Amesbury Elementary School

Amesbury Green Committee Meeting

March 4, 2020

CITY OF AMESBURY
Incorporated
1668
MASSACHUSETTS

DINISCO DESIGN
architects + planners

Agenda

- Building Design Overview
- Review Committee Goals & Priorities
- Sustainability Strategies & LEED

Project Summary

- Project Site: 193 Lions Mouth Road

- New Amesbury Elementary School - 98,195 GSF
  425 kindergarten - 2nd grade students + 45 PreK
- Existing Amesbury Elementary School - 53,723 GSF
  346 Pre-kindergarten - 4th grade students

- Existing Cashman Elementary School to remain
  450 3rd - 5th grade students (proposed)

Existing Conditions | Site Photos

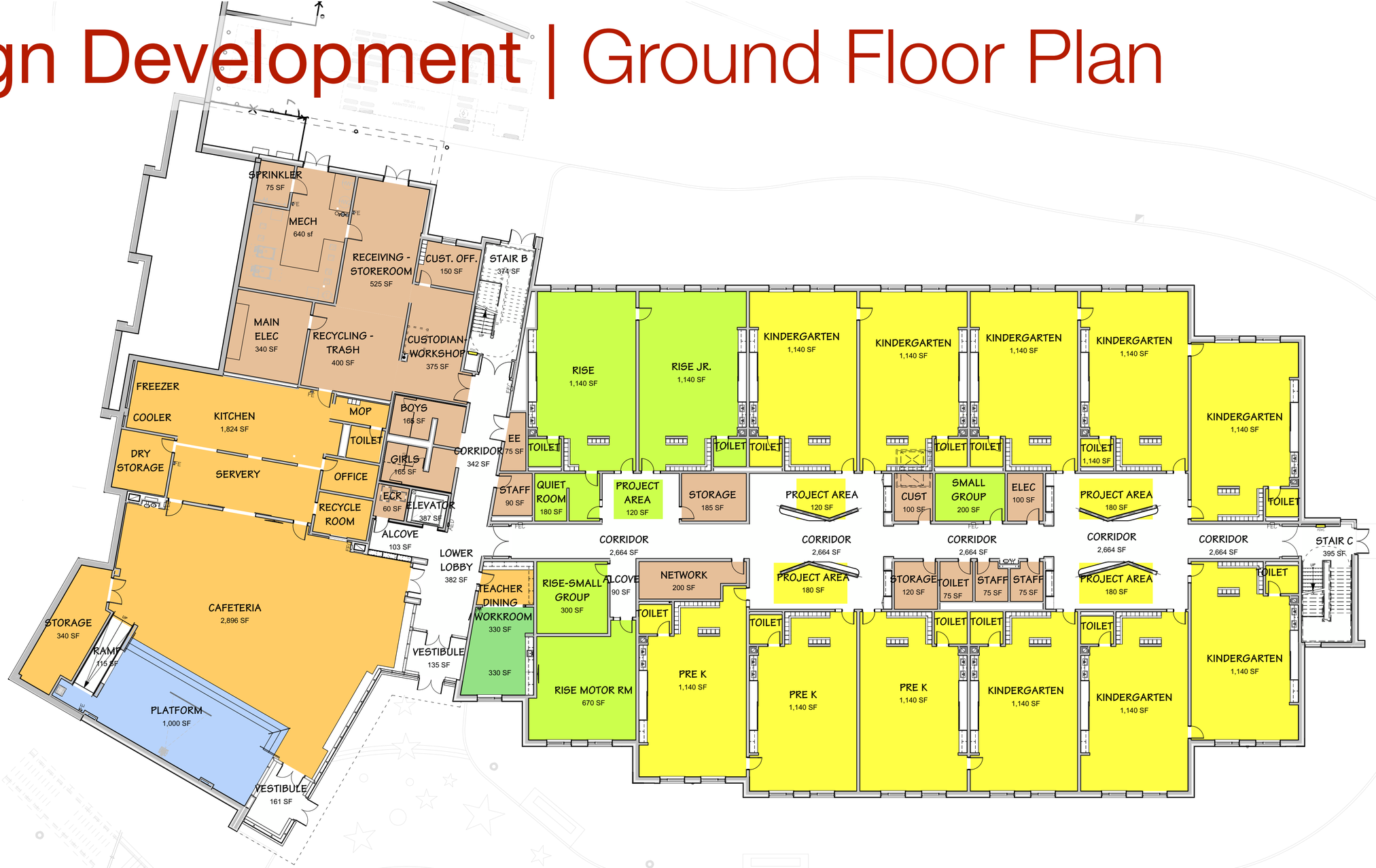
Existing Conditions | Site Photos

Existing Conditions | Site Photos

Existing Conditions | Site Plan

Proposed | Site Plan

Design Development | Ground Floor Plan



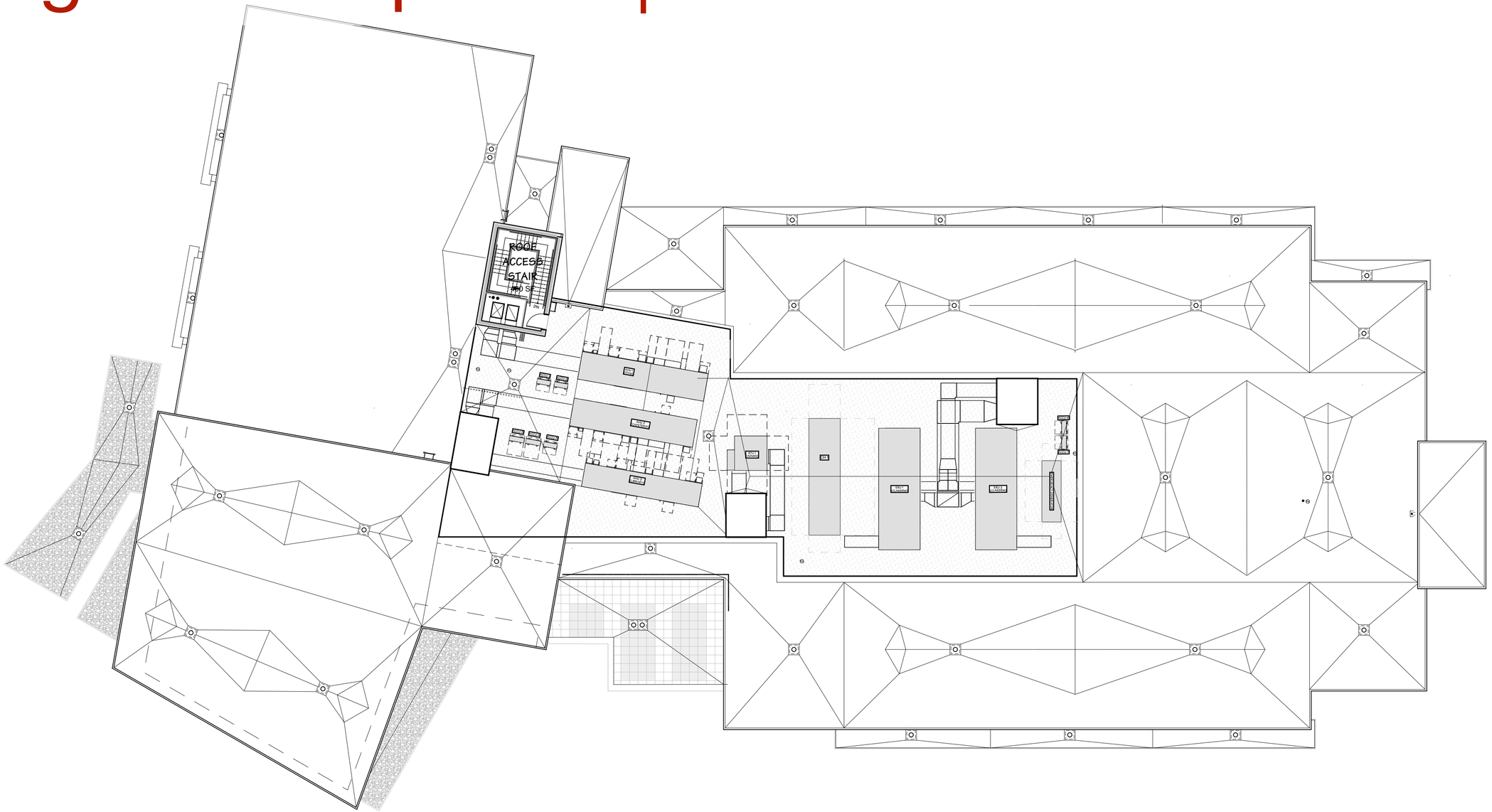
LEGEND

- CLASSROOM
- SPECIAL EDUCATION
- LIBRARY
- ART/MUSIC
- STAGE
- GYMNASIUM
- KITCHEN/CAFETERIA
- ADMINISTRATION
- BUILDING SERVICES
- CIRCULATION

