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Analysis of Essential Programs and Services Components:
Operation and Maintenance of Physical Plant

Report to

Maine Department of Education

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Background

The purpose of this report is to provide data analysis and recommendations for the Operation and Maintenance of Physical Plant (OMP) component within Maine's Essential Programs and Services (EPS) education cost model. The EPS model was implemented in FY 2006 as a way of estimating the cost of providing an adequate basic education, with consideration of the varying characteristics of each school and district that impact costs. The goal of EPS is to ensure that all students are provided with equitable resources for learning regardless of where they live. The model accounts for numerous factors such as student demographics, enrollment, geographic size, and regional differences in labor markets. The OMP component in this report is considered "system-wide" as it allocates the same amount of funding per attending pupil in all districts.

In the initial cost model, the per-pupil funding amounts for each of these components was set in general alignment with historical district expenditures. In other words, past spending was used as a guideline for establishing the appropriate budget allocation. In subsequent years, the initial per-pupil amount was annually inflated by a consumer price index. However, in FY 2009 the per-pupil funding amount for Facilities Operation and Maintenance was reduced by 5% and the System Administration amount was reduced by half as part of a broader policy initiative to promote school district reorganization. Since that year, the practice of annually inflating the amounts (from the revised and lower baseline amounts) was resumed. The most recent annual inflation factor

(from FY14 to FY15) was 1.6%.

The study was conducted using expenditure data from FY2015 to analyze the amounts and patterns of spending in these cost areas. In FY 2015, the Operation and Maintenance of Physical Plant component allocated \$1,039 per preK-8 pupil and \$1,235 per grade 9-12 pupil. Additional details on the methods, assumptions, and limitations are included in the sections below.

Operation and Maintenance of Physical Plant (OMP) Expenditures

The Operation and Maintenance of Physical Plant (OMP) component is intended to fund “Activities concerned with keeping the physical plant open, comfortable, and safe for use, and keeping the grounds, buildings, and equipment in effective working condition and state of repair. This includes the activities of maintaining safety in buildings, on the grounds, and in the vicinity of schools” (Accounting Handbook, 2016). For the purposes of Essential Programs and Services review, expenditures categorized as “facilities acquisition and construction” are not included, although these amounts are included in a budget category called operations and maintenance in annual state expenditure reporting. Thus the amounts in this analysis are not directly comparable to state operations and maintenance spending totals, although the amount of the discrepancy is small (about \$400K in facilities acquisition and construction expenses in FY2015).

In FY2015 the Operation and Maintenance of Physical Plant expenditure category totaled \$256.0M and accounted for 11.2% of all Maine public school expenditures. Spending in this category has increased 10.0% since FY2010, when Maine schools spent \$232.8M on their facilities. Over the same time interval consumer inflation increased 9%, approximately the same amount. Table 1 summarizes these expenditures by type and

Appendix A details expenditures by function.

Table 1: FY2010 and FY2015 Operation and Maintenance Expenditures by Category

Description	FY2010	%	FY2015	%
Salaries, wages, stipends	71,661,939	31%	72,820,358	28%
Employee benefits	25,549,135	11%	28,466,063	11%
Purchased services	55,833,095	24%	66,621,850	26%
Fuel (energy except electricity)	27,868,293	12%	34,564,084	14%
Electricity	22,964,217	10%	20,917,387	8%
Supplies and equipment	11,865,487	5%	11,909,049	5%
Debt Service	13,879,481	6%	15,740,877	6%
Property	2,079,341	1%	3,699,401	1%
Other	1,082,724	0.5%	1,275,309	0.5%
Total	232,783,714	100%	256,014,378	100%

Districts also generated revenues from their physical plant activities, which served to offset their expenses. Table 2 provides a summary of revenues as well as the statewide net expenditure for all Maine public school districts (including charter schools and tribal districts) in FY2015.

Table 2. OMP Revenues and Net Expenditures, FY 2015

Revenue Type	FY15 Amount	% of Total Revenue
Facility Rentals	\$1,752,798	93%
Other Sales, Refunds, and Adjustments	\$122,489	7%
Total Revenue	\$1,875,287	100%
Total Expenditures (from Table 1)	\$256,014,378	
Total Net Expenditures	\$254,138,991	

Next, facilities expenditures on schools were analyzed by district to determine the spending per attending student and to compare spending on school facilities to the EPS allocated rates. Because the EPS formula allocates separate per-pupil amounts for preK-8 students and grades 9-12 students, these expenditures are calculated for each grade level.

Systemwide expenses that span grade levels or cannot be readily attributed to specific grade level(s) were also calculated. Public charter schools, schools in unorganized territories, and the Maine Indian Education units are excluded from these analyses.

Districts spent \$56,140,794 on systemwide operation and maintenance of physical plants in FY2015, representing 22% of the total OMP spending. On a per-pupil basis, this system overhead operations expense is \$319 per preK-12 student attending a Maine public non-charter school. In the analyses that follow, these costs are distributed proportionally across K-8 and 9-12 grade levels in each district based on the number of students at each level, and are thus included in the totals.

