BOARD OF HIGHER EDUCATION
REQUEST FOR BOARD ACTION

NO: BHE 26-39

BOARD DATE: February 10, 2026

APPROVAL OF LETTER OF INTENT OF ROXBURY COMMUNITY COLLEGE TO AWARD THE ASSOCIATE OF APPLIED SCIENCE IN BUILDING AUTOMATION SYSTEMS AND AUTHORIZATION FOR FAST TRACK REVIEW

MOVED: The Board of Higher Education (BHE) has evaluated the Letter of Intent of **Roxbury Community College** to award the **Associate of Applied Science in Building Automation Systems** and has determined that the proposal aligns with BHE criteria. Accordingly, the BHE authorizes the Commissioner to review the program and to make a final determination on degree granting authority pursuant to the Fast-Track review protocol.

VOTED: Motion adopted by the BHE on 2/10/2026.

Authority: Massachusetts General Laws Chapter 15A, Section 9(b); AAC 18-40

Contact: Richard Riccardi, Sc.D., Deputy Commissioner for Academic Affairs and Student Success

BOARD OF HIGHER EDUCATION
Roxbury Community College
Letter of Intent
Associate of Applied Science in Building Automation Systems

DEGREE TITLE ABSTRACT ON INTENT AND MISSION OF PROGRAM

The Associate of Applied Science in Building Automation Systems (BAS) at Roxbury Community College prepares students for high-demand careers at the forefront of clean energy and smart building technology. As a flagship program of the Center for Smart Building Technology, it advances Roxbury's equity, economic mobility, and climate resilience mission by training a diverse, local workforce to manage and optimize energy-efficient building systems. The proposed degree program equips students with industry-recognized skills in building controls, systems integration, and energy performance, supporting Boston's 2050 carbon-neutral goals and opening pathways to technical careers for residents of Environmental Justice communities.

The proposed Associate of Applied Science in Building Automation Systems was approved by Roxbury's Board of Trustees on December 20, 2024. The LOI was circulated on December 5, 2025. No comments were received.

A. **ALIGNMENT WITH MASSACHUSETTS GOALS FOR HIGHER EDUCATION**

Address Gaps in Opportunity and Achievement in Alignment with Campus-Wide Goals

Roxbury's Center for Smart Building Technology (C4SBT) is addressing long-standing gaps in opportunity and achievement through the existing **Associate of Applied Science (AAS) in Building Automation Systems** — a program currently offered as a non-credit, 450-hour certificate and now transitioning to a credit-bearing associate degree. This expansion reflects a deliberate strategy to build an accessible, high-impact career pathway for students historically underserved by traditional higher education.

The proposed degree program directly supports equity and workforce development by:

- **Eliminating financial barriers to entry:**
    - Through institutional accreditation, students enrolled in the proposed degree program will qualify for **federal and state financial aid**, removing cost as a barrier for low-income, first-generation, and underrepresented students. State initiatives such as **MassReconnect** and **MassEducate** also provide free community college access for eligible residents, especially adults over 25 and recent high school graduates, expanding opportunity for residents of Roxbury and surrounding neighborhoods.
- **Stackable, workforce-aligned structure:**
    - The 450-hour certificate program serves as a stepping- stone into the proposed degree program, allowing students to enter the workforce quickly and return later to complete their degree. This flexibility supports academic momentum for working adults and students navigating personal or financial constraints, while maintaining a clear path to family-sustaining careers.
- **Industry-informed curriculum with direct employment outcomes:**
    - Developed in partnership with the **Association of Controls Professionals** and aligned with employer input from partners such as Siemens, Johnson Controls, and Automated Logic, the proposed degree program delivers hands-on, relevant training in electrical systems, HVAC controls, programming, and networking. Students gain practical experience working on real automation systems in Roxbury's state-of-the-art BAS lab — described by partners as "a commercial building in a lab" — and complete a field internship to ensure job readiness upon graduation.

- **Career-ready technical training for an essential, growing industry:**
    - Students are trained to install, program, and troubleshoot building automation systems, including HVAC, lighting, fire alarms, access controls, and energy management systems. With nearly all commercial buildings using integrated BAS technologies, graduates are well-positioned for roles as building automation technicians, energy analysts, and systems integrators. These high-demand jobs offer competitive wages and long-term career growth.

Alignment with Roxbury's institutional goals:

This program advances Roxbury's mission to expand access to career-focused education, close equity gaps, and strengthen local economic development. It aligns with campus-wide priorities of **retention, credential attainment, and workforce readiness**, while preparing students to fill critical roles in Boston's clean energy and smart building sectors. Additionally, it supports the Commonwealth's climate goals by training a new generation of technicians capable of maintaining and optimizing energy-efficient buildings.

By connecting underrepresented students to technical careers with low cost and high reward, the proposed degree program reinforces Roxbury's commitment to inclusive excellence, economic mobility, and environmental sustainability, turning today's students into tomorrow's green building professionals.

Program or Department Supports to Ensure Student Retention and Completion

Roxbury provides a comprehensive framework of academic, career, and wraparound supports to ensure that students persist and complete their programs—particularly within high-demand, mission-driven fields such as clean energy and building automation. The proposed degree program, housed within the Center for Smart Building Technology (C4SBT), reflects Roxbury's commitment to advancing educational access, economic mobility, and climate equity.

