

December 2, 2021

Presented by:
Dr. Edward Bouquillon



THE VISION

Minuteman Regional Vocational Technical School District

A REVOLUTION IN LEARNING



Minuteman collaborates with parents, communities, and business leaders to serve a diverse student body with multiple learning styles. Through a challenging integrated curriculum, our students develop the academic, vocational, and technical skills necessary to be productive members of a global community. We value life-long learning that fosters personal and professional development in a safe and respectful environment.

Minuteman is committed to preparing all students for success.

Goals

1. Provide a healthy, safe, supportive campus culture
2. Promote teacher leadership
3. Gather, share, analyze data to improve student outcomes
4. Deploy intelligent technology to enhance student outcomes
5. Integrate academic and CTVE curriculum maps
6. Expand project-based learning within & between pathways
7. Develop rigorous integration of literacy and math



SCHOOL ORGANIZATION

Dr. Edward Bouquillon
Superintendent-Director



Engineering Construction & Trades Academy Programs	Shared Services & Programs	Life Sciences & Services Academy Programs						
<p>Advanced Manufacturing & Metal Fabrication 48.0501 / 48.0599</p> <p>Automotive Tech 47.0604</p> <p>Carpentry 46.0201</p> <p>Design & Visual Communications 50.0401</p> <p>Electrical 46.0302</p> <p>Multi-Media Engineering 09.0701</p> <p>Plumbing & HVAC 46.0603 / 47.0201</p> <p>Programming & Web Development 11.0201</p> <p>Robotics Engineering Automation 15.0000 / 15.0403</p>	<p>Nursing & Wellness Services Library & Media Center Special Education</p> <p>Common Planning Time Academic Programs</p> <table border="1"> <tr> <td data-bbox="999 712 1666 975"> Chemistry Science Physics English Language Arts Mathematics Physical Education </td> <td data-bbox="1666 712 2332 975"> Humanities Art & Music Guidance Counseling Career Development Advanced Placement </td> </tr> <tr> <td colspan="2" data-bbox="999 975 2332 1031">Common Competencies</td> </tr> <tr> <td data-bbox="999 1031 1666 1219"> Health & Safety Entrepreneurship Financial Literacy </td> <td data-bbox="1666 1031 2332 1219"> Digital Literacy Career Guidance Work based Learning Internships & Coop </td> </tr> </table> <p>Reading Consultancy Student Portfolios Executive Purpose Project Based Learning</p>	Chemistry Science Physics English Language Arts Mathematics Physical Education	Humanities Art & Music Guidance Counseling Career Development Advanced Placement	Common Competencies		Health & Safety Entrepreneurship Financial Literacy	Digital Literacy Career Guidance Work based Learning Internships & Coop	<p>Culinary Arts & Hospitality 12.0500 / 52.0901</p> <p>Cosmetology & Barbering 12.0404 / 12.0402</p> <p>Early Education & Care 13.1210</p> <p>Health Occupations 51.0000</p> <p>Environmental Science 15.0507</p> <p>Biotechnology 15.0401</p> <p>Horticulture & Landscaping Tech 1.0601</p>
Chemistry Science Physics English Language Arts Mathematics Physical Education	Humanities Art & Music Guidance Counseling Career Development Advanced Placement							
Common Competencies								
Health & Safety Entrepreneurship Financial Literacy	Digital Literacy Career Guidance Work based Learning Internships & Coop							

