

Town of Truro
Department of Public Works
OPTION A: BUILDING (11,000 sf); NO FLEET STORAGE
Cost / Benefit Analysis Summary

8/20/2025

Item	Description	Cost Over the Life of the Building (50 Years)	Net Present Value
1	Construction Cost	\$ -	\$ -
2	Building Maintenance Costs	\$ -	\$ -
3	Heating, Ventilation, and Electrical Costs	\$ -	\$ -
	Total Costs Associated with Building and Maintaining a Storage Garage:	\$ -	\$ -
4	Additional Vehicle Maintenance Costs Associated with Exterior Storage	\$ 3,453,654	\$ 2,726,212
5	Additional Costs Associated with Vehicle Life Expectancy Reduction	\$ 6,267,306	\$ 4,889,306
6	Site Development Costs for Exterior Storage	\$ 350,343	\$ 324,971
7	Exterior Storage Area Maintenance Costs	\$ 1,445,781	\$ 1,133,465
8	Cold Weather Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 916,667	\$ 723,590
9	Storm Event Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 308,824	\$ 243,776
10	Engine Block Heater Usage Costs	\$ 277,369	\$ 218,947
11	Security Loading & Unloading of Vehicles (non-productive labor)	\$ 791,453	\$ 624,750
12	Vehicle Staging Non-Productive Labor Costs	\$ 89,794	\$ 70,881
13	Reduced Employee Safety Costs	\$ 230,241	\$ 181,745
14	Environmental Impacts	\$ 640,621	\$ 488,696
15	Increase in Vehicle Maintenance Costs Due to Delays in Preventative Maint.	\$ 619,877	\$ 489,313
	Costs Associated with Storing Vehicles Outdoors:	\$ 15,391,930	\$ 12,115,651
	Additional Costs Incurred By the Town if Vehicles and Equipment are Stored Outdoors:	\$ 15,391,930	\$ 12,115,651

Note: Costs associated with reduced public safety due to delays associated with outdoor storage have not been included in this analysis

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 9
 Number of Small Vehicles 0
 Number of Pieces of Construction Equipment 10
 Average Employee Rate (loaded) \$ 51.03
 2025

Vehicle Type Sheet		
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Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 9
 Number of Small Vehicles 0
 Number of Pieces of Construction Equipment 10
 Average Employee Rate (loaded) \$ 51.03
 2025

Vehicle Type Sheet		Maintenance Activity		A Estimated Occurrences per Year - Interior Storage (per veh.)	FREQUENCY B Estimated Occurrences per Year - Exterior Storage (per veh.)	C Additional Occurrences per Year per Vehicle (B - A)	D Average Maintenance Manhours per Occurrence	E Number of Vehicles or Equipment	LABOR F Total Manhours per Year (C x D x E)	G Loaded Rate	H Total Labor Cost per Year (F x G)	I Parts Cost per Occurrence per Vehicle	J Total Parts Cost per Year (C x E x I)	K Total Labor & Parts Cost per Year (1st Year) (H + J)	TOTAL L Total Cost Over 20 Year Period	M Total Cost Over Life of Bldg (50 Years)	Net Present Value
Small Vehicles	8	Repair windshield wiper system - replace wiper motors, repair or replace wiper linkage, replace wiper blades		0.6	1.2	0.6	2	0	1.2	\$ 51.03	\$ 61	\$ 100	\$ 60	\$ 121	\$ 3,258	\$ -	\$ -
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)		0	1	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	10	Prepare vehicles for plow winter use - repair corroded electrical connections, clean rust from hydraulic pistons, replace frozen quick disconnects		2	3	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	11	Tune up vehicle stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ignition coils		0	0.21	0.21	10	0	0	51.03	\$ -	\$ 500	\$ -	\$ -	\$ -	\$ -	\$ -
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames		0	1	1	3.5	0	0	51.03	\$ -	\$ 300	\$ -	\$ -	\$ -	\$ -	\$ -
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims		0.05	0.16	0.11	1	0	0	51.03	\$ -	\$ 150	\$ -	\$ -	\$ -	\$ -	\$ -
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels		0.1	0.26	0.16	6.5	0	0	51.03	\$ -	\$ 525	\$ -	\$ -	\$ -	\$ -	\$ -
	16	Diagnose water in fuel in vehicles stored outdoors		0	0.26	0.26	1	0	0	51.03	\$ -	\$ 15	\$ -	\$ -	\$ -	\$ -	\$ -
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted		0.05	1.00	0.95	2	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	18	Check battery condition - recharge or replace		0.16	0.32	0.16	1	0	0	51.03	\$ -	\$ 200	\$ -	\$ -	\$ -	\$ -	\$ -
	19	Check alternator output		0.05	0.1	0.05	1.5	0	0	51.03	\$ -	\$ 225	\$ -	\$ -	\$ -	\$ -	\$ -
	20	Replace leaking brake / fuel lines		0	0.24	0.24	5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 9
Number of Small Vehicles 0
Number of Pieces of Construction Equipment 10
Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type Sheet		
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Baseline Vehicle/Equipment Replacement Costs

Recommended Average DPW Vehicle Life Expectancy (years)

15

20

Total Replacement Costs Based on 11 Year Vehicle Life Expectancy: \$ 20,827,138		(50 yr period)	\$ 1,816,067	1469803	1202566	813910
NPV: \$ 16,593,935						

Town of Truro

Department of Public Works
Item 5 - Cost/Benefit Analysis

2 Year Reduction in Vehicle & Equipment Life

Recommended Average DPW Vehicle Life Expectancy (years)
Reduced Average DPW Vehicle Life Expectancy (years)

Tractor/Utility/Sweeper/Small
mower
10
8
3.0%

Excavator/Loader/Interstalf
Machine
350
15
13
8

Discount Rate 0.8%

0.80%

Vehicle #	Description	Purchase Date	Purchase Price	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	
5	F450 Pick Up	2011	\$ 64,850	2025	\$ 98,091	-	\$ 98,091	2038	\$ 144,051	13	\$ 129,876	2051	\$ 211,543	26	\$ 171,959	2064	\$ 310,658	39	\$ 227,879													
7	F350 Pick Up	2022	\$ 66,536	2035	\$ 100,794	10	\$ 82,074	2048	\$ 148,019	23	\$ 123,282	2061	\$ 217,371	36	\$ 163,153	2074	\$ 319,216	49	\$ 216,033													
8	F350 Pickup	2018	\$ 60,582	2031	\$ 89,554	6	\$ 63,373	2044	\$ 131,513	19	\$ 113,036	2057	\$ 193,131	32	\$ 149,663	2070	\$ 283,620	45	\$ 198,158													
10	F350 Pick Up	2012	\$ 51,071	2025	\$ 75,000	-	\$ 75,000	2038	\$ 110,140	13	\$ 96,302	2051	\$ 161,744	26	\$ 131,479	2064	\$ 237,527	39	\$ 174,081													
11	F350 Pick Up	2016	\$ 57,481	2029	\$ 84,413	4	\$ 81,755	2042	\$ 123,964	17	\$ 108,259	2055	\$ 182,045	30	\$ 143,338	2068	\$ 267,339	43	\$ 189,784													
12	F350 Pick Up	2016	\$ 57,481	2029	\$ 84,413	4	\$ 81,755	2042	\$ 123,964	17	\$ 108,259	2055	\$ 182,045	30	\$ 143,338	2068	\$ 267,339	43	\$ 189,784													
13	F350 Pick Up	2019	\$ 62,811	2032	\$ 92,241	7	\$ 87,236	2045	\$ 136,458	20	\$ 115,593	2058	\$ 198,925	33	\$ 152,930	2071	\$ 292,128	46	\$ 202,483													
14	F350 Pick Up	2018	\$ 60,582	2031	\$ 89,554	6	\$ 63,373	2044	\$ 131,513	19	\$ 113,036	2057	\$ 193,131	32	\$ 149,663	2070	\$ 283,620	45	\$ 198,158													
15	Pick Up	2016	\$ 57,481	2029	\$ 84,413	4	\$ 81,755	2042	\$ 123,964	17	\$ 108,259	2055	\$ 182,045	30	\$ 143,338	2068	\$ 267,339	43	\$ 189,784													
16	Sign Sweeper	2014	\$ 216,736	2025	\$ 300,000	-	\$ 300,000	2033	\$ 380,031	8	\$ 356,562	2041	\$ 481,412	16	\$ 423,768	2049	\$ 609,838	24	\$ 503,688	2057	\$ 772,525	32	\$ 588,653	2065	\$ 978,611	40	\$ 711,523	2073	\$ 1,239,676	48	\$ 845,673	
17	John Deere 1300 Excavator	2006	\$ 114,057	2025	\$ 200,000	-	\$ 200,000	2038	\$ 293,707	13	\$ 264,805	2051	\$ 431,318	26	\$ 350,610	2064	\$ 633,405	39	\$ 464,217													
18	John Deere Loader	2012	\$ 170,238	2028	\$ 250,000	-	\$ 250,000	2038	\$ 367,133	13	\$ 331,007	2051	\$ 539,148	26	\$ 438,262	2064	\$ 791,757	39	\$ 580,271													
19	JLG 660R Lift	2020	\$ 142,000	2028	\$ 179,861	3	\$ 175,632	2036	\$ 227,868	11	\$ 205,746	2044	\$ 284,057	19	\$ 248,103	2052	\$ 385,062	27	\$ 294,860	2060	\$ 463,209	35	\$ 350,476	2068	\$ 586,780	43	\$ 418,545					
20	Generator Box Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2033	\$ 63,339	8	\$ 59,427	2041	\$ 80,235	16	\$ 70,631	2049	\$ 101,640	24	\$ 83,948	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 118,587	2073	\$ 206,613	48	\$ 140,946	
21	Generator Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2033	\$ 63,339	8	\$ 59,427	2041	\$ 80,235	16	\$ 70,631	2049	\$ 101,640	24	\$ 83,948	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 118,587	2073	\$ 206,613	48	\$ 140,946	
22	Bandit Wood Chipper	2002	\$ 24,997	2025	\$ 49,334	-	\$ 49,334	2033	\$ 62,495	8	\$ 58,635	2041	\$ 79,166	16	\$ 69,090	2049	\$ 100,285	24	\$ 82,829	2057	\$ 127,038	32	\$ 98,448	2065	\$ 160,929	40	\$ 117,007	2073	\$ 203,869	48	\$ 139,067	
23	Trimpia Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,508	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,861	32	\$ 15,964	2065	\$ 26,096	40	\$ 18,974	2073	\$ 33,058	48	\$ 22,551	
24	Cam Trailer	2007	\$ 7,049	2025	\$ 12,000	-	\$ 12,000	2033	\$ 15,201	8	\$ 14,262	2041	\$ 19,256	16	\$ 16,952	2049	\$ 24,394	24	\$ 20,148	2057	\$ 30,901	32	\$ 23,948	2065	\$ 39,144	40	\$ 28,461	2073	\$ 49,587	48	\$ 33,827	
25	Kaufman Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,508	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,861	32	\$ 15,964	2065	\$ 26,096	40	\$ 18,974	2073	\$ 33,058	48	\$ 22,551	
26	Interstate Trailer	2015	\$ 35,717	2028	\$ 52,451	3	\$ 51,212	2041	\$ 77,026	16	\$ 67,806	2054	\$ 113,115	29	\$ 89,777	2067	\$ 166,113	42	\$ 118,867	2075	\$ 294,580	32	\$ 228,279	2065	\$ 373,165	40	\$ 271,319	2073	\$ 472,716	48	\$ 322,473	
27	Remo Trailer	1997	\$ 50,000	2025	\$ 114,396	-	\$ 114,396	2033	\$ 144,914	8	\$ 135,385	2041	\$ 183,573	16	\$ 161,559	2049	\$ 232,644	24	\$ 192,067	2057	\$ 294,580	32	\$ 228,279	2065	\$ 373,165	40	\$ 271,319	2073	\$ 472,716	48	\$ 322,473	
28	Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,508	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,861	32	\$ 15,964	2065	\$ 26,096	40	\$ 18,974	2073	\$ 33,058	48	\$ 22,551	
35	Hydrex	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2033	\$ 63,339	8	\$ 59,427	2041	\$ 80,235	16	\$ 70,631	2049	\$ 101,640	24	\$ 83,948	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 118,587	2073	\$ 206,613	48	\$ 140,946	
37	Toro Ride Mower	2015	\$ 9,673	2025	\$ 13,000	-	\$ 13,000	2033	\$ 16,468	8	\$ 15,451	2041	\$ 20,861	16	\$ 18,364	2049	\$ 26,426	24	\$ 21,826	2057	\$ 33,476	32	\$ 25,942	2065	\$ 42,406	40	\$ 30,633	2073	\$ 53,719	48	\$ 36,646	
38	Toro Ride Mower	2015	\$ 9,673	2025	\$ 13,000	-	\$ 13,000	2033	\$ 16,468	8	\$ 15,451	2041	\$ 20,861	16	\$ 18,364	2049	\$ 26,426	24	\$ 21,826	2057	\$ 33,476	32	\$ 25,942	2065	\$ 42,406	40	\$ 30,633	2073	\$ 53,719	48	\$ 36,646	
39	RoboCar Ride Mower	2015	\$ 9,673	2025	\$ 13,000	-	\$ 13,000	2033	\$ 16,468	8	\$ 15,451	2041	\$ 20,861	16	\$ 18,364	2049	\$ 26,426	24	\$ 21,826	2057	\$ 33,476	32	\$ 25,942	2065	\$ 42,406	40	\$ 30,633	2073	\$ 53,719	48	\$ 36,646	
41	Push Mower	2015	\$ 744	2025	\$ 1,000	-	\$ 1,000	2033	\$ 1,267	8	\$ 1,189	2041	\$ 1,605	16	\$ 1,413	2049	\$ 2,033	24	\$ 1,679	2057	\$ 2,575	32	\$ 1,996	2065	\$ 3,262	40	\$ 2,372	2073	\$ 4,132	48	\$ 2,819	
42	Paint Machine	2015	\$ 14,862	2033	\$ 25,335	8	\$ 23,774	2051	\$ 43,132	26	\$ 35,081	2069	\$ 54,638	34	\$ 41,671	2067	\$ 69,214	42	\$ 49,528													
43	Power Washer	2015	\$ 3,720	2025	\$ 5,000	-	\$ 5,000	2033	\$ 6,334	8	\$ 5,943	2041	\$ 8,024	16	\$ 7,063	2049	\$ 10,164	24	\$ 8,395	2057	\$ 12,875	32	\$ 9,978	2065	\$ 16,310	40	\$ 11,859	2073	\$ 20,661	48	\$ 14,095	
44	Edco Walk Behind Saw	2015	\$ 3,720	2025	\$ 5,000	-	\$ 5,000	2033	\$ 6,334	8	\$ 5,943	2041	\$ 8,024	16	\$ 7,063	2049	\$ 10,164	24	\$ 8,395	2057	\$ 12,875	32	\$ 9,978	2065	\$ 16,310	40	\$ 11,859	2073	\$ 20,661	48	\$ 14,095	
45	JLG Lift	2020	\$ 50,000	2028	\$ 63,339	3	\$ 61,842	2036	\$ 80,235	11	\$ 73,502	2044	\$ 101,640	19	\$ 87,360	2052	\$ 128,754	27	\$ 103,831	2060	\$ 163,102	35	\$ 123,407	2068	\$ 206,613	43	\$ 146,674	2076	\$ 230,942	51	\$ 171,500	
47	Tiger Mower	2015	\$ 9,673	2025	\$ 13,000	-	\$ 13,000	2033	\$ 16,468	8	\$ 15,451	2041	\$ 20,861	16	\$ 18,364	2049	\$ 26,426	24	\$ 21,826	2057	\$ 33,476	32	\$ 25,942	2065	\$ 42,406	40	\$ 30,633	2073	\$ 53,719	48	\$ 36,646	
48	Wing Plow	2015	\$ 8,929	2033	\$ 15,201	8	\$ 14,262	2051	\$ 25,879	26	\$ 21,037	2069	\$ 44,057	44	\$ 31,028	2087	\$ 64,686	62	\$ 47,544													
49	Wing Plow	2015	\$ 8,929	2033	\$ 15,201	8	\$ 14,262	2051	\$ 25,879	26	\$ 21,037	2069	\$ 44,057	44	\$ 31,028	2087	\$ 64,686	62	\$ 47,544													
50	Wing Plow	2015	\$ 8,929	2033	\$ 15,201	8	\$ 14,262	2051	\$ 25,879	26	\$ 21,037	2069	\$ 44,057	44	\$ 31,028	2087	\$ 64,686	62	\$ 47,544													
51	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343	2087	\$ 20,861	62	\$ 15,201													
52	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343	2087	\$ 20,861	62	\$ 15,201													
53	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343	2087	\$ 20,861	62	\$ 15,201													
54	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343	2087	\$ 20,861	62	\$ 15,201													

Town of Truro
Department of Public Works
Cost/Benefit Analysis - Item 6 - Site Development Costs for Exterior Vehicle Storage Area

Note: Cost to construct and maintain and exterior parking area over the life of the building

Description	Quantity	Unit	Unit Cost	TOTAL (No OH&P)	TOTAL (Incl. OH&P)
DIVISION 2 - SITE WORK					
<u>GENERAL SITE WORK</u>					
Earth Excavation Site	624	CY	\$40.00	\$24,962.96	\$27,958.52
Formation of Subgrade	1872	SY	\$5.00	\$9,361.11	\$10,484.44
Finish Grading	1872	SY	\$1.54	\$2,883.22	\$3,229.21
Concrete Curb	748	LF	\$61.60		
Processed Aggregate Base	624	CY	\$60.00	\$37,444.44	\$41,937.78
Bituminous Concrete (4" pavement) Yard Area	16850	SF	\$5.39	\$90,821.50	\$101,720.08
Underground Drainage System	1	LS	\$18,000.00		
Site Lighting	2	LS	\$4,500.00		
Area/Dimensions to be adjusted for formulas above				Subtotal:	\$185,330
Area	16850	SF		General Condit. (8.5%)	\$15,753
Dim Garage	133	97		Subtotal	\$201,083
Dim Canopy	29	115		Contingency (15%)	\$30,162
				Escalation (6%):	\$13,875
				Total:	\$245,120

Town of Truro
Department of Public Works
Cost/Benefit Analysis - Item 7 - Exterior Storage Area Site Maintenance Costs

Replace Pavement @ Year 20 and Year 40			NPV
Yr 1	Reclaim Pvmnt:	\$18,722	
Yr 1	New Pavement:	\$101,720	
Yr 1	Contingency	\$18,066	
	Cost @ Year 20 based on 3% escalation	\$242,876	\$208,754
	Cost @ Year 40 based on 3% escalation	\$438,661	\$321,490
	Total:	\$681,536	\$530,244
Yearly Striping			
	Labor per Year (hours):	32	
	Labor Rate (loaded):	\$51.03	
Yr 1	Total Labor:	\$1,633	
	Total cost over 50 years:	\$184,193	\$145,396
Snow Removal			
	Labor per event (hours):	8	
	Labor Rate (loaded):	\$51.03	
	Number of Snow Events per Year:	6	
Yr 1	Total Labor	\$2,449	
	Total cost over 50 years:	\$276,289	\$218,094
General Maintenance			
	Labor per week (hours):	1	
	Weeks:	52	
	Labor Rate (Loaded):	\$51.03	
Yr 1	Total Labor	\$2,654	
	Total cost over 50 years:	\$299,313	\$236,269
TOTAL COST OF SITE MAINTENANCE:			
		\$1,441,332	\$1,130,004

Town of Montague
Department of Public Works
Cost / Benefit Analysis - Item 8 - Cold Weather Costs

