



A Possible Pilot Collaboration between Rural Telecom Providers and the Postal Service

Issue Brief

February 8, 2013

**Prepared by U.S. Postal Service Office of Inspector General
Report Number: RARC-IB-13-001**

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Executive Summary

In order to provide new digital services, reduce costs, and improve access, some international postal operators are using hybrid delivery networks that combine traditional physical mail delivery with digital delivery. Such networks allow a postal operator to cut costs by reducing the number of days that it physically delivers mail, while providing customers 24/7 digital access to postal services through computers or handheld devices. The U.S. Postal Service does not currently have such a hybrid physical/digital delivery network. If it decides to pursue one however, the Postal Service will likely face particular challenges in providing adequate service in rural areas. Some rural customers cannot use the Internet as a communications channel, as service in their communities is either unavailable or too costly.

This issue brief describes one possible approach to addressing this problem: a partnership between the Postal Service and rural telecommunications companies to establish a digital postal network and ensure adequate digital access in rural areas. The concept addressed in this issue brief was first discussed by rural telecommunications experts at postal conferences over the past few years.¹ Based on the interest that this concept has received, the U.S. Postal Service Office of Inspector General decided to conduct further research and explore the concept from the postal perspective. If the Postal Service reduces its physical footprint in rural areas, it will need to explore new ways of providing service to rural residents. The ideas presented in this paper are not an endorsement of such a concept, but rather an attempt to objectively review the concept as one method to: reach rural Americans, particularly those who currently lack affordable and reliable broadband access; enhance postal services with digital technology; and address future Postal Service delivery cost issues.

The partnership would create a pilot program to develop a secure digital communications network linking the Postal Service with its rural customers. This digital postal network would use existing telephone lines owned by rural telecom companies. The telecom companies would set up the digital network by installing broadband networking equipment at postal facilities and rural households that voluntarily choose to sign up for the pilot program, and providing the software necessary to send and receive secure digital messages over the telephone lines.² The Postal Service would provide

¹ This idea was first presented by Victor Glass, Director of Demand Forecasting and Rate Development with the National Exchange Carrier Association (NECA) at the Advanced Workshop in Regulation and Competition, 2011-2012, April 6, 2012 – Postal Reorganization Conference, hosted by the Center for Research in Regulated Industries, Rutgers University. Stela Stefanova, Ronald Dibelka and Salvatore Talluto of NECA provided comments on a number of technical issues.

² While this issue brief focuses on wireline telecommunications, other technologies such as wireless telecommunications could be leveraged in addition to or in place of the wireline approach.

the telecom companies with access to Post Offices and other facilities as necessary to install the broadband networking equipment. Once the software and hardware for the digital postal network is in place, the telecom companies would be able to leverage the same broadband equipment and software to provide digital subscriber line (DSL) broadband Internet access to consumers at subsidized rates. In order to create a clear value proposition for consumers, the partnership might need to package the digital postal network and DSL together, offering them as a combined service. The market for the digital postal network alone is untested and uncertain.

The Postal Service would also provide content and services for the network, starting with digital, hybrid, or reverse hybrid mail, and secure messaging, including the ability to receive track and trace notifications. Digital mail involves the creation and delivery of mail entirely in digital form. Hybrid mail begins in digital form and is delivered as a physical mail piece. Reverse hybrid mail begins in physical form and is delivered to the customer electronically. In addition to tracking and tracing parcels and letters, the digital network could also provide a way to provide other secure messaging services such as an electronic mailbox for rural communities, especially for rural residents who are currently digital refugees. The network could also support consumer to consumer (C to C) communications. Deploying these services could allow the Postal Service to give greater consideration to reducing delivery costs by partially replacing physical delivery with digital delivery.

Several postal administrations and private companies around the world have deployed these technologies to provide enhanced postal services to both urban and rural customers and reduce delivery costs. The Department of Defense recently implemented a reverse hybrid mail solution at the Pentagon following a successful pilot. Postal Service customers will require a digital communications link, preferably over a broadband network, to use any of these enhanced postal services. The relatively low rate of broadband usage in rural areas currently limits the potential for rural postal customers to utilize these services.

The Postal Service could also leverage the network to support a number of e-Government and social service applications. By including other entities such as federal, state, and local government agencies and nonprofit service providers in the pilot program, a rural customer could have a secure digital connection to government offices and health care providers using the Postal Service's virtual network (VN). Customers could also go to a Post Office to use advanced services such as two way video connections with a doctor or to communicate with government employees over the VN. The Postal Service could become a portal for broadband intensive secure transmissions for vulnerable populations, an idea which has been previously suggested by senior telecom experts in the federal government.

