OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

The Postal Service's Role as Infrastructure

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Executive Summary

Maximizing

the Postal Service's

contributions to the nation's

infrastructure can conflict

with the business goal of

maximizing profitability.

Throughout its history, the U.S. Postal Service has been both a national infrastructure and a business enterprise, yet there is an inherent tension between these two roles. Maximizing the Postal Service's contributions to the nation's infrastructure can conflict with the business goal of maximizing profitability. This clash is at the bottom of many debates about the Postal Service. But even though answers have been offered before, including by the 1968 Kappel Commission on Postal Organization, it has never been fully resolved. Finding the proper balance between these two goals is vitally important if the Postal Service is to survive the decline of its core product and adapt its mission to the radical changes arising from new technologies.

The balance between the roles of infrastructure and business has shifted over time. For much of its first 200 years, the Post Office not only carried mail but also was deliberately used by the government to bind together and develop the nation. It promoted transportation innovations, extended post roads, and subsidized passenger transportation on stagecoaches and railroads.

The Post Office also made its mark in the commercial marketplace, promoting innovations like the telegraph and civil aviation. In the early 20th century, Congress first thrust it into the banking system by authorizing the Postal Savings Bank to provide savings accounts at post offices. Then, Congress instituted Parcel Post as an alternative in a poorly functioning package delivery market controlled at that time by an oligopoly of railway express companies.

Highlights

The Post Office has always been a part of the nation's vital infrastructure. Today, the Postal Service still provides infrastructure services, facilitating economic activity, improving quality of life, and benefiting wider society in a variety of ways.

However, tension exists between the Postal Service's role as an infrastructure and its efforts to operate like a business. Some important infrastructure services, like operating unprofitable post offices in rural areas, may not have a business rationale.

Today, the effects of the digital age are making this tension acute. First-Class Mail, the prime support of the existing postal network, is declining, while new infrastructure needs are emerging. This paper suggests three broad options the Postal Service can take either individually or together to adapt to these changes if permitted:

- Adjusting its existing physical infrastructure to meet demand,

- Repurposing its infrastructure to meet new needs, and

- Digitally enabling its physical network.

Decisions about the Postal Service's future role should be made strategically to avoid closing off long-term opportunities because of immediate pressures.

The concept of the Postal Service as purely a business has never fully taken hold in the United States.

The Kappel Commission, deliberating in the 1960s before the digital age significantly changed the current and future postal mission, concluded that the nation no longer needed the Post Office as an all-purpose tool of government and declared it to be a business that should be run strictly as one, without subsidies and insulated from other influences of government. While the Commission's rhetoric was compelling and its structural recommendations were largely enacted into law, the concept of the Postal Service as purely a business has never fully taken hold in the United States. In important ways, it has remained a public service infrastructure with responsibilities and costly mandates that differentiate it from the corporate sector, where success is measured by profits rather than contributions to public welfare and social cohesion.

Definitions of infrastructure vary, but providing foundational benefits to the public at large is its essence. Infrastructures can jointly solve problems that are impractical or wasteful for individuals to solve separately. Some common infrastructure characteristics include facilitating economic activity, benefiting quality of life, and providing wider benefits that extend beyond immediate customers to the public at large. Today's Postal Service has all these characteristics. Its mailing and shipping services minimize the transaction costs of exchanging information and goods, fueling commerce. The Postal Service stands at the center of a huge mailing and package industry, supports an entire class of small and home-based businesses, and provides the commercial anchor of many small towns. It enhances quality of life not only through the direct social benefits of carrying letters and parcels to and from everyone in the country, but also through indirect benefits from its activities such as the daily presence of letter carriers in every neighborhood. These indirect benefits extend beyond postal customers, such as maintaining the national address system for everyone's use. In a study for the U.S. Postal Service Office of Inspector General, IBM has calculated that the additional revenues and reduced costs resulting from all the uses of the ZIP Code amount to close to $10 billion across the economy.

Although the history of the Postal Service shows that the roles of businesslike enterprise and infrastructure have always existed side by side in spite of the inherent tension between them, the intensity of the conflict is stronger today. Prior to the Postal Reorganization Act of 1970, appropriations covered a significant share of the postal budget. Even after reorganization, revenue from growing mail volume supported many unprofitable infrastructure mandates needed to provide universal service. Now, however, the decline in demand for First-Class Mail, the primary support for the Postal Service's network, is threatening to make the tension between business efficiency and maintaining the Postal Service's role as an infrastructure more difficult to manage. At the same time, changes arising from the digital revolution are creating new challenges and infrastructure needs. E-commerce is greatly increasing parcel volume, transforming the brick and mortar retail landscape while it forces the Postal Service to rethink its network. E-health applications are on the horizon, while further e-government services are approaching. Yet the Postal Service's customers without digital access risk being left behind, unable to participate in these new developments. In addition, more than a quarter of American households do not have full financial access, and ordering online for delivery at home is difficult without payment methods that work on the Internet. The Postal Service could potentially fill some of the gaps resulting from the emergence of the digital economy, especially if it is asked to update its mission. However, future opportunities could be limited if choices about the Postal Service's network and infrastructure services are driven by immediate pressures and not made strategically.

Throughout its past, the postal enterprise has adapted to new needs and circumstances.

Throughout its past, the postal enterprise has adapted to new needs and circumstances. Opportunities to adapt the Postal Service's infrastructure role to meet today's needs fall into three broad options. If permitted, the Postal Service can pursue these options either individually or together, but careful consideration of all three options should precede any decisions. Changing the size and scope of the Postal Service's infrastructure without evaluating all of its potential uses could be shortsighted. The first option is simply to adjust the Postal Service's existing physical infrastructure to changing demand, adapting incrementally to declining mail volume and preparing for the growth in parcels. The Postal Service is making some attempts at adjustment, but the controversy provoked by service changes and consolidations impedes the agility and rapid adaptation that could mark the difference between institutional life and death.

The second option the Postal Service could undertake is to repurpose the existing postal infrastructure, particularly its networks, to meet demand for innovative services and the need for new revenue streams. Post offices could become business centers by offering micro-warehousing, optimized packaging for shipping, and other business services. For citizens, post offices could act as community hubs and provide a front office presence for government field structures converting from brick and mortar to e-government services. Post offices already offer money orders. They could also provide other basic financial services such as check cashing, exchange services to make it easy to transfer between cash and digital payment methods, and reloadable payment cards for those who live outside the financial mainstream. The geographical reach of the retail network, with its well-established reputation for integrity and security, also makes it ideal for identity issuance and verification.

The third option is to increase the value of the Postal Service's existing physical infrastructure by improving its connection to the digital world and building a data-centered environment for the Postal Service and its customers. Data from digitally enabling the network could be used both to improve the

Postal Service's operations and to develop new products. For example, enhanced technologies such as mobile handheld devices could enable carriers to perform more services at the door or from the truck such as selling stamps, accepting Cash-on-Delivery (COD) payments, recharging debit cards, or even processing passports. Similarly, the Postal Service is already encouraging mailers to create advertising mail pieces that have digital functionality or interact with smart phones. It could take this work further by building a digital feedback system allowing recipients to express preferences about their mail.

National infrastructures are increasingly under pressure as public investments fail to keep up with need. The Postal Service remains a part of the nation's vital infrastructure, but the public's needs for its services are changing. The postal system has a long history of successful adaptation, the result of careful thinking about its national role. It is important that current decisions about its future also be made strategically, with far-sighted purpose. Once the existing Postal Service infrastructure is disassembled, it would likely be prohibitive to restore it as it is today. Only an agile and adaptive infrastructure will be able to maintain self-sufficiency and serve the nation effectively.

