

PARSONS

Linking Academic Instruction to Capital Planning
Or, How Do We Keep the Trains Running?

The Educational Index



CEFPI World Congress

Sunday, 23 September 2012 10:15-11:45

The Educational Index

Presenters

Craig W. Anding

- Project Manager, Parsons

David H. Richards

- Manager, Capital Planning and Project Development, Minneapolis Public Schools

Susan C. Zoller

- MGT of America
- Former Deputy Sup

- comet.parsons.com/ecomet
- MPS EI website

Agenda-timing-lead person

Topic	Slide #	Duration	Start	End	Lead
Introduction	Up to 3				Craig
An Economic Barometer of America	1-2	3	10:15	10:18	David
What is a Capital Budget?	3	2	10:18	10:20	David
What are Capital Budget Complications?	4-5	2	10:20	10:22	Susan
What is the Educational Index (EI)?	6-7	3	10:22	10:25	David
How do we start getting to an EI?	8-9	5	10:25	10:30	David
Pause and reflection 1	10	5	10:30	10:35	Craig / Susan
What were the next steps for EI?	11-13	10	10:35	10:45	David
What process was followed?	14	2	10:45	10:47	Craig
How was the EI built?	15-21	13	10:47	11:00	Susan
Pause and reflection 2	22	5	11:00	11:05	Craig / Susan
How did the EI work?	23-24	10	11:05	11:15	Craig
Pause and reflection 3	25	5	11:15	11:20	Craig / Susan
Does EI resolve the complications of Capital Budgeting?	26-32	10	11:20	11:30	David / All
Questions	33	15	11:30	11:45	All

Giant Sorting Machine

- Bailey Yard: The largest rail classification yard in the world 139 trains daily – coal, harvest, mixed (prototypes)
- 32,000 miles of track, 8,000 locomotives, 94,000 freight cars (function types)
- 13,000 cars maintained every year (attributes)
- 315 miles of track, 985 switches, 766 turnouts, 17 receiving /16 departure track (program 'values')



Minneapolis Giant Sorting Machine

Information Complexity

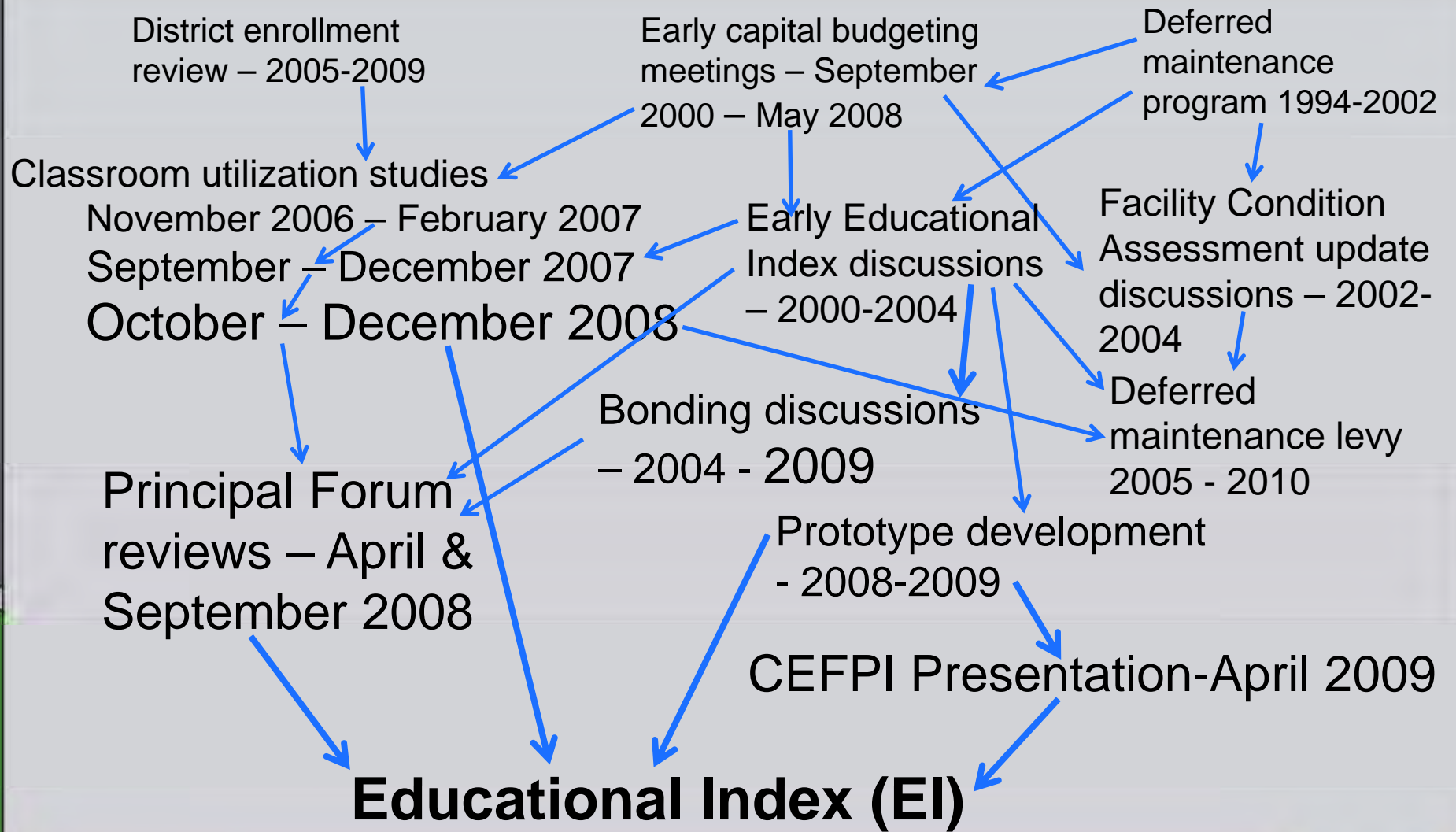
- 70 buildings
 - 8.3 million SF - 10 to 110 years old
 - 35,000 to 300,000 SF
- 420 acres of land
- 2,400 classrooms
 - 131 science labs, 148 computer labs
 - 67 performance rooms
- 85 gymnasiums

