



Public School Facilities Assessment Database Ranking Methodology

State of New Mexico

Public School Facilities
Authority

1312 Basehart SE
Albuquerque, NM 87106

Phone: 505-843-6272
Chris Aguilar
Database Manager
E-mail:
CAguilar@nmpsfa.org



The public school Facilities Assessment Database (FAD) is the tool used to create standards based prioritization for funding public school facilities through the Public School Capital Outlay Council (PSCOC). This assessment database combines building repair cost & system life cycle analysis with New Mexico Educational Adequacy Standards to create the New Mexico Condition Index (NMCI). Weight factors are then applied to create the Weighted New Mexico Condition Index (wNMCI). This index enables the comparison of all the public schools in the state to determine greatest need for funding the correction of school deficiencies. This list is ultimately sorted so that a ranking can be generated identifying greatest capital need.

The ranked list will display the schools in most need of repair or replacement, at the top of the list, sorted by wNMCI. Every year the state will work down from the top of the list and fund needs as available revenues allow. Once corrected, the school drops to the bottom of the ranked list, and lower level needs accordingly move up in priority.

The Facilities Assessment Database (FAD) incorporates facility data for all New Mexico public schools and is updated throughout the year via field assessments, master plan updates, and district stakeholder exchange. School districts are asked to review their facility data and send updated information to the Public School Facilities Authority (PSFA). PSFA is responsible for warehousing the facility information in the database.

“Systems requiring immediate repair posing a health or safety threat will be weighted at the highest weight”

Facility Condition Index: FCI

By tracking building repair cost & system life cycle data within a certain school we are able to score the school using the industry standard concept of the Facility Condition Index (FCI).

The Facility Condition Index (FCI) is the tool commonly used in rating buildings and how these buildings compare to others. It is a ratio of needed repairs (including life cycle renewal requirements) divided by replacement value.

$$FCI = \frac{\text{Needed Repairs (\$)}}{\text{Replacement Value (\$)}}$$

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.

New Mexico Condition Index (NMCI):

$$NMCI = \frac{\begin{array}{c} \text{Needed Repairs (\$)} \\ + \\ \text{Cost to correct NM Adequacy} \\ \text{Standards Deficiencies (\$)} \end{array}}{\text{Replacement Value (\$)}}$$

Weighted New Mexico Condition Index: wNMCI

The NMCI is calculated from the base formula for FCI but takes into account the cost to correct NM Adequacy Standard Deficiencies. And beyond that, 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.

$$wNMCI = \frac{\begin{array}{c} (\text{Category 1} \times 3.5) + (\text{Category 2} \times 1.5) + \\ (\text{Category 3} \times 2.0) + (\text{Category 4} \times 0.25) + \\ (\text{Category 5} \times 0.5) + (\text{Category 6} \times 1.0) + \\ (\text{Category 7} \times 3.0) + (\text{Category 8} \times 0.5) + \\ (\text{Category 9} \times 0.25) \end{array}}{\text{Replacement Value (\$)}}$$

Schools are assessed using standard assessment surveys and criteria for categorizing deficiencies.

Life Cycle Analysis

Data is collected and entered into FAD which executes a life cycle analysis, and compares a school's attributes to determine whether a school is deficient with regards to New Mexico Educational Adequacy Standards.

Through this process, the database sorts deficiencies into two major groups:

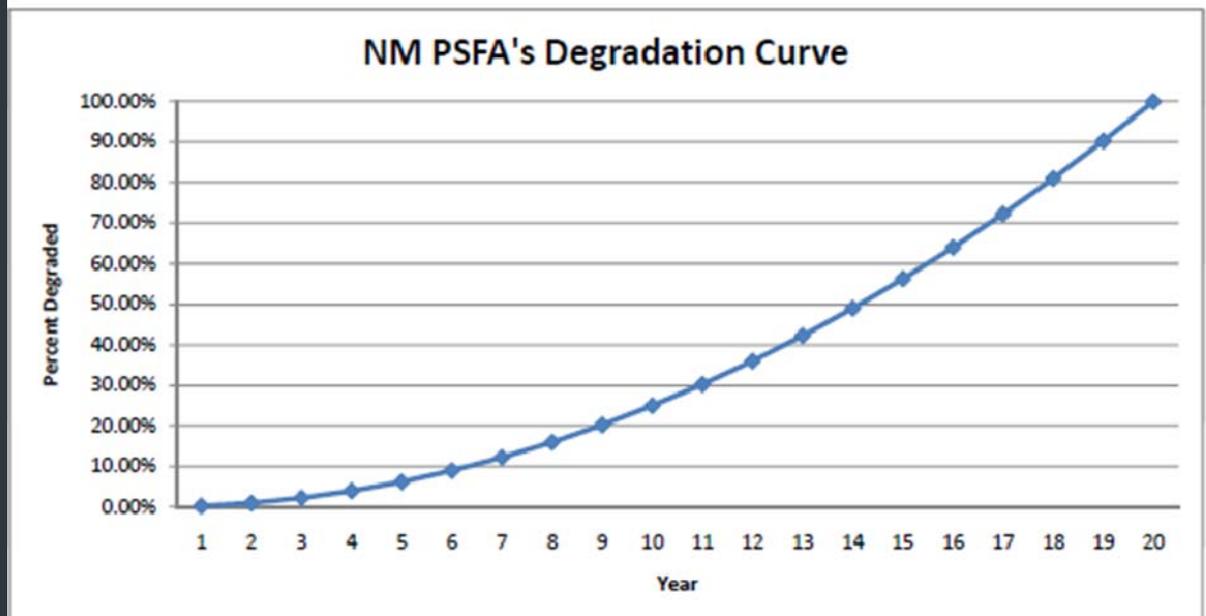
1. Life cycle renewal requirements

A life-cycle renewal requirement exists when a system, is in use beyond the recommended life of the item. Each building system is assessed against the original install or last renovation date to determine the percent-used based on BOMA system lifespan. For example, a roof that has a 20-year life expectancy, installed in 1984, would be considered 100% used in the year of 2005. A life cycle renewal requirement is recognized even though the system or equipment may still be functioning effectively. If determined to not be functioning effectively the deficiency is placed into a higher weighted category which assists in allowing us to organize high-priority projects

The FAD also captures degradation costs for building systems which are less than 100% used (still within normal life cycle.) The deterioration in quality, level, or standard of performance of a functional unit is taken into account through the equation:

$$\text{Percent Degraded} = \frac{(\text{Current age of system})^2}{(\text{System Expected Life})^2}$$

This is demonstrated through the following degradation curve:



Schools are assessed using standard assessment surveys and criteria for categorizing deficiencies.

Life Cycle Analysis, continued

2. New Mexico Adequacy Standard Deficiencies:

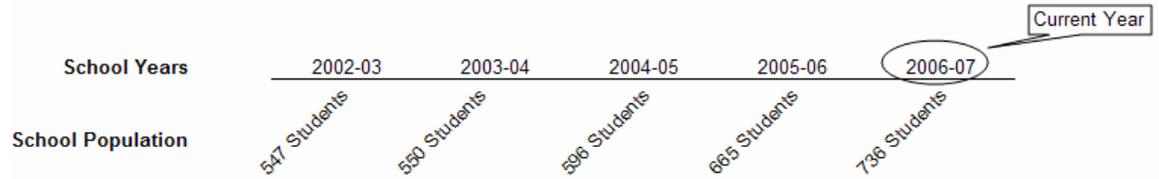
A NM Adequacy Standard deficiency exists when a facility fails to meet any established State Adequacy Standard. Formulas that represent each NM Adequacy Standard are input into the database so that deficiencies are automatically generated when the school fails to meet the standards required to serve its existing school population. In addition, when a school is determined to be over capacity and there is a trend of population growth, an additional Growth Factor is used as a multiplier against the school's current population to determine potential space needs 5-years-out.

The following list shows a few, of the many, data elements that are used in formulas to calculate whether a school meets NM Adequacy Standards.

- ◆ Admin Net Square Footage
- ◆ Art & Music Net Square Footage
- ◆ Computer Lab Net Square Footage
- ◆ General Classroom Net Square Footage
- ◆ Growth Factor
- ◆ Media Center Space
- ◆ Number of Classrooms
- ◆ Number of Students
- ◆ Physical Education Space
- ◆ Science Classroom Net Square Footage

Growth Factor

Example: The timeline below illustrates a change in population over a 5-year period. Student population increased from 547 students in School Year (SY) 2002-03 to 736 students in SY 2006-07, with an average increase of 7.79% per year



Assuming this same trend will continue for the next 5-year period, it can be predicted that this school will have a population of 1,071 students in the SY of 2011-12.

$$(1 + R)^5 \text{ Where } R = \text{Average Yearly Change of Growth Rate}$$

To find the average yearly change of growth rate for the past five years:

$$R = \frac{\Delta Y_2 + \Delta Y_3 + \Delta Y_4 + \Delta Y_5}{4}$$

$$R = \frac{31.16\%}{4} = 7.79\%$$

$$\text{Growth Factor} = (1 + .0779)^5 = 1.455$$

An increase in population from 736 students in SY 2006-07 to 1,071 students in SY 2011-12 will result in a 5-year percent-increase of 45.5%, which translates to a Growth Factor (GF) of 1.455

