Financial Justification

Items:

- Executive Summary Slides (3)
- Measuring the Amount of Obsolescence in the Installed Base
- Identifying the Impact of Obsolescence on the Organization
- Assessing the **Financial** Cost of that on the Organization (and opportunity)
  - One: Impact on Outsourced Help Desk fees
  - Two: Impact on Internal Service Desk costs
- Assessing the **Operational** Cost of that Impact on the Organization
  - Healthcare delivery delays Due to Obsolescence
- Benchmarking the Cost Structure: IDC TCO metrics and Computer Economics ratios
- Calculating TCO cost/cash/expense flows – and impact of faster refresh on those
- Financial Structure data
- Suggested implementation structure and cost/savings projections

Note: All hospital data was derived from a sample from 2nd Level Service Desk support call logs, from an Asset list, and from call counts into/out of CareTech helpdesk. The analysis below is dependent on this supplied data being **accurate**, **timely**, and **representative** of the environment.

Financial Justification – Executive Summary (1 of 3)

Items:

- Measuring the Amount of Obsolete equipment
- Identifying the Impact of Obsolescence on support resources
- Assessing the **Financial** Cost of Obsolescence
- Assessing the **Operational** Cost of Obsolescence
- Benchmarking the Cost Structure, both TCO and EUC Budget in Hospitals
- Calculating a targeted TCO and EUC cost/cash/expense model to achieve desired savings goals
- Financial Structure and pricing data for laptops and desktops
- Implementation structure and cost/savings projections

Summary:

- 32% of the Installed base is Obsolete (over 5 years old)
- 65.2% of all support costs are created by that obsolete gear
- The Legacy cost of supporting just this obsolete gear is $22.5M per year
- This creates between 5-7K delays in healthcare delivery by practitioners per year
- The TCO costs are 170% of IDC models, and spend is 2x that of comparable hospitals
- A Recurring refresh model can bring EUC spend down to comparable levels (From $34M to $17.4M) even with returns “1 year late”
- Laptops on Operating Leases; Desktops on Finance Leases; Effective rates -3.24% and 2.48%
- Yearly refreshes: 6057, 7749, 8184, 9445; Legacy cost recovery of 1.1M (EOY2022); Refresh cost avoidance of $21.7M (EOY 2022)

Financial Justification – Executive Summary (2 of 3)

Removal of the obsolete units and move to better refresh cycles, will allow reduction of yearly TCO costs:

	IDC	BH Now	BH @ 70% of Target
1st Year of Life	$220	$374	$185
2nd	$278	$473	$234
3rd	$386	$657	$325
4th	$571	$972	$481
5th	$887	$1,510	$747
6th	$1,553	$2,643	$1,309
6 year total:	**$3,895**	**$6,630**	**$3,282**
Yearly AVG:	**$649**	**$1,105**	**$547**

When applied to Desktops and Laptops (for 4 years and 3 years), the savings are substantial and on-going (recurring) – even if every unit is returned an entire year late:

Desktops	
$874	Unit cost
$4,406	TCO of Buy and Hold (6 yrs)
$3,471	TCO of 4 Yr Refresh
$3,984	TCO of 5 YR (1 year late)
$935	TCO savings of 4 Yr Refresh
$422	TCO savings of "1 year late"

Laptops	
$1,158	Unit cost
$4,690	TCO of Buy and Hold (6 yrs)
$4,148	TCO of 3 Yr Refresh
$4,304	TCO of 4 YR (1 year late)
$542	TCO savings of 3 Yr Refresh
$386	TCO savings of "1 year late"

Financial Justification – Executive Summary (3 of 3)

Implementation Schedule and Costs Displaced Forecast:

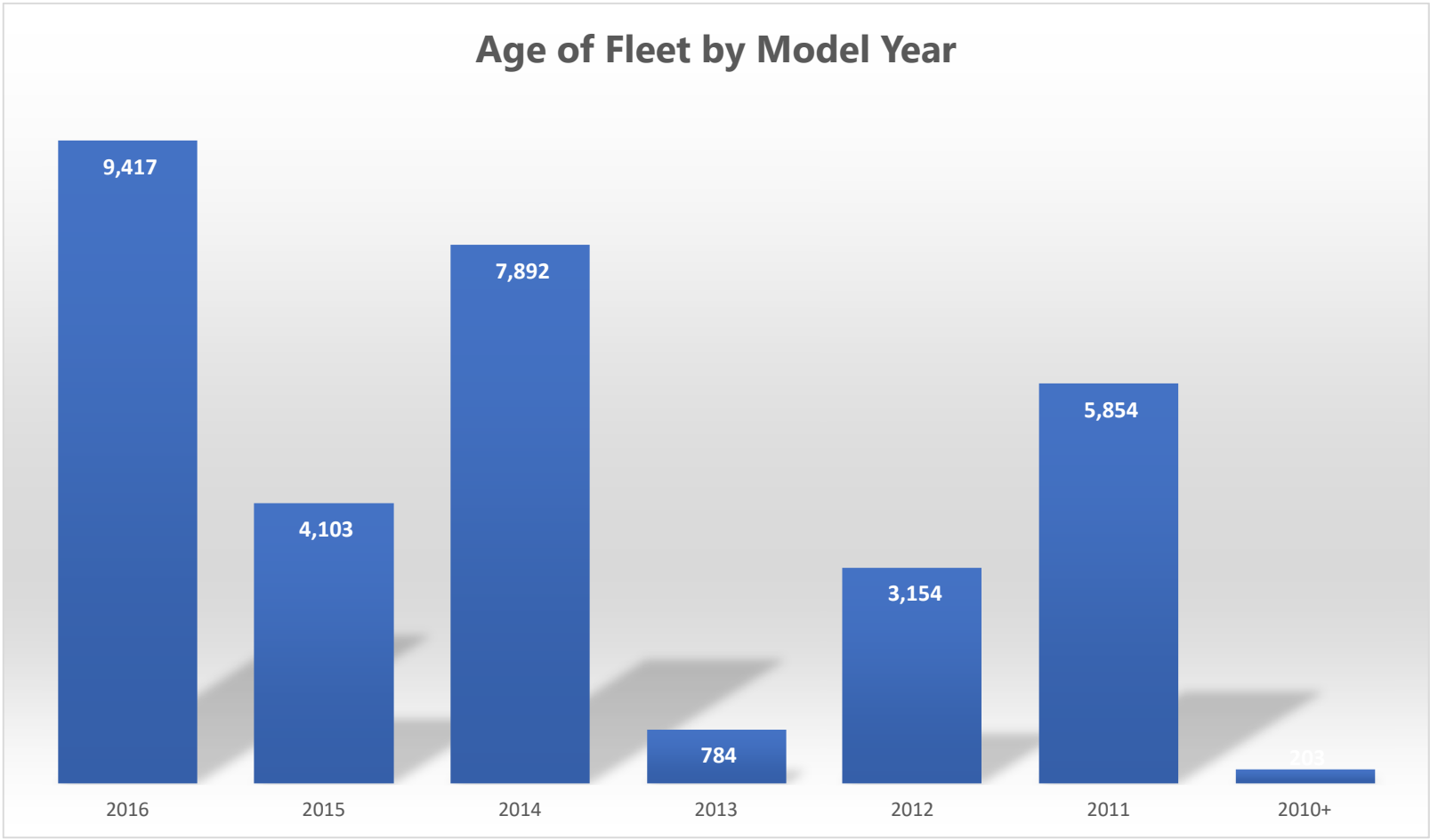
	By EOY 2019	By EOY 2020	By EOY 2021	By EOY 2022
Units Refreshed:	6,057	7,749	8,184	9,445
Legacy Costs Displaced:		$248,072	$440,328	$446,530
Refresh TCO Costs Displaced:		$3,905,207	$7,567,613	$10,217,926
YRLY Total		$4,153,279	$8,007,941	$10,664,456

Measuring the Amount of Obsolescence

Measuring the Amount of Obsolescence

Analysis of the Installed Base

Based on analysis of the provided Asset List (at May 2018):



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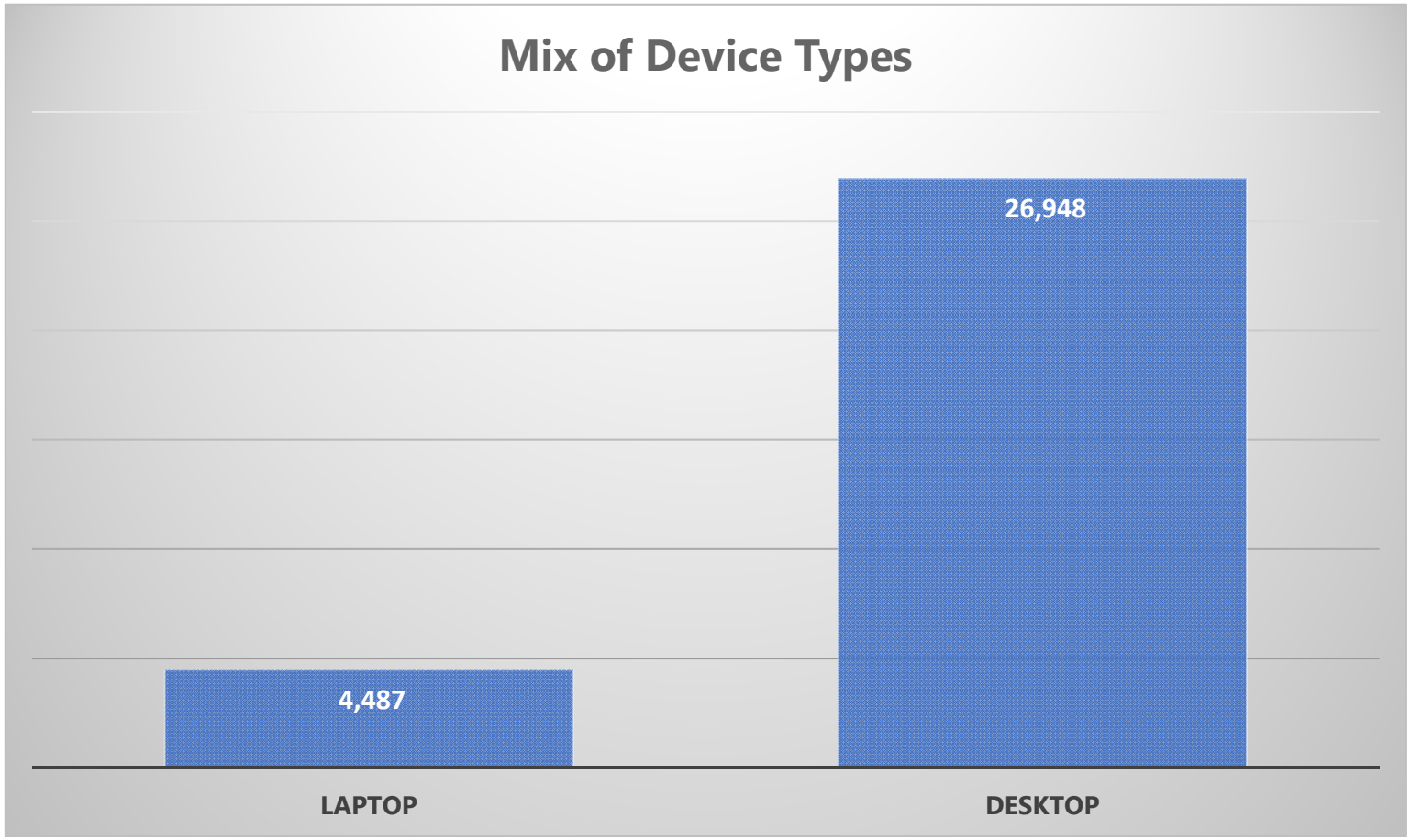