Avg Annual Inflation Rate 3.0%

9 Trucks
2 Excavator/Loader

Average Workforce Rate (loaded) \$ 51.03

	A Workforce Personnel Effected by Warm-up / Preparation Requirement	FREQUENCY		C Average Warm-up / Preparation Time per Vehicle / Equipment (minutes)	D Total Downtime Per Year (minutes)	LABOR		G Total Labor Cost per Year	H Fuel Consumption Rate During Warm-up (gallons/hr)	FUEL CONSUMPTION			K Total Fuel Consumption Cost During Warm-up per Year	TOTAL		M Total Cost Over Life of Bldg (50 Years)	Net Present Value
		B Cold Weather Days				E Total Downtime Per Year (hours)	F Loaded Labor Rate			I Total Fuel Consumption During Warm-up (gallons)	J Fuel Cost per Gallon			L Total Labor & Fuel Cost per Year (1st Year)			
Maintenance Activity																	
Morning warm-up & vehicle preparation	11	85	10	9,350	156	\$ 51.03	\$ 7,952	\$ 0.32	\$ 50	\$ 3.50	\$ 175	\$ 8,127	\$ 916,667	\$ 723,590			
Cold Weather Days: Assume November 15 thru March 15th 17 weeks 5 days per week 85 days per year									TOTALS:				\$ 8,127	\$ 916,667	\$ 723,590		

Assumptions:

1. It is assumed that all workforce personnel will be delayed during vehicle preparation time.
- 2 It is assumed 1 personnel per vehicle

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 9 - Storm Event Costs

Avg Annual Inflation Rate 3.0%
Benefits Adjustment
Average rate with out benefits

Vehicles with Plows: 14
Sanders: 3

Average Workforce Rate (loaded) \$ 51.03

Maintenance Activity	FREQUENCY		C Average Vehicle/Plow Preparation Time per Vehicle (minutes)	D Average Sander Preparation Time per Sander (minutes)	LABOR		G Total Labor Cost per Year (F x E)	H Fuel Consumption Rate During Warm-up (gallons/hr)	FUEL CONSUMPTION		K Total Fuel Consumption Cost During Warm-up per Year (I x J)	TOTAL		Net Present Value
	A Average Number of Plow Events	B Average Number of Sand Events			E Total Preparation Time (hours)	F Loaded Labor Rate			I Total Fuel Consumption During Warm-up (gallons)	J Fuel Cost per Gallon		L Total Labor & Fuel Cost per Year (1st Year) (G + K)	M Total Cost Over Life of Bldg (50 Years)	
Vehicle Preparation & Plow Connection	6	7	30	30	53	51.03	\$ 2,679	\$ 0.32	\$ 17	\$ 3.50	\$ 59	\$ 2,738	\$ 308,824	\$ 243,776
TOTALS:												\$ 2,738	\$ 308,824	\$ 243,776

1. Assumed every plow is assigned to a vehicle.

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 10 - Engine Block Heaters

Avg Annual Inflation Rate 3.0%
Number of Large Vehicles 9
Number of Small Vehicles 0
Number of Pieces of Construction Equipment 10

Maintenance Activity	FREQUENCY			LABOR				TOTAL		Net Present Value
	A Vehicles & Equipment	B Cold Weather Days	C Average Block Heater Usage per Vehicle per Day (hours)	D Total Block Heater Hours of Operation per Year (hours)	E Engine Block Electrical Consumption (Kw)	F Total Electrical Usage	G Electrical Unit Cost (\$/Kwh)	H Total Electrical Cost per Year (1st Year) (F * G)	I Total Cost Over Life of Bldg (50 Years)	
Emergency Vehicles (continuous operation)	10	119	16	19,040	0.7	13,328	\$ 0.18	\$ 2,399	\$ 270,604	
Non-Emergency Vehicles (4 hours operation)	1	119	4	476	0.7	333	\$ 0.18	\$ 60	\$ 6,765	
Cold Weather Days: Assume November 15 thru March 15th 17 weeks 7 days per week 119 days per year								\$ 2,459	\$ 277,369	\$ 218,947

Assumptions:

1. It is assumed that all emergency response vehicles will be required to be plugged in overnight to ensure adequate equipment is available for the DPW use.
2. Non-emergency equipment will be on timers which will activate the block heaters 4 hours before operation.
3. Assuming 9 trucks and 1 Loader is emergency vehicle and 1 excavator is non emergency

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 11 - Loading & Unloading Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Maintenance Activity	A Number of Vehicles Impacted by Operations	FREQUENCY		D Total Downtime Per Year (minutes)	LABOR		G Total Labor Cost per Year (F x E)	TOTAL		Net Present Value
		B Number of Employees Impacted by Operations	C Average Loading & Unloading Time per Vehicle per Day (minutes)		E Total Downtime Per Year (hours)	F Loaded Labor Rate		H Total Labor Cost per Year (1st Year) (G)	I Total Cost Over Life of Bldg (50 Years)	
Vehicle Loading & Unloading	6	1	33	8,250	138	\$ 51.03	\$ 7,017	\$ 7,017	\$ 791,453	\$ 624,750
Work Days	250							\$ 7,017	\$ 791,453	\$ 624,750

Assumptions:

1. It is assumed that there is 1 employee loading and unloading the inside vehicles

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 12 - Vehicle Staging Non-Productive Labor Costs

Avg Annual Inflation Rate 3.0%

Average Mechanics Rate (loaded) \$ 51.03
2025

Description	FREQUENCY						PARTS		TOTAL	J	K	L
	A	B	C	D	E	F	G	H	I			
	Employees Impacted	Non-Productive Labor per Employee (hours)	Cold Weather Days or Storm Events	Total Manhours per Year (A x B x C)	Loaded Rate	Total Labor Cost per Year (D x E)	Average Parts Cost per Year per Equipment	Total Parts Cost per Year	Total Labor & Parts Cost per Year (1st Year) (F + H)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	Net Present Value
Unload Salt/Sand after Storm Event	4	0.3	13	15.6	51.03	\$ 796		\$ -	\$ 796	\$ 21,391	\$ 89,794	\$ 70,881
							TOTALS:		\$ 796	\$ 21,391	\$ 89,794	\$ 70,881

Cold Weather Days: Assume November 15 thru March 15th
17 weeks
5 days per week
85 days per year

1. Assuming 2 employee per sander and 2 employee with the exavator

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 13 - Employee Safety Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Description	FREQUENCY			TOTAL		Net Present Value
	A	B	C	D	E	
	Average Hours of Lost Labor per Year	Loaded Labor Rate	Total Labor Cost per Year (A x B)	Total Labor Cost per Year (1st Year) (C)	Total Cost Over Life of Bldg (50 Years)	
Loss of labor due to injury	40.0	\$ 51.03	\$ 2,041	\$ 2,041	\$ 230,241	\$ 181,745
Average hours of lost labor / year: 120				\$ 2,041	\$ 230,241	\$ 181,745

Assumptions:

1. It is assumed that the Town will incur an average of 40 hours per year of lost labor due to injuries resulting from exposure of employees to fall hazards or other hazards associated with exterior storage of equipment & materials

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 14 - Environmental Impact Costs

Avg Annual Inflation Rate

Average Workforce Rate (loaded)

Description	A Consultant Hours	B Consultant Fee	C Consultant Expenses / Contractors	D Total Consultant Costs	E Regulatory Fees	F Clean-up Costs	TOTAL	
							K 1st Year Occurrence Total Costs	
Immediate Response Actions (containment)	5	\$ 180.00	\$ 1,000	\$ 1,900	\$ -	\$ -	\$ 1,900	
DEP Notification & Remediation Submittals	15	\$ 180.00	\$ 1,000	\$ 3,700	\$ 6,000	\$ -	\$ 9,700	
Limited Soil and Surface Disposal	10	\$ 180.00	\$ 1,000	\$ 2,800	\$ -	\$ 30,000.00	\$ 32,800	
Close-out (response action outcome)	25	\$ 180.00	\$ 1,000	\$ 5,500	\$ -	\$ -	\$ 5,500	
Year 1 Cost							\$ 49,900	
NPV								
Year 10							\$ 65,108	\$ 60,603
Year 20							\$ 87,500	\$ 75,207
Year 30							\$ 117,593	\$ 93,331
Year 40							\$ 158,035	\$ 115,822
Year 50							\$ 212,385	\$ 143,734
Total Cost:							\$ 640,621	\$ 488,696

Assumptions:

1. It is assumed that there will be one reportable hazardous materials release associated with storing equipment outdoors every +/- 10 years (year 10, 20, 30, 40, and 50) associated with leaks/spills from vehicles & equipment stored outdoors

Department of Public Works
Cost / Benefit Analysis - Item 15 -Preventative Maintenance Delay Costs

Benefits Adjustment 1.5694
Number of Large Vehicles 9
Number of Small Vehicles 0
Number of Pieces of Construction Equipment 7
Average Mechanics Overtime Rate (loaded) \$ 71.74

Vehicle Type	Maintenance Activity	LABOR					PARTS		TOTAL			Net Present Value
		A Average Maintenance Manhours per Vehicle	B Number of Vehicles or Equipment	C Total Manhours per Year	D Loaded Rate	E Total Labor Cost per Year	F Parts Cost per Occurrence per Vehicle	G Total Parts Cost per Year	H Total Labor & Parts Cost per Year (1st Year) (H + J)	I Total Cost Over 20 Year Period	J Total Cost Over Life of Bldg (50 Years)	
Large Vehicles	Additional Maintenance Hours	2	9	18	\$ 71.74	\$ 1,291	\$ 200	\$ 1,800	\$ 3,091	\$ 83,063	\$ 348,681	\$ 275,238
Small Vehicles	Additional Maintenance Hours	2	0	0	\$ 71.74	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
Construction Equipment	Additional Maintenance Hours	2	7	14	\$ 71.74	\$ 1,004	\$ 200	\$ 1,400	\$ 2,404	\$ 64,604	\$ 271,196	\$ 214,074
							TOTALS:		\$ 5,496	\$ 147,667	\$ 619,877	\$ 489,313

Note:

1. These costs are based on additional maintenance tasks due to delayed preventative maintenance resulting from the additional services required by Item 4.
2. Due to current workload, it is assumed that these services will be performed on overtime.
3. Assuming 1 sweeper, 1 excavator, 1 Loader, 2 Lift, 2 forklift for Construction EQ

Town of Truro
Department of Public Works
OPTION B: BUILDING (11,000 sf) + COLD STORAGE BUILDING (4,050 sf)
Cost / Benefit Analysis Summary

8/20/2025

Item	Description	Cost Over the Life of the Building (50 Years)	Net Present Value
1	Construction Cost of a New 4,050 SF Storage Garage	\$ 2,130,000	\$ 1,975,742
2	Building Maintenance Costs	\$ 830,880	\$ 663,620
3	Heating, Ventilation, and Electrical Costs	\$ 388,468	\$ 317,894
	Total Costs Associated with Building and Maintaining a Storage Garage:	\$ 3,349,349	\$ 2,957,255
4	Additional Vehicle Maintenance Costs Associated with Exterior Storage	\$ 1,839,015	\$ 1,440,869
5	Additional Costs Associated with Vehicle Life Expectancy Reduction	\$ 2,251,221	\$ 2,975,852
6	Site Development Costs for Exterior Storage	\$ 264,408	\$ 245,259
7	Exterior Storage Area Maintenance Costs	\$ 1,277,519	\$ 1,002,556
8	Cold Weather Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 583,334	\$ 460,466
9	Storm Event Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 141,177	\$ 111,441
10	Engine Block Heater Usage Costs	\$ 67,651	\$ 53,402
11	Security Loading & Unloading of Vehicles (non-productive labor)	\$ -	\$ -
12	Vehicle Staging Non-Productive Labor Costs	\$ 44,897	\$ 35,440
13	Reduced Employee Safety Costs	\$ 57,560	\$ 45,436
14	Environmental Impacts	\$ 564,362	\$ 430,523
15	Increase in Vehicle Maintenance Costs Due to Delays in Preventative Maint.	\$ 959,908	\$ 757,723
	Costs Associated with Storing Vehicles Outdoors:	\$ 8,051,051	\$ 7,558,966
	Additional Costs Incurred By the Town if Vehicles and Equipment are Stored Outdoors:	\$ 4,701,703	\$ 4,601,711

Note: Costs associated with reduced public safety due to delays associated with outdoor storage have not been included in this analysis

Net Present Value (NPV) Discount Rate:	0.80%
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Town of Truro

Department of Public Works

Cost / Benefit Analysis - Item 1 - Vehicle Storage Garage Cost

AMOUNT FINANCED	DEBT SERV. YEARS *	ESTIMATED INT. RATE*
1,500,000	20	4.00%

Total Cost: \$ 2,130,000

NPV Total: \$ 1,975,742

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 2 - Building Maintenance Costs

Average Employee Rate with Benefits \$ 51.03
 Avg Annual Inflation Rate 3.0%
 Benefits Adjustment

Building Maintenance Activity	A	B	LABOR			PARTS		TOTAL			Net Present Value
	Frequency per year	Average Maintenance Manhours per Occurrence	C	D	E	F	G	H	I	J	
			Total Manhours per Year (A x B)	Loaded Rate	Total Labor Cost per Year (C x D)	Parts Cost per Occurrence	Total Parts Cost per Year (A x F)	Total Labor & Parts Cost per Year (1st Year) (E + G)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	
Yearly Preventative Maintenance Service	1	8	8	\$ 51.03	\$ 408	\$ 250	\$ 250	\$ 658	\$ 17,687	\$ 74,247	\$ 58,609
Change Light Bulbs	2	8	16	\$ 51.03	\$ 816	\$ 100	\$ 200	\$ 1,016	\$ 27,313	\$ 114,656	\$ 90,506
Unscheduled Repairs	2	16	32	\$ 51.03	\$ 1,633	\$ 500	\$ 1,000	\$ 2,633	\$ 70,749	\$ 296,990	\$ 234,435
Replace Roof	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 82,328	\$ 67,998
Repaint Exterior Items	0.20	80	16	\$ 51.03	\$ 816	\$ 100	\$ 20	\$ 836	\$ 22,477	\$ 94,352	\$ 74,479
Repair / Replace Heating Elements after useful life of equipment	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 98,794	\$ 81,598
Replace overhead doors after useful life	Four Occurrences - @ years 10, 20, 30 and y		--	--	--	--	--	--	--	\$ 69,513	\$ 55,996
						TOTALS:		\$ 5,144	\$ 138,226	\$ 830,880	\$ 663,620

Discount Rate: 0.8%

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 3 - Heating, Ventilation, & Electrical Costs
2025

Energy Cost Estimate for a 4050 SF Cold Storage Garage

Energy Model Indicates total yearly electricity consumption @	157,000 kWh	3.925 kWh per SF - Cold Storage per historical Energy Model
Adjust for 4,050 SF Vehicle Storage Garage	15,896 kWh	
Annual Electricity Consumption:	15,896 kWh	
Electricity Cost:	0.2246 \$ / kWh	(per US Energy Information Administration May 2025)
Annual Electricity Cost:	3,570 \$ / Year	

Energy Cost Estimate for a 4,050 SF Cold Storage Garage:

Annual Fuel Cost @	\$	-	per year
Annual Elec Cost @	\$	3,570	per year
Total	\$	3,570	1st Year

Over life of bldg with 3% / yr inflation:	\$	388,468
Net Present Value:	\$	317,894

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type Sheet		Maintenance Activity		A Estimated Occurrences per Year - Interior Storage (per veh.)	FREQUENCY B Estimated Occurrences per Year - Exterior Storage (per veh.)	C Additional Occurrences per Year per Vehicle (B - A)	D Average Maintenance Manhours per Occurrence	E Number of Vehicles or Equipment	LABOR F Total Manhours per Year (C x D x E)	G Loaded Rate	H Total Labor Cost per Year (F x G)	PARTS I Parts Cost per Occurrence per Vehicle (C x E x I)		J Total Parts Cost per Year (C x E x I)	K Total Labor & Parts Cost per Year (1st Year) (H + J)	L Total Cost Over 20 Year Period	M Total Cost Over Life of Bldg (50 Years)	Net Present Value
Large Vehicles	1	Diagnose no start condition - remove, rebuild or replace starter motor		0.014	0.070	0.056	3	0	0	51.03	\$ -	\$ 250	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	2	Diagnose no start condition (diesel) - gelled fuel, start vehicles with either		0	0.43	0.43	2.5	0	0	51.03	\$ -	\$ 15	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	8	Repair windshield wiper system - replace wiper motors, repair or replace wiper linkage, replace wiper blades		0.06	0.39	0.33	2	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)		0	1	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	10	Prepare vehicles for plow winter use - repair corroded electrical connections, clean rust from hydraulic pistons, replace frozen quick disconnects		2	3	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames		0	1	1	3.5	0	0	\$ 51.03	\$ -	\$ 300	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	13	Diagnose / repair frozen air systems		0	0.4	0	2	0	0	51.03	\$ -	\$ 20	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims		0.05	0.16	0.11	1	0	0	\$ 51.03	\$ -	\$ 150	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels		0.1	0.26	0	6.5	0	0	\$ 51.03	\$ -	\$ 525	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	16	Diagnose water in fuel in vehicles stored outdoors		0	0.26	0.26	1	0	0	\$ 51.03	\$ -	\$ 15	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted		0.05	1	0.95	2	0	0	\$ 51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	18	Check battery condition - recharge or replace		0.16	0.32	0.16	1	0	0	\$ 51.03	\$ -	\$ 200	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	19	Check alternator output		0.05	0.1	0.05	1.5	0	0	\$ 51.03	\$ -	\$ 225	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type Sheet		Maintenance Activity		A Estimated Occurrences per Year - Interior Storage (per veh.)	FREQUENCY B Estimated Occurrences per Year - Exterior Storage (per veh.)	C Additional Occurrences per Year per Vehicle (B - A)	D Average Maintenance Manhours per Occurrence	E Number of Vehicles or Equipment	LABOR F Total Manhours per Year (C x D x E)	G Loaded Rate	H Total Labor Cost per Year (F x G)	I Parts Cost per Occurrence per Vehicle	J Total Parts Cost per Year (C x E x I)	K Total Labor & Parts Cost per Year (1st Year) (H + J)	TOTAL L Total Cost Over 20 Year Period	M Total Cost Over Life of Bldg (50 Years)	Net Present Value
Small Vehicles	8	Repair windshield wiper system - replace wiper motors, repair or replace wiper linkage, replace wiper blades		0.6	1.2	0.6	2	0	1.2	\$ 51.03	\$ 61	\$ 100	\$ 60	\$ 121	\$ 3,258	\$ 13,675	\$ -
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)		0	1	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	10	Prepare vehicles for plow winter use - repair corroded electrical connections, clean rust from hydraulic pistons, replace frozen quick disconnects		2	3	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	11	Tune up vehicle stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ignition coils		0	0.21	0.21	10	0	0	51.03	\$ -	\$ 500	\$ -	\$ -	\$ -	\$ -	\$ -
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames		0	1	1	3.5	0	0	51.03	\$ -	\$ 300	\$ -	\$ -	\$ -	\$ -	\$ -
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims		0.05	0.16	0.11	1	0	0	51.03	\$ -	\$ 150	\$ -	\$ -	\$ -	\$ -	\$ -
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels		0.1	0.26	0.16	6.5	0	0	51.03	\$ -	\$ 525	\$ -	\$ -	\$ -	\$ -	\$ -
	16	Diagnose water in fuel in vehicles stored outdoors		0	0.26	0.26	1	0	0	51.03	\$ -	\$ 15	\$ -	\$ -	\$ -	\$ -	\$ -
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted		0.05	1.00	0.95	2	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	18	Check battery condition - recharge or replace		0.16	0.32	0.16	1	0	0	51.03	\$ -	\$ 200	\$ -	\$ -	\$ -	\$ -	\$ -
	19	Check alternator output		0.05	0.1	0.05	1.5	0	0	51.03	\$ -	\$ 225	\$ -	\$ -	\$ -	\$ -	\$ -
	20	Replace leaking brake / fuel lines		0	0.24	0.24	5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type	Sheet	Maintenance Activity	A	B	C	D	E	LABOR	G	H	PARTS		K	TOTAL	M	Net Present Value
			Estimated Occurrences per Year - Interior Storage (per veh.)	Estimated Occurrences per Year - Exterior Storage (per veh.)	Additional Occurrences per Year per Vehicle (B - A)	Average Maintenance Manhours per Occurrence	Number of Vehicles or Equipment	Total Manhours per Year (C x D x E)	Loaded Rate	Total Labor Cost per Year (F x G)	Parts Cost per Occurrence per Vehicle	Total Parts Cost per Year (C x E x I)	Total Labor & Parts Cost per Year (1st Year) (H + J)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	
Construction Equipment	3	Repair or replace trailer electrical connectors	0	1	1	1	9	9	\$ 51.03	\$ 459	\$ 35	\$ 315	\$ 774	\$ 20,805	\$ 87,335	\$ 68,940
	4	Prepare small equipment - engine seized due to water, engine oil contaminated with water, repair electronic ignition system	0	1	1	4	2	8	\$ 51.03	\$ 408	\$ 275	\$ 550	\$ 958	\$ 25,748	\$ 108,086	\$ 85,320
	--	Not Used			0			0	\$ 51.03	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -
	6	Prepare sweepers for spring use - repair/replace frozen water pumps, replace damaged water lines	0	1	1	8	0	0	\$ 51.03	\$ -	\$ 200	\$ -	\$ -	\$ -	\$ -	\$ -
	7	Prepare sanders stored outdoors for winter use. Free up frozen conveyors and replace hydraulic quick disconnects	0	2	2	8	0	0	\$ 51.03	\$ -	\$ 300	\$ -	\$ -	\$ -	\$ -	\$ -
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)	0	1	1	2.5	4	10	51.03	\$ 510	\$ 100	\$ 400	\$ 910	\$ 24,460	\$ 102,679	\$ 81,052
	11	Tune up equipment stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ford ignition coils	0	0.21	0.21	10	2	4.2	\$ 51.03	\$ 214	\$ 500	\$ 210	\$ 424	\$ 11,402	\$ 47,863	\$ 37,781
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames	0	1	1	3.5	4	14	\$ 51.03	\$ 714	\$ 300	\$ 1,200	\$ 1,914	\$ 51,441	\$ 215,941	\$ 170,457
	13	Diagnose / repair frozen air systems	0	0.4	0	2	2	1.6	\$ 51.03	\$ 82	\$ 20	\$ 16	\$ 98	\$ 2,624	\$ 11,014	\$ 8,694
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims	0.05	0.16	0	1	13	1.43	\$ 51.03	\$ 73	\$ 150	\$ 215	\$ 287	\$ 7,725	\$ 32,426	\$ 25,596
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels	0.1	0.26	0.2	6.5	21	21.84	\$ 51.03	\$ 1,114	\$ 525	\$ 1,764	\$ 2,878	\$ 77,346	\$ 324,685	\$ 256,297
	16	Diagnose water in fuel in vehicles stored outdoors	0	0.26	0.26	1	2	0.52	\$ 51.03	\$ 27	\$ 15	\$ 8	\$ 34	\$ 923	\$ 3,873	\$ 3,057
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted	0.05	1.00	0.95	2	2	3.8	\$ 51.03	\$ 194	\$ 100	\$ 190	\$ 384	\$ 10,316	\$ 43,304	\$ 34,183
	18	Check battery condition - recharge or replace	0.16	0.32	0.16	1	4	0.64	\$ 51.03	\$ 33	\$ 200	\$ 128	\$ 161	\$ 4,317	\$ 18,122	\$ 14,305
	19	Check alternator output	0.05	0.1	0.05	1.5	2	0.15	\$ 51.03	\$ 8	\$ 225	\$ 23	\$ 30	\$ 810	\$ 3,401	\$ 2,685
											TOTALS:		\$ 8,975	\$ 241,174	\$ 1,012,405	\$ 788,368

