THE EDUCATIONAL INDEX

Performing a District-Wide Master Plan in an Afternoon

David H. Richards
Manager – Planning, Engineering and Real Estate (PERE)
Minneapolis Public Schools (MPS)
david.richards@mpls.112.mn.us

2009 CEFPI Midwest Great Lakes Regional Conference
Thursday, 23 April 2009 10:00 – 10:50

TODAY’S AGENDA

Definitions
Why Bother?
Capital Budgeting Amid Ambiguity
Replacement Value
Deferred Improvements
Prototypes
Educational Index – The Afternoon Master Plan
Case Study 1
Case Study 2
Case Study 3

Definitions

- EI is a measure of the ability of an educational building to support the educational program it contains
  - Similar to Educational Adequacy and other metrics
- In the presentation, EI methodology is used to create a mathematical algorithm of a facilities master plan and capital budget

Why Bother?

<table>
<thead>
<tr>
<th>Enrollment</th>
<th>Classroom Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Graph]</td>
<td>[Graph]</td>
</tr>
</tbody>
</table>

- [Graph A: Enrollement timeline]
- [Graph B: Classroom Utilization by Category]
- [Graph C: Essential Program]
Why Bother?

Square Feet Per Student

<table>
<thead>
<tr>
<th>SF/student</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

Budget Deficit

- $28 million deficit looms for Minneapolis schools
- Many districts now are budgeting under the assumption they'll get no increases over the next two years.
- By PATRICE REIFERFORD and NORMAN DRAPER, Star Tribune

The Train Doesn't Stop

- We need to expand certain programming to eight more sites. Where will it fit?
- Does a particular school have room for a city-wide program?
- There is large kindergarten demand at a specific school. Can the building support the increased enrollment?
- Can we switch to district-wide full day kindergarten?
- School A is 278,843/96/1,999. School B is 307,029/97/1,296
- School C is 33,360/12-4/355. School D is 89,849/33/342

Capital Budgeting Options

Wait for Decisions

- Pros
  - Provides clearest direction
  - Avoids rework
  - Avoids planning costs for sites that are closed
- Cons
  - Deferred investment accumulate
  - Future implementation is time-constrained

Planning Amid Ambiguity

- Pros
  - Initiates funding discussion
  - Identifies disinvestment opportunities
  - Algorithms allow for future changes
- Cons
  - Project scope is vague
  - Instructional models may change
  - Some work may be lost

Capital Budgeting Amid Ambiguity

- All times are ambiguous
- Obsolescence is independent of use
  - Functional
  - Operational
Calculating Deferred Investment Needs

**FCI Algorithm**
- Determine building replacement value (RV)
- Determine deferred maintenance backlog (DM)

*FCI = DM/RV*

**EI Algorithm**
- Determine building replacement value (RV)
- Determine deferred program improvement backlog (DI)

*EI = DI/RV*

Replacement Value

- "As-is" replacement valuation
  - Cost mode
- Cost Mode variables
  - Multi-story
  - Mechanical systems
  - Materials and finishes

Deferred Improvements

- Document existing conditions
- Classroom count
- Classroom utilization
- Program prototypes
- Building prototypes
- Application of third party square foot guidelines
  - Minnesota Department of Education (MDE)
- Compare existing to prototypes
### Master Plan

- Validate building prototype size
- Determine building prototype construction value
- Calculate the EI
- Estimate cost of new construction and renovation
- Compare FCI and EI

