December 2, 2021

Presented by:

Dr. Edward Bouquillon

MINUTEMAN
A REVOLUTION IN LEARNING

THE VISION

Minuteman Regional Vocational Technical School District

A REVOLUTION IN LEARNING

MISSION & GOALS

Dr. Edward Bouquillon
Superintendent-Director

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

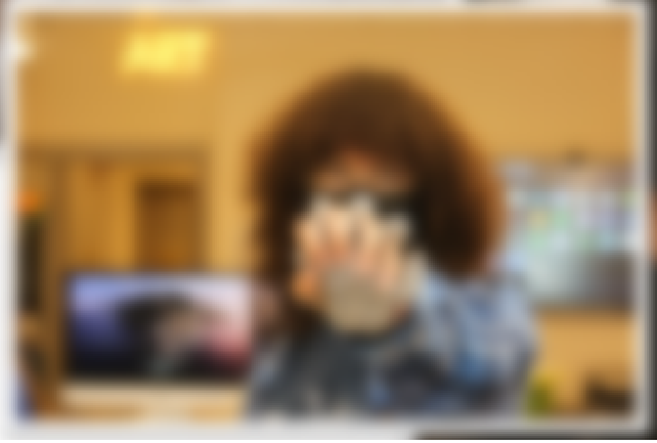
SCHOOL ORGANIZATION

Dr. Edward Bouquillon
Superintendent-Director

Engineering Construction & Trades Academy Programs	Shared Services & Programs		Life Sciences & Services Academy Programs
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		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
	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		

MISSION

Dr. Edward Bouquillon
Superintendent-Director

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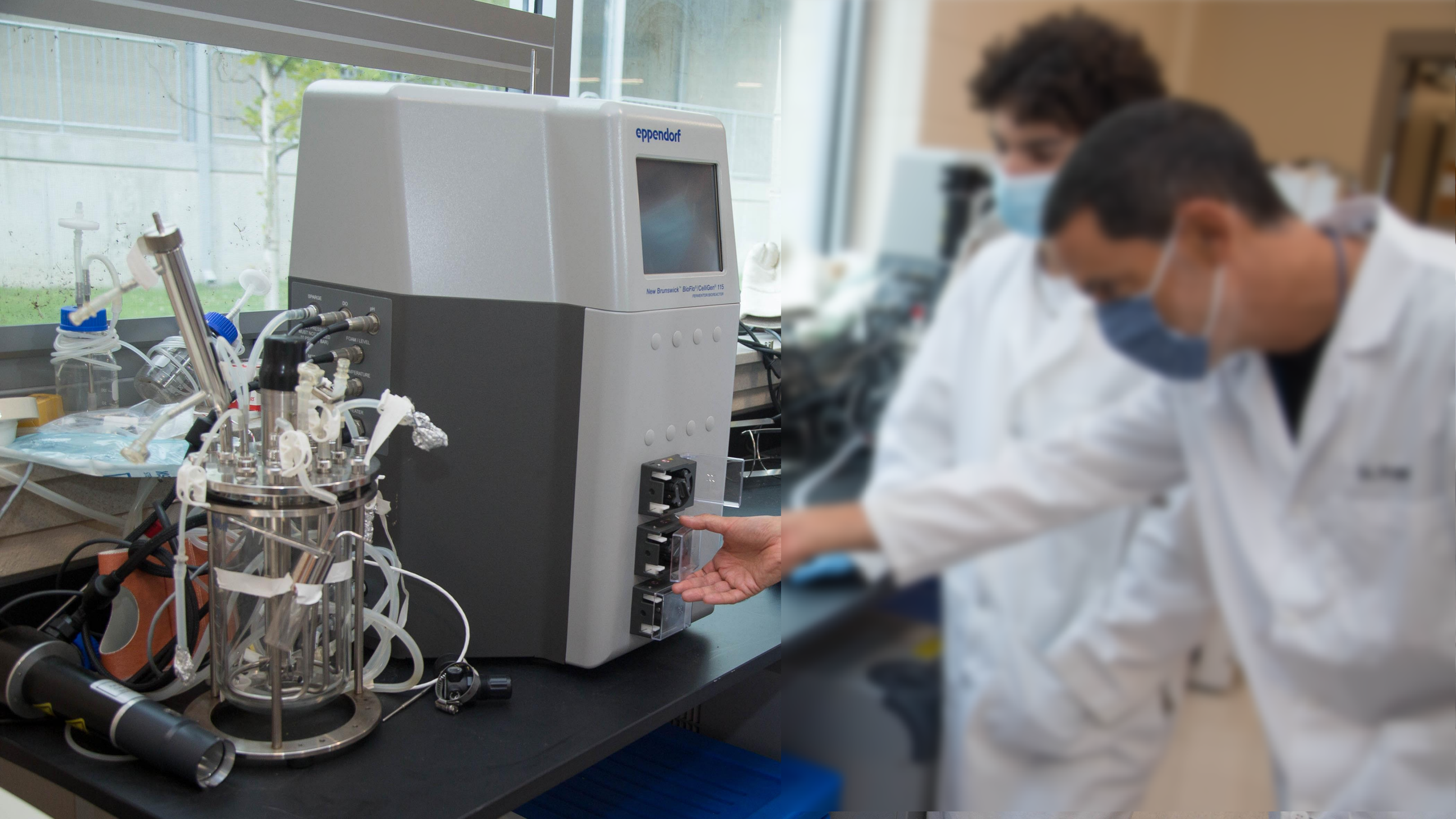
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FOAM / LEVEL

