next flood happens. By minimizing how much damage flooding does, taking steps toward a Flood Ready Home can minimize the time needed to return to normal after the flood. Flood Ready Home Strategies range in cost and complexity, so it's important that you consider all the options and select what works best for your circumstances. **Note that some steps involved in the strategies are low cost and low complexity and could be implemented almost immediately.**

Flooding in Eastwick

How Does Flooding Affect Eastwick?

Major flooding events have impacted Eastwick in recent history. In 1999, Hurricane Floyd broke previous records by inundating homes in Eastwick up to 8 feet of water. Tropical Storm Isaias in 2020 brought similar levels of flooding to Eastwick. Many members of the community were affected by these floods—and other floods—and understand better than anyone how flooding affects the community.

Flooding from Tropical Storm Isaias, August 2020

Source: Eastwick | CEET (upenn.edu)

A vehicle sits in flood waters from Darby Creek on Springfield Road in Darby, August 2018

Source: Drenching rains flood highways, trap motorists (inquirer.com)

Flooded section of the Cobbs Creek Parkway, April 2014

Source: Poll: Most in Pa. think climate change is major public health risk - WHYY

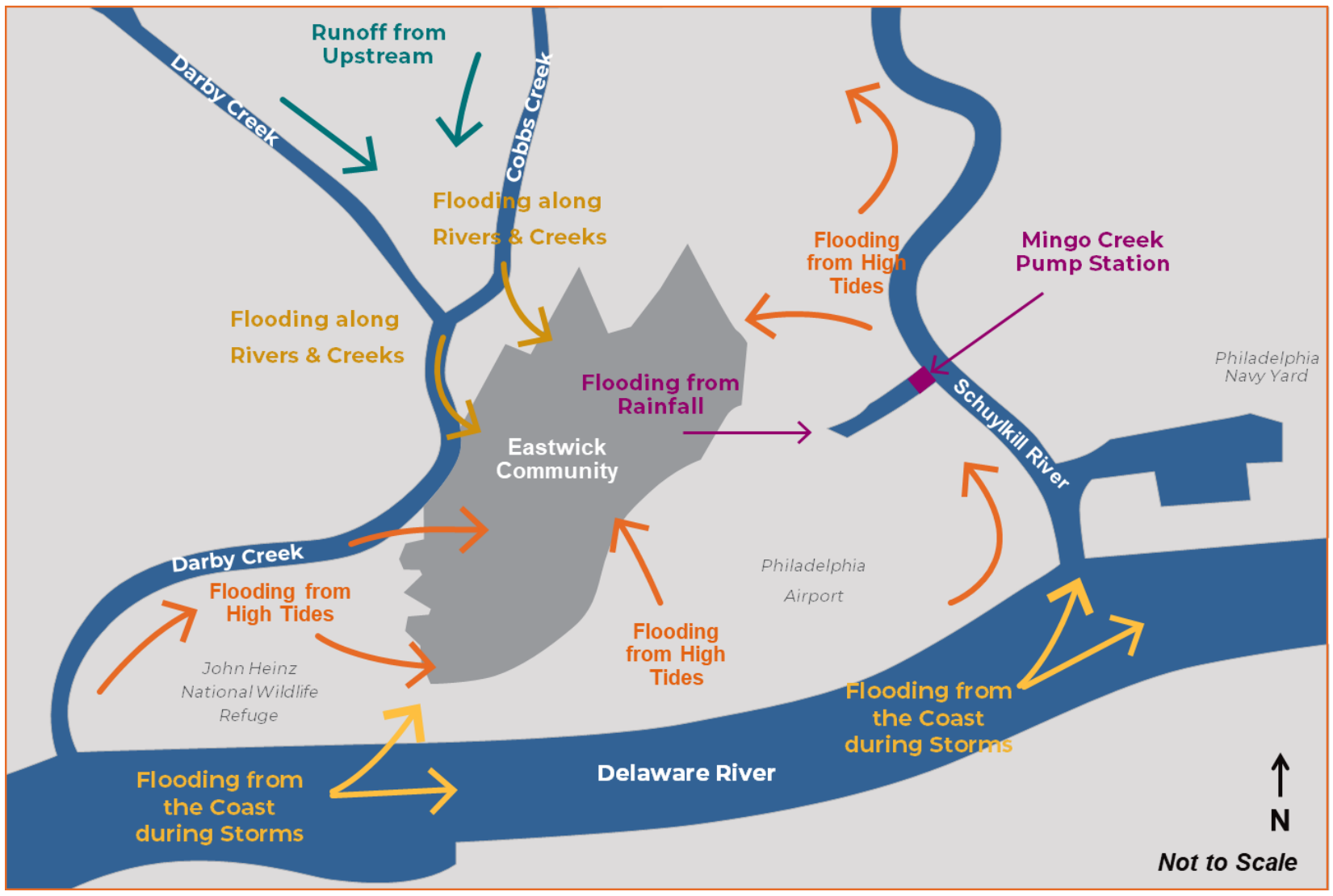
Flooding from Hurricane Floyd, September 1999

Source: Hurricane Floyd – September 1999: Reflections After 20 years - Globe Times (swglobetimes.com)

Flooding in Eastwick

What Types of Flooding Put Eastwick at Risk?

The flooding in Eastwick and surrounding areas is complicated because it comes from multiple directions and sources. The most frequent form of flooding today is caused by riverine flooding, but other sources and impacts of flooding in Eastwick are expected to increase over time due to climate change. The map below illustrates flooding sources that affect Eastwick today and into the future.



Flooding along Rivers and Creeks due to Rainfall

When heavy rainfall is experienced upstream, the flow downstream in Eastwick increases. As flows increase, water levels can exceed the height of the creek bank. This occurs at the confluence of Cobbs and Darby Creeks next to Eastwick, bringing fast-moving floodwaters and debris into the neighborhood. Floodwaters flow through the neighborhood both overland and through buried drainage pipes, taking the lowest-lying path of least resistance down streets, through breezeways, and along the Clearview Landfill. This is the type of flooding Eastwick experienced during Tropical Storm Isaias in August 2020. Climate change resulting in increased precipitation and sea level rise is likely to increase how often events like Isaias happen.

Flooding along the Coast due to Major Storms

During major storms like Nor'easters and hurricanes, water levels in the Delaware and Schuylkill Rivers can rise due to storm surge, causing water and waves to overflow the shore and flood the surrounding areas. Although Eastwick hasn't experienced this type of flooding recently, computer-based flood modeling shows that the community is currently at risk and will be at increasing risk of coastal flooding in the future due to projected sea level rise.

Flooding from High Tides

Unlike flooding from major storms, which happen infrequently, tidal flooding happens frequently depending on the tides, even daily in some low-lying areas. While this doesn't happen today in Eastwick, because the waterbodies surrounding Eastwick are tidal waters, the neighborhood may experience tidal flooding in the future. Rising sea levels may also cause the groundwater level to rise, which can affect underground infrastructure and potentially result in water emerging above ground.

Flooding on Streets and Yards due to Rainfall

This type of flooding happens when rainwater within Eastwick—as opposed to upstream—collects in low-lying areas of the neighborhood. Eastwick experiences some stormwater flooding today but this flooding generally does not damage homes or property because the stormwater drainage system is designed to capture most rainfall. However, this may change in the future as climate change causes more frequent and intense rainstorms combined with higher sea levels that restrict drainage to the ocean.

How to use this guide

1. Use the Flood Risk Reduction Checklist

Provided later in this guide, use this checklist to ensure you have the universal basics down. See pages 6 and 7 for more information.

2. Identify Your Home "Type"

The features, layout, and construction of your home will help you determine which Flood Ready Home Strategy will be most appropriate. See pages 8 and 9 for more information.

3. Match Flood Ready Home Strategies to Your Home

Based on your home type, as well as your preferences and the pros and cons of each strategy, identify which of the three Flood Ready Home Strategies best aligns with your needs. You may be able to implement individual steps included in each strategy to provide some benefits. See pages 10-26 for more information.

4. Seek Professional Assistance if Needed

Depending on the complexity of the Flood Ready Home Strategy you choose, it may be necessary to work with vendors, architects, engineers, or other professionals.

5. Review Guidance and Resources

Each Flood Ready Home Strategy includes relevant resources. Additional resources are listed at the end of this document (pages 27-28) . Reach out to the Philadelphia Office of Sustainability to learn about assistance that may be available.

6. Complete the Flood Ready Home Strategy

Follow relevant guidance and professional input to complete the steps of the applicable Flood Ready Home Strategy

7. Take Note of Any Maintenance Needs

Take note of any regular maintenance needs for the strategy you choose for your home to ensure the strategy's effectiveness into the future.

Step 1: Use the Flood Risk Reduction Checklist

Use this checklist to ensure you know the universal basics and make necessary preparations before flooding happens.

☑ Know Your Risk Today and in the Future

Knowing what your flood risk is today and how it may change in the future is the first step to increasing your home's resilience to flooding.

Flood Risk Today

The best source for information about your current flood risk is the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs). FEMA's flood maps are regulatory and show the Special Flood Hazard Area (SFHA) or the area that has a 1% chance flooding in any given calendar year, today (also referred to as the 100-year floodplain). Note that multiple "100-year floods" can happen in any period of time, even in the same year. Most homes in Eastwick are within the current 100-year floodplain, meaning they are at high risk. Many homes in Eastwick are at risk of floods that happen more frequently, with up to a 20% chance of flooding every year. The closer to the creek your home is located, the higher your risk today.

Flood Risk in the Future

Climate change is projected to cause more frequent and intense rainstorms and sea level rise, among other changes to the environment. These changes will increase flood risks in Eastwick, as the storms seen today happen with greater regularity and severity. While the Flood Ready Home Strategies should focus on addressing flooding experienced today, it is important to be aware of the future flood risks your home may experience.