The students served by Roxbury often face multiple barriers to completion, including financial instability, housing and food insecurity, and limited access to professional networks. Roxbury addresses these challenges through coordinated, student-centered support services designed to help students remain enrolled, complete their credentials, and transition into family-sustaining careers.

Academic and Career Support Services

The proposed degree program provides structured academic guidance through weekly hands-on lab sessions, small class sizes, and a practical curriculum aligned with industry needs. Roxbury offers free tutoring both in-person and online, covering core content areas such as math, writing, and science. Faculty and staff maintain proactive engagement with students, reinforcing expectations around attendance, participation, and performance.

Career preparation is embedded into the program. Roxbury's Career Services team collaborates with faculty to deliver in-class career readiness modules focused on resume development, interview preparation, and workplace professionalism. The college's "Earn While You Learn" model connects students with paid internships and on-campus jobs that build experience and strengthen their employment prospects.

Wraparound and Equity-Focused Services

To reduce non-academic barriers to completion, Roxbury students have access to Project Access, a centralized resource hub that connects them to:

- Free groceries through the *Rox Box* on-campus food pantry
- Prepared meals for students experiencing food insecurity
- Assistance with public benefits (e.g., SNAP, MBTA Reduced Fare Program)
- Emergency financial support for housing and basic needs
- Behavioral health services and counseling
- Legal and tax support services
- Laptop loans, technology coaching, and childcare referrals

Students with disabilities are supported through Roxbury's Student Accessibility Services (SAS), which provides individualized accommodations and skill-building strategies to promote academic success.

A Pathway to Careers, Wealth-Building, and Climate Impact

Roxbury views student achievement as central not only to individual advancement but to the broader goals of economic equity and climate resilience. The proposed degree program is designed to help students leverage this educational opportunity to launch careers in smart building technology — a

growing sector essential to achieving Boston's 2050 carbon neutrality goals. By completing the proposed degree program, students are positioned to earn industry-recognized credentials, access living-wage employment, and contribute to decarbonizing Boston's buildings — often the very neighborhoods they call home.

Through a combination of high-impact instruction, embedded career development, and robust student supports, Roxbury ensures that students are equipped to complete the program, succeed in the clean energy workforce, and build a better future for themselves and their communities.

Alliances and Partnerships with PK-12, Other IHE's, Community Employers

Roxbury has built an integrated network of partnerships across PK-12 schools, higher education institutions, and the employer community to ensure the success, sustainability, and real-world relevance of the proposed degree program. These alliances are central to both program development and student outcomes, ensuring that the proposed degree program is responsive to industry needs, grounded in equity, and designed to support students as they build careers, build wealth, and contribute to Boston's carbon emission reduction goals.

PK–12 Partnerships and Early Pipeline Development

Roxbury partners with multiple Boston Public Schools (BPS) to create early exposure and access to clean energy and building automation careers. The Center for Smart Building Technology (C4SBT) currently works with Madison Park Technical Vocational High School, Dearborn STEM Academy, John D. O'Bryant School of Math and Science, and Boston Day & Evening Academy. Beginning Fall 2026, partnerships will expand to include TechBoston Academy, Dr. Albert D. Holland High School of Technology, and New Mission High School.

These partnerships include after-school programming in Intro to BAS and industry-recognized certificates, Smart Lab tours, curriculum alignment, and career exploration events. Roxbury further contributes to citywide talent pipeline development by serving on Madison Park's HVAC Advisory Board, Clean Energy Task Force, and Building Performance Maintenance Advisory Committee.

Higher Education and Sector-Wide Collaboration

Roxbury is an active member of the *Commonwealth Climate Coalition Higher Ed Roundtable*, which convenes public colleges across Massachusetts to align curriculum development with workforce strategies. Roxbury is also a founding partner of the *Alliance for Climate Transition (ACT)*, a regional collaboration of education, nonprofit, and industry stakeholders focused on creating equitable access to climate careers. Nationally, Roxbury works with the BEST Center (Building Efficiency for a Sustainable Tomorrow) and the Association of Controls Professionals to align training content with national building performance standards and emerging technologies in HVAC and controls.

Employer Engagement and Advisory Board Structure

Roxbury's Smart Building Technology Advisory Board plays a critical role in shaping and refining the proposed degree program. The board includes representatives from:

- Siemens
- Johnson Controls
- Automated Logic
- CBRE (Global Commercial Real Estate Solutions)
- Eversource
- National Grid
- Weston & Sampson
- Groma

These employer partners advise on curriculum development, credential alignment, and labor market relevance. Their input directly informs instructional content, software and lab equipment procurement, and the integration of industry-recognized certifications. They also provide hands-on opportunities for students through internships, job shadows, guest lectures, site visits, and mentorship.

ACP's July 2025 report identifies Amazon, CBRE, Siemens, and C&W Services as top employers posting BAS-related roles in Boston, with Amazon alone listing over 80 combined vacancies across platforms like Indeed and Glassdoor.