Contextual Complexity

- Limited resources
- Needs probably exceed available resources
- Spirited political environment
 - Competing interests
 - Decision-making bandwidth is limited
 - Need for accountability and consistency

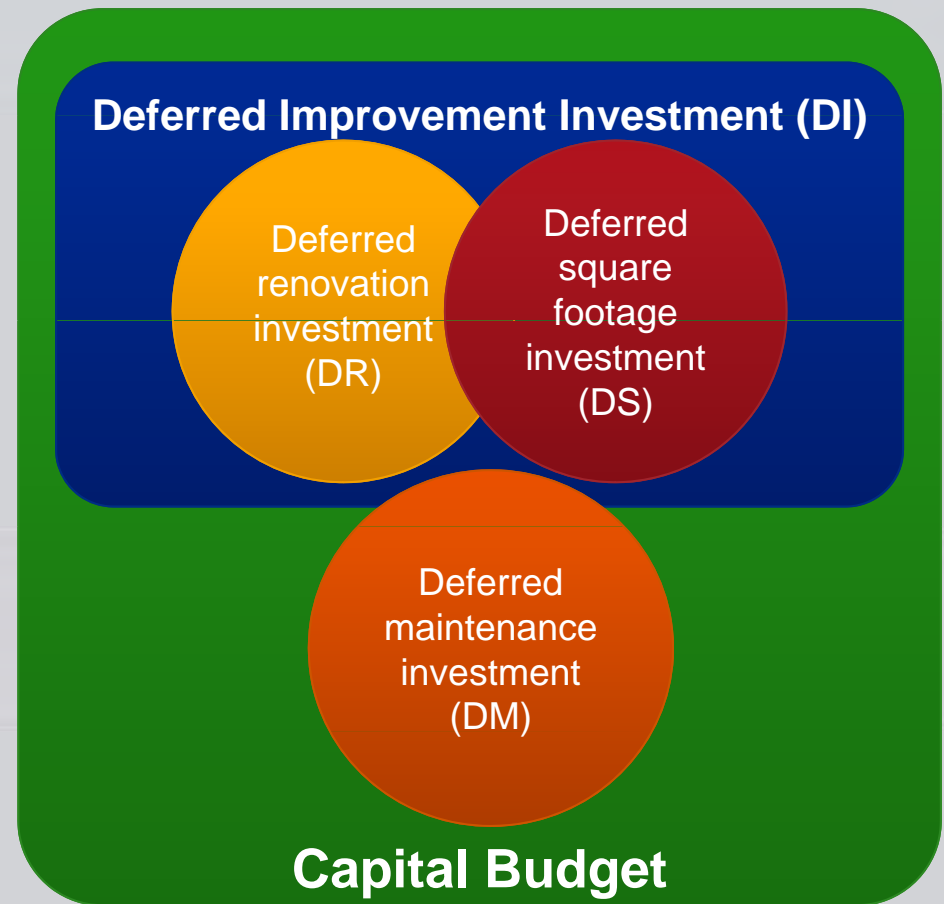


What are Capital Budget Complications?



Sorting a Capital Budget?

- Capital Improvements
 - Quantitative
 - Qualitative
- Capital Renewal
 - Deferred maintenance



What is the Educational Index?

- School building's ability to support its educational program
 - Measures a relationship
 - Descriptive, not prescriptive
 - Planning amid ambiguity
 - Functional obsolescence
- Decision-support method developed to inform, prioritize and justify investment choices in capital budget formulation
- A measure that reaches deeply into the instructional side of the house to inform its decision-making *while...*
- ...speaking facilities maintenance and renewal, as expressed by the Facility Condition Index (FCI)

What is the Educational Index?

- Strategic Facilities Plan
 - Existing condition analysis
 - Organizational needs (linking FM to strategy)
 - Gap analysis
- EI and FCI are both referenced to Replication Value (RV)
 - $EI = DI/RV$
 - $FCI = DM/RV$
- EI and FCI may both have backlogs (DI) and (DM)

How do we Start Getting to an EI?

- Program Prototype Values
 - Cohort continuity
 - Full spectrum of instructional programming
 - Opportunity for programmatic consistency
 - Expansion of early childhood
 - Opportunities for partnerships
 - Space for mandated services
 - Descriptive, not prescriptive
 - Flexibility

How do we start getting to an EI?

- Program Prototypes

- 4 prototype categories
- 5 prototypes, based on size, in each category

Grade Profile	K-5	K-8	MS	HS
Alt. 1	2K	2K	12T	16T
Alt. 2	3K	3K	18T	24T
Alt. 3	4K	4K	24T	32T
Alt. 4	5K	5K	30T	48T
Alt. 5	6K	6K	36T	60T

- Defines essential and desired program elements
- Defines program enrollment and core staff

Pause and Reflection 1

What were the next steps for EI?

Educational Index (EI)

District Strategic Plan

Recommendation #9 – Create and sustain a positive financial position.

Develop a long-range facilities plan in concert with academic program

Program prototypes

Academic Advisory Group – Sep 2009

Review with Academic leadership – May 2009

Strategic Facilities Plan

What Were the Next Steps for EI?

- Academic advisory group
 - Program prototype development
 - Grade profiles / enrollment drivers
 - Essential and desired program offerings
 - Building prototype development
 - Classroom count, sizes and qualities
 - Classroom – core program
 - Specialty classroom, break-out, small space support activities
 - Instructional support spaces: gym, media, lunchroom, admin office
 - Building attributes that support instructional delivery

