

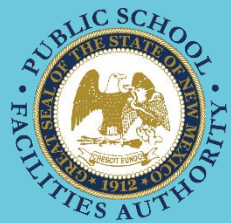
Facilities Assessment Database and Associated Methodology

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STATE OF NEW MEXICO  PUBLIC SCHOOL FACILITIES AUTHORITY

Partnering with New Mexico's communities to provide quality, sustainable school facilities for our students and educators.



Agenda

- The purpose of the Facilities Assessment Database (FAD)
- How
 - Facility Condition Index
 - New Mexico Educational Adequacy Standards
 - Deficiency Categories and Associated Weight Factors
 - Sources of data
- Result
 - Prioritized Capital Funding

Facilities Assessment Database (FAD)

- A tool used to prioritize public school facilities for funding through the Public School Capital Outlay Council (PSCOC)
 - Standards-based funding – replacement, additions, etc.
 - Systems-based funding – upgrade individual building systems
- Combines building repair cost and system lifecycle analysis with the New Mexico Adequacy Standards to evaluate brick and mortar conditions, as well as its educational functionality

How?

Must first determine a Facility Condition Index (FCI)

- A tool used to rate buildings and how these buildings compare to others
- By tracking needed repair cost within a school, we are then able to generate a score that will be used to relatively rank each school
- FCI is a ratio of repair cost, including lifecycle renewal requirements divided by its replacement cost

$$FCI = \frac{\text{Repair Cost (\$)}}{\text{Replacement Cost (\$)}}$$

FCI – Simple Example

- Assume a building within a school is estimated to be worth \$1,000,000 and hail causes \$150,000 in damage to the roof:

$$\frac{\$150,000}{\$1,000,000} = (0.15) * 100 = 15\% \text{ FCI}$$

- Because of the hail damage the roof is now leaking. Interior ceiling tiles are now saturated, it is estimated to cost \$20,000 to replace all the damaged ceiling tiles:

$$\frac{\$150,000 + \$20,000}{\$1,000,000} = (0.17) * 100 = 17\% \text{ FCI}$$

FCI increases when more repairs are needed – **Lower FCI is better**

FCI – Repair Cost Components and Calculations

Two components

- Degradation
- Renewal Percentage (%)

Degradation

- In the previous examples, it is assumed that 100% of the roof and ceiling tiles were at the end of their expected life cycles or damaged. The FAD also captures degradation costs for building systems which are still within life cycle (less than 100% used).
- The key component in calculating still within lifecycle repair cost is called the “percentage used” of the building system.
- If the system, by ageing, reaches end of lifecycle, the percentage used is 100%.
- For example, a roof that has a 20-year life expectancy, installed in 2013, would be considered 100% used at the end of the year 2033.

FCI – Repair Cost: Degradation Calculation

Calculating Percentage Used

- First calculate the age of the building system

$$\text{systemAge} = (\text{currentYear} - \text{yearInstalled})$$

- If the age of the building system is greater than the expected lifespan of that system then,

$$\text{percentageUsed} = 100\%$$

- If not,

$$\text{percentageUsed} = \frac{\text{systemAge}}{\text{systemLifespan}}$$

Example: B30-Roof (20 year expected lifespan) installed in 2013

$$\text{percentageUsed} = \frac{2023 - 2013}{20} = \frac{10}{20} = 50\%$$

FCI – Repair Cost: Renewal Percentage

Renewal Percentage - a multiplier used to adjust the cost of renewing a building system.

- Some building systems cost LESS to renew than to install the first time.
- Some building systems cost MORE to renew than to install for the first time

Examples:

- B30 – Roof: 1.2 – Incurring an additional 20% in repair cost associated with any movement of utilities or additional costs associated with replacing a roof.
- D2010 – Plumbing Fixtures: 1.0 – Simple one-to-one swap, if a plumbing fixture in a bathroom is inoperable. There is no need for any additional cost need to be incurred.

