Forrester Consulting

MAKING LEADERS SUCCESSFUL EVERY DAY

FORRESTER®

Prepared for Faronics

January 2010

The Total Economic Impact™ Of Faronics Power Save

Project Director: Jeffrey North, Principal Consultant

FORRESTER®

Headquarters

Forrester Research, Inc., 400 Technology Square, Cambridge, MA 02139 USA

Tel: +1 617.613.6000 • Fax: +1 617.613.5000 • www.forrester.com

TABLE OF CONTENTS

Executive Summary

In August 2009, BC Hydro Power Authority outfitted its fleet of laptop and desktop computers with Faronics Power Save computer power management software. The software centrally administers workstation power management to automatically reduce computer power consumption by placing PCs in standby mode after 15 or 30 minutes of inactivity. When a computer is in standby, it consumes much less power, but it is still on. A typical computer in standby consumes about 3W of energy, compared with 85W (the average Energy-Star-rated computer uses 127.3W) when it is fully active. Power Save also cuts power used by the computer's peripherals such as hard drive and monitor. Although BC Hydro's computers and LCD monitors are Energy-Star-compliant, the company knew it could do more to save energy and money. By using Faronics Power Save, BC Hydro introduced a system that analyzes CPU, application activity, disk, keyboard, and mouse status before taking power management actions and delivers enterprisewide desktop computer energy management.

In April 2009, Faronics commissioned Forrester Consulting to examine the total economic impact and potential return on investment (ROI) enterprises may realize by deploying Power Save. This study illustrates the financial impact of deploying Power Save PC power management software for 8,068 (as of early December 2009) PCs at BC Hydro, an electric utility generating between 43,000 and 54,000 Gigawatt hours (GWh) of electricity and serving 1.8 million customers in British Columbia. BC Hydro is an organization with extensive expertise in the field of electricity conservation and energy economics. BC Hydro is a commercial Crown corporation owned by the Province of British Columbia, the largest electric utility in British Columbia, and one of North America's leading providers of renewable energy.

In conducting in-depth interviews with an existing Faronics enterprise customer, Forrester found that the Power Save product helped the company achieve significant savings on energy costs, beyond the efficiency savings that BC Hydro had already realized prior to installing Power Save.

BC Hydro is applying its internal learnings and best practices for PC power savings to help the utility's customers further their own computing energy-efficiency initiatives. The cost-saving potential in education, business, and the public sector is significant. Thus, BC Hydro IT engineers are helping their account management colleagues define savings strategies for PC usage for schools, homes, and enterprise customers across the province as these customers find ways to capture the 50% of green IT savings represented by PC power management.

Purpose

The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Power Save on their organizations. Forrester's aim is to clearly show all calculations and assumptions used in the analysis. Readers should use this study to better understand, develop, and communicate a business case for investing in Faronics Power Save.

Methodology

Faronics selected Forrester for this project because of its industry expertise in green IT and environmentally responsible computing as well as Forrester's Total Economic Impact™ (TEI) methodology. TEI not only measures costs and cost reduction (areas that are typically accounted for within IT) but also weighs the enabling value of a technology in increasing the effectiveness of overall business processes.

For this study, Forrester employed four fundamental elements of TEI in modeling Power Save:

1. Costs.

2. Benefits to the entire organization.

3. Flexibility.

4. Risk.

Given the increasing sophistication that enterprises have regarding cost analyses related to IT investments, Forrester's TEI methodology delivers value by providing a complete picture and the total economic impact of technology investment decisions. Please see Appendix A for additional information on the TEI methodology.

Approach

Forrester used a five-step approach for this study:

1. Forrester gathered data from existing Forrester research relative to Faronics Power Save and the PC power management software market in general.

2. Forrester interviewed Faronics marketing and sales personnel to fully understand the potential (or intended) value proposition of Power Save.

3. Forrester conducted a series of in-depth interviews with a customer organization currently using Faronics Power Save.

4. Forrester constructed a financial model representative of the interviews. This model can be found in the TEI Framework section below.

Key Findings

Forrester's study yielded a number of key findings:

- **ROI.** Based on the interviews with a Faronics Power Save customer, Forrester constructed a TEI framework for the customer organization and the associated ROI analysis illustrating the financial impact areas. As seen in Table 1, the estimated ROI for the company is 35% with a breakeven point (payback period) of 20 months for this customer's deployment of the product. **Note:** BC Hydro had already made significant improvements in its PC power consumption, like using Energy Star equipment (which can consume up to 50% less power than other computer equipment). Therefore, the ROI shown here represents significant incremental gains on a relatively efficient base level of electricity consumption. Organizations at an earlier stage of green IT maturity could see higher ROI and faster payback.

