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DO WE HAVE ENOUGH?

Using simple math to answer the hard question of how much you need

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HOW DO WE TYPICALLY PLAN FOR RESOURCES?

PLANNING THE WORK

Many organizations use one of four typical methods for determining how many people and things they need

- Availability – we take what's available and hope that people leave us alone
- History – last year's amount plus a factor plus a filling of vacancies and retirements
- Proximity – this is what our neighbor's have and we are pretty similar
- Possibility – we are able to use some set of objective standard to identify our needs and use that to justify budget and personnel requests

DEMAND AND SUPPLY

HOW MUCH DO YOU HAVE TO DO?

What are the factors that determine level of effort?

- How much of something is there (quantity)?
- How "well" does it have to be done (effectiveness)?
- How soon do we need to do it (timeliness)?

VS.

HOW MANY PEOPLE DO NEED TO DO IT?

What factors determine how much someone can do?

- How well do they know their job (training)?
- How well equipped are they (tooling)?
- How well are they managed (oversight)?
- How well is the process designed (efficiency)?

DEFINING DEMAND

What do you do?	How long does it take (hours)?	How many times do we do this (per year)?	Total hours required?	What do you need?
Floor cleaning (2,500 sq ft)	1.00	400	400	Stripper, cleaner, wax, broom, applicator
Carpet cleaning (2,500 sq ft)	1.00	350	350	Cleaner, vacuum
Light bulb replacement	0.25	600	125	Replacement bulb, ballast
Grass cutting (0.5 acre)	1.5	100	150	Mower, fuel
Snow plowing (1.0 acre @ 4 in)	1.0	150	150	Plow, fuel, shovel
Field setup (baseball)	2.5	20	50	Chalk, machine, frames, drag
Boiler PM	4.5	2	9	

HOW GOOD IS GOOD ENOUGH?

A major concern in resource planning is defining the norm – or what we expect.

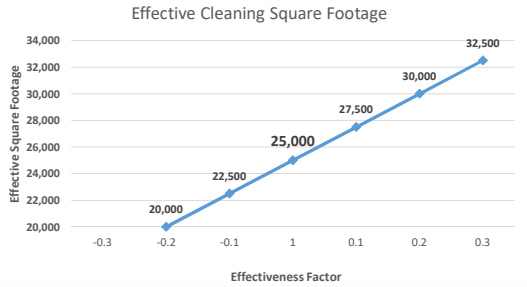
Deciding to be above or below the norm can have a profound impact on how many staff and how much material is required.

How and when do you define the norm?

FIGURE X-6
PLANNING GUIDE FOR MAINTAINING SCHOOL FACILITIES– LEVELS OF CLEANING
FISCAL YEAR 2014-14

LEVEL	DESCRIPTION	SQUARE FOOTAGE RANGE
1	Results in a "spotless" building, as might normally be found in a hospital environment or corporate suite	10,000 to 11,000
2	The uppermost standard for most school cleaning, and is generally reserved for restrooms, special education areas, kindergarten areas, or food service areas	18,000 to 20,000
3	The normal level for school facilities and acceptable to most stakeholders and does not present any health concerns	28,000 to 31,000
4	Normally not acceptable in a school environment. Classrooms would be cleaned every other day, carpets would be vacuumed every third day, and dusting would occur once a month	45,000 to 50,000

SOURCE: Planning Guide for School Facilities.



THE INFLUENCE OF TIME

WHOSE JOB IS IT?

What influences level of effort?

- Cleaning up vs. cleaning the space
- Scheduling vs. reacting

Is slack an issue of inefficiency or a proper way to plan for expected disruption?

7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00
Startup	PM Service							Break	Repair services - ES							Field preparations				

0:15	0:30	0:45
Gym setup		

MATERIAL MANAGEMENT

INVENTORY MANAGEMENT IS HARD

Properly managing inventory is one of the most important things you can do and one of the most expensive things to do poorly.

- Oil filter from your parts stock
- Assumptions:
  - Annual demand = 600 units
  - Monthly ordering
  - Carrying cost = 20% annually
  - Accounting cost = $50 per transaction
  - Inventory management cost = $.50 per transaction

MANAGING MATERIALS

PRICE ≠ COST

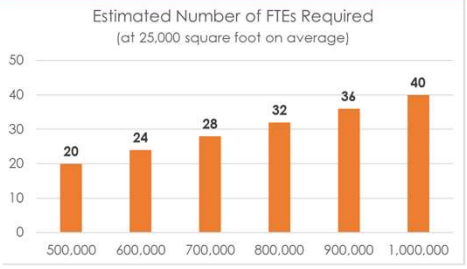
Determining how much should be budgeted for materials is complex and difficult.

Component	Math	Cost
Light bulb	$8.00 * 600	$4,800
Inventory	((600/12)/2) * ($8.00 * 1.2)	$240
Disbursement	(12+12+600) * $0.50	$312
Accounting	12 * $50	$600
Total		**$5,952**

SUPPLY SIDE MATCHING

The item	The math	The outcome
Total hours available	52 weeks * 40 hours	2,080 hours
Less Holidays	18 days * 8 hours	(144 hours)
Less Vacation	15 days * 8 hours	(120 hours)
Less Sick leave	10 days * 8 hours	(80 hours)
Less Non-Productive time	5 days * 8 hours	(40 hours)
Total Productive Hours		**1,696 hours**

HOW MANY PEOPLE DO YOU NEED?



Total Sq ft	Avg Sq Ft/FTE	Number of FTEs	Total Hours	Sq ft Per Hour Daily
500,000	25,000	20	33,920	3,125
600,000	25,000	24	40,704	3,125
700,000	25,000	28	47,488	3,125
800,000	25,000	32	54,272	3,125
900,000	25,000	36	61,056	3,125
1,000,000	25,000	40	67,840	3,125

WHY DOESN'T THIS WORK?

If the math is so easy, why is managing so hard?

- People are not 100% productive
  - For every 10% drop in productivity, you lose 170 hours of time (4.5 weeks)
  - 10% of productive time is 48 minutes per day
- Supplies are not used efficiently
  - Spillage, loss, pilferage
- Individual things are rarely average
  - Sometimes the grass is too high
  - Sometimes we have not replaced equipment when we were supposed to
  - People have bad days
  - Materials don't work as advertised

MANAGING MATERIALS

PRICE ≠ COST

What if we cut inventory by 50% and price by 5%

Component	Math	Cost	Change
Light bulb	$7.60 * 600	$4,560	($240)
Inventory	((600/24)/2) * ($7.60 * 1.2)	$114	($126)
Disbursement	(24+24+600) * $0.50	$324	$12
Accounting	24 * $50	$1,200	$600
Total		**$6,198**	**$246**

IF THIS DOESN'T WORK WHY IS IT BETTER?

- Validating the good work you do
- Justifying new equipment and changes to process
- Rationalizing budget cuts

TAKEAWAY

Resource management becomes paramount when resources are declining

- Determining resource requirements is a combination of personnel considerations and materials considerations that are in constant interaction
- Demand determinations can be made through a combination of inventory identification and application of basic work history/benchmark data
- Supply side availability has to include considerations of what makes people productive; how work is assigned and scheduled; how to support those individuals through process.
- The results of this are never perfect but they provide a reasonable and rationale basis for assessing both requirements and performance.

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FOR QUESTIONS & COMMENTS

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