



Town of Concord

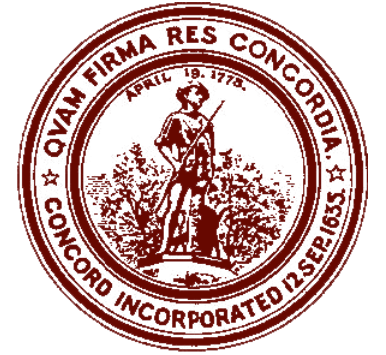
# Concord Middle School

Community Forum

09.23.2021

**EWING  
COLE** | SMMA

# Project Goals Recap



Total Project Cost Range per RFS **\$80-\$100 M**  
Total Project Cost maximum currently estimated **<\$102 M**



Replace two middle schools with **one combined middle school**, grades 6-8



Design enrollment **700 Students**



**Team Teaching** Model, meet **Ed Plan**



Design for **Net Zero Energy**

**Primary Goal:**  
Consolidate two middle school populations **into a single, 21<sup>st</sup> century learning facility** that will serve the community for generations.



# Building Layout and Design

Educational Use, Community Use, Integration with Landscape

## “Public” Wing

- School use only during school hours
- Community use after hours



	Classroom
	Team Commons
	Special Education
	Vocation/Tech Classroom
	Administration
	Guidance
	Nurse
	Media Center
	Auditorium
	Music
	Art
	Physical Education
	Cafeteria

## “Academic” Wing

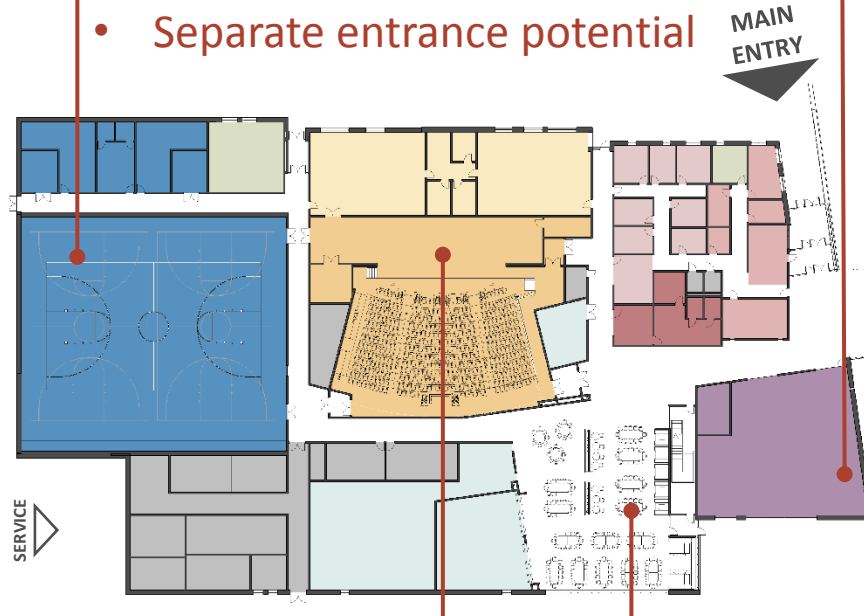
- 3 stories
- Houses majority of classrooms

## Gym:

- 1 MIAA Court
- 2 large practice courts
- All-school assembly
- Proximate to parking
- Separate entrance potential

## Media Center:

- Equal size to existing middle school libraries combined
- Located in the heart of the school
- View into the forest



## Auditorium:

- 420 seats
- Traditional sloped seating

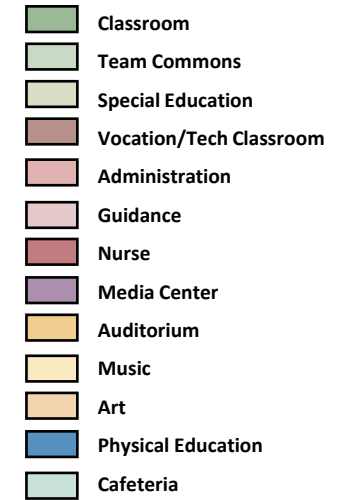
## Cafeteria:

