Public School Maintenance Strategies

Presentation to Public School Capital Outlay Oversight Task Force

July 9, 2021

Jonathan Chamblin, PSFA Executive Director

Larry P. Tillotson, PSFA Maintenance and Operations Support Manager

Hand-outs:

- Current NM Maintenance Performance Dashboard F6, March 30, 2021
- Maintenance Definitions and Terminology – last page
- FMAR Performance Characteristics 2021

Scale of NM Public School Infrastructure

- **89 NM** school districts / 2 constitutional schools.
- **96** charter schools – district and state.
- **65+** Million square feet of facilities.
- **900** + Buildings / Assets.
- Approximate replacement value **$19.5 billion.**
- NM continues to support improving the public school infrastructure through capital renewal investments, Facility Assessments and proven maintenance strategies.
- Maintenance is critical factor in maintaining those assets.

Maintenance Matters

- "***Pay me now or pay me later***"
- "***An ounce of prevention is worth a pound of cure.***"
- The condition of our school facilities matters.
- Well maintained facilities have a positive impact on educational environments:
  - test results.
  - student and teacher morale.
  - behavior and pride.
- Good maintenance:
  - streamlines operational dollars and efficiencies.
  - protects capital investments.
  - reduces the Facility Condition Index score.

COVID - 19 Pandemic (Impact)

The rapid spread of COVID-19 in 2020 brought with it unprecedented issues, and NM had to take extraordinary steps to mitigate the spread of the virus while protecting communities, economies and public and private industries, including the Public School Infrastructure. It would be hard to identify an aspect of life inside or outside of state capitols that was left untouched or upended by the pandemic.

Challenges included:

- Availability of resources and supplies – MERV-13 filters, cleaning supplies, PPE, staff levels reduced.
- IAQ systems were stressed.
- Reconfiguring of educational space.
- Temporary structures to mitigate the spread of the virus.
- Work loads increased. Staffing was reduced.
- Day to day operations were impacted and performance declined – statewide.

COVID - 19 Pandemic (Impact)

The Positive:

- Maintenance, IAQ, Safety and cleaning protocols were pushed to the forefront of importance.
- CARES Act Funding – laying the foundation for a strong and equitable recovery.
- Advanced cleaning protocols, better more effective products.
- Advanced HVAC systems. Indoor air quality is improving.
- Collaboration, outreach and sharing of resources has improved.
- NM school districts are rebounding.

Statewide Improvements

- Improved the Preventive Maintenance (PM) Plan template and compliance rate of districts plans. **Impacted by COVID.**
- Improved Educational Platforms for Public School Facility Managers positively impacting facility conditions. **Impacted by COVID.**
- Improved the use of the state provided FIMS tools and resources. **Impacted by COVID.**
- Developed and implemented a powerful assessment tool to measure maintenance performance – FMAR.
- Improved Overall Maintenance Performance to a 70% or better using the FMAR as a measure. **Impacted by COVID.**

PSFA's Maintenance Assessment History & Evolution

The PSCOC/PSFA wants to know, as do school boards, if a dedicated level of maintenance investment in existing, new or renovated schools would achieve their expected system life-span and a higher level of educational performance.

- 2010 - PSFA developed the Facility Maintenance Assessment Report (FMAR*) as the tool to measure a schools performance.
- 3 FMAR Cycles:
  - **Baseline Cycle:** 2011-2015 (2015 annual report)
  - **Cycle 2:** 2015-2017
  - **Cycle 3:** F6 May 2017-current

FMAR Defined

- The Facility Maintenance Assessment Report (FMAR) is a process tool used by the Public School Facility Authority (PSFA) to evaluate NM school facilities conditions / appearance and determine and verify the implementation level of an effective maintenance management program.
- The results (feedback report) are used to establish a benchmark for the individual schools/districts maintenance programs in an effort towards continuous improvements and implementation of cost effective maintenance strategies.
- During the FMAR review, life, safety, health or property damage may be identified (deficiencies).
- FMAR findings can also be used to determine deferred maintenance and/or capital renewal needs. These identifiers should be considered for inclusion into the districts long range capital planning (FMP).