What is Flood Risk?

Flood risk is the potential for damage to structures, loss of life, and other harmful consequences when flooding of any kind occurs. It is often expressed in probability that the flood will happen, often during a calendar year. The probability that a flood will happen in most locations is likely to increase due to climate change. (adapted from FEMA)

Use your phone's camera to scan this QR code and view Eastwick Flood Map or visit the website below:

https://arcg.is/eastwickfloodmap

☑ Purchase and Maintain Flood Insurance

Many Eastwick residents have signed up for the National Flood Insurance Program (NFIP) already. For those who haven't, doing so will help protect your investments. Most standard home insurance policies do not cover flood damage. All homeowners are eligible to purchase flood insurance, regardless of whether you live in the floodplain or not through the National Flood Insurance Program (NFIP) (https://www.floodsmart.gov/). If you are a renter, you can purchase NFIP renter's insurance to protect your belongings. Though there are coverage limits under the NFIP, additional coverage may be available through private insurance. Please note that flood insurance policies do not automatically renew and must be renewed every year. Set a reminder to renew yours annually. If you need to talk to a FEMA flood insurance specialist, reach out to eastwick@phila.gov to request a consultation.

Use your phone's camera to scan this QR code and sign up for the National Flood Insurance Program, or visit the website below:

https://www.floodsmart.gov

Step 1: Use the Flood Risk Reduction Checklist

☑ Prepare and Evacuate

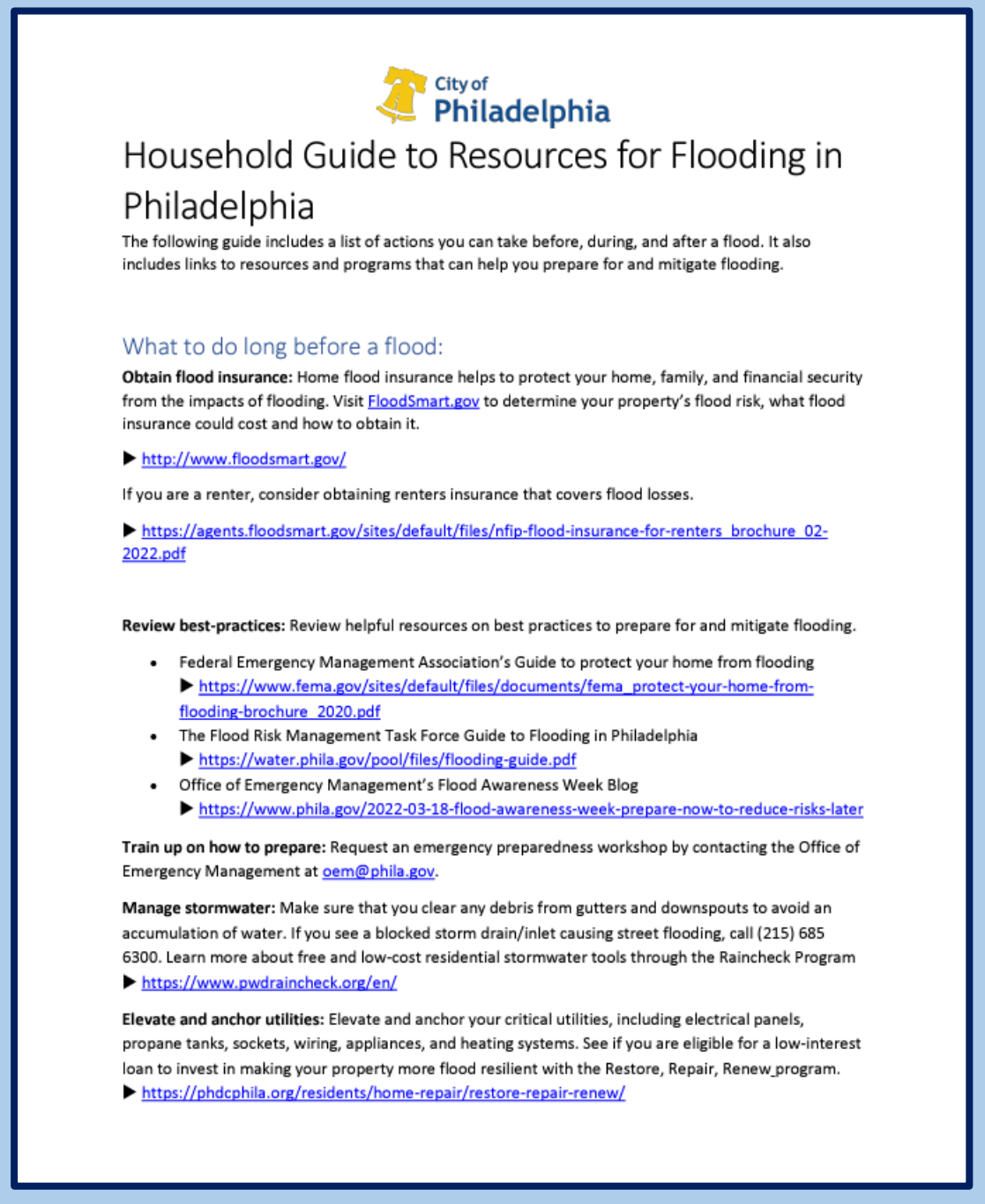
The Office of Emergency Management has suggested a number of actions you can take to stay safe when flooding happens. See the links to the right for more information.

Know the differences between a flood warning and a flood watch to help determine what actions you should take!

- Flash flood watch: A warning that flash flooding might occur due to heavy rain.
- Flash flood warning: A warning that flash flooding is expected due to heavy rain

Use your phone's camera to scan this QR code or visit the website below and learn how to stay safe in a flood event.

https://www.phila.gov/services/safety-emergency-preparedness/natural-hazards/flood/



City of Philadelphia

Household Guide to Resources for Flooding in Philadelphia

The following guide includes a list of actions you can take before, during, and after a flood. It also includes links to resources and programs that can help you prepare for and mitigate flooding.

What to do long before a flood:

Obtain flood insurance: Home flood insurance helps to protect your home, family, and financial security from the impacts of flooding. Visit FloodSmart.gov to determine your property's flood risk, what flood insurance could cost and how to obtain it.

▶ http://www.floodsmart.gov/

If you are a renter, consider obtaining renters insurance that covers flood losses.

▶ https://agents.floodsmart.gov/sites/default/files/nfip-flood-insurance-for-renters_brochure_02-2022.pdf

Review best-practices: Review helpful resources on best practices to prepare for and mitigate flooding.

- Federal Emergency Management Association's Guide to protect your home from flooding ▶ https://www.fema.gov/sites/default/files/documents/fema_protect-your-home-from-flooding-brochure_2020.pdf
- The Flood Risk Management Task Force Guide to Flooding in Philadelphia ▶ https://water.phila.gov/pool/files/flooding-guide.pdf
- Office of Emergency Management's Flood Awareness Week Blog ▶ https://www.phila.gov/2022-03-18-flood-awareness-week-prepare-now-to-reduce-risks-later

Train up on how to prepare: Request an emergency preparedness workshop by contacting the Office of Emergency Management at oem@phila.gov.

Manage stormwater: Make sure that you clear any debris from gutters and downspouts to avoid an accumulation of water. If you see a blocked storm drain/inlet causing street flooding, call (215) 685 6300. Learn more about free and low-cost residential stormwater tools through the Raincheck Program ▶ https://www.pwdraincheck.org/en/

Elevate and anchor utilities: Elevate and anchor your critical utilities, including electrical panels, propane tanks, sockets, wiring, appliances, and heating systems. See if you are eligible for a low-interest loan to invest in making your property more flood resilient with the Restore, Repair, Renew program. ▶ https://phdcphila.org/residents/home-repair/restore-repair-renew/

The Office of Sustainability also prepared a guide called Household Guide to Resources for Flooding in Philadelphia, which includes a list of actions you can take before, during, and after a flood. It also includes links to resources and programs that can help you prepare for and mitigate flooding.

Use your phone's camera to scan this QR code or visit the website below and learn how to stay safe in a flood event.

https://www.phila.gov/media/20220504090515/Philadelphia-Flood-Resource-Guide-.pdf

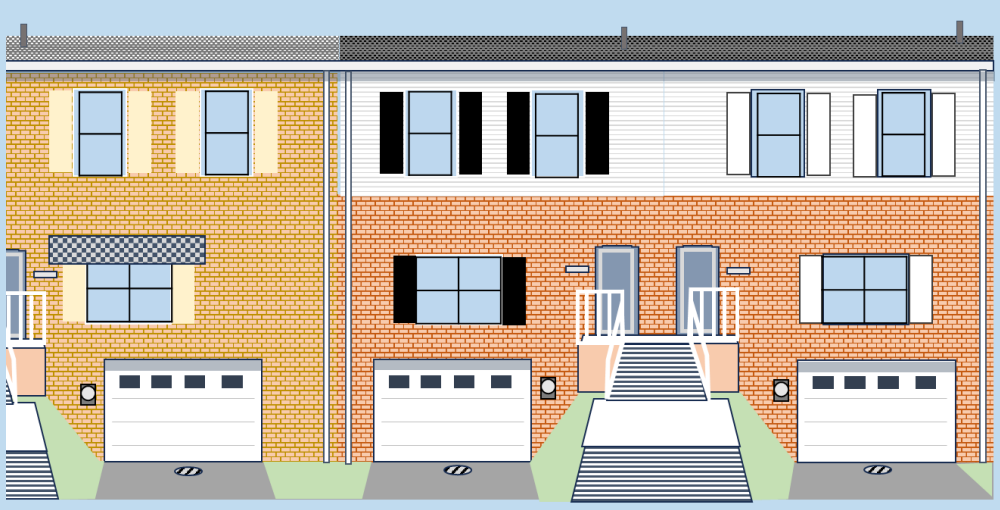
Step 2: Identify Your Home Type

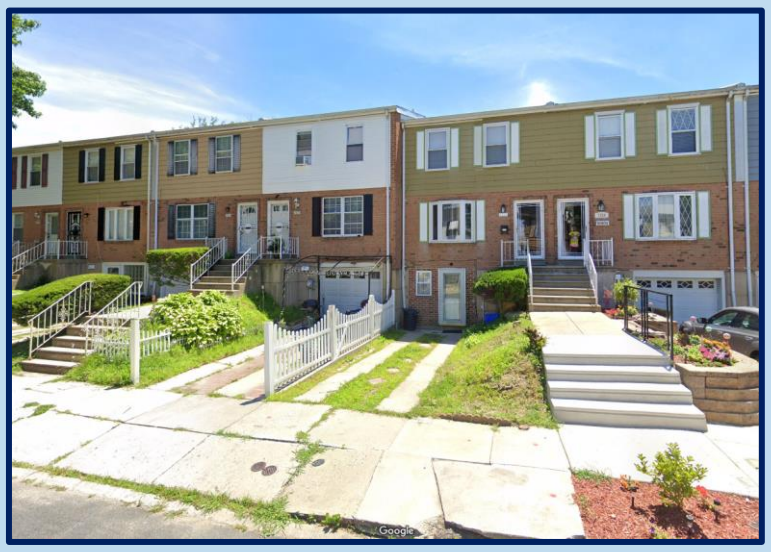
Why Does Home Type Matter?

