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Laying Foundations: New Deal Public Works and Aviation Infrastructure

Abstract: This article examines New Deal public works agencies' pivotal contributions to American aeronautical development, arguing that their creation of aviation-related infrastructure offers powerful evidence of the New Deal's success in remaking the American landscape and fostering economic growth. Organizations such as the Civil Works Agency, the Public Works Administration, and the Works Progress Administration built or improved almost every contemporary U.S. airport, funding improvements that created the foundations of America's modern air transport network. Much more than make-work endeavors, these efforts reflected New Dealers' desire to use public works to create worthwhile products. These policies highlight the sophistication with which the New Deal promoted economic development, and belie the image of public works agencies privileging short-term employment to the detriment of economic gain. Airport terminals, runways, hangers, and countless other aviation-related improvements represent some of the New Deal's most significant physical legacies, highlighting the Roosevelt administrations' vital contributions to aeronautical development.

Keywords: New Deal, Civil Works Agency, Public Works Administration, Roosevelt Administration, U.S. Aeronautical Development

American commercial aviation came of age during the latter half of the 1930s. While the industry had experienced significant turmoil during the first half of the decade—most notably as a result of Senator Hugo Black's investigation into alleged collusion between the government and airlines concerning airmail contracts—the latter half of the 1930s witnessed dramatic developments. The introduction of the Douglas DC-3 in 1936 reliably allowed airlines to profit from carrying passengers for the first time, beginning to free them from relying on federal airmail contracts. During the same period the origins

THE JOURNAL OF POLICY HISTORY, Vol. 30, No. 4, 2018.

doi:10.1017/S089803061800026X

of the modern air traffic control system took shape and the passage of the Civil Aeronautics Act in 1938 created a regulatory foundation that would guide commercial aviation into the jet age and beyond.

That growth and development, however, rested upon a rotten foundation. As the *New York Times* reported in 1935, during this era the majority of American airfields were "little better than emergency landing fields," lacking paved, reinforced runways, enclosed hangars, and adequate terminal buildings.[1] New, larger, heavier airliners like the DC-3 could not operate from fields lacking those improvements, limiting the growth of the air transport network and cutting scores of towns and cities off from modern passenger service. The ongoing effects of the Great Depression, moreover, meant that municipalities struggling to fund basic services were unable to finance airport construction to redress these shortcomings.

New Deal public works programs offered a path forward. Roosevelt and such key advisers as Harold Ickes and Harry Hopkins utilized agencies like the Civil Works Administration (CWA), Public Works Administration (PWA), and Works Progress Administration (WPA) to sponsor a comprehensive overhaul of American aviation infrastructure, in the process constructing the foundation for future commercial growth. Between 1933 and 1939, New Deal public works agencies expended hundreds of millions of dollars on aviation-related projects. The PWA built or improved 547 airports and landing fields and funded more than 100 other aviation-related projects.[2] The CWA supported construction on more than 2,000 similar projects during its brief six-month tenure.[3] Most important, the WPA's Airways and Airports Division disbursed close to half a billion dollars in support of U.S. aeronautics, expenditures that funded 85 percent of U.S. airport construction in the five years following the WPA's establishment in 1935.[4] Working closely with the Bureau of Air Commerce, state and local governments, and private interest groups, the Division built or improved almost one thousand airports, constructed or improved 5,925,000 feet of runway, 1,129,000 feet of taxiway, built or improved more than four thousand airport buildings, engaged in countless grading and drainage projects, sponsored an extensive air-marking campaign, facilitated an accelerated program of national-defense-related construction in strategic areas, and undertook a revolutionary weather survey that influenced forecasting for decades, accomplishments that stand as a testament to the New Deal's productive capacity.[5]

These accomplishments opened the door to a dramatic expansion of governmental responsibility. Unlike Herbert Hoover, who opposed federal spending

on—and responsibility for—airports, Franklin Roosevelt authorized direct federal aid for airfield development through his public works agenda. Beyond the immediate infrastructure gains this policy reversal sanctioned, Roosevelt's actions prefaced a significant legislative change codified in the Civil Aeronautics Act of 1938. That bill formally removed proscriptions on federal airport funding and set the stage for increasing federal activism during the wartime and postwar eras.[6]

Public works programs' aviation-related activities also generated widespread support from the business community, highlighting a unique pro-business aspect of the larger New Deal edifice. Business leaders saw airport development as a necessary precondition for expanded air transport service—service they believed would encourage local and regional economic growth. In support of that end they lobbied local governments to take advantage of New Deal monies, in many cases serving as some of the loudest cheerleaders for applications for public works funds and the resulting projects.