FMAR Score Elements and Process

80% - Facility Maintenance Assessment Performed by PSFA

- **Exterior Site: (**Roadway/Parking, Site Utilities, Playground Athletic Fields, Site Drainage, Sidewalks, Grounds)
- **Building Exterior: (**Windows / Caulking, Walls / Finishes, Entry / Exterior Doors, Roof / Flashing / Gutters)
- **Building Interior: (**Walls / Floors / Ceilings / Stairs, Interior Doors, Restrooms, Housekeeping)
- **Building Equipment & Systems: (**Electrical Distribution, Lighting, Fire Protection Systems, Equipment Rooms, Heating / Cooling and Ventilation (HVAC), Air Filters, Kitchen Equipment and Refrigeration, Plumbing / Water Heaters) and;

20% PM Plan & FIMS Performance

- **Maintenance Management: 20%:** Preventive Maintenance Plan categories (staff development plan, maintenance safety plan, maintenance contract oversight plan, Facility Master Plan, energy management**),** and
- **Use of Facility Information Management software**

→ **Final Report**

Poor (0-59.9%)-----Marginal (60.0-69.9%)----**Satisfactory (70.0-79.9%)**-----Good (80.0-89.9%)-----Outstanding (90.0-100%)

Why a 70%?

70% Satisfactory Performance Rating

- Through continued data analysis, industry standards and comparisons, a 70% Satisfactory performance rating recognizes a level of maintenance management that is balanced with both reactive and preventive maintenance efforts, sufficient to meet expected system life cycles with a medium amount of deferred maintenance, that is manageable through capital renewal efforts.

FMAR
Baseline Story
2011-2015

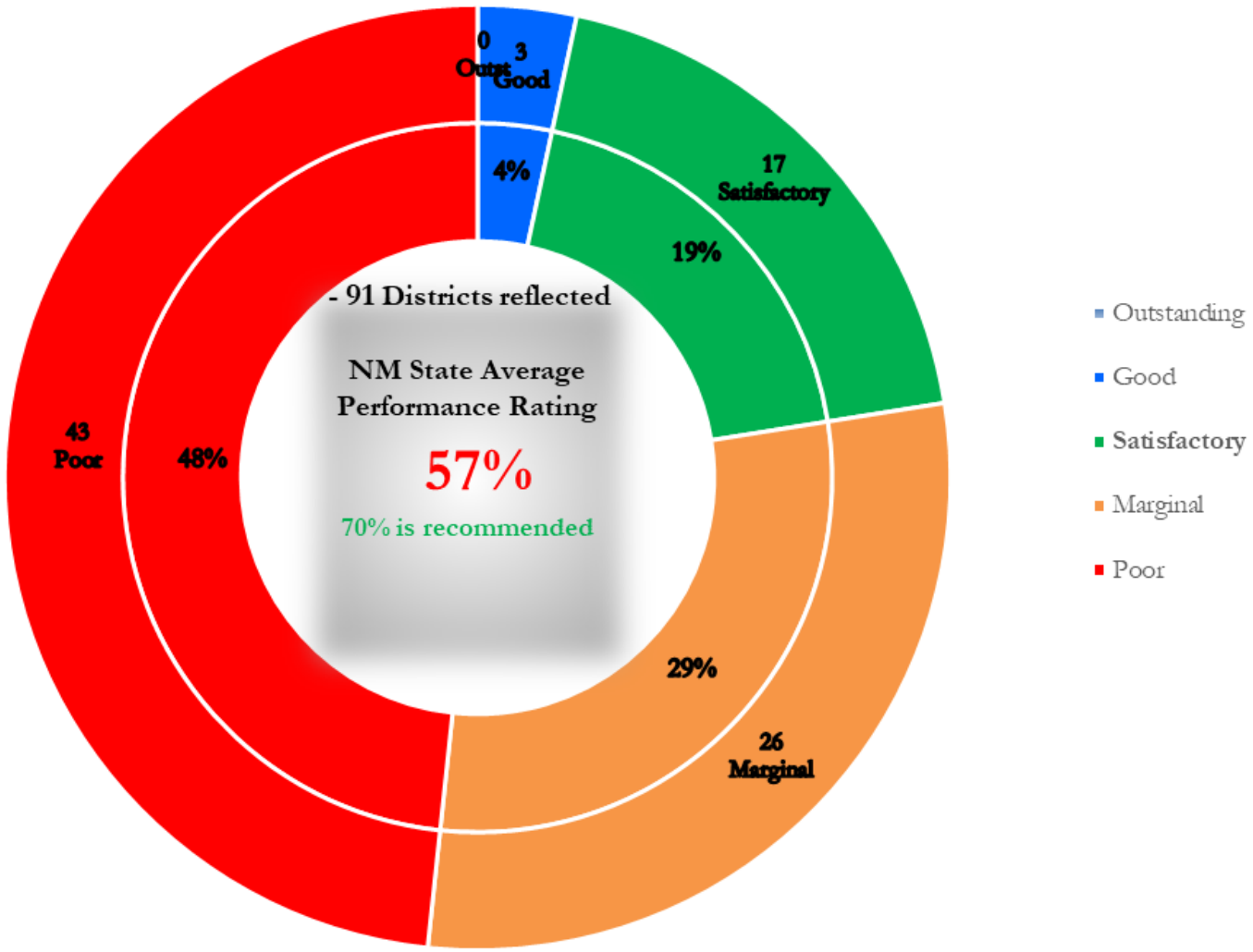
FMAR 5Y Baseline 2011-2015 (Cycle 1):