In the Facilities Assessment Database, each school is assigned a Growth Factor*. This factor acts as a multiplier against a school's current population to determine potential space needs, 5-years-out. In this particular example the school will be assigned a Growth Factor of 1.455. By multiplying this Growth Factor against school's current population we are able to arrive at an Expected Population.

$$\text{Expected Population} = \text{Current Population} \times \text{Growth Factor}$$

$$= 736 \times 1.455 = 1,071 \text{ Students}$$

When the school's current square footage fails to meet adequacy standards for the newly calculated Expected Population, Type 7 Space Deficiencies are generated in the database, which have an additional weight factor of 3.0

*Schools that have a declining student population or a 0% increase will be assigned a growth factor of 1.0, signifying no growth; thus Expected Population is equal to the current-year population. In addition, when there is a sudden percent increases or decrease in a school's population causing a large difference in the growth factor from year to year, the growth factor is validated against the Cohort Survival Projection Method and manual adjustments may be appropriate

A school's Growth Factor is calculated by taking a school's historical five year average population rate change and applying that average yearly rate change over the next 5 years.

Deficiency Categories and Associated Weight Factors

Category Type #	Description	Weight Factor
1	<p>Adequacy – Immediate Code/Life/Health Used only for critical issues that pose immediate threats to the life, health or safety of persons within the facility. Examples include:</p> <ul style="list-style-type: none"> ♦ Obvious friable asbestos; potential release into the air. ♦ Unprotected exit corridors. ♦ Serious code violations such as blocked egress, improper fire detection/warning, electrical hazards, structural failures, emergency lighting, 	3.5
2	<p>Degraded w/ Potential Mission Impact: Assigned to systems or deficiencies that are mission critical and beyond useful life or most systems that are above 200% beyond expected life. Examples include:</p> <ul style="list-style-type: none"> ♦ Fire alarm/detection systems whose age is above 200% of the life cycle. Any system that is in serious disrepair or where failure is imminent ♦ Severely damaged walls, floors, and ceilings. ♦ Most systems that are greater than 200% of the BOMA life expectancy. 	1.5
3	<p>Mitigate Addition Damage: Assigned to systems or deficiencies that should be repaired to mitigate additional damage. Examples include:</p> <ul style="list-style-type: none"> ♦ Roofs that are leaking. ♦ Exterior walls, doors, window systems that chronically leak. ♦ Inadequate ventilation systems that could result in moisture damage or mold creation. 	2.0
4	<p>Beyond Expected Life: Assigned to systems or deficiencies that are 100% -200% beyond expected BOMA life cycle, but exhibit no signs of immediate repair requirements. Examples include:</p> <ul style="list-style-type: none"> ♦ Electrical service equipment that is 110% of the expected BOMA life yet is functioning well. ♦ Most interior finishes not severely damaged, torn, etc. ♦ Expired portable buildings 	0.25
5	<p>Grandfathered or State/District Recommended: Assigned to systems or deficiencies that are code issues that are “grandfathered” or standards specific to the local agency or jurisdiction. Examples include:</p> <ul style="list-style-type: none"> ♦ Fire sprinkler systems, ADA improvements, etc. ♦ Finishes, flooring type, architectural standards, etc. 	0.50
6	<p>Adequacy – Facility Related: Assigned to systems or deficiencies that are determined to be related to the adequacy standards and are an inherent part of the facility. Examples include:</p> <ul style="list-style-type: none"> ♦ ADA issues (readily achievable). ♦ Insufficient parking. ♦ Wiring for LAN, CATV or internet. ♦ Fixed equipment such as lab stations, etc. 	1.0
7	<p>Adequacy – Space Related: Assigned to systems or deficiencies that are determined to be related to the adequacy standards and are inherent part of the facility. Examples include:</p> <ul style="list-style-type: none"> ♦ Additional classroom, career education, lab space, etc. ♦ Core support areas needed to support mission critical space. 	3.0
8	<p>Adequacy – Equipment: Assigned where schools do not meet state adequacy standards for non-fixed equipment. Examples include:</p> <ul style="list-style-type: none"> ♦ No projection screens. ♦ Insufficient number of computers. ♦ Playground equipment. 	0.50
9	<p>Normal / Within Life Cycle: Assigned to systems by default in the FAD database that is within its projected or estimated useful life cycle and does not need replacement. This category will have money allocated to it as building systems age.</p>	0.25