December 2, 2021

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Dr. Edward Bouquillon
Kathleen Bouchard
Gregory Joynt

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SKANSKA

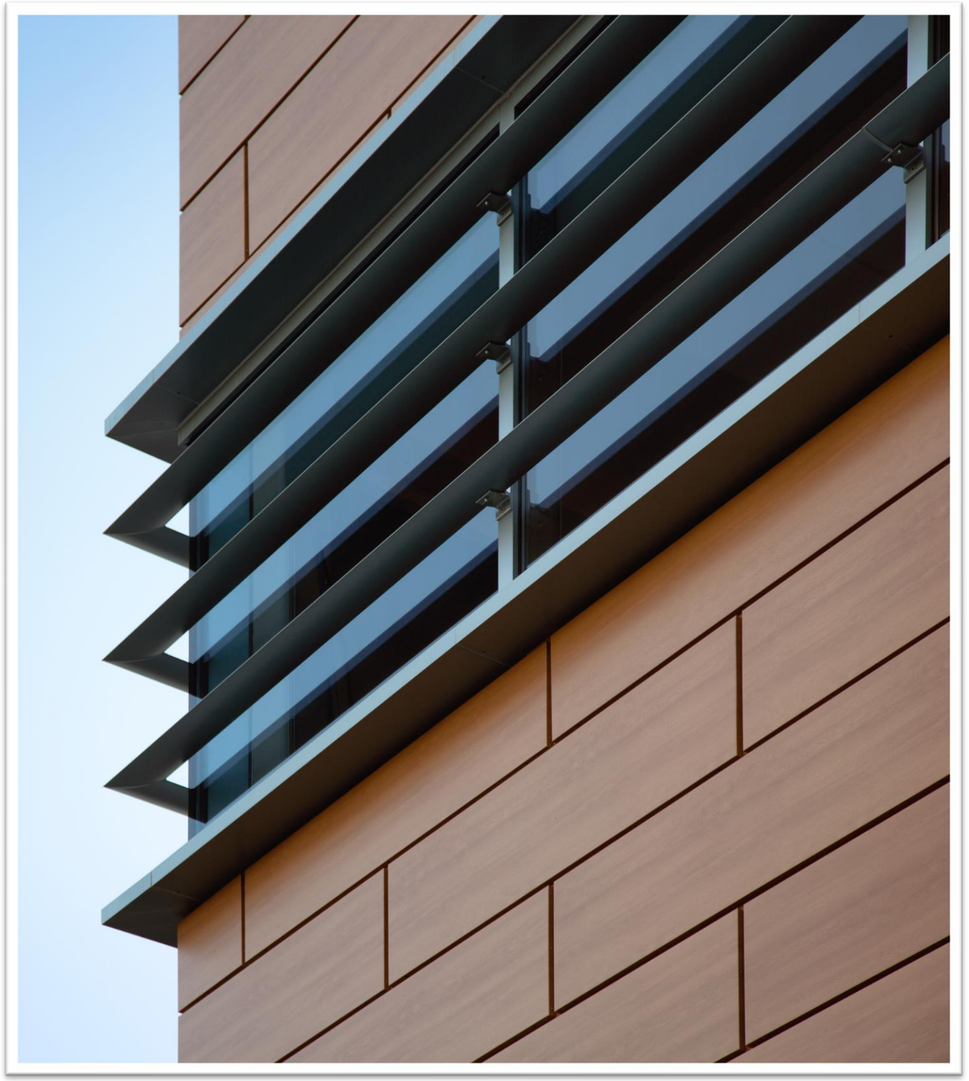
KAESTLE BOOS associates, inc

Gilbane

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

Dr. Edward Bouquillon
Superintendent-Director

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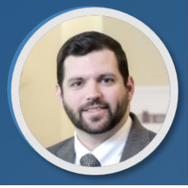
Greg Joynt
Architect



