



ANN ARBOR PUBLIC SCHOOLS
LEAD. CARE. INSPIRE.



2019 Proposed Bond Update

PRESENTED TO THE BOARD OF EDUCATION

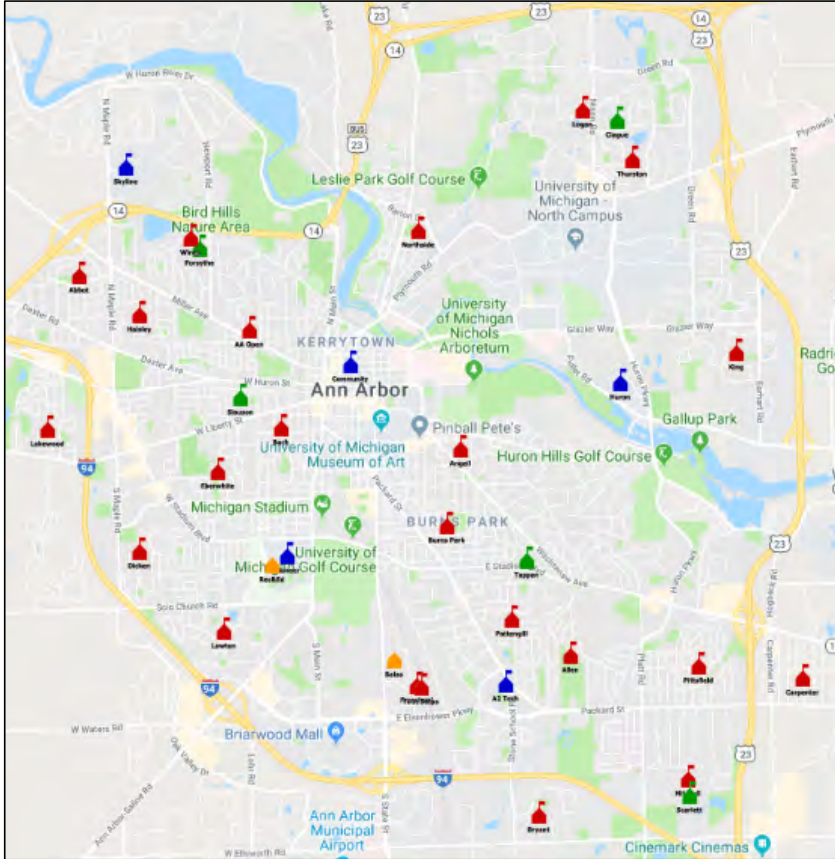
MAY 8, 2019

Marios Demetriou, Assistant Superintendent-Operations

Emile Lauzzana, Executive Director – Physical Properties



AAPS Facilities Overview



Number of Principal Buildings	35
Total Square Footage	3,476,090
Average Age of Buildings	63 years
Total Acreage	762
Number of Students	18,434
Approximate Number of Staff	2,400

Average Age Of AAPS Facilities

School/Building Name	Year Built
Bach Elementary	1922
Community High School	1922
Angell Elementary	1923
Burns Park Elementary	1923
Ann Arbor Open	1923
Slauson Middle School	1937
Ann Arbor STEAM	1939
Pittsfield Elementary	1944

The Original Build

Pathways to Success	1949
Eberwhite Elementary	1950
Tappan Middle School	1950
Mitchell Elementary	1951
Freeman Elementary	1952
Carpenter Elementary	1953
Haisley Elementary	1954
Pioneer High School	1956
Dicken Elementary	1957
Pattengill Elementary	1957
Wines Elementary	1960
Forsythe Middle School	1960
Allen Elementary	1961
Lakewood Elementary	1961
Abbott Elementary	1962
Lawton Elementary	1963
Thurston Elementary	1963
Scarlett Middle School	1968
King Elementary	1969
Huron High School	1969
Balas Bldg	1971
Clague Middle School	1972
Bryant Elementary	1973

The Greatest Generation

Logan Elementary	1977
Transportation	1982
Preschool & Family Center	1990

The Baby Boomers

Skyline High School	2008
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Generation X

Average Year Built	1956
Average Age	63

High Temperatures at AAPS Schools

Location	Average Temp 5/29/18 3-4pm PM EDT	Average Temp 9/5/18 4pm PM EDT	Average Temp 9/7/18 4pm PM EDT	Average of Averages
Community High School		86.00	82.05	84.02
Pattengill Elementary		85.04	82.42	83.73
Dicken Elementary	83.22	83.61	81.07	82.34
Lakewood Elementary	81.12	83.37	81.20	82.28
Burns Park Elementary	83.71	83.69	79.52	81.60
Carpenter Elementary	81.64	83.23	79.81	81.52
Eberwhite Elementary	84.29	82.69	80.17	81.43
Thurston Elementary	81.40	82.81	79.56	81.18
Lawton Elementary	82.53	82.44	79.58	81.01
Clague Middle School	81.20	81.44	79.87	80.66
Bach Elementary	82.49	82.20	78.82	80.51
Mitchell Elementary		81.01	79.92	80.47
Tappan Middle School	79.25	81.79	78.72	80.26
Haisley Elementary	80.29	81.62	78.55	80.09
A2 STEAM	82.57	81.22	78.55	79.89
Abbott Elementary		81.06	78.07	79.56
Pittsfield Elementary	79.52	80.55	78.09	79.32
Angell Elementary	81.32	80.52	78.09	79.31
Wines Elementary	79.93	80.27	76.72	78.49
Pioneer High School		77.96	76.46	77.21
Logan Elementary	75.07	78.66	75.01	76.83
Scarlett Middle School	76.57	76.69	76.79	76.74
Skyline High School		78.01	75.44	76.72
Ann Arbor Open		77.22	76.22	76.72
Slauson Middle School	76.63	76.53	75.34	75.93
Forsythe Middle School	76.16	74.01	76.66	75.33
King Elementary	74.69	75.71	73.37	74.54
Bryant Elementary	76.18	74.06	74.31	74.18
Huron High School		74.27	73.29	73.78
Allen Elementary	74.66	73.71	73.43	73.57
Preschool & Family Center		72.05	72.01	72.03

Facility Condition Assessment (FCA)

The FCA includes the following components:

- **Building Structure**
 - Foundations, Superstructure and Stairwells
- **Building Envelope**
 - Walls, Windows, Doors and Roofs
- **Site Improvements**
 - Parking Lots, Walkways, Signage, Fencing, Athletic Fields, etc.
- **Building Interiors**
 - Doors and Finishes (Floors, Paint, Cabinets, Lockers, etc.)
- **Building MEPF Services** (Mechanical, Electrical, Plumbing, and Fire Safety)
 - Water Systems, Mechanical Systems, Electrical Systems, Elevators, Fire Safety Systems, Communications Systems, and Security Systems
- **Equipment and Furnishings**
 - Kitchen Equipment, Pool Equipment, Scoreboards, Theatre Systems, etc.



Facility Condition Index (FCI)

The Facility Condition Index (FCI) is a standard facility management benchmark that is used to objectively assess the current and projected condition of a building asset. FCI is defined as: **the ratio of current year required renewal cost to current building replacement value.**

$$\text{FCI} = \frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$$



American Society of Civil Engineers *Infrastructure Report Card*



GRADING SCALE



EXCEPTIONAL: FIT FOR THE FUTURE

The infrastructure in the system or network is generally in excellent condition, typically new or recently rehabilitated, and meets capacity needs for the future. A few elements show signs of general deterioration that require attention. Facilities meet modern standards for functionality and are resilient to withstand most disasters and severe weather events.



GOOD: ADEQUATE FOR NOW

The infrastructure in the system or network is in good to excellent condition; some elements show signs of general deterioration that require attention. A few elements exhibit significant deficiencies. Safe and reliable with minimal capacity issues and minimal risk.



MEDIOCRE: REQUIRES ATTENTION

The infrastructure in the system or network is in fair to good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.



POOR: AT RISK

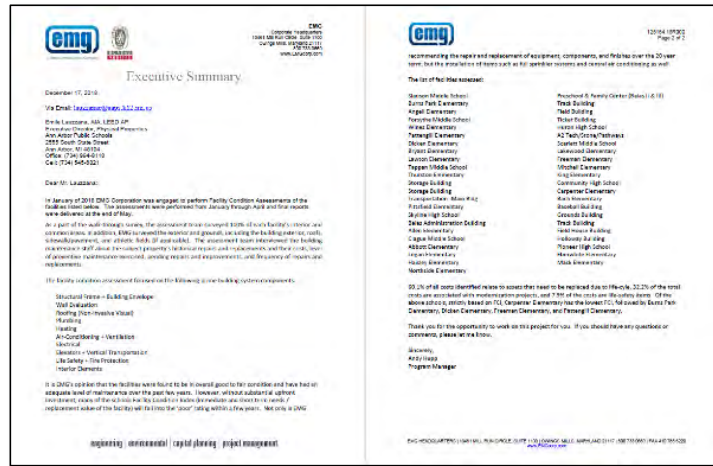
The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure.



FAILING/CRITICAL: UNFIT FOR PURPOSE

The infrastructure in the system is in unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.

EMG Executive Summary



It is EMG's opinion that the facilities were found to be in overall good to fair condition and have had an adequate level of maintenance over the past few years. However, without substantial upfront investment, many of the schools Facility Condition Index (Immediate and short term needs / replacement value of the facility) will fall into the 'poor' rating within a few years.

