



Energizing Education



...it's about kids!



ALBUQUERQUE PUBLIC SCHOOLS
Maintenance and Operations

YEAR END REPORT
MAINTENANCE AND OPERATIONS
Albuquerque Public Schools

Fiscal Year
2015



ALBUQUERQUE PUBLIC SCHOOLS

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ALBUQUERQUE PUBLIC SCHOOLS



Mission Statement, Synopsis, and Opening Statement



- Mission Statement
- Synopsis
- Opening Statement by John Dufay
- Schools are STILL fundamental to kids' development
- M&O is continually adapting in servicing evolving school facilities moving into 21st Century
- We're not just schools anymore
- Cost recovery program implemented
- An empowered community helps!
- 2014-15 was groundbreaking year in advancing data and information management
- M&O employees are important and vital to supporting education

Overview of Maintenance and Operations



- Maintenance Direct is key to effectual work order management
- Work order history 2007 – 2015
- Budget history 2007 – 2015
- Expenditures per high school cluster 2007 – 2015
- Eight service departments drive M&O

Initiatives and Division Highlights



- Healthy worksite assessment conducted and M&O wellness initiative launched
- APS' Camp Gallagher resurrected
- Executive Director honored to serve on review of public school systems' team
- PSFA is a valued resource in APS maintenance management
- Total maintenance costs down – a first!
- APS' Preventive Maintenance Program 2007 – 2015
- Schools' maintenance costs down – another first!
- M&O School Site Expenses 2007 – 2015
- Schools and M&O tighten work order paperwork processing
- Progress made in tackling deferred maintenance
- Technicians issued and trained on handheld electronic tablets
- Utility costs under budget for second consecutive year
- APS' M&O continues to rank in top 5% by the CGCS's annual survey
- Graffiti occurrences down but force of destruction has intensified
- Vandalism strikers fewer but are more determined
- Vandalism Costs 2008-09 – 2014-15
- 2015 Preventive Maintenance Management Plan completed and accepted by PSFA
- Department procedures manuals 100% completed
- Momentous progress made in eliminating energy waste
- Reduced demand charges (spikes) by approximately 8%
- Improved scheduling of heavy equipment preventive maintenance

APS' Energy Conservation Program



- Energy matters!
- WECC's Energy Policy/Goal
- Good start realized in goal to reduce APS' energy and water consumption 20% by the 2023-24 school year
- WECC's professionals
- Rebates paid are welcomed dividends for energy saved
- District taking advantage of both gas and electric utility new construction rebates
- High tech energy use systems provide a precise picture and direction
- Three new hires and repositioned technician are dedicated strictly to combating utility waste and misuse of energy
- Conservation Specialist / Energy Educator
- Senior Facility Usage Specialist
- Utility Analytics Specialist
- Grounds Department water resource specialist repositioned to WECC
- Waste Management sponsored program saved 853 tons of recycled materials
- City Center paper recycling program
- WECC initiatives identified \$2.4 million in real and potential savings in first year
- Incorporating photovoltaic panels into new construction and renovation projects
- Energy utility database provides a compilation of energy use for every school
- Utility meter audit conducted by FD+C identified every meter at every campus
- APS selected as a Better Buildings Challenge Partner
- Negotiated extended maintenance contracts on the purchase of all new mechanical equipment
- Energy Management Center in design and planning
- PNM sponsored Building Tune Up Retro-Commissioning Pilot Program completed
- Two energy professionals earn Certified Building Operator, Level 1 credentials
- Alternative Fuels Challenge introduced electric cars for 2014 annual event
- 2015-16 Energy Conservation Goals

Service Departments



- M&O Organization Chart
- Mechanical
- Grounds
- Structural
- Electrical
- Building Services
- Fleet Maintenance
- Environmental Management
- Support Services

Facing On-Going Challenges and Looking Ahead



- Ramping up preventive maintenance program continues to be a focus and a challenge
- Deferred maintenance screams for funding and attention
- Deferred work orders 2014-15 school year
- Deferred work orders 2014-15 by type
- Professional development must shift to be equipment and site specific
- Consolidation of summer school programs under consideration



APPENDICES

Summer School Consolidation

- Electric Use During Summer School 2014 vs. 2015
- Electric Use During Summer School 2015

What is the APS Baseline?

Electric, Natural Gas, and Water Consumption 2014 vs. 2015

LED Conversion – Interior and Exterior

HVAC Web Enabled Intermatic Time Clock

M&O Department Work Order Totals

- Mechanical
- Grounds
- Structural
- Electrical
- Building Services
- Fleet Maintenance
- Environmental Management

School Cluster Reports

- Rio Grande High School
- West Mesa High School
- Highland High School
- Del Norte High School
- Cibola High School
- Valley High School
- Albuquerque High School
- Sandia High School
- Manzano High School
- Eldorado High School
- Atrisco Heritage Academy High School
- Volcano Vista High School
- La Cueva High School
- Alternative Schools

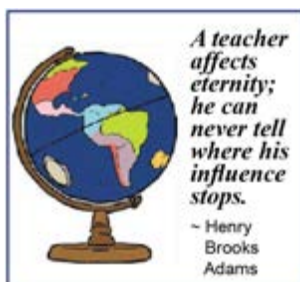
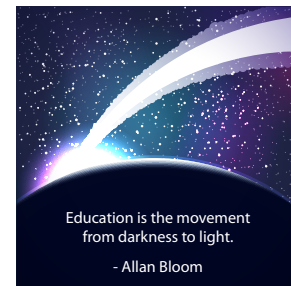
Managing for Results in America's Great City Schools

- M&O Portion of 2015 Study

Albuquerque High School Chiller Reset

APS Water & Energy Conservation Update (Project)

SchoolDude KPI Dashboards



MISSION STATEMENT

The mission of the Maintenance and Operations Division is to partner with the schools in creating environments conducive to student success by providing purposeful, comfortable, aesthetic, clean, safe, and accessible learning and activity spaces in meeting academic achievement goals.

SYNOPSIS

This is the seventh consecutive Albuquerque Public Schools' Maintenance and Operations Year End Report. It summarizes the Division's leadership, purpose, and goals as well as highlights successes and initiatives undertaken in the 2014-15 fiscal year. Challenges and difficulties are also addressed, some ongoing, others new. This document is posted on the M&O website in providing transparency and a snapshot of the Division's fiscal year activities and progress for review by taxpayers, parents, students, schools, and the public at large. It also clearly expresses that all M&O personnel, while responsible for the brick and mortar that encompasses APS' real estate, never lose sight of the fact that their primary purpose is delivering environments that advance education. While M&O stakeholders include the APS Board of Education and executive management/ leadership, along with parents and taxpayers, M&O's priority is incontestably the students and their schools. M&O's very existence is to take care of the students — from pre-kindergarten through graduation — in support of their academic triumphs.

The following is presented in this Year End Report.

Public schools are transforming nationwide and APS is no exception

- Schools are still the heart and soul of America and fundamental to kids' development.
- The misguided perception that America's schools are failing is skewed. The traditional education track is changing but judged by yesteryear's criteria.
- APS' M&O is continually adapting in servicing rapidly expanding and evolving school facilities.
- Public schools are not just schools anymore, but rather community hubs hosting numerous and diverse 'before' and 'after' school programs for students and their families as well Albuquerque area residents. A newly implemented cost recovery program helps to stretch limited budgets not intended for non-education purposes.

2014-15 was groundbreaking year in advancing data and information management

- Data is helpful in governing M&O, but only if the vast collection of numbers can be correctly interpreted and funneled down into useful information that clearly directs appropriate action (solutions) and reports back the results of that action.

Overview of Maintenance and Operations

- The Maintenance Direct/Facility Information Management System (FIMS) is key to effectual work order management and the nucleus of M&O's work order system.
- Work order history 2007 – 2015
- Budget history 2007 – 2015
- Expenditures by school cluster 2007 – 2015

New Initiatives and Highlights in 2014-15 fiscal year

- M&O conducted an assessment of the health condition of employees and launched a motivational Division wide employee Wellness Program.
- Camp Gallagher was resurrected in providing a wilderness classroom to students for hands-on environmental education.
- M&O Executive Director served and learned as a member of a support team charged with reviewing the management of M&O functions for large urban school districts.
- The Public School Facility Authority has become a valued partner in providing informative Facility Maintenance Assessment Reports.
- Maintenance costs declined for the first time.
- Progress was made in school administrators' better understanding the work order system, while M&O personnel made progress in processing work order paperwork in a timely manner.
- Thanks to the support from executive leadership, M&O has successfully addressed some critically needed deferred maintenance work.
- Service technicians utilizing handheld electronic tablets is significantly improving work efficiency, paperwork processing, and customer service.
- The District's utility costs were under budget in spite of the continued rise in rates and energy use.
- The Council of Greater City School's annual survey ranks APS' M&O performance in the top 5% nationwide.
- Graffiti continues its downward trajectory. Vandalism offenders are fewer but more destructive.
- APS' state mandated 2015 Preventive Maintenance Management Plan received the highest possible rating by the Public Schools Facilities Authority.
- M&O Department Manuals (eight service departments and the M&O Warehouse) are now all completed.

Energy Conservation Program pulled out all the stops in 2014-15 fiscal year

- In staggering the start-up of HVAC equipment, the District reduced exorbitant electric demand charges by approximately 8%.
- The Water and Energy Conservation Committee (WECC) made meaningful progress in eliminating energy waste and set a goal of reducing net water consumption by 20% and net energy consumption by 20% by the end of the 2023-24 school year.
- By the end of the 2014-15 fiscal year, WECC efforts had realized a savings of 13.5% in water, 3.0% in electric use, and 11.4% in natural gas consumption.
- Since the start of the WECC baseline year, July 1, 2013, the District captured \$166,253 in annual energy savings and \$161,923 in rebates from PNM and the Gas Company for a total savings of \$328,176.
- New hires and modified existing positions are exclusively assigned to combating utility waste and misuse of energy.
- High tech energy-use diagnostic equipment has identified the potential of saving over \$2 million in annual utility costs.
- The District is incorporating photovoltaic solar panels in all new construction and renovations.
- Newly created energy utility database provides a District wide compilation of energy use by school site.
- Utility meter audit conducted by Facilities Design + Construction identified and mapped every utility meter throughout District. Easily verifying the accuracy of utility invoices is one of the many advantages of this sorely needed documentation.

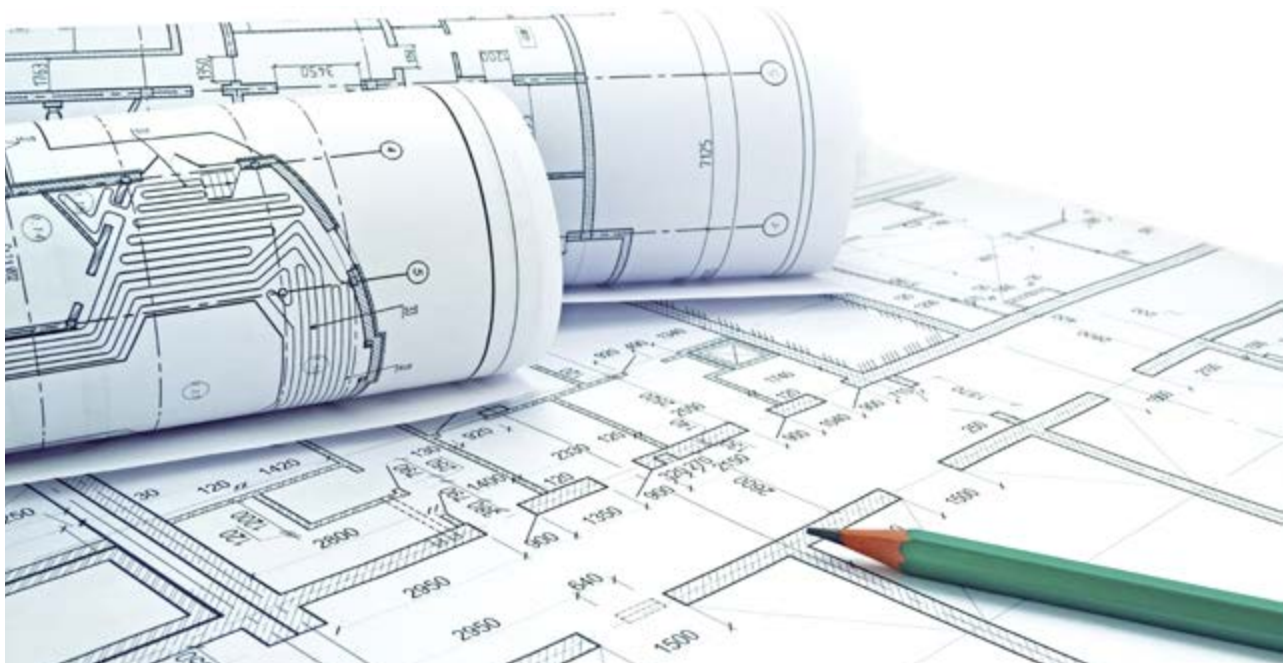
- APS is honored to be invited to participate in the U.S. Department of Energy's Better Buildings Challenge as a Partner in the national program.
- Newly negotiated extended maintenance contracts on the purchase of new mechanical systems and equipment saves time, costs, and M&O manpower.
- Energy Management Center, currently in design and planning, will centralize the many APS energy conservation programs and functions.
- Phase I of the PNM sponsored Building Tune Up Retro-Commissioning Pilot Program is completed and Phase II is under evaluation and planning.
- Two WECC professionals earned certification in energy efficient building operations.

Department Highlights

- Profiles, fiscal year accomplishments, and future goals presented for M&O's eight service departments.

Facing on-going challenges and looking ahead

- Expanding preventive maintenance program continues to be a focus and a challenge.
- Deferred maintenance requires funding now to save capital in the long term.
- Professional development in all trades must shift from universal to equipment and APS site specific.
- The consolidation of the summer school program may save energy and utility costs and is under consideration.



OPENING STATEMENT

By **John Dufay** - *Executive Director of Maintenance and Support Operations*

The 2014-15 fiscal year proved to be a particularly groundbreaking time for M&O. In meeting goals and objections, M&O leadership and personnel worked conscientiously to maintain frequent communication with all applicable parties; provide transparency to taxpayers and the community; respond to requests in a timely fashion; and build trust with each other, the schools, and with other APS Divisions. It is my hope that these efforts are demonstrated throughout the summarization of the 2014-15 fiscal year presented here.

Following are my background thoughts about matters of key importance and influential factors that have driven M&O's need to ratchet up its governing and oversight in certain areas.

Schools are STILL fundamental to kids' development

We have only one law in the United States that mandates what a child must do — he or she must go to school! All other laws state what a child is not permitted to do. Traditional public schools are the heart and soul of America and lay the foundation to lifelong learning for the vast majority of its citizens.

But schools, the “heart and soul” of America, have taken a beating of late. The state of our nation's education system makes the news almost daily, and it's usually discouraging. And the rare positive education news venerates “*this particular school*” with markedly outstanding students or a high graduation rate. Schools are *supposed* to produce bright students who graduate; it should be the status quo, not news worthy! Stories are not written about pilots who successfully land planes every day or surgeons who operate on the correct appendage; that is what is expected of them in executing their job. So why is it news when a school educates?

It is news because we have this misguided perception that America's schools are failing when actually the traditional education track is changing. And it's changing because students have changed — radically changed since Norman Rockwell so famously illustrated the typical student of his time. There is no longer a “typical” student. Today's students, especially in high school, have many more options such as magnet, charter, and alternative schools. Students move from one to the other, sometimes losing time in between; and the traditional public school doesn't track their journey, rather records their departure as a “dropout.” Many of today's students have to first learn English so they can learn the math, science, geography, history, and every other subject taught in English! Education is simply no longer a linear journey free of transitions and setbacks.

Can our education system be improved? Yes, of course it can, and school districts are trying mightily to get acclimated in best serving today's student population. And public schools *are still educating students and are still the heart and soul of America*. How could they not be? Kids have but three primary environments: home, neighborhood, and school. The child's home environment is often not the nuclear family of yesteryear, but rather a blended family or single parent family. The child's community is no longer the idyllic and safe neighborhood where everyone knows each other and homes are safe havens with a parent always present. School, their third environment, is not exempt from societal changes — it too is transforming. We need new measurements in assessing our changing school systems that don't presume an outdated schedule. We are using old criteria in judging a new education paradigm that is adapting to meet today's multifaceted student population. And



we in Maintenance and Operations are doing our part in providing safe, comfortable, and welcoming school environments for the development of students' minds, hearts, and souls, and are proud to be a part of their development and success – *regardless of the trajectory of their education journey.*

M&O is continually adapting in servicing evolving school facilities

"Maintenance and Operations" divisions for the nation's public school districts have historically been just that – straightforwardly charged with maintaining all that keeps the schools operational. While certainly not easy or necessarily quick, jobs and projects were relatively clear-cut: fix what's broken; replace what's beyond repair; clean what's soiled; and tend to interior and exterior safety issues and aesthetics. However, as schools have evolved from basic classrooms to extensive sites that first added kitchens/cafeterias followed by libraries, gyms, sports fields, performing arts centers, science and computer labs, health clinics, collaboration areas, and more, M&O has been hard pressed to keep pace with the schools' steep ascent in complexity and technology coupled with vast physical expansion.

Today's classrooms are run by technology making them highly hands-on learning environments driven by interactive smart boards and computer accessible curriculum programs. Classrooms also feature interactive monitoring of the environment – heating, cooling, sound, and smart lighting that senses natural light penetrating the room and turning off unneeded electrical lighting. Automatic window shades also control daylighting in allowing more natural light in and reducing utility costs. Classrooms now include collaboration spaces, reading corners, and much more. Every innovation advances the quality of APS education as well as the psychological and physical wellbeing of the learners.

By necessity, M&O technicians have become ever more knowledgeable and skilled in working with the unending introduction of cutting-edge technology, HVAC and electrical systems, as well as complex building materials and installation processes. All the while M&O can't ignore the durable older schools built with fewer intricacies but still standing tall and strong in serving their students. These gems need regular maintenance and modernizing in accommodating all the teaching technology they were not originally designed and built for. Also by necessity, schools' evolution has required that M&O divisions do much more with every passing year than the previously straightforward tasks in keeping schools maintained and operational.

We're not just schools anymore

As with the evolution of M&O and the expertise of its technicians, APS is not just about education anymore. All District schools have become non-traditional in the way that they function. They are now open after school and weekends, hosting many dozens of events every day at every school site. Athletics and other outdoor events are using schools' sports fields and grounds, and indoor 'before' and 'after'-school student, family, and community programs utilize classrooms and other site spaces seven days a week. Some APS school campuses have even added health clinics, dental services, and other social service programs for the purpose of preserving students' and their families' health and wellbeing. Schools have become everything that a school never used to be, creating a 180 degree change in the dynamics of school operations from just 10 to 15 years ago and at a much greater cost, challenge, and scope.

APS is not unique. Public school districts nationwide are experiencing exponential growth in the number of events housed at school campuses, translating into increased operating costs in the form of all utilities, custodial overtime, and wear and tear on facilities, grounds, and athletic fields as well as the equipment to maintain them. With facility usage on an indisputably upward climb, the pressing challenge is accommodating people and programs without compromising students' education — the funding's investment and **sole** objective!

The State of New Mexico's Public Education Department financially supports APS for educational purposes utilizing a 'distribution of funds formula' established by the state legislature based on student population. Taxpayers and state government pay only for schools to operate for education purposes during the school day – NOT for everything else that adults and children use the schools for outside of the school day. It is also important to recognize that while not all residents have interests that support APS, community programs hosted by APS are available to all citizens.

Cost recovery program implemented

Yes, of course we want the community to use the schools, but we also have to be responsible, not neglectful, of that use. Operation at night and weekends is not free. All operational costs (custodial, supplies, heating, cooling, electricity, and water) escalate when schools are used outside of education, but the allocated operation funds remain the same. APS has no alternative but to try to recover some of these costs. The District introduced a cost recovery program several years ago and in the 2014-15 FY, the Senior Facility Usage Specialist was positioned at M&O. A member of WECC, she is an integral participant on the energy team working hard in strategizing conservation and scheduling usage. (*See more in the Energy Conservation section on page 25.*)

The Facility Usage Specialist considers all requests for space use

in centralizing functions into areas that are most economical. For example, a school library will not be utilized for extracurricular activities if that library is on the same cooling system as other adjacent spaces. Use of the standalone ancillary gym at the school, however, may well be granted as it is smaller, on its own cooling and heating system, and has a dedicated exterior entrance limiting access to other areas. The Usage Specialist identifies buildings that will maximize the utilization of appropriate space in curbing cost and risk.

Because inclusion makes for happy neighbors and embraced partnerships, rental fees are currently recovering only 23-30% of costs (but every dollar helps) and have recovered \$750,000 in operation and schools' paper goods and custodial costs since the program was started. Rental fees are considerably less than equivalent commercial space, and non-profit entities may qualify for a further discount, depending on purpose.

APS continues to welcome area residents, however, and is working to manage space smarter, responsibly, and strategically to save costs without siphoning money away from the classroom. The cost recovery program is only one example of M&O ceaselessly looking for ways to correctly and productively do better in stretching valuable budget dollars.

A reoccurring theme of this year's Report is offsetting increasing maintenance and energy costs with a wide variety of conservation stratagems and programs. Proactive strategizing has become M&O's standard operating procedure and is realizing more success with every year, as illustrated by the District's decreasing schools' and preventive maintenance costs on page 17. Paying more for supplies, materials, and services (and having *more to maintain*) all the while reducing maintenance costs are *improbably occurring concurrently!*

An empowered community helps!

Because the boundary between school and community is becoming blurred, it is important to welcome the community's involvement through the PTA, volunteer opportunities at the schools, and on APS committees. Today it takes a community to run a school system. Certainly it requires their votes in supporting capital improvements in bond elections. And the more they are involved with the schools—have buy-in—the greater likelihood that they will support the District and its goals.



2014-15 was groundbreaking year in advancing data and information management

Productivity records and data of all types are compulsory to managing M&O as decisions should largely be data driven. M&O data includes a suite of information (various assortments of matrix and stories about the schools and condition of the schools) that enables leadership to take a holistic approach in maintaining each site. Data is produced by SchoolDude, FMARS, high tech energy use monitoring systems, and more. Collectively it's an information toolbox offering the proper tool for each job.

However, all this vast collection of data starts out as just numbers that don't necessarily mean anything and certainly is not yet useful tools. We need to make it mean something and we make it mean something by converting the *data* into *information* form, such as a pie chart or bar graph that clearly tells the story. And in deciphering the story we can ask where our task is in this information and where we can save the most money. The information directs us to the *action plan* which produces yet more data entered into the system which reports the *results*.



This process eliminates speculation and gets to the crux of the problem in aiding us to make sound business practices decisions. We're finally looking at a truthful representation of *now*, no longer following best past practices or other theories that we thought were good.

In the 2014-15 FY, M&O greatly advanced the process of controlling and interpreting the plethora of data. It is so much data that unless controlled, it can actually be contradictory. Because hard facts and data-based decisions are necessary, we learned to more accurately identify what information is pertinent to solving problems and what information is just noise. We also ascertained that external engagement with each school is not noise and must be considered! M&O serves the school staff and their needs which are not represented in charts and bar graphs. We also upped our game in assessing the results of the actions taken which greatly serves as advocacy in obtaining adequate funding.

Lastly, this refined data analysis process has enabled department Managers to empower Supervisors and technicians, expanding the decision making spectrum. When all personnel can access and see clear baselines that spell out direction, they can then determine when and how they will take necessary direction. In their inclusion and understanding of what needs to be done and why, there is buy-in; they own the information and the resolution. (See Appendices - Database Reports)

M&O employees are important and vital to supporting education

The 2013 M&O Year End Report paid special tribute to M&O's proficient and talented workforce, and last year's Report (2014) reiterated their indispensable value to APS' delivery of education. The learning process would quite simply not transpire without the many technicians that keep the schools comfortable, operational, and safe. And because technicians take care of APS and its students, we have to take care of them.

M&O has teamed up with the APS Wellness Program and Blue Cross Blue Shield of New Mexico in designing and launching a wellness and health conscious culture specifically for M&O's vital and hardworking employees. It is a major initiative of the M&O leadership to nurture safe, healthy, active, and happy employees. It certainly makes for a more productive and responsive team serving the schools! (See more about the M&O Wellness initiative on page 13 of this Report.)





Wellness Works

at APS – Maintenance and Operations



Wellness Works

at APS – Maintenance and Operations

ALBUQUERQUE PUBLIC SCHOOLS | **Employee Wellness**
Promoting a Culture of Health

ALBUQUERQUE PUBLIC SCHOOLS | **Employee Wellness**
Promoting a Culture of Health

Wellness Works

- Know Your Numbers
- Work Safety
- Health Coaching
- Fitness Programs
- Nutrition
- Wellness Committee

at M&O



ALBUQUERQUE PUBLIC SCHOOLS
Employee Wellness
Promoting a Culture of Health



Wellness Works

at APS – Maintenance and Operations

*Wellness Works at M&O Campaign,
M&O Employees*

Wellness Trainer



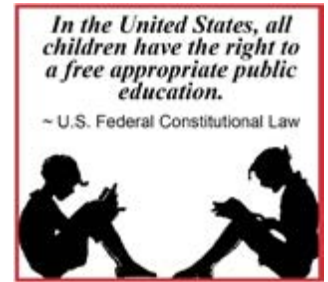
Wellness Works

at M&O

- Know Your Numbers
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ALBUQUERQUE PUBLIC SCHOOLS
Employee Wellness
Promoting a Culture of Health



OVERVIEW of MAINTENANCE and OPERATIONS

The M&O Division of Albuquerque Public Schools is responsible for the physical, environmental and safety, and esthetic condition of New Mexico's largest collection of public buildings and one of the largest public school districts in the nation. APS is comprised of 16.1 million total square feet of property that includes 14.4 million square feet of facilities at 161 locations housing traditional schools (13 High, 27 Middle, and 79 Elementary), various alternative and charter schools, nine administrative buildings, and three sports stadiums. M&O's own sizeable site, Lincoln Complex, consists of numerous Craft Shops within eight service departments, the M&O Warehouse, the Materials Warehouse, and the currently under renovation Building M facility.

APS' M&O Division regularly ranks in the top five percentile in the national study of M&O performance conducted by the Council of the Great City Schools (CGCS) and was honored with the top spot in 2011. The annual research findings present a wide-ranging array of statistical indicators developed by the CGCS and its member urban school districts to measure the performance of large public K-12 school districts. And because APS depends on the many services provided by M&O that are central to the uninterrupted and smooth functioning of its sole purpose — educating students and imparting a love of lifelong learning — the Division's 266 staff members strive to retain their standing in the upper tier of the national study.

While educating children, the nation's future leaders, is the very point of APS' existence, M&O's many services make that very existence possible. The education process is **reliant** on the schools' aesthetically pleasing and comfortable classrooms, libraries, cafeterias, and gyms. This requires that Structural technicians keep the buildings standing tall, proud, and safe, aided by the District's own Environmental Management program, while Building Services personnel assure that all interior space is clean and pest free. Mechanical and Electrical staff keep the buildings' systems functioning properly and reliably, while APS' exterior is maintained by skilled Grounds crews. Unique to APS is M&O's own Fleet Maintenance Department ensuring that APS' large fleet of vehicles are dependably in-service, therefore never delaying maintenance or repair service to the schools or inconveniencing executive drivers of District cars.



Maintenance Direct is key to effectual work order management

Whereas M&O is the heartbeat that keeps schools open and functioning at top performance, SchoolDude's MaintenanceDirect (MD) / Facility Information Management System (FIMS) database is the nucleus of M&O's work order system. The New Mexico Public School Facility Authority purchased SchoolDude in 2005 for all of the state's public school districts. MD/FIMS has significantly increased M&O's productivity and streamlined the management of every department's function. M&O started slowly in fully utilizing MD/FIMS, as the learning curve was steep, but has built momentum and knowledge of the system every year. SchoolDude also continuously expands MD/FIMS' many existing modules and adds new helpful features in more precisely aiding work order management. M&O leadership stays abreast of how each new or improved MD/FIMS module can assist in continuing to improve worker productivity, Department and Shop efficiency, cut costs, and utilize historical data for future planning.

Password accessible to all M&O staff, schools' authorized personnel, and service contractors via the APS Intranet, MD/FIMS provides the same timely information regarding the status of work orders, eliminating misinterpretation and confusion between all parties. MD/FIMS prioritizes work orders (low, medium, high, or emergency), disseminates, and tracks every detail of every WO (materials costs, time, vendor costs, job status, and more) from initial request through the completion of the job. Employee Productivity Reports state the number of tasks performed by each technician and the time taken to execute every job, explicitly conveying each technician's task specific and overall performance. Department Managers applicably address performance concerns on an as needed basis in advancing each technician's skills and job success. (See *SchoolDude KPI Dashboards in Appendices on pages 130-133.*)

M&O Work Order History 2007 – 2015

All Fiscal Years	Total Work Orders	Total Completed	Total Declined or Voided	Average Time To Complete WO
FY 07	57748	51846	3161	40.99
FY 08	63464	57969	2896	39.28
FY 09	68143	62854	2502	34.03
FY 10	68360	62767	2976	24.38
FY 11	71813	63430	2332	14.52
FY 12	70608	65272	1855	18.17
FY 13	77709	70844	2061	18.67
FY 14	77186	71403	1602	16.05
FY 15	77262	70792	1281	15.21
Totals:	400,136	364,138	15,722	28.56

Notes:

- Unlike the Summary Cluster Report, these figures represent work performed throughout the District, not just at schools. In addition, "Average Time to Complete WOs" represent the time between when the WO was opened and closed in the database, not the days to actually complete the job.
- Retroactive reconciliations of the SchoolDude FIMS' work order system are conducted as WOs change from "pending," "open," and "closed" status, consequently altering the historical figures reflected throughout this and previous Reports. FIMS is a dynamic, never static system.

M&O budget history 2007 – 2015

Following is a historical perspective of M&O's budget, salary expenses, and employment numbers. Every year since the significant budget drop in 2010, monies and personnel that the Division is apportioned to operate on has decreased while work orders, the District's square footage, and school campuses have increased. M&O operated on 26.9% less dollars in the 2014-15 FY than in 2006-07 but realized a slight 1% gain over the previous FY to accommodate three added full-time employees.

M&O's Total Budget for Fiscal Years 2007 – 2015

Fiscal Years	Work Orders	Square Feet	M & O TOTAL BUDGET	Operational Budget	SB-9 Budget	Salaries OT & Benefits	School Sites	FTEs
2007	57,760	9,350,500	\$48,342,400.00	\$2,903,213.00	\$31,393,556.00	\$14,045,631.00	136	330.5
2008	63,476	10,975,700	\$55,391,208.00	\$2,629,799.00	\$37,165,908.00	\$15,595,501.00	137	320.5
2009	68,155	12,010,152	\$48,564,786.00	\$2,066,226.00	\$30,832,290.00	\$15,666,270.00	139	310
2010	68,372	13,105,100	\$41,227,836.00	\$1,329,653.00	\$25,350,736.00	\$14,547,447.00	141	285.5
2011	71,825	14,207,533	\$30,237,780.00	\$ 909,154.00	\$14,776,670.00	\$14,551,956.00	142	265
2012	70,620	14,517,582	\$35,966,909.00	\$ 925,736.00	\$21,355,325.00	\$13,685,848.00	143	262.5
2013	77,722	14,624,261	\$38,573,538.00	\$1,005,736.00	\$23,844,843.00	\$13,722,959.00	143	263
2014	77,274	14,402,956	\$38,655,311.00	\$1,054,080.00	\$23,818,035.00	\$13,783,196.00	143	263.5

Notes:

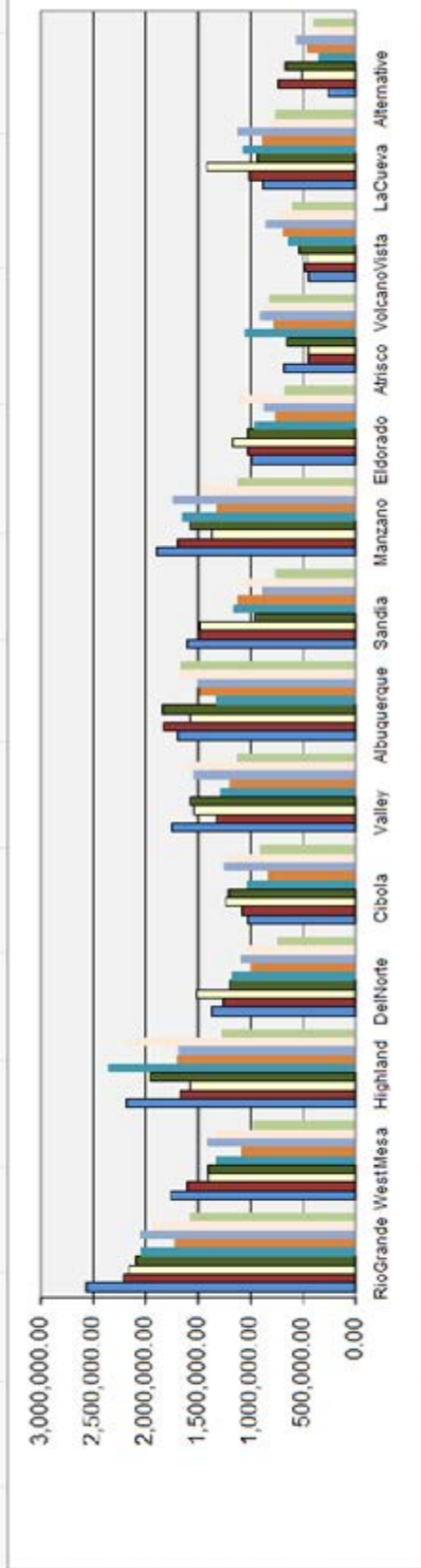
- Work order totals apply District wide, not just school sites
- Several schools sometimes share one campus
- The Operational, SB-9, and Salaries/OT & Benefits columns equal the M&O BUDGET column
- The Budget allocation includes "carryover" monies from previous fiscal year

M&O expenditures by school cluster

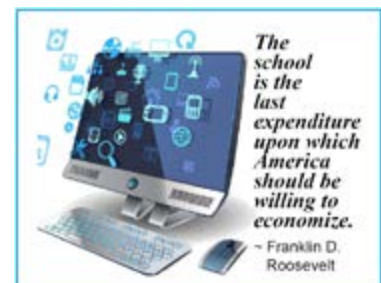
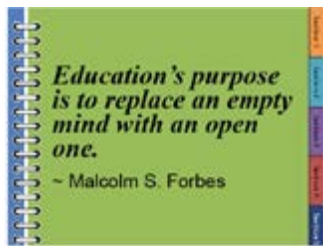
Following are expenditures by High School Cluster from 2007 through 2015. Figures apply only to work orders on school sites; the higher number of work orders and expense totals stated elsewhere in this Report represent M&O work for **all** District facilities. Detailed reports representing each Cluster can be found beginning on page 94 of the Appendices.

M&O Expenditures per High School Cluster 2007 – 2015

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Totals
	Rio Grande	West Mesa	Highland	Del Norte	Cibola	Valley	Albuquerque	Sandia	Manzano	Eldorado	Atrisco	Volcano Vista	La Cueva	Alternative	
FY 2007	2,580,773.36	1,761,450.91	2,176,408.70	1,363,664.81	1,024,119.71	1,750,422.54	1,606,274.63	1,506,107.36	1,889,713.12	976,927.45	682,114.66	446,305.64	872,668.89	263,211.27	19,060,161.03
FY 2008	2,210,404.41	1,604,808.80	1,664,019.47	1,254,359.49	1,071,437.56	1,324,612.25	1,819,590.86	1,490,621.06	1,698,225.05	1,017,962.92	445,239.47	487,564.96	1,012,666.38	729,646.92	17,831,159.60
FY 2009	2,157,903.06	1,399,556.10	1,571,355.44	1,504,000.36	1,234,137.54	1,534,600.59	1,570,097.51	1,402,744.17	1,370,659.00	1,170,309.01	443,115.00	450,309.74	1,420,779.77	512,814.20	17,831,210.44
FY 2010	2,089,431.07	1,410,019.99	1,561,904.31	1,197,353.68	1,211,596.27	1,579,640.92	1,833,832.47	953,459.70	1,573,304.27	1,027,172.44	657,638.31	533,922.54	934,978.83	652,330.62	17,826,585.42
FY 2011	2,043,876.46	1,335,700.52	2,384,077.96	1,187,505.64	1,027,473.36	1,287,339.19	1,328,910.01	1,164,875.29	1,649,310.92	968,170.48	1,049,828.20	845,018.85	1,087,423.80	358,388.91	17,467,897.41
FY 2012	1,731,470.71	1,005,263.75	1,703,677.32	990,657.02	803,731.93	1,199,406.71	1,403,416.30	1,115,060.12	1,316,006.52	769,590.06	770,653.37	690,920.54	876,501.70	459,275.01	15,039,920.94
FY 2013	2,055,026.09	1,410,991.87	1,681,795.26	1,100,283.41	1,254,255.57	1,541,387.18	1,504,331.13	890,055.81	1,734,472.28	868,675.45	906,900.57	854,158.20	1,126,498.86	575,179.38	17,504,011.05
FY 2014	1,937,296.95	1,328,522.05	2,171,356.88	1,042,157.74	1,211,050.78	1,601,941.89	1,683,986.16	1,088,018.77	1,448,403.64	1,119,277.97	875,062.95	733,090.93	830,727.94	352,115.53	17,421,009.95
FY 2015	1,588,061.04	980,851.60	1,277,137.66	741,457.49	913,996.51	1,138,031.09	1,655,100.79	766,329.30	1,120,085.62	673,437.29	823,033.63	603,663.92	766,801.48	399,962.89	13,447,960.30



Make By Fiscal Year	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total Sq. Footage	9,350,500	10,975,700	12,010,152	13,105,100	14,207,533	14,517,582	14,624,261	14,402,956	14,580,750
Total Students	87,805	88,821	85,689	88,820	89,136	89,168	89,602	88,247	86,549
Total Work Order	50,104	54,681	59,267	59,011	63,492	61,634	70,130	71,048	69,597
Total Expense	19,060,161.03	17,031,159.60	17,031,210.44	17,626,585.42	17,457,897.41	15,039,920.94	17,504,011.05	17,421,009.95	13,447,960.30
Non-School related District Expenditures (Fleet, Administration Support, M&O, Food Services, etc.)							\$18,290,084.00	\$20,079,217.00	\$18,002,093.00



INITIATIVES and DIVISION HIGHLIGHTS

Healthy worksite assessment conducted and M&O wellness initiative launched

In cooperation with the APS Wellness Program, an assessment of the health condition of M&O employees was conducted in the spring of 2015. It consisted of an employee survey that quantified the strength of M&O's culture of health efforts; interviews with the Executive Director; focus discussion groups between employees and management; and an audit of M&O's environment and culture. The Well on Target® assessment was conducted by a Senior Wellness Consultant at Blue Cross Blue Shield of New Mexico.



The purpose of this effort is to create a culture that supports a healthy and high-performing workforce. Workforce health and productivity factors translate into direct and indirect costs for employers and the physical condition of employees. The exercise stressed the importance of a healthful workplace environment and nourishing lifestyle choices of workers and their family members.

M&O's "culture of health" rated a 58.6 in the Making Strides range, a mere four points from the Significant Strength rating. M&O rated excellent in Medical Care Management (Thriving), and very high in Human Resources Management and Leadership's Commitment to a healthy workforce (Significant Strengths). However, because the employees' Lifestyle Risk Management choices scored low — especially regarding healthful eating but also physical activity and tobacco — the culture of health needs improvement. While individuals have the greatest control over the state of their own health and physical fitness, M&O leadership recognize that they can contribute to the overall physical, emotional, and social health and wellbeing of employees.

The new M&O Wellness program includes events such as "lunch and learn" sessions that teach everything from simple stretching exercises to avoid on-the-job injuries and an array of healthy lifestyle choices. Employees can also participate in practical hands-on cooking classes that introduce healthy meal and snack choices that are every bit as tasty as high fat and sodium options. And a walking program brings employees together to walk before or after work or during the lunch hour.

M&O's wellness initiative is utilizing expert speakers provided by APS health partners, at no cost to the District, as part of the insurance provider's health preventive maintenance for staff. A healthier employee population results in lower health risks, absenteeism, injuries, and worker compensation claims. And healthier employees are happier employees. There are no losers in this new Wellness program; it's a win-win-win for the insurance providers, M&O employees, and the schools and students — M&O's customers.

The M&O Wellness program is just getting started. M&O anticipates providing more information as well as progress to date in next year's Year End Report, including an improved Lincoln Complex catering and healthy lunch café.



'Lunch and Learn' sessions teach healthy eating and provide lunch to M&O technicians at no cost to APS.

APS' Camp Gallagher resurrected

Camp Gallagher is a mountain refuge and experimental extension of the classroom located approximately 80 miles from Albuquerque near Fenton Lake Park. It is owned by the U.S. Forest Service (USFS) and leased to APS (renewable lease permit expires December 31, 2030). In 1949, Thomas P. Gallagher, Jr. of the New Mexico Timber Company leased the site to APS at a "gift" cost of \$1 for 25 years. The terms of the lease required that the hospitable site be used solely for educational purposes and that the District supply and maintain permanent facilities. APS aspired to extend the privilege of experiencing and learning from the great outdoors to students who would not otherwise have the opportunity. In 1971, the Camp was conveyed to the USFS subject to the APS lease. In 1974, the District negotiated a Special Use Permit from the USFS to continue the Camp with acreage reduced from 22 to 11.61.

Camp Gallagher was used as an environmental outdoor education camp during the summer from 1954 to 1996. After almost 20 years, the District is happy to re-open the site for applied educational experiences of its students. In addition to overnight backpacking and hands-on wilderness survival education, conservation projects, and environmental education, other educational offerings can include field trips to the nearby Seven Springs fish hatchery and Fenton Lake. APS has curriculum established that will provide lessons in ichthyology (the study of fish) and ecosystems. Other future possibilities are being contemplated and include a teacher training site for environmental education.

Camp Gallagher includes:

- restroom structure and underground septic system
- tent platforms
- storage space
- covered eating area
- campfire circle surrounding fire pit
- log bridge across stream
- water system (enclosed spring developments, two tanks, and waterline)



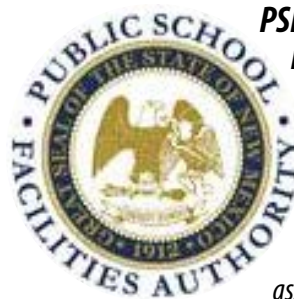
Executive Director honored to serve on review of public school systems' team (by John Dufay)

Along with various other executive management individuals representing major urban public school districts, I had the privilege of serving on a Strategic Support Team charged with reviewing the management of M&O and facilities departments for school districts in Anchorage, Omaha, and other cities. Various management assessments were collected through site visits, staff interviews, and data reviews. The Team's final report to the schools' executive management outlined findings and recommendations deemed by Team members to help improve the efficiency and effectiveness of the school's facilities functions.

Underwritten by the Council of the Great City Schools, the exercise proved to be every bit as much a learning experience as a serving experience. I'm so appreciative of this opportunity as I learned how important it is to pay attention to *all* aspects of the operation—from the seemingly negligible to the major—on a routine basis. It is so easy to put the ostensibly trivial issues that ceaselessly arise on the back burner and attend to the foremost matters that shout for attention, but minor problems sitting on a hot back burner can and do spark major fires.

I also learned how important it is to cultivate an experienced and cooperative team that functions well and work agreeably with each other. The fewer conflicts the greater the level of productivity. And when inevitable disagreements do arise, the sensible individuals are able to resolve them courteously and effectively. A cooperative team won't always agree, but will reach consensus. The experience also underscored for me the importance of *everyone* taking ownership (buy-in) of the project. Strong and competent service department managers, contractors, and industry partners have to understand and embrace the District's goals and culture. The successful accomplishment of jobs requires all players going in the same direction.

This priceless experience provided me the rare opportunity to see where school districts are being challenged, as APS has been, and how they have cleared their hurdles. I returned with a sharper perspective regarding how we can make gainful tweaks to the management of APS' M&O functions as well as a greater appreciation for APS' continued support of M&O's goals.

**PSFA is a valued resource in APS maintenance management**

The Public School Facilities Authority has significantly advanced the quality, accuracy, and value of the Facility Maintenance Assessment Reports (FMAR). (See example of assessment of Susie R. Marmon Elementary School on the following page.)

While always useful and serving a purpose to M&O leadership in identifying repair needs in the District, PSFA's procedures in evaluating the condition of APS school sites has improved every year since FMARs were first introduced approximately three years ago.

PSFA assessors have gained more experience in performing facility inspections and accordingly also a factual "facility condition frame of reference" that greatly aids the assessment process. As with all new programs, it takes time to learn what to look for in correctly accessing the condition of a facility and its components. It is much easier to appraise the condition of an HVAC system when an understanding of that system has been achieved. In the 2014-15 fiscal year, PSFA leaped over the initial and expected hurdle of facility assessment learning curve challenges and is providing M&O with highly accurate and useful FMARs. With a higher level of confidence in the FMARs, M&O is responding to the FMAR results in creating work orders to perform corrective action on specific areas that were targeted in the helpful FMAR comment section. Utilizing FMARs is yet another tool in M&O's proliferating arsenal of valued data, and is about to get even better.

PSFA, in collaboration with M&O leadership, is working to take FMARs to another level with additional information. If all goes as conceived, FMARs will also reflect the condition of the building after the corrective action was undertaken by the District—which was made possible due to the specificity of the FMAR—in showing current results. The next generation FMAR will provide a continuum (story in progress) that includes corrective action results in preparation of the next assessment of the school site. Also in discussion, is automatically (rather than manually) tying evaluations to specific work orders. The possibilities in improving the FMAR tool are near infinite.

Facility Maintenance Assessment Report

2014 ALBUQUERQUE
001280 SUSIE R. MARMON ELEMENTARY

 Combined Id 1:
 Schools Id 2:

FMAR_Date: 11/20/2014 Weather: Sunny & cool 51 deg

PSFA Reps: Levesque Troy Tillotson, Larry

District Reps :

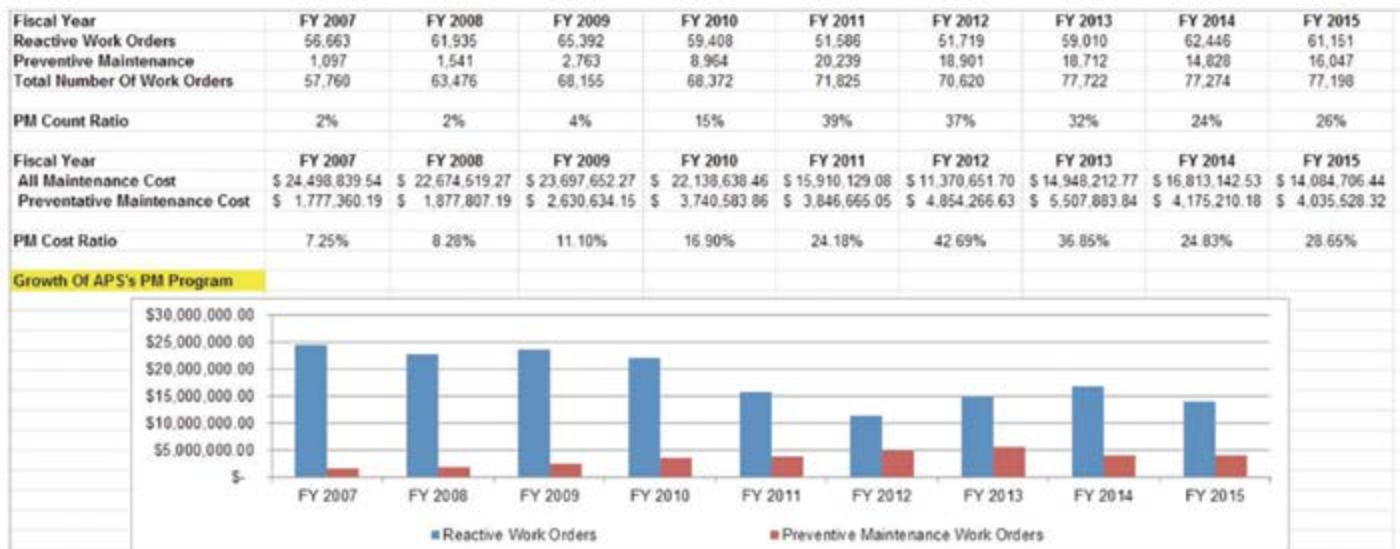
Overall School Maintenance Rating	
Outstanding	90.1% to 100%
Good	80.1% to 90%
Satisfactory	70.1% to 80%
Marginal	60.1 to 70%
Poor	<= 60%
Deficiency Factors	
Life Safety, Health or Property Loss Exposure Multipliers	
Minor Deficiency	1.5
Major Deficiency	3.5
Potential Threat and No Work Order	
Immediate Threat and No Work Order	

Area	Performance Items	Performance Level					Deficiency Factors			Performance Deficiencies		
		Outstanding	Good	Satisfactory	Marginal	Poor	Minor x 1.5	Major x 3.5	None	Weight	Performance	Deficiency Score
Site	Roadway/Parking	●	○	○	○	○	○	○	○	3	0	0.00
	Site Utilities	●	○	○	○	○	○	○	○	5	0	0.00
	Playgrounds/Athletic Fields	○	●	○	○	○	○	○	○	5	-0.95	-4.75
	Site Drainage	○	●	○	○	○	○	○	○	8	-0.95	-7.60
	Sidewalks	○	●	○	○	○	○	○	○	2	-0.95	-1.90
	Grounds	○	●	○	○	○	○	○	○	2	-0.95	-1.90
Building Exterior	Windows/Calking	○	●	○	○	○	○	○	○	3	-0.95	-2.85
	Walls/Finishes	○	●	○	○	○	○	○	○	5	-0.95	-4.75
	Entry/Exterior Doors	●	○	○	○	○	○	○	○	7	0	0.00
	Roof/Flashing/Gutters	○	○	●	○	○	○	○	○	10	-1.89	-18.90
Building Interior	Walls/Floors/Ceilings/Stairs	○	●	○	○	○	○	○	○	3	-0.95	-2.85
	Interior Doors	○	●	○	○	○	○	○	○	3	-0.95	-2.85
	Restrooms	●	○	○	○	○	○	○	○	3	0	0.00
	Housekeeping	○	○	●	○	○	○	○	○	4	-1.89	-7.56
Building Equipment and Systems	Electrical Distribution	○	○	●	○	○	○	○	○	3	-1.89	-8.50
	Lighting	○	●	○	○	○	○	○	○	5	-0.95	-4.75
	Fire Protection Systems	○	○	●	○	○	●	○	○	10	-1.89	-28.35
	Equipment Rooms	●	○	○	○	○	○	○	○	2	0	0.00
	Heating/Cooling/Ventilation	○	●	○	○	○	○	○	○	10	-0.95	-9.50
	Air Filters	●	○	○	○	○	○	○	○	5	0	0.00
	Kitchen Equipment/Refrig	○	●	○	○	○	○	○	○	2	-0.95	-1.90
	Plumbing/Water Heaters	●	○	○	○	○	○	○	○	6	0	0.00
Maintenance Management	PM Plan	●	○	○	○	○				10	0	0
	FIMS and Equipment Data	○	○	○	○	●				7	-3.77	-26.39
	Staff Development	○	●	○	○	○				5	-0.95	-4.75
	Maintenance Safety	○	○	●	○	○				5	-1.89	-9.45
	Maint. Contractor Oversight	●	○	○	○	○				5	0	0.00
	Facilities Mater Plan (Renewal)	○	●	○	○	○				3	-0.95	-2.85
Total Performance Deficiencies:		-152.35					Total Score: 847.65			Overall Rating: 84.76%		

Total maintenance costs down – a first!

As anticipated, preventive maintenance declined in the 2013-14 fiscal year after an uphill trajectory since the inception of PM. The drop was significant, 22.0% over the previous year. PM costs dropped again, for the second consecutive year, in 2014-15 by 3.3% while the PM ratio increased by 15.3%. Total maintenance costs (reactive and preventive) realized its first decrease ever – a remarkable 16.2% over the previous year. Growth in the number of work orders occurred where most vital – preventive work, 8.2% greater than the previous year. Reactive work orders increased by only 2%, a welcomed balance! Working smarter, a successful preventive maintenance program, and increased worker productivity are all credited for the cost per work order decrease.

APS' Preventive Maintenance Program 2007- 2015



Schools' maintenance costs down – another first!

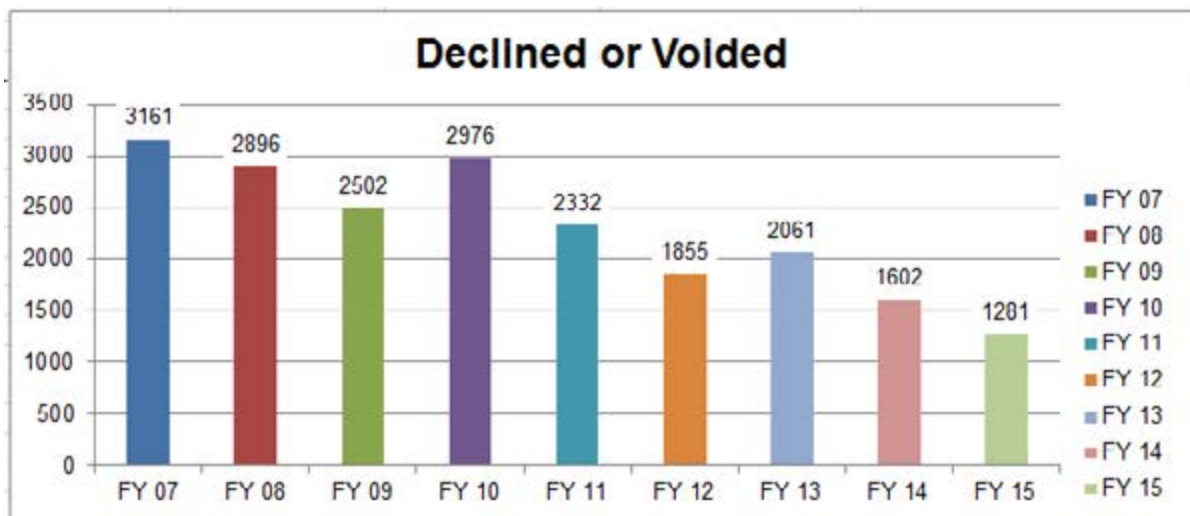
While the above Highlight represents costs for the entire District that includes the three sports stadiums, Central Kitchen, two warehouses, and numerous administrative and other education support facilities, the figures below signify expenses for school sites only. M&O's drop in costs to maintain the District's 144 school sites is even more dramatic than total costs — 22.8% just since last year and 29.4% since 2007.

