
Survey of School Districts

As part of the best practices review on preventive maintenance for local government buildings, the Office of the Legislative Auditor surveyed the 347 independent and special school districts in Minnesota. The aggregate results of school districts' responses are available [here](#).

The October 1999 survey went to facility managers in those school districts for which we had a facility manager's name. For other districts, we mailed surveys to the business officer or, if we did not have the business officer's name, to the superintendent. We received responses from 308 of the 347 independent and special school districts in Minnesota, for a response rate of 88.8 percent.

We asked school districts about their preventive maintenance practices during the 1998-99 school year. The survey also included questions on planning and funding preventive maintenance as well as on obstacles limiting school districts' ability to perform preventive maintenance.

Survey results on preventive maintenance in Minnesota cities and counties are also available on our website. For additional information on survey methodology, see Appendix A in the report.

Minnesota Office of the Legislative Auditor

Managing Preventive Maintenance for Local Government Buildings: A Best Practices Review

School District Survey

Name: _____

Title: _____

Telephone: _____

RESPONSE RATE:

We received responses from 308 of the 347 independent and special school districts in Minnesota, for a response rate of 88.8 percent.

Defining Preventive Maintenance—For this study, preventive maintenance means activities to extend the useful life of a building's components, including its roofing, plumbing, heating, ventilation, air conditioning, electrical systems, exterior and interior construction and finishing. Preventive maintenance activities are those intended to prevent breakdowns, and they include periodic inspections, scheduled minor and major maintenance, and minor repairs. They may also include predictive testing to determine building components' remaining useful life. Preventive maintenance may be funded from the general fund or other funds.

What Is and Is Not Included—Preventive maintenance does *not* include daily custodial work such as sweeping, mopping, emptying wastebaskets, cleaning restrooms, and moving furniture. Unless otherwise specified, this survey excludes maintenance to preserve grounds, playgrounds, and athletic facilities.

Preventive maintenance includes regularly scheduled painting, resurfacing, lubricating, replacing parts, inspecting, testing, and renewing facility components. For instance, vacuuming a carpet is general maintenance; periodically shampooing the carpet according to manufacturers' recommendations is preventive maintenance.

As an everyday example, filling a car with gasoline and checking the oil level are general maintenance. Changing the oil and oil filter every 5,000 miles as recommended by the car manufacturer is preventive maintenance.

Defining Deferred and Emergency Maintenance—Deferred maintenance refers to projects that were needed to maintain components' useful life or correct existing problems but were postponed due to lack of resources. Emergency maintenance is unscheduled work requiring immediate action to repair or replace failed components, such as for power or heat loss.

Completing This Survey—Unless otherwise specified, survey questions pertain to the 1998-99 school year. The questions apply only to buildings owned, not leased, by the district. If necessary, please consult with other staff in your district to answer the questions.

1. Does a districtwide office oversee facility maintenance for your school district? *(Mark one answer.)*
(N=290)

Number Percent

- | | | |
|-----|-------|---|
| 236 | 81.4% | 1. Yes, a districtwide office provides oversight of maintenance. |
| 42 | 14.5 | 2. No, site-based management oversees maintenance in each building. |
| 12 | 4.1 | 3. Other <i>(Please specify.)</i> _____ |

2. In managing preventive maintenance, does your school district use the following practices?

(Mark one answer for each practice.)

Practice	For Most Building Components		For Some Building Components		We Do Not Use This Practice	
	Number	Percent	Number	Percent	Number	Percent
a. Maintain a current list of buildings' components and equipment (N=305)	144	47.2%	118	38.7%	43	14.1%
b. Schedule preventive maintenance tasks according to manufacturers' recommendations or at other set intervals (N=306)	160	52.3	118	38.6	28	9.2
c. Prepare checklists of preventive maintenance tasks for employees (N=304)	115	37.8	110	36.2	79	26.0
d. Maintain supply of materials and spare parts to allow timely maintenance (N=306)	124	40.5	166	54.2	16	5.2
e. Analyze maintenance records to identify problems before components fail (N=305)	57	18.7	147	48.2	101	33.1
f. Inspect building systems and equipment prior to warranty expirations (N=307)	128	41.7	125	40.7	54	17.6
g. Perform preventive maintenance activities according to formal written plans (N=304)	62	20.4	126	41.4	116	38.2
h. Keep comprehensive records of preventive maintenance activities and their costs (N=306)	63	20.6	133	43.5	110	35.9
i. Develop guidelines for planning and budgeting preventive maintenance (N=303)	85	28.1	133	43.9	85	28.1

3. Have any obstacles limited your ability to do preventive maintenance?

Number Percent (N=300)

72 24.0% 1. No. (Go to Question 4.)

