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**Department of Education  
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*Education  
Support Services/  
Facilities*

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CIP Applications (revised)

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## **B R I E F I N G P A P E R**

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### Introduction

This paper discusses the factors surrounding the evaluation and scoring of school districts and their CIP applications with respect to maintenance and facilities management. It establishes the relative importance of the maintenance effort among all other existing scoring criteria and proposes adding 25 additional points in objective and subjective criteria.

### Background

In the 1998 legislative session, AS14.11.011 was amended to require that all school districts applying for Department of Education and Early Development funding for capital improvement projects (CIP) provide evidence acceptable to the department that they have a preventive maintenance plan. The required elements of that were spelled out in statute and included elements of maintenance management, energy management, custodial care, maintenance training and capital renewal forecasting. Taken together, the preventive maintenance plan described was nothing short of comprehensive facility management.

The initial impact of this legislation on the CIP process was to focus efforts on establishing criteria in each of the five areas to measure the eligibility of districts to participate. On occasion during the discussion on eligibility criteria, the concept of adjusting scoring elements related to maintenance was mentioned. However, that matter was routinely tabled while the focus remained on eligibility issues.

In May of 2001, regulations were codified that established the eligibility criteria for use in the CIP process. These regulations included a waiver period initially set for June 30, 2002 and which was subsequently extended through June 30, 2003. The end of that waiver period marks the point when possibilities of revising CIP scoring elements related to maintenance again emerged.

Discussion

The current scoring factors for CIP projects measure 18 different criteria in a combination of objective and subjective assessments totaling 525 points. The relative importance of each criteria is established through the maximum point value assigned. Point values range from 5 to 50 for the subjective criteria and from 10 to 50 for the objective criteria. Between the subjective and objective criteria it is possible to group related scoring elements into 8 “primary factors” under which each application is assessed. Below is a breakdown that groups the related scoring elements under their primary factor:

<b>Primary Factors</b>	<b>Total Points</b>
<ul style="list-style-type: none"> <li>● Maintenance Effort                Avg. Expend. For Maintenance (10), Prevent. Main. (25)</li> </ul>	35
<ul style="list-style-type: none"> <li>● Facility Conditions                Weighted Avg. Age Facilities (20), Emergency (50), Life-Safety/Code (50)</li> </ul>	120
<ul style="list-style-type: none"> <li>● Overcrowding/Capacity                Unhoused Students Today (50), Unhoused Students 7 Years (30)</li> </ul>	80
<ul style="list-style-type: none"> <li>● Educational Need                Type of Space Add/Improve (30), Existing Space (40)</li> </ul>	70
<ul style="list-style-type: none"> <li>● Cost Factors                Cost Estimate (30), Project Cost vs. Operational Cost (30)</li> </ul>	60
<ul style="list-style-type: none"> <li>● Quality of Project/Information                Alternatives (5), Options (25), Adequacy of Document (30)</li> </ul>	60
<ul style="list-style-type: none"> <li>● Prior Efforts/Progress                Previous AS14.11 Funding (30), Planning and Design (30)</li> </ul>	60
<ul style="list-style-type: none"> <li>● District Input                Adequate fixed Asset (10), School District Ranking (30)</li> </ul>	40

The following charts utilize this concept of primary categories to assess the current “weight” that Maintenance Efforts are given in the current CIP scoring and prioritization paradigm. The graphs provide analysis from two perspectives:

- the percentage of the points assigned to each primary factor of the total available points for all categories
- the percentage of the points achieved by the highest scoring applications for each primary factor of the total available points for all categories

Separate charts are shown for the Major Maintenance list and the School Construction list.

The following data illustrates the fact that the relative importance of the Maintenance Effort assessment is the lowest of the eight primary factors charted. As seen by the light blue bar on the left, just less than 8% of the total available 525 points are allotted to this scoring area where as facility condition captures almost 27% of the available points. Even the district’s desired priority and ability to track fixed assets is more heavily weighted than maintenance effort.



These year-by-year graphs also show a slightly different, more realistic picture of the weighting among the primary factors. For example, although facility conditions combine for 27% of the total available points, rarely, in fact never, have those points been fully allotted. As a result, the percentage captured by that category is more realistically understood to be an average of approximately 12%. Under this same “realism” test, Maintenance Effort weighting falls slightly to an average of just over 6%. Incidentally, the graphs also illustrate the improvement in maintenance effort after the implementation of the state-mandated eligibility requirements in FY02.