M&O School Site Expenses 2007- 2015

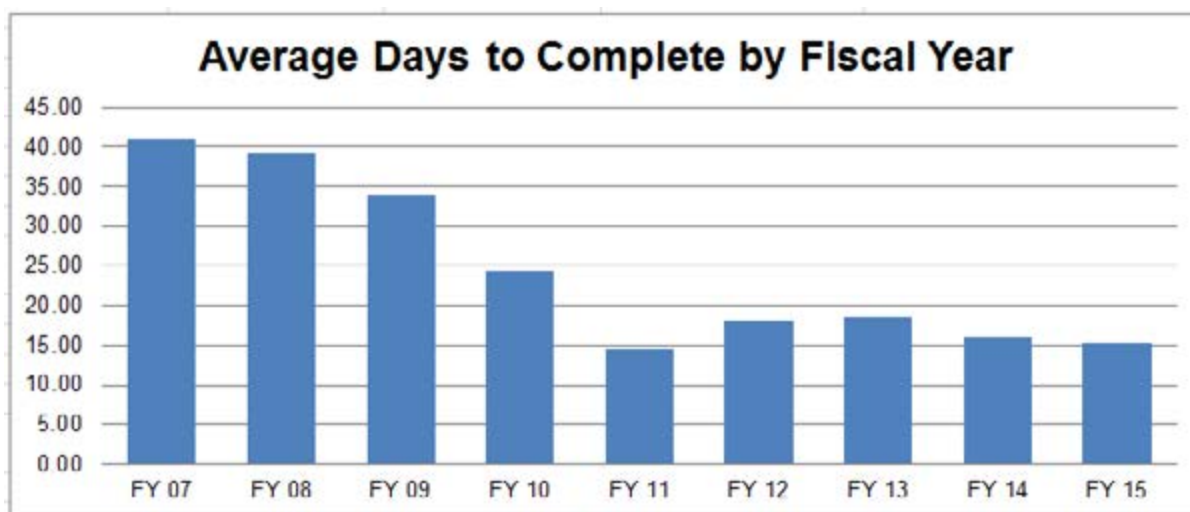


Schools and M&O tighten work order paperwork processing

When SchoolDude's work order system, FIMS (MaintenanceDirect/Facility Information Management System) was first introduced to APS in 2005, all APS employees embarked on the same learning curve. As the following bar graph illustrates, the schools have acquired a better understanding of the work request and approval process with every year since 2007. While there were hiccups in 2010 and 2013 due to many new principals and/or staff reassigned to schools, overall the schools have demonstrated a continuous improvement in working with the system – 59.4% between 2007 and 2015, and a 20% improvement in 2014-15 over the previous year. (It is a given that WOs will rise with new leadership and personnel at a school site. Not only do they have their antenna up watchful of issues, they are also unfamiliar with the facility.) In addition, schools' personnel have gained a much better understanding between work "wanted" and work "needed." A quicker response time to work requests by M&O technicians also reduces the number of duplicate WOs that need to be voided as schools don't submit another WO in their impatience to have the task done. While it is unrealistic to expect that there will ever be no declined or voided work requests, this continuous improvement translates to less time spent spinning wheels and more time spent on productive efforts. *(Note: numbers change retroactively due to periodic cleanups and updates of the work order data.)*



As demonstrated by the following bar graph, M&O has increasingly improved the time to perform and close work orders in the work order system by more than half since 2007 and 5.2% over 2014.



M&O personnel have increased their paperwork proficiency and efficiency by 62.8% since 2007! In 2007, work orders were closed in FIMS an average of 40.9 days after they were initiated and long after the work was actually completed. In 2015, WOs were closed in 15.2 days, a 5.2% improvement over the previous year. It has been an adjustment for all parties to get on board with not only following proper WO protocols

but also understanding the importance of timely paperwork/FIMS processing. SchoolDude is a miraculous tool in measuring proficiencies, but only if the data is accurate and entered in a real time fashion. No, it did not take an average of 40.9 days for a work orders to be completed in 2007. From the time of the initial request to M&O completing the tasks was but a few days; WOs were simply not closed in FIMS for another 35-37 (on average) days as invoices have to first be received and processed. As the process is tightened up, actual time to complete WOs will be reflected in the results.

Progress made in tackling deferred maintenance (DM)

Deferred maintenance has long been of serious concern for public school districts across the nation. At APS, the discussion of DM first made its debut in the 2013 M&O Year End Report for good reason – previous to then M&O's hands were tied in addressing the issue due to a lack of funding. Since 2007, APS' M&O leadership has focused on resolving the high priority DM problem with **sustainable** funding, as throwing a onetime funding cycle at DM is not a resolution. Deferred maintenance is a reoccurring, ongoing expense, not a onetime event. After 2007, M&O was granted funding approved for several identified DM projects, but a truly meaningful victory was realized in 2013 when DM was finally classified as a broader definition line expense in the Capital Master Plan (CMP). A line item budget allocation provides more flexibility in DM work getting addressed and completed quickly. The previous project listing was quite restrictive and time delayed. As a line item M&O can, at last, tackle it immediately rather than have to wait for the next funding cycle.

With DM finally out of the dark closet and under the spotlight to taxpayers and APS Board of Education, M&O has made a great deal of progress in tackling a backlog of critically needed DM work. In joining forces with Facilities Design + Construction, DM projects are included in remodels and rebuilds in economically and efficiently combining several jobs into one. While M&O and FD+C continue to be distinctly separate divisions, they are fusing approaches and cultures in better and more economically serving the District.

M&O is also now an integral participant in identifying the CMP line items in allocating funds specifically for deferred maintenance and central to prioritizing DM projects. The previous massive Mount Everest of deferred maintenance projects is transforming into a smaller mountain. And as DM is a costly undertaking, at best it will only be reduced to a manageable large mound. (See more regarding the DM prioritization process in the Challenges and Looking Ahead section of this Report on page 78.)

Technicians issued and trained on handheld electronic tablets

M&O is in the process of supplying tablets and conducting training for use by technicians. Mechanical, Electrical, and Grounds personnel have been trained and are adeptly using this paperless convenient tool all day, whether in the office or out in the field. Techs are able to fully complete work orders (man hours, parts and materials, status, etc.) immediately upon completing a job and go straight to the next job as they can now retrieve work orders immediately throughout the day. Not only is it resulting in more timely paperwork processing, it saves travel time and empowers the technicians to manage their schedules economically. All other departments' personnel are currently being trained and will be utilizing their tablets by spring 2016.

Utility costs under budget for second consecutive year

Considering WECC's success in curbing energy waste, it doesn't come as a surprise that the District's utility costs in the 2014-15 FY came in **\$897,554 under budget**, a \$554,659 improvement over last year's under budget achievement. However, it's important to understand that coming in under budget needs to occur over a number of consecutive years to really make a palpable dent in the District's immense utility costs. APS spent \$55,599 a day for energy, refuse, and water in the 2014-15 fiscal year, a 3.5% per day increase over the previous fiscal year. *Many uncontrollable factors* come into play with regard to the District's utility use and costs.

Mother Nature may smile upon the District in delivering warm winters that lessen the use of heating systems, and summer rain showers that water vegetation and athletic fields. Or, she may well deliver record breaking cold conditions that test heating systems, and hot dry weather that results in more air conditioning and water use. Also out of the District's control are the ever present utility rate increases, local and national. What happens in the frigid east raises costs for APS in the much balmier Albuquerque. One dramatic rate increase can derail the utility budget; there is no possibility of ever getting ahead of *this* eight ball! Lastly, the District's expanding square footage contributes to the challenge of managing utility use. APS' utility budget is a moving target based on all of the above uncontrollable factors.



What can be controlled is!

The only way to really curb energy use and costs is by actually reducing KWh (kilowatt hour) — what APS has control over. As outlined in the Energy Conservation Program section of this Report (page 25), M&O's focus has to be on conserving use (helped by education, rebate, and incentive programs) and eliminating waste. The daily monitoring of utilities made possible by programs and use-measurement devices outlined in the Energy Conservation Program section, has aided tremendously in identifying where systems are operating inefficiently or wastefully.

History of APS Utility Expenses District Wide 2006-2007 — 2014-2015

2015 – 2016 Budget*

ELECTRICITY

2006-2007	\$6,307,217
2007-2008	\$6,628,399
2008-2009	\$7,758,639
2009-2010	\$8,879,497
2010-2011	\$9,149,364
2011-2012	\$10,484,017
2012-2013	\$11,011,769
2013-2014	\$10,938,163
2014-2015	\$11,700,256
2015-2016	\$12,500,000*

REFUSE REMOVAL

2006-2007	\$1,137,027
2007-2008	\$1,094,743
2008-2009	\$1,543,440
2009-2010	\$1,563,038
2010-2011	\$1,442,888
2011-2012	\$1,395,558
2012-2013	\$1,461,055
2013-2014	\$1,503,571
2014-2015	\$1,567,634
2015-2016	\$1,500,000*

NATURAL GAS

2006-2007	\$5,313,287
2007-2008	\$5,301,009
2008-2009	\$5,895,423
2009-2010	\$6,063,183
2010-2011	\$4,150,665
2011-2012	\$3,862,079
2012-2013	\$3,783,403
2013-2014	\$3,893,150
2014-2015	\$3,614,867
2015-2016	\$4,400,000*

WATER / SEWER

2006-2007	\$2,218,677
2007-2008	\$2,484,657
2008-2009	\$2,482,787
2009-2010	\$2,541,377
2010-2011	\$2,755,320
2011-2012	\$2,768,880
2012-2013	\$3,191,743
2013-2014	\$3,264,780
2014-2015	\$3,411,118
2015-2016	\$3,660,000*

TOTAL 2014-15 Utility Costs: \$20,293,875
(3.5% increase over 2013-2014)

2007–2015 = 35.5% increase in utility expenditures

The part can never be well unless the whole is well.
~ Plato

APS' M&O continues to rank in top 5% by the CGCS's annual survey

The Council of the Great City Schools is a nationwide organization represented by large urban school district members including APS. The CGCS provides the school districts with assistance and guidance in educating their broadly diverse student population to the highest academic standards possible in preparing them to be successful contributors to their families, communities, and nation. In the CGCS meeting its mission to advance the education of students and inspire the public's confidence, it recognizes that schools' Maintenance and Operations divisions serve a pivotal role; without properly functioning schools, there is no schooling!

The organization conducts an annual national web-based survey that defines, collects, and interprets data based on key performance indicators (KPIs) in measuring the non-academic management of school districts' facilities and grounds. The ActPoint® KPI system is an automated intelligence tool whereby member districts enter their raw data into online inquiries. ActPoint then provides performance comparisons in relation to other member districts. The 2015 Report, *Managing for Results in America's Great City Schools* (published in October), includes data quartiles to better aid in setting benchmark targets and managing strategies in reaching goals.



APS' M&O is gratified to once again rank in the top 5% KPI rating (held for several years) of participating member schools for its management of the M&O Division in the 2015 study. At a cost of \$1.15 per square foot (4.1% improvement over last year) and \$201 per student (5.1% better than last year), APS ranked the highest in the nation in cost effectively maintaining the cleanliness of schools. This cost efficiency is remarkable considering that the quantity of APS' custodial workload is a bit above the median for all participating districts. APS held its previous year's custodial costs per square foot to \$0.04, however due to other districts' supply cost increasing; APS holds the highest rating in that category. APS also ranked at the top of the list for its \$2.42 cost per work order for routine maintenance, a considerable 32.2% improvement over the previous year.

And in spite of the District's dramatic 62.5% increase in major maintenance cost per student over the previous year, it is still near the bottom in relation to other districts with only nine districts spending less. And this increase in major maintenance is actually

good news! M&O increased direly needed deferred maintenance work (added to current proactive work orders), at last replacing long overused equipment and systems instead of Band-Aiding them. If the WO scope-of-work can be expanded to include larger DM issues, *technicians are empowered to do so—positive scope creep*—rather than continue to kick the can down the road.

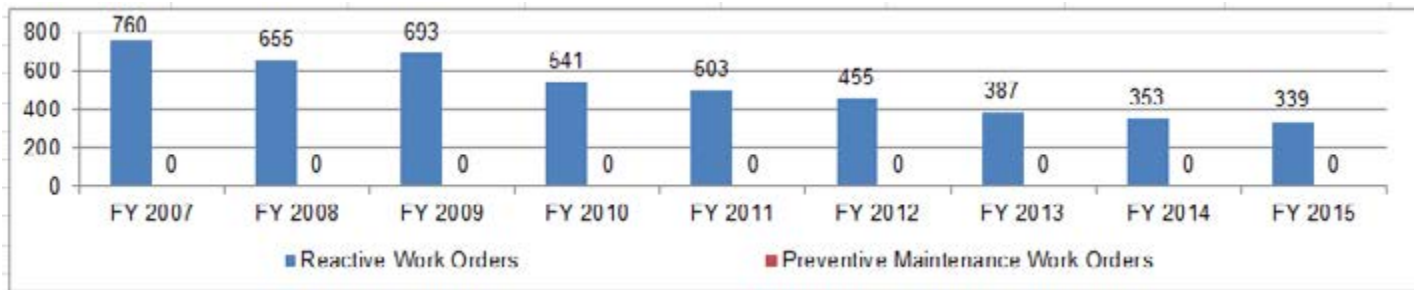
At \$83 per student, 167.7% higher than the previous year, APS spends near the bottom for facility renovations but near the top for delivered renovation construction costs as a percent of total costs. Following the review of last year's Study, M&O stepped back and looked at which renovations *should* sensibly be addressed. A careful assessment of each project classified for renovation and the facility's purpose identified that too many were *wanted* rather than truly *needed*. APS has held steady for the last three years at completing work orders in an average of five days. (See the M&O portion of the 2015 Report in the Appendices beginning on page 104.)



Graffiti occurrences down but force of destruction has intensified

While taggers will unlikely ever cease their incomprehensible need to defile property other than their own, APS has realized welcome success in limiting its occurrence by 3.9% over the previous year and 55.3% since 2007. A number of factors are credited for the improvement that include security cameras; improved lighting at facilities with the most chronic graffiti issues; stepped-up APS Police patrols; and ever alert area residents who are on the ready to report suspicious activity. That said, it's not all good news as when taggers strike, they don't hold back, covering larger areas with unsightly graffiti. The bigger the scar, the most costly the removal denoted in the following Vandalism section.

GRAFFITI



Vandalism strikers fewer but are more determined

Vandals were particularly aggressive in 2014-15. The fiscal year concluded with trespassers shattering 50 windows between three middle schools and Eldorado High School in the early hours of Thursday, June 25. As the destruction occurred at all sites within a three mile radius and within a few hours, one group of offenders is suspected. The \$18,000 to replace the windows could have been applied to much better use! Vandalism was down 8.8% over the previous year, a good thing, but random window breakage increased significantly and has been steadily on the rise for the last three years. The almost \$295,000 vandalism cost illustrated in the bar graph on the following page represents only the outlay to repair damage; when the cost of stolen items is factored in, the expense is many times greater.



M&O and APS Police are continually vigilant in limiting vandalism occurrences. This includes encouraging area residents to use the running tracks and playgrounds and immediately report any suspicious activity to the police, and the District continually installing new security cameras and alarm and detection systems. APS Police have strengthened their efforts in both limiting vandalism through patrols and identifying the offenders, which are fewer than ever. The District is creating an ethos among the student body to take greater pride in their schools and discourage fellow students who may possess the pointless desire to deface their school. Lastly, the evening and weekend community use of the schools discussed on page 4 also limits the opportunity for delinquents to get their inane thrill from intentional ruin.

Vandalism Costs 2008-09 — 2014-15



2015 Preventive Maintenance Management Plan completed and accepted by PSFA

The Public School Facilities Authority, a division of the State Public Education Department, requires all New Mexico public school systems to annually document and present their district's preventive maintenance plan to the PSFA for review and evaluation. APS' 2015 PM Plan included the additional categories of Synthetic Turf Maintenance and Snow Removal which provided the opportunity for M&O to review and update those procedures. The APS Safety Plan was also a new addition to the Plan.

Department procedures manuals 100% completed

M&O began the task of documenting procedures for each of the eight service departments as well as the M&O Warehouse in 2011. In the 2014-15 FY, the Environmental Management Department Procedures Manual was drafted completing the task. Each manual serves as a reference tool in assisting employees in the daily consistent operation of each Craft Shop.

Momentous progress made in eliminating energy waste

As mentioned in the Executive Director's Opening Statement and further detailed in the Energy Conservation Program section starting on page 25, 2014-15 was a breakthrough year in M&O getting down to the nitty-gritty of saving energy. APS will most likely never decrease use as the District continues to build and add energy-dependent technology every day, but as depicted throughout this

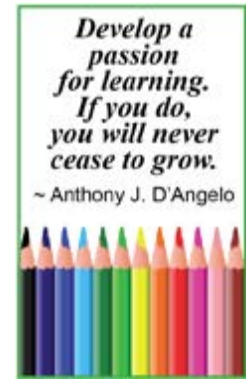
Report, including the following Highlight, M&O is setting no limits on identifying every possible energy saving opportunity and seizing it — no easy task.

Reduced demand charges (spikes) by approximately 8%

The District has long been working to reduce the exorbitant demand charges applied by PNM. Great progress was realized by staggering the start-up of HVAC equipment and utilizing improved scheduling programming in decreasing the surge of start-ups. It sounds simple enough but is not an artless endeavor as frigid classrooms in the winter do not invite student achievement. The 8% reduction in demand charges in 2014-15 is encouraging and has helped to set an attainable goal of a 20% reduction by 2020.

Improved scheduling of heavy equipment preventive maintenance

Last year's Report discussed the quandary of essential heavy equipment being out of commission due to the recurring need of repairs on these often overtaxed backhoes, road graders, wreckers, loaders, and other equipment that moves earth, snow, rocks, concrete, and more. As the District is dependent on these work horses performing reliably every day, a newly implemented staggering PM work schedule on the equipment has decreased breakdowns and addresses multiple repairs in one visit to the Fleet Maintenance Department.

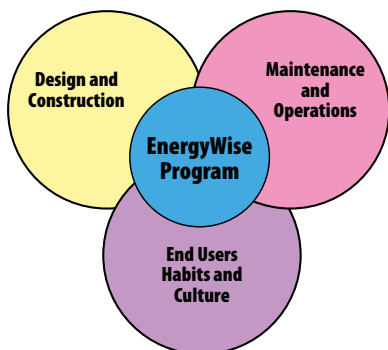


APS' ENERGY CONSERVATION PROGRAM

Energy matters!

Since the District's energy conservation efforts were first launched decades ago, many APS employees (most notably FD+C staff and the M&O Mechanical and Electrical Departments), teachers, students, and custodians have been adopting many good conservation habits. APS' initial conservation efforts were straightforward with a focus on the obvious measures to save energy, which was a good place to start, but these measures eventually hit a "where to go from here?" wall. As it was time to reach higher, deeper, and wider, the District formed the **Water and Energy Conservation Committee (WECC)** — the brainchild of FD+C Executive Director Karen Alarid — in September 2013. Under the guidance of WECC, APS' energy conservation endeavors have taken a giant leap forward, and there's no looking back! WECC has revamped and shifted APS' Energy Conservation Program (ECP) into high gear and knows no boundaries.

WECC is charged with identifying and implementing conservation opportunities District wide. The program consists of three intersecting areas of conservation: 1) new building design and construction; 2) building system operation and maintenance; and 3) the day-to-day habits and culture of the end users (which includes educational outreach that impacts behavioral practices throughout APS.) It is where these three facets intersect that a balanced approach and the most beneficial energy conservation efforts will be seized. However, there will also be no comprising education in this massive goal of identifying every minuscule amount of wasted water, electricity, and gas and eliminating it. The entire conservation effort has to first create an environment conducive to education and then has to save energy. To make this happen, WECC is changing the culture of APS, branding energy education, and folding curriculum and students into the transformation.



WECC evolved from a holistic recognition that every drop of leaking water could develop into a large lake, and an infinitesimal amount of wasted electricity can add up to enough wattage to power hundreds of motorboats speed racing on that lake. APS' new energized ECP evolved from this discernment that saving energy means getting down to the minutia of every facet of energy — the delivery systems; the controls on those systems; the users (building occupants) of the systems; the technicians who service and repair the systems; the systems' design as well as the design of the space the systems cool and heat; when that space is in justifiable use and when the use can be redirected; when and how to most economically purchase the energy; and lastly but most critical to the sustainability of the ECP, participation of the entire energy literate APS populace. It's not only a consolidation of all the variables of energy and energy use, but also the consolidation of the information and education in creating one comprehensive energy picture that can be managed. If it seems endless, it's because it is and is worth repeating, conserving energy at APS knows no boundaries!

APS' energy conservation efforts grew by leaps and bounds in the 2014-15 fiscal year, gaining traction and realizing many gains presented in this section. The re-energized ECP is directing all conservation efforts from a perspective of consolidation, fully acknowledging that it's an overarching concept, yet achievable. The APS Board of Education and executive leadership is on board with WECC's ambitions to change the energy use culture throughout the District. It is a daunting undertaking, considering APS' vast physical size and its 100,000 plus population of students, faculty, and staff is represented by vastly different ideologies.

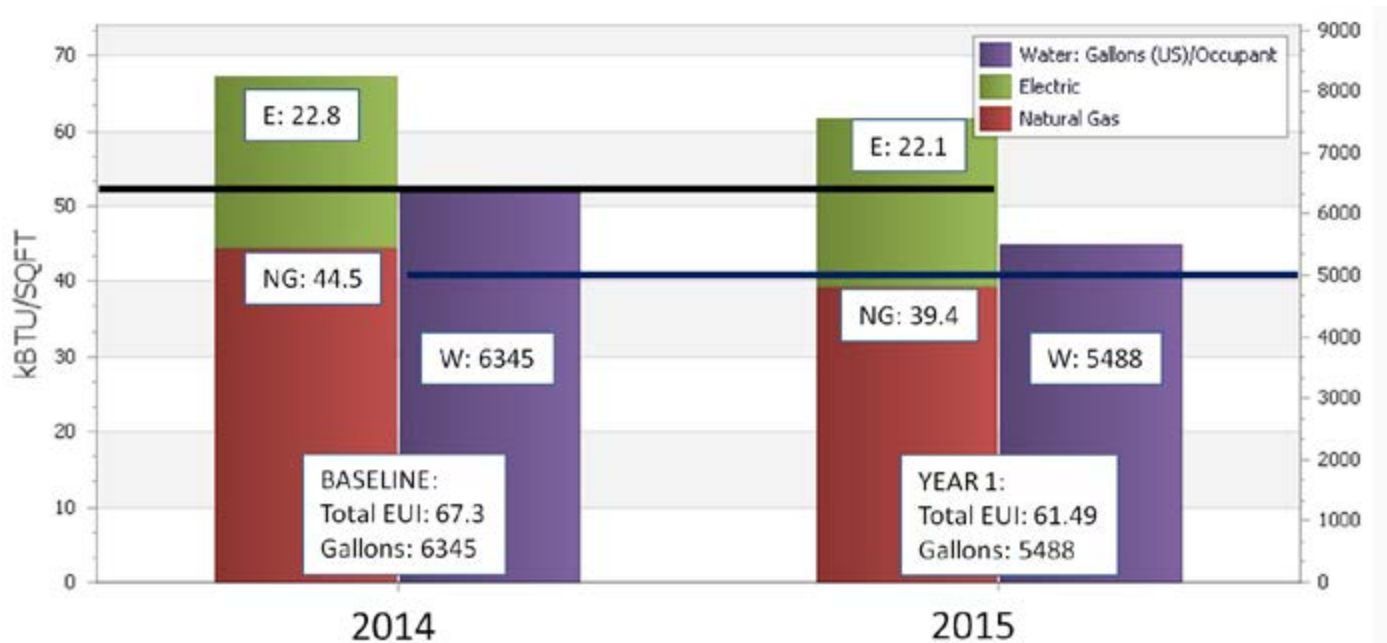
WECC's Energy Policy/Goal

The Board of Education adopted the following energy policy recommended by WECC and the APS Citizens Capital Advisory Commission:

Albuquerque Public Schools shall reduce net water consumption by twenty percent (20%) and net energy consumption by twenty percent (20%) by the end of the 2023-2024 school year as compared to an established 2013-2014 school year baseline. To support this effort, the Superintendent shall ensure full commitment by all employees and involved entities, including administrators, teachers, students, support personnel, contractors, suppliers, and communities using APS facilities. (See "What is a Baseline" on page 87 in Appendices.)

Good start realized in goal to reduce APS' energy and water consumption 20% by the 2023-24 school year

The figures depicted in the first column below represent the water (gallons), electric, and natural gas consumed by the District during the baseline year conducted July 1, 2013 – June 30, 2014. By the end of the 2014-15 fiscal year, WECC efforts had realized a savings of 13.5% in water, 3.0% in electric use, and 11.4% in natural gas consumption.



APS Water & Energy Conservation Update (Water)

- APS Grounds Team, Smartuse LLC, ABCWUA and WECC team members engaged in May 2015 to evaluate viable water optimization projects in the district.

Site Name	Irrigated Acres	Site Analysis \$3000/ac	Repairs based on Time and Materials \$ (Bin H2O Line down to a 3/4 pipe)	Replace all the Heads Sprinkler Head & Spring Joint Replacement \$3000/ac	Remove Casual Turf w/Xeriscape or Turf \$2/ft*2 for demo \$5/ft*2 xeriscape \$8/ft*2 turf (based on 20,000 Ft*2 per location)	Increase Site Staff and Maintenance Capability X 7 people	CY 2014 Use - Units unit= 748 gal/yr	CY 2014 Budgeted Cost at \$1.80/unit	CY 2014 Surcharge	2014 Total Water Spend	% Budget Used
ATRISCO HERITAGE ACADEMY	24	\$73,048	\$12,175	\$73,048	\$140,000	\$46,800	39,599	\$55,685	\$7,164	\$62,849	128%
LA CUEVA HIGH SCHOOL	15	\$45,612	\$7,602	\$45,612	\$140,000	\$46,800	32,859	\$44,141	\$6,894	\$51,035	134%
VOLCANO VISTA HIGH SCHOOL	16	\$46,533	\$7,755	\$46,533	\$140,000	\$46,800	31,374	\$44,944	\$5,297	\$50,241	126%
ELDORADO HIGH SCHOOL	11	\$32,701	\$5,450	\$32,701	\$140,000	\$46,800	23,471	\$31,162	\$5,093	\$36,255	136%
DEL NORTE HIGH SCHOOL	10	\$31,176	\$5,196	\$31,176	\$140,000	\$46,800	22,138	\$30,557	\$4,269	\$34,826	130%
CIBOLA HIGH SCHOOL	9	\$26,563	\$4,427	\$26,563	\$140,000	\$46,800	13,966	\$20,249	\$2,247	\$22,496	124%
JAMES MONROE MIDDLE SCHOOL	5	\$13,920	\$2,320	\$13,920	\$140,000	\$46,800	8,453	\$13,216	\$919	\$14,134	115%
TOTAL	90	\$269,553	\$44,926	\$269,553	\$980,000	\$327,600		\$239,953	\$31,883	\$271,836	

Initial Contractor Options

RFT Option

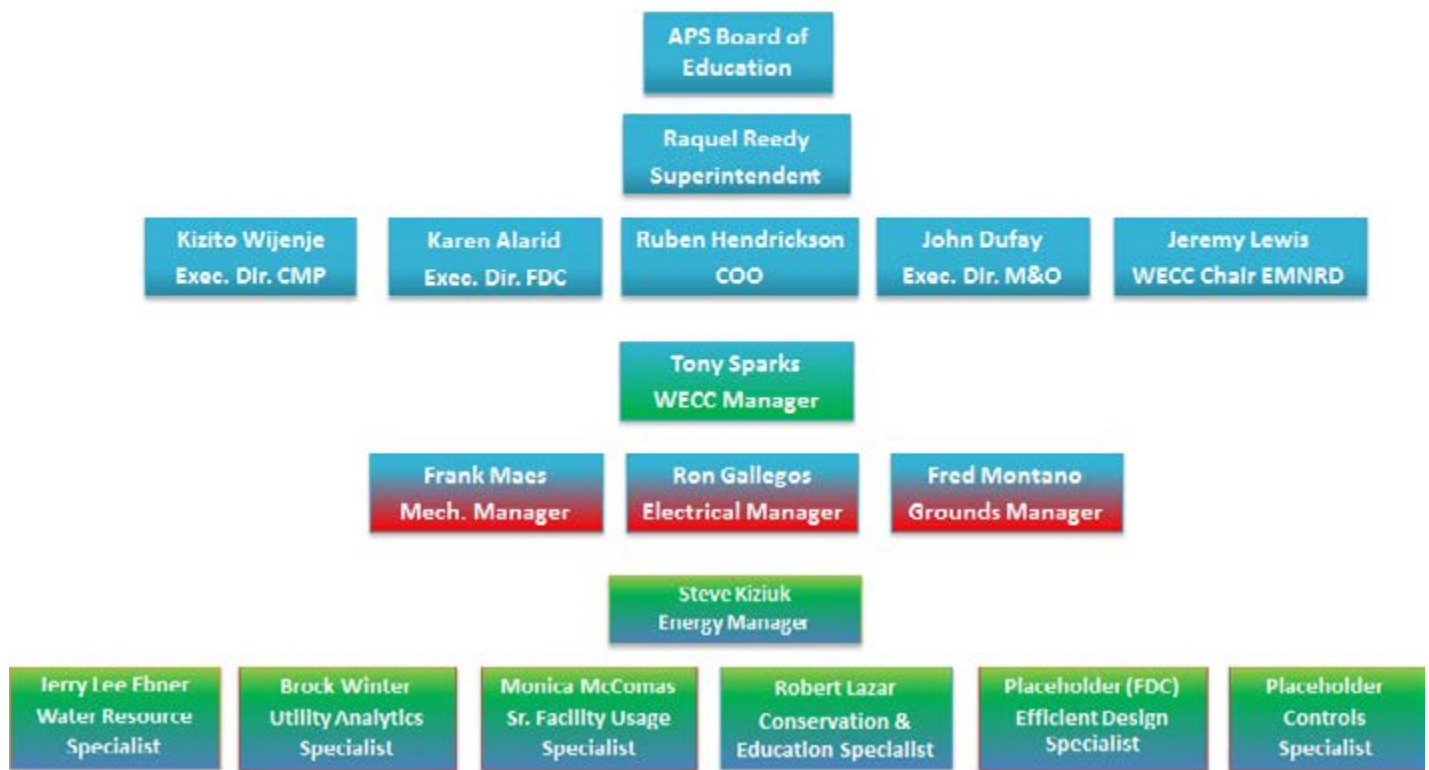
 Top 7 Total Spend
58% of APS Total

WECC's professionals

WECC is a true collaboration of leadership and representatives from APS' executive administration, M&O, FS+C, Finance, Capital Master Plan, and Information Technology divisions as well as the indispensable involvement of municipal utility representatives and community leaders that include business and trade organizations.

Following is an updated organization chart of WECC which includes newly filled positions responsible for Utility Analytics and Facility Usage. Mountain Vector Energy (MVE) was hired as the contracted Energy Manager for Albuquerque Public Schools. Working closely with members of the conservation team, MVE's focus is on converting *data* from disparate systems to *information*, then to *action*, and finally to *results*. In pursuit of the 20% reduction of water and energy use in ten years, Mountain Vector Energy worked with the District's energy team members to lock down a coherent utility baseline, while engaging APS' internal and external stakeholders to characterize, fund, and actively support the team's optimization efforts. Through the establishment of repeatable metrics, the shaping of achievable energy efficiency measures and effective measurement and verification, the WECC team looks forward to true achievable results. This effort exemplifies exactly how WECC's endeavors and investments will return the dividends of saving costs, energy, effort, time and Mother Earth.

APS Water and Energy Conservation Committee Matrixed Org Chart



Energy Conservation Highlights and Initiatives

Rebates paid are welcomed dividends for energy saved

Since the start of the WECC baseline year, July 1, 2013, until about mid-2015, the District has captured \$166,253 in annual energy savings and \$161,923 in rebates from PNM and the Gas Company for a **total savings of \$328,176!** As illustrated in the following visual, the bulk of these savings are for lighting retrofits at numerous school sites and administrative facilities. PNM also rebated \$5,201 for the energy efficient features included in the new construction at Del Norte High School (see next Highlight.) And for participation in the Peak Saver program that shuts off air conditioning units at low occupancy school sites when electricity demand has reached a point of threatening a total brownout, and the Power Saver program that slows down or shuts off cooling systems during high demand, the electric utility also rebated APS \$32,664. The final two entries on the visual represent the \$66,803 in the District's gas savings total (rebate and energy). The installation of energy and programmable t-stats and energy saving boiler calibrations at various sites are credited for this savings.

APS Water & Energy Conservation Update (Rebate)

2013-14 to Present	Date Paid	Project Description	Project Cost	Annual Energy Saved (kWh)	Annual Energy Saved (Therms)	MMBTU	Annualized Energy Spend Saved	Rebate Amount
PNM-13-01281	10/4/2013	Multiple		25,417			\$2,542	\$2,570
PNM-13-01282	10/4/2013	2800 Yermelo Park Dr SV		5,694			\$568	\$341
PNM-13-01343	12/12/2013	1601 Arroyo Vista Blvd NV		176,352			\$17,635	\$11,050
PNM-13-01706	1/16/2014	2700 Mountain Road NV		171,208			\$17,121	\$12,973
PNM-13-01407	1/16/2014	8100 Rainbow Blvd NV		74,468			\$7,447	\$8,010
PNM-14-01465	2/27/2014	Multiple		51,070			\$5,107	\$3,109
PNM-13-01378	7/11/2014	6400 Uptown Blvd NE		106,425			\$10,643	\$10,591
PNM-14-01535	8/21/2014	Multiple		26,016			\$2,602	\$2,609
PNM-14-01593	8/21/2014	Multiple		10,034			\$1,003	\$1,173
PNM-14-01496	11/25/2014	1100 Solar Rd NV - Alvarado		94,387			\$9,499	\$7,267
PNM-14-01497	12/4/2014	1820 Valdivia Rd SV - Ernie Pyle		7,877			\$788	\$824
PNM-14-01783	12/18/2014	1700 Pennsylvania St NE - Inez		23,217			\$2,322	\$1,741
PNM-14-01763	1/28/2015	5323 Montgomery Blvd NE - Del Norte Industrial Art		52,014			\$5,201	\$5,201
PNM-14-01767	2/20/2015	Academy		57,693			\$5,769	\$4,327
PNM-15-01566	3/20/2015	6300 Natalie St NE - Cleveland MS		14,063			\$1,406	\$629
PNM-15-01578	4/3/2015	8208 Guadalupe Trl NV - Taylor Middle		4,601			\$460	\$717
PNM-15-01590	4/3/2015	12955 N Highway 14 Cedar Crest - San Antonio		22,737			\$2,274	\$3,544
PNM-15-01592	4/3/2015	620 Schulte Rd NV - Tail Middle		4,409			\$441	\$687
PNM-15-01593	4/3/2015	5200 Cutler NE - Freedom High		17,166			\$1,717	\$2,676
PNM-15-01591	4/23/2015	400 Edith Blvd NE - Longfellow		8,943			\$894	\$770
PNM-15-01595	4/23/2015	5301 Euclid Ave NE - New Futures		25,888			\$2,569	\$3,234
PNM-14-01585		915 Locust St. SE		210,456			\$21,046	\$1,200
PNM-14-01586		915 Locust St. SE		249,640			\$24,864	\$32,684
SAVER	12/22/2014	ENERMOC DR SEASON		23,458				
NM GAS CO	2/11/2015	NM GAS CO			66,667		\$20,067	\$40,000
NM GAS CO	4/13/2015	NM GAS CO			7,544		\$2,270	\$4,525
Jan 2014 Boiler Tune X 9								
Total								
				Baseline Gallons	Baseline kWh	Baseline Therms	Total Baseline MMBTU	Total Rebate Capture
				521,745,708	100,329,811	6,653,400	1,007,496	\$166,253
				1,468,626	74,211	12,428		\$161,923
				1.46%	1.12%	1.23%		SUM: \$328,176

District taking advantage of both gas and electric utility new construction rebates

FD+C is now requiring General Contractor vendors to apply for all applicable rebates offered by the gas and electric utilities on new construction projects, and forward the rebate dollars to APS. This is one of the best ways to incentivize and take advantage of high-performance design strategies.

High tech energy use systems provide a precise picture and direction

Previous Year End Reports have discussed the need to reduce the District's energy waste as reducing consumption, other than through smart sustainable conservation practices, would compromise the quality of education, which is never an option. Progress has been made, as energy use HVAC, electric, and water diagnostic equipment (and related systems) has made it possible to precisely and accurately gather consumption data. The need to both reduce APS' carbon footprint and save utility costs have dramatically elevated the responsibilities of M&O leadership and expert HVAC, electrical, and water related technicians.

Three new hires and repositioned technician are dedicated strictly to combating utility waste and misuse of energy

Within the last year, M&O has radically ratcheted up its oversight of the District's energy consumption, most decidedly on reducing waste and increasing efficiency. The practice of curbing energy waste is not at all new to the District and its hundred thousand facility occupants. However, improvement is doable and the following dedicated positions will collaborate in intensifying the energy education program that promotes a conservation culture, and in identifying every speck of energy waste and eliminating it.

• Conservation Specialist / Energy Educator

Formerly a teacher with APS for 21 years, energy guru extraordinaire **Robert Lazar** took over the reins of the APS Energy Conservation Program in June 2015 following the passing of the District's first and long-time head of the District's conservation efforts, Ron Rioux. Mr. Lazar most recently taught history and energy at Cleveland Middle School while he simultaneously served as the Sponsor of the Energy Club. He is also involved with the National Energy Education Development (NEED) Project Training Team. Considered the District's master energy educator, Lazar focuses on teaching students the importance of creating and sustaining a culture of energy efficiency and savings. In meeting this objective, he strives to create opportunities that stretch students' imaginations in identifying energy solutions. Under his tutelage, Cleveland Middle

School won the NEED National School of the Year for Energy Student Leadership five times between 1998 and 2013. In his new role he will emphasize energy behavior modification at schools throughout APS.



Mr. Lazar engages students with an energy demonstration

Mr. Lazar facilitates and nurtures a culture of conservation at the schools that incorporates education/curriculum; raising conservation awareness that results in energy saving behavior; and identifying and leveraging internal and external resources — including outreach to communities, APS vendors, and industry partners — to aid in these efforts. He works with the schools in creating and effectively managing energy teams (“Kids Teaching Kids” and “Building Buddies”) consisting of students, teachers, custodians, and administrative personnel. The teams are accountable for developing a school culture that focuses on energy literacy and are committed to working toward meeting the District's water and energy conservation objectives. In students developing a comprehensive Energy Management Plan for their school, they are required to engage and utilize the ecosystem and incorporate conservation strategies into their lesson plans. Mr. Lazar is also charged with implementing a compelling awards and recognition program for the students and schools participating in conservation efforts. He is currently working with the M&O Executive Director in implementing an incentive rebate program that returns electrical cost savings back to the schools, estimated to be about 25%. The schools can apply these funds toward the purchase of energy conservation curriculum materials.

Mr. Lazar is a frequent invited speaker at community energy events and has served on the National Energy Education Development board of directors and currently serves on NEED's National Teacher Advisory Board. In recognition of Mr. Lazar's unfaltering commitment to local and national conservation training programs in energy education, he was honored with the 2015 Distinguished Service Award presented by NEED.

• Senior Facility Usage Specialist

Like other urban school districts, APS is not just about providing Monday through Friday formal class instruction. APS school sites have become community hubs throughout Albuquerque and the surrounding rural communities. In every school site also serving as the community nucleus, area residents use schools' libraries, civic centers, gyms, Performing Arts Centers, cafeterias, sports fields, and classrooms. Even church services have been held in APS classrooms, as well as many of the University of New Mexico's Continuing Education classes. Schools house numerous 'before' and 'after' school programs (APS sponsored and otherwise) and some school sites even have full community health clinics. Parent groups, concerts, movie nights, and family reading, math, and science programs have all been successful in driving parents' engagement and participation in their children's off-hours school activities. APS is eager to welcome parents and all taxpayers to the sites that they in fact financially support, but it has come at a cost that M&O is not budgeted for.

Monica McComas, the newly hired Senior Facility Usage Specialist, is responsible for scheduling all 'before' and 'after' school, as well as weekend, indoor and outdoor activities throughout the District. She strategically designates groups to specific locations within each school site in assuming tighter control of water and energy use. She assures that many activities converge at a limited number of schools and spaces within selected campuses that are appropriate for groups' purposes, rather than scattered throughout the District. This calculated scheduling eliminates the need to heat, cool, and light an entire facility to accommodate a group congregated in but one area. Ms. McComas is truly dedicated to her position and the need to conserve energy. She understands her vital role as the scheduler of facilities use and how it factors into energy conservation.

Ms. McComas manages the APS Facility Usable Program via a web-based registration, rental fee collection (if applicable), and scheduling methodology. This involves regularly collaborating with other members of the WECC energy management team to identify opportunities that optimize/consolidate facility and ground utilization to best conserve resources. The Program has generated \$750,000 in rental fee revenue since it was initiated in the 2012-13 school year. It is not intended to make money, however, merely to recover costs. Information and scheduling regarding fees, use categories, and available facility space is accessed through the APS website at www.aps.edu/community/facility-rentals/building-use-categories.

• Utility Analytics Specialist

As reducing energy use within a large school system without conceding educational quality isn't an option, the focus is on reducing waste. **Brock Winter**, the Utility Analytics Specialist,

is responsible for tracking/monitoring and analyzing utility data (electricity, natural gas, water) District wide and reporting his findings of energy use and misuse to management and WECC. The uncovered data drives actionable energy efficiency measures (EEMs) applicable to general work orders and pre- and post-correction performance of equipment.

Mr. Winter also manages utility rebate incentives for all energy saving projects including retrofits and upgrades; directs cross-functional coordination of EEMs; and follows-up with all pertinent parties to ensure timely progress is achieved on identified saving measures. For example, he works closely with WECC and the HVAC Shop in accessing where nightly shut-downs of heating systems can be carried out safely without the risk of pipes freezing. He closely scrutinizes energy bills (\$12 million annually just for electricity) and questions all peak charges (via newly established communications protocol) to address the occurrence of spikes in electrical use at schools and how to address them. He performs optimization of lighting and HVAC controls, such as timeclock schedules to ensure that lights and equipment turn on and off on a set schedule — not too early in wasting energy but not too late in disrupting school scheduling. Mr. Winter also monitors automated controls in confirming that they are correctly programmed and operating efficiently. In summary, Mr. Winter manages the electricity lifeline to APS facilities.

Grounds Department water resource specialist (WRS) repositioned to WECC

Responsible for overseeing the proper functioning, scheduling, and programming of the District's computerized irrigation system, the WRS, **Jerry Lee Ebner**, is now also an active member of WECC. While he will continue to address irrigation failures immediately to prevent the browning and dying of grass, of equal importance is doing so without wasting a precious drop. The WRS monitors and analyzes water utility data District wide and disseminates information that drives actionable water efficiency measures.

Approximately 182 acres of natural grass is irrigated with an annual cost of \$470,200, representing 13% of APS' water budget — \$3.6 million annually. A mere seven of the largest school sites are responsible for 49.5% of the District's water expenses! As the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) has advised the District that focusing on irrigation is the best application of time and effort in reducing use, WECC and the WRS will start by concentrating water conservation efforts at these top water consuming seven schools. The WRS will also start managing utility rebate incentives for qualifying projects, such as irrigation controls optimization and reclaimed 'grey water' channeled to irrigation systems. (See chart on bottom of page 26.)

Waste Management sponsored program saved 853 tons of recycled materials



APS vendor Waste Management provides large recycling bins at every school and administrative facility site adjacent to the trash collection bins that they are also responsible for. The M&O Grounds Department monitors the recycling bins and requests special pick-ups by Waste Management should they fill to capacity before the scheduled weekly pick-up to not hinder recycling enthusiasm. In 2014-15, 853 tons of aluminum, cardboard/paper, scrap metals, and plastic were recycled! That translates to 6,899 saved trees representing enough saved timber resources to produce 85.4 million sheets of newspaper; 3.5 million kilowatt hours of electricity, enough power to fulfill the annual electricity needs of 291 homes; 4 million gallons of water representing enough fresh water to meet the daily potable water needs of 53,660 people; and 3,084 cubic yards of landfill airspace.

City Center paper recycling program

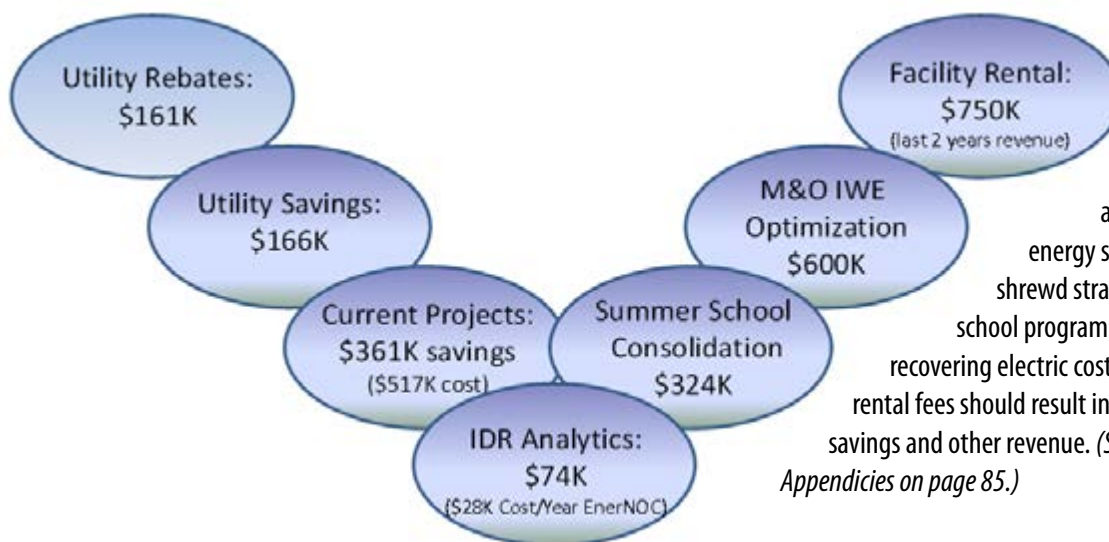
APS' City Center, home to the majority of the District's administrative personnel, initiated a paper and cardboard recycling program in 2011-12. As the following figures illustrate, the effort to recycle versus "throw away" gained massive momentum until 2014-15 when the District emphasized a bigger push to go paperless. In 2014-15, the administrative staff recycled 6.9 tons of paper, a 25% decrease over the previous year. Recycling cardboard has also decreased, but only slightly at 3.4%.

CITY CENTER'S RECYCLED PAPER AND CARDBOARD (TONS)				
Year(s)	2011-12	2012-13	2013-14	2014-15
Recycled Paper	5.8	7.6	9.2	6.9
Recycled Cardboard	unrecorded	1.3	2.9	2.8

The recycled paper alone translates to the saving of 117,86 trees; 48,531 gallons of water; 22.87 cubic yards of landfill; 2,634 gallons of oil; 28,425 kilowatt-hours of electricity; and 415 pounds of reduced air admissions. And the recycled cardboard spared 814 kilowatt-hours of electricity, 96 gallons of oil, and 18.79 cubic yards of landfill space.

WECC initiatives identified \$2.4 million in real and potential savings in first year

The following graphic enumerates achievable savings from initiated energy conservation opportunities for the first year of the program. When completed, these will make a huge dent in M&O's \$20 million annual utility budget. A total of \$328,176 was saved just on electric use reduction and PNM rebates. Programmable thermostats for heating units in portables and boiler tune-ups are on track to save \$44,526 in natural gas costs (not represented in graphic). Current projects, such as Internet enabled time clocks for HVAC systems and retro-commissioning of existing



buildings, not only save energy but also improve building performance. The cost of implementing the projects, an estimated \$517,000, is expected to be recovered in a little over two years through energy saved and rebates. And the shrewd strategy of consolidating summer school programs to a few select sites and recovering electric costs through off-hours facility rental fees should result in over \$1 million in electrical savings and other revenue. (See "2014 vs 2015 Savings" in Appendices on page 85.)

Incorporating photovoltaic panels into all new construction and renovation projects

As the District builds new facilities and renovates existing buildings, it is incorporating renewable energy to offset the energy demand at the site. All new construction is now being designed to include solar photovoltaics (PV). By Public Regulatory Commission rule, a site can generate up to of 80% of its electric load with on-site renewable energy. Moreover, the District is planning to expand its PV presence with arrays at existing campuses throughout the city. New construction projects that incorporated PV panels include Nusenda Credit Union Community Stadium opened in August 2013, and the George I. Sanchez (K-8) Collaborative Community School opened August 2015, each utilizing a 94 kilowatt system which provides approximately 24% of the site's energy.

New construction projects at existing campuses that include PV panels have been started at Ernie Pyle Middle School; Atrisco, Marie Hughes, Onate, Wherry, and Reginald Chavez Elementary Schools; and Rio Grande and West Mesa High Schools, all with expected completion by the end of 2016. PV technology is an important ingredient in APS reaching its energy goals without compromising education.

Energy utility database provides a compilation of energy use for every school



Provided by AIM Energy, an independent energy conservation consulting and technology company, this powerful tool acts as a conduit between APS, the local utilities, and DOE's Energy Star Portfolio Manager database. The AIM Energy Snapshot Tool captures and tracks all

the utilities APS uses and graphs them for each school, providing a repository storage database (not a live representation of real time energy use). This monthly data allows usage patterns to be compared school-to-school. The findings provide a useful picture of relative building efficiency which informs the need for behavioral changes and maintenance/repair/adjustments to equipment.

In true collaborative fashion, this information is being fed back to the District's CAD Drafting Department where a master blueprint for each campus is retained that includes square footage, mechanical and electrical systems, age of every building, and the dates of all construction projects that result in a change to square footage (which, of course, directly impacts energy use at the site).

Utility meter audit conducted by FD+C identified every meter at every campus

In order for the above AIM tool to be developed, identifying every meter throughout the District (including at portables) and recording it by meter number and precise location had to be conducted. It was a Herculean effort but accomplished in providing the ability to compare blueprints against data. An efficient and accurate record of energy use by specific meter is now available and accessible by everyone in the District.

APS selected as a Better Buildings Challenge Partner

In May 2015, APS was invited to participate in the U.S. Department of Energy's Better Buildings Challenge (BBC) as a Partner in the national program. Generally, would-be Partners apply to the program in hopes of being selected. However, the BBC sought out APS after the Kentucky State Department of Energy forwarded them a summary of APS' WECC program which had been written by the WECC Manager. (APS' Energy Conservation Program is actually modeled after that of Kentucky's schools, where they have successfully built the nation's first 'net zero' public schools which produce more energy than they consume. The WECC Manager continues to correspond with Kentucky regularly.) APS is one of only a handful of K-12 public school districts in the nation to qualify and be selected to participate as a BBC Partner.

The Better Business Challenge, started in 2012, is a cornerstone of President Obama's Climate Action Plan, helping the nation to save money on energy and reduce carbon pollution. It is a voluntary leadership initiative that solicits the support of organization and business executives to make a public commitment to energy efficiency. Through the Better Business Challenge, the U.S. Department of Energy (DOE) is showcasing those entities that have demonstrated a commitment to upgrade their facilities in reducing energy consumption and a willingness to provide their energy savings data and strategies as models for others to follow.



The art of teaching is the art of assisting discovery.
~ Mark Van Doren

The BBC was launched with the goal of making U.S. commercial buildings, industrial plants, governmental organizations (including education), and multifamily housing at least 20% more energy efficient over ten years. The energy to operate the buildings in which Americans work, shop, study, and live costs the U.S. an estimated \$200 billion annually, and on average 30% of this energy is wasted. The energy used by U.S. manufacturing plants costs the nation an additional \$180 billion annually, all the while energy efficiencies of 20% or more are possible in most cases, representing a savings of \$45 billion a year!



The DOE's Better Buildings Challenge online resource tool found at <https://www4.eere.energy.gov/challenge/home> assists businesses and organizations find energy conservation and efficiency solutions. Organized by topic, building type, solution type, building size, sector, technology, and location, the site is easy to navigate in obtaining helpful information specific to each organization's profile. On the site, a diverse variety of selected BBC Partner businesses and organizations share their experiences and lessons in what it took to finance their building solutions, implement emerging technologies, build their team's energy expertise, motivate staff, get buy-in from management, and if applicable, establish community-wide initiatives. Currently, approximately 200 tested and proven solutions are featured and include energy efficiency strategies, showcase projects, and implementation models.

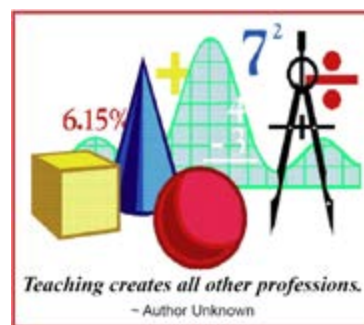
Qualified Partners commit to:

- Publicly pledge a portfolio-wide energy savings goal of at least 20% over ten years and develop an organization-wide plan, schedule, and milestones.
- Announce, initiate, and complete at least one showcase project.
- Have all buildings' energy use benchmarked and a plan in place to manage conservation.
- Share portfolio-wide, building-level energy performance information to measure progress against their pledge goal, and share information about the energy efficiency implementation models (including the tools, technologies, and processes) they are using to reach their pledge goal. In return for their participation, Partners receive from the DOE/BBC technical assistance and help in creating energy efficiency implementation models to support their commitment to measure, track, and improve portfolio-wide energy performance. In addition, DOE and HUD provide national recognition to Partners for achieving program milestones and energy efficiency results.