228 76.0 2. Yes, we have had problems with the following: (Please indicate how serious each obstacle has been for your school district.)

Obstacles	Very Serious		Somewhat Serious		Not Very Serious, If At All	
	Number	Percent	Number	Percent	Number	Percent
a. Numerous emergency or unscheduled major repairs that preclude preventive maintenance (N=225)	31	13.8%	114	50.7%	80	35.6%
b. Not enough staff hours available for the necessary work (N=225)	90	40.0	116	51.6	19	8.4
c. Labor shortages in the region (N=221)	37	16.7	85	38.5	99	44.8
d. Too little training or expertise to implement preventive maintenance (N=225)	18	8.0	128	56.9	79	35.1
e. Competition with other district expenditures for limited dollars (N=225)	120	53.3	80	35.6	25	11.1
f. Funding new construction without considering resulting increased maintenance needs (N=220)	48	21.8	75	34.1	97	44.1

Question 3, continued ...

<u>Obstacles</u>	<u>Very Serious</u>		<u>Somewhat Serious</u>		<u>Not Very Serious, If At All</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
g. School board has not made preventive maintenance a high priority (<i>N</i> =220)	26	11.8%	85	38.6%	109	49.5%
h. Inexperience presenting building maintenance information to school board (<i>N</i> =222)	5	2.3	62	27.9	155	69.8
i. Difficulty hiring contracted maintenance services during the traditional three-month summer break (<i>N</i> =224)	16	7.1	89	39.7	119	53.1
j. Limits imposed by the state on the property taxes school districts may levy (<i>N</i> =225)	83	36.9	104	46.2	38	16.9
k. Funding restrictions that dissuade spending on preventive maintenance, such as those limiting spending to only certain purposes (<i>Please specify.</i>) (<i>N</i> =218)	68	31.2	92	42.2	58	26.6
l. State or local requirements related to maintaining buildings or planning their maintenance, such as building codes (<i>Please specify.</i>) (<i>N</i> =215)	24	11.2	73	34.0	118	54.9
m. Other obstacles (<i>Please specify.</i>) (<i>N</i> =51)	12	23.5	18	35.3	21	41.2

4. Do you monitor building conditions in the district?All RespondentsNumber Percent (*N*=305)

- 29 9.5% 1. No. (*Go to Question 5.*)
- 276 90.5 2. Yes, we do the following: (*Mark all that apply.*)

Respondents
Monitoring

Building ConditionsNumber Percent (*N*=278)

- | | | | | | |
|-----|------|-----|-------|----|--|
| 160 | 52.5 | 160 | 57.6% | a. | Keep a current list of building components and equipment |
| 254 | 83.3 | 254 | 91.4 | b. | Assess the condition of buildings and major components at least once every three years |
| 207 | 67.9 | 207 | 74.5 | c. | Train employees to identify maintenance needs |
| 73 | 23.9 | 73 | 26.3 | d. | Use written guidelines to perform the assessments |
| 167 | 54.8 | 167 | 60.1 | e. | Analyze the remaining useful life of building components |
| 139 | 45.6 | 139 | 50.0 | f. | Rely on standardized inspections for consistent results over time |
| 16 | 5.2 | 16 | 5.8 | g. | Other (<i>Please specify.</i>) _____ |

5. In your opinion, what was the overall condition of your district's facilities in 1998-99? (Using the definitions below, circle one answer that best describes overall conditions for each component or facility.)

Good: Components are structurally sound and only general maintenance and minor repair are required; little or no deferred maintenance exists. Few systems fail, and they allow uninterrupted daily use of the facilities.

Fair: Components show signs of slight deterioration and some corrective maintenance and major repairs are required; some deferred maintenance exists. Systems fail occasionally, causing some interruptions in daily use of the facilities.

Poor: Components show signs of severe deterioration and corrective maintenance and emergency repairs are often required; deferred maintenance is extensive. Systems fail frequently, causing ongoing interruptions in daily use of the facilities.