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Observations

For nearly two centuries, the Post Office was primarily an instrument of government, measured and valued by its contributions to growth of the nation.

Introduction

The nation's Postal Service has always had a split identity. On the one hand, it has been a critical element of national infrastructure, a foundation for economic, cultural, and commercial development, owned by the people themselves and attentive to their changing needs. On the other hand, its operations are businesslike, and it has accepted the expectation that it should collect revenues sufficient to fund its operations, an expectation backed up by the grant of a statutory monopoly.

Three years ago, a U.S. Postal Service Office of Inspector General (OIG) white paper identified as one of several fundamental questions for the future of the Postal Service, the need to decide whether a profit-driven business or a national infrastructure is best suited to carry out the Postal Service's mission.[1] The white paper posited that a profit-driven enterprise, while innovative, would favor the best paying customers and seek to jettison products, services, and facilities that detract from the bottom line. A national infrastructure, on the other hand, would focus on maintaining itself and sometimes sacrifice profitability in order to bind the nation and bridge divisive gaps such as differences in income, age, and geography although it might not adapt as well to changing needs.[2]

In actuality, the Postal Service retains characteristics of both a business and an infrastructure, though the balance has shifted throughout the nation's history as needs changed. While for nearly two centuries the Post Office was primarily an instrument of government, measured and valued by its contributions to growth of the nation, it always displayed a commercial orientation that distinguished it from other government agencies. Today, the Postal Service takes pride in calling itself a business, but it also has a role as part of the national infrastructure, providing value to the nation well beyond the task of delivering the mail.

Yet once again, changing needs — spurred in this case by digital technologies — are bringing these two roles of business and infrastructure into conflict. The demand for First-Class Mail, the primary product sustaining the network, is declining, while the competitive market for parcels is growing rapidly. At the same time, the rise of the digital age is creating gaps that the Postal Service could potentially fill through new infrastructure services. It may be time to examine once again the balance between the Postal Service's responsibility to operate like a business and its responsibility as an infrastructure.

The Post as a Business and an Infrastructure through History

As subjects of the British realm, the American colonies inherited the monarchical postal arrangements that characterized Europe at the time. Postal services were organized and controlled by the king and royal favorites as a monopoly source of revenue for the state, much like the customs service and the stamp tax. The aim of the enterprise was profit rather than service, and rates were set as high as the market would bear.

Much of the pre-Revolutionary postal history is the growing colonial resentment of the British Post Office as "an oppressive agency of taxation," exploiting its complete monopoly of letter carrying and sending every pound of surplus revenues back to England.[3] Benjamin Franklin was dismissed as deputy postmaster general in 1774, primarily for his vigorous arguments that postage should be a fee for service rather than a form of taxation.[4] One of the first actions of the Continental Congress in 1775 was to establish a Post Office with Franklin as the first Postmaster General.[5] The framers of both the Articles of Confederation and the Constitution

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1 U.S. Postal Service Office of Inspector General, *Fundamental Questions for the Future of the Postal Service*, Report No. RARC-WP-11-001, February 2, 2011, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/rarc-wp-11-001_0.pdf, p. 5.
2 Ibid., p. 5.
3 Clyde Kelly, *United States Postal Policy*, (New York: 1931), p. 14.
4 Ibid.
5 Ibid., pp. 8-18.

provided the national government with postal powers and rejected proposals that the Post Office should be operated as a surplus revenue source in the royal tradition.[6]

However, for another 60 years, the Post Office was expected to pay its way. This expectation lent a businesslike character to the institution from its earliest days. In fact, the Post Office was closely aligned with the printing and newspaper publishing industries, and, like Franklin, it was common for postal officials to be drawn from the printers' ranks. The dissemination of political news was the highest priority, subsidized by very high postage rates for correspondence.

Postage rates for correspondence remained very high until the Postal Acts of 1845 and 1851, when rates were slashed to bring them within everyone's reach. At the same time, prepayment was introduced in the form of postage stamps. These changes unleashed a floodgate of personal correspondence that within a few years made twice-daily mail city delivery a cornerstone of cultural interchange.[7] The Post Office also became an even more indispensable component of national infrastructure, so essential that Congress began the regular practice of appropriating funds to the Post Office to supplement its steadily growing but ever less sufficient revenues from the sale of postage stamps.[8]

As the nation matured and began to expand its geographical and commercial horizons, one of the few tools available to federal leaders to take an active role in development was the clause of the Constitution authorizing Congress to "establish Post Offices and post Roads."[9] A network of post offices, 13,468 of them by 1840, gave the federal government a physical presence in every populated corner of the land and linked every new settlement with every other.[10] The expansion of communication and commerce enabled by this infrastructure was of immense importance in fostering nationhood.

The Post Office Fostered Private Infrastructure Development

Even as the Post Office itself was the government's primary infrastructure, throughout our history it has also fostered the development of infrastructure under private sector auspices in a variety of ways.[11] An early example was the development of intercity transportation. Beginning in 1785, Congress subsidized the development of a stagecoach industry to carry mail, but with the explicit added intention of encouraging passenger service.[12] "By bringing the postal system and the stagecoach industry together into a new configuration," wrote Professor Richard John, "by insisting that stagecoach service be coordinated in accordance with a regular schedule, and, most important, by establishing a network of distribution centers to coordinate the whole, the central government had created a communications infrastructure that was largely independent of the preexisting routes of maritime trade and that far outstripped anything that had existed before."[13]

Although the federal government did not directly finance road construction until the 20th century, it used the constitutional power to "establish post roads" as a tool to develop a national road system throughout the preceding century. By selectively designating land routes and waterways as post roads, the postal transportation grid measured 155,000 miles by 1840. When free mail delivery to homes and businesses began in the 1860s, the Post Office made this service conditional on towns maintaining streets and

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6   Ibid., p. 36.
7   David Henkin, *The Postal Age*, (Chicago: University of Chicago Press, 2006), pp. 2-3 and 22.
8   Richard R. John, "The Political Economy of Postal Reform in the Victorian Age," *Smithsonian Contributions to History and Technology*, No. 55, 2010, http://repository.si.edu/bitstream/handle/10088/11087/SSHT-0055.pdf, p. 8.
9   U.S. Const., Art I, sec. 8.
10   President's Commission on Postal Organization (Kappel Commission), *Towards Postal Excellence: The Report of the President's Commission on Postal Organization*, (Washington D.C.: U.S. Government Printing Office, 1968), Annex, Vol. 3, http://www.prc.gov/prcarchive/viewpdf.aspx?docid=508284669, p. 1.11.
11   U.S. Postal Service Office of Inspector General, *Postal Service Contributions to National Infrastructure*, Report No. RARC-WP-12-012, July 9, 2012, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/rarc-wp-12-012.pdf.
12   Kelly, pp. 30-31.
13   Richard R. John, *Spreading the News: The American Postal System from Franklin to Morse* (Cambridge, MA: Harvard University Press, 1995), p. 110.

sidewalks and numbering their houses. Rural areas seeking delivery service decades later found it conditional on maintaining roads in good repair, free of obstructions, and open all year.[14]

Recognizing by the 1830s that railroads would greatly help transporting the mail, the government encouraged them with surveys, land grants, tariff relief, and contracts issued on concessionary terms. Mail contracts sustained the railroads for decades, and as late as 1966 were contributing more than a third of the revenue from passenger service.[15]