APS has everything to gain and nothing to lose in joining ranks with the other recently selected Partners including Intel Corporation (a data center partner committing 24 data centers); Manhattan Housing Authority (committing 202 thousand square feet of multifamily space); and Toyota Motor Engineering & Manufacturing NA, Inc. (committing 10 plants); among other entities, both big and small, nationwide.

Negotiated extended maintenance contracts on the purchase of all new mechanical equipment

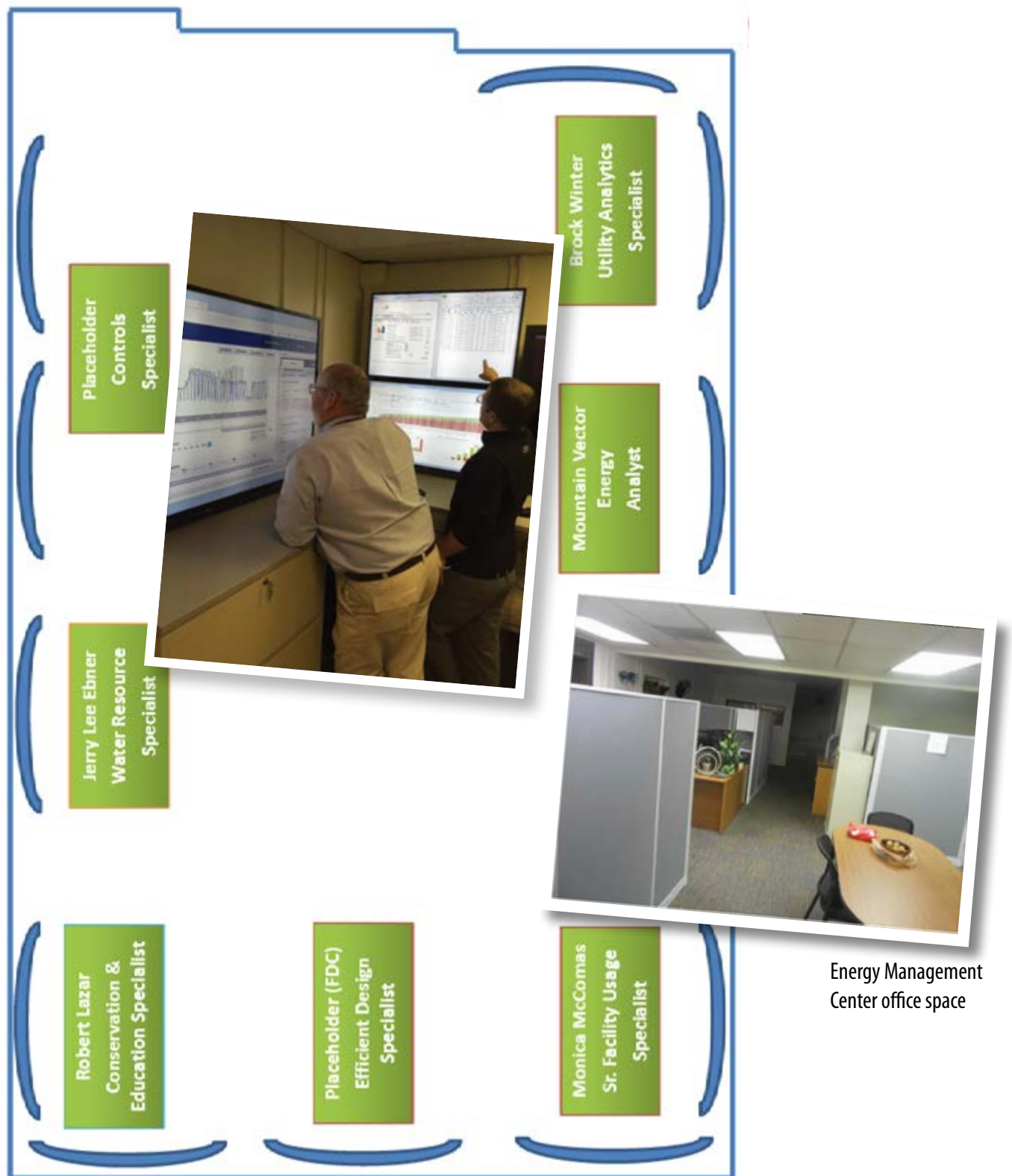
FD+C now negotiates maintenance warranty agreements with all vendors of new mechanical systems, consigning the installer as owner of the equipment for three years. During this "temporary ownership" period, the installer is responsible for performing all repairs, PM work, and training M&O technicians on how to service and repair the equipment. After three years, ownership of the equipment is turned over to APS and M&O assumes responsibility of maintaining it. Today's cutting edge equipment is so sophisticated it requires a great deal of fine-tuning, modifying, and balancing during the first few years of use to work properly. Once precisely adjusted — no easy feat — the "smart" systems do much of the work previously done by the users and technicians. This new three-year maintenance warranty negotiated with the vendors has proven to be cost effective for APS and saves time, expenses, and manpower for M&O.



Energy Management Center in design and planning

The APS Energy Management Center concept, currently in the planning and design phase, is to centralize and broadly visualize all energy and water management functions that span the District. As mentioned in the introduction to this section, the District's reorganized Energy Conservation Program consolidates all energy and utility-use dynamics under one umbrella as each impacts the other. Equipment efficiency is affected by its maintenance, use, and users. The efficient design of a facility and its systems will contribute to energy conservation, while a poorly designed structure will result in needless energy waste. Meticulous scheduling of facilities' use and the conscientious or ill-informed behaviors of occupants will dramatically raise or lower utility bills.

The professional inhabitants of the Center, noted in the illustration below, will work and strategize in concert so that all the pieces of the conservation puzzle come together in saving water, electricity, and natural gas. Quite simply, the Center will manage the optimization of not only how every piece of equipment works, but also how all the various factors work together. Energy use at every District school will be monitored at all times, along with the technology and systems that control the energy. It is quite a distinctive concept for a public school system and one that will more than pay for itself in saving energy and utility costs.



PNM sponsored Building Tune Up Retro-Commissioning (RCx) Pilot Program completed

RCx is the process of monitoring, troubleshooting, and adjusting electrical, mechanical, and other control systems in buildings to improve systems' performance. Experts analyze the performance of systems and offer specific strategies to improve efficiency, extend service life, and improve occupant comfort. RCx provides an understanding of how well a system is working for a specific space or building and identifies obsolete equipment in need of replacement or adjustment in saving energy and costs and improving performance. Study incentives help pay for the building assessments and savings incentives help reduce the cost of implementing the findings. Lastly, PNM offers rebates for identifying and implementing operational and maintenance improvements, many at low-cost or even no-cost.

The five APS pilot schools are noted in the table below. APS, the first to conduct RCx in Albuquerque, is pioneering the program for PNM and the District. Phase I identified and measured electric use and potential savings. Phase II, when executed, will get more specific with executable solutions, benefit savings, and cost factors. WECC and energy conservation leadership is currently evaluating the timing of the next phase.

PNM Building Tune Up Phase I:

	Material Cost	Labor Cost	Total Project Cost	Annual Electric Savings (kBTU)	Annual Gas Savings (kBTU)	Total Energy Savings (kBTU)	Total Savings	Utility Incentive	Simple Payback (Yrs)	Base line EUI	EUI Change	New EUI	EUI Savings %	IDR (Y/N)
Building Tune Up Program				5%										
Building Tune Up - Atrisco Heritage HS - ACS	\$0	\$0	\$3,500	776,897	1,180,400	1,957,297	\$26,323	\$1,750	0.07	79	3.97	75.33	5.0%	Y
Building Tune Up - Georgia O'Keeffe ES - ACS	\$0	\$0	\$2,500	174,037	59,100	233,137	\$5,279	\$1,250	0.24	57	2.86	54.34	5.0%	N
Building Tune Up - Mary Ann Binford ES - ICS	\$0	\$0	\$1,500	114,267	263,700	377,967	\$4,143	\$750	0.18	90	4.49	85.25	5.0%	N
Building Tune Up - Rudolfo Anaya ES - ACS	\$0	\$0	\$3,500	147,130	161,400	308,530	\$4,798	\$1,750	0.36	74	3.70	70.22	5.0%	Y
Building Tune Up - Susie Rayos Marmon - ACS	\$0	\$0	\$2,500	179,282	29,600	208,882	\$5,344	\$1,250	0.23	49	2.43	46.17	5.0%	N
PROJECT TOTALS	\$0	\$0	\$13,500	1,391,613	1,694,200	3,085,813	\$45,885	\$6,750	0.15	74.46	3.72	70.74	5.0%	
Total Baseline 2013-2014	\$13,654,305		\$13,654,305	342,075,559	665,340,000	1,007,415,559	\$16,824,803			65.6	0.20	65.4	0.31%	
% of Baseline	0.00%		0.10%	0.41%	0.25%	0.31%	0.27%							

Two energy professionals earn Certified Building Operator, Level 1 credentials

WECC's Manager and Utility Analytics Specialist attended a seven month course underwritten by PNM to earn this certification presented by the Northwest Energy Efficiency Council. Building Operation Certification is awarded to individuals who demonstrate knowledge and competency in the energy efficient operation and maintenance of building systems and equipment through satisfactory completion of 74 hours of training and on-the-job project completion.

Alternative Fuels Challenge introduced electric cars for 2014 annual event

Aspiring STEM (science, technology, engineering, and math) students representing 27 middle schools from across New Mexico competed in the New Mexico Electric Car Challenge on Saturday, November 22, 2014. Highland High School offered the use of their main gymnasium for this annual event that previously featured hydrogen fueled model cars.

In the ninth year of competition, 46 teams designed, raced, and presented oral reports highlighting their team's approach, car design, and lessons learned from their challenges and shared experience. The Electric Car Challenge strives to present science and math concepts to students in a fun and motivating way, teach team building, inspire creativity, and develop students' writing and presentation skills.



Each team was provided with a lithium-ion battery and a direct-current motor that were required to power their model car. They also received a project toolkit containing a chassis, wheels, and gears to use if they so desired. Students were free to research, evaluate, and adapt other materials not provided in the kit and were credited for doing so. Judges were looking for demonstrations of originality, creativity, and logic, not just building the fastest battery-powered electric car. The Challenge encouraged students to experiment with various body models and utilize a variety of materials to improve their cars' performance on the 10-meter racetrack.

Volunteer judges evaluated the designs for innovation, craftsmanship, and appearance as well as rated the students' optional oral presentations that provided additional credit. Coaches and science teachers report that in participating in the Challenge, students discover their interests and develop talents and the ability to solve problems which elevates their *earned* self-confidence and eagerness to learn more and further challenge themselves.

The race involved five qualifying runs and a final head-to-head elimination tournament. Trophies were awarded in the race, design, and presentation categories, as well as presented to overall winners. Sponsored prize money was also awarded to the top three overall teams (\$750 for first, \$500 for second, and \$250 for third place) to be applied to their schools' budget to fund energy conservation teaching materials.

The 2014 event was dedicated in memory of its founder and longtime Energy Conservation Coordinator for APS, **Ron Rioux**. Generous sponsors of the event include Sandia National Laboratories (primary sponsor as well as organizer of the event in place of Mr. Rioux), Los Alamos National Laboratory, PNM, Intel, Air Force Research Laboratory, and Northrop Grumman Corporation.

APS Energy Czar Dedication



Ron Rioux

September 10, 1950 – October 31, 2014



The New Mexico Electric Car Challenge is a result of the collaboration and commitment of several partners to advance STEM programs and opportunities for students statewide. In April 2014, the above mentioned sponsors came together to sign a STEM Education in New Mexico Proclamation. The proclamation pledges their help to increase the number of certified science and math teachers by 2020; increase high school students' proficiency in mathematics; improve college graduation rates in STEM fields; and prepare the next generation of STEM educators.

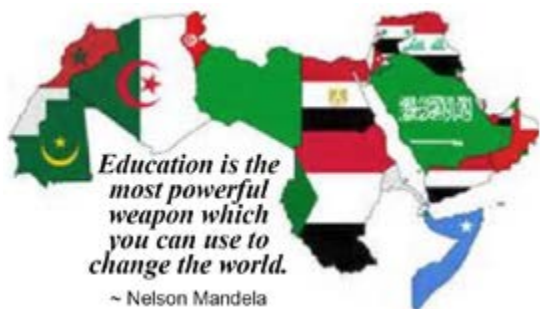


2015-16 Energy Conservation Goals

- The possible move of the irrigation function from the Grounds to the Mechanical Department with the objective of saving water. As plumbing systems transport this precious resource, unifying irrigation and plumbing might simplify water conservation efforts and repairs. The development of a pilot program is currently in progress with possible implementation in spring 2016.
- Recover costs for after-hours facilities use.
- Drive building occupant behavior to be measurably more energy efficient.
- Obtain interval data recording meters (IDRs) at all properties to allow better and more useable utility data for troubleshooting and identifying conservation opportunities.
- Include solar photovoltaic (PV) projects in the Capital Master Plan for broad implementation District wide.
- Gather and analyze building system performance data to inform/influence design choices on new construction and remodel projects.
- Improve design standards for solar hot water systems to cultivate an approach that is beneficial and cost-effective.
- Develop a school culture that focuses on energy literacy by harnessing the energy of the classroom—the energy of students.
- Develop a comprehensive energy management plan for each school in maintaining a sustainable energy conscious school culture.
- Establish energy education and awareness programs for school communities.



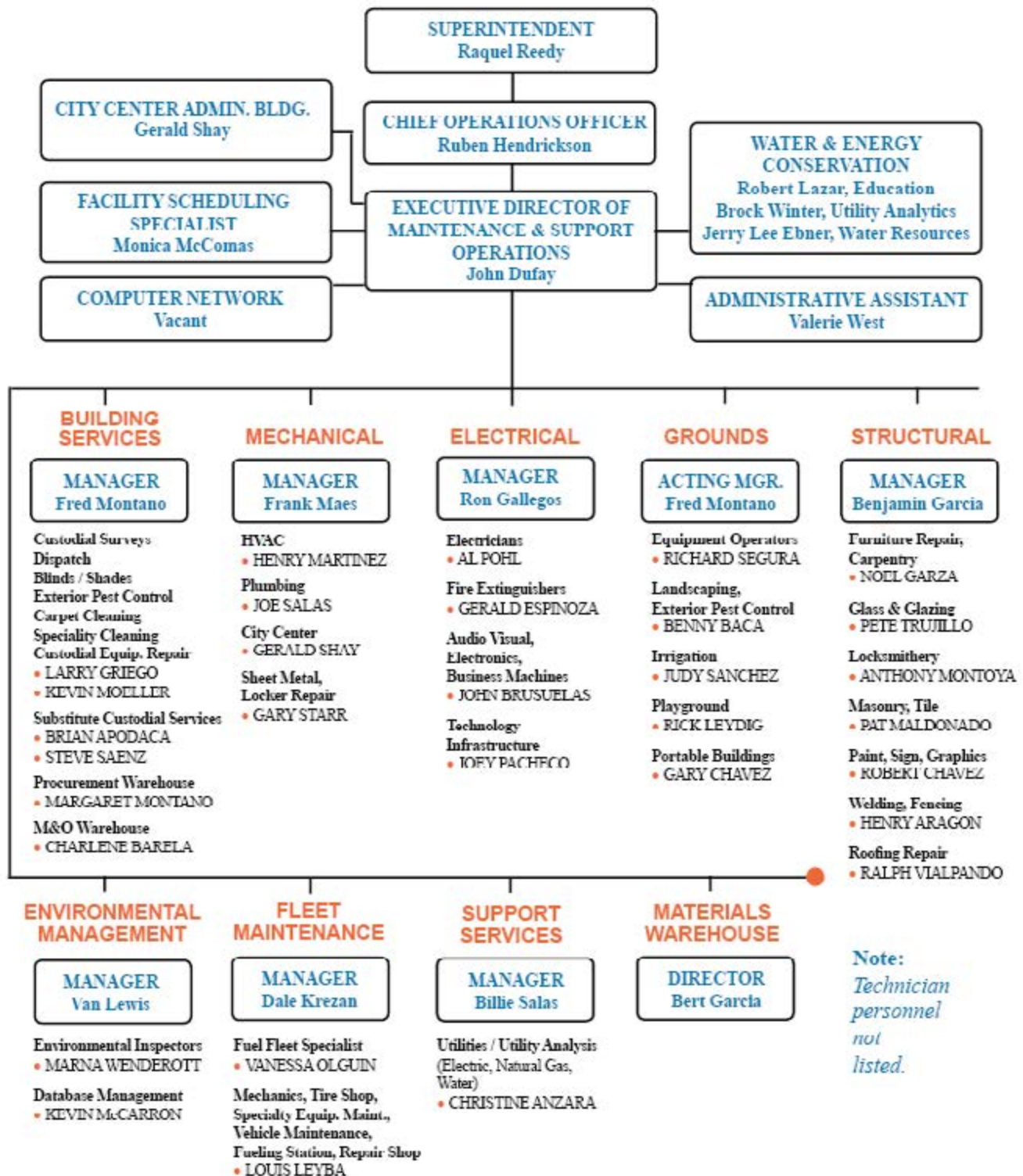
Photos by **Randy Montoya**

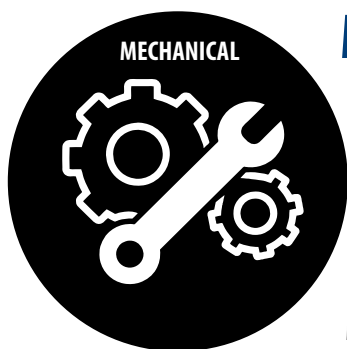


SERVICE DEPARTMENTS

M&O's following eight integrated departments endeavor to provide the highest possible support of the education process through the reliable delivery of excellent maintenance in District schools and administrative facilities: **Mechanical, Grounds, Structural, Electrical, Building Services, Fleet Maintenance, Environmental, and Support Services.**

APS Maintenance & Operations ORGANIZATION CHART





MECHANICAL

Frank Maes, Manager
(22 years with Department,
13 years as manager)
37 technicians and support
personnel

Mechanical Craft Shops include HVAC (heating, ventilating, and air conditioning); Sheet Metal (duct work, exhaust vents, venting hot water heaters, installing ceiling grills, installing air conditioning units, and locker repair); and Plumbing (domestic water, gas, and sewer maintenance).

The Department attends to all that isn't seen but essential to schools' daily smooth operations and wellbeing of the occupants. Mechanical functions have nothing to do with outward appearances and **everything** to do with nearly **everything else** that makes it possible for teachers to teach and for students to learn in a comfortable environment. It is indisputable — the personnel in this department carry much of the weight of the District's very purpose on their shoulders. If these invaluable members of M&O were to disappear, the education process would abruptly halt. But there's not a chance that would happen. At APS, steadfast high quality mechanical service to the District is a given. Due to the unfaltering preventive maintenance attention to the District's plumbing and HVAC systems — aided by subcontractors — APS has not known a school closure due to mechanical failure in decades!

The HVAC Shop stays abreast of the cooling and heating systems that ensure the necessary environmental conditions supportive of the education process. Unsuitable classroom temperatures cause discomfort and distraction that compete with learning! In making certain this doesn't happen requires performing regularly scheduled PM inspections and upkeep (monthly, quarterly, or yearly depending on usage) on the District's over 50,000 pieces of equipment. When issues do occur M&O provides quick professional response to correct the problem. Systems and their controls — becoming more high tech and energy efficient every year — are set for optimum classroom conditions and are continually monitored.

The Department's Plumbing Shop's incessant upkeep of plumbing systems results in the reliability of water delivery District wide. The Shop's monthly preventive maintenance work guarantees that the sanitary drinking water systems are unrestricted and contamination-free. PM on sewer systems abate sewer backups at schools that

would cause classroom disruption, if not complete closure. Jetting sewer lines has proven to be a valuable preventive maintenance protocol.

Monthly inspections are also performed on all fire protection sprinkler systems, kitchen hood fire suppressant systems, and boiler systems. The scheduled inspections and equipment service delivers assurance to students and staff that they have functional mechanical systems and the most comfortable classroom environment possible.

The one-man Locker Repair Shop is the sole craft not on a PM program as lockers rarely wear out. Regrettably, senseless vandalism is typically the sole reason for much needed repairs and parts replacement.

Highlights

Highly skilled new hires elevated quality of Department

• HVAC:

Four out of five vacancies were filled in the HVAC Shop which resulted in taking PM work for 20 schools away from contractors and assigning them to in-house technicians possessing a high level of ownership. In addition to saving dollars, M&O techs with a sense of proprietorship for the schools they are in charge of cultivate face-to-face relationships with the Principals and school Administrators.

• PLUMBING:

Three retirees in the Plumbing Shop were replaced by experienced and highly skilled technicians — no learning curve necessary. In addition, the Shops' highly knowledgeable and experienced Assistant Supervisor, Joe Salas, was promoted to Supervisor with expedient results. With the District for over 20 years, he possesses firsthand knowledge of so many systems he has personally worked on. New to the District and filling the vacated position of Assistant Supervisor is Johnny Madrid. He joined M&O with extensive commercial plumbing experience including serving as a Backflow Prevention Instructor at CNM (currently teaching evening courses). Mr. Madrid is certified in testing, inspecting, and repairing all backflow devices. (See following Highlight).



Plumbing jobs are often more than routine maintenance.

Six technicians certified in backflow testing and prevention are taking back work from contractors

Because Mr. Madrid answered the call to get all plumbing technicians certified in backflow testing and prevention, the function is being brought back in-house. An estimated \$20,000 was saved within four months of M&O plumbing techs assuming some of this work formerly performed by contractors. There are approximately 980 backflow devices throughout the District. If in-house techs test each one, saving \$100 per device currently paid to contractors, APS will save \$98,000 on testing alone. Add the savings of also performing repair work internally and the total saving is enormous.

Saving costs in buying backflow parts in bulk

The Plumbing Shop is now comparative price bidding (for parts) and saving funds by buying parts in large quantities and stocking the inventory in the M&O Warehouse. The price difference may be nickels a piece for some items but the worthwhile savings greatly add up.

Heightened focus on HVAC PM

While equipment PM has held steady and never slowed, it has been a challenge to expand the program due to unending immediate demands and a dearth of financial and consequently manpower resources. To aid in the effort of improving productivity efficiencies and numbers, the HVAC Shop shored up training on servicing the latest equipment being installed in school renovations and re-builds. M&O is also looking at KPI numbers and approaches to continually tweak the Shop's corrective action in improving results. This data aids in recognizing when valuable resources can be redirected to make a positive difference. This includes focusing on minor changes that don't result in the biggest bang for the effort, such as completing PM work in a timely manner and a consolidation of work orders to be more time and cost efficient. Quite simply, when major funds are not available to address the problem, minor procedural tweaks add up and can have a major *total* impact on results. In addition, leadership is working toward ensuring that corrective processes are sustainable and replicable across departments wherever possible.



Crew works on plumbing problem at Tony Hillerman Middle School

Maintenance costs decreased Department wide


When PM work was first introduced, it was assigned to both contractors and in-house technicians. As workers were basically playing catch up with the condition of the equipment, PM work was initially time consuming and costly. In addition, a work order was generated for every PM task as all M&O departments were driven to meet PM work order number requirements set by leadership and the PSFA. The Department has shifted to more efficiently combining many PM functions into one work order saving time, effort, cost, and paperwork. For example, air conditioning shutdown used to be performed at the end of the warm weather season and air conditioning prep performed just before the return of warm weather. These and many other Department wide PM functions are now combined into one work order saving 16% in total maintenance costs and 56.7% in PM costs in 2014-15 over the previous fiscal year — that's \$2.3 million! (Note chart below.) Both PSFA and APS have become much more enlightened regarding the management of PM and maintenance labor and administrative costs.

Mechanical Total		Click Inside The Yellow Cell, Located On The Right, To Select A Different Department							
Fiscal Year	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Reactive Work Orders	15,210	17,085	16,928	19,101	19,439	20,046	20,365	19,720	19,970
Preventive Maintenance	954	1,207	1,895	4,917	4,727	4,811	4,743	4,374	4,242
Total Work Order For Fiscal Year	16,164	18,292	18,823	24,018	24,166	24,857	25,108	24,094	24,212
PM Count Ratio	6%	8%	11%	26%	24%	24%	23%	22%	21%
Fiscal Year	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
All Maintenance Cost	5,667,399	5,983,465	6,140,969	6,102,492	5,716,160	6,083,476	6,280,883	6,715,532	5,639,955
Preventative Maintenance Cost	1,663,951	1,596,942	2,101,255	2,565,293	1,820,847	2,564,035	2,587,634	2,213,515	956,530
PM Cost Ratio	29.36%	26.69%	34.22%	42.04%	31.85%	42.15%	41.20%	32.96%	16.96%

HVAC Shop decreased reactive work

As the following chart illustrates, HVAC reactive work decreased just shy of 2% in 2014-15, largely the result of PM work. Misleading, however, is the decrease in preventive work order numbers as actual PM work activity increased as indicated by the 24.2% increase in PM Cost Ratio over the previous fiscal year. As with the entire Mechanical Department's reduction of PM work orders and all maintenance costs, it is the outcome of efficiently combining work orders (See previous Highlight). The HVAC Shop also decreased all maintenance costs 26.3% and PM costs 8.4% over the previous FY.

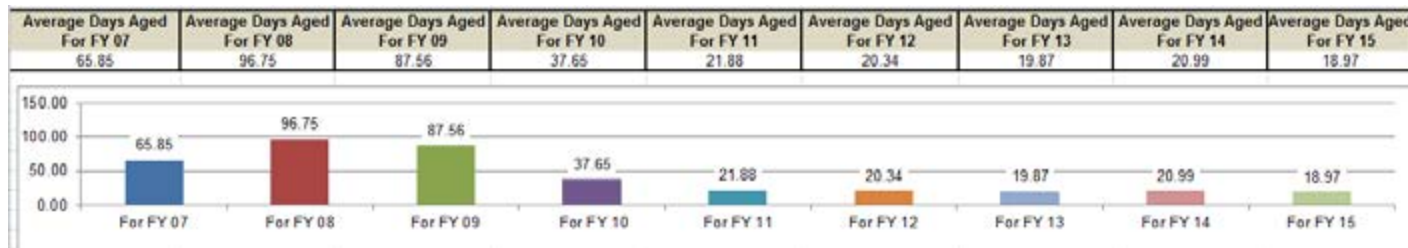
Heating/Ventilation /Air Conditioning		Click Inside The Yellow Cell, Located On The Right, To Select A Different Department							
Fiscal Year	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Reactive Work Orders	7,919	9,199	8,695	8,002	8,272	9,238	9,244	9,004	8,842
Preventive Maintenance	903	1,224	1,729	4,570	4,103	4,183	4,076	3,695	3,567
Total Work Order For Fiscal Year	8,822	10,423	10,424	12,572	12,375	13,421	13,320	12,699	12,409
PM Count Ratio	11%	13%	20%	57%	50%	45%	44%	41%	40%
Completed Or Closed PM Work Orders	845	913	1633	2859	3519	4033	3443	3205	3060
PM Completion Rate By Craft	94%	75%	94%	63%	86%	96%	84%	87%	86%
Fiscal Year	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
All Maintenance Cost	\$ 2,403,172.64	\$ 2,889,470.74	\$ 2,684,903.49	\$ 2,099,221.96	\$ 2,502,190.49	\$ 2,386,864.45	\$ 2,391,725.42	\$ 3,050,452.21	\$ 2,247,804.35
Preventative Maintenance Cost	\$ 1,618,146.15	\$ 1,533,125.97	\$ 1,935,180.34	\$ 2,376,923.80	\$ 1,775,236.04	\$ 2,434,170.70	\$ 2,498,091.19	\$ 2,121,560.37	\$ 1,942,278.61
PM Cost Ratio	67.33%	53.06%	72.08%	113.23%	70.95%	101.98%	104.45%	69.55%	86.41%

Existing PM Program Depicted In Red	
	

HVAC technicians processing paperwork faster

As noted below, HVAC Shop technicians improved the time to close work orders by two days over the previous year. Ideally, it is the time to actually perform the work that should be measured, but the SchoolDude WO system starts the clock with the initial request from the school, even before the school Administrator has reviewed or approved the request. The following does not exemplify that techs are working much faster than they did from 2007 through 2010, but rather that all now have access to computers and have adjusted to the necessity of processing paperwork efficiently (a requirement of their job function).

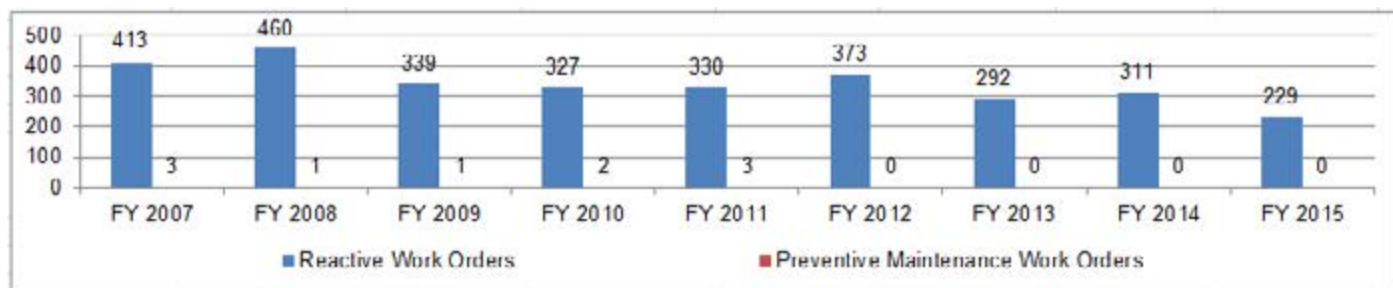
PLUMBING SHOP



Sheet Metal Shop reactive work orders down

As there are no moving parts in grills and corner guards, the Shop performs no PM work at this time. Reactive work fell 26.3% over the previous year as previous years' repair work restored grills and other metal works to a higher standard greatly eliminating breaks and emergency calls as well as resulting in low or no backlog.

SHEET METAL SHOP



Reduced cost for air coolers' prep, start-up, and walk-through work

Due to a new "per unit" contract fee versus a "per hour" fee negotiated with vendors at the end of the previous fiscal year, the Department has cut costs for this PM work by approximately half!

Upgraded old rusted out HVAC equipment at various schools

While technically functional, ancient equipment that has been beat up by rain, snow, and hail coupled with gale winds eventually becomes more expensive to operate than to simply replace. Not even PM work can win a battle with Mother Nature. New equipment was installed at various school sites in 2014-15: new multi-zone heating and cooling units at Valley High School; evaporative coolers were replaced or refurbished at Kirtland, Zia, Sandia Base, Highland, Barcelona, Navajo, La Mesa, and Emerson Elementary Schools, among others; air washers were refurbished at Tomasita, Griegos, and Reginald Chavez Elementary Schools.

Participated in the design of VRF and DDC HVAC systems for Del Norte High School's Industrial Arts Building

Heating and cooling variable refrigerant flow systems and direct digital controls (low voltage electronics on heating and cooling systems individually operated via the APS Intranet) save energy, maintenance labor hours, and ultimately costs. This has become one of four standard applications on new or replacement projects.

PM programs (on-going)

As many HVAC and plumbing service inspections are state-mandated (but not state funded), the Mechanical Department is ahead in developing PM programs; however, many of the following PM programs are not required. All PM work is automatically generated by the PM Direct work order system. PM work orders are scheduled monthly, bi-monthly, semi-annually, and annually (depending on use and function) and visual inspections are performed weekly. PM Direct inspection and/or service work orders are automatically generated for the following:

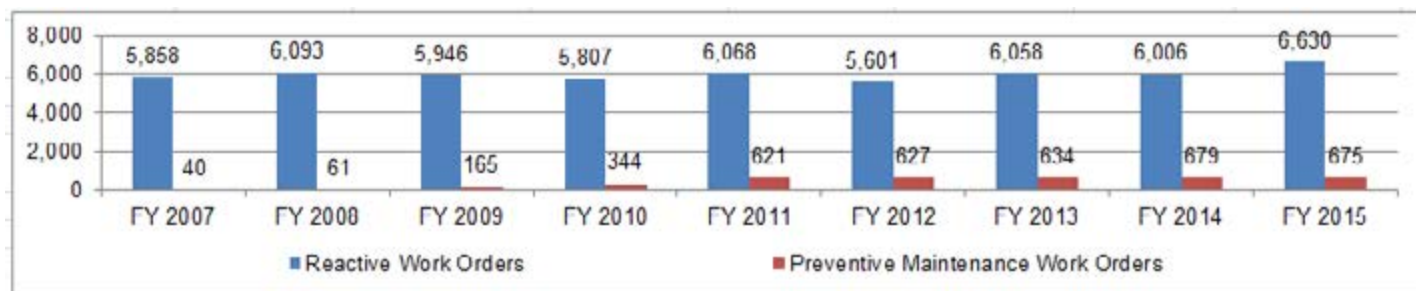
- Fire protection sprinkler systems
- Kitchen hood suppression systems
- Exhaust fans
- HVAC filter change-out
- AC equipment inspection and fully serviced (pads changed every other year)
- Spring AC start-ups (evaporative)
- Winterize AC shut-downs (evaporative)
- Cooling tower and chiller service
- Hot water heaters inspection (quarterly)
- Steam boiler service
- Steam boiler prep for winter heating
- All heating system start-ups (with and without boilers)
- Steam boilers layup
- Steam boilers (summer)
- Hot water boilers (summer)
- Hot water heaters
- Boiler inspections (visual, weekly)
- Chemical treatment for boilers and chillers
- Plumbing systems (annually, primarily summer)
- Water softener treatment
- Chlorinate treatment
- Plumbing inspections at all school sites (drains, faucets/fixtures, toilets, urinals, water fountains)
- Septic pumping and disposal
- Grease trap pumping
- Backflow testing and inspection / backflow prevention
- Air compressors
- Chillers
- Fire pump flow
- Dry pipe system drip test
- Chiller water closed-loop service
- Ground source closed-loop service
- Natural gas pipe run/inspection: Per the New Mexico Public Regulation Commission, by Congressional Mandate the Natural Gas Pipeline Safety act, all gas lines from the meter to the building, in accordance with Mandate (Docket PS-135, Amendment 192-3), all buried gas lines are to be periodically inspected for leakage and repaired if unsafe conditions are found. One third of APS gas lines are inspected on an every third year rotation (summer). APS pressure tests at 5 PSI or service line pressure, greases all gas stops, and repairs any gas lines as needed per the pressure test.



Special Challenge

Aged plumbing systems are requiring more attention District wide. The Plumbing Shop realized a 10.3% increase in reactive work in 2014-15 due to breaks in old sewer lines and main water lines. Old infrastructure is expensive to repair or replace and will undoubtedly continue to burden APS.

PLUMBING SHOP



GOALS

Status of 2014-15 Goals

- ~ Provide training to the remaining Plumbing technicians yet to be certified in backflow prevention inspection and testing. *Six trained, others to following in 2015-16*
- ~ Implement new Plumbing Shop PM to clean out sewer sanitary lines and storm drains with the jetter previously used only for emergencies. The jetter provides a high pressure washing system to address the heightened need as newer systems being connected to existing systems is resulting in increased backups. The PM for sewer lines will help reduce sewer back-up emergency calls dramatically. *In progress*
- ~ Replace the multi-zone heating and cooling units at Del Norte High School's Performing Arts Center. *Designed and equipment ordered (see Highlight above). Installation upon arrival in 2015-16 FY*



2015-16 Goals

- ~ Complete an updated inventory of equipment. Leadership is evaluating options regarding adopting a better method for capturing new equipment added to re-builds, additions, and renovations as well as deleting discarded equipment. M&O sorely needs but is lacking a fulltime inventory clerk to bring equipment databases current and implement a sustainable system to keep the inventory up to date. A sustainable method needs to include all replaced (new) HVAC and electrical equipment (motors, fans, control panels, and more) when construction work is completed.
- ~ Complete training and certification of most if not all technicians in testing, inspecting, and repairing backflow devices District wide. It is estimated that once accomplished 90% of this work can be performed in-house at an astronomical savings.
- ~ Complete training and certification of all HVAC technicians and Supervisors in variable Refrigerant Flow (VRF) and Direct Digital Controls (DDC). This would qualify more personnel to proficiently work on these advanced systems that are steadily being integrated into the District.
- ~ Replace the multi-zone heating and cooling units at Eldorado High School.
- ~ Assign simple, low skill level work to contractors in freeing up the highly skilled in-house technicians to perform more difficult work orders. This will require a thorough and scrupulous analysis of work order data to determine how to strategically shift work assignments to make the best use of both in-house techs and contractors. An annual savings of \$450,000 is projected.



GROUND

Fred Montano, Acting Manager

(35 years with APS, recently appointed acting manager)
44 technicians and support personnel

Grounds Craft shops include
Heavy Equipment Operators;

Landscape Maintenance which includes

Tree Trimming; Weed and Exterior Pest Control; Irrigation; Grounds Safety Inspection; Water Resources; Paving; Portable Maintenance; and Playground Maintenance and Repair.

The M&O Grounds Department supports student success and achievement by delivering safe, healthy, appealing, and highly functional outdoor common areas, playgrounds, sports fields, and learning environments. And in meeting this need for students, Grounds maintenance also contributes to the preservation of the District's real estate. Lastly, the upkeep of all facilities' curb appeal inspires a sense of school pride felt by the students and their parents, teachers and staff, and the neighboring community.

Portable maintenance technicians provide exterior maintenance and access (including ADA access) to approximately 1,600 portable classrooms. The Landscape and Irrigation Shops maintain and irrigate the District's 360 plus acres of athletic fields (both natural grass and synthetic turf), over 150 playgrounds, and tens of thousands of trees, drought tolerant landscaping, ornamental lawns, school summer gardens, and other vegetation.

Playground technicians are dedicated to providing safe playground equipment and play areas for kindergarten and elementary school kids. Regularly scheduled inspections and repairs are performed on a wide assortment of thousands of pieces of International Play Equipment Manufacturers Association (IPEMA) certified playground equipment. The Shop's technicians — all skilled and licensed welders — also lend their welding skills to support other M&O Departments' needs.

Highly trained and licensed (by the NM Department of Agriculture) horticultural pest control technicians safely exterminate relentless weeds and insects that are pesky at minimum and a health hazard if left to proliferate. So much more than merely the "bug crew," they are educated in all areas of both approved and restricted chemical use. NMEDA conducted continuing education courses keep technicians up-to-date on the appropriate use and safety procedures regarding new chemical products.

The Heavy Equipment Shop provides support to other M&O technicians, such as plumbers and electricians, in performing repairs that would otherwise impede the education process. They also handle heavy equipment-required jobs with regards to erosion control, ADA access, and snow/ ice removal. In addition, the Shop is responsible for maintaining the District's paved surfaces, grading dirt tracks for student safety, and the collection and delivery of materials — such as sand, wood chips, and fill-dirt — to playgrounds and other areas.



Delivering a pallet of garden supplies required lifting over the wall at Emerson Elementary School.



Many large repairs require the aid of heavy equipment.

Highlights

Formalized Snow Watch Patrol and Removal Plan

A number of APS Divisions work in unison during the winter months in certifying that roads are passable for school buses and parents driving students to school during snow storms. As such each Division simply followed their established and routine procedures. However, in December 2014, one unified Snow Watch Patrol and Removal Plan brought the various procedures followed by each Division under one umbrella. While the previous method worked just fine, a formalized plan removes any chance of Divisions duplicating efforts or worse yet, a necessary action not taken due to the presumption that another Division was seeing to it. Although the plan is applicable District wide, it is most relevant to the four schools located in the high altitude communities east of the Sandia Mountains where snow most often falls and sticks: A. Montoya and San Antonito Elementary Schools, Roosevelt Middle School, and Manzano High School. Roughly 1,500 students attend the East Mountain schools with Manzano High School represented by students from both the Albuquerque area and the East Mountains.

The APS Snow Watch Patrol is on duty beginning in the early evening in the event of a possible snow threat and is composed of M&O, APS Police, Student Transportation Services, and the Chief Operations Officer. Snow removal is carried out by Grounds Department heavy equipment operators beginning at 4:00 a.m. School custodians are responsible for shoveling snow off sidewalks and start the task between 5:00 and 6:00 a.m., depending on need.

Up-to-date information about school delays, cancellations, and early releases is available at www.aps.edu/about-us/school-delays.



Heavy equipment operators clear snow at various school sites.



Department made noteworthy progress in becoming ADA compliant

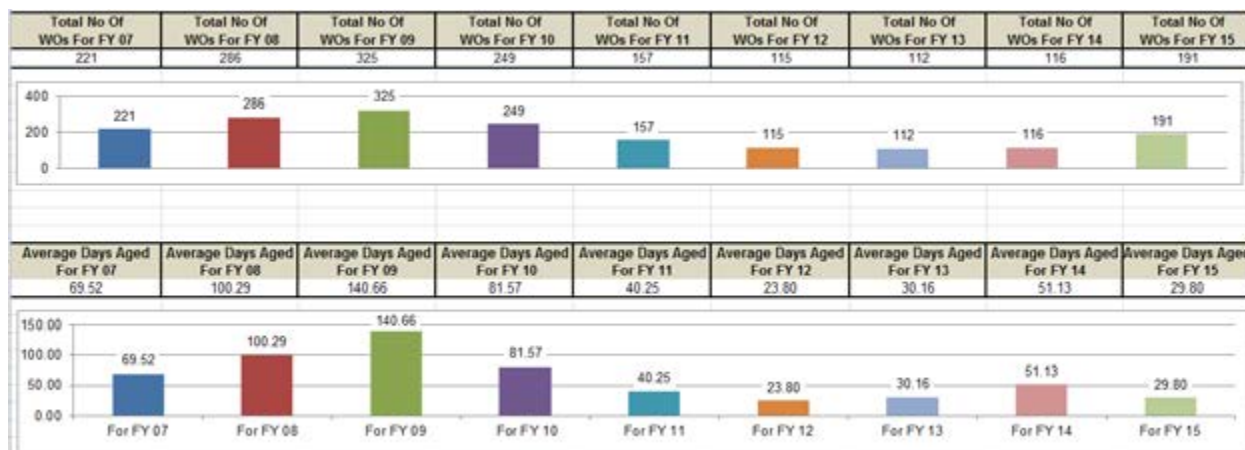
The Paving Shop addressed 122 work orders, 35.5% more than the previous year, in bringing walkways, handicap access to playgrounds, and parking lots near portable classrooms ADA compliant. While damaged paved areas that are trip hazards are tackled immediately, cracks that will eventually become perilous were addressed in the 2014-15 FY.

PAVING SHOP



In addition, the Portables Shop provided handicap access ramps for portable classrooms (under FD+C), work that was formerly contracted out. The cost saving switch in utilizing in-house technicians over contractors resulted in a 64.6% increase in work over the previous year. A bit of this increase is also attributed to the Shop issuing more WOs rather than grouping tasks into one, causing WOs to be completed and closed sooner and decreasing the average number of days to close WOs by 41.7%.

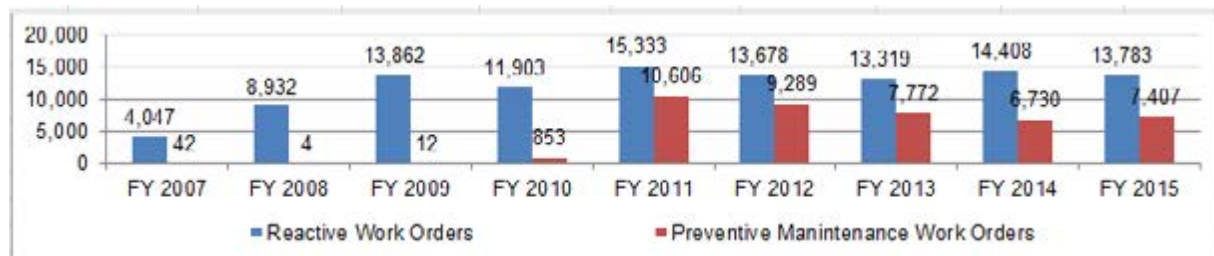
PORTABLES SHOP



All Grounds Shops' heightened use of PM Direct increased PM work orders by 10%

The Department performed 52 more work orders in 2014-15 and corrected data entry to provide a truer picture of reactive versus PM work; reactive WOs decreased by 4.3%; and PM work increased by 10%. Most of the shift occurred in the preventive maintenance of baseball and softball fields that was previously manually scheduled but is now scheduled through PM Direct.

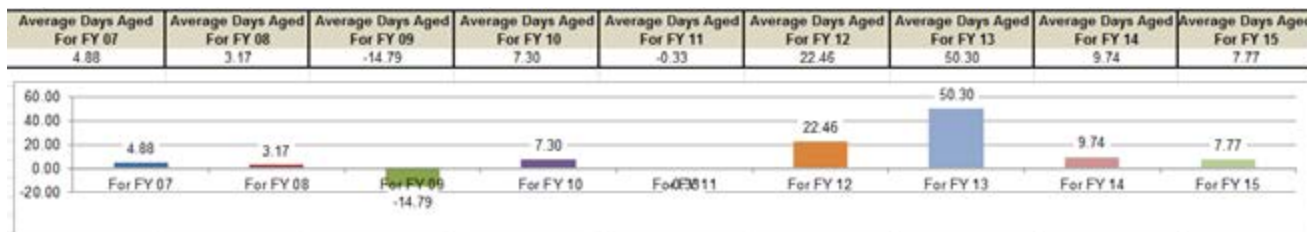
GROUNDS DEPARTMENT



Pest Control technicians closing work orders in a more timely fashion

The push from management to tighten up all WO paperwork has also resulted in the timelier closing of work orders. The outdoor pest control technicians achieved a 20.2% improvement over the previous year.

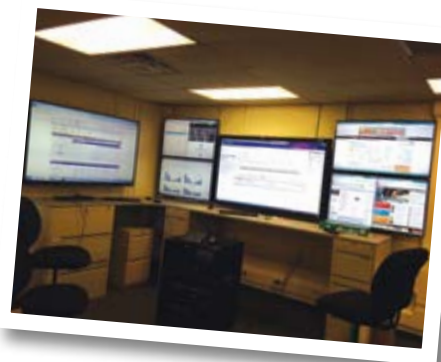
PEST CONTROL OUTDOORS



New outdoor recreation and learning sites constructed at various campuses

The following schools gained new outdoor learning and playing areas in 2014-15:

Atrisco Elementary School	Playing Field
Mountain View Elementary School	Playing Field
Ventana Ranch Elementary School	Playing Field
Collect Park Elementary School	Playground
Wherry Elementary School	Outdoor Classroom Space
Rio Grande High School	Soccer Field



Artificial turf fields, play areas, and common areas installed at various campuses

Synthetic fields provide safe and durable play areas that are cost and time efficient to maintain as well as require not a drop of precious water! The following Elementary Schools received new synthetic fields in 2014-15: Adobe Acres, Chamiza, Duranes, Eugene Field, John Baker, Lavaland, Montezuma, North Star, Petroglyph, Seven Bar, Wherry, and Whittier. Ornamental artificial turf was also installed at the common areas at McKinley and John Adams Middle Schools, and the entrance area at Alamosa Elementary School.

John Adams Middle School's outdoor space upgraded and beautified

In addition to the artificial turf installed in the patio area (see above Highlight Table) a shade structure with seating and an outdoor classroom were added. A new irrigation system was also installed at the school's orchard consisting of apple, peach, and pear trees.

New landscaping constructed at Inez Elementary School

A common area, previously a purely utilitarian holding pond for run-off water, was transformed into a beautiful and inviting patio space that includes tables fashioned out of tree stumps and seating surrounded by large ornamental rocks and boulders. The significantly improved space also serves in redirecting run-off water.

Various grounds improvements made at select sites

Dolores Gonzales Elementary School	Expanded space in portable classroom area
Robert F. Kennedy Charter Middle School	Added new grass and artificial turf areas
Chaparral Elementary School	Expanded staff parking lot
James Monroe Middle School	upgraded running track from dirt to rubber surface (more comfortable, attractive, and safer)

Grey water irrigation systems installed at Wilson Stadium and Milne Stadium (Field II)

The newly installed grey water systems save water and money as grey water is considerably less expensive than potable water. In addition, this eliminated the need for backflows thereby boosting water pressure without increasing volume.

Eldorado High School received major improvements

A seriously needed new campus wide drainage system was installed and the parking lot was resurfaced by FD+C (Capital Master Plan). The improvements were overdue at this northeast heights school constructed in 1970.

Improved drainage system installed at Rio Grande High School

The new system now drains onto the baseball field without the puddling that previously occurred.

Highland High School's running track upgraded

The school's timeworn rubber track was badly cracking and in some areas completely pulled off the ground. The new rubber track with fresh striping is safer to run on and looks 100% better.

Re-seeded fields at select schools

Bare areas on natural grass fields were aerated, re-seeded, fertilized, and top dressed on the football fields at Volcano Vista, Cibola, and La Cueva High Schools, and playing fields at E.G. Ross, Alamosa, Armijo, and Dennis Chavez Elementary Schools. It was a major maintenance task undertaken on these highly used fields.

New smart phone app for the Playground Shop saves time and enhances efficiency and accuracy

The smart phones with a Play Pod app allows for easy and efficient scanning of barcodes on playground equipment and sending data directly to the computer database. Photos of broken equipment parts can also be taken and forwarded to manufacturers with barcode information for repair price quotes or ordering correct replacement parts. Approximately 40% of the District's Playworld Systems brand playground equipment is already outfitted with barcodes that details all the specifics of each piece of equipment. Previously the time intensive tracking of this information was performed manually. With this new technology crews are able to work smarter and much more efficiently.

New PM program

- Winterize irrigation systems (fall) — shut down system, drain backflows, and inspect to ensure heat sources that prevent

freezing are working. This process is reversed in the spring.

- Watering trees and bushes takes place when warmer weather allows for irrigation systems to be used during the winter.

PM programs (on-going)**• Grounds and Fields:**

- Grading dirt tracks
- Irrigation controllers' verification and testing (spring and fall)
- Landscape maintenance of baseball and softball fields (corrective action at infields and infield lips)
- Playground equipment audits (cut back from twice a year, then to annually, and currently down to once every 14 months due to scheduling work issues)
- Grounds safety inspections and parking lot surveys
- Spring and summer fertilization of all athletic fields and ornamental grass (February through March and again May through July fertilization proved to be more drought-tolerant)
- Pre-emergent weed control on bare ground and all perimeter fencing to prevent weeds from germinating (weed control not used on fields for safety reasons)
- Aerating and re-seeding (and top dressing where needed) athletic fields (cut back on frequency from twice a year to once except on football fields which are aerated and re-seeded twice a year)
- Fields inspection of sprinkler heads and bare spots (twice a week when possible spring through fall)
- Inspection of tennis courts and paved tracks (resurfacing and other maintenance as needed)
- Parking lot asphalt inspection and repairs, from minor to complete resurfacing and pothole patching
- Softball and baseball fields grooming (annually remove buildup of clay on grass; repair clogged and broken sprinklers; raise or lower sprinklers as needed; clean running paths between bases)
- Annual summer grub inspection and spraying of athletic fields throughout the District (June through September) Grub control program minimizes damage to athletic fields and lessens repairs
- Clean outside storm drains and jet action pipes every spring prior to monsoon season
- Sweep all District parking lots every summer and clean following rain storms
- Mow athletic fields at high schools twice a week (seasonal) and at other locations once a week (now PM Direct scheduled)
- Irrigation system route inspections (weekly)

• Playgrounds and fall zones:

- Playground safety inspection (annually)
- Playground maintenance (annually)
- Maintain proper condition of protective fall surfaces (rake woodchips)
- Maintain condition of sand (rototill, level)
- Tractor sweep the six foot parameter equipment pod

Special Challenges

~ Grounds lost five technicians in 2014-15 which strained the already scantily staffed Department (a pest control technician, a heavy equipment operator, a landscaping Assistant Supervisor, and two irrigation techs). Other technicians covered for the vacant positions at the cost of paying overtime and obviously adding to their work load. Temporary personnel were hired to address the eruption of weeds and mosquitos flourishing from the generous monsoon season. The wet conditions also invited grubs to natural grass athletic fields and ornamental areas. All vacancies are expected to be filled in the near future.

~ Many trees were lost due to gale winds toppling them like match sticks and an infestation of bugs devouring a few that were still standing. (Note history of tree WOs below). Contractors were engaged to clear out the fallen and dead trees and the Department is now faced with a challenge to replace them.

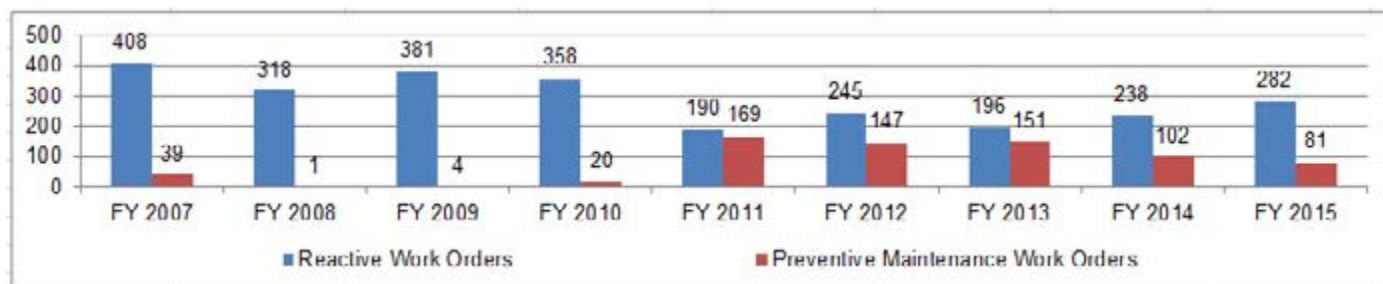
TREE SERVICE

Fiscal Year	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Reactive Work Orders	78	7	3	8	0	10	4	6	31

~ Re-seeding fields is regularly defied by schools. Re-seeding natural grass is necessary as sports activity will inevitably wear away grass. In this case the field is "offline" – not available for use until the reseeded area has fully regrown. While re-seeding is performed off season to avoid conflicting with scheduled activities, students will still shut off the water necessary to keep the re-seeded ground wet and proceed to use the *offline* fields. Fencing is jumped and even torn down to access the vulnerable fields. In addition to the students negating the efforts of restoring their fields, they also cancel the water use variances that grant special allowances of watering these areas daily for 45 consecutive days. Anytime grass fields are taken offline, it is a challenge for M&O and the schools since fields are also outdoor classrooms.