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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.*

★★★★½

3 CE

Need help? Visit Education @USGBC Help

2008 completions

ACCESS OR PURCHASE THIS COURSE

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
Biology **Grade 9** **Mass Standards:** **HSLS1-5,** **HSLS1-7,** **HSLS2-3,** **HSLS2-5**	**Introduction to Sustainable Land Use** 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. Introduction to Cellular Energy: Photosynthesis and Respiration 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.	SSc1 WEc1

SCHOOL AS A TEACHING TOOL

Greg Joynt
Architect

Kathleen Bouchard
Interim Principal
Director of CTE

Water

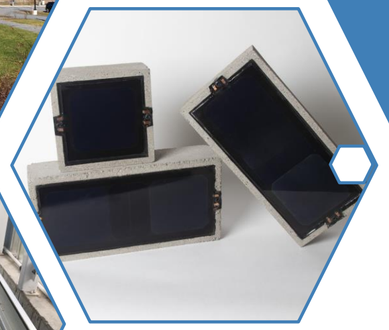
Site

Energy

Food

Transportation

Indoor Environment



Innovation

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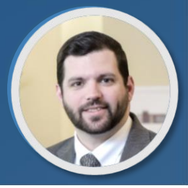
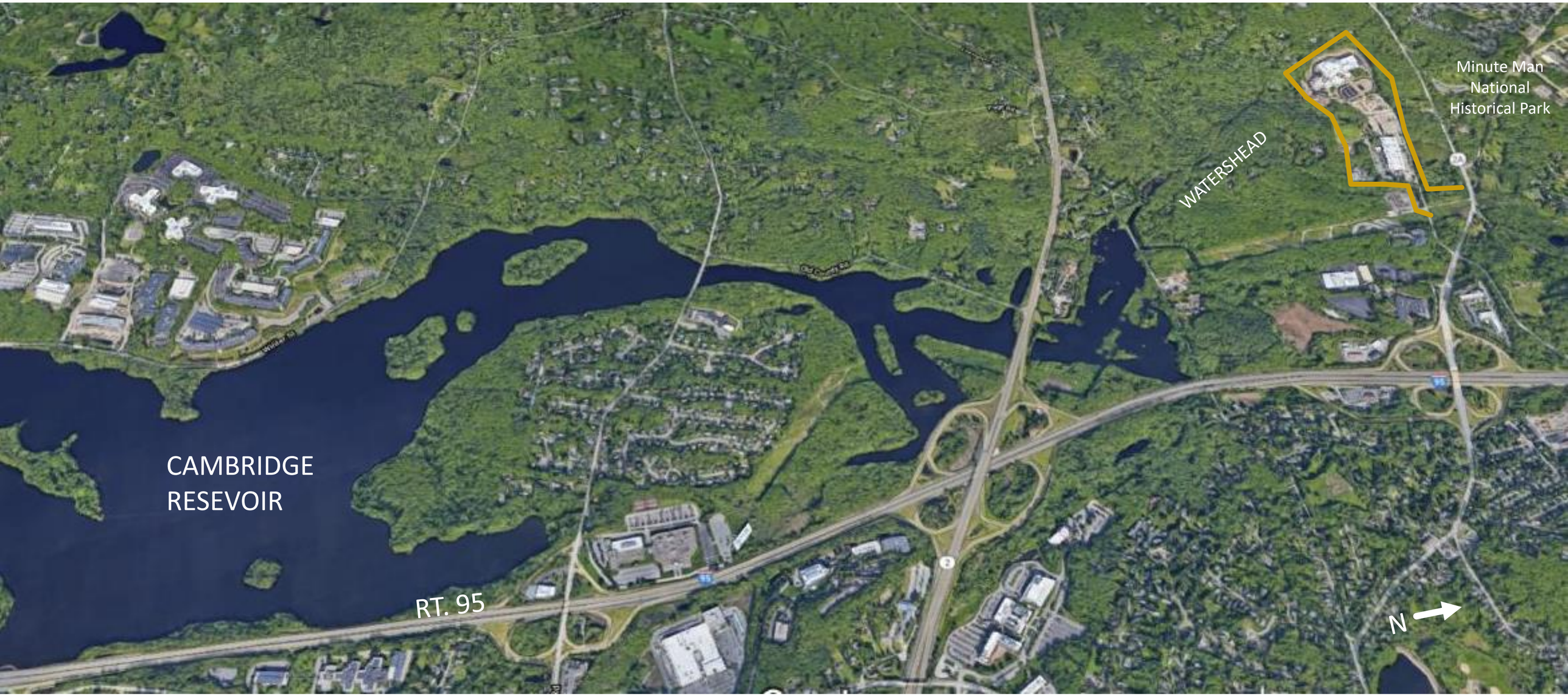
associates, inc