57% Statewide Average FMAR score

POOR

- **78%** of NM schools were maintaining their facilities to less than Satisfactory levels
- Many life, health, and safety issues
- Building systems were projected to fail prior to reaching recommended life cycles
- Increased capital to replace building assets
- Only **22%** of NM schools were expected to achieve their system life cycles.

2015 FMAR Performance Statistics



The first FMAR cycle ***(2011-2015; 2015 PSCOC/PSFA annual report),*** recognized 78% of NM schools were projected to achieve less than expected system life cycles negatively impacting the educational environment and performance. Only 22% of NM Schools were expected to achieve expected system life cycles.

Factors Contributing to Low Performance

2015 Analysis of low performance

District Leadership, Superintendents, Principals, maintenance and custodial staff, SME's

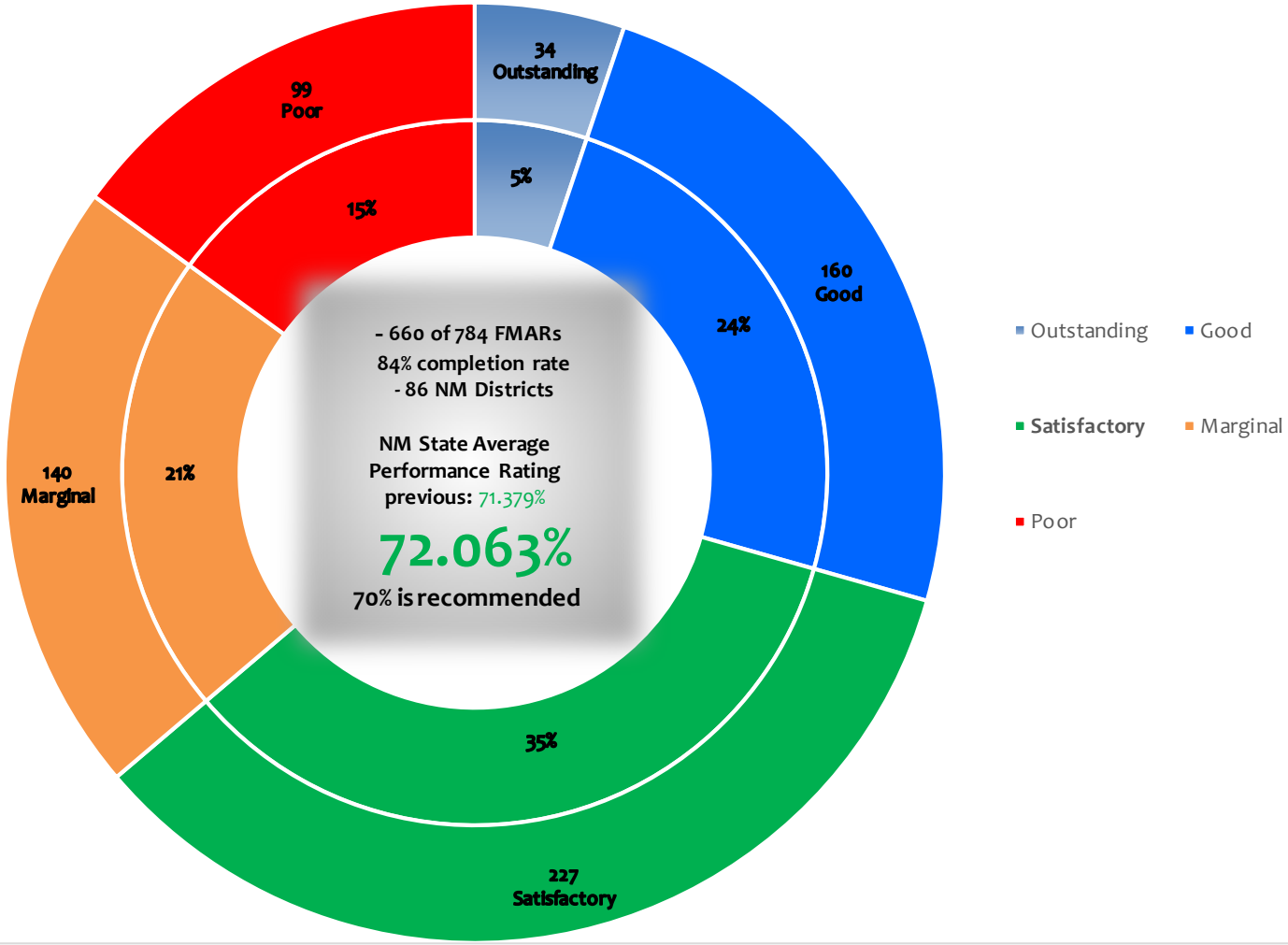
PEOPLE	METHODS	MONEY	HARDWARE
Leadership & Turnover	Reactive Maintenance	Maintenance Cost Codes	Outdated Equipment and Systems
Communication	Lack of Commitment	Insufficient Reporting	Ageing Facilities
Facility Knowledge	Lack of Training Programs	Distance to School Sites	Technology
Staffing Levels	Deferred Maintenance	Short Term Planning	Weather/Climate
Staff Competency	Informal Process	Salaries	Overcomplicating
Commitment	Excess Square Feet	Lack of Planning/Funding	Resources

Red: Solutions still needed

Green: Solutions identified and implemented

2021 FMAR Performance Statistics

(May 1, 2017 to March 30, 2021)



As compared to the first FMAR cycle, the 3rd FMAR F6 cycle recognizes a significant improvement in statewide performance supporting quality educational environments. By driving a performance rating of Satisfactory or above, many districts are projected to meet and/or extend their system life cycles beyond manufacturer recommendations.

NM Public Schools Today

- Recent FMAR scores recognize a significant improvement in statewide performance supporting quality educational environments.
- Many districts are projected to meet and/or extend their building system life-cycles through improved and efficient maintenance performance levels.