Home type refers to the design, layout, construction material, and location of your home. These things matter because the design of your home changes both the vulnerabilities to flooding and the Flood Ready Home Strategies that are possible. Adopting a strategy customized to your home means the strategy will work with your home's characteristics, potential points of entry for floodwater, and the overall layout of your living spaces.

What Types of Homes Exist in Eastwick?

Type A: Attached 3-Story Single Family Home with Garage and/or Living Space on Ground Floor





For Type A homes, all three Flood Ready Home Strategies described in this guide are potentially applicable, depending on individual circumstances and building conditions. See pages 11-25 for more information.

Type A Homes typically have the following features:

- Garage on the ground floor
- Driveway at the same level as the street or slightly sloped downward to garage situated below street.
- Front entrance located approx. 8-10 feet above the ground, accessed by exterior stairs leading to sidewalk and street.
- The ground floor likely includes the living area, laundry area, bathroom, and utilities.
- At least one shared wall with neighboring homes
- HVAC units located at ground-level on exterior of structure.
- Rear yard sometimes contains exterior sunroom, patio, or deck structure.
- Drains may be located in the rear yard and front driveway.
- Primary points of entry for floodwaters: the garage door, rear entry way, cracks or openings in foundation walls, drains on the exterior and interior of the property, including sinks, toilets, and floor drains.

Type B: Attached 2-Story Single Family Home with Living Space on Ground Floor

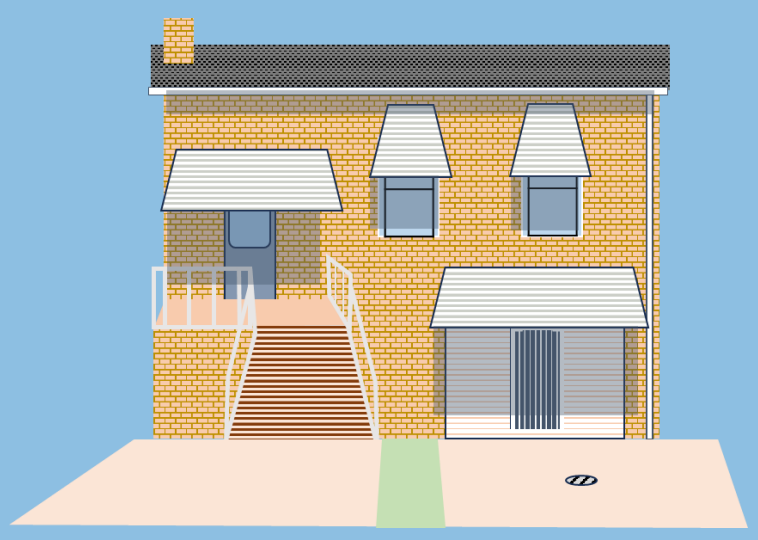
For Type B homes, Flood Ready Home Strategy #1 is the most applicable strategy described in this guide, depending on individual circumstances and building conditions. See pages 11-15 for more information.

Type B Homes typically have the following features:

- Living space and front entryway on the ground floor at or just above street level
- Driveway at the same level or sometimes slightly sloped upward towards the front entrance, without a garage.
- Ground floor likely contains a living room, dining area, laundry room, bathroom, kitchen, and utilities.
- At least one shared wall with neighboring homes
- HVAC unit is located on the exterior of the structure at ground level.
- Rear yard might have an exterior sunroom, patio, or deck structure.
- Drains may be located in the rear and front yards.
- Primary points of entry for floodwaters: the front and rear entry ways, drains on the exterior, interior of the property, including sinks, toilets, and floor drains, and the structure's walls.

Step 2: Identify Your Home Type

Type C: Detached and Semi-Detached 2-3 Story Single Family Home with Garage and/or Living Space on Ground Floor



For Type C homes, all three Flood Ready Home Strategies described in this guide are potentially applicable, depending on individual circumstances and building conditions. This is also the only type for which Structural Elevation may be feasible. See pages 11-25 for more information.

Type C Homes typically have the following features:

- Garage that is sometimes located on the ground floor
- Front entrance can be situated on the second story or on the ground floor for homes without a garage.
- Ground floor likely contains utilities, such hot water heaters, furnaces, and electrical boxes, and in some cases living space.
- Driveway is either at ground level or slightly sloped upward towards the front entrance if there is no garage.
- HVAC units are located at ground level on the exterior of the structure.
- Rear and side yard sometimes contains exterior sunroom, patio, or deck structure.
- Drains may be located in the rear yard and front driveway.
- Primary points of entry for flood waters: the front and rear entry ways, particularly the garage door where present, ground floor windows, cracks or openings in the foundation walls, and drains on the exterior and interior of the property, including sinks, toilets, and floor drains.

Flood Ready Home Strategies: What's Feasible and What's Practical?

A variety of factors determine what Flood Ready Home Strategy will work best for you. There is not a one-size-fits-all approach because everyone's circumstances are unique. Some factors that determine what might be feasible and practical for you include:

- What type of home do you live in?
- How much flooding are you willing to tolerate given the costs and disruptions associated with stopping flooding?
- To what extent are you willing or able to alter the layout of your home's living spaces, especially on the ground floor?
- What resources and support are available to you?
- Is there space to relocate vulnerable possessions and utilities within the home?
- Has your home experienced flooding in the past? If so, how deep was the water?
- What material is the home constructed of and can it withstand the pressure and forces of floodwaters?
- Are the Flood Ready Home Strategies under consideration permitted by the City's building and zoning codes?

The importance of flood forces or "hydrostatic forces" in determining the right Flood Ready Home Strategy for your home type

Standing water or slowly moving water can cause powerful forces against a structure's walls, especially when floodwater levels on different sides of a wall are not equal. Flooding can also cause flotation of structures and items not anchored to the ground. These forces are called "hydrostatic forces" and are one of the main causes of flood damage. Eastwick residents should consult trained professionals to make sure these forces are properly accounted for in any Flood Ready Home Strategy (adapted from FEMA)..

Residents should decide what Flood Ready Home Strategy makes the most sense given their unique circumstances. Make sure to consult with the City of Philadelphia and trained professionals before making any major changes to your property.

Step 3: Match Flood Ready Home Strategies to Your Home

The three Flood Ready Home Strategies described in this guide have been tailored specifically for Eastwick. The three strategies listed here are described in more detail on the following pages:

Strategy 1: Minimize the damage when flooding enters your home.

Strategy 2: If your structure allows it, reduce damage by keeping the water out.

Strategy 3: Follow FEMA best practices to reduce your risk and insurance premiums.

Each strategy is a combination of multiple individual steps that can be applied together to reduce flood risk to your home. Each strategy has pros and cons and varies in terms of cost, effort, disruptiveness, and how it reduces your risk. While everyone's circumstances are different, we recommend you apply all the steps included in the strategy of your choosing to achieve the most benefits. However, some of the individual steps may be applied on their own to provide limited benefits.

It is important to note that the considerations provided are general guidelines and may need to be adapted to the specific conditions and requirements of your home. Applicable regulations, building codes, and expert advice should always be consulted and followed when implementing flood mitigation strategies.

Which Strategy is Right for your Home Type?

Use the table below to determine which Flood Ready Home Strategy might be appliable to your Home Type.

Note: If the foundation and walls of your Type C home are designed to withstand the pressure of floodwaters, Strategy 2 may work for you.

	Strategy #1	Strategy #2	Strategy #3
Home Type A	✓	✓	✓
Home Type B	✓	✗	✗
Home Type C	✓	✓	✓

General Guidance as you Implement any Strategy

- You can implement some elements of the strategies step by step, and, if resources are limited, focus on low cost and low effort steps first (if you haven't already implemented these steps).
- Talk to your neighbors about what they have done because they may have lessons learned or other information to share, like trusted contractors. You may be able to purchase materials in bulk with your neighbors at lower costs.
- If you're making other home improvements like replacing walls or flooring, talk to your contractor about integrating flood resistant materials outlined in the Flood Ready Home Strategies as part of the project.
- Make sure to follow any codes and regulations that may apply (see page 27)
- Make sure any contractor or vendor you work with has experience with similar projects and is trusted.
- After the flood, clean up carefully. Consider hiring professionals. Wear gloves, goggles, an N95 mask or respirator, and protective clothing if cleaning yourself. Flood waters contain contaminants that can cause illness. It is strongly recommended that items coming into contact with flood waters be discarded.