SITE – CONTEXT

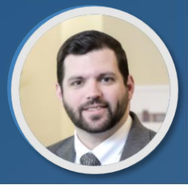
Greg Joynt
Architect

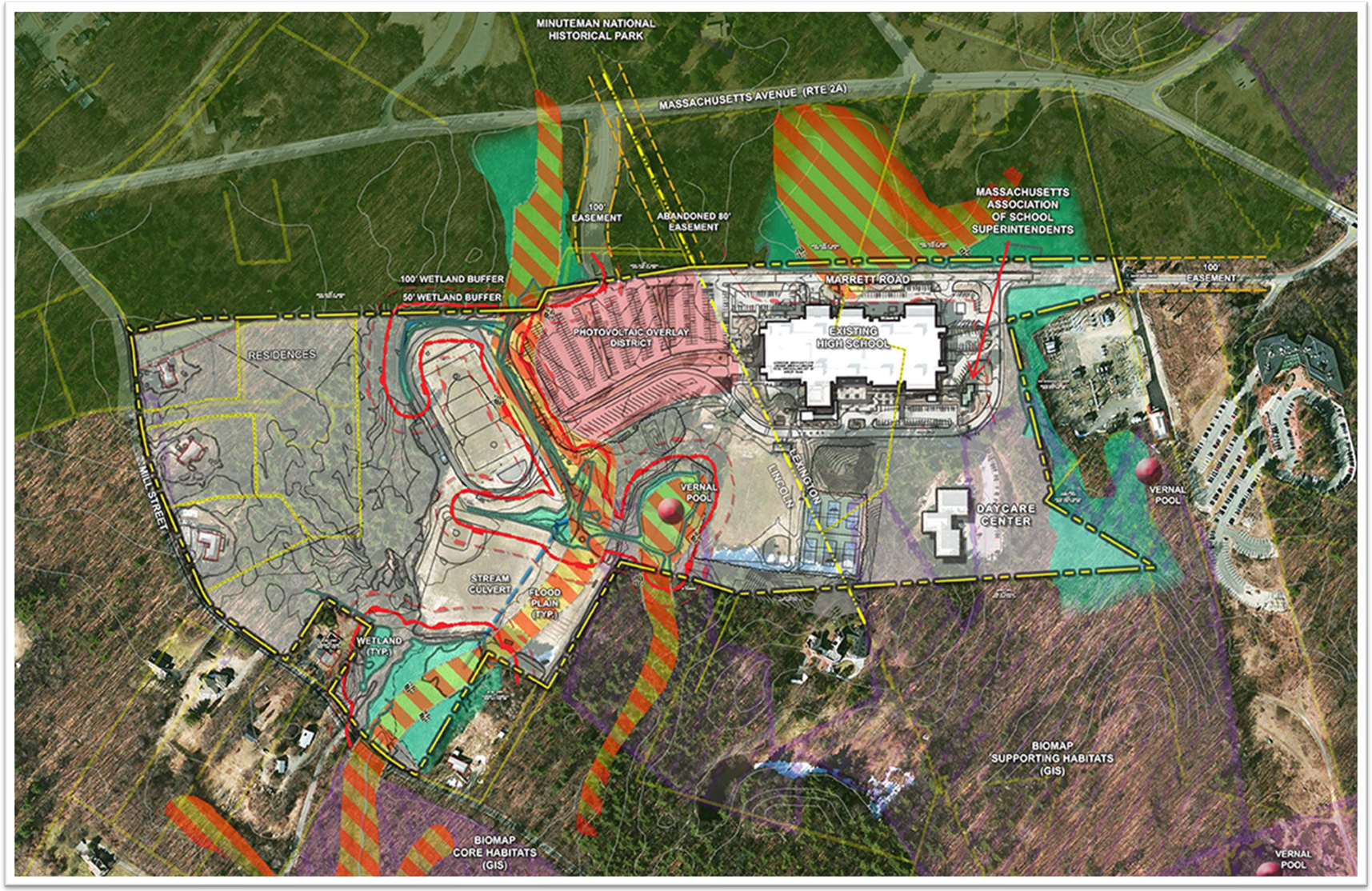




SITE – CONSTRAINTS

Greg Joynt
Architect





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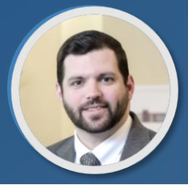
SITE – RESPONSE

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

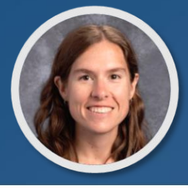
Design Response

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

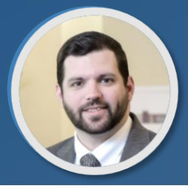

MINUTEMAN REGIONAL VOCATIONAL TECHNICAL HIGH SCHOOL

