

Naval Air Station Jacksonville

Adaptation Package #2: Improving Electric Utility System Resilience

This package includes three strategic projects to improve electric utility resilience for the Naval Air Station (NAS) installation in Jacksonville. It encompasses recommendations for the Naval Air Station electrical substation and adjacent electrical system improvements that can be led by utility service providers.



This study was prepared under contract with the Northeast Florida Regional Council with financial support from the Office of Local Defense Community Cooperation, Department of Defense.

The content herein reflects the views of the Northeast Florida Regional Council and does not necessarily reflect the views of the Office of Local Defense Community Cooperation or the Department of Defense.

How to Read this Document

Project Summary Packages provide details on recommendations, background, and context to facilitate and accelerate implementation. The summaries are presented by mission-critical priority assets in the study area. The recommendations may include physical projects, new partnerships, and modernized policies identified over the course of the project. Presented in three sections, **Background and Context, Recommendations, and Implementation Tools**, each summary package can be used to brief decision makers and to complete funding requests and/or grant applications.

The first section, **Background and Context**, situates the reader to the Military Installation Readiness Review (MIRR) project, the study area location, and the military installations. It includes the following subsections:

- **Mission of the Installation of the Package**, which reminds the reader of the installations' purpose and importance of readiness
- **Mission-Critical Priority Assets** for the installation as identified through stakeholder engagement and vulnerability assessment
- **Current Conditions** of the mission-critical asset of the package, which illustrate the issues in local context
- **MIRR Adaptation Strategy Framework**, which is aligned to the region's vision for a Resilient First Coast and is the foundation of this body of work

The second section, **Recommendations**, dives into the issues challenging the region and study area and presents recommendations in the form of investments through projects, policy modernization, and/or by forging new partnerships among diverse stakeholder groups. This section is informed by the vulnerability assessment findings, stakeholder insight on ongoing projects and priorities, and best practices research. Information on the following topics is included in this section:

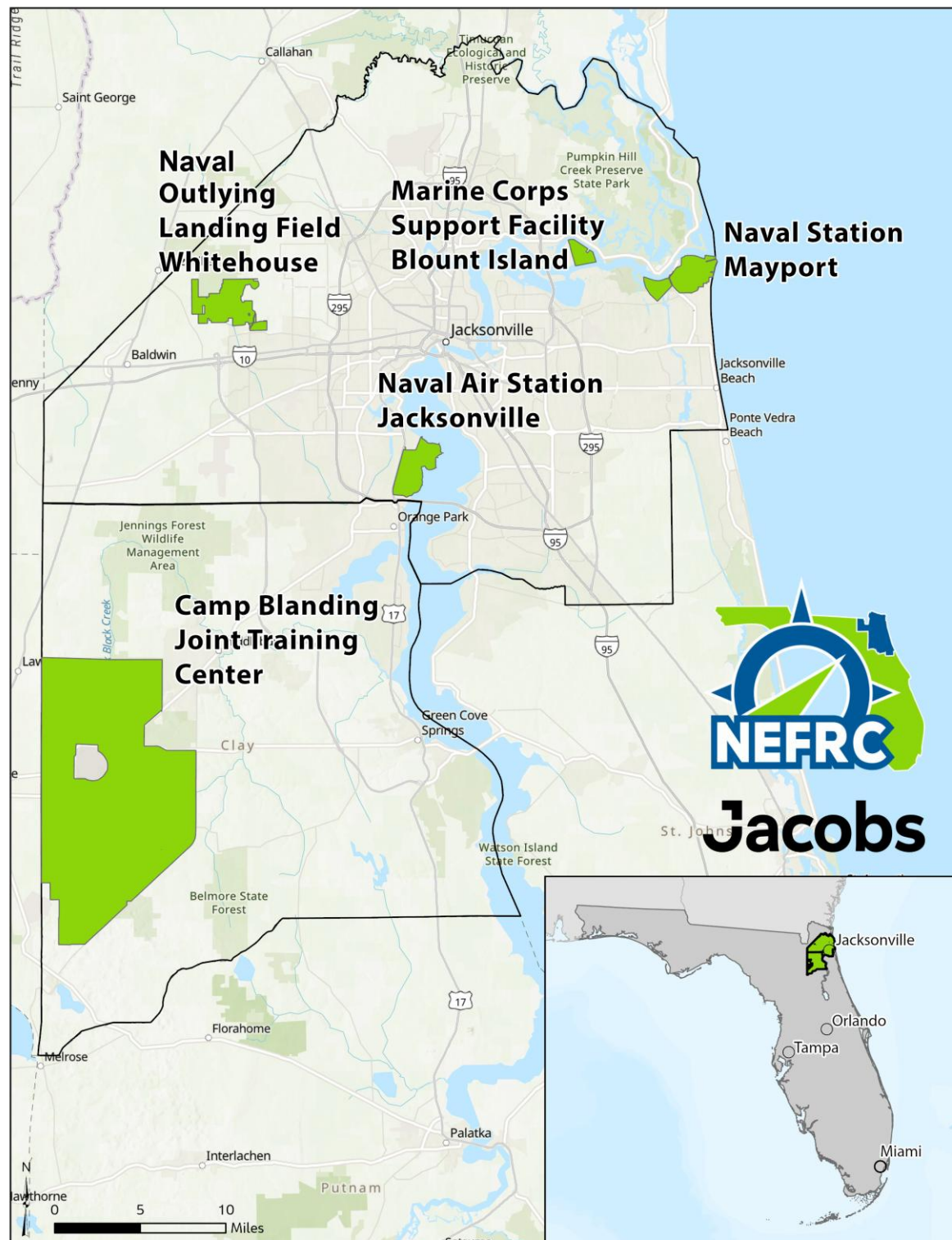
- **Shocks and Stresses** affecting the mission-critical asset
- **Project Objective**, which captures the adaptation goal for the following recommendations to support mission readiness through community resilience
- **Stakeholders and Current Efforts** highlighting successful foundational work upon which to build
- **Recommended Strategic Projects, Policies, and Partnerships**, including the owners and partners, vulnerability being addressed, co-benefits, foundational existing projects (as applicable), and timeline to comment implementation
- The **Metrics and Cost-Benefit Analysis** section, which illustrates how the recommendations were evaluated to determine appropriateness, viability, and achievement of project goals; this tool is available as new projects are identified by implementation partners

The final section, **Implementation Tools**, is provided as a resource to move from planning to action:

- **Financial Strategy Toolkit with Funding Opportunities**, which presents a matrix of opportunities and tools to finance and fund recommendations. Some recent grant opportunities are highlighted; however, given the changing conditions of federal sources and requirements, these should be viewed as initial suggestions for further review and applicability at the appropriate time.
- **References** are presented for user convenience.

Background and Context

Figure 1. Northeast Florida MIRR Study Area Map



In 2024, the Northeast Florida Regional Council (NEFRC) obtained a MIRR grant from the Department of Defense (DoD) Office of Local Defense Community Cooperation to identify and analyze the assets, hazards, and corresponding vulnerabilities and risks that affect the military installations in Duval and Clay counties. This study includes Camp Blanding Joint Training Facility, Marine Corps Support Facility Blount Island, Naval Station Mayport, and Naval Air Station (NAS) Jacksonville (Figure 1). The goal is to increase the resilience and readiness of these installations from the impacts of extreme weather events, infrastructure challenges, and other vulnerabilities, thereby promoting mission assurance. The adaptation projects are structured into comprehensive summary packages, with each focused on a specific mission-critical asset or system.

NAS Jacksonville

Naval Air Station (NAS) Jacksonville covers more than 3,800 acres along the west bank of the St. Johns River in Jacksonville, Florida. It is located north of Interstate 295 (I-295) and the Buckman Bridge, east of the Ortega River and Roosevelt Boulevard, and south of downtown Jacksonville. The installation's large area provides space for military operations, training, and support activities and commands. The installation's area of responsibility also includes Naval Outlying Landing Field (NOLF) Whitehouse and the Pinecastle Range Complex (PRC), which consists of three constituent ranges in central Florida. The proximity of NAS Jacksonville to the NOLF and the PRC supports aviation training activities, while its proximity to Naval Station Mayport supports operational and training activities.