The development of commercial air transportation was even more directly nurtured by the Post Office. The first civil airfields, towers, beacons, and weather stations were all opened and maintained by the Aerial Mail Service for the use of its mail planes. The postmaster general was the nation's most powerful civil aviation figure in the 1920s, but in general used his power to encourage passenger travel and larger planes than were needed for the carriage of mail, recognizing that growth of commercial aviation would eventually decrease the need for subsidies, which were substantial.[16]

The Post Office also nurtured the development of the telegraph, promoting the concept as early as 1827 as means of making long distance communication quicker. When Samuel Morse's message flashed from the Capitol to Baltimore in 1844, the Post Office was in de facto control of the telegraph line. Despite this success, however, efforts to get public funds to expand the telegraph to other cities failed.[17] Although the postmaster general urgently recommended acceptance of the Morse's offer to sell his invention to the government for $100,000 and keep it in public hands, Congress passed on it and forced the sale of government telegraph lines in 1847.[18]

The Post Office Developed Business Management Capabilities

While Congress chose to relinquish government operation of both the telegraph and the Aerial Mail Service to private industry, on other occasions Congress chose to launch the Post Office as a business player in established commercial markets. It established a postal savings system in 1911, for example, to meet needs that the commercial banking sector was ignoring. It also instituted a Parcel Post delivery service in 1913 with the deliberate purpose of competing with the high, managed prices and poor service of the railway express oligarchy. This launched an era of mass consumerism that shaped American culture permanently.[19] In both of these cases, Congress found new commercial uses for the existing postal infrastructure and took advantage of the institution's business resources and skills to develop new markets.

While during most of its history the Post Office was undeniably a government agency politically responsible to the party in power and deployed purposefully as a tool to meet national objectives, it also managed to develop a highly refined production capability that rivaled any business of its day. The organizational challenge of directing millions of letters and parcels to and from destinations in every corner of the land could only be addressed though broad and even visionary network management skills. For example, Clyde Kelly, a Member of Congress who specialized in postal affairs and wrote the first comprehensive analysis of postal policy, called Parcel Post "the greatest distributing organization on earth," within 20 years of its formation.[20]

It is true that once letter postage was lowered to a commonly affordable level, the Post Office usually needed appropriations to make up for a chronic operating deficit. Most of those who held the office of postmaster general over the years felt compelled to

The Post Office managed to develop a highly refined production capability that rivaled any business of its day.

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14 U.S. Postal Service Office of Inspector General, *Postal Service Contributions to National Infrastructure*, pp. 5-6.
15 President's Commission on Postal Organization (Kappel Commission), Annex, Vol. 3, p. 117.
16 Carroll V. Glines, *Airmail: How it All Began* (Philadelphia: Tab Books, 1990), pp. 96-97.
17 John, pp. 86, 88, and fn. 103, and U.S. Postal Service Historian, "Telegraph: Early Postal Role," May 2008, http://about.usps.com/who-we-are/postal-history/telegraph.pdf.
18 Wayne E. Fuller, *The American Mail: Enlarger of the Common Life* (Chicago: University of Chicago Press, 1972), p. 174.
19 U.S. Postal Service Office of Inspector General, *100 Years of Parcel Post*, Report No. RARC-WP-14-004, December 20, 2013, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/rarc-wp-14-004.pdf, pp. ii, 7, 9-10.
20 Kelly, p. 187.

minimize the deficit through efficiency gains and even entrepreneurial ventures. Congress sometimes imposed a restraining hand on new products, for example by forcing the Post Office to give up the telegraph and the nation's largest civil air transportation capacity, and by refusing for decades to allow sufficient postage increases that might have funded new investments for modernization. But political responsiveness also had a beneficial effect in requiring the institution to hold to a high level of service and satisfied customers, lest the party in power be punished at the polls for mismanagement of the most visible of government agencies.

The Kappel Commission Declared the Postal Service a Business

The 1968 President's Commission on Postal Organization known as the Kappel Commission directly addressed the fundamental nature of the Post Office. Taking note of the decline in individual correspondence and the growth of business and advertising mail, as well as the negative effects of political involvement, concluded that "the Post Office is a business."[21] If it were being established today, the Commission noted, "it might well be operated by a privately-owned regulated corporation not unlike the companies which operate other communication and transportation services in this country."[22] Indeed, a majority of the commissioners (mostly themselves from the business community) favored privatization if private investors could be found.[23]

The Commission recognized the "vital role" the Post Office had played in the development of "the new nation," but concluded that all of this was at an end. The nation had a plethora of communication and transportation networks that needed no subsidies and were regulated by other agencies, unreimbursed services to federal agencies had become minimal, and "the Federal Government no longer needs the local post office to make its presence known."[24] From this starting point, the Commission recommended that users of the Postal Service should pay its costs, that appropriations (subsidies) for public services should be eliminated, and that it should be strictly insulated from the other functions of government.

The Kappel Commission's rhetoric was persuasive and most of its structural recommendations were adopted in the Postal Reorganization Act of 1970. The Postal Service began operation as a government corporation in all but name, starting as "an independent establishment of the executive branch" on July 1, 1971, on a statutory schedule to minimize appropriations and survive on its revenues. The thrust of postal history in the following decades can be read as an attempt to realize a vision that the Postal Service is a business, and should be operated as one, rather than as an instrument of government to achieve broad national purposes. However, this business had specific responsibilities to ensure nationwide service and "provide prompt, reliable, and efficient services to patrons in all areas."[25]

And despite its rhetorical acceptance, the concept of the Postal Service as purely a business has never fully taken hold in the United States. In important ways, the Postal Service has remained a public service with responsibilities and costly mandates that differentiate it from the corporate sector where success is measured by growth and profits rather than contributions to public welfare and social cohesion. Like other utilities both public and private, the Postal Service often finds its obligation to provide universal service to the nation can clash with business imperatives to operate efficiently. Postal Service decisions to trim the network or to cut costs by closing facilities are invariably met with strong resistance. The Postal Service has kept open post offices that have little or no economic justification as a result of public pressure, and recent efforts to lift legal blocks to 5-day mail delivery have faced effective opposition.

The thrust of postal history since 1971 can be read as an attempt to realize a vision that the Postal Service is a business, and should be operated as one.

In important ways, the Postal Service has remained a public service with responsibilities and costly mandates that differentiate it from the corporate sector.

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21 President's Commission on Postal Organization (Kappel Commission), p. 48.
22 Ibid., p. 2.
23 Ibid., pp. 53-54.
24 Ibid., pp. 46-47.
25 *Postal Reorganization Act*, P.L. 91-375, 84 Stat. 719. (39 U.S.C. § 101(a))

Even though most postal revenues are provided by commercial and organizational mailers, the American public sees itself as the owner and principal customer of the Postal Service. It is also the primary recipient of mail pieces. Many Americans are unaware that the Postal Service is self-supporting.[26] Numerous surveys confirm that the public places great value in the Postal Service, recognizing its consistency, dependability, and trustworthiness.[27] In other words, just as has been true throughout its history, calls for the Postal Service to be businesslike continue to be countered by the expectations placed on it as a national infrastructure. There is a tension between these two roles.