2-Year Facility Condition Index (FCI) - Unabated and with Current Sinking Fund

	Current	Square	2-Year	2-Year	2-Year FCI	2-Year FCI
Location	Replacement Value	Feet (SF)	Capital Needs	Capital Needs/SF	Unabated	w/ Sinking Fund
Preschool	\$6,898,500	22,995	\$1,167,566	\$51	16.9%	14.6%
Abbott Elementary	\$15,829,500	52,765	\$2,231,876	\$42	14.1%	12.8%
Allen Elementary	\$19,616,400	65,388	\$554,733	\$8	2.8%	1.5%
Angell Elementary	\$11,060,400	36,868	\$756,229	\$21	6.8%	5.5%
Bach Elementary	\$15,927,000	53,090	\$1,055,958	\$20	6.6%	5.3%
Bryant Elementary	\$18,057,600	60,192	\$1,996,865	\$33	11.1%	9.7%
Burns Park Elementary	\$18,297,600	60,992	\$4,313,382	\$71	23.6%	22.2%
Carpenter Elementary	\$15,761,700	52,539	\$6,264,914	\$119	39.7%	38.4%
Dicken Elementary	\$12,959,700	43,199	\$2,307,199	\$53	17.8%	16.5%
Freeman Elementary	\$9,624,000	32,080	\$2,457,794	\$77	25.5%	24.2%
Eberwhite Elementary	\$18,635,100	62,117	\$4,300,412	\$69	23.1%	21.7%
Haisley Elementary	\$17,409,600	58,032	\$2,185,010	\$38	12.6%	11.2%
King Elementary	\$15,660,000	52,200	\$1,101,534	\$21	7.0%	5.7%
Lakewood Elementary	\$12,764,700	42,549	\$922,458	\$22	7.2%	5.9%
Lawton Elementary	\$17,702,700	59,009	\$1,060,626	\$18	6.0%	4.6%
Logan Elementary	\$17,991,000	59,970	\$2,552,827	\$43	14.2%	12.8%
Ann Arbor Open Elementary	\$26,553,900	88,513	\$2,486,026	\$28	9.4%	8.0%
Mitchell Elementary	\$13,030,500	43,435	\$2,654,477	\$61	20.4%	19.0%
A2 STEAM	\$19,132,800	63,776	\$9,565,512	\$150	50.0%	48.7%
Pattengill Elementary	\$16,140,000	53,800	\$4,581,521	\$85	28.4%	27.0%
Pittsfield Elementary	\$12,489,300	41,631	\$842,037	\$20	6.7%	5.4%
Thurston Elementary	\$17,541,000	58,470	\$1,946,201	\$33	11.1%	9.8%
Wines Elementary	\$14,844,600	49,482	\$2,304,810	\$47	15.5%	14.2%
Clague Middle School	\$46,800,000	156,000	\$2,343,461	\$15	5.0%	3.7%
Forsythe Middle School	\$55,546,800	185,156	\$3,626,412	\$20	6.5%	5.2%
Scarlett Middle School	\$48,827,400	162,758	\$3,566,224	\$22	7.3%	6.0%
Slauson Middle School	\$57,027,000	190,090	\$3,636,996	\$19	6.4%	5.0%
Tappan Middle School	\$64,782,600	215,942	\$4,261,860	\$20	6.6%	5.2%
Pathways to Success	\$11,520,600	38,402	\$1,055,702	\$27	9.2%	7.8%
Huron High School	\$121,556,100	405,187	\$4,707,678	\$12	3.9%	2.5%
Pioneer High School	\$121,407,600	404,692	\$1,910,201	\$5	1.6%	0.2%
Community High School	\$17,460,000	58,200	\$3,873,070	\$67	22.2%	20.8%
Skyline High School	\$114,169,200	380,564	\$6,398,863	\$17	5.6%	4.3%
Balas Bldg	\$13,980,000	46,600	\$1,011,790	\$22	7.2%	5.9%
Transportation - Main Bldg	\$5,488,200	18,294	\$940,977	\$51	17.1%	15.8%
TOTAL / AVERAGE	\$1,042,493,100	3,474,977	\$96,943,201	\$41	13.6%	12.2%

2-Year Facility Condition Index (FCI)
Unabated and with Current Sinking Fund
Average Condition = POOR (12%)

POOR CONDITION: The buildings are mostly below standard with many elements approaching the end of their service life. A large portion systems exhibit deterioration. Conditions are of significant concern with a strong risk of failure.

School Condition	FCI Percentage	# Schools Unabated	# Schools w/ Sinking
Good	0-5%	3	6
Fair	6-10%	15	14
Poor	11-30%	15	13
Critical	31-50%	2	2
Divest	50%+	0	0

$$\text{FCI} = \frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$$

5-Year Facility Condition Index (FCI) - Unabated and with Current Sinking Fund

Location	Current Replacement Value (3% Escalation)	Square Feet (SF)	5-Year Capital Needs	5-Year Capital Needs/SF	5-Year FCI Unabated	5-Year FCI w/ Sinking Fund
Preschool	\$7,465,169	22,995	\$3,977,001	\$173	53.3%	48%
Abbott Elementary	\$17,129,794	52,765	\$5,287,996	\$100	30.9%	26%
Allen Elementary	\$21,227,765	65,388	\$2,054,347	\$31	9.7%	4%
Angell Elementary	\$11,968,943	36,868	\$4,342,216	\$118	36.3%	31%
Bach Elementary	\$17,235,304	53,090	\$5,856,141	\$110	34.0%	29%
Bryant Elementary	\$19,540,919	60,192	\$8,341,766	\$139	42.7%	37%
Burns Park Elementary	\$19,800,633	60,992	\$9,891,191	\$162	50.0%	45%
Carpenter Elementary	\$17,056,425	52,539	\$11,463,982	\$218	67.2%	62%
Dicken Elementary	\$14,024,258	43,199	\$7,317,970	\$169	52.2%	47%
Freeman Elementary	\$10,414,551	32,080	\$6,310,451	\$197	60.6%	55%
Eberwhite Elementary	\$20,165,857	62,117	\$8,858,382	\$143	43.9%	39%
Haisley Elementary	\$18,839,690	58,032	\$4,899,420	\$84	26.0%	21%
King Elementary	\$16,946,371	52,200	\$6,294,603	\$121	37.1%	32%
Lakewood Elementary	\$13,813,240	42,549	\$4,438,784	\$104	32.1%	27%
Lawton Elementary	\$19,156,866	59,009	\$3,852,730	\$65	20.1%	15%
Logan Elementary	\$19,468,848	59,970	\$7,966,145	\$133	40.9%	36%
Elementary	\$28,735,137	88,513	\$7,523,527	\$85	26.2%	21%
Mitchell Elementary	\$14,100,874	43,435	\$7,622,085	\$175	54.1%	49%
A2 STEAM	\$20,704,440	63,776	\$14,137,876	\$222	68.3%	63%
Pattengill Elementary	\$17,465,800	53,800	\$8,259,058	\$154	47.3%	42%
Pittsfield Elementary	\$13,515,218	41,631	\$2,372,037	\$57	17.6%	12%
Thurston Elementary	\$18,981,884	58,470	\$4,915,660	\$84	25.9%	21%
Wines Elementary	\$16,063,991	49,482	\$6,930,149	\$140	43.1%	38%
Clague Middle School	\$50,644,328	156,000	\$19,058,259	\$122	37.6%	32%
Forsythe Middle School	\$60,109,622	185,156	\$17,585,817	\$95	29.3%	24%
Scarlett Middle School	\$52,838,266	162,758	\$11,744,989	\$72	22.2%	17%
Slauson Middle School	\$61,711,412	190,090	\$15,710,719	\$83	25.5%	20%
Tappan Middle School	\$70,104,086	215,942	\$17,431,540	\$81	24.9%	20%
Pathways to Success	\$12,466,945	38,402	\$4,185,408	\$109	33.6%	28%
Huron High School	\$131,541,174	405,187	\$35,044,082	\$86	26.6%	21%
Pioneer High School	\$131,380,476	404,692	\$30,890,566	\$76	23.5%	18%
Community High School	\$18,894,230	58,200	\$7,906,750	\$136	41.8%	37%
Skyline High School	\$123,547,486	380,564	\$27,548,106	\$72	22.3%	17%
Balas Bldg	\$15,128,370	46,600	\$2,507,419	\$54	16.6%	11%
Transportation -Main Bldg	\$5,939,021	18,294	\$1,854,655	\$101	31.2%	26%
TOTAL / AVERAGE	\$1,128,127,393	3,474,977	\$344,381,827	\$116	35.8%	30.5%

5-Year Facility Condition Index (FCI)

Unabated and with Current Sinking Fund

Average Condition = CRITICAL (30%)

POOR/CRITICAL CONDITION: The buildings are in an unacceptable condition with widespread signs of deterioration. Many building systems exhibit signs of imminent failure.