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

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SITE – SCIENCE CURRICULUM EXAMPLE

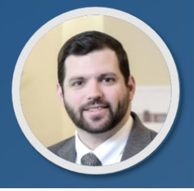
Kathleen Bouchard
Interim Principal
Director of CTE

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.

ENERGY

Greg Joynt
Architect



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

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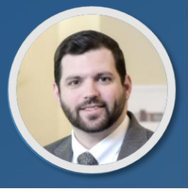
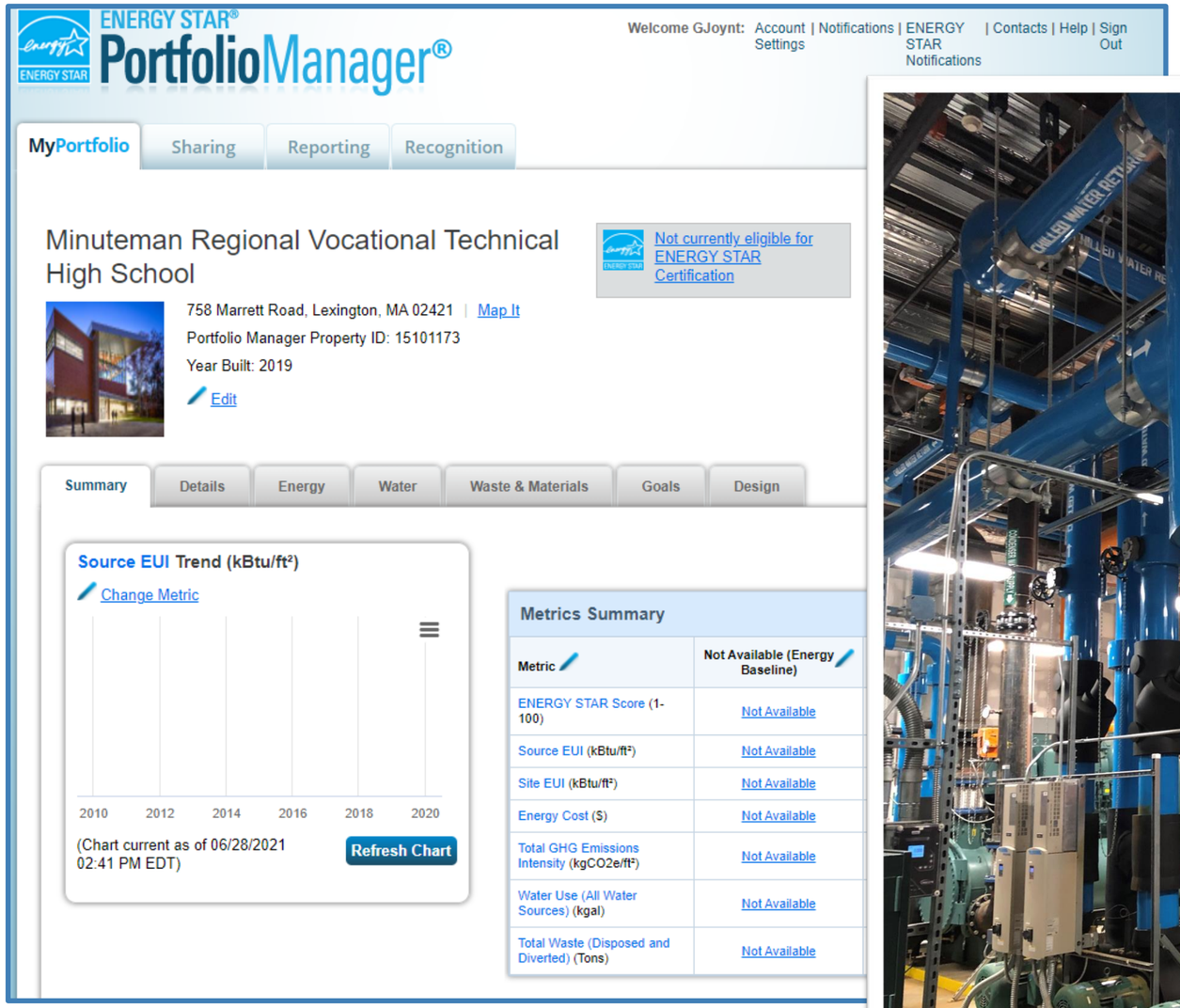
ENERGY – METERING & TRACKING