### Maintenance Effort Summary

The current weighting of Maintenance Effort at 7.8% is not in keeping with the increased statutory emphasis on maintenance implemented by the legislature in 1999. To date, the department has been awarding points objectively on the basis of maintenance expenditures to the replacement value of facilities and subjectively on the basis of reading a description of a preventive maintenance plan and narrative or statistical information on the scope and effectiveness of the plan. This objective assessment remains valid and the points assigned at 10 seem to remain appropriate. While the subjective assessment provides a platform for evaluation, there has been no format established nor requirements delineated for submissions that would standardize district submittals and reduce the amount of subjective assessment necessary to ensure adequate adherence to the statutory requirements under AS 14.11.011(b)(4)(B).

After consideration, the Facilities staff is recommending that the subjective scoring be adjusted to include additional areas of maintenance and facility management and an additional 25 points be assigned. This would bring the total weighting for Maintenance Effort to approximately 13% of the total available points.

In addition, EED should consider implementing a more formalized process of reporting on the maintenance effort to include:

- Key performance criterion derived from established, proven programs and that are common to all plans in general be implemented.
- The implementation of a standard format for data submission that would provide a quantifiable system for the evaluation of effective and properly implemented preventive maintenance plans.

Authority for the department to require the reporting of performance criteria and establish benchmarks that measure the effectiveness of a preventive maintenance plan may need to be codified in regulation to ensure a uniform response from all districts applying for funding through the state’s capital improvement project program. A recommendation that discusses the data elements related to performance criteria, suggests formats for reporting them, and offers measurement benchmarks is the closing section of this briefing paper.

Continuing with the percent of available assessment, the effect of this proposal to add 25 points to a subjective rating is depicted in the following graphs:



Options for Maintenance Effort scoring

The allocation of maintenance and facility management points was developed under the philosophy that an objective assessment of district effort in all primary factor areas is preferable to a subjective assessments. Notwithstanding that desire, it is very difficult to establish measurements in the Maintenance Effort factor that are not subject to manipulation in order to achieve target benchmarks. The following discussion provides several measurements for consideration organized by the five areas of preventive maintenance and facility management. Each measurement criteria option is noted as Objective or Subjective and is assigned a potential weighting (out of 60 possible) that would correspond to its value in an assessment of district maintenance effort.

**Criteria #1: Maintenance management program – 35 Points Total**

<i>Assessment One</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Effectiveness of a work order-based maintenance management system (i.e. CMMS, Cardex or other)	Narrative description of the system [strengths/weaknesses, sample work orders, etc.]	Subjective	<b>5</b>

Discussion: The submission of an acceptable plan with documentation showing that there is a means in place for tracking time and costs is sufficient evidence to demonstrate compliance with the requirement. But how effective is the plan? The current CIP application form requires the submission of a plan description that “shows the program is both functioning and effective”. To ensure compliance with this provision, the evidence acceptable to the department would necessarily include a description of the formal system in place to track timing and costs as stated in regulation and a way to assess effectiveness.

Assessment: Information necessary to evaluate the effectiveness of a district’s process would include a narrative description of the process.

<i>Assessment Two</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Ability to manage maintenance efforts related to labor efforts.	Can the district provide the management reports listed below?	Objective	<b>15</b>
1. Produce a districtwide report showing total maintenance labor hours collected on work orders by type of work [e.g., scheduled, corrective, operations support, etc.] vs. labor hours available by month for the previous 12 months. 2. Produce a districtwide report that shows <del>a-the monthly work order completion rate (i.e., what percentage of work orders initiated in the month were completed in that month) comparison between the number of completed work orders and incomplete work orders</del> by month for the previous 12 months. 3. Produce a districtwide report showing the number of incomplete work orders sorted by age [30 days, 60 days, 90 days, etc.] and status. [deferred, awaiting materials, scheduled, etc.]			

Discussion: In addition to the description of a maintenance tracking system, the requirement to show the program is both functioning and effective presents a need for more detailed analysis of data to demonstrate full compliance. If *Assessment One* has been met and it is being adhered to adequately, this data should be readily available to compile and present to district management or the department for review.

Assessment: Information necessary to objectively evaluate the district's tools available for management of maintenance labor activity would be the listed reports. Reports could be in any format provided by the district's program as long as they provided the listed information.

<i>Assessment Three</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Ability to manage maintenance efforts related to preventive (i.e., scheduled) maintenance and corrective work.	Can the district provide the management reports listed below?	Objective	<b>10</b>
1. Provide a districtwide report that compares scheduled maintenance work order hours to unscheduled maintenance work order hours by month for the previous 12 months. 2. Provide a districtwide report with monthly trend data for corrective (unscheduled) work orders showing both hours and numbers of work orders by month for the previous 12 months.			