Mission

NAS Jacksonville's mission is to "provide the premier platform for generating and projecting naval power from the shore" (Commander, Navy Region Southeast, n.d.). As the largest installation in Navy Region Southeast, NAS Jacksonville is a key naval aviation hub that supports maritime patrol and reconnaissance, rotary-wing fleet support, naval aviation depot sustainment and fifth-generation capability, regional command and logistics, medical support, and aviation training, range, and airspace operations for aligned installations across the eastern United States (refer to Figure 1). These mission areas provide a basis for identifying the mission-essential functions affected by the loss of an asset or service, how quickly a disruption would affect military output, the level of service that must be maintained or restored, and whether a proposed mitigation reduces the resulting mission consequence.

The installation houses seven fixed-wing patrol (VP) squadrons consisting of P-8A Poseidon aircraft, multiple reserve-duty squadrons, and other entities, with more than 100 aircraft operating out of the installation. Patrol Squadron Thirty (VP-30) provides P-8A and MQ-4C Triton unmanned aircraft training. VP-30 is the Navy's largest aviation squadron and the only site that conducts maritime patrol fleet replacement training. Patrol and reconnaissance operations are supported by key tenants, including Patrol and Reconnaissance Wing 11. The installation also supports rotary-wing fleet operations and the broader aviation training, range, and airspace enterprise.

The Fleet Readiness Center Southeast (FRCSE) represents a major and growing national-level naval aviation sustainment mission at NAS Jacksonville. FRCSE employs approximately 5,000

civilian, military, and contract personnel and performs depot-level maintenance, repair, overhaul, modification, and technical support for aircraft, engines, and aeronautical components supporting Navy, Marine Corps, and joint aviation readiness. FRCSE is establishing significant F-35 aircraft and F135 engine maintenance capacity. Navy projections anticipate F135 production ramping through 2034 toward approximately 600 mini-modules and 120 power modules annually, representing roughly 600,000 maintenance labor hours per year at maximum production. Supporting investments include approximately 300,000 square feet of planned F135 maintenance capacity and expansion of engine-test capability. This growth increases the strategic importance of reliable electric power, transportation access, wastewater service, communications, workforce mobility, and other supporting infrastructure at NAS Jacksonville.

Logistical activities, led by NAVSUP Fleet Logistics Center Jacksonville and the Defense Logistics Agency, support Navy Region Southeast. Secondary missions include Naval Hospital Jacksonville, community and homeland defense, provision of emergency staging sites, and installation support for regional commands. Naval Hospital Jacksonville provides healthcare for military personnel and veterans throughout the region. Community and homeland defense activities are supported by U.S. Customs and Border Protection, which operates aircraft out of the installation. Both NAS Jacksonville's and NOLF Whitehouse's airfields are used as staging sites for the Federal Emergency Management Agency as part of disaster-response activities. Numerous tenants based out of the installation support regional activities, such as Naval Facilities Engineering Systems Command Southeast.

Installation Interconnections

The NAS Jacksonville linkage overlays, as shown on the webpage, illustrate the installation's role as one of Florida's most important naval aviation, command-support, and sustainment hubs. The maps show how NAS Jacksonville connects locally to Naval Station Mayport, regional Navy installations, training ranges, medical and logistics nodes, and nationally to Navy command, aviation, maintenance, communications, and supply enterprises. Together, the layers demonstrate that NAS Jacksonville is not an isolated air station, but a central operating platform that supports maritime patrol and reconnaissance, helicopter maritime strike forces, aviation maintenance, fleet logistics, medical readiness, communications, and installation support across the Southeast and beyond.

The broader strategic value of NAS Jacksonville is especially clear in its global linkages. Its maritime patrol and reconnaissance forces connect the installation to P-8A, MQ-4C, and allied training networks across U.S. and overseas operating locations; its rotary-wing squadrons support Atlantic Fleet ships and deployed naval operations; and Fleet Readiness Center Southeast provides aviation sustainment with reach across the Navy, Marine Corps, and joint force. When viewed as a combined overlay, the maps show NAS Jacksonville as a key node in national defense readiness, linking Florida's military infrastructure to fleet operations, international partnerships, homeland defense, and global maritime security.

Identification of Priority Assets for NAS Jacksonville

Priorities for the installation were based on the direct assets and local services required to support the missions. This includes the roadways required to access the installation, the lands around NAS Jacksonville and NOLF Whitehouse that protect the installations and their operations from encroachment hazards, and the utilities (electric power, water, and wastewater) that support installation operations. These assets were evaluated for exposure to shocks and stresses (Figure 2).

Primary Mission Critical asset types for conducting training and operations, and logistical and maintenance support

- Location-Specific Positioning
 - Conservation lands
 - Shorelines
 - Assets Providing Direct Support
 - Electric Production and Supply Facilities
 - Roads and Bridges
 - Railway systems
 - Cecil Airfield
 - Airspace
 - Natural gas supply systems
 - Regional fire stations

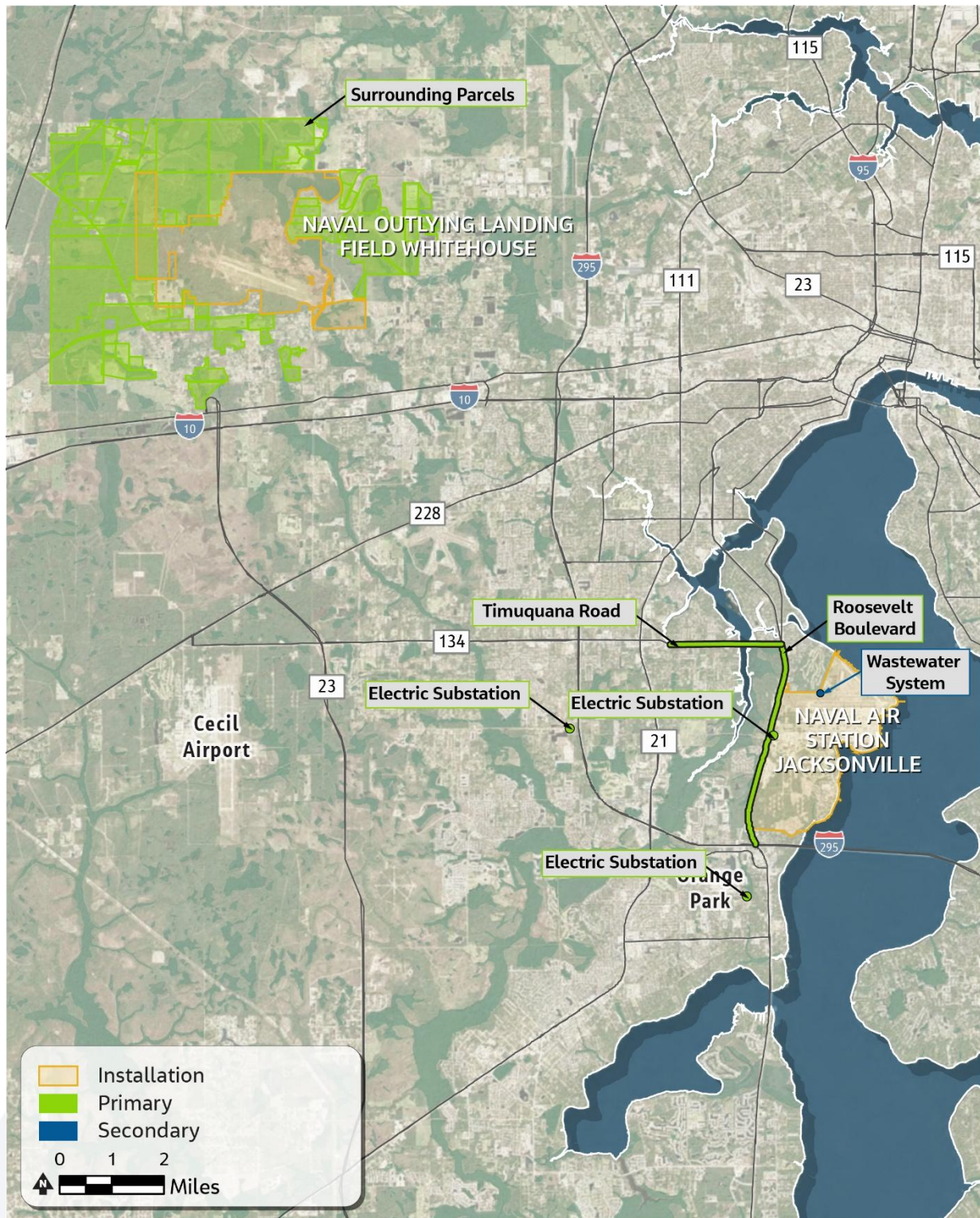
Secondary Mission Critical asset types for drone operations, Naval Hospital, support regional commands, community and homeland defense

- Assets Providing Direct Support
 - Water systems
 - Wastewater systems
 - Communications systems
 - Regional hospitals

Mission Supportive asset types for the livelihood and health of installation personnel, indirect support to primary and secondary missions

- Personnel Support
 - Affordable Housing
 - Childcare Facilities
- Assets Providing Indirect Support
 - Solid and Hazardous Waste Facilities
 - Stormwater systems

Figure 2. Primary and Secondary Mission Critical Assets for NAS Jacksonville



This package addresses the specific shocks and stresses of the mission critical electric system for NAS Jacksonville.