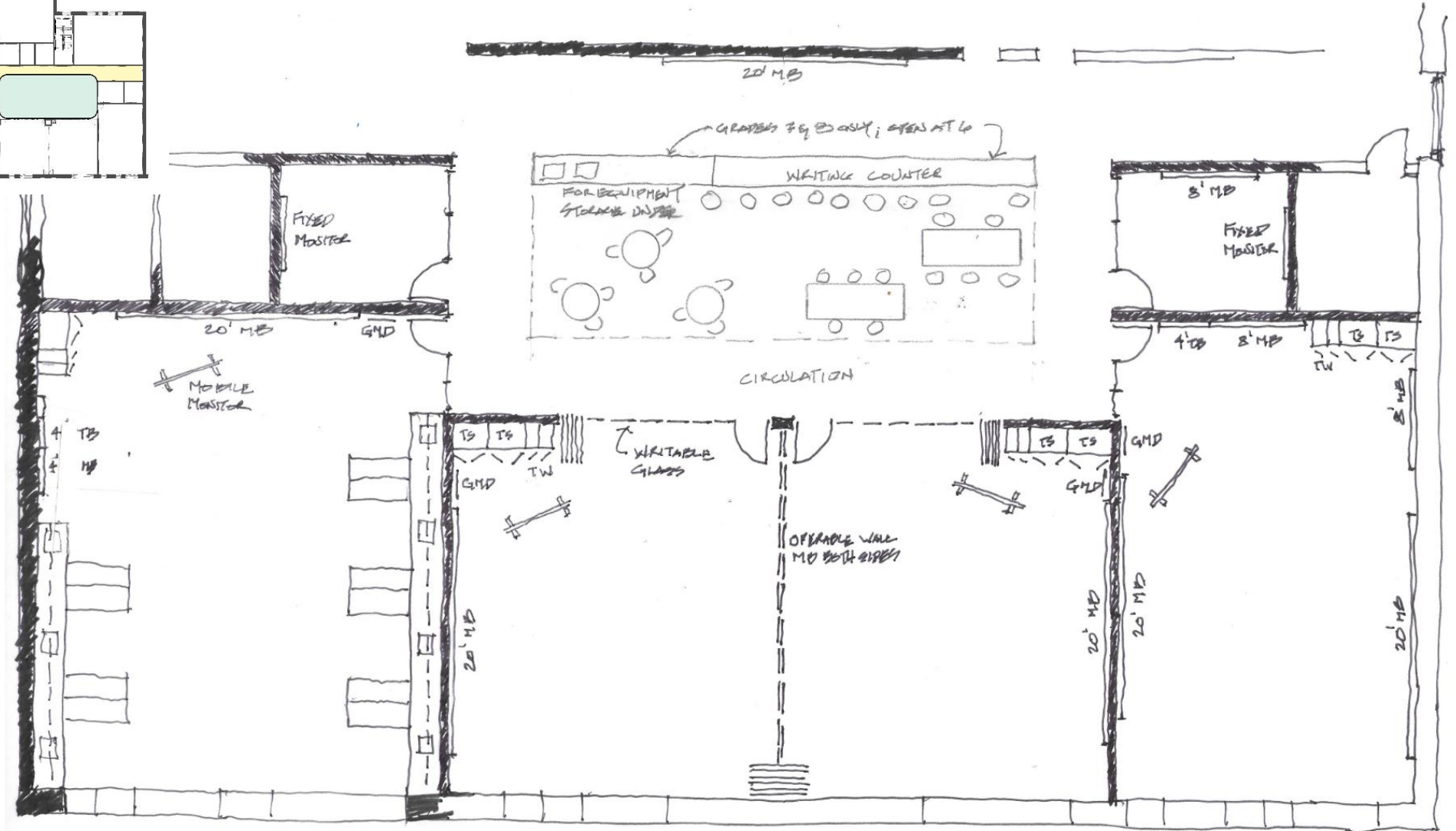
- Scramble servery
- Mix of seating types
- One grade level / lunch
- View into the forest