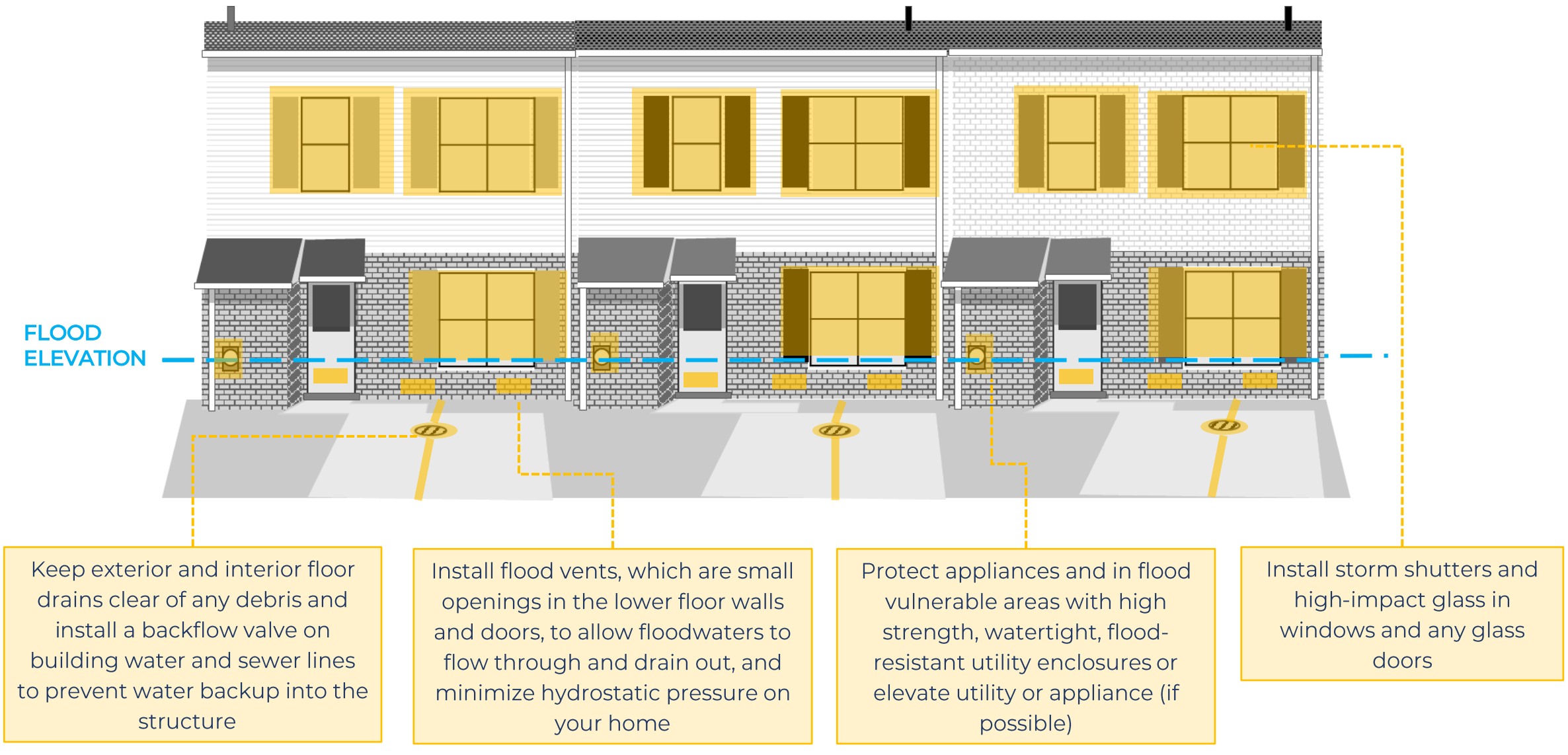
Cost ranges*:

Low	Typically less than $2,000
Medium	Typically between $2,000 - $10,000
High	Typically over $10,000

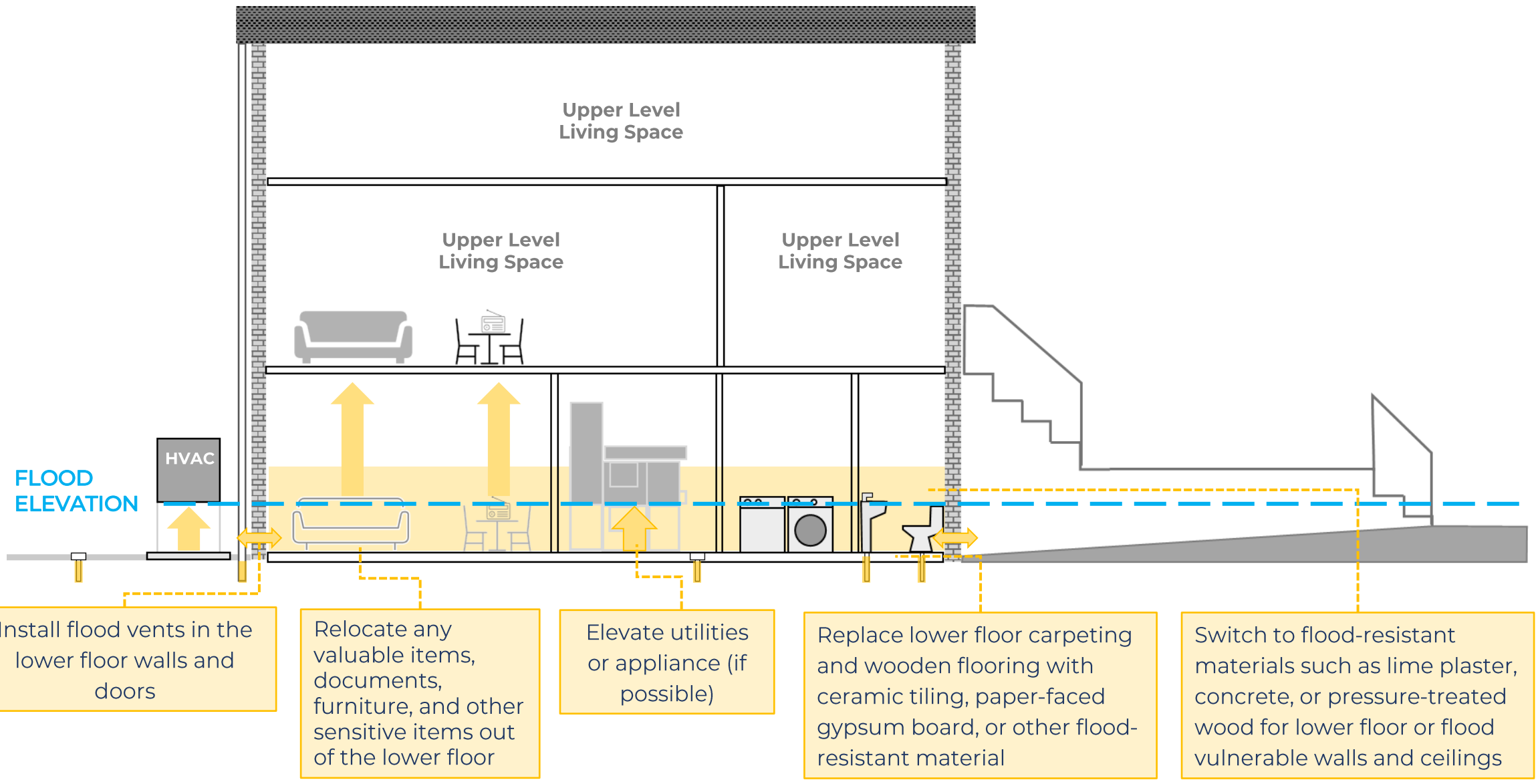
**Costs will vary depending on complexity and work extent.*

Strategy #1: Minimize the Damage When Flooding Enters Your Home

Strategy #1 Diagram (Exterior): Illustrated on Home Type B but also applicable to Home Types A and C



Strategy #1 Diagram (Interior): Illustrated on Home Type A but also applicable to Home Types B and C



Strategy #1: Minimize the Damage When Flooding Enters Your Home

This strategy involves a combination of relatively low cost and low effort steps that, together, will reduce damage and disruption to your home, belongings, and utilities when flooding happens. It seems counterintuitive to allow water into your home, but often the cost, disruptiveness, feasibility of fully preventing flood damage makes these steps impractical. In those cases, it makes sense to do everything in your power to minimize the damage floods cause when they happen. **In this Flood Ready Home Strategy, water may still enter your home, but damages are minimized and the time necessary to get back on your feet is minimized**. This strategy can be considered a "lite" version of Strategy #3 (pages 21-24), involving less cost and effort but offering a lower level of risk reduction. See FEMA's official guidance on wet floodproofing (https://www.fema.gov/sites/default/files/documents/fema_nfip-technical-bulletin-7-wet-floodproofing-guidance.pdf) for more details on many of the steps included in this strategy.

Please review pages 11 –15 for all the steps in strategy #1.

☑ ***What it accomplishes:*** Reduced recovery time, damage to property and belongings, and repairs or replacements associated with flooding with relatively low cost and effort.

☒ ***What it doesn't accomplish:*** Keeping the water out or eliminating flood risk to you and your property, including due to mold growth. Also, although this strategy does include some components of a typical "wet floodproofing" approach, **in the absence of additional steps included in Strategy #3, this strategy would not be eligible for some types of grant funding and is not likely to yield reduced insurance premiums.** Flood insurance will not cover losses in ground floors converted into living areas for type A and C homes, as they are not compliant with local codes.

