2012 National Equipment Fleet Management Conference

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FLEET AGE PLANNING

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Fleet Age Planning

Can we develop a structured process that helps us keep our fleet at or around "the sweet spot".

CEMP

Fleet Age Planning

1. Intro to O & O costs
2. Annual and average, life to date costs
3. Economic life
4. Set life zones
5. Buy what you burn
6. Plan ahead
7. There is no such thing as a free lunch

So..

What I want you to take home

1. Intro to O&O costs

Details from John Hildreth Wed 8 to 9am

OWNING COSTS

Come in BIG chunks at the beginning, the end, annually or monthly.

Fixed when you ink the deal.

OPERATING COSTS

Come constantly or at random intervals for repairs and rebuilds.

Depend on age, application or operation.

1. Intro to O&O costs

Details from John Hildreth Wed 8 to 9am

OWNING COSTS

Have to do with finance and cost of capital.
Are the province of specialists in accounting.

OPERATING COSTS

Have to do with oil, grease, parts and labor.
Are the province of field operations specialists.

1. Intro to O&O costs

Details from John Hildreth Wed 8 to 9am

Owning

Acquire

One very big one or several big ones every month regardless.

- Buy
- Borrow
- Lease
- Rent

Keep

A large number of small ones every month regardless.

- License
- Insurance
- Property Tax
- Interest

Sell

One big one, hopefully, at the end.

- Residual market value
- Auction price
- Sale price
- Trade in

1. Intro to O&O costs

Details from John Hildreth Wed 8 to 9am

Owning

1. **Depreciation**

   Equipment is a depreciating asset. The value of our investment decreases with age - you must recognize this and set funds aside to replace the asset

2. **Interest**

   Our investment in equipment must provide a return on the amount we have invested

3. **Other Owning**

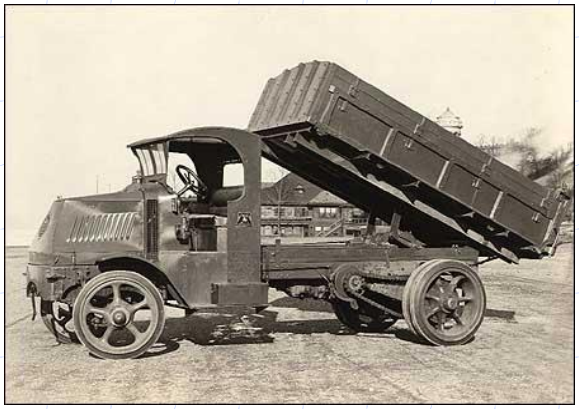
   There will be additional costs for keeping a machine in our fleet. These include the cost of licenses, insurances, property taxes and the like

Have to do with accounting, finance and administration.

1. Intro to O&O costs

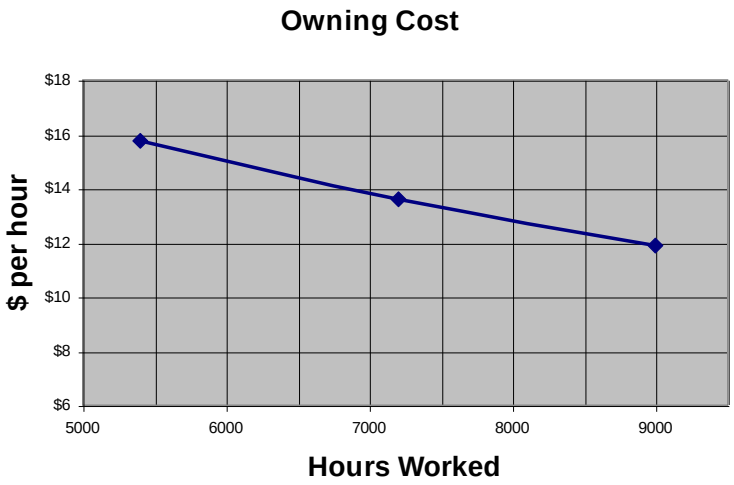
Details from John Hildreth Wed 8 to 9am

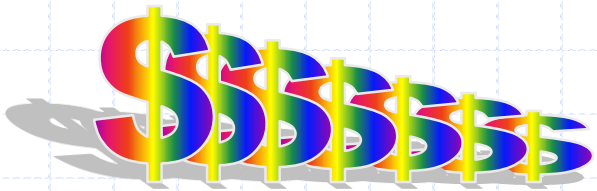
Owning



Hourly owning cost goes down with age.

It depends on the rate at which residual market value decreases and the number of hours worked in a year.





1. Intro to O&O costs

Details from John Hildreth Wed 8 to 9am

Operating

Acquire and Keep

Run

Fix

Sell

A very large number of small ones every hour that the machine works

Fuel
Wear parts
Tracks
Service and P.M.

A small number (hopefully) of big ones depending on hours worked.

Repair labor
Repair parts
Rebuilds

1. Intro to O&O costs

Details from John Hildreth Wed 8 to 9am

Operating

1. **Fuel**
   - **Cost times factor times consumption**
2. **Wear parts** (implement)
   - **Cost times factor times life**
3. **Tires or tracks** (traction)
   - **Cost times factor times life**
4. **Preventive maintenance**
   - **Cost times interval**
5. **Repair parts and labor**
   - **The big uncertainty**
     - **- comes in chunks**
     - **- increases with age**
     - **- dependent on conditions**

Constant

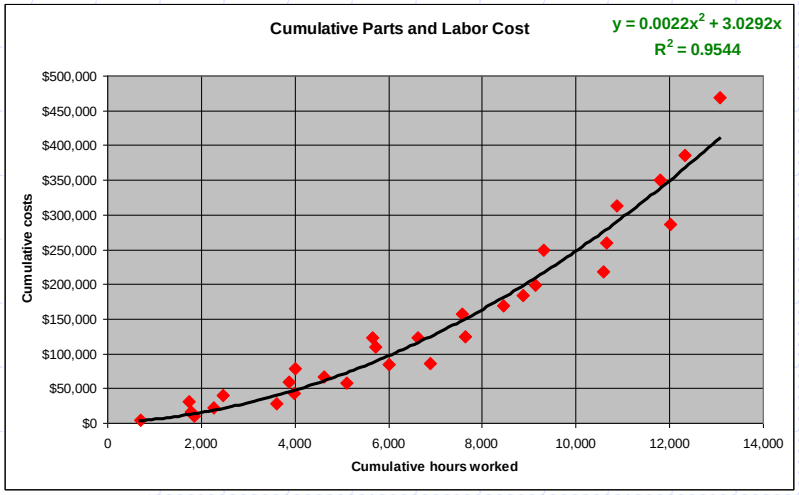
1. Intro to O&O costs

Details from John Hildreth Wed 8 to 9am

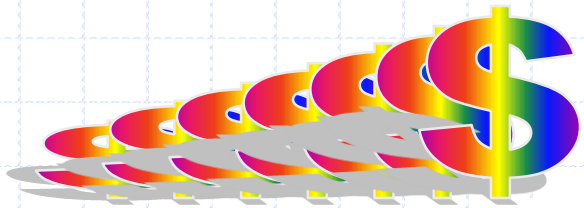
Operating

Hourly operating cost goes up with age.

It depends on the rate at which expenditure on repair parts and labor increases as the machine ages.



We must be able to define the relationship between cost and age and determine the rate at which costs increase with age.



2. Annual and average, life to date costs

Annual costs.

The costs you experience during the year.

Annual hours.

The hours you work during the year

Annual cost per hour.

The costs you experience during the year ÷ hours you work during the year

Cumulative or Life to date cost

All the costs you experience, life to date (LTD).

Cumulative or Life to date hours.

All the hours you work, life to date (LTD)

Average cost, life to date (LTD).

LTD cost ÷ LTD hours worked.

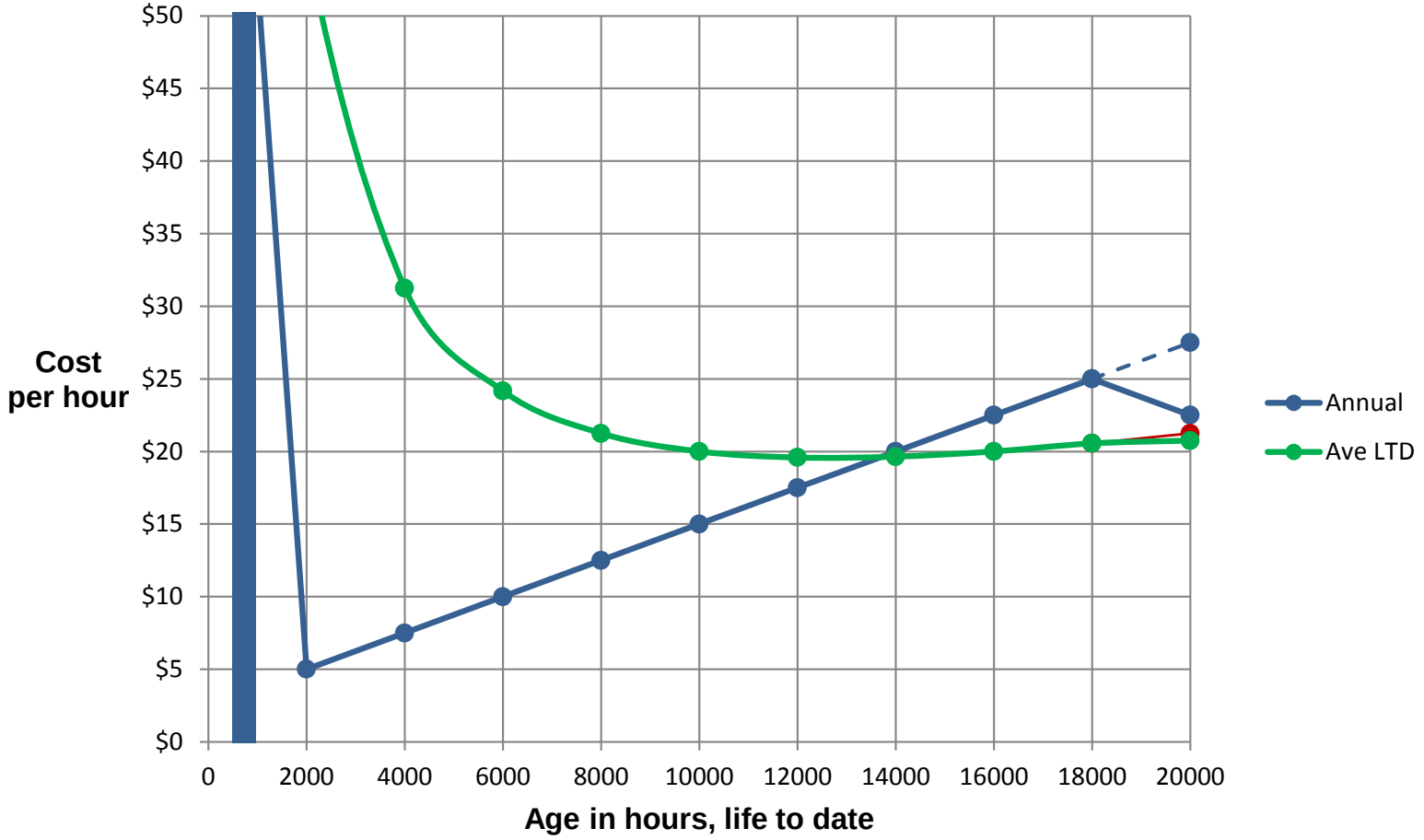
Average LTD is the standard. The average cost for all the hours we own it.