MISSION

Dr. Edward Bouquillon
Superintendent-Director

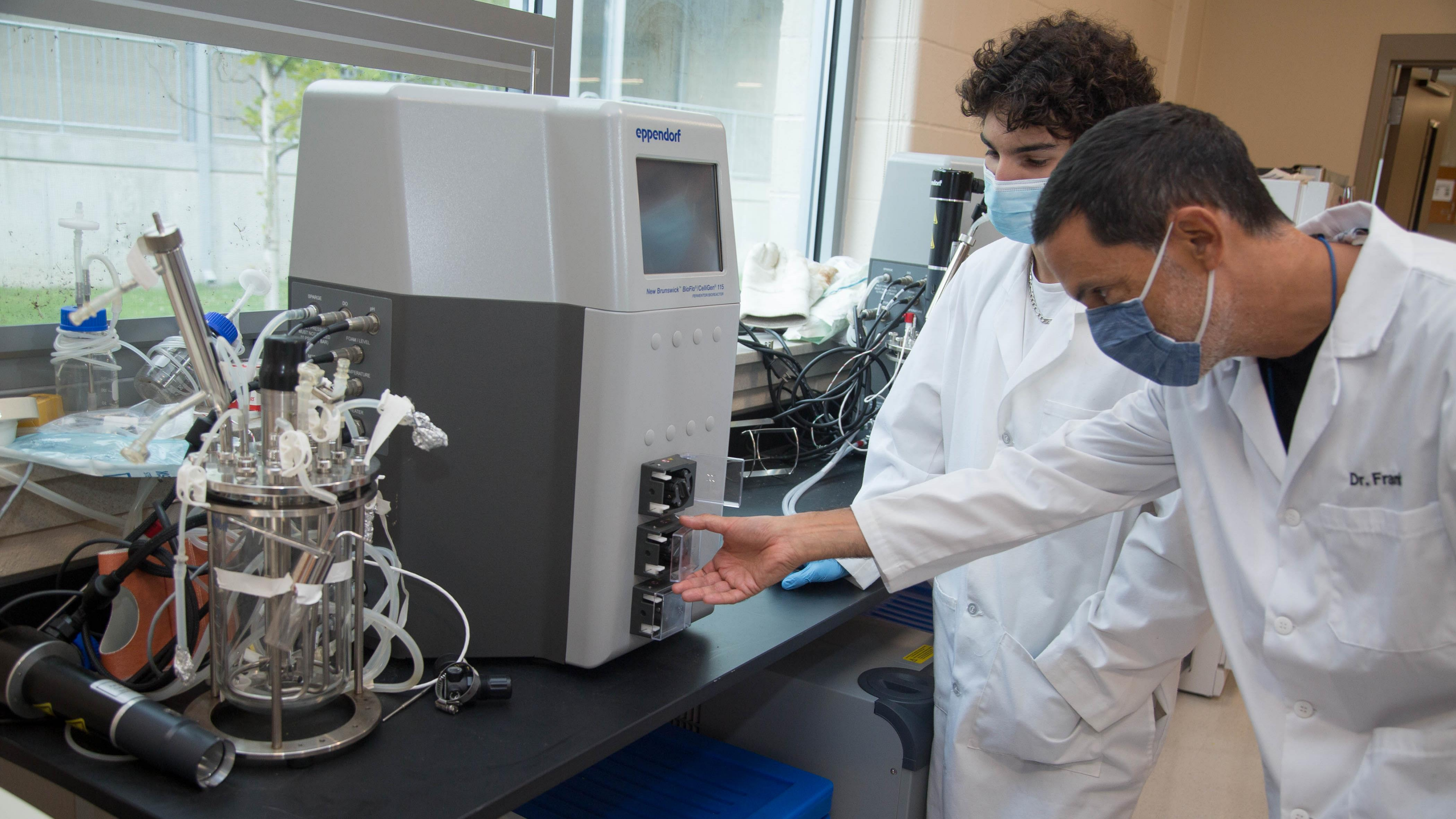












eppendorf

New Brunswick BioFlo 115
FERMENTOR/BIOREACTOR

Dr. Frat



December 2, 2021

Presented by:

Dr. Edward Bouquillon
Kathleen Bouchard
Gregory Joynt



SKANSKA

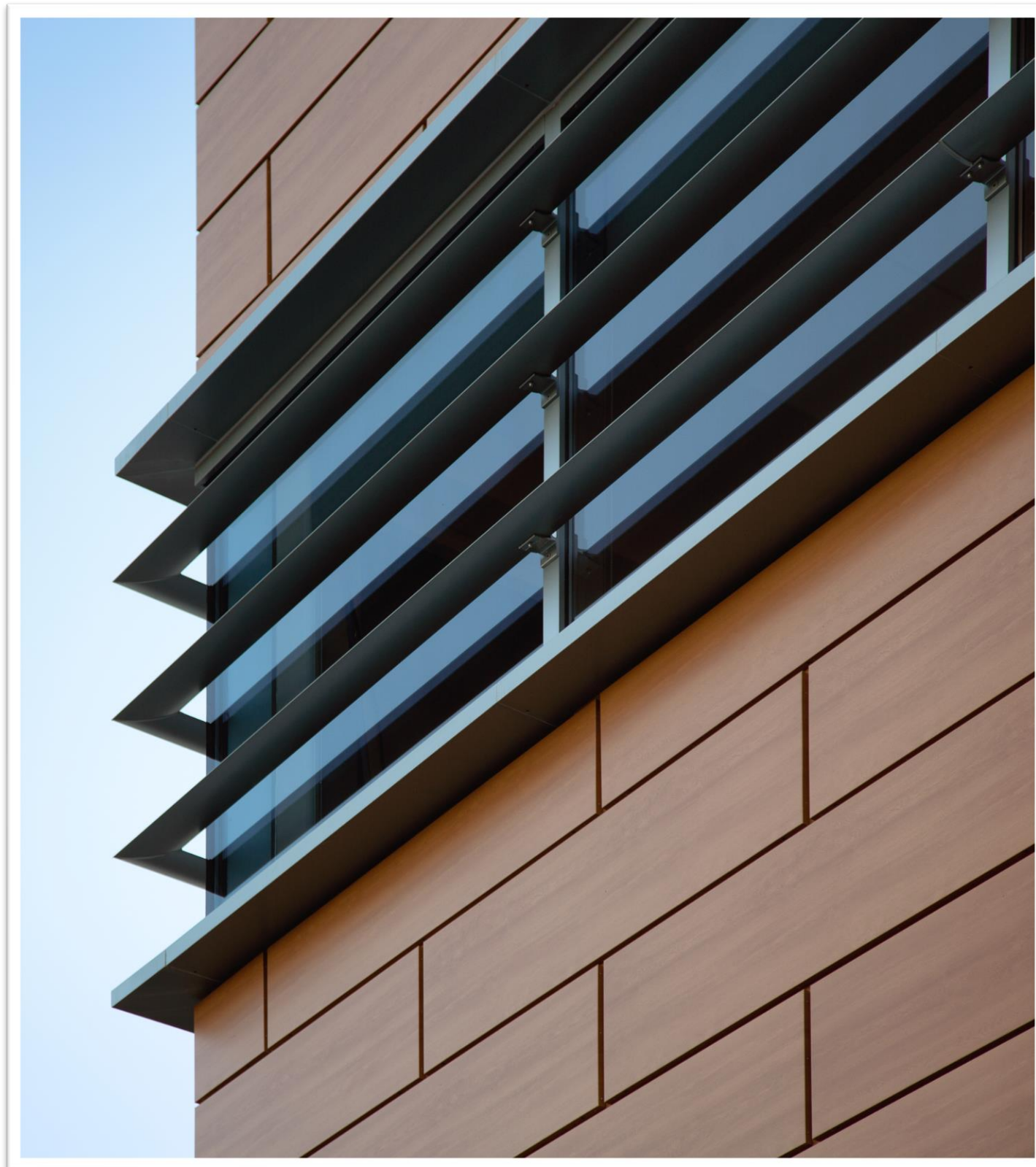
KAESTLE BOOS
associates, inc

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SUSTAINABLE DESIGN: CURRICULUM, SCHOOL BUILDINGS, AND COMPREHENSIVE TECHNICAL EDUCATION

Minuteman Regional Vocational Technical School District

A REVOLUTION IN LEARNING



- **School Organization**
- **Sustainable Training for Teachers**
- **Curriculum Structure**
- **Sustainable Learning Opportunities**
- **Innovation**





