



SEPTEMBER 2026
R: 26-09-A

REPORT

BEYOND LAST RESORT:

HOW NORTH CAROLINA'S COASTAL INSURER BUILT A SELF-FINANCING DISASTER RISK REDUCTION PROGRAM



AUTHOR:

Hope Thompson, Ph.D.

ACKNOWLEDGMENTS

NRDC would like to offer a tremendous thank you to Gina Hardy and the NCIUA staff for their cooperation in providing data and information necessary for this report.

In addition, NRDC thanks Jennifer Weiss and Emily Velasquez at Clean Energy Fund of the Carolinas for their partnership and review.

NRDC would also like to thank the internal and external reviewers of this document for providing their insights and recommendations. In particular, we would like to thank: Alfonso Pating, Dakota Fisher, Joel Scata, Rob Friedman, Laurie Geller, and Leah Stecher (NRDC); Carly Fabian (Public Citizen); and Dave Jones (Climate Risk Initiative at UC Berkeley School of Law's Center for Law, Energy & the Environment). The report was greatly improved through their contributions and any remaining errors should be attributed to the author.

About NRDC

NRDC ([Natural Resources Defense Council](https://www.nrdc.org)) is an international nonprofit environmental organization with more than 3 million members and online activists. Established in 1970, NRDC uses science, policy, law, and people power to confront the climate crisis, protect public health, and safeguard nature. NRDC has offices in New York City, Washington, D.C., Los Angeles, San Francisco, Chicago, Beijing and Delhi (an office of NRDC India Pvt. Ltd). Visit us at www.nrdc.org and follow us on Instagram [@nrdc_org](https://www.instagram.com/nrdc_org).

NRDC Senior Policy Publications Editor: Leah Stecher
NRDC Director of Peer Review, Science Office: Laurie Geller

TABLE OF CONTENTS

Executive Summary 4

Introduction 5

Building “A Stronger, Storm-Ready North Carolina” 6

NCIUA’s FORTIFIED Program Background 7

NCIUA’s Constraints and Limitations..... 8

Blueprint for a Self-Financing Disaster Risk Reduction Program 9

Foundation: Surplus Retention..... 11

NCIUA Case Study:

Changing the financial foundation 12

Investing back into the plan and the policyholders 13

Wall 1: Cost-Saving Investments.....14

NCIUA Case Study:

Building the business case for FORTIFIED investments 15

Expanding inland—and making the case for public investment..... 15

Layering programs to expand reach and address affordability constraints 16

Wall 2: Business Discipline in Service of the Public Good.....18

NCIUA Case Study:

Governance with public representation..... 19

Different outcomes from a public purpose mindset 19

Wall 3: Partnership with Certified Builders and Evaluators..... 20

NCIUA Case Study:

Growing the network of certified evaluators and roofers 21

Streamlining the process through a custom grant portal..... 21

Wall 4: Sophisticated Risk Transfer..... 22

NCIUA Case Study:

The world’s first resilience-linked catastrophe bond 23

Integrating resilience into reinsurance 24

Roof: Construction Standards Alignment 25

Conclusion..... 26

Appendix A: Background on NCIUA Rates and Coverage 27

Appendix B: NCIUA Portfolio and FORTIFIED Roofs by County 28

Endnotes 30

EXECUTIVE SUMMARY

It is time to rethink what we can and should expect from state-created insurers.

Climate change has altered the type, frequency, and severity of hazards that impact homes throughout the country. Homes not built to withstand these hazards are riskier to insure, and private insurers are responding by rapidly raising rates or declining to provide coverage altogether. In most states, homeowners who cannot find insurance on the private market can turn to state-created insurers, often called Fair Access to Insurance Requirements (FAIR) plans, residual markets, or insurers of last resort. These plans, created through state statute, provide a mechanism for private insurers operating in the state to collectively share financial responsibility for properties they each deem too risky to insure.¹ Rapid growth in these plans is a warning sign of an insurability crisis taking hold in a state.²

Even though it would reduce future losses, private insurers have been slow to financially incentivize risk reduction absent state regulatory requirements to do so. One reason for this is that insurance coverage is provided through annual plans. There is a lack of guaranteed commitment on both sides: After each year, either the policyholder or the insurer can opt not to renew the contract, dampening incentives for co-investment in resilience measures that will reduce risk over many years.

State-created insurers are different: They have a statutory mandate to fulfill a public purpose and are often responsible for covering the riskiest properties in a state. That combination of public purpose, concentrated exposure, and policyholders with few other options creates a strong incentive for these insurers to invest in making their covered properties more insurable, reducing risk to their own portfolios and improving the health of the state insurance market.

But despite this being a logical financial strategy for any insurer holding the riskiest properties in a state, few are designed to be able to pursue it. As reliance on these plans grows, their traditional financial structures combined with rising concentrated losses from climate-driven disasters can exacerbate insurance availability and affordability challenges in a state, particularly when the plan's member companies can pass the plan's losses on to all policyholders in the state through assessments and put additional upward pressure on premium prices.³

Throughout this report, we refer to residual insurers as “state-created insurers” to emphasize the point that while most of these programs are not state-run, they are created by, and can thus be reformed through state statute to respond to today's climate and insurance challenges and

to best serve the people in the state. Through reform that enables direct investment in cost-effective risk reduction, state-created insurers can:

- reduce their own financial exposure to losses from covered perils;
- improve the insurability of the state's highest-risk properties;
- support the health and stability of the state insurance market;
- preserve local and state tax bases and reduce public expenditures for debris removal and temporary housing after disasters;
- accelerate the growth of a local contractor workforce trained and certified in disaster-resilient building standards; and
- lastly and most importantly, reduce physical damage to homes and protect the families who live in them.

The North Carolina Insurance Underwriting Association (NCIUA), the state's coastal insurer of last resort, shows what this can look like in practice. NCIUA has invested more than \$137 million to help strengthen more than 21,200 coastal homes it insures against damage from hurricanes and severe storms. It has done this while remaining financially stable and continuing to provide coverage in North Carolina's highest-risk counties.

NCIUA's success is replicable. This report argues that that state-created insurers can serve as both market stabilizers and drivers of risk reduction, but only if they are designed and managed to do so. This requires a new way of thinking about these plans and their purpose, updated for today's insurance challenges. North Carolina's experience suggests that insurers of last resort can be more than a backstop for private market retreat; they can become a bridge to what we all must be working toward: more resilient, more insurable homes.

INTRODUCTION

Twenty years ago, North Carolina faced an insurance crisis not unlike those looming over many other states today. Private insurers were threatening to abandon the state, concerned about the growing liability that they carried through their involuntary membership in the Beach Plan, as the state's coastal insurer of last resort for wind and hail was then known.⁴ The plan was financially precarious. Experts believed it was very likely that a hurricane could generate damages that would deplete the plan's capital reserves and reinsurance many times over.⁵ Private insurers, which would be called upon to pay losses through assessments, faced an open-ended financial liability that was difficult to manage.

In 2009, North Carolina responded to the threat of private insurers leaving the state by enacting statutory reforms that transformed the coastal insurer's financial foundation and pivoted toward incentivizing homeowner risk reduction.⁶

This report describes how NCIUA leveraged those critical reforms and a forward-looking commitment to serve the people of eastern North Carolina to build a self-financing suite of risk reduction programs that help homeowners upgrade their roofs to stronger, more disaster-resilient construction standards that protect against wind damage. Through the process, they have won the support of homeowners, home builders, insurance industry representatives, and lawmakers across the political spectrum, providing valuable lessons for those who want to design similar programs in today's politically polarized climate.

Programs to support disaster-resilient home retrofits are growing in popularity across states, but they often rely on state appropriations, which are increasingly in short supply.⁷ When designed and managed to invest directly in risk reduction, state-created insurers can complement programs funded through private insurance fees or public resources, directing their investments toward the riskiest properties.

There are many opportunities to incentivize risk reduction investments through state-created insurers.⁸ For state policymakers and advocates looking to understand and potentially replicate the successful programs in North Carolina, a study of NCIUA's experience reveals the following critical program elements:

- Surplus retention
- Cost-saving investments
- Business discipline in service of the public good
- Partnership with certified builders and evaluators
- Sophisticated risk transfer
- Construction standards alignment

Thirty-five states currently have FAIR plans or other residual markets, created decades ago to serve a public purpose. States can reform them to meet today's needs. By directly investing in risk reduction, these insurers can strengthen their own financial stability while also improving insurability for the state's riskiest properties.⁹



The yellow house on the far right with the green roof is FORTIFIED. NCIUA's investments in FORTIFIED roofs reduce the amount it pays out in claims after hurricanes and severe storms.

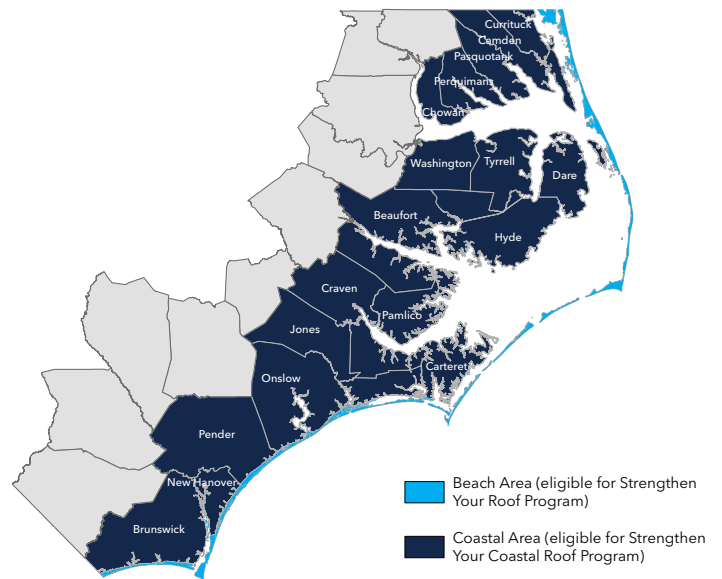
BUILDING “A STRONGER, STORM-READY NORTH CAROLINA”

According to the Insurance Institute for Business & Home Safety (IBHS), a nonprofit research organization funded by the insurance industry, roof-related damage is responsible for 70-90 percent of all catastrophe-related insurance losses in most years.¹⁰ When a roof is compromised, it can expose a home to the elements, potentially causing widespread damage throughout the home’s interior. Investing in roof-strengthening measures can make it less likely that a severe weather event will escalate into a personal disaster.

Hurricane-force winds are a fact of life in coastal North Carolina. Helping policyholders invest in stronger roofs that can protect against wind damage and subsequent water intrusion just makes sense. It’s a win-win for customers and an insurer’s’ bottom line.

This is the position taken by North Carolina’s state-created insurer. When NCIUA CEO Gina Hardy discusses the insurer’s risk-reduction programs, she talks about the need for “a stronger, storm-ready North Carolina.”¹¹ It’s a message that resonates—and the kind of thinking that helped turn NCIUA from a liability into a state asset.

FIGURE 1: NCIUA COVERAGE MAP



“Some shingles came off my roof, but my neighbor is missing his roof.”

—NCIUA policyholder with a FORTIFIED roof



Roof damage caused by strong winds can lead to cascading and devastating impacts for homes and the families that reside in them. For insurers, roof-related damage results in 70-90 percent of all catastrophe-related insurance losses in most years.