- **Benefits.** The principal benefit for the organization profiled in this study is the reduction in annual electricity usage of approximately 1 million kilowatt hours (kWh), which the company values at $80,680 per year or $242,040 over three years.

- **Costs.** License costs plus maintenance amounts to $110,600 over the three-year period of this analysis. Pilot, planning, and implementation labor cost was approximately $35,000.

Table 1 illustrates the risk-adjusted cash flow for the organization, based on data obtained during the interviews. Forrester risk-adjusts these values to take into account the potential uncertainty that exists in estimating the costs and benefits of a technology investment. The risk-adjusted value is meant to provide a conservative estimation, incorporating any potential risk factors that may affect the original cost and benefit estimates. For a more in-depth explanation of risk and risk adjustments used in this study, please see the Risk section.

Table 1: BC Hydro ROI, Original and Risk-Adjusted

Summary financial results	Original estimate	Risk-adjusted
ROI	44%	35%
Payback period (months)	18.2	19.9
Total costs (PV)	$138,929	$141,379
Total benefits (PV)	$200,639	$190,607
Total (NPV)	$61,710	$49,228

Source: Forrester Research, Inc.

Disclosures

The reader should be aware of the following:

- The study is commissioned by Faronics and delivered by the Forrester Consulting group.
- Faronics reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings.
- The customer for the interviews was provided by Faronics.
- Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers should use their own estimates within the framework provided in the report to determine the appropriateness of an investment in Faronics Power Save.
- This study is not meant to be used as a competitive product analysis.

PC Power Management

While the data center is often a first target on organizations' green IT and energy efficiency hit list, companies risk leaving significant savings on the table if they overlook their PC environment. Forrester estimates that most companies use as least as much energy -- and waste at least as much -- powering their PC fleets as they do running data centers. To reduce the financial costs and environmental impact of operating the PC environment, firms are turning to PC power management systems and processes. Forrester defines PC power management as:

Actively reducing the energy consumption of operating PCs and monitors by enabling lower power states during periods of inactivity — where the PC and monitor are drawing energy but no useful work is being performed (e.g., nights, weekends, holidays, and workday breaks).

Like many green IT and energy efficiency initiatives, the value of PC power management is far-reaching. Effective PC power management helps companies reach both environmental and financial goals:

> **Environmental: Reduce the carbon footprint of operating PCs.** According to the Climate Savers Computing consortium: "The average desktop PC wastes half of the energy it consumes. This wasted electricity needlessly increases electric bills and contributes to global warming. By turning on a computer's energy-saving features organizations can save more than $60 [per PC] a year in energy costs and reduce annual CO_2 emissions by nearly half a ton."
>
> **Financial: Reduce the energy-related expenses of operating your PCs.** By turning off or powering down PCs during periods of inactivity — such as at night or over the weekend — the ENERGY STAR team at the US Department of Energy estimates that firms can save anywhere from $25 to $75 per PC per year.

Faronics Power Save: Overview

Power Save is a PC power management solution developed by Faronics for Windows and Mac OS X computer systems. The software provides several features that extend a computer's ability to lower its energy consumption without impacting user or IT processes. These features include intelligent inactivity and critical application detection, an enterprise management platform, reporting, Wake-On-LAN, and the ability to vary power management settings based on a number of factors. Faronics Core, the company's enterprise management platform based on Microsoft Management Console (MMC) technology, provides enterprise deployment and management capabilities for Power Save and several of Faronics' other software products.

Nondisruptive PC Power Management

Power Save is designed to look at keyboard and mouse activity plus CPU, hard disk, and network utilization thresholds set by IT administrators so that Power Save will not standby, hibernate, or shut down computers if background jobs such as VPN, remote access, and remote backup are running. IT can also specify critical applications that are exempt from power down if they are running. CPU, hard disk, and network utilization combines with this feature to ensure that systems are not powered down when users do not want them to be. Power Save also supports standby (recommended) and hibernate power modes to ensure that any unsaved data is not lost. Before shutting a computer down, Power Save will save any open documents to ensure that users do not lose their work.