## Academic Wing:

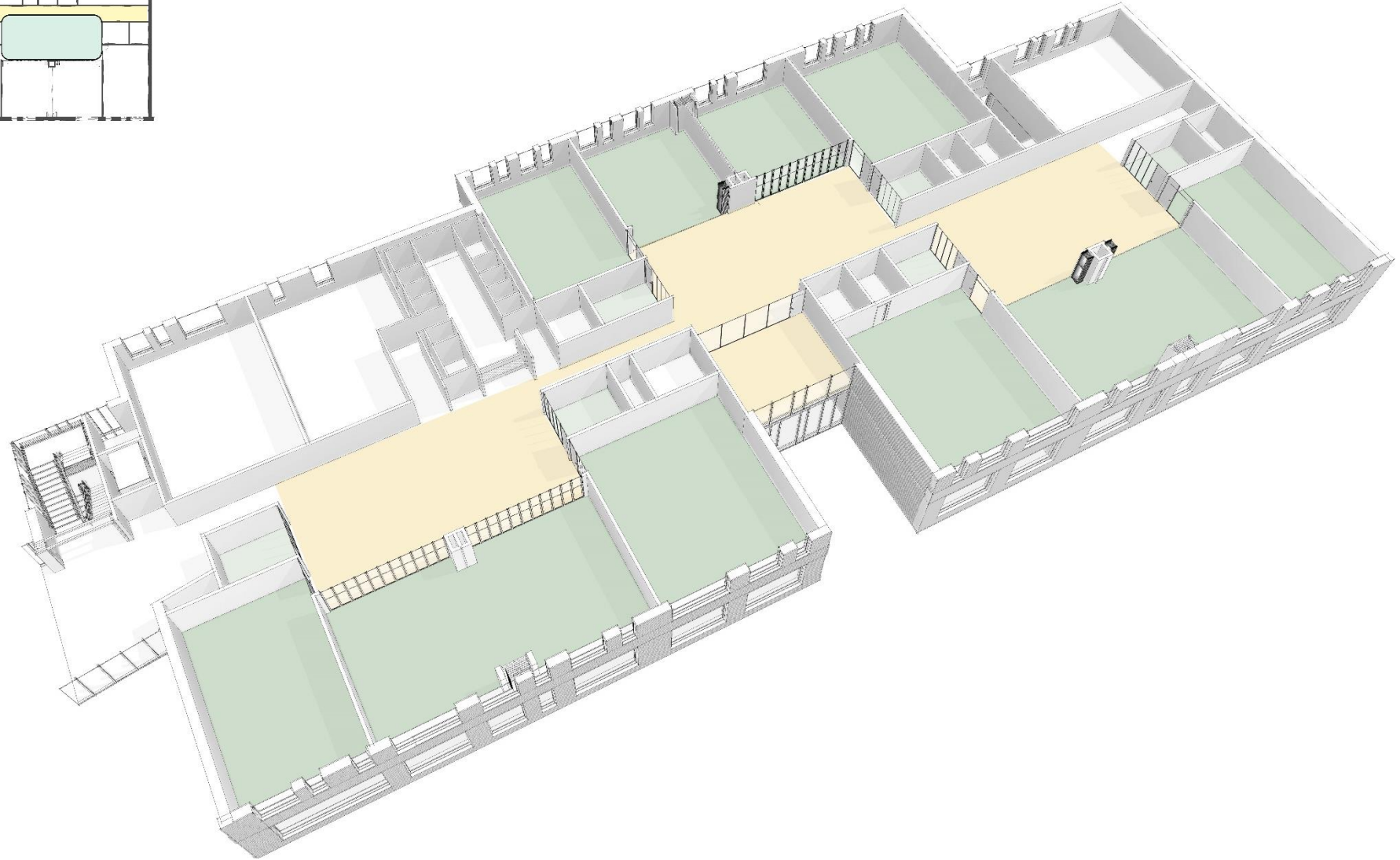
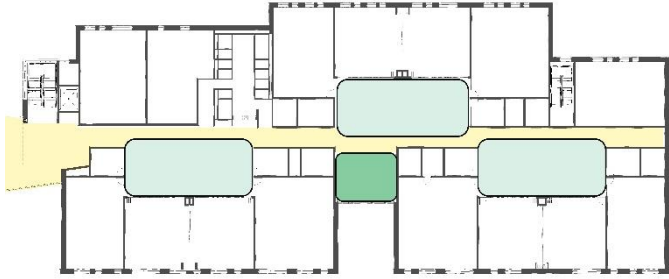
- 1 grade level per floor
- 3 Teams per grade level
- Integrated SPED spaces
- Spaces for differentiation