2. Annual and average, life to date costs

Year	Annual				Cumulative LTD		Average LTD
	Hours in the year	Money spent in the year		Cost per hour	Hours worked	Total money spent	Total cost/ total hours worked
		Buy/sell	Run				
0		$100		100	0	$100	$100.00
1	2,000		$10	$5.00	2,000	$110	$55.00
2	2,000		$15	$7.50	4,000	$125	$31.25
3	2,000		$20	$10.00	6,000	$145	$24.17
4	2,000		$25	$12.50	8,000	$170	$21.25
5	2,000		$30	$15.00	10,000	$200	$20.00
6	2,000		$35	$17.50	12,000	$235	$19.58
7	2,000		$40	$20.00	14,000	$275	$19.64
8	2,000		$45	$22.50	16,000	$320	$20.00
9	2,000		$50	$25.00	18,000	$370	$20.56
10	2,000	-$10	$55	$22.50	20,000	$415	$20.75
Total	20,000	$90	$325				
Ave				$20.75			

Average LTD is the standard. We assume we will keep it for a long time and undertake the journey.

2. Annual and average, life to date costs



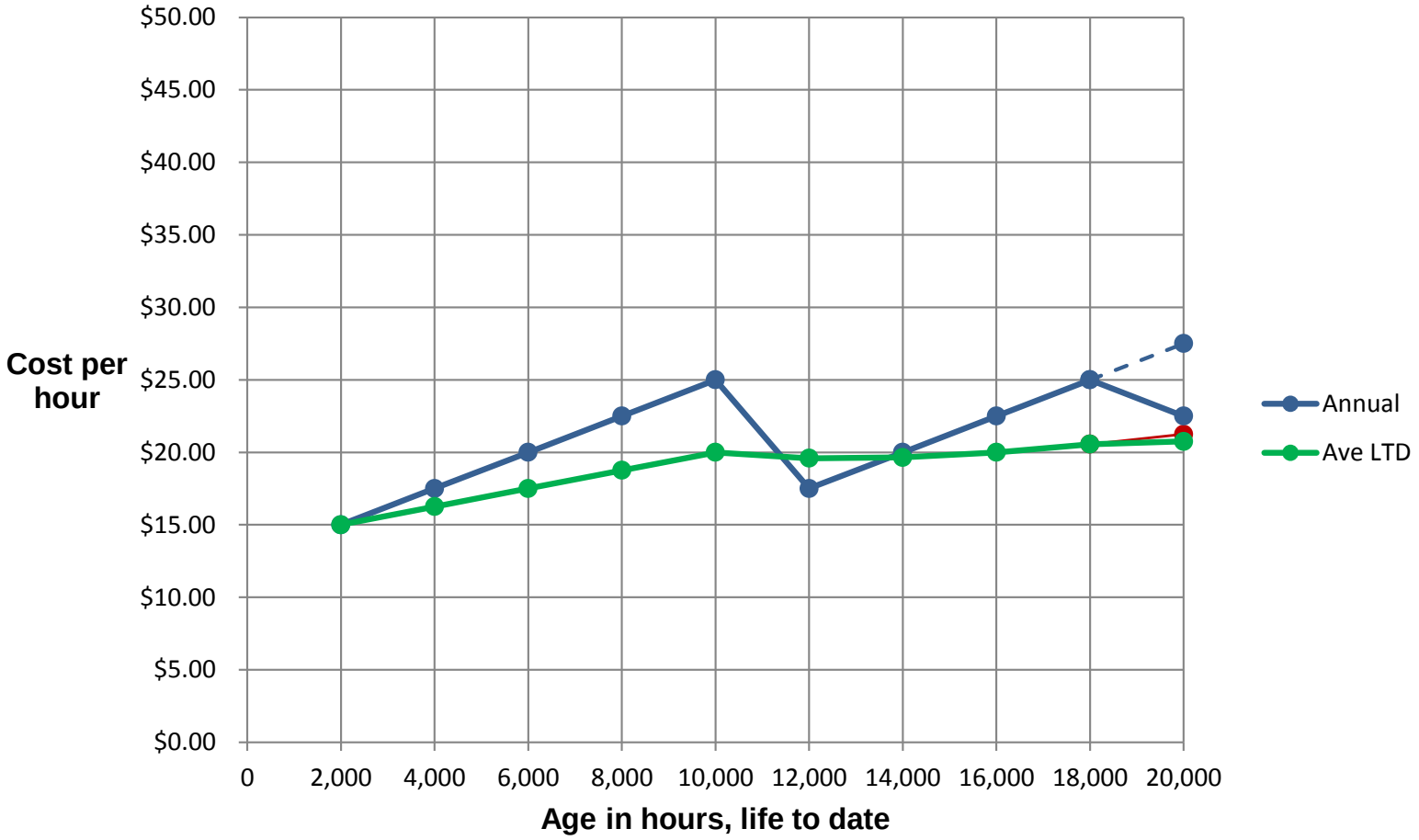
Once you are through the minimum, each year is more expensive than all the prior years

2. Annual and average, life to date costs

Year	Hours in the year	Annual			Cumulative LTD		Average LTD
		Money spent in the year		Cost per hour	Hours worked	Total money spent	Total cost/ total hours worked
		Buy/sell	Run				
0		$0		#DIV/0!	0	$0	$100.00
1	2,000	$20	$10	$15.00	2,000	$30	$15.00
2	2,000	$20	$15	$17.50	4,000	$65	$16.25
3	2,000	$20	$20	$20.00	6,000	$105	$17.50
4	2,000	$20	$25	$22.50	8,000	$150	$18.75
5	2,000	$20	$30	$25.00	10,000	$200	$20.00
6	2,000		$35	$17.50	12,000	$235	$19.58
7	2,000		$40	$20.00	14,000	$275	$19.64
8	2,000		$45	$22.50	16,000	$320	$20.00
9	2,000		$50	$25.00	18,000	$370	$20.56
10	2,000	-$10	$55	$22.50	20,000	$415	$20.75
Total	20,000	$90	$325				
Ave				$20.75			

We often spread the purchase cost over several years and look at it on a year by basis.

2. Annual and average, life to date costs



When annual is above average LTD, it pulls average LTD up.

This year has made all the previous years more expensive.

3. Economic life

Owning costs go down with age as we accumulate an ever larger number of hours worked over which to spread the purchase price.

Operating costs go up with age we accumulate ever higher repair parts and labor costs.

Economic life is that period which ends when the average owning and operating costs to date reach a minimum.

3. Economic life

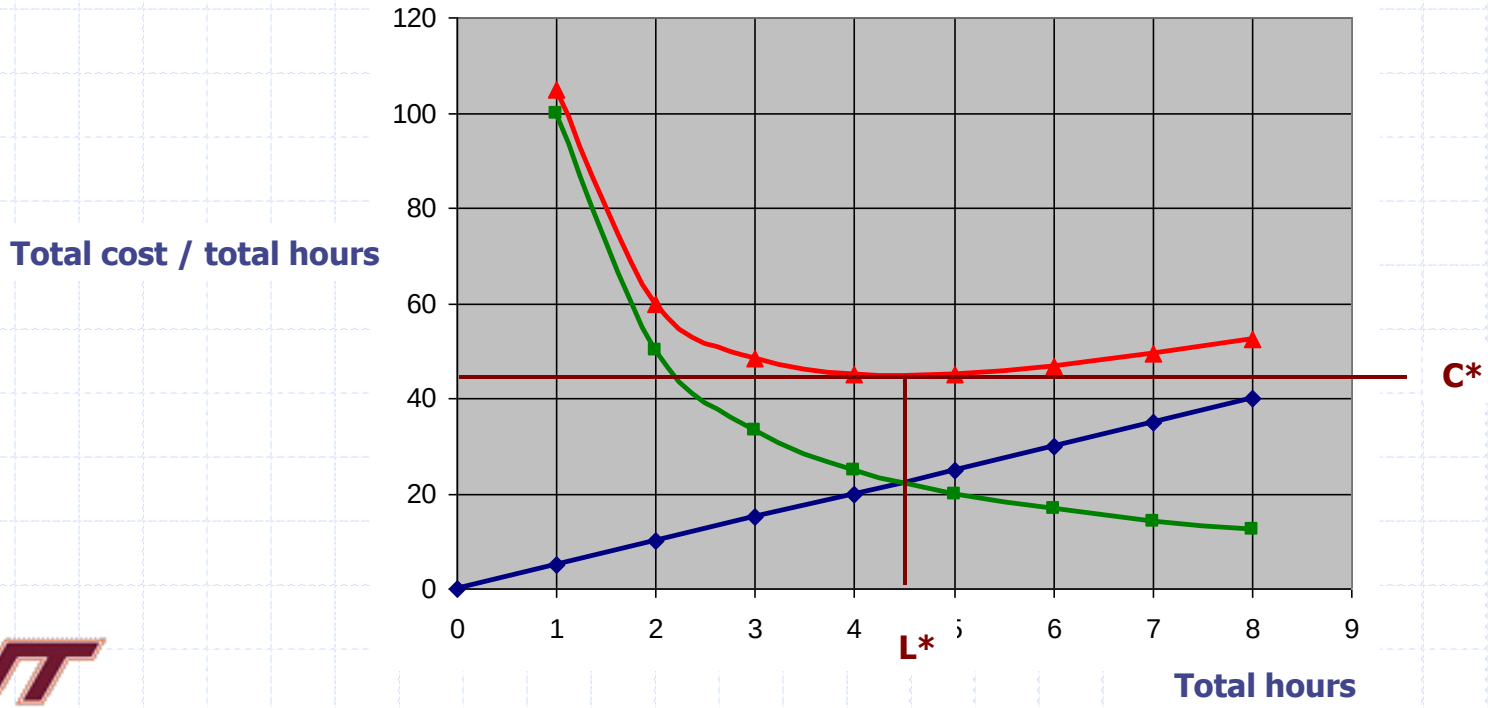
Details from John Hildreth Wed 8 to 9am

Hourly owning cost goes down with age.

It depends on the rate at which residual market value decreases and the number of hours worked in a year.

Hourly operating cost goes up with age.

It depends on the rate at which expenditure on repair parts and labor increases as the machine ages.



3. Economic life

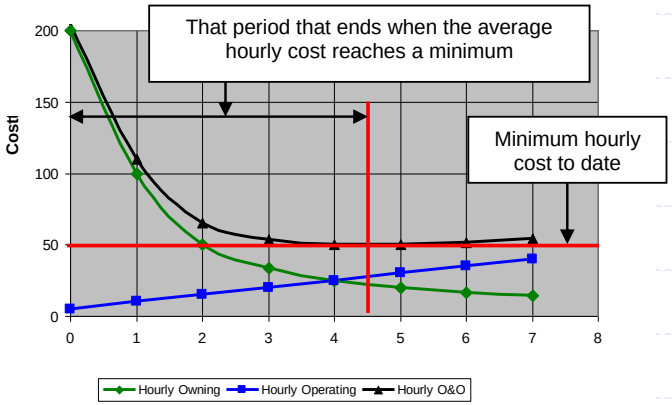
Details from John Hildreth Wed 8 to 9am

A Formal Definition of Economic Life

Many texts define economic life as

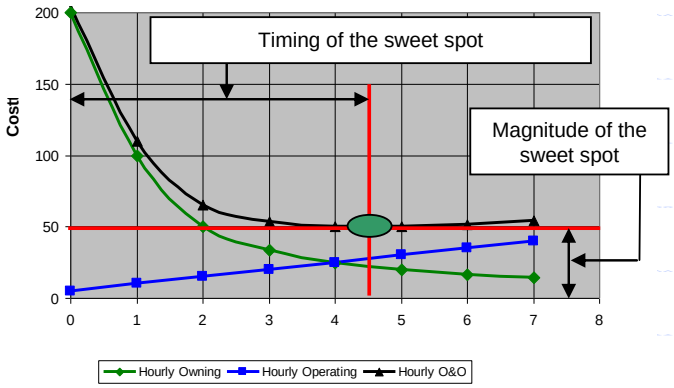
"That period that ends when the average hourly cost to date reaches a minimum."

The terms used in the formal description are shown in the diagram on the left.



We use the term "sweet spot" to avoid the quantitative precision and narrowness of definition implied in the term "economic life." There is much more to the concept of an economic ownership period than is captured in the formal definition.

