Anastasia Mosquito Control District

of St. Johns County, Florida

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904/471-3107

Five-Year Strategic Plan

(2026–2030)

1. Executive Summary

The **Anastasia Mosquito Control District of St. Johns County (AMCD)** has served the citizens of St. Johns County since 1948 with a clear purpose: to protect public health and enhance the quality of life by reducing mosquito populations and preventing vector-borne disease transmission through science-based, environmentally responsible programs.

Over the past five years (2020–2025), AMCD has achieved significant milestones in integrated mosquito management (IMM), applied research, education, and public service. The district expanded its surveillance and aerial capacity, modernized its fleet and laboratories, and strengthened its commitment to community engagement through the **Disease Vector Education Center in St. Augustine**, which now serves as a hub for local and regional outreach, museum-style education, school field trip site, and scientific demonstration. AMCD also advanced its international profile through collaboration with the American Mosquito Control Association (AMCA), the Society of Vector Ecology (SOVE), the Cooperation in Science and Technology (COST), Europe, and the European Mosquito Control Association (EMCA), and global research partners in Thailand, Mali, and Taiwan.

As St. Johns County continues to grow (one of the fastest growing counties in Florida), new challenges and opportunities have emerged. Urban expansion, climate variability, and the introduction of invasive mosquito species increase the complexity of mosquito management. At the same time, emerging technologies in **artificial intelligence, drones, robotics, remote sensing, gene-editing / molecular diagnostics, and environmentally friendly control tools** such as Attractive Targeted Sugar Bait (ATSB), biopesticides (Wolbachia-infected mosquitoes), and SIT present new opportunities for innovation and efficiency.

The **2026–2030 Strategic Plan** provides a forward-looking roadmap to strengthen AMCD's operational excellence, research capacity, and educational impact over the next five years. It establishes five overarching goals:

1. **Strengthen Integrated Mosquito Management (IMM):** expand data-driven surveillance, adopt precision control tools in ground and aerial with SOPs, and uphold environmental stewardship.
2. **Advance Research and Innovation:** lead applied studies in arbovirus detection, insecticide resistance, and emerging technologies by AI, drone, remote sensing, and robotic technology.
3. **Expand Public Education and Community Engagement:** increase outreach through the Disease Vector Education Center and digital platforms.
4. **Build Organizational Capacity and Workforce Development:** invest in training, technology, and infrastructure to support excellence.
5. **Foster Partnerships and Sustainable Funding:** pursue collaborations, grants, and transparency in governance.

This plan aligns AMCD's mission and resources with the evolving needs of St. Johns County and the broader public health community. Through strategic action, AMCD will continue to set the standard for professional mosquito control, research leadership, and innovative public service

ensuring that residents and visitors of St. Johns County remain safe from mosquito-borne diseases and enjoy a higher quality of life.

2. Mission, Vision, and Core Values

Mission: To protect public health and enhance quality of life by reducing mosquito and vector populations through integrated, science-based, and environmentally responsible management practices.

Vision: To be a regional and global leader in mosquito control, research, and education thorugh advancing innovation, collaboration, and community awareness to prevent vector-borne diseases and promote environmental sustainability.

Core Values:

- **Public Service:** Committed to protecting the health and comfort of every resident and visitor of St. Johns County.
- **Scientific Integrity:** Grounded in evidence-based decision-making, monitoring, and research excellence.
- **Innovation:** Embracing emerging technologies in entomology, AI, remote sensing, robotics, and environmental sciences to enhance efficiency and effectiveness.
- **Environmental Stewardship:** Balancing public health protection with preservation of natural ecosystems.
- **Education:** Fostering awareness through outreach, training, and enhancing public education and training at the Disease Vector Education Center.
- **Collaboration:** Strengthening partnerships with local, national, and international agencies and organizations.
- **Accountability:** Upholding transparency, fiscal responsibility, and responsiveness to the public we serve.

3. Organizational Overview

3.1. History and Governance:

The **Anastasia Mosquito Control District of St. Johns County (AMCD)** was established in **1948** under Chapter 388 of the Florida Statutes to protect residents and visitors from mosquitoes and mosquito-borne diseases. AMCD operates as an independent special taxing district, governed by a five-member elected Board of Commissioners who serve staggered four-year terms.

The Board provides strategic direction, adopts policies, approves millage rate /budgets, and ensures accountability to the citizens of St. Johns County. Day-to-day operations are managed by an Executive Director, supported by Assistant Director and division leaders overseeing Operations by ground and aerial applications, Applied Research, Education, and Administration. AMCD conducts its programs in accordance with federal, state, and local regulations and maintains compliance (Chapter 388 and 5E/13) with the Florida Department of Agriculture and

Consumer Services (FDACS), the Florida Department of Health (DOH), the Florida Department of Environmental Protection/State Parks, and the U.S. Environmental Protection Agency (EPA).

3.2. Service Area:

AMCD serves all of St. Johns County, Florida, encompassing approximately 609 square miles of land area and more than 125,000 acres of wetlands and coastal habitats. The county includes diverse environments from the historic city of St. Augustine to rapidly developing urban, suburban, and rural communities.