Current Conditions That Affect the Electric System

Historically, the electric system serving NAS Jacksonville developed within the JEA grid as a centralized, fossil-fuel-based system (coal, oil, natural gas) with radial distribution focused on baseline reliability. Infrastructure was largely above ground and built to mid-20th-century standards, making it vulnerable to hurricanes, flooding, and outages. On-base supply depends almost entirely on off-base generation with limited localized backup. While there was some redundancy in the wider grid, the installation itself relied on a single primary substation, creating a vulnerability that has become more critical with increasing severe weather hazards.

Today, the system is more advanced, with stronger regional redundancy, modern grid controls, storm-hardened poles, selective undergrounding, and a cleaner generation mix that includes natural gas and some solar. However, the installation is still primarily powered through a single substation, leaving a critical point of failure despite upstream redundancy. Increasing hazard intensity—stronger hurricanes, heavier rainfall, and more frequent extreme heat—stresses the system by raising peak demand, accelerating equipment wear, and increasing likelihood of outage from wind and flooding.

In the future, these pressures are expected to intensify, compounding threats to aging infrastructure and low-lying assets. As a result, resilience efforts such as substation hardening, distributed energy resources (microgrids, storage), and heat- and flood-adapted design will be essential to maintain reliable operations under future climate conditions.

Future Mission-Driven Electrical Demand

Looking forward, continued mission modernization and facility investment are expected to influence the installation's electrical needs, including operational reliability requirements, power quality expectations, and the ability to support a range of mission-essential functions during both routine operations and contingency conditions.

Future electrical demand will be shaped by a combination of regional growth, facility modernization, technological change, and evolving mission requirements. Of particular importance is the continued expansion of advanced aviation sustainment and industrial activities associated with Fleet Readiness Center Southeast (FRCSE), which represents a significant long-term mission area and may influence future electrical load characteristics, operational requirements, and resilience needs. As these activities evolve, electrical infrastructure planning should consider a range of potential future operating conditions rather than relying solely on historical demand patterns.

Because future mission requirements, facility configurations, and operational concepts will continue to evolve over time, it is beneficial for electrical planning efforts to incorporate updated installation, utility, and facility-development information as it becomes available. Considerations may include peak demand, load profiles, power-quality requirements, outage tolerance, mission-critical functions, restart requirements, and desired reserve capacity. Evaluating these factors within the context of both infrastructure modernization and mission growth can help ensure that future electrical investments support reliable operations, operational flexibility, and long-term resilience across NAS Jacksonville's aviation, sustainment, logistics, medical, and emergency-response missions.

Figure 3. Electric System Location Map



MIRR Adaptation Strategy Framework

The NEFRC envisions a resilient, prosperous, and inclusive region where communities work collaboratively across jurisdictional boundaries to strengthen economic vitality, safeguard natural and built systems, and enhance quality of life for current and future generations (Figure 4). In 2022, the Council launched Resilient First Coast to collaboratively address climate-related challenges across its seven member counties—Baker, Clay, Duval, Flagler, Nassau, Putnam, and St. Johns. This regional effort received strong support to develop a plan focused on addressing climate impacts and related threats to the region. Guided by this vision, the Regional Resilience Action Plan (RRAP) was published in 2025, providing a unifying framework that translates shared regional goals into coordinated action (NEFRC 2025).

The RRAP establishes a durable foundation for implementing this vision—enabling member governments and partners to prioritize investments, leverage funding opportunities, and advance solutions that build long-term resilience to environmental, economic, and social challenges across Northeast Florida. As such, the MIRR adaptation projects are built upon this framework to ensure alignment and promote successful implementation of the recommended strategies (Figure 5).

RRAP Goals and Objectives

Figure 4. Regional Resilience Action Plan Vision (NEFRC 2025)



Figure 5. Regional Structure for Resilience as Framework for the MIRR

Create a Durable and Adaptive Built Environment

- Minimize magnitude and cost of damage to infrastructure
- Improve development practices and policies
- Decrease utility service disruptions and recovery time
- Improve transportation and mobility

Develop a Thriving Regional Economy

- Improve education and employment opportunities
- Increase housing stability
- Enhance tourism and historic preservation
- Increase smart growth and development

Ensure a Vibrant Quality of Life

- Improve public health and wellness
- Enhance supply of food, energy, and other critical resources
- Increase public participation and engagement
- Minimize disparity

Promote a Healthy Natural Environment

- Reduce heat stress
- Increase biodiversity and ecological services
- Maximize quality of soil, air, and water
- Minimize erosion, flooding, and storm impacts

Connecting this Built Environment Asset to the Regional Economy, Natural Environment, and a Vibrant Quality of Life

This framework provides the structure for how assets were organized and evaluated. This resilience project is centered on assets in the Built Environment pillar, so the acknowledgments below indicate how it is connected to the Regional Economy, Natural Environment, and Quality of Life.

Figure 6. Connection of This Asset to the Community





Recommendations



Documenting Shocks and Stresses with a Vulnerability Assessment

Shocks and stresses to the mission critical assets supporting NAS Jacksonville include rainfall-induced flooding, coastal flooding from sea level rise (SLR), transportation congestion, lack of redundancy in transportation and utility system connection points, regulatory pressures, encroachment potential due to development pressure, and light pollution in areas where dark skies are necessary.

1. Encroachment risks stem from development interest within the accidental potential zones of NAS Jacksonville and around NOLF Whitehouse.
2. Rainfall-induced flooding and SLR can impact travel on Timuquana Road.
3. Transportation congestion (traffic) is a significant issue on Roosevelt Boulevard, the Buckman Bridge, and the I-295 Interchange, causing major traffic and delays getting on and off-base. Roosevelt Boulevard is the primary access road for the installation.
4. **Installation electric and wastewater systems lack redundancy and are aging past their useable lifespan.**
5. Despite existing regulations, light pollution threatens nighttime training operations at NOLF Whitehouse that require dark skies. Encroachment from development pressures and wildfire risk are high in the surrounding undeveloped lands.

This project package addresses redundancy for improved electrical system resilience for the installation (item 4).

Project Need: Improve Electrical System Resilience

Figure 7. Risk to Mission Map



Vulnerabilities Creating Risk to Mission for this Asset

The Naval Air Substation located within NAS Jacksonville is owned and operated by JEA, and supplies power to the entire installation. The 50-megawatt substation sits at the end of the distribution network and receives electricity from two sources: the Orange Park Substation to the south, near Shaw Street, and the Firestone Substation to the west, near the intersection of Rampart Road and Morse Avenue (Figure 7).

Though the substation itself does not appear highly vulnerable to identified natural hazards, it poses a significant operational risk as the installation's sole point of electric power supply. This lack of redundancy creates a critical vulnerability for NAS Jacksonville. The substation also supports essential on-base services, including commissary, exchange, and pharmacy, which are heavily relied upon by both active personnel and veterans living off base.

Additional concerns raised during stakeholder discussions include delayed repair timelines and rising regional electricity demand driven by population growth and expanding base operations. Together, these pressures increase the threat of service disruptions and strain overall system reliability.

Given these factors, addressing the lack of energy redundancy at NAS Jacksonville is an urgent priority to ensure consistent, resilient power delivery (Table 1).

Table 1. NAS Jacksonville Electrical Substation Asset Summary

Asset Name	Owner	Location	Mission Criticality	Relevant Shocks & Stresses	Level of Urgency
NAS JAX Substation	JEA	NAS Jacksonville Installation	Primary	Lack of Redundancy	Immediate

Stakeholders and Current Efforts Identified

NAS Jacksonville is working with the JEA to enhance energy resilience, maintain mission readiness, and prevent operational disruptions across the installation. This includes supporting on-base facilities such as the hospital, commissary, exchange, and pharmacy that are relied upon by veterans living off base.