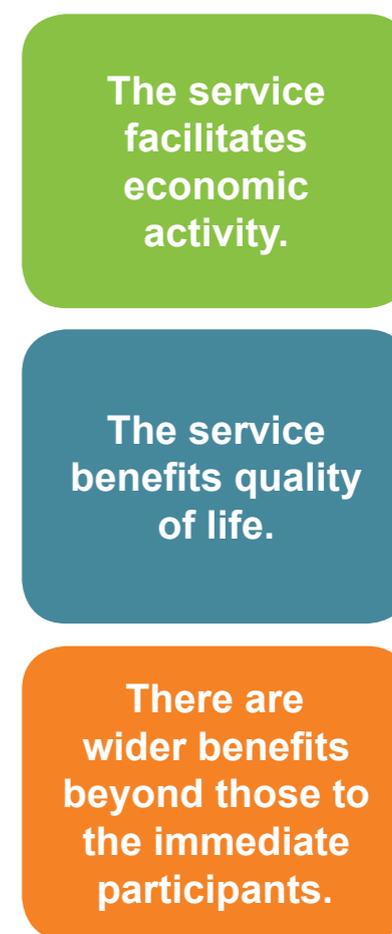## What Does It Mean to Be an Infrastructure?

While infrastructure is a commonly used term, not everyone agrees on what it comprises. Some cite obvious physical examples like roads, bridges, and electricity networks, while others focus on social systems like education, impartial courts of law, and public health protection. The 1997 report of the President's Commission on Critical Infrastructure Protection described it broadly as manmade systems and processes that individuals and businesses can depend on to produce and distribute essential goods and services and "thus the foundation for creating the wealth of our nation and our quality of life as a people."[28]

Economists focus in particular on the fact that many of the systems people think of as infrastructure often have positive externalities — an economic term meaning that benefits accrue more widely than those available to immediate participants in a transaction. Infrastructures can jointly solve problems that are impractical or wasteful for each member of society to solve separately. When goods and services have positive externalities, there is a risk that they will be underprovided if there is no special effort to ensure adequate provision. In many cases, infrastructure systems involve the provision of services over a geographic area through a network, and there is a tendency toward a natural monopoly because of the investment required combined with economies of scale or density.[29] That is, it is often least expensive to have one provider rather than multiple providers. This tendency toward natural monopoly is why the government often provides or regulates the provision of infrastructure services.[30]

To understand the Postal Service's role as infrastructure, we explore how it meets elements of all of these definitions as shown in Figure 1. We examine how the Postal Service facilitates economic activity, benefits quality of life, and provides wider benefits beyond those accruing to the immediate participants in postal transactions, that is, the positive externalities of postal services. In many cases, these benefits overlap.

It should be noted that while all of these benefits are currently provided by the Postal Service, only some are an outcome of its position as part of the government. Others could also be provided by a regulated private sector firm, while some could be provided by any retail or

Infrastructures can jointly solve problems that are impractical or wasteful for each member of society to solve separately.

Figure 1: Three Characteristics of an Infrastructure

> The service facilitates economic activity.

> The service benefits quality of life.

> There are wider benefits beyond those to the immediate participants.

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26 U.S. Postal Service Office of Inspector General, *What America Wants from the Postal Service*, Report No. RARC-WP-13-009, May 21, 2013, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/rarc-wp-13-009.pdf, p. 5.

27 For example, the Ponemon Institute regularly finds the Postal Service one of the most trusted government agencies and was named to the top 10 most trusted companies for 2012. Ponemon Institute, *2012 Most Trust Companies for Privacy*, January 28, 2013, http://www.ponemon.org/local/upload/file/2012%20MTC%20Report%20FINAL.pdf.

28 U.S. President's Commission on Critical Infrastructure Protection, *Critical Foundations: Protecting America's Infrastructures*, October 1997, available at http://fas.org/sgp/library/pccip.pdf, p. 3.

29 José A. Gómez-Ibáñez, *Regulating Infrastructure: Monopoly, Contracts, and Discretion* (Cambridge: Harvard University Press, 2003), p. 4.

30 Ibid.

delivery organization, public or private, as an intrinsic part of the business. However, an unregulated private sector firm would most likely emphasize achieving profits for its shareholders before ensuring it carried out infrastructure responsibilities.

Facilitating Economic Activity

The Postal Service today is an immense organization with 617,000 career and noncareer employees.[31] It manages more than 32,000 properties and a fleet of more than 211,000 vehicles.[32] Yet its real value lies in its interconnectedness, its existence as an integrated network combining physical assets with organization and expertise to deliver mail and parcels 6 days per week to nearly 153 million delivery points, serving people, businesses, and organizations throughout the country.[33] It represents an enormous investment of resources to benefit the nation.

By delivering mail and parcels to households across the United States, this network provides important economic services for the nation's individuals and businesses. The Postal Service infrastructure stands at the center of an industry devoted to mail and shipping that has been valued at more than $1 trillion. This industry includes financial service providers, direct mailers, catalogers, retailers, other shippers, mail service providers (third-party intermediaries in the mail stream), and others, providing more than 8 million jobs.[34] The postal network facilitates communication, documentation, billing and bill payments, advertising, the transmission of news and information, and the distribution of goods.

The Postal Service infrastructure stands at the center of an industry devoted to mail and shipping that has been valued at more than $1 trillion.

Large scale businesses take advantage of the readily available postal infrastructure to increase their own prosperity. The Postal Service is a major customer for large firms in postal technology, surface and air transportation (notably FedEx and UPS, also rivals), and packaging industries. Both UPS and FedEx depend regularly on the last-mile availability of the Postal Service to avoid the higher costs they would incur by making residential deliveries themselves.

At the community level, the ubiquitous network of 31,100 post offices and retail units provides a stable anchor of centrally located economic and social activity that attracts and helps to keep jobs and shops in urban areas and small towns, bolstering the local tax base and infrastructure investments.[35] An entire class of small and home-based businesses benefits because the Postal Service is available to them everywhere and anywhere, including areas where UPS and FedEx go less frequently and at a higher price.[36] The Postal Service also offers these businesses an inexpensive and easily targeted means of advertising. In the financial area, the Postal Service's retail network enables transactions and widens access for many Americans by offering money orders, prepaid cards, and other financial services.

Contributions to the Quality of Life

By facilitating economic activity, the Postal Service also contributes to quality of life, but the benefits of postal services go beyond the economic. The Postal Service's universal service obligation assures that remote areas and vulnerable populations retain a vital link with the rest of the country. While digital connections and capabilities are spreading, there will always be some left behind, priced out, or left out. The elderly, disabled, militarily deployed, and isolated depend on delivery of mail, publications, prescriptions,

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31 U.S. Postal Service, 2013 Report on Form 10-K, http://about.usps.com/who-we-are/financials/10k-reports/fy2013.pdf, p. 106.
32 Ibid., pp. 14-15.
33 Ibid., p. 107.
34 EMA Foundation, *2012 EMA Mailing Industry Job Study*,
     http://www.envelope.org/file_depot/0-10000000/0-10000/1461/conman/02112013+EMA+Mailing+Industry+Job+Study1.pdf, p.4.
35 Number excludes carrier annexes and contract units. U.S. Postal Service, 2013 Report on Form 10-K, p. 14. Research by the Urban Institute suggests that closing a Post Office station or branch could result in the loss of six jobs in the surrounding ZIP Code, but the effect was not always significant. Urban Institute, S*tudies of Social and Commercial Benefits of Postal Services: Economic Effects of Post Offices*, August 2011, http://www.prc.gov/prc-docs/library/archived/Effects_of_POs_Report.pdf, p. 4.
36 Additional research by the Urban Institute for the PRC found that the Postal Service had access advantages and price advantages at low weights for retail small businesses. Urban Institute, "Enhanced Progress Report: Transportation and Price Leadership Role of the USPS," May 26, 2011, http://www.prc.gov/prc-docs/library/archived/Price_Leader_Report.pdf, p. 47.

and mail order goods to participate fully in American culture as well as commerce. In addition, the postal infrastructure also provides an abundance of ancillary or indirect benefits that confer value and contribute to national well-being but are not necessarily compensated through the fee-for-service revenue stream by which it is supported. These benefits are acknowledged by many but have not been quantified with precision or certainty. A 2010 study by the Urban Institute, commissioned by the Postal Regulatory Commission (PRC), amply demonstrated the difficulties involved in defining and measuring the "social value of postal services." It lists eight categories of such benefits (consumer, business, safety and security, environmental, delivery of other government services, information exchange, social linkage, and civic pride and patriotism) and provides an overview of analytical approaches to their measurement, but its conclusion is that considerable additional research would be needed to quantify the value of such benefits.[37] The PRC subsequently sponsored follow-up studies to attempt this quantification in some areas.[38]

The daily visit of a letter carrier to millions of homes is a cultural icon.