Step	What's the typical cost range?	Can this step be taken by itself to achieve limited flood risk reduction?
Relocate heavy items and furniture out of the lower floors or flood vulnerable areas	Low	Yes
Relocate any valuable or sensitive items or documents out of the flood vulnerable areas	Low	Yes
Keep exterior and interior floor drains clear of any debris	Low	Yes
Protect appliances and utilities in flood vulnerable areas with high strength, watertight, flood-resistant utility enclosures or elevate utility or appliance (if possible)	Low to Medium (Depending on Complexity of Utility)	Yes

Strategy #1: Minimize the Damage When Flooding Enters Your Home

This strategy has the potential to be implemented in Home Types A, B, and C.

Home Type A	Home Type B	Home Type C

Do I need a professional or can I do it by myself (DIY)?	What do I need to know about this step?
DIY	• Identify safe and suitable areas on higher floors for relocating items • Follow proper lifting and moving techniques to prevent injuries • Consider the stability and weight capacity of the chosen relocation areas. • (Learn more: Protecting Building Utility Systems from Flood Damage)
DIY	• Identify secure areas on higher floors for storing valuable items and documents • Consider the protection of sensitive items from not just water but also humidity and temperature variations. • Create an inventory and keep records of relocated items for insurance purposes. • (Learn More: Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding)
DIY	• Regularly inspect and clean drains to remove any obstructions. • Install debris screens or guards to prevent blockages. • Speak with neighbors on your block to ensure everyone keeps their drains free of obstructions. • Be mindful of landscaping and ensure that vegetation or objects do not obstruct drains. • (Learn More: City of Philadelphia: Rain Check Program)
DIY or Professional (Depending on Complexity of Utility)	• Choose enclosures that are specifically designed to resist flooding and are watertight. • Ensure proper installation and sealing of the enclosures to prevent water infiltration. • Regularly inspect and maintain the enclosures to ensure their effectiveness. • (Learn More: Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding)

Strategy #1: Minimize the Damage When Flooding Enters Your Home

More Steps in Strategy #1

Step	What's the typical cost range?	Can this step be taken by itself to achieve limited flood risk reduction?
Install flood vents, which are small openings in the lower floor walls and doors, to allow floodwaters to flow through and drain out, and minimize hydrostatic pressure on your home	Medium	No
Replace lower floor carpeting and/or wooden flooring with ceramic tiling, paper-faced gypsum board, or other flood-resistant material	Medium	Yes
Switch to flood-resistant materials such as lime plaster, concrete, or pressure-treated wood for lower floor or flood vulnerable walls and ceilings	Medium to High (Depending on Materials and Square Footage)	Yes
Install storm shutters and high-impact glass in windows and any glass doors	Medium	Yes
Install a backflow valve on building water and sewer lines and a sump pump to prevent any water backup or accumulation in the home	Medium	Yes

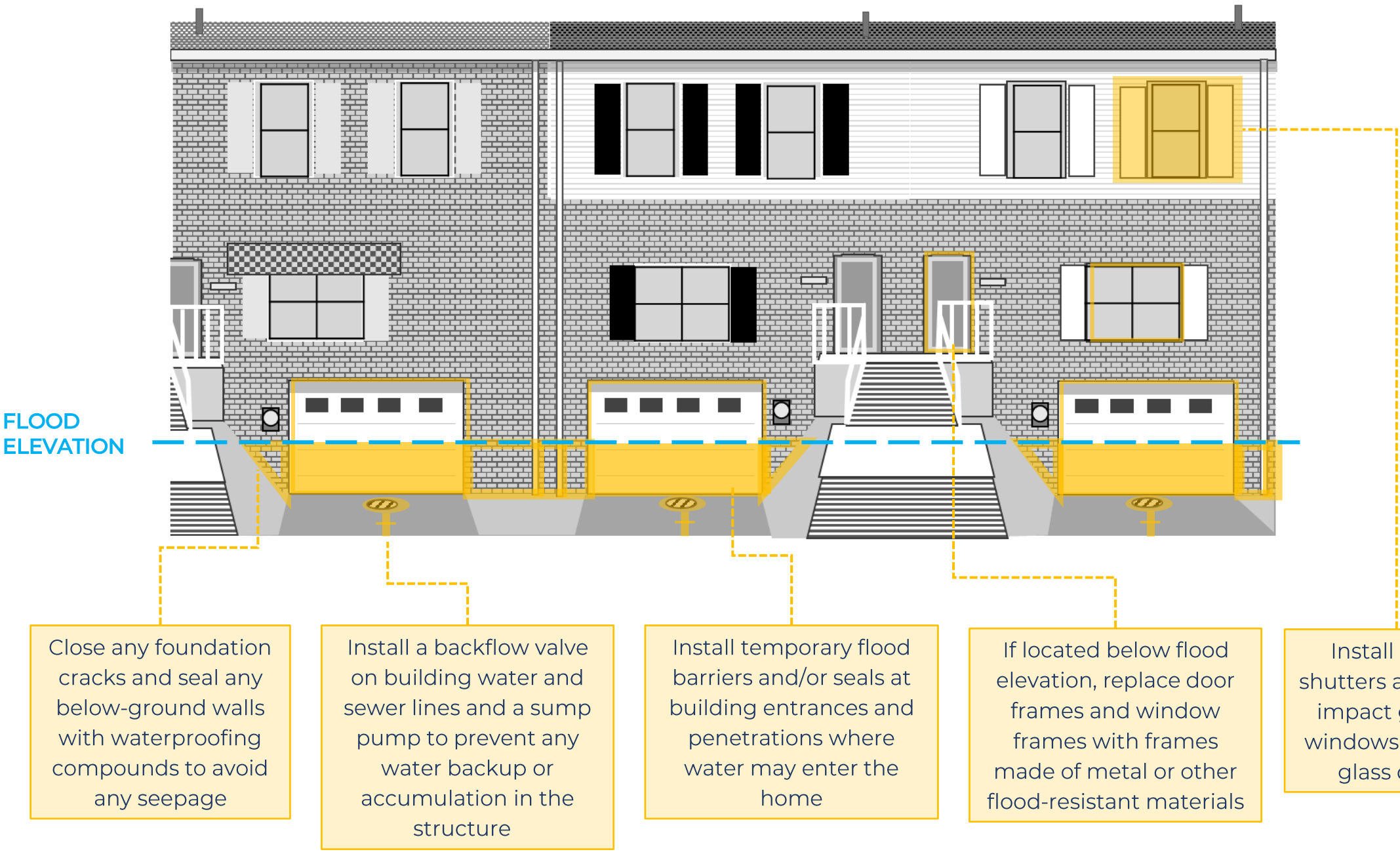
Strategy #1: Minimize the Damage When Flooding Enters Your Home

Do I need a professional or can I do it by myself (DIY)?	What do I need to know about this step?
Professional	• Flood vents are small, permanent openings that allow floodwater to flow through and drain out of enclosed spaces while minimizing the forces floodwaters can exert on your structure—which can destroy walls, door, and foundations—reducing the risk of serious structural damage. • Flood vents should be kept clear of debris so that they work effectively during a flood. Note: Flood vents are required by FEMA for properties being built in high-risk flood zones but can also be added to existing structures. • Flood vents should be compatible in design and placement and should blend in with the property's foundational material. • Engage professionals or vendors who are knowledgeable about flood vent installation and compliance. Make sure they follow the American Society of Civil Engineers (ASCE) Standard 24 flood vent installation requirements. • Regularly inspect and maintain flood vents to ensure their proper functionality. • (Learn More: Flood Resistant Design and Construction)
Professional	• Use professional installation methods to ensure proper sealing and waterproofing of the materials. • Consider the durability and ease of cleaning of the chosen materials. • Ask neighbors or a professional contractor what materials they have used or suggest. • (Learn More: Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding)
Professional	• Work with a professional who has experience with flood-resistant construction techniques to ensure compliance with local building codes and regulations. • Note: Waterproof coatings are vapor impermeable and can trap moisture in the wall or on the interior wall surface and cause deterioration or damage to some materials. For example, lime plaster allows moisture that may have been absorbed during a flood to evaporate and resists mold growth naturally. Consult a professional on how to best mitigate any potential effects of trapped moisture. • (Learn More: Flood Damage-Resistant Materials Requirements)
Professional	• Choose shutters and glass that are designed to withstand high winds and impacts. • Ensure proper installation and secure attachment to prevent failure during storms. • Regularly inspect and maintain shutters and glass for any damage or deterioration. • (Learn More: Flood Safety Checklist)
Professional	• Consult with a plumbing professional to determine the appropriate type and size of backflow valves and sump pumps for your specific needs. • Regularly inspect and maintain the valves and pumps to ensure their proper functioning. • This step may be eligible for the Philadelphia Basement Backup Protection Program.


Search a Property's Flood Dat
Flood Depth: 2-4ft
SAMSUNG

Strategy #2: If Your Structure Allows It, Reduce Damage by Keeping the Water Out

Strategy #2 Diagram: Illustrated on Home Type A but also potentially applicable to Home Type C



CRITICAL INFORMATION FOR STRATEGY 2!

If pursuing Strategy #2, it is critical to note the following:

- Install any flood barriers (or sandbags) well in advance of a flood event. Never perform installation during an ongoing flood event.
- Dry floodproofing is not foolproof and improper installation or maintenance can lead to failure. Always evacuate out of the building or, if unable, to an upper floor during a flood event. Do not linger in the area protected by the dry floodproofing system.
- Work with a licensed vendor, architect, and/or engineer to ensure proper design and installation.
- Diligently perform all regular maintenance needed on a recurring and timely basis.

Strategy #2: If Your Structure Allows It, Reduce Damage by Keeping the Water Out

This strategy involves "dry floodproofing" your home by using barriers and other methods to seal your property and keep floodwaters from entering**. It is important to note that this strategy is not foolproof, and its effectiveness is highly contingent on regular maintenance and proper installation. In addition, the approach of "dry floodproofing" should be considered carefully before applying to residential structures due to potential for failure and the impacts to access and egress from the structure**. However, some Eastwick residents have expressed interest in this strategy as a means of minimizing flood damages.