Key efforts and opportunities include:

- System reliability and capacity: JEA's grid has experienced no major outages recently and can meet current demand but limited on-base redundancy remains a vulnerability.
- Intergovernmental Support Agreement (IGSA): NAS Jacksonville has an existing IGSA with JEA for system maintenance and is pursuing an additional agreement to fund Naval Air substation circuit design and construction.
- Backup power: Diesel generators provide up to 5 days of backup power, with refueling options available for extended outages.
- Microgrid potential: The installation is open to exploring a hybrid microgrid that could integrate diesel generation with emerging technologies, such as small modular nuclear reactors piloted by the DoD.

- **Redundant substation (off-base):** An additional off-base substation could improve resilience and qualify for external funding but faces challenges because of preferences for on-base control and regulatory constraints.
- **Relocation of facilities:** Moving select support services off base could reduce traffic congestion and lower energy demand, though feasibility needs to be reviewed.
- **Monitoring and maintenance:** Substations are managed through JEA’s centralized system and maintained via routine inspections and asset management.

Currently, no major capital upgrades to the electric services to the installation are underway beyond routine maintenance. However, broader initiatives offer promising opportunities to strengthen electrical system resilience. JEA recently prepared a Systemwide Electrical Resilience Plan that outlines investments in system hardening, including flood protection, replacement of aging and vulnerable infrastructure, and upgrades to design standards (Jacobs 2023). In parallel, the City of Jacksonville’s Resilient Jacksonville Plan commits to enhancing utility resilience through coordination with JEA to safeguard critical electrical infrastructure (City of Jacksonville, Florida, 2023).

Together, these efforts present a pathway to improve energy resilience at NAS Jacksonville, supporting mission readiness, protecting essential services relied upon by service members, veterans and the community, and ensuring adequate electrical power supply is available for the installation and the surrounding community during periods of high demand or emergency conditions.

Table 2 gives details on projects and efforts that are currently ongoing or have been identified as a need within the region as it relates to improving electrical system resilience for NAS Jacksonville.

Table 2. Current Projects and Efforts Related to NAS Jacksonville’s Electrical Substation

Existing Project	Entity	Location	Purpose	Timeline
Electric Circuit Replacement	JEA	Naval Air Substation	Increase Capacity	Planned

Review of Strategic Partnerships and Policies

To support the need for reliable, resilient, and redundant electrical power, NAS Jacksonville maintains ongoing partnerships with JEA, the City of Jacksonville, and regional stakeholders. These partnerships emphasize coordination on infrastructure planning, operational reliability, and long-term resilience, particularly given the installation's dependence on utility systems that are largely owned and operated off base.

A central component of this partnership structure is a formal Intergovernmental Support Agreement (IGSA) between NAS Jacksonville and JEA, which governs utility operations and maintenance. This agreement has proven effective in supporting routine service delivery and clearly defined responsibilities, with JEA managing primary utility infrastructure and the installation managing internal distribution systems. However, while the IGSA functions well for day-to-day operations, it does not currently address key resilience challenges, including the installation's reliance on a single substation. As a result, although the partnership framework is strong operationally, it does not yet fully align with emerging resilience needs identified through stakeholder coordination.

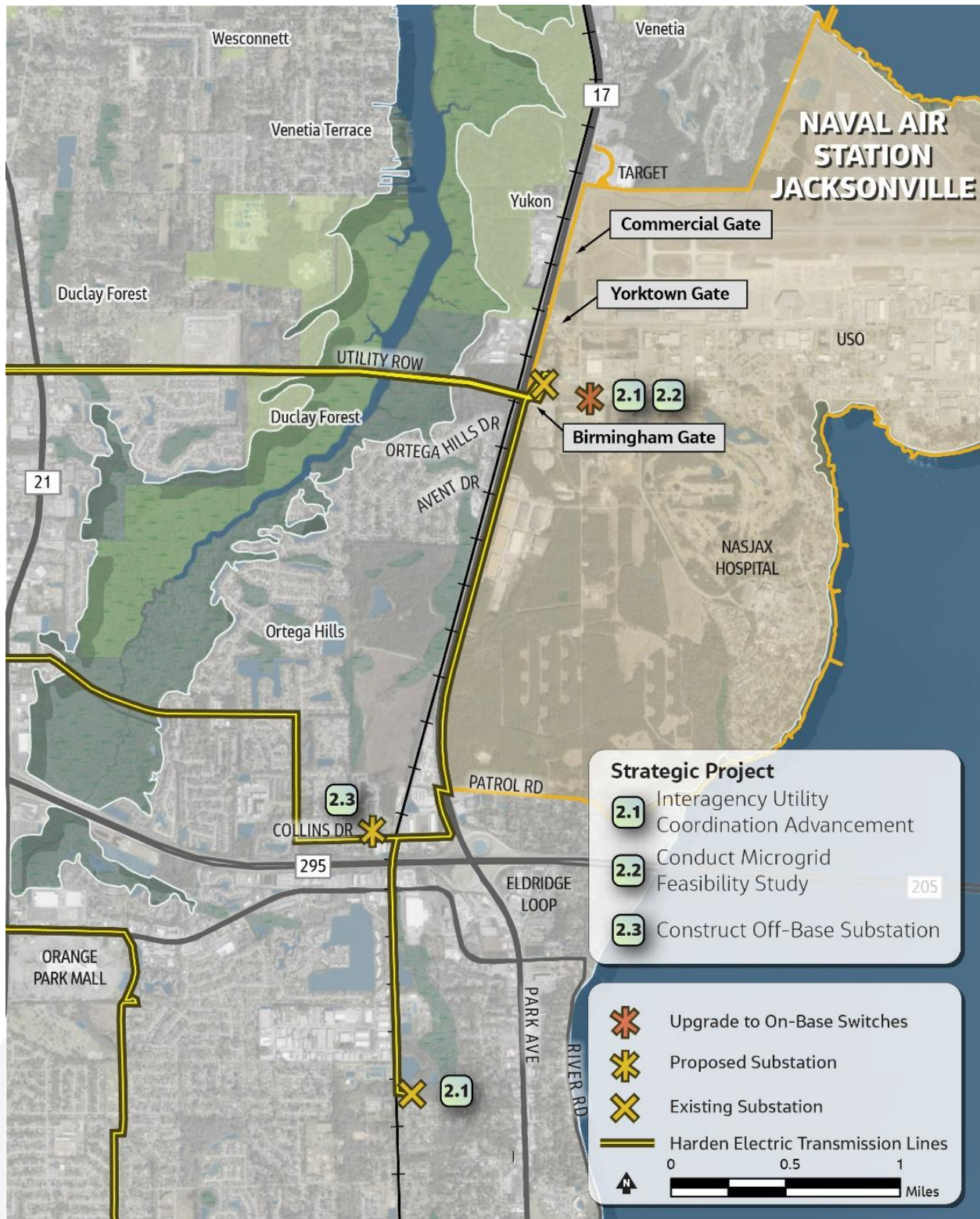
Ongoing discussions among NAS Jacksonville, JEA, and regional partners have highlighted the importance of enhancing electrical redundancy and reducing single points of failure, particularly considering increased risks from extreme weather, flooding, and grid disruptions. Current conditions indicate that the installation's dependence on a single substation represents a critical vulnerability that could disrupt operations if compromised. While no formal agreements currently address substation redundancy, there is growing recognition that existing partnership mechanisms, particularly the IGSA, could be expanded or adapted to better support resilience-focused investments and planning.

Looking ahead, the IGSA provides a durable and efficient framework that could be leveraged to address future infrastructure needs beyond routine maintenance. Because it is a formal procurement mechanism that is not reliant on informal relationships, it offers a structured pathway for expanding collaboration. Stakeholder input suggests that the IGSA could potentially be used to fund or facilitate the development of redundant electrical infrastructure, such as a second substation or diversified feeder systems, thereby significantly enhancing installation resilience. Alternatively, a complementary agreement or expanded IGSA scope could be established to explicitly address both electrical redundancy and broader infrastructure resilience concerns.