Component or Facility	Good		Fair		Poor		Uncertain or Don't Know		Schools Did Not Have	
	#	%	#	%	#	%	#	%	#	%
a. Heating, ventilation, and air-conditioning systems (N=294)	117	39.8%	149	50.7%	28	9.5%	0	0.0%	0	0.0%
b. Plumbing systems (N=293)	104	35.5	158	53.9	30	10.2	1	0.3	0	0.0
c. Roofs (N=295)	134	45.4	133	45.1	28	9.5	0	0.0	0	0.0
d. Elevators (N=292)	161	55.1	28	9.6	6	2.1	2	0.7	95	32.5
e. Electrical and lighting systems (N=293)	161	54.9	112	38.2	20	6.8	0	0.0	0	0.0
f. Life-safety systems, such as fire alarms (N=295)	240	81.4	52	17.6	3	1.0	0	0.0	0	0.0
g. Interior finishes, such as walls, floors, ceilings, doors (N=293)	137	46.8	136	46.4	20	6.8	0	0.0	0	0.0
h. Structural components, such as exterior facades, foundations, windows (N=295)	116	39.3	149	50.5	30	10.2	0	0.0	0	0.0
i. Parking lots and roadways (N=295)	107	36.3	126	42.7	57	19.3	0	0.0	5	1.7
j. Grounds, playgrounds, and athletic fields (N=295)	123	41.7	147	49.8	25	8.5	0	0.0	0	0.0

6. Do you provide periodic reports on building conditions and needs to the superintendent and school board?

All Respondents

Number Percent (N=302)

- | | | |
|-----|-------|---|
| 69 | 22.8% | 1. No. (Go to Question 7.) |
| 233 | 77.2 | 2. Yes, the reports include the following: (Mark all that apply.) |

Respondents
Providing Reports
Number Percent (N=233)

- | | | | | |
|-----|------|-----|-------|--|
| 57 | 18.9 | 57 | 24.5% | a. Number and replacement value of buildings |
| 96 | 31.8 | 96 | 41.2 | b. Condition ratings of the buildings |
| 191 | 63.2 | 191 | 82.0 | c. Estimated costs of building deficiencies |
| 152 | 50.3 | 152 | 65.2 | d. Needs for replacement of building components based on annual life-cycle funding |
| 158 | 52.3 | 158 | 67.8 | e. Plan for managing deferred maintenance projects |

7. In considering decisions to maintain, repair, or replace building components, which of the following practices do you use? (Mark one answer for each practice.)

Practice	For Most Building Components		For Some Building Components		We Do Not Use This Practice	
	Number	Percent	Number	Percent	Number	Percent
a. Determine life-cycle costs, including initial cost, annual maintenance and energy costs, and salvage value (<i>N</i> =272)	60	22.1%	121	44.5%	91	33.5%
b. Estimate repair and replacement costs using a cost-estimating system (<i>N</i> =275)	92	33.5	125	45.5	58	21.1
c. Use predictive maintenance, such as vibration analysis, to project when components are likely to fail (<i>N</i> =273)	17	6.2	55	20.1	201	73.6

8. When replacing major building components, how frequently does the school district do the following? (Mark one answer for each practice.)

Practice	Consistently		Occasionally		Rarely, If Ever	
	Number	Percent	Number	Percent	Number	Percent
a. Purchase components designed to allow low-cost maintenance over time (<i>N</i> =301)	136	45.2%	142	47.2%	23	7.6%
b. Involve personnel with maintenance expertise in purchasing and/or design decisions (<i>N</i> =301)	181	60.1	102	33.9	18	6.0

9. Does your school district have an indoor air quality (IAQ) program?

All Respondents

Number Percent (*N*=303)

33 10.9% 1. No. (*Go to Question 10.*)

270 89.1 2. Yes, the program includes the following: (*Mark all that apply.*)

Respondents With

an IAQ Program

Number Percent (*N*=271)

239 78.9 239 88.2% a. A person designated as IAQ coordinator

204 67.3 204 75.3 b. Use of prepared materials, such as "Tools for Schools," to develop an IAQ program

201 66.3 201 74.2 c. An IAQ assessment with an annual review to identify problems

157 51.8 157 57.9 d. IAQ training for in-house staff or information for contractors whose functions could affect indoor air

187 61.7 187 69.0 e. An IAQ plan for facility operations and maintenance

171 56.4 171 63.1 f. Procedures for managing activities, such as painting or pest control, that could harm air quality

221 72.9 221 81.5 g. Procedures for responding to IAQ complaints

111 36.6 111 41.0 h. School board review of IAQ program status and needs

10. Which of the following training does your school district require for maintenance employees?

(This is training beyond that required for licenses they may hold, such as boiler licenses. Mark one answer for each type of training required, regardless of whether it has been successfully completed.)