Baseline Vehicle/Equipment Replacement Costs

Stored Outside

Recommended Average DPW Vehicle Life Expectancy (years)

Trailer/Forklift	10	Excavator/Loader/Interstate	15	Plow	20	Dump Trailer
	3.0%					

Vehicle #	Description	Purchase Date	Purchase Price	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV																												
10	F350 Pick Up	2012	\$ 51,071	2027	\$ 79,568	2	\$ 78,310	2042	\$ 123,964	17	\$ 108,259	2057	\$ 193,131	32	\$ 149,663	2072	\$ 300,892	47	\$ 206,903				\$ -																												
11	F350 Pick Up	2016	\$ 57,481	2031	\$ 89,554	6	\$ 85,373	2046	\$ 139,522	21	\$ 118,024	2061	\$ 217,371	36	\$ 163,163	2076	\$ 338,657					\$ -																													
12	F350 Pick Up	2016	\$ 57,481	2031	\$ 89,554	6	\$ 85,373	2046	\$ 139,522	21	\$ 118,024	2061	\$ 217,371	36	\$ 163,163	2076	\$ 338,657					\$ -																													
14	F350 Pick Up	2018	\$ 60,982	2033	\$ 95,008	8	\$ 89,140	2048	\$ 148,019	23	\$ 123,232	2063	\$ 230,609	38	\$ 170,363							\$ -																													
15	Pick Up	2016	\$ 57,481	2031	\$ 89,554	6	\$ 85,373	2046	\$ 139,522	21	\$ 118,024	2061	\$ 217,371	36	\$ 163,163							\$ -																													
17	John Deer 130G Excavator	2006	\$ 114,057	2025	\$ 200,000	-	\$ 200,000	2040	\$ 311,593	15	\$ 276,491	2055	\$ 485,452	30	\$ 382,235	2070	\$ 756,319	45	\$ 528,422				\$ -																												
18	John Deere Loader	2012	\$ 170,238	2027	\$ 265,225	-	\$ 265,225	2042	\$ 413,212	17	\$ 360,884	2057	\$ 479,026	32	\$ 371,212	2072	\$ 643,771	47	\$ 442,676		\$ -		\$ -																												
19	JLG 600S Lift	2020	\$ 142,000	2030	\$ 190,836	5	\$ 183,383	2040	\$ 256,468	15	\$ 227,575	2050	\$ 344,671	25	\$ 282,418	2060	\$ 463,209	35	\$ 350,476	2070	\$ 622,515	45	\$ 434,936																												
20	Generator Box Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2035	\$ 67,196	10	\$ 62,049	2045	\$ 90,306	20	\$ 77,002	2055	\$ 121,363	30	\$ 95,559	2065	\$ 163,102	40	\$ 118,587																												
21	Generator Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2035	\$ 67,196	10	\$ 62,049	2045	\$ 90,306	20	\$ 77,002	2055	\$ 121,363	30	\$ 95,559	2065	\$ 163,102	40	\$ 118,587																												
22	Bandit Wood Chipper	2002	\$ 24,997	2025	\$ 49,334	-	\$ 49,334	2035	\$ 66,300	10	\$ 61,222	2045	\$ 89,102	20	\$ 75,976	2055	\$ 119,746	30	\$ 94,285	2065	\$ 160,929	40	\$ 117,007																												
23	Timple Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289	2065	\$ 26,096	40	\$ 18,974																												
24	Cam Trailer	2007	\$ 7,049	2025	\$ 12,000	-	\$ 12,000	2035	\$ 16,127	10	\$ 14,892	2045	\$ 21,673	20	\$ 18,481	2055	\$ 29,127	30	\$ 22,934	2065	\$ 39,144	40	\$ 28,461																												
25	Kaufman Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289	2065	\$ 26,096	40	\$ 18,974																												
26	Interstate Trailer	2015	\$ 35,717	2030	\$ 55,645	5	\$ 53,472	2045	\$ 86,693	20	\$ 73,922	2060	\$ 135,065	35	\$ 102,194	2075	\$ 210,427	50	\$ 141,278		\$ -		\$ -																												
27	Bence Trailer	1997	\$ 50,000	2025	\$ 114,396	-	\$ 114,396	2035	\$ 153,739	10	\$ 141,964	2045	\$ 206,613	20	\$ 176,176	2055	\$ 277,670	30	\$ 218,632	2065	\$ 373,165	40	\$ 271,319																												
28	Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289	2065	\$ 26,096	40	\$ 18,974																												
51	Standard Plow	2015	\$ 2,976	2035	\$ 5,376	10	\$ 4,964	2055	\$ 9,709	30	\$ 7,645	2075	\$ 17,536	50	\$ 11,773	2085	\$ -	60	\$ -																																
52	Standard Plow	2015	\$ 2,976	2035	\$ 5,376	10	\$ 4,964	2055	\$ 9,709	30	\$ 7,645	2075	\$ 17,536	50	\$ 11,773	2085	\$ -	60	\$ -																																
53	Standard Plow	2015	\$ 2,976	2035	\$ 5,376	10	\$ 4,964	2055	\$ 9,709	30	\$ 7,645	2075	\$ 17,536	50	\$ 11,773	2085	\$ -	60	\$ -																																
54	Standard Plow	2015	\$ 2,976	2035	\$ 5,376	10	\$ 4,964	2055	\$ 9,709	30	\$ 7,645	2075	\$ 17,536	50	\$ 11,773	2085	\$ -	60	\$ -																																
55	Standard Plow	2015	\$ 2,976	2035	\$ 5,376	10	\$ 4,964	2055	\$ 9,709	30	\$ 7,645	2075	\$ 17,536	50	\$ 11,773	2085	\$ -	60	\$ -																																
56	Standard Plow	2015	\$ 2,976	2035	\$ 5,376	10	\$ 4,964	2055	\$ 9,709	30	\$ 7,645	2075	\$ 17,536	50	\$ 11,773	2085	\$ -	60	\$ -																																
57	Standard Plow	2015	\$ 2,976	2035	\$ 5,376	10	\$ 4,964	2055	\$ 9,709	30	\$ 7,645	2075	\$ 17,536	50	\$ 11,773	2085	\$ -	60	\$ -																																
58	Standard Plow	2015	\$ 2,976	2035	\$ 5,376	10	\$ 4,964	2055	\$ 9,709	30	\$ 7,645	2075	\$ 17,536	50	\$ 11,773	2085	\$ -	60	\$ -																																
65	Forklift	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2035	\$ 67,196	10	\$ 62,049	2045	\$ 90,306	20	\$ 77,002	2055	\$ 121,363	30	\$ 95,559	2065	\$ 163,102	40	\$ 118,587																												
Subtotals:					\$ 1,547,679	NPV	\$ 1,515,090	Subtotals:					\$ 2,306,196	NPV	\$ 2,019,585	Subtotals:					\$ 3,292,004	NPV	\$ 2,580,361	Subtotals:					\$ 3,900,819	NPV	\$ 2,338,152	Subtotals:					\$ 1,763,348	NPV	\$ 1,264,406												
																						\$ 2,243,906																													
Total Replacement Costs Based on 11 Year Vehicle Life Expectancy:																						\$ 12,810,045					(50 yr period)					\$ 1,816,067					1469803					1202566					813910				
																						NPV: \$ 9,717,595																													
																						\$ 7,546,251																													

Town of Truro

Department of Public Works
Item 5 - Cost/Benefit Analysis

2 Year Reduction in Vehicle & Equipment Life

Recommended Average DPW Vehicle Life Expectancy (years)
Reduced Average DPW Vehicle Life Expectancy (years)

Trailer/Forklift
10
8
3.0%

Excavator/loader/Interstate
15
13

Plow
20
18

Discount Rate 0.8%

Vehicle #	Description	Purchase Date	Purchase Price	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV
10	F350 Pick Up	2012	\$ 15,591	2025	\$ 75,000	-	\$ 75,000	2038	\$ 110,140	13	\$ 110,140	2051	\$ 161,744	26	\$ 161,744	2064	\$ 237,527	39	\$ 237,527												
11	F350 Pick Up	2016	\$ 57,481	2029	\$ 84,413	4	\$ 84,413	2042	\$ 123,964	17	\$ 123,964	2055	\$ 182,045	30	\$ 182,045	2068	\$ 267,339	43	\$ 267,339												
12	F350 Pick Up	2016	\$ 57,481	2029	\$ 84,413	4	\$ 84,413	2042	\$ 123,964	17	\$ 123,964	2055	\$ 182,045	30	\$ 182,045	2068	\$ 267,339	43	\$ 267,339												
14	F350 Pick Up	2018	\$ 60,982	2031	\$ 89,554	6	\$ 89,554	2044	\$ 131,513	19	\$ 131,513	2057	\$ 193,131	32	\$ 193,131	2070	\$ 283,620	45	\$ 283,620												
15	Pick Up	2016	\$ 57,481	2029	\$ 84,413	4	\$ 84,413	2042	\$ 123,964	17	\$ 123,964	2055	\$ 182,045	30	\$ 182,045	2068	\$ 267,339	43	\$ 267,339												
17	John Deer 130G Excavator	2006	\$ 114,057	2025	\$ 200,000	-	\$ 200,000	2038	\$ 293,707	13	\$ 284,895	2051	\$ 431,318	26	\$ 350,610	2064	\$ 633,405	39	\$ 464,211												
18	John Deere Loader	2012	\$ 170,238	2025	\$ 250,000	-	\$ 250,000	2038	\$ 387,133	13	\$ 331,007	2051	\$ 539,148	26	\$ 438,262	2064	\$ 791,757	39	\$ 580,271												
19	LEADS LP	2020	\$ 142,000	2028	\$ 179,881	3	\$ 175,630	2036	\$ 227,889	11	\$ 228,745	2044	\$ 388,657	19	\$ 248,103	2052	\$ 385,662	27	\$ 259,663	2060	\$ 463,200	35	\$ 350,476	2068	\$ 586,780	43	\$ 475,552				
20	Generator Box Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2033	\$ 63,339	8	\$ 59,427	2041	\$ 80,235	16	\$ 70,631	2049	\$ 101,640	24	\$ 83,948	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 115,587	2073	\$ 206,613	48	\$ 140,936
21	Generator Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2033	\$ 63,339	8	\$ 59,427	2041	\$ 80,235	16	\$ 70,631	2049	\$ 101,640	24	\$ 83,948	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 115,587	2073	\$ 206,613	48	\$ 140,936
22	Bambi Wood Chipper	2002	\$ 24,597	2025	\$ 49,334	-	\$ 49,334	2033	\$ 62,495	8	\$ 58,595	2041	\$ 79,166	16	\$ 69,500	2049	\$ 100,285	24	\$ 82,925	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 115,587	2073	\$ 206,613	48	\$ 140,936
23	Triplex Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,508	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,601	32	\$ 16,974	2065	\$ 26,096	40	\$ 16,974	2073	\$ 33,058	48	\$ 22,551
24	Cain Trailer	2007	\$ 7,049	2025	\$ 12,000	-	\$ 12,000	2033	\$ 15,201	8	\$ 14,282	2041	\$ 19,256	16	\$ 16,952	2049	\$ 24,394	24	\$ 20,148	2057	\$ 30,901	32	\$ 23,249	2065	\$ 39,144	40	\$ 26,461	2073	\$ 49,087	48	\$ 33,827
25	Kaufman Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,538	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,601	32	\$ 15,955	2065	\$ 39,144	40	\$ 16,974	2073	\$ 49,087	48	\$ 22,551
26	Interstate Trailer	2015	\$ 35,717	2028	\$ 52,451	3	\$ 51,212	2041	\$ 77,026	16	\$ 67,906	2054	\$ 113,115	29	\$ 89,777	2067	\$ 166,113	42	\$ 118,867	2075	\$ 294,580	32	\$ 228,279	2083	\$ 373,165	40	\$ 271,319	2091	\$ 472,716	48	\$ 322,473
27	Bunce Trailer	1997	\$ 50,000	2025	\$ 114,396	-	\$ 114,396	2033	\$ 144,914	8	\$ 135,995	2041	\$ 183,573	16	\$ 161,599	2049	\$ 232,544	24	\$ 192,061	2057	\$ 294,580	32	\$ 228,279	2065	\$ 373,165	40	\$ 271,319	2073	\$ 472,716	48	\$ 322,473
28	Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,538	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,601	32	\$ 15,955	2065	\$ 37,365	40	\$ 16,974	2073	\$ 33,058	48	\$ 22,551
51	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343																
52	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343																
53	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343																
54	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343																
55	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343																
56	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343																
57	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343																
58	Standard Plow	2015	\$ 2,976	2033	\$ 5,067	8	\$ 4,754	2051	\$ 8,626	26	\$ 7,012	2069	\$ 14,686	44	\$ 10,343																
65	Forklift	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2033	\$ 63,339	8	\$ 59,427	2041	\$ 80,235	16	\$ 70,631	2049	\$ 101,640	24	\$ 83,948	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 115,587	2073	\$ 206,613	48	\$ 140,936
				Subtotals:	\$ 1,490,392	NPV	\$ 1,482,401	Subtotals:	\$ 2,091,317	NPV	\$ 1,957,674	Subtotals:	\$ 2,951,948	NPV	\$ 2,604,541	Subtotals:	\$ 3,991,030	NPV	\$ 3,368,582	Subtotals:	\$ 1,363,793	NPV	\$ 1,048,367	Subtotals:	\$ 1,727,613	NPV	\$ 1,246,025	Subtotals:	\$ 1,445,173	NPV	\$ 985,858
					\$ 2,305,585		\$ 2,305,585		\$ 1,974,910		\$ 1,974,910		\$ 1,630,962		\$ 1,630,962		\$ 1,371,751		\$ 1,371,751												

Total Replacement Costs Based on 9 Year Vehicle Life Expectancy (50 yr Period): \$ 15,061,266

Total Replacement Costs for 9 Year Vehicle Life Expectancy: \$ 12,693,447

Town of Truro
Department of Public Works
Cost/Benefit Analysis - Item 6 - Site Development Costs for Exterior Vehicle Storage Area

Note: Cost to construct and maintain and exterior parking area over the life of the building

Description	Quantity	Unit	Unit Cost	TOTAL (No OH&P)	TOTAL (Incl. OH&P)
DIVISION 2 - SITE WORK					
<u>GENERAL SITE WORK</u>					
Earth Excavation Site	474	CY	\$40.00	\$18,962.96	\$21,238.52
Formation of Subgrade	1422	SY	\$5.00	\$7,111.11	\$7,964.44
Finish Grading	1422	SY	\$1.54	\$2,189.22	\$2,451.93
Concrete Curb	456	LF	\$61.60		
Processed Aggregate Base	474	CY	\$60.00	\$28,444.44	\$31,857.78
Bituminous Concrete (5" pavement) Yard Area	12800	SF	\$5.39	\$68,991.89	\$77,270.91
Underground Drainage System	1	LS	\$55,000.00		
Site Lighting	1	LS	\$4,000.00		
Area/Dimensions to be adjusted for formulas above				Subtotal:	\$140,784
Area	12800	SF		General Condit. (8.5%)	\$11,967
Dim Garage	100	128		Subtotal	\$152,750
Dim Canopy				Contingency (15%)	\$22,913
				Escalation (6%):	\$10,540
				Total:	\$186,202

Town of Truro
Department of Public Works
Cost/Benefit Analysis - Item 7 - Exterior Storage Area Site Maintenance Costs

Replace Pavement @ Year 20 and Year 40			NPV
Yr 1	Reclaim Pvmnt:	\$14,222	
Yr 1	New Pavement:	\$77,271	
Yr 1	Contingency	\$13,724	
	Cost @ Year 20 based on 3% escalation	\$184,499	\$158,578
	Cost @ Year 40 based on 3% escalation	\$333,225	\$244,218
	Total:	\$517,724	\$402,796
Yearly Striping			
	Labor per Year (hours):	32	
	Labor Rate (loaded):	\$51.03	
Yr 1	Total Labor:	\$1,633	
	Total cost over 50 years:	\$184,193	\$145,396
Snow Removal			
	Labor per event (hours):	8	
	Labor Rate (loaded):	\$51.03	
	Number of Snow Events per Year:	6	
Yr 1	Total Labor	\$2,449	
	Total cost over 50 years:	\$276,289	\$218,094
General Maintenance			
	Labor per week (hours):	1	
	Weeks:	52	
	Labor Rate (Loaded):	\$51.03	
Yr 1	Total Labor	\$2,654	
	Total cost over 50 years:	\$299,313	\$236,269
TOTAL COST OF SITE MAINTENANCE:			
		\$1,277,519	\$1,002,556

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 8 - Cold Weather Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

