

Supporting and Scaling Solution-Builders: A RISE Case Study on InfraSGA

About InfraSGA

InfraSGA is an initiative of [SGA](#), a multi-disciplinary and collaborative planning and design studio with over 20 years of experience, offering comprehensive landscape architecture, urban design, and planning services focused on the revitalization and redevelopment of communities through green infrastructure solutions. InfraSGA is piloting a bioretention system, [RAFT](#), which will offer a simple, uniform, and adaptable solution for mitigating flooding and improving water quality for urbanized and highly constrained environments.



Problem We're Trying to Solve

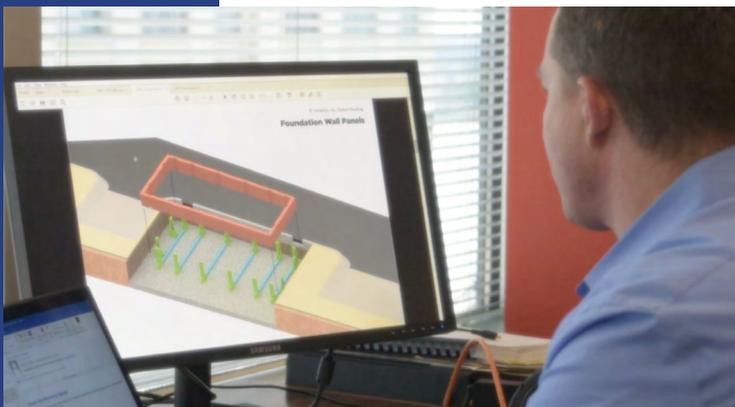
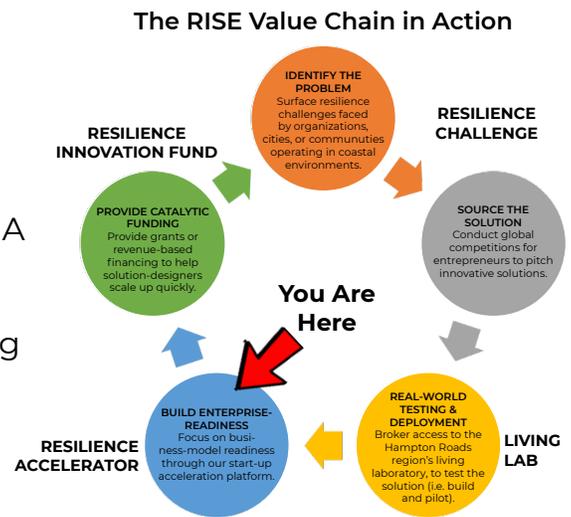
Across the country, coastal communities remain highly vulnerable to the effects of rapid sea level rise. These effects are incredibly apparent on the Eastern Seaboard of the U.S., where variable sea level rise has been exacerbated by gradually sinking land and low-lying areas that are experiencing more frequent “sunny day” (high tide) flooding events. The Hampton Roads region serves as a test case representing the convergence of various resilience threats brought on by climate change – sea level rise, stormwater surge, rapid precipitation, groundwater drainage issues, and aging infrastructure – all packed into a dense urban environment. Infrastructure solutions that attempt to mitigate flooding and build resilience against future stressors have been difficult to scale due to high upfront capital costs and labor requirements to implement and maintain. Moreover, stormwater retention products are highly bespoke and site-specific, making it difficult to promote consistency and standardization across different geographies in ways that are cost-effective. While cities in the Hampton Roads region have made significant progress in sourcing green infrastructure projects, constrained public budgets have led to increased risk-aversion for untested solutions, further constraining the capital available for replication and scale. InfraSGA attempts to fill this gap by making its product fit-for-purpose for the communities it intends to serve. It does this by offering a bioretention system solution that is cost-effective, scalable, and highly modular to adapt to various stormwater challenges.

Resilience Accelerator: How RISE and InfraSGA Worked Together

RISE's partnership with InfraSGA was formed as a response to a persistent resilience challenge facing its surrounding community: chronic flooding as a result of stormwater surge.

To combat this issue, the City of Norfolk – and the Hampton Roads region more broadly – has earmarked dedicated funds to support green infrastructure initiatives that will address these challenges. While Norfolk received several design proposals from different companies working in the resilience space, the City sought to identify a solution that deviated from the typical public works design that had been proposed – searching for something that could balance innovation, efficiency, and affordability.

To identify a solution to mitigate stormwater flooding whose performance exceeds that of the proposed solution, the City of Norfolk turned to RISE to organize this as a Resilience Coastal Community Resilience Challenge in January 2018. RISE would offer more than \$1 million in funding to support a range of solutions across several resilience areas (including this stormwater solution), which could be applied to the Hampton Roads region, built into a sustainable business, and replicable in other communities.



