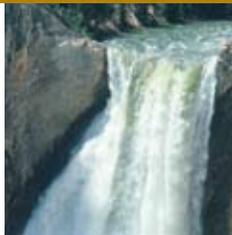
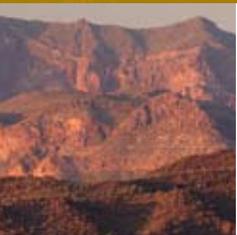


The Government Goes Green: Trends, Developments, and Implementation of Green Initiatives for Government and Industry



Prepared Remarks from ROBERT C. TAPPELLA, *Public Printer of the United States*

Fourth Annual Bill Treadaway Print Leadership Forum | Clemson University, Clemson, SC

January 29, 2009



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Good afternoon. My name is Bob Tapella. I am the Public Printer of the United States. It's wonderful to be here at the 2009 Bill Treadaway Print Leadership Forum at Clemson University.

I'd like to begin by recognizing two of the people that I've brought with me from the Government Printing Office (GPO). They are no strangers to Clemson as they both graduated from the Graphic Communications department and are shining examples of Clemson's hands-on philosophy, which prepares practical, problem-solving people ready to move into the 21st century.

The first is Adam Schwartz. Adam started at Clemson in the Fall of 1997 and graduated in the Spring of 2002. He started as an Engineering major, but after he saw the great things two of his friends were working on in GC he switched majors. Today Adam is a Program Planner in our IT department and is involved in two of our high profile projects: the Federal Digital System, which I'll talk about later, and our Manufacturing Workflow System for our plant.

The second is Casey Clarke Radican. Casey attended Clemson from 1999-2003. She was always a GC major and selected GC because the program combined science and art. And then of course, there was Clemson's FOOTBALL! Apparently, athletics influenced her decision. She agrees with the great American sportscaster Brent Musburger, who said that the moment the players enter Death Valley, rub Howard's rock for good luck, and race down the hill, is the "most exciting 25 seconds in college football". Go Tigers! Casey is a Senior National Account Manager working in our Agency Accounts and Marketing department. Casey's job is to work with our agency customers to make sure they understand what GPO can provide for them covering the entire life cycle of a document from start to finish. Currently, Casey covers the entire East Coast for GPO from Maine to Mississippi, except for the Washington, DC, area.

As Public Printer, I serve as the Chief Executive Officer of the GPO, which has the mission to keep the American people informed about the work of their Federal Government. GPO is one of the largest printing and digital information factories in the world and certainly one of the largest print buyers, too.

Benjamin Franklin was the first to hold the title of "Public Printer" for the colonies of Pennsylvania and Delaware before the American Revolution. More than two hundred years later, I was entrusted with the same responsibility: to record the words and actions of our Government and to make certain that these documents of our democracy are made widely available to the public and kept in perpetuity.

Each and every day I remind myself of this incredible opportunity and responsibility. There is a portrait of Ben Franklin hanging over the fireplace in my office, and he looks over my shoulder every day. I'm certain Ben would be fascinated by just how much our industry has evolved and where we're going.

This afternoon, I will begin by talking about the Government Printing Office and the roles we play. Then I'd like to talk about paper and I'll finish with my views on sustainable environmental stewardship at GPO.



GPO Yesterday and Today

When the GPO was established in 1861, printers set type by hand under candlelight. Printing presses were driven by a steam engine and deliveries each morning to the Capitol were by horse-drawn cart. Since then, every Public Printer has had to adapt the agency to new technologies and new ways of meeting the needs of Congress, Federal agencies, and the American people.

Today, GPO disseminates the *Congressional Record*, the *Federal Register*, and numerous other products and services in print and digitally while also building the digital tools of the future that will enable our Government to work more effectively and efficiently.

Created in 1860 by an Act of Congress, the GPO opened its doors for business on March 4, 1861, the same day Abraham Lincoln was inaugurated as President. Through war and peace, boom and bust, GPO has been there, producing and distributing the official documents of our Nation. It was at GPO that the text for the Emancipation Proclamation was set, and it was at GPO that ink was put to paper for the declarations of war sought by Presidents Woodrow Wilson and Franklin Roosevelt. A GPO bookbinder created the leather covers used for the surrender documents signed on the deck of the battleship *Missouri* in Tokyo Bay in 1945.