Role and Impact of the Advisory Board

The advisory board meets regularly to review student progress, employer feedback, and market needs. Their input is used to:

- Update curriculum and course competencies to reflect evolving technical demands

- Ensure alignment with in-demand credentials (e.g., Niagara certification, BAS integration tools)
- Recommend investments in lab equipment and controls systems
- Inform embedded career readiness modules and work-based learning opportunities
- Provide feedback on capstone projects and participate in mock interviews
- Support continuous improvement of Roxbury's workforce pipeline from non-credit to degree-bearing programs

Conclusion

The proposed degree program is built on a strong foundation of cross-sector partnerships that span Boston's educational and workforce landscape. Roxbury's strategy ensures a full continuum of student support—from career awareness in high school, to skills training and academic progression in college, and to job placement with leading employers. By maintaining strong advisory input and leveraging institutional alliances, Roxbury is ensuring that the proposed degree program remains agile, impactful, and aligned with both the Commonwealth's climate goals and the economic advancement of the communities it serves.

Relationship to MassHire Regional Blueprints

The proposed degree program is designed to meet a clear and growing need in the Massachusetts labor market for skilled Building Automation Technicians and related roles in building systems technology. These roles are essential to operating and maintaining energy-efficient, smart buildings, and are increasingly critical as the Commonwealth advances its climate and decarbonization goals.

According to a July 2025 analysis by the Association of Controls Professionals (ACP), Boston had a mean daily vacancy count of 875 for Building Automation Systems (BAS) roles, including 82 for Building Automation Technicians (BAT), 293 for Building Controls Technicians (BCT), and 455 for Building Automation Engineers (BAE). These figures reflect a robust and urgent need for skilled professionals in the BAS ecosystem.

ACP's data shows that 89% of BAS-related vacancies in Boston are full-time, indicating strong employer commitment to long-term roles in this sector.

Vyapari, S. (2025, July). Boston BAS Vacancies – July 2025. Association of Controls Professionals. Retrieved from https://acprofessionals.org

High-Growth Occupations and Demand

The occupation of **Building Automation Technician** spans multiple job titles in the labor market, including:

- Building Systems Technician
- BAS Field Technician
- Energy Management Technician
- Controls Installer
- HVAC Controls Technician
- Building Controls Specialist
- Smart Building Technician

According to Lightcast labor market analytics, demand for these roles is rapidly increasing in Massachusetts, particularly in the Greater Boston region, where clean energy and smart infrastructure investments are accelerating. Lightcast data projects that from 2020 to 2030, Building Automation-related roles will grow by over 34%, increasing from 1,790 positions in 2020 to 2,390 by 2030 in the Metro Boston area.

The increase is driven by rapid adoption of digital controls, building management systems (BMS), and energy efficiency retrofits in both new construction and existing buildings. As Massachusetts implements policies under the Clean Energy and Climate Plan and Boston enforces BERDO 2.0 compliance, the need for trained technicians to install, program, and maintain BAS infrastructure continues to climb.

Lightcast. (2025, February). *Occupation Snapshot Report: Building Automation Systems and Related Occupations in Metro Boston*. Retrieved May 19, 2025, from https://lightcast.io/

Competitive Wages and Career Ladder

Building Automation Technician roles offer starting wages between $60,000 and $75,000 annually, depending on specialization and experience. Lightcast data shows that job postings for roles such as

Building Controls Technician or Energy Management System (EMS) Technician offer median advertised salaries around $72,000/year in Massachusetts as of early 2025.

These positions serve as entry points to long-term, stable careers in building operations, energy management, and facilities technology. Career ladders often include progression to:

- BAS Project Manager
- Energy Analyst
- Facilities Supervisor
- Systems Integration Specialist

Lightcast. (2025, February). *Building Controls Technician: Occupation Snapshot for Massachusetts*. Retrieved May 19, 2025, from https://lightcast.io/

Duplication

A small number of public and independent institutions in New England offer associate degree programs related to energy systems, HVAC, or building technologies. However, none offer the level of technical specialization, hands-on training, industry integration, or competency-based instruction that distinguishes Roxbury's proposed degree program.

The proposed degree program curriculum was developed in partnership with the Association of Controls Professionals (ACP) and BASE Labs, nationally recognized leaders in control systems training. The proposed degree program uses proprietary curriculum, trainer equipment, and a Learning Management System (LMS) designed specifically for competency-based assessment and lab performance tracking. These tools have already been implemented with success at multiple community colleges across the country, including:

- **Southern U.S. Institutions**: Greenville Technical College (SC), Athens Technical College (GA), and Tennessee College of Applied Technology
- **SUNY System Partners**: Corning Community College (NY), Jamestown Community College (NY), and Mohawk Valley Community College (NY)

- **Mid-Atlantic Institutions**: Montgomery College (MD) and Delaware Technical Community College – Dover (DE)

Roxbury is the **first institution in the Northeast** to implement this national ACP model, positioning the program as a regional leader in Building Automation Systems education.