The goals of the pilot program are to provide digital communications for rural and poor consumers, particularly those who do not presently use broadband Internet services, while allowing the Postal Service to offer innovative and cost-effective services to all of its rural customers. To help fund the pilot program, the program participants could work together to apply for money that federal, state, and local governments have made

available for expanding broadband Internet access. These funds could be used for installation costs, and to help subsidize computers and training for consumers. Access to such funds could help the Postal Service and its partners cover the costs of establishing the digital postal network.

Introduction

A pilot program proposed by experts on rural telecommunications would support expanded broadband adoption in rural areas and provide the foundation for enhanced postal services. This document is intended as an initial, high level exploration of the concept, not as an endorsement. The partnership would implement a pilot program establishing communications links between postal facilities and households. The basic communications link, a virtual network (VN), would allow for the reliable and secure two-way transfer of data between the Postal Service and customers who do not currently utilize broadband service.³

The VN would allow the Postal Service to offer enhanced services to rural customers; support an emergency digital communications network; and provide an alternative, convenient, and potentially more cost effective way of providing universal service by reducing reliance on physical delivery.⁴ By using the VN to replace physical delivery to the home with digital presentment of mail one day per week, the Postal Service could potentially save roughly \$550 million in labor costs annually, while maintaining or improving overall service in rural communities.

A postal virtual network in rural areas could support the introduction of digitally enhanced postal services and broadband expansion; and help to lower the costs of physical delivery in rural communities.

In addition, a virtual network could help to lay the groundwork to provide rural customers with broadband Internet service that is highly affordable and relatively simple to implement. Consumers would have to purchase access to the public Internet separately, but the existence of the VN would make connecting to the public Internet cheaper and easier. Therefore, this pilot could allow for innovative digital postal services, while also

supporting the national goal of increasing broadband adoption in rural areas.⁵ Furthermore, there are government, nonprofit, and private sector funds available to support broadband expansion that could be used to support the startup or operational costs of such a pilot.

In theory, the pilot program could accelerate progress towards three significant goals:

³ Rural customers who are already broadband Internet subscribers would be able to use the postal VN, but the main focus of this brief is customers who do not currently utilize broadband.

⁴ This brief addresses the concept of the virtual network as a conduit for a variety of postal products, rather than describing the network as a product itself. The brief does not address whether the network would be considered a postal product permissible under the law. In order to offer the public the products and services addressed in the brief, the Postal Service would be required to obtain a regulatory determination from the Postal Regulatory Commission, which must determine whether each proposed product is a nonpostal service, prohibited by the Postal Accountability and Enhancement Act. Legislative changes might be necessary in some cases. If access to the network itself were offered as a service, such an approach would also require a determination by regulators and/or legislative changes.

⁵ The term "adoption" refers to potential broadband users who actually subscribe to or use broadband services. Adoption is generally an issue of affordability and education. In contrast, "access" refers to the physical availability of broadband technologies to a population, such as the availability of DSL, cable, or satellite options for accessing the Internet. This issue brief addresses the adoption issue. It does not examine, for example, the significant issue of laying new fiber cables in rural areas.

- Reduce the Postal Service's physical footprint while maintaining or even improving universal service;
- Provide a secure platform and test bed for digitally-enhanced postal services that would help to modernize the Postal Service; and
- Support the broader national objectives of boosting demand, availability, and utilization of broadband.

Despite these potential benefits, this concept requires further study prior to implementation. There is not yet a consensus among telecommunications experts as to the value of this concept for stimulating broadband Internet usage and deployment. There is uncertainty about whether the project, as currently conceived, would draw sufficient external funds to cover its costs. A detailed financial analysis has not been performed to determine whether the added value to the Postal Service of being able to communicate with rural residents who are not currently broadband Internet users would be worth the additional capital and administrative costs and effort needed to establish the program as currently conceived. This is particularly true given the current financial and economic circumstances facing the Postal Service. The Postal Service, however, could consider this concept or a similar one in the future if deployment costs are found to be manageable. The partnership described in this brief may provide a possible conceptual model for discussions about partnering with telecommunications and technology entities for the development and deployment of digitally-enhanced postal services.

Background

The Postal Service is in the midst of a difficult transition, adapting to the increasing utilization of electronic and digital means for communications and commerce, and the resulting decline in mail volume. In response to the decline in mail volume, there is widespread agreement among experts that the Postal Service's physical footprint should be reduced as well. Postal Service officials and stakeholders are looking for opportunities to use the Internet to enhance its product offerings and reduce costs.

