

# BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

DIVISION OF RESERVE BANK OPERATIONS AND PAYMENT SYSTEMS

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## 2015 Currency Budget

### **Action**

On December 11, 2014, the Board approved the 2015 currency budget totaling \$717.9 million, which represents a decrease of \$108.7 million, or 13.2 percent, from the approved 2014 budget, and an increase of 0.8 percent from estimated 2014 expenses.

### **Discussion**

Under authority delegated by the Board, the director of the Division of Reserve Bank Operations and Payment Systems (RBOPS) submits an annual fiscal year (FY) print order for new currency to the director of the Bureau of Engraving and Printing (BEP). Upon reviewing the order, the BEP estimates printing costs for new currency during the calendar year (CY), which staff uses to prepare the annual currency budget. The Board then reviews and approves the final budget. Printing costs for Federal Reserve notes constitute 90 percent of the currency budget. Expenses for currency transportation, the currency reader program, the currency quality assurance (CQA) and counterfeit-deterrence programs, the currency education program (CEP), and other costs to reimburse the BEP make up the remaining 10 percent.

Once the Board approves the currency budget, it assesses the costs of currency to each Federal Reserve Bank on a monthly basis. Table 1 provides details on the Board's CY 2014 budget, 2014 estimate, and 2015 budget.

**Table 1**  
**Currency budget**  
**(calendar year)**

	2014 Budget (thousands)	2014 Estimate (thousands)	Percent change 2014E/2014B	2015 Budget (thousands)	Percent change	
					2015B/2014B	2015B/2014E
<b>Print order (number of notes)</b>	<b>7,845,067</b>	<b>6,877,560</b>	<b>-12.3</b>	<b>7,248,952</b>	<b>-7.6</b>	<b>5.4</b>
<b>BEP expenses</b>	<b>\$767,996</b>	<b>\$663,161</b>	<b>-13.7</b>	<b>\$663,321</b>	<b>-13.6</b>	<b>0.0</b>
Printing Federal Reserve notes	\$745,387	\$657,348	-11.8	\$642,527	-13.8	-2.3
Currency reader	\$19,384	\$2,375	-87.7	\$17,120	-11.7	620.8
Other	\$3,225	\$3,438	6.6	\$3,674	13.9	6.9
<b>Board expenses</b>	<b>\$58,670</b>	<b>\$49,109</b>	<b>-16.3</b>	<b>\$54,618</b>	<b>-6.9</b>	<b>11.2</b>
Currency transportation	\$33,222	\$27,257	-18.0	\$29,235	-12.0	7.3
Quality assurance and counterfeit deterrence	\$21,091	\$18,395	-12.8	\$20,993	-0.5	14.1
Currency education	\$4,357	\$3,457	-20.6	\$4,390	0.8	27.0
<b>Total expenses</b>	<b>\$826,665</b>	<b>\$712,270</b>	<b>-13.8</b>	<b>\$717,939</b>	<b>-13.2</b>	<b>0.8</b>

**2014 Currency Expenses**

Staff estimates that total currency expenses will be \$712.3 million in 2014, which is approximately \$114.4 million, or 13.8 percent, below the 2014 budgeted amount. The budget underrun is primarily attributable to lower printing costs resulting from a smaller order for Federal Reserve notes, as well as lower-than-projected costs for the currency reader program and transporting new and fit notes. These factors are discussed in more detail below.

***2014 Printing and Transportation Expenses***

Estimated expenses for printing Federal Reserve notes in CY 2014 are \$657.3 million, which is \$88.0 million, or 11.8 percent, lower than the budgeted amount. This budget underrun reflects a reduction of 1.8 billion \$100 notes to the FY 2014 order, as approved on July 23 by the RBOPS director.<sup>1</sup> The 2014 budget included costs to print nearly 2.2 billion \$100 notes because our issuance plan for the new-design \$100 note was based on an aggressive replacement rate of the over nine billion \$100 notes in circulation. We planned for high demand for the new \$100 note to avoid the risk of stock-outs and potential concerns in domestic and international markets that we would not be able to meet demand. We based the initial FY 2014

<sup>1</sup> Details regarding the modification to the FY 2014 print order can be found on the Board's public website at [http://www.federalreserve.gov/paymentsystems/2014\\_revised\\_coin\\_currency\\_orders.htm](http://www.federalreserve.gov/paymentsystems/2014_revised_coin_currency_orders.htm)

order for \$100 notes on payments that exceeded the all-time high gross payments in 2012 by 40 percent. Although actual demand in 2014 has been above the 2012 level by about four percent, it is far less than the worst-case demand scenario upon which we based our order. As a result, we decreased our FY 2014 print order for new \$100 notes, which resulted in a \$116.4 million reduction in budgeted variable printing costs. Some of this reduction was offset, however, by higher-than-budgeted production of lower denomination (\$1, \$5, \$10 and \$20) notes during the fourth quarter.<sup>2</sup>

Consistent with ordering fewer \$100 notes than budgeted, we also shipped fewer notes than we included in the 2014 budget. Currency transportation expenses are estimated to be \$6.0 million, or 18.0 percent, lower than the budgeted amount of \$33.2 million.