### Master Plan – Prototype Size

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site Name</th>
<th>Avail CRs (2007)</th>
<th>Replacement CRs (2007)</th>
<th>GPCR Count</th>
<th>Cost (CoP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH</td>
<td>Anthony</td>
<td>39</td>
<td>MS</td>
<td>39</td>
<td>K838</td>
</tr>
<tr>
<td>BART</td>
<td>Barton</td>
<td>34</td>
<td>K9</td>
<td>34</td>
<td>K838</td>
</tr>
<tr>
<td>BETH</td>
<td>Bethune</td>
<td>34</td>
<td>K5</td>
<td>38</td>
<td>K538</td>
</tr>
<tr>
<td>CITY</td>
<td>Cityview</td>
<td>46</td>
<td>K5</td>
<td>51</td>
<td>K651</td>
</tr>
<tr>
<td>EDIS</td>
<td>Edison</td>
<td>70</td>
<td>HS</td>
<td>76</td>
<td>H576</td>
</tr>
<tr>
<td>ERIC</td>
<td>Ericsson</td>
<td>24</td>
<td>K8</td>
<td>26</td>
<td>K626</td>
</tr>
<tr>
<td>FIEL</td>
<td>Field</td>
<td>22</td>
<td>MS</td>
<td>27</td>
<td>M537</td>
</tr>
<tr>
<td>HALL</td>
<td>Hall</td>
<td>33</td>
<td>K5</td>
<td>38</td>
<td>K538</td>
</tr>
<tr>
<td>HAWI</td>
<td>Hawiwa</td>
<td>17</td>
<td>K5</td>
<td>18</td>
<td>K519</td>
</tr>
<tr>
<td>JEFF</td>
<td>Jefferson</td>
<td>48</td>
<td>K5</td>
<td>53</td>
<td>K838</td>
</tr>
<tr>
<td>KEEW</td>
<td>Keeawain</td>
<td>15</td>
<td>MS</td>
<td>19</td>
<td>M53169</td>
</tr>
<tr>
<td>LLOW</td>
<td>Lorrain</td>
<td>12</td>
<td>K5</td>
<td>18</td>
<td>K538</td>
</tr>
<tr>
<td>LONG</td>
<td>Longfellow</td>
<td>22</td>
<td>K5</td>
<td>18</td>
<td>K538</td>
</tr>
<tr>
<td>LORI</td>
<td>Lori</td>
<td>20</td>
<td>K5</td>
<td>18</td>
<td>K538</td>
</tr>
<tr>
<td>RAMS</td>
<td>Ramsey</td>
<td>52</td>
<td>K5</td>
<td>51</td>
<td>K838</td>
</tr>
<tr>
<td>ROOS</td>
<td>Roosevelt</td>
<td>97</td>
<td>HS</td>
<td>92</td>
<td>H5392</td>
</tr>
<tr>
<td>SANF</td>
<td>Sanford</td>
<td>36</td>
<td>MS</td>
<td>40</td>
<td>M5340</td>
</tr>
<tr>
<td>SEWA</td>
<td>Seward</td>
<td>40</td>
<td>K5</td>
<td>38</td>
<td>K838</td>
</tr>
<tr>
<td>SHER</td>
<td>Sheridan</td>
<td>43</td>
<td>K5</td>
<td>51</td>
<td>K838</td>
</tr>
<tr>
<td>SWEE</td>
<td>Southwest</td>
<td>77</td>
<td>HS</td>
<td>76</td>
<td>H5376</td>
</tr>
<tr>
<td>WATI</td>
<td>Waitpark</td>
<td>26</td>
<td>K5</td>
<td>25</td>
<td>K525</td>
</tr>
<tr>
<td>WASH</td>
<td>Washburn</td>
<td>64</td>
<td>HS</td>
<td>76</td>
<td>H5376</td>
</tr>
</tbody>
</table>

### Master Plan – Calculating the EI

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site Name</th>
<th>GPCR Count</th>
<th>Cost (CoP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH</td>
<td>Anthony</td>
<td>134,323</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>BART</td>
<td>Barton</td>
<td>106,883</td>
<td>$850,000</td>
</tr>
<tr>
<td>BETH</td>
<td>Bethune</td>
<td>88,736</td>
<td>$700,000</td>
</tr>
<tr>
<td>CITY</td>
<td>Cityview</td>
<td>150,132</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>EDIS</td>
<td>Edison</td>
<td>341,098</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>ERIC</td>
<td>Ericsson</td>
<td>88,736</td>
<td>$700,000</td>
</tr>
<tr>
<td>FIEL</td>
<td>Field</td>
<td>113,064</td>
<td>$900,000</td>
</tr>
<tr>
<td>HALL</td>
<td>Hall</td>
<td>97,862</td>
<td>$750,000</td>
</tr>
<tr>
<td>HAWI</td>
<td>Hawiwa</td>
<td>49,993</td>
<td>$400,000</td>
</tr>
<tr>
<td>JEFF</td>
<td>Jefferson</td>
<td>150,132</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>KEEW</td>
<td>Keeawain</td>
<td>62,938</td>
<td>$500,000</td>
</tr>
<tr>
<td>LLOW</td>
<td>Lorrain</td>
<td>49,993</td>
<td>$400,000</td>
</tr>
<tr>
<td>LONG</td>
<td>Longfellow</td>
<td>49,993</td>
<td>$400,000</td>
</tr>
<tr>
<td>LORI</td>
<td>Lori</td>
<td>49,993</td>
<td>$400,000</td>
</tr>
<tr>
<td>RAMS</td>
<td>Ramsey</td>
<td>150,132</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>ROOS</td>
<td>Roosevelt</td>
<td>392,700</td>
<td>$3,000,000</td>
</tr>
<tr>
<td>SANF</td>
<td>Sanford</td>
<td>134,323</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>SEWA</td>
<td>Seward</td>
<td>106,883</td>
<td>$850,000</td>
</tr>
<tr>
<td>SHER</td>
<td>Sheridan</td>
<td>88,736</td>
<td>$700,000</td>
</tr>
<tr>
<td>SWEE</td>
<td>Southwest</td>
<td>77,862</td>
<td>$600,000</td>
</tr>
<tr>
<td>WATI</td>
<td>Waitpark</td>
<td>26,936</td>
<td>$200,000</td>
</tr>
<tr>
<td>WASH</td>
<td>Washburn</td>
<td>64,700</td>
<td>$500,000</td>
</tr>
</tbody>
</table>

