



CAPITAL PROJECT PROPOSAL - Business Case -

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PROJECT IDENTIFICATION

01	Project Number:	ITI94
02	Name of Project:	Desktop Modernization
03	Asset Category:	Information Technology [IT]
04	Portfolio:	[IT] Information Technology
05	Sub-Portfolio:	
06	Discretionary or Non-Discretionary Project?	Discretionary
06A	<i>If Non-Discretionary, please provide explanation:</i>	
07	Approval for:	Ongoing Program
08	Investment Type:	Capital Replacement
09	Emergency?	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
09A	<i>If "YES", please provide explanation:</i>	

KEY PROJECT DATES

10	Business Case Submission Date or Revision Date:	10/19/2011, 8/7/2012
11	Planned Start Date:	02/01/2012
12	Note Regarding Planned Start Date:	Other
12A	<i>If "Other", please provide explanation:</i> Based on work being performed, the cost model changed to reflect more capital verses expense as originally projected.	
13	Planned Completion Date:	06/30/2014

PROJECT INVESTMENT SUMMARY TABLE

HELP

The box below is where you will paste in the "Project Investment Summary" table from Excel [refer to Help instructions above]

<i>Dollars in Thousands</i>	Prior Years	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	Future Years	Total Project
Capital Investment								
Direct Costs	-	(5,268)	(2,674)	(1,157)	-	-	-	(9,099)
Overheads	-	-	-	-	-	-	-	-
AFUDC	-	(115)	(292)	(142)	-	-	-	(549)
Total Capital	-	(5,383)	(2,967)	(1,299)	-	-	-	(9,648)
Project Expense	(1,680)	(774)	(507)	(29)	-	-	-	(2,990)
Total Project Costs	(1,680)	(6,157)	(3,474)	(1,328)	-	-	-	(12,638)
Recommended Alternative								
NPV in 2012 Dollars		(16,353)					(22,390)	
Discount rate sensitivity		(18,171)					(1.00)	
Net benefit to cost ratio		(1.29)					-	
Economic benefit/cost		(0.29)						
Discount rate - standard		10.5%						
Discount rate - sensitivity		5.0%						
Next Best Alternative								
NPV in 2012 Dollars							(22,390)	
Net benefit to cost ratio							(1.00)	
Economic benefit/cost							-	



CAPITAL PROJECT PROPOSAL - Business Case -

PROJECT SPECIFICS			
14	In Start of Year Budget?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
14A	<i>If "YES", please provide the following:</i>	Dollar Amount: \$ 5.268M (capital allocation for FY12 only) In-Service Date: 3/30/2014	
15	In Asset Plan?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
15A	<i>If "YES", please provide the following:</i>	Dollar Amount: \$ In-Service Date: 3/30/2014	
16	Has this Asset been designated " critical " in the business unit asset strategy?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
17	Is this a stage-gate project?	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
17A	<i>If "YES", please provide explanation:</i>		
18	Other requirements/approvals needed for project?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
18A	<i>If "YES", please provide explanation:</i>	APSC, ACPRT and CAB	

BUSINESS CASE SYNOPSIS	HELP
<p><i>This section is an overview of the project proposal. It should be completed after all the other sections in the Business Case have been completed</i></p> <p>The Desktop Modernization Project is chartered with deploying Microsoft Windows 7 Enterprise Edition and Microsoft Office 2010 Professional including OneNote and Internet Explorer 8 replacing the current Window XP Operating System and Office 2003/2007 deployment. Strategically, the project will deliver the "Image" base image applications as a "Service" instead of installed locally on each individual machine.</p> <p>This project will introduce virtual desktop architecture and thin-client computing into the office automation technology offerings at BPA, refresh the end-user client devices to meet current standards, and implement the latest desktop operating system (Windows 7) and desktop productivity suite (Office 2010). The new technology will be accompanied by software tools processes that leverage centralization and automation to ease the burden of both end-user client provisioning and application delivery, and that otherwise enhance office automation operations and administration. Although Grid Operations and Critical Business Systems are not directly included in this project, they can take advantage of the products produced.</p> <p>The objectives of the project are to increase efficiency and reliability, reduce the number of client devices and software titles and the corresponding cost of operations, meet government computing regulations, reduce the total cost of ownership of office automation, and contribute to both COOP and green initiatives. In arriving at a solution, the project team considered a scaled down version of the project, as well as simply continuing with business as usual. The more robust solution recommended best meets the key decision criteria, which include least life-cycle costs, licensing compliance, and the desire for "greener" computing. Additionally, the project addresses the current risks of unplanned client downtime from client devices that have not been replaced in several years, are past their expected lifecycles, and are under increasing risk of failure.</p> <p>The financial analysis shows that the recommended alternative is clearly less costly than the scaled down next best alternative, while both alternatives are less costly than the status quo. This project is not only an incremental investment, it is also new way of managing investment in the office automation infrastructure. Rather than just continue with in-kind replacements, which still have</p>	<p style="text-align: center;">19</p>



CAPITAL PROJECT PROPOSAL - *Business Case* -

PROJECT SPECIFICS

significant value, this project directs new investment into modern hardware and system tools.

During implementation, the project will face a number of risks including insufficient resources and a challenging transition to the new environment, in particular application compatibility with the new operating system, and file compatibility with the new Office suite. These risks are well mitigated in the project plan, and several other projects at the agency are identifying dependencies on the new operating system and Office suite. Targets have been established for project implementation cost, schedule and scope. A series of metrics and baseline measurements have been established to allow a clear determination of whether the project delivers the intended improvements and benefits, once it is complete.

