



**ENERGY MANAGEMENT AND MONITORING
TOOL - CARETAKER**

TESTING RESULTS VERSION 1.0

 **caretaker**

Table of Contents

1.0	About Testree	3
2.0	Success Stories	7
3.0	Introduction	10
4.0	CareTaker Energy Consumption and Saving Trial	11
5.0	Conclusion	14

1.0 About Testree

Testree (www.testree.com) is the independent verification and validation division of Nous Infosystems. Testree has proven experience in providing testing services to the customers worldwide across the industries. We primarily offer 3 types of services:

- Functional Testing Services
- Non-Functional Testing
- High End Test Consulting & Advisory Services

Provided below is the snapshot of Testree service offerings:

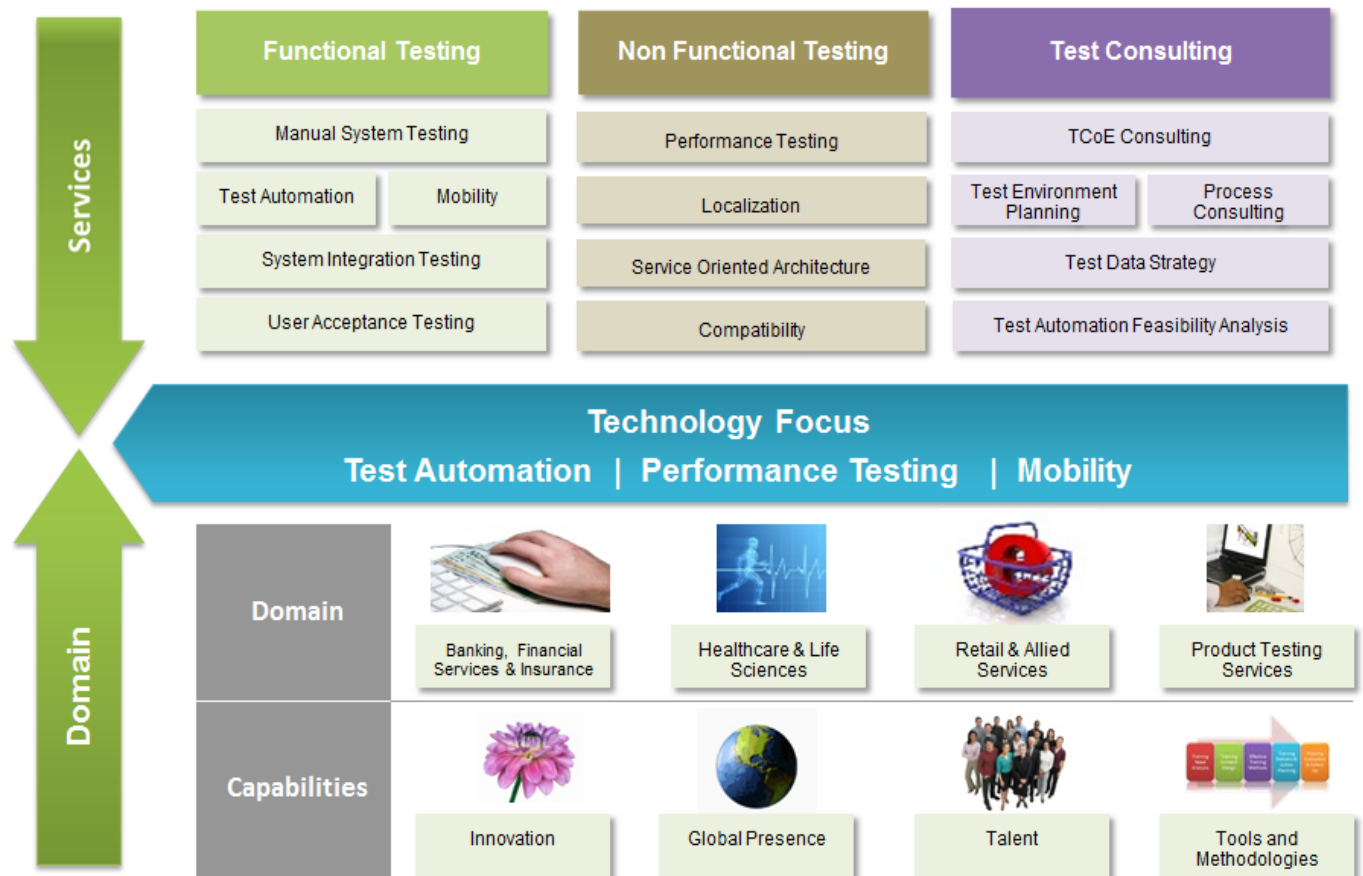


Figure 1: Testree Service Offerings

Functional Testing: Testree provides Manual System/Functional testing, Test Automation, Mobile application testing, 3rd Party Interface Testing, System Integration testing & User acceptance testing as part of functional testing services

Functional Testing	Testree's functional testing services supplements the development methodologies followed by the customer's organization. Care is taken to ensure that an appropriate Test Strategy is defined and a detailed plan is in place to support different methodologies such as Waterfall, Agile etc. Tools used in manual testing includes the following :
---------------------------	--