From an efficiency standpoint, leveraging the existing IGSA or a similar framework represents a practical and strategic opportunity to advance resilience improvements without requiring entirely new institutional structures. Given the substantial benefits of eliminating single points of failure and improving system reliability, further exploration of this approach is warranted. Strengthening and formalizing ongoing coordination through these mechanisms would align with MIRR priorities, ensuring that NAS Jacksonville is supported by an electrical system capable of sustaining mission operations under both routine conditions and stress scenarios.

Adaptable Built Infrastructure Projects

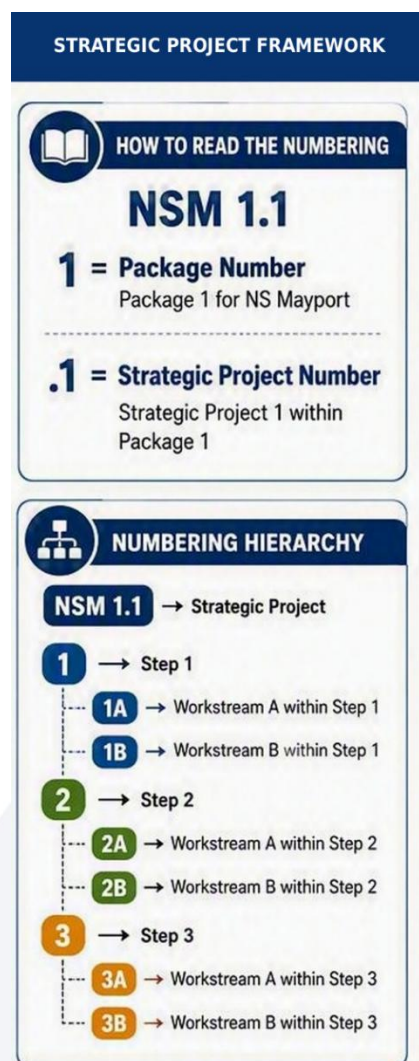
Figure 8. Electric System Strategic Projects Map



Strategies included in the adaptation plan have been organized by short, mid, and long-term timeframes for implementation. The strategy numbers in the maps correspond to the details provided in their respective sections, which outline a comprehensive approach to strengthening energy resilience and support long-term mission continuity. These strategies focus on enhancing existing system performance, reducing vulnerabilities, and advancing modern, flexible infrastructure solutions that can adapt to future demands and environmental conditions. Order-of-magnitude cost estimates will be provided in 2026 dollars to the extent possible, with up to 50% contingency unless otherwise noted.

Potential Project Leads and Partners are mentioned by organization in the following narratives. The intent is to identify the correct stakeholders that have agency, authority, and interest in the work that is being proposed. Being listed as a lead or partner provides the opportunity to collaborate, advise, and be involved in the adaptation efforts, but does not mandate participation. Funding and financing of projects are not indicated as the responsibility of the project lead or partners, and the monetary tools for obtaining such are in the Implementation section of this package.

Figure 9. Strategic Project Framework



The strategic projects are organized by installation, package, project, step, and actions. The 2-3 letter code indicates the installation. The first number indicates which package this project is in. The second number indicates the project number in the package.

Within each project, the timeline of activities is indicated through the steps (Step 1, Short-term, etc.), and the order of activities is narrated in the sub-steps (1A, 1B, etc.). Through this organization, each strategic project illustrates its project number, timeline, and actions in the narrative.

Strategic Project NSJ 2.1. Interagency Utility Coordination Advancement

This project establishes a coordinated operational framework to enhance utility service delivery, response times, and system resilience between JEA and NAS Jacksonville. The initiative is designed to address potential fragmentation inherent in the current multi-node relationship between JEA, NAVFAC, NAS Jacksonville Public Works Department (PWD), and supporting contractors. While existing utility contracts effectively deliver service to the installation boundary, there may be opportunities to further enhance coordination, communication, and role clarity across organizational interfaces.

The NAS Jacksonville installation operates as a city-scale utility environment with complex and evolving energy demands, requiring a high degree of reliability and responsiveness. Given the distributed nature of responsibilities across multiple organizations, there is an opportunity to further align processes related to escalation pathways, incident response coordination, and shared operational awareness between grid operators and on-base utility managers. Strengthening these areas can help support operational continuity, particularly during peak demand events, infrastructure maintenance activities, or mission-driven load fluctuations.

This project offers targeted operational, governance, data-sharing, and infrastructure coordination strategies intended to improve alignment across stakeholders, enhance responsiveness, and support long-term resilience planning if they are not already in place. The recommendations are meant to build on existing contractual frameworks and organizational roles, focusing on coordination enhancements and operational integration rather than structural changes.

Current Stakeholder Projects

- N/A

Potential Project Leads and Partners

NAS Jacksonville (NASJAX) PWD

Naval Facilities Engineering Systems Command (NAVFAC) Southeast (Contracting Authority)

- JEA
- Defense Logistics Agency (DLA Energy – Supporting Role)
- Base Operations and Supporting Utility Contractors

Estimated Cost

To be determined by owner

Step 1: Coordinated Operational Integration Planning (Short-term)

1A. Establish Primary Integration Leads

- Designate a Primary Integration Lead within NAS Jacksonville/NAVFAC to serve as the central coordination point for utility-related requests, incidents, and planning activities with the JEA Client Account Manager. Assign responsibility for intake management, internal routing across engineering and operations teams, and tracking of service response

performance metrics. Create a consistent “single front door” for issue resolution to improve coordination efficiency and clarity of ownership.

1B. Define or Update Scenario-Based Responsibility Matrix

- Develop and formalize a shared responsibility matrix that outlines roles across common operational scenarios, including off-base outages, feeder issues, on-base distribution events, and infrastructure planning activities. Integrate the matrix into standard operating procedures and coordination protocols.

1C. Implement Joint Utility Operations Communication Cadence

- Establish recurring coordination meetings at tactical (biweekly), operational (monthly), and strategic (quarterly) levels. Use these forums to coordinate maintenance activities, review system performance, and align upcoming infrastructure needs and risks. Incorporate discussion of storm readiness, outage response coordination, and resource planning into regular engagement cycles.

1D. Enhance Storm Forecasting and Pre-Staging Coordination

- Strengthen coordination protocols with JEA to support advance planning for severe weather events, including joint review of storm forecasts and system vulnerability assessments. Establish pre-staging strategies for crews, equipment, and response resources to improve restoration timelines following potential service disruptions. Align communication protocols to ensure timely notification and coordinated action before, during, and after storm events.

Step 2: Data Visibility, Response Optimization, and System Flexibility Tool Utilization (Mid-term)

2A. Incorporate Data-Driven and Predictive Decision-Making Tools

- Explore the use of predictive analytics and artificial-intelligence-enabled tools to support forecasting of demand fluctuations, infrastructure stress points, and potential failure scenarios. Enable proactive operational adjustments, including load management strategies and maintenance prioritization, based on data-driven insights. Support long-term planning through improved modeling of mission-driven energy demand and infrastructure performance trends.

2B. Establish Predefined Escalation Framework

- Develop and document a tiered escalation protocol with defined triggers, timelines, and designated points of contact across operational, management, and leadership levels. Ensure alignment between JEA and NAS Jacksonville teams to enable efficient escalation during extended outages or high-impact events. Provide clarity and consistency in response procedures while maintaining flexibility for varying incident conditions.
- Continue any ongoing investments in sectionalizing switches, isolation devices, or similar infrastructure upstream of the installation to limit the impact of localized faults. Enable the ability to isolate affected segments of the feeder without interrupting service to the entire installation where feasible.

Step 3: Long-Term Resilience and Partnership Planning (Long-term)

3A. Develop Joint Utility Resilience Plan

- Collaboratively identify opportunities to enhance resilience through redundant feeder configurations, backup energy integration, and potential microgrid capabilities. Align planning efforts to support continuity of operations during grid disruptions, extreme weather events, or infrastructure failures. Establish a shared roadmap for future infrastructure investments and system upgrades.

3B. Implement Embedded Liaison Coordination Model

- Facilitate periodic engagement between JEA engineering teams and NAS Jacksonville PWD personnel to support ongoing coordination and planning alignment. Encourage participation in planning discussions, infrastructure projects, and operational reviews to improve cross-organizational understanding.

Strategic Project NSJ 2.2. Conduct Microgrid Feasibility Study

The study will assess opportunities to integrate onsite generation and energy storage solutions with a microgrid centered on reliable, dispatchable sources such as diesel generation, natural gas systems, and potential advanced nuclear technologies (for example, small modular reactors), while leveraging lessons learned from DoD microgrid pilot programs and other successful installation and federal resilience initiatives. These established case studies provide foundational data, proven design approaches, and operational insights that can inform system configuration, performance expectations, and implementation strategies at NAS Jacksonville.