#### ***2014 Currency Reader Program Expenses***

Estimated CY 2014 expenses for the currency reader program are \$2.4 million, which is \$17.0 million, or 87.7 percent, lower than the budgeted amount because of lower than anticipated reader orders and a lower cost per reader. When we prepared the 2014 budget, the BEP estimated that it would procure and distribute 120,000 readers in 2014 at a cost of \$150 per reader. The BEP currently estimates that it will procure about 22,000 readers at a cost of about \$60 per reader.

The BEP implemented the currency reader program in 2014 to comply with a court order that required the Treasury Department to provide meaningful access to individuals who are blind or visually impaired in denominating U.S. currency. During 2014, the BEP awarded a contract to procure currency readers, established an interagency agreement with the Library of Congress to administer the program, established a call center, printed educational materials in braille, and distributed readers to a limited group of individuals.

#### ***2014 Currency Quality Assurance and Counterfeit-Deterrence Expenses***

Estimated CY 2014 expenses for the CQA and counterfeit deterrence programs are \$18.4 million, which is \$2.7 million, or 12.8 percent, lower than the budgeted amount

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<sup>2</sup> Because the BEP operates on a fiscal year that begins on October 1 and ends September 30, we estimate the Board's calendar-year budget for new currency by eliminating the cost of notes that the BEP will produce in the first quarter of its fiscal year and estimating the costs of notes we project the BEP will produce in the fourth quarter of the calendar year.

primarily because some work related to the CQA program and security feature development that we expected to occur in 2014 will occur in 2015 instead.

Although building a quality assurance system at the BEP is taking longer than we expected, there is evidence that a culture of quality is beginning to emerge. In 2014, with the support of the CQA program, the BEP implemented a new organizational structure that better reflects a commitment to quality. Specifically, the BEP assigned one executive to be responsible for manufacturing at both of its printing facilities (formerly, the BEP had two executives, one for each facility), formed a new executive position responsible for product and technology development, and established an office of quality with a newly approved executive position over the office.

In addition, the BEP has hired and trained staff to assume several key responsibilities that had previously been performed by the CQA consultants, although the consultants continue to be involved in many areas at the BEP. For example, during 2014, BEP staff assumed management of the portfolio and program management office that the CQA consultants established in 2013. Additionally, the BEP installed and began using sorting equipment that culls good notes from rejected half sheets, which is a process known as single note inspection (SNI), so that overall spoilage rates and printing costs decline.<sup>3</sup> The BEP is currently using SNI equipment to process nearly 375 million \$100 notes that we refused to accept because of quality concerns. The CQA program is also using the SNI equipment to track quality improvements over time; the data indicate that the quality of notes produced more recently is higher and more consistent. Although there is still a significant amount of change needed at the BEP to embrace a quality system, there is evidence that quality assurance is beginning to take root.

#### ***2014 Currency Education Program Expenses***

Estimated CY 2014 expenses for the CEP are \$3.5 million, which is \$0.9 million, or 20.6 percent, lower than the budgeted amount. The budget underrun is largely attributable to a delay in implementing an international outreach strategy, which shifted some planned expenditures from 2014 to 2015.

In 2014, the CEP continued to inform domestic and international stakeholders about the redesigned \$100 note. It also expanded its education and communication efforts to include all circulating designs and denominations of Federal Reserve notes. This work necessitated a major redesign of the NewMoney.gov educational website, which is expected to be complete in the first quarter of 2015.

### **2015 Currency Budget**

The proposed 2015 currency budget is \$717.9 million, which is \$108.7 million, or 13.2 percent, lower than the 2014 budget, and 0.8 percent higher than 2014 estimated expenses.<sup>4</sup> The budgeted printing costs in 2015 are lower than the 2014 estimate and budget, reflecting lower fixed costs at the BEP. The delays in the currency reader program shifted costs from 2014 into 2015, which offset the printing cost reductions and made the 2015 budget slightly higher than the 2014 estimate.

