



SC NEXUS for Advanced Resilient Energy

Project Selection Announcement Webinar

JANUARY 3, 2024



Overview of today's call

- Providing update on where we are in the Phase 2 application process
- Summarizing key feedback received from Phase 1
- Announcing selected projects to include in Phase 2 application and process for selection
- Outlining next steps and how to get involved

SC NEXUS will rapidly define projects and capture into a competitive application over the next month

Phase 2.1
Nov 6 - Dec 15

Project selection

Consolidation and **selection of implementation projects** from SC NEXUS members and setup of overarching project management

6 Weeks

Phase 2.2
Dec 18 - Jan 28

Focus of today

Project definition

▲ Today, 1/3

Write first draft of overarching application and selected implementation project applications

- Outline and **draft project narratives**
- Identify risks and **draft risk mitigation plan**
- Create **project-level budgets**
- Finalize **implementation project forms** for submissions
- Secure letter of **consortium commitments**

6 Weeks¹

Phase 2.3
Jan 29 - Feb 29

Application finalization

Finalization and **submission of application** and launch of SC NEXUS Tech Hub

~5 weeks

1. Includes a one-week project break during December holidays

SC NEXUS has engaged in a rigorous process to design and select competitive projects that will differentiate our application to EDA



Engaged with Stakeholders

SC NEXUS worked with stakeholders across workshops to **define narrowed focus of hub and spur project development and refinement**



Collected Project Proposals

SC NEXUS solicited ideas from communities across SC to **identify projects with high potential to address gaps in SC's ecosystem and build on the state's assets**



Identified Projects with Strong Competitive Advantage for SC

SC NEXUS evaluated all submitted projects and selected several that **best utilize SC's assets and capabilities**



Several inputs informed the project selection process



EDA Feedback | Framing projects according to recommendations from EDA based on timelines, costs, regulations, and SC's differentiated positioning

Additional detail on next page



Industry Conversations | Gathering insights from industry stakeholders to identify emerging commercial trends and priorities



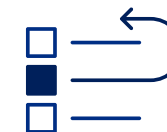
Technical Guidance from researchers and faculty | Determining tech readiness and feasibility through conversations with technical experts



Workshops | Pressure-testing ideas with broader stakeholder community while facilitating unique partnerships



External Experts | Engaging with experts to identify broader tech trends and possible entries for SC



Principal Evaluation | Surveying consortium principals for their perspectives on priority projects



**EDA provided SC
NEXUS substantive
technical feedback
from our Phase 1
application to
inform Phase 2
project selection**

Technological Specificity & Maturation: Projects must focus on specific technology that EDA will invest in with 5-yr commercialization horizon

Path to Global Competitiveness: SC must be able to capture significant global market share in chosen technology in 10 years

Focus on Overcoming Barriers: Projects must demonstrate clear understanding of commercialization barriers and proven solutions

Newness and uniqueness: EDA funding must be used for projects and/or partnerships that otherwise would not happen

Clear, Tactical Commitments: Projects must demonstrate stakeholder buy-in (e.g., investments, in-kind contributions, policies) that catalyze EDA's investment

Focus on Equity: Consortia should demonstrate clear and measurable commitments to equity in project design and impact as well as inclusion of diverse voices in planning and governance processes

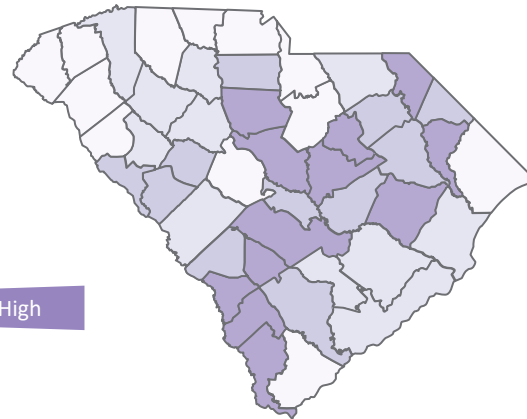
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SC NEXUS aims to advance rural and at-risk communities throughout South Carolina

Tech Hub to spur economic and advancement opportunities for rural and at-risk communities

Goal for most of SC's at-risk communities to feel tangible benefits of tech hub:



- **Expanded economic opportunities and inclusion** for historically overlooked communities
- Increased **education and workforce development pathways** leading to good paying jobs
- **Improvements to infrastructure**, particularly in energy reliability

SC NEXUS is taking specific steps to ensure equity is reflected throughout all efforts