As can be seen from the diagram on the right there is very little difference. Sweet spot is a broader, softer, more easily understood and accepted term.

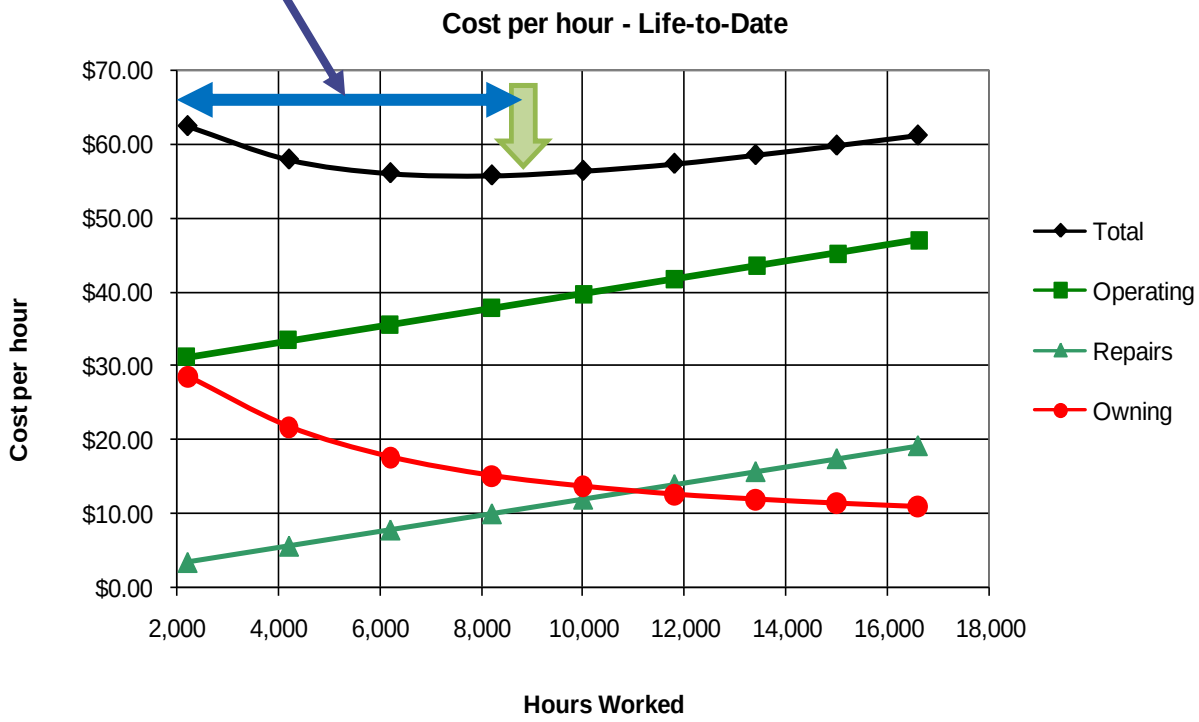


3. Economic life

Details from John Hildreth Wed 8 to 9am

Economic life is that period which ends when average O&O cost, LTD reaches a minimum.

Magnitude and timing of the sweet spot



Fleet Age Planning

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7. There is no such thing as a free lunch

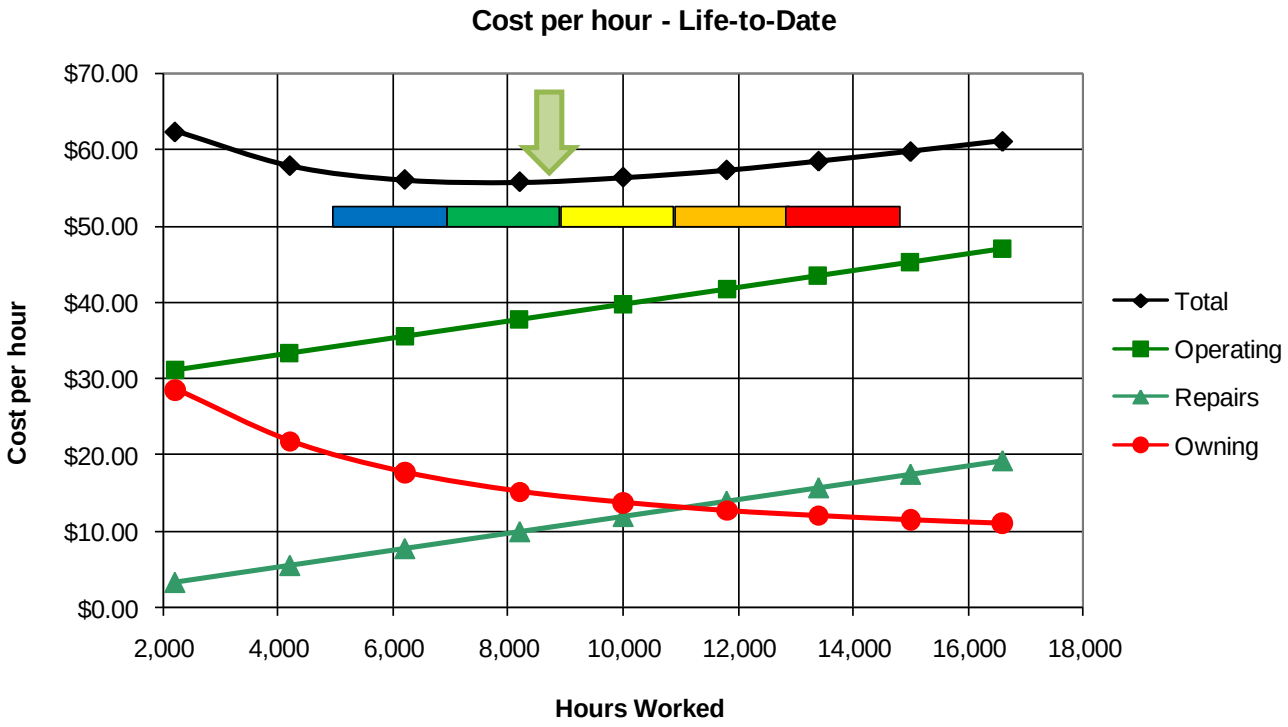
✔

So..

What I want you to take home

4. Set life zones

It is not an exact science



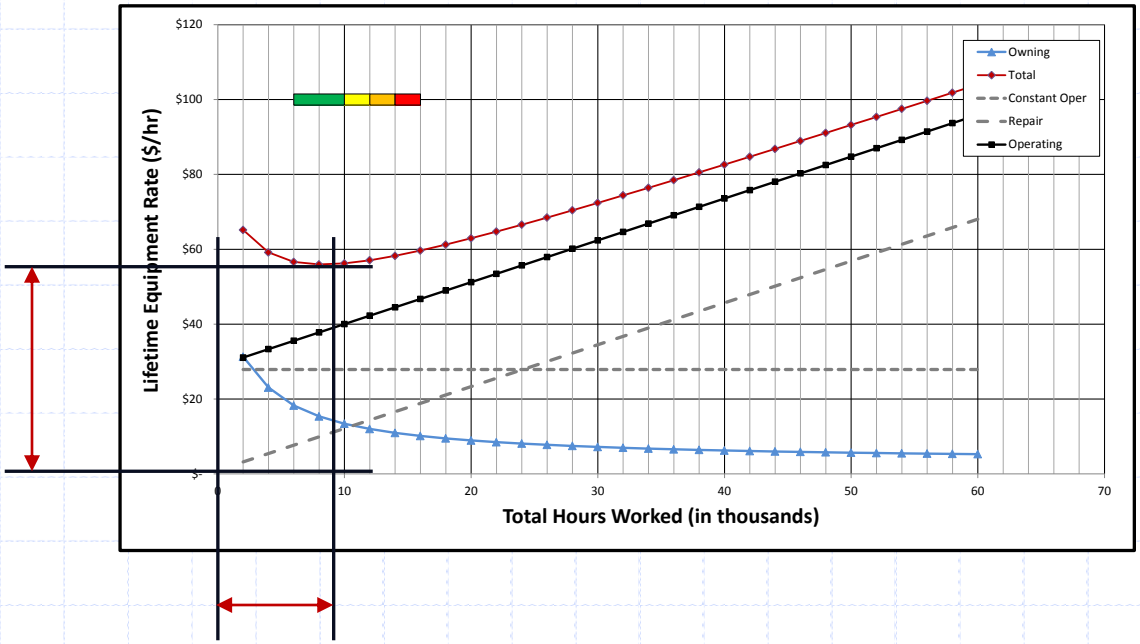
Each year that a machine spends in the orange or red zone is more expensive than all the prior years

4. Set life zones

Magnitude of the sweet spot

$ per hour

Depends on how long you keep it



Timing of the sweet spot

Life in hours

Depends on cost

4. Set life zones

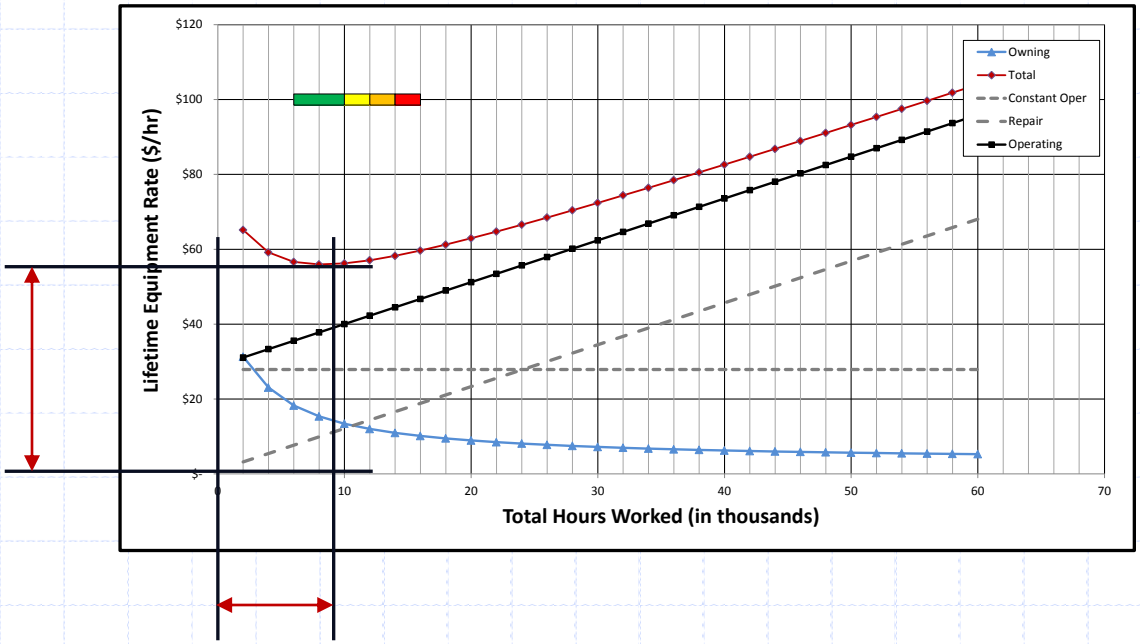
1

Manage cost

Magnitude of the sweet spot

$ per hour

Depends on how long you keep it



2

Manage life

Timing of the sweet spot

Life in hours

Depends on cost

4. Set life zones

There are, in fact, THREE baselines

$ per hour for owning costs.

How do I recover the fixed costs of ownership.

Depends on utilization and life

$ per hour for operating costs.

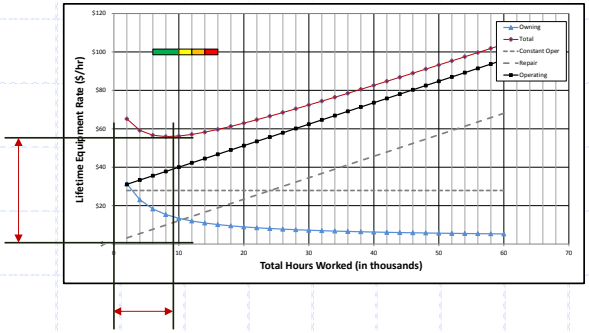
How do I recover the costs of running it and fixing it.