	<ul style="list-style-type: none"> • Test / Defect Management Tools: ApTestManager, JIRA, Quality Center, TFS, Bugzilla, Testopia, Testlink, Rational TestManager (IBM), Quality Center (HP), Rational ClearCase (IBM), Rally, QAccomplete, MTM, JIRA, Rational ClearQuest (IBM), PVCS Tracker, Bugzilla, Serena Team Tracker • Version Management: Visual Source Safe, SharePoint, SVN 						
Test Automation	<p>Test Automation strategies at Testree are designed based on the key business scenarios or functionalities to be automated, release frequency and schedules. Team identifies the functional scenarios that are mundane & time consuming to test manually and then study the feasibility of test automation. Tools used in Test Automation includes the following :</p> <ul style="list-style-type: none"> • QuickTest Professional (HP), Rational Functional Tester (IBM), SilkTest (Borland), TestComplete (SmartBear), TestPartner (Compuware), Selenium-Webdriver, MS-VSTS – CodedUI, WinRunner (HP), Watir Webdriver 						
Mobility	<p>Testree has expertise and experience in testing various mobile applications on different platforms viz iOS, Android, Blackberry, windows-CE etc. The key areas in mobility testing are as follows:</p> <table border="1"> <tr> <td>1. Functional & Compatibility Testing on various devices, Platforms & Wireless networks</td> <td>2. QR Code Scanning Testing</td> </tr> <tr> <td>3. Location Based Services Testing</td> <td>4. Mobile Test Automation</td> </tr> <tr> <td>5. Device & App level Performance Testing</td> <td>6. Mobile Application Performance</td> </tr> </table>	1. Functional & Compatibility Testing on various devices, Platforms & Wireless networks	2. QR Code Scanning Testing	3. Location Based Services Testing	4. Mobile Test Automation	5. Device & App level Performance Testing	6. Mobile Application Performance
1. Functional & Compatibility Testing on various devices, Platforms & Wireless networks	2. QR Code Scanning Testing						
3. Location Based Services Testing	4. Mobile Test Automation						
5. Device & App level Performance Testing	6. Mobile Application Performance						
System Integration testing	<p>Testree has vast experience in System Integration Testing in making sure that the various modules/systems work as required when integrated. More than 80% of our Testing Projects proceeds through System Integration Testing phase. The focus here is on the ability of the newly developed system to co-exist with other systems via its interfaces. Testree has career Test Professionals who have extensive experience & expertise in System Integration Testing methods & processes. Few examples of System Integration Testing for healthcare applications are:</p> <ul style="list-style-type: none"> • Laboratory Management System • Clinical Trial Management System • Site Management System 						
User acceptance testing	<p>Testree assists the Customers in executing User Acceptance Testing. With our expertise in the Healthcare, Retail and BFSI segments we bring in end user perspective in testing application/products. We have executed several UAT projects in both co-managed & managed projects model providing the right team with right skills aided with Best-in-Class processes.</p>						
Non Functional Testing :							

Performance Testing	<p>We offer Tools, Scripting, Load / Stress Testing Expertise, Application Performance Analysis and Validated Application Performance Analysis as part of our services. Provided below is the snapshot of Testree performance measurement tools expertise.</p> <table border="1" data-bbox="407 344 1430 659"> <thead> <tr> <th data-bbox="407 344 889 401">Open Source tools</th> <th data-bbox="889 344 1430 401">Commercial Tools</th> </tr> </thead> <tbody> <tr> <td data-bbox="407 401 889 447">OpenSTA</td> <td data-bbox="889 401 1430 447">HP – Load Runner</td> </tr> <tr> <td data-bbox="407 447 889 493">JMeter</td> <td data-bbox="889 447 1430 493">Neotys – NeoLoad</td> </tr> <tr> <td data-bbox="407 493 889 539">Grinder</td> <td data-bbox="889 493 1430 539">RadView’s WebLoad</td> </tr> <tr> <td data-bbox="407 539 889 585">Testmaker</td> <td data-bbox="889 539 1430 585">Borland’s – SilkPerformer</td> </tr> <tr> <td></td> <td data-bbox="889 585 1430 632">IBM Rational Performance Tester (RPT)</td> </tr> <tr> <td></td> <td data-bbox="889 632 1430 659">WAPT</td> </tr> </tbody> </table>	Open Source tools	Commercial Tools	OpenSTA	HP – Load Runner	JMeter	Neotys – NeoLoad	Grinder	RadView’s WebLoad	Testmaker	Borland’s – SilkPerformer		IBM Rational Performance Tester (RPT)		WAPT
Open Source tools	Commercial Tools														
OpenSTA	HP – Load Runner														
JMeter	Neotys – NeoLoad														
Grinder	RadView’s WebLoad														
Testmaker	Borland’s – SilkPerformer														
	IBM Rational Performance Tester (RPT)														
	WAPT														
Localization	<p>Testree has helped several customers to globalize their products and applications thereby helping them expand their business reach. Our Localization testing services are aligned with the software development lifecycle & help your product / application to blend seamlessly into the native language & cultural landscape. The key focus areas include Web applications testing, Enterprise applications testing, Desktop & Client server applications, Apps for Mobile & Embedded Devices, Localized Libraries, APIs & Tools.</p>														
Browser Compatibility	<p>Testree has successfully performed multiple Browser Compatibility Testing engagements by providing comprehensive approaches for resolving the complexity of numerous combinations of platforms and browsers.</p>														
Service Oriented Architecture	<p>We have expertise in testing at different levels such as service level (Integration Layer), composite business service level, and user interface / use case level (if UI exists). Testree offers WSDL verification (Schema / XML validation) & interoperability, Functional / Regression Test suite creation, execution, and validation, Security / Penetration testing (Parameter fuzzing, SQL injection, User name harvesting, and XML tests) and Compliance testing of web services with the WS-I, SOA Governance & W3C. Testree has expertise in using the following SOA test tools:</p> <table border="0" data-bbox="407 1255 1430 1360"> <tr> <td>1. Parasoft SOAtest</td> <td>2. SoapUI</td> <td>3. WebInject</td> </tr> <tr> <td>4. Mindreef SOAPScope</td> <td>5. SOAPsonar</td> <td></td> </tr> <tr> <td>6. iTKO LISA</td> <td>7. Testmaker Pro (Open source)</td> <td></td> </tr> </table>	1. Parasoft SOAtest	2. SoapUI	3. WebInject	4. Mindreef SOAPScope	5. SOAPsonar		6. iTKO LISA	7. Testmaker Pro (Open source)						
1. Parasoft SOAtest	2. SoapUI	3. WebInject													
4. Mindreef SOAPScope	5. SOAPsonar														
6. iTKO LISA	7. Testmaker Pro (Open source)														
High End Test Consulting & Advisory Services															
TCoE Consulting	<p>Testree assists customer in setting up Test Centers of Excellence (TCoE) for large engagements. The model along with centralizing & standardizing people, processes and tools includes a flexible resourcing model with a dedicated core team for each of the applications under test and a flexible team to work on shared mode for cross team collaboration and faster team ramp-up. The model also helps in sharing testing best practices / methodologies and application knowledge among the team members</p>														
Test Environment Planning	<p>Testree offers Test Environment planning as a consulting service and help its customers in setting up the environment with appropriate hardware and software configurations. Before initiating the tests; Testree evaluates the readiness of the environment for seamless execution.</p>														
Process Consulting	<p>Testree as in Independent Test Service provider offers Process / QA Consulting to assist its customers in setting-up the required testing / QA processes and procedures such as Test Management, Defect Management, Change Request Management, Configuration Management etc. Implementation of QA processes will improve the overall process maturity and helps customers in realizing the tangible business</p>														