NCIUA'S FORTIFIED PROGRAM BACKGROUND

NCIUA was created by statute in 1969 as a market of last resort for property owners on North Carolina's Outer Banks and barrier islands. In 1998 it expanded to cover North Carolina's 18 easternmost counties and now insures more than 250,000 residential property owners. Roughly 80 percent (about 200,000) of its residential policies cover wind and hail only, providing coverage for those perils on top of a homeowner's policy from a private carrier that excludes wind and hail. The remaining 20 percent are full-peril policies.¹²

Policyholders in these 18 counties fall into two designated areas: the Beach Area and the Coastal Area (figure 1). In the Beach Area, the average home value among NCIUA policyholders is \$390,000. In the Coastal Area, it is \$360,000. Appendix B provides additional details about NCIUA policyholders in these areas by county.

NCIUA is one of two state-created insurers of last resort in North Carolina, alongside the North Carolina Joint Underwriting Association (NCJUA), which is a traditional FAIR plan. Both NCJUA and NCIUA are not-for-profit associations of all private, admitted insurers operating in the state, created by statute to serve as insurance markets of last resort. While they share a website, office, and staff, they are run as distinct entities according to their underlying statutory requirements. Statutory reforms implemented in 2009 in response to the growing financial risk on the coast apply only to NCIUA.

As part of those 2009 statutory reforms, NCIUA was directed to provide "a schedule of credits for policyholders based on the presence of mitigation and construction features and on the condition of buildings that it insures."¹³ This addition was inspired by a photograph of a lone house left standing on a beach in Texas after Hurricane Ike, which revealed how building to "code-plus" construction standards (standards that go beyond basic building code requirements) could meaningfully reduce claims for a coastal insurer after a big storm when applied across many homes.¹⁴

To create the premium credit, NCIUA looked for a cost-effective code-plus construction standard to prevent wind damage that it could rely on and incentivize. IBHS had recently developed the FORTIFIED roof construction standard to increase a roof's resilience to wind damage, and it was being tested in Alabama.¹⁵ The first FORTIFIED designation was awarded there in 2011.¹⁶



The IBHS FORTIFIED roof standard is a construction and re-roofing program designed to strengthen homes and commercial buildings against high winds, hurricanes, and tornadoes. FORTIFIED roofs use ring-shank nails and sealed roof decks to prevent wind-driven water intrusion, the damage mechanism responsible for most storm losses. A FORTIFIED-certified roof requires inspection by an IBHS-approved evaluator. When re-roofing, the cost to upgrade to a FORTIFIED roof is \$2,000-\$3,000 for a 2,000-square-foot home.

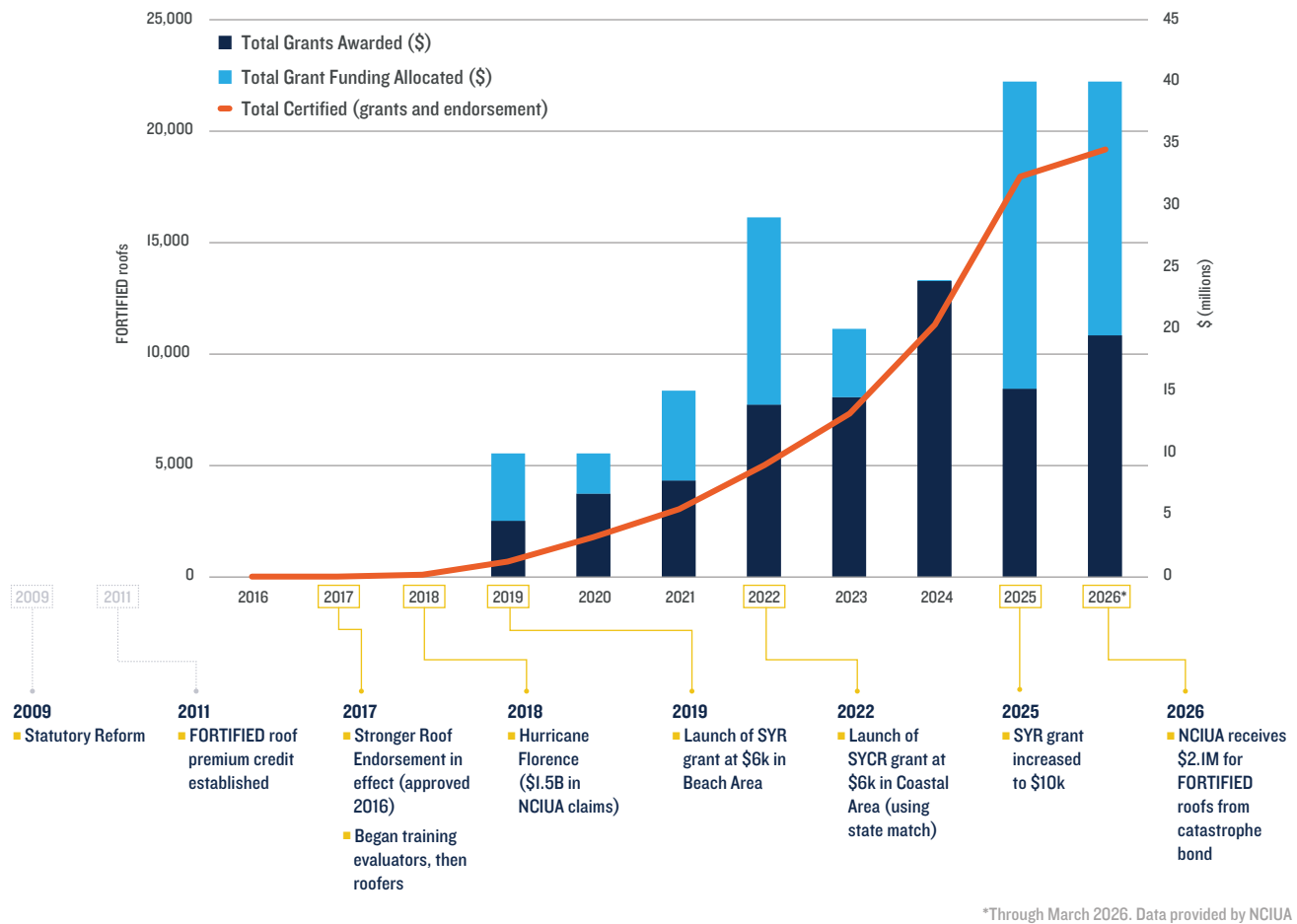
In 2011, North Carolina began offering premium credits for wind-resistant roofs. Over the next 15 years, NCIUA built upon this credit and now offers a suite of incentives for policyholders to install FORTIFIED roofs (table 1). These programs, enabled through statutory reforms, evolved through more than a decade of iteration: identifying what worked, measuring the financial return, expanding what the data supported, and solving the practical barriers that stood between policyholders and a stronger roof (figure 2).

NCIUA covers 58,900 residential policyholders in the Beach Area—the area of greatest risk, which includes the Outer Banks and coastal islands. As of March 2026, NCIUA had directly invested \$84.7 million to strengthen 9,435 homes in that area, meaning that over the past seven years, NCIUA has significantly reduced the likelihood of damages for more than 16 percent of the riskiest properties in its portfolio through its grant programs (see Appendix B).

TABLE 1: NCIUA'S SUITE OF FORTIFIED PROGRAMS

Program	Incentive Type	Eligibility	Launch Year	Amount	Roofs as of March 31, 2026
FORTIFIED roof mitigation credit	Insurance premium discount	All insurance policyholders (NCIUA and private) in Beach and Coastal Areas	2010	Average savings of 6.79% (Beach), 7.12% (Coastal) (see appendix B)	N/A
Stronger Roof Endorsement ¹⁷	No-cost endorsement	All NCIUA policyholders	2017	Up to \$5k above basic coverage (including evaluator fee) when >50% of roof is damaged	7,313
Strengthen Your Roof (SYR) ¹⁸	Grant	NCIUA policyholders in Beach Area	2019	Up to \$10k + evaluator fee	9,435 grants paid 1,159 grants in progress
Strengthen Your Coastal Roof (SYCR) ¹⁹	Grant	NCIUA policyholders in Coastal Area	2022	Up to \$6k + evaluator fee	2,446 grants paid 1,093 grants in progress
Total roofs (complete and in progress)					21,446

FIGURE 2: NCIUA FORTIFIED GRANT FUNDING AND CERTIFIED ROOFS OVER TIME



NCIUA'S CONSTRAINTS AND LIMITATIONS

NCIUA's achievements are significant, but they should be understood in the broader context of an insurability crisis that no single insurer, state-created or private, can solve on its own. NCIUA's 21,200 FORTIFIED roofs represent meaningful progress but remain a drop in the bucket relative to North Carolina's broader coastal wind risk.

The success of any risk reduction program will be undermined if it is not paired with broader public and private action. North Carolina's outdated and weak building codes worsen underlying exposure faster than retrofit grant programs can address it.²⁰ Also, while several states have established FORTIFIED grant programs that are available to private-market policyholders in high-risk areas, North Carolina has not.²¹ The state's homeowners must join the insurance market of last resort to access roof-strengthening grants, which is like offering preventative care only after someone is in the emergency room. Through its inaction on these fronts, North Carolina puts unnecessary strain on NCIUA, the entire state insurance market, and most important, homeowners after a storm.

Affordability challenges are at the center of the insurability crisis for many homeowners, and risk reduction can help ease that pressure only if the expected savings from lower losses

are passed through in the form of lower insurance premiums. In North Carolina, premium discounts of roughly 5–7 percent for FORTIFIED roofs are available to all policyholders in the Beach and Coastal Areas, but discounts that small do little to meaningfully lower annual costs in a state where average rates increased by 15 percent between 2024 and 2026.²² As a result, NCIUA's FORTIFIED programs primarily reduce physical damage and future losses rather than substantially improving insurance affordability for participating households. These minimal discounts also do little to incentivize stronger roofs outside NCIUA's grant programs, unlike in Alabama, where strong building codes equivalent to the FORTIFIED standard and high premium discounts for FORTIFIED have driven the majority of FORTIFIED roof upgrades to occur without grant assistance.²³

As discussed below, NCIUA's success also depends on its ability to retain and grow surplus that can be used both to pay future claims and to invest in risk reduction. In addition to statutory reforms and disciplined financial management, that current surplus took several years of relatively low loss to build. States seeking to replicate this model should therefore understand it as a long-term financial and institutional strategy that complements broader state actions, not an immediate substitute for public investment, stronger codes, or broader insurance reforms.

BLUEPRINT FOR A SELF-FINANCING DISASTER RISK REDUCTION PROGRAM

A key piece of the risk reduction puzzle is identifying funding sources to incentivize and finance risk reduction investments. State-created insurers offer opportunities to convert some portion of the premiums that policyholders pay every year and/or the income from investing their surplus into a revenue stream for grants and low-interest loans. These insurers can become investors in risk reduction directed toward a state's riskiest properties, deploying their own assets to buy down financial risk to their portfolio and improve the insurability of homes within the state. Ideally, programs run through state-created insurers complement statewide efforts to incentivize and invest in disaster-resilient construction and retrofits.

Drawing on lessons learned from NCIUA's program, NRDC has developed a blueprint of the key elements for implementing a successful, self-financing risk reduction program through a state-created residual insurance market

(figure 3). Each element of the blueprint is described in detail below, with NCIUA's experience presented as a case study. The lens of the blueprint is used to describe how NCIUA built its self-financing risk reduction program, highlighting lessons from its successes and noting where its experience does not align with the blueprint's recommendations.

The intent is to provide inspiration and guidance for other states to leverage their state-created insurers to drive risk reduction and improve properties in the state, helping to make them more insurable. While NCIUA's programs have so far been limited to FORTIFIED roofs, states could adapt the blueprint to various cost-effective property and community-level investments that reduce the insurer's modeled average annual loss from specific perils such as wind, hail, or wildfire, or even from other risk factors that could be remediated such as water leaks or faulty electrical wiring.