Comparison of Regional Programs:

Institution	Program	Primary Focus	Approach
Roxbury Community College (Proposed)	AAS in Building Automation Systems	Building automation, controls integration, smart systems	Hands-on, lab-based instruction with a living laboratory model; competency-based LMS from ACP
Springfield Technical Community College (MA)	AS in Energy Systems Technology – Building Automation Track	Energy systems, HVAC, controls	Theoretical and licensing-focused; HVAC-centric labs
Benjamin Franklin Cummings Institute (MA)	AS in Engineering Technology – Building Energy Management	HVAC/R, energy efficiency, sustainability	Begins with HVAC certificate; broader focus on sustainability
Southern Maine Community College (ME)	AAS in HVAC & Refrigeration	HVAC and direct digital controls	Residential/commercial HVAC focus; limited controls integration
New England Institute of Technology (RI)	AS in Building Technology & Automation	General systems and automation	Electrical and automation fundamentals; lacks advanced BAS coverage

Curriculum Comparison

Roxbury's proposed degree program includes a full, dedicated sequence of Building Automation Systems courses:

- Electrical Foundations (with Lab)
- Control Devices & Application (with Lab)
- Installation & Troubleshooting (with Lab)
- Building Systems (with Lab)
- Control Theory & Optimization (with Lab)
- Logic & Programming (with Lab)
- Networking & Integration (with Lab)
- Startup & Commissioning (with Lab)

Each course includes lab work tied directly to job competencies, guided through the ACP LMS. Students train using real-world control systems within a Living Lab outfitted with AHUs, VAV boxes, hydronic loops, lighting systems, and secure remote BAS access.

By contrast:

- **STCC** focuses more broadly on energy systems and utility operations, with less emphasis on digital controls and building integration.
- **Benjamin Franklin Cummings Institute** starts with HVAC fundamentals and introduces energy management concepts but lacks full immersion in BAS platforms.
- **SMCC and NEIT** emphasize HVAC and electrical automation with minimal exposure to full-scale BAS systems or industry-standard tools like Niagara.

Instructional Model

Roxbury employs a competency-based instructional model using ACP's nationally validated LMS.

Students must demonstrate mastery through:

- Digital simulations
- Real-time quizzes
- Instructor sign-offs on performance tasks

This model directly prepares students for technician-level BAS roles and mirrors practices at peer colleges in other regions where students are now employed by Johnson Controls, Siemens, Schneider Electric, and similar companies.

Peer programs in the Northeast do not currently offer:

- A proprietary national BAS curriculum
- Competency-based advancement
- Integrated, employer-aligned lab performance systems

Career Pathways and Relevance

Roxbury's proposed degree program prepares graduates for direct employment in smart building operations, energy management, controls integration, and system commissioning. The program aligns with:

- Boston's BERDO 2.0 mandates
- The city's 2050 carbon-neutral goals
- The workforce priorities of the MassCEC and Commonwealth Climate Roadmap

The proposed degree program also supports vertical pathways through Roxbury's HVAC Heat Pump Training Program at Madison Park Vocational High School, enabling students and incumbent workers to advance into BAS careers.

Other programs may lead to general employment in HVAC or energy systems but lack clear, direct alignment with emerging roles in automation and smart systems.

Conclusion

Roxbury's proposed degree program stands apart as the only associate degree in the Northeast that:

- Offers a full BAS-specific course sequence
- Uses a nationally recognized competency-based model developed by ACP and BASE Labs
- Provides extensive hands-on training in a Living Lab
- Incorporates industry tools such as EasyIO and Niagara
- Is directly aligned with regional workforce needs and employer demand

Peer programs are broader, HVAC-focused, or theoretical, lacking the hands-on BAS depth needed to prepare students for this specialized field. Roxbury's proposed degree program is purpose-built to expand equitable access to high-demand smart building careers in Greater Boston and beyond.

Innovative Approaches to Teaching and Learning

The proposed degree program has been intentionally designed to incorporate industry-led curriculum, hands-on experiential training, competency-based learning, and cutting-edge digital tools. This ensures students graduate with job-ready skills aligned with current and emerging workforce needs in smart building technology.

1. Proprietary Curriculum Developed by the Association of Controls Professionals (ACP)

The curriculum for the proposed degree program is proprietary and developed by the Association of Controls Professionals (ACP), led by industry expert Brian Lovell. ACP is a national leader in standardizing training for building automation technicians. The curriculum includes detailed lab guides, instructor resources, and assessments that align with real-world building systems and control logic. ACP's training model is currently in use at leading institutions such as:

- **Georgia Piedmont Technical College (GA)** – Offers both certificate and associate degree pathways using ACP's Building Automation curriculum and BASE Lab equipment. Their students graduate directly into BAS roles with companies like Siemens and Johnson Controls.
- **Sowela Technical Community College (LA)** – Integrated ACP curriculum into its Industrial Instrumentation program, creating a BAS concentration that serves regional employers in the Gulf Coast energy and manufacturing sectors.
- **Northwest-Shoals Community College (AL)** – Offers a Controls Technician Certificate using BASE Labs and ACP content, with a focus on preparing students for roles in HVAC automation and industrial controls.
- **Tennessee College of Applied Technology (TCAT)** – Uses the ACP-aligned model to support a Controls and Automation program tied to state-level workforce development initiatives.

Roxbury is positioned to be the **first college in the Northeast** to implement this nationally validated curriculum. In partnership with ACP and BASE Lab, Roxbury will adapt this model to Boston's climate goals and clean energy workforce initiatives, creating new pipelines into careers previously inaccessible to many local students.