	benefits.
Test Data Strategy	<p>Testtree designs test data strategy based on the application requirements and test data specifications. Test data strategy helps in enhancing the quality of test cases and improvising test case execution efficiency. Based on the understanding of various functional/business processes appropriate test data will be created and parameterized in the test cases/scenarios to provide better coverage.</p> <p>Testtree evaluates the readiness of the test environment with appropriate test data, which would be populated on the application UI.</p>
Automation Feasibility Analysis	<p>Testtree conducts a detailed Tool evaluation and Test Automation Feasibility Analysis to identify the suitable functional test scenarios for automated regression testing and help customers in enhancing the quality of the projects.</p>

Testtree's Value Proposition:

- Independent Testing and Validation group providing cost effective testing solutions
- Experience & Expertise in Offshore Transitioning and large scale engagements
- Well defined QA Processes, frameworks and Best practices
- Focus on delivery excellence and metric based improvements
- Focus on program governance and senior management commitment for the customer success
- CMMi Level v1.3 (SVC + SSD), ISO 9001:2008 & ISO 27001:2005 certified methodologies and processes
- In-house developed Test Automation framework
- In-house developed plug-ins built on Jmeter-Open Source Performance Testing tool
- Mobile applications & Mobile device testing in every stage of the product lifecycle.
- Strong partnerships with best in class tool providers such as Neotys, Perfecto Mobile and Smartbear
- Agile team with critical customer focus and flexibility
- Expertise in commercial as well as open source tools like Selenium, NeoLoad, QTP, WinRunner, HP LoadRunner, Testcomplete, SilkPerformer, Jmeter, Test Director, Clear quest etc.,
- 24*7 Operations with 250+ testing technology experts
- Dedicated domain focused test labs in place
- Research & Development on Open Source & commercial tools
- Global software services provider with operations in UK, Germany, US, Canada, UAE & India

2.0 Success Stories

Provided below is the sample list of customers, that we are currently providing Independent validation Services:

Sl.No	Customer	Nous Services	Benefits
1	This client provides e-commerce businesses with a wide range of online marketing services including Search Marketing (SEM), Lead Generation and Affiliate Marketing.	<ul style="list-style-type: none"> • Provided end to end test services and acted as a Managed test service partner • The client wanted Testree to automate their huge volume of manual test cases for the feasible scenarios using Selenium (open source tool) and use the automated test suite during the monthly releases, and ad-hoc tests. • Increase automation coverage to the greatest extent possible • Optimal test coverage to ensure that all areas of the application are thoroughly tested with no defect leakage to production 	<ul style="list-style-type: none"> • Drastic reduction in production defects • Reduced the regression effort by 20% • Helped to meet the customer requirements and deadlines with minimal effort even during ramp up/down of the team
2	Mexico's largest independently owned retail shoe company. They offer a large selection of shoes and accessories for Men, Women and children	Web portal for online shopping developed , Tested and integrated into the POS system for back end processing of online web orders	<ul style="list-style-type: none"> • Savings up to 45% due to a stable and completely automated system with less margin for human error • Efficient and stable system with 99.9% uptime and accurate processing
3	One of the US Midwest's largest distributors of foodservice products that serves as the distribution link in bringing food and food related items to institutional users such as restaurants,	Developed and tested the entire application based on Façade Design Pattern	<ul style="list-style-type: none"> • Cost effective solutions through customized use of our Global Delivery Models • Enhanced quality and consistent

health care facilities, and schools.

delivery of content

- 4 Client provides an e-commerce business with wide range of online shopping for wine and its accessories and has grown into top sellers of online wine store by its annual revenues.