Involving diverse voices in project design and governance: SC NEXUS is working to ensure a **wide range of voices and perspectives are reflected** in project design and management of the tech hub

Addressing obstacles for SC communities: SC NEXUS aims to **identify and build paths to overcome obstacles** facing South Carolina's disadvantaged and underserved communities

Creating inclusive opportunities: Each of SC NEXUS' projects must include clear opportunities for rural and at-risk communities to **meaningfully participate in and benefit from each project**

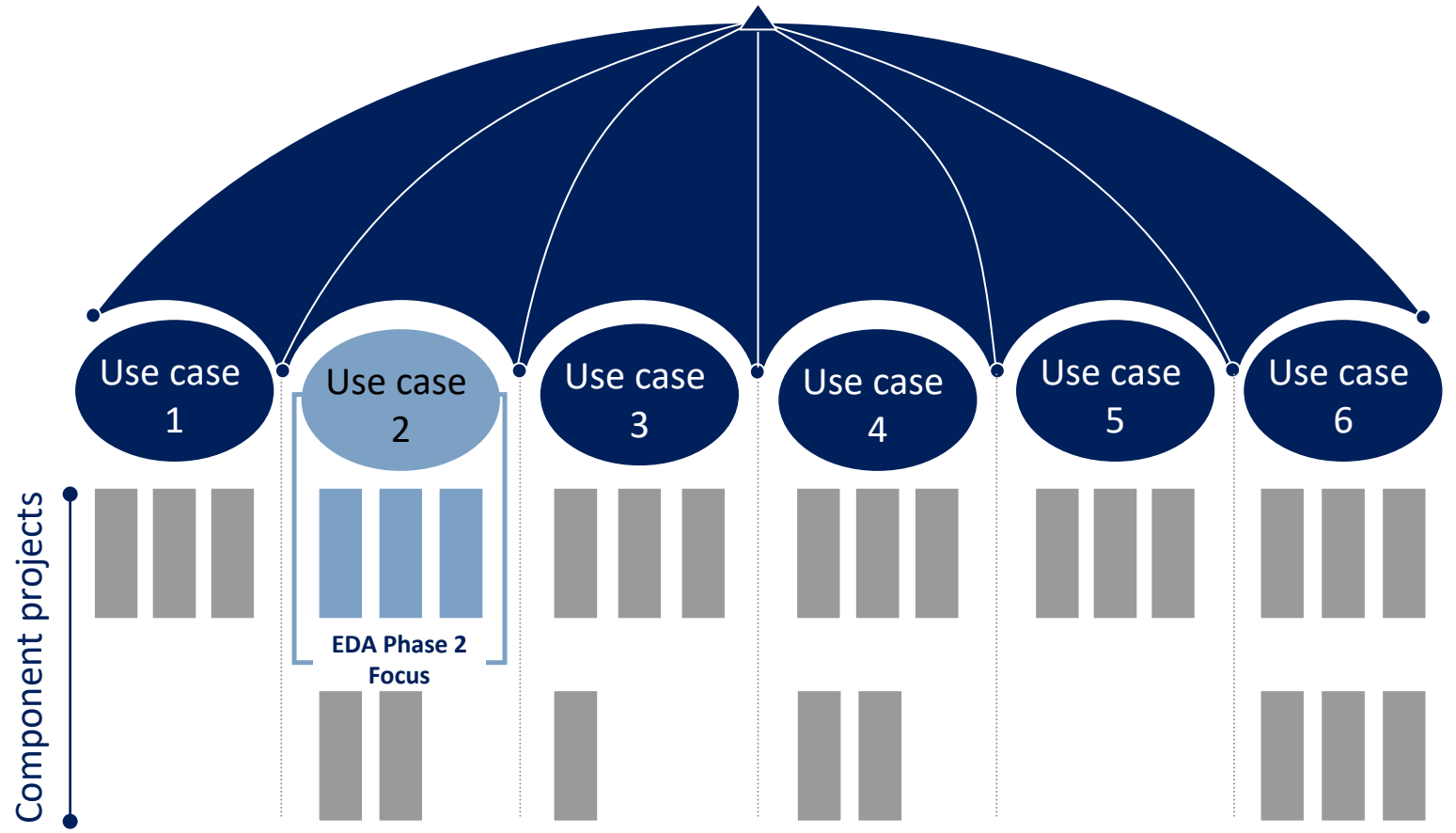
1. Social Vulnerability Index assesses factors such as socioeconomic status, household characteristics, racial and ethnic minority status, housing type and transportation to determine socially vulnerable populations, especially during natural disasters and/or public health emergencies

