



*Sector 5:*  
**Housing**



## *Background*

Disasters meet people on their doorsteps. Floods can cause massive damage to homes and wreak financial havoc, especially for those who are uninsured or underinsured. During extreme temperatures, the way a home is constructed can determine how vulnerable its inhabitants are to heat and cold. To be truly resilient, Maryland must consider where and how homes are built and whether residents are adequately insured against risks. This sector focuses on strategies to improve housing resilience without sacrificing affordability.

Housing was chosen as one of the five sectors in this strategy based on a review of plans from Maryland and other states. While housing is a focus area for the Moore-Miller Administration and a fundamental issue for Maryland residents, it has not been emphasized in Maryland's past resilience and adaptation planning efforts.<sup>1</sup> This strategy aims to address that gap.

## *Definitions*

**Definition of the Sector:** Making the State of Maryland a desirable and affordable home for all residents by fostering attainable, resilient, and quality housing opportunities.

Accessible housing that withstands and adapts to emerging hazards is vital to a functioning and growing economy, generational wealth planning, and economic justice.

**Definition of Hazard:** The Department of Homeland Security defines a hazard as "A source or cause of harm or difficulty."<sup>2</sup> This term is often used to capture **acute shocks** such as hurricanes or cyberattacks.

**Definition of Stressor:** Stressors are chronic challenges that harm communities on blue-sky days and can make hazards more severe. This term is used to capture **ongoing or structural challenges** like persistent poverty or sea level rise.

*Note that while this strategy distinguishes between hazards and stressors for the purpose of discussion, the two are deeply linked and interconnected.*

## *Hazards*

Maryland's housing stock is affected by a wide spectrum of hazards - from flooding to extreme temperatures, to severe storms and tornadoes. The hazards highlighted in this section are the ones most frequently identified by stakeholders through surveys, interviews, and workgroup discussions. The following pages will capture top examples of hazard impact, but the list contained therein is not exhaustive.



## Flooding

- In 2020, about 133,700 properties in Maryland faced a substantial risk of flooding. That number is projected to grow by 14.8% over the next 30 years, reaching roughly 153,500 properties by 2050.<sup>3</sup>
- Just 1 inch of water can cause \$25,000 of damage to a home.<sup>4</sup>



## Extreme Temperature

- By mid-century, the Mid-Atlantic region is projected to experience 47.7 days above 90° F per year under a high future climate scenario. This is 190% greater than the 16.5 days above 90° under a baseline scenario.<sup>5</sup>
- Research shows that extreme heat follows historic redlining patterns with low-income neighborhoods seeing temperatures 10 degrees hotter than more affluent areas.<sup>6</sup>
- Manufactured housing also faces outsized risk, since energy-inefficient mobile homes are harder to cool.<sup>7</sup>



## Tropical Systems & Severe Storms

- In 1972, Hurricane Agnes ranked among the most destructive hurricanes in U.S. history, causing more than \$110 million in property damage across Maryland, including an estimated \$10 million in Carroll County alone.<sup>8,9</sup>
- Approximately 125,000 homes along Maryland's coast are at risk of sustaining major damage from storm surges.<sup>13</sup> Experts estimate that a single severe hurricane could cause as much as \$28 billion in property damage across communities in the state.<sup>10</sup>
- In 2012, Hurricane Sandy damaged an estimated 1,068 houses across Maryland.<sup>11</sup> Of these, 927 were in Somerset County, making it the only county declared eligible for federal Individual Assistance through FEMA.