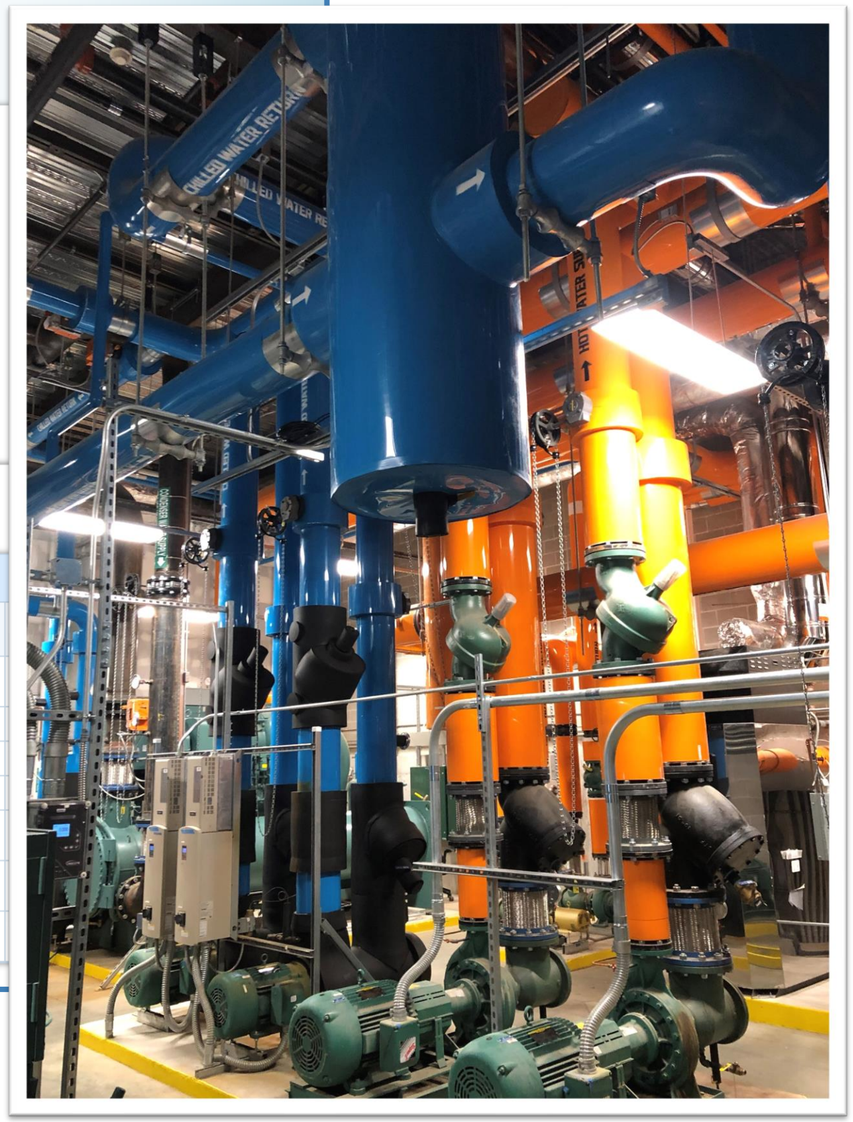
Kathleen Bouchard
Interim Principal
Director of CTE

Greg Joynt
Architect



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





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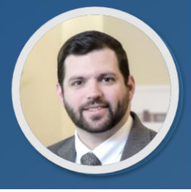
ENERGY – LESSONS LEARNED