Design Development | First Floor Plan

Design Development | Second Floor Plan

Design Development | Roof Plan



Proposed | Building Section

Proposed | Perspective View

Proposed | View of Main Entry

Proposed | View from Parking Lot

Proposed | Main Entry View Towards Cashman

Proposed | View From Playground

Proposed | View Towards Gym

Lobby View From Admin

Lobby View Towards Main Entry

Library View From Teaching Area

Library View Towards Teaching Area

Cafeteria View Towards Playground

Cafeteria View Towards Platform

Typical Classroom Cluster & Project Area

Typical Project Area

Typical Classroom

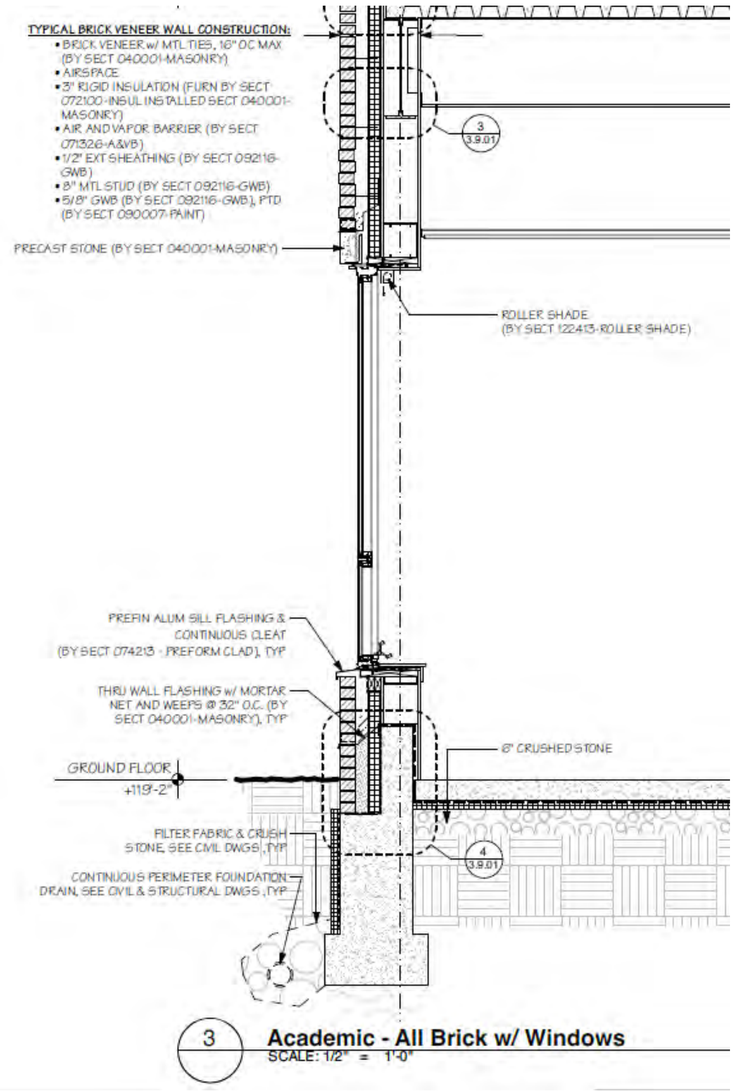
Typical Classroom

Sustainability | General Strategies

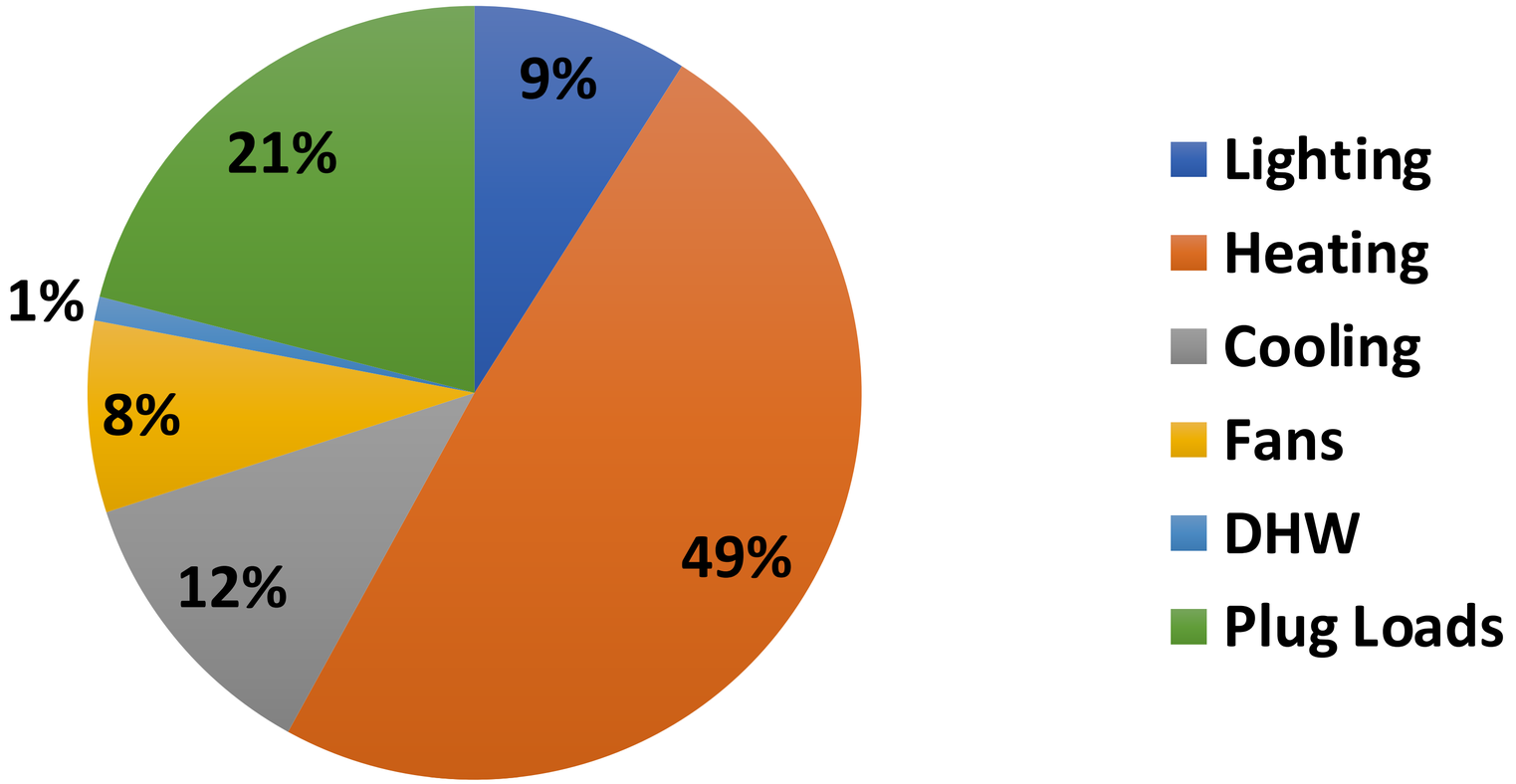
- Enhanced Envelope Strategies (increased insulation, double glazed low-e windows)
- Target EUI of 37 and potentially offset a portion of the remainder w/ renewables energy (on site and/or carbon offsets)
- Building and parking areas designed as PV “ready”
- Efficient HVAC system – Active Chilled Beams
- Efficient Lighting system - LEDs
- Low flow plumbing fixtures
- Electric Vehicle Charging
- Commissioning of MEP and envelope systems
- Implement energy efficiency inventive programs (Mass Save)