S. 1789 would require universal service standards for retail products, whether offered through Post Offices or other retail channels such as the Internet.

Proposed retail facility closings and delivery service cuts have raised concerns that rural residents would lose critical access to postal services, particularly in areas with limited or no broadband access. The 21st Century Postal Service Act (S. 1789), passed by the U.S. Senate on April 25, 2012, includes the views of the Senate on universal postal service in delivery and retail. S. 1789 reflects the concerns of many elected officials regarding plans to reduce the number of delivery days by prohibiting such a reduction for two years, and directing the Postal Service to consider all other options prior to making such a decision.

S. 1789 also directs the Postal Service to consider how its plans to use alternate retail (such as USPS.com) would affect customers' access, and to make plans to improve access to postal services where possible. Notably, these provisions build on previous legislative requirements for the Postal Service to report on efforts to streamline its processing and retail networks. The new Postal Service plans would be required (1) to consider the impact of replacing Post Offices with alternate retail in small communities and rural areas, (2) to ensure that the Postal Service continues to serve such areas, and (3) to allow for community input. The bill would direct the Postal Service to develop national service standards to guarantee customers a certain level of access to retail service, "whether at the [P]ost [O]ffice or some alternative to the [P]ost [O]ffice,"⁶ while taking into account several issues, including population density, demographic factors, and the feasibility of offering retail alternatives.

The bill would also permit the Postal Service to introduce new nonpostal products that meet certain criteria, including that the new products utilize the agency's processing, transportation, delivery, or retail networks, or technology. Collectively, these provisions suggest that the Senate is concerned about a reduction in service to rural residents among other customers, but also wants the Postal Service to think strategically about integrating technology and retail alternatives into its portfolio of products and services in order to maintain or improve service as we transition to a digital-based economy.

The Broadband Digital Divide

Only 50 percent of rural residents have broadband at home.

Policymakers and other observers have been concerned about the digital divide that separates those who utilize broadband to access the Internet frequently, and vulnerable populations who use broadband at much lower rates. While the overall

national broadband adoption rate is 65 percent, it is only 50 percent for rural Americans, 40 percent for low income households, 24 percent for those without high school degrees, and 35 percent for people over 65 years of age.⁷ In March 2010, the Federal Communications Commission (FCC) unveiled its *Connecting America: The National Broadband Plan*, a strategy to address the broadband digital divide. It is a sweeping proposal to boost broadband availability and adoption rates in the United States. It calls for, among many recommendations, increased cooperation between the National Telecommunications and Information Administration (NTIA), and other federal agencies.⁸

Interestingly, the *National Broadband Plan* identifies a perceived lack of relevance as one of the barriers to broadband adoption by senior citizens.⁹ Senior citizens are among the most loyal users of mail, and a primary subject of concern by those who seek to maintain universal postal service. Linking broadband Internet access to tools that

⁶ S. Rept. No. 112-143, sec. 204 (2012). See also S. 1789, sec. 204, as passed by the Senate.

⁷ *The National Broadband Plan*, Federal Communications Commission, p. 167, exhibit 9-A (March 15, 2010). <http://www.broadband.gov/download-plan/>.

⁸ *The National Broadband Plan*, p. 178.

⁹ *The National Broadband Plan*, p. 179.

provide convenient new ways to receive, view, and manage mail, particularly for elderly customers with limited mobility, could be one way to enhance the relevance of both broadband and physical mail while preserving access to postal services. To provide training for seniors, there are several existing digital literacy training programs at the federal, state, and local levels, and the *National Broadband Plan* recommends the expansion of such programs and the creation of a national Digital Literacy Corps.¹⁰

Along with the responsible telecommunications and Internet-focused agencies such as the FCC and NTIA, the Postal Service could play an important role in addressing these growing geographic and economic divisions. The U.S. Postal Service Office of Inspector General (OIG) previously issued a report which notes that the Postal Service already partners with telecommunications firms by subleasing antenna space to wireless service providers, and recommends further partnerships with government agencies and private companies to enhance broadband provision in rural areas.¹¹ The Postal Service's updated Universal Service Obligation or "USO 2.0" could incorporate digital as well as physical communications. The organization would not only serve as an enabler of traditional physical communications and commerce, but would also serve as a bridge between those that have embraced or have access to digital services (digital natives) and those lacking the ability, willingness or the access (digital refugees). The establishment of a VN could reflect the next step in such an evolution. Such a network would allow rural residents to continue receiving the range of trusted postal products and services while ensuring that no one is left behind in the emerging digital economy.