Greg Joynt
Architect

- Project doubled the LEED requirements for quantity
- EV's are getting more use then 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

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JOHN DEERE
TORO
DINGO TX 525

INNOVATION – PLANNING FOR THE FUTURE

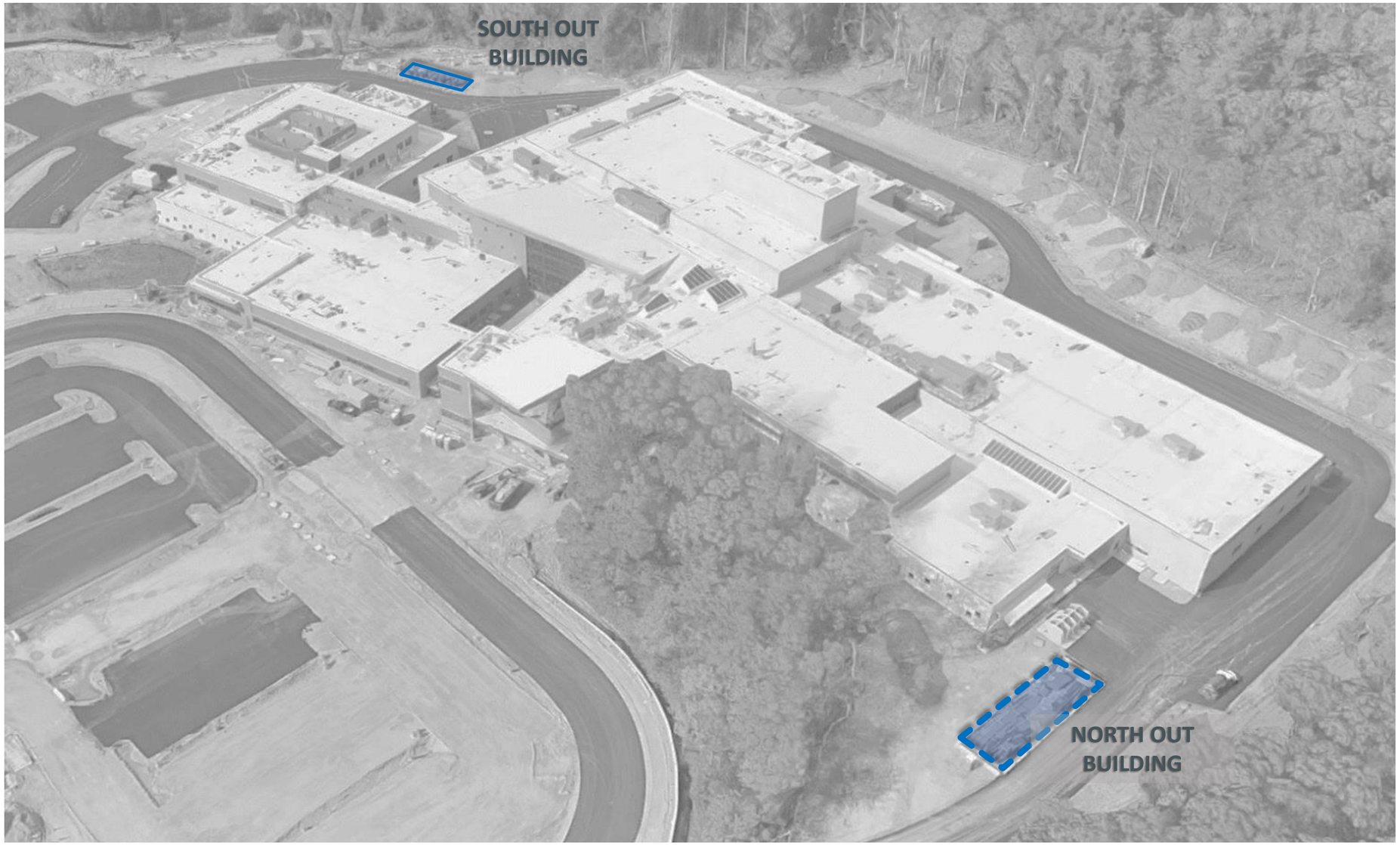
Dr. Edward Bouquillon
Superintendent-Director

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

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Dr. Edward Bouquillon
Gregory Joynt