### ***2015 Printing Budget***

The currency budget includes \$642.5 million in printing costs for CY 2015, which represents a decrease of 13.8 percent from the 2014 budget and 2.3 percent from 2014 estimated expenses. The printing budget includes \$373.7 million (58 percent) in fixed costs and \$268.8 million (42 percent) in variable costs.<sup>5</sup>

*Fixed Costs:* Fixed costs, which include capital, prepress and engraving, fixed manufacturing overhead and support, research and development, and general and administrative staff, are budgeted to decrease \$57.4 million, or 13.3 percent, from 2014 estimated expenses, primarily because the BEP reduced the amount it will maintain in its working capital account. RBOPS staff reviewed the BEP's billing and budget planning programs earlier this year and the CQA program also focused on BEP finances. Both efforts identified that the working capital

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<sup>3</sup> Board staff was instrumental at influencing the BEP's decision to invest in SNI equipment. Without such equipment, the BEP's process had been to destroy half sheets of 16-subject notes that could have been rejected because only one note failed the quality standards. Using SNI, the BEP can reclaim the 15 good notes, thereby reducing spoilage rates and printing costs.

<sup>4</sup> The attachment shows the new currency expenses, the value and number of notes printed, and the number and cost of notes printed from the 1995 through 2015 budget periods.

<sup>5</sup> The BEP does not receive federal appropriations. All operations of the BEP are financed by a revolving fund that is reimbursed through product sales, virtually all of which are sales of Federal Reserve notes to the Board to fulfill its print order. Customer billings are the BEP's only means of recovering the costs of operations and generating funds necessary for capital investment. Section 16 of the Federal Reserve Act requires that all costs incurred for the issuing of notes shall be paid for by the Board and included in its assessments against the Reserve Banks.

fund is typically far in excess of the BEP's monthly expenses and obligations. The BEP agreed to reduce the amount of the working capital fund by \$40 million to \$90 million, to better align it with the BEP's expected expenses and obligations. For budget planning purposes, the BEP also provided us with a three-year working capital plan that includes nearly \$80 million for anticipated 2015 capital investments. We will work with the BEP to review projects that exceed \$1 million, which require consultation with the RBOPS director before funds are committed, as agreed to in memorandum of understanding between the Board and the Treasury.

Variable Costs: Variable costs, which include paper, ink, direct labor, and other variable manufacturing costs, are budgeted to increase by \$42.6 million, or 18.8 percent, from 2014 estimated expenses because the 2015 budget includes nearly one billion more \$100 notes than the 2014 estimate.<sup>6</sup> We have, however, budgeted \$3.2 million in production savings as a result of new production processes and CQA program initiatives that are designed to reduce spoilage. The BEP will print the same quantity of notes using fewer raw materials and less pressmen overtime because it will lower \$20 note spoilage through SNI processing in mid-2015. In addition, the BEP will increase \$1 note throughput because it has begun using larger format sheets, which increase the notes per sheet by more than 50 percent from 32 notes per sheet to 50 notes per sheet. Additionally, we expect that future budgets will reflect lower variable costs as the SNI equipment is used to reclaim good notes for other denominations and BEP expands 50 note sheet production to additional denominations.

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<sup>6</sup> Details regarding the Board's FY 2015 order can be found on the Board's public website, at [www.federalreserve.gov/paymentsystems/coin\\_currency\\_orders.htm](http://www.federalreserve.gov/paymentsystems/coin_currency_orders.htm).

**Table 2**  
**BEP Printing Costs**

Note type	2014 estimated variable unit costs (per thousand notes)	2015 budgeted variable unit costs (per thousand notes)	2014 estimated total unit costs <sup>2</sup> (per thousand notes)	2015 budgeted total unit costs <sup>2</sup> (per thousand notes)
\$1, \$2 <sup>1</sup>	\$18.98	\$18.33	\$54.09	\$48.62
Series 2004 \$5	\$35.38	\$35.80	\$101.37	\$104.97
Series 2004 \$10	\$33.99	\$34.77	\$91.81	\$100.79
Series 2004 \$20, \$50	\$37.69	\$38.16	\$102.07	\$100.54
Series 2004 \$100	\$66.35	\$68.25	\$130.89	\$133.12
Average cost per thousand notes <sup>3</sup>	\$32.89	\$37.08	\$95.58	\$88.64

1. \$1 and \$2 notes do not include the security features that are in the series 2004 design notes; series 2004 \$5 notes include two watermarks and additional security features; and series 2004 \$10, \$20, and \$50 notes include watermarks, additional security features, and a new color-shifting ink. The series 2004 \$100 note includes a watermark, a 3D security ribbon, a new color-shifting feature (“the Bell in the Inkwell”), additional security features, and a new color-shifting ink. This higher level of security for the series 2004 \$100 note has significantly increased the cost for both paper and ink.