This strategy is not suitable for Type B and some Type C homes because the foundation and walls of these types is not designed to withstand the pressure of floodwaters.

Please review pages 17 –19 for all the steps in strategy #2.

☑ ***What it accomplishes****:* If the system works and is installed as intended, this strategy will keep floodwaters from entering your home.

☒ ***What it doesn't accomplish:*** This strategy is not foolproof; floodwaters can still overwhelm the dry floodproofing system, especially if all its components are not maintained and installed properly. Also, this strategy is not eligible for most grant funding and will not yield insurance benefits.

Step	What's the typical cost range?	Can this step be taken by itself to achieve limited flood risk reduction?
Install robust temporary flood barriers and/or seals at building entrances and penetrations where water may enter the home	Low to Medium (Depending on Materials and Complexity)	No Because flooding can still travel through subgrade pipes, such as sinks, floor drains, and toilets, into your home if backflow prevention isn't installed as well
Replace door frames and window frames with frames made of metal or other flood-resistant materials.	Medium	Yes
Install storm shutters and high-impact glass in windows and any glass doors	Medium	Yes
Install a backflow valve on building water and sewer lines and a sump pump to prevent any water backup or accumulation in the structure	Medium	Yes
Close any foundation cracks and seal any below-ground walls with waterproofing compounds to avoid any seepage	Medium	Yes

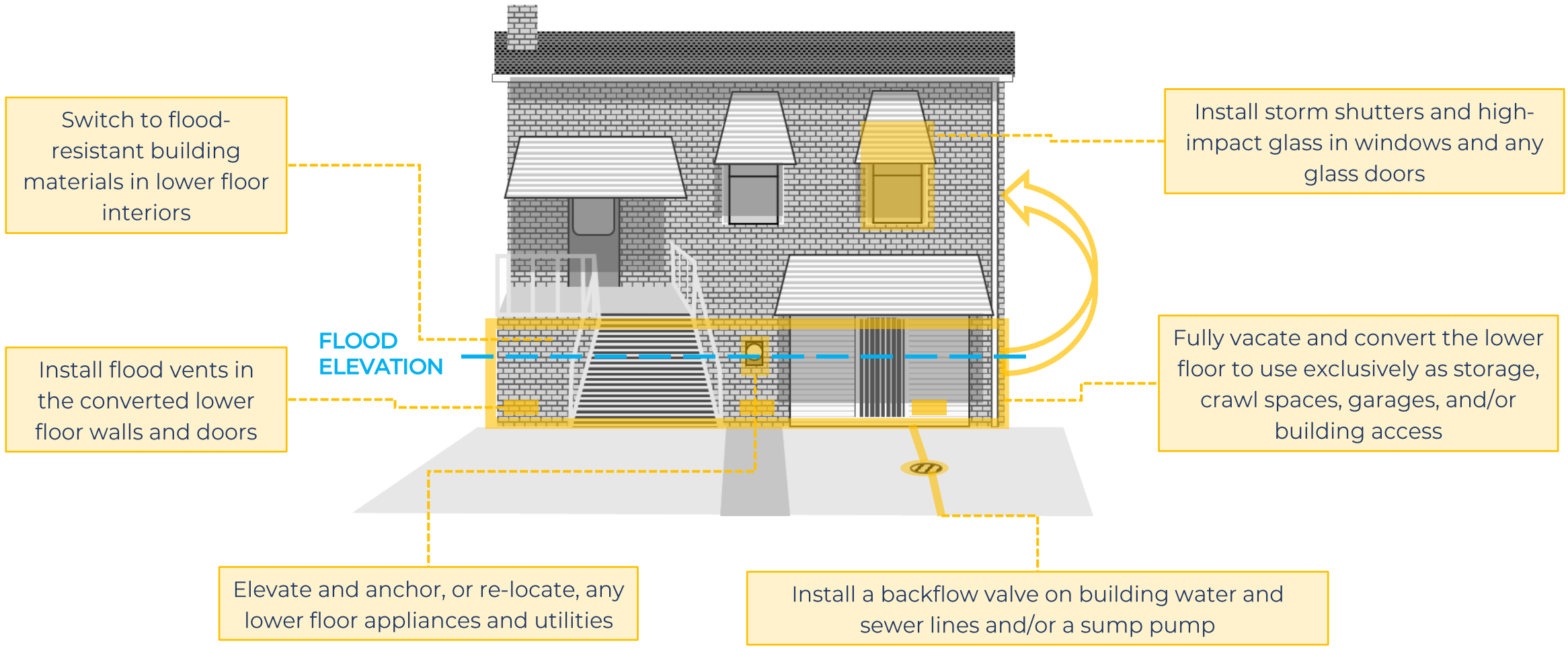
Strategy #2: If Your Structure Allows It, Reduce Damage by Keeping the Water Out

This strategy has the potential to be implemented in home Types A and C.

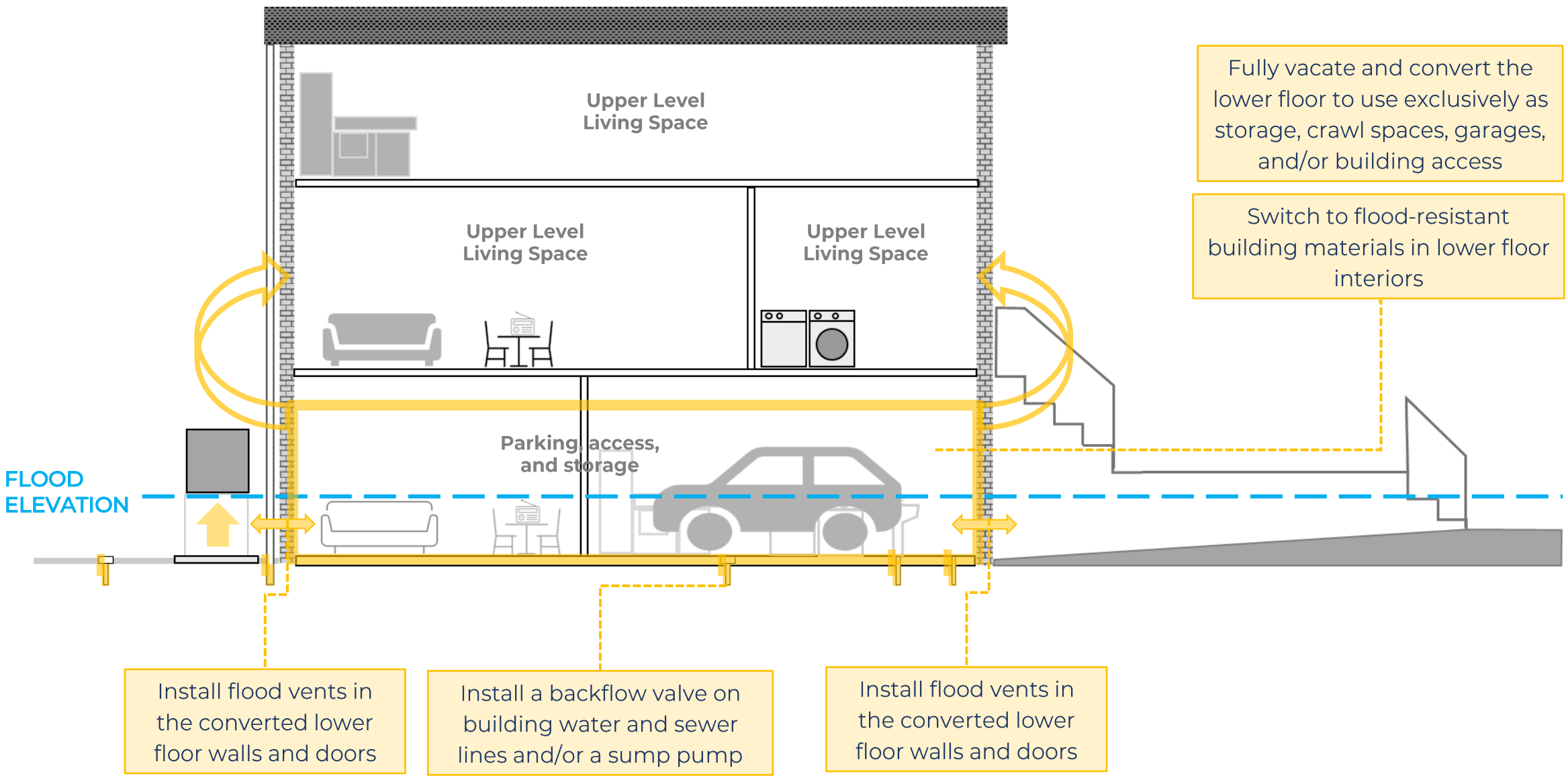
Home Type A	Home Type C *In some cases*
Do I need a professional or can I do it by myself (DIY)?	**What do I need to know about this step?**
Professional	• Engage professionals who have expertise in flood protection measures and retrofitting to design and install the flood barrier system. This also helps ensure compliance with local building codes and regulations. • Regularly inspect and maintain flood barriers and seals to ensure their functionality. • The structure's foundations and walls must be strong enough to withstand the pressure of floodwater and debris. • Consider how people, including first responders, will access and exit your home when barriers are installed. • (Learn More: Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding)
Professional	• Choose materials that are designed to resist water infiltration and structural damage. • Install materials according to manufacturer guidelines and recommendations. • Consider the aesthetics and compatibility of flood-resistant materials with the overall design of the home. • (Learn More: Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding)
Professional	• Choose shutters and glass that are designed to withstand high winds and impacts. • Ensure proper installation and secure attachment to prevent failure during storms. • Regularly inspect and maintain shutters and glass for any damage or deterioration. • (Learn More: Flood Safety Checklist)
Professional	• Consult with a plumbing professional to determine the appropriate type and size of backflow valves and sump pumps for your specific needs. • Regularly inspect and maintain the valves and pumps to ensure their proper functioning. • This step may be eligible for the Philadelphia Basement Backup Protection Program.
Professional	• Inspect the foundation for any cracks or gaps and repair them promptly. • Use appropriate waterproofing compounds or sealants recommended for below-grade applications. • Ensure proper surface preparation and follow the manufacturer's instructions for application. • (Learn More: Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding)