The daily visit of a letter carrier to millions of homes is a cultural icon, providing a positive connection between Americans and their government. Letter carriers on their daily rounds also serve a valuable neighborhood watch function, alerting authorities to accidents, dangerous situations, and customers who have become incapacitated through accidents or illness.[39] Moreover, postal carriers in some locations have been trained to deliver critical medicines and vaccines in the case of a national epidemic.[40] In rural areas, Post Offices serve as a meeting place and focal point of town identity. In some cases, the existence of a Post Office actually creates the town identity.

Another class of indirect benefits conferred by the postal system is environmental benefits. The inherent efficiency of having one letter carrier distributing mail to several hundreds of households, compared to the alternative of each recipient making an individual trip to pick up mail, was recognized more than a century ago in the national policy decision to institute home delivery first to urban areas and by 1913 to rural areas as well through rural free delivery and Parcel Post. The same logic applies today to the intake and delivery of mail and parcels by postal workers at homes and businesses. The Postal Service's role delivering both mail and parcels means that a mail carrier visits most addresses nearly every day. As a result, the Postal Service offers other carriers an effective channel for last mile deliveries and parcel returns, saving fuel and costs for both households and carriers. Moreover, according to the Urban Institute study, the carbon footprint for postal delivery is relatively low compared to alternatives, contributing no more carbon emissions than does electronic mail. Mail accounts for less than 5 percent of municipal waste, most of it readily recyclable.[41]

The availability of the postal infrastructure as an arm of government enhances the nation's political life and government services.

The availability of the postal infrastructure as an arm of government enhances the nation's political life and government services. Governments across the United States depend on the Postal Service for secure transmission of voter registrations and absentee ballots; a growing number of elections are conducted almost entirely by mail. The Postal Service annually accepts millions of passport applications and Selective Service registrations and sells federal duck stamps to support conservation. It also helps the Census Bureau prepare for the decennial census, and is the channel for most of the actual census count, both for the decennial and other periodic surveys. Its availability as a resource for disaster recovery is well established, as in the case of Katrina flooding and as a key element in contingency planning for the delivery of critical medicines and vaccines in an epidemic disaster.

Yet another way the Postal Service indirectly supports public well-being is through its special pricing to the benefit of institutions whose value is not fully reflected in the market economy. From the earliest days of the public, but continuing to today, publications

37 Nancy Pindus, Rachel Brash, Kaitlin Franks, and Elaine Morley, Urban Institute, *A Framework for Considering the Social Value of Postal Services*, February 2, 2010, http://www.urban.org/UploadedPDF/412097-postal-services-framework.pdf.
38 This follow-up research is available at http://www.prc.gov/prc-docs/library/archived/SocValRptIndex.html.
39 The Urban Institute outlined a study design for the PRC to examine the public safety role of carriers and post offices. Urban Institute, *Enhanced Progress Report: Community Security and Public Safety*, March 11, 2011, http://www.prc.gov/prc-docs/library/archived/Public_Safety_Status_Report.pdf.
40 Mimi Hall, "6 cities to train mail carriers to dispense antiterror drugs," *USA Today*, August 2, 2010, http://usatoday30.usatoday.com/news/washington/2010-08-02-postal02_ST_N.htm.
41 Urban Institute, *A Framework for Considering the Social Value of Postal Services*, p. 15.

and the printed word have received preferential prices, in some periods subsidized by other users of the mail or by taxpayers. This supports political and intellectual discussion, on which a democracy depends more than any other form of government. Preferred mailing rates have similarly contributed to the vigorous growth of non-profit organizations as a valuable, voluntary alternative to services provided by government or individuals on their own. Non-profits often maintain their membership contacts and do much of their fundraising by mail. Without access to the postal network made possible by Congressionally-mandated rules for lower rates, the non-profit sector in the United States might play a substantially smaller part in the life of the typical American citizen. In addition, Congress supports free mail for the blind and overseas voters through appropriations.

Wider Benefits

As the examples of the Postal Service's contributions to quality of life show, the benefits of the Postal Service extend beyond sending or receiving mail. These wider benefits can extend even to saving lives, as nearly every week postal carriers are praised for rescuing sick or injured people along their routes. Wider benefits are known as positive externalities, and they fall into two categories: additional benefits to third parties and network effects.

Third-party benefits include the additional value provided to all because of the existence of the postal system. Just as a road or a bridge benefits even those without cars by enhancing commerce and communication, the existence of a mail highway contributes to everyone's well-being by enabling the movement of information and goods. Third-party benefits also include side benefits related to the Postal Service's operations but secondary to its primary service such as the neighborhood watch function of carriers and the environmental benefits of efficient delivery service.

Included in these side benefits are benefits from the Postal Service's role as custodian of the nation's address system. The Postal Service maintains an important form of infrastructure for the entire country by objectively establishing and maintaining this national location system. Address management involves close coordination with local governments that the private sector might find difficult to duplicate. For example, the Postal Service worked closely with counties converting old rural route style addresses to street addresses for improved 911 services. By tracking address changes for the millions of Americans who move every year, the Postal Service assures continuity and currency of location information that is essential for maintaining contact with mobile individuals in a situation that would be chaotic if the Postal Service did not exist. The address database is also a resource for disaster recovery, as in the case of Hurricane Katrina where the government and the American Red Cross used the database to help find people.[42]

Additionally, the postal infrastructure has been the source of important innovations that have been adapted by the rest of society to uses that have broadly advanced technological progress, even in recent years when this was no longer part of its mission. The Postal Service helped fund the development of optical character reading and handwriting recognition technology to speed mail sorting. This research fostered the development of applications outside the Postal Service. The methodical development of the ZIP Code as an elegant way of digitizing surface space has proved to be enormously useful for efficiently organizing data by geography. Because the Postal Service offered it on an open public platform, the ZIP Code was available as public service for anyone to use without charge. IBM, in a study for the OIG, has computed that the additional revenues and reduced costs resulting directly from the ZIP Code, in all its uses, amounts to close to $10 billion annually in value across the economy, far exceeding its value to the Postal Service alone.[43]

The postal infrastructure has been the source of important innovations that have been adapted by the rest of society.

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42   Joy Leong Consulting, LLC, *The Contribution of the Postal Service in National Emergencies: A Case Study of Its Role in Katrina and Its Emergency Preparedness Efforts*, February 14, 2011, http://www.prc.gov/prc-docs/library/archived/Emergency_Prep_Report.pdf, pp. 12-16.
43   U.S. Postal Service Office of Inspector General, *The Untold Story of the ZIP Code*, Report No. RARC-WP-13-006, April 1, 2013, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/rarc-wp-13-006.pdf, p. 9.

