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Monetary Policy and Technology**

Chairman Watt, Ranking Member Paul, Members of the Subcommittee, thank you for holding this hearing and inviting me to testify before you today about initiatives underway at the Bureau of Engraving and Printing (BEP).

Mission/Vision

The mission of the BEP is to design and manufacture high quality security documents that meet customer requirements for quality, quantity, and performance, including counterfeit deterrence.

The BEP is the security printer for the United States Government, and it provides technical assistance and advice to other Federal agencies in the design and production of security documents, which, because of their inherent value or other characteristics, require counterfeit deterrence. The BEP also reviews cash destruction and unfit currency operations at Federal Reserve Banks. As a free service to the public, the BEP processes claims for the redemption of mutilated paper currency. Other BEP activities include engraving plates, dies and manufacturing inks.

The vision of the BEP is to maintain its position as a world-class securities printer, providing customers and the public with superior products through excellence in manufacturing and technological innovation.

Overview

The BEP produces security documents on behalf of other federal agencies; however our primary product is Federal Reserve notes. The BEP began producing currency in 1862. Authority conferred upon the Secretary of the Treasury under 31 U.S.C. 321(a) (4) and § 5114 allows the BEP to engrave and print currency and other security documents. BEP operations are financed by means of an industrial revolving fund, which was established in 1950 in accordance with Public Law 81-656. This fund is reimbursed through product sales for direct and indirect costs of operations including administrative expenses. In 1977, Congress amended the law, in Public Law 95-81, to authorize the BEP to include an amount sufficient to fund capital investment and to meet working capital requirements in the prices charged for products.

The BEP has a diverse workforce, which operates in two locations – Washington, DC and Fort Worth, Texas. Each BEP facility is capable of producing all banknote denominations. On average the BEP produces approximately seven billion Federal Reserve notes per year.

The BEP works collaboratively with the Board of Governors of the Federal Reserve System, the United States Secret Service and the Department of the Treasury to improve the security of Federal Reserve notes. In 1982, by charter, an Advanced Counterfeit Deterrence Steering Committee was established to recommend designs to the Secretary of the Treasury for Federal Reserve notes. As a general guideline, the committee recommended that the Government redesign Federal Reserve notes every seven to 10 years to deter counterfeiting by anticipating advances in reprographic technologies.

Currency Redesign Program

Consequently, in the mid-1990s the US Government introduced the first major redesign of US currency in 65 years. The design changes were needed to combat the emergence of a new category of counterfeiters who were increasingly using computers, scanners, color copiers and other emerging technologies to replicate notes. The goal of staying ahead of technological threats to our currency, rather than simply responding to an existing threat, requires the US Government to plan ahead and regularly develop new designs for currency. This means that new currency must be in development several years before the counterfeiting threat is projected to materialize.

On April 21, 2010, the US Government unveiled the last banknote in the most recent currency redesign series. Redesigned \$20, \$50, \$10 and \$5 notes were introduced into circulation in 2003, 2004, 2006 and 2008, respectively. The redesigned \$100 note will enter circulation in February 2011. The redesign of the \$100 note marked the completion of a multi-year initiative to implement the most ambitious currency redesign in the US. The innovative security features in the new note are the fruit of more than a decade of research and development to protect US currency from counterfeiting. While still retaining the traditional look of US currency, the new \$100 note incorporates advanced technology to combat counterfeiting. There are a number of security features in this redesigned \$100 note, including two new features: the 3-D Security Ribbon and the Bell in the Inkwell. The 3-D Security Ribbon is a blue ribbon on the front of the \$100 note with images of bells and 100s. When holding the note and focusing on the blue ribbon, the bells change to 100s. When the note is tilted back and forth, the bells and 100s move side-to-side. If you tilt the note from side to side, the bells and 100s move

up and down. This security feature is woven into the paper, not printed on it. The Bell in the Inkwell is a color-shifting bell, inside a copper inkwell, on the front of the note. The inkwell and bell are both copper until you move the note. When tilted the bell changes from copper to green, an effect which makes the bell seem to appear and disappear within the inkwell. The BEP's latest assessment indicates that the 3-D Security Ribbon and the Bell in the Inkwell are effective counterfeit deterrence measures for threats posed to the \$100 note.

This latest redesigned series, including the new \$100 note, contain an array of counterfeit deterrent security features, some of which are visible and easily recognizable to the public (microprinting, raised printing, symbols of freedom, a watermark, security thread and color shifting ink) and some of which are covert or machine readable only. The driver for these redesigned notes is a digital counterfeit deterrent system that was developed under the auspices of the Central Bank Counterfeit Deterrence Group, in cooperation with major digital printer and software manufacturers. The US effort on this initiative was led by the Board of Governors of the Federal Reserve System. The digital counterfeit deterrent system, which is being used in a number of countries, relies on a hidden 'marker' embedded in the note's design that can be read or detected by new technology deployed in digital printers and software. This systemic design feature heralds a vibrant and growing partnership between the public and private sector to protect US currency, and is intended to thwart increased counterfeiting of currency using digital reprographic technology. This is a significant investment in the future of currency, and will greatly assist in preventing counterfeiting as digital technology becomes dominant in the marketplace. All of these security features work collectively to create layers of complexity that make these redesigned notes, including the new \$100 note, difficult to counterfeit, but easy to authenticate.