Discussion: A factor in determining the effectiveness of a preventive maintenance program is a comparison of the time and costs of scheduled maintenance in relation to the time and costs of unscheduled (corrective) maintenance. Conscientious adherence to a comprehensive preventive maintenance program will effectively reduce unscheduled repair time and costs. There are, of course, individual components that will not require preventive maintenance because useful life expectancies will not be extended, and replacement costs (including labor) do not justify the costs of maintenance. However, it is anticipated that the unscheduled repair time and cost component of total facility maintenance expenditures should decrease in relationship to increased levels of scheduled preventive maintenance effort. For a further level of sophistication, this same analysis could be provided on a facility-by-facility basis. This would assist in identifying problem buildings.

Assessment: Information necessary to objectively evaluate the district's tools available for management of maintenance categories would be the listed reports. Reports could be in any format provided by the district's program as long as they provided the listed information.

<i>Assessment Four</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Maintenance expenditures per building replacement value.	Average expenditure for maintenance for each of last five years. If $\% \leq 4$ , then $5 \times \% / 4$ If $\% > 4$ , then 5	Objective	<b>5</b>

Discussion: This is the original objectively assessed maintenance factor. It's point value has been adjusted downward another 5 points similar to the action taken prior to the FY2002 CIP cycle and for the same reasons. Management of maintenance efforts by expenditure levels can

be a useful tool for assessing the scope of the maintenance program but it has been difficult to ensure accurate comparative data is being used across all districts.

Assessment: Information needed would be annual district audits and insurance schedule of values.

**Criteria #2: Energy Management – 5 Points Total**

<i>Assessment Five</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Is the district engaged in reducing energy consumption in its facilities?	Narrative description of its process and energy reduction plan.	Subjective	<b>5</b>

Discussion: Energy *management* should address energy utilization with the goal of reducing consumption. This objective can be achieved through a number of methods, some of which will relate directly to a sound preventive maintenance program. Therefore, reporting on energy management ideally will represent more than just a table of figures comparing last year’s monthly consumption to this year’s monthly usage. While the figures will speak for themselves, an annual improvement would be supportive evidence of the overall effectiveness of the energy management component of the preventive maintenance program. It is important to note that energy dollar costs are not considered in this section because fluctuations in unit prices and delivery costs would obscure actual performance parameters.

Assessment: Information necessary to evaluate the effectiveness of a district’s program to reduce energy consumption would include a narrative description of its program.

**Criteria #3: Custodial Program – 5 Points Total**

<i>Assessment Six</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Is the district’s custodial program complete—is it based on quantities from building inventories and frequency of care based on industry practice?	Provide a narrative description of the district’s program developed using data related to inventories and standards of care.	Subjective	<b>5</b>

Discussion: Regular custodial care will help maintain the integrity and the appearance of a facility and provide custodial staff the opportunity to effectively become the front line of preventive maintenance for certain building systems. Thorough cleaning of hard floor surfaces (sweeping and mopping), for instance, will help preserve finishes such as wax or paint to make them last longer before renewing; this, in turn, will protect the flooring surface itself. In this same manner, regular vacuuming and periodic shampooing will prolong the useful service life of carpeting by removing dirt and foreign matter that would degrade or damage the pile and backing during use. As in the case of preventive maintenance discussed earlier, comprehensive schedules should be established and complete records should be kept and reported to the department. The scope of custodial services will be directly related to the type of surfaces and fixtures to be cleaned, the quantity of those items and the frequency of the care for each. It

would also include how the district has customized their program to deal with different surfaces and care needs on a site-by-site basis.

Assessment: Information necessary to evaluate the effectiveness of a district's program to manage custodial efforts based on data would include a narrative description of its program and a description of the data used to generate the program.