APPROVALS

HELP

20 *Please note that **ALL FIELDS** must be completed below!*

Asset Accounting Capitalization Review:

Date Approved:

Scott Baird

11/15/2011

This form is completed by:

Date Submitted:

Jim Cockerham

1/25/2012, 8/7/2012

Name of Project Sponsor/Title:

Date Approved:

Paul Dickson

IT Service Delivery Manager

Project Sponsor

Title

Asset Category Approval/Title:

Date Approved:

Jeff DiGenova

Deputy CIO

Approval

Title



CAPITAL PROJECT PROPOSAL

- Business Case -

NARRATIVE

21 Project Context/Background:

HELP

In the context of this project, the Office Automation Environment consists of the user end-point computer hardware devices, the operating systems that enable those devices, and the software applications that execute on those devices, as well as the computer hardware and software used by the information technology support organizations to manage that environment. It includes those systems that connect to the BPA Administrative Network, but not Grid Operations nor Critical Business Systems specific computers. In short, the focus is on BPA's desktop and laptop computers in the Administrative Network.

The current operating system deployed on these devices at BPA is Microsoft Windows XP with Service Pack 3. This operating system was published in 2001 and has been in service at BPA since 2003. Although Microsoft released another version of its operating system, Microsoft Vista, that version was not adopted at BPA due to many reported problems with the software and an inability to derive enough benefit to the Agency to upgrade. As part of the product lifecycle, Microsoft ended mainstream support for Windows XP in early 2009, which means there will be no more service packs, design changes or new features. Although Windows XP extended support doesn't end until 2014, it only includes security updates and paid support. Corrections that aren't related to security require that a separate Extended Hotfix Support Agreement be purchased, or pay-per-fix fees be paid, both of which are typically expensive, running well into six figures annually.

Due to its age, Microsoft Windows XP doesn't contain the usability features or the level of security provided by a more modern operating system. And the older it gets, the less compatible it will be with new software applications such as those being developed in the Rev projects for BPA.

Although the asset plans for the Office Automation desktop and laptop computers specify a four to five year lifecycle, the hardware refresh for these devices has been postponed for each of the past four years due to BPA budget constraints and priorities. This has led to a situation where approximately 85% of the deployed desktops and laptops will not meet the new hardware standards proposed through the office of the CTO, nor will they likely adequately execute the planned new eGIS, ProjectWise, or LORA applications, among others. In addition, the age of this hardware has caused an increase in failure frequency and subsequent increase in end-user downtime.

The Microsoft Office suite is in much the same state as the Windows XP operating system. The current version widely deployed at BPA is the Microsoft Office Professional 2003 suite (about 125 copies of Office Professional 2007 were installed as part of a test pilot that determined there was not enough benefit to BPA at that time to proceed with a complete roll-out). Microsoft ended mainstream support for the 2003 version of the software in April 2009, which means there will be no more service packs, design changes or new features, but only security updates and paid support. This extended support will end in 2014, at the same time as Windows XP.

Although some automation is employed in the current asset build and configuration process, it is largely a manual process, especially when adding software, patches, and migrating client files and settings. Management of the images and configurations is cumbersome and labor intensive. In addition, managing the deployed software portfolio and versions on each asset after deployment is labor intensive and mostly manual in nature (some software updates are distributed in an automated fashion through Windows Software Update Services and Systems Management Server). Advances in operating systems and management tools are now available to reduce deployment time, recovery time, and end-user downtime by using appropriate automation techniques and simpler, more accurate version control.



CAPITAL PROJECT PROPOSAL - Business Case -

NARRATIVE		
22	Investment Objectives:	HELP
<p>A. PRIMARY Long-Term Outcome: (IT) Reliability, maintenance and availability Standards.</p> <p>B. SECONDARY Long-Term Outcome: (IT) Agency Business Requirements.</p> <p>C. Please describe investment objectives below:</p> <p>The objectives of the project are to gain efficiencies through leveraging automation, standards, and centralization capabilities of current technology to:</p> <ul style="list-style-type: none"> - Replace 90% of end-user operating system and office productivity software that has already been reduced to minimal vendor support and will soon reach end of life. - Rationalize the installed and supported base of PC applications to reach a sustained level of 90% accuracy. - Rationalize the inventory of end-user client devices to reduce the number of units by 15%, with a commensurate reduction in software license obligations. - Reduce labor commitments for orchestrating base software updates by 10%. - Improve reliability by reducing unplanned end-user device downtime by 15%. - Reduce time to deliver new systems by 25% through automation of deployment. - Increase the efficiency of application delivery as measured by Microsoft Operations Framework (MOF) maturity ratings. - Improve BPA position on Green IT by reducing power consumption by 56,000 watts. - Provide additional alternatives to COOP initiatives that increase capabilities for faster recovery time. - Satisfy government regulation by meeting the United States Government Configuration Baseline requirements for PC operating system settings. - IT Software Asset Management system implementation to track and monitor Software Titles install, licensing, tracking, reclamation and distribution self-service. This will replace aged, outdated and essentially manual process, procedures and tracking currently being used. 		
23	Key Decision Criteria: (Type up to a <u>maximum</u> of FIVE (5) entries for each category)	HELP
Business/Finance:		
<ul style="list-style-type: none"> ▶ The selected alternative results in least Total Cost of Ownership for the Office Automation infrastructure, while maximizing flexibility. ▶ The selected alternative results in a reduction of the number of installed units and software licenses required. ▶ The selected alternative increases end-user client device availability and reliability. ▶ The selected alternative results in a reduction of the number of PC software titles to maintain. ▶ 		
Legal/Regulatory:		
<ul style="list-style-type: none"> ▶ The selected alternative increases compliance with software licensing agreements. ▶ The selected alternative reduces the risk of unmanaged electronic data storage for e-Discovery. ▶ ▶ ▶ 		