Source: Natural Earth States and Provinces boundaries without large lakes, US Census Bureau



SC NEXUS

A globally leading hub driving innovation in core technologies that enable an end-to-end resilient, sustainable energy ecosystem



EDA phase 2 application is only one part of overall SC Nexus Tech Hub vision

Note: Technology use cases still under development and are likely to be adjusted and/or combined before short list is finalized



SC NEXUS to target specific use cases and component projects for EDA funding, while envisioning a broader tech focus to reach its goals



SC NEXUS Vision | SC NEXUS will focus on bolstering grid resiliency by enabling the future of distributed energy resources

Our Phase 1 application maintained a broad focus on energy resiliency



The ambition of The Nexus for Advanced Resilient Energy (“SC Nexus”) is to create a globally leading hub driving innovation in core technologies that enable an end-to-end resilient, sustainable energy ecosystem across clean-electricity generation, distribution, and grid-scale storage.

We narrowed our focus for Phase 2 to grid resiliency

We considered six subthemes to evaluate where SC is best positioned for global innovation leadership for inclusion in EDA phase 2 application:



Battery Innovation



Battery Recycling/Disassembly



Grid Resilience

Selected subtheme



Accelerated Component Manufacturing



Hydrogen Demand



Nuclear Advances

A focus on grid resiliency positions SC NEXUS for success across EDA criteria

- SC NEXUS is **positioned to be globally competitive** given existing in-state assets (e.g., SRNL, manufacturing ecosystem)
- Technology required to bolster grid has **aligned TRL definition**: lab-proven but not yet widely commercialized which provides significant opportunity to commercialize
- High potential for **national security impact** due to importance of protecting critical infrastructure from cyber attacks
- **Economic and equity potential impact** is high given expected workforce growth, benefits of resilient grid on GDP, and ability to protect vulnerable communities



SC NEXUS Vision | Enabling the future of distributed energy resources (DERs)

Distributed energy resources (DERs) are critical to US competitiveness and security

Definition

Distributed Energy Resources (DERs) are small-scale generation, storage, and demand management assets that closely interconnect electricity supply and demand

Key Benefits of DERs

- Enable rapid growth of renewable power generation
- Increase grid efficiency reducing grid modernization costs
- Bolster grid resiliency for manufacturers and communities
- Drive economic stability & workforce/entrepreneurship opportunities for those most impacted by energy transition

SC Nexus app will focus on three enabling technologies



Integration of DERs into the grid
(e.g., interconnection of EV chargers, solar)



Enablement of resilient manufacturing via DERs to reduce grid impact
(e.g., native DC distribution, behind-the-meter BESS, H₂ storage)



Development of microgrids and VPPs to support communities/national security
(e.g., demand management software, smart meters, SMRs for defense installations)

Focus on grid resiliency positions SC NEXUS to lead on grid integration of all new energy technologies when ready for full commercialization



We reviewed 40+ projects spanning tech, workforce, and innovation to determine those that best position SC to win

Project submissions span EDA categories, interwoven with construction efforts

EDA category	# of submissions ¹
Tech Grid resilience	6
Tech Batteries	5
Tech Hydrogen	5
Tech Manufacturing	4
Tech Nuclear	2
Workforce development	11
Business and entrepreneurship dev.	8
Construction	15