**Criteria #4: Maintenance Training – 5 Points Total**

<i>Assessment Seven</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Are maintenance personnel being trained in specific building systems?	<u>Provide a narrative description of the district's training program including but not limited to:</u> <u>Identification of training needs, trainings method, and numbers of staff receiving building-system-specific training in the past 12 months.</u> <del>Within the past 12 months, 90% of maintenance personnel completed at least one training event (video, seminar, class, etc.) in a building system specific to their facility (ies).</del>	<u>Subjective</u> <u>Objective</u>	<b>5</b>

Discussion: Ongoing preventive maintenance training for building or facility managers and maintenance staff is a significant factor in providing cost-effective, comprehensive building system and component maintenance. Districts that are not participating in this training at both levels cannot hope to keep up with the new products and technology that are becoming available to aid in their maintenance programs. ~~While a 90% threshold seems high~~An aggressive program would have up to 90% of maintenance personnel engaged in a system-specific training event each year, anything less can adversely affect the quality of the maintenance program. Facility or building managers need to stay abreast of current trends and innovations in building systems and components in order to make cost effective renewal or replacement budget recommendations. University seminars and professional conferences can provide important insight for the manager interested in promoting state-of-the-art improvements for the district's facilities. An effective manager will stay abreast of his staff's training needs and work to get them trained. Training could include systems or components that are scheduled for replacement, or have been replaced, are likely to include upgrades or changes for efficiency, life-cycle improvement or availability reasons as part of the process. Also, maintenance procedures may require new or different skills and techniques to fulfill warranty requirements and to ensure that new components will perform as expected for their entire useful life. Manufacturer or vendor training should be made available to the maintenance staff to attain these goals and objectives. In-service training as well as on-line training could be provided for the entire staff. Safety and equipment specific videos are an inexpensive training resource not used nearly as well as they could be.

Assessment: Information necessary to evaluate a district’s maintenance training program would be a ~~list of the maintenance personnel, their maintenance position in the district and evidence from the district of training events to include, class rosters, certificates, training work orders, etc. by individual~~ a narrative description of the district’s maintenance training program. Failure to document and report training of at least one training event in the past 12 months for 90 percent of all maintenance employees on specific systems included in a facility they maintain would indicate a deficiency in this requirement. Specific discussions related to how a district identifies training needs, methods they use to meet those needs and documentation of how many maintenance personnel receive system specific training would be reviewed.

**Criteria #5: Capital Planning (Renewal & Replacement) – 10 Points Total**

<i>Assessment Eight</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Does the district have a process for identifying capital renewal needs?	Does the district utilize renewal and replacement information to develop a long-range plan for capital renewal?	Subjective	5

Discussion: Renewal and replacement, as defined by the Alaska State Facility Administrator’s group, is the scheduled replacement of worn-out major building components and the retrofitting or replacement of obsolete and/or inefficient building systems. The premise for this concept is that all building systems will deteriorate or fail to an extent that will make repair impractical. Planning and budgeting for these eventualities is instrumental in managing school facilities to accomplish their fundamental purpose of effectively housing education programs. The department has developed an MS Excel based tool which allows facility managers and maintenance staff to formulate a renewal schedule by simply entering the year of installation for a given system, and the anticipated life remaining before renewal or replacement is required. The form then calculates a matrix schedule of capital needs over a six-year period, as well as anticipated costs beyond that point based on the current replacement value for the building or facility.

Assessment: Information necessary to evaluate the completeness of a district’s process would include a narrative description of the process.

<i>Assessment Nine</i>	<i>Benchmark or Standard</i>	<i>Type</i>	<i>Points</i>
Is the district proactive in requesting funds for capital renewal?	Does the six-year CIP plan list capital needs for each main school facility over 5 years of age?	Objective	5

Discussion: Alaska school facility managers are presented with the ongoing challenge of evaluating current system/component conditions in relation to future needs under the constraints of inconsistent funding resources for capital projects. It is that very inconsistency which prevents school districts from setting aside reserves to fund for future requirements. However, state statute and good facility management practices still require districts to define capital project

needs based on forecasts for renewal and replacement of building systems. Defining costs by system over a six-year period allows the maintenance or facility manager to easily move capital needs from the renewal and replacement schedule into the six-year capital plan. The total cost anticipated for each system that is identified in the first year of the 6-year projection should be justified in the detailed scope of work and project budget as required by AS 14.11.011(b)(1).

Assessment: Information necessary to evaluate the districts activity in requesting funds for capital renewal include the annual Six-Year Capital Improvement Plan (EED Form #05-96-006) and the list of main school facilities from the EED Facilities Database.

### Conclusion

The revisions and scoring construct described in this paper has the net effect of reducing the subjective assessments related to Maintenance Effort from 25 points to 20 points and spreads that subjective assessment over four of the five elements of a preventive maintenance and facility management program (see the attached Subjective Rating Form). The objective assessments related to the Maintenance Effort rise from 10 points to 40 points with measurements most heavily weighted in the maintenance management element (see the attached Objective Rating Form).