Depends on day to day field decisions

Hours of economic life.

How do I know when the LTD cost is increasing with each hour worked.

Depends on a combination of owning and operating cost, reliability and productivity.



5. Buy what you burn

- Regardless of the size of your tank, if you burn 40 gallons of gas, you will have to put in 40 gallons of gas.
- If a dozer lasts 48 months, and you are running 24 dozers, you had better buy one dozer every second month.

Buy what you burn,

or you will be living off your seed corn

5. Buy what you burn

If you are running 8 excavators 2,000 hours per year, you had better buy one machine per year.

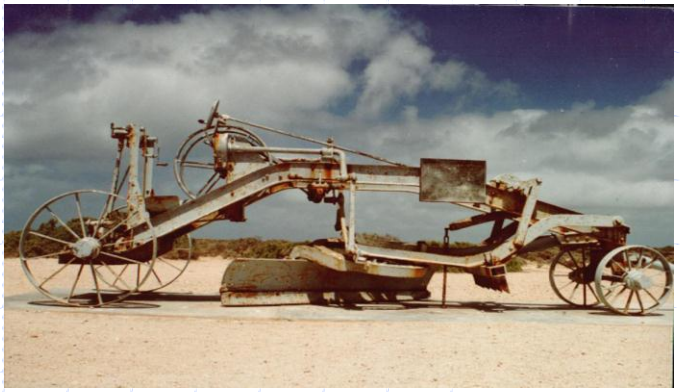
5. Buy what you burn

HOURS IN STOCK

When you buy a machine, you buy 14,000 hours of productive capacity.

When you use it, you use up that productive capacity.

So, after 9,000 hours, what do you have left,1 machine or 5,000 hours of capacity.



5. Buy what you burn

	Current Hours		1st Year	End Yr 1 "Hours"	
Unit #	Worked	In stock	Action	"Worked"	In stock
1	13,000	0	R	1,000	11,000
2	12,000	0	B	6,000	6,000
3	9,000	3,000		11,000	1,000
4	8,000	4,000		10,000	2,000
5	6,000	6,000		8,000	4,000
6	9,000	3,000	V	6,000	6,000
7	7,500	4,500		9,500	2,500
8	8,000	4,000	V	5,000	7,000
9	7,000	5,000		9,000	3,000
10	3,000	9,000		5,000	7,000
11	2,000	10,000		4,000	8,000
12	1,000	11,000		3,000	9,000
Total hours in stock		59,500			66,500
Average Hours in stock		4,958			5,542
		Replacements	$150,000		
		Capitalized rebuilds & renovations	$210,000		
		Total cost	$360,000		

You burn the asset "stock" by working your fleet and completing tasks.

You can replenish your stock by

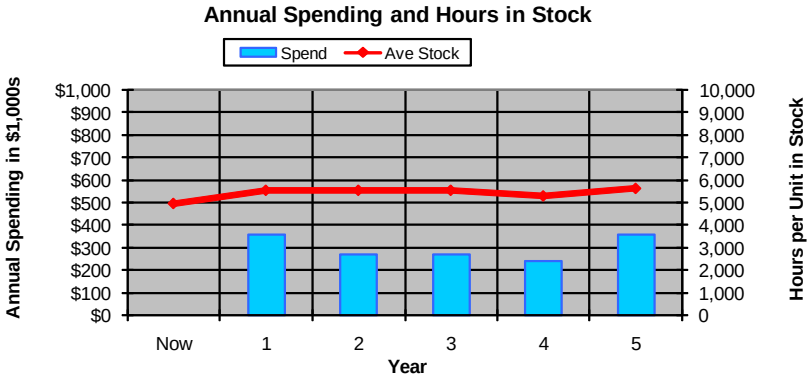
- Replacing units
- Rebuilding units
- Overhauling units

5. Buy what you burn

The Burnolator.

(Burnolator)

Expected life, yrs	6	
Hours per year	2,000	
Expected hours	12,000	
# units in fleet	12	
Replace, R	$150,000	12,000
Capitalized Rebuild, B	$90,000	8,000
Capitalized Renovate, V	$60,000	5,000



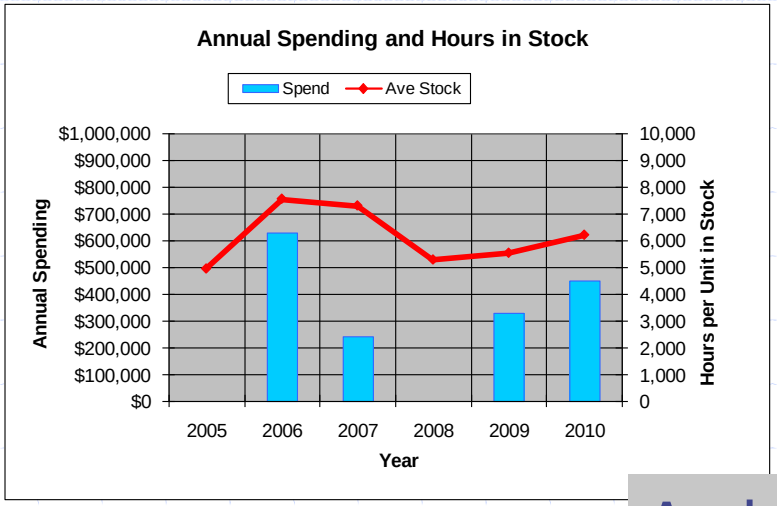
Total for Five Year Plan	
Replacements	$450,000
Capitalized rebuilds & renovns	$1,050,000
Total cost	$1,500,000
Cost per hour	$12.50
Ave Ave Hours in Stock	5,508

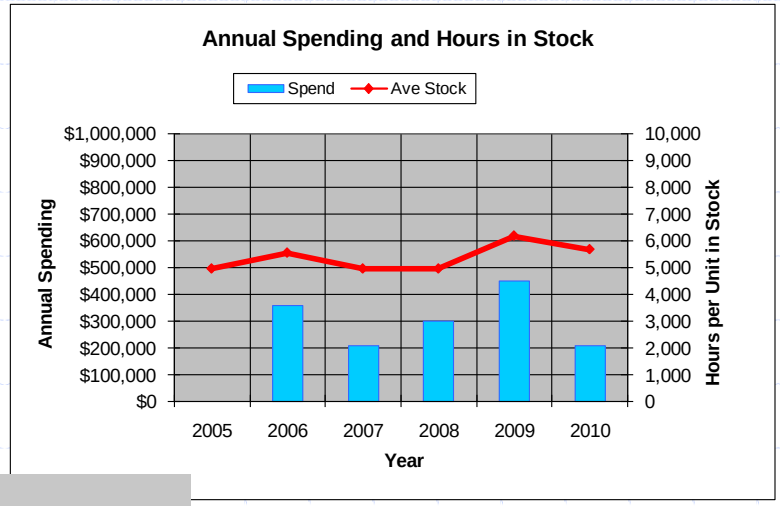
	Current Hours		1st Year	End Yr 1 "Hours"		2nd Year	End Yr 2 "Hours"		3rd Yr	End Yr 3 "Hours"		4th Yr	End Yr 4 "Hours"		5th Yr	End Yr 5 "Hours"	
Unit #	Worked	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock
1	13,000	0	R	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000		9,000	3,000
2	12,000	0	B	6,000	6,000		8,000	4,000		10,000	2,000		12,000	0	R	1,000	11,000
3	9,000	3,000		11,000	1,000	B	5,000	7,000		7,000	5,000		9,000	3,000	R	1,000	11,000
4	8,000	4,000		10,000	2,000	B	4,000	8,000		6,000	6,000		8,000	4,000		10,000	2,000
5	6,000	6,000		8,000	4,000		10,000	2,000	B	4,000	8,000		6,000	6,000		8,000	4,000
6	9,000	3,000	V	6,000	6,000		8,000	4,000	B	2,000	10,000		4,000	8,000		6,000	6,000
7	7,500	4,500		9,500	2,500	B	3,500	8,500		5,500	6,500		7,500	4,500		9,500	2,500
8	8,000	4,000	V	5,000	7,000		7,000	5,000		9,000	3,000	V	6,000	6,000		8,000	4,000
9	7,000	5,000		9,000	3,000		11,000	1,000	B	5,000	7,000		7,000	5,000		9,000	3,000
10	3,000	9,000		5,000	7,000		7,000	5,000		9,000	3,000	B	3,000	9,000		5,000	7,000
11	2,000	10,000		4,000	8,000		6,000	6,000		8,000	4,000	B	2,000	10,000		4,000	8,000
12	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000		9,000	3,000	V	6,000	6,000
Total hours in stock		59,500			66,500			66,500			66,500			63,500			67,500
Ave Hours in stock		4,958			5,542			5,542			5,542			5,292			5,625
Replacements			$150,000			$0			$0			$0			$300,000		
Capitalized rebuilds & renovations			$210,000			$270,000			$270,000			$240,000			$60,000		
Total cost			$360,000			$270,000			$270,000			$240,000			$360,000		

5. Buy what you burn

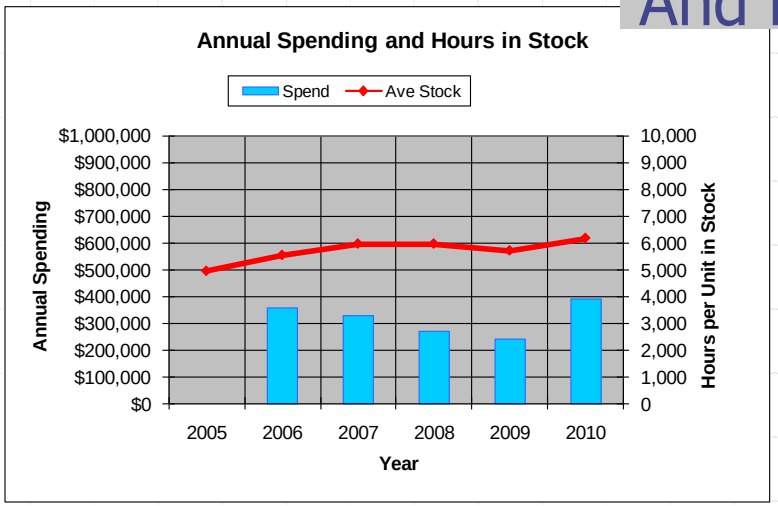
The Burnolator.