Enterprise Control

Faronics Core provides centralized workstation management capabilities with features such as workstation grouping, dynamic filters, and the ability to prevent users from making unauthorized changes to the workstation power management settings. Workstation groups can be based on user-defined parameters, such as departments, physical locations, and user groups. Core's Active Task feature ensures that configuration changes are applied to unavailable workstations by resending the task when the computer can be reached. The Wake-Without-LAN feature is able to schedule wake-up requests locally on the workstation, thereby eliminating the network communication and bandwidth issues associated with Wake-On-LAN technology.

Flexible Scheduling

Power Save allows for different levels of energy management to be applied on specific days of the week and at different times of the day. Organizations can employ a daytime power policy that employs moderate energy-saving actions, while an evening power policy pursues an aggressive power management strategy. A power policy that is set during patch deployment periods will ensure that no power management takes place during times when computers must remain on. Configuration updates can also be scheduled on a single, daily, weekly, or monthly basis, thereby making it easy for IT administrators to make changes to enterprise PC power management settings.

Verifiable Savings

Power Save generates reports detailed by computer and monitor that show the incremental savings gained through the use of Power Save in both kWH and energy cost; this data can be exported to any other reporting tool for additional analysis.

Power Save's Audit mode provides a baseline measure of the energy being consumed, making it easy to determine the true value of the savings generated when Power Save is enabled.

Analysis

Forrester's multistep approach for evaluating the impact that Power Save can have on an organization includes:

- Interviews with Faronics marketing and sales personnel and executive management.
- In-depth interviews within a customer organization currently using Power Save.
- Construction of a financial framework for the implementation of Power Save based on data and insights from the customer interview.

Interview Highlights

Interviews with the Faronics customer, BC Hydro, uncovered a number of salient insights:

- BC Hydro has a long history of green IT and energy conservation initiatives, including:
    - In 1999, BC Hydro began to examine ways to conserve energy in the face of growing demand for electricity from its IT infrastructure, which at the time accounted for about 3% of the company's total electrical usage.
    - In 2001, BC Hydro placed all of its approximately 6,000 CRT monitors into power management mode using an in-house-developed network login script.
    - In 2004, BC Hydro was one of the first utilities to offer its customers prescriptive incentives for computer power management. In 2008, the utility offered incentives on power management software covering some 65,000 devices, resulting in annual savings of 18 million kWh (277 kWh per year per license), which in turn accounted for about 28% of the entire demand-side management (DSM) prescriptive program energy savings and about 2% of its entire *commercial* DSM programs.
    - In fiscal-year (FY) 2009, the company's Power Smart conservation programs achieved cumulative energy savings of 983 GWh — equivalent to powering 65,700 homes for a year.
- The goals and objectives for implementing Power Save were:
    - To lead by example, demonstrating to utility customers that BC Hydro walks the walk.
    - To track and reduce workstation electricity consumption.
    - To reduce spending on electricity.
- Faronics Power Save software was chosen because:
    - License and maintenance costs were competitive, compared with other vendors.
    - A successful pilot test verified Power Save's ability to integrate successfully within the organization's IT and user environment.

   - The reporting and tracking capabilities would validate the energy and cost savings.

- Of the 8,068 PCs onto which Power Save was deployed, the desktop/laptop mix is approximately 50:50.

- BC Hydro commissioned Accenture Business Services to conduct an IT test report on the compatibility of Faronics Power Save within BC Hydro's network computing environment, while employing a new plug load controller desktop power bar (SmartStrip).

- "We had fewer than 10 complaints after deploying over 7,400 initial Power Save licenses on our network after the pilot test," explained David Rogers, an IT leader in the company's Power Smart program. "The majority of users did not feel impacted in any way from Power Save."

   - Almost all of the complaints were from users who did not understand the benefits of Power Save on the power management settings built into the operating system.

   - Some laptop users complained that each time Power Save went to sleep they would have to unlock their overhead workstation locker bins to wake up the laptop, and some users complained that the 15 minute power management setting for placing their workstations into standby was too short. The IT team responded by resetting the power management threshold from 15 minutes to 30 minutes for all users.

   - A few users complained that there were errors in their sessions after Power Save was deployed, but the IT organization discovered that most were using unapproved software or hardware such as nonstandard keyboards on their computers. Thus, Power Save had the unintended consequence of weeding out users of unapproved software when the Faronics product red-flagged the workstations that would not work properly with Power Save.