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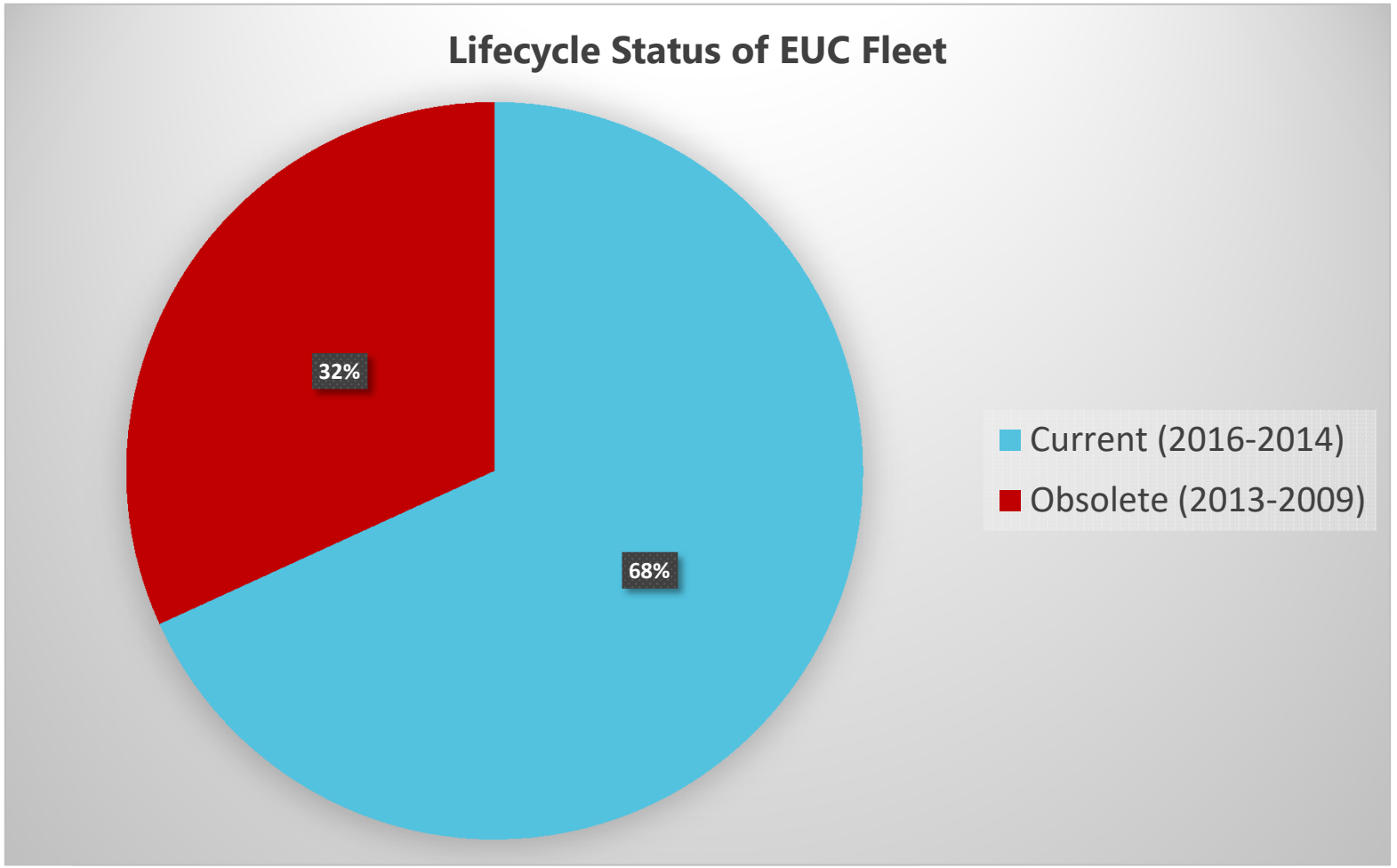
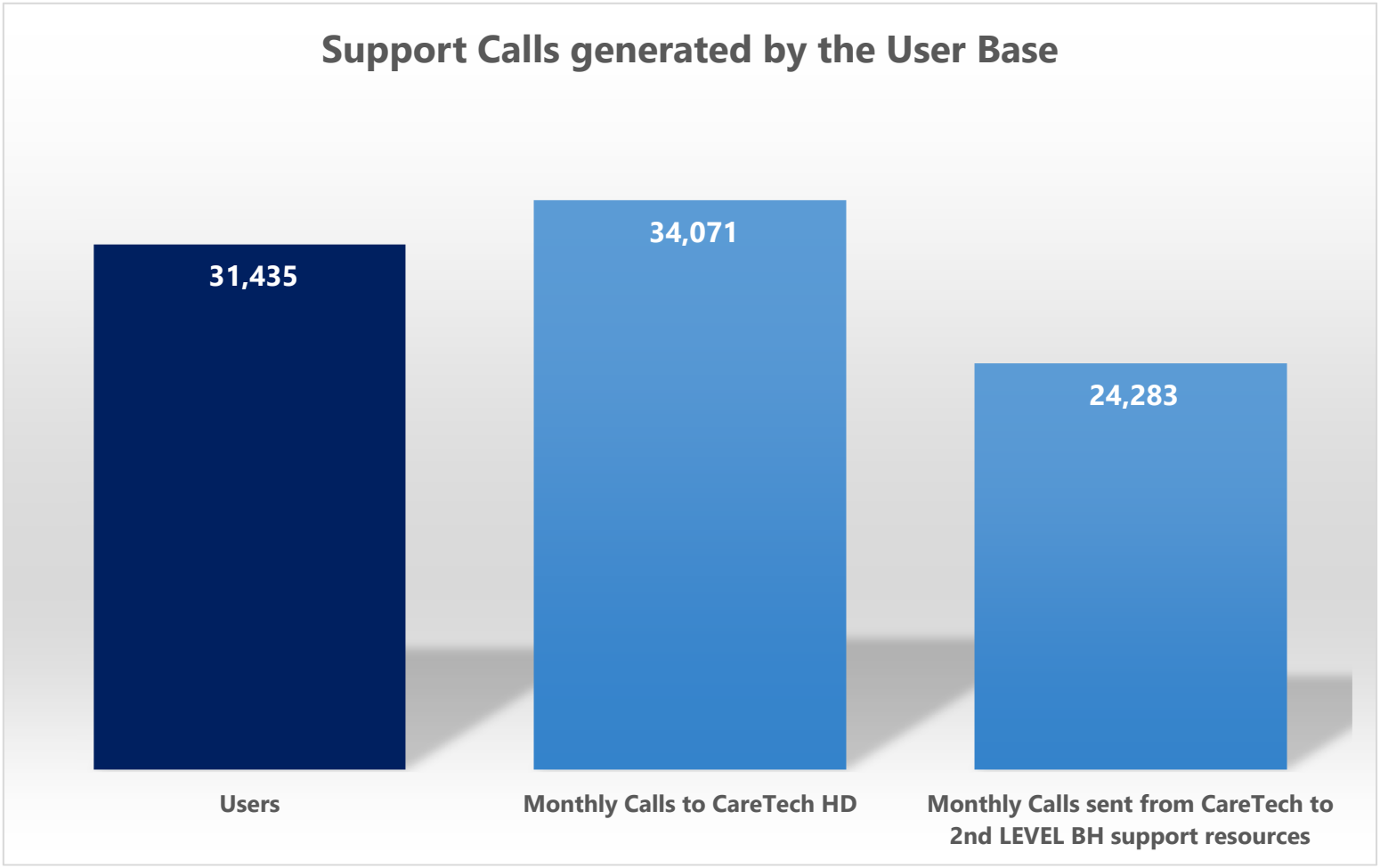


Identifying the Impact of Obsolescence on the Support Resources

Identifying the Impact of Obsolescence

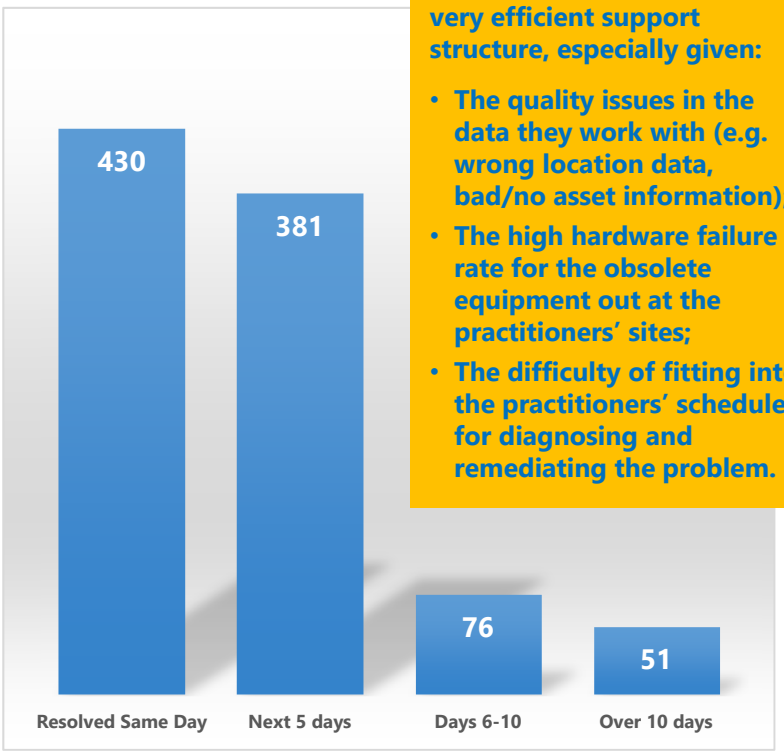
Based on call volumes reported by CareTech (outsourced helpdesk):



Identifying the Impact of Obsolescence

The sample of HW support calls used for analysis:

1. Call/Ticket Log contained 1,094 cases, of which 1,001 came in that month and were resolved in that same month.
2. 462 records had computer model numbers which could be dated.
3. 965 records had asset tag numbers present (not all of which were correct, as noted by the technician once reaching the site).
4. 65 Assets tags had 2 separate cases for them; 1 asset tag had 4 cases.
5. 38 problem tickets were REOPENs of earlier cases (i.e. a second touch); 1 problem had been worked on 3 times, and two problems had been worked on 4 times.