School Condition	FCI Percentage	# Schools Unabated	# Schools w/ Sinking
Good	0-5%	0	1
Fair	6-10%	1	0
Poor	11-30%	13	18
Critical	31-50%	15	13
Divest	50%+	6	3

$$\text{FCI} = \frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$$

10-Year Facility Condition Index (FCI) - Unabated and with Current Sinking Fund

Location	Current Replacement Value (3% Escalation)	Square Feet (SF)	10-Year Capital Needs	10-Year Capital Needs/SF	10-Year FCI Unabated	10-Year FCI w/ Sinking Fund
Preschool	\$8,446,153	22,995	\$7,619,520	\$331	90.2%	88.3%
Abbott Elementary	\$19,380,790	52,765	\$6,885,448	\$130	35.5%	34.4%
Allen Elementary	\$24,017,267	65,388	\$3,614,043	\$55	15.0%	14.0%
Angell Elementary	\$13,541,760	36,868	\$6,871,166	\$186	50.7%	49.6%
Bach Elementary	\$19,500,164	53,090	\$7,781,160	\$147	39.9%	38.8%
Bryant Elementary	\$22,108,756	60,192	\$12,116,584	\$201	54.8%	53.7%
Burns Park Elementary	\$22,402,599	60,992	\$11,879,560	\$195	53.0%	51.9%
Carpenter Elementary	\$19,297,779	52,539	\$14,844,170	\$283	76.9%	75.8%
Dicken Elementary	\$15,867,161	43,199	\$10,483,702	\$243	66.1%	65.0%
Freeman Elementary	\$11,783,109	32,080	\$6,856,298	\$214	58.2%	57.1%
Eberwhite Elementary	\$22,815,816	62,117	\$10,982,781	\$177	48.1%	47.0%
Haisley Elementary	\$21,315,380	58,032	\$6,456,722	\$111	30.3%	29.2%
King Elementary	\$19,173,263	52,200	\$8,514,854	\$163	44.4%	43.3%
Lakewood Elementary	\$15,628,414	42,549	\$7,376,130	\$173	47.2%	46.1%
Lawton Elementary	\$21,674,236	59,009	\$7,927,206	\$134	36.6%	35.5%
Logan Elementary	\$22,027,215	59,970	\$10,417,387	\$174	47.3%	46.2%
Ann Arbor Open Elementary	\$32,511,170	88,513	\$10,253,027	\$116	31.5%	30.4%
Mitchell Elementary	\$15,953,845	43,435	\$11,294,072	\$260	70.8%	69.7%
A2 STEAM	\$23,425,173	63,776	\$20,171,873	\$316	86.1%	85.0%
Pattengill Elementary	\$19,760,950	53,800	\$10,889,215	\$202	55.1%	54.0%
Pittsfield Elementary	\$15,291,229	41,631	\$4,202,732	\$101	27.5%	26.4%
Thurston Elementary	\$21,476,259	58,470	\$8,229,834	\$141	38.3%	37.2%
Wines Elementary	\$18,174,931	49,482	\$9,500,166	\$192	52.3%	51.2%
Clague Middle School	\$57,299,408	156,000	\$22,299,864	\$143	38.9%	37.8%
Forsythe Middle School	\$68,008,521	185,156	\$21,417,302	\$116	31.5%	30.4%
Scarlett Middle School	\$59,781,648	162,758	\$20,953,669	\$129	35.1%	34.0%
Slauson Middle School	\$69,820,798	190,090	\$20,238,705	\$106	29.0%	27.9%
Tappan Middle School	\$79,316,338	215,942	\$27,260,815	\$126	34.4%	33.3%
Pathways to Success	\$14,105,204	38,402	\$6,703,370	\$175	47.5%	46.4%
Huron High School	\$148,826,764	405,187	\$47,647,264	\$118	32.0%	30.9%
Pioneer High School	\$148,644,949	404,692	\$46,316,001	\$114	31.2%	30.1%
Community High School	\$21,377,087	58,200	\$10,243,712	\$176	47.9%	46.8%
Skyline High School	\$139,782,641	380,564	\$57,249,072	\$150	41.0%	39.9%
Balas Bldg	\$17,116,362	46,600	\$5,217,525	\$112	30.5%	29.4%
Transportation -Main Bldg	\$6,719,458	18,294	\$3,565,389	\$195	53.1%	52.0%
TOTAL / AVERAGE	\$1,276,372,597	3,474,977	\$504,280,338	\$169	45.9%	44.8%

10-Year Facility Condition Index (FCI)
Unabated and with Current Sinking Fund
Average Condition = CRITICAL (49%)

CRITICAL CONDITION: The buildings are in an unacceptable condition with widespread advanced signs of deterioration. Many of the building systems exhibit signs of imminent failure.

School Condition	FCI Percentage	# Schools Unabated	# Schools w/ Sinking
Good	0-5%	0	0
Fair	6-10%	0	0
Poor	11-30%	3	5
Critical	31-50%	20	19
Divest	50%+	12	11

FCI = $\frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$

20-Year Facility Condition Index (FCI) - Unabated and with Current Sinking Fund

Location	Current Replacement Value (3% Escalation)	Square Feet (SF)	20-Year Capital Needs	20-Year Capital Needs/SF	20-Year FCI Unabated	20-Year FCI w/ Sinking Fund
Preschool	\$10,811,790	22,995	\$13,443,114	\$585	124.3%	123.5%
Abbott Elementary	\$24,809,050	52,765	\$12,573,246	\$238	50.7%	49.8%
Allen Elementary	\$30,744,133	65,388	\$11,010,780	\$168	35.8%	35.0%
Angell Elementary	\$17,334,598	36,868	\$9,459,365	\$257	54.6%	53.7%
Bach Elementary	\$24,961,858	53,090	\$11,441,105	\$216	45.8%	45.0%
Bryant Elementary	\$28,301,077	60,192	\$17,064,361	\$283	60.3%	59.4%
Burns Park Elementary	\$28,677,221	60,992	\$19,885,791	\$326	69.3%	68.5%
Carpenter Elementary	\$24,702,789	52,539	\$22,376,713	\$426	90.6%	89.7%
Dicken Elementary	\$20,311,308	43,199	\$14,590,657	\$338	71.8%	71.0%
Freeman Elementary	\$15,083,376	32,080	\$10,723,546	\$745	71.1%	70.2%
Eberwhite Elementary	\$29,206,174	62,117	\$23,904,909	\$193	81.8%	81.0%
Haisley Elementary	\$27,285,488	58,032	\$11,982,515	\$206	43.9%	43.1%
King Elementary	\$24,543,398	52,200	\$13,356,948	\$256	54.4%	53.6%
Lakewood Elementary	\$20,005,691	42,549	\$11,061,960	\$260	55.3%	54.4%
Lawton Elementary	\$27,744,854	59,009	\$12,236,120	\$207	44.1%	43.2%
Logan Elementary	\$28,196,697	59,970	\$17,913,604	\$299	63.5%	62.7%
Ann Arbor Open	\$41,617,046	88,513	\$16,689,543	\$189	40.1%	39.2%
Mitchell Elementary	\$20,422,270	43,435	\$14,739,195	\$339	72.2%	71.3%
A2 STEAM	\$29,986,202	63,776	\$35,854,499	\$562	119.6%	118.7%
Pattengill Elementary	\$25,295,686	53,800	\$16,066,255	\$299	63.5%	62.7%
Pittsfield Elementary	\$19,574,065	41,631	\$9,331,580	\$224	47.7%	46.8%
Thurston Elementary	\$27,491,427	58,470	\$16,920,019	\$289	61.5%	60.7%
Wines Elementary	\$23,265,449	49,482	\$15,760,571	\$319	67.7%	66.9%
Clague Middle School	\$73,348,087	156,000	\$31,357,749	\$201	42.8%	41.9%
Forsythe Middle School	\$87,056,656	185,156	\$34,661,341	\$187	39.8%	39.0%
Scarlett Middle School	\$76,525,563	162,758	\$31,307,083	\$192	40.9%	40.1%
Slauson Middle School	\$89,376,524	190,090	\$34,172,269	\$180	38.2%	37.4%
Tappan Middle School	\$101,531,619	215,942	\$40,747,248	\$189	40.1%	39.3%
Pathways to Success	\$18,055,854	38,402	\$11,052,153	\$288	61.2%	60.4%
Huron High School	\$190,510,841	405,187	\$89,062,215	\$220	46.7%	45.9%
Pioneer High School	\$190,278,102	404,692	\$64,790,782	\$160	34.1%	33.2%
Community High School	\$27,364,478	58,200	\$14,602,608	\$251	53.4%	52.5%
Skyline High School	\$178,933,598	380,564	\$98,951,045	\$260	55.3%	54.4%
Balas Bldg	\$21,910,390	46,600	\$9,126,793	\$196	41.7%	40.8%
Transportation -Main Bldg	\$8,601,474	18,294	\$5,572,377	\$305	64.8%	63.9%
TOTAL / AVERAGE	\$1,633,864,834	3,474,977	\$823,790,059	\$281	58.5%	57.7%

20-Year Facility Condition Index (FCI)

Unabated and with Current Sinking Fund

Average Condition = DIVEST (58%)

DIVEST: Systems failure is widespread and building conditions are exceptionally poor. The buildings have reached the end of their useful life and require replacement, renewal or other significant action.

School Condition	FCI Percentage	# Schools Unabated	# Schools w/ Sinking
Good	0-5%	0	0
Fair	6-10%	0	0
Poor	11-30%	0	0
Critical	31-50%	14	15
Divest	50%-100%	19	18
Divest +	100%+	2	2

FCI = $\frac{\text{Deferred Maintenance Deficiencies (DMD)}}{\text{Current Replacement Value (CRV)}}$

Facility Condition Assessment - Results

2-Year Investment Need	\$ 148,562,000
5-Year Investment Need	\$ 344,378,000
10-Year Investment Need	\$ 504,274,000
20-Year Investment Need	\$ 823,780,000

What does the FCA Include and ***Not*** Include?