Engineering Construction & Trades Academy Programs

Shared Services & Programs

Life Sciences & Services Academy Programs

Advanced Manufacturing & Metal Fabrication
48.0501 / 48.0599

Automotive Tech
47.0604

Carpentry
46.0201

Design & Visual Communications
50.0401

Electrical
46.0302

Multi-Media Engineering
09.0701

Plumbing & HVAC
46.0603 / 47.0201

Programming & Web Development
11.0201

Robotics Engineering Automation
15.0000 / 15.0403

Nursing & Wellness Services
Library & Media Center
Special Education

Common Planning Time
Academic Programs

Chemistry Science Physics
English Language Arts
Mathematics
Physical Education

Humanities
Art & Music
Guidance Counseling
Career Development
Advanced Placement

Common Competencies

Health & Safety
Entrepreneurship
Financial Literacy

Digital Literacy
Career Guidance
Work based Learning
Internships & Coop

Reading Consultancy
Student Portfolios
Executive Purpose
Project Based Learning

Culinary Arts & Hospitality
12.0500 / 52.0901

Cosmetology & Barbering
12.0404 / 12.0402

Early Education & Care
13.1210

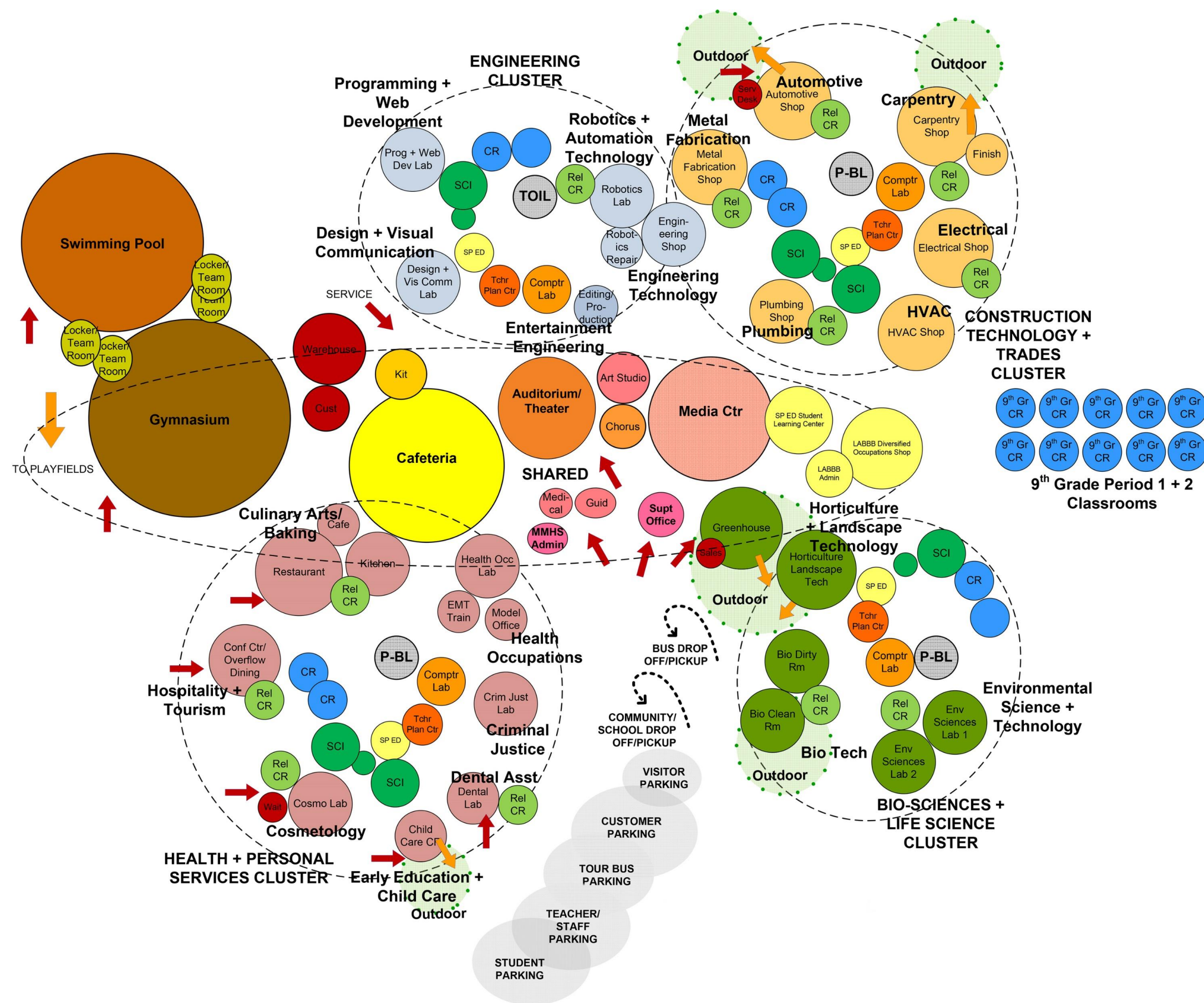
Health Occupations
51.0000

Environmental Science
15.0507

Biotechnology
15.0401

Horticulture & Landscaping Tech
1.0601





SCHOOL AS A TEACHING TOOL- TEACHER TRAINING

Kathleen Bouchard
Interim Principal
Director of CTE



Basic

Green Classroom Professional Certificate



GBCI: 0920024841
Learn to recognize, adopt, and implement practices that keep teachers and students focused, alert and ready to learn. [Learn how this course prepares teachers and staff for the reopening of schools.](#)



ACCESS OR PURCHASE THIS COURSE

Need help? Visit [Education @USGBC Help](#)

2008 completions

Published On: Sep 28, 2021



About



Goals

- Provide an industry recognized certification
- Train and certify at least 50% of teachers
- Establishes a broad knowledge base
- Institutionalized knowledge & Process
- Promote Project Based Learning (PBL)
- Encourage interdisciplinary collaboration

Outcomes

- Utilized Green Classroom Professional Certificate
- 68% of Minuteman teachers and completed the training and certification

SCHOOL AS A TEACHING TOOL- CURRICULUM

Kathleen Bouchard
Interim Principal
Director of CTE



Example:

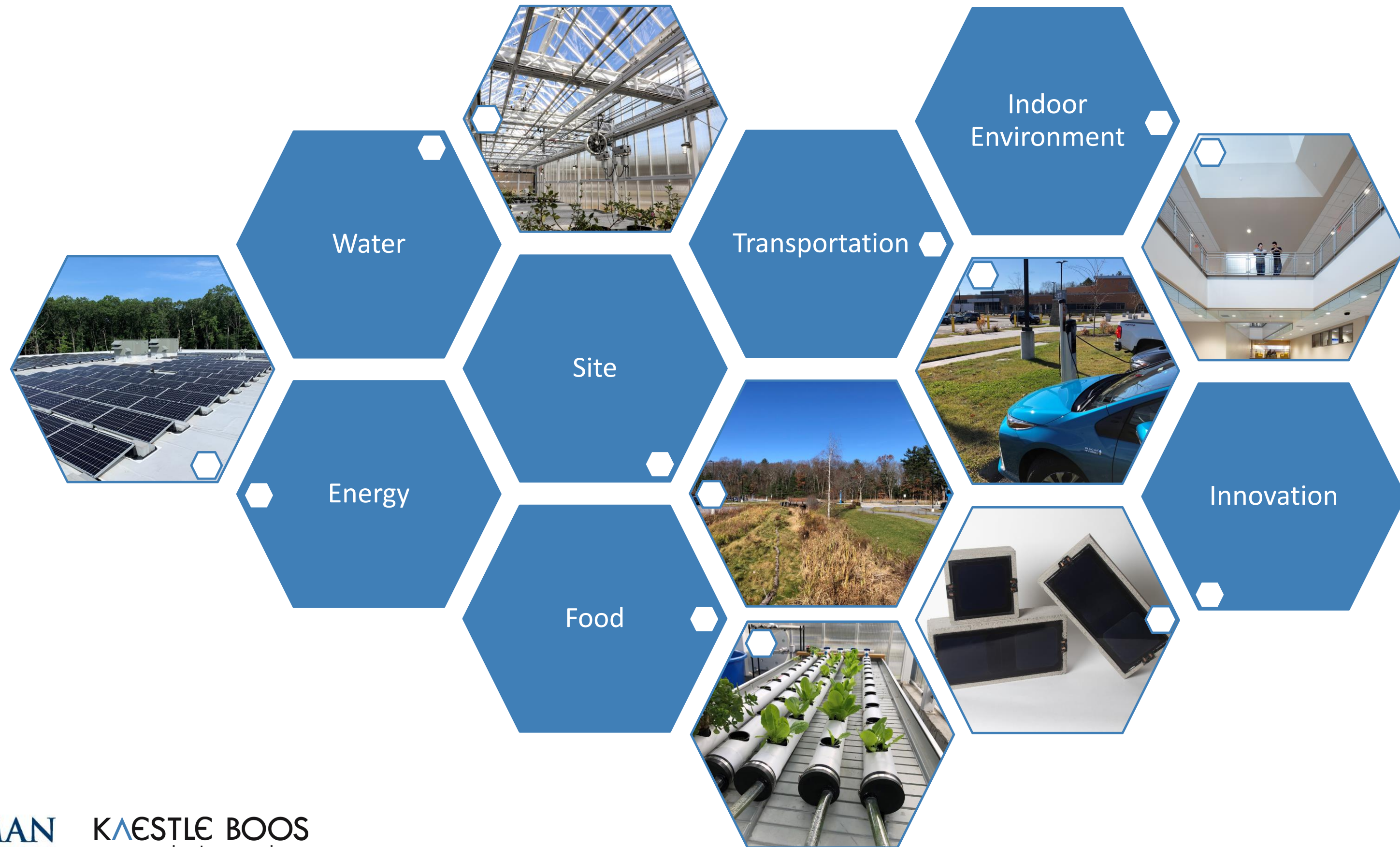
Course and Standards	Education for Sustainability	LEED Credit Correlation
<p>Biology Grade 9</p> <p>Mass Standards: HSL1-5, HSL1-7, HSL2-3, HSL2-5</p>	<p>Introduction to Sustainable Land Use</p> <p>Students participate in a site study that compares sustainable site selection and management from the on-site facility with non-green buildings in the local area. The project site will be compared to town buildings, to compare sustainably designed versus non-sustainably designed complexes. Students will review prime farmland, wetlands and water bodies. Students will then identify identified as habitat for any species on federal or state threatened or endangered lists.</p> <p>Introduction to Cellular Energy: Photosynthesis and Respiration</p> <p>Students explore the architect-identified plants and species located on site to determine how the site managed plantings; these samples will be studied and compared with local fern.</p>	<p>SSc1 WEc1</p>

SCHOOL AS A TEACHING TOOL

Greg Joynt
Architect

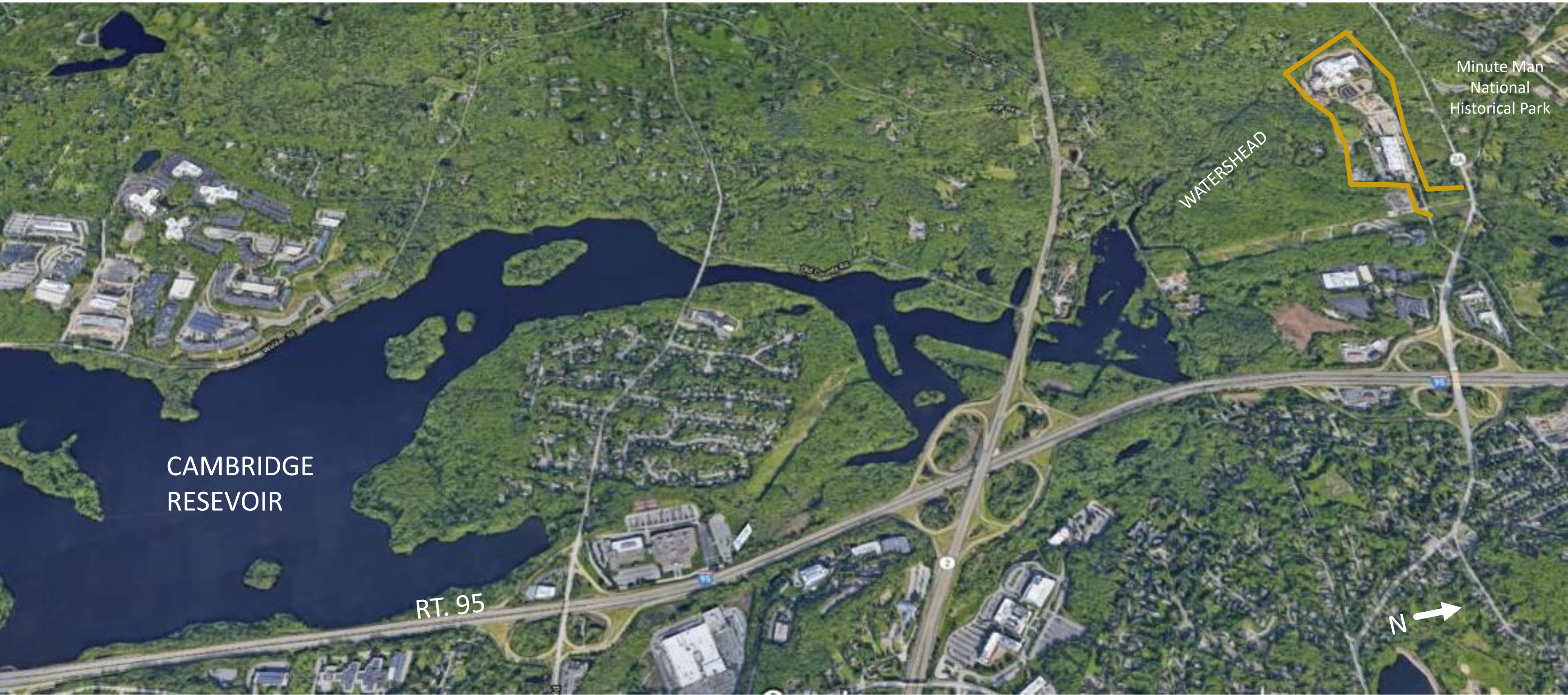
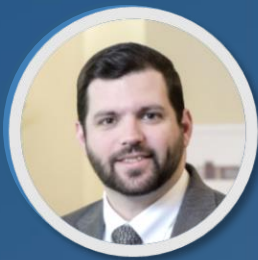