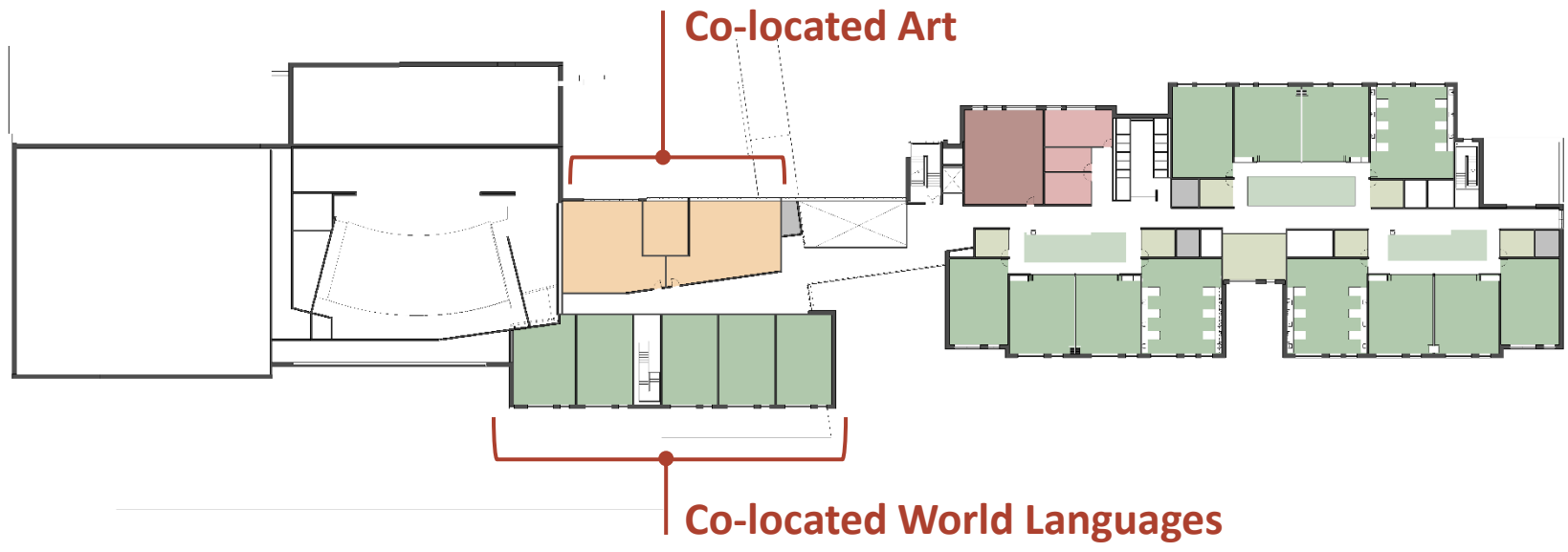




OPTION 1  
7/22/19 PJP







- Classroom
- Team Commons
- Special Education
- Vocation/Tech Classroom
- Administration
- Guidance
- Nurse
- Media Center
- Auditorium
- Music
- Art
- Physical Education
- Cafeteria

UPPER-LEVEL PLAN



LOWER-LEVEL PLAN

















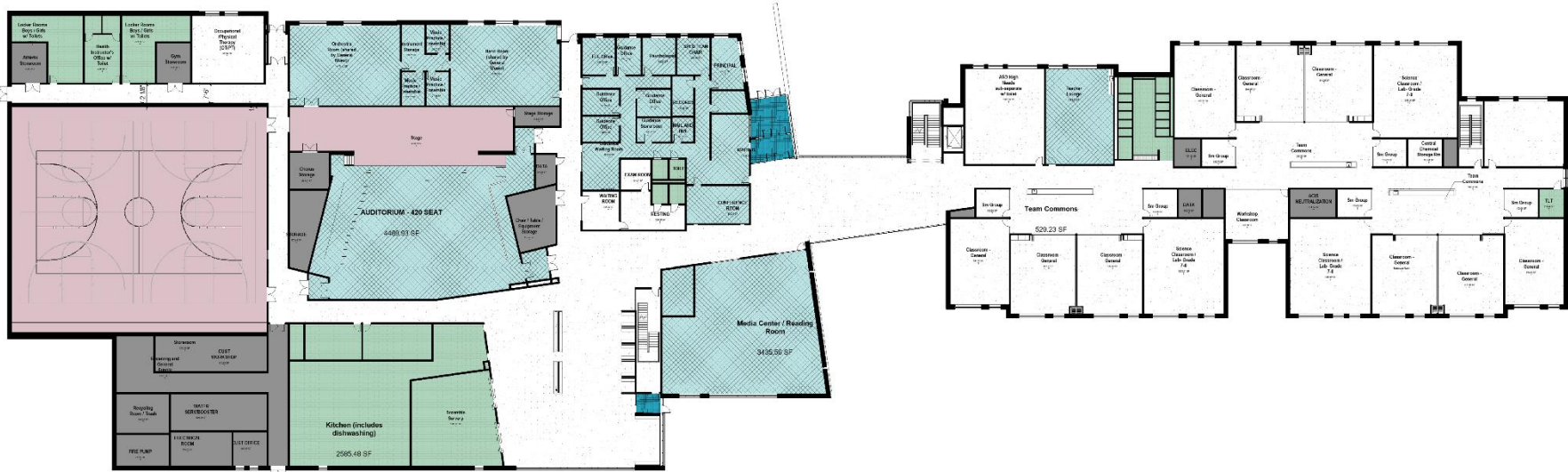






Diagram of Floor Materials

- Linoleum
- Porcelain Tile or Epoxy Resinous
- Wood
- Sealed Concrete
- Carpet Tile
- Walk Off Carpet

