As one of the fastest-growing counties in Florida, St. Johns' population surpassed 350,000 residents in 2025 and continues to expand at an annual rate of 3–4%. Tourism also contributes to seasonal population surges, increasing demand for effective mosquito management. The region's climate, abundant rainfall, and proximity to tidal marshes create ideal breeding conditions for a wide range of mosquito species, including *Aedes aegypti, Aedes albopictus, Culex nigripalpus, Aedes taeniorhynchus, Anopheles crucians,* and *Psorophora columbiae,* several of which are capable disease vectors.

3.3. Facilities and Infrastructure

AMCD operates from its headquarters and operational complex, 120 EOC Drive, St. Augustine, Florida. The facility includes:

- **Administrative offices** and board meeting chambers.
- A fully equipped entomological and molecular research laboratory for species identification, arbovirus testing, and insecticide resistance monitoring.
- **Operations and fleet facilities**, including animal houses, vehicles, helicopters and equipment maintenance areas, pesticide storage, and calibration units.
- **SIT/IIT mass producing facility,** producing Sterile Insect Technique(SIT) and Incompatible Insect Technique (IIT) male mosquitoes for releases.
- **Field operation depots** for larviciding, ULV spraying, and inspection activities.
- The **Disease Vector Education Center**, opened in late March 2024, serves as a museum-style educational and outreach facility showcasing the science of mosquito biology, control, and public health protection. The center features interactive displays, live demonstrations, and will have emerging Artificial Intelligence (AI)- and robot-assisted exhibits for school groups and visitors.

AMCD maintains a robust vehicle fleet and aerial capability (3 helicopters and 2 drones), and advanced data management systems for field reporting, surveillance, and GIS-based decision support.

3.4. Organizational Structure and Staffing

The district's workforce includes scientific, technical, operational, administrative, and educational staff who together deliver comprehensive mosquito control services. The primary divisions include:

- **Administration:** Oversees finance, human resources, procurement, communications, and board support.
- **Operations:** Conducts surveillance, larviciding, adulticiding, inspection, and field maintenance programs through ground and aerial applications.
- **Research and Development:** Focuses on arbovirus detection, insecticide resistance testing, evaluation of new control technologies, and collaborative projects with universities and agencies.
- **Public Education and Outreach:** Manages community engagement, school programs, special events, and operation of the Disease Vector Education Center.

AMCD invests in ongoing staff development through continuing high degree education through university, certifications, workshops, and participation in professional associations, including the American Mosquito Control Association (AMCA), Florida Mosquito Control Association (FMCA), Society of Vector Ecology (SOVE), and Entomological Society of America (ESA).

3.5. Partnerships and Collaboration

AMCD collaborates extensively with local, state, national, and international partners to strengthen public health protection and advance the science of mosquito control. Key partnerships include:

- **Florida Department of Health (DOH)** – for arbovirus surveillance and disease reporting.
- **Florida Department of Agriculture and Consumer Services (FDACS)** – for regulatory compliance and operational guidance.
- **Department of Environmental Protection** – salt marsh mosquito management in state parks & conservation areas.
- **Centers for Disease Control and Prevention (CDC)** – for arbovirus testing support and best practices.
- **Navy Entomology Center of Excellence (NECE)** – for training and evaluation of insecticides and equipment.
- **Universities and Research Institutions** – including the University of Florida, Florida A&M University, University of Miami, University of North Florida, and other academic collaborators in vector biology and control technology innovation.
- **Professional Associations** – such as AMCA, FMCA, and SOVE, facilitating global cooperation and exchange of expertise.
- **Industry** – AMCD is a good laboratory practice (GLP) facility and assists industries to test and evaluate new products and formulations.
- **Local Governments and Agencies** – coordination with municipalities, county emergency management, School Board, and environmental services to support community response and preparedness.

Through these partnerships, AMCD enhances its capacity to anticipate and respond to emerging disease threats, integrate new technologies, and maintain a leadership role in public health vector management.

4. Environmental and Situational Analysis

4.1. Overview of Current Conditions

St. Johns County, located along Florida's northeast Atlantic coast, provides an environment highly conducive to mosquito proliferation due to its humid subtropical climate, extensive wetland and tidal ecosystems, and rapid population growth. Average annual rainfall ranges from 50 to 55 inches, with the peak mosquito season extending from March through November. These conditions support diverse mosquito habitats from saltmarsh and floodplain wetlands to urban containers and artificial water sources.

AMCD's surveillance and control programs are designed to address the unique ecological and demographic characteristics of this region. The district conducts comprehensive Integrated Mosquito Management (IMM) based on surveillance-driven decision-making, using larval and adult sampling, resistance monitoring, and targeted control interventions.

4.2. Mosquito Fauna and Vector Species

Over 40 mosquito species have been identified within St. Johns County, representing multiple genera with differing ecological niches and public health relevance. Key vector and nuisance species include:

Species	Common Name	Primary Habitat	Public Health Importance
Aedes aegypti	Yellow fever mosquito	Urban containers, artificial habitats	Vector of dengue, Zika, chikungunya, yellow fever
Aedes albopictus	Asian tiger mosquito	Suburban/rural containers, shaded areas	Vector of dengue and chikungunya; aggressive biter
Culex nigripalpus	—	Marshes, ditches, stormwater systems	Principal vector of St. Louis encephalitis and West Nile virus
Culex quinquefasciatus	Southern house mosquito	Urban storm drains and septic systems	Vector of West Nile virus
Psorophora columbiae	Dark rice field mosquito	Floodplains, temporary pools	Severe pest species; indicator of heavy rainfall events
Aedes taeniorhynchus	Salt marsh	Salt Marsh	Nuisance and heartworm vector
Anopheles crucians		Permanent water habitats	Secondary malaria vector (historically relevant)
Culiseta melanura		Permanent wooded swamps	EEE virus vector

AMCD continuously monitors species composition and seasonal abundance using CDC light traps, BG-Sentinel traps, ovitraps, and gravid traps, with laboratory identification and arbovirus testing performed on collected specimens.