© Smiley N. Pool/Houston Chronicle via Getty Images



NCIUA's FORTIFIED program was partially inspired by the survival of this home in Gilchrist, TX after Hurricane Ike in 2008. By implementing risk reduction measures at scale, state-created insurers can significantly reduce claims after major disasters.

FIGURE 3: BLUEPRINT FOR A SELF-FINANCING DISASTER RISK REDUCTION PROGRAM

The foundation, walls, and roof work together to help a state-created insurer finance and deliver recurring risk reduction investments.



FOUNDATION: SURPLUS RETENTION

Financial stability is a prerequisite for a sustainable, insurer-funded risk reduction grant program. State-created insurers that retain their surplus funds can invest a portion in buying down risk to the plan. Plan leadership should determine the amount to invest each year to reduce risk without undermining solvency.

In general, insurance rates should be set to cover average annual loss, plus the overhead cost of providing insurance. Charging rates high enough to meet this standard is critical for the long-term sustainability of any insurer. In any given year, the premiums collected may under- or overestimate losses. Low-loss years contribute to the insurer's policyholder surplus, the difference between an insurer's total assets and liabilities. Insurers can invest their surplus until it is needed to pay claims in a high-loss year.

FAIR plans and other residual markets are associations of private insurers that share in the plan's surplus and losses in proportion to their market share within the state.²⁴ In years when losses exceed the plan's financial resources, the plan can assess member companies, requiring them to pay the difference. Absent a statutory requirement for surplus retention, the plan's board (often dominated by industry members) determines how much surplus is distributed to member insurers and how much is retained, invested, and

used to pay claims in future years.²⁵ Retained surplus can generate investment income for the state-created insurer and reduces the likelihood of future assessments.

When allowed to retain more of their surplus, state-created insurers can use a portion of those funds and/or the investment interest they generate to fund programs that buy down risk to the plan's portfolio.

Surplus Retention Recommendations:

- Set rates that sufficiently cover risk, generating surplus in low-loss years.
- Retain surplus. Invest a portion in risk reduction rather than distributing to member companies.
- Create a predictable, sequenced assessment architecture that allows private insurers to manage their risk of assessments while shielding policyholders from assessment pass-throughs.

© Getty Images



NCIUA covered the full \$1.5 billion in claims generated by Hurricane Florence in 2018 through their surplus and without issuing a Tier I assessment. They settled 90 percent of claims within 60 days and have since rebuilt their surplus to almost \$2 billion.

NCIUA's experience shows why surplus retention is the foundation for a self-financing risk reduction program. Without the authority to retain and grow its surplus, NCIUA would not have had the resources to invest in FORTIFIED roofs through grants to policyholders.

Changing the financial foundation

Property insurance rates in North Carolina are set through a centralized rate bureau and then reviewed and approved by the insurance commissioner to ensure that they are not “excessive, inadequate, or unfairly discriminatory.”²⁶ NCIUA must use the same base rates as all other insurers in the state but imposes a statutorily required 15 percent surcharge on homeowner policies and a 5 percent surcharge on wind/hail policies to ensure that it remains the “insurer of last resort.”²⁷ (See appendix A for more details on NCIUA rates and coverage.) It's worth noting that for homeowners who cannot find coverage in the private market, these surcharges aggravate existing insurance affordability challenges while doing nothing to incentivize private market participation.

In 2009, in response to the threat of private market retreat in the state, North Carolina restructured the financial foundation of NCIUA. The statutory reforms require NCIUA to retain all accumulated surplus rather than distribute it to member insurers and removed existing caps on NCIUA's surplus retention.²⁸ Additionally, NCIUA retained the \$650 million member companies held in surplus with the association when the legislation passed.

In exchange, the NCIUA lost its full assessment authority; a new, two-tiered assessment structure created predictability for member insurers and capped their financial liability. The first tier is non-recoupable, meaning that insurers cannot pass it through to policyholders. Member insurers can manage this risk through annual reinsurance purchases. The second tier, when imposed, can be passed through to all residential and commercial policyholders in the state.

NCIUA ASSESSMENT STRUCTURE

Tier 1—A non-recoupable assessment on member companies up to \$1 billion, shared according to the proportion of premiums written in the state minus credits for coverage in Beach and Coastal Areas; this means private insurers can reduce their assessment exposure by writing more policies in the NCIUA territory.

Tier 2 (Catastrophe Recovery Charge)—An additional charge on policyholders statewide, through member companies, limited to 10 percent of policy premiums in each year until the deficit is paid.

With these reforms in place, NCIUA is no longer a passive risk pool. It has become responsible for retaining and managing its surplus and for developing a long-term strategy to oversee the riskiest insurance portfolio in the state. NCIUA now manages its financial risk through a capital stack that includes surplus, reinsurance, catastrophe bonds, and the two-tiered assessment structure (see NCIUA Case Study, Wall 4 for more details on the capital stack). After a few low-loss years, NCIUA had the surplus funds, the statutory authority, and the financial incentive to invest in strategies that would reduce risk to the portfolio.

NCIUA's total residential exposure is about \$156 billion.²⁹ As of the end of 2025, it had built its surplus to more than \$1.65 billion and had enough financing to cover \$5.85 billion in losses before resorting to a Tier 2 assessment. By June 2026, the surplus had grown to \$1.91 billion.

Determining how much is enough is not an exact science and depends on risk tolerance. Some may argue that NCIUA has not been truly tested since the 2009 statutory reforms. Here are some facts to consider:

- NCIUA has not imposed a Tier 1 assessment since Hurricane Floyd in 1999 (before the reforms). At \$80 million, that assessment was far below the current \$1 billion Tier 1 maximum.
- NCIUA has never imposed a Tier 2 assessment.
- Hurricane Florence in 2018 is the worst wind event NCIUA has encountered since it was formed in 1969. NCIUA paid all \$1.5 billion in claims with existing surplus and has since rebuilt its surplus to more than \$1.91 billion as of June 2026.
- According to Moody's risk modeling, the likelihood that NCIUA will need to issue a Tier 1 member assessment in 2026 is 4.17 percent. The likelihood that NCIUA will need to issue a Tier 2 assessment in 2026 is 0.69 percent.

Investing back into the plan and the policyholders

NCIUA allocates premium revenue across four competing uses: operations and expenses (including claims), surplus growth, purchase of risk transfer, and hazard mitigation (figure 4). Keeping these buckets balanced is both science and art. Growing the surplus improves NCIUA's ability to absorb losses directly, lowers the likelihood of an assessment to member companies or the industry, and can reduce reliance on (and the cost of) reinsurance and catastrophe bonds. Purchasing more reinsurance and catastrophe bonds provides immediate protection against extreme losses and reduces the chance of triggering a Tier 2 assessment. Investing in hazard mitigation buys down risk to the portfolio: reducing future claims, the likelihood of assessments, and the cost of risk transfer. The challenge for NCIUA is to balance protection against major events with long-term investments that make those events less costly in the first place.

FIGURE 4: NCIUA ALLOCATES PREMIUM REVENUE ACROSS FOUR COMPETING USES



In determining how much to keep on hand and how much to spend on risk transfer, NCIUA leadership seeks to achieve the following:

- Grow the surplus by a minimum of \$285 million per year to cover its modeled average annual loss, which includes the probability of catastrophic loss.
- Structure the capital stack to cover between 98.5–99 percent of events that can occur in any given year, so that in each year there is a 1–1.5 percent chance that the Tier 2 assessment will be triggered.

Following this strategy, NCIUA has grown its surplus to almost \$2 billion. Holding more in surplus reduces reinsurance and catastrophe bond costs, reduces the likelihood of imposing its assessment authority, and creates the financial stability necessary to sustainably fund its hazard mitigation investments, which ultimately reinforce its long-term financial stability.

WALL 1: COST-SAVING INVESTMENTS

For cost-effective risk reduction strategies, state-created insurers will often be able to justify an investment that reflects the insurer's own modeled savings. Additional investment from state legislatures, federal funding, or nonprofit lenders is justified by externalities that the insurer's balance sheet does not capture. While there are opportunities to integrate and layer these funding streams, it is important to keep them distinct conceptually and to set insurer-funded grants at levels that support and enhance the financial stability of the plan.

There are many financial beneficiaries of increased disaster resilience. Reducing risk of damage to a property benefits the owner, the insurer, and the bank if there is a mortgage in place. At scale, a more disaster-resilient community may require fewer public expenditures on response and recovery activities (e.g., debris removal, temporary housing); reduce a disaster's impact on property values, the tax base, and government debt financing; and speed economic recovery after major events.

Benefits to each of these stakeholders should be considered when identifying and funding risk reduction strategies. However, to build a financially sustainable hazard mitigation program with funding from an insurance provider, it is important to ensure that investment levels are justified by reductions in modeled average annual losses faced by the

insurer. In situations where insurance funds alone cannot cover the full cost of an investment, they can be supplemented through homeowner contributions, public funding, financing from community development financial institutions, and/or philanthropic contributions.

Cost-Saving Investment Recommendations:

- Set grant amounts at the level justified by modeled reinsurance savings and reductions in claims.
- Collect data from real-world events to confirm and update grant amounts.
- To extend eligibility or increase grant amounts beyond what modeled reductions in losses justify, supplement with public or philanthropic investment to reflect wider societal benefit.



Stronger roofs benefit homeowners, insurers, mortgage lenders, and even state and local governments (e.g., through reduced expenditures for debris removal and improved stability of the local tax base after a major storm). Funding from each of these beneficiaries can be combined to support retrofit programs.

As NCIUA built its suite of FORTIFIED roof programs, it rigorously ensured that each program generated expected cost savings to the plan through modeled reductions in average annual losses. Departure from this disciplined approach would undermine the sustainability of the program and the long-term financial health of the plan.

Building the business case for FORTIFIED investments

In 2011, North Carolina began offering premium credits for FORTIFIED roofs along the coast. According to NCIUA, by 2016 only four NCIUA policyholders were benefiting from that credit. There are many reasons why a premium discount alone may not incentivize new FORTIFIED roofs at scale. Roofs are large investments. The average cost for a new asphalt shingle roof for a basic 2,000-square-foot home in North Carolina in 2026 is \$8,806, but costs are increasing as labor and materials become more expensive.³⁰ The FORTIFIED upgrade adds another \$2,000–\$3,000. Larger homes, other roofing materials, and steeper roofs also cost more.

Premium discounts for FORTIFIED roofs in North Carolina are modest, averaging 5–7 percent of the premium (see appendix B). Larger discounts would likely accelerate expansion of the program and improve insurance affordability for households that qualify for them. Alabama, for example, mandates premium discounts ranging from 20–35 percent for FORTIFIED roofs, and Louisiana will require premium discounts ranging from 16–29 percent starting in 2027.³¹ These larger discounts have successfully incentivized upgrades to FORTIFIED roofs even in the absence of grant funding.

However, North Carolina's premium discounts are set through the centralized rate bureau (see appendix A). Because the NCIUA is statutorily required to use rates established by the NC Rate Bureau (see Appendix A), NCIUA decided to start investing its own funds to further incentivize FORTIFIED roof upgrades through a deviation in North Carolina's standard coverage called an

"endorsement." On the basis of expected reduced losses from IBHS research, NCIUA piloted a free endorsement, offered to all policyholders, which provides up to \$5,000 toward the cost of a FORTIFIED roof upgrade when a policyholder files a claim of damage to more than 50 percent of their roof. Since the incremental cost of meeting FORTIFIED standard is typically \$2,000 to \$3,000 for a 2,000-square foot roof, the endorsement covers the full cost of the upgrade inclusive of expected price increases following major events.³²

Strengthening a damaged roof through a FORTIFIED endorsement is good, but preventing damage in the first place is better for homeowners and the insurer. This leads to the question: How much should NCIUA be willing to pay to help policyholders install FORTIFIED roofs before a storm hits?