TEAM COMMONS

23 SEPTEMBER 2021

CONCORD MIDDLE SCHOOL



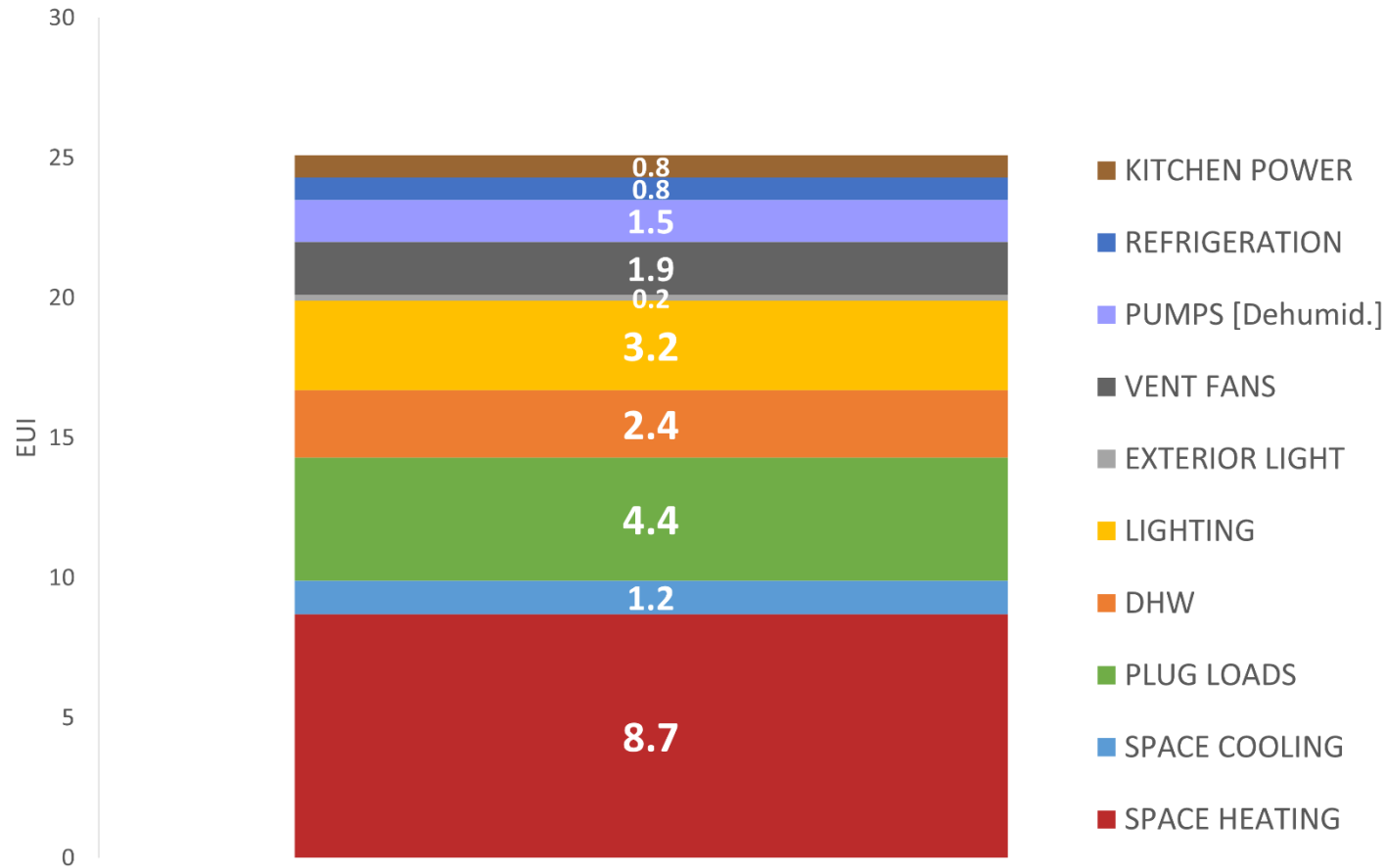
# Sustainability and Building Systems Design