The BEP, along with its collaborative partners, launched global public education programs with the unveiling of each redesigned currency note. A successful public education program is crucial to the anti-counterfeiting effort. The unveiling of the redesigned \$100 note was the first step in a multi-government agency global public education program to educate those who use the \$100 note about its changes before it begins circulating on February 10, 2011. The public education program offers training materials to inform users about the latest currency designs and how to authenticate US currency. These informational materials are available online and can be downloaded from the BEP's 'new money' website – www.newmoney.gov. The goal of the public education program is to build an adequate threshold of awareness to support commerce and ensure seamless, "business as usual" transitions as new currency designs are introduced to the public. The public is the first line of defense in combating

counterfeiting, and paper money users must be aware of new security features in genuine US currency when the new designs are introduced.

Overall, counterfeiting of US currency remains at low levels – due primarily to a combination of improvements in the notes' security design, aggressive law enforcement and public education efforts. According to the US Secret Service less than 1/100th of one percent of the value of all circulating US currency is reported as being counterfeit.

Strategic Plan

In December 2009, the BEP awarded a contract for the development of a facility feasibility study at the Washington, DC facility. The purpose of this study is to provide the BEP with sufficiently documented data to define and determine the preferred alternative of renovation and/or relocation that will most favorably meet BEP and our strategic partners' requirements. The study results are due at the end of this month.

The BEP is also implementing its strategic plan that will significantly change the currency manufacturing process. Over the next few years, the BEP will continue to retool and retrofit the production process by purchasing new processing, printing and inspection equipment, which will allow the agency to migrate to a higher capacity and capability manufacturing environment. The BEP's strategic plan will serve as a roadmap to guide the agency toward the goal of creating a new environment that will ensure cost-effective and flexible business operations for years to come. While the BEP is committed to meeting the many challenges of implementing innovative technology, we remain resolute in producing quality currency, controlling costs, being environmental stewards, and working safely as we move towards our vision – to continue to be the world's preeminent banknote producer.

The BEP's retooling transition began several years ago with the addition of six Simultan offset presses, which allowed us to incorporate color into our currency. The next phase was the installation of Super Orlof Intaglio (SOI) presses. Eight SOI presses are in operation; four at each BEP facility. Both of these presses provide the BEP with greater manufacturing flexibility and expanded functionality. Beginning this September, the BEP will have the first of three processing machines installed. Two of the machines will be installed at the Fort Worth Facility, and the third installed at the Washington, DC Facility. These multi-tasking machines perform functions at the back end of currency production such as overprinting serial numbers and seals, and cutting and packaging. These machines were designed specifically for the BEP, and they too will increase production flexibility and efficiency. Updating this equipment was essential. The aging manufacturing equipment at the BEP no longer met all the performance requirements

demanded in today's dynamic currency manufacturing environment. The new equipment will provide the rapid response, flexibility, productivity, and technology necessary to support the manufacture of increasingly complex currency designs, including an array of possible features for the blind or visually impaired.

Meaningful Access

In January 2008, the BEP commissioned a study, to address options to enable the blind and visually impaired to better denominate US currency. The study consisted of three phases:

- Phase 1: Was to gather data about the demographics of the visually impaired and the usefulness of various accommodations.
- Phase 2: Was to review features currently available to improve access to the visually impaired via discussions with the international banknote community and experts in vision loss and tactility.
- Phase 3: Was to conduct a cost-benefit analysis on the alternatives identified in the first two phases. This included considering the benefits to the visually impaired and the costs to the government, industry and the general public.

Additionally, the study provided a decision model, by which the BEP can evaluate various potential accommodations. Based on the study results, the BEP, in consultation with the Department of the Treasury, the Board of Governors of the Federal Reserve System, drafted proposed recommendations to the Secretary of the Treasury, who by statute has the sole authority for approving designs of US currency. The Advanced Counterfeit Deterrence Steering Committee approved these proposed recommendations. The recommendations consist of the use of a raised tactile feature; use of large, high contrast numerals; and a supplemental currency reader program.

As part of the next currency redesign to assist individuals that are blind or visually impaired to denominate US currency, the BEP plans to develop and deploy a raised tactile feature that builds upon current tactile feature technologies. The tactile feature will be unique to each Federal Reserve note denomination that may lawfully be changed, and will provide users with a means of identifying each denomination by way of touch. A BEP research group has visited several banknote printers to gather information on their progress in developing a tactile feature. Testing is underway at the BEP to determine which process and feature works best in producing the volumes needed for US currency. Based on experience, independent research, and the commissioned study, the BEP believes it can develop a raised tactile feature that is

reasonably durable, and can be incorporated into its existing manufacturing systems at a reasonable cost.