Another form of wider benefits is network effects. Each additional point on a network adds additional value to the network as a whole and the other participants on the network. By providing ubiquitous service across the United States, the Postal Service provides more value to mailers big and small, who can be assured that they have access to addresses throughout the nation, than if its service were limited solely to areas where delivery was profitable.

Moreover, the Postal Service network provides a base of services upon which many other economic, social, and cultural platforms have been built in turn, contributing more than the sum of their transactions. Communities of small online businesses whether on Etsy or eBay have been enabled because of lower-cost end-to-end shipping services. Long before the Internet, mailed periodicals linked individuals with common interests into cultural communities. In the case of advertising mail, the Postal Service operates as a platform connecting senders and recipients in a two-sided market. Advertisers use the mail to build connections with their customers. The addition of more potential recipients creates greater value for senders. All of these communities and networks strengthen economic and social ties, enabling even more commerce and social connection.

Clearly, based on the extensive benefits it provides, the Postal Service meets our three-part test for an infrastructure. Its current portfolio of services provides economic, quality of life, and wider benefits.

Choices for the Future

The tension between the Postal Service's two roles, business and infrastructure, can only increase.

As the history of the Postal Service shows, the Post Office's roles of businesslike enterprise and infrastructure have always existed side by side. Sometimes, more attention has been paid to one role or the other, but both are an important part of the Postal Service's national character. There is, however, an inherent tension between these roles. Businesses are naturally focused on the bottom line. They are usually not interested in providing unprofitable services, however valuable to the society and quality of life. In contrast, infrastructures generally take providing access as their first responsibility, with various methods from government funding to universal service surcharges used to pay for those services when they are not self-supporting. Prior to the Postal Reorganization Act, the federal government paid for a significant share of the Postal Service's budget. After reorganization, revenue from the mail supported many unprofitable infrastructure services. Now, however, the decline in demand for First-Class Mail, which still contributes more than half of the funds to support network costs, is disrupting the primary funding source for the entire postal network, forcing the Postal Service to look for savings wherever possible.[44] The tension between the Postal Service's two roles, business and infrastructure, can only increase.

At the same time, the spread of digital innovations and the growth of global commerce are creating a period of great disruption for the nation's infrastructure as a whole and the postal infrastructure specifically. New capabilities for communications and commerce bring tremendous benefits, but they also upset the settled ways of meeting infrastructure needs, reducing the need for some services while increasing the need for others. Mobile phones are replacing landlines. Some cable customers are dropping cable television but keeping cable broadband to watch new digital television platforms.[45] New meter technology allows utility customers to monitor and adjust their power usage from their mobile phones.[46] For the Postal Service, traditional mail is in decline while parcels spurred by e-commerce are growing, creating new opportunities but also substantial risks, as it could be much more difficult to sustain the postal network on declining mail volumes without above-inflation price increases.

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44 Contribution information calculated from the U.S. Postal Service, Cost and Revenue Analysis, FY 2013,
    http://about.usps.com/who-we-are/financials/cost-revenue-analysis-reports/fy2013.pdf.
45 Farhad Manjoo, "Comcast vs. the Cord Cutters," *The New York Times*, February 15, 2014,
    http://www.nytimes.com/2014/02/16/business/media/comcast-vs-the-cord-cutters.html?_r.
46 Lauren Goode, "Nest, Now Working With Utility Companies, Will Pay You to Meter the A/C This Summer," *All Things D*, April 22, 2013,
    http://allthingsd.com/20130422/nest-now-working-with-utility-companies-will-pay-you-to-meter-the-ac-this-summer/.

For individuals and businesses, the new environment is creating gaps. Access to high-speed Internet service via broadband or mobile has become increasingly important, for e-commerce purchases, e-government services, and e-health offerings such as apps that manage chronic diseases, but some individuals and areas are at risk of being shunted to the slow lane or left behind all together. The ease of digital coordination is generating an e-commerce boom and driving a sharing economy where goods can be rented instead of purchased, making physical-digital integration critical. In the slowly recovering economy, work is more precarious and entrepreneurial, and many people need support for flexible work and small businesses. More than a quarter of Americans are already unbanked or underbanked at a time when the CEO of Morgan Stanley has predicted that the number of bank branches will fall from 97,000 to 10,000 due to trends such as the rise of mobile banking.[47] Lack of financial access can make it more difficult to buy online.

How should the Postal Service adjust to these emerging needs and the changing demand for mail and parcel services? A natural first step is retooling existing infrastructure to match changing interest in its traditional products. But should the Postal Service also take a more proactive approach to adaptation, reinventing itself to serve new infrastructure needs in a new environment?
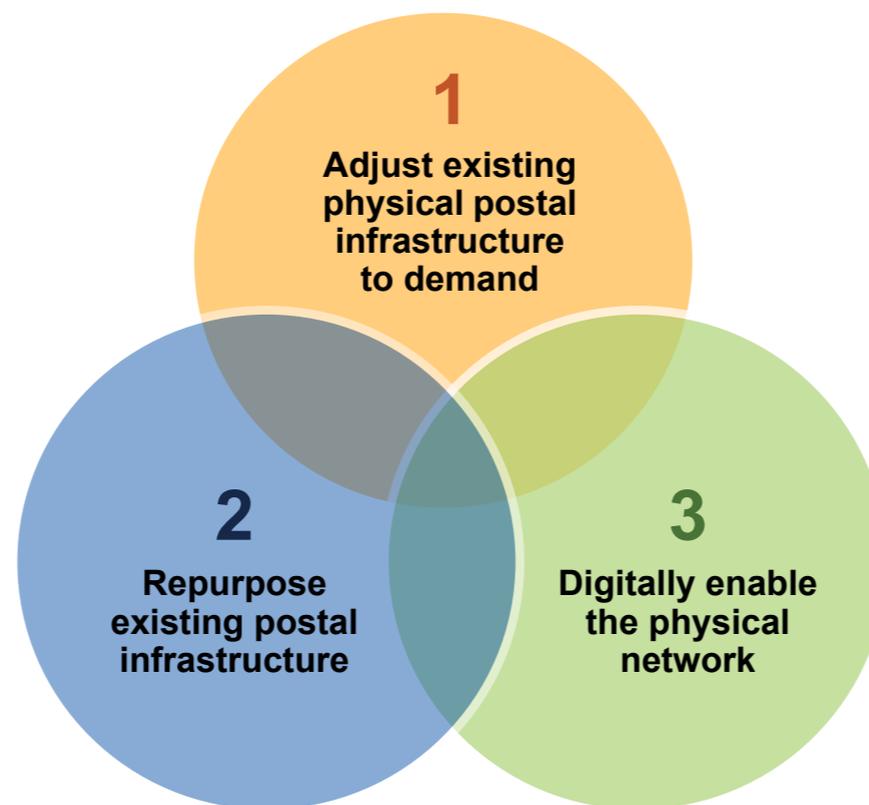
Throughout its past, the postal enterprise has adapted to new needs and circumstances. What we think today as the essential postal act, delivery to the home, was not even a central postal product until the mid-19th century in urban areas. Rural delivery did not begin until the 1890s. The early Post Office was a town-to-town transportation system for news, correspondence, and transactions. Important aspects of the Postal Service today — delivery, parcels, stamps, money orders, and worksharing — were developed in response to changing needs. Such adaptation requires strong leadership and a willingness to explore needed services beyond current postal categories.

Figure 2: Options to Adapt to New Needs

1 Adjust existing physical postal infrastructure to demand

2 Repurpose existing postal infrastructure

3 Digitally enable the physical network

Since the Postal Reorganization Act, efforts to go beyond the traditional postal role, like the electronic communication experiments of the late 1970s and early 1980s and the Postal Service's electronic efforts of the late 1990s, have been fitful and often spurred backlash. However, if the Postal Service and the nation are willing to move beyond current categories, there may be significant opportunities to serve new needs in areas adjacent to the Postal Service's traditional role. Adapting to new trends will be challenging, but the Postal Service can play a role if permitted.