Includes	Does <i>Not</i> Include
Existing Infrastructure Renewals and Replacements	New Classroom Additions for Student Growth
Schools Maintained in “Good/Fair” Condition	Schools Maintained in “Good/Exceptional” Condition
Air Conditioning added to all schools	Furniture Refresh
Solar Power and Geothermal to Reduce Carbon Footprint where Feasible	Busing Fleet Refresh
Security Enhancements	Technology Refresh
Standard Classroom Environments (code minimum)	Optimized Healthy Classroom Environments
Union Wages	Constructing New/Replacement Schools

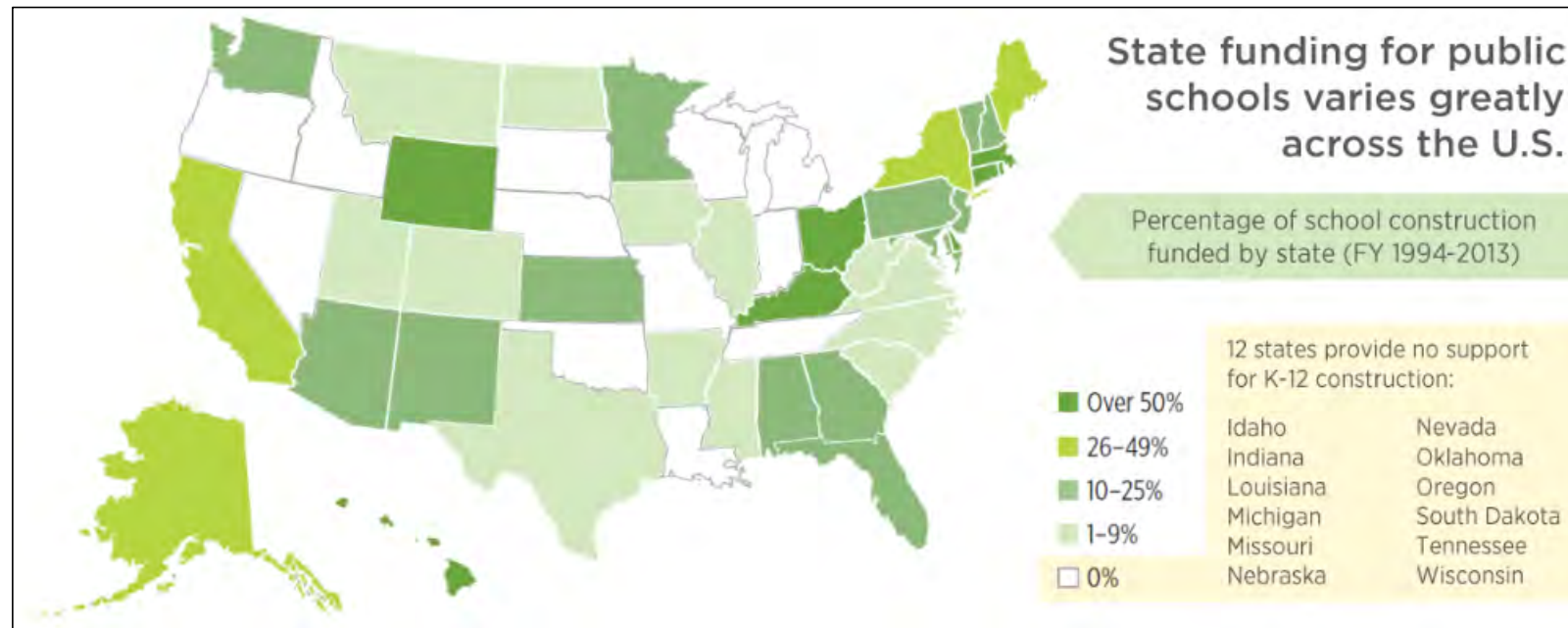
Cost of Items ***Not*** Included in the FCA

Additional Investment Needs (Not in FCA)	Annual Cost
New Schools and Classrooms for Student Population Growth	\$ 10M/year
Furniture Refresh	\$1M/year
Busing Fleet Refresh	\$2M/year
Technology Refresh	\$5M/year
Maintaining Schools in “Good/Exceptional” Condition	\$5M/year
Annual TOTAL Additional Investment Need	\$23M/year
20-Year TOTAL Additional Investment Need (@3% inflation)	\$ 618M

Total Capital Needs

	FCA Need	Other Need (not in FCA)	Total Need
2-Year	\$ 148,562,000	\$ 46,690,000	\$ 195,252,000
5-Year	\$ 344,378,000	\$ 122,110,124	\$ 466,488,124
10-Year	\$ 504,274,000	\$ 263,669,224	\$ 767,943,224
20-Year	\$ 823,780,000	\$ 618,018,613	\$ 1,441,798,613

National K-12 Schools Infrastructure Investment of State Governments



Michigan is one of only 12 states with no state funding dedicated to school infrastructure

- U.S. Green Building Council - *State of Our Schools Report 2016*

SUMMARY OF PROPOSED BONDING

Option 1 - \$828M

1.0 Additional Mill Assuming November 2019 Election

Issuance Year	Bond Amount
Series 2020	\$80,000,000
Series 2022	\$127,000,000
Series 2025	\$245,000,000
Series 2029	\$376,000,000
Total	\$828,000,000

First Year Millage	Average Millage	Maximum Total Mills (all debt)	Increase in Debt Levy
1.35	2.91	3.45	1.00

SUMMARY OF PROPOSED BONDING

Option 2 - \$890M

1.25 Additional Mill Assuming November 2019 Election

Issuance Year	Bond Amount
Series 2020	\$110,000,000
Series 2022	\$132,000,000
Series 2025	\$248,000,000
Series 2029	\$400,000,000
Total	\$890,000,000

First Year Millage	Average Millage	Maximum Total Mills (all debt)	Increase in Debt Levy
1.60	3.13	3.70	1.25

SUMMARY OF PROPOSED BONDING

Option 3 - \$1B

1.65 Additional Mill Assuming November 2019 Election

Issuance Year	Bond Amount
Series 2020	\$130,000,000
Series 2022	\$145,000,000
Series 2025	\$250,500,000
Series 2029	<u>\$475,000,000</u>
Total	\$1,000,000,000

First Year Millage	Average Millage	Maximum Total Mills (all debt)	Increase in Debt Levy
1.99	3.49	4.10	1.65

Additional Cost Of Options from Current Debt Millage Per Year

	Taxable Value	Taxable Value	Taxable Value	All Properties Taxable Value	Residential Taxable Value
	\$ 100,000	\$ 150,000	\$ 200,000	\$ 163,883	\$ 117,384
Option 1 \$828M	\$100	\$150	\$200	\$164	\$ 117
Option 2 \$890M	\$125	\$188	\$250	\$205	\$ 147
Option 3 \$1B	\$165	\$248	\$330	\$271	\$ 194

The Power of Combining the Sinking Fund and a Bond Issue

- The assumption is the Sinking Fund will be renewed at the level voters approved in May 2017 at 2.50 Mills for 10 years twice, once in 2027 and again in 2037
- After a 20 year construction cycle a minimum investment of \$1.4B and a maximum investment of \$1.6B will have been completed
- At the end of the 20-Year cycle the Sinking Fund will be at approximately \$39M per year which will be more than adequate to maintain our renovated buildings in “great condition”

Variances and Similarities

Sinking Fund and Bond Issue Use Comparison

- Sinking Fund, in general, can pay for the same capital improvements as a Bond Issue except for Buses, Technology, Musical Instruments, Furnishings and Equipment not attached to a building
- Technology that can be paid by a Sinking Fund is restricted to wiring infrastructure only
- Similar to a Bond Issue, ALL of the Sinking Fund work must be contracted
- Similar to a Bond Issue, NONE of the Sinking Fund work can be paid to employees of the district