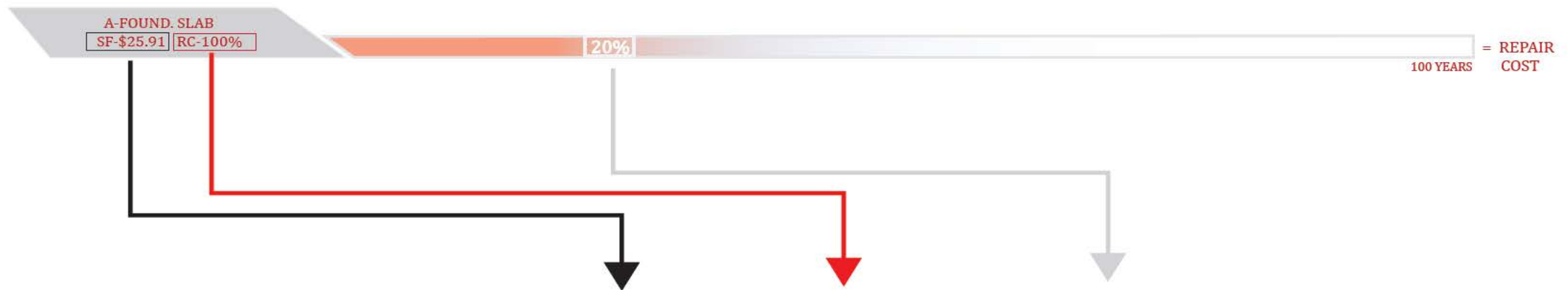
FCI – Repair Cost Calculated

- The FAD takes into consideration a host of different systems that can be present within any given school building
- There are three unique property types that dictate the systems available
 - Permanent
 - Portable
 - Site
- All systems have a unique cost per square foot and renewal percentage with percentage used being based upon current year and year installed
- System info is derived from ASTM UNIFORMAT II Standard E1557

| Property Type | | |
|---------------------------------------|--|--------------------------------|
| Permanent | Site | Portable |
| A- Found. Slab | G2020- Parking Lots | F1012-Pre Engineered Structure |
| B2010 - Exterior Walls | G2030 - Pedestrian Paving | |
| B2020 - Exterior Windows | G2041 - Fencing/Gates | |
| B2030 - Exterior Doors | D2047-Play Fields | |
| B30- Roof | G2052- Basketball Courts | |
| C10 - Int Door, Part, Stair Elevator | G2053-Running Track | |
| C1030 - Interior Walls | G2054-Tennis Courts | |
| C3010 - Wall Finishes | G2050 - Landscaping | |
| C3020 - Floor Finishes | G2055-Playground Equip | |
| C3030 - Ceiling Finishes | G3010 - Water Supply | |
| D2010 - Plumbing Fixtures | G3020-Sanitary Sewer | |
| D2020 - Water Distribution | G3030 - Storm Sewer | |
| D2030 - Drain, Waste, Vent | G3052 - Wells Heating / Cooling | |
| D3020 - Heat Generating Systems | G3060-Fuel Distribution | |
| D3030 - Cool Generating Systems | G4010 Electrical Distribution | |
| D3041 - Air Distribution | G4020-Site Lighting | |
| D3042 - Exhaust Ventilation Equipment | G4090- Other Site Electrical Utilities | |
| D3050- Rooftop Unitary A/C | G90-Site Specialties | |
| D3060 - HVAC Controls | | |
| D4010 - Fire Sprinklers | | |
| D5010 - Main Power /Emergency | | |
| D5020 - Lighting/Branch Circuits | | |
| D5037 - Fire Detection/Alarm | | |
| D5038 - Communication / Security | | |
| D5039 - Technology | | |
| D5090 - Other Electrical Systems | | |
| D5092 - Emergency Lighting | | |
| E1020 - Institutional Equipment | | |
| E1090 - Other Equipment | | |

FCI – Repair Cost Calculated Cont.

- Initial repair costs are calculated at the individual property system level
- Needed repairs or repair cost of a property is calculated as follows:
 - For each system present, the size, cost per square foot, renewal percentage and percentage used are all required fields.



EX: **REPAIR COST FOR SLAB**= (SYSTEM SF) x (SYSTEMS COST/SF) x (RENEWAL PERCENTAGE) x (PERCENTAGE USED)

- Each individual system repair cost is then aggregated within the property to sum up the entire property repair cost.
- Each properties repair cost is accumulated in the school's total repair cost.

New Mexico Condition Index (NMCI)

The NMCI is calculated from the base formula for FCI, but also includes the cost to correct deficiencies based on the NM Educational Adequacy Standards

$$NMCI = \frac{\text{Needed Repairs (\$)} + \text{Cost to Correct NM Adequacy Standards Deficiencies (\$)}}{\text{Replacement Value (\$)}}$$

New Mexico Educational Adequacy Standards

- The state has set standards that create requirements for spaces deemed necessary for educational delivery.
- An Educational Adequacy (EA) Standard deficiency exists when a facility fails to meet any established State Adequacy Standards.
- Formulas that represent each EA Standard are programmed.
- Deficiencies are automatically generated when the school fails to meet the EA standards required.
- Simply put, do you have enough square footage to support the enrollment?