2. The total costs per thousand notes are fixed costs divided by the number of notes in the Board’s order, plus variable costs per thousand notes.

3. The average cost per thousand notes for 2015 is budgeted costs divided by the number of notes included in the CY 2015 budget. For 2014, the average cost per thousand notes is estimated costs divided by the number of notes included in the CY 2014 estimate.

The BEP provided us with estimates of 2015 printing costs, as shown in table 2, which reflect the number of notes in our order and the cost savings initiatives discussed above. Variable costs are determined primarily by the cost of paper, therefore, the average variable cost per thousand notes increased from \$32.89 in 2014 to \$37.08 in 2015 because the share of more-expensive \$100 notes increased from eight percent in the CY 2014 estimate to 21 percent in the CY 2015 budget. Variable costs by denomination, however, remained largely unchanged from 2014 to 2015 and range from \$18.33 per thousand notes for \$1 notes to \$68.25 per thousand notes for \$100 notes. The total projected cost per thousand notes declined from \$95.58 in 2014 to \$88.64 in 2015 primarily because of the adjustment to the BEP’s working capital target and other reductions in its budget for capital expenses in 2015.

***2015 Currency Reader Program Budget***

The 2015 currency reader budget is \$17.1 million, which is approximately \$14.7 million higher than 2014 estimated expenses and \$2.3 million lower than the 2014 budget. Lower reader orders in 2014 resulted in the majority of 2014 budgeted expenses being moved into 2015. The budget includes \$15 million to purchase and distribute over 250,000 currency

readers to qualified individuals who are blind or visually impaired at no cost to the user.<sup>7</sup> In addition, the budget includes \$1.8 million to reimburse the Library of Congress for administering the program through the existing infrastructure of its book reader program, which is managed by the National Library Service. The BEP will continue to bill the Board quarterly based on actual expenses, rather than including an estimated cost for the program in its billing rates.

### ***2015 Budget for Other Reimbursements to the Bureau of Engraving and Printing***

The 2015 budget includes \$3.7 million to reimburse the BEP for expenses incurred by its Destruction Standards and Compliance Division of the Office of Compliance (OC) and Mutilated Currency Division (MCD) of the Office of Financial Management. The OC develops standards for cancellation and destruction of unfit currency and for note accountability at the Reserve Banks, and reviews Reserve Banks' cash operations for compliance with its standards. As a public service, the MCD also processes claims for the redemption of damaged or mutilated currency.

### ***2015 Currency Transportation Budget***

The 2015 currency transportation budget is \$29.2 million, which is nearly \$2.0 million, or 7.3 percent, higher than 2014 estimated expenses. The budget includes the cost of shipping new currency from the BEP to Reserve Banks, of intra-System shipments of fit and unprocessed currency, and of returning currency pallets from the Reserve Banks to the BEP. We estimate that we will ship more notes in 2015 than we shipped in 2014 because our CY 2015 budget includes nearly six percent more notes than the CY 2014 estimate. We are currently negotiating contract rates with armored carriers for 2015, but have assumed, for budgeting purposes, that rates will increase six percent, based on historical increases.

### ***2015 Currency Quality Assurance and Counterfeit-Deterrence Budget***

The 2015 budget for CQA and counterfeit-deterrence is \$21.0 million, which is about \$2.6 million, or 14.1 percent, higher than 2014 estimated expenses, but roughly unchanged from the 2014 budget. The budget includes \$13.9 million to fund the CQA program and \$7.1 million to fund counterfeit-deterrence research and projects.

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<sup>7</sup> The BEP estimates that it may distribute up to 500,000 readers over a three year period.



### *Currency Quality Assurance*

The budgeted amount of \$13.9 million for the CQA program is \$0.6 million, or 4.5 percent, higher than 2014 estimated expenses and unchanged from the 2014 budget. The budgeted funding will allow the CQA consultants to continue facilitating the implementation of the new quality system at the BEP; to support the research, technology, and product development required for the next design family of Federal Reserve notes; and to continue providing temporary resources to the BEP to sustain critical programs that have been implemented for the quality system. In December, the Board expects to enter into a new contract with the CQA consultants to continue this work during 2015 with an option to extend the contract for an additional four years at a total five-year cost not to exceed \$34.4 million.

