DPW Make/Buy Study

Nov 9, 2020

DPW Make/Buy Study



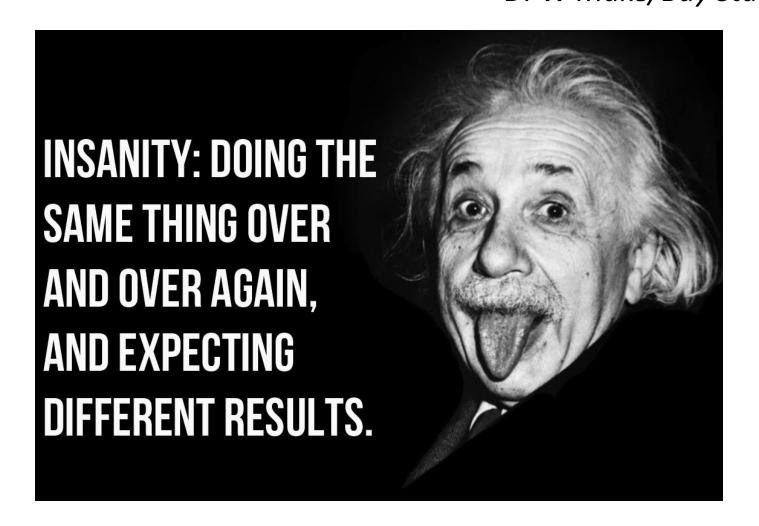
"What if, and I know this sounds kooky. we communicated with the townspeople."

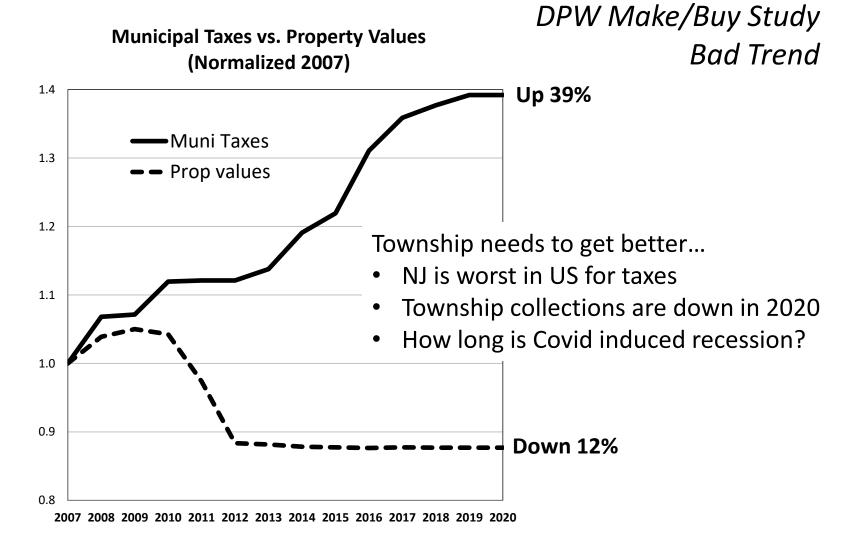
The study requires data and information...

DPW Make/Buy Study What's in the box?

- Nine months of iWorQ entries (~1500 lines of data)
- Five formal meetings with DPW super, CFO, DPW liaison
 - Go over iWorQ entries to understand work
 - Go over expenses/capex to understand variability
 - Discuss contracting alternatives
- Numerous phone calls and meetings with other DPW supers
- Numerous phone calls and meetings with area contractors
- Numerous calls and emails with CFO to confirm budget details
- Issue two RFPs for snow removal

Finance Committee DPW Make/Buy Study

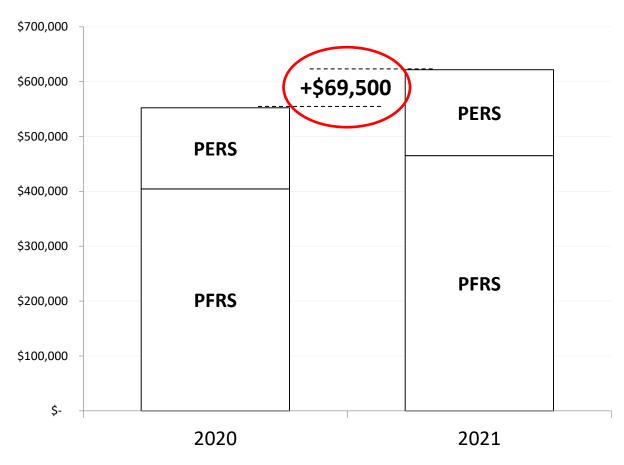




Source: Mendham Township Budget Filings

Mendham Township 2021 pension increase is 13% = <u>a new hire</u>

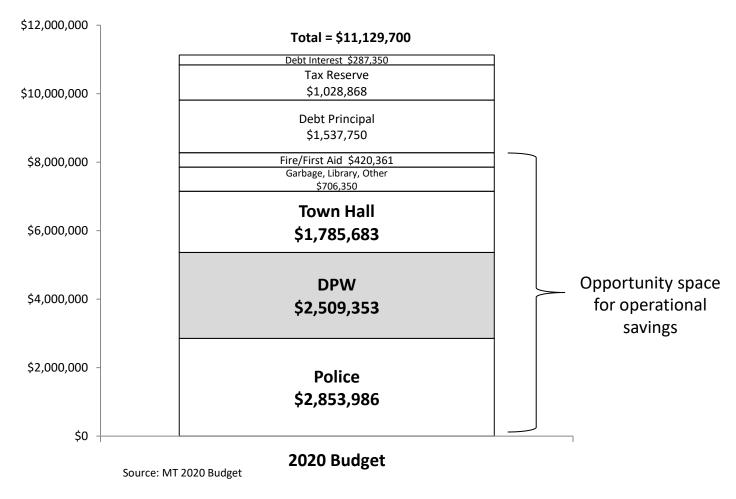
DPW Make/Buy Study NJ pensions <u>worst</u> in US



Source: MT 2020 Budget, NJ Teasury 2021

DPW is a close 2nd for spending

DPW Make/Buy Study Where to find savings?