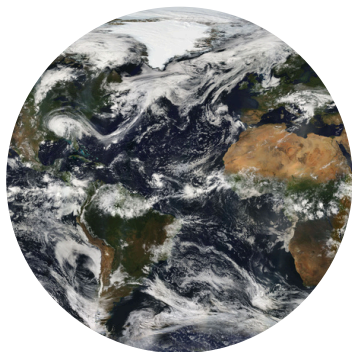


### Tornadoes

- Since 1950 there have been 426 tornado events documented in Maryland, totaling over \$380 million in property damage.<sup>12</sup>
- Mobile homes are far more likely to be damaged or destroyed than other types of housing during these events. There are 36,000 mobile homes in Maryland, primarily located in Western Maryland and the Eastern Shore.<sup>13</sup>

### Long-term Stressors

In addition to the hazards described above, persistent stressors leave Maryland's housing and households vulnerable to disasters. Some of these include:



### Climate Change

Climate change places significant and increasing stress on Maryland's housing system in several ways:

- Sea level rise threatens to inundate communities and the infrastructure that makes living there possible.<sup>14</sup>
- Rising temperatures increase the frequency and intensity of hurricanes and severe storms, raising the risk of catastrophic flooding.
- Increasing air temperatures can make older or poorly insulated residences unsafe in the absence of air conditioning, which housing-burdened or low income individuals struggle to afford.<sup>15</sup>

### Did You Know?

In Ocean City, 25 percent of houses and structures are vulnerable to flooding.<sup>16</sup>



### **Affordability**

Absent any disaster or other stressor, Maryland faces a housing shortage of over 96,000 residences.<sup>17</sup> This shortage contributes to Maryland being one of the ten least affordable states to live in.

In addition to an absolute shortage of housing, Maryland has a shortage of over 130,000 affordable housing units.<sup>18</sup>

### **Did You Know?**

Nearly half of renters in Maryland spend more than 30% of their income on housing. In many cases, these residents may also live in older or lower-quality housing stock that is more vulnerable to hazards.<sup>19</sup>



### **Insurance Access**

Limited uptake of insurance coverage, especially for flooding, makes households more financially vulnerable to hazard-related damages. More frequent and costly disasters are making home insurance increasingly unaffordable.<sup>20</sup>

As with other stressors, the most impoverished and marginalized communities are most likely to be affected. Already in Maryland, it is very difficult to insure mobile homes on the Eastern Shore.<sup>21</sup>

### **Did You Know?**

Only an estimated 4% of Maryland homeowners have flood insurance, even though nearly one-third (32%) of all National Flood Insurance Program (NFIP) claims originate from properties outside designated high-risk flood areas.<sup>22</sup>

### *Existing State Efforts*

See the next page for examples of existing initiatives Maryland has already undertaken to begin addressing the hazards and stressors listed above.



### Resilience Planning Principle

In 2025, Governor Wes Moore signed legislation into law creating the Sustainable Growth Planning Principles.<sup>23</sup> One of those principles is resilience.

The Maryland Department of Planning is responsible for implementing these principles to guide local comprehensive planning, which sets the vision and goals for land use and other local topics.

MDP recently published Sustainable Growth Principles Guidance, which addresses the Resilience Principle: “Integrate resiliency measures that will minimize the impacts of rapid and unexpected natural– and human–caused threats on communities.”<sup>24</sup>



### Building Code Adoption

Building codes set the minimum standards for how buildings are designed and constructed, ensuring they are safe, energy-efficient, and better able to withstand hazards like flooding, wind, and fire.

The Maryland Building Performance Standards (MBPS) require the State to adopt the latest editions of the International Codes within 18 months of their release. Local governments must follow by adopting them within 12 months, with the option to make requirements stricter but not weaker. Codes include the International Building Code (IBC), International Residential Code (IRC), and International Energy Conservation Code (IECC).<sup>25,26</sup>

The Maryland Department of Labor’s Building Codes Unit administers this three-year code cycle, ensuring that Maryland remains aligned with the most up-to-date safety and resilience practices while preserving eligibility for federal funding and insurance programs that depend on compliance with current standards.<sup>27</sup>

Regularly updating building codes reduces disaster risks, lowers long-term costs, and ensures that new and renovated buildings across the state are constructed to protect Marylanders now and in the future.