2. Experiential Learning: A Fully Equipped Living Laboratory

The Roxbury BAS Lab is designed as a "Living Laboratory," modeled after real-world building systems. Students work hands-on with a Superstructure Vertical Schematic Outline that includes:

- Lighting Systems: 1 LED Lighting Luminary and 1 Lighting Control Panel

- HVAC Systems: 1 Air Handling Unit, 3 Parallel Fan Terminal Units, 3 Variable Air Volume Units
- Hydronic Systems: 1 Circulating Pump, 2 Heat Exchangers, actuator-controlled valves, and 1 Electric Heating System
- Building Controls: AC/DC circuits, PID Loop Controllers, Building-Level Controllers, and Peripheral Devices

These physical systems are BACnet-enabled and connected to BASE Lab Level Trainers, allowing students to move from foundational skills (e.g., control device identification, sensor wiring) to advanced troubleshooting and system optimization with platforms like EasyIO and Niagara.

3. Competency-Based Instruction Supported by Digital Tools

All lab-based courses are delivered through a Learning Management System (LMS) developed by ACP, which includes competency-based quizzes, digital simulations, and skill assessments.
Students must demonstrate mastery of each module before progressing. Courses with competency-based assessment include:

- *Electrical Foundations (w/ Lab)* – Students build and wire low-voltage circuits, then complete digital quizzes and instructor sign-offs.
- *Control Devices & Application (w/ Lab)* – Students install and configure actuators, relays, and sensors, and complete troubleshooting exercises in simulation.
- *Installation & Troubleshooting (w/ Lab)* – Focused on diagnosing field wiring issues and controller misconfigurations in mock scenarios.
- *Control Theory & Optimization (w/ Lab)* – Includes PID loop tuning using software simulation tools.
- *Additional coursework: Building Systems, Logic & Programming, Networking & Integration, Startup & Commissioning*—each tied to job-specific learning outcomes

4. Smart Classrooms and Upgraded Digital Infrastructure

To support both in-person and blended learning formats, Roxbury has installed 98" wall-mounted and mobile smart displays in each classroom and lab. These displays enable:

- Live programming demonstrations of BAS systems
- Real-time system monitoring
- Collaborative troubleshooting with wireless connectivity

An upgraded secure network infrastructure allows instructors and students to access building automation systems and control panels remotely, simulating how field technicians manage systems off-site.

5. Innovation in Access and Equity: Pathway from Non-Credit to Degree

The proposed degree program formalizes and expands Roxbury's current 450-Hour BAS Certificate Program and multiple Intro to BAS courses offered over the past two years. The proposed degree program pathway provides academic credit, access to financial aid, and stackable credentials for students who began in the non-credit space, creating a pipeline into sustainable careers with upward mobility.

B. ALIGNMENT WITH CAMPUS STRATEGIC PLAN AND MISSION

The proposed degree program is a strategic priority for Roxbury and its Center for Smart Building Technology (C4SBT) because it sits at the intersection of institutional mission, regional workforce demand, and climate resilience. The program directly supports Roxbury's strategic goals of promoting equity, advancing economic mobility, and aligning academic offerings with high-demand careers—particularly in clean energy and smart building technology.

The proposed degree program was developed as a signature offering of the Center for Smart Building Technology, whose mission is to "prepare the highly skilled workforce needed to implement sustainable, high-performance, and energy-efficient smart building practices, crucial for achieving Boston's 2050 carbon-neutral goal with urgency and environmental equity." By equipping students with industry-validated technical skills in building controls, system integration, and energy efficiency, the proposed degree program provides a direct, affordable pathway into a climate-critical industry for residents of Roxbury and other Environmental Justice communities.

The ACP vacancy analysis underscores the immediate workforce need in Boston's smart building sector, validating Roxbury's strategic investment in a proposed degree program that prepares students for high-demand, full-time careers.

Alignment with Roxbury's Strategic Plan

The proposed degree program advances multiple priorities of Roxbury's approved strategic plan:

1. Workforce-Driven Education Aligned with Regional Needs

- *How it supports the plan*: The proposed degree program addresses Boston's urgent need for building automation technicians by aligning with industry partners—including Siemens, Automated Logic, and Johnson Controls—and training students in technologies used in smart, energy-efficient buildings.
- *Strategic Pillar*: "Develop academic programs that support local and regional workforce needs."

2. Equity and Economic Mobility for Underserved Students

- *How it supports the plan*: The proposed degree program is designed to be accessible through free community college initiatives like MassReconnect and MassEducate, while also integrating wraparound support services through Project Access (transportation, mental health, food insecurity, and tutoring). These efforts ensure students from marginalized communities can complete their education and enter sustainable, well-paying careers.
- *Strategic Pillar*: "Advance equity and inclusion through access, affordability, and support services."

3. Career Pathways and Earn-to-Learn Models

- *How it supports the plan*: The proposed degree program embeds industry-recognized credentials and supports internship and co-op experiences with employer partners. Students will gain hands-on experience in the BAS Lab and transition into employment with industry-aligned competencies in platforms like Niagara, EasyIO, and BACnet.
- *Strategic Pillar*: "Expand career-connected learning opportunities and develop an 'earn while you learn' model."