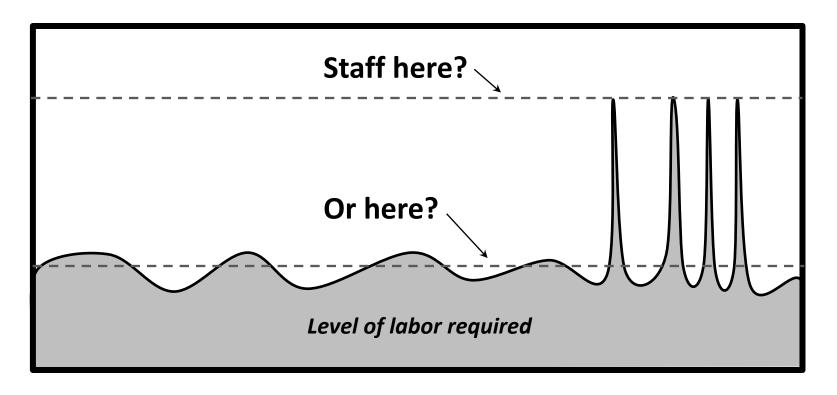
Preliminary

DPW Make/Buy Study When to buy?

- Buy work when the alternative is cheaper, readily available and of acceptable quality
- Buy infrequent work that is labor intensive, i.e. 'surge labor'
- Buy infrequent work that is capital intensive
- Buy if you have chronic staff issues

Staff to normal labor levels, not surge levels

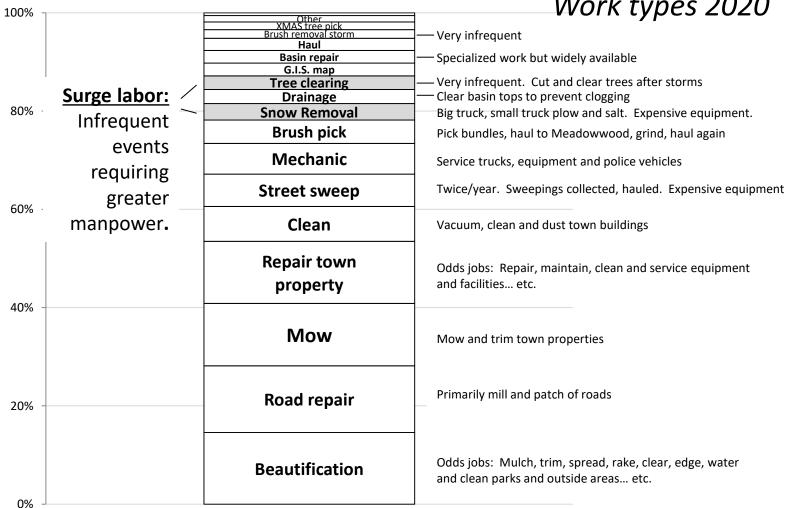
DPW Make/Buy Study
Surge labor



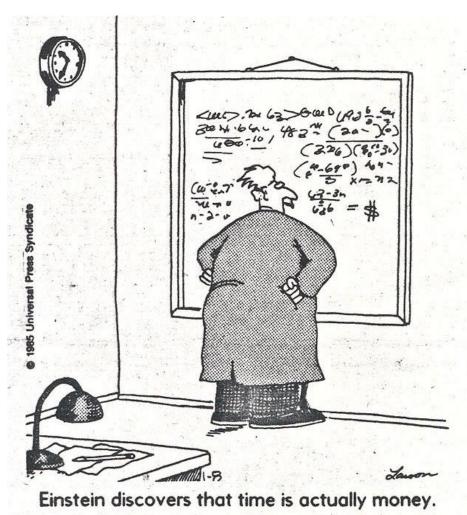
Illustration

What DPW does...

DPW Make/Buy Study Work types 2020



DPW Make/Buy Study



DPW salary and benefits per hour...

DPW Make/Buy Study Annual Hours Worked

Hours available calculation:

Total work days per year 260

Days of PTO taken 39 ~8 weeks in 2019, PTO = paid time off

Days avail for work 221

Annual hours 1,768

Annual hours plus OT 1,919 151 hours/pro of OT in 2019

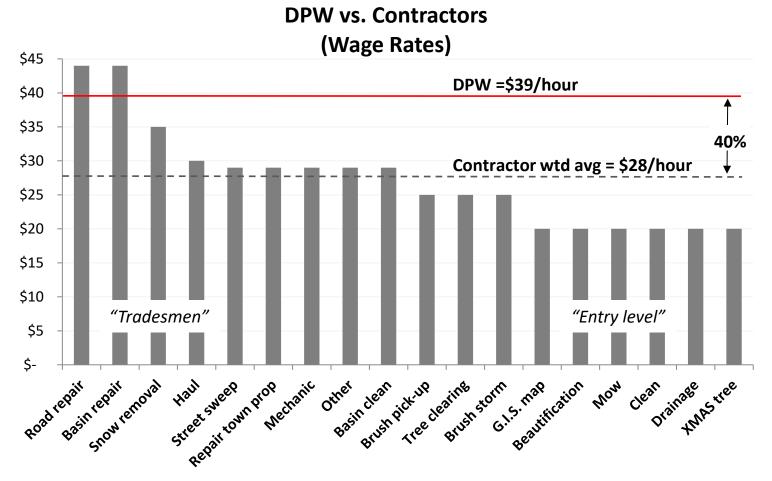
DPW cost per hour on the job:

2021 Salary/Annual hours/12 pros = \$894K/1,919/12 = **\$39 per hour**

Source: DPW PTO 2019, MT Budget

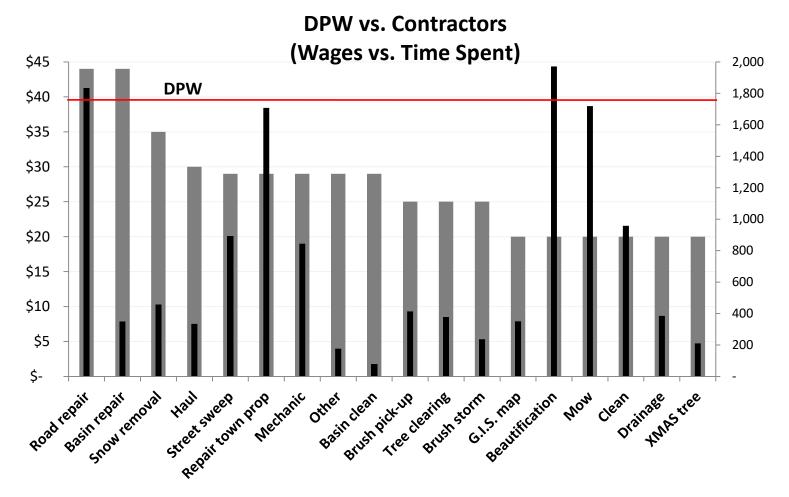
We are 40% more expensive on average than contractor alternatives

DPW Make/Buy Study Cost of alternatives



We spend a lot of time doing uneconomical work

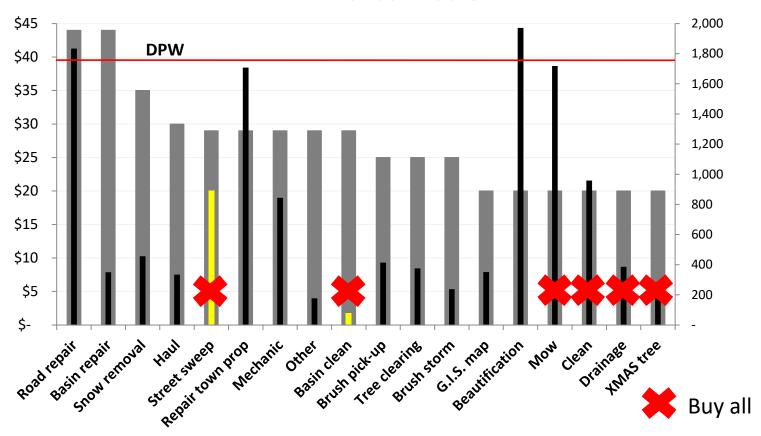
DPW Make/Buy Study Cost of alternatives



Buy big chunks of cheaper work and smaller chunks of infrequent but intensive work

DPW Make/Buy Study Cost of alternatives

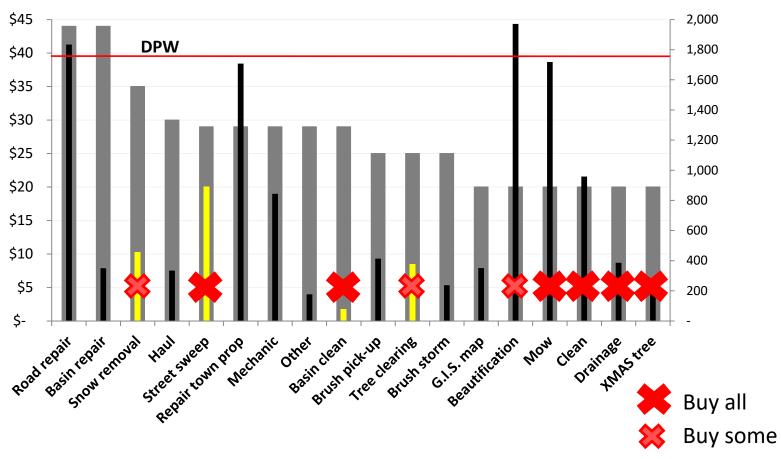
DPW vs. Contractor



Buy big chunks of cheaper work and smaller chunks of infrequent but intensive work

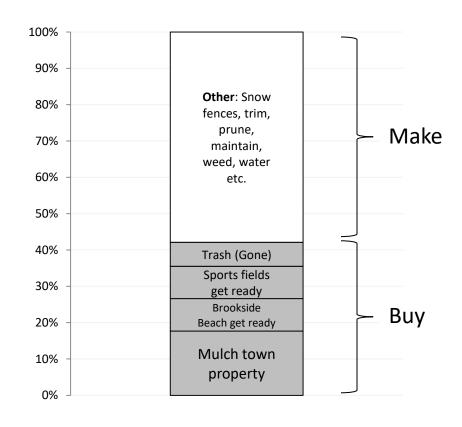
DPW Make/Buy Study
Cost of alternatives

DPW vs. Contractor



Within 'Beautification' there are specific jobs which can be outsourced to reliable contractors at much lower rates