Sustainability | Building Envelope

- Window/Wall Ratio (WWR)
  - Current Design: 22%
    - 14-34% in recent K-12 MA projects
- Windows and Glazing
  - Double-glazed low-e, SHGC, Interior shades, operable
- Tight Envelope
  - Continuous air barrier + air sealing
  - Building envelope commissioning
- Insulation Values
  - 3” rigid insulation @ exterior walls
  - 7” rigid insulation @ roof



Typical Cold Climate School Energy Consumption

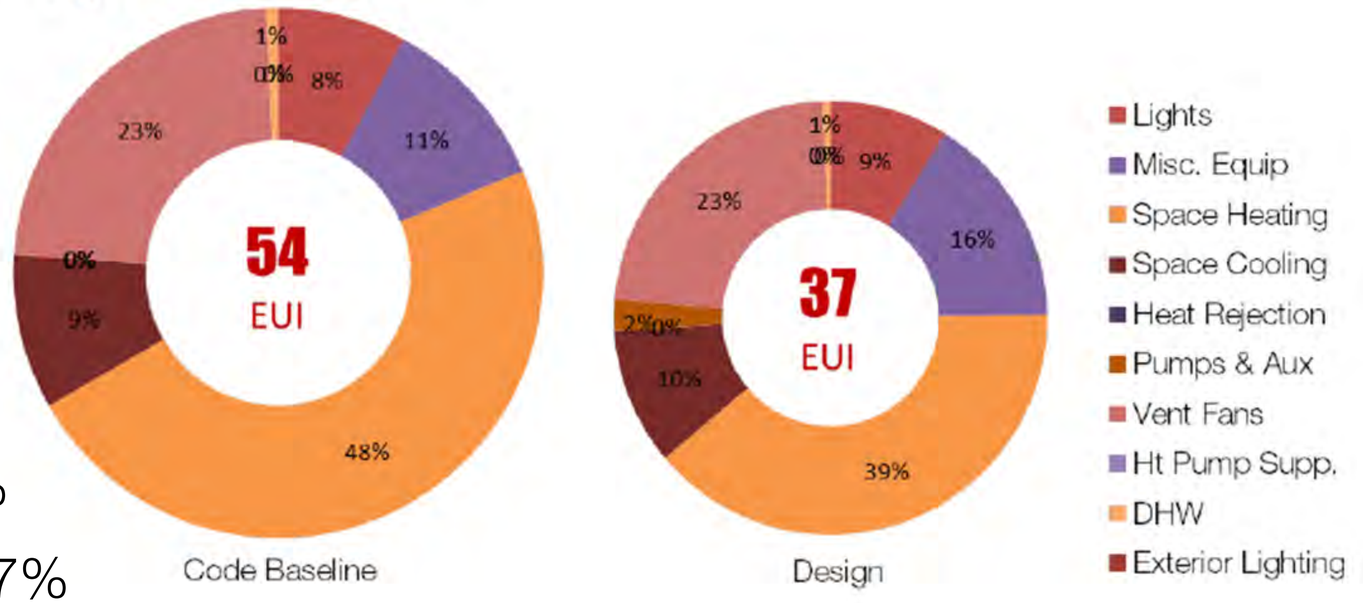