Illustrative Proposed Projects

Technology

Grid Resilience

- SC Nexus Grid Test Bed
- Microgrid Demonstration
- PV/BESS Inverter Testing

Batteries

- SC Institute for Battery Innovation
- Sustainable Battery Supply Chain

Hydrogen

- Hydrogen Energy Storage Testbed
- Palmetto Hydrogen

Nuclear

- Technology Accelerator for SMRs
- Adaptive Welding Innovation

Manufacturing

- Native DC Distribution Showcase
- SC Manufacturing Hub

Workforce Development

- Cyber Operator Training
- Online Pathways Portal
- Mobile Training Lab

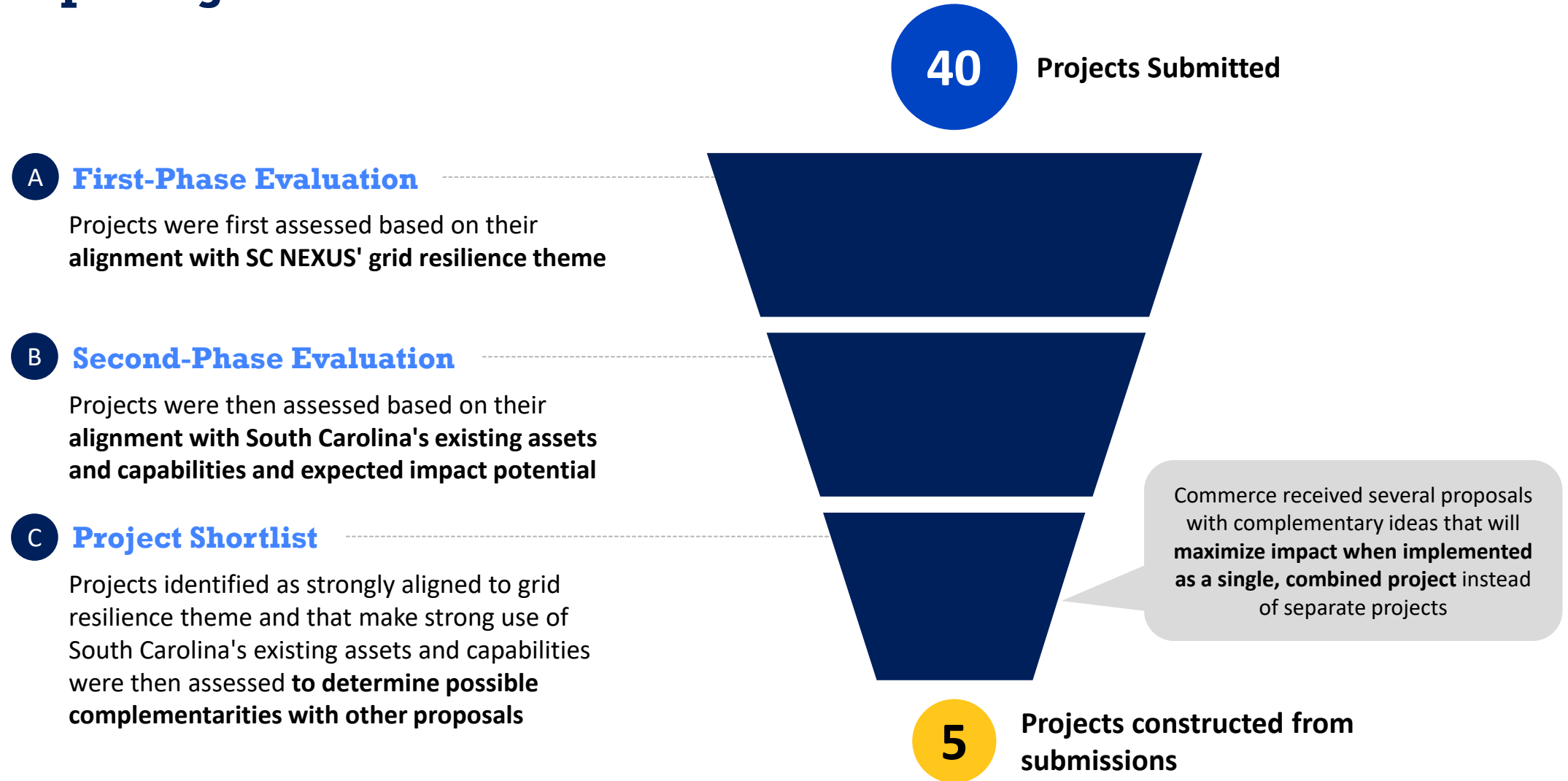
Business & Entrepreneur Dev.

- Tech Deployment & Partnerships Pipeline
- Grid Accelerator
- Early-stage Startup Incubator

1. Projects often span multiple EDA categories; count represents the number of projects where a particular EDA category serves as the primary focus
Source: Project submissions for phase 2 EDA funding opportunity



Projects were evaluated to ensure SC NEXUS proposed most competitive and compelling for EDA investment