### Master Plan – New & Renovation

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Site Name</th>
<th>New Construction Cost (CoP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH</td>
<td>Anthony</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>BART</td>
<td>Barton</td>
<td>$850,000</td>
</tr>
<tr>
<td>BETH</td>
<td>Bethune</td>
<td>$700,000</td>
</tr>
<tr>
<td>CITY</td>
<td>Cityview</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>EDIS</td>
<td>Edison</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>ERIC</td>
<td>Ericsson</td>
<td>$700,000</td>
</tr>
<tr>
<td>FIEL</td>
<td>Field</td>
<td>$900,000</td>
</tr>
<tr>
<td>HALL</td>
<td>Hall</td>
<td>$750,000</td>
</tr>
<tr>
<td>HAWI</td>
<td>Hawiwa</td>
<td>$400,000</td>
</tr>
<tr>
<td>JEFF</td>
<td>Jefferson</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>KEEW</td>
<td>Keeawain</td>
<td>$500,000</td>
</tr>
<tr>
<td>LLOW</td>
<td>Lorrain</td>
<td>$400,000</td>
</tr>
<tr>
<td>LONG</td>
<td>Longfellow</td>
<td>$400,000</td>
</tr>
<tr>
<td>LORI</td>
<td>Lori</td>
<td>$400,000</td>
</tr>
<tr>
<td>RAMS</td>
<td>Ramsey</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>ROOS</td>
<td>Roosevelt</td>
<td>$3,000,000</td>
</tr>
<tr>
<td>SANF</td>
<td>Sanford</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>SEWA</td>
<td>Seward</td>
<td>$850,000</td>
</tr>
<tr>
<td>SHER</td>
<td>Sheridan</td>
<td>$88,736</td>
</tr>
<tr>
<td>SWEE</td>
<td>Southwest</td>
<td>$64,700</td>
</tr>
<tr>
<td>WATI</td>
<td>Waitpark</td>
<td>$26,936</td>
</tr>
<tr>
<td>WASH</td>
<td>Washburn</td>
<td>$64,700</td>
</tr>
</tbody>
</table>

### Master Plan – GPCR Count Category (SF)

- ANTH: Anthony
- BART: Barton
- BETH: Bethune
- CITY: Cityview
- EDIS: Edison
- ERIC: Ericsson
- FIEL: Field
- HALL: Hall
- HAWI: Hawiwa
- JEFF: Jefferson
- KEEW: Keeawain
- LLOW: Lorrain
- LONG: Longfellow
- LORI: Lori
- RAMS: Ramsey
- ROOS: Roosevelt
- SANF: Sanford
- SEWA: Seward
- SHER: Sheridan
- SWEE: Southwest
- WATI: Waitpark
- WASH: Washburn

### Master Plan – Prototype Size

- ANTH: Anthony
- BART: Barton
- BETH: Bethune
- CITY: Cityview
- EDIS: Edison
- ERIC: Ericsson
- FIEL: Field
- HALL: Hall
- HAWI: Hawiwa
- JEFF: Jefferson
- KEEW: Keeawain
- LLOW: Lorrain
- LONG: Longfellow
- LORI: Lori
- RAMS: Ramsey
- ROOS: Roosevelt
- SANF: Sanford
- SEWA: Seward
- SHER: Sheridan
- SWEE: Southwest
- WATI: Waitpark
- WASH: Washburn
Case Study 1

- Classroom capacity
- Performance space
- Circulation (completed)
- Media center (completed)
- Office (completed)
- $EI = 0.44$

Case Study 1 – Site Plan

1 Main entrance
2 Staff entrance
3 Parkland

Case Study 1 – Floor Plans

1 New main entrance
2 Staff entrance
3 Possible performance space
4 Expanded media center
5 New office
6 Possible classroom expansion

Case Study 2

- Auditorium
- HVAC
- Parking
- Security/CPTED – Circulation
- Lunchroom
- Finishes
- $EI = 0.55$
Case Study 2 – Aerial Photo

1 Main entrance
2 Staff entrance
3 Playground

Case Study 2 – Floor Plans

1 Main entrance
2 Staff entrance
3 Playground
4 Auditorium
5 Lunchroom
6 Existing office
7 Elevator location

Ground Floor Plan

First Floor Plan

Second Floor Plan

Third Floor Plan

Case Study 3

A school that is smaller than the guideline

1) Security / CPTED – Circulation
2) Classroom size – older labs
3) Auditorium (completed)
4) Increase site density
5) Gym/fieldhouse
6) Little theater
7) Lunchroom
8) Parking
9) HVAC
10) EL = 0.77

Case Study 3 – Aerial Photo

1 Main entrance
2 Link entrance
3 HC entrance
4 Athletic entrance
5 Pool location
6 Single story construction
Case Study 3 – Floor Plans

1 Main entrance
2 Link entrance
3 HC entrance
4 Athletic entrance
5 Pool
6 Old lab classrooms
7 Lunchroom
8 Gym / Fieldhouse
9 Little theater
10 Second gym
11 Auditorium (completed)
12 Home Economics classrooms
13 Smaller classrooms

Questions and Comments

☐ Thank you for attending