Training	Required of Employees Expected to Perform These Tasks		Not Required of Employees Expected to Perform These Tasks		Not Applicable, Maintenance Employees Do Not Perform These Tasks	
	Number	Percent	Number	Percent	Number	Percent
a. Management and leadership skills (N=280)	58	20.7%	139	49.6%	83	29.6%
b. Budget development (N=280)	38	13.6	87	31.1	155	55.4
c. Preventive maintenance activities (N=284)	186	65.5	85	29.9	13	4.6
d. Communication skills (N=277)	89	32.1	136	49.1	52	18.8
e. Public presentation skills and techniques (N=278)	26	9.4	116	41.7	136	48.9
f. New facility technologies (N=281)	103	36.7	105	37.4	73	26.0
g. Energy conservation strategies (N=280)	130	46.4	112	40.0	38	13.6
h. OSHA-required training, such as asbestos awareness or the use of personal protective equipment (N=287)	275	95.8	8	2.8	4	1.4
i. Diagnosing causes of maintenance problems (N=277)	168	60.6	93	33.6	16	5.8
j. Analyzing the remaining useful life of facility components and equipment (N=280)	79	28.2	127	45.4	74	26.4
k. General maintenance and minor repairs (N=286)	219	76.6	62	21.7	5	1.7

FINANCING

Unless otherwise specified, the following questions pertain to financing all facility maintenance, meaning general maintenance and major repairs in addition to preventive maintenance. Facilities include grounds, playgrounds, parking lots, and athletic facilities, in addition to buildings. If necessary, please consult with other staff in your district to answer these questions.

11. Does your district develop a capital plan for funding maintenance and replacement of facility components?

All Respondents			
Number	Percent	(N=301)	
46	15.3%	1. No. (Go to Question 12.)	
255	84.7	2. Yes, the plan includes the following: (Mark all that apply.)	
		Respondents With a Capital Plan	
		Number	Percent (N=257)
232	77.1	232	90.3%
125	41.5	125	48.6
212	70.4	212	82.5
165	54.8	165	64.2
214	71.1	214	83.3
		a.	Capital needs based on priorities identified in a long-range plan for facility maintenance
		b.	Cost estimates based on the remaining useful life of major components
		c.	An outlook covering several years into the future
		d.	Provisions for preventive maintenance activities
		e.	Annual updates

- 12. What do you estimate was the current replacement value of your district's facilities in the 1998-99 school year?** *(By current replacement value, we mean the amount needed to reproduce your facilities and equipment at current market prices. Insurance policies typically include "current insured value," which may be used here.)* (N=229)

MeanMedian

\$ 52,380,374.80 \$ 22,500,000.00 Current replacement value

- 13. Some local governments decide how much to reinvest in maintaining their facilities by calculating a percentage of their facilities' current replacement value. Does your school district do this?** *(Mark one.)* (N=290)

Number Percent283 97.6% 1. No. *(Go to Question 14.)*

7 2.4 2. Yes.

- 13.(a) If yes, what was this percentage for the 1998-99 school year?** (N=7)

MeanMedian

3.12% 2.00% of current replacement value for maintenance

- 14. Has your school district used "guaranteed energy savings contracts" to finance facility improvements and maintenance?** (N=298)

Number Percent171 57.4% 1. No. *(Go to Question 15.)*127 42.6 2. Yes. Based on my experience the contracts' effectiveness was: *(Mark one answer that best describes your opinion of their effectiveness in each area.)*

	<u>Very Effective</u>		<u>Somewhat Effective</u>		<u>Neither Effective Nor Ineffective</u>		<u>Somewhat Ineffective</u>		<u>Very Ineffective</u>		<u>Uncertain or Don't Know</u>	
	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>
a. For improving facilities (N=126)	39	31.0%	62	49.2%	11	8.7%	5	4.0%	5	4.0%	4	3.2%
b. For saving money to pay for improvements* (N=129)	28	21.7	59	45.7	17	13.2	9	7.0	7	5.4	9	7.0

* The number of respondents to this question exceeds the number indicating they used guaranteed energy savings contracts because two respondents who failed to indicate that they used such a contract responded to the remainder of Question 14.