Figure 2 shows three options the Postal Service can take to adapt its role as infrastructure to new needs. They are not exclusive paths, and some require more freedom from existing constraints than others. The options can be undertaken individually or together, but strategic decisions will be different depending on whether the Postal Service decides to pursue,

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47 U.S. Postal Service Office of Inspector General, *Providing Non-Bank Financial Services for the Underserved*, Report No. RARC-WP-14-007, January 27, 2014, http://www.uspsoig.gov/sites/default/files/document-library-files/2014/rarc-wp-14-007.pdf, p. 2 and James Gorman, "James Gorman on the Future of Finance: Big Banks Will Get Bigger," *The Wall Street Journal*, July 7, 2014, http://online.wsj.com/articles/james-gorman-on-the-future-of-finance-big-banks-will-get-bigger-1404762062.

one, two, or all of the options. The first option, as mentioned above, is to adjust the current physical infrastructure to changing demand for postal services. The other two go beyond the physical delivery of mail and packages. The Postal Service can repurpose existing postal infrastructure to meet new needs, and it can also digitally enable its physical infrastructure.

Adjusting Existing Physical Postal Infrastructure to Demand

Changes to the Postal Service's core business are already spurring the Postal Service to adapt its network. The number of delivery points continues to grow while mail volume is declining. The decline in mail pieces per delivery point is problematic because any drop in revenue per delivery point makes financing the network more difficult. The Postal Service has consolidated delivery routes in response to better processing efficiencies and declining volume, but it is calling for additional measures to save costs. One measure advocated by the Postal Service is ending Saturday mail delivery to spread more mail volume over fewer days of delivery, but the Postal Service has had no success lifting the legislative obstacle to taking this step. Another option is to make the delivery process easier and more efficient for carriers. Nearly one quarter of mailboxes are at the customer's door; the OIG has argued that moving these door delivery points to the curb could save as much as $4.5 billion annually.[48]

In contrast to the decline of mail, package volume is growing.

The Postal Service has also attempted to streamline its other networks to adjust to declining volume. In 2012 the Postal Service began reducing hours at up to 13,000 small Post Offices throughout the nation.[49] Initially, the Postal Service had explored closing some small, underutilized Post Offices, but public backlash led to the alternative of reducing hours. Recently, the Postal Service also announced that it would undertake 82 further plant consolidations in its processing network to save $750 million per year.[50] However, that proposal has already spurred calls for a 1-year moratorium on plant closures.[51]

In contrast to the decline of mail, package volume is growing due to the increase in e-commerce growth. This growth, while welcome, will also require adjustments to the Postal Service capabilities. The Postal Service network is primarily built around letters and flats, and these shapes still constitute most of the volume the Postal Service handles. As package volume grows, the Postal Service must consider how to retool. Details such as the size of parcel lockers, the quality of its scanning data, and how it staffs processing equipment will be important.[52] In addition, the changing market may warrant strategic changes such as increasing its focus on end-to-end services and adding value-added services that parcel senders and recipients are demanding. The Postal Service has been very successful offering last mile services to large parcel shippers and other delivery firms. However, the transformation of the shipping industry led by e-commerce may warrant further changes.[53] Unfortunately, the Postal Service's financial position has meant there is not much money for capital investment.

The need to adapt postal infrastructure to meet changes in the demand for traditional Postal Service products is an expected part of postal operations, but that does not mean it lacks controversy. Stakeholders can have very different views about what constitutes a reasonable response to changes in demand. Some may find service changes acceptable if the alternative is higher prices. Others may prefer to keep traditional service levels and look for alternative approaches to reduce costs. The controversy itself can be damaging, forcing the Postal Service to slow at a time when agility and rapid adaptation may make the difference

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48 U.S. Postal Service Office of Inspector General, *Modes of Delivery*, Report No. DR-AR-11-006, July 7, 2011, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/dr-ar-11-006.pdf, p. 2.
49 U.S. Postal Service, "Our Plan to Preserve Rural Post Offices," May 9, 2012, http://about.usps.com/news/electronic-press-kits/our-future-network/assets/pdf/postplan-presentation-120509.pdf, pp. 12-13.
50 "Network rationalization update," *USPS News Link*, http://liteblue.usps.gov/news/link/2014/07jul/news01s1.htm.
51 Humberto Sanchez, "50 Senators Call for Moratorium on USPS Facility Closures," *Roll Call*, August 14, 2014, http://blogs.rollcall.com/wgdb/post-office-closure-moratorium/.
52 The OIG has conducted a series of Package Readiness audits. A good summary is available from the Spring 2014 Semiannual Report to Congress Fact Sheet, http://www.uspsoig.gov/sites/default/files/document-library-files/2014/spring_2014_sarc_fact_sheet.pdf.
53 U.S. Postal Service Office of Inspector General, *Package Services: Get Ready, Set, Grow!*, Report No. RARC-WP-14-012, July 21, 2014, http://www.uspsoig.gov/sites/default/files/document-library-files/2014/rarc-wp-14-012.pdf.

between the future life or death of the institution. At the same time, optimizing to meet immediate needs today without strategic consideration of the long-term value of the network could be shortsighted, closing off opportunities for the nation to benefit from the assets it has built over time. Evaluating all of the Postal Service's assets for their potential to contribute to the bottom line is good business practice.

For some parts of the network, one answer to optimize effectively may be to expand services at existing facilities to supplement demand for traditional postal products. The Postal Service could repurpose its assets and generate new value from these postal resources. While there are currently limits on the Postal Service's ability to offer new products, draft postal legislation has proposed permitting products that use existing postal infrastructure.[54]

Repurposing Existing Postal Infrastructure

There are many potential opportunities to repurpose existing postal infrastructure, particularly the post office network, to meet new demands and generate additional revenue, although most require existing limitations on new products to be lifted. One area is financial services. Post offices, which already offer money orders, could provide other basic financial services such as check cashing, reloadable payment cards, and easy exchange between digital and physical payment methods for the one in four households that live at least partially outside the financial mainstream. The geographic reach of the postal retail network would extend access as 59 percent of post offices, stations, and branches are in ZIP Codes with zero or one bank branch.[55] This vast network coupled with the Postal Service's well-established reputation for integrity and security also makes the Postal Service ideal for offering in-person proofing for digital or physical identity. Individuals could register online for a digital identity and then take their identity information to the Postal Service for issuance and verification.[56]

Post offices are already central to many small communities. By turning post offices into community hubs, the Postal Service could take this role further and use post office space as place for community, citizen, and business services. At the simplest level, this could mean simply providing bulletin boards for exchange of information and space, if available, for community members to gather. However, the post offices could also be a hub location for services that might not be easily accessible elsewhere in the community. For example, the Postal Service could offer Wi-Fi and computing at post offices. As 3D manufacturing takes off, other posts are exploring offering 3D printing services; the Postal Service could as well.[57] In addition, post offices could offer front-end services for governments at the federal, state, and local level looking to replace their brick-and-mortal facilities with e-government services.[58]

The Postal Service could also provide more extensive logistics services for individuals and small businesses using its existing infrastructure. Postal facilities with excess space could act as micro-warehouses where entrepreneurs could store goods for delivery to nearby locations.[59] When a customer made an order, the Postal Service could fulfill it from the goods stored on site. In combination with other services such as a Virtual PO Box address that would allow both businesses and individuals to receive goods anywhere using a single virtual address, the Postal Service could turn the postal network into a backend operations and fulfillment center.[60]

There are many potential opportunities to repurpose existing postal infrastructure to meet new demands and generate additional revenue.