DPW Make/Buy Study Beautification work

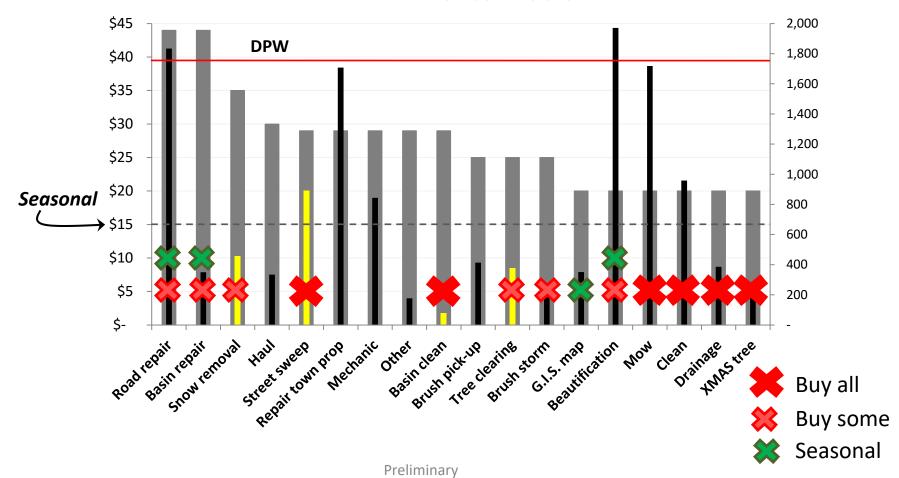


Source: DPW iWorQ to Sep 2020

Use seasonal labor more extensively

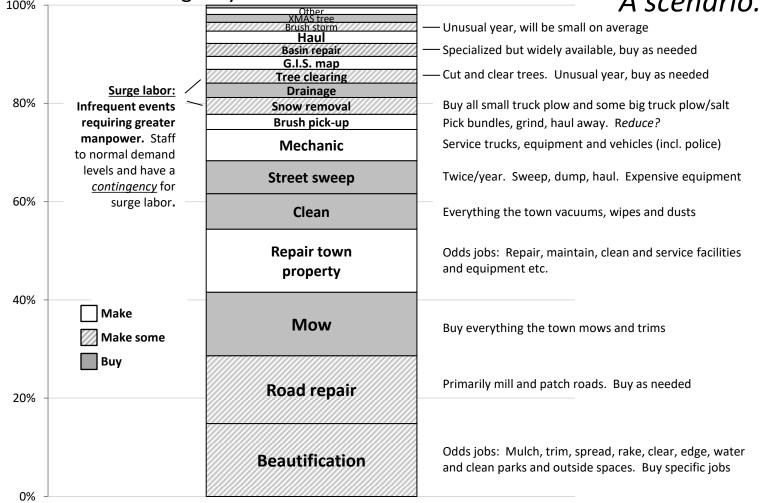
DPW Make/Buy Study Cost of alternatives





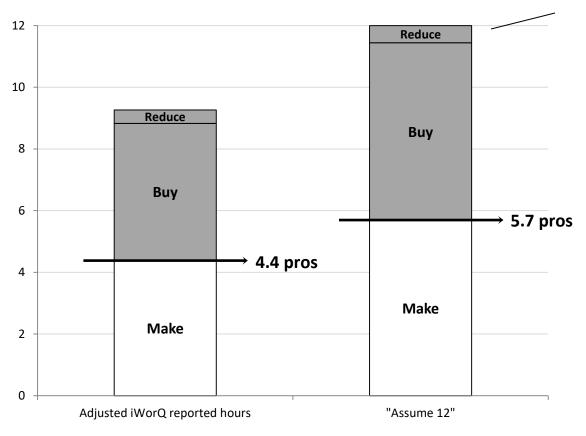
Buy big chunks of work, buy some road and basin work and have a contingency for snow and storms

DPW Make/Buy Study
A scenario...



This scenario requires only 4 full-time DPW proswith expanded seasonal hiring

DPW Make/Buy Study A scenario...



Reduce

- Carry-in/Carry-out
- Tree clearing/storm brush are small

DPW

- Four skilled, flexible pros all with CDLs
- Smaller staff is faster/easier to organize and deploy
- Expand seasonal hires
 - -Pay ~\$15/hour
 - \$40,000 buys 8FTEs for 2 months = 1.3 FTEs
- Consider part-timers as backup for plowing, flagging, etc.

Source: 2020 DPW iWorQ data. *Adjusted for 12 months and 12 pros.