Strategy #3: Follow FEMA Best Practices to Reduce Your Risk and Insurance Premiums

Strategy #3 Diagram (Exterior): Illustrated on Home Type C but also potentially applicable to Home Type A



Strategy #3 Diagram (Interior): Illustrated on Home Type A but also potentially applicable to Home Type C



Strategy #3: Follow FEMA Best Practices to Reduce Your Risk and Insurance Premiums

For most homes in Eastwick, this strategy will most closely align with what is considered national "best practice" by FEMA and other public agencies and would likely result in the highest level of risk reduction out of the Flood Ready Home Strategies. This strategy involves a more comprehensive and complete version of the "wet floodproofing" approach introduced in Strategy #1. Nevertheless, this strategy is also the costliest and potentially most disruptive to the use of your home. It requires converting the ground flood to non-habitable uses like parking, storage, and access . See FEMA's official guidance on wet floodproofing (https://www.fema.gov/sites/default/files/documents/fema_nfip-technical-bulletin-7-wet-floodproofing-guidance.pdf for more details on many of the steps included in this strategy. This strategy is **most suitable for home Types A and C**, but we recognize this strategy might not be practical for many Eastwick residents. If this is the case for you, consider adopting Strategy #1.

☑ ***What it accomplishes:*** Significant flood risk reduction by taking you, your belongings, and the systems critical to daily life out of harm's way. **This strategy is also likely to be eligible for grant funding from various sources and would likely yield insurance premium reductions.**

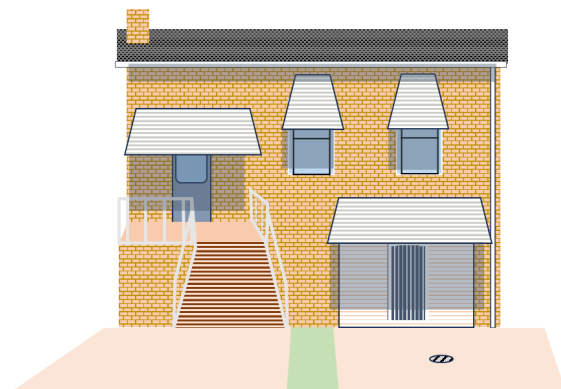
☒ ***What it doesn't accomplish****:* Keeping the water out entirely or eliminating risk to your health and safety, including due to mold growth. Regular maintenance is critical to ensure this strategy is as effective as it can be, and it is important to stay out of potentially flooded areas during a flood event. **Also, many lower floors in Eastwick are used as living space, so the benefits of flood risk reduction should be weighed against the loss of living area.**

Step	What's the typical cost range?	Can this step be taken by itself to achieve limited flood risk reduction?
Re-locate any lower floor appliances and utilities above flood elevation	Medium	Yes
Install flood vents in the converted lower floor walls and doors to allow floodwaters to flow through and drain out, and minimize hydrostatic pressure on your home (see also Strategy #1)	Medium	No
Install a backflow valve on building water and sewer lines and/or a sump pump to prevent any water backup or accumulation in the structure and remove any remaining water after a flood	Medium	Yes

Strategy #3: Follow FEMA Best Practices to Reduce Your Risk and Insurance Premiums

This strategy has the potential to be implemented in home Types A and C.

Home Type A



Home Type C

Do I need a professional or can I do it by myself (DIY)?	What do I need to know about this step?
Professional	• Outside of the structure, utilities and service equipment such as air conditioning condensers, generators, heat pumps, and water meters can be raised and anchored on pedestals or platforms. Outdoor fuel tanks should also be elevated and anchored so that they do not float and become a hazard during a flood . If you are facing challenges in raising utilities because of asbestos in the siding, contact a certified asbestos abatement company for consultation. Access the list of certified asbestos abatement companies prepared by the Pennsylvania Department of Labor and Industry here: https://www.dli.pa.gov/Individuals/Labor-Management-Relations/bois/Documents/ASBCONTR.HTM • Inside the structure, you may consider moving appliances such as washers and dryers from the basement to an upper floor. • Electrical system components such as fuse and breaker boxes, outlets, switches, and wiring can also be elevated above future flood levels by a licensed electrician. • Consult with professionals to determine the appropriate elevation or relocation options for your specific situation. Follow local building codes and regulations regarding elevation requirements. • Ensure proper anchoring of items within structure to prevent movement or damage during flood events. • (Learn More: Protecting Building Utility Systems from Flood Damage)
Professional	• Flood vents are small, permanent openings that allow floodwater to flow through and drain out of enclosed spaces while minimizing hydrostatic pressure—which can destroy walls, door, and foundations—reducing the risk of serious structural damage. • Flood vents should be kept clear of debris so that they work effectively during a flood. Flood vents are required by FEMA for properties being built in high-risk flood zones but can also be added to existing structures. • Flood vents should be compatible in design and placement and should blend in with the property's foundational material. • Engage professionals or vendors who are knowledgeable about flood vent installation and compliance. Follow the American Society of Civil Engineers (ASCE) Standard 24 flood vent installation requirements. • Regularly inspect and maintain flood vents to ensure their proper functionality. • (Learn More: Flood Resistant Design and Construction)
Professional	• Consult with a plumbing professional to determine the appropriate type and size of backflow valves and sump pumps for your specific needs. • Regularly inspect and maintain the valves and pumps to ensure their proper functioning. • This step may be eligible for the Philadelphia Basement Backup Protection Program.

Strategy #3: Follow FEMA Best Practices to Reduce Your Risk and Insurance Premiums

More Steps in Strategy #3

Step	What's the typical cost range?	Can this step be taken by itself to achieve limited flood risk reduction?
Install storm shutters and high-impact glass in windows and any glass doors	Medium	Yes
Switch to flood-resistant building materials in lower floor interiors (see also Strategy #1)	Medium to High (Depending on Materials and Square Footage)	Yes
Vacate and convert the lower floor to use exclusively as storage, crawl spaces, garages, and/or building access	High	No

Strategy #3: Follow FEMA Best Practices to Reduce Your Risk and Insurance Premiums

Do I need a professional or can I do it by myself (DIY)?	What do I need to know about this step?
Professional	• Choose shutters and glass that are designed to withstand high winds and impacts. • Ensure proper installation and secure attachment to prevent failure during storms. • Regularly inspect and maintain shutters and glass for any damage or deterioration. • (Learn More: Flood Safety Checklist)
Professional	• Consider materials that are designed to resist water damage, mold growth, and structural degradation. • Consult with professionals for recommendations on flood-resistant interior materials. • Ensure compatibility with the overall design and functionality of the lower floor uses of access, storage, and parking. • (Learn More: Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding)
Professional	• Evaluate the feasibility and cost-effectiveness of converting the lower floor for non-habitable purposes (limited to crawl space, building access, parking, and storage) • Ensure compliance with building codes and regulations regarding changes in the use of spaces. • Consider the accessibility and functionality of the converted spaces given your living situation. • Keep important belongings (photos, documents) on upper floors. • (Learn More: Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding)

Additional Strategies To Consider

In addition to the three Eastwick-specific Flood Ready Home Strategies above, there are several alternative strategies that may not be practical or appropriate for most homes in Eastwick but may be considered best practice for a limited number of properties. Each strategy offers specific benefits but may have limitations or constraints that make them less suitable for implementation in Eastwick. Understanding these strategies can help you make an informed decision about flood mitigation measures that best suit your needs and circumstances.

Structural Elevation of Detached Homes (Home Type C)

Structural elevation means physically raising the lowest floor of your home to be above the expected flood levels to put your occupiable spaces out of harm's way entirely. In Eastwick, this strategy is only appropriate for some detached (Type C) homes.

☑ *What it accomplishes:* By elevating the structure, this strategy reduces the likelihood of floodwaters reaching vulnerable areas, such as living spaces or utilities, and minimizes potential damage to the property. This guarantees that all belongings and valuables are located above flood level.

☒ *What it doesn't accomplish:* Structural elevation is a significant undertaking that is not practical or cost-effective for most properties in Eastwick. Structural elevation requires careful consideration of various factors, including the property's foundation, structural integrity, building access, and local building regulations.