CAPITAL PROJECT PROPOSAL

- *Business Case* -

NARRATIVE

Environmental:

- ▶ The selected alternative results in lower power consumption and lower cooling demands
- ▶ The selected alternative results in lower noise levels in the workspace.
- ▶
- ▶
- ▶

Public Interest:

- ▶ The selected alternative increases operational reliability to avoid damage to BPA's reputation.
- ▶ The selected alternative keeps BPA abreast with adoption of the technology by the general public, easing data exchange and interoperability.
- ▶
- ▶
- ▶

BPA's People and Processes:

- ▶ The selected alternative includes a training program for both support personnel and end-user clients.
- ▶ The selected alternative includes design and implementation of new processes and procedures for office automation service delivery, in conjunction with process improvement initiatives.
- ▶ The selected alternative will result in new data storage policies and increased awareness of those policies. For Zero client VDI users, the elimination of a local C: Drive will change the usage of shared storage.
- ▶
- ▶

Other Factors:

- ▶ The selected alternative adheres to standards published by the office of the CTO.
- ▶ The CTO has chartered the project with defining the standard infrastructure for VDI going forward.
- ▶ This project has established the desktop standards to Laptop, Desktop and Zero-Client computing devices.
- ▶
- ▶

24

Describe the proposed investment and the alternatives considered:

HELP

Proposed Investment:

The DMP Project is going to deploy Windows7, Office2010, 2,500 thin clients, 3,000 thick clients. The VDI Infrastructure and capital costs associated with VDI is \$1.078M for Direct Internal labor, \$360K for Services Contract, \$3.276M for Servers, Software and Materials (\$125K for Software Asset Management Software, \$1.05 Servers , \$1.355 Software purchase and upgrade, \$400K for Storage)

This project consolidates two distinct normal IT lifecycle activities, and seeks to leverage current technologies to realize efficiencies in office automation service delivery, capabilities, and maintenance support processes. The two lifecycle activities are: 1) replacement of the bundled base software environment for client end-users (primarily the operating system, Office suite, and Internet Explorer); and 2) replacement of the underlying end-user client hardware devices to both ensure compatibility with the base software bundle as well as emerging software from other BPA projects,



CAPITAL PROJECT PROPOSAL - Business Case -

NARRATIVE

and reduce hardware failures due to aging equipment. The proposed investment includes several efforts designed to culminate in the successful delivery of the objectives:

- Development of a streamlined set of standard hardware and software configurations that meet the CTO's strategic architecture specifications, a set of employee roles with requirements related to hardware and software, and a map of the configurations to the roles. This information will be compared to current inventories to establish the final make-up and quantity of end-user client device procurement. "Thick client" estimations are expected to be around 3,000. And VDI targets are 2,500.

- Development of a base software image that meets USGCB regulatory requirements and contains at a minimum Microsoft Windows 7 Enterprise and Microsoft Office 2010. Use of these versions of software also require the use of an automated licensing system.

- Development of various deployment methods that meet the requirements of the standard configurations and roles developed above:

- Deployment of the base image plus role-based software to fully independent client devices by leveraging System Center Configuration Manager (SCCM) and Microsoft Deployment Toolkit (MDT), using the network and/or removable media as the transport.

- Deployment of the base image plus role-based software to thin-client devices by presenting virtual desktops and virtual applications via the Citrix server-based infrastructure. This is estimated to be 2,500 thin-client devices.

- Provide analysis and mitigation for application compatibility issues that may arise from existing applications attempting to execute in the new operating system, or Office file failures (typically macros) in upgrading from Office 2003 to Office 2010. The Application Compatibility Tool (ACT) will be used for initial analysis, and various mitigations will be employed such as installing non-virtualizable applications directly on the end-user device, encapsulating applications to run in a Windows XP virtual environment either directly on the end-user device (Microsoft Enterprise Desktop Virtualization - MED-V, or XP-Mode in Windows 7), and application virtualization from the Citrix server-base infrastructure (App-V or XenApp).

- Provide face-to-face training as well as various self-training resources to both support personnel and end-user clients, for new Windows 7 features, new Office 2010 features, new hardware features, and new policies.

Since this project will impact nearly every employee and contractor at BPA, it is imperative that all of the above efforts be presented, discussed, and negotiated with end-user clients, keeping at the forefront the idea of meeting their needs with least total cost of ownership to the agency with maximized flexibility.

The project will utilize Microsoft Professional Services to assist in at least three specific efforts. The first is the development of the standard base Windows 7 image to meet USGCB requirements and teaching BPA staff how to utilize SCCM and MDT for image deployment and configuration management, as well as knowledge transfer on best approaches to application compatibility mitigation. The second is the design and implementation of the Virtual Desktop Infrastructure to provide a robust virtual environment for the use of thin clients and application virtualization where it fits best. And last is the training of support staff on Windows 7 and Office 2010.