NCIUA asked its reinsurance broker to model the 10-year financial return (based on reduction in average annual losses) on a FORTIFIED roof upgrade in the highest-risk area, the Beach Area. The analysis, which accounted for the reduction in claims and reinsurance costs from a portfolio with stronger roofs, justified grants of \$6,000 per roof.

NCIUA launched the Strengthen Your Roof program in 2019 for policyholders in the Beach Area. In the first year, there were 751 applicants.

The Strengthen Your Roof program initially offered grants up to \$6,000 to install FORTIFIED roofs in the Beach Area, financed entirely through projected savings on claims and reinsurance costs.

The program saves the insureds money. The grant helps the insured obtain a FORTIFIED roof ... this money is well spent on the "front end" to save money for citizens of North Carolina, the state, local governments, and NCIUA after a storm.

– Scott Evans, President, Coastal Insurance & Realty, Inc., Shallotte, NC

Expanding inland—and making the case for public investment

With the \$6,000 Strengthen Your Roof program helping policyholders protect their homes and generating savings in the Beach Area, NCIUA looked at options for extending the program to all policyholders while maintaining a positive return on investment. However, projected reinsurance savings for properties in the inland Coastal Area were lower than for Beach Area properties and NCIUA could not justify a \$6,000 grant. But it knew that the public benefits of FORTIFIED roofs extend well beyond NCIUA's internal financial savings. Stronger roofs generate faster community recovery after storms, reduce demand for emergency management resources, lower state disaster response and recovery costs, improve housing stability, and support a more resilient local tax base. They also stimulate the economy and support local contractors. These are positive public externalities that NCIUA's balance sheet does not capture.

NCIUA made this case to the North Carolina General Assembly (NCGA) and secured \$7 million in state appropriation in 2021 to launch the Strengthen Your Coastal Roof program for Coastal Area policyholders. The cost of grants of up to \$6,000 plus the cost of an evaluator (around \$600) was evenly split between state funding and NCIUA, with NCIUA assuming all administrative costs of program delivery. The 2023 NCGA appropriations included \$2 million for the program’s 2024 cycle, but state funding has stalled since. NCIUA has not received state funding for its FORTIFIED programs since 2024.

The Strengthen Your Coastal Roof program launched in 2022, offering grants up to \$6,000 to install FORTIFIED roofs in the Coastal Area, financed through projected claims and reinsurance savings and matching state grants.

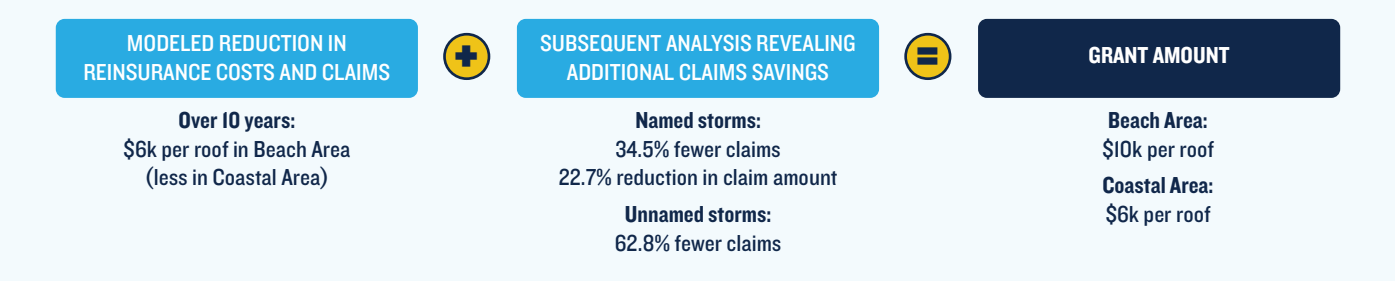
Up to this point, the grant amounts for the Beach and Coastal Areas reflected modeled reductions in reinsurance costs and loss savings. By 2024, NCIUA had collected enough claims data to examine the degree to which FORTIFIED roofs performed differently from standard roofs during named and unnamed storms for their own policyholders.

A study conducted by the Institute for Advanced Analytics at North Carolina State University using data from Hurricanes Dorian, Florence, Matthew, and Isaias found that during named storm events, North Carolina homes with FORTIFIED roofs were 34.5 percent less likely to file a claim than were homes with standard roofs. When filed, claims from FORTIFIED properties revealed a 22.7 percent reduction in loss per building per storm. For unnamed storms between 2018 and 2024, the reduced likelihood of a claim was even greater: Homes with FORTIFIED roofs were 62.8 percent less likely to file a claim.³³

By layering these actual losses avoided on top of modeled reinsurance savings (which had increased over time as modeling agencies and reinsurers responded to increased evidence for FORTIFIED roofs), NCIUA was able to maintain the \$6,000 grant for Coastal Area homes even without state resources and increased the beach grant to \$10,000 (figure 5).

By 2025, NCIUA was offering grants up to \$10,000 in the Beach Area and \$6,000 in the Coastal Area, entirely self-financed through reinsurance savings and projected losses avoided.

FIGURE 5: NCIUA SETS GRANT AMOUNTS BASED ON EXPECTED COST SAVINGS



Layering programs to expand reach and address affordability constraints

NCIUA grants are generous, covering much more than the incremental cost of upgrading a new roof to the FORTIFIED standard, but the cost of a new roof (with or without the upgrade) is still significant. For a household already stretched financially, coming up with the necessary financing is often not possible.

Neither eligibility for NCIUA grants nor the grant amount is dependent on income, but two program design decisions that simplify communication and administration of the grants also benefit lower-income policyholders with lower-value homes:

- Because the grant amounts are based on averaged values of reinsurance and claims savings across the portfolio, policyholders with lower-value homes receive grants that are higher than the expected savings for their property, and those with higher-value homes receive grants that are lower than the expected savings.
- Because grants are set at fixed dollar amounts (rather than a percentage of roof cost), policyholders with lower-value homes receive a proportionally larger grant relative to their expected claim savings and roof replacement costs.

To help fill the financial gap for low-income households, the Clean Energy Fund of the Carolinas (CEFC), a nonprofit financial institution operating in North and South Carolina, provides a grant of up to \$5,000 to low-income households to install a FORTIFIED roof.³⁴ This grant can be layered on top of NCIUA’s grant or used in combination with a low-interest loan. NCIUA promotes the CEFC grant in its own FORTIFIED program materials and works with CEFC to identify and target policyholders who may be eligible for both grants.

A local green bank offers grants up to \$5,000 for income-qualified households, which can supplement NCIUA grants.

**“Thank you for my roof. I love it so much. I feel safer this hurricane season.
I’m not gonna worry as much... From the bottom of my heart,
thank you for being there for me.”**

– A recipient of both the NCIUA and CEFC grants in Onslow County. CEFC worked closely with this recipient, a retired resident with no internet access, to fully fund her new FORTIFIED roof.

Even layered grants covering the full cost of a FORTIFIED roof cannot always overcome the barriers that lower-income households face when trying to strengthen their roof. For instance:

- NCIUA's grants are federally taxed.³⁵ Recipients must pay the income tax on any grant they receive (often a few thousand dollars).
- Some recipients of financial assistance worry that receiving grant funds in their bank account, even if they are immediately used to pay the roofer, will disqualify them from government programs they depend on.
- To be eligible for a FORTIFIED roof, a home must meet certain other construction standards. For example, homes with unreinforced “dry stack” foundations (often used for mobile or manufactured homes) and mobile homes built before 1994 are not eligible for FORTIFIED certification.³⁶

In many cases, effective outreach to low-income and otherwise disinvested communities also requires additional time to build trust and help homeowners navigate complications.

There is, however, enormous potential to integrate hazard mitigation retrofit programs into existing green bank and community lender programs. For example, a roof that is too old or in disrepair can disqualify a household from weatherization and energy efficiency programs. Initiatives that provide financial assistance for FORTIFIED roofs can thus unlock many additional benefits for households, increasing their resilience and reducing household expenses through improved disaster resilience, lower energy costs, and reduced insurance costs.

The green bank also offers a low-interest loan for FORTIFIED roofs, combining financing from NCIUA/NCJUA and other sources.

CEFC and NCIUA/NCJUA are also partnering to provide low-interest loans of up to \$50,000 to help finance qualifying costs associated with a new FORTIFIED roof. In August 2026, CEFC launched the Carolina SURE FORTIFIED Roof Loan Program.³⁷ Through pilot programs with CEFC, NCIUA and NCJUA both contribute capital to finance loans to their policyholders for costs that exceed their grants (NCJUA began offering grants for FORTIFIED roofs to its policyholders in the Coastal Areas in 2026).³⁸ CEFC makes the program available to other homeowners throughout the Carolinas with financing from other sources, providing an innovative approach for integrating insurance financing into community lending programs.

WALL 2: BUSINESS DISCIPLINE IN SERVICE OF THE PUBLIC GOOD

When state-created insurers are designed and managed as insurance providers in service of the public good, they operate differently from those that are designed and managed as traditional risk pools. Through changes in statute and governance, state-created insurers can be reformed into financially disciplined, public-oriented organizations that invest in the state's disaster resilience and the long-term insurability of the state.

FAIR plans were established following the Urban Property Insurance Protection and Reinsurance Act of 1968 as “involuntary associations” of member insurers that required all licensed insurers in a state to share responsibility for insuring properties they each deemed too risky.³⁹ This structure is meant to ensure access to coverage while distributing exposure broadly across all private carriers operating in the state. As a result, state-created insurers are often governed and operated with significant input from the insurance industry, but with little meaningful input from the public.⁴⁰

State-created insurers that function solely as passive pools to distribute unwanted risk are not positioned to design and manage effective risk reduction grant programs. Doing so demands governance and leadership explicitly oriented

toward long-term financial stability of the plan, paired with disciplined financial management, a willingness to innovate as risks evolve, and a commitment to serving policyholders and the public interest. With this type of authority and vision, a state-created, not-for-profit insurer can produce results that differ markedly from what is seen from a typical residual market.

Business Discipline in Service of the Public Good Recommendations:

- Ensure balanced board representation between industry and public interests.
- Operate the plan like a business, but toward goals aligned with the public interest.
- Provide good service to policyholders.

© Jonathan Drake/Reuters



NCIUA combines financial discipline with a public service mission, delivering a reliable service to policyholders while also investing in the long-term resilience of North Carolina's coastal communities.

The NCIUA is a not-for-profit association of private insurers created through state statute to carry out the public responsibility and service of providing essential and adequate property insurance in the Beach and Coastal Areas. It is neither a government entity nor a private insurer. The creation and growth of the FORTIFIED programs in North Carolina were enabled by a management approach that prioritized what was best for the people of North Carolina and the economic development of the state, but within the constraints of running a healthy and financially sustainable insurer that must cover the state's riskiest properties without the ability to set its own rates (see Appendix A).