Current Stakeholder Projects

- N/A

Potential Project Leads and Partners

Naval Facilities Engineering Systems Command (NAVFAC) Southeast (Contracting Authority)
NAS Jacksonville (NASJAX) PWD

- JEA
- Defense Logistics Agency (DLA Energy – Supporting Role)
- Base Operations and Supporting Utility Contractors

Estimated Cost

\$80,000

Step 1: Initial Assessment and Scenario Planning (Short-term)

1A. Conduct Microgrid Feasibility Analysis and Scenarios

- Evaluate the technical feasibility of a hybrid microgrid centered on dispatchable onsite generation sources, including diesel, natural gas, and potential advanced nuclear technologies, supported by energy storage systems. Use scenario-based modeling to simulate outage conditions, peak demand fluctuations, and infrastructure disruptions, assessing system performance, recovery timelines, and optimal configurations. Identify suitable sites for deployment and ensure analysis includes flexibility for long-term expansion, including optional integration of additional energy sources.
- Identify opportunities to deploy distributed, dispatchable energy resources across the installation to improve system flexibility and reduce reliance on centralized supply points. Evaluate placement strategies for backup generation and natural gas systems to enhance operational control, while considering renewable or alternative energy technologies as long-term expansion options based on mission alignment and system compatibility.

Step 2: System Design and Operational Integration Modeling (Mid-term)

2A. Develop Islanding Capability and Integrated Control Systems

- Assess and design microgrid architecture capable of supporting islanded operations, enabling NAS Jacksonville to maintain independent power during external grid disruptions. Evaluate interconnection requirements, control systems, and operational protocols needed to coordinate onsite generation, storage, and load distribution, ensuring reliable performance based on dispatchable energy sources and incorporating scalability for future system enhancements.

2B. Implement Energy Storage and Load Prioritization Framework

- Determine appropriate energy storage capacity to support system stability, backup power, and continuity of operations during outages. Identify and prioritize critical loads, including mission-essential facilities, and align storage and generation resources to ensure these functions are maintained under constrained conditions, with flexibility to expand capacity as operational needs evolve.

2C. Develop Phased Microgrid Implementation and Expansion Roadmap

- Establish a phased roadmap for deploying microgrid infrastructure, beginning with core dispatchable generation and storage systems and expanding over time based on operational priorities and funding opportunities. Incorporate planning for long-term integration of additional energy technologies, ensuring alignment with mission requirements and maintaining system reliability.

2D. Coordinate Utility Integration and Long-Term Resilience Strategy

- Define coordination protocols for microgrid operation alongside utility-supplied power, including interconnection agreements, system operating procedures, and joint resilience planning. Integrate microgrid capabilities into installation-wide energy security strategies, supporting continuity of operations during disruptions and establishing performance metrics to guide future investment and system evolution.

Strategic Project NSJ 2.3. Construct Off-Base Substation

This project evaluates and advances the development of an additional off-base electrical substation to enhance power reliability, capacity, and resilience for NAS Jacksonville. The project focuses on establishing a backup utility supply pathway to reduce potential for service disruption.

Current Stakeholder Projects

- N/A

Potential Project Leads and Partners

- Naval Facilities Engineering Systems Command (NAVFAC) Southeast
- NAS Jacksonville PWD
- JEA
- Defense Logistics Agency (DLA Energy – Supporting Role)
- Base Operations and Supporting Utility Contractors

Estimated Cost

\$44,600,000

Step 1: Feasibility, System Design, and Operational Integration Planning (Mid-term)

1A. Evaluate Secondary Substation Feasibility, Capacity, and System Design

- Assess the feasibility of constructing an additional substation to serve NAS Jacksonville, including evaluation of siting options on- and off-base, interconnection points, and required transmission and distribution upgrades. Analyze opportunities to increase upstream system capacity to support both current and projected demand associated with installation growth, ensuring reliable operation under future load conditions. Develop design concepts for an independent secondary feeder that provides a fully redundant power source, with physically separated routing along distinct corridors to reduce the likelihood of simultaneous disruption. Incorporate resilient design considerations, including storm hardening, flood protection, and elevation, and evaluate integration with existing and planned installation resilience systems such as microgrid capabilities, energy storage, and load prioritization frameworks.
- Microgrid sizing should distinguish present critical load from programmed future mission load so that FRCSE F-35/F135 growth and other approved mission expansions are not treated as discretionary merely because they are not included in today's baseline.

1B. Implement Switching Infrastructure, Automation, and Monitoring Systems

- Evaluate and implement upgrades to on-base switching infrastructure to support rapid and automated transfer between substations, minimizing outage duration and improving operational flexibility. Integrate smart grid technologies and real-time monitoring systems to enable automated fault detection, diagnostics, and coordinated response between utility and installation operations. Support these capabilities with data-driven tools, including predictive

analytics for load forecasting and infrastructure optimization, to enhance system performance, improve reliability, and inform ongoing operational and planning decisions.

Step 2: Execution (Long-term)

2A. Construct Substation and Commission Redundant Supply System

- Advance the design, permitting, and construction of the new off-base substation and associated feeder infrastructure, ensuring compliance with regulatory, environmental, and operational requirements. Commission the system to operate in coordination with the existing substation, enabling reliable dual-feed capability and improved continuity of service for NAS Jacksonville.

2B. Optimize System Performance and Resilience Over Time

- Use real-time monitoring, operational data, and predictive analytics to continuously evaluate system performance, support proactive maintenance, and refine coordination between substations. Identify opportunities for incremental upgrades and system enhancements that further improve reliability, resilience, and alignment with installation growth and mission requirements.

Alignment and Support of the Regional Resilience Action Plan

Figure 10. Alignment with the RRAP

SCALE	ACTION	DESCRIPTION
	6	Support resilient utilities
	13	Facilitate partnerships to advance resilience work
	16	Identify adaptation options for critical infrastructure to enhance resilience
	23	Recommend innovative emergency preparedness practices and processes
	26	Promote public health and quality of life
	32	Inventory critical and significant assets

 Facilitate
  Guide
  Analyze

This project advances RRAP Actions 6, 13, 16, 23, and 26 by addressing an installation that draws its entire electrical supply through a single 50-megawatt substation sitting at the end of the distribution network. Strategic Project NSJ 2.3 evaluates and advances construction of an additional off-base substation with an independent secondary feeder routed along physically separated corridors, together with storm hardening, flood protection, elevation, and automated switching infrastructure enabling rapid transfer between supply points. These measures implement Action 16 (Identify Adaptation Options for Critical Infrastructure to Enhance Resilience), specifically, Subaction 16.1 on protecting critical assets through hardening, elevation, and flood protection where relocation is impractical and applying cost-benefit and life-cycle analysis to identify durable protective measures.

Strategic Project NSJ 2.2's microgrid feasibility study, assessing islanding capability, dispatchable onsite generation, energy storage, and load prioritization, implements Action 6 (Support Resilient Utilities), specifically, Subaction 6.1, under which the Collaborative promotes the development of microgrids for critical infrastructure and encourages diversification of the energy grid so that essential services remain operational across the region during grid-wide failure.

This package carries the portfolio's clearest alignment with the RRAP's Quality of Life goal through Subaction 26.3, under which the Collaborative commits to collaborating with regionally significant hospitals and informing them about best practices for resilience, explicitly including

backup power supply and microgrids. Naval Hospital Jacksonville depends on the same single substation this project addresses and provides healthcare to military personnel and veterans throughout the region. The substation also supports the commissary, exchange, and pharmacy relied upon by veterans living off base. Eliminating this single point of failure, therefore, protects a regionally significant healthcare asset and the off-base population it serves, not only installation operations. The evaluation of hybrid microgrid configurations integrating diesel, natural gas, and potential advanced nuclear technologies, alongside reduced reliance on extended diesel generator runtime, additionally supports Subaction 3.2 on promoting activities that reduce greenhouse gas emissions.