4.3. Vector-Borne Disease Risks

Although Florida's human arbovirus activity varies annually, West Nile virus (WNV) and Eastern equine encephalitis virus (EEEV) remain endemic concerns. Sporadic detections in sentinel chickens and mosquito pools are documented across northeast Florida, including neighboring counties. The growing presence of *Aedes aegypti* and *Aedes albopictus* increases the potential for imported arbovirus introductions such as dengue or chikungunya from travel-associated cases.

In response, AMCD maintains a strong molecular surveillance program to detect arboviruses early and support rapid response. The district collaborates closely with the Florida Department of Health (DOH) and University of Florida laboratories for confirmation and epidemiological correlation.

4.4. Population Growth and Land Development

St. Johns County continues to experience one of the highest growth rates in Florida, with population expanding from approximately 190,000 in 2010 to over 350,000 in 2025 — a 68% increase. Projections indicate that the population will exceed 400,000 by 2030.

Rapid development of residential communities, deforestation, golf courses, landscape changes, and commercial centers has created new larval habitats such as retention ponds, storm drains, construction-related containers, and mosquito species and habitant changes /shifts. Coastal development also increases human exposure to saltmarsh mosquito populations. These trends require AMCD to adjust operational coverage, expand surveillance networks, and plan for additional staff, equipment, and facilities to meet service demand.

4.5. Climate and Environmental Factors

Climate change poses evolving challenges for mosquito control. Increasing temperatures, prolonged rainfall periods, and higher sea levels affect breeding habitats and species distribution. Warmer winters allow certain species to overwinter more effectively, expanding their seasonal activity and geographic range.

AMCD has begun integrating climate and environmental data (precipitation, temperature, tidal influence) into its GIS-based surveillance and operational planning, helping predict mosquito emergence patterns and improving response efficiency.

4.6. Emerging Technologies and Innovation

The next five years will bring transformative advances in mosquito control technology. AMCD is actively evaluating and incorporating:

- **AI-powered mosquito traps** for real-time species detection and density mapping.
- **Drone-assisted larviciding** to reach inaccessible habitats efficiently.

- **SIT & IIT applications** to control major vectors through species specific and environmental-friendly technology.
- **Attractive Targeted Sugar Bait (ATSB)** technology for environmentally friendly adult mosquito control.
- **Data integration platforms** combining field, laboratory, and weather data for predictive modeling.
- **Robotaxi modification** for ground Ultra-Low-Volume (ULV) spraying.

Adoption of this tools/technology aligns with AMCD's goal to improve operational precision, reduce insecticide use, overcome resistance, and enhance cost-effectiveness while maintaining ecological responsibility.

4.7. Strengths, weaknesses, opportunities, and threats (SWOT) Analysis

Strengths	Weaknesses
• Long-standing reputation for excellence and community trust.	• Limited staffing growth relative to population expansion.
• Experienced scientific and operational workforce.	• Aging infrastructure and need for facility upgrades.
• Strong partnerships with universities and state agencies.	• Dependence on weather conditions for operational scheduling.
• Advanced laboratory and surveillance capacity.	• Limited capacity for large-scale data integration.
• Disease Vector Education Center promoting public awareness.	• Recruitment and retention challenges for specialized roles.

Opportunities	Threats
• Adoption of AI, robotics, SIT, Wolbachia-infected male, and ATSB technologies.	• Climate change increasing mosquito breeding potential.
• Expansion of research collaborations and grants.	• Emerging arboviruses and invasive species introduction.
• Growing public engagement through education programs.	• Insecticide resistance development.
• Use of predictive analytics for proactive management.	• Public misinformation and declining trust in science.

This analysis establishes the context for AMCD's strategic goals and initiatives: ensuring that the district remains proactive, innovative, and scientifically grounded in addressing current and future mosquito control challenges in St. Johns County.

5. Strategic Priorities and Goals

The following five strategic goals define the priorities of AMCD for 2025–2030. Each goal supports the district's mission to protect public health through integrated mosquito management (IMM), innovation, education, and collaboration.

For each goal, specific objectives and key strategies are identified, followed by key performance indicators (KPIs) that will guide evaluation and accountability.

Goal 1: Strengthen Integrated Mosquito Management (IMM)

Objective 1.1: Enhance surveillance and data-driven decision-making

- Expand adult and larval surveillance networks using AI-enabled and smart traps.
- Integrate GIS mapping and environmental data (rainfall, tide, temperature) for predictive modeling.
- Standardize data entry and reporting to support transparency and operational efficiency.

Objective 1.2: Modernize control operations

- Implement drone-based larviciding and precision ULV spraying for targeted applications.
- Evaluate and, where appropriate, incorporate Attractive Targeted Sugar Bait (ATSB) technologies for adult mosquito management.
- Evaluate efficacy of SIT and IIT for control of dengue vectors.
- Continue resistance testing and rotation of insecticides to maintain efficacy.