	A Workforce Personnel Effected by Warm-up / Preparation Requirement	FREQUENCY		D Total Downtime Per Year (minutes)	LABOR		G Total Labor Cost per Year	H Fuel Consumption Rate During Warm-up (gallons/hr)	FUEL CONSUMPTION			TOTAL		Net Present Value
		B Cold Weather Days	C Average Warm-up / Preparation Time per Vehicle / Equipment (minutes)		E Total Downtime Per Year (hours)	F Loaded Labor Rate			I Total Fuel Consumption During Warm-up (gallons)	J Fuel Cost per Gallon	K Total Fuel Consumption Cost During Warm-up per Year	L Total Labor & Fuel Cost per Year (1st Year)	M Total Cost Over Life of Bldg (50 Years)	
Maintenance Activity														
Morning warm-up & vehicle preparation	7	85	10	5,950	99	\$ 51.03	\$ 5,060	\$ 0.32	\$ 32	\$ 3.50	\$ 111	\$ 5,172	\$ 583,334	\$ 460,466
Cold Weather Days: Assume November 15 thru March 15th								TOTALS:				\$ 5,172	\$ 583,334	\$ 460,466

Assumptions:

1. It is assumed that all workforce personnel will be delayed during vehicle preparation time.

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 9 - Storm Event Costs

Avg Annual Inflation Rate 3.0%

Vehicles with Plows: 8
 Sanders: 0

Average Workforce Rate (loaded) \$ 51.03

Maintenance Activity	FREQUENCY		C Average Vehicle/Plow Preparation Time per Vehicle (minutes)	D Average Sander Preparation Time per Sander (minutes)	LABOR		G Total Labor Cost per Year (F x E)	H Fuel Consumption Rate During Warm-up (gallons/hr)	FUEL CONSUMPTION		K Total Fuel Consumption Cost During Warm-up per Year (I x J)	TOTAL		Net Present Value
	A Average Number of Plow Events	B Average Number of Sand Events			E Total Preparation Time (hours)	F Loaded Labor Rate			I Total Fuel Consumption During Warm-up (gallons)	J Fuel Cost per Gallon		L Total Labor & Fuel Cost per Year (1st Year) (G + K)	M Total Cost Over Life of Bldg (50 Years)	
Vehicle Preparation & Plow Connection	6	7	30	30	24	51.03	\$ 1,225	\$ 0.32	\$ 8	\$ 3.50	\$ 27	\$ 1,252	\$ 141,177	\$ 111,441
TOTALS:												\$ 1,252	\$ 141,177	\$ 111,441

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 10 - Engine Block Heaters

Avg Annual Inflation Rate 3.0%

Maintenance Activity	FREQUENCY			LABOR				TOTAL		Net Present Value
	A Vehicles & Equipment	B Cold Weather Days	C Average Block Heater Usage per Vehicle per Day (hours)	D Total Block Heater Hours of Operation per Year (hours)	E Engine Block Electrical Consumption (Kw)	F Total Electrical Usage	G Electrical Unit Cost (\$/Kwh)	H Total Electrical Cost per Year (1st Year) (F * G)	I Total Cost Over Life of Bldg (50 Years)	
Emergency Vehicles (continuous operation)	1	119	16	1,904	0.7	1,333	\$ 0.18	\$ 240	\$ 27,060	
Non-Emergency Vehicles (4 hours operation)	6	119	4	2,856	0.7	1,999	\$ 0.18	\$ 360	\$ 40,591	
Cold Weather Days: Assume November 15 thru March 15th 17 weeks 7 days per week 119 days per year								\$ 600	\$ 67,651	\$ 53,402

Assumptions:

1. It is assumed that all emergency response vehicles will be required to be plugged in overnight to ensure adequate equipment is available for the DPW use.
2. Non-emergency equipment will be on timers which will activate the block heaters 4 hours before operation.

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 12 - Vehicle Staging Non-Productive Labor Costs

Avg Annual Inflation Rate 3.0%

Average Mechanics Rate (loaded) \$ 51.03

Description	FREQUENCY						PARTS		TOTAL			
	A	B	C	D	E	F	G	H	I	J	K	L
	Employees Impacted	Non-Productive Labor per Employee (hours)	Cold Weather Days or Storm Events	Total Manhours per Year (A x B x C)	Loaded Rate	Total Labor Cost per Year (D x E)	Average Parts Cost per Year per Equipment	Total Parts Cost per Year	Total Labor & Parts Cost per Year (1st Year) (F + H)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	Net Present Value
Unload Salt/Sand after Storm Event	2	0.3	13	7.8	51.03	\$ 398		\$ -	\$ 398	\$ 10,695	\$ 44,897	\$ 35,440
							TOTALS:		\$ 398	\$ 10,695	\$ 44,897	\$ 35,440

Cold Weather Days: Assume November 15 thru March 15th
 17 weeks
 5 days per week
 85 days per year

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 13 - Employee Safety Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03
2025

Description	FREQUENCY			TOTAL		Net Present Value
	A	B	C	D	E	
	Average Hours of Lost Labor per Year	Loaded Labor Rate	Total Labor Cost per Year (A x B)	Total Labor Cost per Year (1st Year) (C)	Total Cost Over Life of Bldg (50 Years)	
Loss of labor due to injury	10.0	\$ 51.03	\$ 510	\$ 510	\$ 57,560	\$ 45,436
Average hours of lost labor / year: 120				\$ 510	\$ 57,560	\$ 45,436

Assumptions:

1. It is assumed that the Town will incur an average of 10 hours per year of lost labor due to injuries resulting from exposure of employees to fall hazards or other hazards associated with exterior storage of equipment & materials

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 14 - Environmental Impact Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Description	A Consultant Hours	B Consultant Fee	C Consultant Expenses / Contractors	D Total Consultant Costs	E Regulatory Fees	F Clean-up Costs	TOTAL	
							K 1st Year Occurrence Total Costs	
Immediate Response Actions (containment)	2	\$ 180.00	\$ 1,000	\$ 1,360	\$ -	\$ -	\$ 1,360	
DEP Notification & Remediation Submittals	6	\$ 180.00	\$ 1,000	\$ 2,080	\$ 6,000	\$ -	\$ 8,080	
Limited Soil and Surface Disposal	4	\$ 180.00	\$ 1,000	\$ 1,720	\$ -	\$ 30,000.00	\$ 31,720	
Close-out (response action outcome)	10	\$ 180.00	\$ 1,000	\$ 2,800	\$ -	\$ -	\$ 2,800	
						Year 1 Cost	\$ 43,960	
								NPV
						Year 10	\$ 57,358	\$ 53,389
						Year 20	\$ 77,084	\$ 66,254
						Year 30	\$ 103,595	\$ 82,221
						Year 40	\$ 139,223	\$ 102,035
						Year 50	\$ 187,103	\$ 126,624
						Total Cost:	\$ 564,362	\$ 430,523

Assumptions:

- It is assumed that there will be one reportable hazardous materials release associated with storing equipment outdoors every +/- 10 years (year 10, 20, 30, 40, and 50) associated with leaks/spills from vehicles & equipment stored outdoors

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 15 -Preventative Maintenance Delay Costs

Avg Annual Inflation Rate 3.0%

Average Mechanics Overtime Rate (loaded) \$ 63.66

Vehicle Type	Maintenance Activity	LABOR					PARTS		TOTAL H Total Labor & Parts Cost per Year (1st Year) (H + J)	I Total Cost Over 20 Year Period	J Total Cost Over Life of Bldg (50 Years)	Net Present Value
		A Average Maintenance Manhours per Vehicle	B Number of Vehicles or Equipment	C Total Manhours per Year	D Loaded Rate	E Total Labor Cost per Year	F Parts Cost per Occurrence per Vehicle	G Total Parts Cost per Year				
Large Vehicles	Additional Maintenance Hours	2	7	14	\$ 63.66	\$ 891	\$ 200	\$ 1,400	\$ 2,291	\$ 61,565	\$ 258,437	\$ 204,002
Small Vehicles	Additional Maintenance Hours	2	0	0	\$ 63.66	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
Construction Equipment	Additional Maintenance Hours	2	19	38	\$ 63.66	\$ 2,419	\$ 200	\$ 3,800	\$ 6,219	\$ 167,104	\$ 701,471	\$ 553,721
							TOTALS:		\$ 8,510	\$ 228,668	\$ 959,908	\$ 757,723

Note:

1. These costs are based on additional maintenance tasks due to delayed preventative maintenance resulting from the additional services required by Item 4.
2. Due to current workload, it is assumed that these services will be performed on overtime.

Town of Truro
Department of Public Works
OPTION C: BUILDING (11,000 sf) + ATTACHED GARAGE (7,800 sf) + COLD STORAGE BUILDING (4,050 sf)
Cost / Benefit Analysis Summary

8/20/2025

Item	Description	Cost Over the Life of the Building (50 Years)	Net Present Value
1	Construction Cost of a New 4,050 SF Cold Storage Garage + 7,800 SF Storage Garage	\$ 5,197,200	\$ 4,820,809
2	Building Maintenance Costs	\$ 1,182,248	\$ 956,110
3	Heating, Ventilation, and Electrical Costs	\$ 1,826,370	\$ 1,452,931
	Total Costs Associated with Building and Maintaining a Storage Garage:	\$ 8,205,818	\$ 7,229,850
4	Additional Vehicle Maintenance Costs Associated with Exterior Storage	\$ 758,572	\$ 598,794
5	Additional Costs Associated with Vehicle Life Expectancy Reduction	\$ 2,073,542	\$ 1,645,733
6	Site Development Costs for Exterior Storage	\$ -	\$ -
7	Exterior Storage Area Maintenance Costs	\$ -	\$ -
8	Cold Weather Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 750,000	\$ 592,028
9	Storm Event Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 52,941	\$ 41,790
10	Engine Block Heater Usage Costs	\$ 20,295	\$ 16,021
11	Security Loading & Unloading of Vehicles (non-productive labor)	\$ -	\$ -
12	Vehicle Staging Non-Productive Labor Costs	\$ -	\$ -
13	Reduced Employee Safety Costs	\$ 28,780	\$ 22,718
14	Environmental Impacts	\$ 371,791	\$ 283,620
15	Increase in Vehicle Maintenance Costs Due to Delays in Preventative Maint.	\$ 261,385	\$ 206,329
	Costs Associated with Storing Vehicles Outdoors:	\$ 4,317,307	\$ 3,407,034
	Additional Costs Incurred By the Town if Vehicles and Equipment are Stored Outdoors:	\$ (3,888,511)	\$ (3,822,817)

Note: Costs associated with reduced public safety due to delays associated with outdoor storage have not been included in this analysis

Net Present Value (NPV) Discount Rate:	0.80%
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Town of Truro

Department of Public Works

Cost / Benefit Analysis - Item 1 - Vehicle Storage Garage Cost

AMOUNT FINANCED	DEBT SERV. YEARS *	ESTIMATED INT. RATE*
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3,660,000	20	4.00%
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Total Cost: \$ 5,197,200

NPV Total: \$ 4,820,809

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 2 - Building Maintenance Costs

Average Employee Rate with Benefits \$ 51.03
 Avg Annual Inflation Rate 3.0%

2025

Building Maintenance Activity	A	B	LABOR			PARTS		TOTAL			Net Present Value
	Frequency per year	Average Maintenance Manhours per Occurrence	C	D	E	F	G	H	I	J	
			Total Manhours per Year (A x B)	Loaded Rate	Total Labor Cost per Year (C x D)	Parts Cost per Occurrence	Total Parts Cost per Year (A x F)	Total Labor & Parts Cost per Year (1st Year) (E + G)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	
Yearly Preventative Maintenance Service	1	8	8	\$ 51.03	\$ 408	\$ 250	\$ 250	\$ 658	\$ 17,687	\$ 74,247	\$ 58,609
Change Light Bulbs	2	8	16	\$ 51.03	\$ 816	\$ 100	\$ 200	\$ 1,016	\$ 27,313	\$ 114,656	\$ 90,506
Unscheduled Repairs	2	8	16	\$ 51.03	\$ 816	\$ 500	\$ 1,000	\$ 1,816	\$ 48,809	\$ 204,893	\$ 161,737
Replace Roof	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 243,122	\$ 200,804
Repaint Exterior Items	0.20	40	8	\$ 51.03	\$ 408	\$ 100	\$ 20	\$ 428	\$ 11,507	\$ 48,304	\$ 38,130
Repair / Replace Heating Elements after useful life of equipment	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 291,747	\$ 240,964
Replace overhead doors after useful life	Four Occurrences - @ years 10, 20, 30 and y			--	--	--	--	--	--	\$ 205,278	\$ 165,361
						TOTALS:		\$ 3,919	\$ 105,317	\$ 1,182,248	\$ 956,110

Discount Rate: 0.8%

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 3 - Heating, Ventilation, & Electrical Costs
2025

Energy Cost Estimate for a 4050 SF Vehicle Cold Storage Garage + 7800 SF Vehicle Storage Garage

Energy Model Indicates total yearly electricity consumption @	157,000 kWh	3.925 kWh per SF - Cold Storage
Adjust for 11,960 SF Vehicle Storage Garage	72,848 kWh	7.2 kWh per SF - Storage Garage per Energy Information Administration
		6.09
Annual Electricity Consumption:	72,848 kWh	
Electricity Cost:	0.224 \$ / kWh	(per US Energy Information Administration May 2025)
Annual Electricity Cost:	16,318 \$ / Year	

Energy Cost Estimate for Vehicle Storage Garage:

Annual Fuel Cost @	\$	-	per year
Annual Elec Cost @	\$	16,318	per year
Total	\$	16,318	1st Year

Over life of bldg with 3% / yr inflation:	\$	1,826,370
Net Present Value:	\$	1,452,931

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 0
Number of Small Vehicles 0
Number of Pieces of Construction Equipment 2
Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type Sheet		
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Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 0
 Number of Small Vehicles 0
 Number of Pieces of Construction Equipment 2
 Average Employee Rate (loaded) \$ 51.03
 2025

Vehicle Type Sheet		Maintenance Activity		A Estimated Occurrences per Year - Interior Storage (per veh.)	FREQUENCY B Estimated Occurrences per Year - Exterior Storage (per veh.)	C Additional Occurrences per Year per Vehicle (B - A)	D Average Maintenance Manhours per Occurrence	E Number of Vehicles or Equipment	LABOR F Total Manhours per Year (C x D x E)	G Loaded Rate	H Total Labor Cost per Year (F x G)	I Parts Cost per Occurrence per Vehicle	J Total Parts Cost per Year (C x E x I)	K Total Labor & Parts Cost per Year (1st Year) (H + J)	TOTAL L Total Cost Over 20 Year Period	M Total Cost Over Life of Bldg (50 Years)	Net Present Value
Small Vehicles	8	Repair windshield wiper system - replace wiper motors, repair or replace wiper linkage, replace wiper blades		0.6	1.2	0.6	2	n/a	1.2	\$ 51.03	\$ 61	\$ 100	\$ 60	\$ -	\$ -	\$ -	\$ -
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)		0	1	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	10	Prepare vehicles for plow winter use - repair corroded electrical connections, clean rust from hydraulic pistons, replace frozen quick disconnects		2	3	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	11	Tune up vehicle stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ignition coils		0	0.21	0.21	10	0	0	51.03	\$ -	\$ 500	\$ -	\$ -	\$ -	\$ -	\$ -
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames		0	1	1	3.5	0	0	51.03	\$ -	\$ 300	\$ -	\$ -	\$ -	\$ -	\$ -
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims		0.05	0.16	0.11	1	0	0	51.03	\$ -	\$ 150	\$ -	\$ -	\$ -	\$ -	\$ -
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels		0.1	0.26	0.16	6.5	0	0	51.03	\$ -	\$ 525	\$ -	\$ -	\$ -	\$ -	\$ -
	16	Diagnose water in fuel in vehicles stored outdoors		0	0.26	0.26	1	0	0	51.03	\$ -	\$ 15	\$ -	\$ -	\$ -	\$ -	\$ -
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted		0.05	1.00	0.95	2	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
	18	Check battery condition - recharge or replace		0.16	0.32	0.16	1	0	0	51.03	\$ -	\$ 200	\$ -	\$ -	\$ -	\$ -	\$ -
	19	Check alternator output		0.05	0.1	0.05	1.5	0	0	51.03	\$ -	\$ 225	\$ -	\$ -	\$ -	\$ -	\$ -
	20	Replace leaking brake / fuel lines		0	0.24	0.24	5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 0
Number of Small Vehicles 0
Number of Pieces of Construction Equipment 2
Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type	Sheet	Maintenance Activity	A	B	C	D	E	F	G	H	I	J	K	L	M	Net Present Value
			Estimated Occurrences per Year - Interior Storage (per veh.)	Estimated Occurrences per Year - Exterior Storage (per veh.)	Additional Occurrences per Year per Vehicle (B - A)	Average Maintenance Manhours per Occurrence	Number of Vehicles or Equipment	Total Manhours per Year (C x D x E)	Loaded Rate	Total Labor Cost per Year (F x G)	Parts Cost per Occurrence per Vehicle	Total Parts Cost per Year (C x E x I)	Total Labor & Parts Cost per Year (1st Year) (H + J)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	
Construction Equipment	3	Repair or replace trailer electrical connectors	0	1	1	1	2	2	\$ 51.03	\$ 102	\$ 35	\$ 70	\$ 172	\$ 4,623	\$ 19,407	\$ 15,319
	4	Prepare small equipment - engine seized due to water, engine oil contaminated with water, repair electronic ignition system	0	1	1	4	1	4	\$ 51.03	\$ 204	\$ 275	\$ 275	\$ 479	\$ 12,874	\$ 54,041	\$ 42,658
	--	Not Used			0			0	\$ 51.03	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -
	6	Prepare sweepers for spring use - repair/replace frozen water pumps, replace damaged water lines	0	1	1	8	1	8	\$ 51.03	\$ 408	\$ 200	\$ 200	\$ 608	\$ 16,343	\$ 68,603	\$ 54,153
	7	Prepare sanders stored outdoors for winter use. Free up frozen conveyors and replace hydraulic quick disconnects	0	2	2	8	0	0	\$ 51.03	\$ -	\$ 300	\$ -	\$ -	\$ -	\$ -	\$ -
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)	0	1	1	2.5	1	2.5	51.03	\$ 128	\$ 100	\$ 100	\$ -	\$ -	\$ -	\$ -
	11	Tune up equipment stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ford ignition coils	0	0.21	0.21	10	1	2.1	\$ 51.03	\$ 107	\$ 500	\$ 105	\$ -	\$ -	\$ -	\$ -
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames	0	1	1	3.5	1	3.5	\$ 51.03	\$ 179	\$ 300	\$ 300	\$ -	\$ -	\$ -	\$ -
	13	Diagnose / repair frozen air systems	0	0.4	0	2	1	0.8	\$ 51.03	\$ 41	\$ 20	\$ 8	\$ -	\$ -	\$ -	\$ -
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims	0.05	0.16	0	1	5	0.55	\$ 51.03	\$ 28	\$ 150	\$ 83	\$ 111	\$ 2,971	\$ 12,471	\$ 9,844
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels	0.1	0.26	0.2	6.5	5	5.2	\$ 51.03	\$ 265	\$ 525	\$ 420	\$ 685	\$ 18,415	\$ 77,303	\$ 61,021
	16	Diagnose water in fuel in vehicles stored outdoors	0	0.26	0.26	1	1	0.26	\$ 51.03	\$ 13	\$ 15	\$ 4	\$ -	\$ -	\$ -	\$ -
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted	0.05	1.00	0.95	2	1	1.9	\$ 51.03	\$ 97	\$ 100	\$ 95	\$ -	\$ -	\$ -	\$ -
	18	Check battery condition - recharge or replace	0.16	0.32	0.16	1	1	0.16	\$ 51.03	\$ 8	\$ 200	\$ 32	\$ -	\$ -	\$ -	\$ -
	19	Check alternator output	0.05	0.1	0.05	1.5	1	0.075	\$ 51.03	\$ 4	\$ 225	\$ 11	\$ -	\$ -	\$ -	\$ -
											TOTALS:		\$ 6,725	\$ 180,706	\$ 758,572	\$ 598,794

Baseline Vehicle/Equipment Replacement Costs

Trailer/forklift/sweeper/small mower Excavator/loader/interstate/f3 Plow/Paint Machine
Recommended Average DPW Vehicle Life Expectancy (years) 10 15 20
3.0%