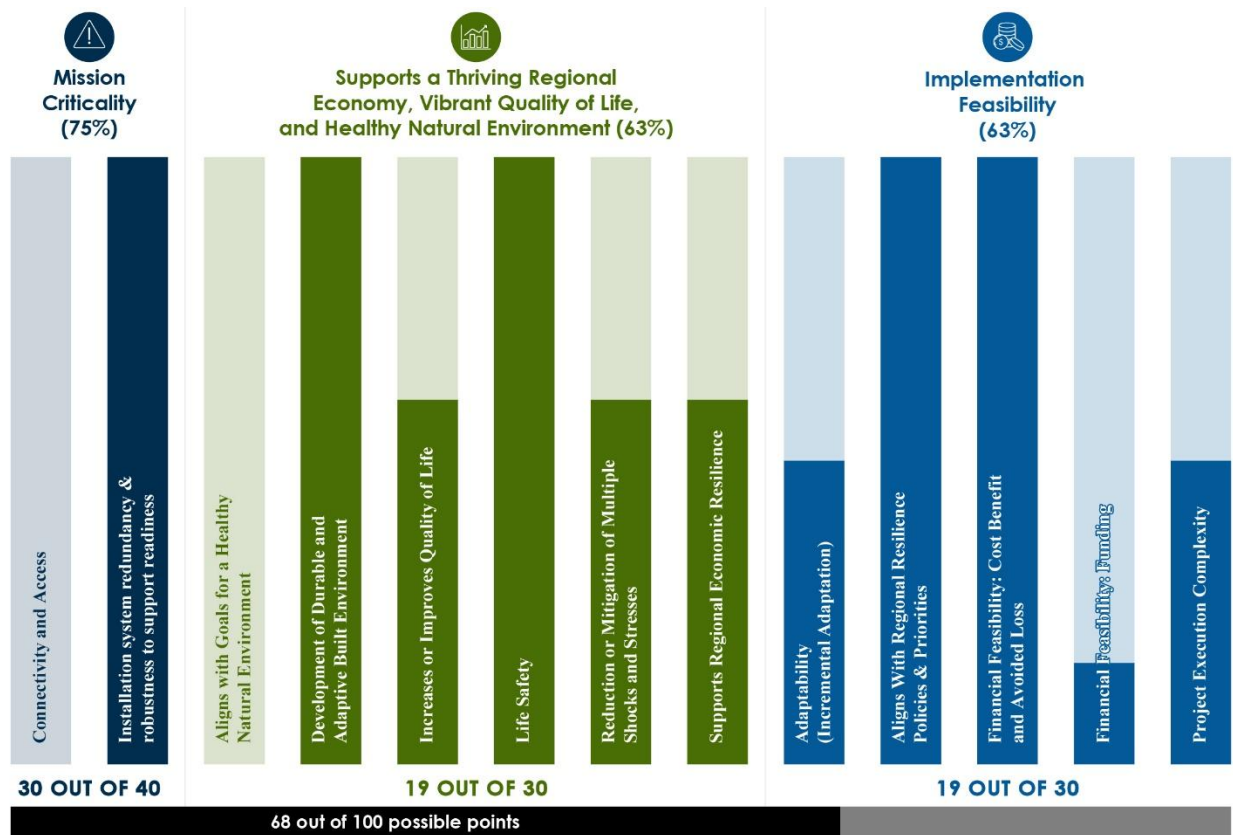
Strategic Project NSJ 2.1 establishes primary integration leads, a scenario-based responsibility matrix, a tiered escalation framework, and a joint operations communication cadence across JEA, NAVFAC Southeast, NAS Jacksonville PWD, and supporting contractors. This implements Subaction 6.2, under which the Collaborative facilitates collaboration between utility providers and local governments on lessons learned from past disruptions and on service provision during heat waves, freeze events, and severe storms; this subaction specifically cites JEA's grid localization and monitoring practices as a regional model. Predictive analytics for demand forecasting and infrastructure stress, together with capacity planning for rising regional electricity demand driven by population growth and expanding base operations, support Subaction 6.3 on capacity improvements to accommodate continued growth.

The recommendation to expand the existing Intergovernmental Support Agreement to encompass resilience and redundancy rather than routine operations and maintenance implements Action 13 (Facilitate Partnerships to Advance Resilience Work), including Subaction 13.1 on advancing public-private partnerships to leverage expertise and funding and Subaction 13.3 on intergovernmental partnerships with state and federal agencies, including the military, to increase regional readiness, the subaction under which the RRAP explicitly recognizes the Council's MIRR process. Joint storm forecasting, pre-staging of crews and equipment, and coordinated restoration protocols support Subaction 23.3 on advanced training and peer learning among emergency managers. Documentation of the substation and its dependencies contributes to the inventory of regionally significant assets maintained under Subaction 32.2, built on the geodatabase NEFRC developed through the FDEP Regional Resilience Entity grant.

Metrics Score

The NAS Jacksonville Resilient Electric System project was evaluated against a robust series of metrics to determine the appropriateness, viability, and achievement of goals (Figure 11). The metric categories are given a percentage weight to indicate the comparative importance for the MIRR, with Mission Criticality being the highest. High and mid-range scores across all metric categories indicate that implementing the strategies and policy recommendations within this project will promote mission assurance for the installation.

Figure 11. NAS Jacksonville Electric Substation Metrics Scorecard Results



Cost-Benefit Analysis

Benefit-cost analysis (BCA) determines the cost-effectiveness of adaptation projects. This effectiveness is calculated using the equation

$$\frac{B}{C} = \text{Value}$$

Where B is the benefit, or avoided costs, of the project and C is the cost to implement the project. A benefit-cost value greater than 1 indicates that a project is cost-effective (i.e., the benefits of the project outweigh the costs incurred in implementing it), whereas a BC value less than 1 indicates the project may not be cost effective (i.e., the costs exceed the benefits).

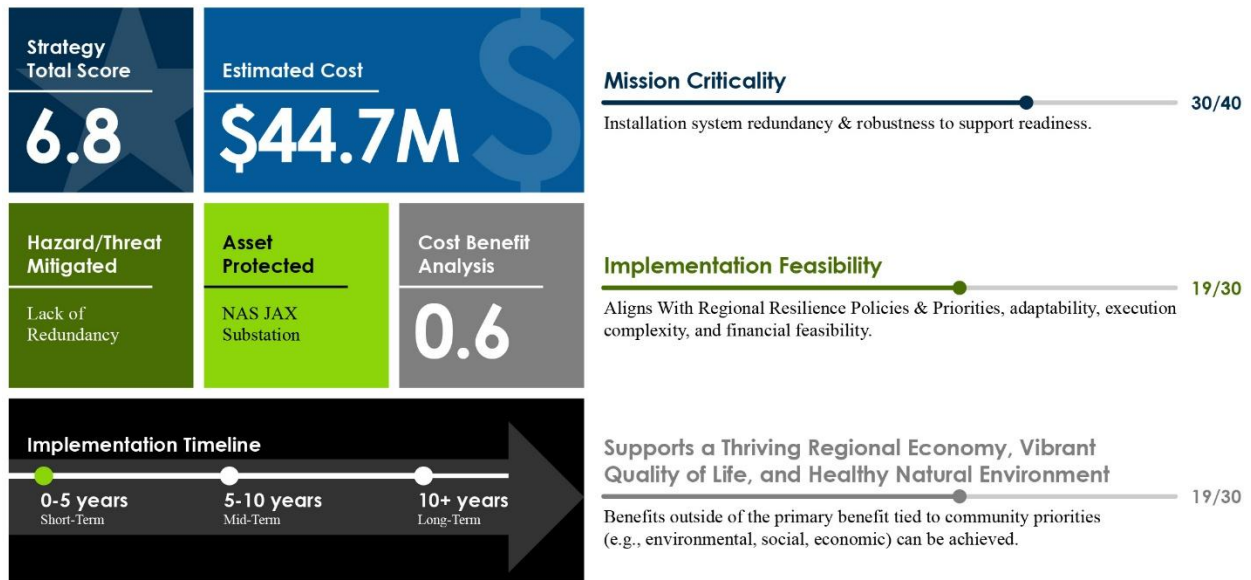
Adaptation project costs were costed to include project construction and design costs, where feasible. Project benefits were costed to include direct (construction or repair costs) and indirect (social, economic, and environmental) costs whenever feasible.

Data sources for benefit values include the Federal Emergency Management Agency, the National Institute of Standards and Technology, the National Interagency Fire Center, and others.

In many cases, associated financial savings data (such as improved installation operations, improved quality of life for installation personnel, or asset-specific O&M costs) was unknown; in these cases, the benefit is described. Hence, BCA values may not reflect the total possible benefit of the proposed adaptation project.