Governance with public representation

NCIUA's board structure differs from that of many state-created insurers in its deliberate incorporation of public representatives. While most state-created insurers are governed primarily by representatives of member insurance companies, often with limited or purely advisory public representation, NCIUA's board of 14 voting members comprises seven insurance member representatives (typically from the largest carriers in the state) and seven appointed by the insurance commissioner: three from outside the industry to represent the public, and four to represent insurance agents.⁴¹

This mixed composition brings in diverse perspectives and supports longer-term decision-making focused not only on addressing the concerns of private insurance company members, but also on providing quality service, enhancing overall market stability, and supporting the economic well-being of the state and its residents. Culturally, NCIUA board members are reminded at the beginning of each meeting to leave their outside roles at the door and to make decisions in the best interest of NCIUA and its statutory directives.

While three public representatives may not constitute a truly "balanced" board, they have made an impact. It was one of the public representatives, professor Don Hornstein of the University of North Carolina at Chapel Hill, who initially proposed incentivizing hazard mitigation improvements as part of the 2009 statutory reform, and he has championed the FORTIFIED programs as a board member ever since. Hornstein and CEO Gina Hardy, who has directed both NCIUA and NCJUA since 2012, together with the other board members, have continually improved and expanded NCIUA's risk reduction programs, figuring out how to best serve policyholders while running a successful insurance program.

Different outcomes result from a public purpose mindset

NCIUA operates in many respects like a traditional private insurance company—collecting premiums, underwriting risk, and paying claims—but it does not generate a profit or invest in marketing to maintain or grow its market share.

Its orientation toward public service results in NCIUA choosing to operate differently from both private insurers in the state and other residual insurers, with benefits for its policyholders. Beyond its investments in FORTIFIED roofs, NCIUA:

- does not factor a policyholder's credit score into its premium (in the North Carolina private market, homeowners with a low credit score pay more than double what homeowners with a high credit score pay for a similar property);⁴²
- does not use consent-to-rate (see appendix A);
- sought and received approval not to adopt the roof payment schedule, which will go into effect statewide in 2027 and limit the amount insurers pay for damage to older roofs;⁴³
- allows policyholders to freely enter and exit the plan (wind/hail only or full homeowners) without requiring proof of rejection from private insurance or forcing depopulations;
- provides coverage similar to the private market (see Appendix A) and does not have additional eligibility requirements (such as flood insurance);
- offers policy auto-renewals and payment installment plans at \$3 per installment, reducing the need for policyholders to utilize high interest rate loans to finance premium payments;
- settled 90 percent of the 100,000 claims after Hurricane Florence within 60 days, with only 50 requiring litigation;⁴⁴
- maintains an average customer service call waiting time of 20 seconds;⁴⁵ and
- maintains a low expense ratio of 25 percent compared to the average for coastal property writers (32 percent).⁴⁶

WALL 3: PARTNERSHIP WITH CERTIFIED BUILDERS AND EVALUATORS

A successful home retrofit grant program hinges on having local builders who are trained, certified, and willing to take on the work. When introducing a new code-plus standard, direct engagement and investment in builder capacity can accelerate early adoption and enable rapid scaling. Additionally, simplifying and streamlining the end-to-end process for incentive programs for both homeowners and contractors can reduce administrative friction, improve transparency and trust, and shorten turnaround times, further accelerating program uptake and enabling more efficient scaling.

Code-plus construction standards that reduce risk to properties differ from standard construction in terms of materials and technique. FORTIFIED roofs are both installed by builders and inspected by evaluators certified by IBHS to maintain quality and ensure that roofs deliver the expected results during events. States need enough certified local builders and evaluators to meet the demand that any new program intends to create. A successful program requires local construction professionals to buy in to the standard and to invest resources to become certified.

Customer experience also matters. The easier it is for homeowners to learn about the program, apply, find qualified contractors, acquire certification, and receive payment, the more likely it is that the process will be completed and the stronger roof installed.

Recommendations for Partnership with Certified Builders and Evaluators:

- Require certification and cover any associated fees for the grantee.
- Engage the home building industry as a partner early. Contractors who understand and support code-plus standards become advocates and help market the program.
- Facilitate training and certification until local capacity is established.
- Streamline grantee process for identifying contractors, collecting bids, and matching with an evaluator.



Code-plus programs require a local contractor base trained and certified in the new standards, which include specific materials and techniques. Contractors who understand and believe in code-plus standards become program advocates. Without them, the program won't get off the ground.

In addition to offering grants for FORTIFIED roofs, NCIUA decided to invest its own resources to build local capacity and help scale the program. NCIUA:

1. followed the IBHS process, requiring the use of certified roofers and evaluators, and included evaluator fees in the grant award;
2. facilitated and sponsored training for local evaluators and roofers; and
3. designed and built a custom grant portal to streamline interactions among homeowners, builders, IBHS, evaluators, and grant administrators.

Growing the network of certified evaluators and roofers

An IBHS-certified evaluator is not optional in the FORTIFIED system. Standards compliance is verified and the grant and insurance discount become available only after inspection and approval by an IBHS trained and certified evaluator. Research from Alabama found that roofs with the FORTIFIED certification performed better than roofs claimed to have been built to identical code but without the certification, highlighting the importance of evaluators.⁴⁷ From the beginning, NCIUA partnered with independent claim adjusters to create a large pool of certified evaluators and covered the evaluator fee (around \$600) as part of the endorsement and grant programs.

Local roofers trained in FORTIFIED standards are also required for a successful program. When roof claims after Florence created a surge in demand for FORTIFIED installations, NCIUA found that the bottleneck in endorsement uptake was not money or policyholder interest, but the absence of enough trained roofers to execute the work.

NCIUA's response was to invest directly. It partnered with IBHS and the North Carolina Home Builders Association (NCHBA) to train local roofers on FORTIFIED installation standards. This investment paid dividends beyond program capacity: The NCHBA, initially skeptical of code-plus standards that increased construction cost and complexity, became a champion once its members understood that FORTIFIED certification generated business and added measurable value to customers. NCIUA allows grantees to use a roofing company of their choice, provided they are IBHS certified; they currently list 55 certified roofing companies on their website.⁴⁸

“The SYCR FORTIFIED Roof program is now a time-tested success.

The Outer Banks Home Builders Association supports the expansion of this program.”

—David Buchanan, President, Outer Banks Home Builders Association

Streamlining the process through a custom grant portal

Investing in home upgrades of any kind can be daunting. NCIUA facilitates the entire process from start to finish through a custom web-based grant management portal built in-house to streamline every interaction and decision among homeowners, NCIUA, IBHS, contractors, and evaluators. Through the portal, policyholders submit an application; receive confirmation of eligibility from IBHS and NCIUA; receive, compare, and select bids from certified roofers; match with an IBHS-certified evaluator; track progress; and receive final grant payment once certification is confirmed.⁴⁹

By coordinating every step within a single platform, NCIUA reduces administrative burden, minimizes delays, and creates a transparent, predictable experience for policyholders and contractors alike. NCIUA is currently working to make the code for its portal transferable, so that others can use it to establish their own programs faster and with fewer resources.

“We were very impressed with the entire process from initial application to the final payment.

Using the website for contractor selection and bids was surprisingly easy. I selected 11 contractors, spoke on the phone with several, received four bids (three through the site), and accepted the one that suited our needs the most. Once selected, the FORTIFIED evaluator assignment was quick and smooth.

The work was completed within a few weeks of selection. The contractor arrived early and worked diligently throughout the day, despite a few material supply delays. We could not be happier with the FORTIFIED roof and quality of materials used. Once completed, the final approval documents and payment were processed within five weeks! We would highly recommend extending this program in the future. I will continue to tell all I know in the region about this exceptional program.”

—William C., South Mills, NC (NCIUA policyholder with a FORTIFIED roof)

WALL 4: SOPHISTICATED RISK TRANSFER

Risk transfer should protect the insurer and its policyholders from catastrophic risk. When used creatively, it can also inform and help finance risk reduction that makes future losses less likely. State-created insurers should build flexible risk transfer programs that use reinsurance and capital markets to protect solvency while capturing the financial value of proven mitigation investments and passing those benefits on to policyholders.

Risk transfer is an important tool that insurers use to help manage their risk. Similar to how homeowners purchase insurance to help guard against extreme events and smooth costs over time, insurers purchase reinsurance to transfer a portion of their risk to other firms, allowing them to spread the financial impact of large losses over time and maintain capacity to write policies. They can also sell catastrophe bonds (an insurance-linked security designed to transfer defined catastrophic risks to capital markets in exchange for interest payments), providing additional capacity and diversification beyond traditional reinsurance to help manage large, infrequent losses.

All state-created insurers rely on these risk transfer tools to pay claims when there are major events, ultimately transferring a significant portion of premiums they collect to reinsurers or catastrophe bond investors in annual

payments. If used creatively, these tools can also enable state-created insurers to link reductions in physical risk to financial returns, generating an additional revenue stream for effective hazard mitigation programs.

Recommendations for Sophisticated Risk Transfer:

- Build a risk transfer program that includes both reinsurance and capital markets.
- Use modeled reinsurance savings estimates to determine grant amounts for risk reduction programs.
- Allow flexibility in reinsurance purchasing so the plan can be responsive to price.
- Incorporate resilience rebates and no-claim bonuses to help fund risk reduction.



A study by North Carolina State University found that FORTIFIED roofs were 34.5 percent less likely to file a claim after hurricanes and 62.8 percent less likely to file a claim after unnamed severe storms than homes with roofs built to standard codes. Adopted at scale, FORTIFIED roofs can significantly reduce the likelihood of an insurer's losses triggering its reinsurance and catastrophe bonds.

NCIUA has been purchasing reinsurance for decades and sponsored its first catastrophe bond in 2009. These risk transfer tools are layered in a “capital stack” or “reinsurance tower” that displays the order (bottom to top) in which resources are deployed to pay claims from severe events (figure 6). Each layer of the stack is designed to absorb a different level of loss. The higher the layer is on the tower, the less costly risk transfer is because the chance of needing it is lower. NCIUA uses its own reserves to cover lower-severity losses before imposing the Tier I assessment (see NCIUA Case Study, Wall I for discussion of assessments). Severe losses that exhaust these resources trigger resources from higher layers.

When NCIUA reforms went into effect in 2009, the insurer was spending 65 cents of every premium dollar on reinsurance purchases to protect against catastrophic risk, and it wasn’t enough. The plan was still in financial trouble. Surplus retention, effective management of reserves, placement of the Tier I assessment below reinsurance and catastrophe bonds in the capital stack, and investment in cost-effective risk reduction allowed NCIUA to reduce the amount it spends on reinsurance and catastrophe bonds to 22 cents of every premium dollar as of 2026.

Unlike some other state-created insurers that are required to purchase reinsurance up to a specific risk tolerance level, the NCIUA has no specific requirement and can instead adjust reinsurance purchasing in response to market conditions. In recent years, when the price of reinsurance was high, NCIUA elected to purchase less, opting to invest in growing the surplus and in FORTIFIED programs and taking on slightly more risk of needing to issue a Tier 2 assessment.

The world’s first resilience-linked catastrophe bond

By 2024, NCIUA had a mature risk reduction program: \$100 million invested, 13,000 roofs completed, and claims outcomes proving effectiveness. When funding from the North Carolina General Assembly decreased from \$7 million in 2022 to \$2 million in 2024, NCIUA began to consider additional funding sources to expand the program.

A 2015 report had proposed that catastrophe bonds could be expanded beyond pure risk transfer to provide a revenue source for resilience investments.⁵⁰ Investors require lower rates of return for catastrophe bonds with lower modeled expected losses. Risk reduction lowers modeled expected losses. The report considered a catastrophe bond (or “resilience bond”) priced at two levels: one based on expected losses with risk reduction and one without. When risk reduction occurs over the life-span of the bond, financial value is created. A portion of this value can be returned to the catastrophe bond sponsor as a “resilience payment” to offset costs of the risk reduction investments. This concept circulated in academic and policy circles for nearly a decade without finding a sponsor able and willing to execute it.