EUI Goal, Netzero Readiness, All-Electric Systems



# CMS EUI Update

ENERGY CONSUMPTION BY END-USE



25  
EUI



# Life Cycle Cost Analysis Update

## Building Energy Systems

Initial Project Cost & Payback Analysis							
System Options		Installation Costs	Incremental costs		Predicted Annual Savings	Predicted EUI	Predicted GHG Emissions Reduction
		(\$)	(\$)	(%)	(\$)	kBtu/SF/yr.	(%)
<b>Scenario 1 (Proposed Design)</b>	<b>VRF/ASHP HEATING &amp; COOLING + DOAS</b>	\$11,306,709				25.1	42.4%
<b>Scenario 2</b>	<b>VRF/ASHP HEATING &amp; COOLING + DOAS + DISPL. VENT (Audit.)</b>	\$11,729,709	\$423,000	3.7%	(\$1,669)	25.4	41.8%
<b>Scenario 3</b>	<b>GEOHERMAL HEATING &amp; COOLING + GEOHERMAL DOAS</b>	\$14,871,709	\$3,565,000	31.5%	\$2,053	24.8	43.1%

NOTE: Geothermal will not be possible without impact to schedule, due to site constraints

# Life Cycle Cost Analysis Update

## Building Energy Systems relative to MA Stretch Code

Initial Project Cost & Payback Analysis								
System Options		Installation Costs	Incremental costs		Predicted Annual Savings	Payback	Predicted EUI	Predicted GHG Emissions Reduction
		(\$)	(\$)	(%)	(\$)	(Yrs.)	kBtu/SF/yr.	(%)
<b>Base Case (Stretch Code)</b>	<b>ALL ELECTRIC PACKAGED DX DOAS + DX HEAT PUMP HEATING/COOLING</b>	\$10,128,910					43.6	
<b>Scenario 1 (Proposed Design)</b>	<b>VRF/ASHP HEATING &amp; COOLING + DOAS</b>	\$11,306,709	\$1,177,799	1.2%	\$122,464	9.6	25.1	42.4%
<b>Scenario 2</b>	<b>VRF/ASHP HEATING &amp; COOLING + DOAS + DISPL. VENT (Audit.)</b>	\$11,729,709	\$1,600,799	1.6%	\$120,794	13.3	25.4	41.8%
<b>Scenario 3</b>	<b>GEOHERMAL HEATING &amp; COOLING + GEOHERMAL DOAS</b>	\$14,871,709	\$4,742,799	4.7%	\$124,516	38.1	24.8	43.1%

NOTE: Geothermal will not be possible without impact to schedule, due to site constraints