More recently, GPO produced the official Government edition of the 9/11 Commission's final report in both print and online formats. For the recent historic Presidential Inauguration, GPO printed a range of materials including invitations, maps, signs, programs, tickets, and other products. Some of these products used intricate security features, including a few never before used in the United States. GPO also produced and personalized the law enforcement credentials that were used by more than 40 different agencies that day. More than 10,000 individual credentials were issued.

Last February, the President submitted the *Budget of the U.S. Government for Fiscal Year 2009* to Congress electronically. This is the first time in history that this important Government document was delivered electronically. GPO authenticated it by digital signature. Authentication verifies to anyone who downloads the *Budget* that the content is official and unaltered. This truly ushered in a new era for GPO and the Federal Government.

Our mission and the notion of an informed public is one of the great ideas to emerge in the past millennium. It's an idea that was directly related to the single greatest invention of that era: Johann Gutenberg's development of moveable type some 550 years ago.

This was not simply a method of producing ink-on-paper more economically. What Gutenberg did was create a means for easily transferring language to a medium for widespread dissemination. The technologies we have today for accomplishing the same end—computers, e-mail, online systems, and even offset web presses—are all indebted to his vision.

Where once we solely relied on ink and paper, we now also use electronic ions and integrated circuits, but our job is still the same: to record the words and actions of our Government and make them available for our people.

GPO's Four Roles

GPO plays four primary roles today:

- GPO plays an integral role in the legislative process by the daily work we do for the United States Congress. At GPO we print about \$90 million worth of work for Congress. This includes a daily newspaper called the *Congressional Record* which we run on Hantscho web presses. Congress will give us the copy sometimes as early as 4:00 PM other days as late as 4:00 AM, and we have the newspaper delivered to their chambers by 9:00 AM. A typical week can run anywhere from 3 to 6 million impressions. We also print bills, reports, envelopes, letterhead, telephone books and pretty much anything else needed by Congress.
- GPO plays a critical role in our nation's security by producing passports for the State Department. Six years ago this was a quiet little \$17 million business producing around 8 million passports, very similar to ones we began producing in 1926. Last year, because of the unprecedented public demand for passports, it was a \$350 million business and we produced a record-breaking 24 million passports, all featuring an RFID chip capable of holding biometric information. This year, now that things have calmed down a bit, it's a \$180 million business producing over 10 million passports.
- GPO plays a supportive role to all of the agencies and organizations of the Federal Government as we help them meet their printing and communication needs. We do this much like a print broker would. Last year we sent nearly 135,000 jobs with a value of nearly \$500 million to more than 2,000 private sector vendors located in every State plus Guam, Puerto Rico, and the Mariana Islands.
- GPO plays a facilitating role as we work with the American library community to provide free, open, and permanent public access to the documents of our democracy through the Federal Depository Library Program. Dating to 1813, Federal depository libraries have safeguarded the public's right to know by collecting, organizing, maintaining, preserving, and assisting patrons with information from the Federal Government. As institutions committed to equity of access and dedicated to free and unrestricted public use, the Nation's more than 1,250 depository libraries serve as one of the vital links between "We the people" and our Government. The Cooper Library here at Clemson is part of this vital and essential program.



GPO and Paper

Now that you have a little background on GPO, I'd like to change my focus to paper. As you know, substrates play an important role in printing. And as you could probably guess, GPO uses a lot of paper.

Last year, for use in our plant, GPO purchased over 31 million pounds of paper. This included nearly 1.1 billion sheets of copier paper (214,400 cartons); 40 million sheets of non-copier paper (4,000 skids); 15 million pounds of offset roll paper (10,000 rolls); 5 million pounds of newsprint roll paper (3,800 rolls); and nearly 1.5 million pounds of security paper for use in passport production.

I mentioned that GPO is also a very large print buyer. We estimate that the 35,000 jobs GPO procured from the private sector last year used about half a billion pounds of paper. Yes, over half a billion pounds of paper. That's roughly 50 billion standard 8½ by 11" sheets. If we were to lay them out end-to-end, they would circle the earth more than 350 times.