~ Playground Shop struggling with staying ahead of PM while reactive work intensifies. As shown below, the Shop's PM work orders were nearly equal with reactive in 2011. Since then reactive WO's have increased 48.4% while PM has fallen 52%. Just since the previous fiscal year, reactive work rose 18.4% and PM dropped 20.5%. A reversal of this trend is preferred but not possible with a workforce number that holds steady while the District adds playgrounds. Though it can certainly be argued that dead trees don't halt education as a broken water line or a mechanical failure would, the Division aspires to resolve this issue.

PLAYGROUND SHOP



An investment in knowledge pays the best interest.
~ Benjamin Franklin

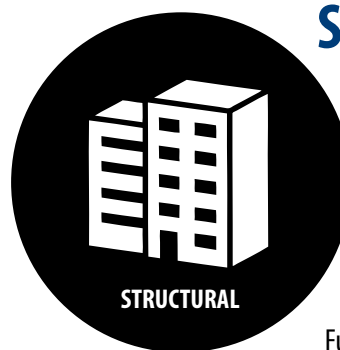
GOALS

Status of 2014-15 Goals

- ~ Complete the upgrade in progress of the running track at Highland High School with a new rubber surface and subsurface. *Completed, note Highlight above*
- ~ Repair or replace broken equipment. *In progress*
- ~ Transition at least two ornamental grass areas from independent manual irrigation system to computer controlled system. *Not completed due to lack of funding; moved to 2015-16 goals. (Transitioning irrigation from manual to computer control is also incorporated into campus rebuilds.)*
- ~ Begin transitioning irrigations systems District wide. Current systems require system control keypads that are no longer being manufactured. The Irrigation Supervisor and staff are currently researching options for updated technology with improved technical support that will replace the current MIR 5000 system. *In progress. For now, as the scorpio units (that communicate with the valves that open and close the water flow) malfunction, they are being replaced with Motorola or Ace units as appropriate in keeping the systems highly functional.*
- ~ Transition from domestic water to grey water irrigation system at Milne Stadium (Field II). *Completed, see Highlight above*
- ~ Replace retired Heavy Equipment technician/operator. *Completed*
- ~ Increase PM work in Irrigation Shop. *Completed (4.6% increase)*
- ~ Acquire smart phones for the Playground Shop and Play Pod app to manage and send playground equipment information directly to the computer database. *Completed (note Highlight above)*

2015-16 Goals

- ~ Resurface playground asphalt (outside of play zones) at needed Elementary Schools.
- ~ Resurface asphalt staff and student parking lots at needed Middle and High Schools (prioritize and schedule).
- ~ Install a separate metered system (from MIR 5000) that taps into the main water line for use by coaches. Currently, coaches are manually accessing quick couplers connected to the main water line in watering their fields. These quick couplers are not metered nor do they communicate with the District wide MIR 5000 computerized irrigation system that automatically shuts the water off in the event of a water line break. A separate metered system that prevents the coaches from over-riding the MIR 5000 system and defeating its purpose is the solution.
- ~ Provide Elementary School playgrounds with ADA access updates, woodchips, and sand in meeting ADA safety code (March 2012).
- ~ Transition at least two ornamental lawns from independent manual irrigation system to computer controlled system.



STRUCTURAL

Benjamin Garcia, Manager

(28 years with M&O, three years as manager), 66 technicians and support staff

Structural Craft Shops include Furniture Repair; Carpentry; Glass and Window Repair; Lock and Key;

Masonry/Tile; Flooring (tile, carpet, wood, concrete); Painting; Signage; Graphics; Welding; Fence Repair; Parking Lot Striping; Bleachers; Ceiling Tile; Doors and Hardware; and Roofing Repair (new roofs are the responsibility of FD+C).

The Department is charged with all that preserves schools' physical appearance and condition, safety, functionality, and security. It all adds up to an immense responsibility that keeps the technicians busy year-round, but is ratcheted way up during the summer months when their work doesn't interrupt the school day.

The skilled technicians throughout the Structural Shops provide clean, safe, comfortable, and aesthetically pleasing environments District wide. In support of the education process, they eliminate all that could be a distraction to students and teachers. These include small issues such as a door that sticks, to much larger problems such as a badly leaking roof that could lead to the temporary relocation of classes if not immediately tackled. Students' achievement potential begins the moment they set foot on campus, and from that minute and throughout their instructional day, either indoors or outdoors, if they are greeted with welcoming and preserved learning spaces, taking in concepts, theories, facts, and figures can be their only focus.

The Department's skilled carpenters, roofers, painters, glass fitters, masons, tile and carpet installers, welders, locksmiths, and sign and graphic artists all understand how executing their responsibilities positively affects learning.

Highlights

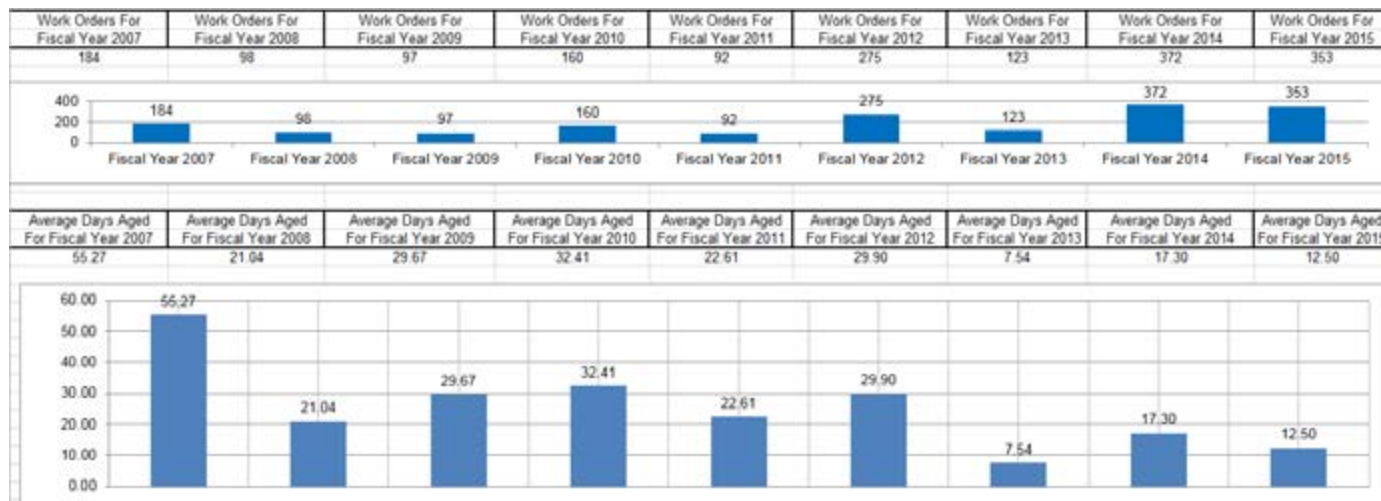
Roofing technicians assigned to specific Clusters within four zones

As technicians are now assigned work orders at schools in their designated Clusters, they develop relationships with the schools' Administrators and gain a historical knowledge of the condition of the roofs. It has also proven to instill more team and individual accountability.

Roofing repairs performed 27.7% faster

All emergency status work orders are attended to immediately, but for the Roofing Shop during a wet year that may well mean having a dozen WOs that need their attention “now” when there is only one “now.” Nevertheless, the Shop’s response time for high priority work improved by 27.7% in 2014-15 – a very wet year with many heavy rain showers. The 2015-16 winter is also forecasted to be moisture packed.

ROOFING SHOP HIGH PRIORITY WORK ORDERS



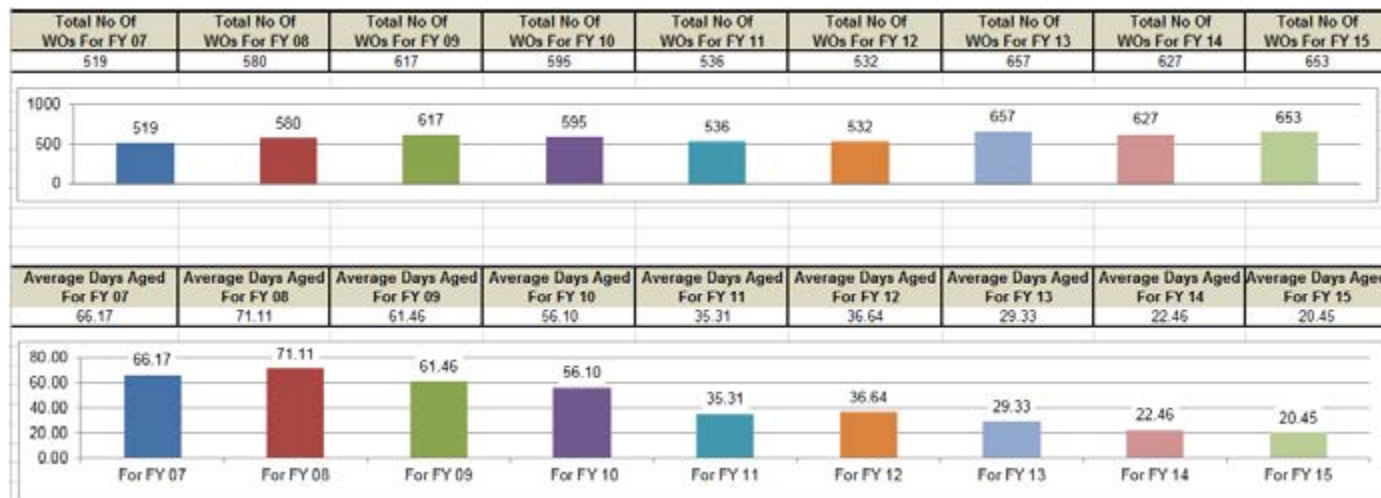
Roofing technicians completed trouble-shooting classes

The courses taught online included hands-on exercises and addressed trouble-shooting roof repairs. This included what to look for in identifying potential issues and how to repair them in circumventing major damage and extending the life of the roof.

New router sign machine aided in work production and completion time in Signage Shop

The Shop’s long used large commercial printer was outdated but a major refurbishing in the previous fiscal year gave it a second life. The needed new \$60,000 router printer purchased in the 2015-16 FY will not only keep the Shop open for business should the timeworn printer fail, but allows for getting more signs printed and installed faster with two commercial printers doing the job. The Shop had a 4.1% increase in work orders over the previous year and an 8.9% decrease in response time (69% since 2007!). Printing jobs are never contracted out, saving the District incalculable dollars.

SIGNAGE SHOP



Locking devices installed on PNM transformers

The Welding and Fence Shop fabricated locking devices for PNM transformers on school sites due to copper theft at several campuses. While these transformers have been fortified, approximately 130 remain vulnerable to theft District wide and will be addressed.

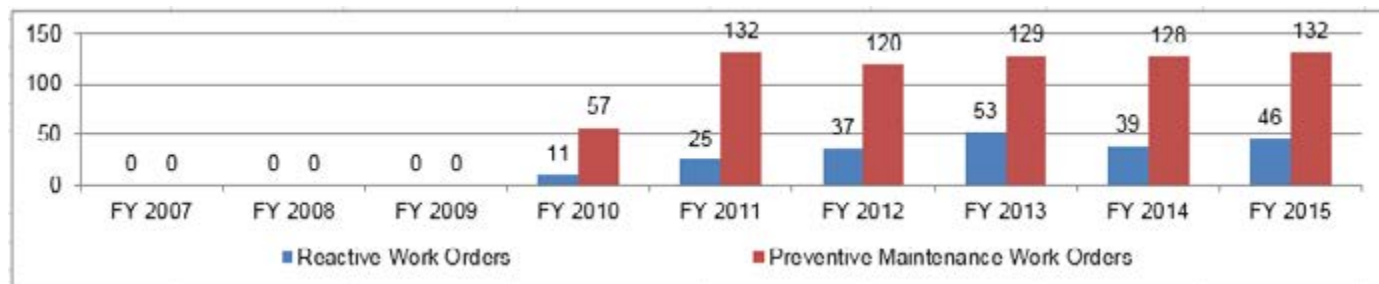
Security screens installed on computer lab windows at ten schools

The screens, fabricated by Structural Department welders, will also be installed at the most susceptible to vandalism and theft computer classrooms throughout the District in the coming months and year.

Parking lot striping work aided by purchase of new paint sprayer

Clearly visible parking lot striping is critical in directing drivers (most importantly emergency fire and medical personnel) through school campuses and is not an uncommon code violation cited in Fire Marshal inspections. As such, most parking lot striping conducted by the Paint Shop is PM, as illustrated by the following bar graph. The newly purchased parking lot paint sprayer significantly aided in technicians working faster, completing more reactive and PM WOs, and staying ahead of Fire Marshal inspectors. Paint Shop technicians, aided by contractors, were able to access and re-strip parking lots at school sites, administrative facilities, two soccer fields, and all three sports stadiums increasing reactive WOs by 19.7 and PM work by 3.1% over the previous fiscal year.

PARKING LOT STRIPING



Old basketball rims replaced at Elementary and Middle Schools

The outdoor basketball rims, subject to harsh weather conditions as well as heavy use, were beyond simple repair and were replaced with the latest and most durable outdoor rim design.

Two new Lincoln Welders procured for Welding and Fencing Shop

The new welders replaced two that far outlived their projected life expectancy. The new equipment is reliable, more economical, and easy to operate for better efficiency by technicians out in the field.

Replaced bleachers at three school sites

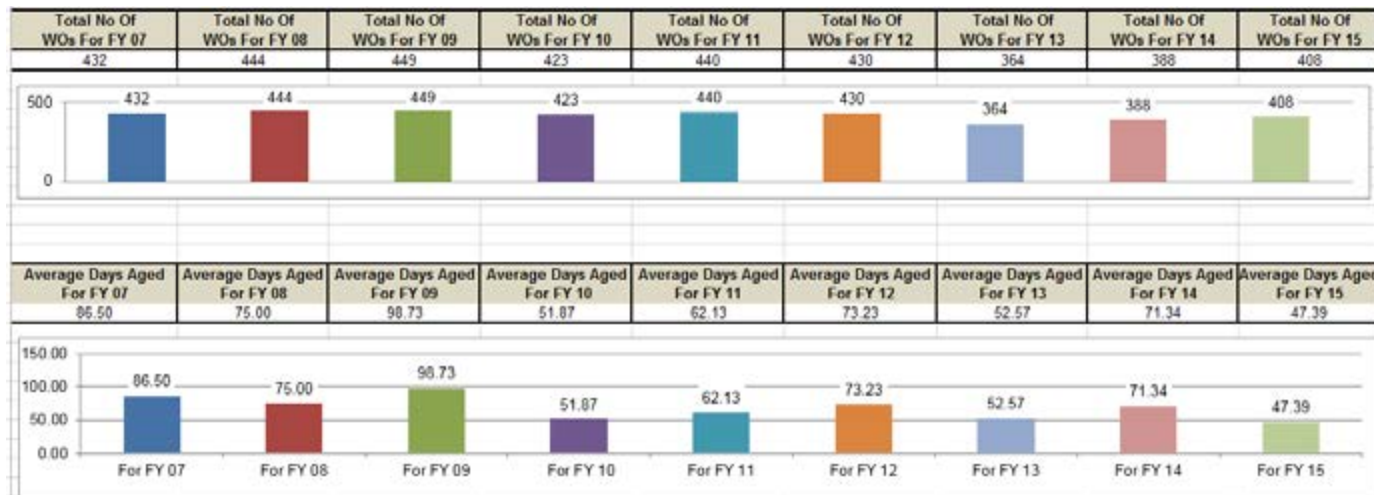
The Carpenter Shop replaced the antiquated bleachers beyond repair at Eldorado High School and Washington and Jefferson Middle Schools. The new ADA approved gym bleachers are safer, more comfortable, and considerably more visually appealing.



Masonry Shop improved work production and response time

The following bar graphs are impressive because masonry repair and replacement work is challenging to schedule and equally difficult to get done. It is noisy work, requires dusty demolition that leaves piles of debris and clean-up, and the put-back is time intensive. Work has to be scheduled around class time and debris cleared away quickly. Faced with these hindrances, the Shop nonetheless performed 5.1% more work and closed it out 33.5% faster than in the previous fiscal year.

MASONRY SHOP



Lock and Key Shop carried out re-keying projects at various campuses

La Cueva High School	Changed out the school's master keys from Yale hardware and replaced it with a more secure and ADA compliant Schalg system
McCarthy Elementary School	New master and Schalg Primus system
APS Transportation Lot	School bus parking lot is more secure

New Ace Tubular Key Duplicator machine procured for Lock and Key Shop

The Shop previously purchased these secure unique barrel keys used exclusively for APS elevators. The new duplicator eliminates the need and expense to purchase new keys and the ability to serve customers in a more timely fashion.

Glazier Shop steadily replacing Alsynite with clear glass District wide

In combating vandalism, the Shop began switching out Alsynite window panels with clear glass reinforced with security screens throughout the District, completing approximately 15% of the windows a year. To date, 125 of the Districts 152 sites (schools and administrative facilities) have been completed to date. The task will continue until all 27 remaining sites are completed.

Glazier Shop collaborating with FD+C regarding glass standards and choices for new schools and remodels

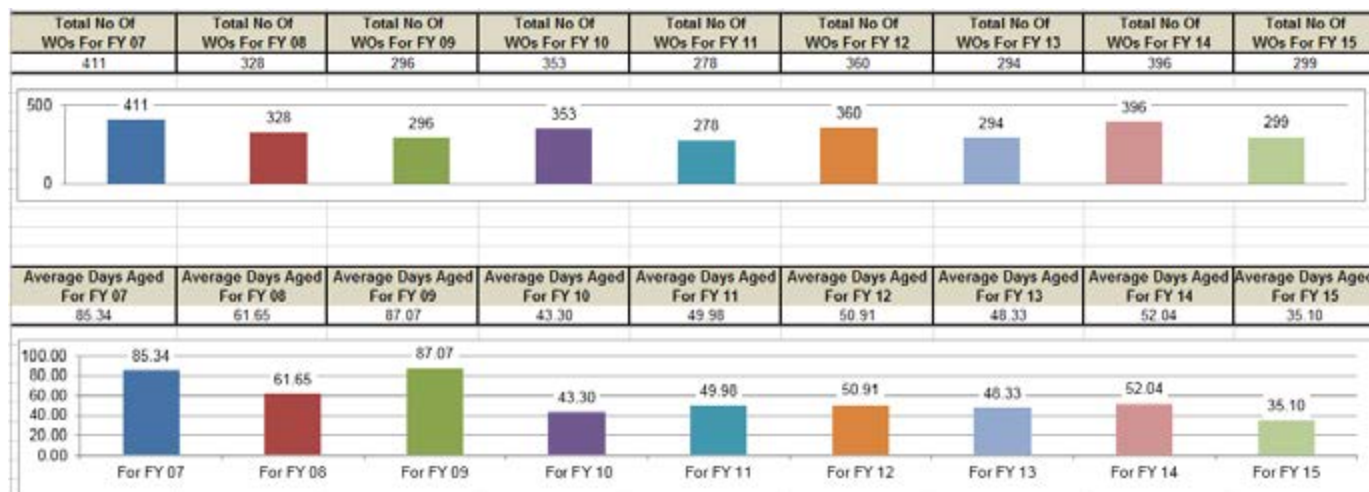
As security is an ever rising concern, the Facilities Design + Construction Division is consulting with the Glazier Shop in designing and selecting windows (types of glass, shading/tinting) and doors for new construction that meet higher than previously required security standards.



School custodians aided in installing ceiling tiles

The Ceiling Tile Shop delivered supplies of ceiling tiles to the schools for quicker replacement installation by the custodians. It resulted in a welcomed 24.9% fewer work orders for the busy Shop over the previous fiscal year and a 32.5% improved response rate. Schools are serviced more quickly when tasks are performed by their always present custodians when possible.

CEILING TILE SHOP



New sheetrock and stainless steel installed in kitchen dishwashing area at Longfellow Elementary School

The old materials had become a bit tattered due to age. The upgraded materials are more aesthetic and considerably easier to keep clean due to new domestic water lines installed throughout the school.

New concrete slab installed at Matheson Park Elementary School main entrance

The main entrance concrete was cracking and breaking up and quickly becoming a trip hazard. The new entry is not only safer but also makes a much better first impression to school visitors. ADA access issues and other architectural barriers were also addressed.

New flooring replaced those old and worn at three school sites

In response to helping aging schools' flooring issues, VCT (vinyl composition tile), ideal for schools because it's durable, attractive, and easy to maintain, was installed in the hallways and cafeteria at Dolores Gonzales Elementary School; two hallways in the classroom building at Van Buren Middle School; and the cafeteria at L.B. Johnson Middle School.

New PM programs

- Inspection of gates and perimeter fencing around school sites (11 conducted in 2014-15)
 - Inspection of basketball goalposts in High School gyms (all completed and will repeat annually)
- Note: As issues are identified by technicians or reported by schools, they are repaired immediately.*

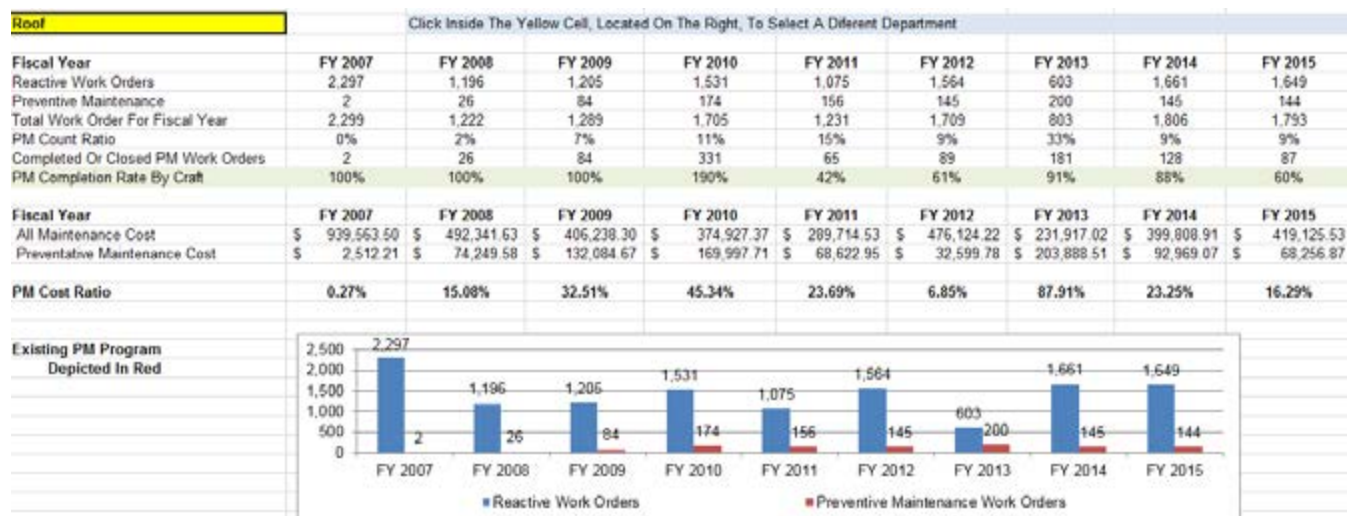
PM programs (on going)

- Roll-up doors inspection and repair
- Inspection of gym floors every six months and performance of spot repairs
- Doors inspection, weather stripping, and repair
- Parking lot re-striping with focus on fire lanes and crosswalks
- ADA automatic door opener
- Interior bleachers inspection and repair
- Glass and window inspection and repair
- Repainting of fire and bus lanes
- Fabricating and installing security window screens
- Gym wood floors refinished annually

Special Challenge

Second year of heavy monsoon seasons reduced Roofing Shop's PM output

Two consecutive years of soaking rains severely cut into the Shop's ability to carry out PM work as reactive WOs have dominated scheduling. The Shop hoped to be caught up on the backlogged 2013-14 PM work and back on a regular PM schedule by June 30, 2015, but it didn't happen and will transpire when Albuquerque experiences a dry year and a consideration for more FTEs and funding.



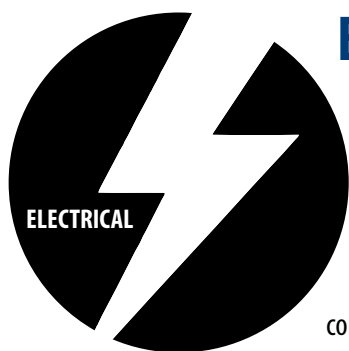
GOALS

Status of 2014-15 Fiscal Year Goals

- ~ Make progress in expanding the "SiteMaster" security key control system that informs the Key Shop Supervisor of keys issued activity. It began as a pilot in the M&O Division a few years ago and is primed for expansion whereby each site can monitor its own key control. *On hold until required manpower and more funding are available for expansion of the program to schools. Not expected in the immediate future*
- ~ Complete the implemation of automatic issuing ADA door button opener PM work orders to subcontractor (oversight provided by Lock Shop). *Started, will be completed in 2015-16*
- ~ Replace bleachers at Eldorado High School and Washington, Jefferson, and Taylor Middle Schools when funding is approved. (Two schools planned with Eldorado high priority.) *Completed at all but Taylor Middle School which will be addressed in 2015-16 (see Highlight above and 2015-16 Goal below)*
- ~ Install entirely reengineered new basketball goal post systems in main gym at Highland High School. All are quite old and one poses a safety issue. Engineering is in progress and manufacturing to take place. *Completed*
- ~ Launch a PM program for ADA door inspections (pilot project funded).
- ~ Replace bleachers at McKinley and Taylor Middle Schools (funding allocated if February 2016 bond election successful).
- ~ Complete the implemation of automatic issuing ADA door button opener PM work orders to contractor that was started in 2014-15 fiscal year.
- ~ Conduct re-keying projects to strengthen security:
 - New George I. Sanchez K-12 School build on the west side in 2014-15 FY. (The school's doors came with locks that are inconsistent and not up to par with APS' security system.)
 - M&O Lincoln Complex
 - School on Wheels
 - APS Diagnostic Centers (re-key the three sites to one master key system)
 - Elementary Schools (nine) and Atrisco Heritage Academy High School (those buildings that have different outdoor key locks from master, the result of keys that shouldn't have been being duplicated)
- ~ Install new flooring at Ernie Pyle Middle School classroom building hallway and Valle Vista Elementary School (during winter break while school is not in session).
- ~ Assess condition of all old Elementary Schools' gym floors and replace at the most needed (Longfellow and Hawthorne).
- ~ Assess condition of drop ceilings and concrete District wide and replace at sites with the most need (funding permitting).
- ~ Assess condition of all parking lot striping, painted curbs, and symbols at every site and re-paint where needed.

2014-15 Fiscal Year Goals

- ~ Further train Roofing Shop technicians on basic computer skills and the SchoolDude work order system, and instill the importance of conducting data entry, most importantly closing work orders, on a timely basis.



ELECTRICAL

Ron Gallegos, Manager
(27 years with M&O, manager
24 years)
28 technicians and support
personnel

Electrical Craft Shops are comprised of Electrical (includes back-up emergency generators); Industrial Arts Repair; Audio Visual; Electronics; Business Machines Repair; Fire Extinguisher Service; Elevators (inspections by City of Albuquerque and service handled by a contractor); and Technology Infrastructure.

The Electrical Department is committed to providing a well-lit and amply powered environment free from flicker and power surges enabling students to concentrate on their studies without eye strain or power hiccups. M&O electricians guarantee a suitable classroom environment that supports alert attentiveness and student achievement.

As with mechanical systems, electrical systems are pivotal to the daily functionality of APS; as electrical failures can close down schools wired for 21st century learning. For a classroom, gym, or library, electrical failures used to mean no lights, heating, or cooling. But today's classrooms rely on computers, smart boards, and numerous other related accouterments that require electric power. And APS' Electrical Department is not only challenged with keeping all systems up and humming to avoid a lapse in instruction and sports activity, it is also under the gun to stay on top of new government mandated energy codes and rapidly evolving electrical technology.

This is not all bad, on the contrary. Sophisticated new lighting technology and electrical systems are providing a higher quality of light while reducing energy and its cost. It demands initial capital expenditures and manpower installation expense, however, which is challenging. But electric conservation is not novel to APS. The Department is continuously advancing energy conservation efforts, currently with an emphasis on metal halide and high pressure sodium systems. The Electrical Department is as aggressive as funding allocation permits in implementing energy efficient systems and procedures throughout the District.

In summary, the Department's electricians are working fast and feverishly in becoming code compliant; replacing antiquated systems with energy saving choices; staying on top of ever

intensifying Fire Marshal regulations; and upgrading electrical capacity to accommodate new technology in schools. Many of APS' schools were solidly built to last many decades ago, and indeed they have! The architects and planners of yesteryear, however, could not have envisioned the high tech and electronics-driven needs of today's classrooms.



In addition to the lighting and electrical systems work performed by electricians, other Shops complete the Department. The Industrial Arts Repair Shop provides the students with properly maintained equipment so they can safely experience hands-on training in auto shop, wood shop, art classes, and other industrial studies. Such elective classes afford students a wide range of vocational instruction and a sampling of occupation choices. Shop technicians service all industrial arts equipment and tools that are used by students and staff at middle and high schools and even at some elementary schools. This includes a large spectrum of teaching apparatus such as science equipment; microscopes; scales and balances; sewing machines; paper cutters; kilns; potting wheels; ice machines and appliances; all auto, welding, and wood shop equipment; and numerous other pieces of instructional related machinery, all of which M&O must maintain and update.

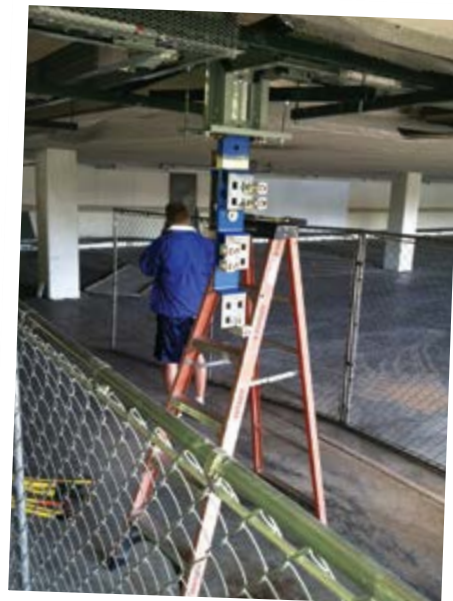
The two-man Fire Extinguisher Shop keeps the District's fire extinguisher equipment up to code. This Shop is run on 100% PM work.

Highlights

Lighting retrofits resulted in rebates totaling \$64,371, a 91.6% increase over 2014

The Department replaced high energy lighting systems with energy efficient systems at various APS schools in-house, earning rebates from PNM and saving electricity. Following is a partial listing of the retrofit projects:

Lew Wallace Elementary School	Entire school (interior and exterior)
La Luz Elementary School	Parking lot
La Mesa Elementary School	Wall packs
Polk Middle School	Wall packs
Chamisa Elementary School	Wall packs and parking lot
Painted Sky Elementary School	Wall packs
Armijo Elementary School	Wall packs and parking lot
La Cueva High School	Wall packs
Roosevelt Middle School	Wall packs and parking lot
A. Montoya Elementary School	Wall packs and parking lot
San Antonito Elementary School	Wall packs and parking lot
Manzano High School	Main gym hallways, stairwells, and closets
Alvarado Elementary School	Entire school (interior and exterior)



The tremendous savings of these lighting upgrades goes beyond energy costs, rebates, and kilowatts. Performing the work entirely in-house over engaging contractors reduces the cost by over 80%. For example, the Electrical Department's total retrofit of Lew Wallace Elementary School was accomplished for \$125,000 (excluding labor costs). The contractor provided estimate for the same complete retrofit of Alvarado Elementary School, similar in size, was \$230,000 — 84% higher than M&O electricians can execute the job!

Lighting Update

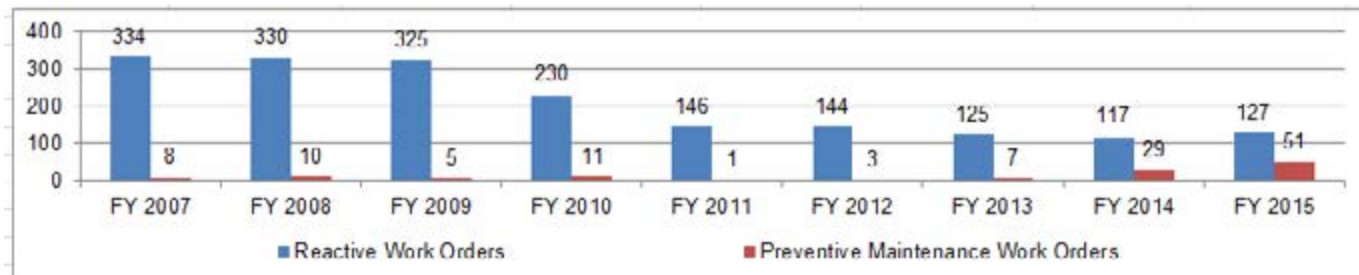
Previous Year End Reports discussed the on-going conversion of T-12 incandescent bulbs to T-8 florescent bulbs and ballasts as the expense of interior LED lighting was cost prohibitive. While the Department was converting exterior lighting to LED, the far more expensive interior LED conversion for existing facilities was forecasted for some time in the far future. (LED has been installed in all new buildings for several years.) LED manufacturers, however, swiftly changed the direction for industry professionals nationwide, offering state-of-the-art lighting at a rapidly decreasing price. A 34 watt indoor florescent lamp replaced by a 14 watt LED provides equivalent lumens output as the florescent lamp — which is quickly becoming obsolete. In addition to wattage saved, there is never a need to change a lamp 10 to 15 years. Lastly, the LED replacement fixtures qualify for PNM rebates. Switching out functioning T-12 incandescent and T-8 florescent systems to LED is no longer on a fantasized "wish list" — it's happening now! (See "LED Conversion - Interior & Exterior" appendix on page 89 in Appendices.)



Machinery Repair Shop performed 75.8% more PM work

With one technician in the three-man shop dedicating time to preventive maintenance tasks, 22 more PM work orders were performed in 2014-15 over the previous fiscal year.

MACHINERY REPAIR SHOP



Programmable intermatic time clocks installed at various school sites

In the last fiscal year, the Department launched a new programmable time clock system at Cibola High School. As the new time clocks proved to save time, effort, and operation costs, it was expanded in 2014-15 to include La Cueva High School, Roosevelt Middle School, and A. Montoya, Painted Sky, and San Antonito Elementary Schools. Operated through the APS Intranet, it allows technicians to program lighting from their laptops in minutes. Special requests from the schools for lighting a night game no longer require a technician to visit the site. Installing the data lines and clocks will be conducted in-house throughout the District (approximately five a year). (See "HVAC Web Enabled Intermatic Time Clock" savings appendix on page 90.)

Electrical systems upgraded at 32 computer labs throughout the District

The Technology Infrastructure electrician worked with the Department Manager and electricians in upgrading the computer labs to be more energy efficient and better accommodate the expansive quantity of technology that requires concurrent electrical juice. Each year a list of computer labs are evaluated in identifying those in most need of updating to current needs and codes.

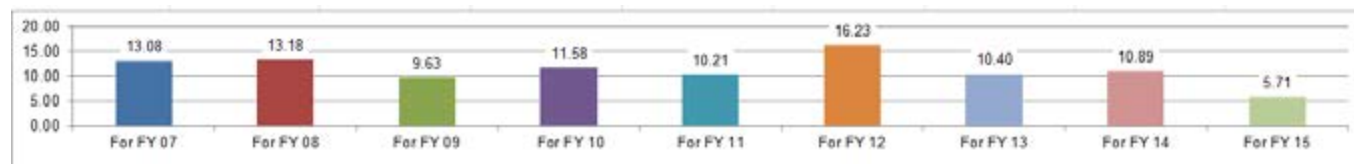
Completed upgrade of elevators at City Center

The major modernization of the four old elevators that began in 2012 was completed. Prior to the upgrade, the timeworn systems required huge generators to operate and delivered a jolting ride. The reconstructed systems are now more reliable, energy and cost efficient, visually appealing, quieter, and provide for a much smoother journey.

Intercom technicians processed paperwork 47.5% faster

The Shop realized an 8.2% increase in work orders in 2014-15 yet completed paperwork and closed work orders in a much improved timely manner.

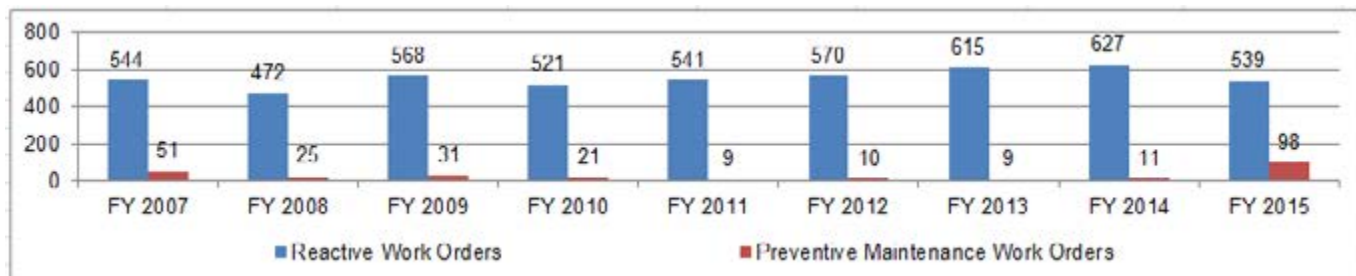
INTERCOMS SHOP WO AVERAGE DAYS



Fire Alarm Shop dramatically increased PM work

In being proactive with testing fire alarm systems District wide, the five-man Shop increased its PM work by 790% over the previous year!

FIRE ALARM SHOP



Added electrical responsibility of new facilities

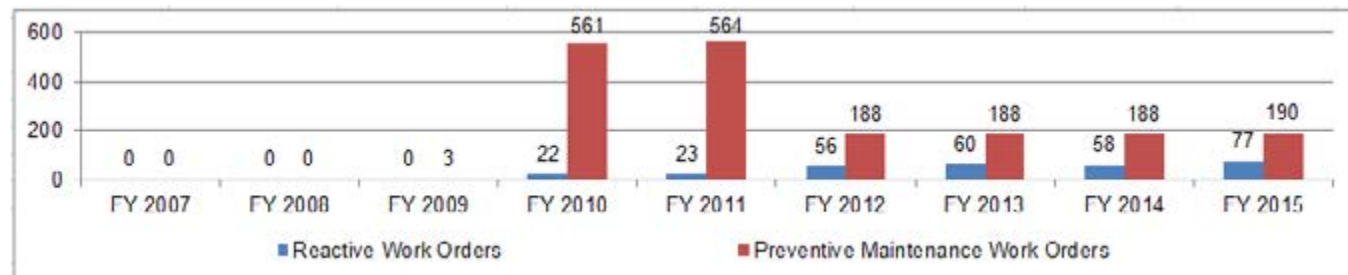
APS grew in physical space (187,805 sq. ft.) in 2014-15 adding facilities that the Electrical Department is responsible for maintaining:

Sandia Base Elementary School	Entire school (interior and exterior)
eCademy High School	New cafeteria
McKinley Middle School	Classroom building
Inez Elementary School	Cafeteria and fine arts building
Mitchell Elementary School	Cafeteria/kitchen remodel and expansion
New George I. Sanchez K-8 Community School (largest K-8 in the state)	
New Food and Nutrition Services building	

Elevator reactive work increased 32.7%

The maintenance contract for the District's 58 elevators does not include addressing unforeseen service calls. These are numerous and include broken keys in switch; keys dropped in the pit; doors that fail to open or close; or emergency phones that need to be replaced, among other issues. This increase in needed attention for elevators is in part due to the fact that APS is adding elevators in multi-floor new construction as well as an increased number of riders.

ELEVATORS



PM programs (on-going)

Federal and state Fire Marshal mandated PM work is performed by contractors and includes:

- Fire extinguisher, sprinkler, and alarm inspection
- Fire suppression systems
- Elevator (quarterly) inspection and service (monthly inspections performed by City of Albuquerque)
- Emergency generators inspection (twice a year)

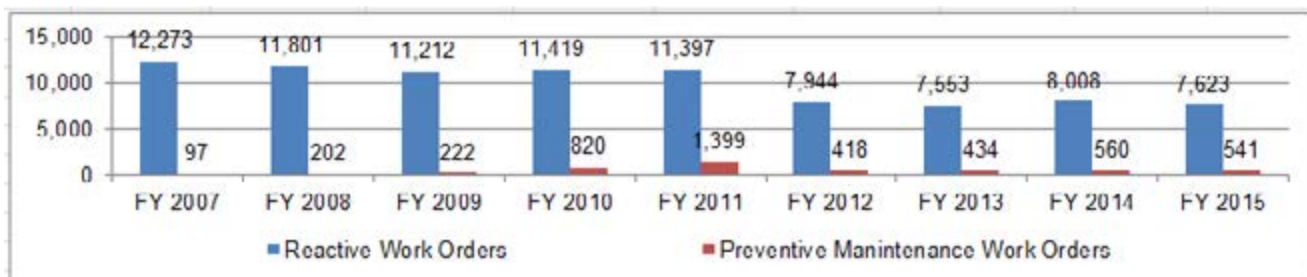
Not government mandated PM is performed in-house:

- Replacement of high energy systems with energy and cost effective systems throughout the District.

Special Challenge

Dwindling staff strains manpower resources

The Department has been struggling to perform PM work due to limited manpower. This was further thwarted due to the retirement of four technicians in 2014-15; this is in addition to six techs lost in other recent past years. Although the Department manages to stay abreast of work, it becomes more and more challenging and at the cost of the PM effort. In spite of this issue, technicians are nonetheless proactive in addressing anything that may break while performing reactive work, as illustrated by the 4.8% drop in reactive work orders in 2014-15 over the previous year.



GOALS

Status of 2014-15 Fiscal Year Goals

- ~ Convert Alvarado Elementary School's exterior and interior lighting to energy efficient LED lighting. *Completed*
- ~ Complete the update of all elevators at City Center. *Completed*
- ~ Complete (or be near completion) the installation of programmable intermatic time clock systems at all high schools. *Completed (See Highlight above)*
- ~ Complete the total LED retrofit (interior and exterior) of Alvarado Elementary School. *Completed*
- ~ Convert parking lot fixtures to LED at A. Montoya and San Antonito Elementary Schools and Roosevelt Middle School (34 total fixtures). *Completed*
- ~ Upgrade electrical systems at two aging school sites. *Not completed, moved to 2015-16*
- ~ Overhaul at least two (to be determined) old elevators to be new code compliant. *Not completed, moved to 2015-16*

2014-15 Fiscal Year Goals

- ~ Begin installing twist timers in the District's 1,000 plus portables. Occupants leave air coolers and heaters on during nights and weekends wasting precious and costly energy. Twist timers operate controls in preventing occupants from running systems during non-use times.

- ~ Install lighting improvements in Del Norte High School's weight/cheerleading room and the corridor between the two gyms.
- ~ Upgrade electrical systems at two aging school sites (planning begun).
- ~ Overhaul at least two (to be determined) old elevators to be new code compliant.





BUILDING SERVICES

Fred Montano, Manager
(35 years with APS, manager 13 years)
50 technicians and support personnel

Building Services Craft Shops include Graffiti Removal; Custodian

Coordination; Pest Control; Custodial Equipment Repair; Carpet Cleaning (includes water extraction); Specialty Cleaning; Blinds and Shades; Emergency Dispatch; and M&O Warehouse Management.

Building Services is responsible for keeping APS schools and other facilities sanitary and pest free, unquestionably M&O's most unfavorable yet important and necessary jobs. This work includes water extraction due to flooding; cleaning up any and all bodily fluids as well as pigeon excrement; and the extermination of annoying and potentially harmful indoor and outdoor pests. As pesky insects, flooded classrooms, and offensively soiled floors and furniture are health hazards and *not* conducive to learning, these distractions are remedied immediately and with minimal disruption to the classroom. Emergency status work also includes sandblasting graffiti off structures, walls, and sidewalks in not only maintaining the schools' appearance but also the District's assets and the pride and school spirit of students, teachers, and staff. The Department's "graffiti rule" is to remove graffiti at schools within 24 hours if not sooner. Approximately 80% of Building Services' work orders regard these large emergency clean-up projects, yet there is room for routine PM work. The annually scheduled major power washings and internal pest control inspections ensure happy and complaint-free school occupants.

Building Services also manages the APS Custodial Program, providing training and custodial support to the schools. New custodians begin in the substitute pool and are assigned to schools in place of custodians out on leave, and all permanent school custodian staff are hired from this pool. Other Department Shops include custodial equipment repair; window blinds repair; and two dispatchers charged with responding to emergency calls and ensuring that all emergency status work is immediately communicated to the relevant Department Managers and technicians.

Lastly, the Department manages the M&O Warehouse which includes the purchasing, stocking, and distributing of approximately

\$1.2 million worth of inventory (repair materials, supplies, tools, and equipment) used by all M&O Craft Shops. The cost and time savings of M&O operating its own warehouse on-site is immeasurable. All routinely used items, including seasonal needs, are purchased in large volume at a steep discount and stocked in the Warehouse for immediate and convenient availability to all technicians. Warehousing also greatly reduces the overall logistical costs of obtaining supplies and materials. The all-inclusive and quickly accessible "store" serves the vast majority of inventory needs. Only for the occasional, often more expensive, specific item is it necessary to visit a vendor.



Highlights

Pest control work orders re-classified in SchoolDude provide more accurate data

As there are three distinctly different categories of pests (indoor, outdoor, and landscape/grounds specific) pest control work order numbers have never been quite accurate. The Department Manager is now reviewing all pest control work orders and forwarding to the Grounds Department those that they are responsible for (grubs, mosquitos, and prairie dogs). He has also eliminated the indoor/outdoor distinction for Building Services pest control WOs. A truer picture of the District's pest issues has aided in managing solutions.

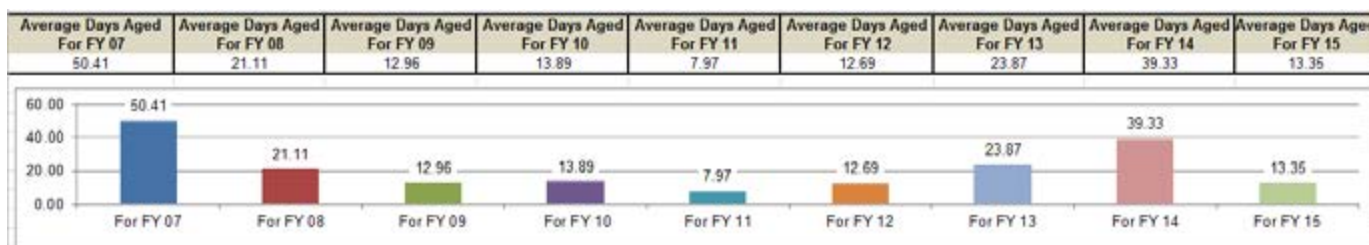
Two experienced Assistant Supervisors hired in Custodial Shop improved process and quality

Assistant Custodial Supervisors are charged with monitoring evening school custodians, conducting spot checks, and performing custodial surveys that determine and regulate the precise time each task requires (school site specific) for successful completion. The new hires, previously Head Custodian at schools, have applied their experience in designing new surveys and improving the cleaning process. As school custodians (over 500) are employees of the schools not M&O, it is an on-going challenge to fine tune custodial service in delivering the highest possible quality to the students the custodians are accountable to.

Blind cutter improved customer service response time by 66%!

A new blind cutter procured for the Blinds Shop allows for purchasing universal size blinds in large quantities, stocking the inventory in the M&O Warehouse, and "cutting to fit" windows of varying sizes. In addition to saving costs, waiting time for blinds deliveries has been eliminated and customers are serviced much more quickly.

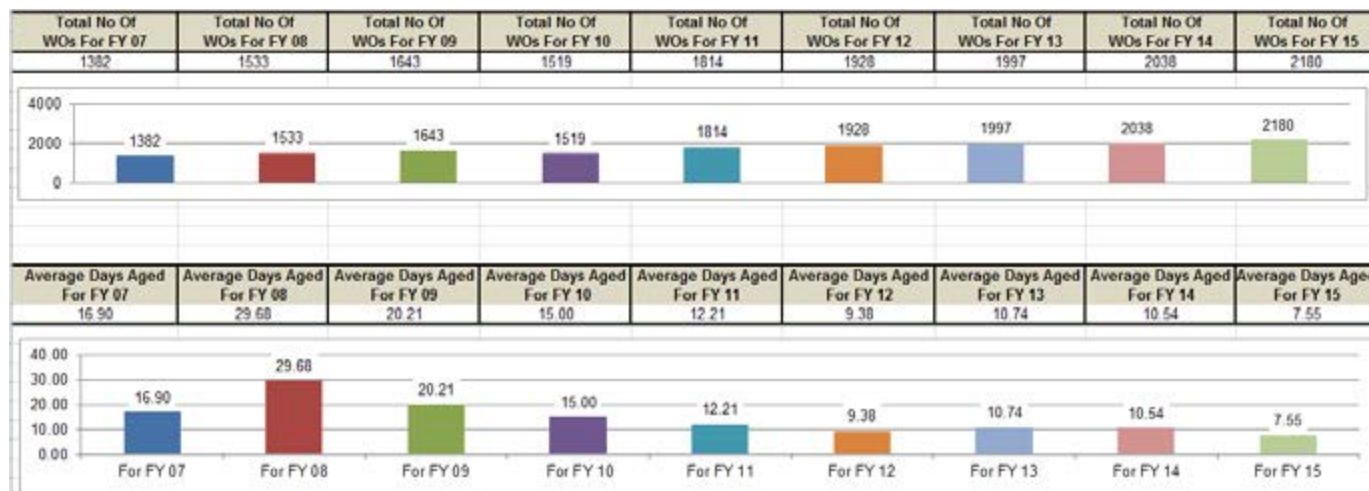
BLINDS



Carpet cleaning reactive work orders increased while time to complete work decreased

The Shop realized a 6.9% increase in reactive WOs largely due to more emergency bodily fluids clean-up requests. As these tasks require an immediate response, the average time to complete and close work orders decreased 28.3% over the previous year.

CARPET CLEANING



PM programs (on-going)

- Thorough pressure washing of each school's cafeteria tables annually (summer)
- Interior pest control school inspection (monthly — reduced from 12 to 9 months a year)
- Custodial equipment inspection and maintenance at every school site (annual)

Special Challenge

The migration of school Principals in 2015-16 will intensify work requests

Just as when a new family purchases and moves into a previously-owned home, when Principals are reassigned to a different school they see many needed improvements that the former Principal turned a blind eye to or had other concerns. What looked satisfactory to the outgoing Principal is unacceptable to the incoming Principal.

As much movement of Principals is expected at the start of the 2015-16 school year, the number of reactive work orders will not only increase, there will also be a demand to address all the requests quickly, already a very busy time for all M&O departments.

GOALS

Status of 2014-15 Fiscal Year Goals

- ~ Improve classification of pest control work orders in SchoolDude. Currently there is an "indoor" category and simply a "pest control" category ostensibly to group outdoor pest WOs. However, data entry is inconsistent and the attempt to categorize has merely caused unnecessary confusion without aiding in managing the Craft Shop. *Completed, note Highlight above*
- ~ Hire two Assistant Supervisors in the Custodial Shop to monitor evening school custodians, conduct spot checks during their work schedules, and support custodial survey PM program throughout the District. The custodial surveys determine and regulate the precise time each task — unique to each school site — requires for satisfactory completion. Observing the time allotments eliminates slack in the schedule furthering productivity. *Completed*

2014-15 Fiscal Year Goals

- ~ Hire new personnel: M&O Warehouse stock clerk to replace retiring clerk; new carpet cleaning technician; and an emergency dispatcher. (Kudos is extended to the departed dispatcher who earned an education degree while working at M&O and transferred to Truman Middle School as a teacher.)
- ~ Launch a carpet cleaning PM program that provides for carpets being cleaned at *least* once every three years, sooner if doable (would require increased contractor funding). The schools with the most soiled carpets will be addressed first. (All emergency status soiled carpets are addressed immediately.)



FLEET MAINTENANCE

Dale Krezan, Manager

(8 years with APS outside of M&O, manager 3 years)
15 Technicians and Support Personnel

Fleet Maintenance responsibilities include Vehicle Maintenance; Specialty

Equipment Maintenance (small engine grounds equipment); Tire and Towing; Fuel Station; Lincoln Complex automated security gate access and fueling systems maintenance; point of contact for vehicle accident processing; and the APS Drivers' License and driving record monitoring programs.

Fleet Maintenance provides and maintains safe, reliable, and fuel-efficient vehicles used by District leadership staff and APS Police; service vans and trucks used by M&O and school sites; and refrigerated trucks used by Food Services to transport fresh food to District school cafeterias in support of students' health and nutrition. Its 700 plus inventory includes cars, trucks, and vans as well as commercial earth moving and other heavy equipment, backhoes, loaders, road graders, snow removal equipment, a wrecker/slider, and more. Fleet Maintenance also services grounds maintenance equipment consisting of over 3,000 pieces of machinery located at schools and other sites throughout the District. These include riding and push lawn mowers, trimmers, hedgers, blowers, chainsaws, and golf carts. APS' in-house fleet maintenance operation results in quick turnaround time and an immeasurable savings to the District.

Fleet Maintenance meets the requirement that all vehicles are in working order and road-safe for use by APS employees. Because M&O technicians depend on the reliability of their service vehicles to perform maintenance and repair of assets throughout the District, it is imperative that Fleet Maintenance staff observe a strict preventive maintenance schedule on these trucks and vans.

All mechanics have formal training in vehicle repair; hold a State of New Mexico Commercial Driver's License necessary to operate heavy equipment and vehicles; and Air Care Station certifications. Emissions tests and certifications are conducted on-site only for APS fleet. The mechanics are also skilled welders and fabricators. The highly qualified technicians work in a 26-bay state-of-the-art facility. Off-site work is provided by the Tire Shop technicians who operate an APS wrecker and provide roadside repair service.