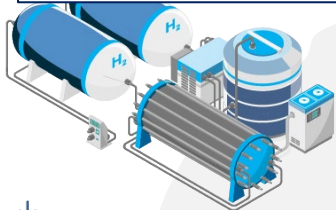




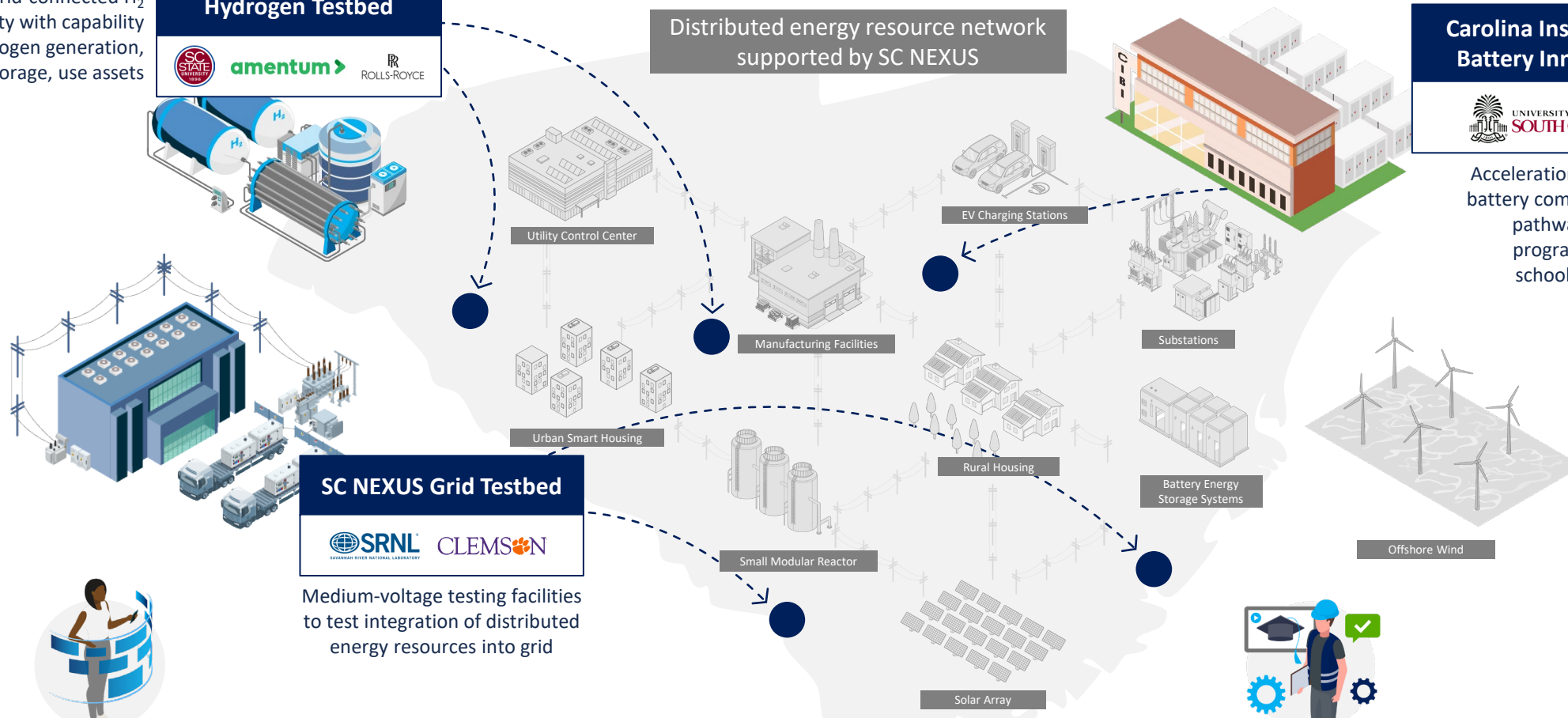
Five selected projects enable SC NEXUS to become global leader in bolstering grid resilience through distributed energy resources

Microgrid-connected H₂ testbed facility with capability to test hydrogen generation, storage, use assets

Hydrogen Testbed



Distributed energy resource network supported by SC NEXUS



Carolina Institute for Battery Innovation

Acceleration of grid-scale battery commercialization pathways, workforce programs, and cross-school programming

SC NEXUS Grid Testbed

Medium-voltage testing facilities to test integration of distributed energy resources into grid



Entrepreneurship and Innovation Hub

Accelerate time to commercialize innovative energy technologies for both mature and startup companies in SC

Education and Workforce Center

Coordination of workforce development ecosystem to ensure awareness, skilling, and access to ever-evolving energy-related career paths for all South Carolinians

Next Steps | How to get involved

If your organization has assets or resources that can support a project and/or you would like to support execution of a project, here is how to raise your hand to potentially get involved over the next ~2 weeks:

Fill out the consortium member interest form on SC NEXUS's website at <https://www.sccommerce.com/sc-nexus-tech-hub/sc-nexus-consortium-member-interest-form>:

- Your name and job title
- Your organization's name
- Your email address and phone number
- In the text box, explain:
 - What project(s) you are interested in supporting
 - A short description of the value your organization could bring to SC NEXUS's federal funding application



South Carolina
Department of Commerce