- 15. To the best of your knowledge, what was the dollar value of *deferred* maintenance backlog in your school district by the end of 1998-99?** *(Include costs of maintenance projects you had identified as necessary but that had been postponed due to lack of resources. Exclude costs for new construction, building additions, or projects not intended to correct existing deficiencies.)* (N=239)

MeanMedian

\$ 3,545,665.03 \$ 240,500.00 in deferred maintenance

If you do not actively manage preventive maintenance for at least some building components, as indicated by your responses to Question 2 on page 2, please skip to Question 28.

16. Does your school district fund preventive maintenance?Number Percent (N=285)

- 62 21.8% 1. No. (*Go to Question 18.*)
- 223 78.2 2. Yes. (*Please indicate how consistently the school district does the following:*)

<u>Practice</u>	<u>Consistently</u>		<u>Sometimes</u>		<u>Rarely, If Ever</u>	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
a. Each year we set aside money for preventive maintenance of our buildings. (N=221)	131	59.3%	74	33.5%	16	7.2%
b. We set priorities for preventive maintenance that do not compete for funding with capital projects. (N=213)	76	35.7	106	49.8	31	14.6
c. We set aside money for preventive maintenance based on the annual depreciation of building systems and equipment. (N=210)	35	16.7	53	25.2	122	58.1
d. We rely on reserved accounts (other than the operating capital reserve) to fund preventive maintenance. (N=200)	24	12.0	65	32.5	111	55.5
e. Other (<i>Please specify.</i>) (N=8)_____	2	25.0	1	12.5	5	62.5

17. Based on your experiences, what practices for funding preventive maintenance do you find particularly effective?

PREVENTIVE MAINTENANCE PLANNING

The following questions pertain to planning and managing preventive maintenance for district buildings.

18. Did you have a written, long-range plan for maintenance in 1998-99 that extended out at least three to five years?All RespondentsNumber Percent (N=290)

- 135 46.6% 1. No. (*Go to Question 19.*)
- 155 53.4 2. Yes, it included the following: (*Mark all that apply.*)

Respondents With
a Written,
Long-Range Plan
Number Percent (N=156)

- | | | | | | |
|-----|------|-----|-------|----|--|
| 67 | 23.1 | 67 | 42.9% | a. | An inventory of the condition and expected useful life of buildings and their components |
| 136 | 46.9 | 136 | 87.2 | b. | Expected maintenance projects, including preventive maintenance |
| 141 | 48.6 | 141 | 90.4 | c. | An estimate of costs to maintain or replace components |
| 76 | 26.2 | 76 | 48.7 | d. | Projected changes in student populations and building uses |
| 101 | 34.8 | 101 | 64.7 | e. | Deferred maintenance projects listed in priority order |
| 4 | 1.4 | 4 | 2.6 | f. | Other (<i>Please specify.</i>) _____ |

19. Do you have an annual building maintenance plan to identify preventive maintenance expected for the coming year?

All Respondents

Number Percent (N=287)

- | | | |
|-----|-------|--|
| 96 | 33.4% | 1. No. (<i>Go to Question 20.</i>) |
| 191 | 66.6 | 2. Yes, the plan includes the following: (<i>Mark all that apply.</i>) |

Respondents
With an
Annual Plan

Number Percent (N=191)

- | | | | | |
|-----|------|-----|-------|---|
| 175 | 61.0 | 175 | 91.6% | a. A workplan of projects expected to be completed in the year |
| 70 | 24.4 | 70 | 36.6 | b. Plans to reduce the backlog of deferred maintenance |
| 54 | 18.8 | 54 | 28.3 | c. An analysis of labor needs, including labor for unscheduled repairs and emergencies |
| 75 | 26.1 | 75 | 39.3 | d. A mid-year review and updating of the building maintenance plan |
| 100 | 34.8 | 100 | 52.4 | e. Links between the building maintenance plan and the budget for maintenance |
| 70 | 24.4 | 70 | 36.6 | f. Guidelines for responding to emergencies and unanticipated equipment failures |
| 162 | 56.4 | 162 | 84.8 | g. Cost estimates for capital needs such as major repairs or component replacement |
| 132 | 46.0 | 132 | 69.1 | h. Cost estimates for annual operations, including utilities, preventive maintenance, design and engineering, minor repair, and general maintenance |
| 105 | 36.6 | 105 | 55.0 | i. Cost estimates for personnel and overhead such as salaries and benefits, training, contract labor, and office equipment |