The BEP will continue with its current practice of adding large, high-contrast numerals and different and distinct color schemes to each denomination that it is permitted by law to alter in order to further assist visually impaired citizens. By law, the Department of the Treasury is not permitted to redesign the \$1 note.

Meaningful Access Status

In May of this year, the BEP posted a notice in the Federal Register to announce the recommendations it intends to propose to the Secretary of the Treasury for moving forward in providing meaningful access to the blind and visually impaired community in denominating currency, and to request public comments about the agency's recommendations. In June, the BEP held simulcast, public forums at both facilities to hear comments from the public. Earlier this month, the BEP once again participated in the national conferences for both the American Council of the Blind and the National Federation of the Blind. After the public comment period the BEP expects shortly to be in a position to make recommendations to Secretary Geithner on the best manner in which to provide meaningful access to US currency.

The most recent redesign of the currency commenced in 2003, and the final denomination in that series of currency is in production. It is somewhat difficult to provide a specific date or time frame as to when the redesign of a new family of currency will be completed; however, if approved by the Secretary, some variation of a tactile feature, a large high-contrast numeral, and distinct colors will be included in future generations of US currency to provide meaningful access for individuals that are blind or visually impaired.

Meaningful Access – Interim

In the interim, the BEP also proposes to recommend to the Secretary of the Treasury a supplemental currency reader program that will provide access to US currency. This measure would involve a process to loan and distribute currency readers to the blind and visually impaired at no cost to them. The BEP believes that this process will ameliorate difficulties stemming from the transition that will occur during the co-circulation of notes with and without a tactile feature and large, high contrast numerals, a transition which will persist for many years after the introduction of the tactile-enhanced note.

Additionally, the BEP is continuing in its efforts to explore emerging technological solutions such as the development of software to enable blind and visually impaired individuals to denominate US currency. Some of the options include the development and deployment of assistive software to enable banknote denomination recognition using cellular telephones, computers, and imaging and reading devices. Initial design specifications for the cellular phone application have been completed, and a functioning preliminary prototype has been produced and made functional. An image recognition engine has been selected and the BEP contractor is working through algorithm refinement. A target release date is anticipated later this year. This is the first of several government sponsored cellular phone applications aimed at assisting the blind and visually impaired community.

Other Initiatives

Other initiatives currently underway at the BEP include employee training, product quality, cost reduction efforts, and the modernization of the BEP's information technology systems. Through our Human Capital Strategic Plan, we are creating an environment that supports, nurtures, and sustains a high caliber workforce that ensures we efficiently accomplish our mission. By leveraging the efficiencies of the new innovations and technologies we recognized we were overstaffed in certain positions as we modernized; therefore, we requested and were granted authority from the Office of Personnel Management to offer optional early-outs and buy-outs to specific positions where we were overstaffed, based on a projected five-year staffing analysis. By the end of 2014, the BEP expects to have at least a 10% overall staff reduction. Thus far, 39 employees accepted the early-out, buy-out offer for an estimated \$1.5 million in savings. In addition, staffing has continued to decline over the past several years through prior early-out and buy-out offers as well as normal attrition – for example in 2005 staffing declined from 2,282 FTEs to 1,944 FTEs in 2009, reduction of 338 FTEs. Each year, the BEP analyzes the number of positions to ensure that the organization has the right number and mix of employees in place to achieve its mission requirements.

The BEP strives to enhance the effectiveness of recruitment and retention to ensure that the agency continues to meet its critical mission requirements, establishes itself as an employer of choice, and moves into the top 50% of Best Places to Work in Government by the end of FY 2014. Along with innovative, cutting-edge designs, BEP will maintain its focus on producing quality security products in the most cost effective manner possible. It will continue to pursue process improvements as required of an ISO 9001 certified organization, a designation that indicates to current and prospective customers that the BEP employs a rigorous quality management program.

Continuous process improvements will be the catalyst for world class quality and improved cost performance through streamlined processes and low spoilage. In addition to quality certification, the BEP attained ISO 14001 certification in 2007 for its environmental management systems, institutionalizing its commitment to sound environmental stewardship.

The BEP strives to provide its customers with superior products and continuously looks for ways to manufacture efficiently without compromising quality. The BEP is modernizing its business information technology system, which is more than 25 years old. Over the next five years, nearly all of the BEP's production related business decisions will be driven by near real-time manufacturing performance metrics. The upgraded business information system will provide an integrated platform that will simplify and standardize the integration of disparate information technology systems and applications used in the BEP to optimize the timely collection and reliability of all available data. The new business information system will use modern software with built-in longevity and upgrade paths. This project will span the next several years, and it will be a companion modernization effort to the new equipment that the BEP is acquiring.

Conclusion

Mr. Chairman, this concludes my remarks about initiatives at the BEP. I will be happy to respond to any questions you or other members of the Subcommittee may wish to ask. Thank you.