Objective 1.3: Maintain compliance and environmental stewardship

- Ensure compliance with all federal, state, and local regulations (EPA, FDACS, DOH, DEP).
- Minimize non-target impacts through calibrated applications and monitoring.
- Strengthen integrated pest management (IPM) practices to balance control effectiveness and environmental protection.

Key Performance Indicators (KPIs):

- ≥ 95% of control operations based on verified surveillance data.
- ≥ 5% reduction in average annual adult mosquito density (compared to 2020–2025 baseline).
- 100% adherence to pesticide calibration and application standards.

Expected Outcomes:
Improved disease detection, faster operational response, optimized resource allocation, and reduced mosquito nuisance levels across urban and rural environments.

Goal 2: Advance Research and Innovation

Objective 2.1: Expand laboratory and field research

- Conduct ongoing arbovirus detection and molecular diagnostic research.
- Continue studies on insecticide resistance and mechanisms of tolerance in local mosquito populations.
- Develop experimental trials for emerging technologies (ATSB, autodissemination, SIT/IIT, GMO, and biological control).

Objective 2.2: Strengthen collaborations

- Establish cooperative research projects with the University of Florida, University of North Florida & University of South Florida, USDA/CMAVE, DOD/NECE, CDC/DVBD, and other partners.
- Participate in multi-agency and international research consortia (AMCA, SOVE).
- Pursue external funding through grants from CDC, NIH, USDA, and private foundations.

Objective 2.3: Promote innovation adoption

- Pilot test AI-based surveillance and automated trap systems.
- Develop a centralized data platform integrating field, lab, and weather data.
- Evaluate novel operational technologies for cost-benefit performance.

KPIs:

- ≥ 3 peer-reviewed publications or presentations per year.
- ≥ 2 funded research or technology projects per biennium.
- ≥ 1 new control or surveillance technology adopted districtwide by 2030.

Expected Outcomes:
Enhanced scientific credibility, improved operational efficiency, and broader adoption of cost-effective, data-driven technologies.

Goal 3: Expand Public Education and Community Engagement

Objective 3.1: Grow Reach of the Disease Vector Education Center

- Increase school and public visitation by 10% annually.
- Develop interactive, robot-assisted exhibits explaining mosquito ecology, control, and health risks.
- Offer teacher workshops and student programs aligned with Florida science standards.

Objective 3.2: Strengthen community outreach

- Conduct targeted outreach in new residential developments and tourism zones.
- Expand bilingual educational materials and social media campaigns.
- Promote "Drain and Cover" and source reduction campaigns through local partnerships.

Objective 3.3: Foster transparency and public trust

- Maintain regular communication through websites, newsletters, reports, and media engagement.
- Host public events/open house, public tours, and demonstration days.
- Encourage citizen participation through community surveys and feedback tools.

KPIs:

- ≥ 12,000 annual visitors or participants in education and outreach programs by 2030.
- ≥ 90% of surveyed residents express confidence in AMCD's programs.
- ≥ 50 community presentations or school visits per year.

Expected Outcomes:
A more informed and proactive community, improved public cooperation with source reduction efforts, personal protection and prevention, and strengthened support for AMCD's mission.

Goal 4: Build Organizational Capacity and Workforce Development

Objective 4.1: Invest in professional training

- Provide continuing advance education, annual continuing education for staff in entomology, communication, customer service, drone operation, GIS, and AI data systems.
- Encourage certifications from FDACS, CDC, and AMCA.
- Support participation in national and international conferences.

Objective 4.2: Strengthen organizational structure

- Evaluate staffing levels and create succession plans for critical positions.
- Implement performance-based evaluations and professional development pathways.
- Upgrade facilities, fleet, and IT infrastructure to meet operational demands.

Objective 4.3: Enhance workplace culture & safety

- Foster teamwork, safety, and continuous improvement.
- Develop all SOPs and safety procedures for all other business operations.
- Implement employee recognition and retention programs.
- Support a diverse and inclusive work environment.

KPIs:

- 100% of operational staff are certified for required field applications.
- ≥ 90% annual staff retention rate.
- Implementation of updated facilities and technology infrastructure by 2028.

Expected Outcomes:
A skilled, motivated workforce supported by modern facilities and technology that meet the growing needs of St. Johns County.

Goal 5: Foster Partnerships and Sustainable Funding

Objective 5.1: Strengthen governmental and academic partnerships

- Maintain active collaboration with FDACS, DOH, DEP, USDA/CMAVE, DOD/NECE, and CDC for data sharing and preparedness.
- Participate in regional emergency response networks for vector-borne disease outbreaks.
- Expand partnerships with local governments and environmental organizations.

Objective 5.2: Secure diversified funding

- Pursue competitive research and operational grants to supplement tax revenue.
- Explore public-private partnerships for educational and technology initiatives.
- Develop sponsorship and donation opportunities for the Disease Vector Education Center.

Objective 5.3: Maintain transparency and accountability

- Publish annual performance and financial reports for public review.
- Strengthen procurement, budgeting, and auditing procedures.
- Ensure data accessibility for partners and citizens.
- Develop all safety procedures.

KPIs:

- $\geq$ \$1 million in external grant or partnership funding secured over five years.
- $\geq$ 3 new interagency or academic MOUs established by 2030.
- 100% compliance with annual financial audits, chemical inventory and reporting requirements.
- 100% compliance with all safety audits and reporting requirements.