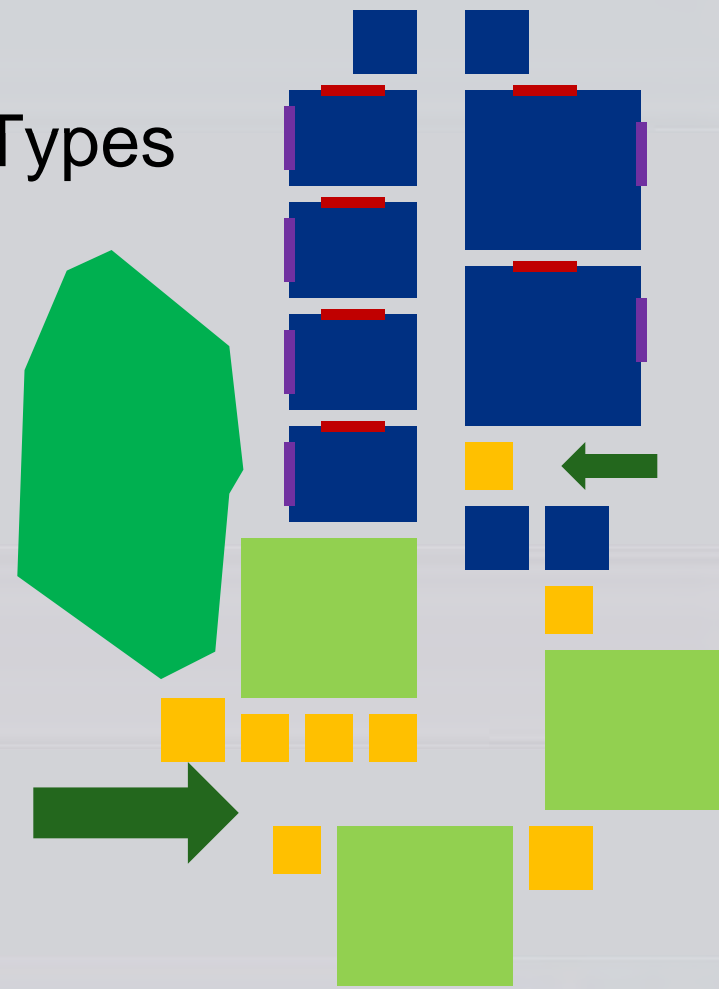
What were the next steps for EI?

- Comprehensively and strategically evaluate facilities
- Envision facilities required to provide pre-kindergarten through high school programming
- Through the planning window of five to twenty years.
- Develop an understanding of educational program-based investment that:
 - 1) has been deferred in the past – the Deferred Improvements
 - 2) is anticipated in the future as primary/secondary pedagogy evolves.

- This information will be organized as the **Educational Index**
- This information will be sufficient to prepare a multi-year **Capital Budget** – the roadmap to facilities optimization.

How was the EI built?

- Program Prototype
- Building Prototype/Function Types
 - Classrooms
 - Instructional Support Spaces
 - Offices
 - Security
 - Site Constraints
 - Attributes
- Looking to the Future
 - Flexibility
 - Optimize, not Maximize



How was the EI built?

- Define grade levels
- Determine core classroom count
- Determine total classroom count
- Essential CRs (01.20.09)

	Prototype	K5 4K	K8 4K	MS 8	HS 32			
15%	Target CRs	38	Target CRs	51	Target CRs	41	Target CRs	54
	Max CRs	44	Max CRs	58	Max CRs	47	Max CRs	62
15%	Min CRs	32	Min CRs	43	Min CRs	35	Min CRs	46

Gr.	Class size	Tchr FTEs	Enrollm ent	CRs	Tchr FTEs	Enrollm ent	CRs	Tchr FTEs	Enrollm ent	CRs	Tchr FTEs	Enrollm ent	CRs	
12	34		0	0		0	0		0	0		6.0	204	6
11	34		0	0		0	0		0	0		7.0	238	7
10	34		0	0		0	0		0	0		9.0	306	9
9	34		0	0		0	0		0	0		10.0	340	10
8	32		0	0	2.0	96	3	8.0	256	8	0	0	0	0
7	32		0	0	3.0	96	3	8.0	256	8	0	0	0	0
6	32		0	0	3.0	96	3	8.0	256	8	0	0	0	0
5	32	3.0	96	3	3.0	96	3		0	0	0	0	0	0
4	32	3.0	96	3	3.0	96	3		0	0	0	0	0	0
3	28	4.0	104	4	4.0	104	4		0	0	0	0	0	0
2	26	4.0	104	4	4.0	104	4		0	0	0	0	0	0
1	26	4.0	104	4	4.0	104	4		0	0	0	0	0	0
FDK	26	4.0	104	4	4.0	104	4		0	0	0	0	0	0
H5	40	1.0	40	1	1.0	40	1		0	0	0	0	0	0
HA	0	0.0	0	0	0.0	0	0		0	0	0	0	0	0
FD students			608			896			768			1,088		
A/P students			20			20			0			0		
Max student load			628			916			768			1,088		