2016																			
Vehicle #	Description	Purchase Date	Purchase Price	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV
10	F350 Pick Up	2012	\$ 51,071	2027	\$ 79,568	2	\$ 78,310	2042	\$ 123,964	17	\$ 108,259	2057	\$ 193,131	32	\$ 149,663	2072	\$ 300,892	47	\$ 206,903
11	F350 Pick Up	2016	\$ 57,481	2031	\$ 89,554	6	\$ 85,373	2046	\$ 139,522	21	\$ 118,024	2061	\$ 217,371	36	\$ 163,163				\$ -
12	F350 Pick Up	2016	\$ 57,481	2031	\$ 89,554	6	\$ 85,373	2046	\$ 139,522	21	\$ 118,024	2061	\$ 217,371	36	\$ 163,163				\$ -
16	Elgin Sweeper	2014	\$ 216,726	2025	\$ 300,000	-	\$ 300,000	2035	\$ 403,175	10	\$ 372,296	2045	\$ 541,833	20	\$ 462,014	2055	\$ 728,179	30	\$ 573,353
18	John Deere Loader	2012	\$ 170,238	2027	\$ 265,225	2	\$ 261,032	2042	\$ 413,212	17	\$ 360,864	2057	\$ 643,771	32	\$ 498,678	2072	\$ 1,002,974	47	\$ 689,675
19	JLG 600S Lift	2020	\$ 142,000	2030	\$ 190,836	5	\$ 183,383	2040	\$ 256,468	15	\$ 227,575	2050	\$ 344,671	25	\$ 282,418	2060	\$ 463,209	35	\$ 350,476
23	Timpte Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289
25	Kaufman Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289
				Subtotals:	\$ 1,030,736	NPV	\$ 1,009,470	Subtotals:	\$ 1,497,365	NPV	\$ 1,324,899	Subtotals:	\$ 2,187,046	NPV	\$ 1,743,940	Subtotals:	\$ 2,534,090	NPV	\$ 1,850,986

Town of Truro

Department of Public Works
Item 5 - Cost/Benefit Analysis

2 Year Reduction in Vehicle & Equipment Life

Trailer/tow/kilts/sweeper/small	Excavator/loader/interstate/lift	Plow/Paint Machine
mower	350	
10	15	20
8	8	
3.0%	13	18

Discount Rate 0.8%

0.80%

Vehicle #	Description	Purchase Date	Purchase Price	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV							
10	F350 Pick Up	2012	\$ 51,071	2025	\$ 75,000	-	\$ 75,000	2038	\$ 110,140	13	\$ 99,302	2051	\$ 161,744	26	\$ 131,470	2064	\$ 237,527	39	\$ 174,081																			
11	F350 Pick Up	2016	\$ 57,481	2029	\$ 84,413	4	\$ 81,785	2042	\$ 123,964	17	\$ 105,220	2055	\$ 182,045	30	\$ 143,338	2068	\$ 267,339	43	\$ 189,784																			
12	F350 Pick Up	2016	\$ 57,481	2029	\$ 84,413	4	\$ 81,785	2042	\$ 123,964	17	\$ 108,220	2055	\$ 182,045	30	\$ 143,338	2068	\$ 267,339	43	\$ 189,784																			
16	Elgin Sweeper	2014	\$ 216,726	2025	\$ 300,000	-	\$ 300,000	2033	\$ 380,031	8	\$ 356,562	2041	\$ 481,412	16	\$ 423,788	2049	\$ 609,838	24	\$ 503,688	2057	\$ 772,525	32	\$ 598,653	2065	\$ 978,611	40	\$ 711,523	2073	\$ 1,239,676	48	\$ 845,673							
18	John Deere Loader	2012	\$ 170,238	2025	\$ 250,000	-	\$ 250,000	2038	\$ 367,133	13	\$ 331,007	2051	\$ 539,148	26	\$ 438,262	2064	\$ 791,767	39	\$ 580,271																			
19	LG 6000 Lift	2020	\$ 142,000	2028	\$ 179,881	3	\$ 175,632	2036	\$ 227,868	11	\$ 208,746	2044	\$ 288,657	19	\$ 248,103	2052	\$ 365,962	27	\$ 294,880	2060	\$ 463,209	35	\$ 350,476	2068	\$ 586,780	43	\$ 416,555											
23	Timothy Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,598	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,601	32	\$ 15,961	2065	\$ 26,096	40	\$ 18,974	2073	\$ 33,058	48	\$ 22,551							
25	Kaufman Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,598	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,601	32	\$ 15,961	2065	\$ 26,096	40	\$ 18,974	2073	\$ 33,058	48	\$ 22,551							
Subtotals:					\$ 989,708	NPV	\$ 980,163	\$ 2,305,585	Subtotals:	\$ 1,353,368	NPV	\$ 1,231,152	\$ 1,974,910	Subtotals:	\$ 1,860,726	NPV	\$ 1,550,910	\$ 1,630,962	Subtotals:	\$ 2,571,986	NPV	\$ 1,959,352	\$ 1,371,751	Subtotals:	\$ 1,276,938	NPV	\$ 981,058	\$ 1,153,736	Subtotals:	\$ 1,617,584	NPV	\$ 1,166,026	\$ 818,641	Subtotals:	\$ 1,305,792	NPV	\$ 890,776	\$ 818,641

Total Replacement Costs Based on 9 Year Vehicle Life Expectancy (50 yr Period):										\$	10,976,096	Total Replacement Costs for 9 Year Vehicle Life Expectancy:										\$	8,759,435
---	--	--	--	--	--	--	--	--	--	----	------------	---	--	--	--	--	--	--	--	--	--	----	-----------

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 8 - Cold Weather Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

	A Workforce Personnel Effected by Warm-up / Preparation Requirement	FREQUENCY		C Average Warm-up / Preparation Time per Vehicle / Equipment (minutes)	D Total Downtime Per Year (minutes)	LABOR		G Total Labor Cost per Year	H Fuel Consumption Rate During Warm-up (gallons/hr)	FUEL CONSUMPTION			K Total Fuel Consumption Cost During Warm-up per Year	TOTAL		Net Present Value
		B Cold Weather Days				E Total Downtime Per Year (hours)	F Loaded Labor Rate			I Total Fuel Consumption During Warm-up (gallons)	J Fuel Cost per Gallon			L Total Labor & Fuel Cost per Year (1st Year)	M Total Cost Over Life of Bldg (50 Years)	
Maintenance Activity																
Morning warm-up & vehicle preparation	3	85		30	7,650	128	\$ 51.03	\$ 6,506	\$ 0.32	\$ 41	\$ 3.50		\$ 143	\$ 6,649	\$ 750,000	\$ 592,028
Cold Weather Days: Assume November 15 thru March 15th									TOTALS:					\$ 6,649	\$ 750,000	\$ 592,028

Department of Public Works
Cost / Benefit Analysis - Item 9 - Storm Event Costs

Vehicles with Plows: 3
 Sanders: 0

Average Workforce Rate (loaded) \$ 51.03

Maintenance Activity	FREQUENCY		C Average Vehicle/Plow Preparation Time per Vehicle (minutes)	D Average Sander Preparation Time per Sander (minutes)	LABOR			FUEL CONSUMPTION				TOTAL		Net Present Value
	A Average Number of Plow Events	B Average Number of Sand Events			E Total Preparation Time (hours)	F Loaded Labor Rate	G Total Labor Cost per Year (F x E)	H Fuel Consumption Rate During Warm-up (gallons/hr)	I Total Fuel Consumption During Warm-up (gallons)	J Fuel Cost per Gallon	K Total Fuel Consumption Cost During Warm-up per Year (I x J)	L Total Labor & Fuel Cost per Year (1st Year) (G + K)	M Total Cost Over Life of Bldg (50 Years)	
Vehicle Preparation & Plow Connection	6	7	30	30	9	51.03	\$ 459	\$ 0.32	\$ 3	\$ 3.50	\$ 10	\$ 469	\$ 52,941	\$ 41,790
TOTALS:												\$ 469	\$ 52,941	\$ 41,790

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 10 - Engine Block Heaters

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 3

Maintenance Activity	FREQUENCY			LABOR				TOTAL		Net Present Value
	A Vehicles & Equipment	B Cold Weather Days	C Average Block Heater Usage per Vehicle per Day (hours)	D Total Block Heater Hours of Operation per Year (hours)	E Engine Block Electrical Consumption (Kw)	F Total Electrical Usage	G Electrical Unit Cost (\$/Kwh)	H Total Electrical Cost per Year (1st Year) (F * G)	I Total Cost Over Life of Bldg (50 Years)	
Emergency Vehicles (continuous operation)	0	119	16	-	0.7	-	\$ 0.18	\$ -	\$ -	
Non-Emergency Vehicles (4 hours operation)	3	119	4	1,428	0.7	1,000	\$ 0.18	\$ 180	\$ 20,295	
Cold Weather Days: Assume November 15 thru March 15th 17 weeks 7 days per week 119 days per year								\$ 180	\$ 20,295	\$ 16,021

Assumptions:

1. It is assumed that all emergency response vehicles will be required to be plugged in overnight to ensure adequate equipment is available for the DPW use.
2. Non-emergency equipment will be on timers which will activate the block heaters 4 hours before operation.

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 13 - Employee Safety Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Description	FREQUENCY			TOTAL		Net Present Value
	A	B	C	D	E	
	Average Hours of Lost Labor per Year	Loaded Labor Rate	Total Labor Cost per Year (A x B)	Total Labor Cost per Year (1st Year) (C)	Total Cost Over Life of Bldg (50 Years)	
Loss of labor due to injury	5.0	\$ 51.03	\$ 255	\$ 255	\$ 28,780	\$ 22,718
				\$ 255	\$ 28,780	\$ 22,718

Assumptions:

1. It is assumed that the Town will incur an average of 5 hours per year of lost labor due to injuries resulting from exposure of employees to fall hazards or other hazards associated with exterior storage of equipment & materials

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 14 - Environmental Impact Costs

Avg Annual Inflation Rate

Average Workforce Rate (loaded)
2016

Description	A Consultant Hours	B Consultant Fee	C Consultant Expenses / Contractors	D Total Consultant Costs	E Regulatory Fees	F Clean-up Costs	TOTAL	
							K 1st Year Occurrence Total Costs	
Immediate Response Actions (containment)	2	\$ 180.00	\$ 1,000	\$ 1,360	\$ -	\$ -	\$ 1,360	
DEP Notification & Remediation Submittals	6	\$ 180.00	\$ 1,000	\$ 2,080	\$ 6,000	\$ -	\$ 8,080	
Limited Soil and Surface Disposal	4	\$ 180.00	\$ 1,000	\$ 1,720	\$ -	\$ 15,000.00	\$ 16,720	
Close-out (response action outcome)	10	\$ 180.00	\$ 1,000	\$ 2,800	\$ -	\$ -	\$ 2,800	
Year 1 Cost							\$ 28,960	
NPV								
Year 10							\$ 37,786	\$ 35,171
Year 20							\$ 50,782	\$ 43,647
Year 30							\$ 68,246	\$ 54,165
Year 40							\$ 91,717	\$ 67,219
Year 50							\$ 123,260	\$ 83,417
Total Cost:							\$ 371,791	\$ 283,620

Assumptions:

1. It is assumed that there will be one reportable hazardous materials release associated with storing equipment outdoors every +/- 10 years (year 10, 20, 30, 40, and 50) associated with leaks/spills from vehicles & equipment stored outdoors

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 15 -Preventative Maintenance Delay Costs

Avg Annual Inflation Rate 3.0%

Average Mechanics Overtime Rate (loaded) \$ 71.73

Vehicle Type	Maintenance Activity	LABOR					PARTS		TOTAL H Total Labor & Parts Cost per Year (1st Year) (H + J)	I Total Cost Over 20 Year Period	J Total Cost Over Life of Bldg (50 Years)	Net Present Value
		A Average Maintenance Manhours per Vehicle	B Number of Vehicles or Equipment	C Total Manhours per Year	D Loaded Rate	E Total Labor Cost per Year	F Parts Cost per Occurrence per Vehicle	G Total Parts Cost per Year				
Large Vehicles	Additional Maintenance Hours	0	3	0	\$ 71.73	\$ -	\$ 200	\$ 600	\$ 600	\$ 16,122	\$ 67,678	\$ 53,423
Small Vehicles	Additional Maintenance Hours	0	0	0	\$ 71.73	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
Construction Equipment	Additional Maintenance Hours	2	5	10	\$ 71.73	\$ 717	\$ 200	\$ 1,000	\$ 1,717	\$ 46,145	\$ 193,706	\$ 152,906
							TOTALS:		\$ 2,317	\$ 62,267	\$ 261,385	\$ 206,329

Note:

1. These costs are based on additional maintenance tasks due to delayed preventative maintenance resulting from the additional services required by Item 4.
2. Due to current workload, it is assumed that these services will be performed on overtime.

Town of Truro
Department of Public Works
OPTION D: BUILDING (11,000 sf) + ATTACHED GARAGE (12,800 sf)
Cost / Benefit Analysis Summary

8/20/2025

Item	Description	Cost Over the Life of the Building (50 Years)	Net Present Value
1	Construction Cost of a New 12,800 SF Storage Garage	\$ 5,012,600	\$ 4,649,579
2	Building Maintenance Costs	\$ 1,184,723	\$ 958,141
3	Heating, Ventilation, and Electrical Costs	\$ 1,955,645	\$ 1,554,976
	Total Costs Associated with Building and Maintaining a Storage Garage:	\$ 8,152,968	\$ 7,162,695
4	Additional Vehicle Maintenance Costs Associated with Exterior Storage	\$ 1,354,035	\$ 1,068,835
5	Additional Costs Associated with Vehicle Life Expectancy Reduction	\$ 1,300,137	\$ 1,092,772
6	Site Development Costs for Exterior Storage	\$ 81,496	\$ 75,558
7	Exterior Storage Area Maintenance Costs	\$ 1,290,287	\$ 1,016,654
8	Cold Weather Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 500,000	\$ 394,685
9	Storm Event Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 97,059	\$ 76,615
10	Engine Block Heater Usage Costs	\$ 60,886	\$ 48,062
11	Security Loading & Unloading of Vehicles (non-productive labor)	\$ -	\$ -
12	Vehicle Staging Non-Productive Labor Costs	\$ 89,794	\$ 70,881
13	Reduced Employee Safety Costs	\$ 57,560	\$ 45,436
14	Environmental Impacts	\$ 568,984	\$ 434,048
15	Increase in Vehicle Maintenance Costs Due to Delays in Preventative Maint.	\$ 581,119	\$ 458,718
	Costs Associated with Storing Vehicles Outdoors:	\$ 5,981,358	\$ 4,782,265
	Additional Costs Incurred By the Town if Vehicles and Equipment are Stored Outdoors:	\$ (2,171,610)	\$ (2,380,430)

Note: Costs associated with reduced public safety due to delays associated with outdoor storage have not been included in this analysis

Net Present Value (NPV) Discount Rate:	0.80%
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Town of Truro

Department of Public Works

Cost / Benefit Analysis - Item 1 - Vehicle Storage Garage Cost

*Provided By Owner

AMOUNT FINANCED	DEBT SERV. YEARS *	ESTIMATED INT. RATE*
3,530,000	20	4.00%

Total Cost: \$ 5,012,600

NPV Total: \$ 4,649,579

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 2 - Building Maintenance Costs

Average Employee Rate with Benefits \$ 51.03
 Avg Annual Inflation Rate 3.0%

2025

Building Maintenance Activity	A	B	LABOR			PARTS		TOTAL			Net Present Value
	Frequency per year	Average Maintenance Manhours per Occurrence	C	D	E	F	G	H	I	J	
			Total Manhours per Year (A x B)	Loaded Rate	Total Labor Cost per Year (C x D)	Parts Cost per Occurrence	Total Parts Cost per Year (A x F)	Total Labor & Parts Cost per Year (1st Year) (E + G)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	
Yearly Preventative Maintenance Service	1	8	8	\$ 51.03	\$ 408	\$ 250	\$ 250	\$ 658	\$ 17,687	\$ 74,247	\$ 58,609
Change Light Bulbs	2	8	16	\$ 51.03	\$ 816	\$ 100	\$ 200	\$ 1,016	\$ 27,313	\$ 114,656	\$ 90,506
Unscheduled Repairs	2	8	16	\$ 51.03	\$ 816	\$ 500	\$ 1,000	\$ 1,816	\$ 48,809	\$ 204,893	\$ 161,737
Replace Roof	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 243,935	\$ 201,475
Repaint Exterior Items	0.20	40	8	\$ 51.03	\$ 408	\$ 100	\$ 20	\$ 428	\$ 11,507	\$ 48,304	\$ 38,130
Repair / Replace Heating Elements after useful life of equipment	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 292,722	\$ 241,770
Replace overhead doors after useful life	Four Occurrences - @ years 10, 20, 30 and y			--	--	--	--	--	--	\$ 205,965	\$ 165,914
						TOTALS:		\$ 3,919	\$ 105,317	\$ 1,184,723	\$ 958,141

Discount Rate: 0.8%

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 3 - Heating, Ventilation, & Electrical Costs
2025

Energy Model Indicates total yearly electricity consumption @	157,000 kWh	3.925 kWh per SF - Cold Storage per historical energy model
Adjust for 12800 SF Vehicle Storage Garage	77,965 kWh	7.2 kWh per SF - Storage Garage per the Energy Information Administration
		6.09
Annual Electricity Consumption:	77,965 kWh	
Electricity Cost:	0.224 \$ / kWh	(per US Energy Information Administration May 2025)
Annual Electricity Cost:	17,464 \$ / Year	

Energy Cost Estimate for a 12,800 SF Vehicle Storage Garage:

Annual Fuel Cost @	\$	-	per year
Annual Elec Cost @	\$	17,464	per year
Total	\$	17,464	1st Year

Over life of bldg with 3% / yr inflation:	\$	1,955,645
Net Present Value:	\$	1,554,976