4. Innovation in Teaching and Learning Environments

- *How it supports the plan*: Courses are delivered using a proprietary, competency-based curriculum from the Association of Controls Professionals (ACP), combined with smart classroom technology and a fully equipped Living Laboratory. Students gain practical experience with real equipment, remote access control systems, and simulation tools.
- *Strategic Pillar*: "Enhance teaching and learning through innovation and digital infrastructure

Advancing Center for Smart Building Technology's Mission

The proposed degree program also fulfills the core mission of the Center for Smart Building Technology by:

- Developing a diverse pipeline of local talent into green building and energy careers
- Supporting Boston's climate goals through technical training in energy management and system optimization
- Expanding Roxbury's role as a regional hub for clean energy education and workforce development
- Creating stackable pathways from high school (through BPS partnerships), non-credit credentials, and workforce training into a terminal associate degree

Conclusion

The proposed degree program is not only a strategic expansion of Roxbury's academic offerings—it is a critical tool for workforce equity and environmental justice. It embodies the shared mission of Roxbury and the Center for Smart Building Technology: to empower underserved students with the skills, credentials, and opportunities needed to thrive in the clean energy economy while supporting a more sustainable and resilient Boston.

Goals and Objectives (Form B)

The proposed degree program represents a strategic expansion of Roxbury's successful 450-hour BAS Certificate Program. The proposed degree program responds directly to labor market demand for trained technicians in building controls, energy systems, and smart building technologies. It aligns with the Commonwealth's workforce development priorities and supports equity by offering accessible, hands-on training pathways for students from Boston's Environmental Justice communities.

The proposed degree program's overall goals are focused on ensuring academic quality, industry alignment, workforce readiness, and long-term sustainability. Each goal is supported by clear, measurable objectives and a defined strategy for achievement, as outlined in the accompanying table. Highlights include:

- **Enrollment and Retention**: Roxbury aims to launch the proposed degree program with 20 full-time students in Fall 2026, drawing from existing high school and non-credit pathways, and will implement student support systems to ensure at least 80% are retained through the second

semester.

- **Faculty Development**: To deliver this highly technical proposed curriculum, Roxbury will expand instructional capacity by hiring and onboarding additional instructors using a standardized train-the-trainer model developed in collaboration with the Association of Controls Professionals (ACP) and BASE Labs.
- **Work-Based Learning**: Roxbury has already established strong partnerships with leading employers including Siemens, Johnson Controls Automated Logic, Weston & Sampson, and CBRE. These partnerships will be activated to place at least 80% of students in internships prior to graduation.
- **Curriculum Innovation**: The curriculum, licensed from ACP and used nationally by other community colleges, will be reviewed annually to ensure alignment with evolving industry technologies and integrated building analytics platforms. Employer and instructor feedback will drive continuous improvement.
- **Pipeline Development**: The proposed degree program will intentionally support high school students transitioning from Roxbury's existing Smart Building Technology High School Expansion Program, which includes partnerships with Madison Park Technical Vocational High School, Dearborn STEM Academy, and others. Roxbury will implement a tracking system and provide individualized academic advising and transition supports.
- **Career Outcomes**: To ensure students are job-ready, career readiness will be embedded into the final semester. Roxbury will measure post-graduation success through outcome surveys, employer check-ins, and alumni tracking, with a goal of achieving at least 80% placement in employment or advanced training within six months of graduation.
- **Strategic Partnerships**: Roxbury will continue to deepen and formalize relationships with employers, public agencies, and nonprofit organizations through its roles in the Alliance for Climate Transition (ACT), the Commonwealth Climate Coalition Higher Ed Roundtable, and the Blue/Green Jobs Committee. At least five new partnerships will be secured in Year 1 to support instruction, training infrastructure, or student placement.
- **Digital Engagement**: To boost awareness and enrollment, Roxbury will expand its "Build Your Career" marketing campaign, livestream employer and student events, and maintain an active digital presence across platforms. The goal is to reach 500 prospective students annually and double online engagement metrics by the end of Year 1.

Together, these goals form a cohesive framework to launch and scale a high-quality, workforce-driven associate degree that strengthens Boston's clean energy economy and expands equitable access to technical careers in smart building operations.

C. ALIGNMENT WITH OPERATIONAL AND FINANCIAL OBJECTIVES OF INSTITUTION

Enrollment Projections (Form C)

The proposed degree program is expected to generate sustainable, year-over-year enrollment growth, reaching 75 students by Year 5 through a combination of new full-time, continuing, and part-time enrollees. The projections are based on Roxbury's successful pipeline of students from the noncredit 450-hour BAS certificate program and the Smart Building Technology High School Expansion initiative, which includes dual enrollment partnerships with Boston Public Schools.

The proposed degree program is structured as a continuum from Roxbury's existing noncredit programming, offering a natural progression for students seeking credentials with higher earning potential and long-term career growth.

With over 875 daily BAS-related vacancies in Boston, Roxbury anticipates strong enrollment interest and job placement outcomes, supporting its projection of 75 students by Year 5.

Anticipated Enrollment Impact on Other Programs

- The proposed degree program is designed to **complement, not compete with**, existing academic offerings.
- **No negative impact** is anticipated on other Roxbury programs.
- On the contrary, the proposed degree program is expected to create **synergies with related disciplines**, including:
    - Electrical Technology and HVAC, where overlapping skills in wiring, diagnostics, and control systems can be reinforced or co-listed for electives.
    - STEM advising and career services, as students seek additional credentials (e.g., BPI, OSHA, Niagara 4) or plan for transfer into bachelor's programs in energy systems, facilities management, or engineering technology.