Plug Loads and Lighting make up 30% of the Total Energy Consumption

AES Design Development Energy Model Results

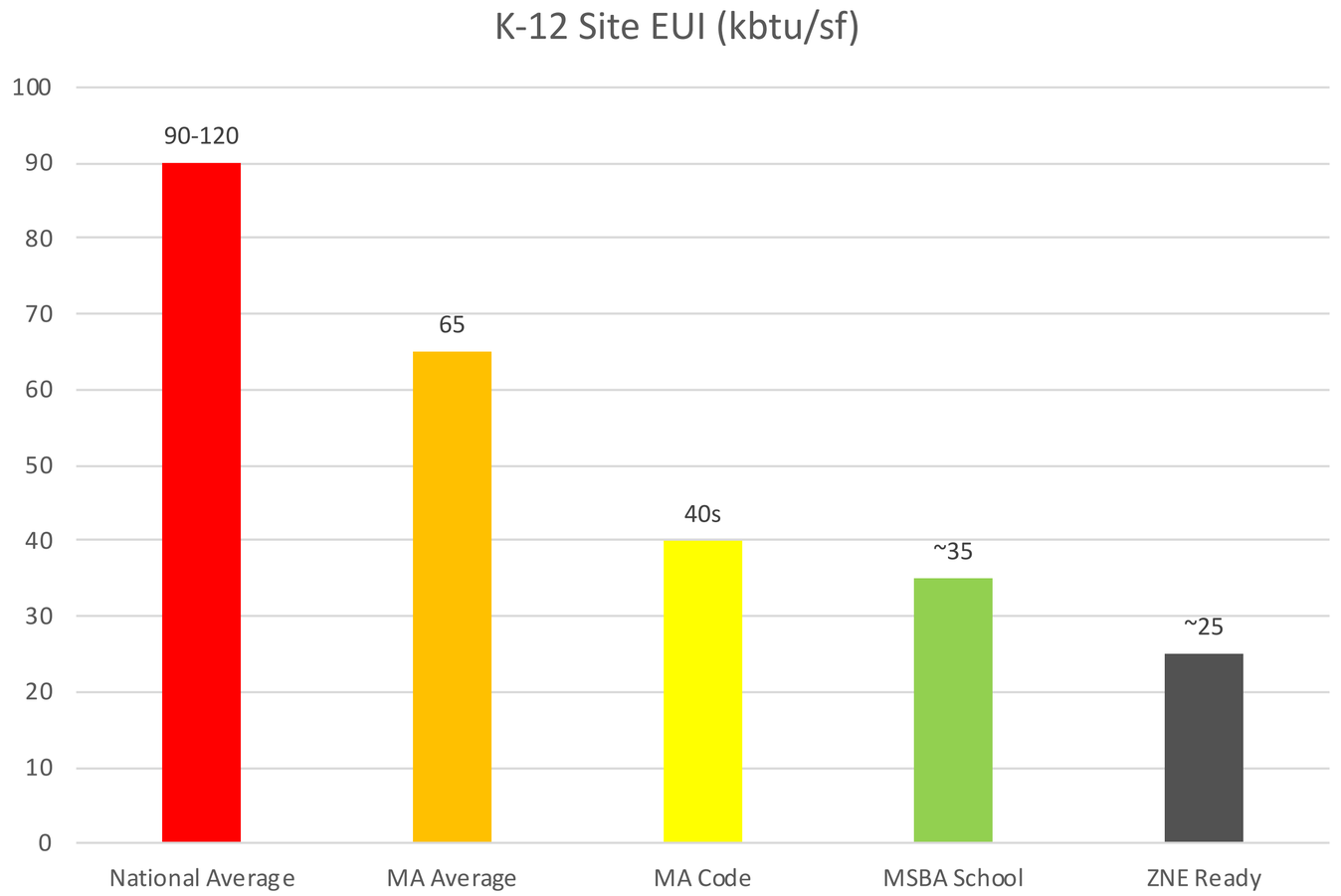
- **EUI:** 36.6 kBtu/sf/yr
- **Annual Energy Cost Savings:** 22.2%
- **Annual Site Energy Savings:** 32%
- **Annual Source Energy Savings:** 24.4%
- **Annual GHG Emission Reduction:** 29.7%

Figure 2: EUI Comparison



Sustainability | MSBA Requirements

- LEED-Schools v4 Certified Level (minimum)
- 20% Improvement over current MA State Energy Code (IECC 2015/ASHRAE 90.1-2013)