   - Significantly more users chose to opt in to using Power Save than opt out, especially among engineering staff, among whom there was some initial resistance to the product prior to rollout.

- On the first day of launch, and to a lesser extent thereafter, email was faster, workstations booted up faster, and applications were more responsive at lunchtime when many users' PCs were not pinging the network, which freed up bandwidth.

TEI Framework

Introduction

From the information provided in the in-depth interviews, Forrester has constructed a TEI framework for other organizations considering implementation of Power Save. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision.

Framework Assumptions

Table 2 lists the discount rate used in the present value (PV) and net present value (NPV) calculations and the time horizon used for the financial modeling.

Table 2: General Assumptions

Ref.	General assumptions	Value
	Discount rate	10%
	Length of analysis	Three years

Source: Forrester Research, Inc.

Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their finance department to determine the most appropriate discount rate to use within their own organizations.

Costs

The cost categories associated with this Power Save implementation are: 1) Faronics software license and maintenance; 2) labor costs for internal staff charged with pilot testing and project planning; and 3) professional service fees for installation of the software. The following are the cost inputs to the financial analysis.

License And Maintenance

The largest cost item in this project was the software license, which amounted to $79,000 for the implementation described in this study, based on 7,900 users and a cost of $10 per seat. This is standard pricing without any discounting or incentives included. Annual maintenance is based on 20% of the license cost, or $15,800 per year beginning in Year 2.

Note: Organizations evaluating or deploying Faronics Power Save should check with their local utility providers regarding availability of specialized energy-efficiency incentive programs that would include Faronics Power Save. Such incentives often cover 100% of the license and maintenance costs, thus completely eliminating this cost factor.

Internal Labor — Implementation

BC Hydro carried out IT lab tests on Power Save to assess its compatibility with its network. It subsequently conducted a pilot test with 70 users to determine which of the company's 600 applications would be affected by Power Save. The results of this pilot confirmed that the company could deploy Power Save on about 85% of its network-based PCs. Only a few older, graphics-intensive applications would not work well with Power Save.

The internal labor for BC Hydro to plan, pilot test, and roll out Power Save required a project manager and three IT technical staff who spent approximately 100 hours each over the course of three months. At an hourly loaded rate of $50, this cost amounts to $20,000 in internal labor cost. The initial actual rollout of Power Save, however, was completed in only a week for 7,000 workstations, of which about 50% were laptops and the remaining 50% were desktop computers.

Professional Services

An implementation of this scale can be faster and more assured with the assistance of professional services from either Faronics or a partner. Three consultants working on-site for three days would generate a cost of about $15,000. Professional services can provide faster and greater cost savings. With professional services involved, implementations typically take less time, so the effective savings begin to accrue sooner. Additionally, professional services can fine-tune the deployment immediately, allowing for more aggressive (larger) savings.

Total Costs

Total initial costs for this implementation are shown in Table 3 below.

Table 3: Total Costs, Non-Risk-Adjusted

Costs	Initial	Year 1	Year 2	Year 3	Total
Software license	$79,000				$79,000
Software maintenance			15,800	15,800	31,600
Implementation labor costs	20,000				20,000
Professional services	15,000				15,000
Total	$114,000		$15,800	$15,800	$145,600

Source: Forrester Research, Inc.

Benefits

> *"BC Hydro is able to claim about 1 GWh per year in new savings in FY 2010 from Faronics Power Save . . . and we have confidence in the reporting capabilities of Faronics Power Save in terms of it being accurate in measurement and estimating savings."* (IT advisor, BC Hydro Power Smart engineering)

The BC Hydro IT technical advisor who was interviewed for this study described the financial and nonfinancial benefits that their organization has gained from the use of Faronics Power Save.

Electricity Cost Savings

After extensive analysis and testing the accuracy of various metering devices against the measurements provided by the Power Save console, BC Hydro determined that the average savings for a workstation are estimated to be between 125 and 150 kWh per year. This is about 50% lower than regular usage without Power Save. Engineers also determined that the power consumption measurements done by Power Save software were within 0.7% of measurements done independently using a Kill A Watt meter and verified again by a Fluke 41 meter. It is especially important to note that this level of savings is achieved on an already-efficient base level of energy consumption in an organization that has made strides toward lower electricity consumption since 2001. All computer monitors are LCDs, compared with much less efficient CRTs. Half of the workstations are laptop computers, while the other half consist of more energy-consuming desktop computers. The average savings are calculated against baseline operations for Energy-Star-rated equipment.