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type Sheet		
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Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type Sheet		Maintenance Activity		A Estimated Occurrences per Year - Interior Storage (per veh.)	FREQUENCY B Estimated Occurrences per Year - Exterior Storage (per veh.)	C Additional Occurrences per Year per Vehicle (B - A)	D Average Maintenance Manhours per Occurrence	E Number of Vehicles or Equipment	LABOR F Total Manhours per Year (C x D x E)	G Loaded Rate	H Total Labor Cost per Year (F x G)	PARTS I Parts Cost per Occurrence per Vehicle (C x E x I)		J Total Parts Cost per Year (C x E x I)	K Total Labor & Parts Cost per Year (1st Year) (H + J)	L Total Cost Over 20 Year Period	M Total Cost Over Life of Bldg (50 Years)	Net Present Value
Small Vehicles	8	Repair windshield wiper system - replace wiper motors, repair or replace wiper linkage, replace wiper blades		0.6	1.2	0.6	2	n/a	1.2	\$ 51.03	\$ 61	\$ 100	\$ 60	\$ -	\$ -	\$ -	\$ -	\$ -
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)		0	1	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	10	Prepare vehicles for plow winter use - repair corroded electrical connections, clean rust from hydraulic pistons, replace frozen quick disconnects		2	3	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	11	Tune up vehicle stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ignition coils		0	0.21	0.21	10	0	0	51.03	\$ -	\$ 500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames		0	1	1	3.5	0	0	51.03	\$ -	\$ 300	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims		0.05	0.16	0.11	1	0	0	51.03	\$ -	\$ 150	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels		0.1	0.26	0.16	6.5	0	0	51.03	\$ -	\$ 525	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	16	Diagnose water in fuel in vehicles stored outdoors		0	0.26	0.26	1	0	0	51.03	\$ -	\$ 15	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted		0.05	1.00	0.95	2	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	18	Check battery condition - recharge or replace		0.16	0.32	0.16	1	0	0	51.03	\$ -	\$ 200	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	19	Check alternator output		0.05	0.1	0.05	1.5	0	0	51.03	\$ -	\$ 225	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	20	Replace leaking brake / fuel lines		0	0.24	0.24	5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type	Sheet	Maintenance Activity	A	B	C	D	E	LABOR	G	H	PARTS		K	TOTAL	M	Net Present Value
			Estimated Occurrences per Year - Interior Storage (per veh.)	Estimated Occurrences per Year - Exterior Storage (per veh.)	Additional Occurrences per Year per Vehicle (B - A)	Average Maintenance Manhours per Occurrence	Number of Vehicles or Equipment	Total Manhours per Year (C x D x E)	Loaded Rate	Total Labor Cost per Year (F x G)	Parts Cost per Occurrence per Vehicle	Total Parts Cost per Year (C x E x I)	Total Labor & Parts Cost per Year (1st Year) (H + J)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	
Construction Equipment	3	Repair or replace trailer electrical connectors	0	1	1	1	10	10	\$ 51.03	\$ 510	\$ 35	\$ 350	\$ 860	\$ 23,115	\$ 97,034	\$ 76,596
	4	Prepare small equipment - engine seized due to water, engine oil contaminated with water, repair electronic ignition system	0	1	1	4	2	8	\$ 51.03	\$ 408	\$ 275	\$ 550	\$ 958	\$ 25,747	\$ 108,082	\$ 85,317
	--	Not Used			0			0	\$ 51.03	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -
	6	Prepare sweepers for spring use - repair/replace frozen water pumps, replace damaged water lines	0	1	1	8	0	0	\$ 51.03	\$ -	\$ 200	\$ -	\$ -	\$ -	\$ -	\$ -
	7	Prepare sanders stored outdoors for winter use. Free up frozen conveyors and replace hydraulic quick disconnects	0	2	2	8	3	48	\$ 51.03	\$ 2,449	\$ 300	\$ 1,800	\$ 4,249	\$ 114,178	\$ 479,299	\$ 378,344
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)	0	1	1	2.5	1	2.5	51.03	\$ 128	\$ 100	\$ 100	\$ 228	\$ 6,115	\$ 25,668	\$ 20,262
	11	Tune up equipment stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ford ignition coils	0	0.21	0.21	10	1	2.1	\$ 51.03	\$ 107	\$ 500	\$ 105	\$ 212	\$ 5,701	\$ 23,930	\$ 18,890
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames	0	1	1	3.5	1	3.5	\$ 51.03	\$ 179	\$ 300	\$ 300	\$ 479	\$ 12,860	\$ 53,983	\$ 42,613
	13	Diagnose / repair frozen air systems	0	0.4	0	2	1	0.8	\$ 51.03	\$ 41	\$ 20	\$ 8	\$ 49	\$ 1,312	\$ 5,507	\$ 4,347
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims	0.05	0.16	0	1	10	1.1	\$ 51.03	\$ 56	\$ 150	\$ 165	\$ 221	\$ 5,942	\$ 24,943	\$ 19,689
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels	0.1	0.26	0.2	6.5	10	10.4	\$ 51.03	\$ 531	\$ 525	\$ 840	\$ 1,371	\$ 36,830	\$ 154,607	\$ 122,042
	16	Diagnose water in fuel in vehicles stored outdoors	0	0.26	0.26	1	1	0.26	\$ 51.03	\$ 13	\$ 15	\$ 4	\$ 17	\$ 461	\$ 1,936	\$ 1,528
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted	0.05	1.00	0.95	2	1	1.9	\$ 51.03	\$ 97	\$ 100	\$ 95	\$ 192	\$ 5,158	\$ 21,651	\$ 17,091
	18	Check battery condition - recharge or replace	0.16	0.32	0.16	1	1	0.16	\$ 51.03	\$ 8	\$ 200	\$ 32	\$ 40	\$ 1,079	\$ 4,530	\$ 3,576
	19	Check alternator output	0.05	0.1	0.05	1.5	1	0.075	\$ 51.03	\$ 4	\$ 225	\$ 11	\$ 15	\$ 405	\$ 1,701	\$ 1,342
											TOTALS:		\$ 12,004	\$ 322,557	\$ 1,354,035	\$ 1,068,835

Baseline Vehicle/Equipment Replacement Costs

Trailer/forklift/sweeper/small
mower
Excavator/loader/interstate/f3
50
Plow/Paint Machine
20
Recommended Average DPW Vehicle Life Expectancy (years)
10
3.0%

2016																			
Vehicle #	Description	Purchase Date	Purchase Price	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV
17	John Deer 130G Excavator	2006	\$ 114,057	2025	\$ 200,000	-	\$ 200,000	2040	\$ 311,593	15	\$ 276,491	2055	\$ 485,452	30	\$ 382,235	2070	\$ 756,319	45	\$ 528,422
18	John Deere Loader	2012	\$ 170,238	2027	\$ 265,225	2	\$ 261,032	2042	\$ 413,212	17	\$ 360,864	2057	\$ 643,771	32	\$ 498,878	2072	\$ 1,002,974	47	\$ 689,675
20	Generator Box Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2035	\$ 67,196	10	\$ 62,049	2045	\$ 90,306	20	\$ 77,002	2055	\$ 121,363	30	\$ 95,559
21	Generator Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2035	\$ 67,196	10	\$ 62,049	2045	\$ 90,306	20	\$ 77,002	2055	\$ 121,363	30	\$ 95,559
22	Bandit Wood Chipper	2002	\$ 24,997	2025	\$ 49,334	-	\$ 49,334	2035	\$ 66,300	10	\$ 61,222	2045	\$ 89,102	20	\$ 75,976	2055	\$ 119,746	30	\$ 94,285
23	Timpte Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289
24	Cam Trailer	2007	\$ 7,049	2025	\$ 12,000	-	\$ 12,000	2035	\$ 16,127	10	\$ 14,892	2045	\$ 21,673	20	\$ 18,481	2055	\$ 29,127	30	\$ 22,934
25	Kaufman Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289
26	Interstate Trailer	2015	\$ 35,717	2030	\$ 55,645	5	\$ 53,472	2045	\$ 86,693	20	\$ 73,922	2060	\$ 135,065	35	\$ 102,194	2075	\$ 210,427	50	\$ 141,278
27	Bence Trailer	1997	\$ 50,000	2025	\$ 114,396	-	\$ 114,396	2035	\$ 153,739	10	\$ 141,964	2045	\$ 206,613	20	\$ 176,176	2055	\$ 277,670	30	\$ 218,632
28	Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289
62	Sander Body	2015	\$ 37,205	2035	\$ 67,196	10	\$ 62,049	2055	\$ 121,363	30	\$ 95,559	2075	\$ 219,195	50	\$ 147,165				
63	Sander Body	2015	\$ 37,205	2035	\$ 67,196	10	\$ 62,049	2055	\$ 121,363	30	\$ 95,559	2075	\$ 219,195	50	\$ 147,165				
64	Sander Body	2015	\$ 37,205	2035	\$ 67,196	10	\$ 62,049	2055	\$ 121,363	30	\$ 95,559	2075	\$ 219,195	50	\$ 147,165				
65	Forklift	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2035	\$ 67,196	10	\$ 62,049	2045	\$ 90,306	20	\$ 77,002	2055	\$ 121,363	30	\$ 95,559
				Subtotals:	\$ 1,072,188	NPV	\$ 1,050,382	Subtotals:	\$ 1,645,596	NPV	\$ 1,431,964	Subtotals:	\$ 2,553,526	NPV	\$ 1,963,403	Subtotals:	\$ 2,818,607	NPV	\$ 2,027,772
				\$ 2,243,906															
				(50 yr period)															
				\$ 1,816,067															
				1469803															
				1202566															
				813910															
				Total Replacement Costs Based on 11 Year Vehicle Life Expectancy: \$ 9,230,750															
				NPV: \$ 7,302,990															
				\$ 7,546,251															

Department of Public Works
Item 5 - Cost/Benefit Analysis

Trailer/forklift/sweeper/small Excavator/loader/interstate/f

Plow/Paint

0.80%

8 13 11

		NPV
Total Replacement Costs Based on 9 Year Vehicle Life Expectancy (50 yr Period):	\$ 10,530,887	Total Replacement Costs for 9 Year Vehicle Life Expectancy: \$ 8,395,762

Weston & Sampson

Town of Truro
Department of Public Works
Cost/Benefit Analysis - Item 6 - Site Development Costs for Exterior Vehicle Storage Area

Note: Cost to construct and maintain and exterior parking area over the life of the building

Description	Quantity	Unit	Unit Cost	TOTAL (No OH&P)	TOTAL (Incl. OH&P)
DIVISION 2 - SITE WORK					
<u>GENERAL SITE WORK</u>					
Earth Excavation Site	150	CY	\$40.00	\$6,000.00	\$6,720.00
Formation of Subgrade	450	SY	\$5.00	\$2,250.00	\$2,520.00
Finish Grading	450	SY	\$1.54	\$693.00	\$776.16
Concrete Curb	330	LF	\$61.60		
Processed Aggregate Base	150	CY	\$60.00	\$9,000.00	\$10,080.00
Bituminous Concrete (4" pavement) Yard Area	4050	SF	\$5.39	\$21,829.50	\$24,449.04
Underground Drainage System	1	LS	\$18,000.00		
Site Lighting	2	LS	\$4,500.00		
Area/Dimensions to be adjusted for formulas above				Subtotal:	\$44,545
Area	4050	SF		General Condit. (8.5%)	\$3,786
Dim Garage	30	135		Subtotal	\$48,332
Dim Canopy				Contingency (15%)	\$7,250
				Escalation (6%):	\$3,335
				Total:	\$58,916

Town of Truro
Department of Public Works
Cost/Benefit Analysis - Item 7 - Exterior Storage Area Site Maintenance Costs

Replace Pavement @ Year 20 and Year 40			NPV
Yr 1	Reclaim Pvmnt:	\$4,500	
Yr 1	New Pavement:	\$24,449	
Yr 1	Contingency	\$4,342	
	Cost @ Year 20 based on 3% escalation	\$58,377	\$50,175
	Cost @ Year 40 based on 3% escalation	\$105,435	\$77,272
	Total:	\$163,811	\$127,447
Yearly Striping			
	Labor per Year (hours):	8	
	Labor Rate (loaded):	\$39.63	
Yr 1	Total Labor:	\$317	
	Total cost over 50 years:	\$35,761	\$28,229
Snow Removal			
	Labor per event (hours):	32	
	Labor Rate (loaded):	\$39.63	
	Number of Snow Events per Year:	6	
Yr 1	Total Labor	\$7,609	
	Total cost over 50 years:	\$858,267	\$677,490
General Maintenance			
	Labor per week (hours):	1	
	Weeks:	52	
	Labor Rate (Loaded):	\$39.63	
Yr 1	Total Labor	\$2,061	
	Total cost over 50 years:	\$232,447	\$183,487
TOTAL COST OF SITE MAINTENANCE:			
		\$1,290,287	\$1,016,654

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 8 - Cold Weather Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Maintenance Activity	A	FREQUENCY		C	LABOR				H	FUEL CONSUMPTION			TOTAL		Net Present Value
	Workforce Personnel Effected by Warm-up / Preparation Requirement	B		Average Warm-up / Preparation Time per Vehicle / Equipment (minutes)	D	E	F	G	Fuel Consumption Rate During Warm-up (gallons/hr)	I	J	K	L	M	
		Cold Weather Days			Total Downtime Per Year (minutes)	Total Downtime Per Year (hours)	Loaded Labor Rate	Total Labor Cost per Year		Total Fuel Consumption During Warm-up (gallons)	Fuel Cost per Gallon	Total Fuel Consumption Cost During Warm-up per Year	Total Labor & Fuel Cost per Year (1st Year)	Total Cost Over Life of Bldg (50 Years)	
Morning warm-up & vehicle preparation	2	85		30	5,100	85	\$ 51.03	\$ 4,338	\$ 0.32	\$ 27	\$ 3.50	\$ 95	\$ 4,433	\$ 500,000	\$ 394,685
Cold Weather Days: Assume November 15 thru March 15th									TOTALS:				\$ 4,433	\$ 500,000	\$ 394,685

Assumptions:

1. It is assumed that all workforce personnel will be delayed during vehicle preparation time.
- 2 It is assumed 2 personnel per large vehicle and 1 per small vehicle

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 9 - Storm Event Costs

Avg Annual Inflation Rate 3.0%

Vehicles with Plows: 2
Sanders: 3

Average Workforce Rate (loaded) \$ 51.03
2016

Maintenance Activity	FREQUENCY		C Average Vehicle/Plow Preparation Time per Vehicle (minutes)	D Average Sander Preparation Time per Sander (minutes)	LABOR			FUEL CONSUMPTION				TOTAL		Net Present Value
	A Average Number of Plow Events	B Average Number of Sand Events			E Total Preparation Time (hours)	F Loaded Labor Rate	G Total Labor Cost per Year (F x E)	H Fuel Consumption Rate During Warm-up (gallons/hr)	I Total Fuel Consumption During Warm-up (gallons)	J Fuel Cost per Gallon	K Total Fuel Consumption Cost During Warm-up per Year (I x J)	L Total Labor & Fuel Cost per Year (1st Year) (G + K)	M Total Cost Over Life of Bldg (50 Years)	
Vehicle Preparation & Plow Connection	6	7	30	30	17	51.03	\$ 842	\$ 0.32	\$ 5	\$ 3.50	\$ 18	\$ 860	\$ 97,059	\$ 76,615
								TOTALS:				\$ 860	\$ 97,059	\$ 76,615

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 10 - Engine Block Heaters

Avg Annual Inflation Rate

3.0%

Maintenance Activity	FREQUENCY			LABOR				TOTAL		Net Present Value
	A Vehicles & Equipment	B Cold Weather Days	C Average Block Heater Usage per Vehicle per Day (hours)	D Total Block Heater Hours of Operation per Year (hours)	E Engine Block Electrical Consumption (Kw)	F Total Electrical Usage	G Electrical Unit Cost (\$/Kwh)	H Total Electrical Cost per Year (1st Year) (F * G)	I Total Cost Over Life of Bldg (50 Years)	
Emergency Vehicles (continuous operation)	2	119	16	3,808	0.7	2,666	\$ 0.18	\$ 480	\$ 54,121	
Non-Emergency Vehicles (4 hours operation)	1	119	4	476	0.7	333	\$ 0.18	\$ 60	\$ 6,765	
Cold Weather Days: Assume November 15 thru March 15th 17 weeks 7 days per week 119 days per year								\$ 540	\$ 60,886	\$ 48,062

Assumptions:

1. It is assumed that all emergency response vehicles will be required to be plugged in overnight to ensure adequate equipment is available for the DPW use.
2. Non-emergency equipment will be on timers which will activate the block heaters 4 hours before operation.

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 11 - Loading & Unloading Costs

Avg Annual Inflation Rate 3.0%
Benefits Adjustment 0
Number of Large Vehicles 0
Number of Small Vehicles 0
Number of Pieces of Construction Equipment 2
Average Workforce Rate (loaded) \$ 51.03

Maintenance Activity	FREQUENCY			LABOR				TOTAL		Net Present Value
	A Number of Vehicles Impacted by Operations	B Number of Employees Impacted by Operations	C Average Loading & Unloading Time per Vehicle per Day (minutes)	D Total Downtime Per Year (minutes)	E Total Downtime Per Year (hours)	F Loaded Labor Rate	G Total Labor Cost per Year (F x E)	H Total Labor Cost per Year (1st Year) (G)	I Total Cost Over Life of Bldg (50 Years)	
Vehicle Loading & Unloading	0	0	33	-	-	\$ 51.03	\$ -	\$ -	\$ -	\$ -
Work Days	250							\$ -	\$ -	\$ -

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 12 - Vehicle Staging Non-Productive Labor Costs

Avg Annual Inflation Rate 3.0%

Average Mechanics Rate (loaded) \$ 51.03

Description	FREQUENCY						PARTS		TOTAL	J	K	L
	A	B	C	D	E	F	G	H	I			
	Employees Impacted	Non-Productive Labor per Employee (hours)	Cold Weather Days or Storm Events	Total Manhours per Year (A x B x C)	Loaded Rate	Total Labor Cost per Year (D x E)	Average Parts Cost per Year per Equipment	Total Parts Cost per Year	Total Labor & Parts Cost per Year (1st Year) (F + H)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	Net Present Value
Unload Salt/Sand after Storm Event	4	0.3	13	15.6	51.03	\$ 796		\$ -	\$ 796	\$ 21,391	\$ 89,794	\$ 70,881
							TOTALS:		\$ 796	\$ 21,391	\$ 89,794	\$ 70,881

Cold Weather Days: Assume November 15 thru March 15th
17 weeks
5 days per week
85 days per year

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 13 - Employee Safety Costs

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 0

Number of Small Vehicles 0

Number of Pieces of Construction Equipment 2

Average Workforce Rate (loaded) \$ 51.03

Description	FREQUENCY			TOTAL		Net Present Value
	A	B	C	D	E	
	Average Hours of Lost Labor per Year	Loaded Labor Rate	Total Labor Cost per Year (A x B)	Total Labor Cost per Year (1st Year) (C)	Total Cost Over Life of Bldg (50 Years)	
Loss of labor due to injury	10.0	\$ 51.03	\$ 510	\$ 510	\$ 57,560	\$ 45,436
Average hours of lost labor / year:	120			\$ 510	\$ 57,560	\$ 45,436

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 14 - Environmental Impact Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Description	A Consultant Hours	B Consultant Fee	C Consultant Expenses / Contractors	D Total Consultant Costs	E Regulatory Fees	F Clean-up Costs	TOTAL	
							K 1st Year Occurrence Total Costs	
Immediate Response Actions (containment)	4	\$ 180.00	\$ 1,000	\$ 1,720	\$ -	\$ -	\$ 1,720	
DEP Notification & Remediation Submittals	6	\$ 180.00	\$ 1,000	\$ 2,080	\$ 6,000	\$ -	\$ 8,080	
Limited Soil and Surface Disposal	4	\$ 180.00	\$ 1,000	\$ 1,720	\$ -	\$ 30,000.00	\$ 31,720	
Close-out (response action outcome)	10	\$ 180.00	\$ 1,000	\$ 2,800	\$ -	\$ -	\$ 2,800	
						Year 1 Cost	\$ 44,320	
								NPV
						Year 10	\$ 57,828	\$ 53,826
						Year 20	\$ 77,715	\$ 66,797
						Year 30	\$ 104,443	\$ 82,894
						Year 40	\$ 140,363	\$ 102,870
						Year 50	\$ 188,636	\$ 127,661
						Total Cost:	\$ 568,984	\$ 434,048

Assumptions:

- It is assumed that there will be one reportable hazardous materials release associated with storing equipment outdoors every +/- 10 years (year 10, 20, 30, 40, and 50) associated with leaks/spills from vehicles & equipment stored outdoors

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 15 -Preventative Maintenance Delay Costs

Avg Annual Inflation Rate 3.0%

Average Mechanics Overtime Rate (loaded) \$ 71.73

Vehicle Type	Maintenance Activity	LABOR					PARTS		TOTAL		Net Present Value	
		A Average Maintenance Manhours per Vehicle	B Number of Vehicles or Equipment	C Total Manhours per Year	D Loaded Rate	E Total Labor Cost per Year	F Parts Cost per Occurrence per Vehicle	G Total Parts Cost per Year	H Total Labor & Parts Cost per Year (1st Year) (H + J)	I Total Cost Over 20 Year Period		J Total Cost Over Life of Bldg (50 Years)
Large Vehicles	Additional Maintenance Hours	2	2	4	\$ 71.73	\$ 287	\$ 200	\$ 400	\$ 687	\$ 18,458	\$ 77,483	\$ 61,162
Small Vehicles	Additional Maintenance Hours	0	0	0	\$ 71.73	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
Construction Equipment	Additional Maintenance Hours	2	13	26	\$ 71.73	\$ 1,865	\$ 200	\$ 2,600	\$ 4,465	\$ 119,976	\$ 503,637	\$ 397,556
Note:							TOTALS:		\$ 5,152	\$ 138,434	\$ 581,119	\$ 458,718

Note:

1. These costs are based on additional maintenance tasks due to delayed preventative maintenance resulting from the additional services required by Item 4.
2. Due to current workload, it is assumed that these services will be performed on overtime.