Room Use Category	Definition
Core	Class size teachers, UA core subject classrooms, Health CRs (HS only), Assessment computer labs
Prep/Elective	Elementary science, music, dance, art, band/orchestra, business, drivers ed, world languages, engineering, AVID
Mandated support	SERTs, ELL, ESL, T1, GT
Citywide Special Ed	Special education (e.g. DCD, SPAN, Autism, etc., but excluding ECSE), OT/PT, Speech, SWs, Psychologist and NLL
Pre-K	ECSE, H5, ECFE, childcare spaces
School Support	UA non-assessment computer labs. Includes engineering and business labs and College & Career Centers Behavior, AEs, EAs, Writer's Workshop, Reading resource, Math resource ; Literacy coaches, CFCs, TAP mentors and PDCs, conference rooms
Agencies	Neighborhood groups, Community Education (Mpls. Kids, ECFE), leased space, AmeriCorps, Agency volunteers or staff, MPS research project,
Unassigned/other	Swing rooms, open classrooms, 2 nd classrooms assigned to a teacher; itinerant rooms, storage rooms, book rooms, fitness centers Includes PDCs, conference rooms

	Prototype	K5 4K	K8 4K	MS 8	HS 32	
ESSENTIAL CRs (below)		35	47	38	50	
C	x	23.0	32.0	24.0	32.0	
C-A	x	0.0	0.0	0.0	0.0	
E	x 0.2	4.6	6.4	4.8	6.4	
M-S	x F/R var	2.0	3.0	2.0	3.0	
M-D	x minsz	3.0	4.0	4.0	6.0	
PK	x minsz	2.0	2.0	2.0	2.0	
DESIRED CRs (below)		3	4	38	50	
E-C		0.0	0.0	0.0	0.0	
S-S	F/R var	0.0	0.0	0.0	0.0	
S-D		0.0	0.0	0.0	0.0	
A	minsz	0.0	0.0	0.0	0.0	
Total FTEs/CRs		34.6 61%	38 47.4 63%	51 36.8 58%	41 49.4 60%	54

How was the EI built?

- Convert the Program Prototype into a Building Prototype
 - Essential CRs types
 - Strategic Facility Plan “Function Types”

Essential Classrooms Room Use Category	Strategic Facility Plan Room Function Type
Core	Classroom / High
Core	Classroom / Intermediate
Core	Classroom / Kindergarten
Core	Classroom / Middle
Core	Classroom / Primary
Core	Classroom / Lab / Science type A
Core	Classroom / Lab / Science type B
Core	Classroom / Lab / Science type C
Core	Classroom / Lab / Science type D
Core - Assessment Lab	Classroom / Lab / Computer
Prep / Elective	Classroom / High
Prep / Elective	Classroom / Middle
Prep / Elective	Classroom / Art
Prep / Elective	Classroom / Art / Ceramics
Prep / Elective	Classroom / Lab / Career Tech Ed
Prep / Elective	Classroom / Lab / Computer
Prep / Elective	Classroom / Lab / FACS
Prep / Elective	Classroom / Lab / Graphics - CADD
Prep / Elective	Classroom / Lab / Music Keyboard
Prep / Elective	Classroom / Performance / Dance
Prep / Elective	Classroom / Performance / Instrumental
Prep / Elective	Classroom / Performance / Vocal
Prep / Elective	Classroom / Shop / General
Mandated Support	Classroom / Small group
Citywide Special Ed	Classroom
Citywide Special Ed	Classroom / with break-out
Citywide Special Ed	Classroom / with toilet
Pre-K	Classroom / Kindergarten
School Support	Classroom / Lab / Computer
School Support	Classroom / Small group
School Support	Office
Before/After school	Classroom
Partnerships	Classroom
Support spaces	Office
Core Facility	Gym
Core Facility	Lunchroom
Core Facility	Media Center / Lab / Graphics - CADD
Core Facility	Media Center / Stacks & Circulation
Core Facility	Performance
Core Facility	Gym / Auxiliary
Core Facility	Office
Core Facility	Storage
Core Facility	Athletics

How was the EI built?

- Overall Sizing of Facilities
 - Strategic Facility Plan Function Types
 - MDE Benchmark
 - MPS Prototype

	MDE Guidelines			MPS Prototype			Room Size Group
	Number of Students	Square Feet Per Student	Square Feet Per Room	Number of Students	Square Feet Per Student	Square Feet Per Room	
Classroom / High	20-28	38	850-950	34	26	900	4
Classroom / Middle	20-28	38	850-950	32	28	900	4
Classroom / Intermediate	15-25	45	850-950	32	28	900	4
Classroom / Primary	15-25	45	850-950	26	35	900	4
Classroom / Kindergarten	15-25	68	1,200-1,500	26	46	1,200	5
Classroom / Kindergarten	15-25	34	1,200-1,500	40	30	1,200	5
Classroom / Lab / Science type A	20-25	60	1,200-1,500			1,500	6

How was the EI built?