Expected Outcomes:
Stable funding, stronger interagency collaboration, and a reputation for excellence in public service and research.

These strategic goals form the foundation of AMCD's operational and research priorities for the next five years. They reinforce the district's leadership role in science-based mosquito control, public education, and community service ensuring that AMCD continues to meet the growing needs of St. Johns County while advancing innovation and sustainability in vector management.

6. Objectives and Milestones of Each Goal

Goal 1: Strengthen Integrated Mosquito Management (IMM)

Objective 1.1 – Enhance Mosquito Surveillance Network

Strategies:

- Upgrade and expand fixed and rotating trap sites using GIS-based planning.
- Incorporate AI-enabled smart traps and automated species recognition tools.
- Integrate larval habitat mapping with remote sensing and drone imagery.

Milestones: Year	Key Actions	Performance Indicators
2026	Conduct countywide review and optimization of existing trap network; implement GIS mapping of all sites.	Updated trap network map; ≥95% data georeferenced.
2027	Deploy 10 AI-enhanced traps in representative habitats (urban, coastal, rural).	Pilot project results and accuracy report.
2028	Integrate drone-based larval habitat surveillance in high-risk zones.	80% of floodwater habitats are monitored by drones.
2029	Expand automated data collection and dashboard reporting to include real-time population density maps.	Operational dashboard online and updated weekly.
2030	Evaluate system performance; refine thresholds and standardize response protocols.	≥90% accuracy in predictive risk mapping.

Objective 1.2 – Improve Arbovirus and Pathogen Surveillance

Strategies:

- Increase molecular diagnostic testing for arboviruses (WNV, EEE, dengue, chikungunya, and Zika).
- Collaborate with Florida Department of Health (FDOH) and CDC for data sharing.
- Integrate vertebrate host and sentinel chicken monitoring where appropriate.

Milestones: Year	Key Actions	Performance Indicators
2026	Establish updated molecular lab SOPs and begin in-house PCR testing for key viruses. Adopt DOH new data system	Restart mosquito pools testing internally.
2027	Implement sentinel chicken program in coordination with FDOH.	Weekly surveillance data reports.
2028	Add real-time RT-PCR platform for enhanced sensitivity and faster turnaround.	48-hour turnaround time achieved.

Milestones: Year	Key Actions	Performance Indicators
2029	Conduct viral diversity assessment of local mosquito species.	Peer-reviewed publication or technical report.
2030	Review 5-year arbovirus trends; update response and communication plan.	Annual report with trend analysis completed.

Objective 1.3 – Optimize Larval and Adult Control Operations

Strategies:

- Apply integrated pest management (IPM) based on surveillance data.
- Incorporate biological control (e.g., larvivorous fish, Bti, IGRs).
- Release of SIT/IIT mosquitoes in Downtown.
- Use precision aerial (helicopters and drones) and ground ULV systems with GPS and flow-control technologies.

Milestones: Year	Key Actions	Performance Indicators
2026	Update operational manuals and calibrate all ULV equipment. Release of SIT/IIT male mosquitoes	100% calibration compliance.
2027	Introducing precision aerial treatment software (real-time spray tracking).	≥90% treatment accuracy.
2028	Conduct countywide source reduction campaigns with public participation. Promote citizen sciences	≥1,000 citizen reports through engagement platform.
2029	Evaluate efficacy and cost-benefit of AI-supported spraying route optimization.	Operational efficiency improved by ≥15%.
2030	Publish operational outcomes and performance summary.	Peer-reviewed report or AMCA presentation.

Objective 1.4 – Strengthen Emergency Response and Vector-Borne Disease Preparedness

Strategies:

- Maintain readiness for arboviral or invasive species outbreaks.
- Establish rapid deployment protocols and interagency coordination plans.
- Conduct annual simulation exercises and staff training.

Milestones: Year	Key Actions	Performance Indicators
2026	Develop Emergency Vector Response Plan (EVRP) with FDOH and local agencies.	EVRP approved by Board.
2027	Conduct first tabletop exercise and interagency review.	Evaluation report completed.
2028	Expand rapid response kits and train staff for nighttime emergency operations.	≥90% of staff trained.
2029	Participate in statewide mosquito-borne disease preparedness drill.	Successful exercise participation.
2030	Review response effectiveness and update EVRP.	Revised plan adopted by Board.

Objective 1.5 – Environmental and Resistance Management

Strategies:

- Monitor insecticide resistance annually.
- Implement rotation strategies to delay resistance development.
- Promote reduced pesticide footprint and eco-friendly alternatives.

Milestones: Year	Key Actions	Performance Indicators
2026	Establish baseline insecticide resistance profile for key mosquito species including larvae and adults.	Database established.
2027	Implement rotational chemical use plan. Mass release of SIT/IIT male mosquitoes in downtown	Resistance monitoring report issued.
2028	Introduce ATSB or biopesticide pilot project.	Field efficacy data collected.
2029	Evaluate environmental impact metrics (non-target organisms, drift).	Environmental compliance report completed.
2030	Publish 5-year resistance management outcomes.	Scientific paper or technical summary published.