Kathleen Bouchard
Interim Principal
Director of CTE



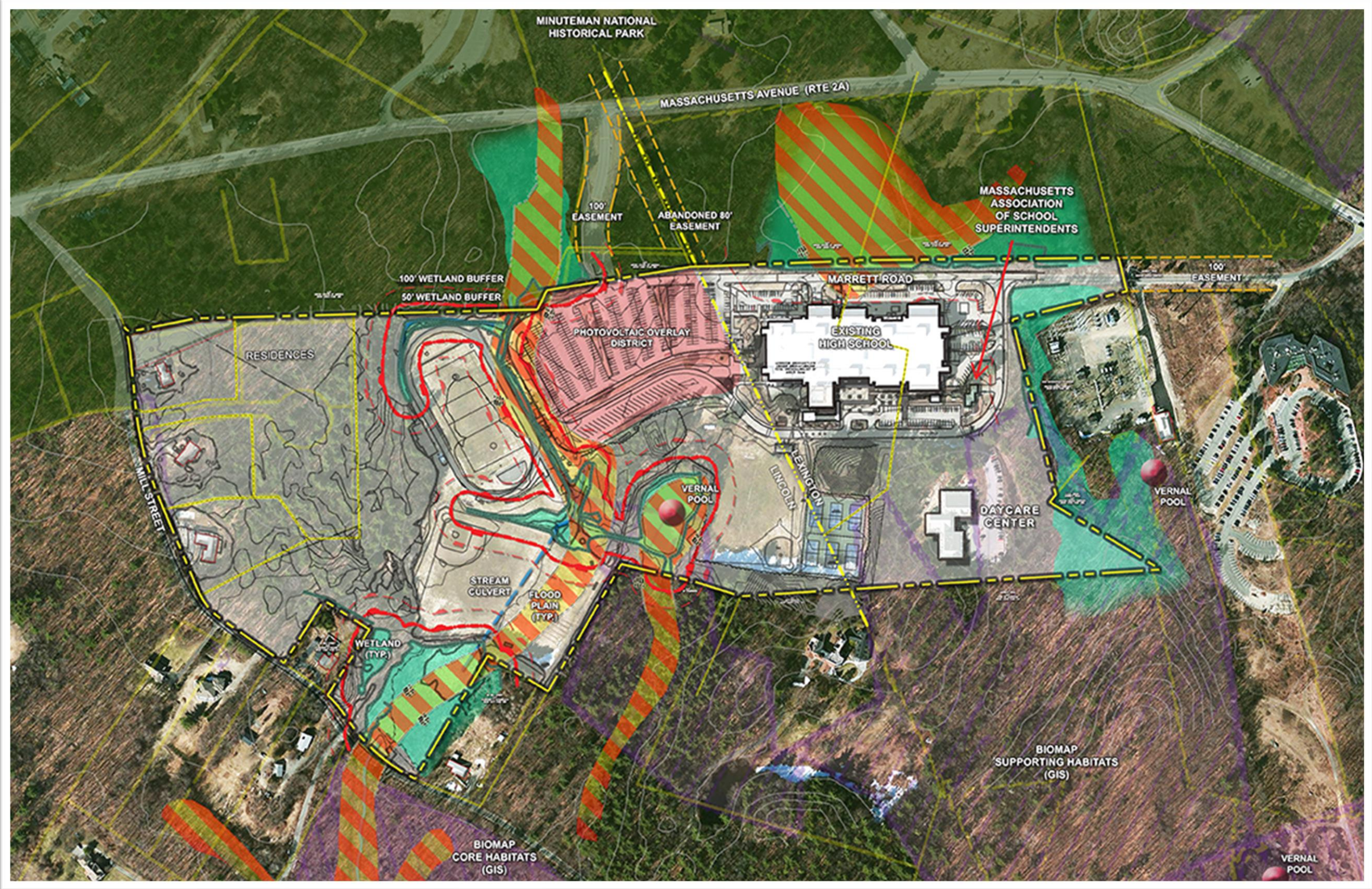
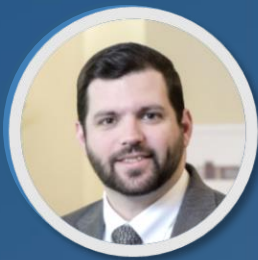
SITE – CONTEXT

Greg Joynt
Architect



SITE – CONSTRAINTS

Greg Joynt
Architect



SITE – RESPONSE

Greg Joynt
Architect



Project Goals

- Provide a working “lab”
- Restore wetland habitat
- Infiltrate 99% of stormwater
- Provide