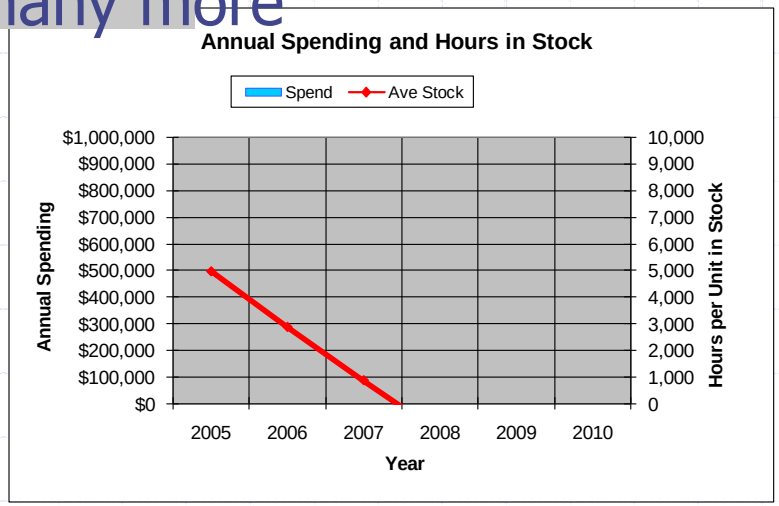
(Burnolator)





And many more





Fleet Age Planning

1. Intro to O & O costs ✔
2. Annual and average, life to date costs ✔
3. Economic life ✔
4. Set life zones ✔
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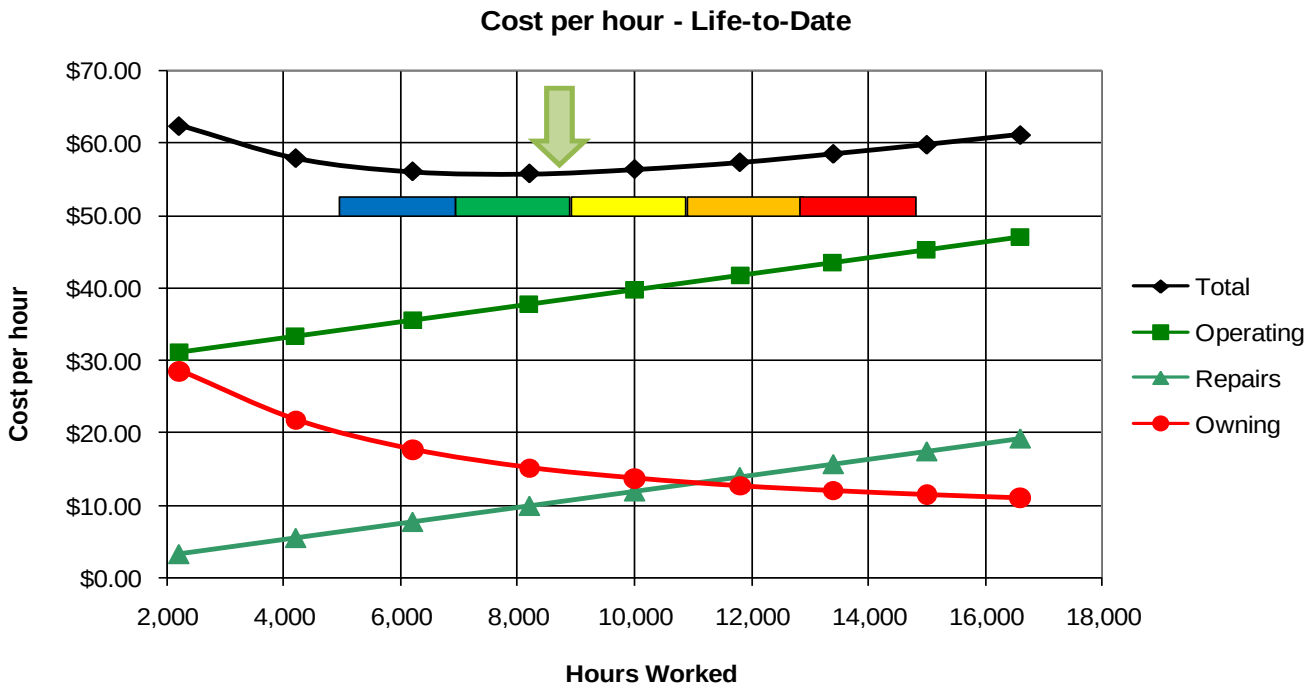
6. Plan ahead
7. There is no such thing as a free lunch

So.. What I want you to take home

6. Plan ahead


Cost per hour - Life-to-Date
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$0.00
Cost per hour
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
18,000
Hours Worked
Total
Operating
Repairs
Owning

6. Plan ahead

A	B	C	D	E	F
Unit numb	Current ag	Expected age at end of 2008	2009	2010	2011
7002	18092	**Sell**			
7003	15304	**< 2**			
7001	13326	15126	**< Sell 1**		
7004	12317	14117	15817	**< Sell 1**	
7022	10374	12174	13874	15574	**< Sell 1**
7150	7156	8956	10656	12356	14056
7161	6182	7982	9682	11382	13082
7157	4921	6721	8421	10121	11821
7160	4875	6675	8375	10075	11775
7152	4588	6388	8088	9788	11488
	Buy	1700	3400	5100	6800
	2 >	1700	3400	5100	6800
		Buy 1 >	1700	3400	5100
			Buy 1 >	1700	3400
				Buy 1 >	1700

6. Plan ahead

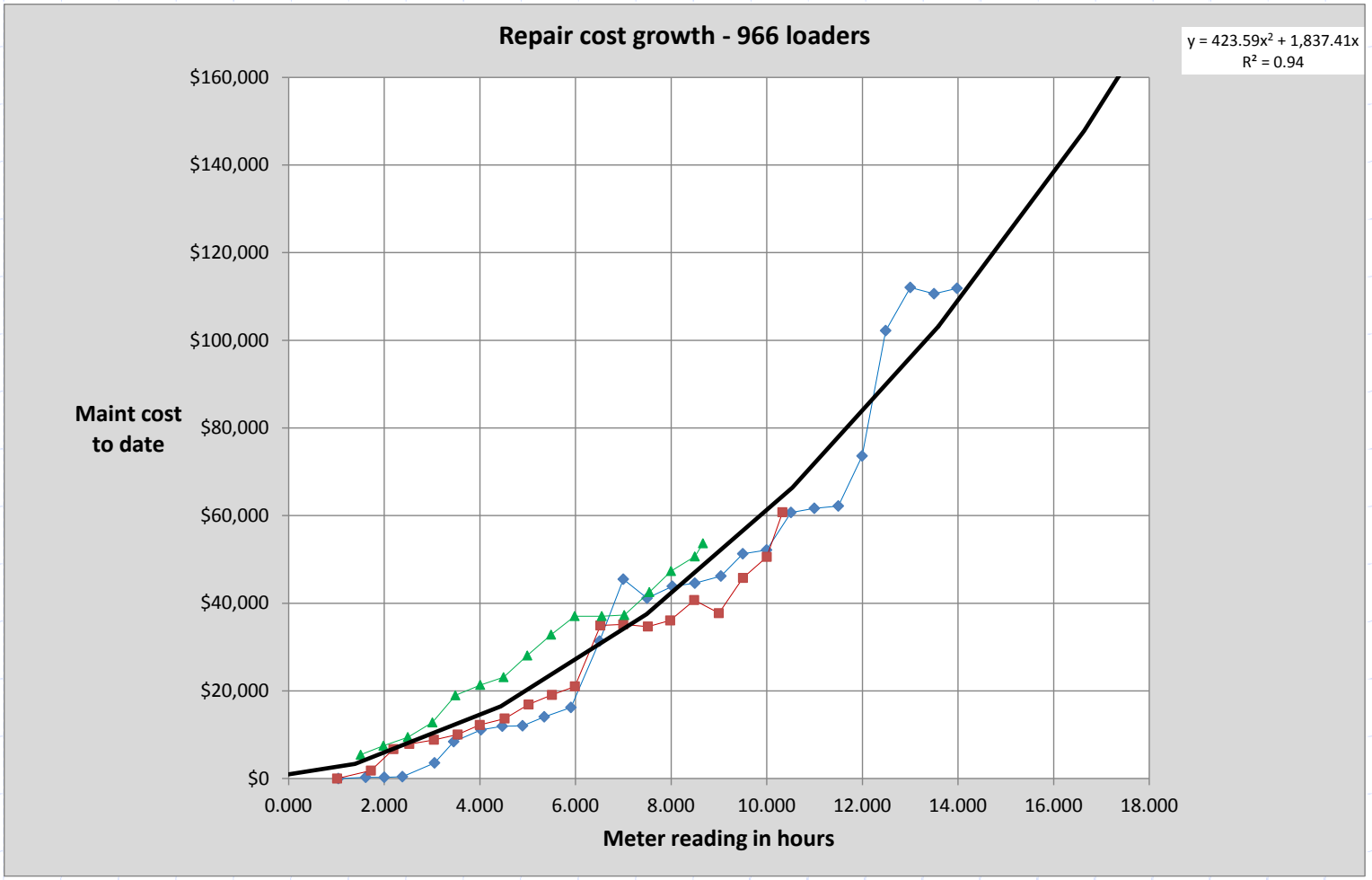
Anticipated maximum life for class		6,000	Green		Orange			Red		
Anticipated annual utilization for class		500	0.6 to 0.8 Target		0.8 - 1.2 Target			More than 1.2 Target		
			Expected hours in the given number of years ahead							
Unit	Make	Model	Hours now	1	2	3	4	5	6	7	8
185 CFM Air Compressor - Diesel											
	INGERSOLL RAND	P185WJD	3,748	4,248	4,748	5,248	5,748	6,248	6,748	7,248	7,748
	INGERSOLL RAND	P185WJD	3,386	3,886	4,386	4,886	5,386	5,886	6,386	6,886	7,386
	INGERSOLL RAND	P185WJD	3,215	3,715	4,215	4,715	5,215	5,715	6,215	6,715	7,215
	INGERSOLL RAND	P185WJD	3,012	3,512	4,012	4,512	5,012	5,512	6,012	6,512	7,012
	INGERSOLL RAND	P185WJD	3,000	3,500	4,000	4,500	5,000	5,500	6,000	6,500	7,000
	INGERSOLL RAND	P185WJD	2,929	3,429	3,929	4,429	4,929	5,429	5,929	6,429	6,929
	INGERSOLL RAND	P185WJD	2,472	2,972	3,472	3,972	4,472	4,972	5,472	5,972	6,472
	Ingersoll-Rand	P185WJD	2,410	2,910	3,410	3,910	4,410	4,910	5,410	5,910	6,410
	INGERSOLL RAND	P185WJD	2,001	2,501	3,001	3,501	4,001	4,501	5,001	5,501	6,001
	INGERSOLL RAND	P185WJD	1,799	2,299	2,799	3,299	3,799	4,299	4,799	5,299	5,799
	Ingersoll-Rand	P185WJD	1,664	2,164	2,664	3,164	3,664	4,164	4,664	5,164	5,664
	Ingersoll-Rand	P185WJD	1,454	1,954	2,454	2,954	3,454	3,954	4,454	4,954	5,454
	Ingersoll-Rand	P185WJD	989	1,489	1,989	2,489	2,989	3,489	3,989	4,489	4,989
	Ingersoll-Rand	P185WJD	911	1,411	1,911	2,411	2,911	3,411	3,911	4,411	4,911
375 CFM Air Compressor - Diesel											
	SULLAIR	DPQ JD	5,653	6,153	6,653	7,153	7,653	8,153	8,653	9,153	9,653
	INGERSOLL RAND	P375WJD	2,806	3,306	3,806	4,306	4,806	5,306	5,806	6,306	6,806
400 CFM Air Compressor (High Pressure)- Diesel											
	INGERSOLL RAND	VHP400WCU	5,345	5,845	6,345	6,845	7,345	7,845	8,345	8,845	9,345

6. Plan ahead

Anticipated maximum life for class		150,000	Green		Orange			Red		
Anticipated annual utilization for class		17,000	0.6 to 0.8 Target		0.8 - 1.2 Target			More than 1.2 Target		
			Expected miles in the given number of years ahead							
Unit	Make	Model	Miles now	1	2	3	4	5	6	7	8
Utility Truck											
	FORD	F-350	161,990	178,990	195,990	212,990	229,990	246,990	263,990	280,990	297,990
	FORD	F-350	148,319	165,319	182,319	199,319	216,319	233,319	250,319	267,319	284,319
	FORD	F-350	143,347	160,347	177,347	194,347	211,347	228,347	245,347	262,347	279,347
	FORD	F350	135,967	152,967	169,967	186,967	203,967	220,967	237,967	254,967	271,967
	FORD	F-350	113,028	130,028	147,028	164,028	181,028	198,028	215,028	232,028	249,028
	FORD	F-350	65,244	82,244	99,244	116,244	133,244	150,244	167,244	184,244	201,244
	FORD	F-350	57,917	74,917	91,917	108,917	125,917	142,917	159,917	176,917	193,917
	Ford	F-350	42,531	59,531	76,531	93,531	110,531	127,531	144,531	161,531	178,531
	FORD	F-350	37,542	54,542	71,542	88,542	105,542	122,542	139,542	156,542	173,542
	FORD	F-350	31,208	48,208	65,208	82,208	99,208	116,208	133,208	150,208	167,208