 - Performed functional Testing in coordination with onsite development team and regressed the system for every month's release
 - Independent Verification & Validation of the application for both the desktop and mobile versions and to check for compatibility across various browsers.
 - Optimal test coverage and reusable scenarios for complete testing and to eliminate redundancy
 - 5 The client is one of the oldest and most respected newspapers in the USA

 - Thoroughly tested its new bespoke content management system
 - Extensive use of descriptive programming to address any inherent limitations of QTP object recognition feature
 - Built extensive reusable function libraries which made the automation suite modular & easy to maintain
 - Comprehensive automation user manual was provided to the client for ready reference
- Reduced time-to-market due to faster completion of the project by Nous' development team
 - Increased the market acceptance of the product
 - Helped to meet the customer requirements and deadlines with no deliverable slippage, even during the rapid ramp-up/ramp-down phase of the team.
 - Reduced costs and time by effectively managing the devices and resources.
 - Significantly reduced the regression testing cycle through extensive use of automation
 - Optimization of the manual testing effort, as most of the redundant and repetitive testing tasks were automated, allowing the QA team time concentrate their efforts on enhancements, bug fixes & exploratory testing
 - Reduction in the QA team size

- 6 Client is one of the leading providers of online systems and services to the private healthcare market. They provide web based medical invoicing software to clinicians in private practice. They have extensive range of specific products for the private healthcare market including practice management systems and online billing, patient membership enquiry; secure messaging and clinical coding translation tools
- Testree assumed full responsibility for developing and delivering a comprehensive end-to-end testing solution to the client and the delivery is managed based on agreed upon pre-defined SLA's.
 - Identified Gaps and presented recommendations
 - Helped the client in identifying the number of test cases that is needed for optimal coverage of the application under test
 - Analyzed the available test cases w.r.t. the Test automation coverage
 - Provided strategic support in tool evaluation and designed frameworks
 - Significantly reduced the regression testing cycle through extensive use of automation
- Faster time to release
 - Significantly reduced the regression testing cycle through extensive use of automation
 - Reduced the regression effort by 20% by using the automation suite
 - Reduced the QA efforts
 - Faster time to release
 - Enables Smooth transition to testing vendor and less loss of productivity
 - Quick Ramp-up on need basis

3.0 Introduction

This document acts as final conclusion report of CareTaker testing trial performed by Testree. The trial included three PCs with the following operating systems with CareTaker installed to monitor power consumption and the power saving after an energy saving policy is applied.

- NIBC0842 - Windows 8 (Base Unit monitored)
- NIBC1393 - Windows 7 (Base Unit monitored)
- NIBC0882 - Windows Vista (Base Unit monitored)
- NIBC830 - Windows Vista (Base and Display Unit monitored)

The purpose of this project is to verify and validate that CareTaker software correctly calculates energy usage of PCs (Base and Display units) against energy meters, and that by applying energy saving policy allows the users to save up to 50% of energy. This trial is carried out by a third party, an independent software testing company.

CareTaker software is tested and the results delivered prove the accuracy of the CareTaker algorithms and energy saving predictions.

Provided wattage for each PC included in the trial:

	NIBC0842 ¹	NIBC0882 ¹	NIBC1393 ¹	NIBC830 ²
Sleep Mode CPU	0 Watts	0 Watts	0 Watts	4.75 Watts
Off Mode CPU	0 Watts	0 Watts	0 Watts	4.11 Watts
Active Mode CPU	50 Watts	40 Watts	50 Watts	46 Watts
Sleep Mode Monitor	0 Watts	0 Watts	0 Watts	0.95 Watts
Off Mode Monitor	0 Watts	0 Watts	0 Watts	0.96 Watts
Active Mode Monitor	10 Watts	10 Watts	10 Watts	14.75 Watts

Table 1: Wattage for PCs provided by Testree

¹ The wattage has been calculated by Testree with the use of an energy meter by calculating drawn power based on the energy consumption in kWh which results in 0 for the sleep and off mode.

² The wattage has been measured by Testree with the use of an energy meter by measuring drawn power based on the energy consumption in watts.

4.0 CareTaker Energy Consumption and Saving Trial

The trial ran from 2 weeks (time period from 3rd June 2014 to 16th June 2014), where the first week the energy usage has been captured by CareTaker and Energy Meters. The second week CareTaker started applying saving actions and the energy usage has been captured by CareTaker as well as by Energy Meters. Energy saving policy has been applied from the 11th of June forward on all PCs included in the trial. Additional PC has been added to the trial in order to monitor usage of Base and Display unit at the same time to observe the total energy consumption of a PC with the use of an energy meter and CareTaker software.