NM Public Schools Maintenance Today

Current FMAR Scoring Trends:

72% Statewide Average FMAR Score

Satisfactory

- **36%** of NM Schools are projected to achieve less than expected system life expectancy (poor & marginal performance – previously 78%). **These districts remain a PSFA focus area for improvements through outreach efforts. Tools and resources are available to these districts to improve performance through formal means (PM Planning, FIMS, Staffing Levels, FMAR etc.).**
- **64%** of NM Schools are projected to achieve expected system life cycles with many more driving performance to a level that will extend their system life cycles (satisfactory, good and outstanding performance – previously 22%).
  - **35%** - will achieve their expected system life cycles (satisfactory).
  - **24%** - will extend their system life cycles 10-15% longer (good performance).
  - **5%** - will extend their system life cycles 15-20% longer (outstanding performance).

NM Public School Maintenance Today

- Through improved definitions, performance metrics, continued data collection and analysis, combined with industry standards, district outreach, **the 60-day response process** and training advancements the FMAR articulates that facility conditions, including extending the life of facility systems do improve with a dedicated maintenance investment and improved level of awareness (***attachment – FMAR Performance and Maintenance Characteristics 2021***)

District Case Study "A"

District "A" – Poor Maintenance

- **May 2019:** Fire Marshall visit resulted in serious compliance issues prompting immediate action.
- **June 2019:** FMAR assessment validated poor performance with many life, health, safety and property damage issues with a rating of 45.407%.
  - **Cause**: determined a lack of maintenance, PM Plan not current, no FIMS use, staffing levels and skillsets not effective.
  - **Deferred Maintenance**: High.
  - **Facility Conditions**: Poor.
  - **Financial Impact**: Two-fold.
    - Short Term: Low maintenance costs as no dedicated maintenance was occurring.
    - Long term: critical systems failed prematurely prompting reactionary action and a high financial impact to the district.
  - **System Life Cycles:** Not met.
  - Prompted urgent need to change through PM planning and a formal management of maintenance programs.
- **January 2021:** PSFA assessment documented maintenance performance and facility condition improvements.
  - 88.146% FMAR score: Good performance.

District Case Study "B"

District "B" – Outstanding Maintenance

- **March 2019:** FMAR assessment validated Outstanding performance with no life, health, safety or property damage issues with a rating of 95.157%.
  - **Cause**: Dedicated maintenance, PM Plan historically current. Power user of FIMS. Staffing levels and skillsets supported above the recommended benchmark.
  - **Deferred Maintenance**: Very Low.
  - **Facility Conditions**: Good to Outstanding.
  - **Financial Impact**: Streamlined and reduced costs.
    - Short Term: Balanced maintenance costs and efficiencies.
    - Long term: Reliable working systems through proactive actions and a well balanced financial impact to the district.
  - **System Life Cycles:** Building systems will exceed full, expected life-span.
  - Consistent dedication to maintenance extends life of facility systems, reduces costs, improves system reliability and staff performance supporting quality learning environments.
- District consistently achieves greater than 90% FMAR scores.

Scope of NM Public Schools

- 65 M SF of public school property / 900 + buildings.
- Approximate replacement value **$19.5 billion.**
- PSCOC continues to invest state funding for new school construction and capital renewal projects.
- Over the past 18 years, from FY02 to FY19, the combined spending and investments for public school capital renewal totaled nearly $2.6B ($2,576,145,742).
- 2013 performing district review indicated a benchmark value of $7.59/ft^2 supporting a quality maintenance program. (**2013 PSFA annual report**).

How much did NM districts spend on maintenance?

- Analysis of FY17/18 PED data, based on self-reported budgets and expenditures for each NM school district, used to determine how much New Mexico school districts spent on maintenance and operations (M&O):
  - M&O spending per square foot from as low as $2.59/SF to as high as $12.28/SF
  - Mid-range average spend was $6.39/SF.
- A broader spending range of $5.50 to $8.00/SF is recommended to support a quality maintenance program with an additional "size of school" factored in.