Additionally, the proposed degree program may increase persistence and degree completion rates by offering clear academic and career pathways that begin in high school, continue through noncredit training, and culminate in a terminal associate degree.

Institutional Benefits

- Strengthens Roxbury's identity as a clean energy workforce hub.
- Increases student engagement across credit and noncredit divisions.
- Supports retention, credential attainment, and employer-connected outcomes, aligning with Roxbury's strategic plan and mission to serve Environmental Justice communities

Resources and Financial Statement of Estimated Net Impact on Institution
(Form D, Appendices)

While Roxbury has made significant upfront investments in lab infrastructure, technical equipment, and curriculum development for its successful non-credit Building Automation Systems (BAS) training programs, the transition to the proposed degree program will require strategic resource allocation to ensure quality, scalability, and long-term sustainability. These investments will support enrollment growth, instructional integrity, and alignment with state workforce and climate goals.

Faculty and Staffing: Current Staffing

- Adam Lovell, Roxbury's BAS Program Manager and Lead Instructor for the 450-Hour non-credit certificate, will continue to provide instructional leadership and employer engagement.
- Non-credit instructors are paid $75/hour; credit adjuncts at Roxbury are compensated at $32.68–$39.36/hour, based on experience.

New Faculty for Credit Program

To fully implement the credit-bearing program, Roxbury will hire one new full-time BAS faculty in Spring 2026. Each will:

- Deliver foundational and advanced BAS coursework
- Lead lab instruction using real equipment and software platforms (Niagara, BACnet, EasyIO)
- Support curriculum updates to reflect employer and industry feedback

For financial planning, Roxbury assumes a mid-range faculty salary of $116,040, with fringe at 37.81%, totaling $159,915.

General Education Faculty

Courses in English, math, computer science, and environmental science will be taught by **existing full-time faculty** or **adjuncts**, requiring **no new hires** in the general education disciplines during the program's initial phase.

Support Staff

The proposed degree program will be supported by:

- A **part-time Lab Assistant** to assist with equipment setup, maintenance, and safety
- A **Program Coordinator or Academic Advisor** (full- or part-time) responsible for
    - Student recruitment and onboarding
    - Academic support and retention tracking
    - Dual enrollment coordination with Boston Public Schools
    - Internship placement, employer communication, and job placement tracking

This role is budgeted at $50,000–$70,000 annually, depending on position scope

Technology, Instructional Support, and Facilities

While Roxbury's existing BAS Lab and Smart Building Technology infrastructure is sufficient to launch the proposed degree program, modest recurring investment is required to keep systems operational and aligned with evolving industry platforms.

Instructional Materials & Library Acquisitions

- **$20,000 in Year 1**, decreasing to **$15,000/year** thereafter, covers:
    - BAS programming kits, sensors, lab consumables
    - Software licenses and cloud access
    - Digital subscriptions and technical publications

Facilities, Equipment, and Lab Maintenance

- Roxbury will leverage its existing lab through Years 1–2.
- Starting in Year 3, Roxbury will invest $10,000/year for upgrades to lab systems and infrastructure.

- A dedicated $25,000/year line item is allocated for BAS Lab Commissioning, which includes:
    - System recalibration, safety inspections, programming updates, and replacement of worn components

Field & Clinical Resources

- Beginning in Year 2, $5,000–$10,000 annually will support:
    - Supervision and administration of student internships
    - Employer site visits, insurance, safety equipment, and coordination costs

Marketing

- Initial $10,000 investment in Year 1 for branding, outreach, and recruitment
- Gradually decreases to $5,000/year by Year 3 as program recognition and pipelines stabilize

STAFF REVIEW AND VALIDATION

Staff thoroughly reviewed the **LOI** proposing full degree granting authority for the **Associate of Applied Science in Building Automation Systems** program submitted by **Roxbury Community College**. Staff validate that the **LOI** includes all data required by the Massachusetts Board of Higher Education. Staff recommendation is for BHE authorization for the Commissioner to review the program pursuant to the Fast-Track review protocol.

Form A: Curriculum Outline

Required (Core) Courses in the Major (Total # courses required = 11***)***		
Course Number	Course Title	Credit Hours
ACS 102	The College Experience	3
ENG 101	English Composition I	3
BAS 110	BAS Math Applications	3
BAS 101	BAS Electrical Foundations (with lab)	4
BAS 102	BAS Control Devices & Applications (with lab)	4
ENG 102	English Composition II	3
BAS 103	BAS Installation & Troubleshooting (with lab)	4
BAS 104	BAS Control Theory & Optimization (with lab)	4
BAS 201	BAS Building Systems (with lab)	4
BAS 202	BAS Logic & Programming (with lab)	4
BAS 203	BAS Networking & Integration (with lab)	4
BAS 204	BAS Startup & Commissioning (with lab)	4
BAS 299	Internship in Building Automation Systems I	3
	Sub Total Required Credits	47
Elective Courses (Total # courses required = 3) *(attach list of choices if needed)*		
SCI 133	Intro to Environmental Science and Ecology	4
SCI 151	Science for Everyday Life	4
BAS 298	Internship Building Automation Systems II	3
SCI 233	Environmental and Sustainable Management	3
	HUM/ENG/LAN Elective	3
	Sub Total Elective Credits	14