DPW Make/Buy Study

Savings Calculation

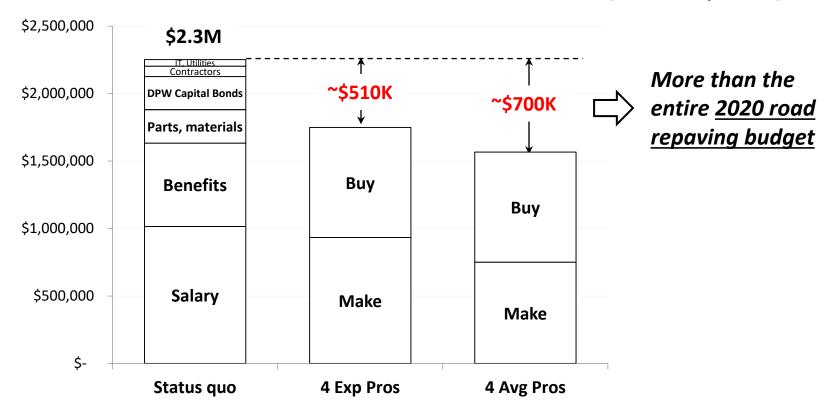
DPW Make/Buy Study Buy Estimates

Buy estimates are based on formal bids and estimates from contractors

Buy Estimates	Next	t 5 Yrs Avg		
Mow	\$	176,584	Set and forget	
Clean	\$	41,549	Set and forget	
Street sweep	\$	41,549	Set and forget	<u>Note</u> : ~250K of
Drainage	\$	20,775	Set and forget	spend is
Xmas tree	\$	14,542	Set and forget	<u>discretionary</u> .
Beautification	\$	31,162	Set and forget	Provides flexibility
Small truck plow	\$	64,701	Variable	for town.
Large truck plow	\$	42,638	Variable	
Large truck salt	\$	35,532	Variable	
Tree clearing	\$	15,581	Variable	
Basin clean	\$	67,517	Variable	
Basin repair	\$	103,873	Discretionary 7	
Road repair	\$	103,873	Discretionary	
Seasonal labor	\$	41,549	Discretionary	
	\$	801,425	, J	

Next 5-years average savings depends on DPW team composition

DPW Make/Buy Study
Annual savings
(Next 5 years)



Source: 2020 budget, 2019 expenses, DPW capital plan, contractor estimates, other

Finance Committee DPW Make/Buy Study

Summarizing

DPW could be staffed with four (4) full-time pros

- Don't staff to surge labor, have a contingency instead
- Buy chunks of work below our pay grade, save money/improve DPW focus
- Buy excess road repair and basin repair work
- Use seasonal labor liberally, helpers and flagmen are cheap
- No remaining DPW work requires > 4 pros



Savings = <u>~\$500K-\$700K</u> per year depending on composition of staff

Finance Committee DPW Make/Buy Study Concerns vs. Myths

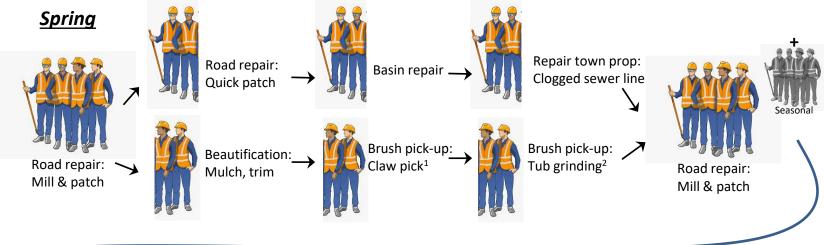
- Quality will suffer if we outsource
- Response time will suffer if we outsource
- Must be loyal to our "local boys" in DPW
- "Sudden middle of the day deicing requirement?"

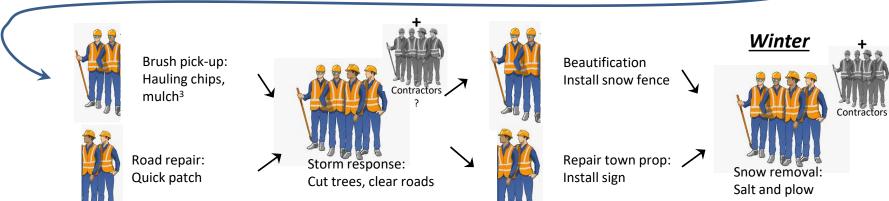
DPW Make/Buy Study

DPW work descriptions

Four DPW pros, working in teams or together, with seasonal hires and contractors can do the work of Mendham Township

DPW study
Staff Flow





DPW Make/Buy Study Beautification

Sample iWorQ entires...

- Spread sand along waters edge and fence line
- Rake beach with ball groomer
- Mulch play ground
- Install snow fence and prune trees
- Trim back low branches for parade
- Haul, spread, and rake sand out at brookside beach
- Install aerators
- Mulch municipal complex and community club
- Prep brookside beach for opening
- Cleanup concrete from potting beds
- Trim back trees and bushes from road ways, corners and signs

Odd jobs, some seasonal, hard to outsource with scale Small crews, 1-4 DPW pros Seasonal hires can assist Recommendation: **Make**

DPW Make/Buy Study Repair/Maintain Town Property

Sample iWorQ entires...

- Repair broken and rotted guard rails on hunters glen
- Install new historic district signs on 24, Tempe Wick, Cherry, Pleasant Valley...
- Clean up and organize around shop. Dump waste oil, remove all garbage...
- Jack hammer foundation out and haul concrete to jefferson recycling.
- Clean up around shop dispose of garbage organize equipment
- Septic pump out
- Empty, wash and rinse all salt trucks with salt-B-gone
- Replace Batteries and Pads in AEDs.
- Take down shelving units in library
- Repair hole in front of the building and try to remove bird from ceiling
- Clogged sewer line
- Plexiglass partitions

Odd jobs, some seasonal, hard to outsource with scale Small crews, 1-4 DPW pros
Seasonal hires can assist
Recommendation: **Make**

DPW Make/Buy Study Road Repair

Sample iWorQ entires...