Existing Features

1. Vernal Pool
2. Intermittent Stream
3. Existing wetland

Design Response

4. New Vegetated wetland
5. Sand Filter
6. Bio Swale
7. Reconnect / daylight stream
8. Wet Meadow
9. Infiltration Chambers





SITE— CTE CURRICULUM EXAMPLE

Kathleen Bouchard
Interim Principal
Director of CTE



Greg Joynt
Architect



- Invasive Plant Removal
- Vernal pool certification/identification
- Stream Water Quality Index
- Examination of Best Management Practices of Wetland/Erosion Control
- Forestry study
- GIS mapping
- Wetland survey and identification





*Cellular Energy: Photosynthesis and Respiration/
Ecology: Food Web*

Students deepen their exploration of the architect-identified plants and species located on site to determine how the site managed plantings; these samples will be studied and compared with local fern. Students also engage in a Food Web ecology walk in which the students walkabout the school grounds, classifying organisms as consumers and decomposers. Tropic levels are tested and symbiotic relationships and succession – students are able make observations of species within the grounds and complete their observations in the laboratories.



Goals

- Additional 2% MSBA reimbursement
- LEED Silver Certification
- Incorporate PV

Challenges

- Large Exhaust Air Requirements
- Multiple Large Openings
- Building Orientation

Strategies

- LED Lighting & Controls
- Air source heat pumps (Administration Areas)
- Energy Recovery
- Photovoltaic (PV)
- Recirculating Welding Exhaust Capture







ENERGY – METERING & TRACKING

Kathleen Bouchard
Interim Principal
Director of CTE



Greg Joynt
Architect



- Building Management System
- PV Information Portal
- Utility Sub-meters
- Energy Tracking Portal

ENERGY STAR® PortfolioManager®

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MyPortfolio | [Sharing](#) | [Reporting](#) | [Recognition](#)

Minuteman Regional Vocational Technical High School

758 Marrett Road, Lexington, MA 02421 | [Map It](#)
Portfolio Manager Property ID: 15101173
Year Built: 2019
[Edit](#)

Not currently eligible for ENERGY STAR Certification

Summary | [Details](#) | [Energy](#) | [Water](#) | [Waste & Materials](#) | [Goals](#) | [Design](#)

Source EUI Trend (kBtu/ft²)

[Change Metric](#)

(Chart current as of 06/28/2021 02:41 PM EDT) [Refresh Chart](#)

Metric	Not Available (Energy Baseline)
ENERGY STAR Score (1-100)	Not Available
Source EUI (kBtu/ft ²)	Not Available
Site EUI (kBtu/ft ²)	Not Available
Energy Cost (\$)	Not Available
Total GHG Emissions Intensity (kgCO ₂ e/ft ²)	Not Available
Water Use (All Water Sources) (kgal)	Not Available
Total Waste (Disposed and Diverted) (Tons)	Not Available



ENERGY – LESSONS LEARNED

Greg Joynt
Architect



- Project doubled the LEED requirements for quantity
- EV's are getting more use than anticipated
- Charging stations can be set up to shut down on demand response
- Charging stations can be set up with an independent utility connection