### Housing & Energy Programs - Maryland Department of Housing & Community Development (DHCD)

- Maryland Housing Rehabilitation Program – Provides affordable financing to repair health and safety issues and ensure homes meet building codes.<sup>28</sup> The program assists owner-occupied single-family homes through income-based loans, with repayment terms tailored to borrowers' ability to pay. Loans are managed by the Maryland Department of Housing and Community Development's Special Loan Program and delivered through a network of local housing agencies and nonprofit partners.
- Community Development Block Grant Program – Provides funding to local governments and nonprofits for housing rehabilitation, infrastructure, and community facilities.<sup>29</sup> These investments reduce vulnerability to hazards and improve long-term community resilience.
- Energy Grant Programs for Homeowners and Renters – Offers resources for households of all income levels to improve home energy efficiency.<sup>30</sup> Programs support insulation, hot water system improvements, furnace repair or replacement, renewable energy systems, and other health and safety enhancements. These measures reduce utility costs, protect households against extreme weather, and buffer residents from fluctuating energy rates.
- Multifamily Energy Efficiency and Housing Affordability Program – Promotes energy efficiency and affordability in affordable multifamily rental housing developments.<sup>31</sup> The program provides insulation, hot water system improvements, heating system replacements, renewable energy systems, and other upgrades that help properties withstand extreme temperatures and lower operating costs.



### Consumer Education on Insurance

The Maryland Insurance Administration (MIA), provides a range of resources to help residents understand flood risks and insurance options, emphasizing that most standard homeowners and renters policies do not cover flood damage.<sup>32</sup>

Its consumer education efforts include clear explanations of the National Flood Insurance Program (NFIP), guidance on purchasing policies and filing claims, promotion of preparedness tools such as the Home Inventory App to help document possessions, and educational webinars to engage directly with consumers.<sup>33,34,35</sup>

To further raise awareness, MIA partners with other state and local agencies each year for Flood Awareness Month, a cross-agency campaign featuring webinars, Q&A sessions, and informational presentations on flooding impacts and available resources.<sup>36</sup> Together, these initiatives aim to reduce confusion, empower informed decision-making, and strengthen both individual and community resilience to flooding.

## Challenges & Needs

To appropriately respond to the hazards present in this sector, the following issues should be addressed:

### Local Governments Determine Zoning & Land Use

Through zoning processes, local governments regulate land use, determining what types of buildings and uses are allowable in given areas, as well as other parameters of construction. Zoning can be a driver of resilience, limiting development in flood-prone areas or requiring more permeable surfaces and open space that can absorb water.<sup>37</sup>

However, because local governments take the lead on land use, these practices vary by jurisdiction, zoning data is decentralized, and the state has limited levers to support best practices.

### Building Code Enforcement is Lacking

Although Maryland regularly adopts the latest I-Code, that is only the first step toward ensuring resilient home construction. Practitioners, such as architects, designers, contractors, and engineers must understand and follow the codes in order for them to be effective. Code officials are another vital piece of the puzzle, because they enforce the codes and keep their communities safe.<sup>38</sup>

Through stakeholder conversations, concerns emerged that code officials are retiring more rapidly than they are being replaced. Experts also expressed that continuing education is lacking, given that the codes are updated every three years.

### Manufactured & Modular Housing Have Unique Vulnerabilities

Manufactured and modular housing are more affordable housing types that make homeownership attainable to a greater number of Maryland residents.<sup>39</sup> The Maryland General Assembly recognized this by passing the Housing Expansion and Affordability Act (HB 538), which “prohibits jurisdictions from denying the construction of manufactured and modular home construction types in single family zones.”<sup>40,41</sup>

Yet manufactured and modular housing also present distinct hazard and climate vulnerabilities.<sup>42</sup>




Manufactured homes are more likely to be constructed in floodplains and other hazard areas, can sustain significant wind damage (especially if anchored improperly), and are harder to heat and cool. Modular housing is often indistinguishable from traditional stick-built homes and is not inherently less resilient.