GPO and Environmental Sustainability



Toward a Sustainable Future I hope the background I've provided on the size and scope of GPO helps you to understand our role in the graphic communications industry, particularly as I begin to talk about perhaps the most important issue facing our industry today: environmental sustainability.

Environmental issues have taken hold in the public's mind for many years. American companies in all areas of our economy have taken notice. The graphic communications industry is no exception. We have long had to contend in one way or another with many environmental factors, from solvent emissions to paper waste, to the complex industrial chemicals and metals used in our processes.

Too often, our industry has focused on what must be done to avoid inspections and fines. But now we're looking ahead to the future and focusing on what should be done to deliver environmentally responsible print manufacturing. As graphic communication technologies have evolved, and have become more complex, the need to review our supply chains with the disciplines of systems thinking, lifecycle management, industrial ecology, and triple bottom line analysis has become necessary. I call this future sustainable environmental stewardship, which is more than just "going green." It is being proactive and making changes so that we are a more efficient operation, making better use of the resources under our control.

This may surprise a few people, but sustainability is not a partisan issue. It's good business and it's good Government. In fact, about half of the Fortune 500 companies now publish sustainability reports and employ sustainability managers. Today, more than 80% of global Fortune 250 companies (G250) disclose their sustainability performance in "sustainability" or "corporate responsibility" reports.

Public awareness of the term sustainability has risen dramatically over the past few years, but the idea of sustainability is said to have appeared in early writings in the field of scientific forestry in Germany in the late eighteenth century. Sustainability was probably most succinctly defined in the 1987 report of the World Commission on Environment and Development (otherwise known as the Brundtland Commission, named after its Chairman), which was formed by the United Nations. According to the Brundtland Commission, sustainability means meeting the needs of the present without compromising the ability of future generations to meet their own needs. It's similar to the "seventh generation" philosophy practiced by the Iroquois Confederacy, which mandates that chiefs always consider the effects of their actions on the descendants seven generations in the future.

Business, government, and society-at-large depend on print to a far greater degree than most realize, and the graphic communications industry faces a great opportunity in defining exactly what sustainable printing and communications means.

We must look at the myriad of flows of energy, materials, and human effort required by the full scope of graphic communication supply chains and not just our printing plants. There must be a vision for the entire system's lifecycle of what we produce and consume, from how we source the raw materials to how we produce our products, to what happens to the products when consumers are done with them.

There are many aspects of the print supply chain that need to be identified, quantified, managed, and improved if print is to be objectively defined as truly "green" or sustainable. Non-renewable energy use, greenhouse gas emissions, water use, unsustainable materials sourcing, waste recovery, and local sourcing practices are just a few of them.

Our industry is everywhere you see words and images: books, magazines, billboards, clothing, web sites, CDs, documents, and even credit cards. Someone working in graphic communications made them all. At GPO, we're involved in just about every facet of the graphic communications industry either by producing it in our plant or procuring it for our customers.

We are beginning to review the entire lifecycle of everything we do at GPO. Like so many of the Fortune 500 Companies, I have appointed an executive whose sole job is to look at sustainable environmental stewardship. We're looking at our entire enterprise to make certain that we are being good stewards of the resources under our control. And remember, these resources are paid for with your tax dollars.

Sustainable Paper Practices Currently, we print what are essentially two daily newspapers, the *Congressional Record* and *Federal Register*. These are produced on 40% post consumer waste recycled newsprint. They are printed on offset web presses just like those used in the newspaper industry and we have a significant amount of planned waste. As most of you know, make-ready on offset web presses uses a lot of paper. When printing large quantities, the paper consumed in make-ready ends up being a relatively small percentage of the paper



used in a job. Unfortunately, the number of copies of the *Record* and *Register* that we print are continuing to decline, resulting in a higher percentage of planned waste. So I would like to see if we could move these publications from web offset to digital equipment to significantly reduce paper consumption.