LEED v4 for BD+C: Schools
Project Checklist

Project Name: **Amesbury Elementary School**
Date: **2/7/2020**

Y	?	N			
0	**1**	**0**	**Integrative Process**		**1**
	1		Credit	Integrative Process	1

Y	?	N			
2	**0**	**13**	**Location and Transportation**		**15**
		N	Credit	LEED for Neighborhood Development Location	15
1			Credit	Sensitive Land Protection	1
		2	Credit	High Priority Site (RP@2)	2
		5	Credit	Surrounding Density and Diverse Uses (RP@4)	5
		4	Credit	Access to Quality Transit	4
		1	Credit	Bicycle Facilities	1
		1	Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

Y	?	N			
7	**4**	**1**	**Sustainable Sites**		**12**
Y			Prereq	Construction Activity Pollution Prevention	Required
Y			Prereq	Environmental Site Assessment	Required
1			Credit	Site Assessment	1
	2		Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
1	2		Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1
		1	Credit	Site Master Plan	1
1			Credit	Joint Use of Facilities	1

Y	?	N			
4	**0**	**8**	**Water Efficiency**		**12**
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1		1	Credit	Outdoor Water Use Reduction (RP@2)	2
2		5	Credit	Indoor Water Use Reduction	7
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

Y	?	N			
19	**9**	**3**	**Energy and Atmosphere**		**31**
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
5		1	Credit	Enhanced Commissioning	6
13	3		Credit	Optimize Energy Performance (RP@8)	16
1			Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
	3		Credit	Renewable Energy Production (RP@2)	3
	1		Credit	Enhanced Refrigerant Management	1
	2		Credit	Green Power and Carbon Offsets	2

Y	?	N			
4	**4**	**5**	**Materials and Resources**		**13**
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	3	2	Credit	Building Life-Cycle Impact Reduction (RP@2)	5
1		1	Credit	BPDO - Environmental Product Declarations	2
	1	1	Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1		1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

Y	?	N			
8	**2**	**6**	**Indoor Environmental Quality**		**16**
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
Y			Prereq	Minimum Acoustic Performance	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
1	2		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
1		1	Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1		1	Credit	Interior Lighting	2
		3	Credit	Daylight	3
1			Credit	Quality Views	1
		1	Credit	Acoustic Performance	1

Y	?	N			
6	**0**	**0**	**Innovation**		**6**
1			Credit	Innovation: OM Starter Kit (Green Cleaning & IPM Plan)	1
1			Credit	Innovation: Purchasing Lamps (Low Mercury Lighting)	1
1			Credit	Innovation: Occupant Comfort Survey	1
1			Credit	Innovation: Design for Active Occupants	1
1			Credit	Pilot: Integrative Analysis of Building Materials	1
1			Credit	LEED Accredited Professional	1

Y	?	N			
1	**1**	**2**	**Regional Priority (max of 4 points) Credit Names have been underlined**		**4**
		1	Credit	High Priority Site (RP@2)	1
1			Credit	Optimize Energy Performance (RP@8)	1
		1	Credit	Outdoor Water Use Reduction (RP@2)	1
	1		Credit	Building Life-Cycle Impact Reduction (RP@2)	1

51	21	38	**TOTAL**	Possible Points: **110**

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

LEED v4 for BD+C: Schools
Project Checklist

Project Name: **Amesbury Elementary School**
Date: **2/27/2020**

Y	?	N			
0	**1**	**0**	**Integrative Process**		**1**
	1		Credit	Integrative Process	1

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1			Credit	Innovation: Design for Active Occupants	1
1			Credit	Pilot: Integrative Analysis of Building Materials	1
1			Credit	LEED Accredited Professional	1

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1	**2**	**1**	**Regional Priority (max of 4 points) Credit Names have been underlined**		**4**
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The Green Engineer
Sustainable Design Consulting

Questions & Discussion

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Sustainability | Rooftop Solar

igure 8: An example of a PanelClaw PolarBear III HD 10° roof mounted ballasted PV system.