District Size	District Total Gross Square Feet	Cost Range ($/SF)	Average Cost ($/SF)
Extra Small	Less than 120,000 GSF	$4.62 - 5.64	$5.13
Small	120,000 to 300,000 GSF	$5.52 – 6.74	$6.13
Medium	300,000 to 800,000 GSF	$5.74 – 7.02	$6.38
Large	More than 800,000 GSF	$5.99 – 7.33	$6.66

Industry Standards on M&O spending

- *In November of 2016, the 21st Century School Fund, The National Council on School Facilities,* and *The Center for Green Schools Association published a comprehensive nationwide study on America's K-12 Facilities called the "State of our Schools". This report analyzed the impact that facilities have on student and staff learning, health and finances. The report further analyzed spending investments in maintenance and capital renewal in addition to providing recommendations on spending and budget guidelines, how these investments impact communities equitability and that K-12 Facilities Matter.*

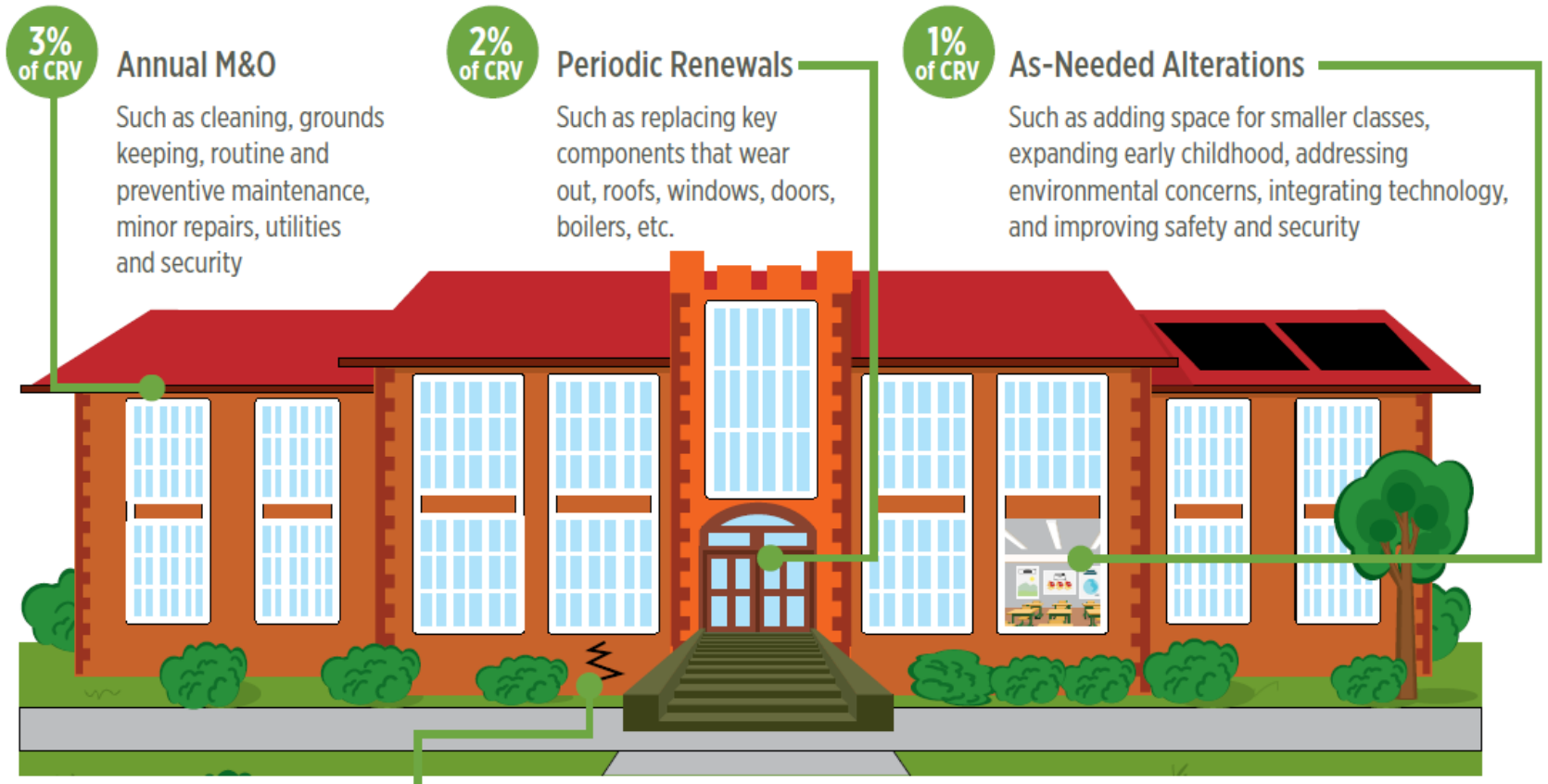
- The comprehensive report, of which New Mexico participated in, states, ***"a large and growing body of evidence demonstrates that school facilities have a direct impact on student learning, student and staff health and school finances. But too many students attend school facilities that fall short of providing 21st century learning environments because essential maintenance and capital improvements are underfunded."***