Pilot Program for Enhanced Postal Services and Support of Broadband Expansion

A pilot program could help address many of the concerns and priorities described above by providing secure communications links for rural postal and telecom customers, particularly those who do not currently use broadband. Postal Service customers could receive enhanced postal services, such as digital mail, hybrid or reverse-hybrid mail, and secure messaging, including the ability to receive track and trace notifications, through a low speed¹² broadband virtual network (VN). In addition to tracking and tracing parcels and letters, the digital network could also provide a way to provide other secure messaging services such as an electronic mailbox for rural communities, especially for rural residents who are currently digital refugees. Mailers might also use innovative, integrated multimedia marketing approaches that would require a digital communications link which many rural customers are presently lacking. The Postal Service could, in theory, continue to provide universal service while reducing its reliance on physical delivery.

¹⁰ *The National Broadband Plan*, p. 174-183.

¹¹ See U.S. Postal Service Office of Inspector General, *21st Century Post Office: Aligning with the National Broadband Infrastructure Initiative*, Report Number DA-MA12-2012, January 23, 2012, http://www.uspsoig.gov/foia_files/DA-MA-12-002.pdf, which recommends that the Postal Service partner with federal agencies and private sector Internet Service Providers to host broadband infrastructure, particularly for the provision of broadband in unserved and underserved rural communities through Wi-Fi hotspots.

¹² Telecom experts suggest that a DSL service deployed in the manner described in this brief would offer speeds of less than one megabit per second.

A VN is a software-based private broadband network that interconnects customers through the public communications infrastructure by reserving a broadband channel through which information can be transmitted securely using special routing, authentication, and encryption to assure a high degree of communications security. To set up the VN, the telecom provider would install broadband networking equipment and software at the local Postal Service facility, as well as providing low-cost equipment such as a modem and software for a customer's home.

Once the VN is established and linked to a home, a Postal Service customer could view mail online (the outside of an envelope or parcel, as well as the contents, depending on the customer's preferences¹³) as well as notify the Postal Service that she wants the item delivered to her mailbox. A customer could also have a secure digital connection to government offices, other important social service websites such as healthcare agencies, and other businesses using the Postal Service's VN.¹⁴ In addition to services accessible at their home, customers could also go to a Post Office to use advanced services such as two way video connections to their doctor or to speak with government employees over the VN. The Postal Service could become a portal for broadband intensive secure transmissions.

A secure virtual network would allow rural customers to view their mail online and provide delivery instructions to the Postal Service.

Other countries have implemented similar approaches on a broader scale. For example, Swiss Post allows customers to either have their mail delivered at home or scanned and delivered via an Internet-connected device. In New Zealand, the postal operator is working with a company called Digital Postal Mail (formerly Zumbox). The company's platform permits delivery of a secure facsimile of paper mail that a person can retrieve from an electronic mailbox. Canada's epost is an electronic mailbox that has 8 million registered users. Canada Post has partnered with a number of government agencies and private companies to offer bill statements, bill payments, and document management through epost.

¹³ In order to have his mail opened and scanned by a third party and made available online, a customer would have to provide consent by signing Postal Service form 1583, *Application for Delivery of Mail Through Agent*. Title 39 U.S.C. § 404(c) requires the Postal Service to maintain one or more classes of mail that are sealed against inspection, such as First Class Mail. In addition, Postal Service policies direct that mail that is not sealed against inspection may only be opened in very limited circumstances.

¹⁴ While the network could support C to C communications, the commercial value of such a capability on a rural postal VN is uncertain and is potentially limited, particularly in relation to other communications options. The pilot addressed in this issue brief would focus on a relatively small subset of rural customers. As the target population is relatively small, the network effects on the demand side, and economies of scale on the supply side, are unlikely to be highly attractive for C to C communications on this particular pilot network, as compared to phone and Internet access. If the VN described in this brief were part of a wider initiative, the VN could potentially provide more value as a C to C channel by linking rural customers to broader communications networks.

Finland's Antilla pilot used digital communications to maintain service to rural residents, while reducing rural physical delivery and associated costs.

Finland's national postal operator, the Itella Corporation, has provided one example of how a postal operator can utilize digital communications to provide enhanced services, specifically for rural residents, while reducing operational costs. Itella has begun providing electronic delivery of mail to an electronic mailbox controlled by the consumer. It recently completed testing the use of digitally-enabled services integrated with physical delivery in the rural area of Antilla. Itella operated the Antilla Living Lab, testing new delivery approaches on a trial basis with a small number of households (122) and businesses (17).