Town of Truro
Department of Public Works
OPTION E: BUILDING (11,000 sf) + ATTACHED GARAGE (12,800 sf) + COLD STORAGE BUILDING (4,050 sf)
Cost / Benefit Analysis Summary

8/20/2025

Item	Description	Cost Over the Life of the Building (50 Years)	Net Present Value
1	Construction Cost of Full Build Out - 12,800 SF Storage Garage + 4,050 SF Cold Storage Garage	\$ 7,142,600	\$ 6,625,320
2	Building Maintenance Costs	\$ 1,491,674	\$ 1,209,926
3	Heating, Ventilation, and Electrical Costs	\$ 2,743,331	\$ 2,176,753
	Total Costs Associated with Building and Maintaining a Storage Garage:	\$ 11,377,605	\$ 10,011,999
4	Additional Vehicle Maintenance Costs Associated with Exterior Storage	\$ -	\$ -
5	Additional Costs Associated with Vehicle Life Expectancy Reduction	\$ -	\$ -
6	Site Development Costs for Exterior Storage	\$ -	\$ -
7	Exterior Storage Area Maintenance Costs	\$ -	\$ -
8	Cold Weather Costs for Vehicles Stored Outdoors (non-productive labor)	\$ -	\$ -
9	Storm Event Costs for Vehicles Stored Outdoors (non-productive labor)	\$ -	\$ -
10	Engine Block Heater Usage Costs	\$ -	\$ -
11	Security Loading & Unloading of Vehicles (non-productive labor)	\$ -	\$ -
12	Vehicle Staging Non-Productive Labor Costs	\$ -	\$ -
13	Reduced Employee Safety Costs	\$ -	\$ -
14	Environmental Impacts	\$ -	\$ -
15	Increase in Vehicle Maintenance Costs Due to Delays in Preventative Maint.	\$ -	\$ -
	Costs Associated with Storing Vehicles Outdoors:	\$ -	\$ -
	Additional Costs Incurred By the Town if Vehicles and Equipment are Stored Outdoors:	\$ (11,377,605)	\$ (10,011,999)

Note: Costs associated with reduced public safety due to delays associated with outdoor storage have not been included in this analysis

Net Present Value (NPV) Discount Rate:	0.80%
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Town of Truro

Department of Public Works

Cost / Benefit Analysis - Item 1 - Vehicle Storage Garage Cost

*Provided By Owner

AMOUNT FINANCED	DEBT SERV. YEARS *	ESTIMATED INT. RATE*
5,030,000	20	4.00%

Total Cost: \$ 7,142,600

NPV Total: \$ 6,625,320

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 2 - Building Maintenance Costs

Average Employee Rate with Benefits \$ 51.03
 Avg Annual Inflation Rate 3.0%

2025

Building Maintenance Activity	A	B	LABOR			PARTS		TOTAL			Net Present Value
	Frequency per year	Average Maintenance Manhours per Occurrence	C	D	E	F	G	H	I	J	
			Total Manhours per Year (A x B)	Loaded Rate	Total Labor Cost per Year (C x D)	Parts Cost per Occurrence	Total Parts Cost per Year (A x F)	Total Labor & Parts Cost per Year (1st Year) (E + G)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	
Yearly Preventative Maintenance Service	1	8	8	\$ 51.03	\$ 408	\$ 250	\$ 250	\$ 658	\$ 17,687	\$ 74,247	\$ 58,609
Change Light Bulbs	2	8	16	\$ 51.03	\$ 816	\$ 100	\$ 200	\$ 1,016	\$ 27,313	\$ 114,656	\$ 90,506
Unscheduled Repairs	2	8	16	\$ 51.03	\$ 816	\$ 500	\$ 1,000	\$ 1,816	\$ 48,809	\$ 204,893	\$ 161,737
Replace Roof	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 344,762	\$ 284,752
Repaint Exterior Items	0.20	40	8	\$ 51.03	\$ 408	\$ 100	\$ 20	\$ 428	\$ 11,507	\$ 48,304	\$ 38,130
Repair / Replace Heating Elements after useful life of equipment	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 413,714	\$ 341,702
Replace overhead doors after useful life	Four Occurrences - @ years 10, 20, 30 and y		--	--	--	--	--	--	--	\$ 291,097	\$ 234,491
						TOTALS:		\$ 3,919	\$ 105,317	\$ 1,491,674	\$ 1,209,926

Discount Rate: 0.8%

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 3 - Heating, Ventilation, & Electrical Costs
2025

Energy Cost Estimate for a 4050 SF Vehicle Cold Storage Garage + 12,800 Minimally Heated Garage

January 2007 Energy Model Results for a 40,000 SF Vehicle Storage Garage

Energy Model Indicates total yearly electricity consumption @	157,000 kWh	3.925 kWh per SF - Cold Storage per historical energy model
Adjust for Vehicle Storage Garage and Cold Storage	108,848 kWh	7.2 kWh per SF - Garage per energy information administration
		6.42
Annual Electricity Consumption:	108,848 kWh	
Electricity Cost:	0.2246 \$ / kWh	(per US Energy Information Administration May 2025)
Annual Electricity Cost:	24,447 \$ / Year	

Energy Cost Estimate for Vehicle Storage Garage and Cold Storage Garage:

Annual Fuel Cost @	\$	-	per year
Annual Elec Cost @	\$	24,447	per year
Total	\$	24,447	1st Year

Over life of bldg with 3% / yr inflation:	\$	2,743,331
Net Present Value:	\$	2,176,753

Town of Truro
Department of Public Works
OPTION F: BUILDING (11,000 sf) + ATTACHED GARAGE (7,800 sf)
Cost / Benefit Analysis Summary

8/20/2025

Item	Description	Cost Over the Life of the Building (50 Years)	Net Present Value
1	Construction Cost of a New 7,800 SF Storage Garage	\$ 3,067,200	\$ 2,845,068
2	Building Maintenance Costs	\$ 924,805	\$ 744,935
3	Heating, Ventilation, and Electrical Costs	\$ 1,404,717	\$ 1,120,090
	Total Costs Associated with Building and Maintaining a Storage Garage:	\$ 5,396,722	\$ 4,710,093
4	Additional Vehicle Maintenance Costs Associated with Exterior Storage	\$ 1,317,998	\$ 1,040,388
5	Additional Costs Associated with Vehicle Life Expectancy Reduction	\$ 3,348,659	\$ 2,592,251
6	Site Development Costs for Exterior Storage	\$ 81,496	\$ 75,558
7	Exterior Storage Area Maintenance Costs	\$ 1,290,287	\$ 1,016,654
8	Cold Weather Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 500,000	\$ 394,685
9	Storm Event Costs for Vehicles Stored Outdoors (non-productive labor)	\$ 97,059	\$ 76,615
10	Engine Block Heater Usage Costs	\$ 60,886	\$ 48,062
11	Security Loading & Unloading of Vehicles (non-productive labor)	\$ 791,382	\$ 624,693
12	Vehicle Staging Non-Productive Labor Costs	\$ 67,345	\$ 53,161
13	Reduced Employee Safety Costs	\$ 57,560	\$ 45,436
14	Environmental Impacts	\$ 564,362	\$ 430,523
15	Increase in Vehicle Maintenance Costs Due to Delays in Preventative Maint.	\$ 193,706	\$ 152,906
	Costs Associated with Storing Vehicles Outdoors:	\$ 8,370,740	\$ 6,550,932
	Additional Costs Incurred By the Town if Vehicles and Equipment are Stored Outdoors:	\$ 2,974,019	\$ 1,840,840

Note: Costs associated with reduced public safety due to delays associated with outdoor storage have not been included in this analysis

Net Present Value (NPV) Discount Rate:	0.80%
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Town of Truro

Department of Public Works

Cost / Benefit Analysis - Item 1 - Vehicle Storage Garage Cost

*Provided By Owner

AMOUNT FINANCED	DEBT SERV. YEARS *	ESTIMATED INT. RATE*
2,160,000	20	4.00%

Total Cost: \$ 3,067,200

NPV Total: \$ 2,845,068

Department of Public Works
Cost / Benefit Analysis - Item 2 - Building Maintenance Costs

Average Employee Rate with Benefits \$ 51.03
 Avg Annual Inflation Rate 3.0%

2025

Building Maintenance Activity	A	B	LABOR			PARTS		TOTAL			Net Present Value
	Frequency per year	Average Maintenance Manhours per Occurrence	C Total Manhours per Year (A x B)	D Loaded Rate	E Total Labor Cost per Year (C x D)	F Parts Cost per Occurrence	G Total Parts Cost per Year (A x F)	H Total Labor & Parts Cost per Year (1st Year) (E + G)	I Total Cost Over 20 Year Period	J Total Cost Over Life of Bldg (50 Years)	
Yearly Preventative Maintenance Service	1	8	8	\$ 51.03	\$ 408	\$ 250	\$ 250	\$ 658	\$ 17,687	\$ 74,247	\$ 58,609
Change Light Bulbs	2	8	16	\$ 51.03	\$ 816	\$ 100	\$ 200	\$ 1,016	\$ 27,313	\$ 114,656	\$ 90,506
Unscheduled Repairs	2	8	16	\$ 51.03	\$ 816	\$ 500	\$ 1,000	\$ 1,816	\$ 48,809	\$ 204,893	\$ 161,737
Replace Roof	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 158,558	\$ 130,959
Repaint Exterior Items	0.20	40	8	\$ 51.03	\$ 408	\$ 100	\$ 20	\$ 428	\$ 11,507	\$ 48,304	\$ 38,130
Repair / Replace Heating Elements after useful life of equipment	One Occurrence @ year 25		--	--	--	--	--	--	--	\$ 190,270	\$ 157,151
Replace overhead doors after useful life	Four Occurrences - @ years 10, 20, 30 and y		--	--	--	--	--	--	--	\$ 133,877	\$ 107,844
						TOTALS:		\$ 3,919	\$ 105,317	\$ 924,805	\$ 744,935

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 3 - Heating, Ventilation, & Electrical Costs
2025

January 2007 Energy Model Results for a 40,000 SF Vehicle Storage Garage

Energy Model Indicates total yearly electricity consumption @	157,000 kWh	3.925 kWh per SF - Cold Storage per historical energy model
Adjust for 7800 SF Vehicle Storage Garage	56,160 kWh	7.2 kWh per SF - Storage Garage per Energy information Administration
Annual Electricity Consumption:	56,160 kWh	
Electricity Cost:	0.224 \$ / kWh	(per US Energy Information Administration May 2025)
Annual Electricity Cost:	12,580 \$ / Year	

Energy Cost Estimate for a 3,335 SF Vehicle Storage Garage:

Annual Fuel Cost @	\$	-	per year
Annual Elec Cost @	\$	12,580	per year
Total	\$	12,580	1st Year

Over life of bldg with 3% / yr inflation:	\$	1,404,717
Net Present Value:	\$	1,120,090

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type Sheet		
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Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type Sheet		Maintenance Activity		A Estimated Occurrences per Year - Interior Storage (per veh.)	FREQUENCY B Estimated Occurrences per Year - Exterior Storage (per veh.)	C Additional Occurrences per Year per Vehicle (B - A)	D Average Maintenance Manhours per Occurrence	E Number of Vehicles or Equipment	LABOR F Total Manhours per Year (C x D x E)	G Loaded Rate	H Total Labor Cost per Year (F x G)	PARTS I Parts Cost per Occurrence per Vehicle (C x E x I)		J Total Parts Cost per Year (C x E x I)	K Total Labor & Parts Cost per Year (1st Year) (H + J)	L Total Cost Over 20 Year Period	M Total Cost Over Life of Bldg (50 Years)	Net Present Value
Small Vehicles	8	Repair windshield wiper system - replace wiper motors, repair or replace wiper linkage, replace wiper blades		0.6	1.2	0.6	2	n/a	1.2	\$ 51.03	\$ 61	\$ 100	\$ 60	\$ -	\$ -	\$ -	\$ -	\$ -
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)		0	1	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	10	Prepare vehicles for plow winter use - repair corroded electrical connections, clean rust from hydraulic pistons, replace frozen quick disconnects		2	3	1	2.5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	11	Tune up vehicle stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ignition coils		0	0.21	0.21	10	0	0	51.03	\$ -	\$ 500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames		0	1	1	3.5	0	0	51.03	\$ -	\$ 300	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims		0.05	0.16	0.11	1	0	0	51.03	\$ -	\$ 150	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels		0.1	0.26	0.16	6.5	0	0	51.03	\$ -	\$ 525	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	16	Diagnose water in fuel in vehicles stored outdoors		0	0.26	0.26	1	0	0	51.03	\$ -	\$ 15	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted		0.05	1.00	0.95	2	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	18	Check battery condition - recharge or replace		0.16	0.32	0.16	1	0	0	51.03	\$ -	\$ 200	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	19	Check alternator output		0.05	0.1	0.05	1.5	0	0	51.03	\$ -	\$ 225	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	20	Replace leaking brake / fuel lines		0	0.24	0.24	5	0	0	51.03	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 4 - Increased Vehicle Maintenance Costs

Avg Annual Inflation Rate 3.0%

Average Employee Rate (loaded) \$ 51.03
2025

Vehicle Type	Sheet	Maintenance Activity	A	B	C	D	E	LABOR	G	H	PARTS		K	TOTAL	M	Net Present Value
			Estimated Occurrences per Year - Interior Storage (per veh.)	Estimated Occurrences per Year - Exterior Storage (per veh.)	Additional Occurrences per Year per Vehicle (B - A)	Average Maintenance Manhours per Occurrence	Number of Vehicles or Equipment	Total Manhours per Year (C x D x E)	Loaded Rate	Total Labor Cost per Year (F x G)	Parts Cost per Occurrence per Vehicle	Total Parts Cost per Year (C x E x I)	Total Labor & Parts Cost per Year (1st Year) (H + J)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	
Construction Equipment	3	Repair or replace trailer electrical connectors	0	1	1	1	7	7	\$ 51.03	\$ 357	\$ 35	\$ 245	\$ 602	\$ 16,181	\$ 67,924	\$ 53,617
	4	Prepare small equipment - engine seized due to water, engine oil contaminated with water, repair electronic ignition system	0	1	1	4	2	8	\$ 51.03	\$ 408	\$ 275	\$ 550	\$ 958	\$ 25,747	\$ 108,082	\$ 85,317
	--	Not Used			0			0	\$ 51.03	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -
	6	Prepare sweepers for spring use - repair/replace frozen water pumps, replace damaged water lines	0	1	1	8	2	16	\$ 51.03	\$ 816	\$ 200	\$ 400	\$ 1,216	\$ 32,685	\$ 137,207	\$ 108,307
	7	Prepare sanders stored outdoors for winter use. Free up frozen conveyors and replace hydraulic quick disconnects	0	2	2	8	3	48	\$ 51.03	\$ 2,449	\$ 300	\$ 1,800	\$ 4,249	\$ 114,178	\$ 479,299	\$ 378,344
	9	Repair hydraulic pumps, motors, gear boxes - change oil viscosity (summer/winter)	0	1	1	2.5	1	2.5	\$ 51.03	\$ 128	\$ 100	\$ 100	\$ 228	\$ 6,115	\$ 25,668	\$ 20,262
	11	Tune up equipment stored outdoors - remove spark plugs frozen in engine, remove fuel filters frozen to fuel lines, replace ford ignition coils	0	0.21	0.21	10	1	2.1	\$ 51.03	\$ 107	\$ 500	\$ 105	\$ 212	\$ 5,701	\$ 23,930	\$ 18,890
	12	Repair brakes (air & hydraulic) on vehicles stored outdoors - brake shoes frozen to drums, calipers frozen to caliper frames	0	1	1	3.5	1	3.5	\$ 51.03	\$ 179	\$ 300	\$ 300	\$ 479	\$ 12,860	\$ 53,983	\$ 42,613
	13	Diagnose / repair frozen air systems	0	0.4	0	2	1	0.8	\$ 51.03	\$ 41	\$ 20	\$ 8	\$ 49	\$ 1,312	\$ 5,507	\$ 4,347
	14	Repair or replace tires other than normal wear and tear - dry rot, rusted rims	0.05	0.16	0	1	8	0.88	\$ 51.03	\$ 45	\$ 150	\$ 132	\$ 177	\$ 4,753	\$ 19,954	\$ 15,751
	15	Repair rust / rot - coat rust with special primers/paint, weld patches/panels	0.1	0.26	0.2	6.5	1	1.04	\$ 51.03	\$ 53	\$ 525	\$ 84	\$ 137	\$ 3,683	\$ 15,461	\$ 12,204
	16	Diagnose water in fuel in vehicles stored outdoors	0	0.26	0.26	1	1	0.26	\$ 51.03	\$ 13	\$ 15	\$ 4	\$ 17	\$ 461	\$ 1,936	\$ 1,528
	17	Replace hydraulic lines - fittings rusted, hoses dry rotted	0.05	1.00	0.95	2	1	1.9	\$ 51.03	\$ 97	\$ 100	\$ 95	\$ 192	\$ 5,158	\$ 21,651	\$ 17,091
	18	Check battery condition - recharge or replace	0.16	0.32	0.16	1	1	0.16	\$ 51.03	\$ 8	\$ 200	\$ 32	\$ 40	\$ 1,079	\$ 4,530	\$ 3,576
	19	Check alternator output	0.05	0.1	0.05	1.5	1	0.075	\$ 51.03	\$ 4	\$ 225	\$ 11	\$ 15	\$ 405	\$ 1,701	\$ 1,342
											TOTALS:		\$ 11,685	\$ 313,972	\$ 1,317,998	\$ 1,040,388

Baseline Vehicle/Equipment Replacement Costs

Stored Outside

Recommended Average DPW Vehicle Life Expectancy (years) 10
3.0%

Vehicle #	Description	Purchase Date	Purchase Price	Replacement Date	Estimated Replacement Cost	Estimated Replacement Cost		Replacement Date	Replacement Cost	Estimated Replacement Cost		Replacement Date	Replacement Cost	Estimated Replacement Cost		Replacement Date	Replacement Cost	Estimated Replacement Cost		Replacement Date	Replacement Cost	Estimated Replacement Cost		Replacement Date	Replacement Cost	Estimated Replacement Cost		Replacement Date	Replacement Cost
						year	NPV			year	NPV			year	NPV			year	NPV			year	NPV			year	NPV		
23	Temple Trailer	2017	\$ 6,315	2027	\$ 8,487	8	\$ 7,963	2037	\$ 12,101	19	\$ 10,401	2047	\$ 16,750	30	\$ 13,189	2057	\$ 23,186	41	\$ 16,724	2067	n/a	-							
25	Kaufman Trailer	2017	\$ 6,315	2027	\$ 8,487	4	\$ 8,221	2037	\$ 12,101	15	\$ 10,737	2047	\$ 16,750	26	\$ 13,616	2057	\$ 23,186	37	\$ 17,266	2067	\$ 32,095	48	\$ 21,894						
13	F350 Pick Up	2019	\$ 62,811	2034	\$ 97,858	9	\$ 91,086	2049	\$ 152,460	24	\$ 125,922	2064	\$ 237,527	39	\$ 174,081														
14	F350 Pick Up	2018	\$ 60,982	2033	\$ 95,008	8	\$ 89,140	2048	\$ 148,019	23	\$ 123,232	2063	\$ 230,609	38	\$ 170,363														
17	John Deer 130G Excavator	2006	\$ 114,057	2025	\$ 200,000	-	\$ 200,000	2040	\$ 311,593	15	\$ 276,491	2055	\$ 485,452	30	\$ 382,235	2070	\$ 756,319	45	\$ 528,422										
20	Generator Box Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2035	\$ 67,196	10	\$ 62,049	2045	\$ 90,306	20	\$ 77,002	2055	\$ 121,363	30	\$ 95,559	2065	\$ 163,102	40	\$ 118,587						
21	Generator Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2035	\$ 67,196	10	\$ 62,049	2045	\$ 90,306	20	\$ 77,002	2055	\$ 121,363	30	\$ 95,559	2065	\$ 163,102	40	\$ 118,587						
22	Bandit Wood Chipper	2002	\$ 24,997	2025	\$ 49,334	-	\$ 49,334	2035	\$ 66,300	10	\$ 61,222	2045	\$ 89,102	20	\$ 75,976	2055	\$ 119,746	30	\$ 94,285	2065	\$ 160,929	40	\$ 117,007						
24	Cam Trailer	2007	\$ 7,049	2025	\$ 12,000	-	\$ 12,000	2035	\$ 16,127	10	\$ 14,892	2045	\$ 21,673	20	\$ 18,481	2055	\$ 29,127	30	\$ 22,934	2065	\$ 39,144	40	\$ 28,461						
27	Bence Trailer	1997	\$ 50,000	2025	\$ 114,396	-	\$ 114,396	2035	\$ 153,739	10	\$ 141,964	2045	\$ 206,613	20	\$ 176,176	2055	\$ 277,670	30	\$ 218,632	2065	\$ 373,165	40	\$ 271,319						
28	Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2035	\$ 10,751	10	\$ 9,928	2045	\$ 14,449	20	\$ 12,320	2055	\$ 19,418	30	\$ 15,289	2065	\$ 26,096	40	\$ 18,974						
62	Sander Body	2015	\$ 37,205	2035	\$ 67,196	10	\$ 62,049	2055	\$ 121,363	30	\$ 95,559	2075	\$ 219,195	50	\$ 147,165														
63	Sander Body	2015	\$ 37,205	2035	\$ 67,196	10	\$ 62,049	2055	\$ 121,363	30	\$ 95,559	2075	\$ 219,195	50	\$ 147,165														
64	Sander Body	2015	\$ 37,205	2035	\$ 67,196	10	\$ 62,049	2055	\$ 121,363	30	\$ 95,559	2075	\$ 219,195	50	\$ 147,165														
				Subtotals:	\$ 895,158	NPV	\$ 866,288	Subtotals:	\$ 1,381,672	NPV	\$ 1,185,565	Subtotals:	\$ 2,157,123	NPV	\$ 1,631,937	Subtotals:	\$ 1,491,379	NPV	\$ 1,104,671	Subtotals:	\$ 957,634	NPV	\$ 694,830						
				\$ 2,243,906																									
Total Replacement Costs Based on 10 Year Vehicle Life Expectancy:				\$ 6,882,966				(50 yr period)				\$ 1,816,067				1469803				1202566				813910					
				NPV: \$ 5,483,291																									
				\$ 7,546,251																									