An agency employee project team will be required to support the project. It is estimated that approximately six FTEs will need to be dedicated full-time to the project, while a considerably larger



CAPITAL PROJECT PROPOSAL - *Business Case* -

NARRATIVE

number of subject matter experts will be needed for targeted tasks throughout the life of the project. The FTEs will be responsible for overall project management as well as process design, policy creation training organization, and system testing and quality assurance.

This alternative produces the largest productivity gains and eventual decrease in labor required to effectively manage the office automation environment, although productivity typically dips for a short period as employees learn new systems and processes. It reduces power consumption overall, and leads to lower total cost of ownership.

Next best alternative:

The next best alternative is to proceed with the refresh of end-user client devices and replacement of the operating system and Office suite, without implementing a virtual desktop infrastructure. This would occur on approximately the same schedule, however several of the methods of application compatibility mitigation would be unavailable, reducing the success of that effort, and extending the time needed for migration to the new environment. This effort would be to replace approximately 5,500 laptop and desktops as expense only effort. This approach would nearly eliminate the gains achieved in productivity expected through centralized management of the PC environment through the virtual infrastructure. Delivery of applications to multiple end-user client devices would remain largely manual and labor intensive as well as the power consumption reduction of thin clients would not be realized.

The value of this alternative is in lower initial capital investment requirement for the virtual desktop infrastructure, and lower organizational change management concerns such as resistance to using new application delivery mechanisms. Although it still addresses the need to reduce outage risk by replacing end-of-life equipment and software, it does not deliver the lower life cycle benefits, availability improvements, nor "green" improvements.

Status Quo:

A status quo case was also considered. Since the agency has foregone refreshing the office automation hardware for several years, the failure rate has climbed to the point that break/fix replacements will eventually replace the entire existing base within a few years. While it is possible to continue under this approach, it is uncontrolled and is predicated on hardware failure, which introduces unplanned and longer outages for end-user clients. It also does not address the requirements of several new projects underway at the agency that require Windows 7 and Office 2010, nor the total loss of support for these products in 2014. It produces none of the benefits and subjects the agency's office automation infrastructure to increasing pressure and risk. This approach results in the highest total cost of ownership of all the alternatives. **This approach is not really a viable option because it exposes the agency to sever security vulnerabilities on March 9, 2014 when security patches for Windows XP are no longer supplied by Microsoft. Unsupported and unpatched environments are vulnerable to security risks as well as out of compliance with NIST and USGCB requirements and mandates. This will result in an officially recognized control failure by an internal or external audit body, leading to suspension of certifications, and/or public notification of the organization's inability to maintain its systems and customer information. It will place the entire IT desktop infrastructure for the entire agency at considerable risk.**



CAPITAL PROJECT PROPOSAL - *Business Case* -

NARRATIVE		
25	Risks Addressed by this Project:	HELP
<p>This project will influence BPA's posture in relation to several of the Top Enterprise Risks for 2010:</p> <ul style="list-style-type: none"> - Increasing regulatory burdens – costs of compliance and/or consequences of being found to be out of compliance. - Inadequate talent for achieving BPA's strategic objectives. - Failure to align IT strategy and internal business client strategies. - Inadequate business continuity preparedness. <p>This project also aligns with strategic objectives in the Agency Strategy Map for 2010-2016:</p> <ul style="list-style-type: none"> - Technology Innovation (I5) - Systems and Processes (I1) - Talent and Development (P2) <p>Risk: Risk that the agency's failure to maintain adequate compliance with licensing agreements leads to legal rulings or fines, which results in reputational and financial damage to BPA. Likelihood: Possible - could occur at any time, although unpredictable. Consequence: Moderate - First occurrences usually lead to a true-up exercise, where BPA would be required to purchase licenses up to the level it is actually using. Multiple infractions could lead to fines or litigation ranging to multiple thousands of dollars, depending on the severity.</p> <p>Risk: Risk that agency personnel will fall behind constituents in utilizing more modern office productivity software and impact the ability to effectively exchange information. Likelihood: Likely - Gartner and Forrester reports indicate industry adoption of Windows 7 and Office 2010 increasing rapidly between 2010 and 2011. Consequence: Moderate - Productivity gains and performance increases expected from the base operating environments would not be realized, and data exchange would be slower and less effective.</p> <p>Risk: Risk that emerging software solutions developed or selected for specific strategic business projects would be at odds with current operating system and Office suite products, leading to multiple non-standard environments and increased cost of support. Likelihood: Likely - several business projects have identified Office 2010 as a requirement (e.g. LORA). Consequence: Moderate - Additional staffing would be required to maintain multiple environments at an acceptable level, up to three FTE at approximately \$450,000 per year.</p> <p>Risk: Risk that the agency would be unable to return services to operation within accepted time periods in case of COOP events. Likelihood: Possible - could occur at any time, although unpredictable. Consequence: Depending on the severity of the event, the agency would be exposed to loss of reputation, possible failure to meet regulatory obligations, and loss of potential revenue.</p>		
26	Financial Analysis:	HELP
Describe the assumptions for capital costs:		



CAPITAL PROJECT PROPOSAL

- Business Case -

NARRATIVE

\$1.078M for Direct Internal labor, \$360K for Services Contract, \$3.276M for Servers, Software and Materials (\$125K for Software Asset Management Software, \$1.05 Servers , \$1.355 Software purchase and upgrade, \$400K for Storage)

The capital cost estimates were developed by the project team based on the best information available:

- Server hardware costs are estimated on vendor recommendations and industry successes that describe capacity for the server-based infrastructure required to support virtual desktops: 2,500 clients (target) at 50 clients per server is 22 host servers, plus two management servers.
- Personnel resources were priced at an average annual rate of \$150,000.
- The purchase cost of the thin-client devices can be capitalized since they bring a new technology to the agency.