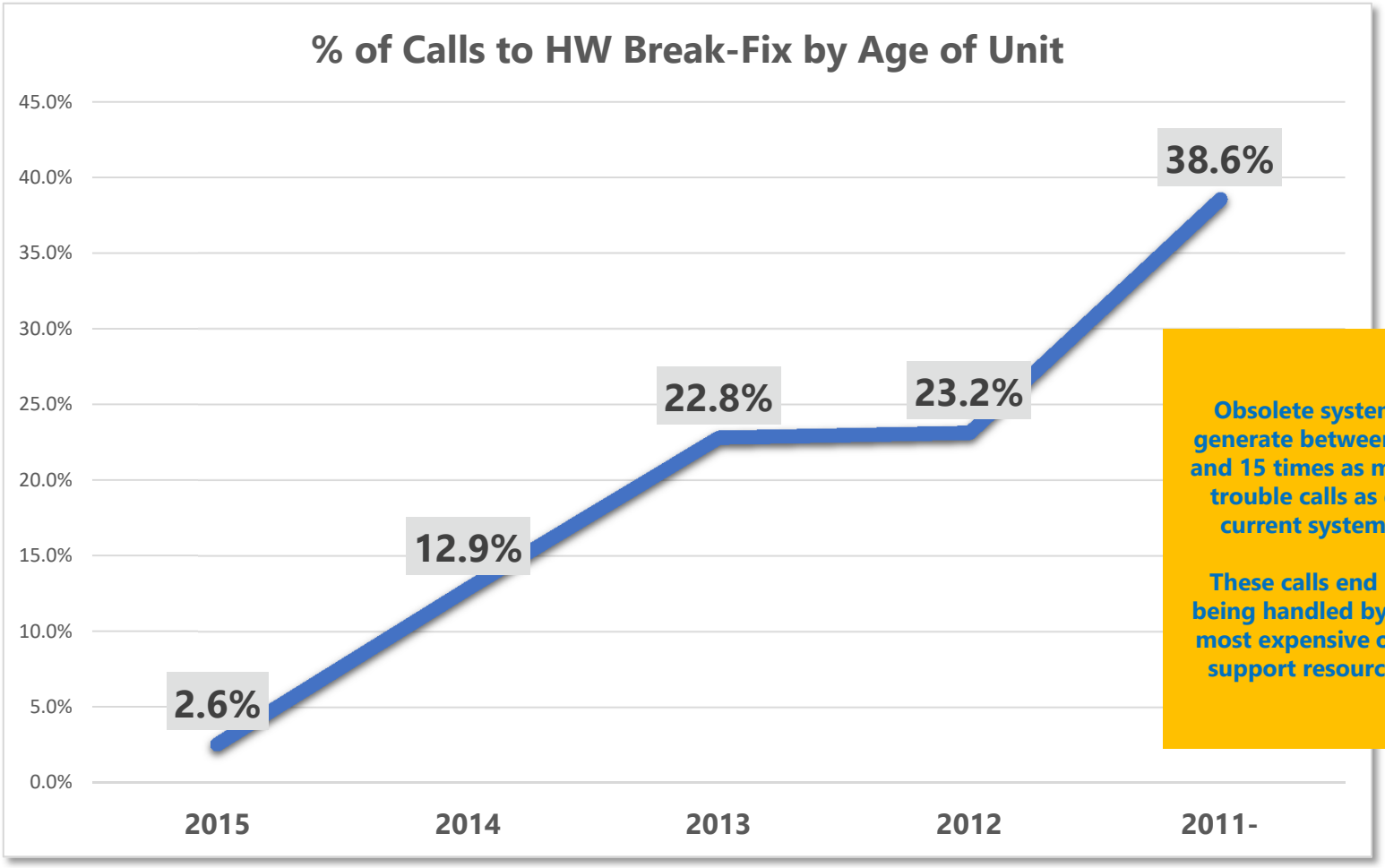
Resolution times indicate a very efficient support structure, especially given:

- **The quality issues in the data they work with (e.g. wrong location data, bad/no asset information);**
- **The high hardware failure rate for the obsolete equipment out at the practitioners' sites;**
- **The difficulty of fitting into the practitioners' schedules for diagnosing and remediating the problem.**

Note: Multiple interventions for the same asset and/or same system normally occur in cases of obsolete gear or under-powered equipment. With obsolete or under-powered gear, a patch for one problem often causes a problem with another component to appear within a short period of time.

Identifying the Impact of Obsolescence

Based on analysis of HW support calls:

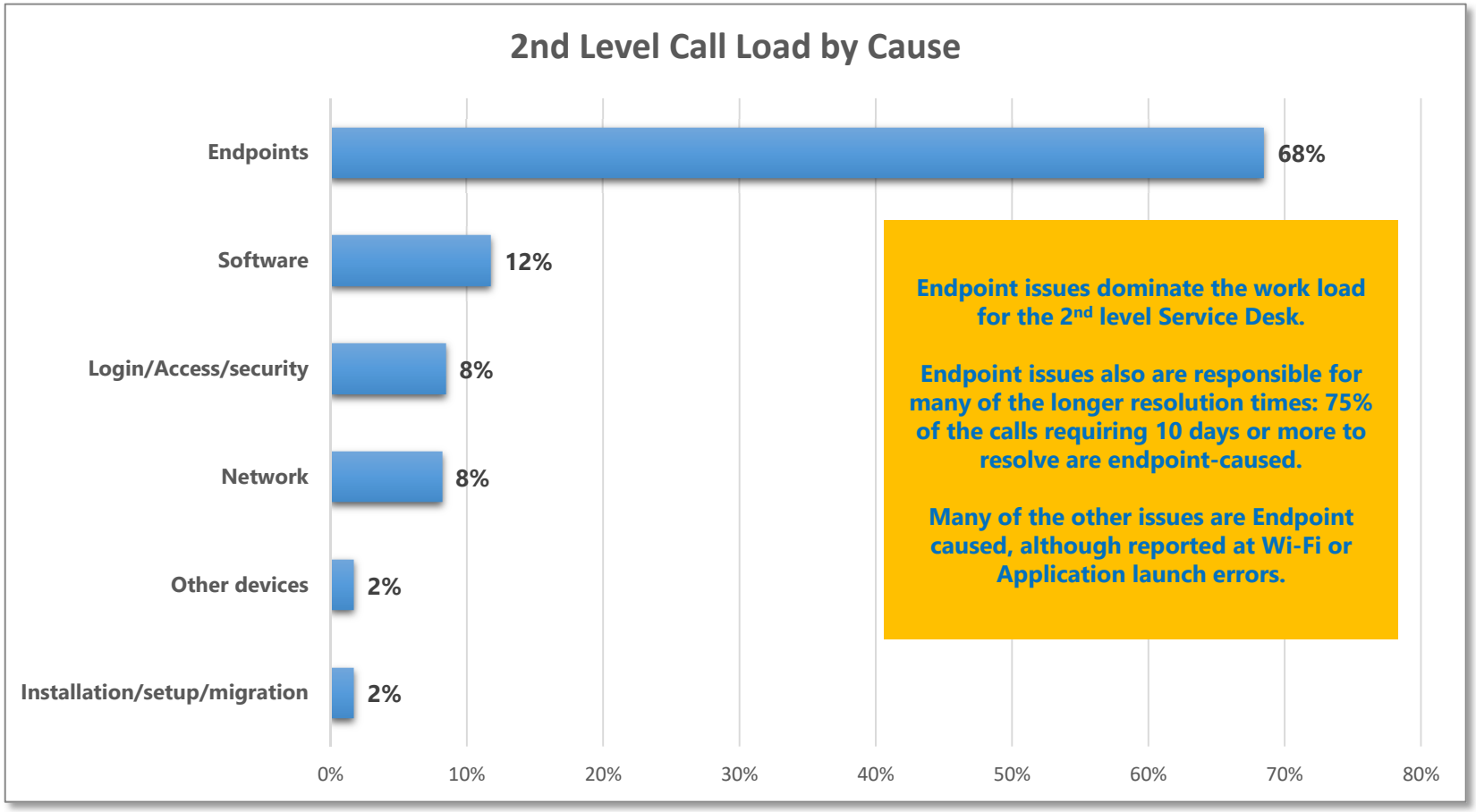


Obsolete systems generate between 10 and 15 times as many trouble calls as do current systems.

These calls end up being handled by the most expensive of IT support resources.

Identifying the Impact of Obsolescence

Based on analysis of HW support calls:



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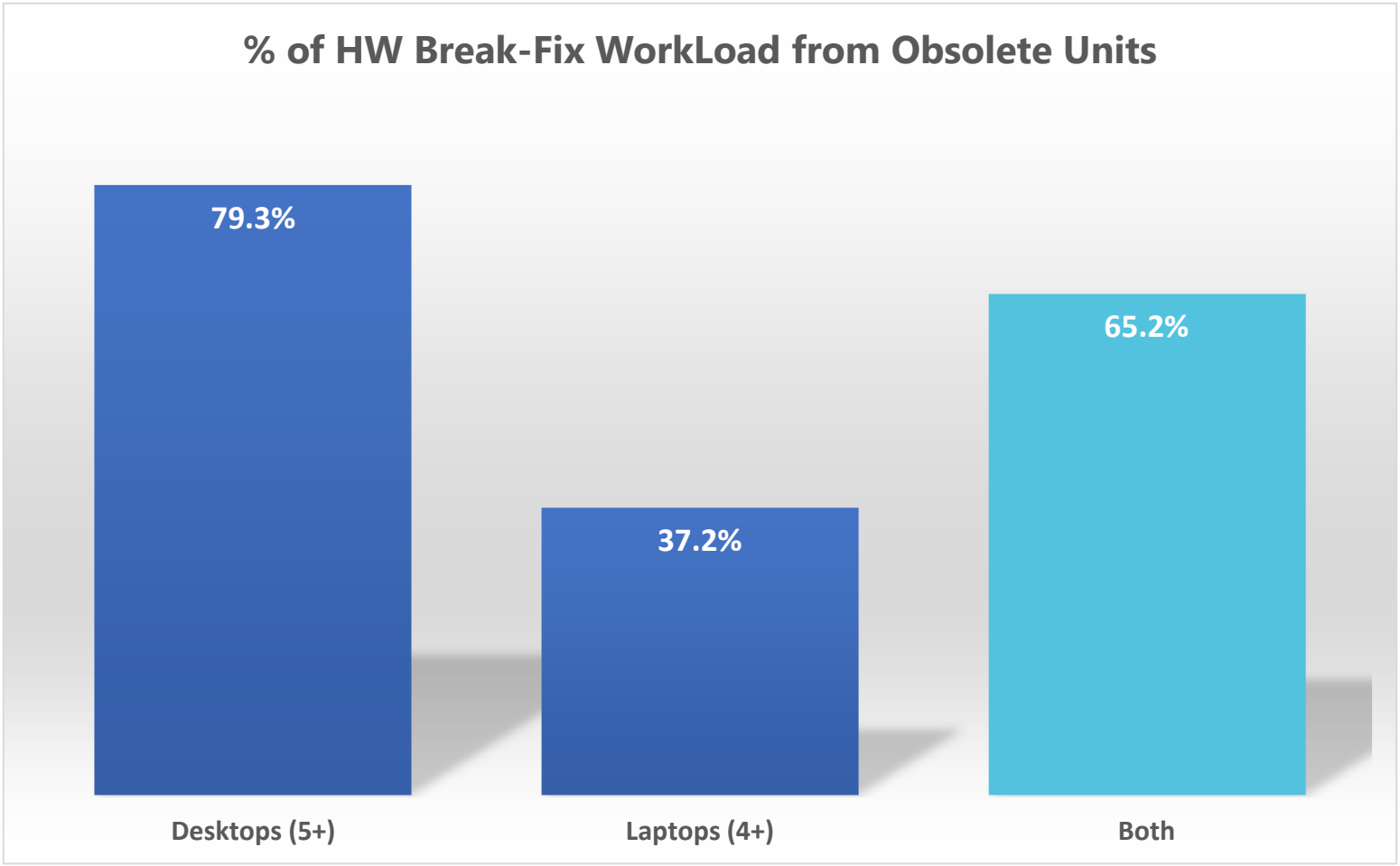
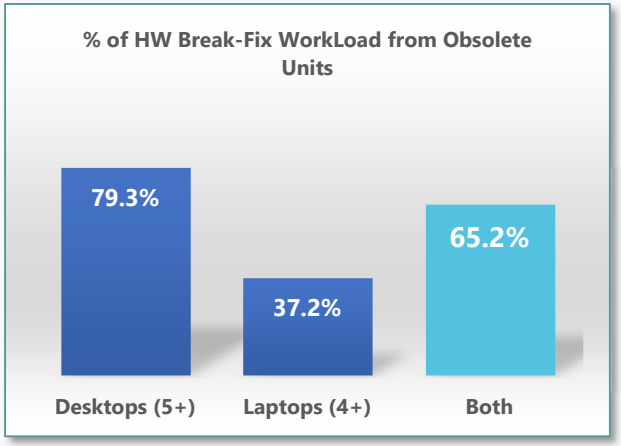