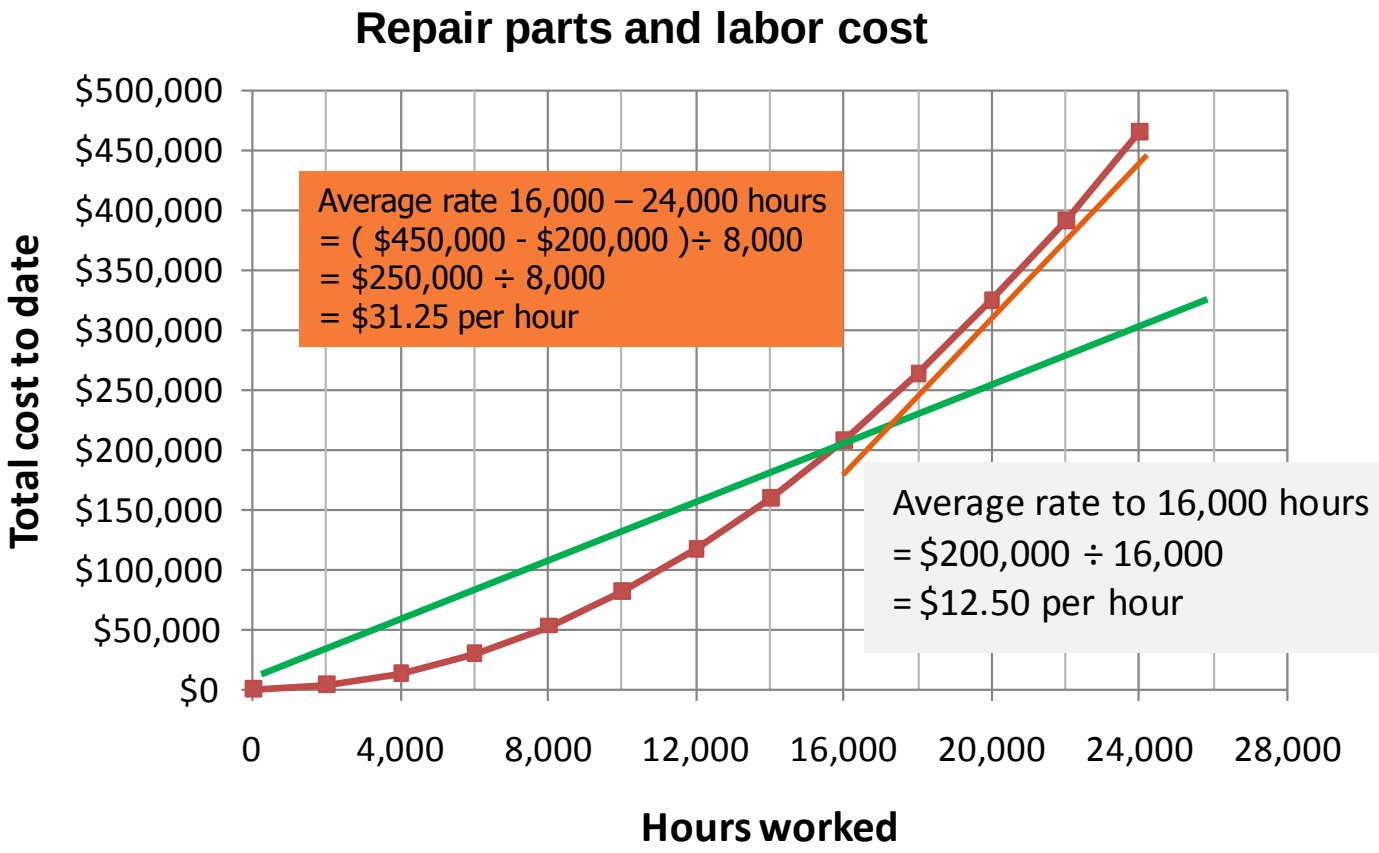
7. There is no such thing as a free lunch

Understand the curve – make good decisions.



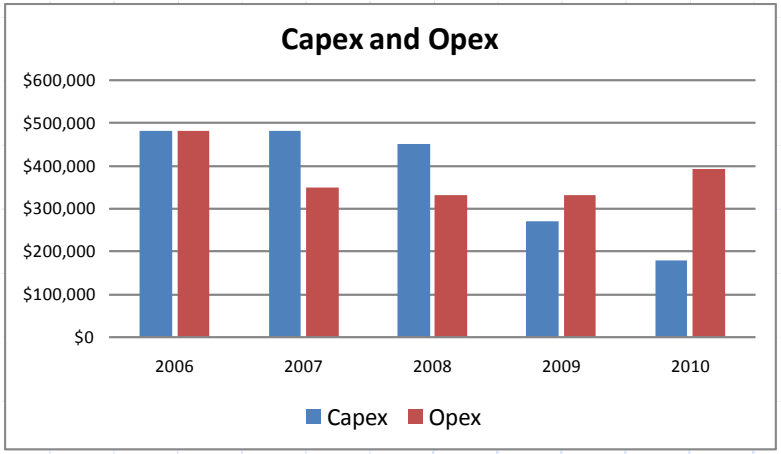
7. There is no such thing as a free lunch

Understand the curve – make good decisions.



7. There is no such thing as a free lunch

Expected life, yrs	6	
Hours per year	2,000	
Expected hours	12,000	
# units in fleet	12	
Replace, R	$150,000	12,000
Capitalized Rebuild, B	$90,000	8,000
Capitalized Renovate, V	$60,000	5,000



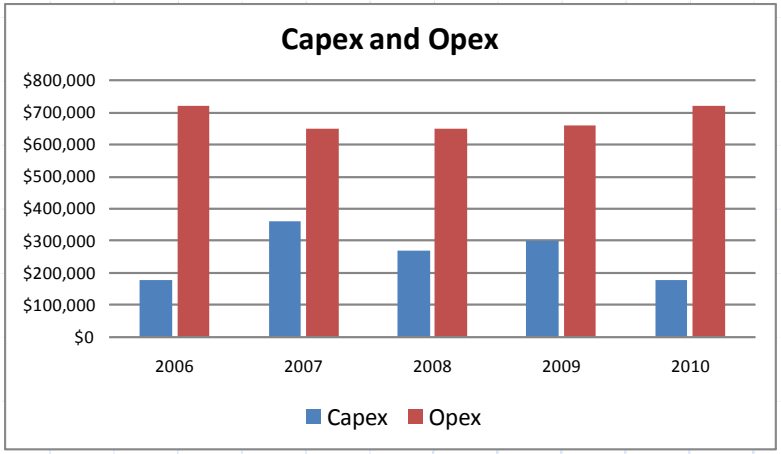
Total for Five Year Plan	
Replacements	$1,050,000
Capitalized rebuilds & renovns	$810,000
Opex	$1,887,340
Total cost	$3,747,340
Cost per hour	**$31.23**
Ave Ave Hours in Stock	**7,425**

	End 2005 Hours		2006	End 2006 "Hours"		2007	End 2007 "Hours"		2008	End 2008 "Hours"		2009	End 2009 "Hours"		2010	End 2010 "Hours"	
Unit #	Worked	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock
1	13,000	0	R	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000	B	1,000	11,000
2	12,000	0	R	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000	B	1,000	11,000
3	9,000	3,000		11,000	1,000	R	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000
4	8,000	4,000		10,000	2,000	R	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000
5	6,000	6,000		8,000	4,000	B	2,000	10,000		4,000	8,000		6,000	6,000		8,000	4,000
6	9,000	3,000	B	3,000	9,000		5,000	7,000	R	1,000	11,000		3,000	9,000		5,000	7,000
7	7,500	4,500		9,500	2,500	B	3,500	8,500		5,500	6,500		7,500	4,500		9,500	2,500
8	8,000	4,000	B	2,000	10,000		4,000	8,000		6,000	6,000	B	0	12,000		2,000	10,000
9	7,000	5,000		9,000	3,000		11,000	1,000	R	1,000	11,000		3,000	9,000		5,000	7,000
10	3,000	9,000		5,000	7,000		7,000	5,000	R	1,000	11,000		3,000	9,000		5,000	7,000
11	2,000	10,000		4,000	8,000		6,000	6,000		8,000	4,000	B	2,000	10,000		4,000	8,000
12	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000	B	1,000	11,000		3,000	9,000
Total hours in stock		59,500			77,500			92,500			94,500			94,500			86,500
Ave Hours in stock		4,958			6,458			7,708			7,875			7,875			7,208
Replacements			$300,000			$300,000			$450,000			$0			$0		
Capitalized rebuilds & renovations			$180,000			$180,000			$0			$270,000			$180,000		
Total Capex at start of year			**$480,000**			**$480,000**			**$450,000**			**$270,000**			**$180,000**		
Expected repair cost for year ahead			**$481,280**			**$349,280**			**$331,680**			**$331,680**			**$393,420**		

(Capex- opex- olator)

7. There is no such thing as a free lunch

Expected life, yrs	6	
Hours per year	2,000	
Expected hours	12,000	
# units in fleet	12	
Replace, R	$150,000	12,000
Capitalized Rebuild, B	$90,000	8,000
Capitalized Renovate, V	$60,000	5,000



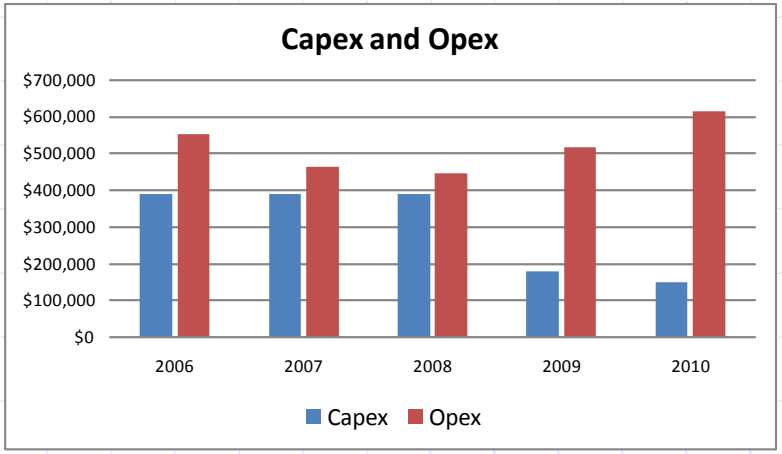
Total for Five Year Plan	
Replacements	$300,000
Capitalized rebuilds & renovns	$990,000
Opex	$3,392,140
Total cost	$4,682,140
Cost per hour	**$39.02**
Ave Ave Hours in Stock	**4,575**

	End 2005 Hours		2006	End 2006 "Hours"		2007	End 2007 "Hours"		2008	End 2008 "Hours"		2009	End 2009 "Hours"		2010	End 2010 "Hours"	
Unit #	Worked	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock
1	13,000	0	B	7,000	5,000		9,000	3,000		11,000	1,000	R	1,000	11,000		3,000	9,000
2	12,000	0	B	6,000	6,000		8,000	4,000		10,000	2,000	R	1,000	11,000		3,000	9,000
3	9,000	3,000		11,000	1,000	B	5,000	7,000		7,000	5,000		9,000	3,000		11,000	1,000
4	8,000	4,000		10,000	2,000	B	4,000	8,000		6,000	6,000		8,000	4,000		10,000	2,000
5	6,000	6,000		8,000	4,000		10,000	2,000	B	4,000	8,000		6,000	6,000		8,000	4,000
6	9,000	3,000		11,000	1,000	B	5,000	7,000		7,000	5,000		9,000	3,000		11,000	1,000
7	7,500	4,500		9,500	2,500		11,500	500	B	5,500	6,500		7,500	4,500		9,500	2,500
8	8,000	4,000		10,000	2,000	B	4,000	8,000		6,000	6,000		8,000	4,000		10,000	2,000
9	7,000	5,000		9,000	3,000		11,000	1,000	B	5,000	7,000		7,000	5,000		9,000	3,000
10	3,000	9,000		5,000	7,000		7,000	5,000		9,000	3,000		11,000	1,000	B	5,000	7,000
11	2,000	10,000		4,000	8,000		6,000	6,000		8,000	4,000		10,000	2,000	B	4,000	8,000
12	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000		9,000	3,000		11,000	1,000
Total hours in stock		59,500			50,500			58,500			58,500			57,500			49,500
Ave Hours in stock		4,958			4,208			4,875			4,875			4,792			4,125
Replacements			$0			$0			$0			$300,000			$0		
Capitalized rebuilds & renovations			$180,000			$360,000			$270,000			$0			$180,000		
Total Capex at start of year			**$180,000**			**$360,000**			**$270,000**			**$300,000**			**$180,000**		
Expected repair cost for year ahead			**$718,880**			**$648,480**			**$648,480**			**$657,280**			**$719,020**		