20. Do you have one or more processes for ranking the importance of preventive maintenance projects?

All Respondents

Number Percent (N=279)

- | | | |
|-----|-------|---|
| 117 | 41.9% | 1. No. (<i>Go to Question 21.</i>) |
| 162 | 58.1 | 2. Yes, the process includes the following: (<i>Mark all that apply.</i>) |

Respondents With
Process for Ranking

Number Percent (N=163)

- | | | | | |
|-----|------|-----|-------|--|
| 47 | 16.8 | 47 | 28.8% | a. Written guidelines that distinguish urgent projects requiring immediate action from those that can be delayed |
| 97 | 34.8 | 97 | 59.5 | b. A procedure to route high priority projects into the maintenance work-order system |
| 70 | 25.1 | 70 | 42.9 | c. Specifying when each project should begin |
| 86 | 30.8 | 86 | 52.8 | d. Setting priorities according to how buildings are used, such as whether buildings are frequently occupied |
| 118 | 42.3 | 118 | 72.4 | e. Annual revisions of priorities based on completed projects and condition changes |
| 9 | 3.2 | 9 | 5.5 | f. Other (<i>Please specify.</i>) _____ |

21. Did you have a management information system for tracking and analyzing maintenance projects in 1998-99? (Mark one.)

All Respondents

Number Percent (N=288)

- | | | |
|-----|-------|---|
| 224 | 77.8% | 1. No, we did not have a management information system. (<i>Go to Question 22.</i>) |
| 30 | 10.4 | 2. Yes, we had a computerized management information system. |
| 34 | 11.8 | 3. Yes, we had a manual management information system. |

21.(a) If you did have a management information system, which of the following did it provide? (Mark all that apply.)

Respondents

With an MIS

Number Percent (N=69)

- | | | | | |
|----|------|----|-------|--|
| 49 | 17.0 | 49 | 71.0% | a. Number of work orders completed and outstanding |
| 45 | 15.6 | 45 | 65.2 | b. Maintenance and repair history on individual building components or equipment |
| 32 | 11.1 | 32 | 46.4 | c. Records of equipment malfunctions |
| 37 | 12.8 | 37 | 53.6 | d. Histories of costs for preventive maintenance, repairs, and replacement of components |
| 20 | 6.9 | 20 | 29.0 | e. Estimates of work hours needed for each type of maintenance activity |
| 16 | 5.6 | 16 | 23.2 | f. Records of changes over time in the condition of building components |
| 2 | 0.7 | 2 | 2.9 | g. Other (<i>Please specify.</i>) _____ |

22. Do you evaluate the efficiency and effectiveness of your preventive maintenance?

All Respondents

Number Percent (N=285)

- | | | |
|-----|-------|---|
| 162 | 56.8% | 1. No. (<i>Go to Question 23.</i>) |
| 123 | 43.2 | 2. Yes, we evaluate by: (<i>Mark all that apply.</i>) |

Respondents Evaluating
Preventive Maintenance

Number Percent (N=123)

- | | | | | |
|----|------|----|-------|--|
| 50 | 17.5 | 50 | 40.7% | a. Measuring progress towards meeting preventive maintenance goals |
| 62 | 21.8 | 62 | 50.4 | b. Reviewing preventive maintenance records to identify potential problems |
| 70 | 24.6 | 70 | 56.9 | c. Analyzing costs and benefits of preventive maintenance to quantify savings |
| 83 | 29.1 | 83 | 67.5 | d. Surveying building occupants to assess satisfaction levels about building environments |
| 51 | 17.9 | 51 | 41.5 | e. Following a quality assurance program with maintenance work standards and inspections of completed work |
| 50 | 17.5 | 50 | 40.7 | f. Comparing trends in frequency of malfunctioning components and equipment |
| 5 | 1.8 | 5 | 4.1 | g. Other (<i>Please specify.</i>) _____ |

23. Based on your experiences, what practices for planning or managing preventive maintenance do you find particularly effective or innovative?