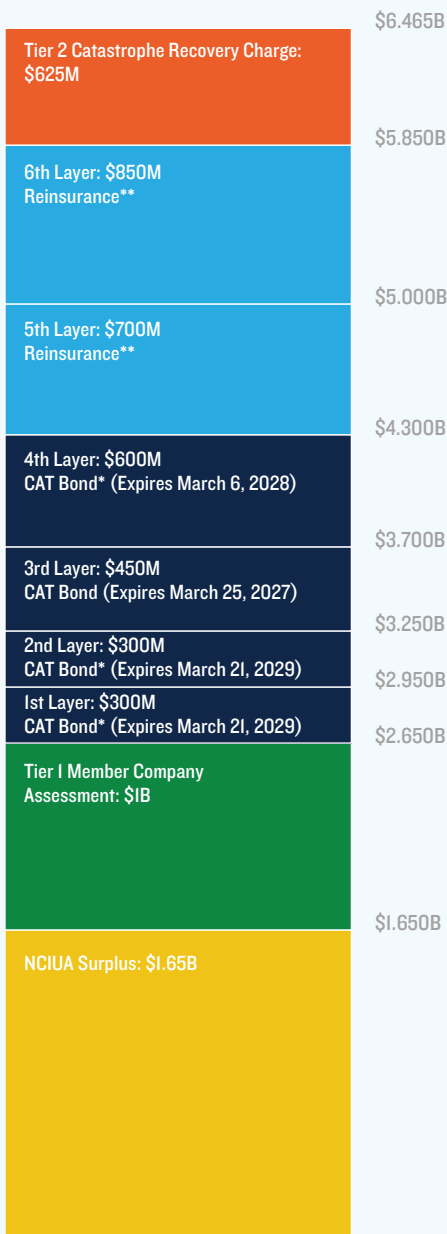
“For a long time, people have been asking, ‘Could we monetize the savings from mitigation efforts to pay for the mitigation efforts?’ But it’s incredibly complex.”

—Cory Anger, NCIUA’s broker at Guy Carpenter⁵¹

NCIUA decided to try this approach. It already had an established FORTIFIED roof program with eight years of claims and loss-reduction data, enabling credible quantification of risk reduction into catastrophe models. It also had already issued seven catastrophe bonds, each oversubscribed relative to initial targets, establishing investor familiarity and confidence in NCIUA’s governance and financial management.

In February 2025, NCIUA presented its instrument to investors.⁵² The bond targeted \$350 million. It closed at \$600 million, driven by strong global investor interest and demand.

FIGURE 6: NCIUA 2026 CAPITAL STACK



*CAT bond includes resilience feature

**Reinsurance includes resilience no claim bonus

Data from NCIUA. Surplus has increased to \$1.91 billion as of June 2026.

NCIUA's resilience bond works as follows: NCIUA pays an additional 0.35 percent of the original value of the bond as a "resilience spread," which is set aside in a dedicated resilience account. NCIUA receives the resilience payment to support FORTIFIED programs in low-loss years (when paid losses stay below 60 percent of the attachment level at which the catastrophe bond would begin paying out). If paid losses exceed 60 percent of the attachment point, the resilience payment is retained by the bond investors.⁵³

“With this innovative cat bond, Hannover Re, in close cooperation with its partners, has brought a new feature to the insurance-linked securities market that for the first time provides funds to help build more disaster-resistant communities. If we want to effectively mitigate the costs of catastrophes, we must not only work on increasing coverage but also invest in adaptive measures. This placement combines both elements and should serve as a blueprint for more such transactions.”

—Silke Sehm, Executive Board member for Property and Casualty at Hannover Re
(referring to NCIUA's first catastrophe bond with a resilience feature)

This design aligns investor, insurer, and community interests. Investors benefit financially when storm losses stay low, and NCIUA uses these calm periods to fund the resilience investment that makes future storms less damaging to its portfolio and the state.

Throughout NCIUA's history, catastrophe losses have never reached the threshold required to trigger a CAT bond payment. Therefore, in 2026 the NCIUA received a \$2.1 million resilience payment, which it used to fund 212 FORTIFIED roofs in the Beach Area.

Integrating resilience into reinsurance

In 2026, NCIUA again sponsored catastrophe bonds with a resilience feature.⁵⁴ It then extended the concept to its reinsurance relationships as well, securing a "resilience no claim bonus" from each of its reinsurance providers in 2026. If NCIUA does not have any reinsurance claims, it receives 5 percent of its deposit premium back for FORTIFIED program investments.

NCIUA could receive up to \$8.425 million in 2027 from resilience features across its capital stack if losses stay below defined amounts for each catastrophe bond and traditional reinsurance layer.

It is likely that in 2027 NCIUA will attempt to maintain existing resilience features and integrate a resilience spread into the one remaining catastrophe bond tranche that pre-dates its incorporation of resilience features, further increasing the potential funding available for FORTIFIED roofs. In addition to reducing its overall reliance on risk transfer over time, NCIUA has harnessed these tools to support risk reduction investments across its portfolio, making capital markets and reinsurers co-investors in North Carolina's coastal resilience, not merely providers of financial protection after the fact.

Now that NCIUA has demonstrated the feasibility of integrating resilience-linked features into reinsurance and catastrophe bonds, the path should be somewhat easier for other states that follow. States interested in leveraging similar revenue sources need to begin building the prerequisite institutional infrastructure—a risk reduction program with returns that can be captured by catastrophe models, and a strong but flexible risk transfer program—now.

ROOF: CONSTRUCTION STANDARDS ALIGNMENT

States can't retrofit their way out of an insurability crisis if they continue to allow new homes in high-risk areas to be built to outdated standards. Stronger, more resilient standards for new construction, repairs, and renovations must accompany retrofit programs so states can steadily reduce risk across the existing housing stock rather than continually addressing newly created, unnecessary exposure.

The metaphorical roof on top of the blueprint is ensuring that new construction is built to a code that equals or exceeds what has been deemed cost effective for retrofits so that over time the entire housing stock becomes more resilient and insurable.

For state-created insurers investing in risk reduction to buy down their financial risk, the strategy is undermined when new homes built to outdated standards enter the plan indefinitely. State-created insurers cannot achieve long-term stability without state collaboration. States must extend cost-effective disaster-resilience standards to new construction, especially in the most high-risk areas.

In many cases, new construction offers even more opportunities to implement cost-effective hazard mitigation strategies that are difficult or cost-prohibitive to implement after a house is designed or built. Requiring new homes in the highest-risk territories to meet these stronger standards may result in higher up-front construction costs for developers but has been found to not increase housing prices.⁵⁵ Additionally, more disaster-resilient construction will likely reduce long-term costs for the homeowner, the state-created insurer, and the state.

Long-term benefits notwithstanding, as policymakers move to incorporate cost-effective standards into required codes, it is also important to account for immediate structural and financial constraints faced by homes and homeowners, especially the increased cost of upgrading to new standards during required repairs or renovations of existing homes. Implementation should therefore include targeted hardship provisions, such as grant support, to ensure that resilience standards expand coverage without imposing unmanageable burdens on lower-income households or structurally constrained properties.

Recommendations for Construction Standards Alignment:

- Require cost-effective code-plus standards for new construction in high-risk territories to prevent new exposure that retrofit programs must later address.
- Encourage and enable code-plus upgrades for repairs and renovations while addressing structural and financial barriers for homes and homeowners.

© Insurance Institute for Business & Home Safety



It is easier and cheaper to build new homes to FORTIFIED standards than to retrofit them. When states fail to adopt standards that adequately address risk, it puts people at risk and pressure on state-created insurers.

The strength of NCIUA's risk reduction strategy depends on its ability to lower its financial risk through its FORTIFIED investments. Unfortunately, state policies are undermining its efforts. No insurer can solve the insurability crisis on its own, and NCIUA is no exception.

North Carolina has some of the weakest building codes in the country.⁵⁶ Current state codes permit new coastal construction built to outdated standards, resulting in increased exposure that can easily outpace the capacity of NCIUA's roof-strengthening retrofit programs. More than 100,000 new residences were constructed in hurricane-prone Brunswick County in 2024 alone.⁵⁷ New coastal homes built to minimum code standards often enter NCIUA's portfolio, where it becomes eligible for a FORTIFIED upgrade. This is unsustainable.

For maximum impact, North Carolina (and any state committed to protecting property holders and its insurance market) must adopt and enforce the same or better standards for new construction that it has determined cost effective for retrofits.

North Carolina should also extend NCIUA's FORTIFIED program to all homeowners in high-risk counties, funding the program through fees on the insurance industry, as Alabama and other states have done.

NCIUA's mandate to provide insurance to residents along North Carolina's coast also raises broader questions about long-term development patterns in high-risk coastal areas where sea level rise, erosion, and flood risks are expected to intensify over time. All states, including North Carolina, should adopt risk-informed land use standards to guide development away from high-risk areas.⁵⁸ At the same time, these challenges do not diminish the value of reducing risk to existing homes and communities in the near to medium term. For properties that are already built, cost-effective measures that lower damage, reduce losses, and improve recovery outcomes remain a critical part of managing today's disaster risks, even as policymakers, communities, and homeowners grapple with longer-term questions about adaptation and, in some cases, potential retreat.

CONCLUSION

Homeowners along North Carolina's coast have been living with private insurer retreat for decades. The state's reform of the NCIUA offers lessons for how to maintain insurance coverage for the highest-risk properties. Instead of passively waiting in vain for the private market to return, since the 2009 statutory reforms, NCIUA has become a financially disciplined, resilience-investing, capital markets-integrated not-for-profit insurer that has not imposed an industry member assessment in 25 years. It has hardened more than 21,000 coastal homes against hurricane damage and pioneered the first catastrophe bond that directly funds risk reduction programs.

When private carriers withdraw coverage, homeowners deserve options that provide adequate coverage. Ideally, state-created markets not only provide this last-resort coverage but actively support homeowners to improve insurability of their homes, reducing risk of damage in

the short term and increasing the likelihood that private insurance options will return. Aggressive investment in risk reduction is a win-win-win for homeowners, the insurer of last resort, and the broader state insurance market.

The urgency of expanding and replicating this model is only growing. The insurance instability that coastal states have faced for decades is coming to the interior of the country in the form of severe convective storms, which now generate more than \$50 billion in insured losses annually and have spurred many noncoastal states to consider home retrofit programs to reduce damages from wind and hail.⁵⁹

State-created insurers can be part of the solution to today's insurability crisis, driving targeted risk reduction investments among a state's riskiest properties. What NCIUA has built is not beyond reach for states that are willing to modernize their state-created insurers to serve the public interest in face of today's insurance challenges.