- Mill and patch Mt. Pleasant
- Mill and patch yardley where needed
- Patch low spots from previous days
- Replace curb heads and grates
- Patch pot holes along colonial drive
- Screen asphalt and concrete pile
- Mill and patch where needed
- Raise apron 2", berm from mailbox to catch basin, and patch milled area
- Pick up cold patch from Weldon in Rockaway. 2.3 tons patch holes around town. Calais, ironia, wilrichglen, pleasant valley, knollwood trail, roxciticus.
- Patch pot holes along roads

Quick patch = 2 pros, possibly 3 depending on traffic Cut (or Mill) and patch = 2-4 pros based on volume and traffic Seasonal hires can assist as labor or flagging On busiest streets and busiest days, police may assist with traffic Recommendation: Make some, buy some as needed

DPW Make/Buy Study Road Repair



Quick Patch (aka "Throw and Patch")

- Set up trucks/cones for traffic
- Clean and prepare pot hole surface
- Shovel asphalt into pothole
- Hand tamp or vibrating compactor

Process occurs in series of steps above 2 pros for quiet streets 4 pros crew for busy streets (including flaggers)



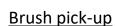
Cut and Patch or Mill and Patch:

- Set up trucks/cones for traffic
- Saw (or mill) area around pothole or weak area
- Break up asphalt (manual or mechanical)
- Shovel asphalt, clean and prepare area
- Pour and rake new asphalt into area
- Roll (or vibrating compactor) asphalt

Process occurs in series of steps above No more than 4 pros (including flaggers)

DPW Make/Buy Study

Brush Pick-up



- Claw the brush piles into a waiting dump truck
- Haul brush to Meadowwood
- <u>Later</u>: tub grind brush pile into chips and mulch
- Haul chips and mulch to residents and dump, etc

Process occurs in series of steps above No step requires > 2-3 men Consider reducing to spring only.

Recommendation: Make

DPW Make/Buy Study Snow plowing: 7 Zones

In Each Zone...



One (1) large truck

- Start with main streets then feeders
- Plow both sides of road to curb
- When zone is complete move to unfinished zones



One (1) small truck

- Plows the middle of road ahead of large truck so that large truck can plow in only two passes
- Then plows culdesacs and small roads
- Cleans up intersections



Smaller than average plow zones is a built-in safety factor

DPW Make/Buy Study Snow Plow Event

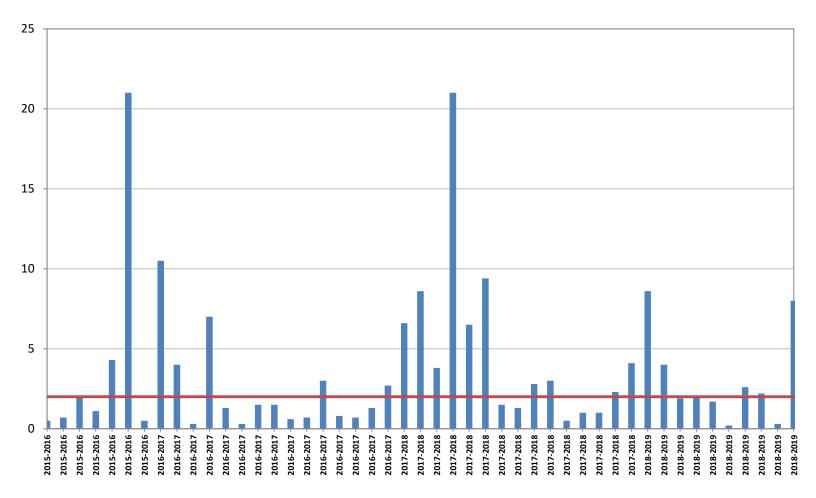
Lewi

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<u>Plow ea</u>	ich lane										
miles	85										
lane miles	340	4x distan	ce: bo	side	s + mic	ddle fo	r wide	e road:	s, sta	rt/stop	os
trucks	7	26,000+0	SVW								
oute miles	49										
speed	15										
drive time	3.2	hours									
					{		5	5	N	fendi	nam
					,					ienar	nam

Not every snow is an plow event

DPW Make/Buy Study Snow Events 2015-2019



DPW Make/Buy Study Snow Removal

Snow Removal

- Snow plowing is classic surge labor: <5% of work, timing uncertain
- Hiring full-time for surges results in overcapacity, have a contingency instead

7-zone snow removal plan

- Staffing and equipment dictated by zone-based removal plan: 7 plow zones
- Each zone calls for a large plow (dump) teamed with a small plow (pickup)
- Result: 7 large drivers (CDL) and 7 pickup drivers for plowing
- Town mechanic also drives
- Total = 14 drivers
- Buy 3 large plows and 7 small plows = 10 drivers
- Net requirement is <u>make</u> 4 DPW pros

Recommendation: Make 4, buy 10 (3 large, 7 small)

Considerations

- Consolidate 7 plow routes into 6, or give two smaller routes to best driver
- All DPW have CDLs for maximum flexibility
- Have call-in list of MT part timers who are interested in plow driving (town has 4-5 part time folks who might be interested in overtime pay)

DPW pre-salts before expected snow storm. Then salts again after plowing.