New Mexico Educational Adequacy Standards: Calculations

- EA Standards require a specific amount of space.
- PSFA staff performs site assessment.
- Space utilization from site assessment entered in FAD
- FAD then subtracts required space from actual space measured.
- Result indicates if EA standard not met – if not, a dollar value is generated to be added to the numerator of the NMCI equation

Examples:

- Computer Lab Square Footage:
• $\text{GREATEST}(700, \langle\langle\text{enrollment}\rangle\rangle * 3)$
- Student Health Square Footage:
• $\text{GREATEST}(150, \langle\langle\text{enrollment}\rangle\rangle)$
- Physical Education Square Footage (HS):
• $(6500 + (\langle\langle\text{enrollment}\rangle\rangle * 1.5 * 4) + (150 * 2))$

Weighted New Mexico Condition Index (wNMCI)

- Recap,

$$\text{NMCI} = \frac{\text{FCI}(\text{all system Repair costs}) + \text{EA Standards Deficiencies}(\text{utilization})}{\text{Replacment Value} (\text{maximum repairCost of all systems})}$$

- Next, each deficiency is “weighted” in order to create prioritization
- Systems requiring immediate repair posing a health or safety threat will be weighted at the highest weight of 3.5 to ensure that those schools get treated with the greatest priority

Deficiency Categories and Associated Weight Factors

- Category Type #'s 1,2,3 and 5 are based on assessments / observations of the unique building systems.
- Category Type #'s 4 and 9 are determined automatically within FAD based on the current year and year of installation of the system.
- Category Type #'s 6 ,7 and 8 are associated with the EA ONLY. Determined based on the utilization of the space within the school in respect to the enrollment.

Deficiency Categories and Associated Weight Factors

System - Category Override

| Category Type # | Description | Applied Weight Factor |
|-----------------|--|-----------------------|
| 1 | Immediate Code/Life/Health Applied to a system exhibiting critical issues that pose immediate threats to life, health or safety of persons within the facility. Examples include: <ul style="list-style-type: none"> • Obvious friable asbestos; potential release into the air • Serious code violations such as blocked egress, improper fire detection/warning, electrical hazards, structural failures, emergency lighting • Inadequate cooling/heating/ventilation in educational spaces • No site security fencing | 3.5 |
| 2 | Degraded with Reduced Functionality Applied to a system exhibiting degradation due to age or use. Examples include: <ul style="list-style-type: none"> • Severely damaged walls, floor finishes and ceiling finishes | 1.5 |
| 3 | Mitigate Additional Damage Applied to a system exhibiting damage and/or degradation that is beyond repair and failure is imminent. The system requires significant repairs or replacement to prevent additional damage to the building or facility. Examples include: <ul style="list-style-type: none"> • Chronically leaking roofs | 2.0 |
| 5 | Grandfathered or State/District Recommended Applied to a system that contains code issues that are "grandfathered" or standards specific to the local agency or jurisdiction. Examples include: <ul style="list-style-type: none"> • Fire sprinkler systems, ADA improvements, etc. • Finishes, flooring type, architectural standards, etc. | 0.50 |

System - Age Based

| | | |
|---|---|-------|
| 4 | Beyond Expected Life Automatically applied to a system that is over 100% beyond expected BOMA life cycle, but exhibit no sign of immediate repair or replacement. | 0.625 |
| 9 | Normal/Within Life Cycle Automatically applied to a system that is within the projected lifecycle and does not exhibit degradation or need for replacement or repair. | 0.25 |

Educational Adequacy

| Category Type # | Description | Applied Weight Factor |
|-----------------|--|-----------------------|
| 6 | Facility Related Deficiencies Automatically applied when site related deficiencies are determined in respect to the statewide adequacy standards and are an inherent part of the facility. Examples include: <ul style="list-style-type: none"> • Insufficient parking • Insufficient bus drop offs | 1.0 |
| 7 | Space Related Deficiencies Automatically applied when interior space related deficiencies are determined in respect to the statewide adequacy standards and are an inherent part of the facility. Examples include: <ul style="list-style-type: none"> • Insufficient art, music, computer, career education, general classroom square footage, etc. • Insufficient core support areas needed to support mission critical space. | 3.0 |
| 8 | Equipment Related Deficiencies Automatically applied when the equipment within a facility does not meet statewide standards. Examples include: <ul style="list-style-type: none"> • Lack of playground equipment • Lack of chemical storage units | 0.50 |

Weighted New Mexico Condition Index (wNMCI) Cont.

wNMCI=

Category1-weightFactor(3.5)(systemsRepairCost)
+Category2-weightFactor(1.5)(systemsRepairCost)
+Category3-weightFactor(2.0)(systemsRepairCost)
+Category4-weightFactor(0.625)(systemsRepairCost)
+Category5-weightFactor(0.5)(systemsRepairCost)
+Category9-weightFactor(0.25)(systemsRepairCost)

+

Category6-weightFactor(1.0)(EAdeficiencyRepairCost)
+Category7-weightFactor(3.0)(EAdeficiencyRepairCost)
+Category8-weightFactor(0.50)(EAdeficiencyRepairCost)

Replacement Value

Updating the FAD

The database is continually updated four ways:

- By PSFA staff through on-site assessments.
- By district Facilities Master Plan vendors.
- By school district officials.
- As part of the plan review process in conjunction with the state Construction Industries Division (CID) before construction.