The Fuel Station technician monitors the fueling system that dispenses approximately 1,000 gallons of gasoline and 500 gallons of diesel fuel daily to APS as well as CNM vehicles (reimbursed to the District). The Fuel Station also provides propane gas for roofing equipment, Materials Management forklifts, and equipment used in the Heavy Equipment and Masonry Shops, as well as for CNM equipment. Fuel is provided at spot market pricing based on negotiated contract rates through the City of Albuquerque fuel contract. In support of a clean fleet, drivers can also power wash and vacuum their vehicles at the Station at any time during the duty day.

The Department's functions are aided by FleetVision "smart tracking" software utilized for vehicle maintenance monitoring that includes vehicle history; driver information; VIN and license plate numbers; maintenance records; PM due notification; and vehicle fueling history (quantity, date, and miles to the gallon). While FleetVision quite reliably tracks all matters relating to every vehicle, it is not work order capable; therefore, WO's are also entered into SchoolDude to manage the work order activity of every vehicle. A third software system, Dream Island, performs the security function of recording all APS and CNM vehicles entering and exiting Lincoln Complex during off-hours when access gates are locked. Dream Island also records fueling information which is then exported to the FleetVision database.

Lastly, traffic accidents do happen and as the Department does not do body work, it is responsible for securing vehicle body repair cost estimates from vendors, directing the repairs, and coordinating this activity with the APS Risk Management Division. The Department also manages the District Driver's License Program which requires running monthly drivers' license background checks on all approved APS drivers, as well as monitors their state drivers' license status with the New Mexico Motor Vehicle Department.

Highlights

Fuel Station major upgrades

The Fuel Station required essential upgrades to meet New Mexico Environment Department (Tank Division) standards. In bringing the Station up to code, it was shut down for six weeks while upgrades and modernizations were installed. The Fuel Station serves the entire District as well as CNM with its biggest daily customers being the drivers of M&O service trucks and vans that make up about a third of APS' entire fleet of vehicles.

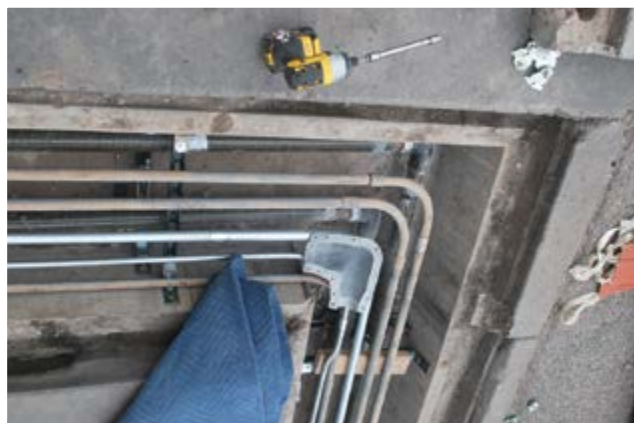
• Upgrades Included:

- A new protection system consisting of containment tanks under each fuel dispenser.
- A new OPW Fuel Management System located inside the Station facility that electronically monitors the fuel levels in tanks as well as the water mixed in with the fuel and sets an alarm off when a leak is detected in the piping. Previously fuel was manually monitored.
- Replacement of piping from tanks to fuel pumps with new double walled piping to meet environmental standards and for monitoring purposes.

BEFORE



AFTER



- Fuel steel piping was replaced with double wall fiberglass piping that detects leaks which then triggers alarms alerting of the leak.
- Replacement of a section of electrical wiring in a trench running from inside the station to the tanks and pumps as well as replacement of a rusted conduit that created a potential electrical hazard. The M&O Environmental Management Department Manager assisted with identifying the issues and overseeing the repairs in meeting the state's environmental protection code.

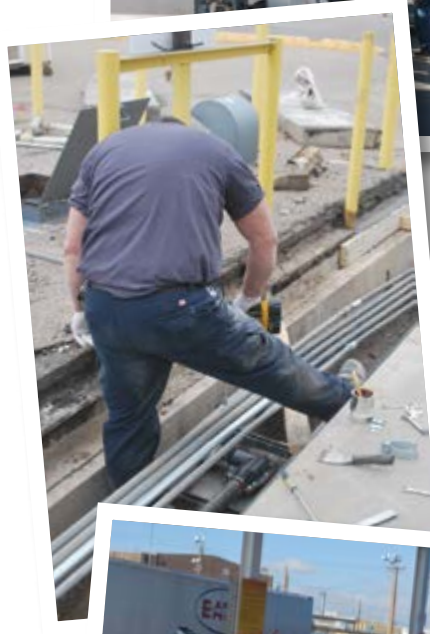
• Department wide effort

Although the major job was contracted out, M&O departments provided immeasurable cost saving materials, time, and skill in assisting the contractor throughout the massive upgrade. In addition to the M&O Environmental Management Department Manager providing consulting expertise, other departments provided timely and extremely responsive assistance during the project. Services were provided by M&O electricians, the Welding and Heavy Equipment Shops, and the Mason Shop. The Fleet Maintenance Department is appreciative of the instrumental aid and credits the other M&O Departments for the near flawlessly executed undertaking carried out during the coldest time of the year (January – February). Their diligent efforts saved the District thousands of dollars by clearing hurdles that would have slowed contractor work delaying the completion.

• Fuel Station moved to temporary site

The daily fueling of vehicles carried on as usual, just not at its usual site. The Fleet Maintenance Department considered several area stations and even the City of Albuquerque's fueling service in selecting the Broadway Express station conveniently located at Broadway and Cesar Chavez Avenue. Broadway Express was not only the lowest bidder, but also equipped with a commercial truck island capable of fueling many of M&O's large service vehicles and equipment. The location, a mere mile away from Lincoln Complex, minimized driving downtime to refuel. Broadway Express proved capable of accommodating essentially an added twin operation from their station. Their Mini-Mart also conveniently provided an opportune place to fuel up on snacks and coffee too.

Fleet Maintenance Department employees worked from this temporary location utilizing M&O's Mobile Command Unit (see next Highlight) as an office for processing the temporary credit card payment and accounting system created and administered by the Fleet Specialist. The various APS Divisions utilizing the Fuel Station were issued a total of 22 credit cards specifically for this provisional use.



New training and certifications acquired

The operation of a fuel station requires unique training specific to safety protocols and knowledge of refueling equipment. Three Fleet Maintenance staff members and the Environmental Management Department Manager attended a course conducted by the state's Environmental Department in becoming certified in a nationally recognized Petroleum Storage Tank Operator Training program. All are now "A" level operators qualified to receive fuel deliveries, dispense fuel, inspect fuel tanks, as well as teach and certify others.

Created Mobile Command Unit (MCU)

A former mobile classroom was repaired and equipped to serve as an "emergency office / control center" to be used at disaster sites, most often caused by fire or flooding. The MCU serves as an on-site construction office that can be readily setup and transported as needed. It considerably aids in work being efficiently carried out, especially during inclement weather and on weekends when permanent office space is locked up. The MCU has shown to be beneficial in coordinating assessment and repairs conveniently right on site. To not delay or suspend school, it is not unusual for urgent projects to run 24 hours a day including weekends.

2014-15, the year of school bus trials

APS is not, or certainly has not historically been, in the school bus business. The District traditionally contracts all bus transportation services with local bus contractors that *are* in the bus business. Or rather *did*. The landscape changed profoundly when issues arose regarding the unexpected acquisition of buses at the start of the school year. Students have to be transported to and from school safely and on time every single day; school doesn't stop because buses are decreed out of commission. Following are the three bus related occurrences the Fleet Maintenance Department, in unison with the Student Transportation Department in their respective roles, addressed.

• Repaired newly acquired bus fleet to meet Department of Transportation (DOT) and Public Education Department (PED) standards

In August 2014, Mountain Bus Company (the school bus vendor that serviced APS' East Mountain schools) unexpectedly closed their doors, regrettably coinciding with the start of the school year. The District's sudden acquisition of 18 buses presented Fleet Maintenance with the demanding job of bringing the buses up to DOT and PED rigorous safety and maintenance standards. The Department also had to assume responsibility for conducting the mandated inspections prior to every morning and afternoon trip.

Select Fleet Maintenance mechanics began work at 4:00 a.m. to properly inspect and repair buses before the morning student pick-up run. A parking lot at Roosevelt Middle School was made available for this purpose. Red tagged buses requiring major work were transported to the Department's 26-bay facility for repairs that extended to Saturdays when necessary. The funds to pay for these repairs and labor hours were paid from the APS Student Transportation Division's budget. The District owned the buses for three trying months, after which time a commercial bus company purchased the mended buses and routes from the District.

• Repaired 13 contractor-owned buses red tagged by DOT

A red tagged bus is a bus that isn't going anywhere until it can pass inspection. An APS school bus contractor found themselves in an immovable predicament when DOT performed an inspection on their buses and 13 were red tagged for failure to comply with safety or mechanical standards. The DOT inspector allowed many of the buses to be moved (in a convoy) from the bus company's lot to the APS Fleet Maintenance Department for repair. The mechanic technicians worked 8-10 hour shifts from a Friday through midday on Sunday assisting the contractor in getting the buses ready for re-inspection. They all passed inspection and were ready to transport their student passengers to school the following morning. The bus company reimbursed APS for parts and labor costs.

• Assisted with complex paperwork when the District acquired 185 buses from Durham School Services

It was a taxing year for bus issues at APS because it was a troubled time for bus companies. Durham School Services pulled out of the Albuquerque market transferring their fleet of buses that were acquired by the District. While the APS Transportation Division is responsible for managing the bus routes, the Fleet Department was assigned the complex task of processing the transfer of ownership paperwork involving titles, registrations, and license plates. The task required working with banks and dealing with power of attorney issues. The Fleet Specialist also worked with the Risk Management Division in issuing APS drivers licenses and qualifying the new APS employees (formerly employed by Durham) to operate APS vehicles. *(Note: This was a multiphase event that spilled into the 2015-16 FY and is included here for continuity and clarity.)*

Replaced the District's most high-mileage and timeworn vehicles

During the fiscal year APS replaced 56 high mileage vehicles. Divisions and Departments receiving new vehicles included APS Police, M&O (five service trucks), Capital Master Plan, Real Estate, Information Technology, Food Services, Transportation, and ROTC (a large box trailer). All were purchased utilizing a state contract which provided a competitive price, cut down on the number of SPOs, got vendors paid a little quicker, and eliminated a lengthy bidding process. While it improved the overall condition of the District's fleet, many old vehicles are still in need of replacement; high mileage M&O service vehicles and trucks will continue to be replaced.

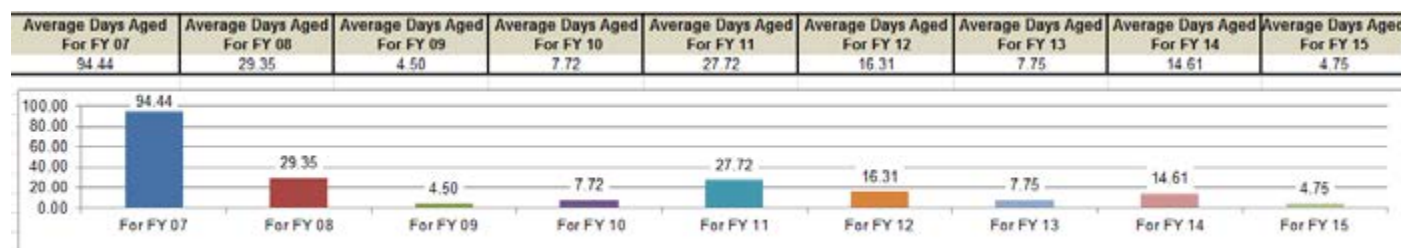
Noteworthy improvement in SchoolDude WO data entry

As illustrated by the following two graphs, the Department made meaningful strides in the use and understanding of the SchoolDude WO system, and therefore more accurately entering data. Although the Fleet Maintenance Department did increase its PM work over the previous year, the 347.9% increase indicated below is more indicative of correct work classification data entry. The Fleet Maintenance Department's recent acclimatization to the SchoolDude WO system has also required retroactive work order data entry corrective action that includes not grouping several WOs into one and classifying PM work correctly. And the 67.4% improvement in the average days to perform work over the previous year indicates staff closing out work orders on a timelier basis.

FLEET MAINTENANCE WORK ORDER TOTALS

Fiscal Year	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Reactive Work Orders	51	64	63	71	156	359	2,266	2,858	2,773
Preventive Maintenance	0	0	0	0	9	69	658	173	775
Total Work Order For Fiscal Year	51	64	63	71	165	428	2,924	3,031	3,548

FLEET MAINTENANCE AVERAGE DAYS AGED



Seven underutilized M&O vehicles were reassigned

The Department was able to shift vehicles between M&O departments in meeting demand without purchasing new vehicles. These service trucks were previously used by since departed employees, and held in hopes of filling the vacated positions. Fleet personnel worked with department Managers and Supervisors, who then collaborated interdepartmentally in re-locating seven service trucks that are now much better utilized.

Department up-to-date with repairs and PM work

Previously the Department fell behind on repairs, at times by as much as three months, and PM work also fell behind schedule. The implementation of the Lube Lane, similar to an express quick in and out service bay just for oil changes and quick repairs, established in the last fiscal year, is credited for eliminating the backlog of Fleet PM work orders and repairs.

PM programs (on-going)

- In preserving the fleet, the Department performs preventive maintenance schedules based on mileage (4,000 / 12,000 / 48,000) that includes all vehicle manufacturers' required tasks.
 - PM inspections and repairs are performed to prevent major servicing at a later date. Preventive maintenance improves gas mileage, reliability of fleet, and extends the life of vehicles.
 - A minimum of three or four PM work orders are scheduled every day in Fleet. The PM includes oil changes, transmission flushes, brake inspections and other safety inspections and repairs as required and recommended by manufacturers' specifications.
- Large grounds equipment inspection and service (typically performed in off season while not in use with the exception of rider lawn mowers which are priority during growing season).

Special Challenge

Data entry employee sorely needed

For many years the Department staffed a clerk who processed all purchase orders and performed work order data entry. The duty has since become the responsibility of technicians and the Fleet Specialist. Sans a dedicated data entry clerk, it is the most efficient means to keep current with the massive amount of paperwork.

GOALS

Status of 2014-15 Goals

- ~ Bring 18 school buses (acquired when a school bus vendor closed their business in August 2014) up to APS, Department of Transportation, and the Public Education Department standards. *Completed, see Highlight above*
- ~ Replace approximately 25 of the fleet's most high mileage and poor condition vehicles. Funding has been allotted for this purpose and at least a portion shall be released during the current fiscal year as approved by the Executive Director. *Completed, see Highlight above*

2014-15 Goals

- ~ At the end of the last fiscal year, the Department took over the issuing of APS driver's licenses for all M&O drivers of District vehicles from the Risk Management Division, as well as administering of driver training and testing for the required every two year license renewals. It has been a time-intensive undertaking and completing the initial registration for all drivers is pending. The Fleet Specialist is striving to have all completed by June 30, 2016.
- ~ Continue updating the Fleet Maintenance Department Procedures Manual to reflect the many new and improved procedures and policies that have been adopted since the Manual was first drafted in 2010.
- ~ Identify the most worn M&O service trucks and replace (pending funding)



School Bus Maintenance

ENVIRONMENTAL MANAGEMENT

Van Lewis, Manager

(19 years with M&O, manager 9 years) 9 Inspectors/staff



The Environmental Management Department is staffed by certified Environmental Inspectors who conduct federally mandated inspections and oversee the

remediation of any environmental quality issues that are identified. APS' Inspectors maintain over 20 specialized certifications and licenses that include Asbestos Contractor Supervisor, Asbestos Inspector, Asbestos Management Planner, and Asbestos Project Designer. Certifications are also required in Hazardous Waste Operations, Water Quality, Waste Water Systems, and Indoor Air Quality.

Clean and safe indoor air is non-negotiable for classrooms as poor air quality — due to mold and other contaminants — results in highly demonstrable negative health effects *and* are detrimental to students' ability to focus on their school work. Irritated eyes, runny nose, sore throat, or headache caused by toxins avert students' attention away from classroom lessons.

The Department's principal purpose is furthering academic performance through preserving the environmental quality of learning spaces. Findings of asbestos, radon, mold, and lead-based paint are promptly addressed in steadily maintaining ambient indoor air quality and safe facilities. Inspectors are also responsible for the quality of potable water and waste water treatments in meeting state and federal drinking water and ground water standards compliance.

APS' Environmental Management Department, launched in 1989 when asbestos abatement legislation became effective, is the sole in-house environmental management program throughout New Mexico school districts and one of very few in the nation. The Department provides an unparalleled environmental program, evidenced by APS never failing an EPA asbestos inspection audit. (The APS model is being used as a model for EPA Region 6.)

Because the Department is charged with staying ahead of EPA and OSHA mandates, their work is primarily conducting regularly scheduled inspections (monthly, quarterly, annually, or every three years). Reactive work consists of that initiated by other M&O

departments; Facilities Design + Construction and other APS Divisions; and occupants of District schools and administrative facilities. Occupant complaints, often of suspicious odors, are responded to and investigated immediately. And should an M&O Department or FD+C need to perform maintenance or renovation construction that will impact building materials (floors, ceilings, walls, plumbing), they must first request an AHERA Compliance Work Plan (permit) prior to beginning the project. The Environmental Management Department reviews the historical data of the site, takes samples of the materials for analysis, and generates the permit that authorizes the work and details specifically how it is to be safely carried out.

The value of APS operating its own environment management program is incalculable. In addition to providing students with clean and safe environments beneficial to learning, it does so at a controlled and substantially reduced cost over hiring independent environmental consultants.

Highlights

Supported sizeable asbestos abatement projects at select sites:

- **Del Norte High School**
Developed the asbestos abatement project for the final Phase 5 demolition of the school as part of the rebuild in progress throughout the campus. The job included the safe removal of floor tile, sheetrock, and vermiculite insulation. The Department managed the bid petition and evaluation process and oversaw the abatement on this \$1.2 million project conducted over three months.
- **City Center**
The elevators in both towers of City Center received major upgrades in the 2014-15 fiscal year which included the abatement of the sprayed-on asbestos fire proofing insulation. (See more in *Electrical Department section of this Report on page 60.*)
- **Dolores Gonzales Elementary School**
The last of the remaining asbestos at the school was removed during the 2014-15 FY remodel. Eradicating asbestos District wide was at one time a goal, until it was ascertained that a safer approach in handling the toxic material is to simply manage it in place until construction work is scheduled. The school, built in 1975, had quite a lot of floor tile and sheet rock containing asbestos, but as remodel projects have taken place, it has steadily been removed. Every APS renovation or remodel presents the never squandered opportunity to abate asbestos containing building materials.
- **Wherry Elementary School**
Twelve thousand square feet of floor tile and related carpet containing asbestos were abated in preparation for the large remodel of the school conducted by FD+C.

Provided oversight and advisory consultation regarding environmental safety considerations in the Fuel Station upgrades

The Environmental Management Department Manager, with an extensive background in overseeing large capacity underground fuel storage and working with hydrogeologists, assisted in selecting the most appropriate and safe equipment and fuel delivery choices. (See more about the Fuel Station upgrades in the *Fleet Maintenance section on page 66.*)

Reinstalled drinking water chlorination system at Camp Gallagher

The reopening of Camp Gallagher in 2014-15 required an evaluation of the existing drinking water system that had not been in use since 1996. As the old chlorination system couldn't be adjusted to properly regulate chlorine levels in meeting EPA drinking water standards, the Department conducted the necessary sampling and research in finding a new system, then redesigned and installed it into the existing plumbing scheme. (See more about the reopening of Camp Gallagher on page 14 of this Report.)

Department Manager drafted Operations and Maintenance Plans for wells and drinking water systems at select sites

In meeting the New Mexico Environmental Department requirement that written guidelines exist for all APS wells and other drinking water systems, procedures were formally documented for systems at Corrales and Los Padillas Elementary Schools, Polk Middle School, and Sandia Mountain Natural History Center (jointly operated by APS and the New Mexico Museum of Natural History and Science). The Center provides ecology education and field experiences to APS and other New Mexico students. As each site's water system is unique, specific procedures and details pertaining to each site's system were incorporated into a prototype design.

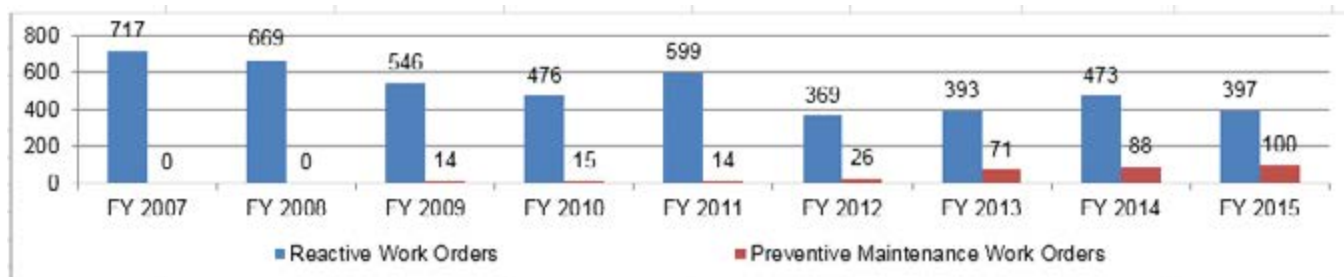


Sandia Mountain Natural Science History Center

PM Direct scheduling increased 13.6%

As environmental management is a rarity in the vast majority of school districts, and environmental inspections don't quite fit the definition of "preventive maintenance," fully utilizing the SchoolDude WO system has been a bit inconsistent and clumsy. Nonetheless, the Department is adding inspections that can be captured in PM Direct – increasing the number 13.6% over the previous fiscal year and 614.2% since 2009 when SchoolDude was first utilized. (Note last 2015-16 Goal below.)

ENVIRONMENTAL WORK ORDER TOTALS



Completed the Department Procedures Manual

The Manual formalizes the procedures and policies — and references OSHA, EPA, and AHERA requirements — in the Environmental Inspectors carrying out daily work. Manuals for all eight M&O service departments and the M&O Warehouse are now completed.

Established a District wide norovirus response protocol

Noroviruses are a group of viruses that cause gastroenteritis that, like all viral infections, are impervious to antibiotics and spread very quickly, particularly within schools systems due to the high degree of person-to-person contact. Gastroenteritis is an inflammation of the stomach lining and intestines, causing an acute onset of severe vomiting and diarrhea, most commonly in children. Young children and the elderly are most at risk for more severe or prolonged infection.

The Environmental Management Department collaborated with Albuquerque and New Mexico Environmental Health Departments, APS Nursing Services, APS Food and Nutrition Services, and the M&O Building Services Department in developing the protocol to address illness occurrences promptly and scrupulously in eliminating the likelihood of the virus spreading. As the program relies heavily on custodial response, the Building Services Manager provides guidance and procedures to custodial staffs throughout the District. The program may eventually be used in schools around the state.

GOALS

Status of 2014-15 Fiscal Year Goals

- ~ Renew the Wastewater Discharge Permit for wetlands at Corrales Elementary School. *In process with completion expected by June 30, 2016*
- ~ Refurbish the wetland cells to ensure proper wastewater treatment at Corrales Elementary School. *Renewal of permit in process; waiting to see permit requirements*
- ~ Redistribute tasks of the Inspectors to be more specialized and conserve time and resources. *Goal aborted as not viable in foreseeable future. Will revisit at a later date*

2014-15 Fiscal Year Goals

- ~ Conduct asbestos abatement in Building M at Lincoln Complex in preparation of administrative personnel currently located at the APS Montgomery Complex moving into the soon to be remodeled Lincoln facility. Asbestos containing floor tile and sheet rock will be safely removed before renovation commences.
- ~ Modify the SchoolDude WO system to accommodate the classification of work as a specific type of inspection in addition to PM. Currently, a work order has to be classified as either one or the other (an inspection or PM) but needs to be recorded as *both* as well as specify the type of inspection, such as asbestos or water sampling. This will greatly aid in scheduling inspections through PM Direct as well as more accurately record keeping and tracking PM work. (Note related following goal.)
- ~ Add more environmental inspections to the PM Direct schedule.



SUPPORT SERVICES

Billie Salas, Manager

(28 years with M&O, manager 9 years) 10 employees

The Support Services Department is responsible for the administration of Budget Management; Invoice and Payment Processing; Contract Administration; and Utilities Management. The Department Manager collaborates with the APS Accounts Payable and Finance staff, the M&O Executive Director, and the seven other M&O Managers in overseeing the accuracy of funds loaded in and expenditures paid out of M&O's annual budget comprised of Operational funds and Senate Bill 9 (SB-9) funds. Operational monies are used to pay for services, materials, equipment, fleet fuel, and District wide utilities. SB-9 resources, created in the 1990s by voter approval and reloaded annually, are used to pay for contractor services and related materials and equipment. Insightful management of SB-9 funds is Support Services' principal objective.

Ms. Salas watchfully coordinates with M&O Managers in earmarking budget dollars as precisely as possible for projected services, materials, and equipment provided by contractors and vendors, generally for anticipated sizeable projects. It is imperative that these monies are reserved so that M&O can remedy the District's most critical needs without classroom interruptions and within budgetary restrictions. Setting monies aside, approximately 35%, for unforeseen breakdowns and issues is equally important.

In accordance with procurement rules and procedures, staff first reviews and Ms. Salas then approves all of M&O's invoices prior to forwarding to APS Procurement and/or Accounts Payable for final processing. Support Services personnel endeavor to process invoices without delay as holdups in the APS payment system cause the ill-fated domino effect of work falling behind schedule, unhappy customers, added costs, and can even adversely impact student programs.

Fortunately, the Department benefits from very little turnover. Cross-trained veteran employees continuously perfect systems and procedures, becoming ever more heedful of accurate and efficient expenses processing. As the following budget history demonstrates, the District increases in size every year while the monies to maintain expanding existing campuses and new schools don't keep up.

M&O Budget History 2007 – 2015

(Total M&O Budget Allocation Includes "Carry Over" SB-9 Monies from Previous Fiscal Years)

Fiscal Years	Work Orders	Square Feet	M & O TOTAL BUDGET	Operational Budget	SB-9 Budget	Salaries OT & Benfits	School Sites	FTEs
2007	57,760	9,350,500	\$48,342,400.00	\$2,903,213.00	\$31,393,556.00	\$14,045,631.00	136	330.5
2008	63,476	10,975,700	\$55,391,208.00	\$2,629,799.00	\$37,165,908.00	\$15,595,501.00	137	320.5
2009	68,155	12,010,152	\$48,564,786.00	\$2,066,226.00	\$30,832,290.00	\$15,666,270.00	139	310
2010	68,372	13,105,100	\$41,227,836.00	\$1,329,653.00	\$25,350,736.00	\$14,547,447.00	141	285.5
2011	71,825	14,207,533	\$30,237,780.00	\$ 909,154.00	\$14,776,670.00	\$14,551,956.00	142	265
2012	70,620	14,517,582	\$35,966,909.00	\$ 925,736.00	\$21,355,325.00	\$13,685,848.00	143	262.5
2013	77,722	14,624,261	\$38,573,538.00	\$1,005,736.00	\$23,844,843.00	\$13,722,959.00	143	263
2014	77,274	14,402,956	\$38,655,311.00	\$1,054,080.00	\$23,818,035.00	\$13,783,196.00	143	263.5
2015	77,198	14,590,750	\$39,063,004.00	\$1,529,562.00	\$23,536,468.00	\$13,996,974.00	144	266.5

NOTE: Retroactive reconciliations of the SchoolDude FIMS' work order system are conducted as WOs change from "pending," "open," and "closed" status, consequently altering the historical figures reflected throughout this and previous Reports. FIMS is a dynamic, never static system.

Highlights

Continued trend of increasing drawdown purchase orders (PO)

A drawdown PO specifies a total figure that a vendor's invoices for recurring or expected expenses will draw down upon during the fiscal year. Several years ago the Department started moving away from issuing separate purchase orders for transaction payments which has significantly reduced the number of requisitions waiting for approval, paperwork processes, and time. Since the new drawdown system was initiated in the 2012-13 fiscal year, drawdown POs have increased 72.9% (144 to 249), with 31% occurring in the last (2013-14) FY. Vendors are paid more promptly and closing financials at the end of the fiscal year is streamlined. Support Services personnel and the Capital Fiscal Division staff quickly recognized how tracking invoices and payments was greatly expedited.

Two employees trained to assist with utility payments

The Utilities Management Technical Assistant (UMTA) responsible for scrutinizing and paying the District's utility invoices (electric, natural gas, water/sewer—utility and wells—refuse, and recycling) has been exclusively skilled to perform the function. This left no backup for the position when she was out on vacation or sick leave, as well as no assistance in carrying out the multifaceted function. The various and numerous utility vendors' invoicing systems can be knotty as many variables influence each invoice's total, all too often incorrectly increasing the amount due. Two staff members were trained in analyzing assigned utilities' invoices and processing them through SchoolDude's Utility Direct program. The UMTA now has sorely needed on-going assistance and utility invoices are no longer held up in her absence.

Utilities Management Technical Assistant (UMTA) began a utility/meter audit

As mentioned above, paying the District's utility invoices is anything but a clear-cut process, illustrated by APS' utility expenses in 2014-15 exceeding \$20.2 million! Accurate invoicing (and payments) is made even more complicated by the extensive campus rebuilds and remodels constantly in development whereby meters can be added, changed out, and even entirely removed. Utilities have mistakenly charged APS incorrect rates, especially for new installations or for meters that no longer exist. To certify that meters are correctly located, functioning properly, and that readings correlate with invoices, the UMTA began drafting a plan to audit utility meters. (See 2015-16 Goals)

No needed budget transfers made for a smooth transition to new fiscal year

Having the option to transfer budgeted funds from one designated use to another is certainly helpful, but to not need to makes for much more favorable financial management. Budget transfers are not only cumbersome in that they require many reviews, approvals, and signatures; they can also muddy the transition from one fiscal year to another. Support Services personnel collaborated efficiently and ahead of schedule with other M&O departments as well as with Procurement and Finance personnel in accurately earmarking funds, therefor avoiding the need for budget transfers. The rollover of purchase orders also transitioned without a hitch and the total M&O budget was loaded on time. (Waiting for budgeted monies at the start of a new fiscal year can also present issues.)



GOALS

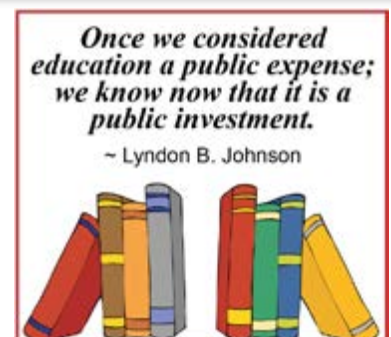
Status of 2014-15 Goals

- ~ Scan all invoices (past and present) for electronic storage. *Process started and will gain traction with every year. As many invoices are received by email (versus hardcopies received by U.S. Mail) the process has been made easier, but is nonetheless laborious.*
- ~ Create drawdown POs for utility expenses. *Completed, six created.*

2014-15 Goals

- ~ UMTA to conduct a utility invoice audit comparing invoices to the District's hundreds of utility meters. It is an arduous task but important in not unknowingly overpaying utility expenses. The effort, however, was made much less difficult due to the recent utility meter audit conducted by FD+C whereby every functional, malfunctioning, and obsolete meter was identified and recorded in a "mapped" database.
- ~ Create a 2015-16 BSR Credit Listing by vendor separate from the drawdown purchase orders. This process will still allow the Department to track/monitor credits without affecting the matching encumbered balances between the BSR and Lawson. Credits from vendors for returned merchandise and returns are common throughout M&O departments. These credits have resulted in incongruity between the M&O financial database (BSR) and the District wide financial database (Lawson). When invoices are entered into Lawson, they are deducted from the allocated balance. However, when a credit is entered, it changes the encumbered balance in the BSR but doesn't affect the Lawson PO balance. All credits in Lawson are applied against the vendor, not the PO. As a result, it has been necessary to manually calculate credits at the close of every fiscal year and request a revision in matching Lawson's balance to the penny to automatically close the PO. The BSR Credit Listing by vendor will track entered credits, by design, which is invaluable information as it enables Support Services personnel to view true, matching PO balance(s) between the BSR and Lawson databases. It will then be a simple revision in matching Lawson to the necessary penny. The new protocol will also avoid duplicate invoices or taking a credit twice. Support Services has reduced duplicates by over 95% over time and this new program will address the remaining 5%.





FACING ON-GOING CHALLENGES and LOOKING AHEAD

Ramping up the preventive maintenance program continues to be a focus and a challenge

Every M&O Year End Report stresses the importance of preventive maintenance work at length. The early Reports supported its critical need. Since then everyone at APS has gotten on board with recognizing PM's importance, from the top rungs of executive leadership to the technicians eager to carry it out. The education and persuasion of PM's merits to executive management was arduously conducted, supported by credible research and evidence, and was unanimously consented to and launched!

Oddly, M&O starting its PM effort years ago was easier than multiplying it has been. It is not usually the case that creating a new program from nothing is easier than sustaining and expanding it, after all, it is established, and isn't that the hard part? No, not in the case of costly PM work; only dollars can power continued PM momentum. All the PM that could be accomplished inexpensively has been. All the PM that could be completed with a conservative pot of funds has been. Clever budget maneuverings and ingenious strategies have been employed by all department Managers in getting PM work addressed.

APS' M&O leadership now has to advance beyond clever and cunning means in addressing needed PM work as applying funds that simply aren't there isn't possible. Expanding PM is not a vexing problem just for APS; it is a dilemma for all public school districts nationwide. *Certainly all school systems would rather perform PM work today in saving equipment and money in the long term.*

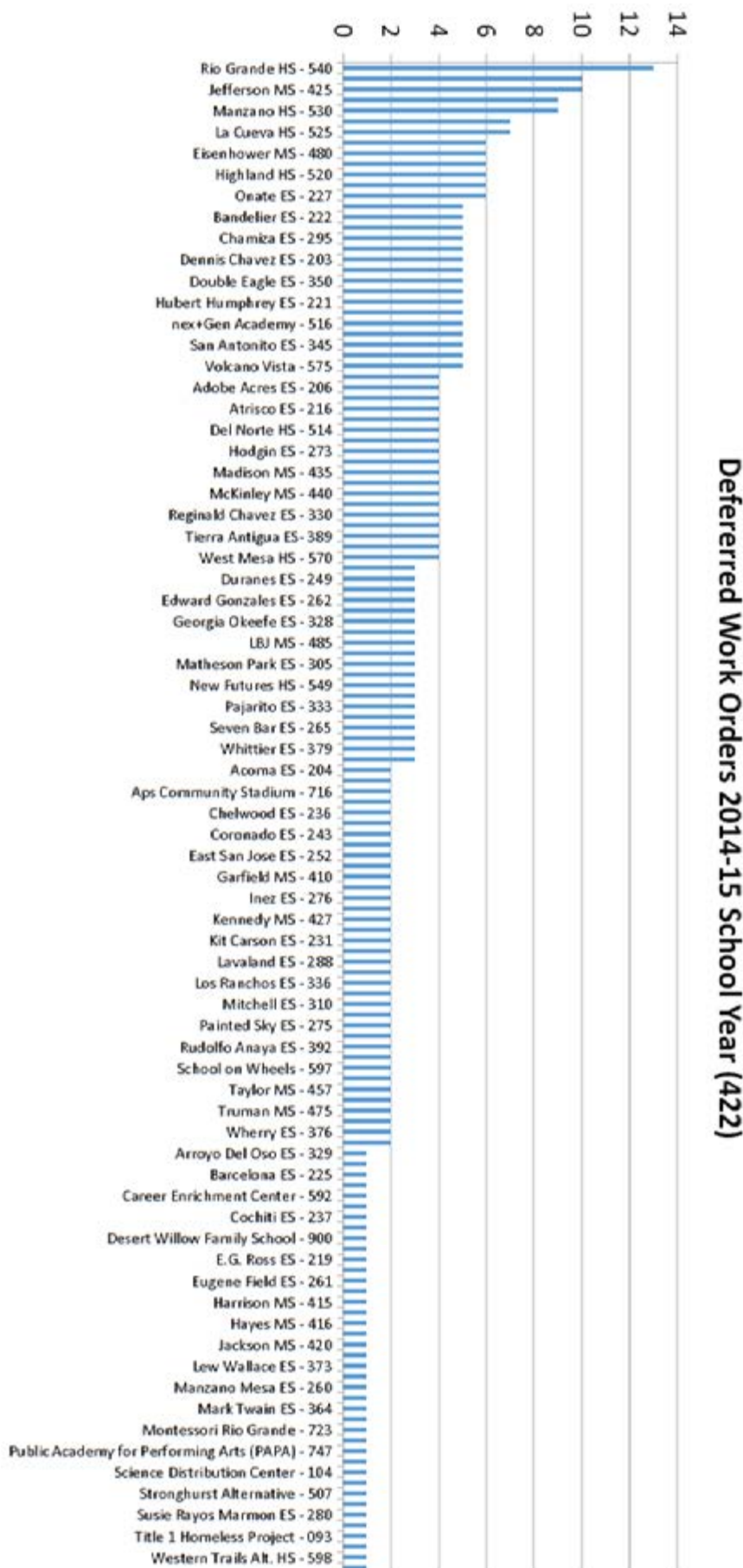
But, while crafty strategies may well be nearly exhausted, astute choices and practices have not been. For example, APS' M&O is improving the efficiencies of established PM work. And when new equipment, systems, and materials replacements are needed, options are thoroughly vetted in making prudent purchasing decisions. Smart systems and equipment designed to require less maintenance, and systems that allow control adjustment and monitoring via the APS Intranet are selected — ultimately saving service and repair costs. Forecasted PM and reactive work is considered with every purchase of replacement equipment, systems, and materials in new District construction or remodels. Service contracts are also being negotiated to include installation and initial maintenance/adjustments with the purchase of the most sophisticated "smart" systems. In short, operation requirements, projected maintenance and repairs, life cycle, and more are evaluated with ongoing PM needs in mind. Sounds complicated?

It is! "Maintenance" is no longer workers with tool belts and lunch boxes. "Maintenance" today is represented by highly skilled technicians with handheld electronic tablets, apps on their smart phones, and very specialized tools and training.

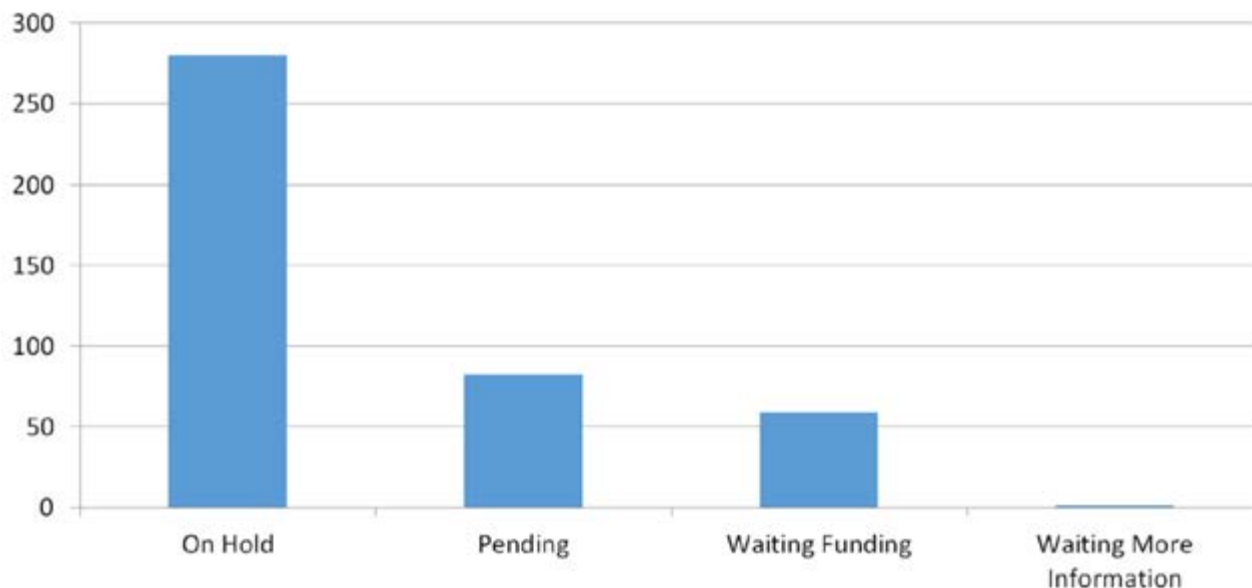
Deferred maintenance (DM) screams for funding and attention

Large urban school systems from coast to coast are experiencing accelerating deterioration of their schools. And the condition of buildings and equipment in classrooms and support spaces are declining to the point of hindering the core mission of schools: *educating children*. Deferred maintenance is a measure of the preventive and regular maintenance, capital repairs, and capital system and component replacements that are needed to extend the life of equipment, systems, or facility to achieve projected life expectancy but that have been postponed to a future date most often due to a lack of funding. The Council of the Great City Schools recognizes this critical need and is doing all it can to bring it to the attention and forefront of school districts' leadership throughout the country. (Source: *Reversing the Cycle of Deterioration in the Nation's Public School Buildings*, published by the Council of the Great City Schools, October 2014).





The following bar graphs characterize APS' 422 deferred work orders in the 2014-15 fiscal year representing 68 schools and three other sites under M&O's responsibility. Even the new west side sports stadium just opened in 2013 is included here. The price to remedy every one of these 422 projects rises as they sit in the black hole of inaction, most due to waiting for funding from the Capital Master Plan. If M&O waits too long to fund projects, more money is needed than if addressed soon. It's an unfortunate puzzle that just seems to splinter into more expensive puzzle pieces as projects sit on the DM shelf.

Deferred Work Orders 2014-15 by Type (422)


What is M&O to do with these essential large jobs that there is no funding for? To date, projects that pose a safety issue are immediately made “safe,” but are not fully resolved. Deferred projects are like a pernicious cancer that can be treated but not cured. These projects are cared for with a Band-Aid that keeps the wound clean and closed and then the WO goes into a “hold” status, either waiting for funding approval or for approved funding to materialize. However, while a deferred maintenance need may not be included in the CMP, a discretionary funding mosaic can sometimes underwrite the project.

The fine art of prioritizing takes careful planning

Deferred work orders go into a Direct Maintenance Report that lists and details needed work. This Report is received by the M&O Executive Director who rates projects based on level of need as well as health and safety factors. The Report is then forwarded to Architectural Research Consultants, Inc. (ARC), the APS consulting firm that visits the DM school sites in performing the necessary due diligence to confirm that there is indeed a need, and then develops the Capital Master Plan. The Directors of CMP, Facilities Design + Construction, and M&O are provided with copies of the Report and work together with ARC in prioritizing the projects. (FD+C can sometimes add a DM project to their schedule of work, generally scooping it up in an upcoming renovation or rebuild.) When priority is identified, it moves the work out of the deferred list onto the “budget granted high priority list.” Still required is approval from the APS Board of Education as well as taxpayers voting (bond elections) in support of funding the projects.

For projects that don’t make it onto the “budget granted” list, the cycle of repairing continues when replacement is really the only viable solution, but replacement is very costly. APS has more need than it has money, as do all public school districts, no exceptions. There is an art to strategizing these DM work orders, with those posing health or safety hazards always rising to the top. Aesthetic needs, no matter how unsightly, always drop to the bottom. Functionality falls somewhere in the middle of the pack. It’s always a balancing act that requires considering down classroom time and many other factors. And the balancing act is often nonsensical, such as when the cost of maintaining the system or product is more than its worth in dollars. It’s not unusual for M&O to be faced with either replacing a timeworn HVAC system in need of a \$50,000 - \$75,000 fix, or a total replacement which is more prudent in the long term but costs \$350,000 - \$450,000. These tough decisions are made every day. Replacing a transmission for \$5,000 on a service vehicle valued at \$4,000 is irrational, but so is disregarding work requests because the \$30,000 to replace the vehicle is not available.

Example

The main building's heating and cooling system at Acoma Elementary School consists of three central air handling units, each over 30 years old, far exceeding the normal service life for this type of equipment, and should be replaced. Two separate heating hot water boilers provide hot water to heat the facility, they too should be replaced. The maximum allowable construction cost for replacement is \$412,296 and the total project cost is \$524,583. While the need is dire, the project is unfunded.

Acoma ES Partial Projects List, 2011-16

4.05.D02.1.	Repair and Re-stucco Media Center	\$7,056	\$8,982	Unfunded
8.00.G01.1.	Issue: ADA Projects Previously Identified	\$0	\$0	Unfunded
7.15.A07.1.	Communications System Upgrades	\$58,000	\$55,100	Unfunded
7.06.E02.1.	Xeriscaping Projects	\$80,000	\$76,000	Unfunded
7.00.A03.1.1.	Issue: M&O HVAC Upgrades	\$0	\$0	Unfunded
4.00.A03.2.1.	Architectural Assessment Notes Relating to Electrical Issues	\$0	\$0	Unfunded
4.00.A03.1.1.	Architectural Assessment Notes Relating to Mechanical Issues	\$0	\$0	Unfunded
6.04.A09.1.	Fire Protection Sprinkler System	\$241,902	\$307,941	Unfunded
4.04.A03.1.1.	HVAC System Upgrades- Main Building	\$412,296	\$524,853	Unfunded
4.00.E05.1.	Architectural Assessment Notes Relating to Drainage Issues	\$0	\$0	Unfunded
4.06.E05.1.	Upgrade the Detention Pond	\$150,000	\$181,688	Unfunded

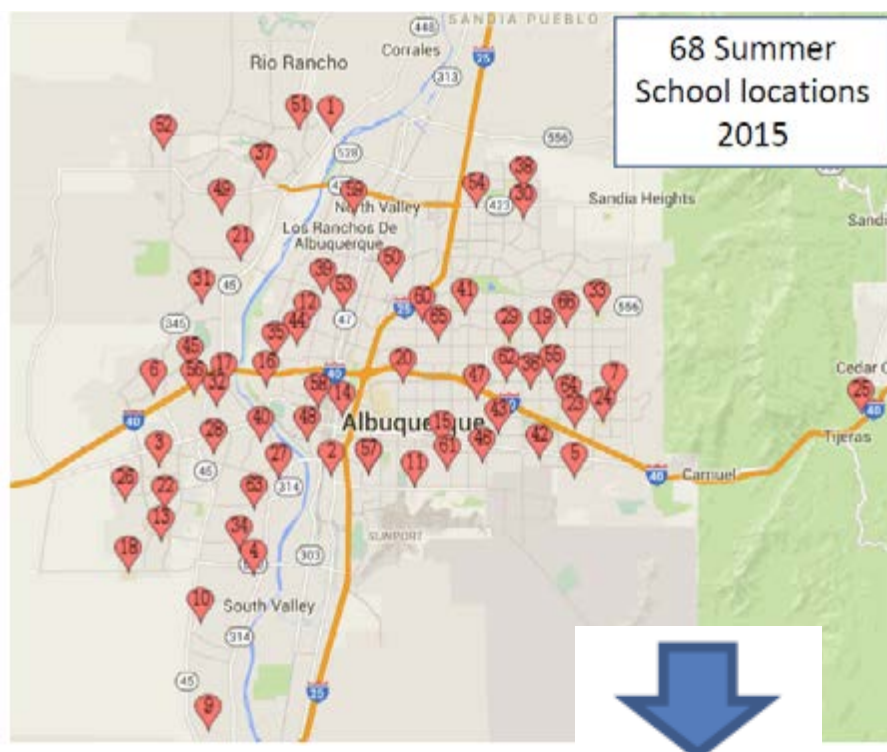
Professional development must shift to be equipment and site specific

Keeping abreast of today's cutting-edge schools and systems has been a challenge for M&O service departments and craft shops. High tech equipment is introduced seemingly without a respite. However, as servicing the equipment is a must, taking the time to first comprehend it is a prerequisite that cannot be disregarded, which is resulting in a continuing education cultural shift. M&O leadership is challenging department Managers to develop and demand from vendors professional development tailored to their specific equipment and sites. This necessitates redirecting professional development to be more applicable to the District's systems, equipment, building materials, and school sites.

Going forward, trades' continuing education will be required to address the needs of each craft shop in technicians properly servicing schools. This means targeting formal course/classroom time conducted by vendors and product manufacturers to be specific to technicians' work and areas of responsibility. Historically, generic courses for *all* purchasers of equipment and materials were conducted. However, all customers do not use and service these purchases in the same manner and few, if any, of vendors' customers are as large, complex, and diverse as APS. Vendors' and manufacturers' previous generalized **universal** continuing education wasted time teaching APS techs what they don't need to know; a far cry from the useful site/job specific training that they *do need to know*.

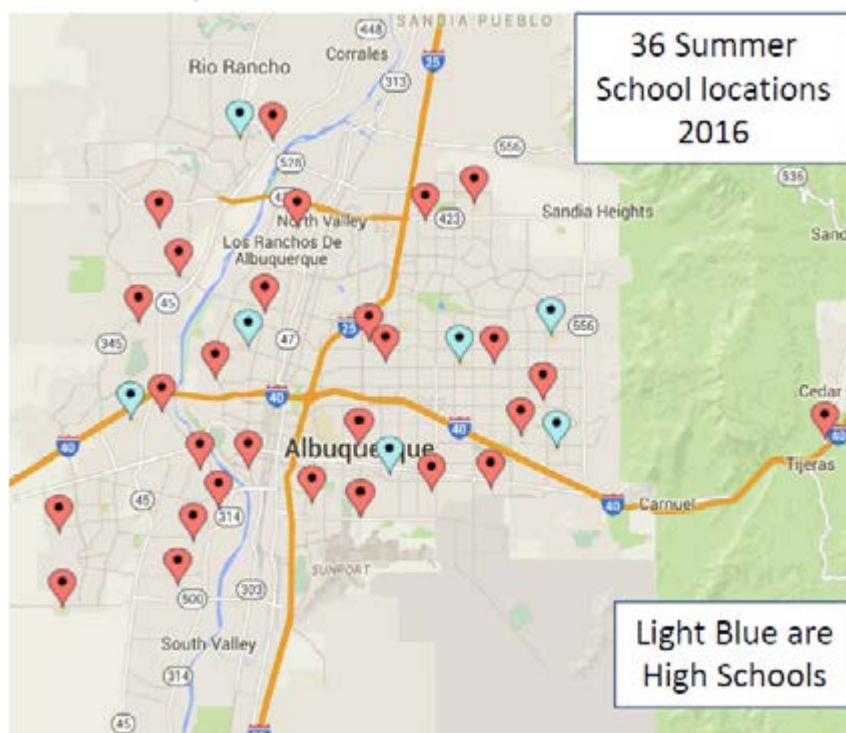
Managers are expected to be active participants in changing this status quo by demanding certified training tailored specified in the purchase contract of equipment and products. Technicians don't have the time for catchall "maintenance of a heating system" courses. They need to learn how to maintain *this* heating system purchased specifically for *this* school site.

days of service	On Peak KWh	Off Peak KWh	Total KWH	Billed KW	Actual KW	Total Charge
60	2,851,556	3,136,016	6,056,555	9,589	9,077	\$809,054



Consolidation of summer school programs under consideration

An evaluation conducted in 2015 presented the concept of consolidating summer school programs as illustrated below. Currently 68 schools are utilized for summer school programs. It may be feasible, however, to concentrate summer school to 36 sites which would result in an estimated 33% reduction in electricity during the summer semester, approximately \$263,430 in utility costs and 3,012 in kilowatt usage. The Facility Usage Specialist is currently assessing the viability of such a consolidation for 2016. (See actual savings between Summer 2014 and 2015 on page 85 in Appendices and Summer School Electric use in 2015 on page 86.)



days of service	On Peak KWh	Off Peak KWh	Total KWH	Billed KW	Actual KW	Total Charge
60	1,961,736	2,225,556	4,221,530	6,571	6,065	\$545,624



APPENDICES

Electric Use During Summer Schedule 2014 vs. 2015

Electric Use During Summer Schedule 2015

What is the APS Baseline?

Electric, Natural Gas, and Water Consumption 2014 vs. 2015

LED Conversion – Interior and Exterior

HVAC Web Enabled Intermatic Time Clock

M&O Department Work Order Totals

School Cluster Reports

Managing for Results in America's Great City Schools

Albuquerque High School Chiller Reset

APS Water & Energy Conservation Update (Project)

SchoolDude KPI Dashboards



Summer School Consolidation

Electric Use During Summer School 2014 vs. 2015

APs Water & Energy Conservation Update (IDR)



Blue is 2015. Gray is 2014 inclusive of all EnerNOC enabled schools.
From 6/15/2015 to 7/12/2015, our Peak Demand kW and kWh exceeds 2014 usage by approximately 10%.

It's great news that we know this as it enables us to go work the problem.