Modern Standards for Maintenance and Capital Renewal

21st Century School Fund, The National Council on School Facilities and *The Center for Green Schools Association*

Modern Standards for Maintaining and Upgrading Current K–12 Public School Facilities

The following proposed national standards for school facilities are based on building industry best practice. The percentages refer to the percentage of facilities' current replacement value that should be invested annually to maintain school buildings in good condition. Local conditions will vary. For example, school facilities in very poor condition will need more than 1 percent a year toward their deferred maintenance. But in general, if communities have stable funding at these levels, they should be able to deliver healthy, safe, educationally appropriate, and environmentally sustainable school facilities.



How much should districts spend on maintenance?

- The 2016 report recommends that an appropriate total budget allocation for routine maintenance and capital renewal efforts for K-12 is in the range of 3% to 4% of the aggregate current replacement value (CRV) of those facilities.

  - **Annual M&O Budget: 3-4% of the CRV** (cleaning, grounds, preventive & reactive maintenance, minor repairs, utilities and security)
  - **Periodic Renewals: 2% of the CRV** - (components that wear out such as roofs, windows, doors, boilers etc.)
  - **As-Needed Alterations: 1% of the CRV -(**adding space for smaller classes, expanding early childhood, addressing environmental concerns, technology, improving safety & security**)**
  - **Deferred Maintenance**: **1% of the CR**V - (making up for delayed M&O, renewals and alterations)

- ***Current Replacement Value*** *(CRV): The amount ($) required to reproduce a facility in like kind and materials at one time in accordance with current market prices for materials and labor.*
- ***Deferred Maintenance:*** *Maintenance, system upgrades, or repairs that were deferred to a future budget cycle or postponed until funding was available.*

How much should districts spend
vs.
How much districts actually spent

- Using industry standards adapted to K-12 public schools, PSFA estimates that of the $19.5B in public school assets (CRV), New Mexico districts should be spending approximately $585 million (3% of Current Replacement Value, CRV) per year to maintain and operate the public school asset (plus an additional 1-2% in capital renewal efforts, more if facilities are not progressively maintained) to renew facilities so that they provide healthy and safe learning environments for students and teachers.
- For Maintenance, New Mexico spent:
  - $388,116,957 (66.4%) , short $196,883,043 (33.6%).

Strategic Planning to Achieve Better Maintenance Performance

- **Current improvements to PSFA's FMAR process:**
  - District portal access & assessment picture viewing.
  - Enhanced FMAR Criteria.
  - **60 Day response process – Opportunity for Improvement.**

- **Focused effort on the Marginal to Poor performers.**
- **NMPFMA (2021)** NM organization supporting public school facilities maintenance staff training programs.
  - Collaboration with NM Public School Insurance Authority (NMPSIA), Cooperative Educational Services (CES), PSFA and others.
  - Continuing to advanced the Facility Masters training programs:
    - maintenance, safe school planning, grounds, custodial, life safety, OSHA training, security…

- Preventive Maintenance Plan best practice template - "**Core Maintenance**" infrastructure, formal and best practice method proven to advance maintenance performance for NM Public Schools:
  - Incorporates measurable performance metrics and other goals.
  - Industry standard guidelines and Standard Operating Procedures.
  - Considered a best practice, a quality model recognized nationwide.