Users of this study must note that the type of organization, its specific equipment in use, and the usage profile of the employees are critical determinants of the potential for savings. BC Hydro studies have shown that compared with its internal reductions of 125 kWh per computer, primary and secondary schools can achieve savings of 250 kWh per user, while college and university campuses can see more than 370 kWh in savings per user. General office environments typically indicate 320 kWh per user, and hospitals can see savings of 465 kWh per year. BC Hydro's own average savings is therefore on the low end of the range but nevertheless presents a positive business case for deployment of Power Save.

The calculation for BC Hydro, shown in Table 4 below, uses an avoided cost of $0.08 per kWh based on its extensive total resource cost allocations, which include the cost and timing of building new generating facilities. Most organizations will use the delivered cost of their electricity. This amount will vary for each user organization based on its local utility charges and the type of energy — coal, hydroelectric, and alternative energy sources — used to generate the local electric power. Typical North American utility electricity rates will range from $0.06 to $0.10 per kWh.

For 8,068 users, estimated savings of 125 kWh per year amounts to more than 1 million kWh or 1 GWh per year.

Carbon Footprint Reduction

BC Hydro does not claim carbon emissions reductions for its energy-savings initiatives, since most of the electricity used by the company is generated by hydroelectric power, rather than from burning fossil fuels.

Many organizations, however, will wish to calculate the reduction in greenhouse gas (GHG) emissions resulting from lower electricity consumption with the implementation of Power Save. Users can consult the many carbon calculators available online or from their local power utility in order to convert reductions in energy usage to reductions in GHG emissions.

On average, electricity generation sources in the US emit 1.34 pounds of CO_2 per kWh.[1] CO_2 emissions per kWh vary greatly by region, depending on the amount of clean energy in the power mix. Using the average of 1.34 pounds, the electricity savings calculated in this study would be equivalent to approximately 600 metric tons (with one metric ton equaling 2,200 pounds) or roughly one-third of the total emissions from the company's PC fleet.

Total Benefits

Table 4 summarizes the key benefit — the estimated annual value of the electricity savings, based on the avoided cost of new power-generating capacity and the average savings in kWh per workstation — experienced by this Faronics customer from implementing Power Save.

Table 4: Estimated Electricity Cost Saving

Ref.	Metric	Calculation	Per period	Year 2	Year 3	Total
A1	Number of users		8,068			
A2	KWh saved per user		125			
A3	KWh saved per year		1,008,500			
A4	Avoided cost per kWh		$0.08			
Ato	Total (original)	A3*A4	$80,680	$80,680	$80,680	$242,040

Source: Forrester Research, Inc.

Risk

Risk is the third component within the TEI model; it is used as a filter to capture the uncertainty surrounding different cost and benefit estimates. If a risk-adjusted ROI still demonstrates a compelling business case, it raises confidence that the investment is likely to succeed because the risks that threaten the project have been taken into consideration and quantified. The risk-adjusted numbers should be taken as realistic expectations, since they represent the expected values considering risk. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates.

For the purpose of this analysis, Forrester risk-adjusts cost and benefit estimates to better reflect the level of uncertainty that exists for each estimate. The TEI model uses a triangular distribution method to calculate risk-adjusted values. To construct the distribution, it is necessary to first estimate the low, most likely, and high values that could occur within the current environment. The risk-adjusted value is the mean of the distribution of those points.

For example, take the case of implementation labor costs. The $20,000 value used in this analysis can be considered the most likely or expected value. The amount of hours required to plan, pilot-test, and roll out a new software product can vary greatly, with a lot of uncertainty prior to completion. This variability represents a risk that is captured as part of this study. Forrester uses a risk factor of 130% on the high end, 100% as the most likely, and 100% on the low end. This has the effect of increasing the cost estimate to take into account the fact that original cost estimates are more likely to be revised upward than downward. Forrester then creates a triangular distribution to reflect the range of expected costs, with 110% as the mean (110% is equal to the sum of 130%, 100%, and 100% divided by three). Forrester applies this mean to the most likely estimate, $20,000, to arrive at a risk-adjusted value of $22,000.