Town of Truro

Department of Public Works
Item 5 - Cost/Benefit Analysis

2 Year Reduction in Vehicle & Equipment Life

Recommended Average DPW Vehicle Life Expectancy (years) 10
Reduced Average DPW Vehicle Life Expectancy (years) 8
3.0%

Discount Rate 0.8%

Vehicle #	Description	Purchase Date	Purchase Price	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	Replacement Date	Estimated Replacement Cost	year	NPV	
23	Tempe Trailer	2017	\$ 6,315	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,751	9	\$ 10,007	2041	\$ 14,028	18	\$ 12,154	2049	\$ 18,303	27	\$ 14,760	2057	\$ 23,882	36	\$ 17,926	2065	\$ 31,160	45	\$ 21,771					
25	Kaufman Trailer	2017	\$ 6,315	2025	\$ 8,000	1	\$ 7,937	2033	\$ 10,751	10	\$ 9,928	2041	\$ 14,028	19	\$ 12,057	2049	\$ 18,303	28	\$ 14,643	2057	\$ 23,882	37	\$ 17,784	2065	\$ 31,160	46	\$ 21,598					
13	F350 Pick Up	2019	\$ 62,811	2032	\$ 92,241	7	\$ 87,236	2045	\$ 135,458	20	\$ 115,503	2058	\$ 198,925	33	\$ 152,930	2071	\$ 292,128	46	\$ 202,483													
14	F350 Pick Up	2018	\$ 60,982	2031	\$ 89,554	6	\$ 85,373	2044	\$ 131,513	19	\$ 113,036	2057	\$ 193,131	32	\$ 149,663	2070	\$ 283,620	45	\$ 198,158													
15	Pick Up	2016	\$ 57,481	2028	\$ 84,413	4	\$ 81,765	2042	\$ 123,964	17	\$ 108,259	2055	\$ 182,045	30	\$ 143,338	2068	\$ 267,339	43	\$ 189,784													
17	John Deer 130G Excavator	2006	\$ 114,057	2025	\$ 200,000	-	\$ 200,000	2038	\$ 293,707	13	\$ 264,805	2051	\$ 431,318	26	\$ 350,610	2064	\$ 633,405	39	\$ 464,217													
20	Generator Box Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2033	\$ 63,339	8	\$ 59,427	2041	\$ 80,235	16	\$ 70,631	2049	\$ 101,640	24	\$ 83,948	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 118,587					
21	Generator Trailer	2015	\$ 37,205	2025	\$ 50,000	-	\$ 50,000	2033	\$ 63,339	8	\$ 59,427	2041	\$ 80,235	16	\$ 70,631	2049	\$ 101,640	24	\$ 83,948	2057	\$ 128,754	32	\$ 99,776	2065	\$ 163,102	40	\$ 118,587					
22	Bandit Wood Chippers	2002	\$ 24,997	2025	\$ 49,334	-	\$ 49,334	2033	\$ 62,495	8	\$ 58,635	2041	\$ 79,166	16	\$ 69,690	2049	\$ 100,285	24	\$ 82,629	2057	\$ 127,038	32	\$ 98,446	2065	\$ 160,929	40	\$ 117,007					
24	Cam Trailer	2007	\$ 7,049	2025	\$ 12,000	-	\$ 12,000	2033	\$ 15,201	8	\$ 14,262	2041	\$ 19,256	16	\$ 16,952	2049	\$ 24,394	24	\$ 20,148	2057	\$ 30,901	32	\$ 23,948	2065	\$ 39,144	40	\$ 28,461					
27	Bence Trailer	1997	\$ 50,000	2025	\$ 114,396	-	\$ 114,396	2033	\$ 144,914	8	\$ 135,965	2041	\$ 183,573	16	\$ 161,599	2049	\$ 232,544	24	\$ 192,067	2057	\$ 294,580	32	\$ 228,279	2065	\$ 373,165	40	\$ 271,319					
28	Trailer	2015	\$ 5,953	2025	\$ 8,000	-	\$ 8,000	2033	\$ 10,134	8	\$ 9,508	2041	\$ 12,838	16	\$ 11,301	2049	\$ 16,262	24	\$ 13,432	2057	\$ 20,601	32	\$ 15,964	2065	\$ 26,096	40	\$ 18,974					
62	Sander Body	2015	\$ 37,205	2033	\$ 63,339	8	\$ 59,427	2051	\$ 107,830	26	\$ 87,652	2069	\$ 183,573	44	\$ 129,284					\$ 0	####											
63	Sander Body	2015	\$ 37,205	2033	\$ 63,339	8	\$ 59,427	2051	\$ 107,830	26	\$ 87,652	2069	\$ 183,573	44	\$ 129,284					\$ 0	####											
64	Sander Body	2015	\$ 37,205	2033	\$ 63,339	8	\$ 59,427	2051	\$ 107,830	26	\$ 87,652	2069	\$ 183,573	44	\$ 129,284					\$ 0	####											
Subtotals:				\$ 955,953	NPV \$ 932,322	\$ 2,305,585		Subtotals:	\$ 1,389,054	NPV \$ 1,221,722	\$ 1,974,910		Subtotals:	\$ 2,039,497	NPV \$ 1,609,408	\$ 1,630,962		Subtotals:	\$ 2,089,864	NPV \$ 1,560,418	\$ 1,371,751		Subtotals:	\$ 778,392	NPV \$ 601,897	\$ 1,153,736		Subtotals:	\$ 987,859	NPV \$ 716,304	\$ 818,641	

NPV

Total Replacement Costs Based on 8 Year Vehicle Life Expectancy (50 yr Period): \$ 9,413,063

Total Replacement Costs for 8 Year Vehicle Life Expectancy: \$ 7,441,881

Town of Truro
Department of Public Works
Cost/Benefit Analysis - Item 6 - Site Development Costs for Exterior Vehicle Storage Area

Note: Cost to construct and maintain and exterior parking area over the life of the building

Description	Quantity	Unit	Unit Cost	TOTAL (No OH&P)	TOTAL (Incl. OH&P)
DIVISION 2 - SITE WORK					
<u>GENERAL SITE WORK</u>					
Earth Excavation Site	150	CY	\$40.00	\$6,000.00	\$6,720.00
Formation of Subgrade	450	SY	\$5.00	\$2,250.00	\$2,520.00
Finish Grading	450	SY	\$1.54	\$693.00	\$776.16
Concrete Curb	330	LF	\$61.60		
Processed Aggregate Base	150	CY	\$60.00	\$9,000.00	\$10,080.00
Bituminous Concrete (4" pavement) Yard Area	4050	SF	\$5.39	\$21,829.50	\$24,449.04
Underground Drainage System	1	LS	\$18,000.00		
Site Lighting	2	LS	\$4,500.00		
Area/Dimensions to be adjusted for formulas above				Subtotal:	\$44,545
Area	4050	SF		General Condit. (8.5%)	\$3,786
Dim Garage	30	135		Subtotal	\$48,332
Dim Canopy				Contingency (15%)	\$7,250
				Escalation (6%):	\$3,335
				Total:	\$58,916

Town of Truro
Department of Public Works
Cost/Benefit Analysis - Item 7 - Exterior Storage Area Site Maintenance Costs

Replace Pavement @ Year 20 and Year 40			NPV
Yr 1	Reclaim Pvmnt:	\$4,500	
Yr 1	New Pavement:	\$24,449	
Yr 1	Contingency	\$4,342	
	Cost @ Year 20 based on 3% escalation	\$58,377	\$50,175
	Cost @ Year 40 based on 3% escalation	\$105,435	\$77,272
	Total:	\$163,811	\$127,447
Yearly Striping			
	Labor per Year (hours):	8	
	Labor Rate (loaded):	\$39.63	
Yr 1	Total Labor:	\$317	
	Total cost over 50 years:	\$35,761	\$28,229
Snow Removal			
	Labor per event (hours):	32	
	Labor Rate (loaded):	\$39.63	
	Number of Snow Events per Year:	6	
Yr 1	Total Labor	\$7,609	
	Total cost over 50 years:	\$858,267	\$677,490
General Maintenance			
	Labor per week (hours):	1	
	Weeks:	52	
	Labor Rate (Loaded):	\$39.63	
Yr 1	Total Labor	\$2,061	
	Total cost over 50 years:	\$232,447	\$183,487
TOTAL COST OF SITE MAINTENANCE:			
		\$1,290,287	\$1,016,654

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 8 - Cold Weather Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Maintenance Activity	A	FREQUENCY B	C	LABOR				H	FUEL CONSUMPTION			TOTAL		Net Present Value
	Workforce Personnel Effected by Warm-up / Preparation Requirement	Cold Weather Days	Average Warm-up / Preparation Time per Vehicle / Equipment (minutes)	D Total Downtime Per Year (minutes)	E Total Downtime Per Year (hours)	F Loaded Labor Rate	G Total Labor Cost per Year	Fuel Consumption Rate During Warm-up (gallons/hr)	I Total Fuel Consumption During Warm-up (gallons)	J Fuel Cost per Gallon	K Total Fuel Consumption Cost During Warm-up per Year	L Total Labor & Fuel Cost per Year (1st Year)	M Total Cost Over Life of Bldg (50 Years)	
Morning warm-up & vehicle preparation	2	85	30	5,100	85	\$ 51.03	\$ 4,338	\$ 0.32	\$ 27	\$ 3.50	\$ 95	\$ 4,433	\$ 500,000	\$ 394,685
Cold Weather Days: Assume November 15 thru March 15th 17 weeks 5 days per week 85 days per year								TOTALS:				\$ 4,433	\$ 500,000	\$ 394,685

Assumptions:

1. It is assumed that all workforce personnel will be delayed during vehicle preparation time.
- 2 It is assumed 2 personnel per large vehicle and 1 per small vehicle

no warm up of trailers

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 9 - Storm Event Costs

Avg Annual Inflation Rate 3.0%

Vehicles with Plows: 2
Sanders: 3

Average Workforce Rate (loaded) \$ 51.03

Maintenance Activity	FREQUENCY		LABOR					FUEL CONSUMPTION				TOTAL		Net Present Value
	A	B	C	D	E	F	G	H	I	J	K	L	M	
	Average Number of Plow Events	Average Number of Sand Events	Average Vehicle/Plow Preparation Time per Vehicle (minutes)	Average Sander Preparation Time per Sander (minutes)	Total Preparation Time (hours)	Loaded Labor Rate	Total Labor Cost per Year (F x E)	Fuel Consumption Rate During Warm-up (gallons/hr)	Total Fuel Consumption During Warm-up (gallons)	Fuel Cost per Gallon	Total Fuel Consumption Cost During Warm-up per Year (I x J)	Total Labor & Fuel Cost per Year (1st Year) (G + K)	Total Cost Over Life of Bldg (50 Years)	
Vehicle Preparation & Plow Connection	6	7	30	30	17	51.03	\$ 842	\$ 0.32	\$ 5	\$ 3.50	\$ 18	\$ 860	\$ 97,059	\$ 76,615
								TOTALS:				\$ 860	\$ 97,059	\$ 76,615

assume not using trailers in a storm event

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 10 - Engine Block Heaters

Avg Annual Inflation Rate 3.0%

Number of Large Vehicles 0

Number of Small Vehicles 0

Number of Pieces of Construction Equipment 2

Maintenance Activity	FREQUENCY			LABOR				TOTAL		
	A Vehicles & Equipment	B Cold Weather Days	C Average Block Heater Usage per Vehicle per Day (hours)	D Total Block Heater Hours of Operation per Year (hours)	E Engine Block Electrical Consumption (Kw)	F Total Electrical Usage	G Electrical Unit Cost (\$/Kwh)	H Total Electrical Cost per Year (1st Year) (F * G)	I Total Cost Over Life of Bldg (50 Years)	Net Present Value
Emergency Vehicles (continuous operation)	2	119	16	3,808	0.7	2,666	\$ 0.18	\$ 480	\$ 54,121	
Non-Emergency Vehicles (4 hours operation)	1	119	4	476	0.7	333	\$ 0.18	\$ 60	\$ 6,765	
Cold Weather Days: Assume November 15 thru March 15th 17 weeks 7 days per week 119 days per year								\$ 540	\$ 60,886	\$ 48,062

Assumptions:

1. It is assumed that all emergency response vehicles will be required to be plugged in overnight to ensure adequate equipment is available for the DPW use.
2. Non-emergency equipment will be on timers which will activate the block heaters 4 hours before operation.

assume no engine block heaters for trailers

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 11 - Loading & Unloading Costs

Avg Annual Inflation Rate 3.0%
 Benefits Adjustment 0
 Number of Large Vehicles 0
 Number of Small Vehicles 0
 Number of Pieces of Construction Equipment 2
 Average Workforce Rate (loaded) \$ 51.03

	FREQUENCY			LABOR				TOTAL		
	A	B	C	D	E	F	G	H	I	
Maintenance Activity	Number of Vehicles Impacted by Operations	Number of Employees Impacted by Operations	Average Loading & Unloading Time per Vehicle per Day (minutes)	Total Downtime Per Year (minutes)	Total Downtime Per Year (hours)	Loaded Labor Rate	Total Labor Cost per Year (F x E)	Total Labor Cost per Year (1st Year) (G)	Total Cost Over Life of Bldg (50 Years)	Net Present Value
Vehicle Loading & Unloading	6	1	33	8,250	138	\$ 51.03	\$ 7,016	\$ 7,016	\$ 791,382	\$ 624,693
Work Days	250							\$ 7,016	\$ 791,382	\$ 624,693

Assumptions:

1. It is assumed that there is an average of 2 employees per vehicle

based on 6 vehicles stored inside at a time per Jarrod

Department of Public Works
Cost / Benefit Analysis - Item 12 - Vehicle Staging Non-Productive Labor Costs

Average Mechanics Rate (loaded) \$ 51.03

Description	A	B	FREQUENCY C	D	E	F	PARTS		TOTAL	J	K	L
	Employees Impacted	Non-Productive Labor per Employee (hours)	Cold Weather Days or Storm Events	Total Manhours per Year (A x B x C)	Loaded Rate	Total Labor Cost per Year (D x E)	Average Parts Cost per Year per Equipment	Total Parts Cost per Year	Total Labor & Parts Cost per Year (1st Year) (F + H)	Total Cost Over 20 Year Period	Total Cost Over Life of Bldg (50 Years)	Net Present Value
Unload Salt/Sand after Storm Event	3	0.3	13	11.7	51.03	\$ 597		\$ -	\$ 597	\$ 16,043	\$ 67,345	\$ 53,161
							TOTALS:		\$ 597	\$ 16,043	\$ 67,345	\$ 53,161

Cold Weather Days: Assume November 15 thru March 15th
17 weeks
5 days per week
85 days per year

not associated with trailers

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 13 - Employee Safety Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Description	FREQUENCY			TOTAL		Net Present Value
	A	B	C	D	E	
	Average Hours of Lost Labor per Year	Loaded Labor Rate	Total Labor Cost per Year (A x B)	Total Labor Cost per Year (1st Year) (C)	Total Cost Over Life of Bldg (50 Years)	
Loss of labor due to injury	10.0	\$ 51.03	\$ 510	\$ 510	\$ 57,560	\$ 45,436
Average hours of lost labor / year: 120				\$ 510	\$ 57,560	\$ 45,436

Assumptions:

1. It is assumed that the Town will incur an average of 40 hours per year of lost labor due to injuries resulting from exposure of employees to fall hazards or other hazards associated with exterior storage of equipment & materials

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 14 - Environmental Impact Costs

Avg Annual Inflation Rate 3.0%

Average Workforce Rate (loaded) \$ 51.03

Description	A Consultant Hours	B Consultant Fee	C Consultant Expenses / Contractors	D Total Consultant Costs	E Regulatory Fees	F Clean-up Costs	TOTAL	
							K 1st Year Occurrence Total Costs	
Immediate Response Actions (containment)	2	\$ 180.00	\$ 1,000	\$ 1,360	\$ -	\$ -	\$ 1,360	
DEP Notification & Remediation Submittals	6	\$ 180.00	\$ 1,000	\$ 2,080	\$ 6,000	\$ -	\$ 8,080	
Limited Soil and Surface Disposal	4	\$ 180.00	\$ 1,000	\$ 1,720	\$ -	\$ 30,000.00	\$ 31,720	
Close-out (response action outcome)	10	\$ 180.00	\$ 1,000	\$ 2,800	\$ -	\$ -	\$ 2,800	
Year 1 Cost							\$ 43,960	
								NPV
Year 10							\$ 57,358	\$ 53,389
Year 20							\$ 77,084	\$ 66,254
Year 30							\$ 103,595	\$ 82,221
Year 40							\$ 139,223	\$ 102,035
Year 50							\$ 187,103	\$ 126,624
Total Cost:							\$ 564,362	\$ 430,523

Assumptions:

- It is assumed that there will be one reportable hazardous materials release associated with storing equipment outdoors every +/- 10 years (year 10, 20, 30, 40, and 50) associated with leaks/spills from vehicles & equipment stored outdoors

Town of Truro
Department of Public Works
Cost / Benefit Analysis - Item 15 -Preventative Maintenance Delay Costs

Avg Annual Inflation Rate 3.0%

Average Mechanics Overtime Rate (loaded) \$ 71.73

Vehicle Type	Maintenance Activity	LABOR					PARTS		TOTAL H Total Labor & Parts Cost per Year (1st Year) (H + J)	I Total Cost Over 20 Year Period	J Total Cost Over Life of Bldg (50 Years)	Net Present Value
		A Average Maintenance Manhours per Vehicle	B Number of Vehicles or Equipment	C Total Manhours per Year	D Loaded Rate	E Total Labor Cost per Year	F Parts Cost per Occurrence per Vehicle	G Total Parts Cost per Year				
Large Vehicles	Additional Maintenance Hours	2	3	6	\$ 71.73	\$ 430	\$ 200	\$ 600	\$ 1,030	\$ 27,687	\$ 116,224	\$ 91,744
Small Vehicles	Additional Maintenance Hours	0	0	0	\$ 71.73	\$ -	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ -
Construction Equipment	Additional Maintenance Hours	2	2	4	\$ 71.73	\$ 287	\$ 200	\$ 400	\$ 687	\$ 18,458	\$ 77,483	\$ 61,162
							TOTALS:		\$ 1,717	\$ 46,145	\$ 193,706	\$ 152,906

Note:

1. These costs are based on additional maintenance tasks due to delayed preventative maintenance resulting from the additional services required by Item 4.
2. Due to current workload, it is assumed that these services will be performed on overtime.