Assessing the Financial Cost of that Impact

Identifying the Impact of Obsolescence

ONE: Applying this pattern to the calls to the (outsourced) Help Desk:

Annual Outsourced Helpdesk Calls:	408,852
Fee per call:	$13.32
Total Fees for Yearly Call Volume:	$5,445,909
Percentage of Calls due to Obsolete Gear:	65.2%
Calls attributed to Obsolete gear:	266,572

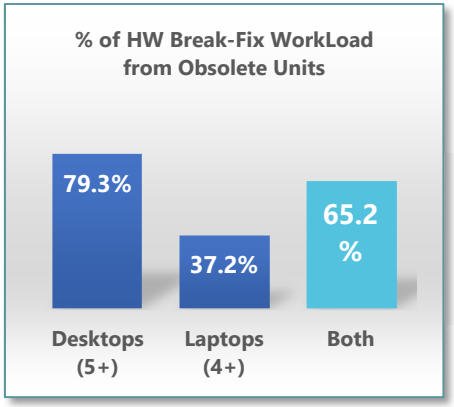


Possible Reduction in Inbound Calls, by elimination of Obsolete footprint

Assessing the Financial Cost of that Impact

Eliminating the Obsolete Equipment Workload would Phase out and then Eliminate this range of costs from Help Desk operations:

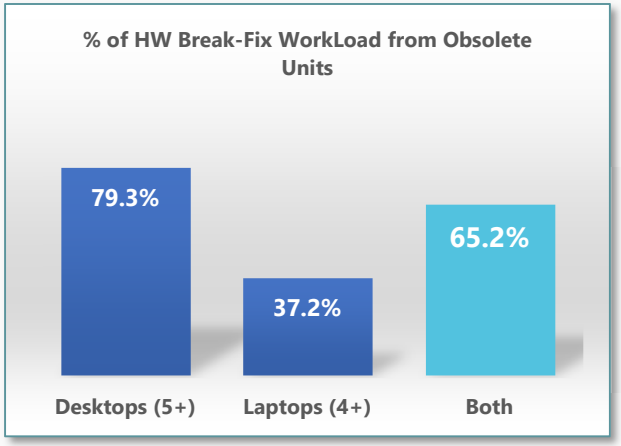
Annual Outsourced Helpdesk Calls:	408,852
Fee per call:	$13.32
Total Fees for Yearly Call Volume:	$5,445,909
Percentage of Calls due to Obsolete Gear:	65.2%
Calls attributed to Obsolete gear:	266,572
Savings from eliminated calls:	**$3,550,732**



Identifying the Impact of Obsolescence

ONE: Applying this pattern to the calls to the (internal) Service Resources:

Annual Hardware Repair Calls by BHSD:	291,396
Estimated Internal Cost per Incident:	$100
Estimated Total Cost for Yearly Incidents:	$29,139,600
Percentage of Calls due to Obsolete Gear:	65.2%
Calls attributed to Obsolete gear:	189,990



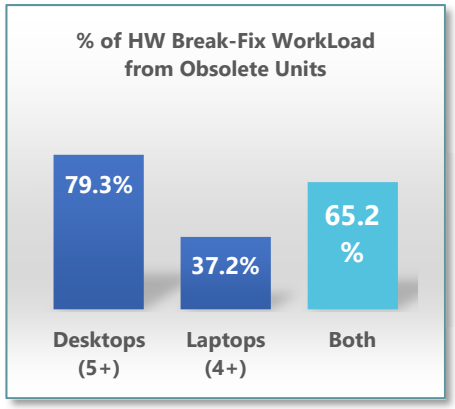
Possible Reduction in Level 2 Calls, by elimination of Obsolete footprint

- Industry averages for 2nd Level tech support range from $75 to $200 per incident, and even higher for 3rd level support. These costs go up further as multiple-trips are required for parts, for working on a system on a tech workbench, or even inaccurate location description by the users.
- Operational costs for laptop HDD repair, for example, can aggregate a helpdesk call, a deskside diagnostic visit, packaging for warranty shipment, return of unit to user, and re-setup of the system -- $500-600 in expense.

Assessing the Financial Cost of that Impact

Eliminating the Obsolete Equipment Workload would Phase out and then Eliminate this range of costs from internal Service Desk or Field Support operations:

Annual Hardware Repair Calls by BHSD:	291,396
Estimated Internal Cost per Incident:	$100
Estimated Total Cost for Yearly Incidents:	$29,139,600
Percentage of Calls due to Obsolete Gear:	65.2%
Calls attributed to Obsolete gear:	189,990
Savings from eliminated calls:	**$18,999,019**



- Costs for various levels of support are tracked by Meta Group and HDI. The latest figures are: **Level 1** ($0 - $25); **Level 2** ($75 - $200); **Level 3** ($200 - $500)

Assessing the Financial Cost of that Impact

SUMMARY: Eliminating the Obsolete Equipment Workload would Phase out and then Eliminate / Recover these costs:

Annual Outsourced Helpdesk Calls:	408,852
Fee per call:	$13.32
Total Fees for Yearly Call Volume:	$5,445,909
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Savings from eliminated calls:	**$3,550,732**
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Estimated Internal Cost per Incident:	$100
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Percentage of Calls due to Obsolete Gear:	65.2%
Calls attributed to Obsolete gear:	189,990
Savings from eliminated calls:	**$18,999,019**
Totals:	**$22,549,752**

This can be rapidly harvested, since this is for invoices for calls which will be eliminated.

This is mostly skilled labor payroll costs, which will be harvested more slowly via cost avoidance of future hires and/or leveraging for higher level/ROI workloads.

- Costs for various levels of support are tracked by Meta Group and HDI. The latest figures are:
  Level 1 ($0 - $25); **Level 2** ($75 - $200); **Level 3** ($200 - $500)
- Skilled Service Desk resources can be freed up by elimination of the obsolescence workload, but these savings are not typically harvested via a reduction in force. Rather, the amount of operational damage 'absorbed' by the practitioners gets greatly reduced and many types of cost avoidance appear.

Assessing the Operational Cost of that Impact (on Practitioners)

Assessing the Operational/Clinical Cost of that Impact

Healthcare delivery delays Due to Obsolescence: The Realities of the IT workload:

When good IT support resources are consumed providing life-support for obsolete equipment, EVERYTHING turns sub-optimal.

1. **Everything becomes URGENT when everything is fragile due to age.**
2. **True HIGHEST PRIORITIES then get under-resourced with predictable decline in remediation.**
3. **The impact on practitioners is measurable (at a minimum) from Time-to-Repair logs of the Service Desk, and from Call Abandonment Rates on the inbound phone lines.**
4. **These logs show the impact of obsolescence on the ability of IT to 'keep the workers working'.**
5. **Skilled Service Desk or Field support resources could be freed up by elimination of the obsolescence workload, but this does not typically allow an immediate reduction in force. Rather, the amount of damage 'absorbed' by the practitioners gets greatly reduced and many types of cost avoidance appear (e.g. less having to manage aging spare parts and software; less need for additional hiring as organization grows; reduction in per-call outsource services fees for 'status check' calls.)**

Our sample of LOG comments brings this vividly to the executive's attention—even though the quantification of that possible gain in quality/output of healthcare is difficult to measure.

We look below at a few comments by practitioners on the impact of dysfunctional technologies:

• **Physician tasks**
• **Patient Care**
• **Workflow**
• **Medication**
• **Lab**

Healthcare Delivery Delays due to Obsolescence

Based on analysis of HW support calls, the impact of downtime and delay-time due to obsolescence work load is significant.

Representative comments in the Tech Support Logs (1 of 4):

Physician tasks	"Dr. cannot work on computer There are 2 computers she is having issues with Need someone at her location ASAP ... client is calling back she has not had any contact from 2nd level... She is asking to have ticket priority raised
Physician tasks	"Physician still cannot use pc - Running slow and still freezing
Physician tasks	"Doctor Liu ... frustrated that the ticket has been open for 4 days ... There is a second computer that is having the same issue as well... Doctor Liu needs this completed ASAP ... they are unable to view patients on these computers Raising to high priority... User stated issue has been on going for 5 days ... this issue affecting his workflow .
Physician tasks	"Doctor Tuxhair needs this laptop to be able to see patients today, is requesting that this be looked into as soon as possible
Physician tasks	"User called to follow up on this ticket ... User states has not received any updates or calls User states it affecting patient care at this time ... Client called back ... She would like this someone to come out and take a look at her computer today . User stated she is a physician and the computer is critical to her work ... User stated that there is no other computer to use,

- **Reminder: These issues go away by simply moving to faster refresh. The existing support teams (internal and external) seem to be very efficient, but much of this is wasted on repeated attempts to patch up obsolete systems. This issues are not in any way due to some lack of skill and performance on the part of the IT professionals.**

Healthcare Delivery Delays due to Obsolescence

Based on analysis of HW support calls, the impact of downtime and delay-time due to obsolescence work load is significant.

Representative comments in the Tech Support Logs (2 of 4):

Patient Care	"Raising priority to High - client has called multiple times Unable to provide any patient care - unable to work ... Client is trying to see patients and is requesting the pc be reimaged today. He needs this stat ... He is checking on the status. They opened the ticket last week and cannot do work because of the issue. ... Client called back ... The issues with his computer has gotten
Patient Care	"User called on status. User has patients waiting ;there is no other computer that has PACS on it
Patient Care	"Client states this issue is affecting patient care
Patient Care	"LAPTOP NOT FUNCTIONING. ... called again for an update, frustrated its taking so long. ... Client called in again. expressed discontent that it has not been fixed for 24 hours. ... User is requesting a high priority due to patient care
Patient Care	"She has had this ticket open since 9/18 ... Both laptops not functioning properly ...Their office has been down 2 computers for several weeks because of these issues... laptops have not been returned to the office and it is now Thursday 9/27 ... this issue is impacting patient care
Patient Care	"User called in stating that when they try to power on the PC nothing happens.... Issue has been ongoing Located in patient room 3908
Patient Care	"Client called in for an update PC is not working at all now ... Affecting patient care ...
Patient Care	"A quote has been issued for replacement of this machine. This request is for patient exam room ... told M- that this laptop is old and that I will be sending her a quote for a replacement via email.
Patient Care	"Client called for status. ... Can't do her job ... This is impeding patient care and safety - needs computer replaced ASAP. There is not another computer for her to use.... User called to follow up on this ticket, she is unable to do any work at this time

- **Reminder: These issues go away by simply moving to faster refresh. The existing support teams (internal and external) seem to be very efficient, but much of this is wasted on repeated attempts to patch up obsolete systems. This issues are not in any way due to some lack of skill and performance on the part of the IT professionals.**

Healthcare Delivery Delays due to Obsolescence

Based on analysis of HW support calls, the impact of downtime and delay-time due to obsolescence work load is significant.