Strategic Planning Next Steps

- Continue the FMAR Process advancing education platforms and data driven solutions driving maintenance effectiveness.
  - Automated PM Plan reminders.
  - Educational whitepapers for each maintenance category.
- Encourage realistic staffing models (maintenance, custodial and grounds).
- Advance training programs supporting the skillsets of facilities staff.
- Collaboration with Construction Industries Division (CID) to define what systems maintenance staff can provide repairs on in a safe manner supporting the educational environments.
- Encourage the development of energy management programs to reduce energy consumption and reduce costs.
- Continue to analyze NM spend data - develop realistic budgets and best practices to reduce costs, improve efficiencies, extending system life cycles.
- Collaborate across state agencies having a larger impact.

Conclusion

- The FMAR indicates many school districts have made significant improvements to their maintenance programs and facility conditions through the FMAR Response Process, enhanced training, better planning and use of the Facility Information Management System.
- Through PSCOC and district funding partnerships, the State's Facility Condition Index score (FCI score) is improving.
- Budgets are tight - Reduced capital dollars make maintenance efforts more critical than ever. Continue to research and provide resources to impact maintenance performance.
- Core maintenance efforts are critical to protecting our ever-increasing public school investments.
- Improving maintenance performance by focusing on preventive versus reactive maintenance, with a focus on data-driven processes, will greatly improve NM K-12 educational environments, ultimately improving student and teacher performance.

Maintenance Terminology and Definitions

Current Replacement Value (CRV): The amount ($) required to reproduce a facility in like kind and materials at one time in accordance with current market prices for materials and labor.

Deferred Maintenance: Maintenance, system upgrades, or repairs that were deferred to a future budget cycle or postponed until funding was available.

Equipment Life: Span of time over which building systems and equipment is expected to fulfill its intended purpose. Life Cycle

FIMS - Facility Information Management System: a Computerized Maintenance Management Software System provided to NM Public Schools and statute driven.

- **Maintenance Direct**: module that documents and manages the entire reactive maintenance work order process from request to completion, to include expenditures and provides for data analysis and reports.
- **Preventive Maintenance Direct**: module that assists in creating, scheduling, assigning and managing recurring preventive maintenance tasks for district facility equipment. This module documents and manages the entire preventive reactive maintenance work order process from request to completion, to include expenditures and provides for data analysis and reports.
- **Utility Direct**: module used to track and analyze utility consumption and costs to identify savings opportunities leading to the development or enhancement of effective energy management programs.

CMMS - Computerized Maintenance Management System/Software: Software to assist with the effective and efficient management of maintenance activities that analyzes and collects actionable facility data which teams can use to more effectively manage assets and perform maintenance and cleaning tasks. It generally includes elements such as a computerized Work Order system, as well as functions for scheduling Routine, Preventive Maintenance and custodial tasks.

FCI - Facility Condition Index: The ratio of needed repairs, including life cycle renewal requirements, divided by the replacement value.

FMAR 60-Day Response Process: A 60-day window whereby districts can respond to deficiencies and unfavorable findings using the Facility Information Management System (FIMS) or PM through Planning efforts identified on their Facility Maintenance Reports.

PM - Preventive Maintenance Plan: A structured document that describes the management of all activities that determine the maintenance objectives, responsibilities, processes such as; work orders, PM (preventive maintenance) initiatives, contractor oversight, facility equipment inventory, and provides inputs to the FMP as capital needs are identified in the field on a real time basis. Improvements and change is continual and encompass methods in the organization, including economic, environmental and safety & security aspects. This document is statute driven and required to be updated annually.

Primary Source of Definitions: NMPSFA: The Facility Management Definitions and Acronym Guide 2021