Prioritized Capital Funding

- The wNMCI enables the comparison of all K-12 public schools in the state to determine greatest need for funding the correction of school deficiencies.
- The current FAD dataset is then evaluated against the PSCOC/PSFA defined standards. A report from the FAD is then published yearly.
- Award criteria is subject to change.
- Commonly sorted by wNMCI from largest to smallest.

2020 - 2021 wNMCI Final Ranking, Sorted By Rank

| Rank | District | School | Grass Area (\$/ft ²) | wNMCI |
|------|----------|----------|----------------------------------|--------|
| 1 | Clark | Clark ES | 23,627 | 87.83% |
| 2 | Clark | Clark ES | 46,000 | 95.83% |
| 3 | Clark | Clark ES | 48,227 | 82.27% |
| 4 | Clark | Clark ES | 72,961 | 81.93% |
| 5 | Clark | Clark ES | 57,275 | 35.04% |
| 6 | Clark | Clark ES | 60,298 | 27.81% |
| 7 | Clark | Clark ES | 70,701 | 71.1% |
| 8 | Clark | Clark ES | 71,875 | 25.42% |
| 9 | Clark | Clark ES | 80,070 | 24.5% |
| 10 | Clark | Clark ES | 124,481 | 65.14% |
| 11 | Clark | Clark ES | 60,230 | 71.35% |
| 12 | Clark | Clark ES | 51,884 | 64.24% |
| 13 | Clark | Clark ES | 55,340 | 67.65% |
| 14 | Clark | Clark ES | 64,877 | 64.4% |
| 15 | Clark | Clark ES | 57,888 | 27.13% |
| 16 | Clark | Clark ES | 55,258 | 52.44% |
| 17 | Clark | Clark ES | 51,089 | 48.17% |
| 18 | Clark | Clark ES | 123,275 | 63.2% |
| 19 | Clark | Clark ES | 42,431 | 76.85% |
| 20 | Clark | Clark ES | 44,524 | 46.18% |
| 21 | Clark | Clark ES | 72,462 | 65.75% |
| 22 | Clark | Clark ES | 77,131 | 48.58% |
| 23 | Clark | Clark ES | 72,822 | 41.92% |
| 24 | Clark | Clark ES | 90,293 | 42.72% |
| 25 | Clark | Clark ES | 64,027 | 40.40% |
| 26 | Clark | Clark ES | 113,820 | 37.32% |
| 27 | Clark | Clark ES | 71,921 | 36.1% |
| 28 | Clark | Clark ES | 29,792 | 47.2% |
| 29 | Clark | Clark ES | 41,020 | 34.16% |
| 30 | Clark | Clark ES | 194,111 | 34.67% |
| 31 | Clark | Clark ES | 55,647 | 33.84% |
| 32 | Clark | Clark ES | 98,191 | 34.1% |
| 33 | Clark | Clark ES | 288,125 | 31.75% |
| 34 | Clark | Clark ES | 47,854 | 31.13% |
| 35 | Clark | Clark ES | 130,070 | 29.48% |
| 36 | Clark | Clark ES | 135,408 | 30.15% |
| 37 | Clark | Clark ES | 357,472 | 29.24% |
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| 45 | Clark | Clark ES | 64,760 | 64.14% |
| 46 | Clark | Clark ES | 51,810 | 44.92% |
| 47 | Clark | Clark ES | 245,360 | 33.55% |
| 48 | Clark | Clark ES | 36,401 | 44.4% |
| 49 | Clark | Clark ES | 41,991 | 21.55% |
| 50 | Clark | Clark ES | 250,313 | 46.27% |
| 51 | Clark | Clark ES | 70,404 | 42.98% |
| 52 | Clark | Clark ES | 23,728 | 42.95% |
| 53 | Clark | Clark ES | 49,670 | 50.64% |
| 54 | Clark | Clark ES | 346,810 | 37.1% |
| 55 | Clark | Clark ES | 61,872 | 85.48% |
| 56 | Clark | Clark ES | 31,804 | 71.7% |
| 57 | Clark | Clark ES | 62,311 | 25.54% |
| 58 | Clark | Clark ES | 30,694 | 29.2% |
| 59 | Clark | Clark ES | 54,481 | 28.15% |
| 60 | Clark | Clark ES | 60,226 | 27.34% |
| 61 | Clark | Clark ES | 64,744 | 27.6% |

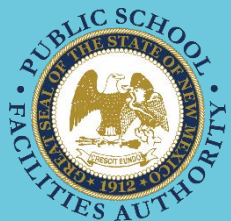
Schools with "00-000" rankings are projects that have received an award through a previous standards or systems-based award. The rank is formatted by award year, followed by the rank from that award cycle.

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