The following *general* management and process risk was considered in this study:

- BC Hydro considered it essential to carry out a pilot to deploy Power Save on a limited number of user workstation computers before launching the program across the entire network computer base.

The following risk specific to Power Save was considered in this study:

- There was initial concern about the technical risk associated with Faronics Power Save having conflicts with existing BC Hydro application software. However, the pilot test proved that only a few applications had potential technical risk conflicts with Power Save and that only about 15% of all workstation computers needed to be removed from the Power Save deployment because of these conflict risks.

Risk adjustments for benefits reduce the original benefits estimates. For example, Forrester applies a risk range of 80% on the low end of the estimate, 100% on the most likely, and 105% on the high end for electricity savings. This has the effect of reducing the benefit estimate by 5%, equal to 95% of the original value.

Some cost figures are not risk-adjusted. License and maintenance costs, for example, can be determined with a high degree of certainty (and contractually set) before a project is started. License and maintenance costs presented in this study are not risk-adjusted for this reason.

The following table shows the values used to adjust for uncertainty in cost and benefit estimates. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Table 5: Risk Adjustment Factors

Risk adjustment factors	Low	Most likely	High	Mean
Costs				
Implementation labor costs	100%	100%	130%	110%
Professional fees	100%	100%	110%	103%
Software license and maintenance	100%	100%	100%	100%
Benefits				
Electricity cost savings	80%	100%	105%	95%

Source: Forrester Research, Inc.

Flexibility

Flexibility, as defined in Forrester's TEI methodology, is an investment in additional capacity or capability today that can be turned into future business benefits at some additional cost in the future. This provides an organization with an option, or the ability to engage in specific future initiatives — but not the obligation to do so. In multiple scenarios, a customer might choose to implement Power Save within a certain scope of activities and business areas and later discover additional value that can be realized by expanding usage and capturing additional value. The flexibility component of TEI can capture that value, using the industry-standard Black-Scholes option pricing model.

While data for calculating the monetary value of a flexibility option was not available at the time of publication, the customer identified several areas where additional value could be exploited in future, including:

- Optimizing computer power management using reporting and metrics from Power Save, such as fine-tuning several settings for incrementally greater power saving or learning why some end users opt out and then addressing those issues in order to gain more savings.

- Expanding usage of plug load controlled by current sensing power bar switches.

- Using the computer power management software to control desktop task lighting and save on power costs by using lower-power LED lighting, which is intelligently switched off when users leave their work areas.

- Using Faronics' reporting capabilities to analyze desk occupancy patterns and help optimize space requirements, perhaps expanding hoteling space and reducing the number of permanent desks.

- Controlling lights and plug loads per workstation, using Power Save software in combination with plug load-controlled current-sensing power bar switches and overhead light dimmer switches (being much less costly to use software instead of sensors to accomplish these tasks).

Finally, much of the learning from the Faronics Power Save deployment could be valuable in a future initiative to deploy software that can control and monitor building electrical loads in addition to computers. BC Hydro has started preliminary discussions with Faronics and other software vendors to explore this type of opportunity, for the company as well as for its utility customers.

TEI Framework: Summary

Considering the financial framework constructed above, the results of the costs, benefits, and risk sections using the representative numbers can be used to determine an ROI, NPV, and payback period. Tables 1 and 8 show the consolidation of the numbers for this customer organization.

Tables 6 and 7 below show the risk-adjusted values, applying the risk-adjustment method indicated in the Risks section and the values from Table 5 to the numbers in Tables 3 and 4.

Table 6: Total Costs — Risk-Adjusted

Costs	Initial	Year 1	Year 2	Year 3	Total	Present value
Software license	79,000				79,000	79,000
Software maintenance			15,800	15,800	31,600	
Implementation labor costs	22,000				22,000	22,000
Professional services	15,450				15,450	15,450
Total	$116,450		$15,800	$15,800	$148,050	$116,450

Source: Forrester Research, Inc.

Table 7: Total Estimated Benefits — Risk-Adjusted

Benefits	Initial	Year 1	Year 2	Year 3	Total	Present value
Electricity cost savings		79,000	79,000	79,000	237,000	196,461
Total		$79,000	$79,000	$79,000	$237,000	$196,461

Source: Forrester Research, Inc.

It is important to note that values used throughout the TEI framework are based on in-depth interviews with one organization. Forrester makes no assumptions as to the potential return that other organizations will receive within their own environment. Forrester strongly advises that readers use their own estimates within the framework provided in this study to determine the expected financial impact of implementing Power Save.