DPW Make/Buy Study Snow Removal & Salting

<u>Salting</u>

- Big trucks only, 7 zones again = 7 drivers
- Everyone loads their own salt
- Buy 3 large salt trucks
- Net requirement is <u>make</u> 4 DPW pros

Recommendation: Make 4, Buy 3

Considerations

- Salting is relatively fast, why so many zones and drivers?
- Combine salting routes to reduce manpower

	Pre-salt mide	dle of road						
-								
L	mile	es 85	drive do	own mid	ddle in I	ore-salt		
	lane mil	es 170	2x dista	nce: sta	rts/sto	os, retrac	ing, dea	ad ends
	truc	ks 7	26,000+	GVW				
	route mil	es 24						
	spec	ed 20						
	drive tin	ne 1.2	hours					
	reload tin	ne 0.0						
	total time/tru	ck 1.2						
	lbs salt per lane mi	le 700	200-400	lbs/lan	e mile			
L	mil	es 85	middle	of road				
		2000	weight	of ton,	equal to	yard of	salt	
	total sa	alt 29.75	tons					
	salt capaci	ty 10	vbox					
	loads per tru	ck 0.4						

DPW Make/Buy Study Tree Clearing





Tree clearing (rare occurrence)

- Detour road
- Two-three saw-men cut trees into moveable logs
- Move logs safely out of roadway (skidsteer/front loader)
- <u>Later</u>: collect debris and haul away for grinding
- Haul chips to residents or other

Process occurs in series of steps

No step requires > 2-4 men

Contingency for big storms: local landscapers with trailer and skidsteer are common

Recommendation: Make, buy some as needed

DPW Make/Buy Study Basin repair

Sample iWorQ entries...

- Repair basin 42
- Repair basin 13? On green hills (corner of indian hollow)
- Repair basin 5 on colonial drive
- Repair basin 1 on cherry lane
- Repair basin 1& 2 colonial drive

Basin repair

- Often begins and ends with a road repair
- Remove basin lid and frame
- Saw area around asphalt sinkhole, clean out debris around basin
- Repair basin blocks, add riser rings and pack joints with cement as needed
- Fill around basin with QP or stone and compact, replace frame and lid
- Repair asphalt as in Road repair

Process occurs in series of steps above

No step requires > 2-3 men on quiet roads, 3-4 men on busy roads

Seasonal hires can assist as helper, material delivery and flagging

Police may assist with traffic on busy streets

Recommendation: Make some, buy some as needed





DPW Make/Buy Study Other big jobs

Broken storm pipe

- Detour road (no flagmen, trucks and cones block work area)
- The emergency is the blockage and related flooding
- Clear blockage (one excavator is 95% of solution)
- Wait for engineer?
- Finish digging out trench, place new pipe (at least a day later)
- Pour QP and stone around new pipe (skidsteer) and compact (roller)
- Final step is a 2-4 man road repair

Process occurs in series of steps above

No step requires > 2-4 men

Seasonal hires can assist as helper, material delivery and flagging Police may assist with traffic on busy streets

Recommendation: Make (very rare)

Four DPW, maybe contractor support for material delivery



DPW study

Back-up

Total cost includes all variable expenses associated with compensating and outfitting our DPW pros

DPW Make/Buy Study Cost Estimates

DP	<i>N</i> inflation	inflation			d rate	d maturity	DPW				
	4%		% 2%		2.5	2.5%		10			
	202	<u>1</u>	<u>202</u>	2	<u>202</u>	3	202	24	<u>2025</u>	Ne	xt 5 Yrs
Salary \$	901,420	\$	937,477	\$	974,976	\$	1,013,975	\$	1,054,534	\$	976,476
Benefits \$	569,809	\$	592,601	\$	616,306	\$	640,958	\$	666,596	\$	617,254
Parts, materials \$	219,700	\$	224,094	\$	228,576	\$	233,148	\$	237,811	\$	228,666
IT, Utilities \$	46,940	\$	47,879	\$	48,836	\$	49,813	\$	50,809	\$	48,856
Contractors \$	72,997	\$	74,457	\$	75,946	\$	77,465	\$	79,014	\$	75,976
DPW Capital Bonds \$	134,260	\$	224,100	\$	255,272	\$	293,011	\$	322,513	\$	245,831
Total DPW variable spend \$	1,945,126	\$	2,100,609	\$	2,199,912	\$	2,308,370	\$	2,411,277	\$	2,193,059
per pro \$	162,094	\$	175,051	\$	183,326	\$	192,364	\$	200,940	\$	182,755

Every DPW expense was examined to determine variability

DPW Study Expenses 2019

Fixed/Variable	Vendor Name	Sum	of Trans
fixed	ATLANTIC SALT INC	\$	(175,072)
fixed	SERVPRO	\$	(50,552)
in play	LANDWORKS LANDSCAPE DESIGN LLC	\$	(46,750)
variable	WELDON ASPHALT COMPANY	\$	(22,930)
in play	Deandrea Land & Stone	\$	(21,060)
variable	DOVER BRAKE & CLUTCH	\$	(18,070)
fixed	AUTOMATED BUILDING CONTROLS	\$	(15,945)
variable	ROSE VALLEY NURSERY, LLC	\$	(15,934)
fixed	ROAD SOLUTIONS, INC.	\$	(15,372)
fixed	FRENCH & PARRELLO ASSOC. PA	\$	(14,523)
variable	HOOVER TRUCK CENTERS	\$	(11,600)
variable	ELIZABETH TRUCK CENTER	\$	(11,293)
fixed	KELLY PLUMBING & HEATING, LLC	\$	(11,195)
variable	NAPA OF CHESTER, INC.	\$	(10,636)
variable	CINTAS CORPORATION NO 2	\$	(9,756)
fixed	CONSOLIDATED FIRE PROTECTION	\$	(8,249)
variable	JESCO, INC	\$	(7,345)
variable	SPECIALTY GRAPHICS, LLC.	\$	(7,130)
variable	HOME DEPOT CREDIT SERVICE	\$	(6,232)
variable	ONE SOURCE OF NEW JERSEY, LLC	\$	(5,406)
variable	SHEAFFER SUPPLY INC	\$	(5,393)
variable	MAPLECREST FORD OF MENDHAM,INC	\$	(5,203)
variable	R & J CONTROL, INC	\$	(4,708)
variable	SERVICE TIRE TRUCK	\$	(4,675)
variable	MENDHAM GARDEN CENTER	\$	(4,441)
variable	CHEMUNG SUPPLY CORPORATION	\$	(3,920)