Option 1 Bond of \$828M with Sinking Fund and Sinking Fund Renewals

Tax Year	Fiscal Year		Taxable Value	Growth Rate	Mills Levied	Estimated Annual Revenue Sinking Fund	November 2019 Election Estimated Collection Bond	Mills Levied	Available Funds Per Year Sinking and Bond Funds
1 years	2019	2020	\$ 9,573,882,869	5.77%	2.46	\$ 23,551,752	\$ 80,000,000	3.45	\$ 103,551,752
2 years	2020	2021	\$ 9,956,838,184	4.00%	2.42	\$ 24,095,548		3.45	\$ 24,095,548
3 years	2021	2022	\$ 10,205,759,138	2.50%	2.42	\$ 24,697,937		3.45	\$ 24,697,937
4 years	2022	2023	\$ 10,460,903,117	2.50%	2.42	\$ 25,315,386	\$ 127,000,000	3.45	\$ 152,315,386
5 years	2023	2024	\$ 10,722,425,695	2.50%	2.42	\$ 25,948,270		3.45	\$ 25,948,270
6 years	2024	2025	\$ 10,990,486,337	2.50%	2.42	\$ 26,596,977		3.45	\$ 26,596,977
7 years	2025	2026	\$ 11,265,248,496	2.50%	2.42	\$ 27,261,901	\$ 245,000,000	3.45	\$ 272,261,901
8 years	2026	2027	\$ 11,546,879,708	2.50%	2.42	\$ 27,943,449		3.45	\$ 27,943,449
9 Years	2027	2028	\$ 11,835,551,701	2.50%	2.42	\$ 28,642,035		3.45	\$ 28,642,035
10 Years	2028	2029	\$ 12,131,440,493	2.50%	2.50	\$ 30,328,601		3.45	\$ 30,328,601
11 Years	2029	2030	\$ 12,434,726,505	2.50%	2.50	\$ 31,086,816	\$ 376,000,000	3.45	\$ 407,086,816
12 Years	2030	2031	\$ 12,745,594,668	2.50%	2.50	\$ 31,863,987		3.45	\$ 31,863,987
13 Years	2031	2032	\$ 13,064,234,535	2.50%	2.50	\$ 32,660,586		3.45	\$ 32,660,586
14 Years	2032	2033	\$ 13,390,840,398	2.50%	2.50	\$ 33,477,101		3.45	\$ 33,477,101
15 Years	2033	2034	\$ 13,725,611,408	2.50%	2.50	\$ 34,314,029		3.45	\$ 34,314,029
16 Years	2034	2035	\$ 14,068,751,693	2.50%	2.50	\$ 35,171,879		3.45	\$ 35,171,879
17 Years	2035	2036	\$ 14,420,470,486	2.50%	2.50	\$ 36,051,176		3.45	\$ 36,051,176
18 Years	2036	2037	\$ 14,780,982,248	2.50%	2.50	\$ 36,952,456		3.45	\$ 36,952,456
19 Years	2037	2038	\$ 15,150,506,804	2.50%	2.50	\$ 37,876,267		3.45	\$ 37,876,267
20 Years	2038	2039	\$ 15,529,269,474	2.50%	2.50	\$ 38,823,174		3.45	\$ 38,823,174
TOTAL ESTIMATED COLLECTIONS						\$ 612,659,327	\$ 828,000,000		\$ 1,440,659,327

Option 2 Bond of \$890M with Sinking Fund and Sinking Fund Renewals

				Growth	Mills	Estimated Annual	November 2019 Election	Mills	Available Funds Per Year
Tax Year	Fiscal Year		Taxable Value	Rate	Levied	Revenue Sinking Fund	Estimated Collection Bond	Levied	Sinking and Bond Funds
1 years	2019	2020	\$ 9,573,882,869	5.77%	2.46	\$ 23,551,752	\$ 110,000,000	3.70	\$ 133,551,752
2 years	2020	2021	\$ 9,956,838,184	4.00%	2.42	\$ 24,095,548		3.70	\$ 24,095,548
3years	2021	2022	\$ 10,205,759,138	2.50%	2.42	\$ 24,697,937		3.70	\$ 24,697,937
4 years	2022	2023	\$ 10,460,903,117	2.50%	2.42	\$ 25,315,386	\$ 132,000,000	3.70	\$ 157,315,386
5 years	2023	2024	\$ 10,722,425,695	2.50%	2.42	\$ 25,948,270		3.70	\$ 25,948,270
6years	2024	2025	\$ 10,990,486,337	2.50%	2.42	\$ 26,596,977		3.70	\$ 26,596,977
7 years	2025	2026	\$ 11,265,248,496	2.50%	2.42	\$ 27,261,901	\$ 248,000,000	3.70	\$ 275,261,901
8 years	2026	2027	\$ 11,546,879,708	2.50%	2.42	\$ 27,943,449		3.70	\$ 27,943,449
9 Years	2027	2028	\$ 11,835,551,701	2.50%	2.42	\$ 28,642,035		3.70	\$ 28,642,035
10 Years	2028	2029	\$ 12,131,440,493	2.50%	2.50	\$ 30,328,601		3.70	\$ 30,328,601
11 Years	2029	2030	\$ 12,434,726,505	2.50%	2.50	\$ 31,086,816	\$ 400,000,000	3.70	\$ 431,086,816
12 Years	2030	2031	\$ 12,745,594,668	2.50%	2.50	\$ 31,863,987		3.70	\$ 31,863,987
13 Years	2031	2032	\$ 13,064,234,535	2.50%	2.50	\$ 32,660,586		3.70	\$ 32,660,586
14 Years	2032	2033	\$ 13,390,840,398	2.50%	2.50	\$ 33,477,101		3.70	\$ 33,477,101
15 Years	2033	2034	\$ 13,725,611,408	2.50%	2.50	\$ 34,314,029		3.70	\$ 34,314,029
16 Years	2034	2035	\$ 14,068,751,693	2.50%	2.50	\$ 35,171,879		3.70	\$ 35,171,879
17 Years	2035	2036	\$ 14,420,470,486	2.50%	2.50	\$ 36,051,176		3.70	\$ 36,051,176
18 Years	2036	2037	\$ 14,780,982,248	2.50%	2.50	\$ 36,952,456		3.70	\$ 36,952,456
19 Years	2037	2038	\$ 15,150,506,804	2.50%	2.50	\$ 37,876,267		3.70	\$ 37,876,267
20 Years	2038	2039	\$ 15,529,269,474	2.50%	2.50	\$ 38,823,174		3.70	\$ 38,823,174
TOTAL ESTIMATED COLLECTIONS						\$ 612,659,327	\$ 890,000,000		\$ 1,502,659,327

Option 3 Bond of \$1B with Sinking Fund and Sinking Fund Renewals

Tax Year	Fiscal Year		Taxable Value	Growth Rate	Mills Levied	Estimated Annual Revenue Sinking Fund	November 2019 Election Estimated Collection Bond Fund	Mills Levied	Available Funds Per Year Sinking and Bond Funds
1 years	2019	2020	\$ 9,573,882,869	5.77%	2.46	\$ 23,551,752	\$ 130,000,000	4.10	\$ 153,551,752
2 years	2020	2021	\$ 9,956,838,184	4.00%	2.42	\$ 24,095,548		4.10	\$ 24,095,548
3 years	2021	2022	\$ 10,205,759,138	2.50%	2.42	\$ 24,697,937		4.10	\$ 24,697,937
4 years	2022	2023	\$ 10,460,903,117	2.50%	2.42	\$ 25,315,386	\$ 145,000,000	4.10	\$ 170,315,386
5 years	2023	2024	\$ 10,722,425,695	2.50%	2.42	\$ 25,948,270		4.10	\$ 25,948,270
6 years	2024	2025	\$ 10,990,486,337	2.50%	2.42	\$ 26,596,977		4.10	\$ 26,596,977
7 years	2025	2026	\$ 11,265,248,496	2.50%	2.42	\$ 27,261,901	\$ 250,000,000	4.10	\$ 277,261,901
8 years	2026	2027	\$ 11,546,879,708	2.50%	2.42	\$ 27,943,449		4.10	\$ 27,943,449
9 Years	2027	2028	\$ 11,835,551,701	2.50%	2.42	\$ 28,642,035		4.10	\$ 28,642,035
10 Years	2028	2029	\$ 12,131,440,493	2.50%	2.50	\$ 30,328,601		4.10	\$ 30,328,601
11 Years	2029	2030	\$ 12,434,726,505	2.50%	2.50	\$ 31,086,816	\$ 475,000,000	4.10	\$ 506,086,816
12 Years	2030	2031	\$ 12,745,594,668	2.50%	2.50	\$ 31,863,987		4.10	\$ 31,863,987
13 Years	2031	2032	\$ 13,064,234,535	2.50%	2.50	\$ 32,660,586		4.10	\$ 32,660,586
14 Years	2032	2033	\$ 13,390,840,398	2.50%	2.50	\$ 33,477,101		4.10	\$ 33,477,101
15 Years	2033	2034	\$ 13,725,611,408	2.50%	2.50	\$ 34,314,029		4.10	\$ 34,314,029
16 Years	2034	2035	\$ 14,068,751,693	2.50%	2.50	\$ 35,171,879		4.10	\$ 35,171,879
17 Years	2035	2036	\$ 14,420,470,486	2.50%	2.50	\$ 36,051,176		4.10	\$ 36,051,176
18 Years	2036	2037	\$ 14,780,982,248	2.50%	2.50	\$ 36,952,456		4.10	\$ 36,952,456
19 Years	2037	2038	\$ 15,150,506,804	2.50%	2.50	\$ 37,876,267		4.10	\$ 37,876,267
20 Years	2038	2039	\$ 15,529,269,474	2.50%	2.50	\$ 38,823,174		4.10	\$ 38,823,174
TOTAL ESTIMATED COLLECTIONS						\$ 612,659,327	\$ 1,000,000,000		\$ 1,612,659,327

What is a Modernized School?

STUDENTS ARE...