In response to RISE's Coastal Community Resilience Challenge, InfraSGA was selected as one of six finalists to put forward a stormwater management solution. Recognizing the difficulties in scaling bioretention stormwater management products, InfraSGA's integrated RAFT system is able to reduce street level stormwater flooding, while improving water quality, demonstrating the possibility of serving as a new industry standard for urban bioretention stormwater

systems. Designed to be cost-effective, less labor intensive, and flexible in application, InfraSGA's product provides a compelling solution that could potentially replace the City of Norfolk's current systems. Justin Shafer, who works in the City of Norfolk's Stormwater Department and has consulted RISE throughout this process, adds: "What InfraSGA has created is superior to similar, less modular options on the market right now. The RAFT system

could be integrated in the city’s ‘toolbox’ for water quality and flood reduction devices and serve as a cost-effective solution to mitigate flooding, as well as reduce and treat water.” To Shafer, InfraSGA’s product also “offers a single, integrated solution that meets multiple resilience goals” and, as a result, provides various “co-benefits” to the Hampton Roads community.

For InfraSGA, RISE’s funding helped translate their concept into the development of an actual product and provided a needed runway to demonstrate that their solution was not only more effective, but also more affordable than the City of Norfolk’s existing solution. To amplify InfraSGA’s efforts, the City of Norfolk would provide areas for InfraSGA to conduct on-the-ground analysis of current stormwater issues and eventually demonstrate proof of concept for their proposed solution. In tandem with the City identifying a suitable testing site, RISE would offer technical support to help InfraSGA refine their business model and ensure that their envisioned product had technical functionality, commercial viability, and replicability. To that end, RISE put InfraSGA through their Resilience Innovation Accelerator starting in July 2019, a three-month program intended to refine their market, product, and strategies, and focus more specifically on the commercial aspects necessary for scale.

For InfraSGA, the accelerator was an important next step. It took a conceptually sound idea and grounded it in a solution that could be commercialized. Bob Smith, then Director of ICAP (Innovation Commercialization Assistance Program) run by George Mason University and organizer of the RISE-funded accelerator program, played a critical role in helping teams make this leap. Along with two instructors and a cohort of mentors dedicated to each of the finalists that participated, Smith’s intention was to help companies like InfraSGA “achieve scale by ‘productizing’ their solution” – that is, looking beyond the technology of the solution itself, and instead

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thinking more intentionally about the business model, including the underlying strategy, pricing, and lifecycle cost considerations that are factored into a product's commercial sustainability. To Smith, the value of the accelerator was rooted in "merging businesses that are compelling from a technical perspective, with businesses that can become truly viable." Over the three-month period, InfraSGA worked with Smith and their mentors to orient their solution around a sustainable business model. By the end of the accelerator program, InfraSGA was well-positioned to submit their business plan to RISE's panel of judges for review and feedback.

The experience of the accelerator program provided InfraSGA with the necessary tools to build their product into a successful business and concretely think through next steps on implementing their bioretention system. As InfraSGA continues to fine-tune the product's technical specifications, RISE has been leveraging its connections with partners in Hampton Roads to facilitate access to real-world testing sites. The City of Norfolk's Stormwater Department has been particularly instrumental in this effort, and has identified potential sites that could offer InfraSGA the opportunity to demonstrate the viability of its product. While the process of identifying a suitable site is still underway, the location – once identified – will allow InfraSGA to implement a physically constructed pilot of its bioretention system and demonstrate the full functionality and viability of the system for a range of stakeholders in Hampton Roads.

Results

Through its partnership with RISE, InfraSGA has been able to translate a conceptually sound and innovative intervention into a practical, applied, and business-oriented green infrastructure solution. As a winner of RISE's Coastal Community Resilience Challenge, InfraSGA has been able to tap into the full value chain of RISE's services, offering a "one-stop shop" that allows companies like InfraSGA to move from ideation to implementation, effectively and thoughtfully. RISE's support encompassed a broad range of interventions, from funding, to participation in the accelerator program, to ongoing resources to build and prototype their work provided through RISE's workspace, access to RISE's network of partners to further build and promote their work and, and critically, the opportunity to pilot their solution on the ground. With support from RISE and the City of Norfolk, InfraSGA has demonstrated the potential to seed a new industry in Hampton Roads. In time, Hampton Roads has the potential to become a hub for green infrastructure design and manufacturing. RISE's funding has also helped catalyze additional resources to InfraSGA. In partnering with the City of Norfolk, RISE has also served as a crucial resource, offering the City a pathway to explore and pursue innovation in areas that rest outside the City's immediate priorities.



As partners, RISE and InfraSGA have been able to work together to identify, test, and scale a much needed stormwater retention solution in Hampton Roads. Through RISE support, InfraSGA will be moving towards more effective design and implementation of their product, with a strong business model and a better understanding of how to commercialize their tested solution to achieve scale. If successful, this intervention could be deeply catalytic for so many communities across the country.

Ready to Get Involved?

To effectively address our most complex resilient challenges, we need innovative, proven, and catalytic solutions. If you're a solution-builder ready to change how we think about a problem, participate in an upcoming [RISE Coastal Community Resilience Challenge](#), and join us!