Representative comments in the Tech Support Logs (3 of 4):

Workflow	"User is checking the status of the ticket Client stated that no one had contacted her about the issue ... User called requesting an update. ... User called for status update... User would like an eta ... User called in for a status update... - User stated that she is not able to perform job duties because she is not able to access her ... User called to check the status of ticket as she is not able to do any work. Client is requesting a higher priority.
Workflow	"Affecting job duties Requesting an increase priority level ... for PC frozen issue
Workflow	"Client called back because she is still having the issue printing reports ... Requesting higher priority, affecting work flow ... Reopened via Web for reason: This is still not working and I am unable to perform my job duties because of this.
Workflow	"Requesting high priority One laptop per provider which causes workflow issue
Workflow	"States that their PC was taken a week before and did not get any response back . She called multiple times for update . Says this issue affecting their workflow . Asking if possible get back their PC by Monday ... user called to ask when the PC will be returned

- **Reminder: These issues go away by simply moving to faster refresh. The existing support teams (internal and external) seem to be very efficient, but much of this is wasted on repeated attempts to patch up obsolete systems. This issues are not in any way due to some lack of skill and performance on the part of the IT professionals.**

Healthcare Delivery Delays due to Obsolescence

Based on analysis of HW support calls, the impact of downtime and delay-time due to obsolescence work load is significant.

Representative comments in the Tech Support Logs (4 of 4):

Medication	"Client asked to reopen this ticket stated that the pc is still doing the same thing requesting high - needed for patient doses
Medication	"User called in on this ticket stated that she needs this pc looked at asap today ... User called for a status update... User said this issue is affecting patients from getting their medication requesting to speak with manager ... User called for an update. .. M- cannot get any work done until this issue is resolved. Located - Oncology Pharmacy
Lab	"Failed motherboard. - PC WILL NOT TURN ON - ... Client called on ticket status -upset that this ticket has yet to be assigned ... User stated that they still didn't hear back about the ticket. User is requesting high priority. Advised user that it is already high priority and it is assigned to a group. ... E- called back regarding this ticket . States that they placed this ticket two days before and no one stop by . They use this computer for their Lab Service and issue affecting workflow .

The majority of all these work stoppages simply DISAPPEAR when the technology is CURRENT, and when the support team is free to remediate quickly (because the obsolescence load is GONE.)

NOTE: These reports totaled around 23+ KNOWN cases of DELAYS in healthcare delivery. This was observed in only 1,000 Level 2 problem ticket logs. With a yearly volume of over 290K such calls, this indicates an alarming 5,000 to 7,000 such DELAYS per year.

Benchmarking that Financial Cost against Enterprise and Healthcare industry average cost models

Benchmarking the Cost Structure

TCO (Total Cost of Ownership) and IT Budget for EUC (End-User Computing)

IDC (International Data Corporation) publishes TCO averages for EUC in aggregate for all industries.

These represent ACTUAL client survey numbers and NOT optimized or best-in-class target numbers. It is a statistical model, based on actual client numbers.


IDC

WHITE PAPER

PC Leasing and Financing: The Benefits to Enterprises Pursuing a PC Leasing Strategy

Sponsored by: Dell

Susan G. Middleton
January 2015

Matthew Marden

IDC OPINION

IN THIS WHITE PAPER

Computer Economics publishes IT spend ratios by Industry Sector and Organization size, updated yearly.

This data is also strictly client-supplied data, but represents the best set of benchmarking tools for IT available. They report on a wide range of IT spend patterns, with one area being that of EUC (end-user computing).

TCO Lifecycle Cost Calculations

Distributing Aggregate Costs over a Lifecycle to predict the rate of Savings realization

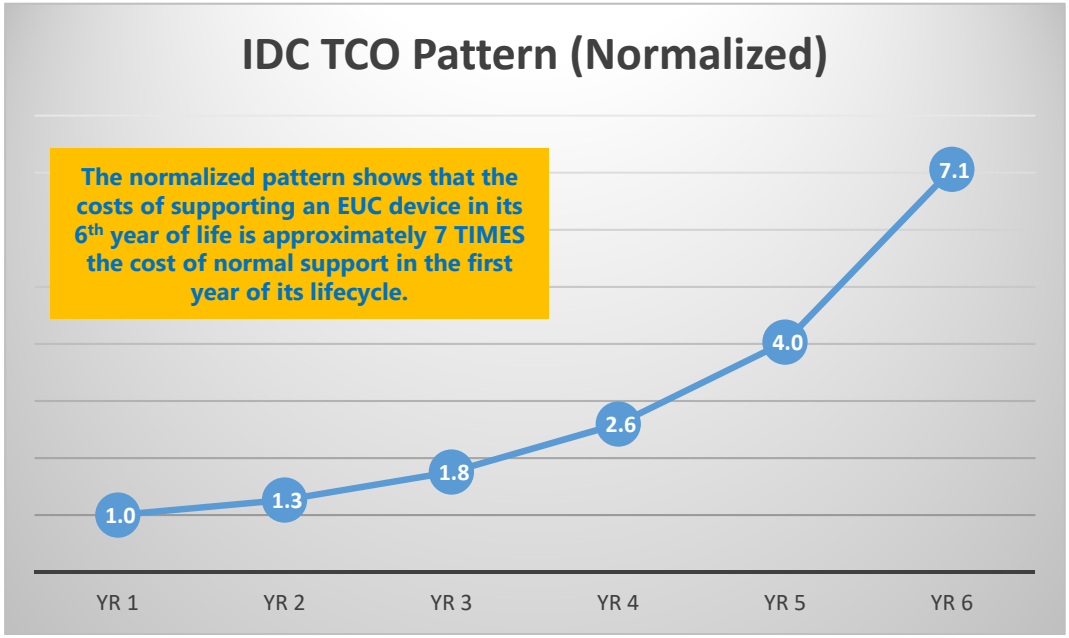
IDC publishes TCO averages for EUC in aggregate for all industries.

These represent ACTUAL client survey numbers and NOT optimized or best-in-class target numbers. It is a statistical model, based on actual client numbers.

The most recent set of updated numbers are from 2015, with the yearly cost of EUC (end-user-computing) given by year:

1st Year of Life	$ 220
2nd	$ 278
3rd	$ 386
4th	$ 571
5th	$ 887
6th	$ 1,553
6 year total:	**3,895.0**

IDC includes all routine support tasks, but excludes migration costs and initial product cost. It includes parts cost for out-of-warranty periods, and includes direct support labor (but not new application development).

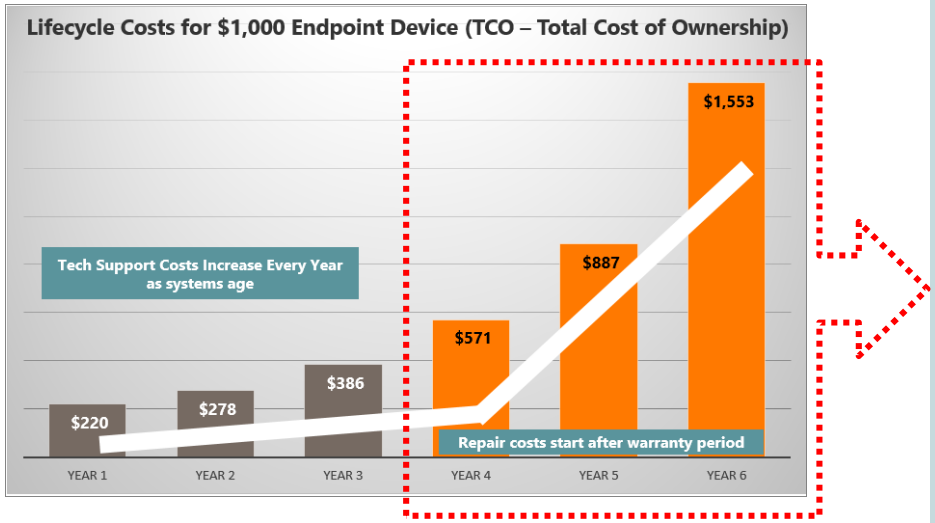


$ 649	IDC Average Cost per User Per Year

TCO Lifecycle Cost Calculations

Distributing Aggregate Costs over a Lifecycle to predict the rate of Savings realization

ALL of these "Hard Costs" are on YOUR P&L somewhere



These TCO costs are being absorbed <u>somewhere</u> in the organization, and typically show up as:

- Invoices for replacement parts
- Post-warranty repair services or labor
- Extra contract labor in the support team
- Support resources consumed by aged systems
- Upgrades to older systems to keep them in-step with current applications
- Extra infrastructure resources needed for remediation of malware, network, and shared storage problems
- Extra developer resources for application incompatibilities
- Manual labor required for software asset management and audit compliance

TCO initiatives focus on these 'hard costs':

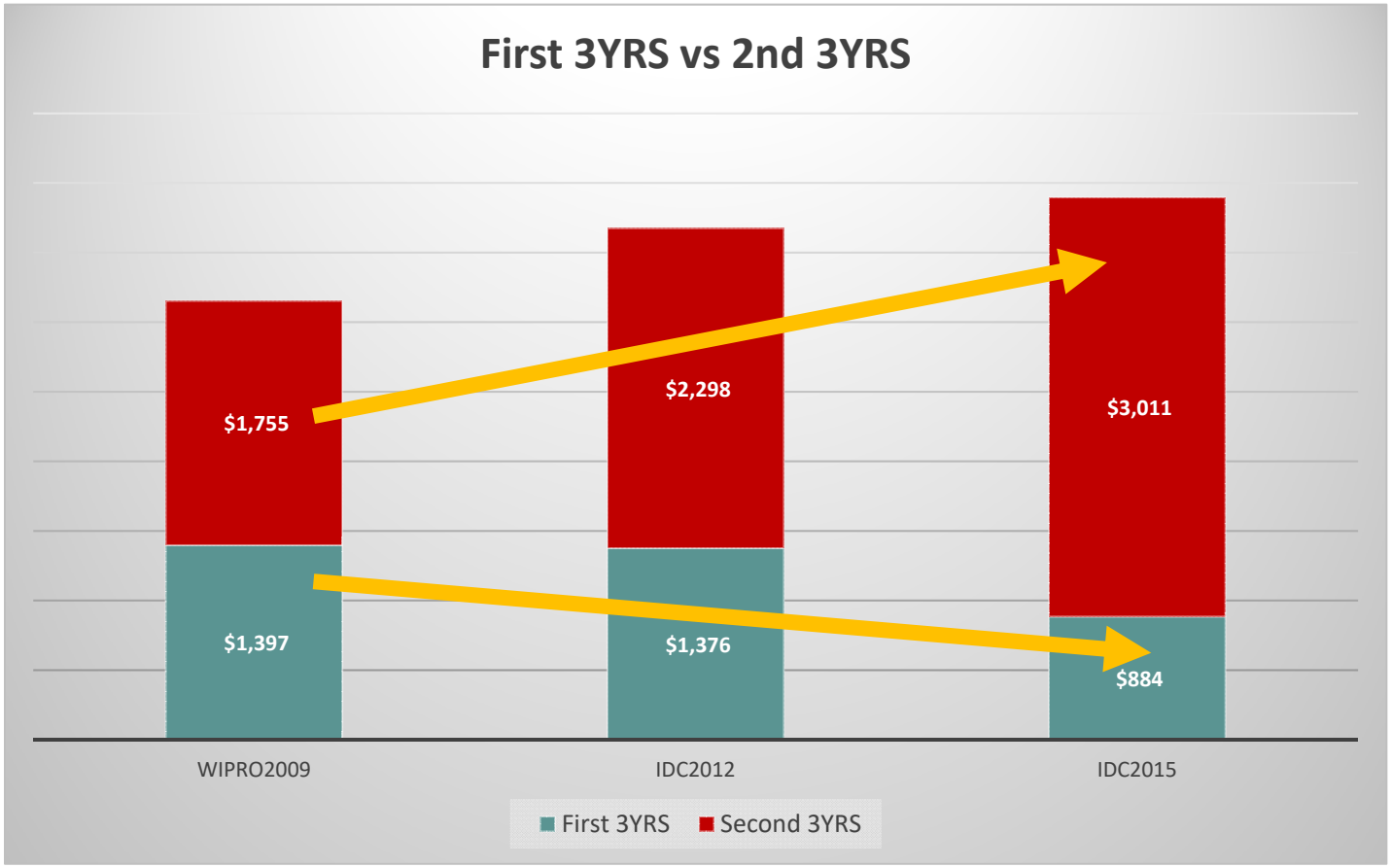
1. HW/SW out-of-warranty upgrades
2. Invoices to outsourcer service and support firms
3. Labor costs used/wasted on obsolete gear

Although 'soft costs' such as user/practitioner downtime are typically an order of magnitude greater than 'hard costs', TCO initiatives typically do not focus on those costs.