Goal 2 – Advance Research, Innovation, and Technology Development

Purpose:
To ensure AMCD remains a regional and international leader in applied mosquito research and technology integration, fostering innovation that enhances public health protection, operational efficiency, and environmental sustainability.

Objective 2.1 – Strengthen Research Programs and Capacity

Strategies:

- Expand in-house research on arboviruses, insecticide resistance, and control efficacy.
- Recruit and support qualified research staff, including a Molecular Entomologist and seasonal research interns.
- Maintain collaboration with the University of Florida, USDA/ARS, DOD/NECE, USDA/CMAVE, CDC, and other research institutions.

Milestones: Year	Key Actions	Performance Indicators
2026	Hire Molecular Entomologist and re-establish molecular and bioassay laboratories.	Position filled; laboratory functional.
2027	Initiate three applied research projects on local arbovirus surveillance and vector competence.	≥3 projects launched; annual report submitted.
2028	Publish findings in peer-reviewed journals and present at AMCA/SOVE conferences.	≥2 publications or presentations.
2029	Expand collaboration with state and international mosquito control associations.	≥3 active MOUs or cooperative projects.
2030	Conduct 5-year research review; identify new priorities for next planning cycle.	Review document completed and adopted.

Objective 2.2 – Integrate Artificial Intelligence (AI) and Robotics in Mosquito Surveillance and Control

Strategies:

- Evaluate commercial and prototype AI mosquito traps for species identification and density estimation.
- Implement AI-assisted data management and predictive analytics.
- Explore robotics applications in public education, data collection, and laboratory operations.

Milestones: Year	Key Actions	Performance Indicators
2026	Conduct initial AI trap pilot study with university partner.	Pilot report submitted.
2027	Integrate AI system for automated trap image analysis and reporting.	50% trap data processed by AI.
2028	Test robotic demonstration units for public outreach and educational use.	Education robot deployed at Vector Education Center.

Milestones: Year	Key Actions	Performance Indicators
2029	Incorporate machine learning for population prediction and spray scheduling.	Predictive accuracy ≥85%.
2030	Publish operational and scientific evaluation of AI and robotics use.	Peer-reviewed publication or technical monograph.

Objective 2.3 – Research and Evaluate Novel Control Technologies

Strategies:

- Test Attractive Targeted Sugar Bait (ATSB), biopesticides, Wolbachia-based suppression, and genetic control methods.
- Conduct field and semi-field trials to assess efficacy and non-target safety.
- Establish regulatory and GLP compliance and public communication protocols.

Milestones: Year	Key Actions	Performance Indicators
2026	Identify research sites and partners for ATSB/SIT pilot study.	Site selected; protocol approved by Board.
2027	Implement ATSB & SIT/IIT field trial and collect efficacy and environmental data.	≥75% deployment success.
2028	Begin feasibility assessment of biopesticide Wolbachia trials.	Feasibility report completed.
2029	Conduct semi-field evaluation of gene-drive or novel sterile male technologies (if regulatory approval obtained).	Pilot study conducted safely.
2030	Summarize outcomes and develop AMCD Technology Adoption Guidelines.	Published technical report and recommendations.

Objective 2.4 – Promote Innovation Through Partnerships and Funding Initiatives

Strategies:

- Pursuing competitive research grants from CDC, USDA, DOD, NIH, NSF, and private foundations.
- Collaborate with technology companies and start-ups developing mosquito surveillance tools.
- Participate in national and international consortia for technology evaluation.

Milestones: Year	Key Actions	Performance Indicators
2026	Submit two grant proposals for R&D funding (CDC, USDA, DOD or state).	≥$100,000 in proposals submitted.
2027	Secure at least one external grant award and begin collaborative study.	1+ funded project underway.
2028	Join international mosquito innovation consortium (e.g., AMCA, SOVE partnership).	Membership or collaboration formalized.
2029	Host annual consulting and collaboration meeting, research workshop or technology demonstration day at AMCD.	≥50 attendees; stakeholder feedback positive.
2030	Maintain continuous external funding and partnerships.	≥$500,000 cumulative grant funding achieved.

Objective 2.5 – Disseminate Research and Foster Knowledge Exchange

Strategies:

- Present findings at AMCA, FMCA, SOVE, and related global scientific meetings.
- Publish annual research summary reports on AMCD's website.
- Host visiting scientists, students, and training programs at AMCD's facilities.

Milestones: Year	Key Actions	Performance Indicators
2026	Establish research communication plan and format.	Plan adopted by Research Committee.
2027	Continue to organza and host AMCD Research and Technology Consulting & Coordinating Symposium.	30+ participants.
2028	Publish annual R&D progress report.	Posted publicly online.
2029	Develop mentorship program for graduate students and interns.	≥3 mentees per year.
2030	Compile five-year research and innovation summary.	Final report presented to Board and partners.

Goal 3 – Expand Public Education, Community Engagement, and Outreach

Purpose:
To educate residents, students, and visitors about mosquito ecology, control methods, and prevention of mosquito-borne diseases, fostering an informed and proactive community.

Objective 3.1 – Strengthen the Disease Vector Education Center (DVEC)

Strategies:

- Expand interactive exhibits, including AI and robotic demonstration units, to engage visitors of all ages.
- Develop new hands-on workshops and training programs for schools, colleges, and community groups.
- Promote the center as a regional hub for vector education and tourism.