Overall, expenditures for preK-8 operations and maintenance were \$1,401 per preK-8 pupil, or 135% of the FY15 EPS per pupil allocation of \$1,039, as shown in Table 3. Spending per preK-8 pupil was about the same overall in districts with 300 or more enrolled students, between \$1,250 and \$1,400 per preK-8 pupil. Districts with less than 300 enrolled students spent significantly more at \$1,953 per preK-8 student. The preK-8 school size category with the smallest per-pupil spending overall (\$1,255 per pupil in districts with enrollments above 3,000) spent 21% more than the EPS per pupil allocation. Only 11.8% of the SAUs with K-8 expenditures had spending at or below the per-pupil EPS allocation; the remaining 88.2% spent more than \$1,039 per K-8 pupil.

Table 3: FY2015 School Operations and Maintenance Per Pupil Expenditures in Grades preK-8, by Enrollment Size

	Number of preK-8 Students Enrolled in SAU				
	1-300	300-1,000	1,000-3,000	Over 3,000	Overall
Number of SAUs	80	53	45	2	180
Total Number of pK-8 Students	8,693	31,340	73,772	8,743	122,548
Avg. pK-8 Enrollment	109	591	1639	4372	681
Overall Expenditure Per pK-8 Pupil in Size Category	\$1,953	\$1,386	\$1,359	\$1,255	\$1,401
Range of SAU Per pK-8 Pupil Amounts	\$811 to \$8,865	\$747 to \$7,144	\$866 to \$2,669	\$1,113 to \$1,373	\$747 to \$8,865
% of EPS Rate	188%	133%	131%	121%	135%

Spending for operation and maintenance of physical plants in grades 9-12 was \$1,580 per pupil overall, or 128% of the EPS allocation of \$1,235 per grades 9-12 pupil, as shown in Table 4.

Table 4. FY2015 School Operations and Maintenance Per Pupil Expenditures in Grades 9-12, by Enrollment Size

	Number of 9-12 Students Enrolled in SAU			
	1-300	300-1,000	1,000-3,000	Total
Number of SAUs	43	56	9	108
Total Number of 9-12 Students	6,202	32,777	11,001	49,980
Avg. Enrollment	144	585	1222	463
Overall Expend. for Size Category Per 9-12 Pupil	\$2,332	\$1,614	\$1,217	\$1,616
Range of SAU Per 9-12 Pupil Amounts	\$23 to \$6,757	\$1,040 to \$2,606	\$986 to \$1,788	\$23 to \$6,757
% of EPS Rate	189%	131%	99%	131%

Per-pupil cost differences by enrollment size were also large in secondary schools. The smallest districts (less than 300 secondary students) spent \$2,332 per high school pupil compared to \$1,217 in districts with over 1,000 students, approximately the same amount as the EPS allocation of \$1,235 per high school pupil. However, a large majority of 82.9% of districts spent more per grade 9-12 pupil than the EPS allocation.

These findings of interdistrict variation and costs that are higher than allocations are generally consistent with those in the last MEPRI review in 2011. Per pupil expenditures for K-8 ranged from \$1,040 in districts with over 3,000 grades K-8 students to \$1,737 in those with 300 or less, all higher than the FY 2010 EPS allocation of \$962 per K-8 pupil. Grades 9-12 expenditures in FY 2010 ranged from \$1,158 in districts with over 1,000 grades 9-12 students to \$2,074 in those with 300 or less, also all higher than the EPS allocation of \$1,143 per 9-12 pupil (MEPRI, 2011). The amount spent relative to the EPS per pupil allocations has remained generally consistent across most size groups, as seen in Table 5.

Table 5. Per-Pupil OMP Spending as a Percent of EPS, FY2010 and FY2015

	Per pK-8 Pupil OMP Spending (Percent of EPS Allocation)		Per 9-12 Pupil OMP Spending (Percent of EPS Allocation)	
	FY2010	FY2015	FY2010	FY2015
<i>EPS Alloc.</i>	\$962	\$1,039	\$1,143	\$1,235
1 to 300	\$1,737 (181%)	\$1,953 (188%)	\$2,074 (181%)	\$2,332 (189%)
300 - 1000	\$1,252 (130%)	\$1,386 (131%)	\$1,356 (119%)	\$1,614 (131%)
1000 - 3000	\$1,204 (125%)	\$1,359 (121%)	\$1,158 (101%)	\$1,217 (99%)
3000 +	\$1,040 (108%)	\$1,255 (135%)	--	--

In a final analysis, average per-pupil spending amounts were calculated based on the governance type of the districts. This seeks to evaluate whether there are systematic differences in the costs of maintaining facilities based on the way the school communities

are organized into districts. Table 6 demonstrates that there is more variation in enrollments and per pupil spending within districts of the same governance type than between groups of districts with different structures. In the table, none of the average per pupil spending amounts are significantly different across groups except as noted for K-8.