16 SEPTEMBER 2021

CONCORD MIDDLE SCHOOL

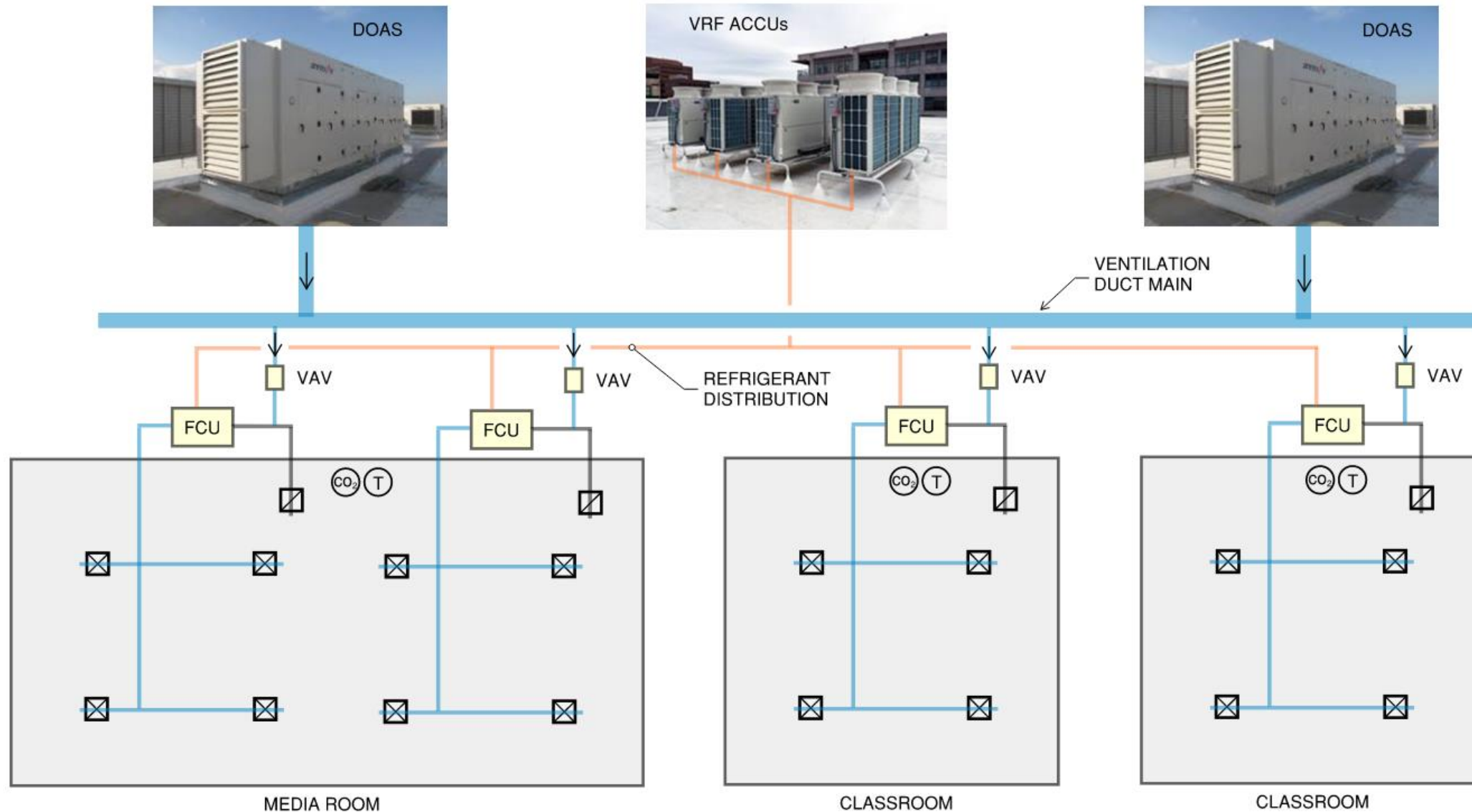
# Life Cycle Cost Analysis Update

## Building Energy Systems – 50 yr. Life Cycle Analysis

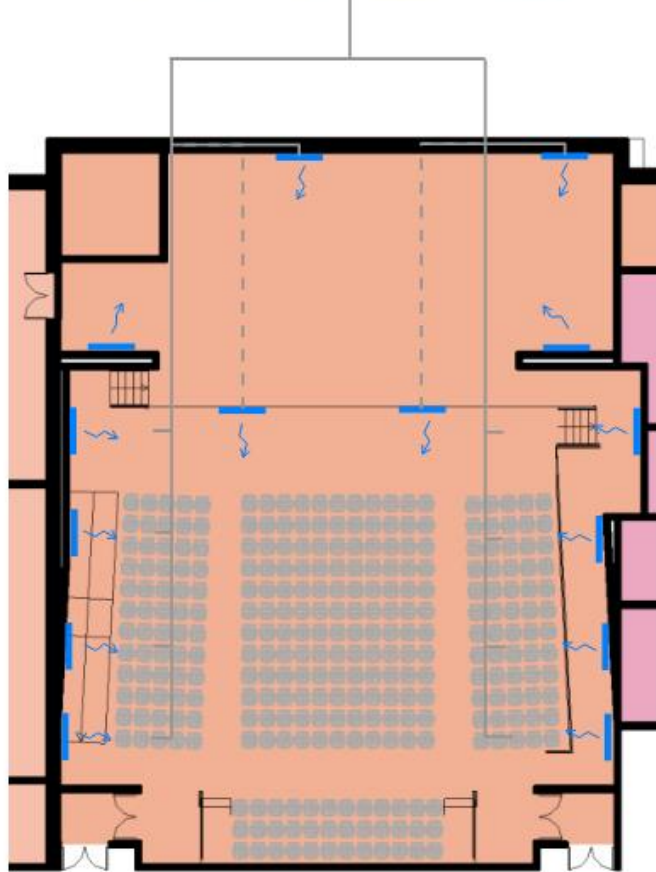
Life Cycle Cost Analysis (50 yrs) - HVAC Systems & Building Enclosure								
		System Costs as Present Value					Predicted EUI	Predicted GHG emissions Reduction (%)
		Installation	Replacement	Maintenance	Energy	50-Year Life	kBtu/SF/yr	
<b>Scenario 1 (Proposed Design)</b>	VRF/ASHP HEATING & COOLING + DOAS	\$11,306,709	\$5,530,200	\$581,493	\$4,278,024	<b>\$21,696,000</b>	<b>25.1</b>	<b>42.4%</b>
<b>Scenario 2</b>	VRF/ASHP HEATING & COOLING + DOAS + DISPL. VENT (Audit.)	\$11,729,709	\$5,745,440	\$594,358	\$4,320,978	<b>\$22,390,000</b>	<b>25.4</b>	<b>41.8%</b>
<b>Scenario 3</b>	GEOTHERMAL HEATING & COOLING + GEOTHERMAL DOAS	\$14,871,709	\$4,773,719	\$800,196	\$4,225,206	<b>\$24,671,000</b>	<b>24.8</b>	<b>43.1%</b>