Describe the assumptions for non-recurring project expense(s):

Lifecycle labor is reduced 25% (from 8 hrs to 6 hrs) per system though process efficiencies and new automation.

Lifecycle labor for thin client devices is significantly lower after initial distribution, down to 2 hrs per system.

Numbers of desktop equipment as reported through Sunflower and SCCM are accurate to within 2%.

Target mix for rich clients of 80% desktop and 20% laptop will satisfy client requirements. However, existing inventories will be consumed before desired ratio will be achieved.

Describe the assumptions for incremental benefits:

10% labor savings for centralizing application delivery through virtual infrastructure will be realized. This is primarily ease of software updates and new application distributions.

Power savings for thin client devices as reported by Forrester are accurate.

Software licenses on the 620 machines targeted for removal without replacement are primarily titles on the Microsoft Enterprise Agreement.

Describe the assumptions for incremental costs:

The rate of \$50 per device for IT disposal of rich clients is representative of average industry costs, and the same for \$25 per device for IT disposal of thin clients. The estimates are based on list pricing from Dell Computer.

NPV of the recommended alternative:

\$ (16,353,000)



CAPITAL PROJECT PROPOSAL - Business Case -

NARRATIVE	
NPV of the next best alternative:	\$ (22,390,000)
Please discuss the NPV results:	
<p>The NPV results for all options are negative since providing computer infrastructure and tools is a basic business investment that is recovered through rates revenues, and the positive business value of having information technology equipment in order to conduct business more efficiently is assumed to greatly outweigh the investment (having a computer that works: priceless!). It is evident that the lifecycle costs can be reduced by selecting the preferred alternative, and in fact, the extent that thin clients are successfully accepted and deployed can result in additional reductions in the future.</p> <p>Note that although this project actually ends in 2014, the project costs are extended out through 2017 to show the relative costs of the alternatives. Other projects with funding would have to be undertaken in the future to refresh equipment.</p>	
Discuss the Sensitivity Analysis and Results:	
N/A	
27	Project execution risks and management controls:
<div style="text-align: right; margin-bottom: 10px;">HELP</div> <p>During implementation, the project faces the following key execution risks:</p> <p>Risk: Risk that applications will be found at the agency that will not properly execute, or are not certified by the software vendor, on the Windows 7 operating system. Likelihood: Certain - With a few thousand unique software applications installed on the Windows XP office automation systems, it is expected that some are not compatible with Windows 7. Consequence: Moderate - The number of these applications found in most Windows 7 migrations averages around 10%. Cost of upgrade for Win7 incompatibility is an expense item. Mitigation: The agency's Quality Control staff will be trained by Microsoft experts in the use of the Application Compatibility Toolkit, which is used to discover and quantify problem applications. They will also be trained in the techniques used to "shim" applications to enable them to execute properly under Windows 7. An applications compatibility lab will be established in which to conduct this work. In addition, several other methods will be employed to manage problem applications: rationalization with the end-user clients to verify that the application is still required, upgrading of the application if a Windows 7 version is available, Microsoft Enterprise Desktop Virtualization and Windows 7 XP mode to allow execution on local devices, XenApp or AppV to allow virtual execution on a server host, presentation of the application from the legacy Citrix environment.</p> <p>Risk: Risk that documents created in previous versions of the Microsoft Office suite will be incompatible with Office 2010. Likelihood: Certain - BPA has a large population of old documents that remain on-line and in use, and the use of macros in Word and Excel complicate the compatibility. Consequence: Moderate - Although the percentage of truly incompatible documents is expected to be low, the importance to the agency business of specific ones such as E-forms, power scheduling spreadsheets, and transmission planning spreadsheets is high.</p>	



CAPITAL PROJECT PROPOSAL - Business Case -

NARRATIVE

Mitigation: The agency's Quality Control staff will be trained by Microsoft experts in the use of Office Migration Planning Tools, which are used to discover and evaluate Office file migration compatibility problems. They will also be trained in the techniques to convert file formats. The applications compatibility lab will be used to conduct this work, including early file system scans to locate potential file issues.

Risk: Risk that new technologies will not be embraced by agency employees resulting in lower or eliminated expected cost savings.

Likelihood: Likely - Resistance to change is expected in any technology replacement, and may be slightly higher at BPA due to age demographics.

Consequence: Minor - Refusal to accept the Windows 7 and Office 2010 products will only delay the benefits of changing the operating system and productivity suite since the current software will eventually be unsupported and untenable (this is a matter of when, not if). Refusal to accept thin-client and virtual technology will only incrementally reduce expected cost savings, as early discussions with clients have produced a relatively even distribution of enthusiasm, non-committal, and skepticism.

Mitigation: The project will obtain the services of internal organizational change management subject matter experts to assist with ADKAR activities, develop and present a training strategy, and deploy pilot groups to prove the technologies and gain end-user client acceptance and support.