Distribution of General Education Requirements Attach List of General Education Offerings (Course Numbers, Titles, and Credits)	# of Gen Ed Credits
Arts and Humanities, including Literature and Foreign Languages	9
Mathematics and the Natural and Physical Sciences	8
Sub Total General Education Credits	**17**

Curriculum Summary	
Total number of courses required for the degree	13
Total credit hours required for degree	61

Form B: LOI Goals and Objectives

Goal	Measurable Objective	Strategy for Achievement	Timetable
1. Launch and grow the AAS in BAS program	Enroll 20 full-time students in Fall 2026 and retain 80% through Spring 2027	Recruit from RCC's Intro to BAS completers, Boston Public School pathways, and nonprofit partners using the "Build Your Career" outreach campaign and direct community engagement	Recruitment: Spring–Summer 2026 Program Launch: Fall 2026 Retention Review: Spring 2027
2. Expand instructional capacity and faculty development	Hire two additional instructors and implement a standardized train-the-trainer model by Spring 2027	Onboard instructors using ACP's curriculum framework; provide mentorship from existing faculty and BASE Labs; support credentialing with grant funds	Instructor Hiring: Fall 2026 Train-the-Trainer Launch: Spring 2027
3. Establish robust internship and co-op pathways	Place 75% of students in paid internships or co-ops before graduation	Strengthen existing partnerships (e.g., Siemens, Johnson Controls, CBRE, ACT); finalize a credit-bearing co-op course in partnership with RCC Career Services	Advisory Board Meeting: Fall 2026 to Spring 2027 Internship Plan Finalized: Fall 2027 Placements Begin: Spring 2028
4. Maintain industry-aligned and innovative curriculum	Conduct annual reviews and integrate at least one new tool, platform, or instructional model per year	Leverage ACP and BASE Labs curriculum; integrate emerging tools such as Niagara and EasyIO based on faculty and employer feedback	First Review: Summer 2027 New Tool Pilot: Spring 2028 Annual Review: Ongoing
5. Strengthen high school-to-college pathway	Support and track at least 10 students annually transitioning from RCC's high school BAS programs	Implement a tracking system with Institutional Research; offer onboarding and advising in collaboration with BPS	System Launch: Summer 2027 First Support Cycle: Fall 2027
6. Demonstrate graduate career readiness and job placement	Achieve 80% graduate placement in employment or continued education within six months	Embed career readiness in capstone term; coordinate job placement with RCC Career Services, MassHire, and employer partners; conduct alumni follow-up surveys	Capstone Career Workshops: Spring 2028 Graduate Follow-Up: Summer 2028

7. Expand strategic partnerships and shared resources	Formalize three new partnerships by end of Year 1 for instruction, equipment, or job placement	Leverage RCC's involvement in ACT, MassCEC programs, and advisory networks to secure MOUs with employers and training organization	Outreach Phase: Summer–Fall 2026 MOUs Finalized: Winter 2027
8. Enhance digital presence and public engagement	Reach 500 prospective students annually and double online engagement by end of Year 1	Expand "Build Your Career" campaign via digital outreach, livestreamed events, social media, and newsletters to schools, employers, and CBOs	Digital Campaign Launch: Fall 2026 Metrics Review: Summer 2027

Form C: LOI Program Enrollment

	Year 1	Year 2	Year 3	Year 4	Year 5
New Full-Time	20	20	20	20	20
Continuing Full-Time	0	15	15	15	15
New Part-Time	0	0	0	20	20
Continuing Part-Time	0	0	0	0	20
Enrollment Totals	20	35	35	55	75

Form D: LOI Program Budget

One Time/ Start Up Costs		**Annual Expenses**				
	Cost Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
	Full Time Faculty *(Salary & Fringe)*	$159,915	$159,915	$159,915	$159,915	$159,915
	Part Time/Adjunct Faculty *(Salary & Fringe)*	$20,000	$25,000	$25,000	$30,000	$30,000
	Staff (Lab Asst + Program Manager)	$90,000	$95,000	$95,000	$95,000	$95,000
	General Administrative Costs (breakdown by category-i.e. accreditation, credentialing, etc.)	$10,000	$10,000	$10,000	$10,000	$10,000
	Instructional Materials, Library Acquisitions	$20,000	$15,000	$15,000	$15,000	$15,000
	Facilities/Space/Equipment	$0	$0	$10,000	$10,000	$10,000
	Field & Clinical Resources	$0	$5,000	$10,000	$10,000	$10,000
	Marketing	$10,000	$7,500	$5,000	$5,000	$5,000
	Other (Specify)	$25,000	$25,000	$25,000	$25,000	$25,000
	Expenses Total	$407,080	$414,580	$427,080	$432,080	$432,080

One Time/Start-Up Support		***Annual Income***				
	Revenue Sources	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
	Grants	$0	$0	$0	$0	$0
	Tuition	$263,520	$461,160	$461,160	$725,280	$988,200
	Fees	$16,000	$28,000	$28,000	$49,000	$85,750
	Departmental	$0	$0	$0	$0	$0
	Reallocated Funds	$100,000	$50,000	$25,000	$0	$0
	Other (specify)	$0	$0	$0	$0	$0
	Income Total	$379,520	$539,160	$514,160	$774,280	$1,073,950