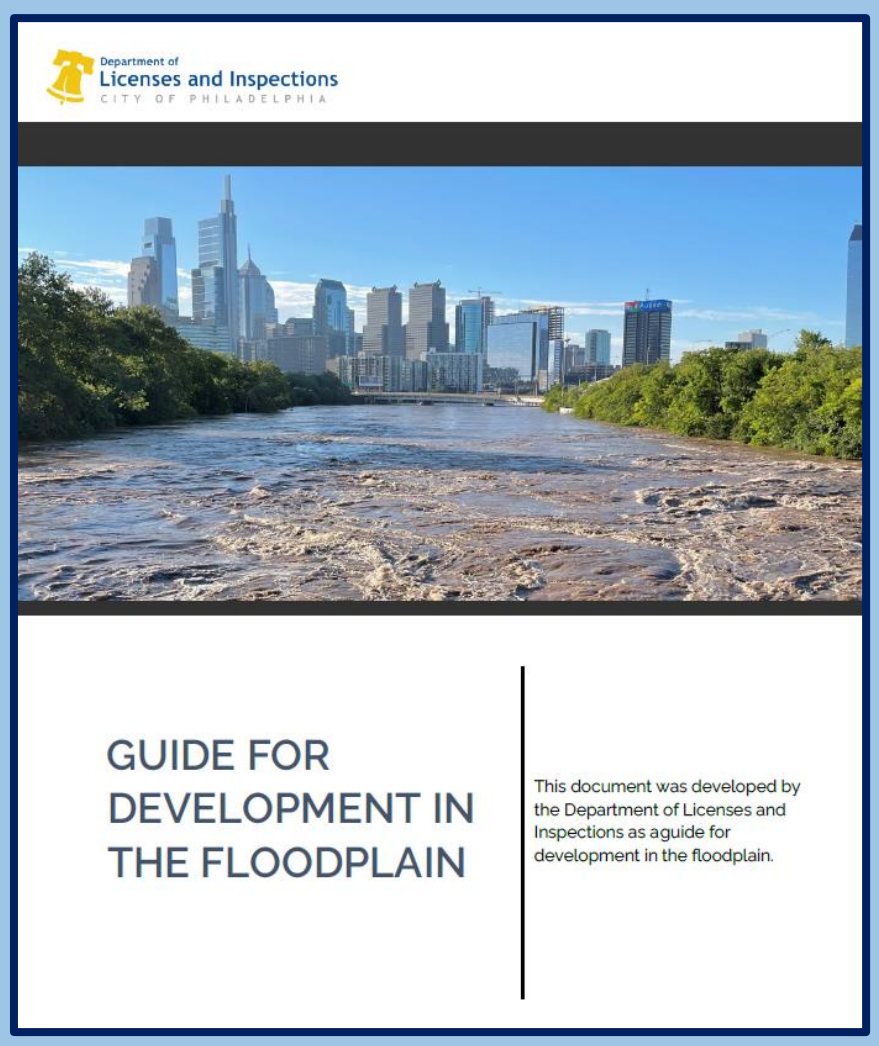
Reconstruction Mitigation (Home Type C)

Reconstruction mitigation involves redesigning and rebuilding a home to be more resilient against future flood events. It typically involves demolishing your existing home and rebuilding an improved, elevated building using flood-resistant materials and design techniques.

☑ *What it accomplishes:* Reconstruction mitigation can serve as a comprehensive flood risk reduction solution, providing a new flood resilient home.

☒ *What it doesn't accomplish:* This strategy requires significant planning, design expertise, and financial investment. It is likely to be impractical for most residents in Eastwick due to cost considerations and limitations imposed by existing buildings and infrastructure. This strategy may also not address immediate flood protection needs and is likely more applicable for long-term planning and future construction projects.

The Role of Codes and Regulations



Codes and standards at the City, State, and Federal levels govern construction in the floodplain. These include the Zoning Code, Building Code, ASCE-24-14 Flood Resistant Design and Construction, NFIP Regulations (44CFR Parts 60-80) and Pennsylvania Code-Title 25 Environmental Protection.

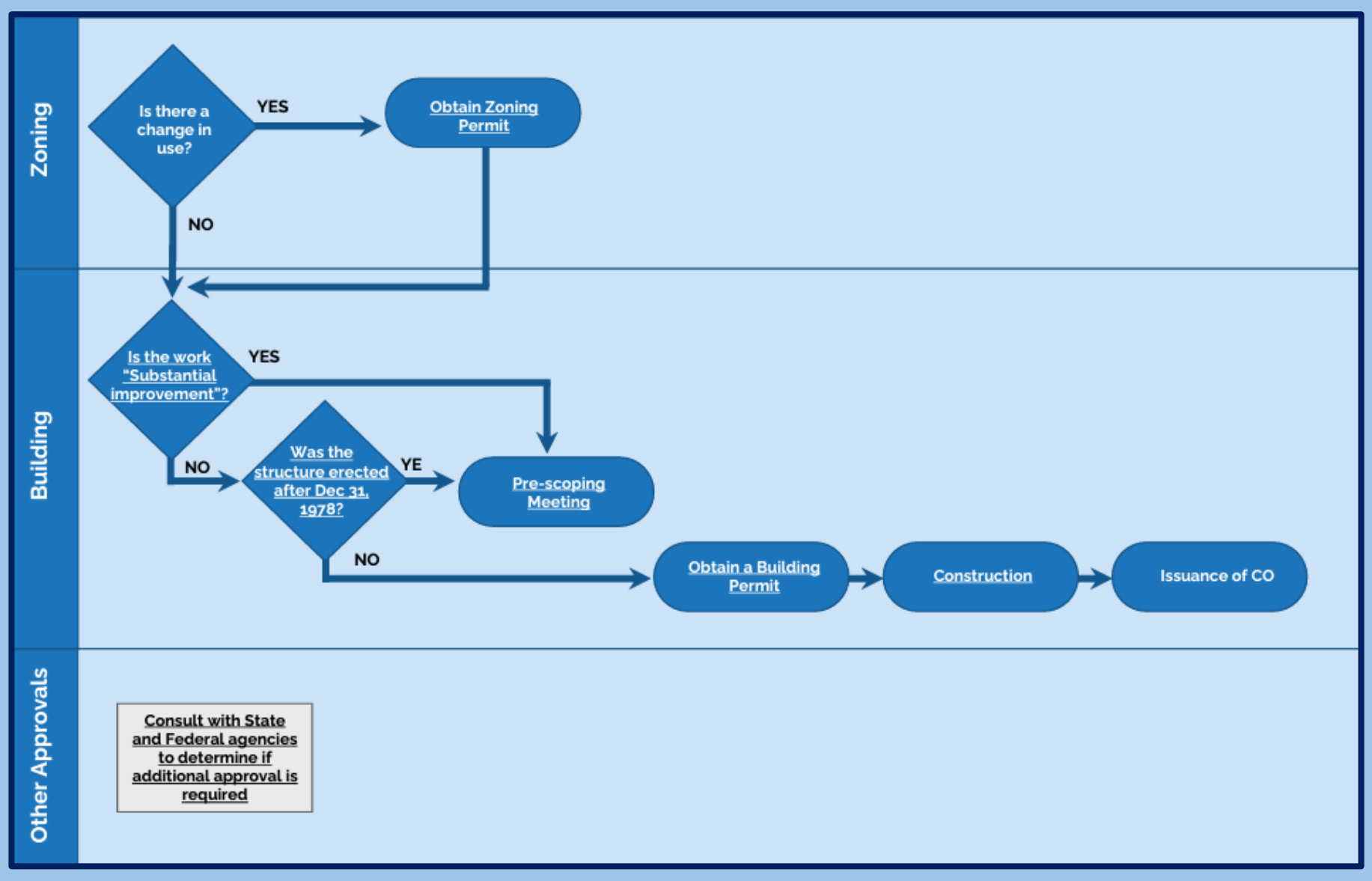
Work on existing buildings within the floodplain in Eastwick must reference and comply with applicable sections of the City's building code. Those specifically related to flood hazard mitigation include Section 1612 Flood Loads, Section P-309 Flood Hazard Resistance, and Section R322 Flood-Resistant Construction. If your home was built prior to December 31, 1978, and your planned project doesn't constitute a substantial improvement (more than 50% of the property's assessed market value), you can often apply directly to the Department of Licenses and Inspections for a building permit. Other cases may require additional steps and coordination with Department of Licenses and Inspections.

More information is available in the city's Guide for Development in the Floodplain.

https://www.phila.gov/media/20220202131643/Guide-for-Development-in-the-Floodplain-Rev-2.2.22.pdf

Permitting Flow Chart for Building Alterations in Philadelphia

The flow chart below summarizes the steps for permitting alterations to an existing building in the floodplain within the City of Philadelphia. This flow chart (page 4) and others are provided in the Guide for Development in the Floodplain. These steps would apply for some Flood Ready Home Strategies in Eastwick. Residents should consult professionals or the city staff to learn more.



What to do Next

Step 4: Seek Professional Assistance

☑ Reach out to the Philadelphia Office of Sustainability to learn about assistance that may be available.

Korin Tangtrakul
Program Manager of Place-Based Initiatives,
Office of Sustainability, City of Philadelphia
(215) 683-1795
korin.tangtrakul@phila.gov

☑ Talk to a qualified professional about your options

☑ Learn from your neighbors

☑ Consult the list of local, state, and national resources below.

Have you tried any of these strategies?

Would you like to share what you've learned? Please let us know using the contact information to the left!

Step 5: See List of Resources

Local

- Eastwick Flood Management Flyer
- Philadelphia-Flood-Resource-Guide
- How to get ready | Office of Emergency Management | City of Philadelphia
- Ready, Or Not? An Emergency Preparedness Program
- Severe Weather Safety Guide
- Copy of Emergency Kit Checklist (phila.gov)
- Family Emergency Plan (phila.gov)
- Flood | Services | City of Philadelphia
- Stay informed | Services | City of Philadelphia
- After an emergency | Services | City of Philadelphia
- Disaster recovery funding | Services | City of Philadelphia
- READYHome READYBusiness READYCommunity preparedness workshops | Office of Emergency Management | City of Philadelphia
- Philadelphia Basement Backup Protection Program.

To access the web-version of this guide with active links, visit: https://www.phila.gov/programs/eastwick-from-recovery-to-resilience/

State

- Pennsylvania Emergency Preparedness Guide
- Know the Threats: Flooding
- PA Flood Maps
- PA Flood Zone Information

National

- National Flood Insurance Program: Commercial Preferred Risk Policy Fact Sheet
- National Flood Insurance Program: Residential Preferred Risk Policy Fact Sheet
- Protecting Building Utility Systems from Flood Damage
- Protect Your Home from Flooding: Low-Cost Projects Your Can Do Yourself
- Protect Your Property from Natural Hazards Brochures
- Reducing Flood Risk to Residential Buildings That Cannot be Elevated
- The Professional Practices for Business Continuity Management
- Wet Floodproofing Requirements and Limitations

Take Action Today to Reduce the Impact of Flooding to Your Home and Belongings in Eastwick.

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