NOTE: Geothermal will not be possible without impact to schedule, due to site constraints

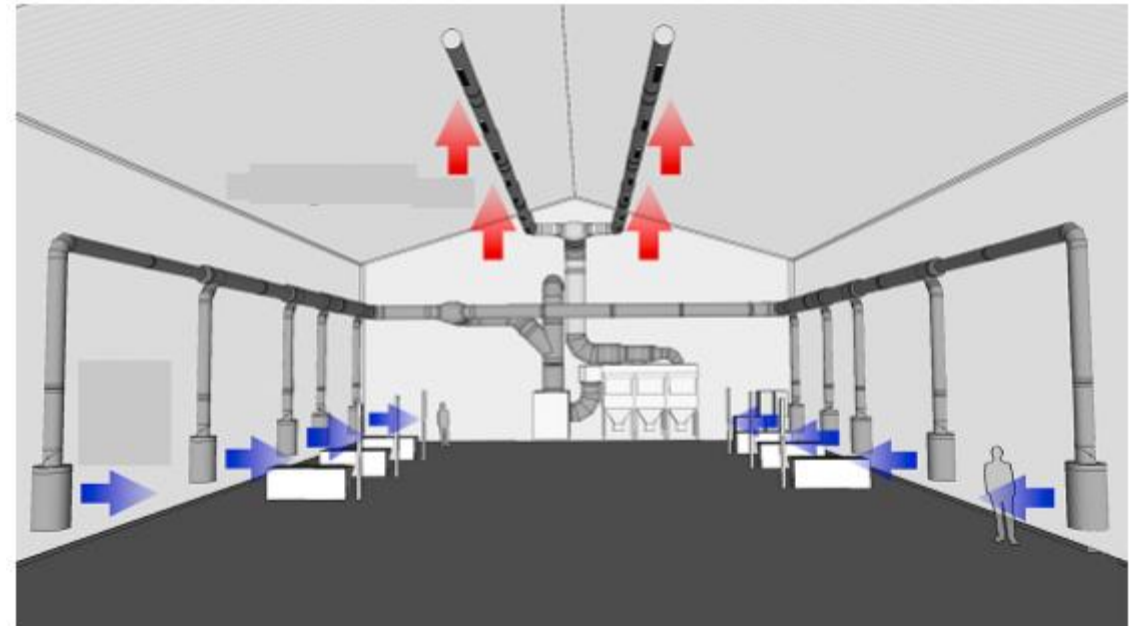
# Recommended Opt. 2. VRF + DOAS + DV *for Auditorium*



# Recommended Opt. 2. VRF + DOAS + DV *for Auditorium*



Displacement Diffuser Types



Displacement Ventilation Example



# Budget, Schedule and Upcoming Meetings



## PHASE 1 - NEW SCHOOL DESIGN & CONSTRUCTION



# Meetings

## CMSBC – Thursday, September 16th

- Exterior and Interior Design refinements
- Mechanical Systems update

## CMSBC – Thursday, October 7th

- SD Pricing Submission Content
- Proposed Value Management List
- Furniture and Technology Scope and Budget

-----[2.5 weeks Estimating and SD Report Review]-----

## CMSBC – Friday, November 5th

- Review Reconciled Estimates / Project Cost
- Discuss Value Management (VM) Recommendation
- Vote VM Recommendation

## CMSBC – Friday, November 12th

- Vote to approve Schematic Design Scope and Budget



# Thank you!

more information:

<https://www.cmsbuildingproject.org/>

contact us at:

[msbc@concordps.org](mailto:msbc@concordps.org)

follow us on:

Instagram: @cmsbcinconcord

Twitter: @CMSBCinConcord

Facebook: CMS Building Committee (@cmsbcinconcord)