Milestones: Year	Key Actions	Performance Indicators
2026	Update exhibit content to reflect latest mosquito biology and control technologies.	100% exhibits updated; visitor feedback positive.
2027	Deploy AI/robotics interactive demonstrations.	≥2 robotic units operational.
2028	Launch educator and school outreach program with lesson plans aligned to Florida Science Standards.	≥20 schools participating.
2029	Expand DVEC capacity for seasonal programs and field trips.	10% annual increase in attendance.
2030	Conduct five-year impact assessment and identify future expansion opportunities.	Report completed; Board-approved plan developed.

Objective 3.2 – Increase Community Outreach and Engagement

Strategies:

- Conduct targeted outreach in neighborhoods, new residential developments, and tourism zones.
- Develop bilingual (English/Spanish) educational materials and social media campaigns.
- Promote citizen participation and citizen science in source reduction, mosquito reporting, and community monitoring.

Milestones: Year	Key Actions	Performance Indicators
2026	Launch bilingual social media campaign updates.	≥50 posts and 5,000 engagements annually.
2027	Implement "Drain and Cover" seasonal campaigns in high-density neighborhoods.	≥500 households engaged per campaign.
2028	Conduct/host summer workshops and community mosquito monitoring programs. District's 80-year anniversary celebration.	≥200 participants annually.
2029	Expand mobile education unit for community events and festivals.	≥10 events attended per year.

Milestones: Year	Key Actions	Performance Indicators
2030	Evaluate engagement effectiveness; update outreach strategies.	≥80% participant satisfaction rate.

Objective 3.3 – Foster Public Trust and Transparency

Strategies:

- Provide clear, timely communication on mosquito control activities, arbovirus detections, and research outcomes.
- Host public events /open houses, demonstration days, and "Mosquito Awareness Week" annually.
- Encourage public input on programs and solicit feedback via surveys and community forums.

Milestones: Year	Key Actions	Performance Indicators
2026	Publish annual mosquito control and research report.	Report available to public online and in print.
2027	Host public events/ open house event at DVEC.	≥200 attendees; feedback collected.
2028	Implement online citizen feedback platform.	≥100 submissions per year.
2029	Expand newsletter and media coverage of AMCD activities.	Quarterly newsletter distributed; ≥1,000 subscriptions.
2030	Conduct five-year public trust survey.	≥80% of residents indicate confidence in AMCD programs.

Objective 3.4 – Support Youth and Educational Programs

Strategies:

- Partner with K–12 schools, colleges, and STEM programs for educational experiences.
- Offer internships, summer camps, and volunteer programs.
- Promote citizen science initiatives such as mosquito surveillance and habitat reporting.

Milestones: Year	Key Actions	Performance Indicators
2026	Continue student internship program (summer) at DVEC and labs.	≥6 interns annually.

Milestones: Year	Key Actions	Performance Indicators
2027	Develop K–12 curriculum modules on mosquito biology and control.	≥10 schools participating.
2028	Organize annual "Mosquito Science Day" for students.	≥200 student participants.
2029	Expand citizen science program for local mosquito monitoring.	≥50 active participants.
2030	Evaluate youth program outcomes and expand successful initiatives.	≥80% positive participant feedback.

Goal 4 – Enhance Infrastructure, Equipment, and Workforce Development

Purpose:
To strengthen AMCD's operational capacity by investing in modern facilities, advanced technology, and a highly trained, motivated workforce capable of meeting current and future mosquito control challenges.

Objective 4.1 – Upgrade Laboratory and Operational Facilities

Strategies:

- Renovate and expand molecular biology, insectary, and diagnostic laboratories.
- Improve storage, fleet maintenance, and operational support facilities.
- Implement energy-efficient, environmentally responsible building upgrades.

Milestones: Year	Key Actions	Performance Indicators
2026	Conduct facility needs assessment for labs, office, and storage.	Assessment report completed.
2027	Renovate laboratory spaces to accommodate expanded research and molecular diagnostics.	≥90% facility upgrades completed.
2028	Upgrade fleet maintenance area and operational storage facilities.	Maintenance efficiency improved by ≥20%.
2029	Implement more energy-efficient lighting/solar recourse, HVAC, and water systems.	≥20% reduction in energy waste.
2030	Conduct full review of facility performance and prepare five-year infrastructure plan.	Review report approved by Board.

Objective 4.2 – Modernize Equipment and Technology

Strategies:

- Replace aging ULV sprayers, drones, and helicopter, larvicide application systems, and traps.
- Adopt drone-assisted larviciding and AI-enhanced surveillance tools.
- Implement centralized IT, GIS, and data management systems.

Milestones:

Year	Key Actions	Performance Indicators
2026	Inventory and assess all field and laboratory equipment and facilities	Comprehensive inventory report completed.
2027	Replace outdated ULV and larvicide application equipment. Evaluating helicopter effectiveness	≥80% of equipment modernized.
2028	Upgrade on deploying drones and integrate GIS-based operational tracking. Purchasing 1 or 2 large helicopters to replace 3 aged helicopters	≥50% operational zones monitored by drone/GIS.
2029	Implement centralized data platform for field and laboratory operations.	Platform fully functional and staff trained.
2030	Evaluate technology performance and plan next-generation upgrades.	Report published; recommendations approved.