TCO Lifecycle Cost Calculations

Distributing Aggregate Costs over a Lifecycle to predict the rate of Savings realization

Historically, TCO studies suggest that support for in-warranty endpoints has gotten LESS expensive in recent years, while support for out-of-warranty endpoints has gotten MORE so.

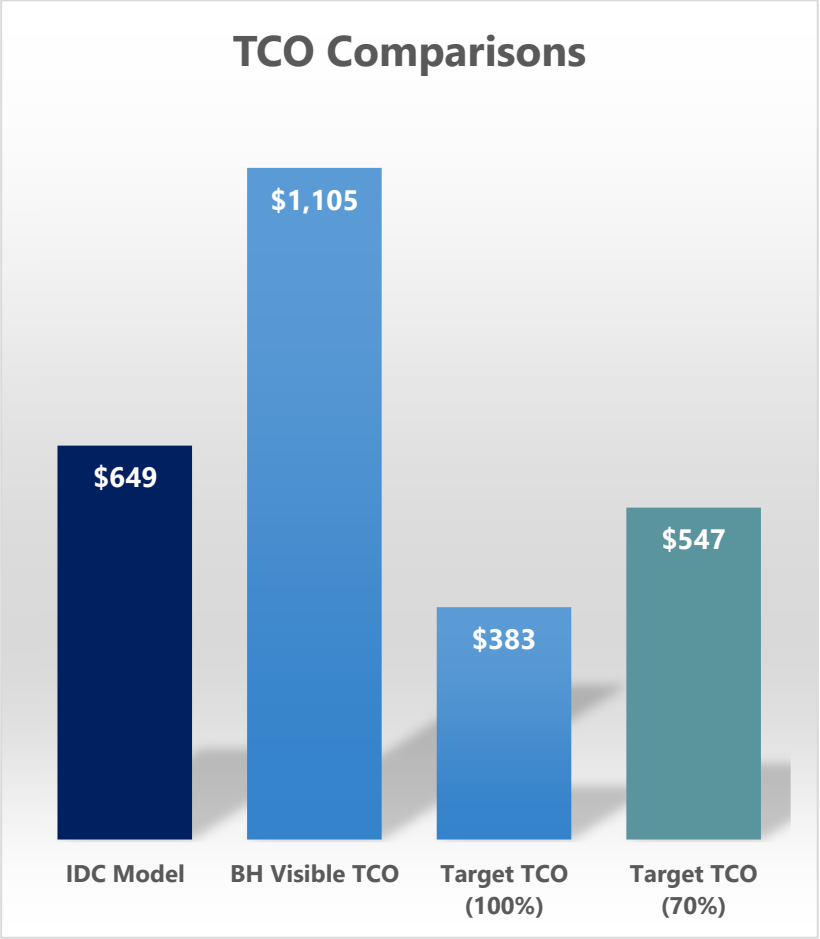


TCO Lifecycle Cost Calculations

Distributing Aggregate Costs over a Lifecycle to predict the rate of Savings realization

Applying the IDC statistical model to your environment:

- An average cost per user per year of **$659** would roll-up to an aggregate EUC cost of **$20.4M** (for 31,435 users).
- The roll-up of visible numbers from the current environment give a basic EUC cost of **$34.7M** (Helpdesk plus Service Desk costs only).
- The per-user per year distribution for that $34.7M is approximately **$1,105** per-user per year.
- The possible cost reductions identified above could bring (at 100% implementation success) those figures down to **$12M** and **$383** per-user per-year – better numbers than the statistical model of IDC.
- At a more **feasible 70%** implementation success, the savings harvest is still better than the IDC numbers--**$547** per user/yr.



Huntington TECHNOLOGY FINANCE

EUC Budget Comparison -- Healthcare

Computer Economics publishes IT spend ratios by Industry Sector and Organization size, updated yearly.

This data is also strictly client-supplied data, but represents the best set of benchmarking tools for IT available. They report on a wide range of IT spend patterns, with one area being that of EUC (end-user computing).

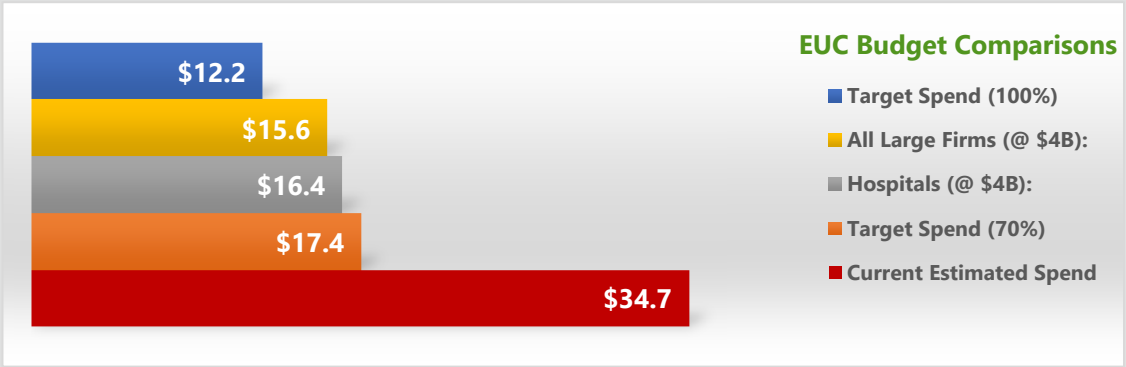
For an organization at the $4B in revenue mark, the IT spend and EUC spend ratios and calculations are these:

	All Large Firms (@ $4B):	Hospitals (@ $4B):
IT Spend as % of Revenue	3.9%	4.1%
Spend ($M)	$ 156	$ 164
% of IT spend on EUC service area	10%	10%
Spend ($M)	$ 15.6	$ 16.4

In other words, hospitals with around $4B in Net Patient Revenue spend – at the median -- $16.4M in EUC expense (includes labor), compared to $15.6M spend by other industry firms of the same size.

Here we compare these numbers to our estimates for both CURRENT and TARGETED spend amounts:

Achieving a 70% implementation success would bring the EUC spend closer in alignment with healthcare industry averages.



Creating a Targeted Savings/Cost/Cash-flow Model, based on the TCO of an Improved Refresh Cycle

TCO Lifecycle Cost Calculations - Applied

Distributing Aggregate Costs over a Lifecycle to predict the rate of Savings realization

Applying the IDC statistical model to your FUTURE environment:

- **The following TCO models of Purchase versus Refresh apply at each individual unit refresh, year-by-year.**
- **These models assume we can get to the 70% implementation success, which means that much of the initial savings estimates have been harvested or reclaimed for future or alternative use already.**
- **The savings in these TCO models are on-going—they apply even once all the models have become current. In other words, only by STAYING current (via refresh) can those inevitable obsolescence costs be avoided and thereby not begin to drain off value resources for low-value tasks (spending $400 in repair labor on a 6year desktop).**

	IDC	BH Now	BH @ 70% of Target
1st Year of Life	$220	$374	$185
2nd	$278	$473	$234
3rd	$386	$657	$325
4th	$571	$972	$481
5th	$887	$1,510	$747
6th	$1,553	$2,643	$1,309
6 year total:	**$3,895**	**$6,630**	**$3,282**
Yearly AVG:	**$649**	**$1,105**	**$547**

Lifecycle Cost Comparison

Purchase vs. Refresh

DESKTOPS | Purchase, Target Refresh (4 years), and Fallback Refresh (5 years)

Desktop

Current 6 years versus Refresh at 4 years (Target) and 5 years (Fallback)

	Purchase		Target 4YR		FallBack 5YR	
Start of Year 1:	$874	$0	Initial Cash Spend	$0	Initial Cash Spend	
Start of Year 1:	$200	$200	Migration Expense (new unit)	$200	Migration Expense (new unit)	
Year 1 Helpdesk/Support costs	$185	$185	Helpdesk/Support costs	$185	Helpdesk/Support costs	
		$229	Payments to HTF	$229	Payments to HTF	
Year 2 Helpdesk/Support costs	$234	$234	Helpdesk/Support costs	$234	Helpdesk/Support costs	
		$229	Payments to HTF	$229	Payments to HTF	
Year 3 Helpdesk/Support costs	$325	$325	Helpdesk/Support costs	$325	Helpdesk/Support costs	
		$229	Payments to HTF	$229	Payments to HTF	
Year 4 Helpdesk/Support costs	$481	$481	Helpdesk/Support costs	$481	Helpdesk/Support costs	
		$229	Payments to HTF	$229	Payments to HTF	
Start of Year 5		$250	Migration Expense (new unit)			
Year 5 Helpdesk/Support costs	$747	$185	Year 1 Support costs	$747	Helpdesk/Support costs	
		$229	Payments to HTF	$229	Payments to HTF	
Start of Year 6				$250	Migration Expense (new unit)	
Year 6 Helpdesk/Support costs	$1,309	$234	Year 2 Support costs	$185	Year 1 Support costs	
Data Wipe cost	$50	$229	Payments to HTF	$229	Payments to HTF	
TOTALS:	$4,406	$3,471		$3,984		