Table 6. Average Per Pupil OMP Spending by District Governance Structure

	Elementary (K-8)			Secondary (9-12)		
	N	Mean K-8 Per-pupil Spending (Range)	Average K-8 Enrollment Per District (Range)	N	Mean 9-12 Per-pupil Spending (Range)	Average 9-12 Enrollment Per District (Range)
AOS Member Units, Unions, and CSDs	66	\$2,150* (\$747 to \$7,975)	222 (3 to 1,782)	16	\$1941 (\$1,114 to \$3,325)	275 (72 to 678)
Municipalities	44	\$1825 (\$867 to \$8,865)	949 (2 to 4,746)	28	\$1805 (\$986 to \$6,023)	646 (30 to 2,083)
RSUs and MSADs	70	\$1531* (\$809 to \$7,144)	945 (3 to 2,540)	63	\$1968 (\$1,040 to \$6,757)	436 (21 to 1,139)

** Difference between average K-8 per pupil spending is significantly different between the AOS/Union/CSD group and the RSU/MSAD group. All other K-8 and 9-12 per pupil differences are not significant.*

Conclusions and Recommendations

In general, these analyses demonstrate that districts are spending well above the amount allocated within the EPS model on operation and maintenance of their physical plants. Smaller districts spend more per pupil than larger ones, though there is wide variation in per pupil spending even when comparing districts of similar enrollments.

Some of this variation can be explained by the conventional wisdom that maintenance costs are heavily influenced by the number and size of schools that are

operated. For example, two districts could have similar numbers of K-8 students, with one operating multiple smaller elementary schools and one with a single larger elementary school. The unit with one large school would be expected to have much lower per pupil maintenance costs than one with more schools. Because expenditure data are currently reported at the grade level cost center (K-8, 9-12, or systemwide) rather than by school, further analysis of maintenance costs by school is not yet feasible. However, changes underway in school district expenditure reporting requirements will soon enable school-level analysis. By the next EPS review of this component in FY2019, adequate data should be available to explore more nuanced differences in districts' expenditures for operation and maintenance of physical plants.

In the meantime, it is clear that districts are finding it necessary to spend significantly more than they are being allocated on facilities operation and maintenance, and that this has been the case for several years. It is recommended that the EPS cost model be updated to provide an allocation that is closer to districts' needs. Underfunding of facilities needs may lead to local decisions to defer necessary maintenance, and thus create longer-term cost increases as small problems become bigger and costlier to fix. The amount of increase is subject to policymaker determinations, and different approaches could address varying perspectives or goals. One approach would be to reinstate the 5% cut to OMP allocations that was made in FY09 as part of school district reorganization policy (with or without inflation adjustment for the intervening years, which would equate to about 6%). Other approaches could involve establishing updated rates based on spending in districts that have a district organizational profile that fits policy goals, such as those meeting certain total enrollment targets and/or adopting governance structures that

policymakers wish to encourage. Appendix B provides additional detail on average per-pupil expenditures by grade level enrollment and governance type. Policymakers may have other priorities or considerations in addition to these possibilities.

Appendix A: Operation and Maintenance of Physical Plant Expenditures by Function

Description	Amount	Percent of Total
Expenditures by Function		
Care and Operation of Buildings	\$89,161,923	34.8%
Operation and Maintenance - General	\$82,706,264	32.3%
Maintenance of Buildings	\$54,453,663	21.3%
Capital Renewal and Renovation	\$12,927,563	5.0%
Capital Enhancement and Improvement	\$9,473,701	3.7%
Care and Upkeep of Grounds	\$5,394,799	2.1%
Security & Safety	\$995,458	0.4%
Care and Upkeep of Equipment	\$578,178	0.2%
Vehicle Operation and Maintenance (other than Student Transportation Vehicles)	\$322,829	0.1%
Total Expenditures	\$256,014,378	100%

Appendix B: Per Pupil OMP Spending by Grade Level Enrollment in District and SAU Governance Type, FY2015

Table B1. Average OMP Expenditure Per K-8 Pupil by SAU Governance Type and Size, FY2015*

K-8 Enrollment	AOS, Union, or CSD		Municipality		RSU or MSAD	
	N	Avg. Per Pupil	N	Avg. Per Pupil	N	Avg. Per Pupil
1 to 300	51	\$2,386	18	\$2,632	11	\$2,788
300 - 1000	13	\$1,396	10	\$1,199	30	\$1,542
1000 - 3000	2	\$1,032	14	\$1,319	29	\$1,410
3000 +			2	\$1,244		--

Comparison: FY2015 K-8 Per Pupil Allocation = \$1,039

Table B2. Average OMP Expenditure Per 9-12 Pupil by SAU Governance Type and Size, FY2015

Gr. 9-12 Enrollment	AOS, Union, or CSD		Municipality		RSU or MSAD	
	N	Avg. Per Pupil	N	Avg. Per Pupil	N	Avg. Per Pupil
1 to 300	10	\$2,135	8	\$2,763	25	\$2,425
300 - 1000	6	\$1,617	14	\$1,562	36	\$1,638
1000 - 3000		--	6	\$1,094	3	\$1,471

Comparison: FY2015 9-12 Per Pupil Allocation = \$1,235