Societal Benefits of Managing Facility Cost of Ownership

Monte Hunter AIA
AGENDA

- TCO Background
- What Impacts TCO
- Case Studies
- Modeling Tool
TOTAL “COST” OF OWNERSHIP (TCO)

**Economic**
- Initial & long term cost
- Financial sustainability

**Education**
- Preserve education funds
- Impact of poverty

**Community**
- Generational commitment
- Facility equity

**Environment**
- Energy
- Carbon
- Waste
### ECONOMIC COST OF OWNERSHIP

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Construction</td>
<td>10-20%</td>
</tr>
<tr>
<td>Bond Interest</td>
<td>80-90%</td>
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<tr>
<td>Maintenance</td>
<td></td>
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<tr>
<td>Renewal</td>
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<tr>
<td>Adaption</td>
<td></td>
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</tbody>
</table>
Space Efficiency
SHARED COMMUNITY SPACE

$425M

30-year cost of ownership avoidance
Annual Teacher Salary Equivalents
367
Annual Household Carbon Equivalents
RHODE ISLAND SCHOOL SPACE EFFICIENCY

State trend 2.8M SF less

USA Trend
State Trend

Facility SF

LEA Enrollment

$3.1B
797
6,459

CO2

Facility SF

LEA Enrollment

New Shoreham
Little Compton
Foster
Jamestown
Glocester
Narragansett
Scituate
Exeter
West Greenwich
North Smithfield
Tiverton
Newport
Middleton
Burrillville
Smithfield
East Greenwich
South Kingstown
Burrillville
Smithfield
East Greenwich
South Kingstown

$3.1B
797
6,459
364 Truck Loads
DISTRICT SPACE

Peer Trend SF: 9,052,130, 10,634,351, 10,969,917
District SF: 8,742,351, 10,634,351

2.9% below trend


$233M
107
CO2 712
Elementary School Energy Equivalents
POVERTY & STUDENT ACHIEVEMENT
POVERTY & STUDENT ACHIEVEMENT IN TEXAS

- **$1.6B** At-risk Annual State Programs
- **$1.1B** Annual cost avoidance

![Graphs showing correlation between poverty rate, campus scores, and campus enrollment, with SF per student trend over years from 2009 to 2018.](image-url)
BROWNSVILLE ISD

- Enrollment: 45K
- Poverty level: 96%
- Below peer space trend: 3%
- Annual TCO savings: $5.6M
- Student scores: 89%
Strategic Renewal
Renovate 4 Older Schools

2 New Schools

$34,477,423

$23,194,607

$105,156,784

$186,609,804

$81M

RENOVATE OR REPLACE
DEMAND SMOOTHING & FINANCIAL SUSTAINABILITY

Traditional Approach

Strategic Renewal

Bond Capacity

$97,568,509

$105,264,468

$496M

$1,996,126,313

$1,499,468,444
CAMPUS SIZING

Test scores increased as enrollment increased.

2018 Campus Scaled Score vs 2018 Campus Enrollment

- District Trend
- 750 vs 550 student campuses
- $451M
- 142
- 7
TCO MODELING TOOL

From 10,000 feet
## TCO EXCEL WORKSHEET . . . MID-RANGE MODEL

### Facility SF Peer Benchmark

<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>District Enrollment</td>
<td>20,000</td>
</tr>
<tr>
<td>Peer Trend District SF</td>
<td>3,205,989</td>
</tr>
</tbody>
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\[
\text{TCO per SF} \times \text{Building SF} = 150.6 \times \text{enrollment} + 193,989
\]

### 30 year TCO

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Building SF</td>
<td>85,000</td>
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<tr>
<td>Facility Age</td>
<td>25</td>
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<tr>
<td>TCO per SF</td>
<td>$903</td>
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<tr>
<td>30 year TCO</td>
<td>$76,755,000</td>
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\[
\text{30 year TCO} = 22 \times \text{facility age} + 353 = \text{TCO per SF} \times \text{Building SF}
\]
WORKSHEET QUALIFICATIONS

**SPACE**
- USA mid-range
- General district space guidance
- Districts > 2,000 enrollment
- All facility SF including portables
- Refine with state & regional trends

**TCO**
- Mid-range conceptual
- Buildings only, no site work
- Use adjusted building age
- Can vary 40% either way
- Refine with 8 variables
CONCLUSION

High Quality
+
Space Efficiency
+
Strategic Renewal

TCO Management & Societal Benefits