In the trial, first and second class letters were scanned and made available to the customer electronically. After Itella scanned the mail, it delivered the items physically to the mailbox twice a week, while the customer was able to retrieve the letters (as well as parcels) from a central retail location as needed between delivery days. Itella consulted with customers while developing the trial, and reported that participants were satisfied with receiving paper mail twice a week in the mailbox.¹⁵ The Antilla trial provides an example of expanding and modernizing service for rural residents while reducing the costs associated with physical delivery.

On a narrower scale, the U.S. federal government has begun to utilize digitally enhanced postal services. The Department of Defense (DoD) recently implemented the Digital Delivery Mail Program for all Pentagon residents. The system involves scanning physical mail and providing digital delivery to end users. In a successful pilot program, the DoD found that the system substantially reduces the time for manual processing and delivery of mail. The DoD predicts that the system will reduce the cost of mail delivery over time. In addition, the DoD reported that the system improves the traceability, security, and efficiency of mailing operations.¹⁶

How Data is Transmitted Securely in the Postal Virtual Network

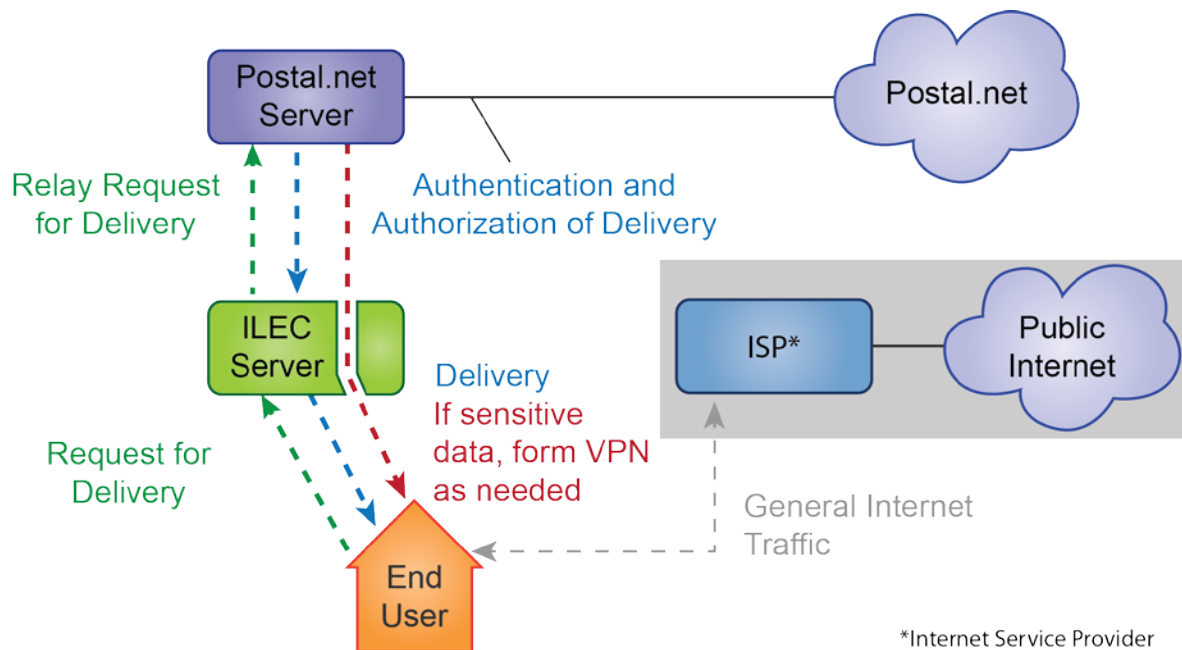
While both types of networks can provide for secure transmission, the VN described in this issue brief is a distinct concept from a Virtual Private Network (VPN), which is an approach in which a tunnel is formed within the public Internet to protect packets of data delivered within the tunnel from inspection or interception. According to technical experts, the VN described in this paper differs from a VPN in that it is a separate network from the public Internet. Although security measures such as encryption may be used, VPN-type tunneling is not normally required because the information flows through the separate network rather than through the public Internet.

¹⁵ Itella presentation, *Developments in Digital Business Case Itella*, Dr. Tommi Tikka, Itella (November 29, 2011).

¹⁶ Department of Defense Correspondence Management Division, <http://www.dtic.mil/whs/esd/cmd/ddmp.htm>. See also Department of Defense 2012 Congressional Report on Defense Business Operations, http://dcmo.defense.gov/publications/documents/March_2012_Congressional_Report.pdf, p. 15.