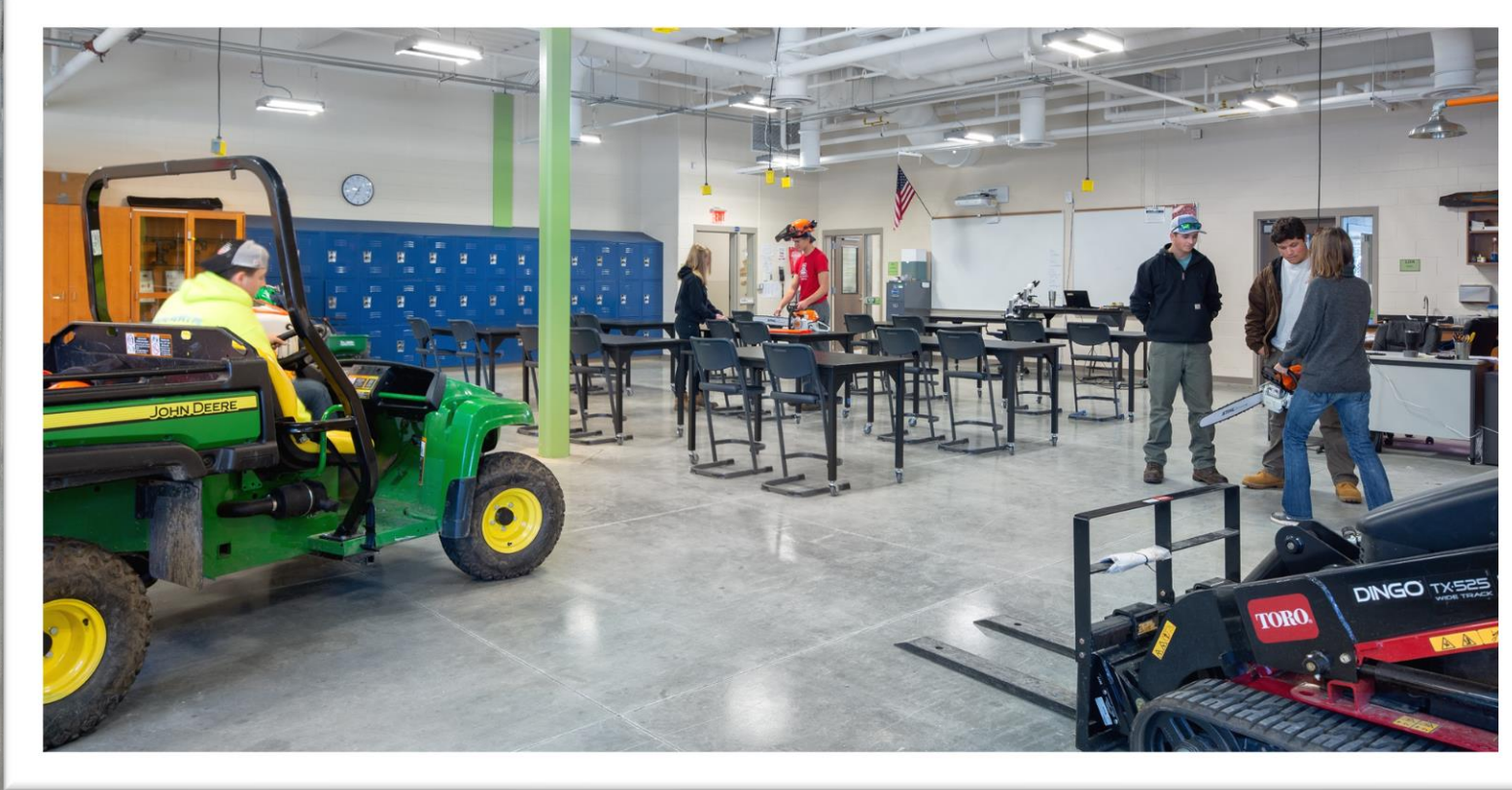


LOCAL FOOD PRODUCTION - CTE CURRICULUM

Greg Joynt
Architect



- Habitat
- Food Production
- Food Preparation
- Health





INNOVATION – PLANNING FOR THE FUTURE

Dr. Edward Bouquillon
Superintendent-Director

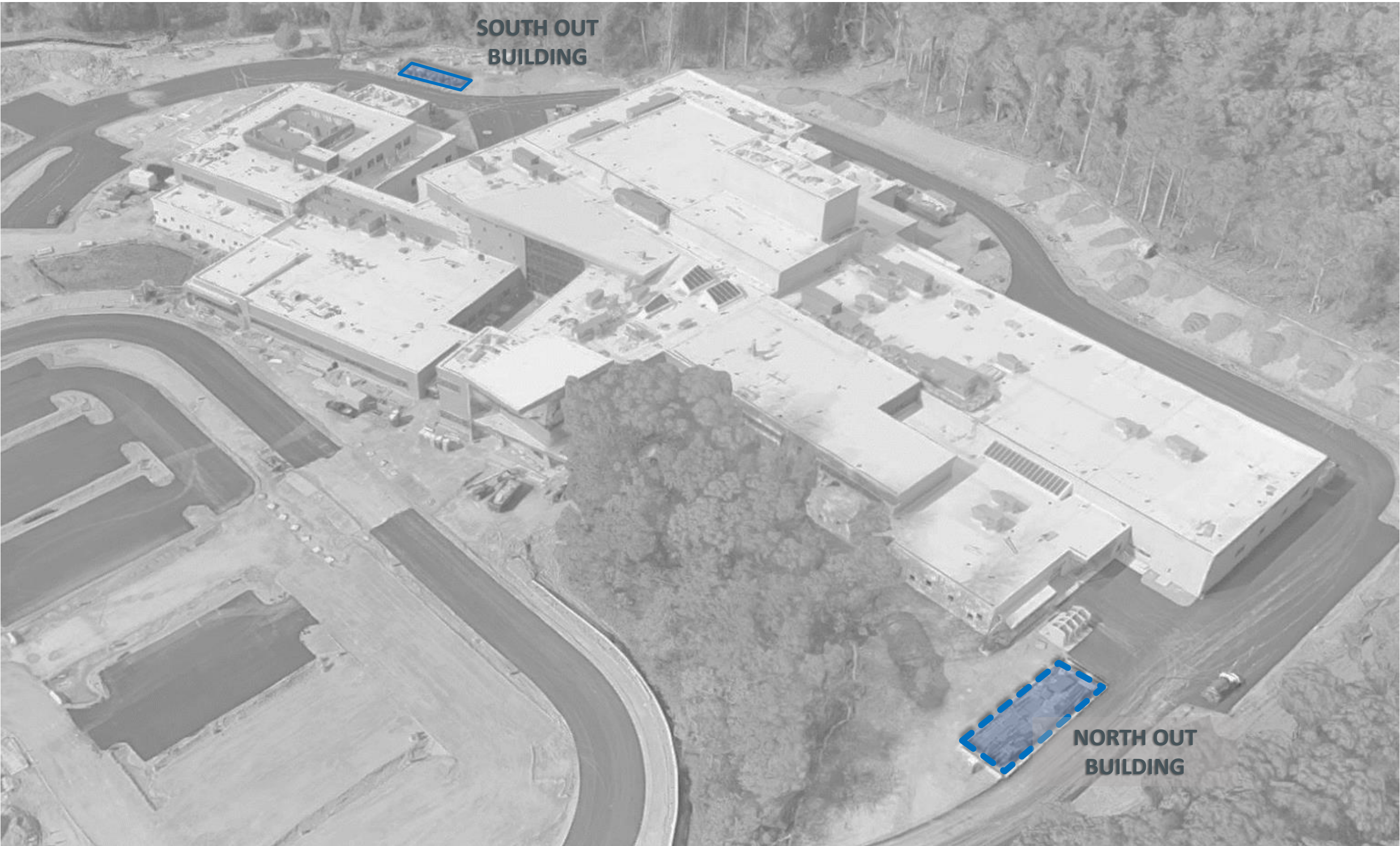


South Out Building:

- Student Building Project
- Innovative Technologies
- Net-Zero potential
- Horticulture Equipment
- Training

North Out Building:

- Partial Student Project
- Engineering Construction & Trades Academy Expansion





THANK YOU!

December 2, 2021

Presented by:
Dr. Edward Bouquillon
Gregory Joynt



KÆSTLE BOOS
associates, inc

PAYING FOR ENERGY USE REDUCTION AND ENERGY GENERATING

Minuteman Regional Vocational Technical School District

A REVOLUTION IN LEARNING

PHOTOVOLTAIC SYSTEM - GOALS

Dr. Edward Bouquillon
Superintendent-Director



- Lead by Example
- Provide Teaching Opportunities
- Reduce Carbon Impact
- Reduce Operating Cost
- Limit Project Budget Impacts





District Owned PV

- Benefits
 - No 3rd party power agreements.
 - No easements
 - Retain Environmental attributes
- Challenges
 - Upfront funding
 - Bonding costs

Purchase Power Agreement (PPA) Bid

- Benefits
 - No up-front costs
 - Most competition
- Challenges
 - Timeframe
 - Smaller System Size