25% more proud
to go to school in a
modernized building

AND

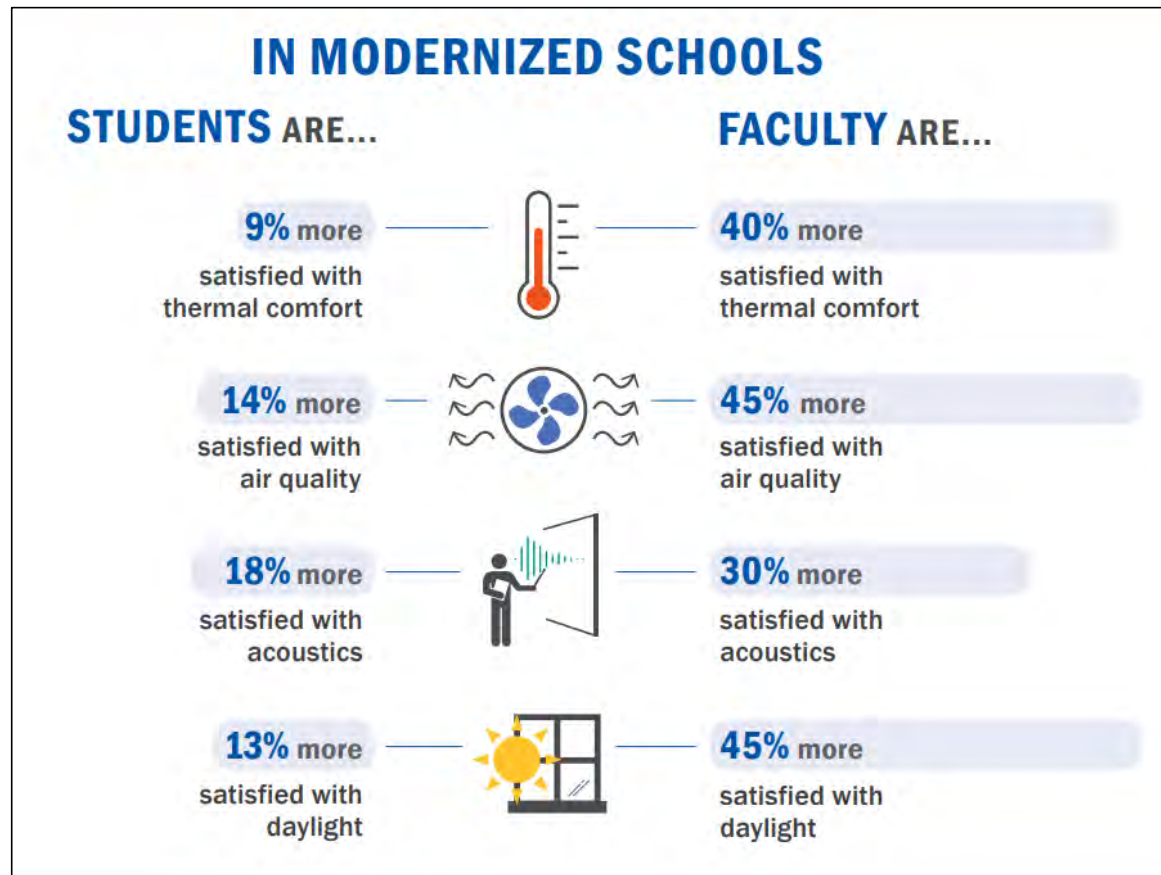


16% happier,
18% calmer,
17% healthier, and
16% more ready to learn
in modernized
school classrooms



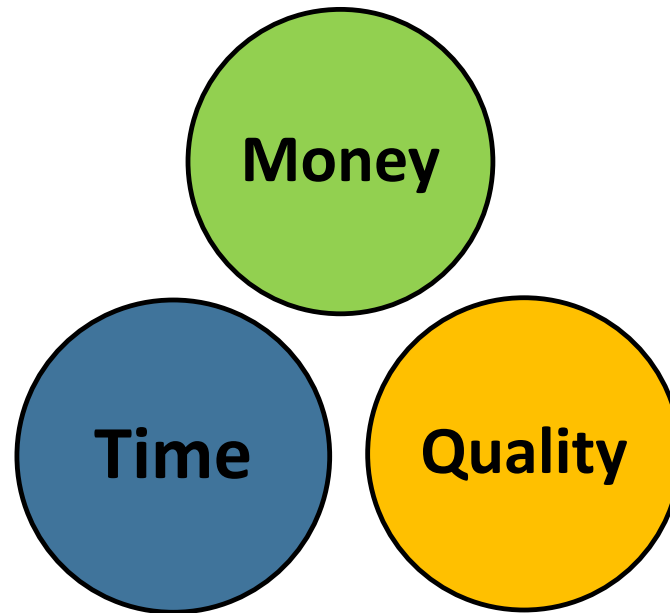
Perkin Eastman – *Investing in Our Future* – Washington DC School Modernization Study

What is a Modernized School?



Perkin Eastman – *Investing in Our Future* – Washington DC School Modernization Study