Attributes to assess the Educational Index

- Daylighting
- Storage
- Instructional
- Finishes
- Ventilation
- Plumbing
- Lab
- Power / Data
- Lighting

	Daylt	Storage	Instructional										Finishes									
	Windows (SF) (10% of floor area)	Window Treatment	Base Cabinets (LF)	Wall Cabinets (LF)	Tall Cabinets (LF) (or 2 x wall cabinets)	Shelving (LF of wall)	Teacher's Wardrobe/Closet	Cubbies - Clothing & Backpacks	Student Storage - Instructional Materials	Markerboard (LF)	Chalkboard (is a deficiency)	Interactive White Board	Tackboard (LF)	Tackring (LF)	Projection Screen	Mounted LED Projector	Power & Data for Projector	Sound Reinforcement System	Wood Gym Floor	Carpeting (SF)	Vinyl Flooring (SF)	Acoustical Treatment (TBD)
Classroom / High	90	Y	16	0	4	10	Y	0	24	X	Y	0	30	Y	Y	Y	Y	Y				
Classroom / Middle	90	Y	16	0	0	10	Y	0	4	X	Y	0	120	Y	Y	Y	Y					
Classroom / Intermediate	90	Y	16	0	0	10	Y	32	4	X	Y	0	120	Y	Y	Y	Y					
Classroom / Primary	90	Y	16	0	0	10	Y	26	4	X	Y	0	120	Y	Y	Y	Y					
Classroom / Kindergarten	120	Y	16	0	0	10	Y	26	4	X	Y	0	120	Y	Y	Y	Y		600	300		
Classroom / Kindergarten	120	Y	16	0	0	10	Y	20	4	X	Y	0	120	Y	Y	Y	Y		600	300		
Classroom / Lab / Science type A	150	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y					

	HVAC	Plumbing	Lab	Power / Data		Lighting														
	Central Air Conditioning	Exhaust	Sink	Toilet - Accessible w/Shower	Toilet - Accessible w/ Changing	Toilet	Gas Shutoff	Fire Extinguisher	Eye Wash	Safety Shower	Fume Hood	Flammable Cabinet	Dishwasher	Power (1 duplex per 75 sf floor area)	Data Port	Voice Port	PA System	Lighting - Dual Switching	Lighting (footcandles)	Clock
Classroom / High	Y													12	4	Y	Y	40-50	Y	
Classroom / Middle	Y													12	4	Y	Y	40-50	Y	
Classroom / Intermediate	Y		Y			Y								12	4	Y	Y	40-50	Y	
Classroom / Primary	Y		Y			Y								12	4	Y	Y	40-50	Y	
Classroom / Kindergarten	Y		Y			Y								16	4	Y	Y	40-50	Y	
Classroom / Kindergarten	Y		Y			Y								16	4	Y	Y	40-50	Y	
Classroom / Lab / Science type A	Y	Y	Y				Y	Y	Y	Y	Y	Y	Y	20	13	Y	Y	40-50	Y	