28	Recommended Targets & Thresholds for PBVIEWS:	HELP
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Measure Description: PROGRAM COST

Progress Indicators (PI): GREEN: Total direct capital cost is forecast to be \$9.7 million or less

YELLOW:

RED: Total direct capital cost is over \$9.7 million

End of Project Target: GREEN: Total direct capital cost is less than \$9.7 million

RED: Total direct capital cost is over \$9.7 million

Measure Owner:

Point of Contact:

Subject Matter Expert:

PBVIEWS Entry:

Measure Description: PROJECT SCHEDULE

Progress Indicators (PI): GREEN: Project is to be in service by 03/31/2014

YELLOW: Project is forecast to be in service between 4/01/2014 and 7/31/2014

RED: Project is forecast to be in service after 7/31/2014

End of Project Target: GREEN: Project is forecast to be in service before 03/31/2014

RED: Project is forecast to be in service after 3/31/2014



CAPITAL PROJECT PROPOSAL - Business Case -

NARRATIVE

Measure Owner:
Point of Contact:
Subject Matter Expert:
PBIEWS Entry:

Measure Description: PROJECT / PROGRAM SCOPE OR CAPABILITY

Progress Indicators (PI): **GREEN:** Project is to have 2,500 placed in service

YELLOW: Project is 90% or 2,250 placed in service

RED: Less than 2,250 placed in service

End of Project Target: **GREEN:** Project has 2,500 placed in service

RED: Less than 2,250 placed in service

Measure Owner:
Point of Contact:
Subject Matter Expert:
PBIEWS Entry:

Measure Description: OTHER PERFORMANCE MEASURE(S)

Progress Indicators (PI): **GREEN:**

YELLOW:

RED:

End of Project Target: **GREEN:**

RED:

Measure Owner:
Point of Contact:
Subject Matter Expert:
PBIEWS Entry:



CAPITAL PROJECT PROPOSAL - Business Case -

29	What are the appropriate metrics to judge the success of the investment once it is placed in service?	HELP
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ID #	Benefit Description	Metric	Owner	Baseline (current)	Target (goal)	Comments
1	Save energy by replacing physical desktops and laptops with virtual desktops and low-power access devices	Reduction of power consumption by end user devices	Paul Dickson	Current estimated power consumption: - 65W/hr. per laptop - 255W/hr. per desktop	Future estimated power consumption: - 7W/hr. per thin client Reduce power consumption by 118,000W	Final deployment numbers will drive actual savings
2	Reduce end-user device provisioning timeline	Time required to configure new or replacement device	Paul Dickson	Current estimated configuration timeline: - 3 hrs. per XP desktop - 2 hrs. per Win 7 desktop	Future estimated configuration time: - 30 min. per thin client Reduce time for 2,500 users by 5,000 hours	Assumes replacement of physical desktop/laptop with thin client
3	Reduce desktop application installation timeline	Time required for installation of an approved software title	Paul Dickson	Current estimated installation timeline: - Avg. 10 business days	Future estimated installation timeline: - Less than 1 business day	Assumes manager approval and license availability
4	Reduce desktop hardware expenses by implementing less expensive access devices	Reduction of hardware expenses	Paul Dickson	Current standard equipment expenses (excluding peripherals): - \$ 1,290 per standard desktop - \$ 1,460 per standard laptop	70% reduction in hardware expenses for every desktop and laptop replaced with a thin client	Final deployment numbers will drive actual savings
5	Reduce future desktop hardware expenses by implementing devices with a longer lifecycle	Length of device lifecycle	Paul Dickson	Current desktop hardware lifecycle is between 3 & 5 years	Refresh thin clients every 7 years	Final deployment numbers will drive actual savings
6	Reduce software expenses by using more efficient and accurate license tracking	Reduction of software expenses	Paul Dickson / Lynn Mantanona	Cost of "Desktop" COTS package over the last 5 years	10% reduction in software expenses	Assumes reclamation and redistribution of underutilized licenses

Financial Model and Other Information	HELP
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Double click on icon below to open up the EXCEL MODEL workbook:





CAPITAL PROJECT PROPOSAL - *Business Case* -

HELP SECTION ON SPECIFIC QUESTIONS	
<p>SECTION C: <u>PROJECT INVESTMENT SUMMARY TABLE</u></p>	<p>The Project Summary Investment table from the embedded Excel financial model must be copied and pasted into the box provided. The Excel model is embedded in the template in the final section (Financial Model and Other Information):</p> <p>From the "Summary" worksheet of the Excel model, highlight the complete table and click on the "Copy" icon.</p> <p>Switch to the Word template, place your cursor inside the box provided and select Edit, Paste Special, and then choose Picture (Enhanced Metafile).</p> <p>You will need to replace the summary table if the numbers in the Excel model change, so this step is better left until the business case is nearly complete.</p>
<p>Question #19 <u>BUSINESS CASE SYNOPSIS</u></p>	<p>The business case synopsis should be completed only after the rest of the business case is complete. The synopsis should be brief, but should capture key points from each section of the business case. The synopsis discussion should be organized to follow the order of the template – background, objectives, etc. No new information should be included in the synopsis.</p> <p>If you cut and paste from the rest of the template, be careful to be brief and to focus on just the key points.</p>
<p>Question #20 <u>APPROVALS</u></p>	<p>All approvals must be complete before the business case is submitted for agency approval.</p> <p>The Asset Accounting review requires that you consult with Asset Accounting to obtain the approval signature. The purpose of the Asset Accounting review is to verify that the project costs are properly classified as either expense or capital. The signature should be from the Asset Accounting representative who performed the review. You should obtain and retain an e-mail or other document from the Asset Accounting representative to support their approval.</p> <p>The final approval (Asset Category Approval) should generally be a vice president. In addition to filling out their name and date on this electronic form, some form of supporting documentation for the approval must be sent to Agency Asset Management. That documentation can be an e-mail from the approver indicating approval, a hard copy signature, PDF signature, or equivalent.</p>