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DPW wants road equipment replacement = \$395K/year

DPW Study Road Capital

ROADS EQUIPMENT

(\$000'S)

		170	00 3						
PROJECT NAME	PRIORITY RANKING	TOTAL AMT	PRIOR YEARS	2020	2021	2022	2023	2024	2025
Mason Dump	3	\$70		\$70					
98 Dump Truck M6	1	\$100		\$100					
00 Skidsteer	1	\$140		\$140					
14 John Deere Excavator	1	\$120						\$120	
08 Stirling Tractor	3	\$200						\$200	
2003 John Deere 5420 Tractor	1	\$80	EU E				\$80		
2007 Dump Truck m15	3	\$200				7 - E. H.	\$200		
Ford Dump F750	3	\$82	160			\$82			
2007 Dump Truck m14	3	\$200				\$200			
05 Elgin Vacuum Sweeper	3	\$245	50		231	\$245			
1999 Whacker Roller	3	\$25			\$25				
03 Talbert Lowboy Trailer	3	\$65	- 50		\$65	2	1093		
2003 John Deere Bachoe	3	\$115			\$115			7 3 2 6	
05 Tandem Dump	2	\$230			\$230				
98 Dump Truck M17	2	\$230			\$230	177			PER NOT
04 Woodchuck	1	\$0							
05 Ford F350	3	\$0							
16 CAT 938K Loader	2	\$0							
16 F350	1	\$0							
18 F150	3	\$0	50						
18 F150	2	\$0							
2012 John Deere 344J Loader	2	\$190		443			Name and Section		\$190
2015 F250 Supercab	2	\$75							\$75
90 Super Duty Utility	2	\$0							
Pelican Sweeper	3	\$0							
			Totals	\$310	\$665	\$527	\$280	\$320	\$265

Source: DPW 2020

DPW wants B&G replacement = \$230K/year

DPW Study B&G Capital

		Buildin	gs & Grounds	Summary					
			(\$00	00'S)					
PROJECT NAME	PRIORITY RANKING	TOTAL	PRIOR YEARS	2020	2021	2022	2023	2024	2025
Brookside EMS Paint	1	\$10	\$0	\$10					
Enclosed Trailer	1	\$12	\$0	\$12					
DPW Pole Barn Roof	1	\$14	\$0	\$14					
DPW Garage Repairs	1	\$50	\$0	\$50					
Toro Groundsmaster	1	\$115	\$0	\$115					
**Fuel Tanks	1	\$140	\$0	\$140					
Salt Barn	1	\$400	\$0	\$400					
48" Toro Walk Mower	3	\$9	\$0					\$9	
Aer-Vator	3	\$10	\$0		\$10				
Construction Of New					17 7 9 22 2				
Pole Barn	2	\$250	\$0			\$250			
Ford 1900 Tractor	3	\$30	\$0			\$30			
Ford 1920 Tractor	3	\$30	\$0		\$30	33.453			
Goosen Field Vaccuum	1	\$0							
Jocobsons Seeder	3	\$0	\$0			365			
Municipal Facility	1	\$240	\$0		\$60	\$60	\$60	\$60	\$60
Ralston Firehouse	2	\$0					SRO		
Turf Tiger Mower	1	\$0	\$0						
Woods Mower	3	\$10	\$0					\$10	
			Totals	\$741	\$100	\$340	\$60	\$79	\$60

Source: DPW 2020

**Board of Education should split the cost

(\$000'S)

DPW work is capital intensive

DPW Study Capital Summary

From 2020 DPW list														
		<u>2020</u>		<u>2021</u>		<u>2022</u>		<u>2023</u>		<u>2024</u>		<u>2025</u>	2021	-2025 Avg
Roads Equip	\$	310,000	\$	665,000	\$	527,000	\$	280,000	\$	320,000	\$	265,000	\$	411,400
B&G	\$	741,000	\$	100,000	\$	340,000	\$	60,000	\$	79,000	\$	60,000	\$	127,800
EMS paint	-	(10,000)	۲	100,000	Ψ	3 10,000	Υ	00,000	Υ	73,000	Ψ	33,000	~	227,000
fuel tanks	\$	(140,000)												
salt barn	\$	(400,000)												
muni facility			\$	(60,000)	\$	(60,000)	\$	(60,000)	\$	(60,000)	\$	(60,000)		
	\$	191,000	\$	40,000	\$	280,000	\$	-	\$	19,000	\$	-	\$	67,800
Total Roads and B&G	\$	501,000	\$	705,000	\$	807,000	\$	280,000	\$	339,000	\$	265,000	\$	479,200
Bonding cost (10yr)	\$	57,244	\$	137,796	\$	230,003	\$	261,995	\$	300,729	\$	331,008	\$	252,306

Source: DPW 2020