Where we continue to use paper, I would like GPO to use more environmentally responsible paper, both in our plant and for our agency customers. This is a complicated issue. Some of our customers have asked for more sustainable paper choices and I know that there are many challenges we face in providing them options. In addressing paper, we have to include office and publishing paper, as GPO is one of the largest providers of copier paper to Federal agencies.

We have had an open dialogue with the paper industry over the past year. It has been very helpful as we navigate and determine the parameters for gauging paper sustainability. Last May, I hosted a Paper Industry Day at GPO to listen and learn about paper sustainability from dozens of paper industry leaders from around the world. This year, I will be hosting another Paper Industry Day to further our quest for the most sustainable papers available.

Important environmental issues come to mind in the manufacturing of paper. Millions of trees are harvested and millions of tons of minerals are extracted. More than 75 billion kilowatt hours of electricity and billions of gallons of water are used, all resulting in the emission of tens of millions of tons of greenhouse gases each year.



There are now ways to make significant, environmentally positive improvements on all of these fronts, including the use of renewable energy and utilization of industry-generated residue materials. Pulp and paper mills can use co-generation of energy for process heating, product drying, and electric power. There is also great promise in the development of integrated bio-refineries. These employ waste paper, agricultural waste, dedicated energy crops, and sustainably-managed forest biomass as inputs to produce green energy and bio-fuels as well as paper and bio-polymers. With important advances in technology, and now with attractive, high quality paper available, I see the graphic communications industry becoming a beacon for sustainability.

At GPO, I would like to dramatically increase the use of 100% post consumer waste recycled paper, provided the industry can meet the challenge of cost and performance. We've begun testing these papers and running them in our Digital Print Center. Additionally, we recently ran a 40-lb. white offset 100% post consumer waste recycled paper through our web presses. There was no difference in printability or run-ability as compared to the 30% post consumer waste recycled paper that we've been using for years. We are adding more 100% post consumer waste recycled papers to our qualified products list.

Beyond 100% recycled paper, we need to look at the fiber used in other papers. Have the fibers come from responsibly managed forests? While there are a number of certification programs, only 10% of all the world's forests are certified to any system. Some of GPO's customers are asking me whether they can get paper certified by one of the programs. And so, we are expanding our print procurement regulations that would allow our customers to specify certified papers.

The United States forest products industry is making great strides toward sustainability from managing the forests to manufacturing to recycling. The U.S. Forest Service estimates an average of 1.74 billion trees are planted in America every year. Last year, the American Forest and Paper Association announced that 56% of the paper consumed in America was recovered for recycling. This is an all-time high recovery rate, but it could and should be higher.

The focus must remain on innovative practices and improved technologies that protect the environment and provide good jobs while making products that society needs.



Sustainable Green Printing Moving back to the printing industry, I am so pleased that the Printing Industries of America, the Specialty Graphic Imaging Association, and the Flexographic Technical Association have joined together to form one central location for information on sustainable green printing activities. This new Sustainable Green Printing (SGP) Partnership serves to establish the print and graphic communications industry as a leader within the business community for the adoption and promotion of sustainable business practices designed to reduce the global impact of our industry.

The SGP Partnership recognizes that sustainability is a journey and not an endpoint, such that the criteria used by this recognition program will expand and evolve over time as new techniques and technologies become available. Four printing companies have been certified as Sustainable Green Printers by the SGP Partnership, and more than 65 printers have initiated the application process since it was finalized in August and are awaiting certification.

Options for a Sustainable Facility GPO's factory is composed of four buildings totaling 1.5 million square feet. GPO's newest building was completed in 1940. Our plant is located on multiple floors, requiring numerous elevators for the transportation of our product. The buildings are too large and antiquated to meet the printing and digital needs of the 21st century.

We have proposed constructing a modern factory at our current location that has the plant on the ground level, increasing efficiency and saving the taxpayer money. We would like to become the first LEED Platinum printing plant in America. LEED is a voluntary green building rating system that provides measurable benchmarks for developing high-performance, sustainable buildings. Platinum is the highest standard.

In the meantime, we're taking steps to increase the efficiencies of the current factory. We're piloting a new bio-based green roofing system in a small portion of our factory that will double the typical life expectancy of a new roof. If this pilot is successful, we hope to be able to replace our entire roof with this application.