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PAYING FOR ENERGY USE REDUCTION AND ENERGY GENERATING

Minuteman Regional Vocational Technical School District

A REVOLUTION IN LEARNING

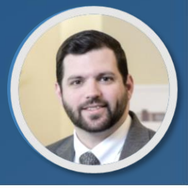
PHOTOVOLTAIC SYSTEM - GOALS

Dr. Edward Bouquillon
Superintendent-Director

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

PHOTOVOLTAIC SYSTEM

Greg Joynt
Architect



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

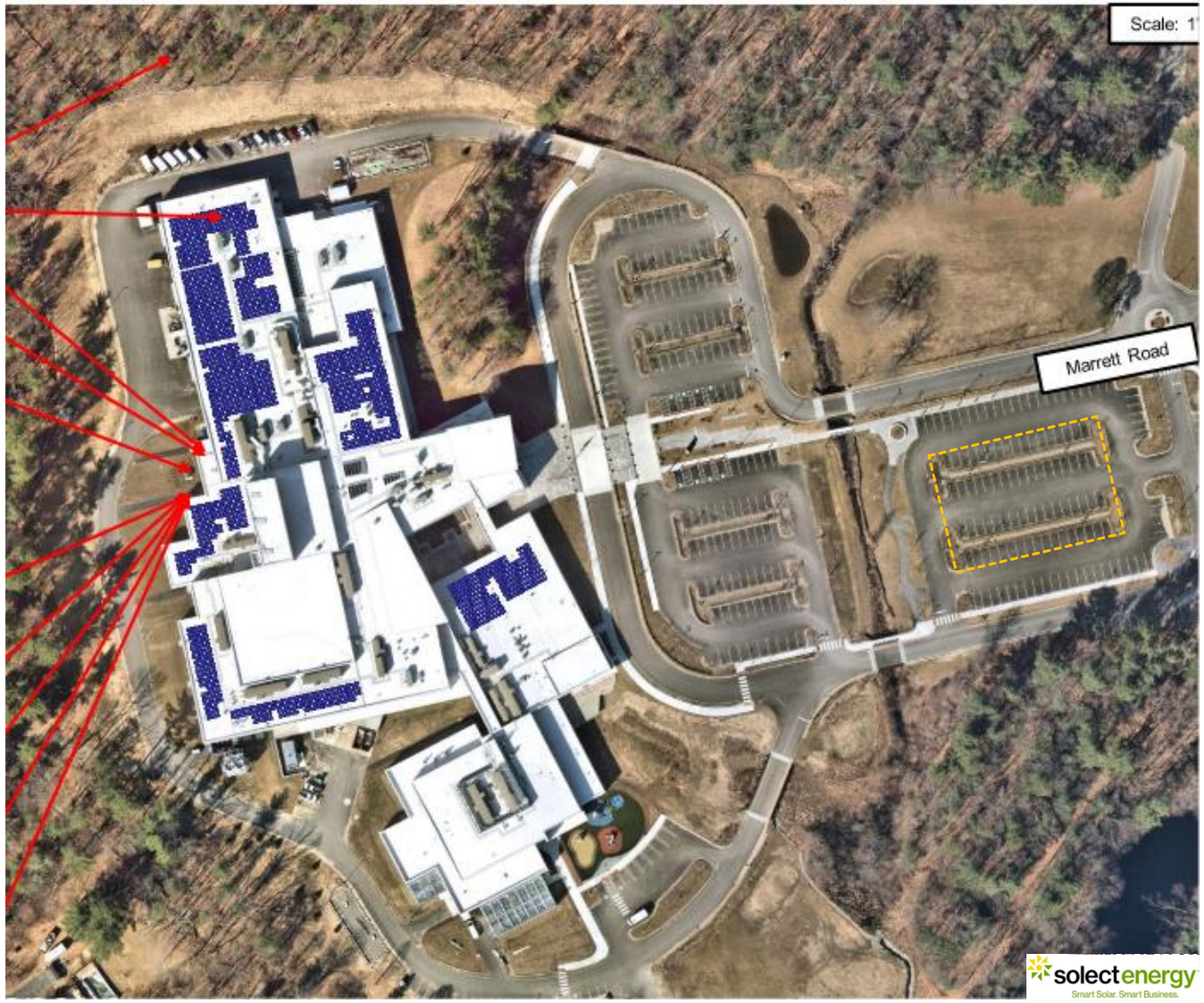
- Benefits
  - Known Vendor
  - Upfront procurement completed
  - Design input
- Challenges
  - Environmental Attributes belong to the PPA vendor
  - District must join the consortium

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



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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.