Please see below the results in kWh:

Date	NIBC0842 ³	NIBC1393 ³	NIBC830 ³	NIBC0842 per day ⁴	NIBC1393 per day ⁴	NIBC830 per day ⁴
3 rd June 2014	0.43	1	-	0.43	1	-
4 th June 2014	0.98	2.06	-	0.55	1.06	-
5 th June 2014	1.44	2.51	-	0.46	0.45	-
6 th June 2014	1.96	3.02	-	0.52	0.51	-
9 th June 2014	2.51	3.51	-	0.55	0.49	-
10 th June 2014	2.95	3.93	-	0.44	0.42	-
11 th June 2014	3.18	4.32	-	0.23	0.39	-
12 th June 2014	3.39	4.77	-	0.21	0.45	-
13 th June 2014	3.86	5.34	-	0.47	0.57	-
16 th June 2014	4.06	5.64	-	0.20	0.18	-
8 th July 2014	-	-	1.51	-	-	0.54 + 0.26 0.80
9 th July 2014	-	-	1.99	-	-	0.58 + 0.30 0.88

Table 2: Energy Usage in kWh by test meter

Please note that the first energy reading has been recorded at 9:30 AM and last energy reading noted by Testree has been recorded at 7:30 PM.

NIBC830 From midnight to first measurement:

8th of July $4.5h * 46W / 1000 = 0.20kWh$
 $4.5h * 14.7W / 1000 = 0.06kWh$
 Together: **0.26**

9th of July $5h * 46W / 1000 = 0.23kWh$
 $5h * 14.7W / 1000 = 0.07kWh$
 Together: **0.30**

³ Cumulative readings provided by Testree

⁴ Extracted reading provided by Testree per day

Date	NIBC0842 per day	NIBC1393 per day	NIBC830 per day
3 rd June 2014	0.54 – 0.11 – 25.58%	1.10 – 0.10 – 10%	-
4 th June 2014	0.48 – 0.07 – 12.7%	1.10 – 0.04 – 3.77%	-
5 th June 2014	0.42 – 0.04 – 8.70%	0.65 – 0.20 – 44.44%	-
6 th June 2014	0.54 – 0.02 – 3.85%	0.60 – 0.09 – 17.65%	-
9 th June 2014	0.48 – 0.07 – 12.73%	0.65 – 0.16 – 32.65%	-
10 th June 2014	0.42 – 0.02 – 4.55%	0.60 – 0.18 – 42.86%	-
11 th June 2014	0.12 – 0.11 – 47.83%	0.55 – 0.16 – 41.03%	-
12 th June 2014	0.06 – 0.15 – 71.43%	0.55 – 0.10 – 22.22%	-
13 th June 2014	0.42 – 0.05 – 10.64%	0.55 – 0.02 – 3.51%	-
8 th July 2014	-	-	0.80 – 0.00 – 0%
9 th July 2014	-	-	0.80 – 0.08 – 10%

Table 3: Energy Usage in kWh by CareTaker and difference between CareTaker and Energy Meter in kWh and %

Example of calculation: 0.54 (CareTaker reading in kWh) – 0.11 (difference between CareTaker reading and energy meter reading in kWh) – 25.58% (difference between CareTaker reading and energy meter reading in %)

Please note that the last energy reading by CareTaker has been recorded at 12:00 AM and therefore the 16th of June is not included as additional calculations for the missing time in the evening would have to be carried out to get the true reading for the whole 24 hours.

Energy Consumption:

- Average variation in kWh usage for PC NIBC0842 is 22% which results in 2% difference between the energy meter and CareTaker energy readings.
- Average variation in kWh usage for PC NIBC1393 is 24.24% which results in 4.24% difference between the energy meter and CareTaker energy readings.
- Average variation in kWh usage for PC NIBC830 is 10% difference between the energy meter and CareTaker energy readings.
- On average the difference between the energy meter and CareTaker readings is 5.41%.

A percentage of 20% has been deducted due to Display unit energy consumption not being monitored (Base unit wattage is 50 watts and Display unit wattage is 10 watts which results in 20% of energy usage).

These differences can be explained by the 0 wattage specified for sleep and off stage of the PCs.

Date	NIBC0842 per day	NIBC0882 per day	NIBC1393 per day	NIBC0842 average	NIBC0882 average	NIBC1393 average
3 rd June 2014	0.43	0.43	1.00			
4 th June 2014	0.55	1.11	1.06			
5 th June 2014	0.48	0.52	0.47			
6 th June 2014	0.49	0.52	0.47			
9 th June 2014	0.55	0.65	0.49	No policy	No policy	No policy
10 th June 2014	0.44	0.47	0.42	0.49 ⁵	0.62 ⁵	0.65 ⁵
11 th June 2014	0.23	0.27	0.39			
12 th June 2014	0.21	0.25	0.45			
13 th June 2014	0.47	0.20	0.57	Policy	Policy	Policy
16 th June 2014	0.20	0.18	0.31	0.27 – 0.22 – 38.78%	0.22 – 0.40 – 64.52%	0.43 – 0.22 – 33.85%

Table 4: Energy Usage in kWh by test meter and difference between average with no policy applied and an energy policy applied in kWh and %

Please note that the 16th of July has been added to this table as

Energy Saving:

- Average saving in kWh usage for PC NIBC0842 is 38.78%.
- Average saving in kWh usage for PC NIBC0882 is 64.52%.
- Average saving in kWh usage for PC NIBC1393 is 33.85%.
- On Average the difference between the energy used with no policy applied and with policy applied is the energy saving of 47.76%.