The diagram below presents a highly simplified illustration of how digital information flows through the postal VN separately from the public Internet. This diagram omits many steps in the electronic storage and exchange of data as well as the physical collection and scanning of hard copy mail. When an end user makes a request for electronic delivery, the request is relayed to a server owned by the rural telecom provider (in telecom industry jargon, an Incumbent Local Exchange Carrier, or ILEC). The telecom provider's server then relays the request for delivery to the servers in the postal VN. Authentication and authorization of delivery is conducted in the postal VN (along with accounting, which is not depicted for the purposes of this diagram), confirming that the end user is entitled to access the information. A message authorizing delivery is then sent from the postal VN to the rural telecom provider's server, which then provides final delivery to the end user. Routing postal information through a separate network allows for an elevated level of security in the postal network.

Secure Transmission of Data between the Virtual Network and the End User



The final data exchange between the rural telecom provider and end user, as well as the data sitting on the telecom provider's server prior to delivery, are potential points of heightened vulnerability. This risk can be mitigated by encrypting the data on the server and during transmission between the server and the end user. Where the content is sensitive information such as a bank statement, however, additional security might be necessary.

It is at this point that a VPN could be deployed to further enhance security. A VPN can be created on an as needed basis to form a tunnel between the end user and the postal

VN, passing through the rural telecom provider's server, and providing for secure transmission to the end user. In this approach, the sensitive data would sit in the postal VN's servers, rather than telecom provider's server, while awaiting final delivery to the end user. (Public key infrastructure may be deployed to strengthen authentication prior to authorizing access to the data. In this scenario, the end user could also be provided with a token that would be used to authenticate the user along with a password.) According to technical experts, using a VPN for all exchanges of data, rather than on an *ad hoc* basis, might be unnecessarily costly, since lower and less expensive levels of security are appropriate for less sensitive types of data.

Security in the Postal.net concept has several potentially complex technical, legal/regulatory, and administrative aspects. The roles, responsibilities, and risks involved in network security should be spelled out and managed carefully throughout a partnership. While the Postal Service has significant resources devoted to information security,¹⁷ telecom companies or other experts on network security might be better positioned to provide some of the security for a digital communications network.¹⁸ The Postal Service might consider contracting out some security responsibilities to a telecom partner or another firm.

The type of partnership described in this issue brief could provide many economic benefits to rural telecom providers, such as the ability to extend broadband Internet coverage to rural residents at a higher quality and lower costs than if telecom providers did not have access to Postal Service facilities. For example, as wires are stretched for longer distances between the nodes in a network, the broadband speed decreases. Allowing telecom providers to use postal facilities to increase the number of nodes in their network could allow them to maintain reasonable broadband speeds without incurring the expense of building their own nodes or facilities in vast rural areas. Postal Service executives may consider negotiating for a telecom partner to take on a greater share of the security burden in exchange for some of these potential benefits.

Postal Service actions and policies concerning the network would be bound by the Privacy Act, the Electronic Communications Privacy Act, title 39 of the U.S. Code, and other relevant statutes, regulations, executive orders, and Presidential directives. In addition, Postal Service partners would likely be required to comply with a number of laws applicable to the private and public sectors. A Postal Service contract with a service provider would likely include provisions to ensure compliance. Oversight of Postal Service, partner, and contractor performance could be provided by the Postal Service's Chief Information Officer, Corporate Information Security Office, and Privacy Office, with additional law enforcement oversight by the Inspection Service and the OIG.

¹⁷ The Postal Service was recently chosen to implement a pilot version of the Federal Cloud Credential Exchange, a cloud-based system that will be designed to allow federal agencies to accept from citizens a variety of credentials issued by third parties. The OIG has previously found that digital identity services can play a role in the digital identity ecosystem. See *Digital Identity: Opportunities for the Postal Service*, Report No. RARC-WP-12-011, May 29, 2012, http://www.uspsoidg.gov/foia_files/RARC-WP-12-011.pdf.

¹⁸ For example, building firewalls, network monitoring, and intrusion detection might be handled by external experts on network security. The security of individual end users' computers is also important. The Postal Service and its potential partners would need to provide education on security practice for end users, many of whom would be unsophisticated consumers of information technology.