CAPITAL PROJECT PROPOSAL

- *Business Case* -

HELP SECTION ON SPECIFIC QUESTIONS	
<p style="text-align: center;">Question #21 NARRATIVE <u>Project Context/Background</u></p>	<p>In general, this section is the problem statement. You should describe the current state and explain how we arrived at the current state. What has (or hasn't) occurred that now requires this investment? This section should include (where appropriate):</p> <p>A description of the facility/equipment/asset that is to be replaced, expanded, reinforced or upgraded. Include location, capability, purpose, etc.</p> <p>The condition of the equipment, including supporting inspection and maintenance information.</p> <p>The requirements or standards that are not being met (or will not be met) by the current equipment.</p>
<p style="text-align: center;">Question #22 NARRATIVE <u>Investment Objectives</u></p>	<p>In this section, you will describe the objectives of the investment. Select the general objectives from the supplied options for A and B. Then describe the specific objectives in section C. Your explanation should:</p> <p>Describe the desired future state – what does this investment need to accomplish? This is not a description of the project; it is a description of the outcome you are trying to achieve.</p> <p>Be specific – comply with NERC standard X, increase capacity by X, improve response time to X, reduce outages by X, serve new customer X, etc.</p>



CAPITAL PROJECT PROPOSAL

- Business Case -

HELP SECTION ON SPECIFIC QUESTIONS

Question #23
NARRATIVE
[Key Decision Criteria](#)

The key decision criteria are the factors you will use to evaluate the alternatives to meeting your investment's objectives. Here you are identifying which factors will be important to you as you evaluate your alternatives to choose the best solution. You may be unable to identify criteria in each of the categories. The following are some examples:

Business/Finance:

- The solution must be least life cycle cost.
- Reliability must increase by at least X.
- The solution must be accommodated within the FY XXXX budget.
- Capability must increase by at least X.
- The rate impact must be less than X.

Legal:

- Contract provision X must be met.
- At minimum, the solution must comply with regulation X.

Environmental:

- The solution must produce a minimum flow of X.
- The solution should reduce energy consumption.
- The solution should have no carbon footprint.
- The solution must be consistent with renewable resource goals.

Public Interest:

- The solution must accommodate public input.
- The solution must support regional goals for X.

BPA's People and Processes:

- The solution must add no workforce.
- The solution must be consistent with BPAM X.
- The solution must have executive support.
- Implementation must be accomplished with existing workforce.



CAPITAL PROJECT PROPOSAL

- *Business Case* -

HELP SECTION ON SPECIFIC QUESTIONS

Question #24 NARRATIVE

[Proposed Investment](#)

Describe the proposed investment or recommended alternative. Be specific:

- What is being purchased, constructed or implemented?
- Where will the work be performed?
- When will the work be completed?
- What resources are required to complete the project?
- How will the project be conducted?
- Explain why the proposed investment meets the key decision criteria better than the other options considered.

Next Best Alternative:

Describe the next best alternative – what would you do if you didn't make the proposed investment? Explain why the next best alternative is not as attractive as the recommended alternative. If any other alternatives were considered, briefly discuss them and why they were rejected.

Status Quo:

Describe the status quo if it was not described as one of the alternatives. The status quo is "business as usual" and isn't necessarily a "do nothing" case. It describes what you will do to get by, or continue to get by, instead of pursuing one of the alternatives.



CAPITAL PROJECT PROPOSAL

- Business Case -

HELP SECTION ON SPECIFIC QUESTIONS

Question #25
NARRATIVE
[Risks Addressed by this Project](#)

1. Provide Agency risk management context:

- a. Define relationship of project to applicable **Agency** Top Enterprise Risks.
- b. Define relationship of project to applicable **Agency** strategic objectives.

2. Outline the risks to the Agency if this investment does *not* occur:

- a. Provide a concise risk statement for each risk identified.
 - i. Example: "Risk that *(description of event)* leads to *(description of outcome expressed in terms of impact on the Agency objectives)*"
- b. For each risk statement, quantify the level of risk in terms of Likelihood (probability of event occurring) and Consequence (impact on the organization). Do not use arbitrary or undefined ratings. Refer to the pre-defined Agency scales if necessary.



CAPITAL PROJECT PROPOSAL

- *Business Case* -

HELP SECTION ON SPECIFIC QUESTIONS

Question #26
NARRATIVE
[Financial Analysis](#)

Respond to each of the prompts concerning the financial analysis contained in the embedded financial analysis model. When describing assumptions:

Explain how you estimated your capital costs and non-recurring project expenses. What contingency is included in the estimates?

Describe the incremental costs and benefits. This information should provide a general understanding of the costs and benefits that are included in the financial analysis model. In the financial analysis model, you will be required to detail the calculation of those costs and benefits.

When discussing the NPV results, you may need to explain why the project NPV is negative, or why the recommended alternative may have a less attractive NPV than the next best alternative.