We've conducted multiple energy audits to help identify areas where we can increase our buildings' efficiency by looking at programs and processes that have short returns on investment. Some of these include:

- Replacing over 25,000 light bulbs with lower wattage bulbs when they require replacement;
- Installing a steam meter to further monitor steam consumption that will help identify faulty equipment and ensure its replacement/repair;
- Evaluating the efficiency of the air handling units that supply air and humidification throughout the factory; and
- Performing a compressed air audit of our factory's air system to increase efficiency and reduce energy loss.

To put some of these numbers in perspective, our utilities costs include about \$350,000 per year for natural gas; about \$450,000 per year for city water and sewer; about \$4 million per year for electricity; and about \$6 million per year for steam.



Reducing Hazardous Materials and Managing Waste At GPO, we have made tremendous progress in reducing hazardous materials use and waste generation in our plant. The Environmental Protection Agency (EPA) has lowered GPO's status from a Large Quantity Hazardous Waste Generator to a Small Quantity Hazardous Waste Generator, in recognition of our successful efforts to reduce such wastes. By the end of this year, I want GPO to become a Conditionally Exempt Small Quantity Generator of hazardous waste. To earn this designation, our entire 1.5 million square foot factory will produce less than 25 gallons of hazardous waste each month. We're close to this now and it should be attainable.

As part of the ongoing effort to reduce waste, GPO has installed a solvent recovery system to improve operations sustainability and generate significant cost savings. The system recovers solvent from color presses used in our plant through a distillation system. Up to 90% of the solvent is purified and recovered for reuse and the resulting distilled water can be reused or disposed of from the process. A minute amount of sludge material, which is a small fraction of the volume of the former waste stream, is then disposed of as a non-hazardous waste. This system has reduced up to 90% of GPO's solvent waste and will eliminate about 5,000 gallons of hazardous waste from leaving GPO each year.

We're reviewing other potential environmental impacts from our operation including our underground storage tank systems. We determined that a 1,500-gallon underground storage tank, although still in use and only halfway through its design life, was functionally obsolete.

We decided that the potential environmental risk posed to the groundwater and to the public by the tank outweighed its usefulness and it was successfully removed, resulting in a “clean closure” and the elimination of the risks. Our final underground storage tank system is a 6,000 gallon gasoline tank with similar characteristics and is scheduled to be removed next month.

GPO is also investigating a Total Waste Management System, which would streamline GPO’s current recycling and solid waste program by integrating multiple waste hauling contracts into one. This will help our operation run more efficiently as well as identify new waste streams – which could become new revenue sources—and ultimately reduce the amount of waste that leaves our facility and finds its way to a landfill.

GPO has been recycling waste paper, copper, brass and scrap metal since 1861. Today, GPO recycles nearly 2 tons of toner cartridges, 1,300 gallons of motor oil, 10,000 pounds of computers and electronics, 33,000 pounds of paper cores, 200,000 pounds of metals, 1.5 million pounds of corrugated boxes, and more than 5 million pounds of paper each year. In 2008, the 5.6 million pounds of waste paper we recycled resulted in 34,020 trees saved, 28.9 million gallons of water flow conserved, 3 million pounds of landfill waste diverted, and 5.9 million pounds of greenhouse gas emissions eliminated.



We’re in the process of de-commissioning our film processing unit. By the end of February, we will no longer be creating negatives at GPO. This will eliminate 55 gallons of chemicals used in film processing each quarter.

Sustainable Vehicles We’re evaluating our fleet of trucks and vehicles in operation at GPO. We’re trying to determine if we need all of the vans and trucks currently in operation and to see if we can eliminate the older ones to increase the efficiency of our fleet. We currently have four vehicles that can use E-85 flex fuel. We’re in negotiations to start using the Architect of the Capitol’s E-85 fueling station just a few blocks from GPO. And we are scheduled to take delivery of our first hybrid vehicle next week!

Digitization and Sustainability Digital itself is a key sustainability initiative, and it is at the core of an ongoing transformation of GPO’s operations and programs. As I mentioned earlier, GPO plays a facilitating role by working with the library community to provide free, open, and permanent public access to the documents of our democracy through the FDLP. Paramount to our future is FDsys—GPO’s Federal Digital System.