Potential Delivery Cost Savings

OIG experts on postal operations performed a general analysis of the potential labor cost savings that the Postal Service could achieve by partially replacing physical delivery with digital presentment in rural areas. "Rural" in this analysis is defined by reference to areas served by rural telecom providers.¹⁹ These areas generally have low population density, and hew closely to a common sense understanding of the term "rural," rather than focusing only on the areas where the Postal Service provides "rural delivery." "Rural delivery" as defined by the Postal Service applies in some cases to areas that would not be considered rural in lay terms. The cost savings analysis is a rough estimate and is only intended to give an idea of the magnitude of potential savings if such a program were implemented nationwide.

Presenting mail digitally could allow the Postal Service to reduce the costs associated with physical delivery

This analysis found that the labor savings would be about \$550 million if digital presentment replaced physical delivery to the home one day per week.²⁰ The analysis focuses only on labor costs, and excludes other potential savings as well as potential lost revenues if reducing the days of physical delivery reduced the attractiveness of the mail for certain senders.²¹

This analysis also does not aggregate the costs of establishing virtual networks in rural areas across the nation. On a local site-specific basis, preliminary estimates are that the partnership would cost the Postal Service about \$700 per postal facility in installation costs, and about \$350 per month per postal facility in recurring subscription costs. Consumers might be able to receive subsidized, low-speed DSL broadband Internet access for less than \$10 per month, based on the ability to leverage the Postal Service digital network.

¹⁹ This analysis was conducted by selecting rural delivery routes serving ZIP codes identified by the National Exchange Carrier Association, Inc. (NECA) as being served by NECA tariff participants, which generally are local telecom companies serving highly dispersed rural populations. This method yielded 78,134 rural routes in 19,551 ZIP codes. The costs for these routes were retrieved from the Postal Service's general accounting ledger, U.S. Postal Service, *FY 2011 General Ledger* by Finance number from the *Accounting Data Mart, Electronic Data Warehouse (EDW)*. The fixed costs in these routes were then isolated by reference to the FY 2011 Public Cost Segments and Components <http://about.usps.com/who-we-are/financials/cost-segments-components-reports/fy2011.pdf>, which lists fixed costs as roughly 60 percent. The analysis performed for this paper was cross referenced against rural carrier labor cost savings of \$336 million for eliminating Saturday delivery as estimated by Dr. Michael Bradley. *Direct Testimony of Michael D. Bradley on behalf of the United States Postal Service*, pp. 31-32, <http://www.prc.gov/Docs/67/67422/USPS.T.6.Bradley.pdf>. Because Saturday includes a large number of non-full time employees, the estimated cost savings are expected be lower than for weekdays. The \$550 savings figure reflects potential savings from eliminating one day of weekday delivery. Thus, the Bradley estimate is not inconsistent with a finding of \$550 million per day in cost savings, and may be considered as an alternative low end estimate for eliminating one day of delivery, if Saturday is chosen as the day, while the analysis performed for this brief represents potential labor savings if decision makers select a weekday.

²⁰ Replacing physical delivery with digital presentment of mail one day per week would require legislative changes.

²¹ Other potential cost issues that are not included in the analysis include: the costs of training local personnel on how to properly service customers; training maintenance workers; one-time costs to implement scanning software to capture mail images (if reverse hybrid mail were used in addition to digital mail); one time or recurring costs for hardware to put mail images online (servers); recurring operational costs to scan the mail (for reverse hybrid mail); vehicle cost savings; recurring operational costs for assisting customers locally or via a call center; and administrative costs related to the entire pilot program.

This paper assumes, for the sake of developing the concept, that the charges would be largely funded through federal programs and partnerships that are currently aimed at increasing broadband adoption in rural communities and among vulnerable populations such as low income and elderly Americans.

A pilot program might include the following objectives, roles for the respective parties, and benefits:

Objectives

- Lower the costs of universal postal service in rural communities.
- Provide a platform for digitally-enhanced postal services.
- Improve postal customer service by expanding access.
- Support the expansion of broadband in rural communities.
- Establish a test bed for innovations in postal services.

Roles

- Postal Service: Provide access to facilities as necessary to install electronic equipment. Provide content and services: e.g. digital, hybrid, or reverse hybrid mail.
- Rural Telecom Carriers: Establish virtual network. Coordinate applications for broadband and related funds.
- Government: Funding for computers and education for end users. Funding to establish a virtual network.

Benefits

- Consumers: Access to enhanced postal services. Communications link for emergencies and secure transactions.
- Postal Service: Potential reduction of delivery costs in high cost areas. Ability to offer enhanced services on the VN and broadband network. Multi-channel capabilities might provide additional value to mailers and help sustain the physical mail business.
- Rural Telecom Carriers: Attract funding for increased broadband adoption rates, and for build out. Utilizing postal infrastructure would allow carriers to maintain reasonable broadband speeds while saving the expense of building new facilities in rural areas.
- Government: Emergency/backup telecom carrier and services for digital refugees. Emergency community services. Can tie a pilot to larger broadband adoption and economic development goals.