However, modular homes must be anchored properly in order to avoid damage during disasters.<sup>43</sup> While modular housing follows the state-adopted code, manufactured housing is constructed to the requirements of the less stringent HUD code.<sup>44</sup>

### Older Homes Lack Resilience Measures

While building codes make new and remodeled buildings safer, older homes often lack resilience features. A home built in the 1970s or even the early 2000s may not have the same protections from flooding, wind, or extreme temperatures.

## \*\* End of Sector Analysis \*\*

 <p><b>Mobile Home</b></p>	 <p><b>Manufactured Home</b></p>	 <p><b>Modular Home</b></p>
<p><b>Construction Standards:</b> Pre-1976 HUD Code</p> <p><b>Foundation Type:</b> Permanently attached chassis</p> <p><b>Build Process:</b> Factory construction, anchored to site</p>	<p><b>Construction Standards:</b> Current HUD Code</p> <p><b>Foundation Type:</b> Various (permanent chassis is typical)</p> <p><b>Build Process:</b> Factory construction, assembled at site</p>	<p><b>Construction Standards:</b> Current IRC Code</p> <p><b>Foundation Type:</b> Permanent foundation</p> <p><b>Build Process:</b> Factory construction, assembled at site w/permanent foundation</p>
<p><b>Legal Status:</b> Personal property</p>	<p><b>Legal Status:</b> Personal property</p>	<p><b>Legal Status:</b> Real estate</p>
<p><b>Typical Financing:</b> Limited options</p>	<p><b>Typical Financing:</b> Manufactured home loans</p>	<p><b>Typical Financing:</b> Conventional mortgages</p>

## Allegany County Buyout Program

Allegany County has established a strong flood [buyout program](#) to reduce risks in its most flood-prone areas. The program works by reaching out to property owners to determine their interest in selling, conducting property assessments, and securing grant funding to support acquisitions. Once properties are purchased and demolished, the land is permanently converted to open space. To maximize impact, the County prioritizes repetitive loss properties, especially when multiple are located within the same neighborhood.

Between 1987 and 2006, Allegany County purchased and demolished 172 structures through its flood buyout program. An additional 14 properties were acquired between 2006 and 2011, followed by the creation of a new waiting list in 2011. From 2013 to 2016, seven more properties were purchased and removed. Altogether, this totals 203 properties.

More recently, the County has advanced a grant-funded initiative focused on the Garden City Mobile Home Park along Winchester Road in LaVale. This ongoing project aims to acquire and relocate 25 mobile home lots out of the floodplain, ensuring residents can move to safer areas where they are no longer at risk from recurring floodwaters. As of 2024, the County continues to reduce flood risk through property acquisitions and maintains a buyout waiting list that currently includes 82 properties.<sup>45</sup>



# Goals & Recommendations

## Housing



### GOAL 1 - Make existing housing stock more resilient while emphasizing affordability.

#### Recommendation 1.1

Increase training and continuing education for building code officials and design professionals to improve the resilience of housing and other structures.

**Owner:** MDOL

**Timeline:** 2 years, ongoing

**Funding:** No additional funding needed

**Focus Area:** Robust Economy & Job Creation

#### Why This Matters:

- Adopting the latest model code has a benefit cost ratio of 11:1 and can save lives and prevent injuries during disasters.<sup>46</sup>
- While Maryland has already adopted the latest model International Code, building and design professionals must understand the code, and local building officials must enforce it in order for it to be effective.<sup>47</sup>
- When Maryland was assessed on the Building Code Effectiveness Grading Schedule (BCEGS), the state received a rating of 4 out of 10.<sup>48</sup>
- A lack of continuing education and limited training is an identified gap for Maryland's building codes. By addressing this, the state can build more resilient housing and other structures.

#### Recommendation 1.2

Support local and community-level initiatives to improve the resilience of existing housing stock through grants, financing, and public-private partnerships.