Funding vs. Time vs. Quality

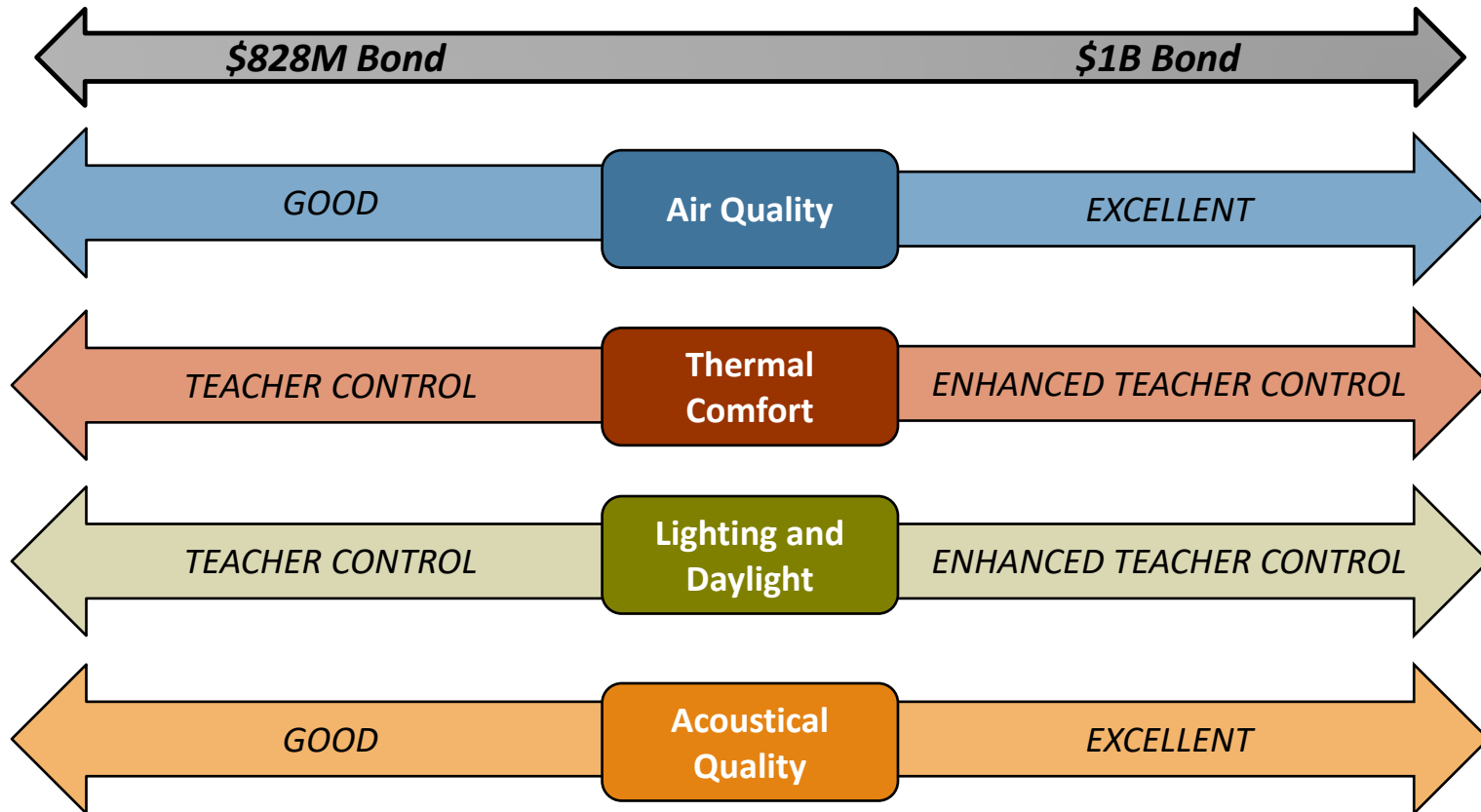


**choose only 2*

Increased bond amounts create rapid school modernization + higher quality

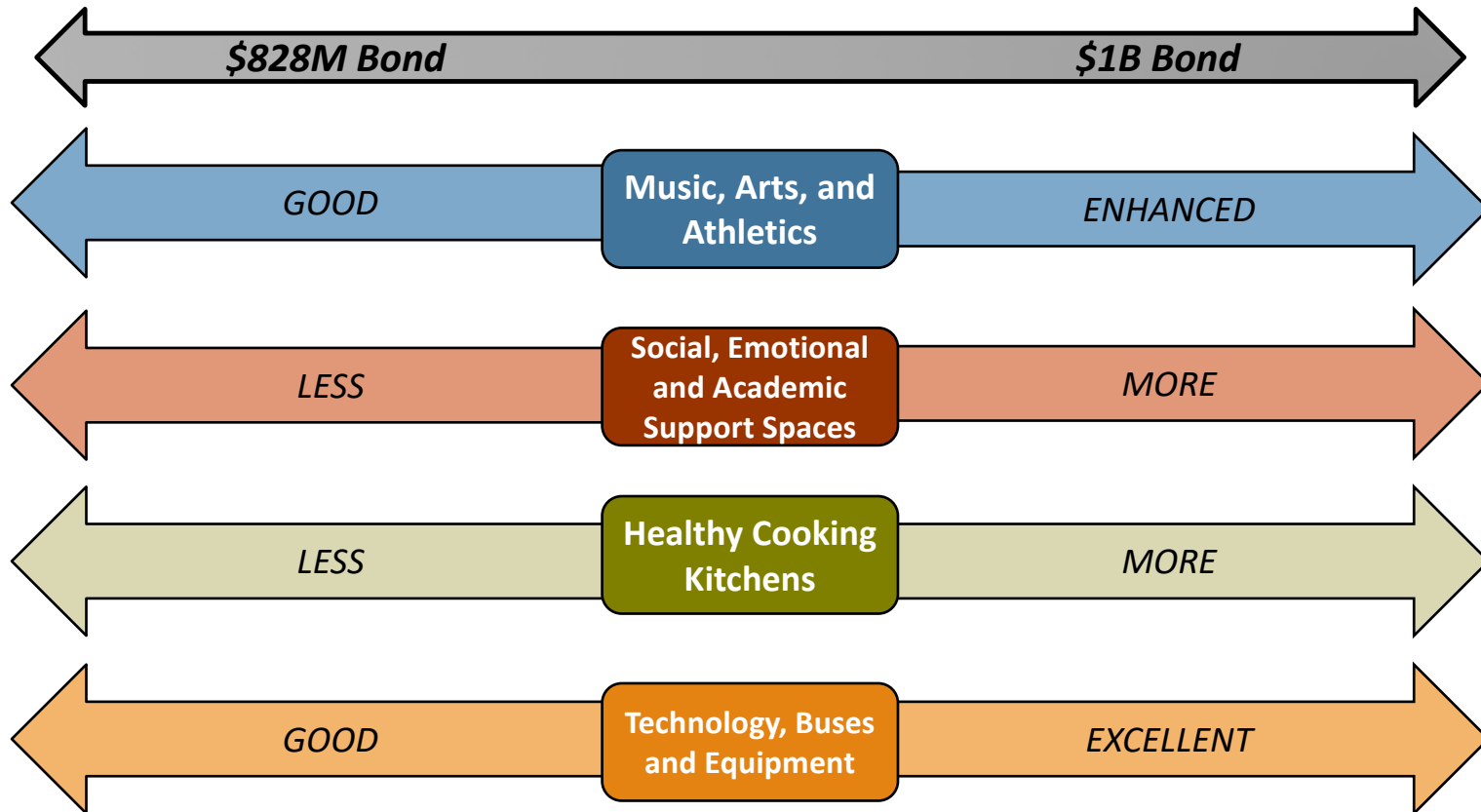
- \$828M = Modernize all schools in 20 years to Good Quality
- \$1B = Modernize all schools in 15 years to Excellent Quality

Options – *Quality of Classroom Environments*



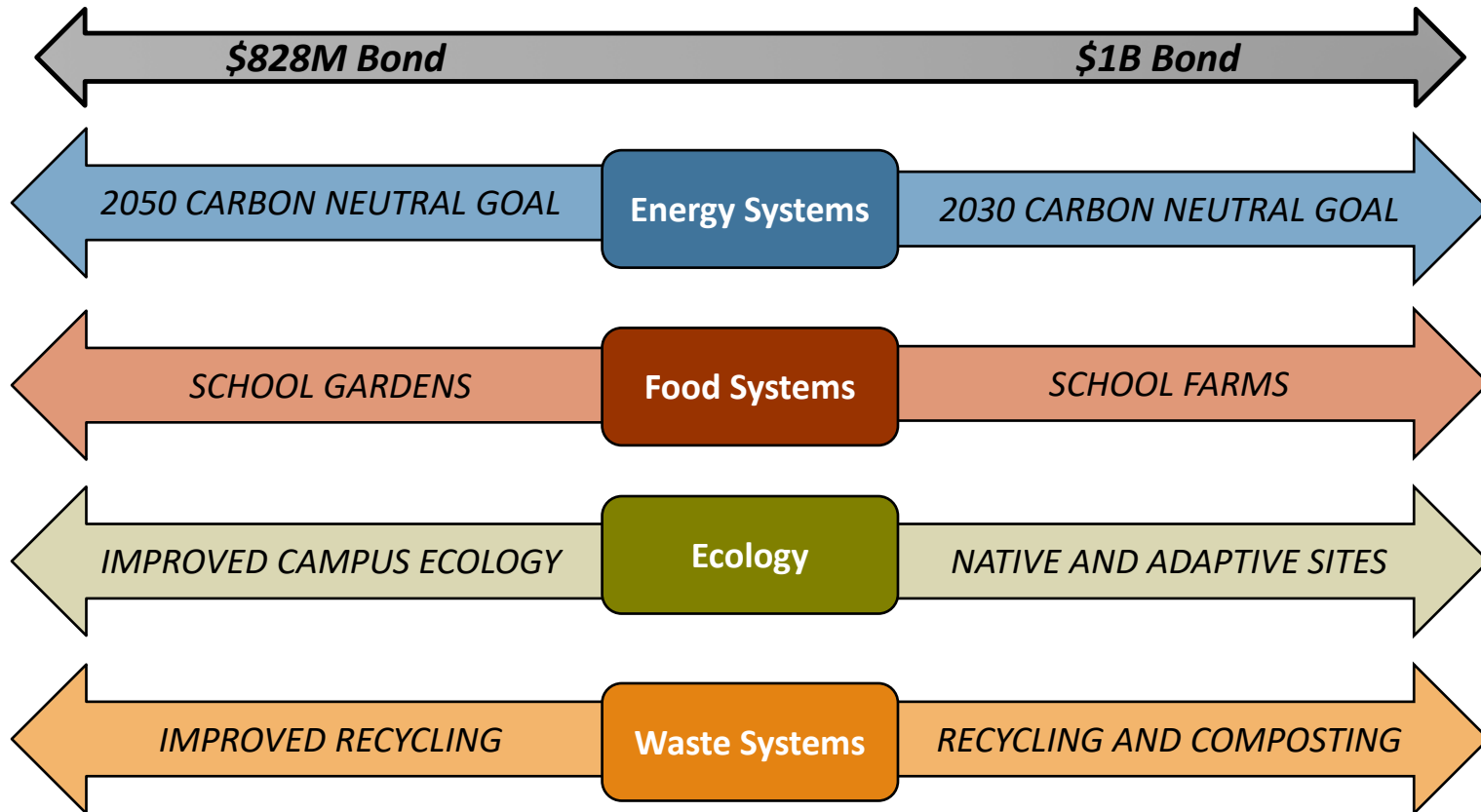
Increased bond amounts create *higher quality classroom environments and more teacher control*

Options – *Quality of School and Support Spaces*



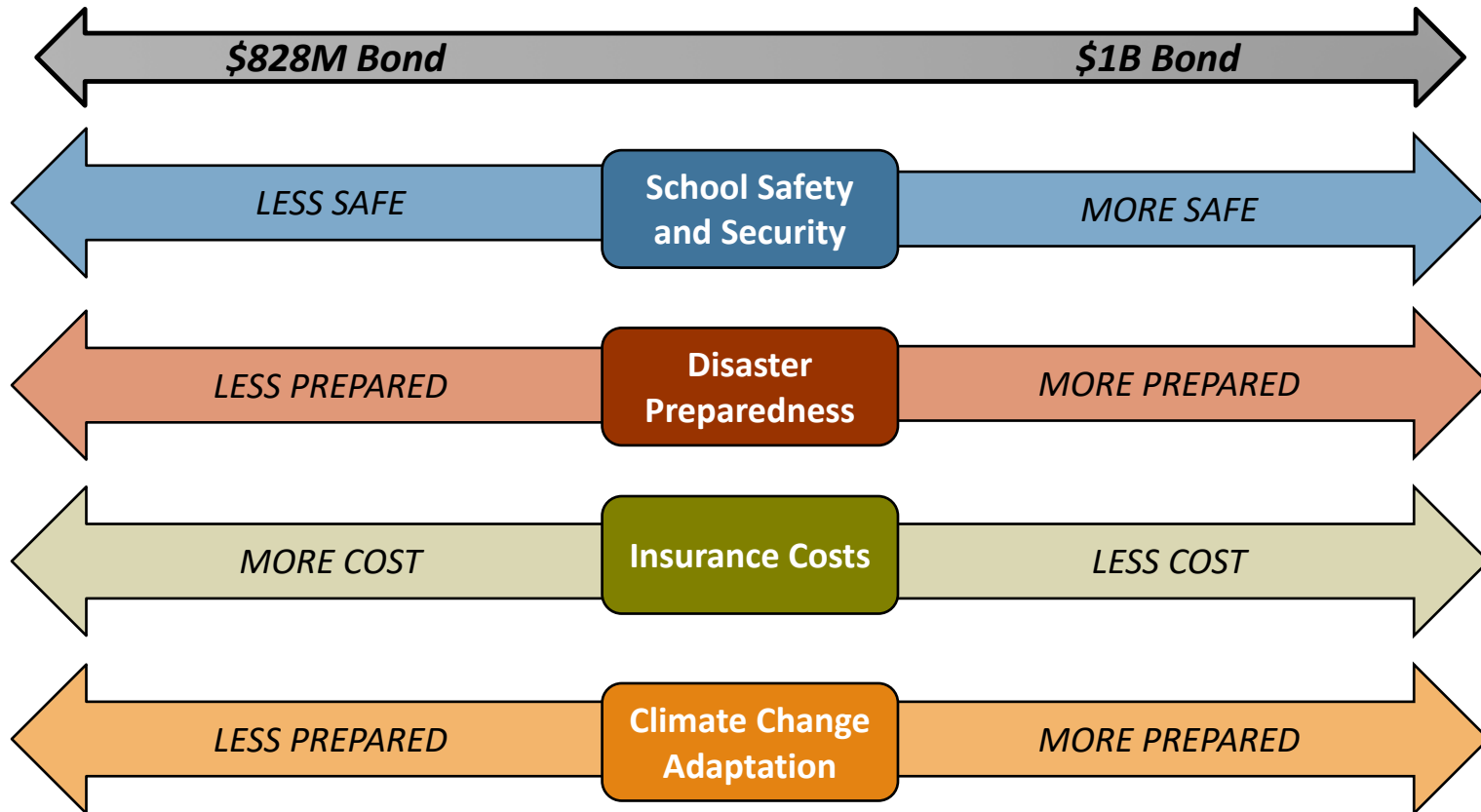
Increased bond amounts create *higher quality spaces and technology*