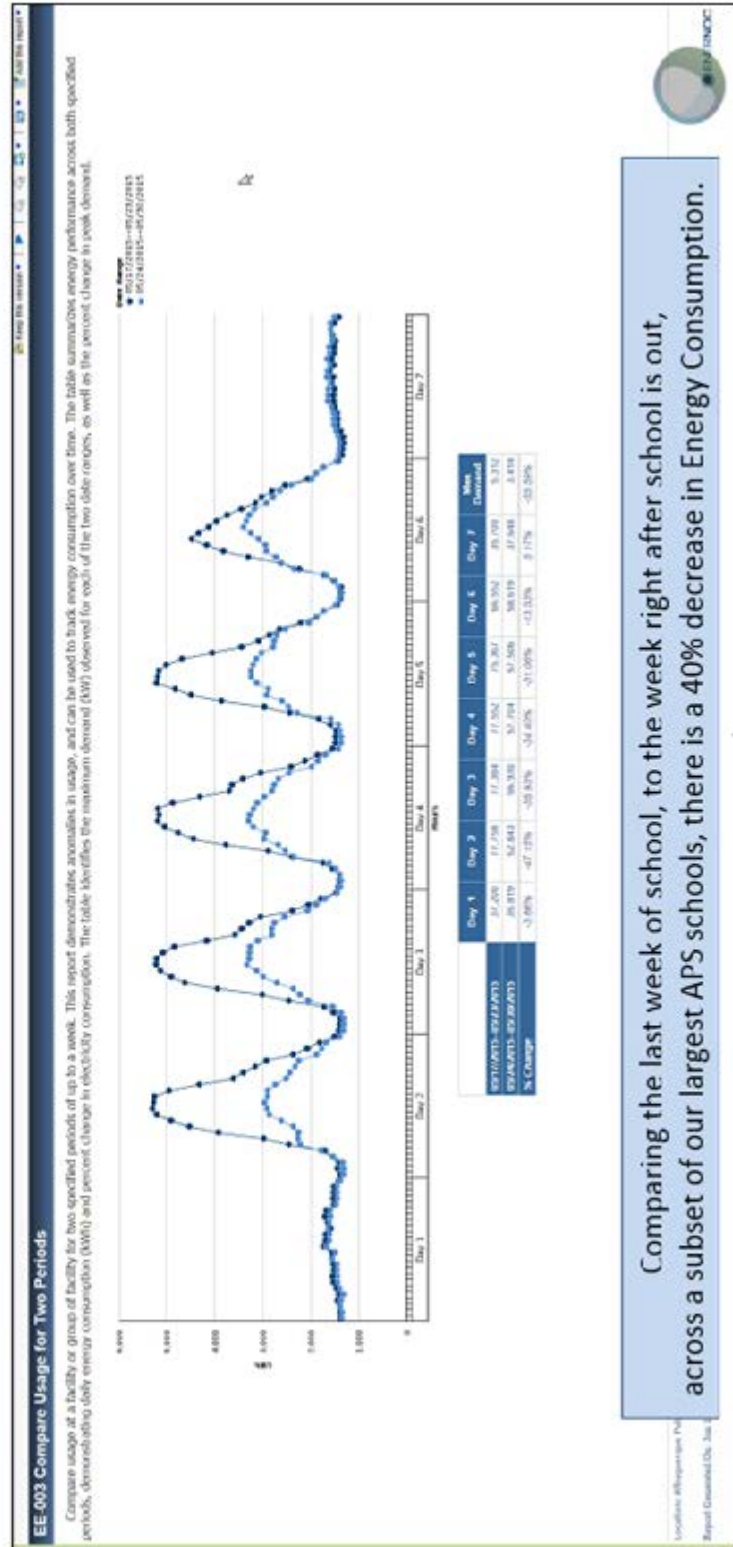
Electric Use During Summer School 2015

APS Water & Energy Conservation Update (Summer School Consolidation)

In June and July 2015, across 68 Summer School locations, we used the following electricity:

days of service	On Peak KWh	Off Peak KWh	Total KWh	Billed KW	Actual KW	Total Charge
60	2,851,556	3,136,016	6,056,555	9,589	9,077	\$809,054

Our 2016 opportunity to consolidate summer school programs enables a target of a 40% reduction in electricity for this time period equivalent to \$324K.



Comparing the last week of school, to the week right after school is out, across a subset of our largest APS schools, there is a 40% decrease in Energy Consumption.

What is APS Baseline?

APS Water & Energy Conservation Update

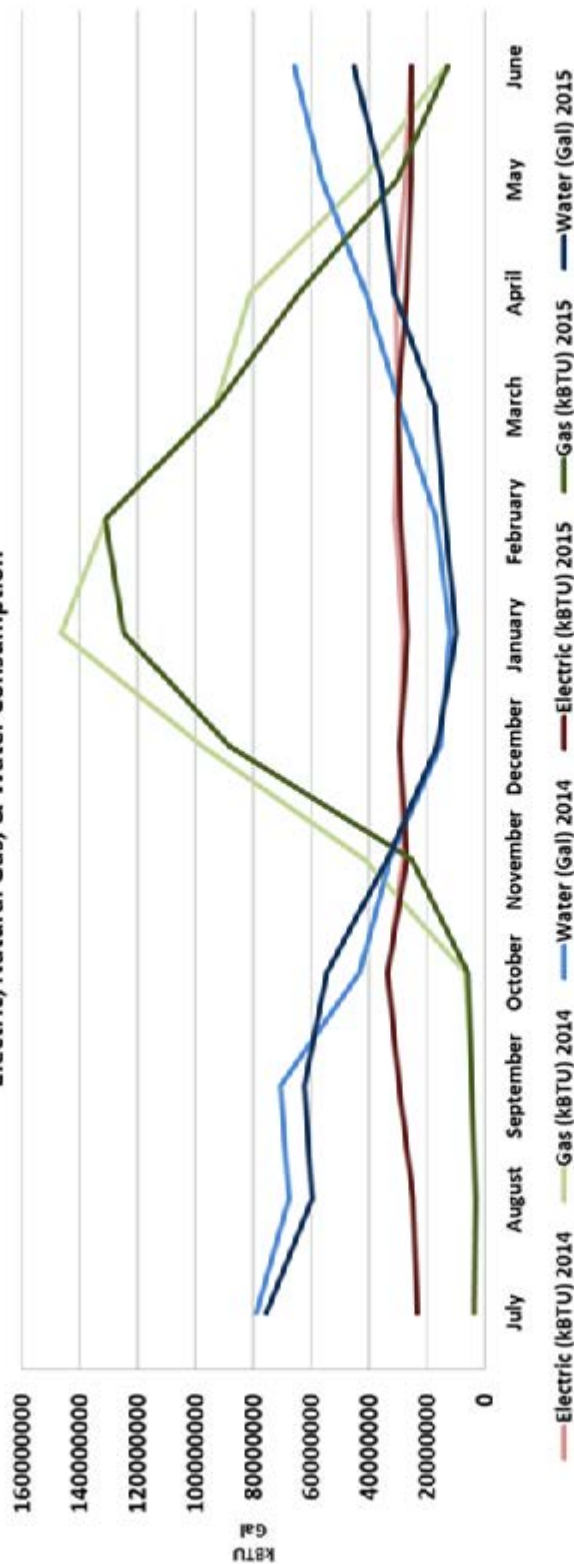
- **What is the APS Baseline?**
 - **Baseline Year: July 1, 2013 thru June 30th, 2014**
 - 88,555 Students in 155 facilities
 - 13,689,714 ft² permanent + 1,670,185 ft² portable = 15,359,899 ft² TOTAL
 - 14 HS, 27 MS, 89 ES, 28 Admin, 9 AS, 7 CS = 174 Locations
 - 1415 Portable Classrooms
 - 282 Water Meters
 - 272 Gas Meters
 - 246 Electric Meters
- **The APS Baseline serves as the 'model of record' against which all future energy and water performance is measured.**
- **The Baseline Year metrics are not 100% final and will take 2-4 weeks to lock down the data set and accompanying metrics.**
- **Perspective: We're working on an \$19.5M dollar problem.**

544110	Electricity	\$11,600,000
544120	Natural Gas	\$4,400,000
544150	Water & Sewer	\$3,560,000
Total		\$19,560,000

Electric, Natural Gas, and Water Consumption 2014 vs. 2015

APS Water & Energy Conservation Update (Metrics)

APS 2014 vs. 2015
Electric, Natural Gas, & Water Consumption



	2013-2014	2014-2015	% change
Electric (\$)	\$10,993,536	\$11,593,969	5.5
Gas (\$)	\$2,657,438	\$2,497,699	-6.0
MSPW (\$)	\$3,221,582	\$3,138,437	-2.6
Total (\$)	\$16,872,556	\$17,230,105	2.1

	2013-2014	2014-2015	% change
Electric (kBTU)	341,626,105	332,414,376	-2.7
Natural Gas (kBTU)	665,295,000	587,775,000	-11.7
MSPW- All (Gal)	530,803,988	455,861,120	-14.1
Electric & Gas (kBTU)	1,006,921,105	920,189,376	-8.6
Baseline EUI (kBTU/Ft^2)	62	57	-8.5
Total Square Footage	16,120,741	16,106,405	-0.1

AIM EUI: 67.3
AIM EUI: 61.5
AIM %: -8.6

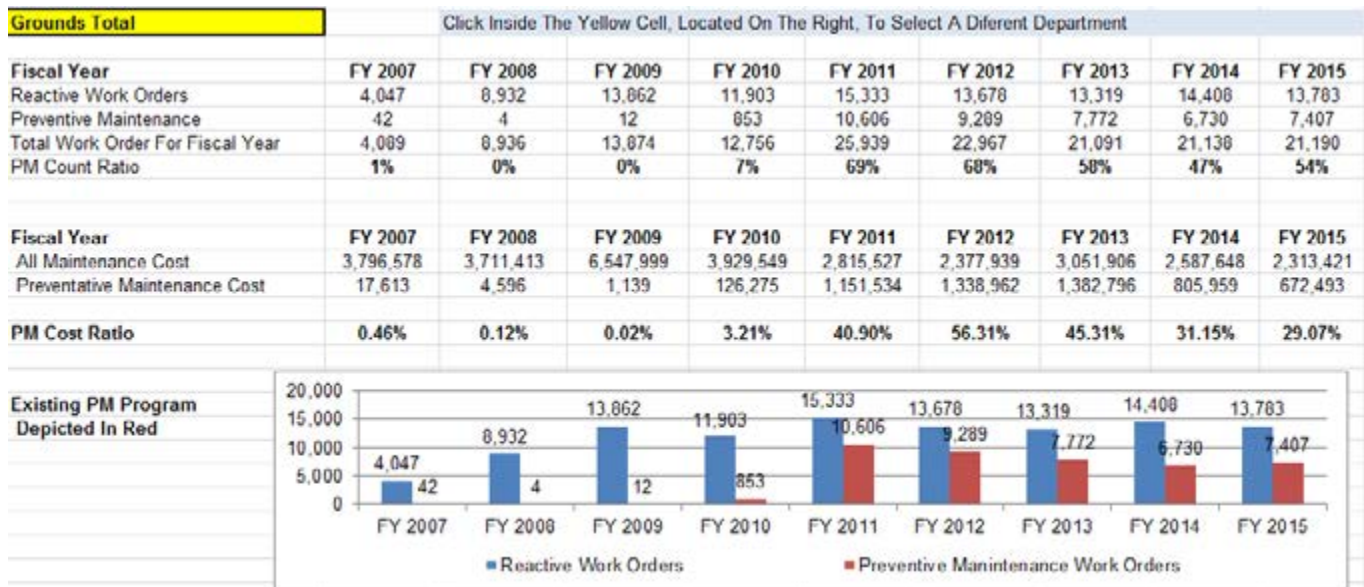
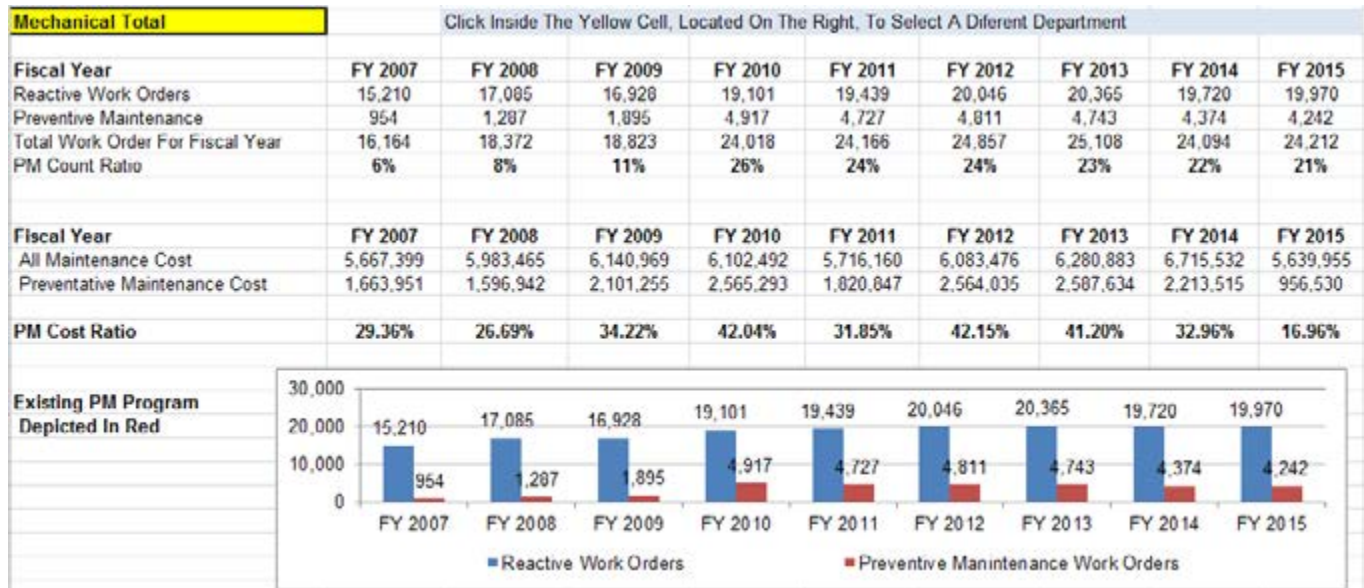
LED Conversion - Interior and Exterior

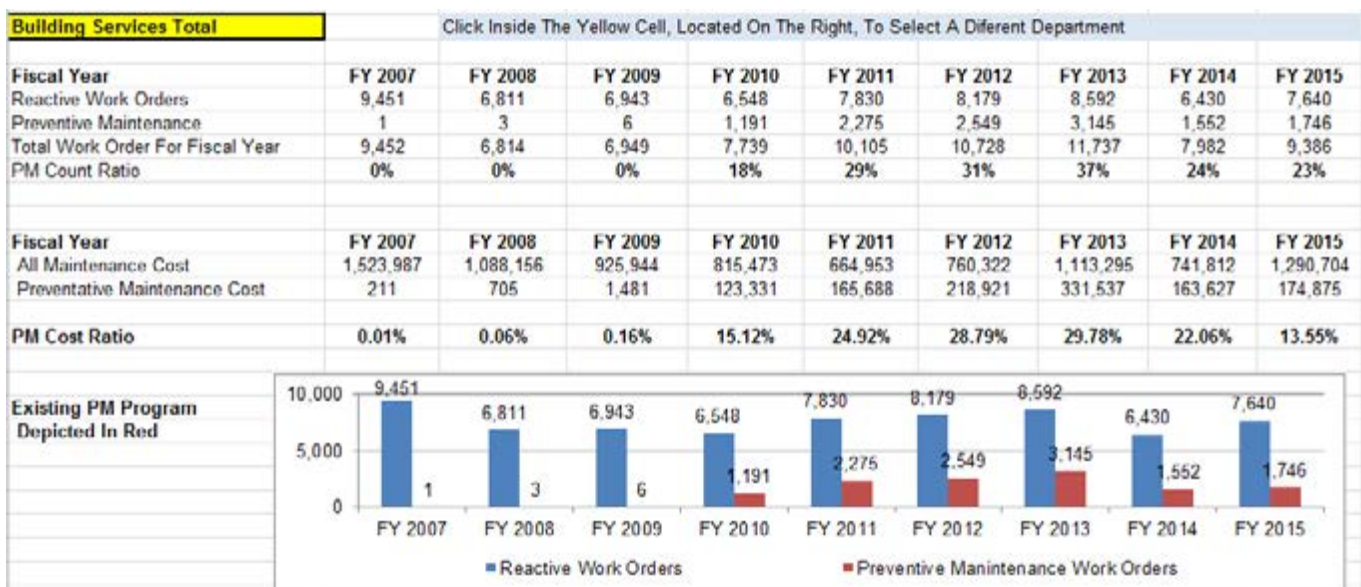
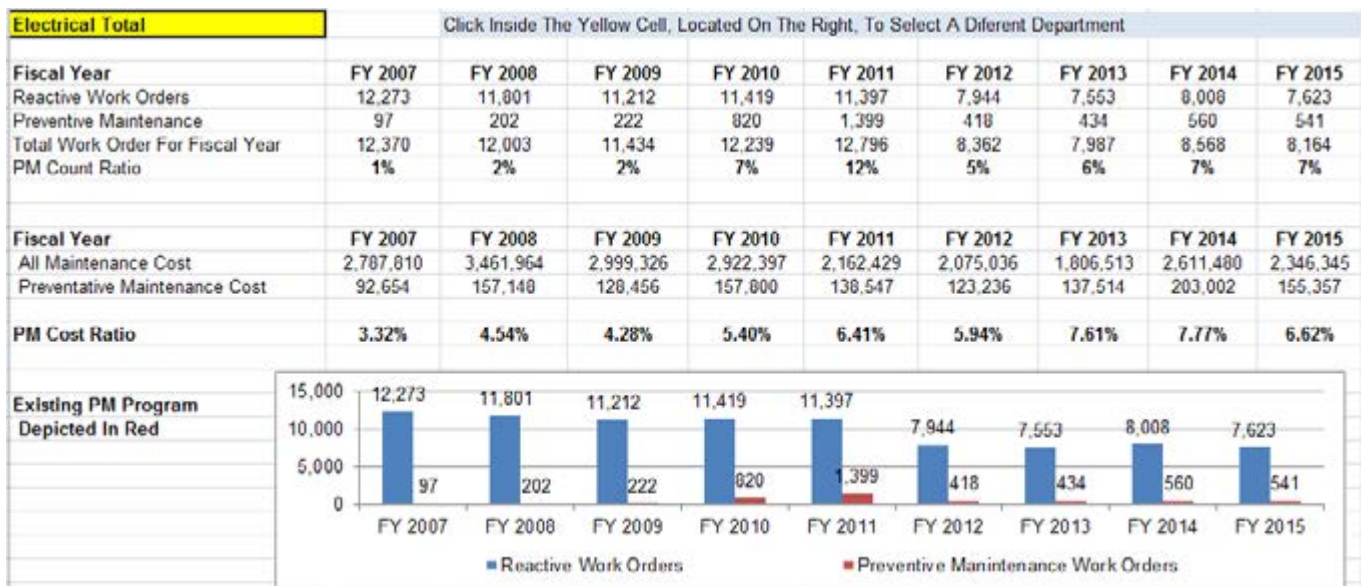
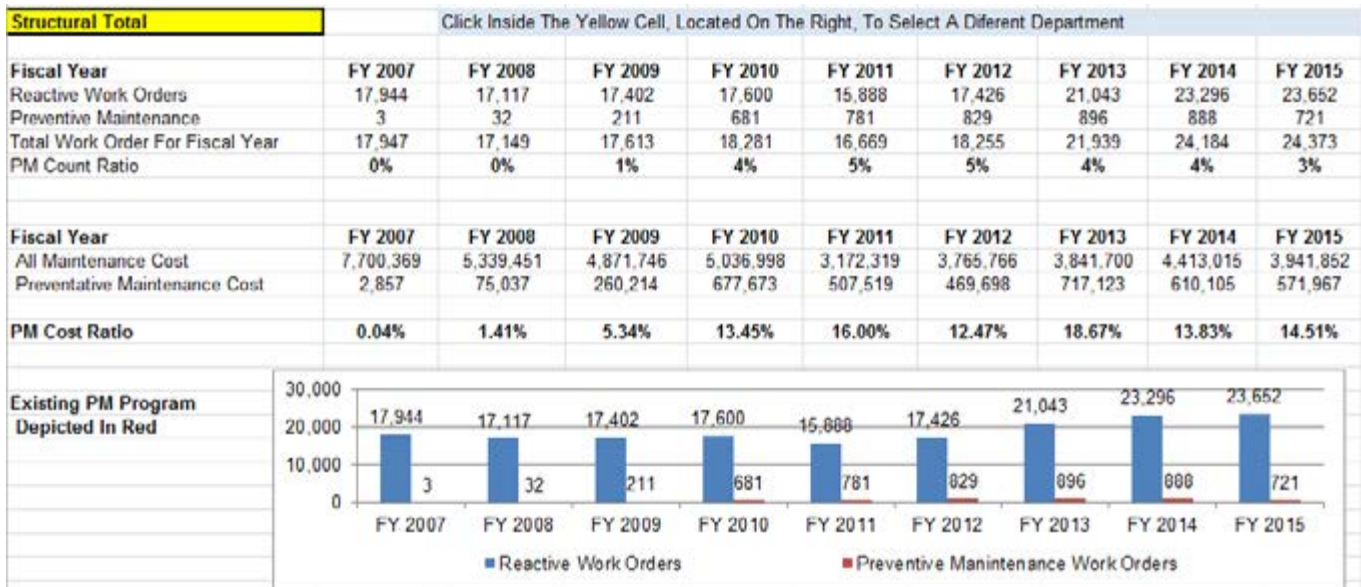
	Material Cost	Labor Cost	Total Project Cost	Annual Electric Savings (kBTU)	Annual Gas Savings (kBTU)	Total Energy Savings (kBTU)	Total Savings	Utility Incentive	Simple Payback (Yrs)	Base line EUI	EUI Change	New EUI	EUI Savings %	IDR (Y/N)
LED Lighting Conversion Exterior (75% redux) Interior (30% redux)				30%										
Lew Wallace ES Lighting Retrofit - Interior and Exterior	\$120,508	\$0	\$120,508	234,176		234,176	\$6,863	\$7,051	17	84	5.77	78.16	6.9%	N
Alvarado ES Lighting Conversion - Interior and Exterior \$214,501K New Fixtures	\$182,984	\$65,370	\$281,454	321,249		321,249	\$9,415	\$7,267	29	78	7.33	70.22	9.5%	N
PROJECT TOTALS	\$303,492	\$65,370	\$401,962	555,424	0	555,424	\$16,279	\$14,318	23.81	80.62	6.58	74.04	8.2%	
Total Baseline 2013-2014	\$13,654,305		\$13,654,305	342,075,559	665,340,000	1,007,415,559	\$16,824,803			65.6	0.04	65.6	0.06%	
% of Baseline	2.22%		2.94%	0.16%	0.00%	0.06%	0.10%							

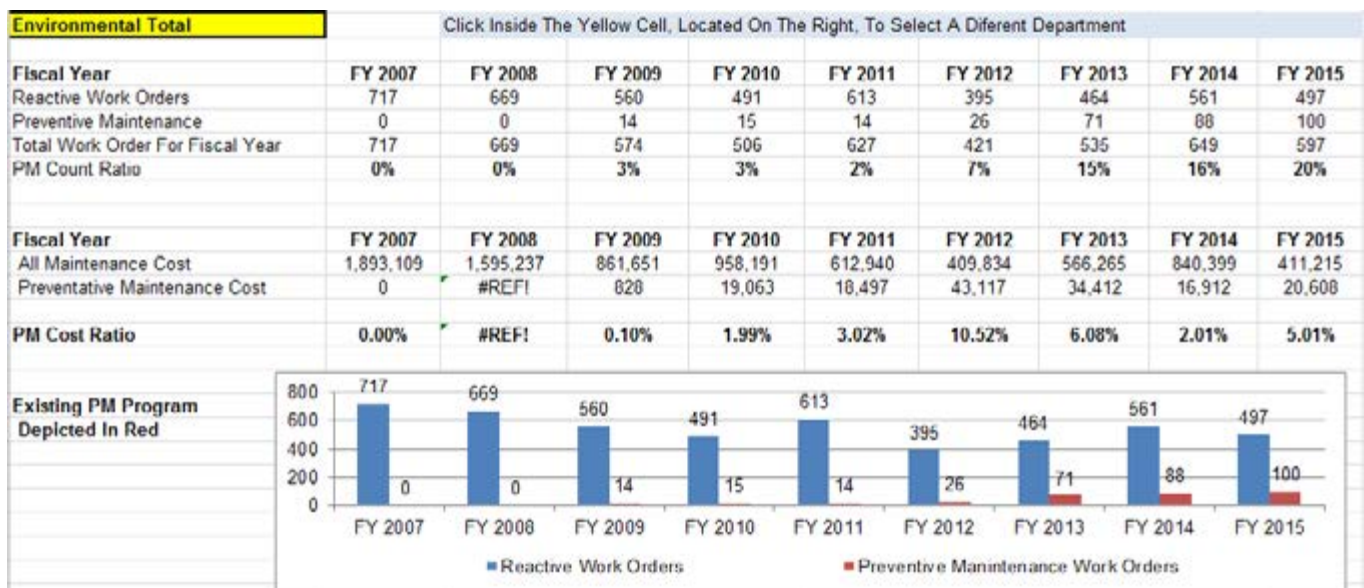
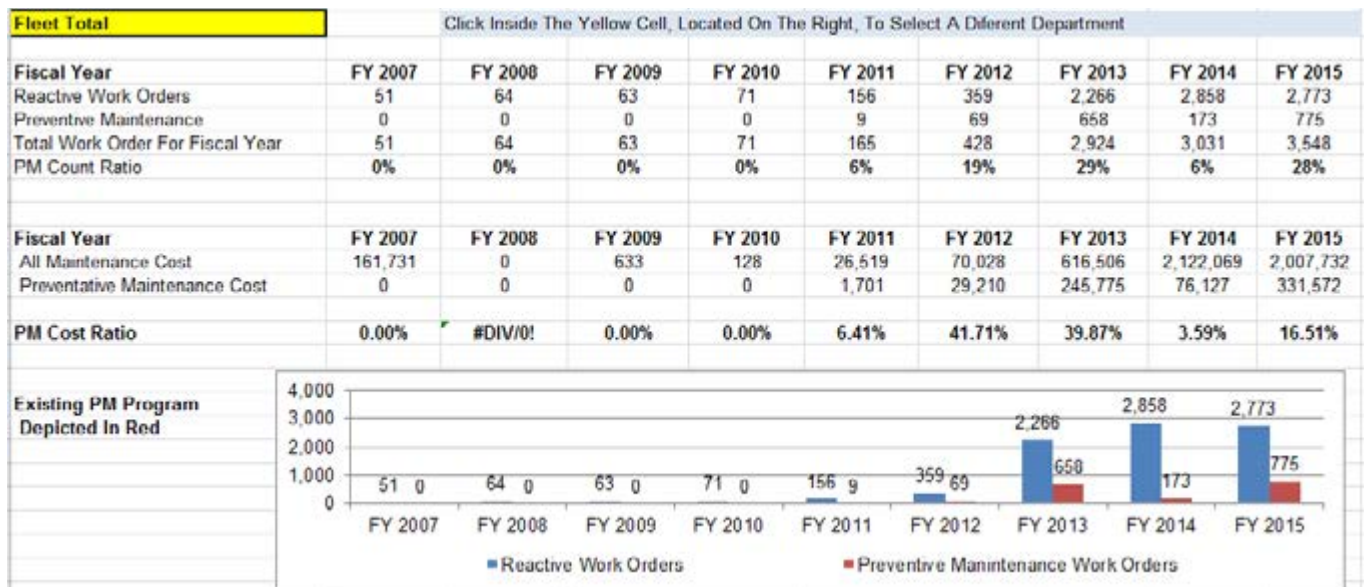
HVAC Web Enabled Intermatic Time Clock

	Material Cost	Labor Cost	Total Project Cost	Annual Electric Savings (kBtu)	Annual Gas Savings (kBtu)	Total Energy Savings (kBtu)	Total Savings	Utility Incentive	Simple Payback (Yrs)	Base line EUI	EUI Change	New EUI	EUI Savings %	IDR (Y/N)
Intermatic Web Enabled Timeclock for HVAC				20%										
Time Clock HVAC - Albuquerque High - 15,8,8,2	\$7,872	\$780	\$8,652	2,113,112		2,113,112	\$61,932	\$0	0.14	81	6.98	74	8.6%	Y
Time Clock HVAC - Cibola High - 16, 1	\$4,048	\$390	\$4,438	1,858,653		1,858,653	\$54,474	\$0	0.08	77	5	71	7.0%	Y
Time Clock HVAC - La Cueva High - 8x8, 4	\$16,889	\$2,340	\$19,229	1,639,160		1,639,160	\$48,041	\$0	0.40	50	5	46	9.3%	Y
Time Clock HVAC - Desert Ridge Mid - 2,2,2	\$4,779	\$585	\$5,364	662,575		662,575	\$19,419	\$0	0.28	75	4	70	6.0%	Y
Time Clock HVAC - Eisenhower Mid - 16,8,8,4,2	\$9,465	\$975	\$10,440	549,483		549,483	\$16,104	\$0	0.65	71	5	66	6.4%	Y
Time Clock HVAC - Ernie Pyle Mid - 4, 8	\$3,505	\$390	\$3,895	719,611		719,611	\$21,091	\$0	0.18	49	4	45	7.3%	Y
Time Clock HVAC - Dennis Chavez Elem - 8	\$1,912	\$195	\$2,107	279,617		279,617	\$8,195	\$0	0.26	73	4	69	5.6%	Y
Time Clock HVAC - SY Jackson Elem - 12,4	\$4,048	\$390	\$4,438	309,393		309,393	\$9,068	\$0	0.49	87	6	82	6.7%	Y
Time Clock HVAC - Painted Sky Elem - 2,2,2	\$4,779	\$585	\$5,364	399,089		399,089	\$11,697	\$0	0.46	96	6	90	5.8%	N
PROJECT TOTALS	\$57,297	\$6,630	\$63,927	8,530,693		8,530,693	\$250,020	\$0	0.26	69	5.14	64	7.5%	
Total Baseline 2013-2014	\$13,654,305		\$13,654,305	342,075,559	685,340,000	1,007,415,559	\$16,824,803			65.6	0.56	65.0	1%	
% of Baseline	0.42%		0.47%	2.49%	0.00%	0.85%	1.49%							

M&O Department Work Order Totals







Note: Due to the nature of the Environmental Management Department's role (support to other M&O Departments and FD+C), it is difficult to accurately identify "reactive" WOs. The Department's work, whether routine inspections or support work related to repairs or construction, is always scheduled work in response to a regulation.

In addition, the above graph does not illustrate time, but rather costs and not necessarily costs to the Environmental Management Department. Because every asbestos work order, including those generated by FD+C, goes through Environmental Management, the costs are included in the Environmental WO even if the Department doesn't actually cover the costs. To exclude costs in the WO, however, would be negligent as costs would then not be accurately tracked anywhere.

School Cluster Reports

Rio Grande High School Cluster

Rio Grande Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Adobe Acres ES - 206	80,046	562	531	\$ 131,611.02	73,332	607	547	\$ 131,356.69	73,332	607	504	\$ 77,084.51
Armijo ES - 215	64,307	452	593	\$ 97,015.19	62,375	450	504	\$ 82,757.25	62,375	450	570	\$ 126,471.99
Atrisco ES - 216	61,228	351	501	\$ 125,631.27	61,357	380	459	\$ 87,093.48	61,357	380	392	\$ 75,630.64
Barcelona ES - 225	76,338	529	373	\$ 120,915.36	75,544	542	369	\$ 89,039.94	75,544	542	314	\$ 51,868.90
Ernie Pyle MS - 450	175,633	653	743	\$ 207,384.60	118,396	634	675	\$ 233,720.80	118,396	634	603	\$ 142,255.09
Harrison MS - 415	134,416	925	637	\$ 140,926.91	122,148	897	766	\$ 151,830.37	122,148	897	663	\$ 127,849.88
Kit Carson ES - 231	72,211	517	552	\$ 91,353.12	72,211	486	482	\$ 82,474.96	72,211	486	472	\$ 69,455.12
Los Padillas ES - 297	45,801	292	715	\$ 157,538.89	45,801	276	581	\$ 124,926.27	45,801	276	571	\$ 125,847.72
Mountain View ES - 324	53,844	390	402	\$ 73,903.95	53,844	372	410	\$ 73,596.46	53,844	372	517	\$ 70,416.70
Navajo ES - 327	76,400	679	547	\$ 96,271.95	82,562	689	517	\$ 90,755.16	82,562	689	534	\$ 99,615.95
Pajarito ES - 333	71,070	611	466	\$ 163,085.95	71,070	549	441	\$ 108,655.07	71,070	549	474	\$ 125,100.49
Polk MS - 448	89,869	459	591	\$ 127,127.27	91,565	415	589	\$ 114,219.56	91,565	415	599	\$ 103,880.72
Rio Grande HS - 540	390,728	1,464	1462	\$ 415,842.14	390,728	1,523	1400	\$ 447,649.81	390,728	1,523	1383	\$ 303,661.07
Valle Vista ES - 370	72,192	656	482	\$ 106,418.45	72,192	566	586	\$ 119,221.12	72,192	566	606	\$ 88,922.26
Totals	1,464,083	8,548	8,595	\$ 2,055,026.09	1,393,125	8,386	8,334	\$ 1,937,296.95	1,393,125	8,386	8,202	\$ 1,588,061.04
Cost Per Square Foot	1.40	Cost Per Square Foot			1.39	Cost Per Square Foot			1.14	Cost Per Square Foot		
Cost Per Student	240.41	Cost Per Student			231.02	Cost Per Student			189.37	Cost Per Student		

West Mesa High School Cluster

West Mesa Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Alamosa ES - 210	64,460	684	542	\$ 181,669.47	77,376	652	437	\$ 62,816.12	77,376	652	575	\$ 101,263.74
Chaparral ES - 234	92,682	894	679	\$ 150,061.20	92,682	901	697	\$ 331,660.79	92,682	901	604	\$ 87,644.33
Jimmy Carter MS - 445	170,939	1,233	569	\$ 129,267.31	173,061	1,232	518	\$ 134,713.04	173,061	1,232	595	\$ 148,054.11
John Adams MS - 405	128,054	703	779	\$ 154,567.42	122,976	677	722	\$ 136,456.57	122,976	677	705	\$ 127,653.42
Lavaland ES - 288	65,123	681	477	\$ 129,134.36	65,123	698	529	\$ 72,531.33	65,123	698	466	\$ 81,088.80
Painted Sky ES - 275	98,452	1,028	589	\$ 132,722.85	98,452	1,096	590	\$ 149,409.75	98,452	1,096	614	\$ 96,468.03
Susie Rayos Marmon ES - 280	102,758	776	514	\$ 90,609.85	102,758	862	492	\$ 78,688.10	102,758	862	434	\$ 67,631.17
West Mesa HS - 570	365,570	1,551	1,310	\$ 442,959.41	365,570	1,453	1,382	\$ 362,246.34	365,570	1,453	1,251	\$ 271,058.01
Totals	1,088,038	7,550	5,459	\$ 1,410,991.87	1,097,998	7,571	5,367	\$ 1,328,522.05	1,097,998	7,571	5,244	\$ 980,861.60
Cost Per Square Foot	1.30	Cost Per Square Foot			1.21	Cost Per Square Foot			0.89	Cost Per Square Foot		
Cost Per Student	186.89	Cost Per Student			175.48	Cost Per Student			129.56	Cost Per Student		

Highland High School Cluster

Highland Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Bandelier ES - 222	75,688	594	637	\$ 139,234.44	77,057	579	603	\$ 107,138.98	77,057	579	496	\$ 73,597.27
Emerson ES - 255	67,096	492	748	\$ 118,783.75	67,096	504	659	\$ 121,065.39	67,096	504	530	\$ 92,184.55
Hawthorne ES - 270	60,151	526	510	\$ 190,302.36	60,151	497	557	\$ 106,384.51	60,151	497	527	\$ 97,538.05
Hayes MS - 416	111,478	370	343	\$ 121,159.98	113,562	381	312	\$ 224,443.06	113,562	381	288	\$ 59,244.72
Highland HS - 520	397,798	1,602	1,422	\$ 248,321.03	397,798	1,495	1,448	\$ 500,237.42	397,798	1,495	1,283	\$ 260,501.92
Kirtland ES - 279	53,038	369	474	\$ 98,834.62	53,038	352	486	\$ 63,289.51	53,038	352	430	\$ 50,442.61
La Mesa ES - 205	83,429	732	470	\$ 84,666.72	83,429	709	506	\$ 100,666.55	83,429	709	672	\$ 111,211.30
Manzano Mesa ES - 260	81,644	739	412	\$ 66,881.88	81,644	748	466	\$ 81,604.11	81,644	748	435	\$ 55,743.07
Mark Twain ES - 364	72,423	402	544	\$ 88,380.30	72,423	395	636	\$ 97,026.68	72,423	395	709	\$ 109,554.24
Sandia Base ES - 348	51,430	492	452	\$ 115,756.55	51,430	450	418	\$ 91,455.03	51,430	450	427	\$ 70,990.29
Van Buren MS - 460	113,204	533	501	\$ 143,467.23	111,194	544	490	\$ 116,609.17	111,194	544	344	\$ 55,578.48
Wherry ES - 376	67,333	533	431	\$ 72,910.46	67,333	543	460	\$ 102,240.36	67,333	543	446	\$ 74,417.09
Whittier ES - 379	68,592	499	426	\$ 97,316.88	68,592	453	355	\$ 87,557.47	68,592	453	358	\$ 41,519.91
Wilson MS - 470	100,408	518	455	\$ 95,699.04	128,408	508	671	\$ 371,638.44	128,408	508	682	\$ 124,614.16
Totals	1,411,712	8,401	7,921	\$ 1,681,795.26	1,441,155	8,150	8,155	\$ 2,171,356.68	1,441,155	8,150	7,627	\$ 1,277,137.66
Cost Per Square Foot	1.19	Cost Per Square Foot			1.51	Cost Per Square Foot			0.89	Cost Per Square Foot		
Cost Per Student	200.19	Cost Per Student			266.16	Cost Per Student			156.55	Cost Per Student		

Del Norte High School Cluster

Del Norte Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Arroyo Del Oso ES - 329	50,658	415	283	\$ 100,448.50	50,658	439	291	\$ 79,935.93	50,658	439	263	\$ 52,759.83
Del Air ES - 228	75,519	375	560	\$ 92,787.01	71,495	420	594	\$ 76,536.98	71,495	420	557	\$ 72,864.1
Cleveland MS - 407	115,858	666	395	\$ 130,389.36	108,036	648	393	\$ 155,947.70	108,036	648	432	\$ 98,794.29
Del Norte HS - 514	305,891	1,188	969	\$ 326,326.60	305,891	1,182	883	\$ 225,507.51	305,891	1,182	842	\$ 175,967.71
E.G. Ross ES - 219	65,163	496	437	\$ 97,444.84	65,163	506	447	\$ 80,796.78	65,163	506	388	\$ 52,209.21
Governor Bent ES - 230	64,797	527	646	\$ 107,946.13	65,631	530	559	\$ 95,097.34	65,631	530	638	\$ 80,971.56
Hodgin ES - 273	79,856	586	462	\$ 67,846.38	79,856	588	503	\$ 82,549.22	79,856	588	510	\$ 67,748.40
McKinley MS - 440	95,335	572	582	\$ 118,321.85	97,802	540	546	\$ 165,457.22	97,802	540	462	\$ 72,869.16
Zuni ES - 388	57,125	415	404	\$ 58,771.95	57,125	431	413	\$ 80,329.05	57,125	431	515	\$ 67,273.15
Totals	910,202	5,240	4,738	\$ 1,100,283.41	901,657	5,284	4,629	\$ 1,042,157.74	901,657	5,284	4,607	\$ 741,457.49
Cost Per Square Foot	1.21	Cost Per Square Foot			1.16	Cost Per Square Foot			0.82	Cost Per Square Foot		
Cost Per Student	209.98	Cost Per Student			197.23	Cost Per Student			140.32	Cost Per Student		

Cibola High School Cluster

Cibola Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Cibola HS - 580	394,545	1,822	1,389	\$ 335,357.23	394,545	1,842	1,423	\$ 495,395.42	394,545	1,842	1,395	\$ 309,716.81
Corrales ES - 351	70,034	457	635	\$ 264,490.63	70,034	440	671	\$ 106,261.09	70,034	440	570	\$ 83,777.13
James Monroe MS - 490	150,684	976	421	\$ 101,729.27	150,684	977	420	\$ 98,065.23	150,684	977	494	\$ 83,235.99
Petroglyph ES - 317	67,369	736	492	\$ 144,922.96	67,369	663	497	\$ 146,395.66	67,369	663	432	\$ 74,280.16
Seven Bar ES - 265	71,120	828	367	\$ 72,899.95	87,280	809	367	\$ 79,195.53	87,280	809	434	\$ 96,006.30
Sierra Vista ES - 356	73,253	794	441	\$ 142,047.97	73,253	783	470	\$ 82,690.18	73,253	783	515	\$ 113,675.13
Sunset View ES - 393	85,304	531	378	\$ 60,902.41	85,304	584	391	\$ 55,407.28	85,304	584	431	\$ 54,966.96
Taylor MS - 457	115,836	509	578	\$ 131,897.14	114,270	495	644	\$ 147,640.38	114,270	495	441	\$ 98,338.04
Totals	1,028,145	6,553	4,701	\$1,254,255.57	1,042,747	6,593	4,883	\$ 1,211,050.78	1,042,747	6,593	4,712	\$ 913,996.51
Cost Per Square Foot	1.22	Cost Per Square Foot			1.16	Cost Per Square Foot			0.88	Cost Per Square Foot		
Cost Per Student	188.52	Cost Per Student			183.69	Cost Per Student			138.63	Cost Per Student		

Valley High School Cluster

Valley Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Alameda ES - 207	45,911	252	412	\$ 114,215.38	45,911	259	337	\$ 60,254.70	45,911	259	345	\$ 78,128.24
Alvarado ES - 213	49,321	401	431	\$ 95,782.94	49,321	368	444	\$ 363,560.60	49,321	368	440	\$ 88,569.66
Cochiti ES - 237	50,652	279	252	\$ 63,531.83	50,652	290	362	\$ 103,732.96	50,652	290	327	\$ 52,002.02
Duranes ES - 249	55,340	328	430	\$ 141,646.68	55,530	302	439	\$ 115,055.06	55,530	302	392	\$ 91,248.83
Garfield MS - 410	96,192	347	349	\$ 91,918.97	101,741	331	357	\$ 70,879.65	101,741	331	377	\$ 68,063.13
Griegos ES - 267	46,749	378	494	\$ 69,505.53	46,749	368	419	\$ 68,817.28	46,749	368	441	\$ 71,888.56
La Luz ES - 282	51,672	220	367	\$ 73,136.05	51,672	222	382	\$ 79,745.49	51,672	222	313	\$ 52,794.71
Los Ranchos ES - 336	56,977	341	521	\$ 126,447.73	56,977	343	524	\$ 90,443.02	56,977	343	515	\$ 61,557.92
MacArthur ES - 303	46,228	248	463	\$ 92,675.85	46,228	233	554	\$ 124,663.89	46,228	233	564	\$ 76,916.10
Mission Avenue ES - 309	58,833	435	528	\$ 151,728.60	58,833	406	468	\$ 110,107.80	58,833	406	473	\$ 92,034.26
Taft MS - 455	123,136	524	526	\$ 128,618.24	121,869	514	645	\$ 120,320.93	121,869	514	590	\$ 88,771.89
Valley HS - 560	349,380	1,340	1,564	\$ 392,178.60	349,380	1,231	1,380	\$ 294,360.50	349,380	1,231	1,371	\$ 315,255.82
Totals	1,030,391	5,093	6,337	\$ 1,541,387.18	1,034,863	4,867	6,311	\$ 1,601,941.89	1,034,863	4,867	6,148	\$ 1,138,031.09
Cost Per Square Foot	1.50	Cost Per Square Foot			1.55	Cost Per Square Foot			1.10	Cost Per Square Foot		
Cost Per Student	302.65	Cost Per Student			329.14	Cost Per Student			233.83	Cost Per Student		

Albuquerque High School Cluster

Albu. Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Albuquerque HS - 590	311,621	1,712	734	\$ 260,571.90	334,109	1,665	909	\$ 353,927.79	334,109	1,665	940	\$ 702,344.64
Coronado ES - 243	43,036	278	289	\$ 48,352.08	43,036	295	327	\$ 49,754.49	43,036	295	271	\$ 30,368.84
Dolores Gonzales ES - 244	52,926	415	398	\$ 68,994.55	52,926	415	553	\$ 86,517.80	52,926	415	401	\$ 52,740.31
East San Jose ES - 252	68,174	620	430	\$ 138,001.58	68,174	596	432	\$ 120,237.67	68,174	596	578	\$ 109,566.99
Eugene Field ES - 261	62,111	367	333	\$ 72,229.17	62,111	327	344	\$ 62,279.35	62,111	327	383	\$ 64,205.10
Jefferson MS - 425	123,372	930	696	\$ 154,251.69	123,372	852	789	\$ 235,004.65	123,372	852	859	\$ 142,594.94
Lew Wallace ES - 373	34,089	299	246	\$ 45,843.46	34,089	295	281	\$ 71,958.78	34,089	295	288	\$ 85,248.03
Longfellow ES - 291	47,698	294	377	\$ 69,841.80	47,698	291	339	\$ 58,963.09	47,698	291	370	\$ 66,707.45
Lowell ES - 300	54,341	395	484	\$ 105,783.37	53,572	356	572	\$ 126,755.95	53,572	356	476	\$ 71,655.00
Monte Vista ES - 312	55,790	492	351	\$ 95,403.56	55,790	523	427	\$ 108,568.52	55,790	523	412	\$ 69,709.67
Montezuma ES - 315	75,997	505	275	\$ 61,122.84	75,997	474	314	\$ 90,517.48	75,997	474	362	\$ 63,062.03
Reginald Chavez ES - 330	46,279	340	410	\$ 219,200.28	46,279	316	348	\$ 77,541.43	46,279	316	327	\$ 47,396.60
Washington MS - 465	95,488	463	312	\$ 87,597.00	97,407	486	389	\$ 98,204.64	97,407	486	358	\$ 92,371.48
Zia ES - 385	59,983	409	425	\$ 77,137.04	59,983	436	451	\$ 143,754.51	59,983	436	412	\$ 57,129.70
Totals	1,120,905	7,519	5,760	\$ 1,504,331.13	1,144,543	7,327	6,475	\$ 1,683,986.16	1,144,543	7,327	6,437	\$ 1,655,100.79
Cost Per Square Foot	1.34	Cost Per Square Foot			1.47	Cost Per Square Foot			1.45	Cost Per Square Foot		
Cost Per Student	200.07	Cost Per Student			229.83	Cost Per Student			225.89	Cost Per Student		

Sandia High School Cluster

Sandia Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Bellehaven ES - 229	51,261	317	283	\$ 43,868.33	51,074	328	308	\$ 70,430.52	51,074	328	292	\$ 45,144.42
Comanche ES - 241	49,478	409	320	\$ 48,236.61	49,365	417	331	\$ 39,272.35	49,365	417	385	\$ 66,717.42
Eubank ES - 258	60,226	497	636	\$ 103,385.06	60,226	466	427	\$ 158,650.29	60,226	466	363	\$ 59,731.31
Grant MS - 413	116,722	635	425	\$ 92,677.16	139,519	615	560	\$ 117,774.71	139,519	615	493	\$ 90,537.03
Inez ES - 276	60,877	444	399	\$ 83,682.83	60,877	451	585	\$ 140,770.76	60,877	451	462	\$ 91,137.76
Madison MS - 435	121,188	732	585	\$ 143,379.54	124,271	704	599	\$ 159,606.43	124,271	704	552	\$ 92,729.95
Osuna ES - 332	48,769	430	267	\$ 50,175.17	48,769	439	341	\$ 91,333.94	48,769	439	318	\$ 56,546.74
Sandia HS - 550	336,821	1,886	993	\$ 278,449.38	336,821	1,844	966	\$ 229,239.10	336,821	1,844	1,047	\$ 184,309.63
Sombra Del Monte ES - 357	62,295	383	333	\$ 46,200.94	62,295	392	382	\$ 78,940.67	62,295	392	394	\$ 79,475.04
Totals	907,637	5,733	4,241	\$ 890,055.81	933,217	5,656	4,499	\$ 1,086,018.77	933,217	5,656	4,306	\$ 766,329.30
Cost Per Square Foot	0.98	Cost Per Square Foot			1.16	Cost Per Square Foot			0.82	Cost Per Square Foot		
Cost Per Student	155.25	Cost Per Student			192.01	Cost Per Student			135.49	Cost Per Student		

Manzano High School Cluster

Manzano Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
A. Montoya ES - 321	65,971	316	359	\$ 84,005.17	65,971	356	290	\$ 101,278.22	65,971	356	298	\$ 48,382.65
Acoma ES - 204	45,141	192	273	\$ 55,365.74	45,141	158	335	\$ 60,416.30	45,141	158	289	\$ 36,252.98
Apache ES - 214	58,830	428	384	\$ 58,072.25	58,830	428	387	\$ 96,278.60	58,830	428	358	\$ 45,603.41
Chelwood ES - 236	89,716	602	445	\$ 58,940.49	76,152	609	509	\$ 86,812.93	76,152	609	581	\$ 77,014.76
Collet Park ES - 240	44,807	355	318	\$ 73,960.29	45,696	365	315	\$ 76,677.73	45,696	365	347	\$ 63,273.88
Jackson MS - 420	88,934	609	536	\$ 122,208.98	88,934	577	528	\$ 110,157.22	88,934	577	547	\$ 96,601.92
Kennedy MS - 427	107,782	502	543	\$ 111,743.93	107,782	485	527	\$ 113,137.89	107,782	485	506	\$ 91,397.25
Manzano HS - 530	408,812	1,802	1,335	\$ 733,110.81	343,394	1,718	1,257	\$ 314,154.56	343,394	1,718	1,163	\$ 294,446.61
McCollum ES - 307	66,687	412	417	\$ 82,668.58	66,687	397	418	\$ 84,701.66	66,687	397	487	\$ 85,355.44
Roosevelt MS - 452	103,470	359	435	\$ 136,346.23	98,852	333	415	\$ 187,723.18	98,852	333	406	\$ 132,175.32
San Antonio ES - 345	53,719	284	332	\$ 139,853.99	53,719	268	320	\$ 114,405.15	53,719	268	298	\$ 65,585.91
Tomasita ES - 363	64,719	378	414	\$ 78,195.81	64,719	402	494	\$ 102,660.19	64,719	402	411	\$ 83,995.50
Totals	1,198,588	6,239	5,791	\$1,734,472.28	1,115,877	6,096	5,795	\$1,448,403.64	1,115,877	6,096	5,691	\$1,120,085.62
Cost Per Square Foot	1.45	Cost Per Square Foot			1.30	Cost Per Square Foot			1.00	Cost Per Square Foot		
Cost Per Student	278.00	Cost Per Student			237.60	Cost Per Student			183.74	Cost Per Student		

Eldorado High School Cluster

Eldorado Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Eldorado HS - 515	370,620	1,886	1,295	\$288,674.42	370,620	1,830	1,101	\$ 436,002.22	370,620	1,830	989	\$ 242,642.79
Georgia Okeefe ES - 328	85,000	605	225	\$ 35,951.85	91,842	604	249	\$ 39,780.77	91,842	604	247	\$ 28,599.68
Hoover MS - 418	112,220	684	559	\$235,698.47	111,605	678	536	\$ 136,072.99	111,605	678	536	\$ 105,800.39
John Baker ES - 217	69,535	477	330	\$ 79,506.48	69,535	549	336	\$ 60,585.26	69,535	549	321	\$ 58,397.20
Matheson Park ES - 305	43,375	321	325	\$ 65,599.22	43,375	344	381	\$ 147,681.07	43,375	344	274	\$ 70,427.46
Mitchell ES - 310	54,078	430	375	\$ 65,210.04	54,078	411	438	\$ 115,362.53	54,078	411	318	\$ 37,297.54
Olate ES - 227	45,309	227	191	\$ 38,591.79	42,879	221	182	\$ 70,269.62	42,879	221	144	\$ 36,233.45
S.Y. Jackson ES - 360	55,388	572	351	\$ 59,443.18	55,388	585	428	\$ 113,523.51	55,388	585	383	\$ 94,038.79
Totals	835,525	5,202	3,651	\$868,675.45	839,322	5,222	3,651	\$1,119,277.97	839,322	5,222	3,212	\$ 673,437.29
Cost Per Square Foot	1.04	Cost Per Square Foot			1.33	Cost Per Square Foot			0.80	Cost Per Square Foot		
Cost Per Student	166.99	Cost Per Student			214.34	Cost Per Student			128.96	Cost Per Student		

Atrisco Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Atrisco Heritage HS - 576	473,000	2,413	1077	\$ 312,534.36	473,000	2,329	1246	\$ 301,753.29	473,000	2,329	1092	\$ 241,457.54
Carlos Rey ES - 339	95,166	852	494	\$ 115,115.78	95,166	775	449	\$ 82,274.39	95,166	775	520	\$ 96,121.22
Edward Gonzales ES - 262	84,363	664	271	\$ 75,753.33	84,363	649	277	\$ 64,416.36	84,363	649	319	\$ 59,630.79
George I Sanchez - 496	0	0	0	\$ -	0	0	0	\$ -	0	0	2	\$ 876.84
Helen Cordero ES - 395	83,877	848	325	\$ 69,209.43	83,877	798	350	\$ 48,413.14	83,877	798	387	\$ 61,978.65
Mary Ann Binford ES - 250	74,203	915	483	\$ 114,039.66	74,203	900	498	\$ 138,394.02	74,203	900	668	\$ 148,833.45
Rudolfo Anaya ES - 392	90,680	811	394	\$ 83,534.23	104,904	873	418	\$ 71,266.98	104,904	873	499	\$ 81,180.26
Truman MS - 475	174,438	1,391	578	\$ 136,713.79	174,438	1,396	534	\$ 168,544.78	174,438	1,396	585	\$ 132,954.88
Totals	1,075,727	7,894	3,622	\$ 906,900.57	1,089,951	7,720	3,772	\$ 875,062.95	1,089,951	7,720	4,072	\$ 823,033.63
Cost Per Square Foot Cost Per Student	0.84 114.88	Cost Per Square Foot Cost Per Student			0.80 113.35	Cost Per Square Foot Cost Per Student			0.76 106.61	Cost Per Square Foot Cost Per Student		

[illegible]

La Cueva High School Cluster

La Cueva Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Dennis Chavez ES - 203	83,364	652	611	\$ 107,438.69	83,026	614	697	\$ 102,251.17	83,026	614	589	\$ 85,513.73
Desert Ridge MS - 430	157,039	1,048	476	\$ 133,498.34	159,767	1,028	418	\$ 128,533.24	159,767	1,028	408	\$ 76,097.30
Double Eagle ES - 350	65,651	492	407	\$ 97,771.63	65,651	535	539	\$ 90,272.61	65,651	535	507	\$ 71,448.84
Eisenhower MS - 480	137,017	888	544	\$ 126,410.95	135,825	895	679	\$ 126,431.76	135,825	895	646	\$ 116,071.48
Hubert Humphrey ES - 221	76,440	478	497	\$ 108,981.98	58,879	447	490	\$ 86,234.13	58,879	447	522	\$ 71,582.08
La Cueva HS - 525	387,921	1,849	1,098	\$ 479,040.02	387,921	1,846	979	\$ 238,559.61	387,921	1,846	972	\$ 309,768.67
North Star ES - 268	79,693	741	357	\$ 73,357.25	79,693	628	270	\$ 58,445.41	79,693	628	262	\$ 36,319.39
Totals	987,125	6,148	3,990	\$ 1,126,498.86	970,762	5,993	4,072	\$ 830,727.94	970,762	5,993	3,906	\$ 766,801.48
Cost Per Square Foot	1.14	Cost Per Square Foot			0.86	Cost Per Square Foot			0.79	Cost Per Square Foot		
Cost Per Student	183.23	Cost Per Student			138.62	Cost Per Student			127.95	Cost Per Student		

Alternative Schools' Cluster

Alternative Cluster	2012- 2013				2013- 2014				2014- 2015			
	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost	Square Footage	Total Students	Work Orders	Total Cost
Aps @ Cnm - 591	0	0	5	\$ 42,026.78	0	0	15	\$ 2,337.53	0	0	13	\$ 21,005.92
Career Academic & Technology Academy (CATA) - 765	0	0	0	\$ -	0	0	0	\$ -	0	0	0	\$ -
Career Enrichment Center - 592	52,906	1,661	342	\$ 60,477.16	52,906	1,692	346	\$ 54,726.92	52,906	0	283	\$ 37,927.70
Crossroads - 512	0	6	0	\$ -	0	6	0	\$ -	0	0	0	\$ -
Court House - 615	0	0	0	\$ -	0	0	0	\$ -	0	0	0	\$ -
Data Charter - 743	0	0	0	\$ -	0	0	17	\$ 9,113.54	0	0	80	\$ 29,233.53
Desert Willow Family School - 900	29,451	249	116	\$ 15,815.21	0	244	133	\$ 28,158.63	29,451	244	127	\$ 20,278.31
eCademy - 511	44,397	0	159	\$ 33,408.68	44,397	31	148	\$ 18,686.89	44,397	31	153	\$ 21,406.97
Freedom HS - 596	41,434	178	193	\$ 38,195.89	41,434	159	207	\$ 38,754.49	41,434	159	193	\$ 37,803.71
Juvenile Detention Center - 048	4,480	55	6	\$ 163.76	0	0	1	\$ 85.44	0	0	1	\$ 13,899.56
Montessori Rio Grande - 723	14,671	0	123	\$ 43,062.46	0	0	146	\$ 19,793.05	21,597	0	134	\$ 18,543.75
Native American Community Academy - 762	30,912	0	144	\$ 23,194.31	0	0	33	\$ 9,287.41	0	0	6	\$ 1,160.08
New Futures HS - 549	35,933	194	307	\$ 53,458.12	35,933	154	317	\$ 57,230.01	35,933	154	253	\$ 44,437.51
Nex+Gen Academy - 516	46,894	254	86	\$ 15,226.57	46,606	307	123	\$ 20,333.97	46,606	307	170	\$ 23,888.94
Nuestros Valores - 739	0	0	0	\$ -	0	0	28	\$ 10,765.65	0	0	3	\$ 21.36
Public Academy For Performing Arts (PAPA) - 747	29,568	0	149	\$ 32,457.72	0	0	88	\$ 8,423.64	29,344	0	86	\$ 11,081.60
Robert F Kennedy HS - 728	43,904	0	168	\$ 60,678.07	0	0	62	\$ 9,703.86	43,904	0	86	\$ 16,807.40
Sandia Rec - 154	13,200	0	55	\$104,246.96	0	0	41	\$ 4,763.35	13,200	0	35	\$ 3,028.41
School On Wheels - 597	19,338	124	138	\$ 23,122.47	19,338	127	137	\$ 19,312.70	19,338	127	166	\$ 21,429.46
Sierra Alt HS - 594	0	0	2	\$ 56.96	0	0	4	\$ 397.44	0	0	2	\$ 42.72
South Valley Academy - 725	0	0	11	\$ 4,587.86	0	0	127	\$ 26,683.15	41,562	0	251	\$ 48,043.18
Vision Quest - 840	3,380	7	115	\$ 17,153.75	3,380	22	69	\$ 6,810.61	3,380	22	76	\$ 22,757.74
Western Trails Alt. HS - 598	8,736	0	53	\$ 7,803.91	0	0	53	\$ 6,747.23	8,736	0	53	\$ 7,165.05
21st Century Charter School - 727	0	0	1	\$ 42.72	0	0	1	\$ -	0	0	1	\$ -
Totals	419,204	2,728	2,173	\$575,179.38	243,994	2,742	2,096	\$352,115.53	431,788	1,044	2,172	\$399,962.89
Cost Per Square Foot Cost Per Student	1.37 210.84	Cost Per Square Foot Cost Per Student			1.44 128.42	Cost Per Square Foot Cost Per Student			0.93 383.11	Cost Per Square Foot Cost Per Student		



Managing for Results in America's Great City Schools 2015

RESULTS FROM FISCAL YEAR 2013-14



ActPoint KPI
PERFORMANCE MANAGEMENT SYSTEM

A REPORT OF THE PERFORMANCE MEASUREMENT AND BENCHMARKING PROJECT

OCTOBER 2015

INTRODUCTION

OVERVIEW

The Performance Management and Benchmarking Project

In 2002 the Council of the Great City Schools and its members set out to develop performance measures that could be used to improve business operations in urban public school districts. The Council launched the Performance Measurement and Benchmarking Project to achieve these objectives. The purposes of the project were to:

- Establish a common set of **key performance indicators** (KPIs) in a range of school operations, including business services, finances, human resources, and technology;
- Use these KPIs to benchmark and compare the performance of the nation's largest urban public school systems;
- Use the results to improve operational performance in urban public schools.