During 2015, the Board and CQA consultants will continue to build on the improved processes established to date. Efforts will continue to focus on several BEP operational areas to derive and sustain improvements in both quality and efficiency. The CQA consultants will continue to focus on the BEP's management processes to monitor and continuously improve the quality system. The CQA consultants will also assist the BEP in improving the banknote design process so that production quality is considered at the conceptual stage and continues through the development and testing stages of the next family of banknotes. The consultants will also work with the BEP to implement programs that will further reduce spoilage, building upon the reductions included in the 2015 budget. The CQA consultants believe that the BEP can reduce annual production costs in future years by at least \$60 million if it minimizes spoilage and maximizes throughput by engaging the SNI equipment fully and producing currency more efficiently.

### *Counterfeit-Deterrence*

The 2015 budget for counterfeit-deterrence research is \$7.1 million, which is nearly \$2.0 million, or 39.2 percent, higher than 2014 estimated expenses and largely unchanged from the 2014 budget because the security feature development activities that were planned for 2014 have been moved to 2015. The budget includes \$5.0 million for membership in the Central Bank Counterfeit Deterrence Group (CBCDG). The CBCDG operates under the auspices of the G-10 central bank governors to combat digital counterfeiting and includes 34 central banks. The Board's share of the 2015 CBCDG budget makes up over 70 percent of the Federal Reserve's counterfeit-deterrence budget. The other 30 percent mostly includes funding for research to

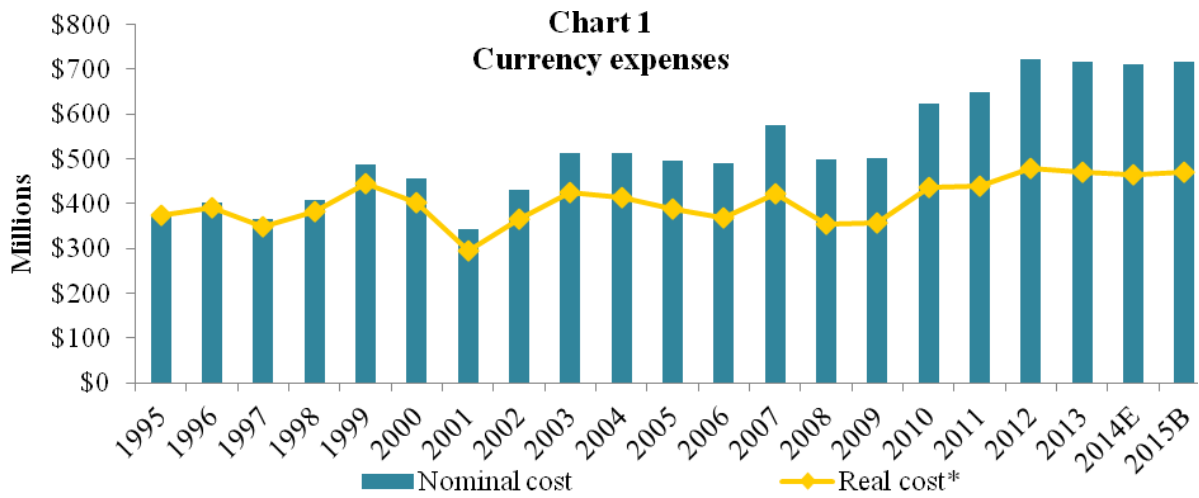
support increasing the security of Federal Reserve notes for the next design family and membership in the Reprographic Research Center to perform adversarial analysis on design concepts and potential security features.

***2015 Currency Education Program Budget***

The 2015 CEP budget is \$4.4 million, which represents an increase of \$0.9 million from 2014 estimated expenses, but is nearly equivalent to the 2014 budget. The CEP program protects and maintains confidence in U.S. currency worldwide by providing educational information on all circulating designs of Federal Reserve notes to the global public and key stakeholder groups.

In 2015, the CEP will continue to use in-house resources and leverage, when possible, existing Reserve Bank, United States Secret Service, State Department, and BEP partnerships in order to minimize expenses. Tasks that either cannot be or would be too resource-intensive to be sourced internally will be contracted; these tasks account for more than 90 percent of the 2015 CEP budget. The major expense drivers for the 2015 budget include the fulfillment of educational materials in 30 languages, international outreach to businesses and retailers, and hosting and developing the NewMoney.gov educational website. New initiatives in 2015 include the development of a tailored education program for the U.S. retail sector and the development of a new, comprehensive educational guide for consumers and businesses.

**Attachment: New Currency Expenses**



\*Real cost is nominal cost deflated by CPIU, normalized to 1995, seasonally adjusted