FDsys is an advanced digital system that will enable GPO to manage Government information, from all three branches of the Federal Government. The system will replace *GPO Access* to meet the public demand for immediate online access to information. FDsys will ensure that information is readily and permanently available for public access, as well as guarantee that the information contained within the system has been created by an official source and has remained unaltered. FDsys will contain information gathered through three methods: files submitted by Federal agencies and Congress, information gathered from Federal agencies’ websites, and previously printed products which are converted into digital files through scanning. This information will not only include text files, but also graphics, audio, and video files as well.

When complete, FDsys will give the public a one-stop site for authentic, published Government information. GPO is planning to release FDsys in phases. Each phase will introduce new content and functions. The beta site is on-line today. Next week, we'll formally commission the first release of FDsys.

In many ways electronic systems, such as FDsys, and non-print media are perceived to be more environmentally friendly than paper based systems. But are they? Computers, data centers, and other Internet transmission facilities and broadcast apparatus run on vast amounts of generated electricity and the electrons aren't free.

According to the Energy Information Administration of the Department of Energy, in 2006 data centers and servers alone consumed 61 billion kilowatt hours of electricity, an amount that doubled between 2001 and 2006, and is expected to double again by 2010! Even Google searches leave a carbon footprint. According to a recent report in The Times of London, a typical Google search on a desktop computer generates about 7 grams of carbon dioxide. Performing two searches is comparable to bringing a kettle to boil. While that may not sound like a lot of energy, the report notes that Google handles about 200 million searches a day. According to a recent Gartner study, the global IT industry generates about 2 percent of global carbon dioxide emissions, or about as much greenhouse gas as the world's airlines.



And, don't forget the looming question of what to do with e-waste such as discarded computers, peripherals, and components? The result is, that we cannot afford to think that digital media is without environmental impacts.

This may be a great opportunity for the printing and paper industry to take the lead by showing the complete lifecycle of our products. Although hard-copy printing has been an easy target for negative commentary by some environmentalists, especially those going after printed material delivered by the U.S. Postal Service, it is actually one of the least energy-intensive of all manufacturing industries.

Because GPO is not just about the printed word, I am also concerned about our electronic footprint. GPO's Information Technology Department has made incredible strides in reducing our energy demand while increasing our functionality and efficiency. While developing FDsys, GPO has focused on building an energy efficient, sustainable system. FDsys requires 80 servers to operate. GPO sought out the most energy efficient servers available. We chose servers that use 50 watt processors instead of the standard 80 watt processors.

Last year, GPO's IT Department completed a server upgrade to provide faster and improved search results for our Government publications on *GPO Access*. This modification eliminated over 20 separate servers, and resulted in about a 50% reduction in energy to support this application. All components of the retired servers were recycled or used for parts within our current operation. These sustainable efforts in the transformation of *GPO Access* earned GPO international recognition as a finalist in the Computerworld "Best Practice in Green IT" Computing Awards last September.

GPO also plans to implement virtualization technology for servers once this technology proves to be reliable for our applications. Virtualization offers us the ability to share single physical servers to support multiple applications across operating systems. This will further reduce our Information Technology energy consumption by over 60%.

GPO has also adopted a Citrix thin client solution for several processes which has substantially reduced our energy use. These initiatives replaced nearly 60 desktop systems with Citrix, reducing our power consumption by over 75%. GPO is also adopting Microsoft applications that better reduce paper waste and individual desktop energy consumption.

A Final Word

So there you have it. GPO is becoming a model for showing how sustainable environmental stewardship is good business and good Government. I would like to conclude with one of my favorite quotes on sustainability:

Our position in the world has been attained by the extent and thoroughness of the control we have achieved over nature; but we are more, and not less, dependent upon what she furnishes than at any previous time of history.



President Theodore Roosevelt made this observation during a speech to a national conference on conservation held at the White House in 1908. It's just as accurate today as then, and certainly a call to sustainable environmental stewardship. At GPO, we intend to move forward with this timeless vision so eloquently expressed by one of America's greatest leaders.

Thank you.



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