⁵ Average of energy consumption in kWh from 3rd of June to 9th of June where no policy was applied.

5.0 Conclusion

Based on the results provided by the energy meters and CareTaker it can be concluded that CareTaker software accurately calculates the energy consumptions of PC with variations of 5.41% against energy meters (which can be explained by the 0 wattage specified for sleep and off stage of the PCs where wattage has been calculated and not measured) and allows the users of CareTaker software to save up to 47.76% of energy, depending on the energy saving policy settings applied.

6.0 Appendix

Please find attached the power consumption details provided by Testree.

Date	Timings	CPU (NIBC830)	Monitor (NIBC830)
08-Jul-14	10:34 AM	1.1	0.37
08-Jul-14	11:00 AM	1.12	0.38
08-Jul-14	11:30 AM	1.14	0.38
08-Jul-14	12:05 PM	1.16	0.39
08-Jul-14	12:30 PM	1.19	0.4
08-Jul-14	1:00 PM	1.21	0.4
08-Jul-14	1:30 PM	1.23	0.41
08-Jul-14	2:00 PM	1.25	0.42
08-Jul-14	2:30 PM	1.28	0.43
08-Jul-14	3:00 PM	1.3	0.43
08-Jul-14	3:35 PM	1.33	0.44
08-Jul-14	4:00 PM	1.35	0.45
08-Jul-14	4:30 PM	1.37	0.46
08-Jul-14	5:00 PM	1.39	0.46
08-Jul-14	5:30 PM	1.41	0.47
08-Jul-14	6:00 PM	1.44	0.48
08-Jul-14	6:32 PM	1.47	0.49
08-Jul-14	7:00 PM	1.49	0.49
08-Jul-14	7:30 PM	1.51	0.5
09-Jul-14	9:30 AM	1.55	0.52
09-Jul-14	10:00 AM	1.57	0.53
09-Jul-14	10:30 AM	1.59	0.53
09-Jul-14	11:00 AM	1.61	0.54
09-Jul-14	11:30 AM	1.64	0.55
09-Jul-14	12:05 PM	1.66	0.55
09-Jul-14	12:30 PM		
09-Jul-14	1:00 PM	1.71	0.57
09-Jul-14	1:30 PM		
09-Jul-14	2:00 PM	1.76	0.58
09-Jul-14	2:30 PM	1.79	0.59
09-Jul-14	3:00 PM	1.81	0.60
09-Jul-14	3:30 PM	1.83	0.61
09-Jul-14	4:00 PM	1.85	0.61
09-Jul-14	4:30 PM	1.88	0.62
09-Jul-14	5:00 PM	1.90	0.63

09-Jul-14	5:30 PM	1.93	0.64
09-Jul-14	6:00 PM	1.95	0.65
09-Jul-14	6:30 PM	1.97	0.65
09-Jul-14	7:00 PM	1.99	0.66
10-Jul-14	10:05 AM	2.81	0.67
10-Jul-14	10:30 AM	2.83	0.68
10-Jul-14	11:00 AM	2.85	0.68
10-Jul-14	11:30 AM	2.87	0.69
10-Jul-14	12:00 PM	2.89	0.70
10-Jul-14	12:30 PM	2.92	0.70
10-Jul-14	1:00 PM	2.94	0.71
10-Jul-14	1:25 PM	2.96	0.72

Date	Timings	NIBC0842	NIBC0882	NIBC1393
03-Jun-14	9:45 AM	0.02	0.03	0.57
03-Jun-14	10:00 AM	0.02	0.03	0.58
03-Jun-14	10:30 AM	0.02	0.03	0.60
03-Jun-14	11:00 AM	0.04	0.06	0.62
03-Jun-14	11:30 AM	0.06	0.08	0.65
03-Jun-14	12:00 PM	0.09	0.10	0.67
03-Jun-14	12:30 PM	0.11	0.13	0.70
03-Jun-14	1:00 PM	0.13	0.15	0.72
03-Jun-14	1:30 PM	0.15	0.17	0.74
03-Jun-14	2:06 PM	0.18	0.20	0.77
03-Jun-14	2:30 PM	0.20	0.22	0.79
03-Jun-14	3:00 PM	0.22	0.24	0.81
03-Jun-14	3:30 PM	0.25	0.26	0.83
03-Jun-14	4:00 PM	0.27	0.29	0.86
03-Jun-14	4:30 PM	0.30	0.31	0.88
03-Jun-14	5:00 PM	0.32	0.34	0.90
03-Jun-14	5:30 PM	0.35	0.36	0.93
03-Jun-14	6:00 PM	0.37	0.39	0.95
03-Jun-14	6:36 PM	0.40	0.41	0.98
03-Jun-14	7:10 PM	0.43	0.43	1.00
04-Jun-14	10:04 AM	0.54	1.13	1.65
04-Jun-14	10:30 AM	0.56	1.15	1.67
04-Jun-14	11:00 AM	0.58	1.17	1.69
04-Jun-14	11:30 AM	0.61	1.19	1.71
04-Jun-14	12:00 PM	0.63	1.22	1.74
04-Jun-14	12:30 PM	0.66	1.24	1.76
04-Jun-14	1:00 PM	0.68	1.26	1.78
04-Jun-14	1:30 PM	0.71	1.29	1.81
04-Jun-14	2:06 PM	0.73	1.31	1.83