Total Project Package Snapshot

Figure 9. Total Project Package Snapshot





Implementation Tools



Financial Strategy Toolkit

More information on financial strategy building can be found in Technical Memo 10: Implementation Strategy and Investment Pathways.

Many of the tools required to fund, finance, and coordinate resilience implementation are already available under current Florida law or institutional precedent. The challenge, then, is aligning, adapting, and scaling existing tools to support coordinated regional resilience investment strategies. Thus, this section provides an initial inventory of funding, financing, and institutional tools that can be used to support the implementation of the MIRR project portfolio and the broader resilience system envisioned above.

Coordinate with JEA and Clay Electric on Regional Resilience Priorities

The region's utilities own most of the off-base grid, so coordinated planning and advocacy are the primary near-term levers. The proposed off-base substation near Camp Blanding is the clearest dual-benefit example, serving both the installation and the surrounding community. This effort can serve as a model for how utility investment and installation resilience can align. Near-term steps include:

- Convening the installations, JEA, and Clay Electric to identify shared priorities such as substation hardening and relocation, feeder redundancy, and outage-response improvements.
- Aligning installation and community resilience planning with the utilities' investment cycles and rate cases so regional needs are reflected in grid modernization plans.
- Advancing the off-base Camp Blanding substation as a co-investment that delivers mission and community benefit together.

Access Grid Resilience and Modernization Funding

Federal grid programs are structured to reach utilities like JEA and Clay Electric, either by formula through the state or through competitive rounds. Near-term steps include:

- Coordinating with the state energy office and the Florida Department of Emergency Management on the DOE Grid Resilience State and Tribal Formula Grants (IIJA §40101(d)), which pass through to electric utilities, including municipal utilities such as JEA and cooperatives such as Clay Electric, for hardening, undergrounding, and other resilience measures.
- Positioning larger transmission and reconductoring needs for DOE's competitive grid program (SPARK, formerly GRIP), which funds grid hardening, microgrids, and storage.

Note: The DOE competitive grid program's current round is likely the final one under IIJA, with concept papers and applications due in Spring of 2026, and formula grant allocations run through FY2026. Funding past FY2026 will depend on future congressional allocations.

Use the Defense Community Infrastructure Program (DCIP) for Dual-Benefit Utility Projects

The Defense Community Infrastructure Program (DCIP), administered by the DoD Office of Local Defense Community Cooperation, is a competitive grant program for community infrastructure that supports a nearby installation, and it can fund off-base water, wastewater, electric, and other utility projects. It is open to state and local governments and to member-owned utilities, which makes it a strong fit for dual-benefit projects such as the off-base Camp Blanding substation and community-serving upgrades tied to the installations. REPI can also support installation-resilience elements where energy and encroachment protection overlap. Near-term work is to identify which utility projects meet DCIP's installation-support criteria and prepare competitive applications around reliability and mission continuity.

Incorporate Energy Resilience into Public Facility and Infrastructure Upgrades

Many public facilities that provide lifeline services, including emergency operations centers and water treatment plants, lack sufficient backup power or redundancy. A cost-effective way to add resilience to existing facilities is during already planned upgrades. Near-term actions can include screening critical facilities for backup power, solar-plus-storage, or microgrid opportunities, aligning capital improvement planning with resilience co-benefits such as operational continuity and reduced recovery time, and prioritizing facilities that serve high-risk populations or mission-critical functions. Early-stage grant funding can pilot these systems before they are financed at scale through longer-term tools.

Resilient Utilities Longer-term Implementation

Utility resilience priorities should be matched to the funding or capital process most likely to deliver them. For utility-owned assets, this means determining whether the project belongs in the utility's capital program or needs another funding path based on the risk addressed, the function served, and the project's likely scope, cost, timing, and operation.

Installation-side and federally linked assets require separate considerations. Fuel infrastructure, on-base utility systems, and other projects tied directly to continuity of operations inside the fenceline should be distinguished from community utility investments, even where the systems are connected. These projects may require federal action, utility coordination, service-agreement changes, local cost-share, or a defense-community funding strategy.

The strongest candidates will be projects that connect mission assurance with community continuity and can be translated into a clear path to delivery.

Funding Opportunities

Table 3. Energy and Utility Resilience Funding Options

Agency/Org	Program	Description	Available Funding	General Eligibility	Example Eligible Projects	Timeline
US DOE	Speed to Power through Accelerated Reconductoring and other Key Advanced Transmission Technology Upgrades (SPARK) (formerly known as GRIP)	Supports efforts to modernize the electric grid, including reconductoring with advanced conductors, Advanced Transmission Technologies (ATTs) that can increase the usable capacity of existing assets in real time, and large-scale, cross-regional transmission upgrades and coordinated planning.	\$10.5 billion total (IIJA, FY2022-26); >\$6B awarded across Rounds 1-2. Round 3 = 'SPARK' (Speed to Power / advanced transmission), up to \$1.9B.	State and local governments, tribes and territories, utilities (including publicly owned and cooperative), grid operators, and partnerships among these entities.	Undergrounding of power lines, microgrids and energy storage for resilience, weatherization and automation of grid components, smart grid sensors and cybersecurity systems	Round 3 (SPARK) concept papers due April 2, 2026; full applications due May 20, 2026. Likely the final IIJA round — authorization expires FY2026.
US DOE	Grid Resilience State and Tribal Formula Grants (IIJA §40101(d))	Non-competitive formula grants to states and tribes to prevent outages and enhance the resilience of the electric grid against wildfires, extreme weather, and natural disasters. States sub-grant funds to electric utilities and other eligible entities.	Up to \$459M/year nationally (FY2022-26), allocated by formula (population, land area, hazard exposure, prior mitigation spending). Florida receives an annual allocation administered by the state energy office. (energy.gov/gdo; netl.doe.gov)	States and tribes (pass-through to electric utilities — investor-owned, cooperative, and municipal — and other eligible entities).	Grid hardening, undergrounding, vegetation management, weatherization, monitoring/control equipment, microgrids, and other resilience measures.	Annual state allocations FY2022-26.

References

Blonsky, Michael. 2024. Grid-Supportive End-Use Electronics. Presentation delivered at the U.S. Department of Energy Building Technologies Office Peer Review, Arlington, VA, October 21–24, 2024. Golden, CO: National Renewable Energy Laboratory.

City of Jacksonville. 2023. *Resilient Jacksonville*. October.

Jacobs. 2023. *Electrical System Resilience Assessment and Adaptation Plan*. Prepared for JEA. August 24.

JEA. 2025. Systemwide Electrical Resilience Plan.

McKinsey & Company. 2018. *Smart Cities: Digital Solutions for a More Livable Future*. McKinsey Global Institute. June.

Murphy, Caitlin. 2023. The Value of Flexible Loads With Increasing Electrification. Presentation delivered at the Long-Term Load Forecasting Workshop, Denver, CO, June 13–15, 2023. Golden, CO: National Renewable Energy Laboratory.

Northeast Florida Regional Council (NEFRC). 2025. *Regional Resilience Action Plan*. September 30.

Rocky Mountain Institute (RMI). n.d. “Grid-Interactive Efficient Buildings (GEBs).” Accessed June 10, 2026. <https://rmi.org/our-work/buildings/pathways-to-zero/grid-interactive-energy-efficient-buildings/>

U.S. Department of Energy (DOE). 2021. “DOE’s National Roadmap for Grid-interactive Efficient Buildings.” Office of Critical Minerals and Energy Innovation. May 18. <https://www.energy.gov/cmei/articles/does-national-roadmap-grid-interactive-efficient-buildings>

U.S. Department of Energy (DOE). 2021. *A National Roadmap for Grid-Interactive Efficient Buildings*. Office of Energy Efficiency & Renewable Energy Building Technologies Office. May 17.

U.S. Department of Energy (DOE). n.d. “Grid Modernization Initiative.” Accessed June 10, 2026. <https://www.energy.gov/gmi/grid-modernization-initiative>

U.S. Department of Energy (DOE). n.d. “Grid-Interactive Efficient Buildings.” Accessed June 10, 2026. <https://www.energy.gov/cmei/buildings/grid-interactive-efficient-buildings>

World Economic Forum. 2022. “Our Alliance is creating smart city governance.” June 22. <https://www.weforum.org/impact/smart-cities-governance-alliance/>