Since its inception, the project has been led by two Council task forces operating under the aegis of the organization's Board of Directors: the Task Force on Leadership, Governance, and Management, and the Task Force on Finance. The project's work has been conducted by a team of member-district managers, technical advisors with extensive expertise in the following functional areas: business services (transportation, food services, maintenance and operations, safety and security), budget and finance (accounts payable, financial management, grants management, risk management, compensation, procurement and cash management), information technology, and human resources.

Methodology of KPI Development

The project's teams have used a sophisticated approach to define, collect and validate school-system data. This process calls for each KPI to have a clearly defined purpose to justify its development, and extensive documentation of the **metric definitions** ensures that the expertise of the technical teams is fully captured. (The definitional documentation for any KPI that is mentioned in this report is included in the "KPI Definitions" section of each functional area.)

At the core of the methodology is the principle of **continuous improvement**. The technical teams are instructed to focus on operational indicators that can be *benchmarked* and are *actionable*, and thus can be strategically managed by setting improvement targets.

From the KPI definitions the surveys are developed and tested to ensure the comparability, integrity and validity of data across school districts.

Power Indicators and Essential Few

The KPIs are categorized into three levels of priority—Power Indicators, Essential Few, and Key Indicators—with each level having its own general purpose.

- **Power Indicators:** Strategic and policy level; can be used by superintendents and school boards to assess the overall performance of their district's non-instructional operations.
- **Essential Few:** Management level; can be used by chief executives to assess the performance of individual departments and divisions.
- **Key Indicators:** Technical level; can be used by department heads to drive the performance of the higher-level measures.

This division is more or less hierarchical, and while it is just one way of many to organizing the KPIs, it is helpful for highlighting those KPIs that are important enough to warrant more attention being paid to them.

A Note on Cost of Living Adjustments

We adjust for **cost of living** in most cost-related measures. Regions where it is more expensive to live, such as San Francisco, Boston, New York City and Washington, D.C., are adjusted downward in order to be comparable with other cities. Conversely, regions where the costs of goods are lower, such as Columbus, OH, and Nashville, TN, are adjusted upwards.

Maintenance & Operations

Performance metrics in maintenance and operations (M&O) assess the cost efficiency and service levels of a district's facilities management and labor. Areas of focus include *custodial work, maintenance work, renovations, construction, utility usage, and environmental stewardship*. The cost efficiency of custodial work is represented broadly by **Custodial Workload** and **Custodial Cost per Square Foot**, where low workload combined with high cost per square feet would indicate that cost savings can be realized by reducing the number of custodians. Additionally, the relative cost of supplies can be considered by looking at **Custodial Supply Cost per Square Foot**.

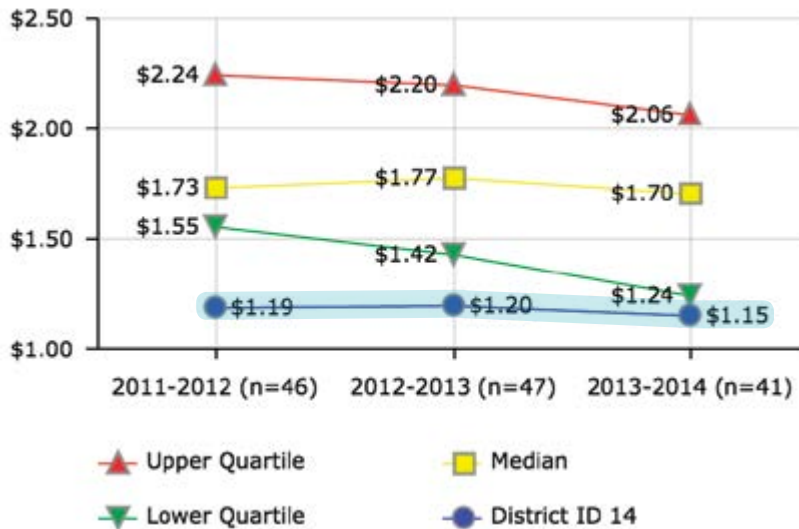
The relative cost of utilities is represented by **Utility Usage per Square Foot** and **Water Usage per Square Foot**.

These KPIs should give district leaders a general sense of where they are doing well and where they can improve. The importance and usefulness of each KPI is described in the "Importance of Measure" and "Factors that Influence" headings, which can be used to guide improvement strategies.

Council of the Great City Schools
Performance Measurement and Benchmarking Project

MAINTENANCE & OPERATIONS

Custodial Work - Cost per Square Foot



Description of Calculation

Total cost of district-operated custodial work plus total cost of contract-operated custodial work, divided by total square footage of all non-vacant buildings.

Importance of Measure

This measure is an important indicator of the efficiency of the custodial operations. The value is impacted not only by operational effectiveness, but also by labor costs, material and supply costs, supervisory overhead costs as well as other factors. This indicator can be used as an important comparison with other districts to identify opportunities for improvement in custodial operations to reduce costs.

Factors that Influence

- Cost of labor
- Collective bargaining agreements
- Cost of supplies and materials
- Size of school

Districts in Best Quartile (FY 2013-14)

- Albuquerque Public Schools
- Atlanta Public Schools
- Baltimore City Public Schools
- Charleston County School District
- Cleveland Metropolitan School District
- Dallas Independent School District
- Denver Public School District 1
- Guilford County School District
- Houston Independent School District
- Palm Beach County School District
- Shelby County School District

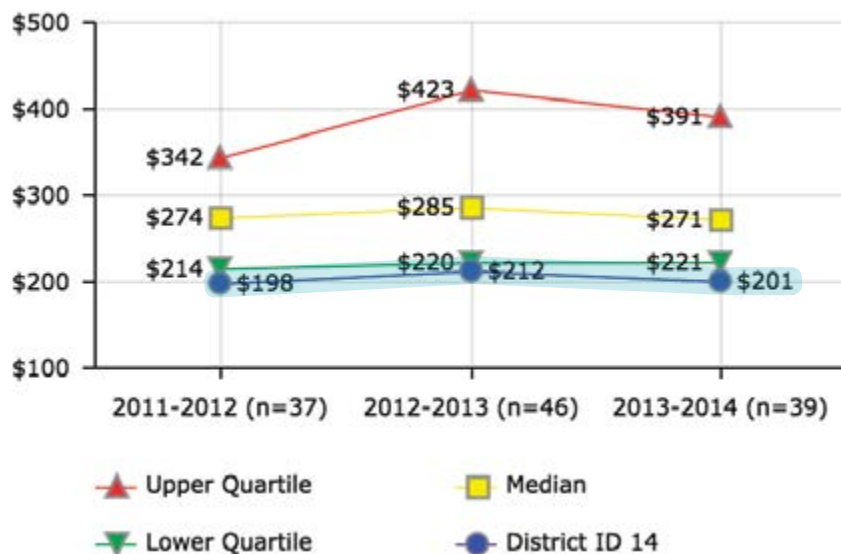
M&O continues to keep custodial costs in check without compromising quality.

District ID	2011-2012	2012-2013	2013-2014
1	\$1.81		\$1.74
2	\$1.70	\$2.03	\$1.63
3	\$1.83	\$1.87	\$2.06
4	\$1.73	\$1.77	\$1.73
5	\$1.64	\$1.56	\$1.52
6		\$1.94	\$1.66
7	\$1.76	\$2.08	\$1.82
8	\$1.11	\$1.17	\$1.17
9	\$2.45	\$2.39	\$2.30
10	\$1.55	\$1.61	\$1.64
11	\$1.43	\$1.55	
12	\$2.52	\$2.41	\$2.54
13	\$1.55	\$1.77	\$1.65
14	\$1.19	\$1.20	\$1.15
16	\$1.64	\$1.89	\$1.87
18	\$2.27	\$2.28	\$1.08
19	\$2.57		\$3.00
20	\$2.00	\$1.75	\$1.84
21	\$1.87	\$1.94	\$2.48
23	\$1.74	\$1.37	\$1.24
25	\$2.80	\$2.65	
26	\$3.71		
28	\$1.19	\$1.20	\$1.23
30	\$1.50	\$1.42	\$1.40
32		\$1.60	
33		\$1.68	\$1.96
34	\$1.78	\$1.86	\$1.58
35	\$3.49	\$3.64	
37	\$1.64	\$1.45	\$1.12
39	\$1.21	\$1.23	\$1.22
41	\$0.82	\$1.21	\$0.89
43	\$3.39	\$3.38	\$3.32
44	\$1.73	\$1.72	\$1.76
45	\$2.60	\$0.73	
46		\$1.08	\$1.16
47	\$1.64	\$1.64	\$1.70
48	\$1.31	\$1.31	\$1.43
49	\$1.24	\$1.20	\$1.00
52	\$1.64	\$1.87	\$1.97
53	\$2.45		
54	\$1.55		
55	\$1.47	\$1.60	\$1.47
56	\$2.24	\$2.26	
57	\$0.95	\$0.94	\$0.97
58		\$2.37	\$2.81
62	\$1.83		
63	\$2.29	\$2.20	\$2.25
66	\$2.07	\$2.45	\$2.42
67	\$1.76	\$3.40	\$2.40
71	\$1.64	\$1.89	\$1.80
74			\$2.25
77		\$3.57	
79		\$2.02	
101	\$1.98	\$2.00	

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

Custodial Work - Cost per Student



District ID	2011-2012	2012-2013	2013-2014
1	\$342		\$320
2		\$423	
3	\$332	\$348	\$391
4	\$314	\$337	\$319
5	\$295	\$283	\$271
6		\$344	\$315
7	\$281	\$337	\$299
8	\$205	\$186	\$186
9	\$272	\$261	\$251
10	\$214	\$212	\$216
11	\$187	\$213	
12	\$493	\$472	\$451
13	\$227	\$256	\$236
14	\$198	\$212	\$201
16	\$180	\$206	\$214
18	\$416	\$423	\$203
19			\$600
20	\$380	\$347	\$354
21	\$379	\$401	\$543
23	\$302	\$244	\$226
25		\$572	
26	\$754		
28	\$274	\$263	
30	\$318	\$309	\$311
32		\$210	
33		\$538	
34		\$466	\$458
35	\$601	\$625	
37	\$283	\$245	\$181
39	\$190	\$182	\$182
41	\$262	\$203	\$146
43	\$726	\$686	\$825
44	\$236	\$227	\$236
45	\$730	\$210	
46		\$236	\$253
47	\$294	\$288	\$285
48	\$214	\$204	\$221
49	\$218	\$221	\$185
52		\$417	\$410
54	\$240		
55	\$224	\$242	\$221
56		\$259	\$258
57	\$194	\$220	\$234
58		\$513	\$517
63			\$660
66	\$429	\$507	\$495
67	\$179	\$341	\$248
71	\$255	\$293	\$293
74			\$384
77		\$620	
79		\$441	
101	\$197	\$197	

Description of Calculation

Total custodial work costs (contractor and district operated), divided by total student enrollment.

Importance of Measure

This measure is an important indicator of the efficiency of the custodial operations. The value is impacted not only by operational effectiveness, but also by labor costs, material and supply costs, supervisory overhead costs as well as other factors. This indicator can be used as an important comparison with other districts to identify opportunities for improvement in custodial operations to reduce costs.

Factors that Influence

- Cost of labor
- Cost of supplies and materials
- Scope of duties assigned to custodians

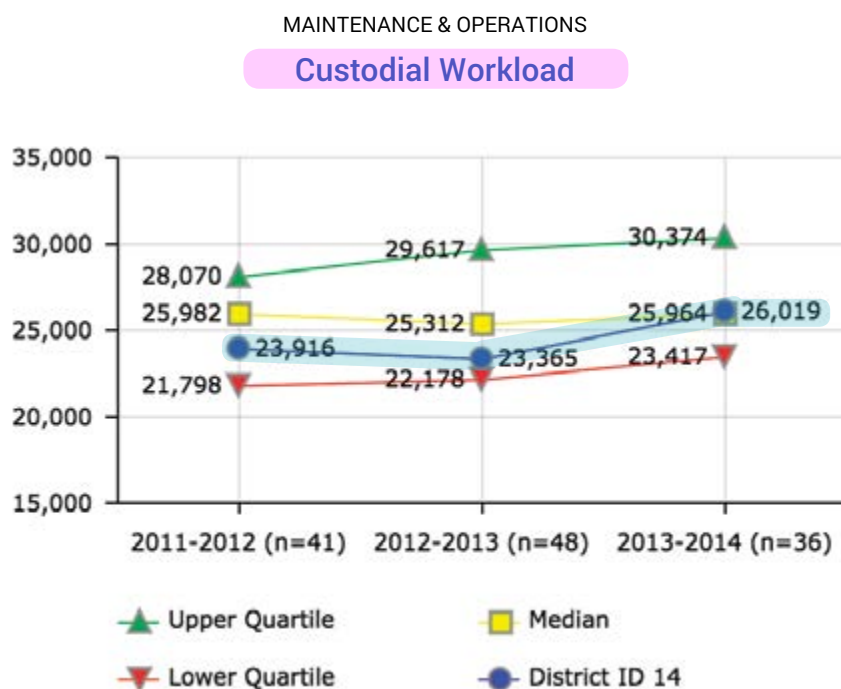
Districts in Best Quartile (FY 2013-14)

- Albuquerque Public Schools
- Charlotte-Mecklenburg School District
- Dallas Independent School District
- Denver Public School District 1
- Guilford County School District
- Hillsborough County Public School District
- Houston Independent School District
- Palm Beach County School District
- San Diego Unified School District
- Shelby County School District

APS improved efficiencies and costs 5.1% over the previous year.

Council of the Great City Schools

Performance Measurement and Benchmarking Project



District ID	2011-2012	2012-2013	2013-2014
1	34,079	32,247	32,886
2		24,825	24,409
3	33,099	32,192	30,596
4	26,580	30,113	30,029
5	29,481	28,888	28,888
7	24,717	26,593	30,331
8	23,676	23,554	23,250
9	23,256	23,487	23,836
10	18,611	17,812	17,729
11	27,992	26,863	
12		23,679	24,173
13	25,982	25,905	27,861
14	23,916	23,365	26,019
16	22,131	24,748	24,016
18	18,248	18,248	
19	25,777	25,124	24,658
20	28,070	30,372	30,580
21	27,696	26,301	25,955
23		23,289	
25	17,153	15,130	
26	32,123	28,871	
28	526		30,996
30	38,132	41,223	39,030
32		21,540	
33		29,701	29,213
34	27,074	17,747	23,585
35	21,612	22,699	
37	27,145	27,502	25,806
39	19,308	21,658	20,181
41	26,605	29,122	27,621
43	32,842	25,854	23,879
44	16,892	17,669	15,625
45		37,244	
46		20,307	21,559
48	24,684	23,088	26,168
49	23,217	23,217	21,849
52	31,537	31,371	30,721
53	21,798		
54	26,117		
55	31,326	30,506	30,417
56	17,000	14,719	
57	37,264	45,692	44,399
58		20,238	19,157
62	45,009	52,381	
63		31,506	31,506
66	26,816	25,973	25,973
67	17,949	16,933	16,878
71	12,350	12,422	12,422
77		29,534	
79	26,737	25,501	
101	23,961	23,961	

Description of Calculation

Total square footage of non-vacant buildings that are managed by the district, divided by total number of district custodial field staff. This measure only applies to district-operated sites.

Importance of Measure

This measurement is a very good indicator of the workload for each custodian. It allows districts to compare their operations with others to evaluate the relative efficiency of the custodial employees. A value on the low side could indicate that custodians may have additional assigned duties, or have opportunities for efficiencies as compared to districts with a higher ratio. A higher number could indicate a well managed custodial program or that some housekeeping operations are assigned to other employee classifications. It is important for a district to examine what drives the ratio to determine the most effective workload.

Factors that Influence

- Assigned duties for custodians
- Management effectiveness
- Labor agreements
- District budget

Districts in Best Quartile (FY 2013-14)

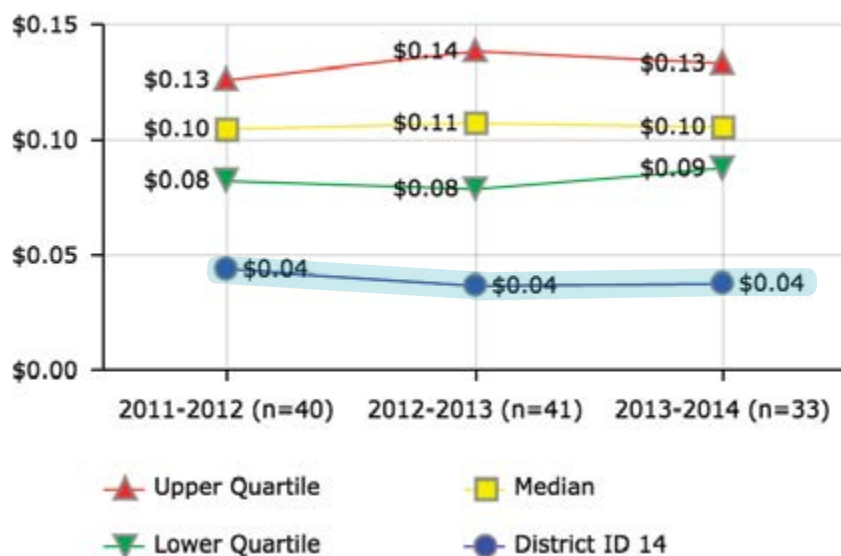
- Atlanta Public Schools
- Charlotte-Mecklenburg School District
- Cincinnati Public Schools
- Cleveland Metropolitan School District
- Milwaukee Public Schools
- Minneapolis Public School District
- Seattle School District 1
- St. Louis City Public School District
- St. Paul Independent School District 625

**The benchmark
for cleaning
designated
areas remains
consistent.**

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

Custodial Supply Cost per Square Foot



District ID	2011-2012	2012-2013	2013-2014
1	\$0.36	\$0.11	\$0.13
2		\$1.96	\$0.09
3	\$0.16	\$0.15	\$0.15
4	\$0.18	\$0.16	\$0.16
5	\$0.17	\$0.14	\$0.13
7	\$0.08	\$0.08	\$0.06
8	\$0.07	\$0.07	\$0.07
9	\$0.13	\$0.09	\$0.12
10	\$0.10	\$0.12	\$0.12
11	\$0.08	\$0.09	
12	\$0.12	\$0.02	\$0.11
13	\$0.08	\$0.08	\$0.08
14	\$0.04	\$0.04	\$0.04
16	\$0.09	\$0.09	\$0.09
18	\$0.07	\$0.07	
19	\$0.12	\$0.17	\$0.26
20	\$0.23	\$0.19	\$0.21
21	\$0.08	\$0.08	\$0.08
25	\$0.23	\$0.19	
26	\$0.11		
28			\$0.24
30	\$0.04	\$0.04	\$0.04
32		\$0.02	
33		\$0.06	\$0.06
34	\$0.09	\$0.26	\$0.17
35	\$0.12	\$0.17	
37	\$0.11	\$0.11	\$0.11
39	\$0.11	\$0.11	\$0.15
41	\$0.10	\$0.11	\$0.10
43	\$0.09	\$0.13	\$0.10
45	\$0.08	\$0.07	
48	\$0.07	\$0.09	\$0.10
49	\$0.01	\$0.02	\$0.05
52	\$0.14	\$0.14	\$0.18
53	\$0.06		
55	\$0.12	\$0.16	\$0.10
56	\$0.08	\$0.08	
57	\$0.11	\$0.09	\$0.10
58	\$0.53	\$0.13	\$0.09
62	\$0.13		
66	\$0.11	\$0.12	\$0.11
67	\$0.13	\$0.12	\$0.12
71	\$0.09	\$0.11	\$0.10
77		\$0.24	
101	\$0.10	\$0.10	

Description of Calculation

Total custodial supply cost of district-operated custodial services, divided by total square footage of buildings managed by the district. This measure only applies to district-operated sites.

Importance of Measure

This measure is an important indicator of the efficiency of the custodial operations. The value is impacted not only by operational effectiveness, but also by labor costs, material and supply costs, supervisory overhead costs as well as other factors. This indicator can be used as an important comparison with other districts to identify opportunities for improvement in custodial operations to reduce costs.

Factors that Influence

- Cost of labor
- Cost of supplies and materials
- Scope of duties assigned to custodians

Districts in Best Quartile (FY 2013-14)

- Albuquerque Public Schools
- Anchorage School District
- Broward County School District
- Guilford County School District
- Indianapolis Public School District
- Milwaukee Public Schools
- Palm Beach County School District
- Rochester City School District
- San Diego Unified School District

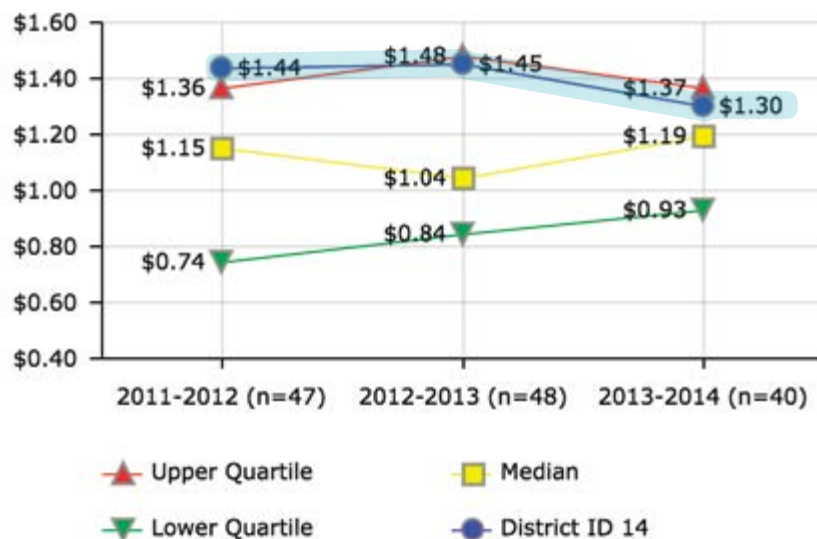
Purchasing in large discounted quantities and warehousing on site makes this \$.04 cost per square foot possible.

Council of the Great City Schools

Performance Measurement and Benchmarking Project

MAINTENANCE & OPERATIONS

Routine Maintenance - Cost per Square Foot



Description of Calculation

Cost of district-operated maintenance work plus cost of contractor-operated maintenance work, divided by total square footage of non-vacant buildings.

Importance of Measure

This provides a measure of the total costs of routine maintenance relative to the district size (by building square footage).

Factors that Influence

- Age of infrastructure
- Experience of maintenance staff
- Training of custodial staff to do maintenance work
- Deferred maintenance backlog

Districts in Best Quartile (FY 2013-14)

- Cleveland Metropolitan School District
- Denver Public School District 1
- Des Moines Public Schools
- Guilford County School District
- Orange County Public School District
- Palm Beach County School District
- Richmond City School District
- Rochester City School District
- Seattle School District 1
- St. Louis City Public School District

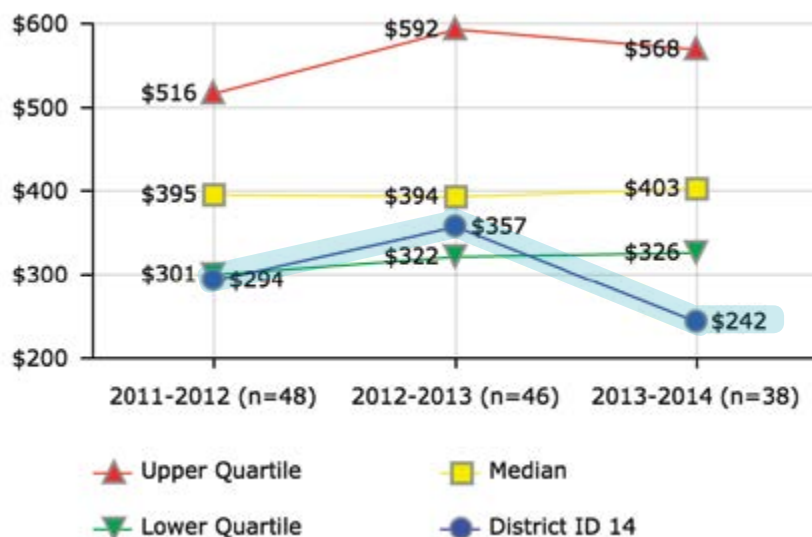
M&O is focusing on replacing over repairing when it is cost effective in the long term.

District ID	2011-2012	2012-2013	2013-2014
1	\$0.62	\$0.14	\$0.71
2	\$1.14	\$0.36	\$0.65
3	\$1.33	\$1.41	\$1.00
4	\$0.66	\$0.90	\$1.13
5	\$0.81	\$0.97	\$1.01
6	\$1.18	\$1.75	\$1.63
7	\$1.45	\$1.47	\$1.38
8	\$0.81	\$0.90	\$0.92
9	\$1.30	\$1.25	\$1.15
10	\$1.23	\$0.97	\$1.08
11	\$0.46	\$1.03	
12	\$1.15	\$1.06	\$0.92
13	\$0.71	\$1.02	\$1.26
14	\$1.44	\$1.45	\$1.30
16	\$1.00	\$0.77	
18	\$0.58	\$0.59	\$0.94
19	\$1.52	\$1.55	\$1.34
20	\$1.35	\$1.18	\$1.25
21	\$0.83	\$0.91	\$0.83
23	\$1.17	\$0.96	\$1.07
25	\$1.29	\$1.71	
26	\$0.65	\$0.87	
28	\$1.21	\$1.57	\$1.65
30	\$1.25	\$0.90	\$1.32
32		\$1.18	
33		\$1.19	\$1.38
34	\$1.73	\$2.59	\$1.33
35	\$1.58	\$1.57	
37		\$0.77	\$0.69
39	\$1.41	\$1.56	\$1.53
41	\$0.39	\$0.82	\$0.98
43	\$1.36	\$1.38	\$1.36
44	\$1.20	\$1.50	\$1.44
45	\$0.74	\$0.18	
46		\$0.87	\$1.23
47	\$1.53	\$1.45	\$1.56
48	\$0.70	\$0.74	\$0.75
49	\$0.72	\$0.73	\$0.67
52	\$1.32	\$1.56	\$1.88
53	\$1.15		
54	\$1.49		
55	\$1.75	\$1.36	\$1.32
56	\$1.43	\$2.16	
57	\$0.72		\$0.61
58	\$0.81	\$0.73	\$1.31
62	\$0.94		
63	\$0.37	\$0.54	\$0.65
66	\$0.91	\$0.93	\$1.08
67	\$2.52	\$2.45	\$2.56
71	\$1.01	\$1.07	\$1.02
74			\$1.70
77		\$0.35	
101	\$0.79	\$2.01	

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

Routine Maintenance - Cost per Work Order



Description of Calculation

Total costs of all routine maintenance work, divided by total number of routine maintenance work orders.

Importance of Measure

This provides a measure of the costs of each routine maintenance work order.

Factors that Influence

- Age of infrastructure
- Experience of maintenance staff
- Training of custodial staff to do maintenance work
- Deferred maintenance backlog

Districts in Best Quartile (FY 2013-14)

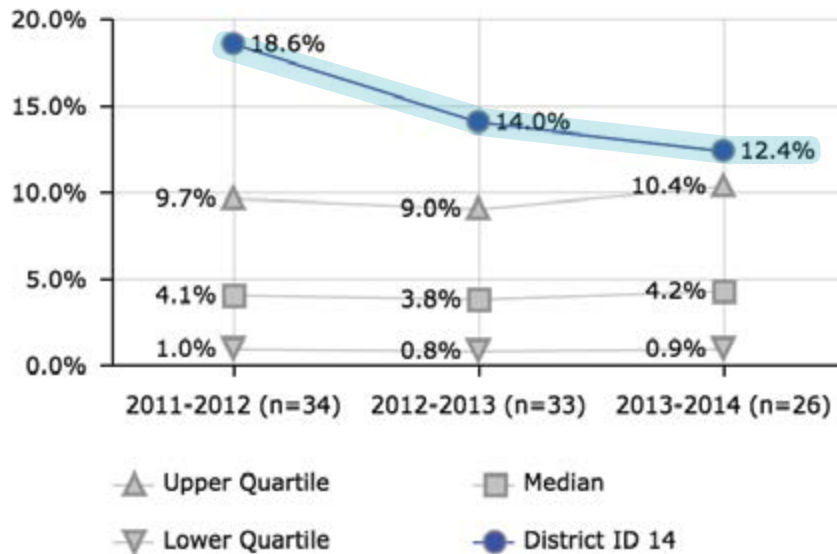
- Albuquerque Public Schools
- Austin Independent School District
- Baltimore City Public Schools
- Duval County Public Schools
- Guilford County School District
- Hillsborough County Public School District
- Palm Beach County School District
- Richmond City School District
- Rochester City School District
- Seattle School District 1

**Performing
proactive
PM work reduces
the expense for
reactive
workorders.**

District ID	2011-2012	2012-2013	2013-2014
1	\$163		\$169
2	\$327	\$370	\$205
3	\$1,038	\$827	\$554
4	\$231	\$337	\$438
5	\$470	\$546	\$659
6	\$1,273	\$1,014	\$1,093
7	\$441	\$600	\$436
8	\$257	\$242	\$259
9	\$470	\$492	\$403
10	\$349	\$252	\$275
11	\$105	\$265	
12	\$504	\$552	\$373
13	\$449	\$652	\$673
14	\$294	\$357	\$242
16	\$280	\$178	
18	\$422	\$425	\$647
19	\$494	\$598	\$496
20	\$493	\$321	\$357
21	\$32	\$322	\$322
23	\$321	\$355	\$331
25	\$1,502	\$1,082	
26	\$917	\$1,141	
28	\$378	\$386	\$568
30	\$1,064	\$710	\$1,026
32		\$853	
33		\$391	\$340
34	\$446		
35	\$569	\$578	
37	\$42	\$470	\$368
39	\$394	\$428	\$440
41	\$321	\$314	\$333
43	\$498	\$483	\$498
44	\$175	\$190	\$179
45	\$721	\$174	
46		\$211	\$326
47	\$620	\$592	\$568
48	\$308	\$332	\$357
49	\$289	\$279	\$322
52	\$536	\$667	\$872
53	\$326		
54	\$3,463		
55	\$425	\$342	\$347
56	\$361	\$675	
57	\$1,545		
58	\$527	\$591	\$897
62	\$344		
63	\$338	\$350	\$415
66	\$396	\$374	\$404
67	\$374	\$373	\$597
71	\$186	\$206	\$170
74			\$828
77		\$396	
101	\$201	\$504	

MAINTENANCE & OPERATIONS

Routine Maintenance - Proportion Contractor-Operated, by Work Orders



District ID	2011-2012	2012-2013	2013-2014
1	4.4%	0.8%	0.8%
2	5.3%	1.5%	2.5%
3	5.3%	8.9%	0.6%
6		1.9%	
7	0.2%	0.3%	
9		0.0%	
10	15.0%	12.5%	15.3%
11	0.0%	0.0%	
12	3.6%	4.0%	4.6%
13	1.3%	0.8%	0.8%
14	18.6%	14.0%	12.4%
16	1.4%	0.3%	0.8%
18	0.4%	0.4%	
19	0.9%		
20	6.7%	4.4%	0.9%
21	9.7%	9.0%	3.0%
23	2.4%	11.6%	12.9%
25	13.5%		
26	100.0%	100.0%	
28	1.1%	2.5%	10.4%
30	13.8%	4.7%	4.2%
32		3.8%	
34	1.6%		
37	0.8%	1.0%	2.5%
39	28.0%	20.0%	20.0%
41	1.0%	3.5%	1.0%
43	9.5%	8.2%	6.7%
44	3.8%	3.8%	4.3%
45	4.3%		
46		10.0%	10.8%
47	1.5%	5.0%	
48	0.8%	6.8%	5.8%
49	32.1%	3.8%	10.4%
52	8.8%	9.1%	8.8%
54	100.0%		
57	9.1%	28.6%	
66	0.4%	0.5%	0.4%
67			0.3%
71	0.9%	0.8%	0.9%
74			100.0%

Description of Calculation

Number of routine maintenance work orders handled by contractors, divided by total number of routine maintenance work orders.

Importance of Measure

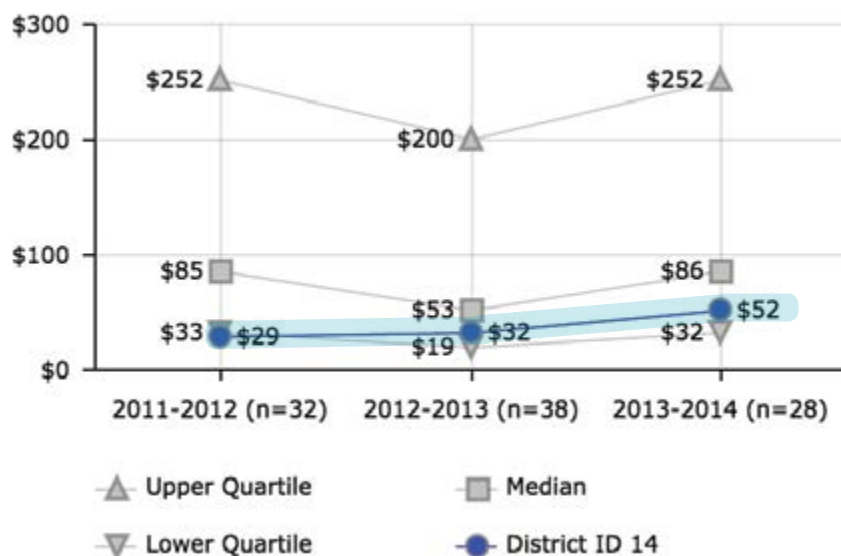
Can be used to identify districts that utilize contractors to perform routine maintenance.

M&O carefully evaluates areas that are cost beneficial to outsource, such as for the unusual job requiring unique expertise, and most beneficial to taxpayers.

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

Major Maintenance - Cost per Student



District ID	2011-2012	2012-2013	2013-2014
1	\$109	\$48	\$44
3	\$318	\$302	\$233
4	\$655	\$467	\$413
5	\$183	\$228	\$105
6		\$26	\$30
7	\$248	\$303	\$508
8	\$46	\$8	\$20
10	\$102	\$90	\$90
11	\$24	\$1	
12	\$252		
13	\$83	\$57	\$90
14	\$29	\$32	\$52
16	\$87	\$107	
19		\$19	\$106
20	\$6	\$3	
21	\$311	\$354	\$584
23	\$94	\$79	\$132
26	\$56		
28	\$154	\$60	
30	\$308	\$200	\$83
32		\$47	
33		\$80	
34		\$1,094	\$1,029
35	\$0	\$38	
37	\$66	\$95	\$82
39	\$289	\$13	\$82
41	\$1,387	\$976	\$304
43	\$400	\$414	\$288
44	\$24	\$48	\$73
45	\$253	\$19	
46		\$11	\$16
48	\$18	\$18	\$27
49	\$28	\$230	\$170
52		\$70	\$271
55	\$36	\$32	\$32
56		\$8	\$21
57	\$56	\$200	
66	\$54	\$42	\$33
67	\$5	\$4	\$6
101	\$40	\$31	

Description of Calculation

Total cost of major maintenance work divided by total student enrollment.

Importance of Measure

This looks at the cost of major maintenance projects relative to the size of the district (by student enrollment).

Factors that Influence

- Number of capital projects
- Deferred maintenance backlog
- Passage of bond measures
- Age of infrastructure
- District technology plan

Because M&O is doing so much routine maintenance, major maintenance jobs are held down. Incorporating major maintenance into construction is also cost effective.

Council of the Great City Schools
Performance Measurement and Benchmarking Project

MAINTENANCE & OPERATIONS

Renovations - Cost per Student



District ID	2011-2012	2012-2013	2013-2014
1	\$199	\$79	\$147
3	\$504	\$384	\$397
4	\$1,426	\$117	\$97
5	\$33	\$132	\$387
6		\$602	\$195
7	\$71	\$240	\$60
8	\$196	\$2	\$11
10	\$282	\$255	\$169
11	\$30	\$376	
12	\$1,291	\$1,399	\$725
14	\$114	\$31	\$83
16	\$175	\$181	\$533
18	\$218	\$221	\$154
20	\$324	\$536	\$467
21	\$3	\$4	\$7
23	\$20		\$21
25		\$275	
26	\$784	\$589	
28	\$814	\$437	
30		\$163	\$89
32		\$60	
33		\$499	
34		\$1,478	
35	\$0	\$107	
37		\$672	\$547
39	\$723	\$941	\$674
43	\$65	\$49	\$274
44	\$9	\$34	\$1
45	\$3,705		
46		\$11	\$13
48	\$750	\$416	\$709
49	\$954	\$402	\$130
52		\$426	\$661
54	\$22		
55	\$69	\$78	\$384
56		\$3	
57	\$378		\$262
58	\$326		
63			\$1,336
66	\$33	\$142	
67	\$5		
71	\$158	\$71	\$101
74			\$26
101	\$1,328	\$1,329	

Description of Calculation

Total cost of renovations divided by total student enrollment.

Importance of Measure

This indicates the level of spending on major renovations relative to the size of the district (by student enrollment).

Factors that Influence

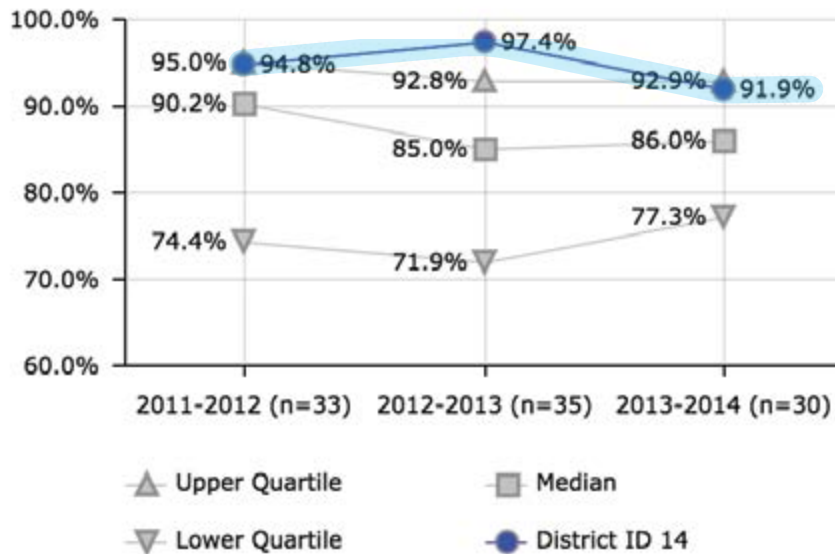
- Number of capital projects
- Age of infrastructure
- District technology plan

M&O continues to perform minor renovations (outside of construction projects) efficiently.

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

Renovations - Delivered Construction Costs as Percent of Total Costs



District ID	2011-2012	2012-2013	2013-2014
1	57.0%	21.8%	46.0%
3	86.8%	83.4%	78.6%
4	96.2%	92.6%	89.6%
5	60.0%	58.3%	63.2%
6		89.8%	85.4%
7	64.3%	77.8%	77.3%
8	88.4%		74.2%
10	92.7%	92.7%	86.6%
11	64.4%	85.0%	
12	92.6%	99.1%	92.9%
14	94.8%	97.4%	91.9%
16	78.7%	80.1%	88.1%
18	94.3%	94.3%	96.1%
20	99.8%	100.0%	100.0%
23	86.0%		87.0%
25		72.6%	
26	95.0%		
28		71.6%	80.2%
30		87.8%	75.6%
32		73.7%	
33		83.0%	83.0%
34	74.4%	92.4%	
35		90.2%	
37		71.9%	78.1%
39	95.6%	94.9%	96.4%
43	50.1%	39.5%	85.3%
44	90.2%	93.2%	53.1%
45	99.7%		
46		64.0%	50.8%
48	96.0%	92.8%	92.8%
49	93.3%	93.3%	86.6%
52	71.4%	66.5%	82.1%
53	84.9%		
54	41.6%		
55	100.0%	71.7%	95.5%
56	100.0%	2.2%	
57	94.5%	100.0%	99.8%
58	81.2%		
63	95.5%	92.0%	98.3%
66	58.2%	72.0%	
71	89.3%	82.4%	70.9%
74			100.0%
101	92.4%	92.4%	

Description of Calculation

Construction costs of major rehab/renovation projects, divided by total costs of all major rehab/renovation projects.

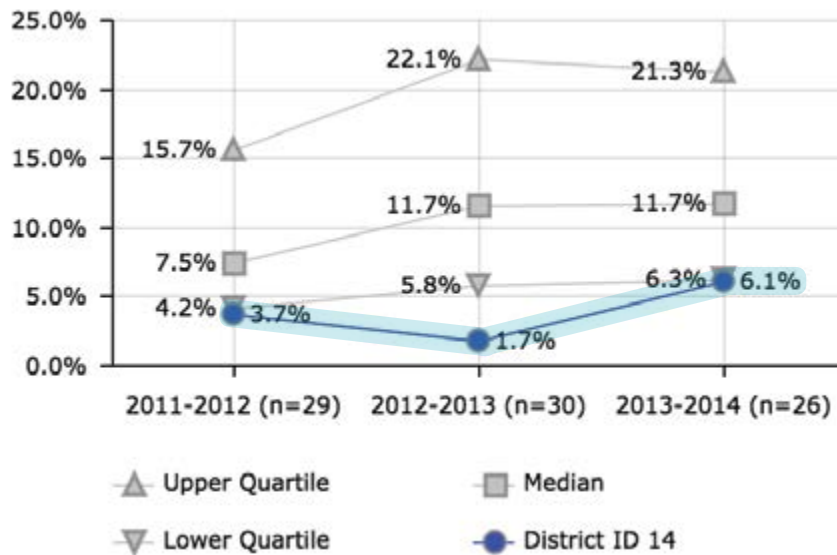
Importance of Measure

This can be used to evaluate the cost of delivered construction relative to design costs and personnel costs.

Administrative personnel are responsible for multiple aspects of projects in keeping overhead costs to a minimum.

MAINTENANCE & OPERATIONS

Renovations - Design to Construction Cost Ratio



Description of Calculation

Design costs of all major rehab/renovation projects, divided by construction costs of all major rehab/renovation projects.

Importance of Measure

This can be used to evaluate the cost of delivered construction relative to design costs.

**Facilities Design
+ Construction
consistently holds
design costs to
a minimum!**

District ID	2011-2012	2012-2013	2013-2014
1	58.1%		84.4%
3	9.4%	13.2%	21.2%
4	3.9%	3.7%	4.3%
5	42.4%	43.4%	43.7%
6		10.7%	13.0%
7	42.9%	25.0%	14.6%
8	7.5%		7.8%
10	5.7%	5.4%	11.5%
11	4.9%	9.7%	
12	6.4%	0.3%	6.3%
14	3.7%	1.7%	6.1%
16	21.5%	19.9%	12.0%
18	1.4%	1.4%	0.9%
20	0.2%		
23	15.7%		10.6%
25		20.8%	
28		33.6%	24.6%
30		12.6%	25.6%
32		22.1%	
33		19.4%	19.4%
34	32.4%	6.9%	84.8%
35		10.0%	
37		34.0%	21.3%
39	3.7%	2.7%	
43	11.6%	15.4%	3.4%
44	8.4%	5.9%	6.8%
48	2.9%	5.8%	6.7%
49	6.6%	5.5%	10.9%
52	33.4%	44.4%	17.4%
53	15.0%		
54	81.7%		
55		39.4%	4.6%
57	5.0%		
58	10.8%		
63	4.0%	7.7%	0.0%
66	4.2%	22.8%	
71	12.0%	14.5%	35.8%
101	5.9%	5.9%	

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

New Construction - Cost per Student



District ID	2011-2012	2012-2013	2013-2014
1		\$42	\$185
2		\$2	
4	\$62	\$578	\$422
5	\$21	\$5	\$17
6		\$702	\$174
7			\$666
8	\$7		\$235
10	\$97	\$30	\$65
11		\$311	
12	\$21	\$382	\$266
14	\$671	\$701	\$1,812
16	\$129	\$259	\$834
18	\$937	\$952	\$385
20	\$5,296	\$2,706	\$697
21	\$3	\$4	
23		\$2,407	\$2,969
28		\$2,168	
32		\$39	
35	\$0	\$767	
37	\$56	\$815	\$1,092
39	\$486	\$91	\$86
41	\$869	\$581	\$106
44	\$283	\$322	\$68
46		\$5	
47	\$540	\$251	\$617
48	\$407	\$269	\$199
49	\$925	\$147	\$114
52		\$628	\$152
54	\$51		
55	\$9	\$334	\$156
56		\$7	
57		\$12	\$2,041
58	\$96		
66	\$545	\$320	
71	\$163	\$524	\$563
101	\$19		

Description of Calculation

Total costs of new construction projects, divided by total student enrollment

Importance of Measure

This looks at the total amount of construction spending relative to district size (by student enrollment).

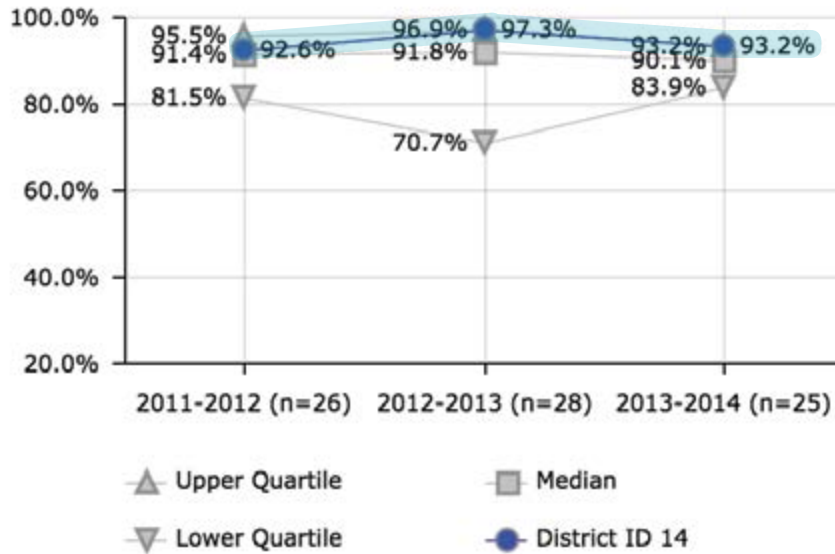
Factors that Influence

- Number of capital projects
- Population growth trends
- Quality of buildings

Taxpayers actively support the renewal of old schools through their bond election votes.

MAINTENANCE & OPERATIONS

New Construction - Delivered Construction Costs as Percent of Total Costs



District ID	2011-2012	2012-2013	2013-2014
1		8.7%	27.9%
4	95.1%	94.6%	83.4%
5	75.5%	32.4%	51.8%
6		90.8%	87.9%
7			88.2%
8	68.1%		91.0%
10	93.4%	73.6%	83.9%
11		71.6%	
12	97.7%	99.1%	95.9%
14	92.6%	97.3%	93.2%
16	80.0%	77.0%	86.6%
18	96.9%	96.9%	98.8%
20	84.5%	97.6%	96.1%
23		99.2%	94.8%
25	36.5%		
28		98.6%	92.5%
32		69.9%	
35		98.1%	
37	100.0%	29.1%	33.1%
39	95.4%	92.3%	98.6%
41	95.9%	97.0%	83.3%
44	90.2%	92.3%	87.7%
46		28.9%	
47	94.3%	86.0%	90.4%
48	93.5%	91.9%	91.1%
49	95.5%	85.9%	88.2%
52	81.5%	91.6%	70.2%
53	84.9%		
54	84.0%		
55	100.0%	92.4%	91.0%
56	21.3%	21.3%	
57			96.6%
58	83.5%		
66	97.7%	96.8%	
71	84.8%	59.1%	90.1%
101	10.3%		

Description of Calculation

Delivered construction costs of new construction projects, divided by total costs of all new construction projects.

Importance of Measure

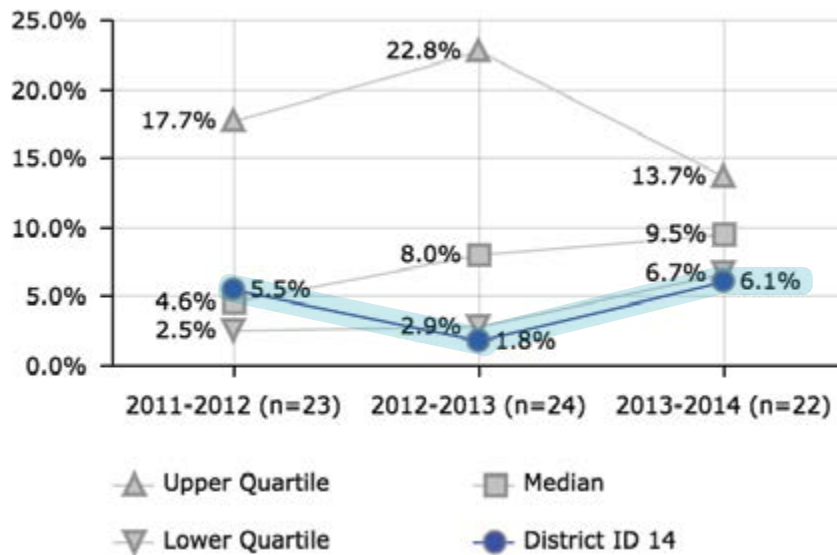
This can be used to evaluate the cost of delivered construction relative to design costs and personnel costs.