04-Jun-14	2:36 PM	0.76	1.34	1.86
04-Jun-14	3:00 PM	0.78	1.36	1.88
04-Jun-14	3:30 PM	0.81	1.38	1.91
04-Jun-14	4:00 PM	0.83	1.40	1.93
04-Jun-14	5:00 PM	0.88	1.45	1.97
04-Jun-14	5:30 PM	0.91	1.47	2.00
04-Jun-14	6:00 PM	0.93	1.50	2.02
04-Jun-14	6:30 PM	0.96	1.52	2.04
04-Jun-14	7:00 PM	0.98	1.54	2.06
05-Jun-14	10:30 AM	1.01	1.59	2.10
05-Jun-14	11:00 AM	1.03	1.62	2.11
05-Jun-14	11:30 AM	1.06	1.64	2.13
05-Jun-14	12:00 PM	1.08	1.67	2.15
05-Jun-14	12:30 PM	1.11	1.70	2.18
05-Jun-14	1:00 PM	1.13	1.72	2.20
05-Jun-14	2:00 PM	1.18	1.76	2.25
05-Jun-14	2:30 PM	1.21	1.79	2.28
05-Jun-14	3:00 PM	1.23	1.82	2.30
05-Jun-14	4:00 PM	1.27	1.87	2.35
05-Jun-14	4:30 PM	1.30	1.89	2.37
05-Jun-14	5:00 PM	2.32	1.91	2.39
05-Jun-14	6:00 PM	1.37	1.96	2.44
05-Jun-14	7:00 PM	1.42	2.01	2.49
05-Jun-14	7:30 PM	1.44	2.04	2.51
06-Jun-14	10:30 AM	1.47	2.09	2.55
06-Jun-14	11:00 AM	1.50	2.11	2.57
06-Jun-14	11:30 AM	1.52	2.14	2.60
06-Jun-14	12:00 PM	1.55	2.16	2.62
06-Jun-14	12:30 PM	1.57	2.19	2.64
06-Jun-14	1:00 PM	1.60	2.22	2.67
06-Jun-14	2:00 PM	1.65	2.27	2.71
06-Jun-14	2:30 PM	1.67	2.30	2.73
06-Jun-14	3:00 PM	1.70	2.32	2.76
06-Jun-14	4:00 PM	1.74	2.37	2.81
06-Jun-14	4:30 PM	1.77	2.40	2.83
06-Jun-14	5:10 PM	1.80	2.43	2.86
06-Jun-14	5:40 PM	1.83	2.46	2.88
06-Jun-14	6:00 PM	1.84	2.48	2.90
06-Jun-14	6:30 PM	1.87	2.51	2.92
06-Jun-14	7:00 PM	1.89	2.54	2.94
06-Jun-14	8:30 PM	1.96	2.61	3.02
09-Jun-14	10:30 AM	2.08	2.80	3.10
09-Jun-14	11:00 AM	2.11	2.83	3.13
09-Jun-14	11:30 AM	2.13	2.86	3.15
09-Jun-14	12:10 PM	2.17	2.89	3.18

09-Jun-14	12:40 PM	2.19	2.92	3.21
09-Jun-14	1:00 PM	2.21	2.93	3.23
09-Jun-14	1:30 PM	2.24	2.96	3.25
09-Jun-14	2:00 PM			
09-Jun-14	2:30 PM	2.28	3.01	3.29
09-Jun-14	3:00 PM	2.31	3.04	3.32
09-Jun-14	4:00 PM	2.36	3.09	3.36
09-Jun-14	4:30 PM	2.38	3.12	3.39
09-Jun-14	5:00 PM	2.41	3.14	3.41
09-Jun-14	5:30 PM	2.44	3.17	3.43
09-Jun-14	6:00 PM	2.46	3.20	3.45
09-Jun-14	6:30 PM	2.48	3.23	3.48
09-Jun-14	7:00 PM	2.51	3.26	3.51
10-Jun-14	10:10 AM	2.53	3.30	3.52
10-Jun-14	10:30 AM	2.55	3.32	3.54
10-Jun-14	11:00 AM	2.58	3.34	3.56
10-Jun-14	11:30 AM	2.60	3.37	3.58
10-Jun-14	12:00 PM	2.62	3.40	3.61
10-Jun-14	12:37 PM	2.66	3.43	3.64
10-Jun-14	1:06 PM	2.68	3.45	3.67
10-Jun-14	1:30 PM			
10-Jun-14	2:00 PM	2.73	3.51	3.71
10-Jun-14	2:30 PM	2.75	3.53	3.73
10-Jun-14	3:00 PM	2.78	3.56	3.76
10-Jun-14	3:30 PM	2.80	3.58	3.78
10-Jun-14	4:00 PM	2.82	3.60	3.80
10-Jun-14	4:30 PM	2.84	3.61	3.82
10-Jun-14	5:00 PM	2.86	3.64	3.84
10-Jun-14	5:40 PM	2.88	3.66	3.86
10-Jun-14	6:00 PM	2.90	3.68	3.88
10-Jun-14	6:30 PM	2.93	3.70	3.90
10-Jun-14	7:00 PM	2.95	3.73	3.93
11-Jun-14	10:10 AM	2.97	3.77	3.96
11-Jun-14	10:30 AM	2.99	3.77	3.98
11-Jun-14	11:00 AM	3.00	3.79	3.99
11-Jun-14	11:30 AM	3.01	3.80	4.01
11-Jun-14	12:07 PM	3.02	3.81	4.04
11-Jun-14	12:30 PM	3.04	3.83	4.07
11-Jun-14	1:06 PM	3.05	3.85	4.08
11-Jun-14	1:30 PM			
11-Jun-14	2:00 PM	3.06	3.86	4.10
11-Jun-14	2:30 PM	3.08	3.88	4.12
11-Jun-14	3:00 PM	3.09	3.90	4.14
11-Jun-14	3:30 PM	3.11	3.92	4.17
11-Jun-14	4:00 PM	3.12	3.93	4.20