Pause and Reflection 2

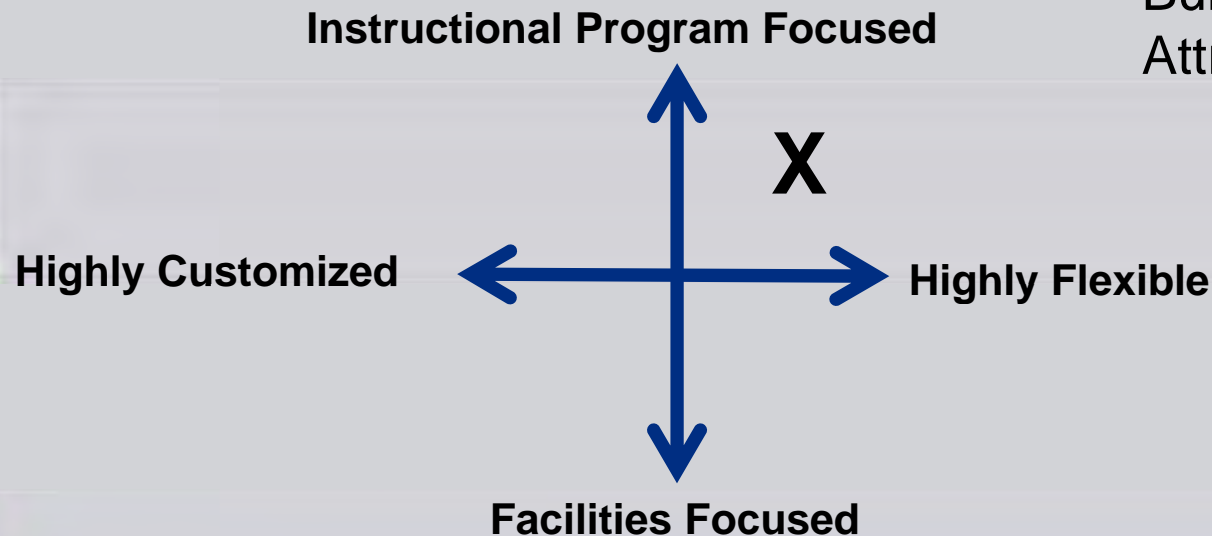
How did the EI work?

Process

- Assessment of Existing Buildings from the 1890s through the 1990s . . .
- . . . Through the Lens of Instructional Needs and Methods of 2010 to 2020 and beyond.

Procedure

- Designate a Program Prototype Appropriate for Existing School Building . . .
- . . . Evaluate that Building Through the Lens of the Building Prototype and its Attributes.



EI Resolves Capital Budgeting Complications

- Objective 1: Provide Access to Equitable Facilities for All Students
 - Strive to enhance adequacy of general classrooms
 - Strive to enhance adequacy of specialized classrooms
 - Strive to enhance adequacy of pre-k and kindergarten
 - Support variety of learning and teaching styles
 - Align support spaces with the instructional program
 - Strive to enhance adequacy of outdoor physical education learning spaces

Target groups

Target Group	EI ranking	Investment Requirements
1	Over 120%	extraordinary investments are required
2	70% - 120%	significant investments
3	50% - 70%	moderate investments
4	30% - 50%	some improvements are required
5	0% - 30%	little work required except for certain features

Threshold	Investment Requirements
81% - 100%	satisfactory
51% - 80%	some improvements are required
26% - 50%	moderate investments
0% - 25%	significant investments

Pause and Reflection 3

EI Resolves Capital Budgeting Complications

Categories of Work (through 2016)

- Health & Safety/Regulatory
\$1,500,000
- Critical Maintenance
\$193,500,000
- Significant Maintenance
\$611,000,000

Categories of Work

- Classroom Spaces - \$293,500,000
- Support Spaces - \$231,500,000
- Security - \$14,250,000
- Technology - \$19,250,000
- Fixtures & Equip. - \$40,750,000
- Improved Lighting - \$40,000,000
- Site - \$12,250,000
- New Air Conditioning
\$193,750,000

EI Resolves Capital Budgeting Complications

Classroom Types

- General Classrooms
\$54,250,000
- Specialty Classrooms
\$133,750,000
- Pre-K/Kindergarten
\$18,000,000
- Small Group/Special Ed.
\$87,500,000

Support Space Types

- Computer Labs
\$17,500,000
- Media Centers
\$27,750,000
- Lunchrooms
\$48,750,000
- Gymnasiums
\$113,500,000
- Auditoriums
\$24,000,000

Thank you for
Attending

PARSONS

- Questions and
Comments

EI Resolves Capital Budgeting Complications

- Strategic Facilities Framework
- Objectives 1-4
- Stoplight document
- Categories of work and costs
- Enrollment capacity planning

EI Resolves Capital Budgeting Complications

- Objective 2: Provide a High Quality Learning Environment
 - Improve temperature control within the building
 - Provide welcoming environment
 - Positive learning environment
 - Provide adequate natural and artificial lighting

EI Resolves Capital Budgeting Complications

- Objective 3: Provide Resources for Effective Instruction
 - Enhance Instruction Through Technology
 - Provide Necessary Teaching Aids
- Objective 4: Provide a Safe and Secure Learning Environment
 - Provide Adequate Interior Supervision
 - Control and Monitor Access to the Building and Site
 - Improve Pedestrian and Vehicular Safety