Savings	4 YR target	$935	5 YR Fallback	$422

Lifecycle Cost Comparison – Cash/Cost Flows

Purchase vs. Refresh

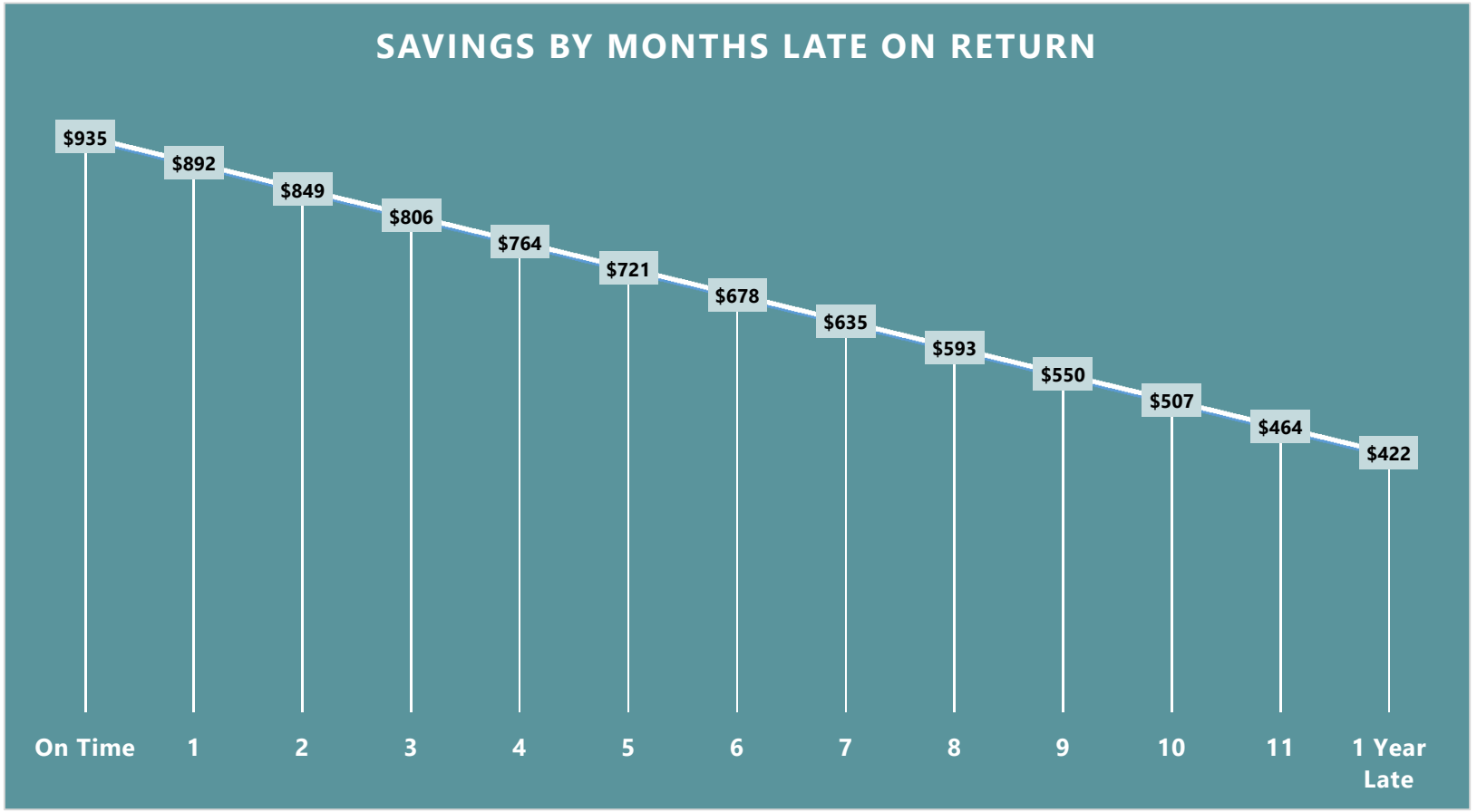
DESKTOPS | Purchase, Target Refresh (4 years), and Fallback Refresh (5 years)

	Cumulative Net Cash/Expense Flows By Year				
	Cumulative Costs/Expenses			Cash/Expense Savings (by YR)	
	Buy	4YR	5YR	4YR	5YR
Start	$ 1,074	$ 200	$ 200	$ 874	$ 874
EOY1	$ 1,259	$ 615	$ 615	$ 645	$ 645
EOY2	$ 1,494	$ 1,078	$ 1,078	$ 415	$ 415
EOY3	$ 1,819	$ 1,633	$ 1,633	$ 186	$ 186
EOY4	$ 2,300	$ 2,343	$ 2,343	$ (43)	$ (43)
EOY5	$ 3,047	$ 3,008	$ 3,320	$ 40	$ (272)
EOY6	$ 4,406	$ 3,471	$ 3,984	$ 935	$ 422

Lifecycle Cost Comparison

Purchase vs. Refresh

DESKTOPS | Target Refresh Goal versus Fallback Refresh Goal – Impact on Net Savings



Lifecycle Cost Comparison

Purchase vs. Refresh

LAPTOPS | Purchase, Target Refresh (3 years), and Fallback Refresh (4 years)

Laptop

Current 6 years versus Refresh at 3 years (Target) and 4 years (Fallback)

	Purchase		Target 3 YR		FallBack 4 YR	
Start of Year 1:	**$1,158**		**$0**	**Initial Cash Spend**	**$0**	**Initial Cash Spend**
Start of Year 1:	**$200**		**$200**	**Migration Expense (new unit)**	**$200**	**Migration Expense (new unit)**
Year 1 Helpdesk/Support costs	$185		$185	Helpdesk/Support costs	$185	Internal Helpdesk labor
			$368	Payments to HTF	$368	Payments to HTF
Year 2 Helpdesk/Support costs	$234		$234	Helpdesk/Support costs	$234	Internal Helpdesk labor
			$368	Payments to HTF	$368	Payments to HTF
Year 3 Helpdesk/Support costs	$325		$325	Helpdesk/Support costs	$325	Internal Helpdesk labor
			$368	Payments to HTF	$368	Payments to HTF
Start of Year 4			**$250**	**Migration Expense (new unit)**		
Year 4 Helpdesk/Support costs	$481		$185	Year 1 Support costs	$481	Year 4 Support costs
			$368	Payments to HTF	$368	Payments to HTF
Start of Year 5					**$250**	**Migration Expense (new unit)**
Year 5 Helpdesk/Support costs	$747		$234	Year 2 Support costs	$185	Year 1 Support costs
			$368	Payments to HTF	$368	Payments to HTF
Year 6 Helpdesk/Support costs	$1,309		$325	Year 3 Support costs	$234	Year 2 Support costs
Data Wipe cost	$50		$368	Payments to HTF	$368	Payments to HTF
	$4,690		$4,148		$4,304	
Savings	3 YR target		$542	4 YR Fallback	$386	

Lifecycle Cost Comparison – Cash/Cost Flows

Purchase vs. Refresh

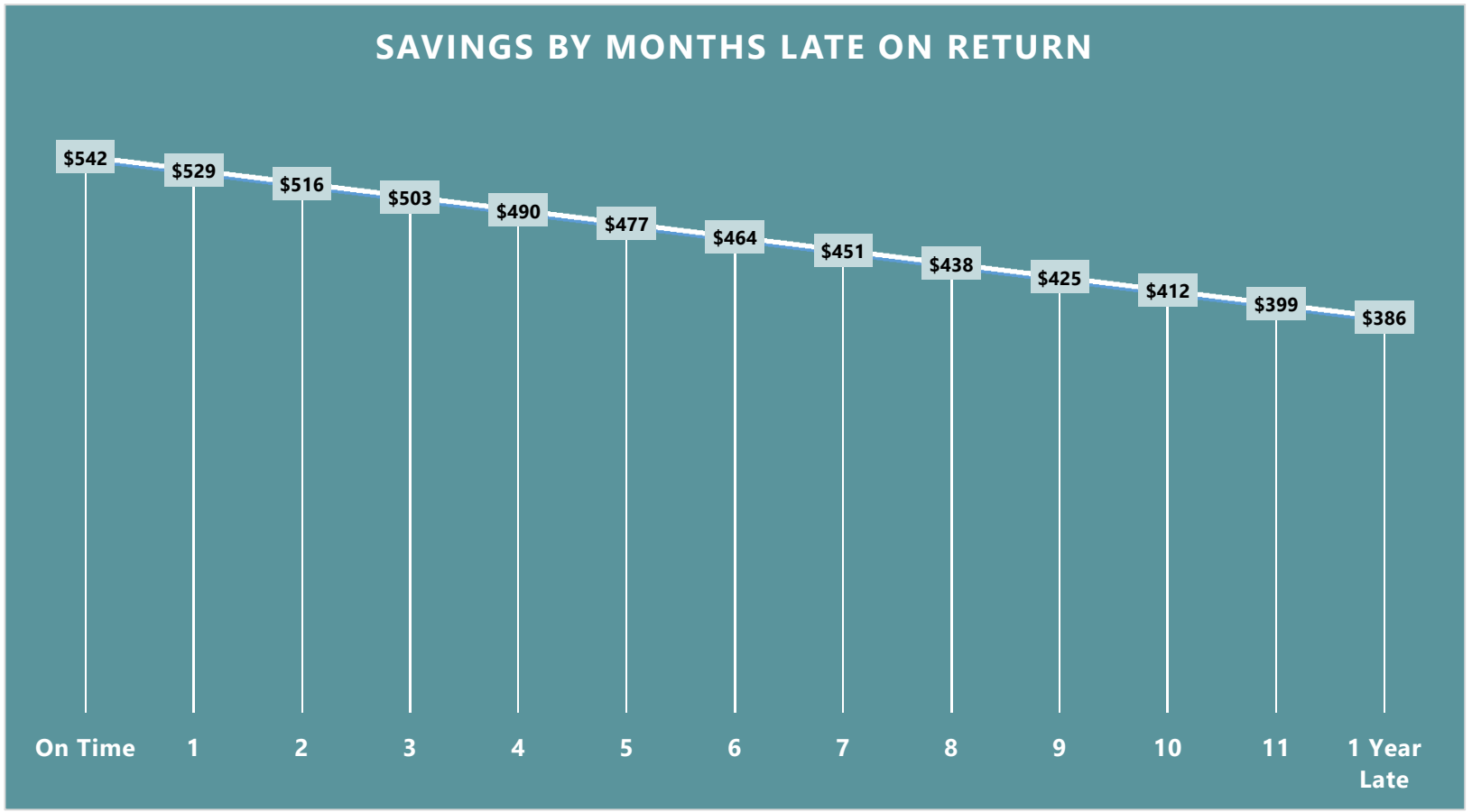
LAPTOPS | Purchase, Target Refresh (3 years), and Fallback Refresh (4 years)

	Cumulative Net Cash/Cost Flows By Year				
	Cumulative Costs/Expenses			Cash/Expense Savings (by YR)	
	Buy	3YR	4YR	3YR	4YR
Start	$ 1,358	$ 200	$ 200	$ 1,158	$ 1,158
EOY1	$ 1,543	$ 753	$ 753	$ 790	$ 790
EOY2	$ 1,778	$ 1,356	$ 1,356	$ 422	$ 422
EOY3	$ 2,103	$ 2,049	$ 2,049	$ 54	$ 54
EOY4	$ 2,584	$ 2,852	$ 2,898	$ (268)	$ (314)
EOY5	$ 3,331	$ 3,454	$ 3,701	$ (123)	$ (370)
EOY6	$ 4,690	$ 4,148	$ 4,304	$ 542	$ 386

Lifecycle Cost Comparison

Purchase vs. Refresh

LAPTOPS | Target Refresh Goal versus Fallback Refresh Goal – Impact on Net Savings



The Financial Structure and Product Pricing to Support these TCO Cost Improvements