**Owner:** DHCD

**Timeline:** 5 years, ongoing

**Funding:** No additional funding needed

**Focus Area:** Justice & Equity, Robust Economy & Job Creation

#### Why This Matters:

- While building codes help make new buildings or remodeled homes more resilient, existing housing stock is also vulnerable to hazards.
- Grants, financing, and other assistance can help homeowners mitigate flood risks, create energy efficiencies, and cool their homes during heat waves.
- In particular, the Department of Housing and Community Development administers US Housing and Urban Development Community Development Block Grants as well as Maryland Housing Rehabilitation loans that can be used for this purpose.<sup>29,28</sup>



### Recommendation 1.3

Establish and fund a buyout program for homes in flood-prone areas.

Owner: TBD

Timeline: 10 years

Funding: TBD

Focus Area: Justice & Equity

#### Why This Matters:

- In areas that are prone to flooding, voluntary home buyouts are an important tool to move individuals out of harm's way.<sup>49</sup>
- States around the country – like New Jersey and South Carolina – have established buyout programs to advance resilience and draw down flood risk.<sup>50,51</sup>

## GOAL 2 - Support resilient and affordable growth.

### Recommendation 2.1

Provide guidance, data, and technical assistance to promote resilient and safe development of affordable modular and traditional housing.

Owner: MDOL

Timeline: 2 years, ongoing

Funding: No additional funding needed

Focus Area: Justice & Equity

#### Why This Matters:

- Modular housing is an important part of Maryland's housing supply that makes homeownership more affordable and attainable.
- To maintain affordability and advance hazard resilience, the state needs programs that make both modular and traditional housing construction safer.

### Recommendation 2.2

Develop model ordinances that incorporate resilience to support risk-informed development and land use.

Owner: MDP

Timeline: 5 years

Funding: Potential HUD PRO Housing Grant

Focus Area: Robust Economy & Job Creation

#### Why This Matters:

- In Maryland, local governments are responsible for zoning and land use decisions that dictate where development happens.
- Local stakeholders expressed a need for model ordinances that incorporate resilience in development.
- The State of Maryland has recently received a HUD PRO Housing Grant that is funding model ordinance development.<sup>52</sup> Future HUD PRO Housing funding could be utilized to fund this effort.



### Recommendation 2.3

Work with local governments to implement the State's Resilience Planning Principle in comprehensive planning.

**Owner:** MDP

**Timeline:** 5 years

**Funding:** Funding Secured - General Funds

**Focus Area:** Robust Economy & Job Creation

#### Why This Matters:

- In 2025, Governor Wes Moore signed legislation into [law creating the Sustainable Growth Planning Principles](#). One of those principles is resilience.<sup>23</sup>
- MDP is implementing these principles to guide local comprehensive planning, which will inform land use.

## GOAL 3 - Bolster Maryland's property insurance market in the face of climate change to protect homeowners and renters.

### Recommendation 3.1

Convene relevant state partners to understand the impact of climate change on the property insurance market in Maryland, and inform future strategies that promote market stability and insurance affordability.

**Owner:** Office of the Comptroller & MIA

**Timeline:** 2 years

**Funding:** No additional funding needed

**Focus Area:** Robust Economy & Job Creation

#### Why This Matters:

- Across the country, [climate change is impacting homeowners' insurance](#) with premiums rising and private insurers withdrawing from hazard-prone areas.<sup>53</sup>
- Renters are also at-risk of financial damages from disasters.
- Many homeowners and renters [do not realize that flood insurance policies](#) must be purchased separately.<sup>54</sup>
- While Maryland insurance markets are in a strong position, it is essential for relevant state parties to monitor this challenge and consider proactive strategies.

**\*\* End of Sector Recommendations \*\***

# Big Ideas & Open Questions

## Future of the National Flood Insurance Program

In the event of a flood, the National Flood Insurance Program (NFIP) provides coverage for direct physical damage to both structures and personal belongings.<sup>55</sup> The NFIP is the primary source of flood insurance for residential properties across the United States.<sup>56</sup>

More than 22,000 communities in 56 states and jurisdictions participate, with over 4.7 million active policies providing more than \$1.3 trillion in coverage.<sup>57</sup> Notably, about 32% of all NFIP claims come from homes located outside of high-risk flood zones.<sup>58</sup>

Despite its importance, the NFIP faces ongoing challenges. Rising costs, program uncertainties, and federal and FEMA-level changes have raised concerns about the program's long-term stability.