11-Jun-14	4:30 PM	3.13	3.94	4.22
11-Jun-14	5:00 PM	3.14	3.95	4.25
11-Jun-14	5:30 PM	3.16	3.97	4.27
11-Jun-14	6:00 PM	3.17	3.98	4.28
11-Jun-14	6:30 PM	3.18	3.99	4.30
11-Jun-14	7:00 PM	3.18	4.00	4.32
12-Jun-14	10:23 AM	3.21	4.04	4.35
12-Jun-14	10:33 AM	3.21	4.05	4.36
12-Jun-14	11:00 AM	3.23	4.06	4.39
12-Jun-14	11:30 AM	3.24	4.07	4.41
12-Jun-14	12:00 PM	3.24	4.08	4.43
12-Jun-14	12:30 PM	3.25	4.09	4.46
12-Jun-14	1:00 PM	3.26	4.11	4.49
12-Jun-14	1:34 PM	3.27	4.11	4.50
12-Jun-14	2:00 PM	3.28	4.12	4.52
12-Jun-14	2:30 PM	3.29	4.13	4.55
12-Jun-14	3:00 PM	3.30	4.15	4.57
12-Jun-14	3:30 PM	3.31	4.16	4.60
12-Jun-14	4:10 PM	3.32	4.17	4.62
12-Jun-14	4:36 PM	3.33	4.18	4.65
12-Jun-14	5:00 PM	3.34	4.19	4.67
12-Jun-14	5:30 PM	3.35	4.20	4.69
12-Jun-14	6:00 PM	3.37	4.22	4.72
12-Jun-14	6:30 PM	3.38	4.23	4.74
12-Jun-14	7:00 PM	3.39	4.25	4.77
13-Jun-14	10:30 AM	3.41	4.29	4.83
13-Jun-14	11:00 AM	3.43	4.30	4.85
13-Jun-14	11:30 AM	3.45	4.31	4.88
13-Jun-14	12:00 PM	3.48	4.32	4.91
13-Jun-14	12:30 PM	3.50	4.33	4.94
13-Jun-14	1:00 PM	3.53	4.34	4.97
13-Jun-14	1:30 PM			
13-Jun-14	2:00 PM	3.58	4.35	5.03
13-Jun-14	2:30 PM	3.61	4.36	5.05
13-Jun-14	3:00 PM	3.63	4.37	5.08
13-Jun-14	3:30 PM	3.66	4.37	5.10
13-Jun-14	4:00 PM	3.68	4.38	5.12
13-Jun-14	4:30 PM	3.71	4.39	5.14
13-Jun-14	5:00 PM	3.74	4.40	5.17
13-Jun-14	5:30 PM	3.76	4.41	5.20
13-Jun-14	6:00 PM	3.79	4.42	5.23
13-Jun-14	6:30 PM	3.81	4.42	5.27
13-Jun-14	7:00 PM	3.84	4.43	5.30
13-Jun-14	7:30 PM	3.86	4.45	5.34
16-Jun-14	10:30 AM	3.96	4.61	5.43

16-Jun-14	11:00 AM	3.96	4.51	5.44
16-Jun-14	11:30 AM	3.97	4.52	5.45
16-Jun-14	12:00 PM	3.97	4.52	5.47
16-Jun-14	12:30 PM	3.98	4.53	5.48
16-Jun-14	1:00 PM	3.99	4.53	5.50
16-Jun-14	1:30 PM			
16-Jun-14	2:00 PM	4.01	4.54	5.52
16-Jun-14	2:30 PM	4.01	4.55	5.53
16-Jun-14	3:00 PM	4.02	4.56	5.54
16-Jun-14	3:30 PM	4.03	4.58	5.56
16-Jun-14	4:00 PM	4.03	4.59	5.58
16-Jun-14	4:30 PM	4.04	4.60	5.59
16-Jun-14	5:00 PM	4.04	4.61	5.61
16-Jun-14	5:30 PM	4.05	4.62	5.62
16-Jun-14	6:00 PM	4.05	4.62	5.63
16-Jun-14	6:30 PM	4.06	4.63	5.64
16-Jun-14	7:00 PM	4.06	4.63	5.65
16-Jun-14	7:30 PM	4.06	4.63	5.65