APPENDIX A: BACKGROUND ON NCIUA RATES AND COVERAGE

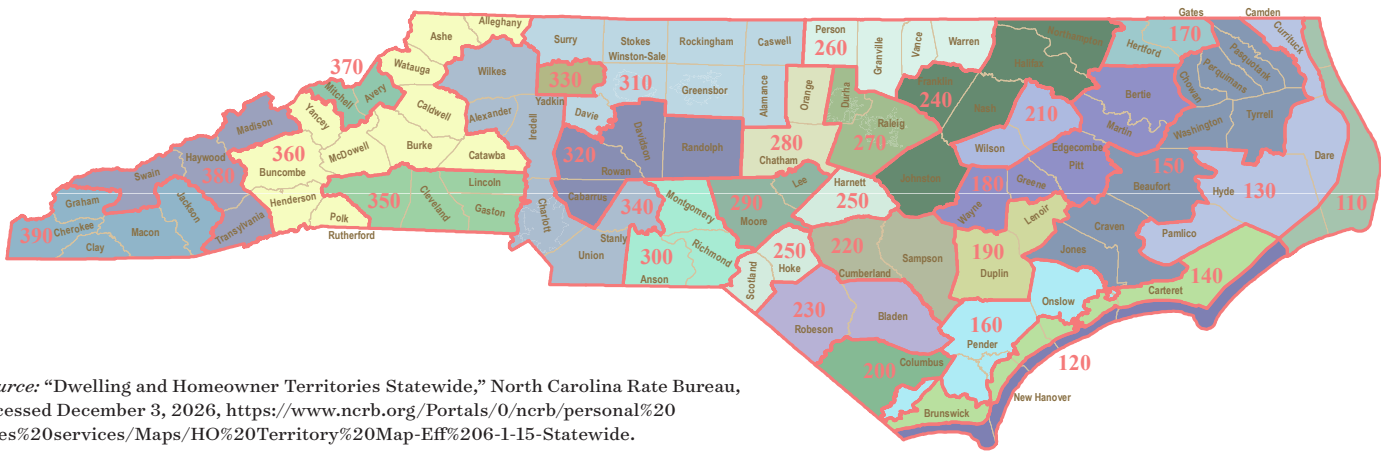
In North Carolina, insurance rates are set by the North Carolina Rate Bureau (NCRB), a nonprofit rating bureau created by statute in 1977 that represents companies writing property insurance in the state. NCRB files base rates by geographic territory (see figure A1) on behalf of members; these rates are then reviewed by the insurance commissioner to ensure that they are not “excessive, inadequate, or unfairly discriminatory” and are either approved or rejected.⁶⁰

All admitted insurance carriers operating in the state must use the base rates set through this process, though a homeowner’s actual premium will vary according to property-specific and individual underwriting factors such as location, construction materials, coverage selections, claims history, and credit score.

Insurers may also offer coverage at a rate up to 250 percent of the base rate through what is known as Consent to Rate (CTR).⁶¹ Use of CTR across the state has increased from about 20 percent of policies in 2012 to more than 55 percent in 2024, with the average CTR premium charging 39 percent more than the base rate in 2024.⁶² While use of CTR varies by insurer, its growing use signals that many private insurers believe the base rates to be too low.

NCIUA does not use CTR. As required in statute, NCIUA applies a surcharge of 5 percent for wind/hail policies and 15 percent for homeowners policies to the NCRB base rates.⁶³ Given the growing use of CTR in the state, many homeowners in the Beach and Coastal Areas may find that NCIUA offers the most affordable coverage, even with the surcharges designed to maintain its status as insurer of last resort.

FIGURE A1: DWELLING AND HOMEOWNER INSURANCE TERRITORIES



Source: “Dwelling and Homeowner Territories Statewide,” North Carolina Rate Bureau, accessed December 3, 2026, <https://www.ncrb.org/Portals/0/ncrb/personal%20lines%20services/Maps/HO%20Territory%20Map-Eff%206-1-15-Statewide.pdf?ver=2019-10-31-132302-820>.

SUMMARY OF NCIUA RATES AND COVERAGE	
Topic	Description
Policy types	Homeowner (Beach and Coastal Areas)
	Homeowner Wind/Hail Only (Beach and Coastal Areas)
	Dwelling Fire (Beach Area Only)
	Dwelling Wind/Hail Only (Beach and Coastal Areas)
	Commercial Fire (Beach Area Only)
Coverage alignment	Commercial Wind/Hail Only (Beach and Coastal Areas)
	Crime (Beach Area Only)
Key coverage limits	Policies track private-market standard forms approved by the NC commissioner of insurance.
Rates	Maximum dwelling coverage is \$1,000,000, with personal property generally limited to 40 percent of the dwelling amount.
	Uses base rates set by the North Carolina Rate Bureau and approved by the insurance commissioner, with statutorily defined surcharges:
■ +5 percent for wind/hail only	
■ +15 percent for full homeowners	

APPENDIX B: NCIUA PORTFOLIO AND FORTIFIED ROOFS BY COUNTY

STRENGTHEN YOUR ROOF (SYR) STATISTICS BY COUNTY

The SYR grant operates only in the Beach Area. For counties with both Beach and Coastal Areas, this table shows data for the Beach Area only.

County	NCIUA Residential Portfolio (Beach)			SYR Grant Program			Percent FORTIFIED	Average FORTIFIED Premium Discount
	Properties (#)	Average Building Value	Average In-force Premium	Grants Paid (#)	Grants in Progress (#)	Total Grants (#)		
Brunswick	12,539	\$347,521	\$3,857	1,690	149	1,839	15%	6.67%
Carteret	10,040	\$403,991	\$4,594	685	108	793	8%	6.94%
Currituck	3,120	\$534,613	\$4,714	824	93	917	29%	6.82%
Dare	21,759	\$385,449	\$3,540	5,327	642	5,969	27%	6.82%
Hyde	823	\$330,344	\$3,246	117	31	148	18%	6.46%
New Hanover	6,006	\$389,538	\$4,381	402	66	468	8%	7.02%
Onslow	2,123	\$339,397	\$4,015	141	40	181	9%	6.99%
Pender	2,490	\$358,422	\$4,172	249	30	279	11%	6.33%
Total	58,900	\$391,077	\$3,831	9,435	1,159	10,594	18%	6.79%

Grant and average premium discount data provided by NCIUA (as of March 31, 2026). Total properties from December 2025 NCIUA financial statements.⁶⁴

STRENGTHEN YOUR COASTAL ROOF (SYCR) STATISTICS BY COUNTY

The SYCR Grant operates only in the Coastal Area. For counties with both Beach and Coastal Areas, this table shows data for the Coastal Area only.

County	NCIUA Residential Portfolio (Coastal)			SYCR Grant Program			Percent FORTIFIED	Average FORTIFIED Premium Discount
	Properties (#)	Average Building Value	Average In-force Premium	Grants Paid (#)	Grants in Progress (#)	Total Grants (#)		
Beaufort	8,437	\$353,834	\$1,856	86	55	141	2%	5.26%
Brunswick	34,100	\$396,382	\$2,701	408	152	560	2%	7.60%
Camden	1,961	\$370,620	\$1,859	27	18	45	2%	5.60%
Carteret	17,045	\$351,329	\$2,845	351	130	481	3%	7.69%
Chowan	3,078	\$324,195	\$1,617	24	19	43	1%	5.90%
Craven	18,453	\$330,062	\$1,637	194	104	298	2%	5.68%
Currituck	5,201	\$363,656	\$2,305	142	60	202	4%	6.90%
Dare	2,283	\$397,774	\$2,415	147	47	194	8%	6.78%
Hyde	642	\$239,771	\$1,920	6	11	17	3%	6.56%
Jones	1,558	\$332,190	\$1,658	12	10	22	1%	5.76%
New Hanover	44,619	\$370,066	\$2,736	523	206	729	2%	7.60%
Onslow	32,583	\$319,311	\$2,100	260	139	399	1%	7.41%
Pamlico	3,103	\$351,138	\$2,085	36	15	51	2%	7.09%
Pasquotank	5,914	\$288,417	\$1,583	69	40	109	2%	5.49%
Pender	13,163	\$391,613	\$2,702	113	54	167	1%	7.75%
Perquimans	2,932	\$415,017	\$1,916	20	21	41	1%	5.67%

STRENGTHEN YOUR COASTAL ROOF (SYCR) STATISTICS BY COUNTY

The SYCR Grant operates only in the Coastal Area. For counties with both Beach and Coastal Areas, this table shows data for the Coastal Area only.

County	NCIUA Residential Portfolio (Coastal)			SYCR Grant Program			Percent FORTIFIED	Average FORTIFIED Premium Discount
	Properties (#)	Average Building Value	Average In-force Premium	Grants Paid (#)	Grants in Progress (#)	Total Grants (#)		
Tyrrell	695	\$268,320	\$1,429	15	5	20	3%	5.49%
Washington	1,650	\$238,950	\$1,637	13	7	20	1%	4.98%
Total	197,417	\$359,338	\$2,401	2,446	1,093	3,539	2%	7.12%

Grant and average premium discount data provided by NCIUA (as of March 31, 2026). Total properties from December 2025 NCIUA financial statements.