Purchase Power Agreement (PPA) Power Options

- Benefits
 - Known Vendor
 - Upfront procurement completed
 - Design input
- Challenges
 - Environmental Attributes belong to the PPA vendor
 - District must join the consortium



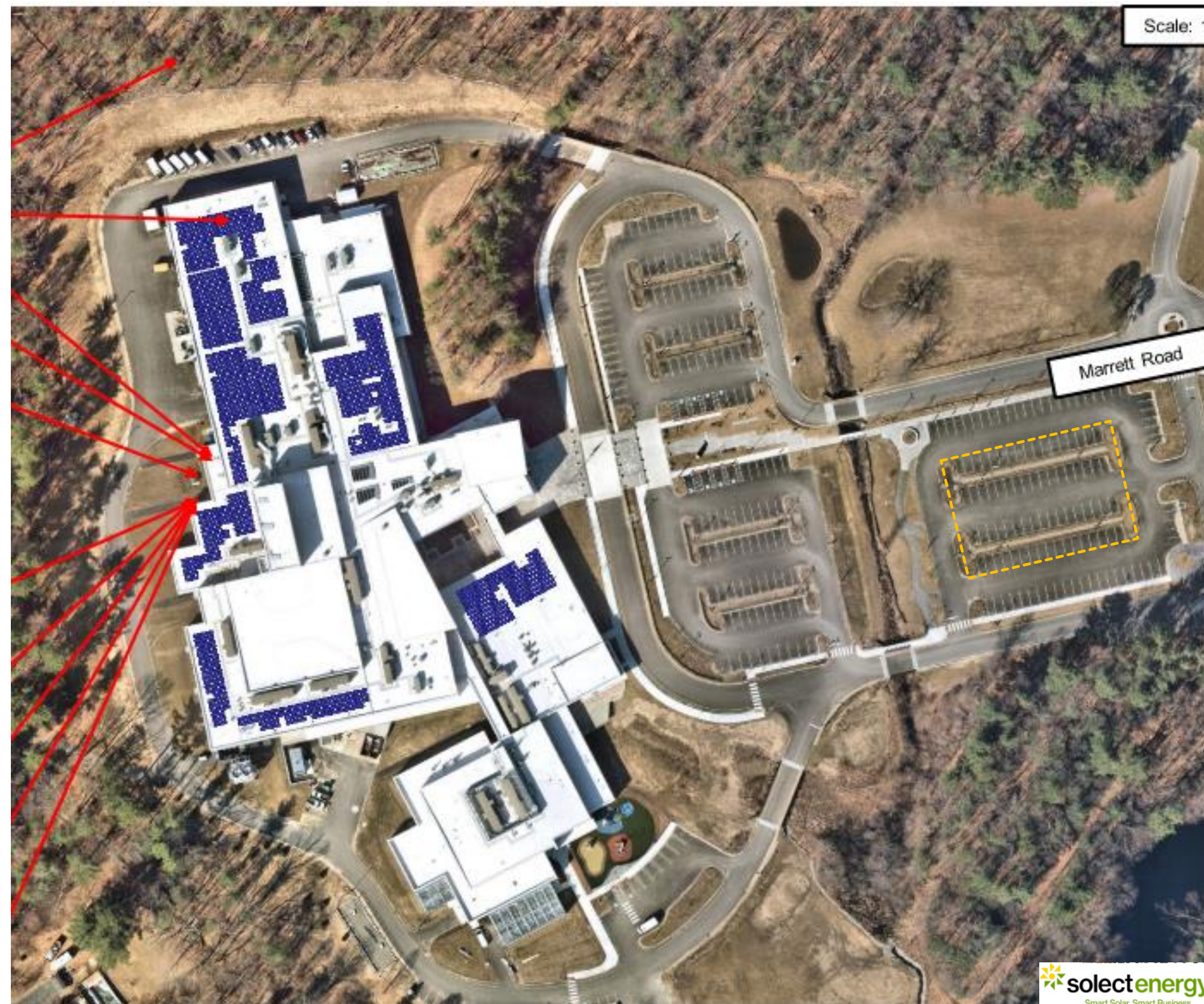
PHOTOVOLTAIC SYSTEM – PPA DETAILS

Greg Joynt
Architect



System Size: 250kW AC
374kW DC
Avg. Annual Production:
397kWH
Behind the Meter

Projected Cost Reduction*:
Annual: -\$28,500
20 Yr. Life: -\$570,000
*85% guaranteed



solectenergy
Smart Solar. Smart Business.

PHOTOVOLTAIC SYSTEM

Dr. Edward Bouquillon
Superintendent-Director





THANK YOU!



Edward A. Bouquillon, Ph.D.,
Superintendent-Director
Minuteman Regional Vocational Technical School District

Dr. Edward Bouquillon is the Superintendent-Director of the Minuteman Regional Vocational Technical School District in Lexington – a role he has held since 2007. “Dr. B” has more than three decades of experience in the administration of career and technical education. While at Minuteman, he oversaw the 12 year district wide approval process resulting in the opening of the new school in 2019. The district has received numerous state and national recognitions for its academic rigor, including a 2018 National Blue Ribbon School designation, and in 2020, the Massachusetts Reading Association honored Minuteman with its Exemplary Reading Program Award.



Kathleen Bouchard, M.Ed, C.A.G.S.
Interim Principal and Director of Career Technical Education
Minuteman Regional Vocational Technical High School

Kathleen Bouchard is the Interim Principal and Director of Career Technical Education at Minuteman Regional Vocational Technical High School in Lexington. Ms. Bouchard has worked for Minuteman since 2009. She served as an Early Education and Teaching instructor for several years before becoming the Assistant CTE Director. She was named Director of CTE in July 2020. Bouchard was named Interim Principal in October 2021.



Gregory Joynt, AIA, LEED BD+C
Associate Principal
Kaestle Boos Associates, Inc.

Gregory Joynt is an Associate Principal for Kaestle Boos Associates, Inc. where he has overseen multiple large scale and technically complex projects Since joining KBA in 2007. Greg work includes the additions and renovations of the Bay Path Regional Vocational Technical High School in Charlton, along with multiple Public Safety, municipal and school district projects. Greg was the Project Architect for the construction of the new Minuteman Regional Vocational Technical High School.