(Capex- opex- olator)

7. There is no such thing as a free lunch

Expected life, yrs	6	
Hours per year	2,000	
Expected hours	12,000	
# units in fleet	12	
Replace, R	$150,000	12,000
Capitalized Rebuild, B	$90,000	8,000
Capitalized Renovate, V	$60,000	5,000



Total for Five Year Plan	
Replacements	$750,000
Capitalized rebuilds & renovns	$750,000
Opex	$2,591,340
Total cost	$4,091,340
Cost per hour	**$34.09**
Ave Ave Hours in Stock	**6,092**

	End 2005 Hours		2006	End 2006 "Hours"		2007	End 2007 "Hours"		2008	End 2008 "Hours"		2009	End 2009 "Hours"		2010	End 2010 "Hours"	
Unit #	Worked	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock	Action	"Worked"	In stock
1	13,000	0	R	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000		9,000	3,000
2	12,000	0	R	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000		9,000	3,000
3	9,000	3,000		11,000	1,000	B	5,000	7,000		7,000	5,000		9,000	3,000		11,000	1,000
4	8,000	4,000		10,000	2,000	B	4,000	8,000		6,000	6,000		8,000	4,000		10,000	2,000
5	6,000	6,000		8,000	4,000	V	5,000	7,000		7,000	5,000		9,000	3,000		11,000	1,000
6	9,000	3,000	B	3,000	9,000		5,000	7,000	R	1,000	11,000		3,000	9,000		5,000	7,000
7	7,500	4,500		9,500	2,500	B	3,500	8,500		5,500	6,500		7,500	4,500		9,500	2,500
8	8,000	4,000		10,000	2,000	V	7,000	5,000		9,000	3,000		11,000	1,000	R	1,000	11,000
9	7,000	5,000		9,000	3,000		11,000	1,000	R	1,000	11,000		3,000	9,000		5,000	7,000
10	3,000	9,000		5,000	7,000		7,000	5,000	B	1,000	11,000		3,000	9,000		5,000	7,000
11	2,000	10,000		4,000	8,000		6,000	6,000		8,000	4,000	B	2,000	10,000		4,000	8,000
12	1,000	11,000		3,000	9,000		5,000	7,000		7,000	5,000	B	1,000	11,000		3,000	9,000
Total hours in stock		59,500			69,500			79,500			81,500			73,500			61,500
Ave Hours in stock		4,958			5,792			6,625			6,792			6,125			5,125
Replacements			$300,000			$0			$300,000			$0			$150,000		
Capitalized rebuilds & renovations			$90,000			$390,000			$90,000			$180,000			$0		
Total Capex at start of year			**$390,000**			**$390,000**			**$390,000**			**$180,000**			**$150,000**		
Expected repair cost for year ahead			**$551,680**			**$463,680**			**$446,080**			**$516,480**			**$613,420**		

(Capex- opex- olator)

7. There is no such thing as a free lunch

Understand availability and cost.

Fleet Age Planning

1. Intro to O & O costs ✔
2. Annual and average, life to date costs ✔
3. Economic life ✔
4. Set life zones ✔
5. Buy what you burn ✔
6. Plan ahead ✔
7. There is no such thing as a free lunch ✔

So.. What I want you to take home

1. Intro to O&O costs

So..

Owning

Acquire

One very big one or several big ones every month regardless.

- Buy
- Borrow
- Lease
- Rent

Keep

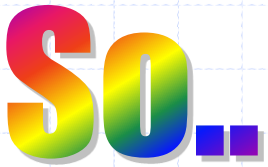
A large number of small ones every month regardless.

- License
- Insurance
- Property Tax
- Interest

Sell

One big one, hopefully, at the end.

- Residual market value
- Auction price
- Sale price
- Trade in

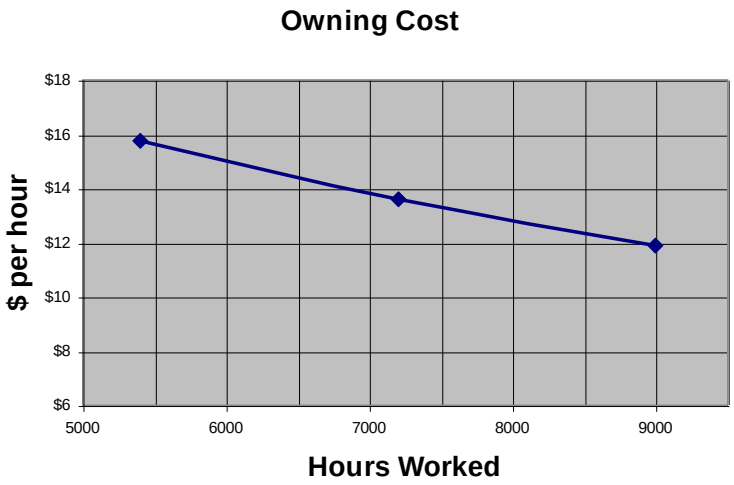


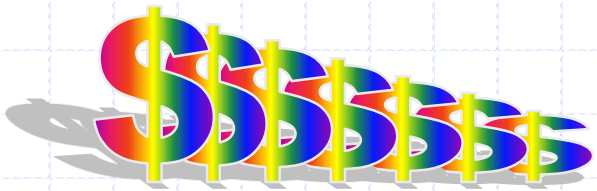
1. Intro to O&O costs

Owning

Hourly owning cost goes down with age.

It depends on the rate at which residual market value decreases and the number of hours worked in a year.





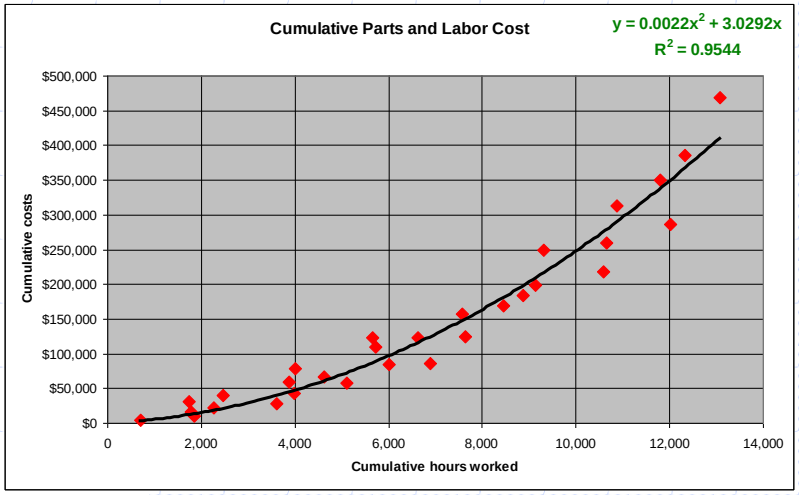
1. Intro to O&O costs

SO..

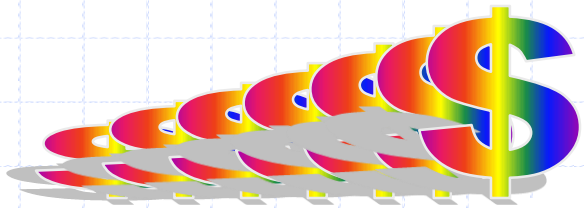
Operating

Hourly operating cost goes up with age.

It depends on the rate at which expenditure on repair parts and labor increases as the machine ages.

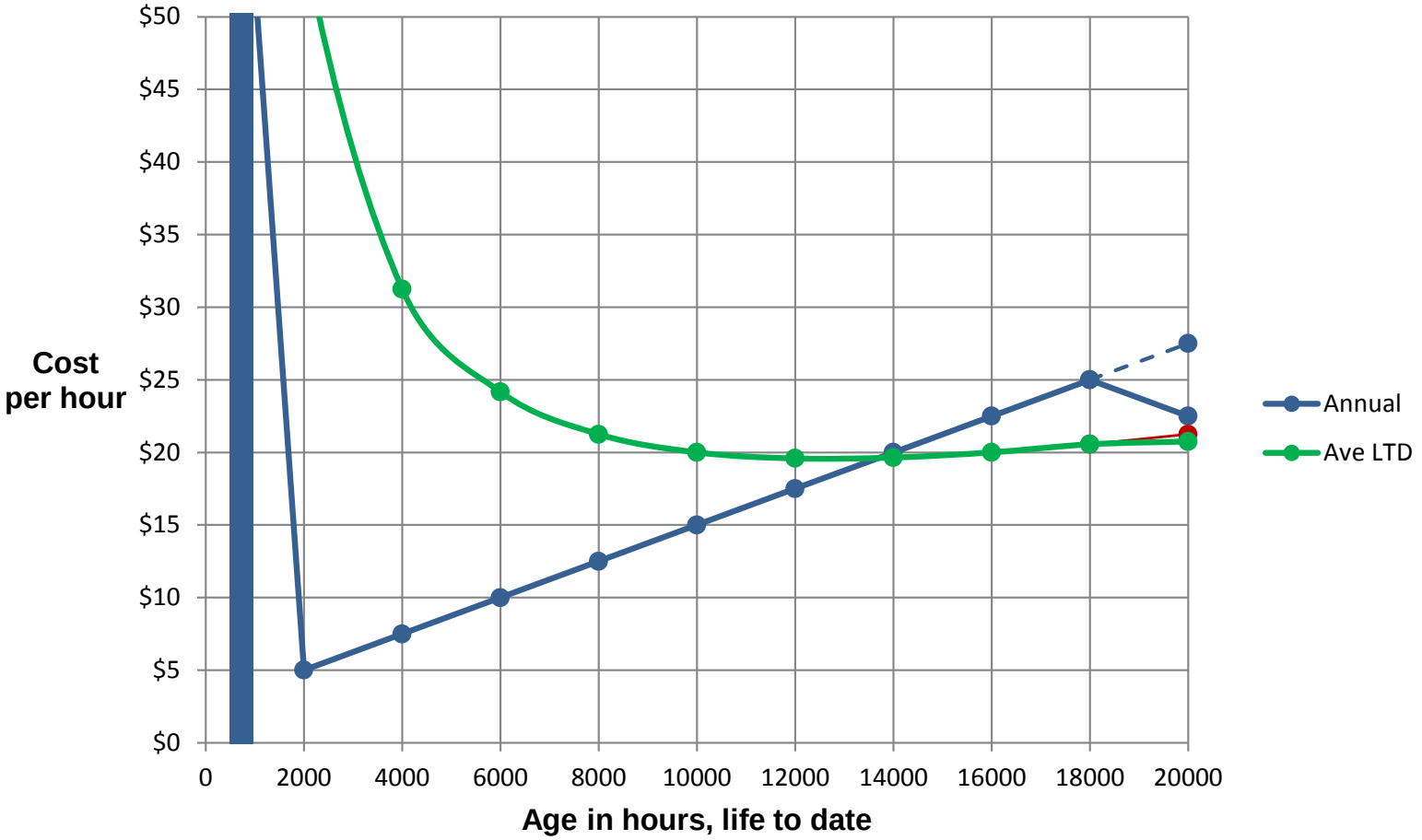


We must be able to define the relationship between cost and age and determine the rate at which costs increase with age.