Financial Structure and Data

Details of Financing Structure: Rates, PV analysis, ASC 842 Classification

Configuration Data: Units, Costs	Laptop	Desktop		
Cost:	$1,158	$874		
Total Units:	4,487	26,948		
Transaction Elements	**Refresh Option**	**Refresh Option**	**Purchase**	**Notes / Comments**
Hardware Cost	**$5,195,946**	**$23,552,552**		
Lease Term in Months	36	48		
Useful life of equipment in months			60	Based on AHA accounting guidelines
Client's assumed WACC: Weighted Average Cost of Capital (or IBR)	5.8%	5.8%	5.8%	Average combined capital cost of debt and equity or IBR
Refresh Financing Option				
Monthly Hardware Lease Rate	0.026483	0.021859		
Refresh Billing Cycles	Monthly	Monthly		Payments billed Monthly or Quarterly in Advance
Is title automatically transfered to lessee (Beaumont) (Y,N)?	N	N		
Is the buyout price anything OTHER than Fair Market Value (Y,N)?	N	N		
Monthly Hardware Rental Payment	**$137,604**	**$514,835**		Hardware Monthly Payment
Present Value Analysis				
Up-front fees, deposits and / or advanced lease payments	$0	$0	$0	HTF does not charge fees, deposits or advance rentals
Out of Warranty Maintenance Costs (Year 4)	Discuss	Discuss	Discuss	How many yrs of warranty/maintenance are in prices
Out of Warranty Maintenance Costs (Year 5)	Discuss	Discuss	Discuss	How much are you paying in maintenance costs annually?
Present Value of lease payments at WACC/IBR	**$4,558,620**	**$22,114,043**		
Savings over Original Equipment Cost	**$637,326**	**$1,438,509**		
Savings as % of Original Equipment Cost	**12.3%**	**6.1%**		
Effective Rate	**-3.24%**	**2.48%**		
ASC 842 Test				
Payments do not total up to substantially ALL of the fair value?	**PASS**	**FAIL**		**Is PV of payments <= 90% of FMV?**
75% Useful Life Test	**PASS**	**FAIL**		**Is Term greater than or equal to 75% of useful life?**
No “Bargain” Purchase Option	**PASS**	**PASS**		**Is there a “Bargain” purchase option?**
Lease does not convey ownership at termination	**PASS**	**PASS**		**Lease does not convey ownership at termination**

Financial Structure and Data

Pricing of Initial Units as Specified & Savings Rate at Steady-State Run Rates

	Purchase Model	Lease Structure			Cost Comparisons		
	Purchase $						
		48	Months		5.80%	: Cost of Debt (used for PV)	
	Unit Costs	LRF mos	Mon PMT$	PMTs	PV of PMTS	Unit Savings$	% Savings at PV
Optiplex 3050 kit	$ 874.00	0.021859	$19.10	$917.03	$820.62	$53.38	6.1%
Total Desktop Config:	$874.00	0.021859	$19.10	**$917.03**	$820.62	$53.38	**6.1%**
		36	Months		5.80%	: Cost of Debt (used for PV)	
	Unit Cost$	LRF mos	Mon PMT$	PMTS	PV of PMTS	Unit Savings$	% Savings at PV
Latitude 3590 kit	$1,158.00	0.026483	$30.67	$1,104.02	$1,015.96	$142.04	12.3%
Total Laptop Config:	$1,158.00	0.026483	$30.67	**$1,104.02**	$1,015.96	$142.04	**12.3%**

	Annual Units	Purchase		Lease Savings	
	Refreshed	Unit Cost$	Extended	per Unit$	Extended
Desktop Kit	6,737	$874	$5,888,138	$53.38	$359,627
Laptop Kit	1,496	$1,158	$1,731,982	$142.04	$212,442
Total Units:	**8,233**		**$ 7,620,120**		**$ 572,069**
		Annual Blended Cash/Cost Savings:			**7.51%**

Suggested Implementation Structure with Legacy and Refresh cost savings projections

Suggested implementation Structure

Current Asset Base to Be Retired

#	Row Labels	Count of Serial Number	Average of Computer Age	October 31, 2018	By Year
1	Surface	28	1.82	January 6, 2017	
2	5040 i5	22	1.95	November 18, 2016	
3	7040 i5 - reuse	18	2.00	November 2, 2016	
4	5040 i5 - reuse	1	2.00	November 2, 2016	
5	Small Laptop	10	2.20	August 21, 2016	
6	M700 guess	217	2.32	July 7, 2016	
7	PAC's Machines - OOS	316	2.38	June 15, 2016	
8	M700x	8833	2.63	March 18, 2016	9,445
9	IBM	6	3.17	September 4, 2015	
10	Laptop	4071	3.43	May 31, 2015	
11	3020	4	3.50	May 6, 2015	
12	9020 i5 - reuse	22	3.68	February 28, 2015	
13	7020 i5 - reuse	348	3.84	December 31, 2014	
14	All in One - 23	3733	4.09	October 4, 2014	8,184
15	Research Required	18	4.28	July 26, 2014	
16	7010	3793	4.76	January 31, 2014	
17	3010	2	5.00	November 6, 2013	
18	Laptop-cart	378	5.14	September 16, 2013	
19	9010	107	5.18	September 2, 2013	
20	390 i3's - reuse	32	5.50	May 8, 2013	
21	390 i3's	226	5.71	February 21, 2013	
22	M700x	39	5.85	January 2, 2013	
23	Specialized Device - OOS	39	6.31	July 18, 2012	
24	790	3115	6.42	June 8, 2012	7,749
25	780 - dispose	2688	7.20	August 27, 2011	
26	980 - dispose	26	7.42	June 8, 2011	
27	Wyse	3140	7.86	January 1, 2011	
28	960 - dispose	1	8.00	November 10, 2010	
29	Dispose	6	8.00	November 10, 2010	
30	160 Dou - dispose	192	8.22	August 22, 2010	
31	AMD - dispose	4	9.75	February 11, 2009	6,057
	Grand Total	31,435	4.57		31,435

Suggested implementation Structure

Cost/savings projections

Units to Displace per Year:				
	By EOY 2019	By EOY 2020	By EOY 2021	By EOY 2022
	6057	7749	8184	9445
	All Desktops	378 Laptops / 7371 Desktops	4071 Laptops / 4113 Desktops	38 Laptops / 9407 Desktops

Legacy Cost Displacement Schedule:

	Calls Generated by Units (by End of Year)							
	2019	2019	2020	2020	2021	2021	2022	2022
	HD	SD	HD	SD	HD	SD	HD	SD
	2,933	2,090	5,205	3,710	5,279	3,762	8,798	6,270
	5,205	3,710	5,279	3,762	**8,798**	**6,270**		
	5,279	3,762	**8,798**	**6,270**				
	8,798	**6,270**						
Total Calls:	22,214	15,833	19,282	13,742	14,076	10,032	8,798	6,270
Cost per Call:	$13.32	$100.00	$13.32	$100.00	$13.32	$100.00	$13.32	$100.00
Extended Cost:	$295,894	$1,583,252	$256,832	$1,374,241	$187,497	$1,003,249	$117,186	$627,030
Sum: HD + SD:		$1,879,146		$1,631,074		$1,190,746		$744,216
Costs Removed from Prior Year levels:				$248,072		$440,328		$446,530
Total Reclaimed:								**$1,134,930**

Suggested implementation Structure

Cost/savings projections

On-going Cost Displacement Schedule (at 70% success rate, and 1 YR late in 100% of units):		Cash Savings by EOY 2020	Cash Savings by EOY 2021	Cash Savings by EOY 2022
Units deployed in 2019				
Desktops:	6057			
TCO net cash savings (by year):		$645	$415	$186
Extended:		$ 3,905,207	$ 2,516,596	$ 1,127,986
Laptops:				
TCO net cash savings (by year):				
Extended:				
Units deployed in 2020				
Desktops:	7371			
TCO net cash savings (by year):			$645	$415
Extended:			$ 4,752,399	$ 3,062,544
Laptops:	378			
TCO net cash savings (by year):			$790	$422
Extended:			$ 298,617	$ 159,510
Units deployed in 2021				
Desktops:	4113			
TCO net cash savings (by year):				$645
Extended:				$ 2,651,827
Laptops:	4071			
TCO net cash savings (by year):				$790
Extended:				$ 3,216,058
Yearly Totals:		**$ 3,905,207**	**$ 7,567,613**	**$ 10,217,926**
Cumulative:		**$ 3,905,207**	**$ 11,472,820**	**$21,690,746**

Issues and Tactics in Harvesting TCO Savings

Harvesting TCO Savings – "Where's my Check?!"

Understanding TCO Savings and how to harvest them

Cost savings:

- With the possible exception of Rebates, all "cost savings" and "cost reductions" are actually "cost avoidance actions".
- For example, if we negotiate a better price for some product or service, we AVOID extra costs, but we do not get CASH that we can put in the bank.
- Cost avoidance, reduction, and savings are NOT 'liquid' – they can change the cost STRUCTURE (so that we have more cash TO DEPOSIT or USE), but they are not 'hard currency'.
- If the cost that was avoided was already in the budget, then our P&L looks better.
- If the cost that was avoided was unexpected, then our P&L looks the same—but we avoided it looking WORSE. If we had to invest money to avoid this cost, our ROI was real, but not visible.
- Insurance, investments in security, and remediation of negative PR incidents are examples of investments in COST AVOIDANCE, with almost no way to assign ROI.
- When a product vendor promises that their product will result in 'hard dollar TCO cost savings' (which it is likely to do), we cannot ask them to 'write us a check' for those savings!

Harvesting TCO Savings – "Where's my Check?!"

Understanding TCO Savings and how to harvest them

TCO savings:

TCO savings are like other savings – they avoid an expense/cost, and can be forecasted due to historical models, and measured over time.

In our case here, the hard costs that will be avoided are:

1. Fees from the outsourced help desk (as fewer calls will come to them)
2. Support staff labor hours (as fewer calls will come to them)
3. Parts for out-of-warranty repairs and life-extending upgrades.

- **Number 1** above will be easy to measure since the monthly invoice amounts will start decreasing immediately after starting the refresh.
- **Number 3** above has not been a visible cost to BH in the past, since they patched old systems with used parts from dead systems, but this had a heavy impact on practitioner productivity.
- **Number 2** will be easy to measure also—from records of incoming trouble ticket calls and resolutions—but this will not result in any excess capacity that could be eliminated (at least not in the near term). What will be seen (and should be tracked closely from now on) will be the backlog of requests.
- When a support team is running at full capacity, excess incoming work sits in a backlog until resources become available. NO support resources become IDLE until all of the backlog is eliminated. This means that until the workload from obsolete gear drops SIGNIFICANTLY (via refresh), there will not be any 'excess labor capacity' to eliminate or repurpose.
- Resolution times will start to improve, though, with definite impact on practitioner workflows.

Harvesting TCO Savings – "Where's my Check?!"

Suggested Action Items:

- Immediately start the refresh process for the oldest systems, while publishing the numbers that are expected for call intake reductions (HTF can help with that, based on this analysis).
- The short-term budget impact of this will be positive, since lease finance causes the smallest drain on cash resources and/or on CAPEX budgets.
- The cash flow impact of quick start on the refresh is very positive (cash deferral via time-based payments), so this allows time for modifying reporting processes to better CAPTURE the positive impact on Practitioner downtime and positive impact on support call loads.
- You will NEED to start tracking calls loads and staff utility levels more closely, so that you will KNOW when any excess capacity is created (allowing reallocation or reduction in that pool of resources).
- After the first few months, consider the option to move to an operating lease refresh period for the desktops, since this will look considerably better on the financial statements than either finance leases or purchase with cash. [Operating leases are not classed as LTD, so it will not negatively affect debt rations; they generate positive entries in Assets; and they impact Cash – and therefore DCOH – the least of all equipment funding options.]