The project money goes to actual construction.

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

New Construction - Design to Construction Cost Ratio



District ID	2011-2012	2012-2013	2013-2014
4	4.1%	4.9%	19.1%
5	2.0%	129.4%	77.9%
6		9.6%	10.9%
7			12.0%
8	17.5%		8.9%
10	3.7%	21.5%	13.5%
11		31.6%	
12	2.3%		2.6%
14	5.5%	1.8%	6.1%
16	19.5%	24.0%	13.7%
18	2.5%	2.5%	
20	17.7%	2.0%	4.1%
23			4.7%
25	155.1%		
28		1.4%	7.6%
32		24.6%	
35		1.2%	
37		8.9%	20.2%
39	2.2%	6.2%	
41	3.9%	2.4%	17.0%
44	10.0%	7.9%	12.1%
47	4.6%	13.2%	9.3%
48	4.6%	6.4%	6.7%
49	4.0%	11.6%	8.8%
52	19.1%	5.6%	37.4%
53	15.0%		
55		8.2%	9.6%
56	150.0%	150.0%	
57			2.9%
58	7.7%		
66	2.4%	3.3%	
71	2.4%	59.7%	6.9%
101	130.2%		

Description of Calculation

Design costs of all new construction projects, divided by construction costs of all new construction projects.

Importance of Measure

This can be used to evaluate the cost of delivered construction relative to design costs.

**APS administrative
and design fees
hold steady.**

Council of the Great City Schools

Performance Measurement and Benchmarking Project



District ID	2011-2012	2012-2013	2013-2014
1	\$794	\$225	\$858
2		\$507	
3	\$1,430	\$1,321	\$1,245
4	\$2,618	\$1,712	\$1,494
5	\$698	\$835	\$980
6	\$2,521	\$2,791	\$1,092
7	\$884	\$1,193	\$1,844
8	\$631	\$364	\$624
9	\$447	\$429	\$406
10	\$919	\$770	\$740
11	\$367	\$1,103	
12	\$2,309	\$2,528	\$1,624
13	\$460	\$504	\$548
14	\$1,279	\$1,264	\$2,422
16	\$723	\$880	\$1,623
18	\$1,722	\$1,750	\$959
19		\$968	\$1,072
20	\$6,275	\$3,832	\$1,765
21		\$981	\$1,353
23	\$694	\$2,973	\$3,609
25		\$1,233	
26	\$1,732	\$760	
28	\$1,576	\$3,339	
30	\$926	\$920	\$802
32		\$535	
33		\$1,518	
34		\$3,765	
35	\$892	\$1,828	
37	\$525	\$2,014	\$2,080
39	\$1,930	\$1,486	\$1,279
41	\$2,660	\$1,923	\$745
43	\$1,540	\$1,486	\$1,793
44	\$739	\$858	\$598
45	\$4,939	\$285	
46		\$498	\$608
47	\$1,139	\$837	\$1,208
48	\$1,538	\$1,058	\$1,308
49	\$2,272	\$1,154	\$741
52		\$1,966	\$1,970
54	\$558		
55	\$621	\$910	\$1,013
56		\$597	\$407
57	\$813		\$2,715
58		\$683	\$785
63			\$2,208
66	\$1,307	\$1,259	\$804
67	\$595	\$943	\$812
71	\$759	\$1,080	\$1,149
74			\$725
77		\$681	
101	\$1,740	\$1,831	

Description of Calculation

Total custodial costs (district and contractor) plus total grounds work costs (district and contractor) plus total routine maintenance costs (district and contractor) plus total major maintenance/minor renovations costs plus total major rehab/renovations

Importance of Measure

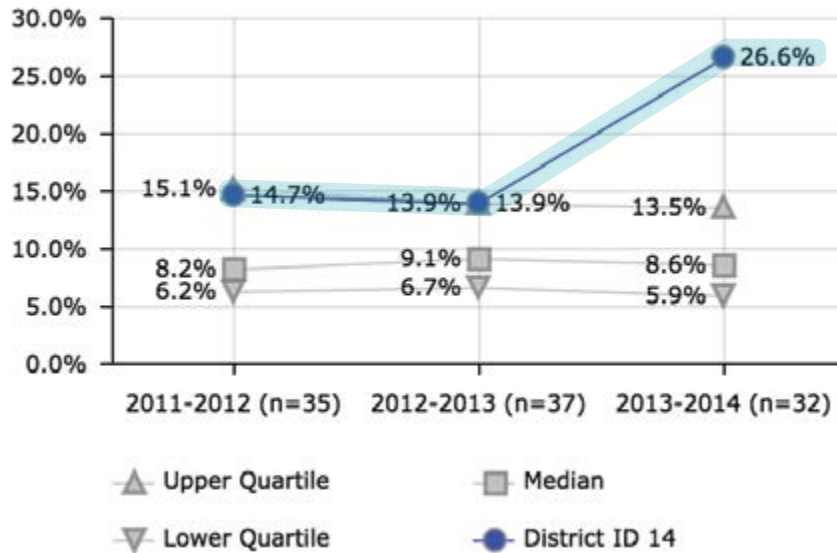
This is a broad view of the costs of maintenance, operations and facilities work. Expenditures may fluctuate drastically depending on the number of capital projects.

**M&O is doing
so much more than
"routine" maintenance
and Band-Aiding; it
focuses on deferred
maintenance and
renewal.**

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

M&O Costs Ratio to District Operating Budget



District ID	2011-2012	2012-2013	2013-2014
1	8.2%	2.4%	9.1%
2		3.7%	
3		10.0%	
4	24.0%	12.7%	11.4%
5	7.2%	9.0%	10.9%
6	23.0%	26.2%	10.1%
7	7.5%	9.5%	14.9%
8	7.5%	4.7%	7.9%
9	5.5%		5.2%
10	10.0%	8.4%	7.6%
11	3.8%		
12	13.5%	15.0%	
13	6.2%	6.7%	7.3%
14	14.7%	13.9%	26.6%
16	11.4%	11.9%	20.7%
18	15.2%	14.8%	8.8%
19			4.7%
20	35.3%	22.7%	8.5%
21		4.6%	5.9%
23	7.1%	29.6%	
25	5.7%	5.4%	
26	13.7%		
28	10.0%		
30	6.6%	6.3%	5.8%
32		6.5%	
33		6.8%	
34		29.8%	
35	4.2%	9.0%	
37	5.5%	21.2%	22.2%
39	21.8%	17.7%	14.3%
41	31.4%		
43	7.0%	6.7%	6.9%
45		1.2%	
46			3.7%
47	10.5%	7.5%	10.8%
48	17.9%	13.6%	15.7%
49		11.6%	8.0%
52	15.1%	13.9%	14.0%
54	5.7%		
56	6.5%	8.9%	5.7%
57	4.0%		13.1%
58		4.9%	4.9%
63			15.4%
66	10.6%	9.7%	6.0%
67	6.6%	8.4%	8.4%
71	6.2%	9.1%	9.3%
74			5.4%
101	25.7%	27.2%	

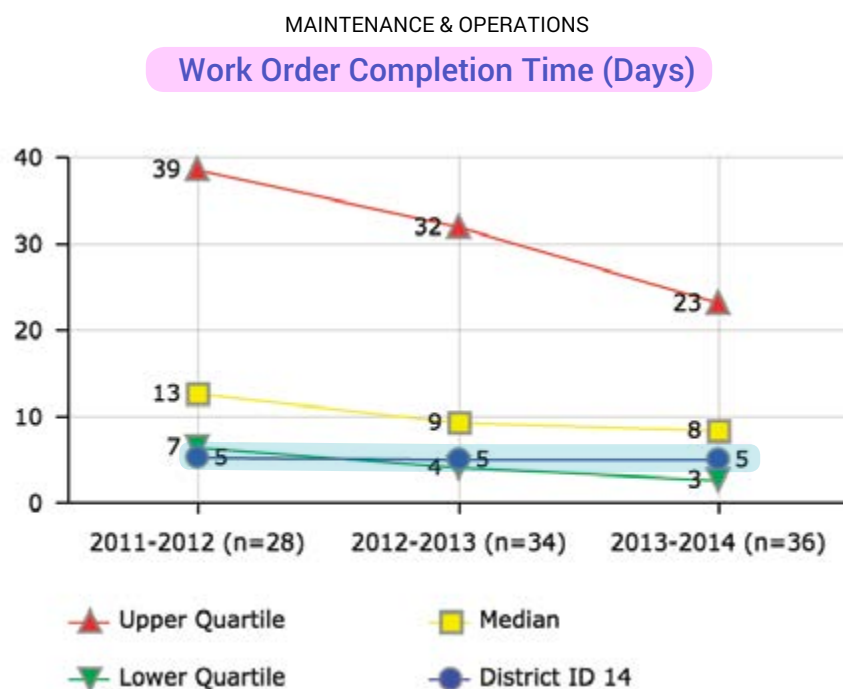
Description of Calculation

Total custodial costs (district and contractor) plus total grounds work costs (district and contractor) plus total routine maintenance costs (district and contractor) plus total major maintenance/minor renovations costs plus total major rehab/renovations

Importance of Measure

This is a broad view of the costs of maintenance, operations and facilities work. Expenditures may fluctuate drastically depending on the number of capital projects.

APS is
dedicated to
preserving the
learning
environment.

Council of the Great City Schools
Performance Measurement and Benchmarking Project


District ID	2011-2012	2012-2013	2013-2014
1	38	36	20
2			5
3		23	13
4		6	7
5	42	32	24
6		5	
7	28	23	
8	50	40	45
9	5	2	2
10		1	17
11	9	65	
12	288		23
13	36	39	53
14	5	5	5
16	51	64	63
18			3
19		9	5
20	5	29	27
21		32	43
23	13	9	10
25		4	
26	4		
28		6	7
30	86	86	57
33		2	2
34	7		
35	20	21	
37	12	102	140
39	42	3	0
41	28	26	23
43			0
44	6	7	7
45	39		
46		10	10
47	1		
48	20		19
49	8	8	6
52	7	9	14
55	11	11	12
56	7		
58			0
63		1	2
66		1	1
67			0
71	4	4	4
74			0
101		1	

Description of Calculation

Total aggregate number of days to complete all work orders, divided by total number of work orders.

Importance of Measure

This measure is an indicator of a district's timeliness in completing work orders

Districts with lower completion times are more likely to have a management system in place with funding to address repairs.

Factors that Influence

- Menu Number of maintenance employees
- Management effectiveness
- Automated work order tracking
- Labor agreements
- Funding to address needed repairs
- Existence of work flow management process

Districts in Best Quartile (FY 2013-14)

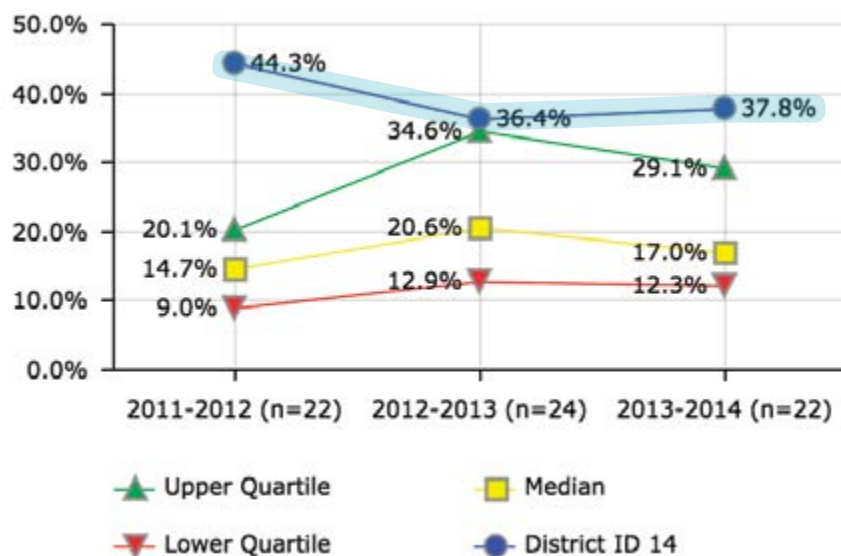
- Clark County School District
- Fresno Unified School District
- Houston Independent School District
- Indianapolis Public School District
- Omaha Public School District 1
- Pittsburgh Public Schools
- Providence Public Schools
- School District of Philadelphia
- St. Louis City Public School District

**M&O personnel
respond to
work order
requests quickly.**

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

Recycling - Percent of Total Material Stream



District ID	2011-2012	2012-2013	2013-2014
3	36.4%	42.4%	34.2%
5	6.3%	23.6%	25.3%
8	15.7%	16.2%	15.7%
9	15.2%	43.9%	33.6%
10		100.0%	
11	58.2%	54.0%	
12	14.1%		17.1%
14	44.3%	36.4%	37.8%
16		32.7%	
18	1.5%	1.5%	
19	9.0%	16.4%	16.5%
20			16.9%
21	5.1%	8.4%	14.9%
23	23.4%	100.0%	28.2%
25		1.7%	
28		13.5%	11.6%
30	3.7%	4.1%	29.9%
33			1.5%
37	13.1%	12.3%	12.3%
41	16.5%	18.7%	20.1%
43	3.6%	22.0%	6.3%
48	17.3%	28.1%	45.4%
52	13.4%	19.2%	27.1%
53	12.3%		
54	13.9%		
55	16.1%	15.5%	16.8%
62		26.9%	
66	20.1%	8.4%	11.3%
67	29.4%	27.0%	29.1%
74			4.8%

Description of Calculation

Total material stream that was recycled (in tons), divided by total material stream (in tons).

Importance of Measure

This measures the degree to which districts recycle.

Factors that Influence

- Placement of recycling bins near waste bins
- Number of recycling bins deployed
- Material collection contracts
- Commitment to environmental stewardship
- State requirements

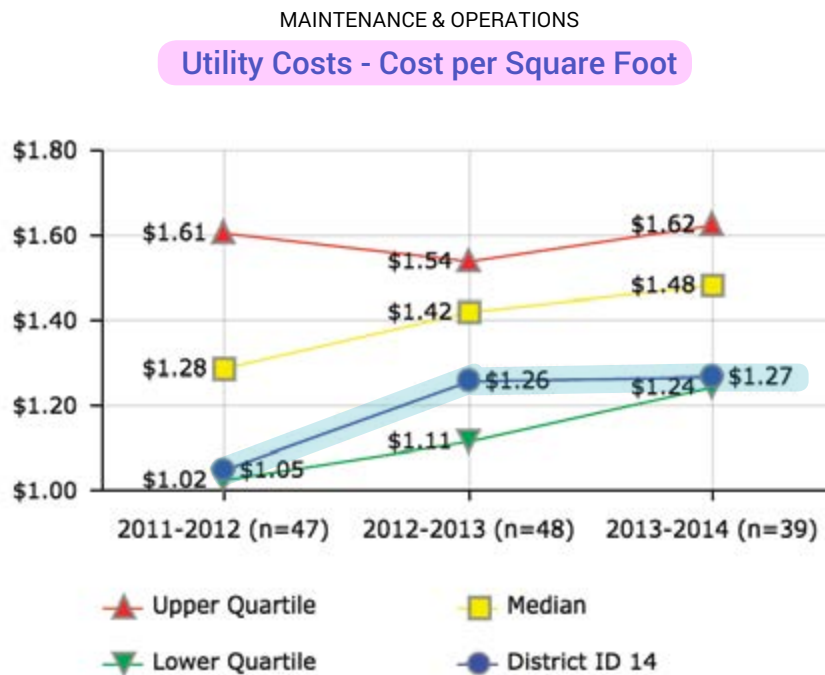
Districts in Best Quartile (FY 2013-14)

- Albuquerque Public Schools
- Clark County School District
- Fresno Unified School District
- Milwaukee Public Schools
- Orange County Public School District
- St. Paul Independent School District 625

**APS strives
to be
environmentally
responsible!**

Council of the Great City Schools

Performance Measurement and Benchmarking Project



Description of Calculation

Total utility costs (including electricity, heating fuel, water, sewer), divided by total square footage of all non-vacant buildings.

Importance of Measure

This measures the efficiency of the district's building utility operations

It may also reflect a district's effort to reduce energy consumption through conservation measures being implemented by building occupants as well as maintenance and operations personnel.

Higher numbers signal an opportunity to evaluate fixed and variable cost factors and identify those factors that can be modified for greater efficiency.

Factors that Influence

- Age of buildings and physical plants
- Amount of air-conditioned space
- Regional climate differences
- Customer support of conservation efforts to upgrade lighting and HVAC systems
- Energy conservation policies and management practices

Districts in Best Quartile (FY 2013-14)

- Charlotte-Mecklenburg School District
- Denver Public School District 1
- Des Moines Public Schools
- Duval County Public Schools
- Milwaukee Public Schools
- Palm Beach County School District
- Portland School District 1J
- Providence Public Schools
- Seattle School District 1
- Wichita Unified School District 259

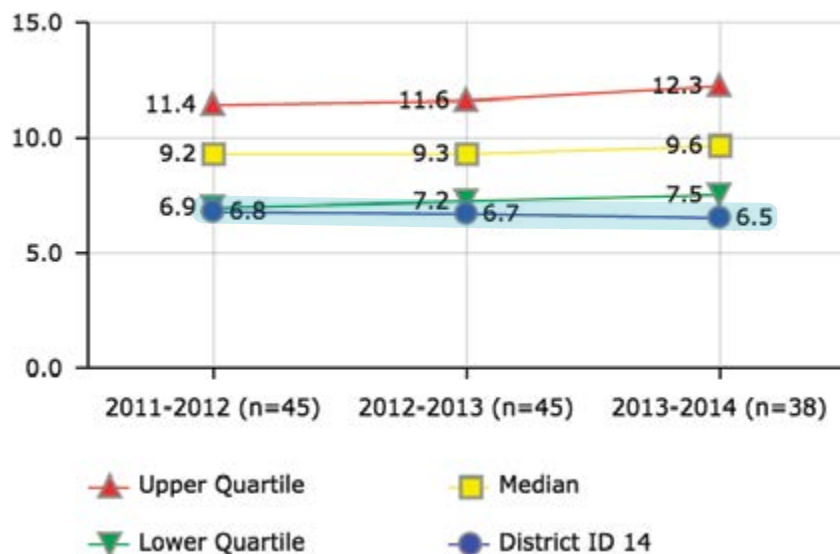
APS is holding costs down in spite of building larger schools and growing demands of high energy use technology.

District ID	2011-2012	2012-2013	2013-2014
1	\$0.76	\$0.58	\$0.54
2	\$1.20	\$1.35	\$1.42
3	\$0.81	\$0.86	\$1.29
4	\$0.96	\$1.19	\$1.20
5	\$1.02	\$0.79	\$0.86
6	\$2.07	\$2.87	\$2.68
7	\$1.45	\$1.42	\$1.36
8	\$1.18	\$1.18	\$1.10
9	\$1.61	\$1.55	\$1.57
10	\$1.70	\$1.69	\$1.75
11	\$1.00	\$1.04	
12	\$0.92	\$0.81	\$0.96
13	\$1.41	\$1.42	\$1.38
14	\$1.05	\$1.26	\$1.27
16	\$0.85	\$0.87	
18	\$1.50	\$1.43	\$1.43
19	\$1.63	\$1.50	\$1.96
20	\$1.68	\$1.70	\$1.71
21	\$1.39	\$1.46	\$1.50
23	\$1.27	\$1.52	\$1.55
25	\$1.20	\$1.68	
26	\$1.29	\$1.34	
28	\$1.85	\$1.58	\$1.55
30	\$1.28	\$1.09	\$1.21
32		\$1.51	
33		\$0.96	\$1.33
34	\$1.74	\$1.74	\$1.51
35	\$1.84		
37	\$0.92	\$0.91	\$0.77
39	\$1.84	\$1.66	\$1.51
41	\$0.93	\$1.77	\$1.73
43	\$1.44	\$1.50	\$1.37
44	\$1.48	\$1.44	\$1.24
45	\$0.89	\$0.88	
46		\$1.44	\$1.81
47	\$1.80	\$2.00	\$1.96
48	\$1.63	\$1.53	\$1.52
49	\$1.51	\$1.52	\$1.50
52	\$1.07	\$1.28	\$1.61
53	\$1.56		
54	\$1.10		
55	\$1.12	\$1.06	\$1.19
56	\$0.69	\$0.68	
58	\$1.08	\$1.25	\$1.62
62	\$0.81	\$1.21	
63	\$1.37	\$1.40	\$1.48
66	\$1.03	\$1.20	\$1.36
67	\$1.68	\$1.88	\$1.85
71	\$1.41	\$1.50	\$1.64
74			\$1.18
79		\$1.83	
101	\$1.07	\$1.13	

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

Utility Usage - Electricity Usage per Square Foot (KWh)



District ID	2011-2012	2012-2013	2013-2014
1	5.8	6.2	6.0
2	9.9	10.6	10.5
3	6.6	6.5	6.2
4	9.0	9.3	9.6
5	4.0	4.2	4.1
7	9.5	9.2	8.6
8	11.1	10.9	11.2
9	12.2	12.5	12.2
10	13.4	13.5	13.5
11	7.4	7.6	
12	8.0	7.8	8.9
13	14.2	14.0	14.1
14	6.8	6.7	6.5
16	5.0	4.8	
18	11.2	10.7	9.6
19	11.1	11.6	12.8
20	11.6	12.0	12.6
21	8.5	8.3	8.3
23	9.2	10.8	1.6
25		5.7	
26	4.6	4.6	
28	16.3	14.1	14.5
30	6.4	6.5	6.3
32		14.9	
33		9.6	0.1
34	17.7	15.8	13.8
35	10.0		
37	6.9	9.2	7.7
39	16.2	17.4	16.6
41	7.2	13.8	14.6
43	8.5	7.9	7.1
44	10.9	11.0	10.5
45	5.5		
46		8.3	8.3
47	13.2	13.0	12.3
48	13.4	12.8	13.0
49	10.4	10.6	10.2
52	7.4	8.0	8.4
53	11.4		
54	9.4		
55	9.0	8.5	8.9
56	4.0	3.9	
58	6.1	6.4	7.5
62	6.1	6.5	
63	11.8	11.1	10.6
66	10.2	9.8	10.4
67	8.8	9.0	9.6
71	11.5	11.0	10.7
74			5.0
101	7.6	7.2	

Description of Calculation

Total electricity usage (in kWh), divided by total square footage of all non-vacant buildings.

Importance of Measure

This measures the level of electricity usage. Districts with high usage should investigate ways to decrease usage in order to reduce costs.

Factors that Influence

- Use of high-efficiency lightbulbs
- Automated light switches
- Shutdown policy during winter break
- Regulation of heating and air conditioning

Districts in Best Quartile (FY 2013-14)

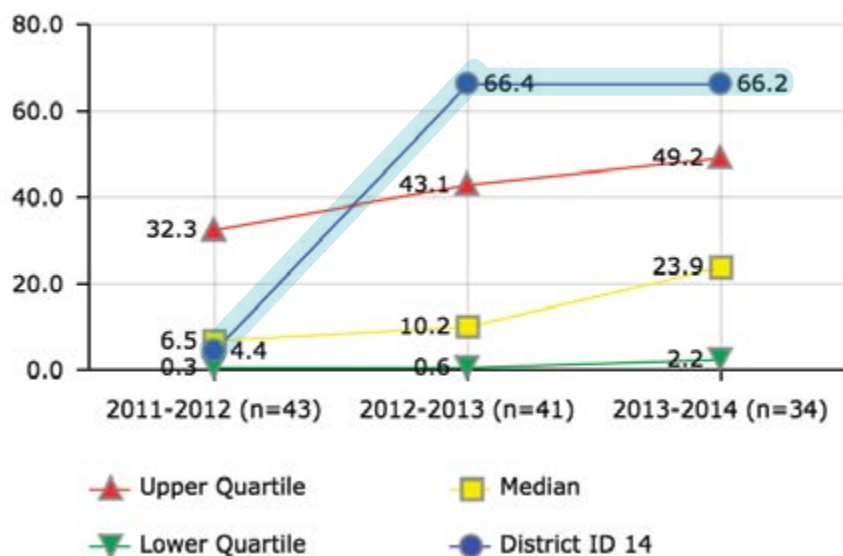
- Albuquerque Public Schools
- Charleston County School District
- Indianapolis Public School District
- Milwaukee Public Schools
- Pittsburgh Public Schools
- Portland School District 1J
- Providence Public Schools
- School District of Philadelphia
- Seattle School District 1
- St. Paul Independent School District 625

**Reflects WECC's
successful
conservation
programs!**

Council of the Great City Schools
Performance Measurement and Benchmarking Project

MAINTENANCE & OPERATIONS

Utility Usage - Heating Fuel Usage per Square Foot (KBTU)



District ID	2011-2012	2012-2013	2013-2014
1	20.8	0.2	19.1
2	0.2	0.3	71.1
3	39.9	49.1	49.2
4	26.0	33.4	36.7
5	43.9	43.1	46.2
7	0.8	0.8	
8	1.4	1.4	1.4
9	14.5	15.1	13.5
10	5.0	5.9	2.0
11	0.0	10.2	
12	0.2	52.0	58.9
14	4.4	66.4	66.2
16	8.9	7.6	
18	16.6	20.8	2.2
19	42.9	42.7	46.7
20	34.8	41.8	39.5
21	53.5	52.0	64.3
23	2.7	3.3	3.4
25	0.3	0.6	
26	0.6	0.6	
28	10.9	14.5	15.9
30	0.4	0.5	58.5
33		46.6	0.4
34	0.0	50.8	44.3
35	42.0		
37		0.0	0.0
39	5.5	5.6	6.6
41	6.5	12.0	17.1
43	57.3	65.1	66.5
44	0.8	0.8	
45	44.2		
46		43.3	48.1
47	0.2	0.3	0.2
48	1.6	1.9	1.2
49	23.0	22.8	28.7
52	56.1	71.6	78.2
53	19.8		
54	51.9		
55	13.0	0.1	17.3
56	0.1	0.1	
58		46.5	
62	0.2		
63	32.3	0.0	0.0
66	0.3	33.9	34.9
67	22.2	0.2	0.2
71	0.0	10.1	13.8
74			52.8
101	0.1		

Description of Calculation

Total heating fuel usage (in kBTU), divided by total square footage of all non-vacant buildings.

Importance of Measure

This measures the level of heating fuel usage. Heating fuel can be in a variety of forms, such as fuel oil, kerosene, natural gas, propane, etc. This excludes electricity that is used for heating.

Districts in Best Quartile (FY 2013-14)

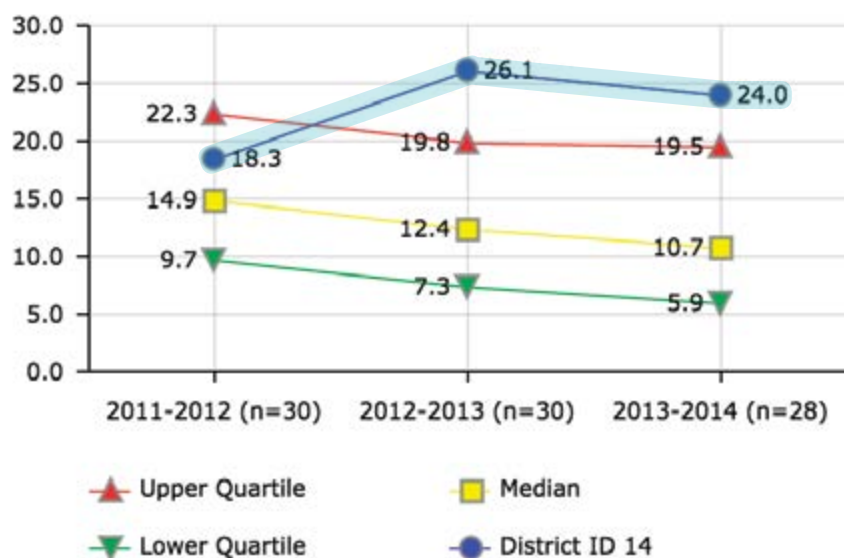
- Denver Public School District 1
- Fresno Unified School District
- Hillsborough County Public School District
- Indianapolis Public School District
- Metropolitan Nashville Public School
- Orange County Public School District
- Palm Beach County School District
- Shelby County School District
- St. Louis City Public School District

APS uses low cost natural gas as a heating fuel.

Managing for Results in America's Great City Schools 2015

MAINTENANCE & OPERATIONS

Utility Usage - Water (Non-Irrigation) Usage per Square Foot (Gal.)



District ID	2011-2012	2012-2013	2013-2014
1			5.3
3			5.7
4	8.6	7.8	8.5
5	14.3	13.2	11.6
7	8.5	5.0	6.9
8	14.4	14.1	
9	20.3	19.8	20.5
10	29.6	37.4	15.1
12	12.1	11.4	11.7
13	53.3	55.8	63.9
14	18.3	26.1	24.0
16	10.9	11.0	
19			0.1
20	9.6	11.2	8.8
21	13.4	13.0	12.3
25	5.9	7.0	
26		6.3	
28	9.4	7.3	7.0
30	22.3	19.8	20.9
35	10.3		
37	6.2	8.1	6.2
39	55.6	0.0	
41	31.3	28.4	1.1
43	9.7	8.4	8.9
44	15.3		
45	6.5		
46		17.9	20.8
47		2.1	
48	15.5	0.0	0.0
49	29.7	29.5	30.1
52	12.4	13.1	13.7
53	24.7		
55		11.7	12.1
56	26.4	25.8	
58	17.6	14.4	9.8
62		0.9	
63	21.9	22.6	0.0
66			87.4
71	19.1		18.6
74			0.0

Description of Calculation

Total water usage (in gallons) excluding irrigation, divided by total square footage of all non-vacant buildings.

Importance of Measure

Can be used to evaluate water usage.

Factors that Influence

- Low-flow toilets and urinals
- Maintenance of faucet aerators
- Motion-sensor faucets to reduce vandalism

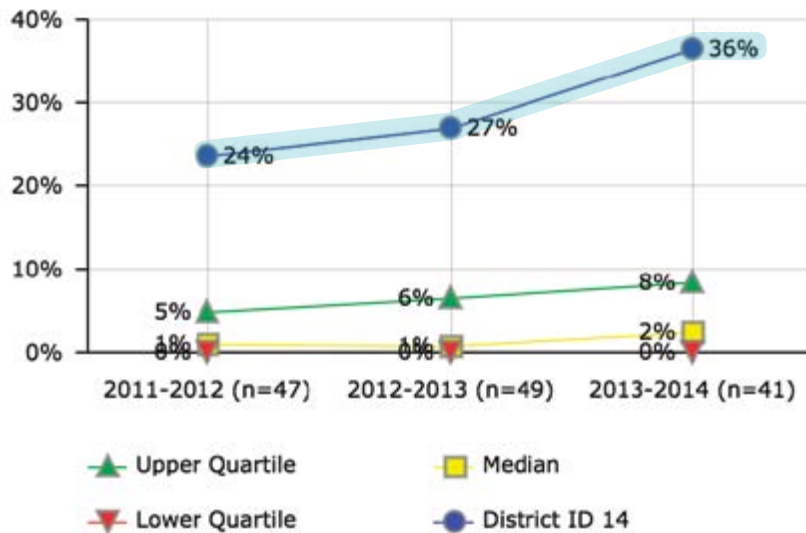
Districts in Best Quartile (FY 2013-14)

- Dallas Independent School District
- Dayton Public School District
- Orange County Public School District
- Providence Public Schools
- Seattle School District 1
- St. Louis City Public School District
- St. Paul Independent School District 625

APS has a lot of square footage and is actively working on water conservation programs.

MAINTENANCE & OPERATIONS

Green Buildings - Buildings Green Certified or Equivalent



Description of Calculation

Square footage of all permanent buildings (academic and non-academic) with a green building certificate, plus square footage of all permanent buildings (academic and non-academic) that were built in alignment with a green building code but not certified.

Importance of Measure

This measure compares the number of energy efficient or "green" buildings in the district.

Factors that Influence

- Community support for environmental and sustainability measures
- Grant availability
- District policy
- Environmental site assessment
- Local health issues

Districts in Best Quartile (FY 2013-14)

- Albuquerque Public Schools
- Atlanta Public Schools
- Charleston County School District
- Cincinnati Public Schools
- Dallas Independent School District
- Dayton Public School District
- Guilford County School District
- Houston Independent School District
- Indianapolis Public School District
- Orange County Public School District
- San Diego Unified School District

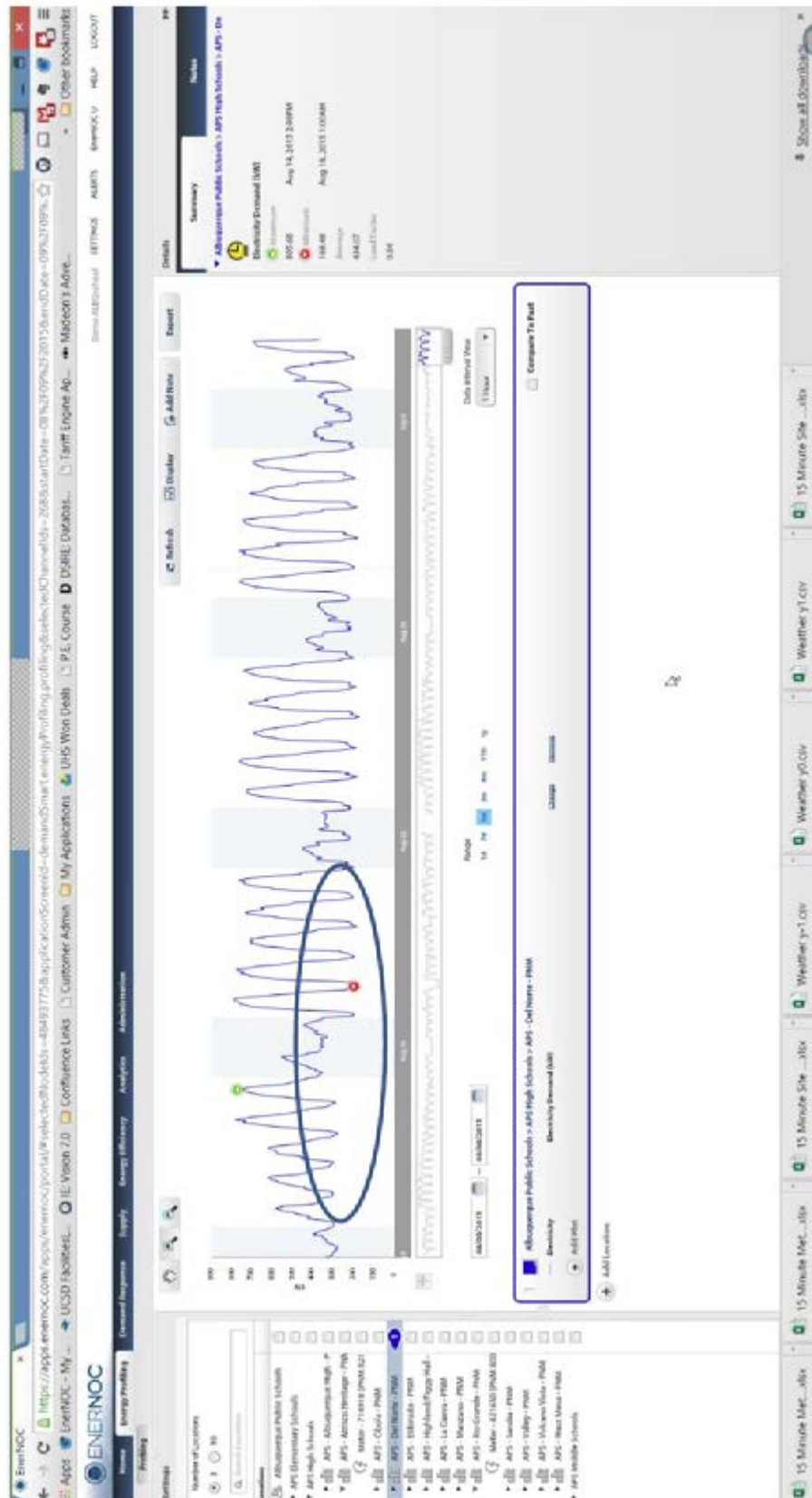
**APS has a
high standard for
building LEED
and green.**

District ID	2011-2012	2012-2013	2013-2014
1	12%	0%	0%
2	0%	4%	4%
3	0%	0%	0%
4	0%	0%	0%
5	1%	1%	1%
6	0%	0%	0%
7	1%	1%	1%
8	5%	0%	5%
9	0%	6%	5%
10	0%	0%	1%
11	4%	2%	
12	88%	93%	0%
13	0%	0%	0%
14	24%	27%	36%
16	9%	10%	11%
18	0%	0%	0%
19	86%	79%	84%
20	100%		95%
21	0%	0%	0%
23	23%	19%	31%
26	0%	0%	
28	27%	26%	31%
30	0%	0%	0%
32		15%	
33		15%	18%
34	0%	0%	0%
35	0%	0%	
37	3%	3%	5%
39	5%	6%	8%
41	7%	9%	9%
43	0%	0%	0%
44	5%	5%	5%
45	1%	1%	
46		0%	0%
47	3%	5%	8%
48	2%	8%	16%
49	17%	21%	21%
52	0%	2%	2%
53	0%		
54	4%		
55	0%	0%	0%
56	3%	79%	
57	2%	1%	2%
58	2%	2%	3%
62	1%	0%	
63	0%	0%	0%
66	1%	1%	4%
67	0%	0%	0%
71	6%	6%	7%
74			0%
77		0%	
79		0%	
101	1%	1%	

Albuquerque High School Chiller Reset

APs Water & Energy Conservation Update (Albuquerque High)

Measurable
Saving
Results



100 kW baseload reduction based on chiller reset.
A measurable and verifiable change.

APS Water & Energy Conservation Update (Project)

Actionable Steps

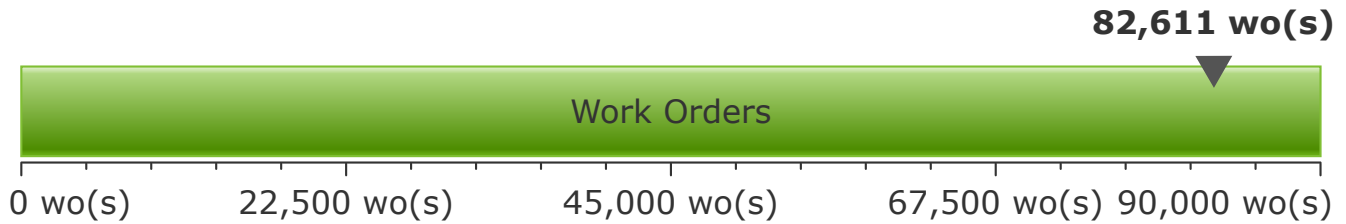
APS WECC Project Tracking	EUI Savings %	Status	Start Date	End Date	Owner	Comment
Web Enabled Timeclock for HVAC Total 9 Locations	7.5%	🟢	8/15/2015	11/13/2015	Tony Sparks	Purchase Order expected mid July with a 4-6 week material lead time. Coordination with B&D, time clock consolidation and IT PD's to be worked in parallel.
Web Enabled Timeclock for Lighting Total 19 Schools Installed - 6 Pending	2.9%	🟢	7/10/2015	8/24/2015	Ron Gallegos	Continuity with IT complete via Chris Money.
Yearout Building Tune Up 5 Schools	5.0%	🟢	6/15/2015	8/14/2015	Frank Maes	Initial report timing estimated 8/1/15.
LED Lighting Conversions Lew Wallace Pending	8.2%	🟢	6/20/2015	7/30/2015	Ron Gallegos	95% done as of 7-14-15. \$119,592 45338 Old Watts 537 Old Fixtures \$7,125 Rebate 16068 New Watts 355 New Fixtures (\$119,592 - \$7125 Rebate)/\$12,820 Savings/Yr = 8.8 Yrs
Irrigation Commissioning Top 7 Users Prioritized	0.0%	🟡	TBD	TBD	J. Lee Ebner	Still in discovery. The Team is doing a really nice job with what they have. Predictable scheduled maintenance vs. a possible perception of reactive maintenance is a process focus.

Material Cost	Labor Cost	Total Project Cost	Annual Electric Savings (kBTU)	Annual Gas Savings (kBTU)	Total Energy Savings (kBTU)	Total Savings	Utility Payback Incentive (Yr)	Base EUI	EUI Change	New EUI	EUI Savings %	IDR (Y/N)
\$399,029	\$72,000	\$517,629	11,436,284	1,694,200	13,130,484	\$340,278	\$21,068	72.88	4.42	68.26	6.1%	
\$13,654,395		\$13,654,395	342,075,559	665,340,000	1,007,415,559	\$16,824,803		65.6	0.85	64.7	1.30%	
2.92%		3.79%	3.34%	0.25%	1.30%	2.02%						

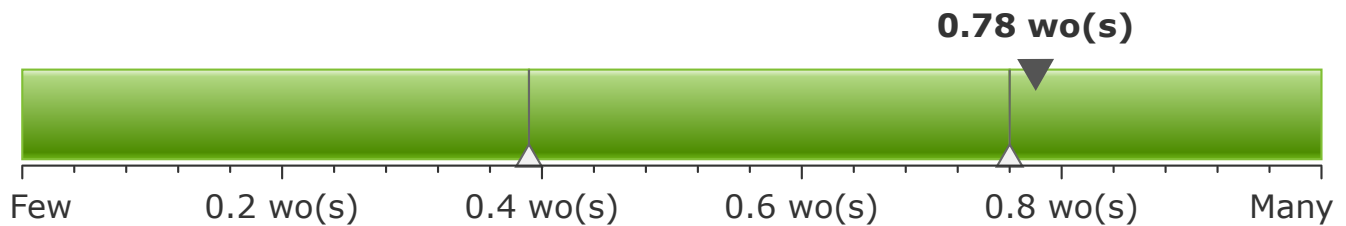
SchoolDude KPI Dashboards

Maintenance Dashboard

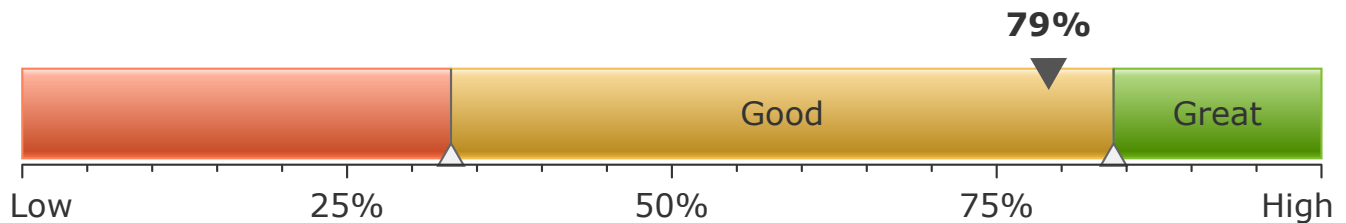
Total Number of Work Orders



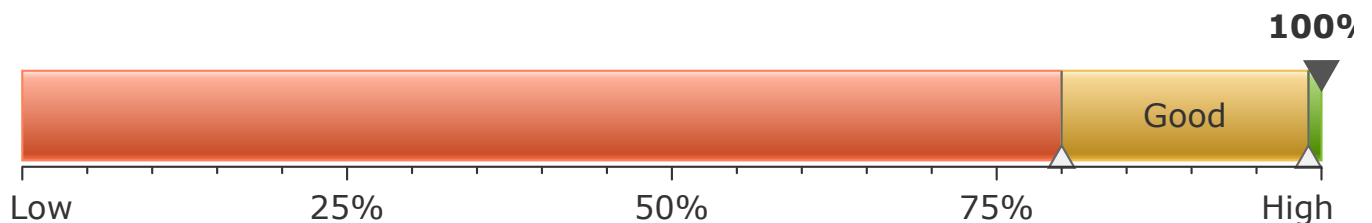
Work Orders per Student per Year



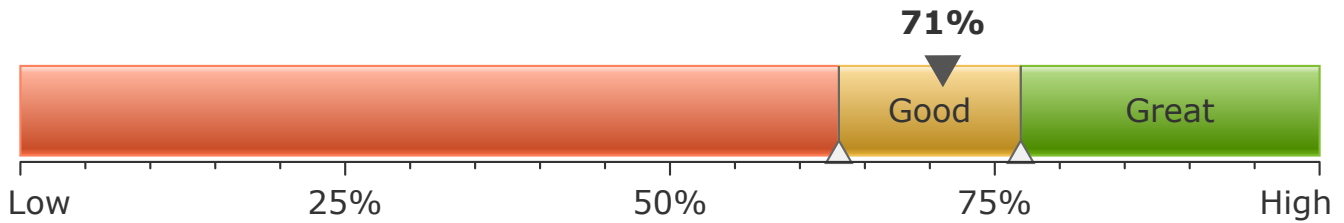
Work Orders with Hours



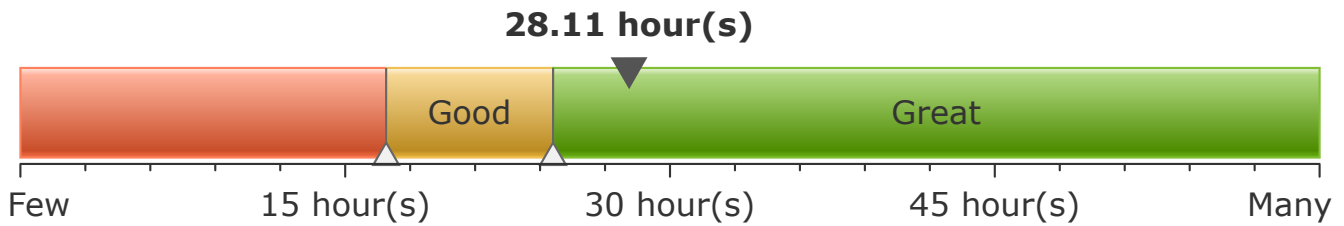
Work Orders with a Craft



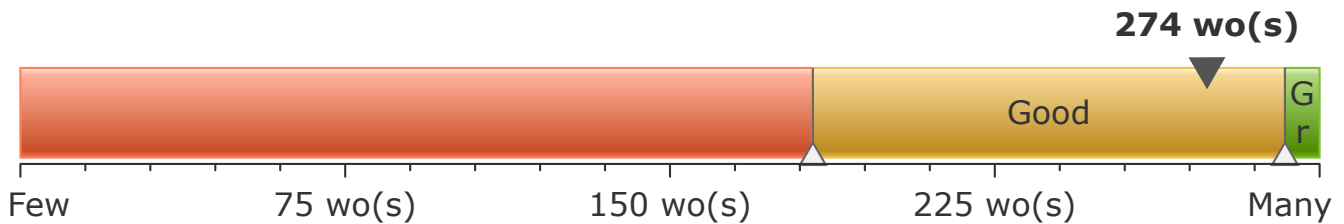
Work Orders Completed in less than a Week



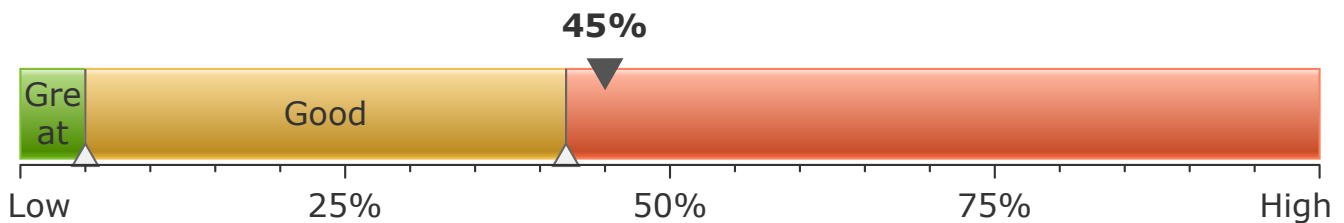
Work Hours per Employee per Week



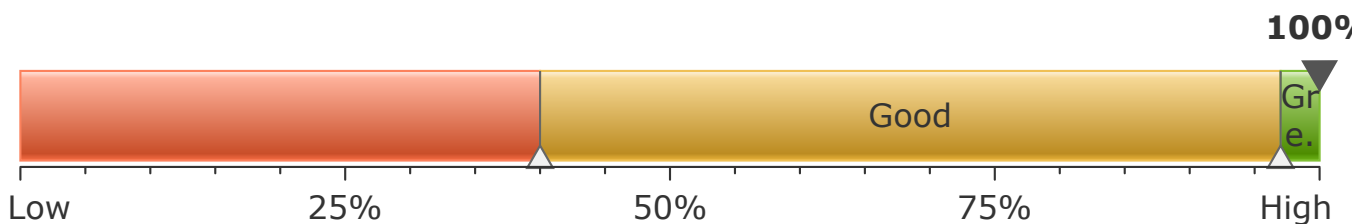
Work Orders per Employee per Year



Work Contracted Out vs. In-House



Work Orders with a Purpose Code



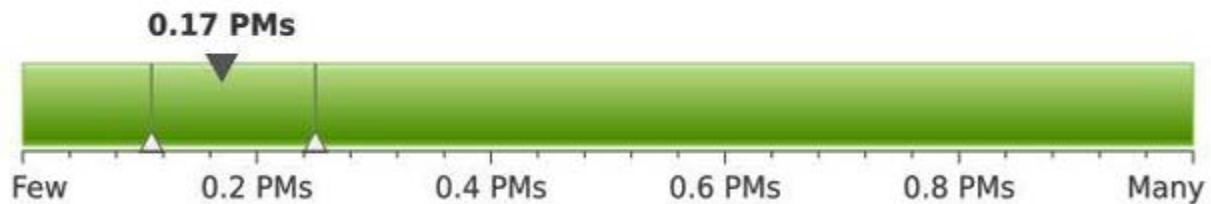
SchoolDude KPI Dashboards

Preventative Maintenance Dashboard

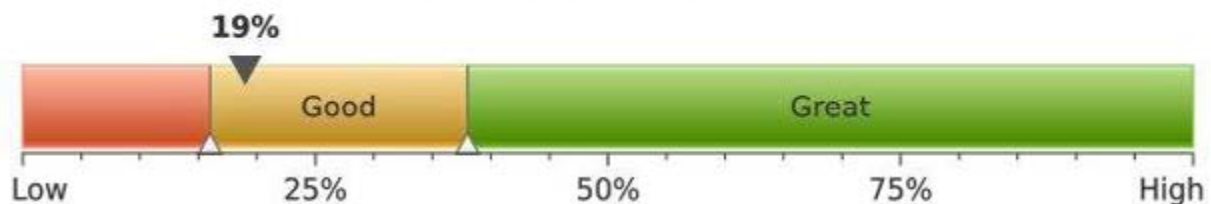
PM Scheduled for Upcoming Year



PM Work Orders per Student per Year



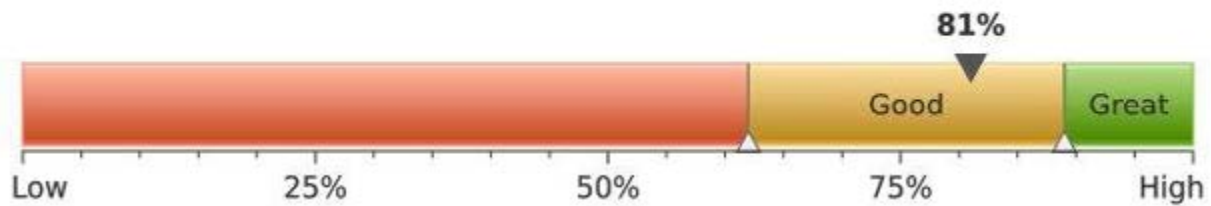
Ratio of PMs to Work Orders



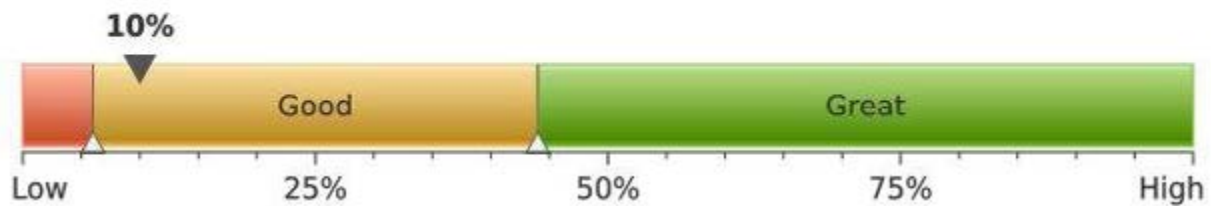
Total Preventive Maintenance Hours



PMs Completed in Less Than a Month

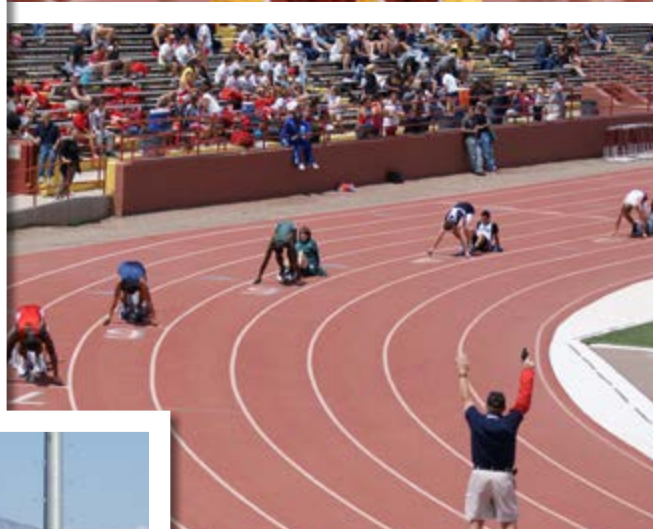


Percentage of PMs linked to Equipment



Percentage of Work Orders with Priority of Emergency





Maintaining and Sustaining a Functional School District ...DAILY!





Energizing Education



ALBUQUERQUE PUBLIC SCHOOLS



ALBUQUERQUE PUBLIC SCHOOLS