Recent FEMA actions and announcements have emphasized an overall shift of emergency management responsibilities to states. This has raised questions about whether NFIP responsibilities might also shift to the states and the private insurance industry.

## Community-driven Relocation

Community-driven relocation, often referred to as “managed retreat,” involves individuals or entire communities moving away from high-risk areas to reduce exposure to hazards. These efforts are typically coordinated and voluntary, with residents receiving compensation for their properties.

This is an area that requires further research to establish best practices and ensure relocation is both effective and equitable. Successful relocation efforts must remain voluntary and provide robust support for communities considering or preparing for such transitions.

A leading example is New Jersey's Blue Acres Program, launched in 1995.<sup>59</sup> Administered by the Department of Environmental Protection, Blue Acres reduces risks to public safety and the environment by relocating families from repeatedly flooded homes and repurposing the land for natural flood storage, parks, and community open space. Since its inception, the program has acquired approximately 1,100 homes.<sup>60</sup>

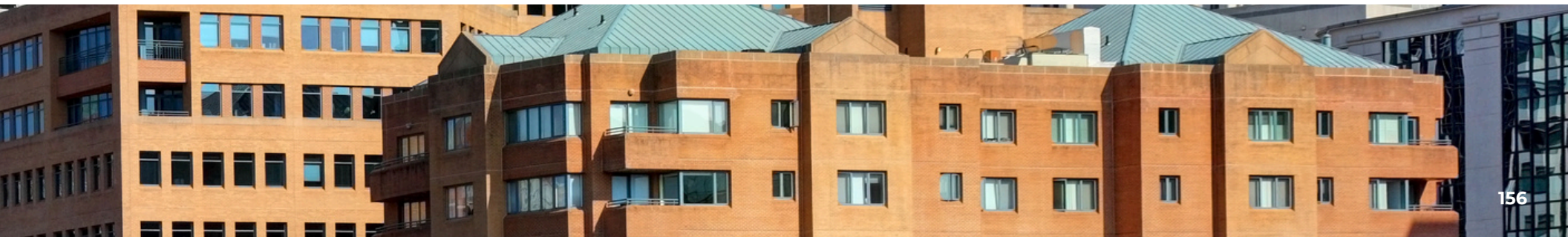


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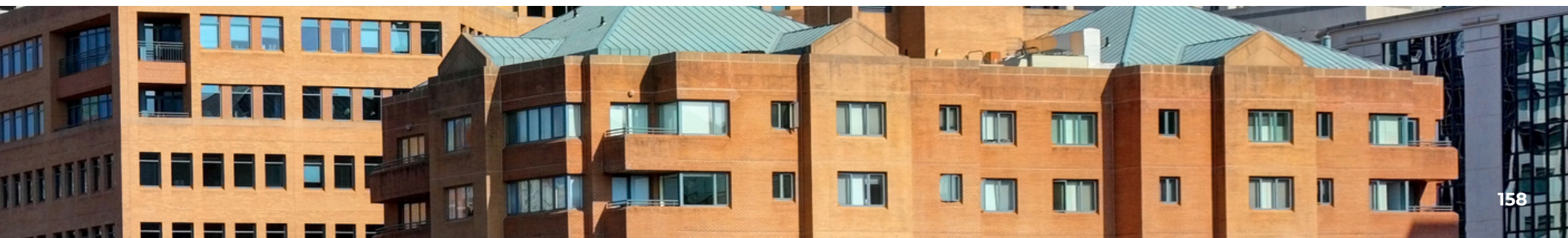
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## **\*\* End of Chapter References \*\***