So..

2. Annual and average, life to date costs



Once you are through the minimum, each year is more expensive than all the prior years

So..

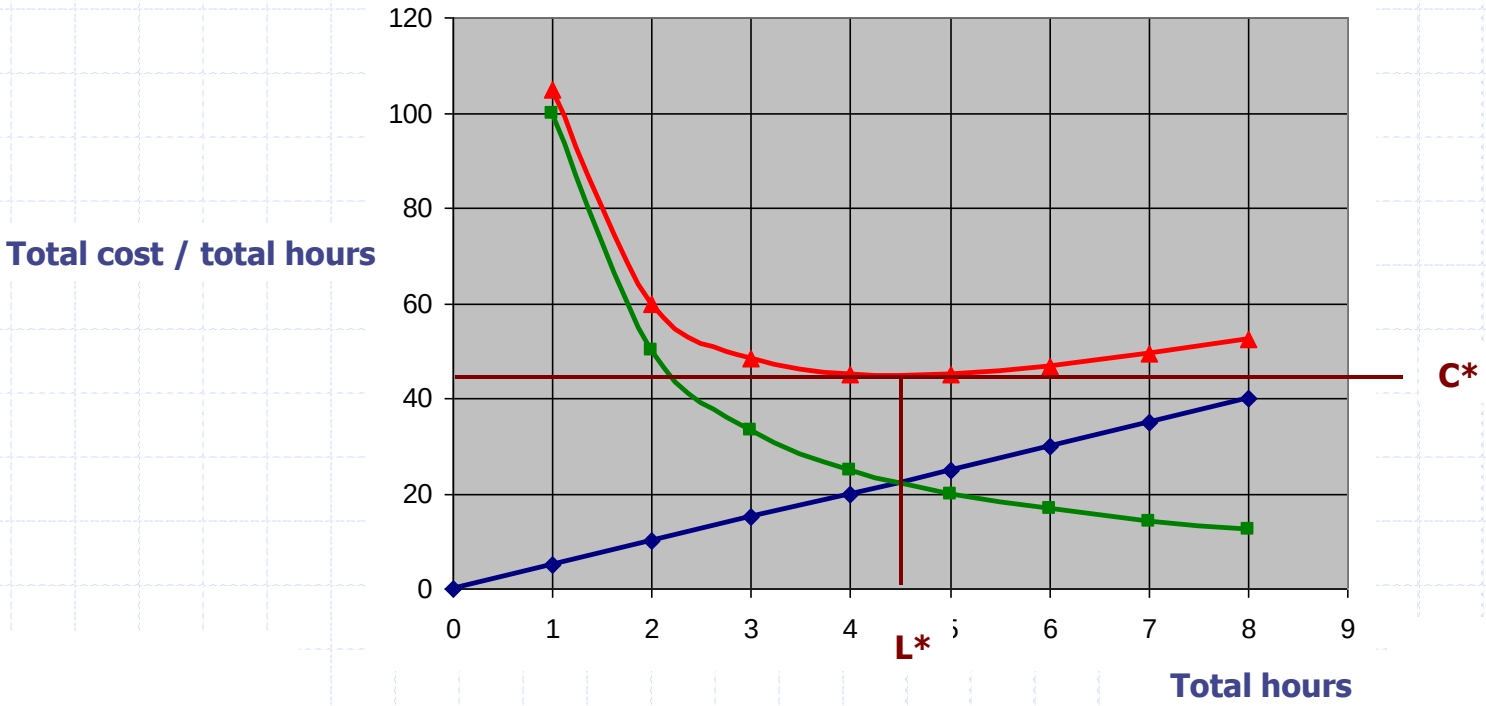
3. Economic life

Hourly owning cost goes down with age.

It depends on the rate at which residual market value decreases and the number of hours worked in a year.

Hourly operating cost goes up with age.

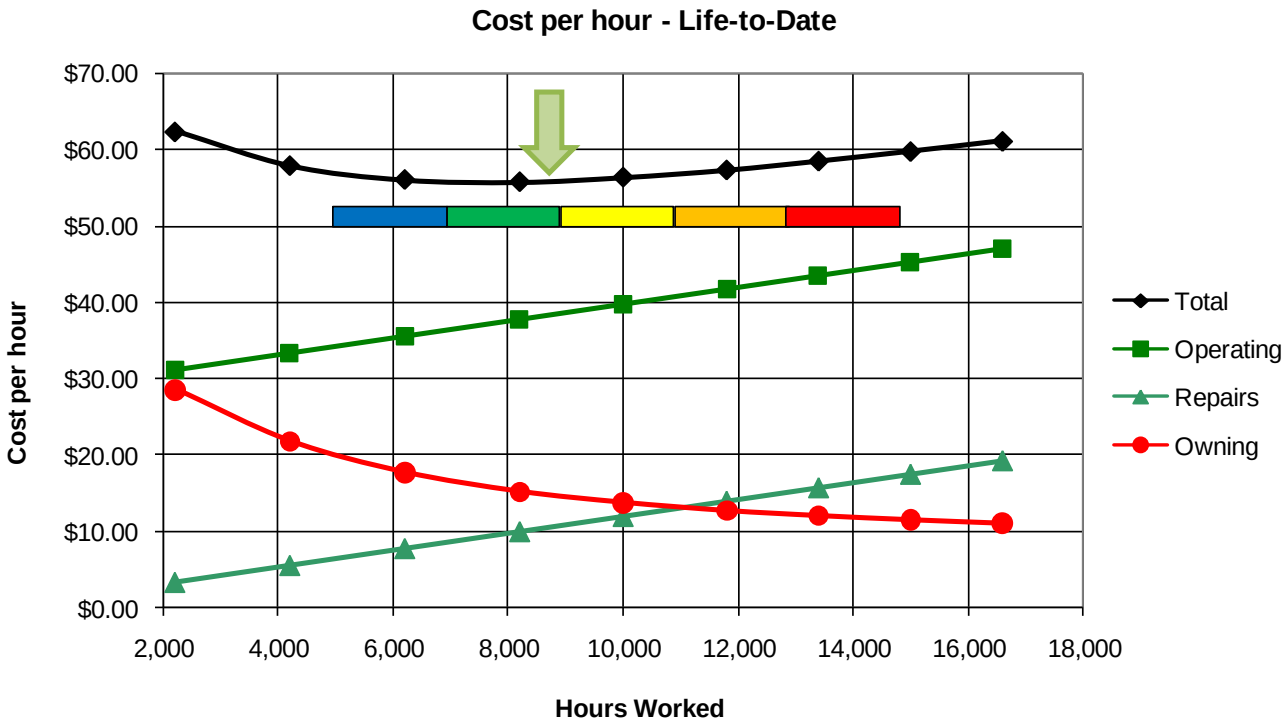
It depends on the rate at which expenditure on repair parts and labor increases as the machine ages.



So..

4. Set life zones

It is not an exact science



Each year that a machine spends in the orange or red zone is more expensive than all the prior years

So..

5. Buy what you burn

- Regardless of the size of your tank, if you burn 40 gallons of gas, you will have to put in 40 gallons of gas.
- If a dozer lasts 48 months, and you are running 24 dozers, you had better buy one dozer every second month.

Buy what you burn,

or you will be living off your seed corn

6. Plan ahead

A	B	C	D	E	F
Unit numb	Current ag	Expected age at end of 2008	2009	2010	2011
7002	18092	**Sell**			
7003	15304	**< 2**			
7001	13326	15126	**< Sell 1**		
7004	12317	14117	15817	**< Sell 1**	
7022	10374	12174	13874	15574	**< Sell 1**
7150	7156	8956	10656	12356	14056
7161	6182	7982	9682	11382	13082
7157	4921	6721	8421	10121	11821
7160	4875	6675	8375	10075	11775
7152	4588	6388	8088	9788	11488
	Buy	1700	3400	5100	6800
	2 >	1700	3400	5100	6800
		Buy 1 >	1700	3400	5100
			Buy 1 >	1700	3400
				Buy 1 >	1700

SO…

Fleet Age Planning

There is no such thing as a free lunch.

What do I want you to take home:

- **Buy what you burn**
  - Equipment is used up in the production of work. The “tank” needs to be kept full.
  - Deferring replacement does not deny replacement.
- **Replenish stock**
  - It is not the number of machines you have. It is the number of machine hours you have in stock. Know the number and keep your inventory up.

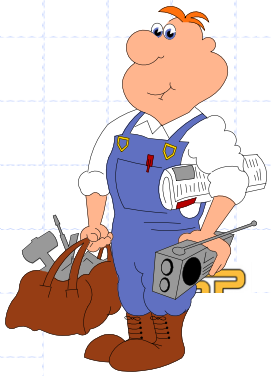
SO…

Fleet Age Planning

There is no such thing as a free lunch.

What do I want you to take home:

- **Know it is a curve**
  - It really is very wrong to assume that the repair and maintenance cost per hour does not change with age. Know how it changes and factor this into your analysis.
- **Understand there is a sweet spot**
  - Yes, we need to watch the timing and the magnitude of the minimum cost point. We need to keep our fleet average age well balanced and somewhere round the sweet spot.



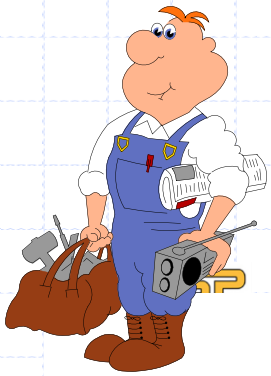
SO…

Fleet Age Planning

There is no such thing as a free lunch.

What do I want you to take home:

- **Look at both capex and opex**
  - You can not reduce capex and push life out and expect opex to stay at past levels. Balance capex and opex in your decision making.
- **Measure availability and reliability**
  - They are different, both are important and both deteriorate as the machine ages. Deterioration makes it impossible to deliver completed construction on time and on budget.



SO…

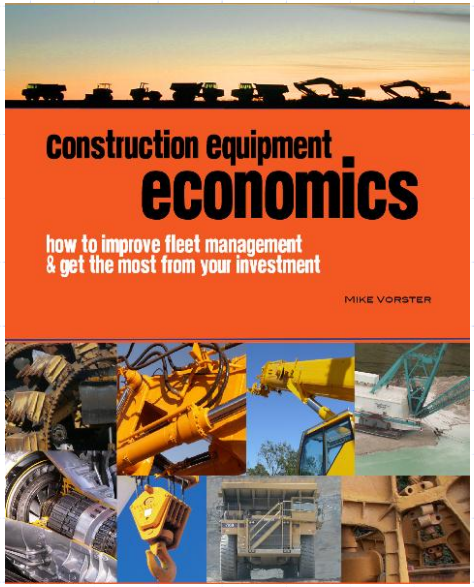
Fleet Age Planning

There is no such thing as a free lunch.

What do I want you to take home:

- **Plan ahead**
  - We should be able to estimate the age of individual units at the end of the next couple of years. This should not come as a surprise.
- **Know the impact**
  - When fleet average age goes up, lots of things go wrong. You go up the cost curve, down the availability curve and round the spiral of doom.

Fleet Age Planning



To confirm what we have said and for more details:

Chapter 4	**The Rate Calculation**
Chapter 5	**Understanding and Estimating Owning Costs**
Chapter 6	**Understanding and Estimating Operating Costs**
Chapter 7	**Economic Life, Fleet Average Age and Capital Expenditure**

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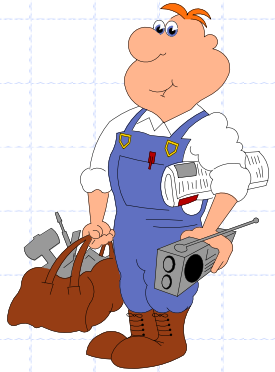
Fleet Age Planning



Can we develop a structured process that helps us keep our fleet at or around "the sweet spot".

2012 National Equipment Fleet Management Conference

FLEET AGE PLANNING

Thank you, a pleasure

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