Study Conclusions

Forrester's in-depth interviews with a Power Save's customer yielded several important observations:

- Based on information collected in interviews with a current Power Save customer, Forrester found that organizations can realize benefits in the form of lower total cost for electricity due to power savings management for computer workstations.

- Several factors contribute to differences in ROI that will be realized by different Faronics Power Save customers, including the delivered price of electricity, incentives offered from the local utility against the price of the software, the type and mix of equipment in use, and the overall usage patterns within the organization.

The financial analysis provided in this study illustrates the potential for organizations to evaluate the value proposition of Faronics Power Save software. Based on information collected from in-depth customer interviews, Forrester calculated a three-year risk-adjusted ROI of 35% for the user organization with a payback period of 20 months. All final estimates are risk-adjusted to incorporate potential uncertainty in the calculation of costs and benefits.

Based on these findings, companies looking to implement Power Save can see electric power cost savings. Using the TEI framework, many companies may find the potential for a compelling business case to make such an investment.

Table 8: Company ROI, Original And Risk-Adjusted Estimates

Summary financial results	Original estimate	Risk-adjusted
ROI	44%	35%
Payback period (years)	18.2	19.9
Total costs (PV)	$138,929	$141,379
Total benefits (PV)	$200,639	$190,607
Total (NPV)	$61,710	$49,228

Source: Forrester Research, Inc.

Appendix A: Total Economic Impact™ Overview

Total Economic Impact (TEI) is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, risks, and flexibility. For the purpose of this analysis, the impact of flexibility was not quantified.

Benefits

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

Costs

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the forms of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the investment. All costs must be tied to the benefits that are created.

Risk

Risk measures the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: the likelihood that the cost and benefit estimates will meet the original projections and the likelihood that the estimates will be measured and tracked over time. TEI applies a probability density function known as "triangular distribution" to the values entered. At a minimum, three values are calculated to estimate the underlying range around each cost and benefit.

Flexibility

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point in time. However, having the ability to capture that benefit has a present value that can be estimated. The flexibility component of TEI captures that value.

Appendix B: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Although the Federal Reserve Bank sets a discount rate, companies often set a discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their organization to determine the most appropriate discount rate to use in their own environment.

Net present value (NPV): The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.

Present value (PV): The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

Payback period: The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Return on investment (ROI): A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

A Note On Cash Flow Tables

The following is a note on the cash flow tables used in this study (see the Example Table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in Years 1 through 3 are discounted using the discount rate shown in Table 2 at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations are not calculated until the summary tables and are the sum of the initial investment and the discounted cash flows in each year.

Example Table

Ref.	Category	Calculation	Initial cost	Year 1	Year 2	Year 3	Total

Source: Forrester Research, Inc.

Appendix C: About The Project Manager

Jeffrey North
Principal Consultant

Jeffrey North is a principal consultant with Forrester's TEI consulting practice. The TEI methodology focuses on measuring and communicating the value of IT and business decisions and solutions, as well as providing an ROI business case based on the costs, benefits, flexibility, and risk of investments.

Jeff came to Forrester with consulting and operating experience, notably working with fast-growth companies. He was a founding member of the digital strategy practice at Cambridge Technology Partners, where he specialized in business value justification of technology investments and customer advocacy. As a director in the international and catalog business units at Staples, Jeff built and managed metrics and reporting programs in North America and Europe as the company experienced significant growth. He has also consulted in a business-IT capacity to retailers and life sciences companies.

Jeff holds a B.A. from St. Lawrence University and an M.B.A. with a concentration in international management and finance from the Thunderbird School of Global Management.

Appendix D: Supplemental Material

Related Forrester Research

"Market Overview: The Advent Of Enterprise Carbon And Energy Management Systems," Forrester Research, Inc., November 17, 2009

"The Value Of A Green IT Maturity Assessment," Forrester Research, Inc., October 20, 2009

"PC Power Management Suites Help Overcome Barriers To Maximize Financial Savings," Forrester Research, Inc., August 7, 2009

Appendix E: Endnotes

[1] Source: "Updated State-level Greenhouse Gas Emission Coefficients for Electricity Generation 1998-2000," Energy Information Administration, April 2002 (http://www.eia.doe.gov/pub/oiaf/1605/cdrom/pdf/e-supdoc.pdf).