A sensitivity analysis is required for projects over \$7 million which have key cost/benefit drivers that are highly uncertain. The sensitivity analysis should include a range of assumptions to address the risk around the delivery of the expected value of the project, as measured by NPV or NCR. This should be done for all alternatives, including the status quo. The results should show the NPV of each alternative at the various sensitivity levels. You may use this analysis to support the cost threshold that you will propose in Section 28. Before proceeding with this analysis, consult the ACPRT or your finance subject matter expert to discuss the best approach for this analysis.



CAPITAL PROJECT PROPOSAL

- Business Case -

HELP SECTION ON SPECIFIC QUESTIONS

Question #27
NARRATIVE
Project Execution Risks
and Management
Controls

1. Describe the Project Execution risks related to this project:

- a. Provide a concise risk statement for each project execution risk that may impact project performance, cost, and schedule milestones (Example: "Risk that *(description of event)* leads to *(description of outcome expressed in terms of impact on the project objectives or deliverables)*."
- b. For each risk statement, quantify the level of risk in terms of Likelihood (probability of event occurring) and Consequence (impact on the organization). Do not use arbitrary or undefined ratings. Refer to the pre-defined Agency scales if necessary. Avoid boilerplate language (e.g. "risk that schedule overruns results in project delays"); each risk should be supported by specific and verifiable supporting information.
- c. For each risk, outline the details of your treatment plan that will reduce the level of risk. The level of information here should follow S.M.A.R.T. principles; information provided should be Specific, Measurable, Actionable, Relevant, and Time-oriented.
- d. If management is willing to accept all (or a portion of) the risks identified, supporting rationale should be provided.



CAPITAL PROJECT PROPOSAL - Business Case -

HELP SECTION ON SPECIFIC QUESTIONS

In this section, you will propose targets and thresholds for cost, schedule and scope. There is a fourth field available (Other Performance Measure) for an additional target, if appropriate. The targets should be focused on the project-end state: total direct capital costs, final in-service date and complete delivered scope. The thresholds you propose, above the direct capital costs and expected in-service date in your business case, should be based on some level of thought or analysis regarding the uncertainty in your project. What, in particular, is uncertain and what does that mean for cost, schedule and scope?

The following example is a typical set of targets for cost, schedule and scope. There are many actual examples available on the Agency Asset Management SharePoint site. You can access those by browsing the approved projects folders and looking at the ACPRT or CAB decision documents.

PROJECT COSTS:

Program Indicators:

Green: Total direct capital cost is forecast to be \$x.x million or less.

Yellow: Total direct capital cost is forecast to be between \$x.x million and \$x.x million.

Red: Total direct capital cost is forecast to be greater than \$x.x million.

End of Project Target:

Green: Total direct capital cost is \$x.x million or less.

Red: Total direct capital cost is greater than \$x.x million.

PROJECT SCHEDULE:

Project Indicators:

Green: Project is forecast to be 90% placed in service by 12/31/2013.

Yellow: Project is forecast to be 90% placed in service between 1/01/2014 and 4/30/2014.

Red: Project is forecast to be 90% placed in service after 4/30/2014.

End of Project Target:

Green: Project is 90% placed in service by 12/31/2013.

Red: Project is 90% placed in service after 4/30/2014.

PROJECT/PROGRAM SCOPE OR CAPABILITY:

Program Indicators:

Green: Component replacements are forecast to be completed at all of the 20 sites identified.

Yellow: Component replacements are forecast to be completed at between 19 and 20 sites.

Red: Component replacements are forecast to be completed at less than 19 sites.

End of Project Target:

Green: Component replacements are completed for at least 19 of the sites identified.

Red: Component replacements are completed for less than 19 of the sites identified.

Question #28
NARRATIVE
Recommended Targets &
Thresholds
for PBVIEWS:



CAPITAL PROJECT PROPOSAL

- *Business Case* -



CAPITAL PROJECT PROPOSAL - *Business Case* -

HELP SECTION ON SPECIFIC QUESTIONS

<p style="text-align: center;">Question #29 NARRATIVE</p> <p style="text-align: center;"><u>What are the appropriate metrics to judge the success of the investment once it is placed in service?</u></p>	<p>Describe the metrics that you would use to measure the project’s success, once it has been implemented. These metrics should be specific and measurable, wherever possible. Provide the baseline (pre-implementation) measurement for those metrics and the expected performance for those metrics following project implementation. Examples of metrics would include: capacity is X and is expected to be Y, response time is X and is targeted to be Y, outage minutes are X and will improve to Y, customer satisfaction levels are X and are expected to move to Y, etc. You may have already touched on these metrics in the objectives discussion in section 22.</p> <p>It’s possible that the metrics are not clearly identified at this point in the project’s development. In those cases, provide a commitment as to when the project metrics and current baseline measurements will be provided to the ACPRT.</p>
<p style="text-align: center;"><u>Financial Model and Other Information</u></p>	<p>The Excel model that supports the business case must always be saved in the dedicated spot that it occupied when the template was delivered to you. The remaining area in this section may be used to attach additional information that supports the business case:</p> <ul style="list-style-type: none"> Limit attachments to information that is clearly relevant to the business case: maps, project timelines, cost detail, etc. Relevant and focused excerpts from documents are more useful than entire documents. You may also note and describe a document that is available, but not attached if the information in that document has a more general relation to the project, but not being specifically referenced. If you attach entire documents select Insert/Object/Create from File and check the “Display as Icon” box. You may rename your attached file to a more meaningful name by clicking on the “Change Icon” button.