Objective 4.3 – Develop Workforce Skills and Capacity

Strategies:

- Offer continuing education and professional certification programs for all operational and research staff.
- Crosstrain staff in surveillance, laboratory diagnostics, data analysis, and public engagement.
- Support attendance at state, national, and international conferences and workshops.

Milestones:

Year	Key Actions	Performance Indicators
2026	Conduct staff skills and safety assessment and identify training needs.	Assessment completed for 100% staff.
2027	Implement annual training, workshop program for mosquito control operations, lab diagnostics, and safety.	≥90% of staff trained.
2028	Support professional certification for field technicians and researchers.	≥80% of staff certified.
2029	Introduce cross-training in AI, GIS, and drone technology for operational staff. Host 10th International Congress of Society of Vector Ecology.	≥75% of staff cross-trained.

Milestones: Year	Key Actions	Performance Indicators
2030	Evaluate workforce performance and plan long-term capacity-building initiatives.	Staff competency report completed.

Objective 4.4 – Foster Employee Retention and Organizational Culture

Strategies:

- Implement recognition programs and professional development incentives.
- Maintain a safe, inclusive, and collaborative workplace.
- Encourage internal communication, mentorship, and team-building activities.

Milestones: Year	Key Actions	Performance Indicators
2026	Enhance employee recognition and awards program. Complete job classification and compensation study	≥80% of staff participated.
2027	Conduct annual employee satisfaction and engagement survey.	≥75% overall satisfaction.
2028	Introduce mentorship program for new hires and interns.	≥5 mentor-mentee pairs established.
2029	Host annual team-building and professional development events.	≥90% staff participation.
2030	Evaluate retention rates and workplace culture metrics.	≥90% staff retention; positive survey results.

Goal 5 – Ensure Fiscal Responsibility, Governance, and Strategic Partnerships

Purpose:
To maintain AMCD's long-term sustainability, transparency, and effectiveness through sound financial management, strategic partnerships, and robust governance structures.

Objective 5.1 – Strengthen Financial Planning and Budget Management

Strategies:

- Develop multi-year budgeting aligned with strategic priorities and operational needs.
- Monitor expenditures and resource allocation to ensure cost-effectiveness.
- Develop and maintain safety procedures and SOPs for all operation programs.
- Maintain transparent reporting and compliance with state and local regulations.

Milestones: Year	Key Actions	Performance Indicators
2026	Complete five-year financial forecast aligned with strategic plan & SOPs.	Board-approved financial plan.
2027	Implement quarterly budget reviews and reporting system.	≥90% adherence to budget monitoring.
2028	Conduct cost-benefit analysis for major operational programs.	≥90% of programs evaluated.
2029	Review and adjust multi-year forecast based on actual revenues and expenditures.	Forecast updated and approved.
2030	Conduct comprehensive 5-year financial performance review.	Report completed and published.

Objective 5.2 – Pursue External Funding and Grants

Strategies:

- Apply for federal, state, and private grants for research, education, and operational innovation.
- Develop public-private partnerships for technology testing, community education, and infrastructure projects.
- Maintain grant tracking and reporting systems to ensure compliance and maximize funding.

Milestones: Year	Key Actions	Performance Indicators
2026	Identify grant opportunities and submit at least 2 proposals.	≥$100,000 in proposed funding.
2027	Secure at least one external grant or partnership.	≥$50,000 in awarded funding.
2028	Expand grant applications and collaborative proposals with universities and industry.	≥$150,000 cumulative funding.
2029	Implement and evaluate funded projects, ensuring milestone compliance.	≥90% project completion rate.
2030	Achieve cumulative external funding of ≥$500,000 over five years.	Report of all grants awarded and outcomes published.

Objective 5.3 – Enhance Governance and Policy Oversight

Strategies:

- Review and update policies and procedures to reflect best practices, safety, and regulatory requirements.
- Conduct annual audits, compliance checks, and performance evaluations.
- Maintain clear lines of accountability between staff, management, and the Board of Commissioners.

Milestones:

Year	Key Actions	Performance Indicators
2026	Conduct comprehensive policy and procedure review.	All policies are updated and approved.
2027	Implement annual internal audit of operations and finance.	100% of departments audited.
2028	Update procurement, contracting, and risk management procedures.	Procedures standardized and documented.
2029	Conduct governance training for Board members and senior staff.	≥90% attendance.
2030	Evaluate governance effectiveness and implement improvements.	Board-approved governance report.

Objective 5.4 – Strengthen Strategic Partnerships

Strategies:

- Maintain collaborative relationships with FDACS, CDC, DOD/NECE, USDA/CMAVE, DOH, AMCA, EMCA, and local municipalities.
- Partner with academic institutions for research, workforce training, and technology evaluation.
- Engage community organizations, environmental groups, and the tourism sector in mosquito management initiatives.

Milestones:

Year	Key Actions	Performance Indicators
2026	Identify and formalize priority partnerships with MOUs or agreements. Host the Florida Entomology Society' 106th meeting.	≥3 new MOUs signed.
2027	Participate in at least one interagency mosquito control exercise or initiative.	Successful joint program implemented.
2028	Expand collaborative research and technology projects with universities and private sector.	≥2 active partnerships.
2029	Host regional conference or workshop for mosquito control stakeholders.	≥50 attendees; positive feedback.

Milestones: Year	Key Actions	Performance Indicators
2030	Evaluate partnership outcomes and develop a five-year collaboration plan.	Strategic collaboration report published.