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54 The limits are part of the Postal Accountability and Enhancement Act, which prevents the Postal Service from undertaking new products that do not meet the definition of a postal service. 39 USC 404(e). S. 1486 would permit nonpostal services that use the Postal Service's processing, transportation, delivery, retail networks, or technology.
55 U.S. Postal Service Office of Inspector General, *Providing Non-Bank Financial Services for the Underserved*, p. i and 6.
56 U.S. Postal Service Office of Inspector General, *Digital Identity: Opportunities for the Postal Service*, Report No. RARC-WP-12-011, May 29, 2012, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/rarc-wp-12-011.pdf, p. 12.
57 U.S. Postal Service Office of Inspector General, *If It Prints, It Ships: 3D Printing and the Postal Service*, Report No. RARC-WP-14-011, July 7, 2014, http://www.uspsoig.gov/sites/default/files/document-library-files/2014/rarc-wp-14-011_if_it_prints_it_ships_3d_printing_and_the_postal_service.pdf, pp. ii and 17.
58 U.S. Postal Service Office of Inspector General, *e-Government and the Postal Service — A Conduit to Help Government Meet Citizens' Needs*, Report No. RARC-WP-13-003, January 7, 2013, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/rarc-wp-13-003.pdf.
59 U.S. Postal Service Office of Inspector General, *Opportunities for the Postal Service – Micro-Warehousing*, Report No. MS-WP-14-003, March 13, 2014, http://www.uspsoig.gov/sites/default/files/document-library-files/2014/ms-wp-14-003_0.pdf.
60 U.S. Postal Service Office of Inspector General, *Virtual Post Office Boxes*, Report No. MS-WP-13-002, April 17, 2013, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/MS-WP-13-002.pdf.

Likewise, the Postal Service could use the fact that carriers travel through America's neighborhoods every day to sell services to businesses and municipalities. For example, carriers could carry sensors to monitor air quality or vehicles could be fitted with devices to report back on potholes.[61] Every few days, there is a news report of a carrier helping a customer on his or her route, and there is even a formal Carrier Alert Program to monitor the well-being of elderly and disabled customers.[62] The Postal Service could explore other services that tap into carriers' knowledge of their communities. Repurposing existing postal infrastructure would benefit the Postal Service and the nation while raising additional funds to support the infrastructure the Postal Service is already providing.

Digitally Enabling the Physical Network

A third way of adapting to new needs is by digitally enabling the physical postal network. A seamless physical-digital experience is increasingly important to today's customers. People undertake many of their transactions online, but they still need physical goods and services. The Postal Service could enhance the value of its existing physical infrastructure by improving its connection to the digital world and building a data-centered, information-rich environment for the Postal Service and its customers. For example, enhanced technologies such as mobile handhelds could enable carriers to perform more services at the door like selling stamps, taking payment for digital Collect-on-Delivery (COD), verifying identity, recharging debit cards, and even processing passport applications at the door.[63]

A seamless physical-digital experience is increasingly important to today's customers.

The Postal Service could also follow the example of other carriers and move beyond basic tracking to allow customers to reroute and customize deliveries in real time. Customers increasingly want more control over how and when they receive goods. The Postal Service could use tracking and routing data to provide the ability to redirect deliveries, select specific delivery windows, and even return deliveries in real time.[64]

In the area of advertising, the Postal Service is already encouraging mailers to create mail pieces that interact with smart phones or have other digital functionality, but it could take this work further by building a digital feedback system that would reward recipients for expressing their preferences about the mail they receive. This system could enable a digital information market that would benefit both mailers and recipients and combine many of the advantages of paper and digital advertising.[65]

Finally, the decreased cost of sensors combined with the increase in the capacity for storing and analyzing data is driving the growth of the Internet of Things. The Postal Service already gathers massive amounts of data from its processing network. By further digitally connecting its network using sensors, the Postal Service could use the resulting data to both manage its network better and gain new insights about its customers in order to develop innovative products.[66] For example, to improve operations, the Postal Service could create systems that notify plants when GPS sensors show that trucks are delayed.[67] Using mailbox sensors, the Postal Service could develop better knowledge about when mail pieces are delivered and picked up by customers. Combined with existing data from the Postal Service's Intelligent Mail Barcode (IMb) tracking system, this localized intelligence could help mailers target the timing of mail more effectively.

61 Michael J. Ravnitzky, "Offering Sensor Network Services Using the Postal Delivery Vehicle Fleet," (presentation at the 18th Conference on Postal and Delivery Economics, Porvoo, Finland, June 4, 2010), http://www.prc.gov/prc-docs/newsroom/techpapers/Ravnitzky%20Postal%20Sensors%20Paper%20070910-MJR-1_1191.pdf.
62 National Association of Letter Carriers, "The NALC's Carrier Alert Program," http://www.nalc.org/community-service/carrier-alert.
63 U.S. Postal Service Office of Inspector General, *Enriching Postal Information: Applications for Tomorrow's Technologies*, Report No. RARC-WP-14-006, January 13, 2014, http://www.uspsoig.gov/sites/default/files/document-library-files/2014/rarc-wp-14-006.pdf, p. 3.
64 Ibid., p. 6.
65 U.S. Postal Service Office of Inspector General, *Strengthening Advertising Mail by Building a Digital Information Market*, December 11, 2013, http://www.uspsoig.gov/sites/default/files/document-library-files/2013/rarc-wp-14-002.pdf.
66 U.S. Postal Service Office of Inspector General, *International Postal Big Data: Discussion Forum Recap*, Report No. RARC-IB-14-002, May 12, 2014, http://www.uspsoig.gov/sites/default/files/document-library-files/2014/rarc-ib-14-002.pdf.
67 U.S. Postal Service Office of Inspector General, *Enriching Postal Information: Applications for Tomorrow's Technologies*, p. 7.

Digitally enabling the Postal Service's existing infrastructure requires the Postal Service to extend its services more deeply into the area of digital technology. However, it could make the Postal Service's existing services even more valuable to its customers and society.

Conclusion

Infrastructure is critical to daily life, but support for infrastructure faces challenges in the United States. The American Society of Civil Engineers gave the nation's roads, bridges, and other forms of civil infrastructure a cumulative grade of D+ in its 2013 Report Card.[68] Investment is failing to keep up with the need for services.

The Postal Service is an immense organization and a vital part of the nation's infrastructure. It provides numerous services that benefit the public both directly as part of its mission to deliver mail and parcels and indirectly as a byproduct of its network and daily presence. These services are the legacy of 200 years of investment in the Post Office by the government and postal customers that have developed the network and promoted national goals. As new technologies emerge, the postal network may no longer be needed in the same way it was in 1970, but the Post Office has a history of adapting successfully to changing needs and technology if it is permitted to adjust.

Deciding strategically what the Postal Service, its network, and its resources should become as demand for mail and parcels changes is a question that should concern all postal stakeholders and the public at large. The Postal Service is an important national asset that belongs to the citizens. Its existing infrastructure is far too valuable to be ignored. Once disassembled, it would not be easy to restore it as it is today. Only an agile and adaptive infrastructure will be able to maintain self-sufficiency and serve the nation effectively.

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68 American Society of Civil Engineers, *2013 Report Card for America's Infrastructure*, March 2013, http://www.infrastructurereportcard.org/.

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