ENDNOTES

- 1 Property Insurance Plans Service Office, “Current PIPSO Members and Links of Interest,” accessed May 21, 2026, <https://pipso.com/members/>.
- 2 Hope Thompson, Alfonso Pating, and Susan Lee, “Mapping an Uninsurable Country,” NRDC, August 11, 2026, <https://www.nrdc.org/resources/mapping-uninsurable-country>.
- 3 NRDC, “Insurance for a Fair Future: Leveraging Insurance for Climate Adaptation,” July 2025, https://www.nrdc.org/sites/default/files/2025-07/Reimagining_FAIR_Plans_IB_25-07-A_04_locked.pdf.
- 4 North Carolina General Assembly, Joint Select Study Committee on the Potential Impact of Major Hurricanes on the North Carolina Insurance Industry, *Report to the 2009 Session of the General Assembly*, accessed May 21, 2026, <https://webservices.ncleg.gov/ViewDocSiteFile/113019>.
- 5 “Insurers’ Study Warns on North Carolina Beach Plan Deficit,” *Insurance Journal*, October 21, 2008, <https://www.insurancejournal.com/news/southeast/2008/10/21/94845.htm>.
- 6 Act of Aug. 26, 2009, ch. 472, 2009 N.C. Sess. Laws 472 (H.B. 1305), <https://www.ncleg.net/EnactedLegislation/SessionLaws/PDF/2009-2010/SL2009-472.pdf>.
- 7 Chase Parry and David Wessel, “What Incentives Are States Offering to Make Houses Less Vulnerable to Extreme Weather Damage?,” Brookings, March 3, 2026, <https://www.brookings.edu/articles/what-incentives-are-states-offering-to-make-houses-less-vulnerable-to-extreme-weather-damage/>.
- 8 Carolyn Kousky et al., *Driving Loss Reduction Through State-Created Residual Insurance Markets*, Environmental Defense Fund, June 2025, <https://library.edf.org/AssetLink/v71028dx0x68g22mj067j2kw41ls28nj.pdf>.
- 9 Rob Moore, “An Uninsurable Country,” NRDC, February 24, 2026, <https://www.nrdc.org/resources/uninsurable-country>.
- 10 Insurance Institute for Business and Home Safety, “Disaster Safety Strategy,” accessed May 22, 2026, <https://ibhs.org/strategy/roof/>.
- 11 North Carolina Department of Insurance (hereinafter NCDOI), “Commissioner Causey, State, Local Leaders Announce \$20 Million Grant Program to Strengthen Coastal Roofs,” press release, July 17, 2025, <https://www.ncdoi.gov/news/press-releases/2025/07/17/commissioner-causey-state-local-leaders-announce-20-million-grant-program-strengthen-coastal-roofs>.
- 12 North Carolina Insurance Underwriting Association (hereinafter NCIUA), *Coastal Property Insurance Pool Manual of Rules and Procedures*, January 12, 2026, https://www.ncjua-nciua.org/DocLib/OperationalDocs/CPIP_MRP.pdf; NCIUA, *Statutory Financial Statements*, December 31, 2025, https://www.ncjua-nciua.org/DocLib/finance/CPIP_December_2025_IFS.pdf.
- 13 Act of Aug. 25, 2009, ch. 472, 2009 N.C. Sess. Laws 472 (H.B. 1305).
- 14 The North Carolina General Assembly convened a study committee to examine the potential impact of hurricanes on the insurance industry and propose reforms. Professor Don Hornstein of the University of North Carolina–Chapel Hill, a member of the study committee and now a member of NCIUA’s board, tells the story of seeing the photograph of the lone house on a Texas beach after Hurricane Ike and how it informed his recommendations. See Don Hornstein, “Beyond Loss Payments: Insurance and Resiliency at the NC Coast,” TEDx Talks video, accessed August 20, 2026, <https://www.youtube.com/watch?v=gdI6FDSR8yY>; North Carolina General Assembly, Joint Select Study Committee, *Report to the 2009 Session*.
- 15 FORTIFIED Home, “FORTIFIED Is a Better Way to Build, Re-roof, or Retrofit Your Home to Protect Against Severe Weather,” accessed May 21, 2026, <https://fortifiedhome.org/about/>.
- 16 Smart Home America, “Our History,” accessed May 21, 2025, <https://www.smarthomeamerica.org/about/our-history>.
- 17 NCIUA Stronger Roof, “NCIUA Stronger Roof,” accessed May 21, 2026, <https://nciuastrongerroof.com>.
- 18 Strengthen Your Roof, “Strengthen Your Roof,” accessed May 21, 2026, <https://www.strengthenyourroof.com/Home/Policyholders>.
- 19 Strengthen Your Coastal Roof, “Strengthen Your Coastal Roof,” accessed May 21, 2026, <https://www.strengthenyourcoastalroof.com/>.
- 20 The FEMA Building Code Adoption Tracker provides the following adoption notes for North Carolina: “The latest edition of the North Carolina state building code is based on the 2015 IBC and 2015 IRC and is mandatory statewide as of 01/01/2019. The previous edition was based on the 2009 IBC and 2009 IRC, was also mandatory statewide, and was effective until 12/31/2018. North Carolina is currently reviewing the 2021 IBC & IRC for adoption. North Carolina adopted the 2021 IBC and IRC with an original effective date of 7/1/2025. However, North Carolina enacted S.L. 2025-2, which delays the effective date until 12 months after the SFM certifies that certain statutory and publication and distribution requirements have been met. While the effective date remains TBD, the previous code, based on the 2015 IBC, remains in effect.” Federal Emergency Management Agency (hereinafter FEMA), “National Building Code Adoption Tracker,” accessed July 13, 2026, <https://experience.arcgis.com/experience/a18f62279e1b448a9d980e42ddd98a0f/page/FEMA-BCAT-App?views+Combined-Hazard>.
- 21 Parry and Wessel, “What Incentives Are States Offering?”
- 22 NCDOI, “Commissioner Causey Negotiates Settlement on Rate Bureau’s Homeowners’ Insurance Request,” press release, January 17, 2025, <https://www.ncdoi.gov/news/press-releases/2025/01/17/commissioner-causey-negotiates-settlement-rate-bureaus-homeowners-insurance-request>.
- 23 Alabama Department of Insurance and Center for Risk and Insurance Research, *Performance of IBHS FORTIFIED Home™ Construction in Hurricane Sally*, May 5, 2025, https://www.banking.senate.gov/imo/media/doc/powell_testimony_addendum_10-21-25.pdf.
- 24 “Policyholder surplus” is the difference between the plan’s assets and its liabilities, essentially the net worth of the company. A FAIR plan can choose to disburse this surplus back to participating insurers.
- 25 Isabel Peñaranda Currie et al., *Insurers of Last Resort: Why Today’s FAIR Plans Need a Redesign to Address the Home Insurance Crisis*, Climate & Community Institute, October 2025, <https://climateandcommunity.org/research/insurers-of-last-resort/>.
- 26 N.C. Gen. Stat. § 58-36-10 (2026), https://www.ncleg.gov/enactedlegislation/statutes/html/bysection/chapter_58/gs_58-36-10.html#:~:text=%C2%A7%2058%2D36%2D10,excessive%2C%20inadequate%20or%20unfairly%20discriminatory.
- 27 N.C. Gen. Stat. § 58-36-1 (2026), https://www.ncleg.net/enactedlegislation/statutes/pdf/byarticle/chapter_58/article_36.pdf.
- 28 Ibid.
- 29 NCIUA, *Statutory Financial Statements*.
- 30 Stephanie Minasian-Koncewicz, “How Much Does a New Roof Cost in North Carolina?,” This Old House, updated May 28, 2026, <https://www.thisoldhouse.com/roofing/new-roof-cost-north-carolina>. For information on construction inflation and how it impacts insurance, see Xuesong You and Carolyn Kousky, “Understanding the Drivers of Insurance Costs: The Role of Construction Inflation,” Insurance for Good, accessed May 21, 2026, <https://www.insuranceforgood.org/blog/construction-inflation-and-premiums>.

- 31 Joshua Saks, “The *Strengthen Alabama Homes* Program: A State Model for Wind Mitigation Retrofits,” Georgetown Climate Center, February 2026, https://www.georgetownclimate.org/files/GCC_APP2_Strengthen_Alabama_Homes.pdf; Louisiana Department of Insurance, “FORTIFIED Benchmarks—Effective January 1, 2027,” accessed May 21, 2026, <https://ldi.la.gov/fortifiedbenchmarks>.
- 32 FORTIFIED Home, “Build Resilience to Your Budget,” accessed May 21, 2026, <https://fortifiedhome.org/article/build-resilience-to-your-budget/>.
- 33 NCDOL, “Here’s an Opportunity to Get a Grant for a New, Stronger Roof,” July 30, 2025, <https://www.ncdoi.gov/blog/2025/07/30/heres-opportunity-get-grant-new-stronger-roof>.
- 34 Emily Velasquez, “Building Stronger Communities: How FORTIFIED Roofs Can Protect the Most Vulnerable Homes,” Clean Energy Fund of the Carolinas, accessed February 3, 2026, <https://cefc Carolinas.org/2025/07/building-stronger/>.
- 35 Strengthen Your Roof, “Frequently Asked Questions,” accessed May 21, 2026, <https://www.strengthenyourroof.com/Home/FAQ>.
- 36 FORTIFIED Home, *2025 FORTIFIED Home Standard*, 2025, <https://fortifiedhome.org/wp-content/uploads/2025-FORTIFIED-Home-Standard.pdf>.
- 37 Clean Energy Fund of the Carolinas, “FORTIFIED Roof Loans,” accessed September 8, 2026, <https://cefc Carolinas.org/fortified-roof-loan/>.
- 38 Stronger Roof Grant, “Stronger Roof Grant,” accessed Sept 8, 2026, <https://www.strongerroofgrant.com/Home>.
- 39 NAIC, “Fair Access to Insurance Requirements Plans,” last updated December 13, 2024, <https://content.naic.org/insurance-topics/fair-access-to-insurance-requirements-plans>.
- 40 Currie et al., *Insurers of Last Resort*.
- 41 North Carolina Joint Underwriting Association (hereinafter NCJUA) and NCIUA, “Board of Directors,” accessed June 24, 2026, https://www.ncjua-nciua.org/html/board_of_directors.htm.
- 42 Moira Birss et al., *Penalized: The Hidden Cost of Credit Score in Homeowners Insurance Premiums*, Consumer Federation of America and Climate & Community Institute, August 2025, <https://consumerfed.org/wp-content/uploads/2025/08/Penalized-Final.pdf>.
- 43 North Carolina Rate Bureau, “Circular Letter to All Member Companies,” April 22, 2026, <https://www.ncrb.org/Portals/0/ncrb/circular%20letters/property/2026/P-26-4%20Implementation%20of%20the%20NC%202027%20Windstorm%20and%20Hail%20Policy%20Program.pdf?ver=UC7-QnzvFjGeutECLnTexA%3d%3d>.
- 44 Data provided by NCIUA on file with the author.
- 45 Ibid.
- 46 Marsh Re Risks Benchmarking Report, Oct 2025.
- 47 Alabama Department of Insurance and Center for Risk and Insurance Research, *Performance of IBHS FORTIFIED Home™ Construction*.
- 48 Strengthen Your Roof, “Select Your Contractor,” accessed May 21, 2026, <https://www.strengthenyourroof.com/Contractor/Directory>.
- 49 Strengthen Your Roof, “The Grant Process,” accessed May 21, 2026, <https://www.strengthenyourroof.com/Homeowner/Grant>.
- 50 Shalini Vajjhala and James Rhodes, *Leveraging Catastrophe Bonds as a Mechanism for Resilient Infrastructure Project Finance*, Refocus Partners, December 2015, <https://www.refocuspartners.com/wp-content/uploads/2017/02/RE.bound-Program-Report-December-2015.pdf>.
- 51 Leslie Kaufman, “How ‘Super Roofs’ Reward Insurers, Cat Bond Investors and Homeowners,” Carrier Management, December 2, 2025, <https://www.carriermanagement.com/news/2025/12/02/281975.htm>.
- 52 Artemis, “Cape Lookout Re Ltd. (Series 2025-1),” accessed March 9, 2026, <https://www.artemis.bm/deal-directory/cape-lookout-re-ltd-series-2025-1/>.
- 53 Steve Evans, “NCIUA’s Recent Catastrophe Bond Included Integrated Disaster-Resilience Feature,” Artemis, May 16, 2025, <https://www.artemis.bm/news/nciuas-recent-catastrophe-bond-included-integrated-disaster-resilience-feature/>.
- 54 Artemis, “Cape Lookout Re Ltd. (Series 2026-1),” accessed March 31, 2026, <https://www.artemis.bm/deal-directory/cape-lookout-re-ltd-series-2026-1/>.
- 55 Sebastain Awondo, Shane Crawford, and Lars Powell, “Do Housing Prices Change with Building Codes?,” University of Alabama, June 8, 2026, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6896198.
- 56 FEMA, “National Building Code Adoption Tracker.”
- 57 Michael Cline, “North Carolina Remains Tops in Residential Housing Growth,” North Carolina Office of State Budget and Management, May 19, 2025, <https://www.osbm.nc.gov/blog/2025/05/19/north-carolina-remains-tops-residential-housing-growth>.
- 58 Dakota Fisher, Joel Scata, and Adelle Thomas, “Rebuilding Safer,” NRDC, May 4, 2026, <https://www.nrdc.org/resources/rebuilding-safer>.
- 59 Insurance Information Institute, “Triple-I: Severe Convective Storms Generate More Than \$50B in Insured Losses for Third Consecutive Year,” press release, April 14, 2026, <https://www.iii.org/press-release/triple-i-severe-convective-storms-generate-more-than-50b-in-insured-losses-for-third-consecutive-year-041326>.
- 60 N.C. Gen. Stat. § 58-36-1 (2026).
- 61 11 N.C. Admin. Code 10 .0602 (2026).
- 62 Hope Thompson, “In North Carolina, Opportunities to Protect People—Not Just Insurance Profits,” NRDC, February 24, 2026, <https://www.nrdc.org/bio/hope-thompson/north-carolina-opportunities-protect-people-not-just-insurance-profits#cost>.
- 63 N.C. Gen. Stat. §58-45-1 et. seq., https://www.ncleg.net/enactedlegislation/statutes/html/byarticle/chapter_58/article_45.html.
- 64 NCJUA and NCIUA, “Financials,” accessed May 22, 2026, <https://www.ncjua-nciua.org/html/fin.htm>.