PERSONNEL

The following questions on personnel pertain specifically to school districts that perform at least some preventive maintenance.

24. Did your school district use in-house staff or contracts with private firms to perform preventive maintenance on the following in 1998-99? (Mark one answer for each component or facility.)

Component or Facility	In-House Staff for Most or All Preventive Maintenance		Contracted Services for Most or All Preventive Maintenance		Combination of In-House And Contracted Services		No Preventive Maintenance Was Provided		Schools Did Not Have	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
a. Heating, ventilation, and air-conditioning systems (N=292)	54	18.5%	52	17.8%	180	61.6%	4	1.4%	2	0.7%
b. Plumbing systems (N=291)	80	27.5	33	11.3	147	50.5	28	9.6	3	1.0
c. Roofs (N=291)	23	7.9	173	59.5	74	25.4	16	5.5	5	1.7
d. Elevators (N=284)	5	1.8	172	60.6	12	4.2	4	1.4	91	32.0
e. Electrical and lighting systems (N=289)	45	15.6	107	37.0	120	41.5	13	4.5	4	1.4
f. Life-safety systems such as fire alarms (N=292)	4	1.4	226	77.4	60	20.5	1	0.3	1	0.3
g. Interior finishes, such as walls, flooring, ceilings, doors (N=292)	170	58.2	11	3.8	97	33.2	11	3.8	3	1.0
h. Structural components, such as exterior facades, foundations, windows (N=288)	34	11.8	117	40.6	90	31.3	36	12.5	11	3.8
i. Parking lots and roadways (N=290)	26	9.0	142	49.0	72	24.8	33	11.4	17	5.9
j. Grounds, playgrounds, and athletic fields (N=291)	145	49.8	21	7.2	107	36.8	11	3.8	7	2.4

25. In your opinion, how effective were the overall staffing arrangements you described in Question 24 for accomplishing preventive maintenance in 1998-99? (Mark one.) (N=290)

Number	Percent	
89	30.7%	1. Very effective
170	58.6	2. Somewhat effective
14	4.8	3. Neither effective nor ineffective
9	3.1	4. Somewhat ineffective
1	1.7	5. Very ineffective
3	1.0	6. Uncertain or don't know

26. Do you share preventive maintenance services with other jurisdictions? *(Mark all that apply.)*
(N=281)

Number	Percent	
249	88.6%	a. We do not share preventive maintenance services.
22	7.8	b. We share preventive maintenance services with other schools, cities, or counties in our region.
9	3.2	c. We share preventive maintenance services specifically for buildings or grounds we jointly own with another jurisdiction.
10	3.6	d. Other <i>(Please specify.)</i> _____

27. For the 1998-99 school year, please estimate how many person-hours were spent in your district on facility maintenance and operations. *(Please count hours, including overtime, worked by full-time, part-time, and seasonal employees on all maintenance of buildings, grounds, athletic facilities, and parking lots, including planning and administering this maintenance. If you have to convert numbers of employees into person-hours, one full-time equivalent worker equals 2,088 person-hours for the year, without accounting for overtime. If possible, break down the total number of hours by the types below.)*

	In-House Personnel Hours		Contracted Labor Hours	
	Mean	Median	Mean	Median
a. TOTAL Person-Hours	24,569.66	7,308.00 (N=245)	1,594.68	550.00 (N=210)
<u>Types of Hours</u>				
b. Preventive maintenance	3,409.78	1,078.00 (N=214)	303.35	100.00 (N=190)
c. Other planned maintenance and major repairs, including scheduled custodial work and work to reduce deferred maintenance	15,036.99	3,000.00 (N=214)	756.68	80.00 (N=190)
d. Unscheduled repairs and maintenance, including both emergency and less urgent projects	2,171.00	500.00 (N=214)	458.53	100.00 (N=190)
e. Other	876.92	0.00 (N=214)	10.55	0.00 (N=190)

FINAL COMMENTS

28. Do you have any final comments about preventive maintenance for facilities in your school districts?

Thank you for responding to this survey!
Please return it in the enclosed, postage-paid envelope by November 30, 1999 to:

**Office of the Legislative Auditor
Centennial Office Building – 1st Floor South
St. Paul, MN 55155
(Phone: 651/296-4708)**

Or fax to: 651/296-4712