Options – *Environmental Sustainability*



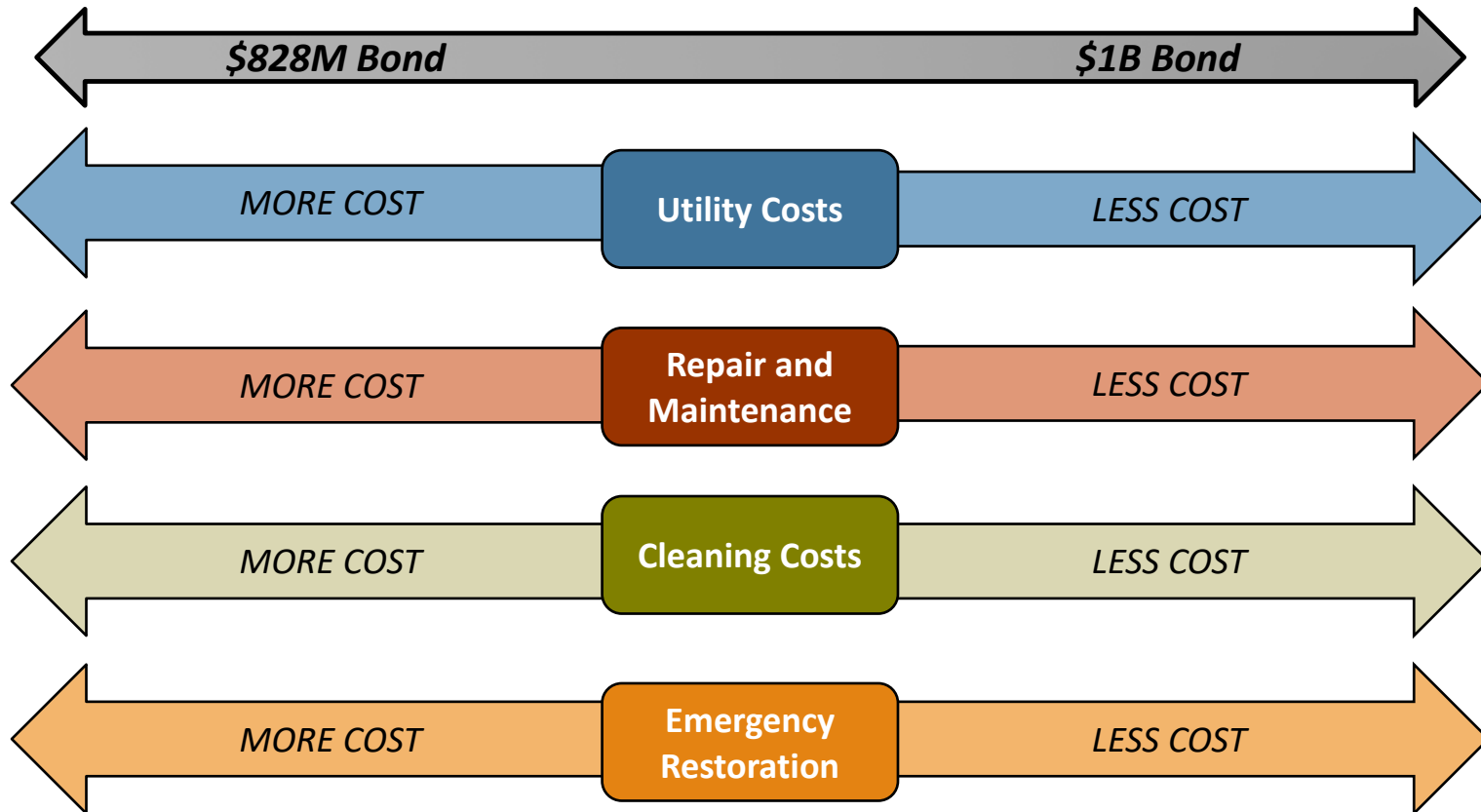
Increased bond amounts create *enhanced sustainability and resilience*

Options – *Risk and Security*



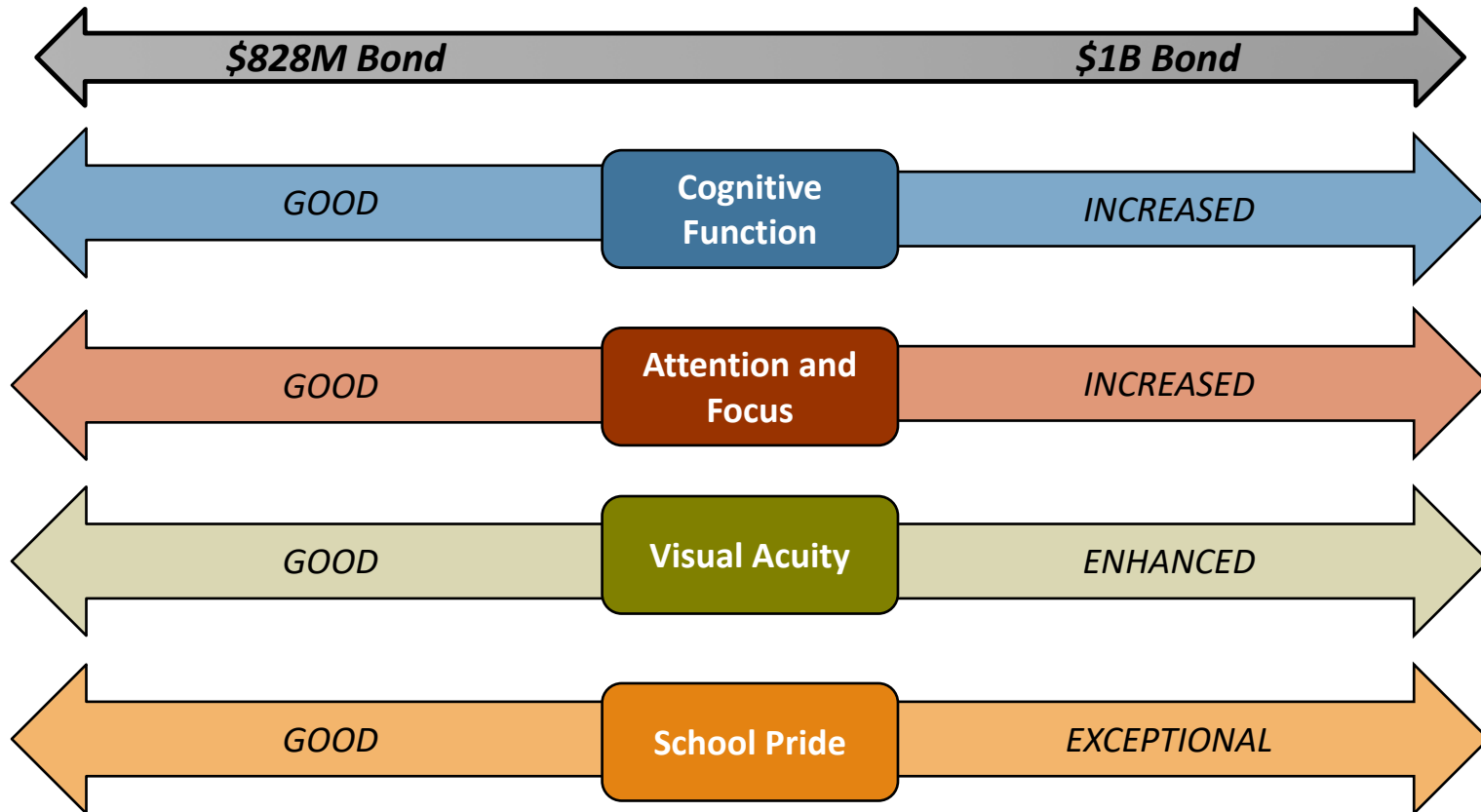
Increased bond amounts create *lower risk and more security*

Options – *General Fund Impact*



Increased bond amounts create *lower General Fund expenditure*

Options – *Student Performance*



Increased bond amounts create *healthier and higher performing students*



ANN ARBOR PUBLIC SCHOOLS
LEAD. CARE. INSPIRE.



2019 Proposed Bond Update

PRESENTED TO THE BOARD OF EDUCATION

MAY 8, 2019

Marios Demetriou, Assistant Superintendent-Operations

Emile Lauzzana, Executive Director – Physical Properties