Potential Support for Broadband Related Costs

To the extent that a pilot program would be used to promote consumer access to broadband Internet service beyond establishing a VN, there are a number of potential

funding sources that the program could draw upon. Many of these sources relate to money administered and distributed under the FCC's universal service fund, which can be tapped by telecom carriers. The FCC has recently expanded its core rural universal service initiatives to support broadband expansion in rural areas.

In October 2011, the FCC issued a formal order creating the Connect America Fund, which allowed universal service funds to be made available for broadband. The order transitions the largest portion of the universal service programs, the *High Cost* program, from exclusively providing subsidies for traditional telephone infrastructure in order to make universal service funds available for deploying broadband infrastructure. This program was traditionally aimed at ensuring that telephone (and now broadband) service is available and affordable in rural areas. The new Connect America Fund is initially capped at \$4.5 billion per year.

It is unclear how much access the proposed rural pilot would have to these particular funds. The Connect America Fund has minimum speed requirements for telecom operators (4 Mbps downstream/1 Mbps upstream) which are faster than the speeds likely to be achieved in the pilot described in this paper. On the other hand, the FCC plans to permit a number of waivers, including some specifically for small rural operators. In addition to the funding changes, the FCC's order encourages operators to work with community anchor institutions, such as school libraries and other entities which facilitate the use of broadband for vulnerable populations. Senior telecom experts in the government have previously suggested that Post Offices could serve as anchor institutions.

Additionally, the *National Broadband Plan* recommended that the FCC reduce barriers to adoption by expanding two universal service telephone voice service subsidies that make up the *Low Income* portion of the FCC's universal service system. The Lifeline Assistance and Link-Up America programs permit recipients to use the benefits for broadband. These programs traditionally used universal service funds to subsidize monthly phone service (Lifeline) or installation (Link-Up) for low income households. The subsidies are provided to eligible telecommunications carriers, which verify consumer eligibility and handle consumer outreach. In January 2012, the FCC adopted these recommendations and announced a plan to provide \$25 million for pilot programs to test the use of Lifeline for broadband. Rural telecom carriers allied with the National Telecommunications Cooperative Association (NTCA) applied for funding for a pilot in July 2012.

The U.S. Department of Agriculture's (USDA) Rural Utilities Service operates the Community Connect Broadband Program, which funds projects that provide broadband services in rural communities that do not currently have broadband service. The funds may be used for a number of purposes including equipment, construction, deployment, and operational expenses. They can also be provided to nonprofits, private corporations, and state and local governments.

Another approach to funding broadband expansion is through public private partnerships, exemplified by the Connect to Compete initiative. Connect to Compete is

a nonprofit organization that works in partnership with the FCC and several private companies and nonprofits to support broadband adoption among low income households that qualify for the federal Free School Lunch Program. Under the Connect to Compete initiative, partners donate services, equipment, and other resources to further the goal of increasing broadband adoption among low-income families. The FCC serves in a coordinating role.

There are numerous other potential federal sources of funding related to broadband including the NTIA and the National Science Foundation. In addition, there are also a number of current and proposed programs to improve digital literacy among vulnerable populations. Furthermore, there are a number of state and local programs aimed at supporting broadband expansion.

Conclusion

This document is based on discussions with telecommunications experts, and preliminary research to comprehend rural broadband issues and how they might relate to future operational and cost issues for the Postal Service. The next steps would involve detailed analyses of the costs, funding availability, benefits, privacy, information security and other technical concerns, regulatory issues, views of (postal, broadband, and telecom) stakeholders, and alignment with broader Postal Service strategic and public policy imperatives.

Several organizations are involved in providing rural telecommunications and broadband services,²² including the National Exchange Carriers Association, the NTCA, the Organization for the Promotion and Advancement of Small Telecommunications Companies, and the Western Telecommunications Alliance. In addition to broadband provided through the wireline approach, there are other broadband technologies such as satellite, cable, Wi-Fi, and mobile wireless. Other service providers might also have an interest in partnering with the Postal Service using a number of models, as noted in the previous OIG report *21st Century Post Office: Aligning with the National Broadband Infrastructure Initiative*.²³

²² Members of these organizations are often called rural local exchange carriers, or RLECs.

²³ Report Number DA-MA12-2012, January 23, 2012, http://www.uspsoig.gov/foia_files/DA-MA-12-002.pdf.