Traditionally, historians have dismissed these programs as unsuccessful efforts to end the unemployment crisis and break the Depression's grip. In this view, at best these programs served as well-meaning efforts that failed in their fundamental task; at worst they were corrupt, wasteful "boondoggles" that served to prop up the existing economic order.[7] In recent years, scholars such as Jason Scott Smith, Robert Leighninger, and Nick Taylor have sought to reassess public works programs' legacy by drawing attention to their productive capacity. In Smith's words, agencies like the PWA and WPA provided an "extraordinarily successful method of state-sponsored economic development" as they promoted the dual goals of work relief and infrastructure creation.[8] In so doing, these New Deal programs built on a tradition of utilizing government-funded building programs to allay high levels of unemployment stretching back to the early nineteenth century.[9]

While Smith, Leighninger, and Taylor emphasize the New Deal's constructive capacity, aviation infrastructure remains a largely hidden aspect of that revisionist argument. Aviation-related public works activities, however, offer perhaps the clearest example of these programs' ability to promote economic development. Their efforts addressed glaring weaknesses in contemporary airport infrastructure while opening the door to a dramatic expansion of government responsibility, in the process highlighting Roosevelt's increasing willingness to break with his predecessor's economic policies. The enthusiasm with which municipal governments and organizations like the Chamber of Commerce embraced these activities, moreover, stands in sharp contrast to the work of scholars like Kim Phillips-Fein, who highlight the business community's antipathy to the

New Deal.[10] While not immune from controversy, public works agencies aviation-related efforts appear largely exempt from the criticisms these programs often engendered—a fact reflected both at the national and local levels.

These points highlight the need to reassess these New Deal agencies' legacy. An examination of public works agencies' national operations and those agencies' contributions to municipalities like Knoxville, Tennessee, demonstrates that far from make-work programs, the PWA, CWA, and WPA initiated a revolution in aviation infrastructure development. With widespread support from the public, local governments, and the business community, public-works organizations laid the groundwork for commercial aviation's dramatic expansion during and after World War II. In so doing, they exposed a sharp point of differentiation between Hoover's and Roosevelt's economic agenda, emphasizing the Roosevelt administration's willingness to expand federal engagement with aviation. Popular, effective, and valuable, New Deal public-works aviation-related activities stand as one of the most successful examples of the Roosevelt administrations' efforts to use the power of the federal government to reduce unemployment and promote economic development.

From the beginning of his presidency, federally sponsored public works represented a key facet of Franklin Roosevelt's New Deal. In an effort to jump-start the moribund economy and boost employment, Roosevelt and his fellow New Dealers established a wide-ranging public works agenda. Their efforts radically altered the relationship between the American government and the people, in the process redefining government's responsibility to its citizens. Organizations like the CWA, PWA, and WPA expended tens of billions of dollars to support the creation of public buildings, roads, bridges, dams, and airports. The PWA received an initial appropriation of $3.3 billion in 1933, funds that represented almost 6 percent of the U.S. gross domestic product (GDP) that year, and more than 165 percent of the government's revenues. Two years later, Roosevelt established the WPA with an appropriation of $4.88 billion, almost 7 percent of that year's GDP. Between 1933 and 1939 the federal government disbursed more than two-thirds of its emergency expenditures on public works programs, an increase of 1,650 percent over the four-year period preceding the Depression.[11] During its tenure the PWA, relying on private contractors and focusing on large-scale construction projects like the Boulder Dam, disbursed funds in 3,068 of the nation's 3,071 counties. The WPA provided direct employment while focusing on lighter construction; it was responsible for building 78,000 bridges, improving almost 40,000 public buildings, constructing or improving 31,000 miles of sidewalk, building 500 water-treatment plants, laying

19,700 miles of water mains, and building more than 12,800 playgrounds. These programs created physical reminders of the New Deal's lasting influence on American life and, as Jason Scott Smith suggests, "wrought in concrete and steel a tangible representation of [New Deal] political philosophy."[12]

Leading new dealers clearly understood public works programs' potential to create valuable infrastructure even as those programs aided unemployed Americans. Policymakers like Harold Ickes—secretary of the interior and subsequent director of the PWA—and Harry Hopkins—who headed the Federal Emergency Relief Administration (FERA), CWA, and WPA before becoming secretary of commerce—consistently emphasized the need to fund worthwhile construction. For Ickes, economic development represented the central goal of the New Deal public works agenda. In July 1933 he argued that end mandated the PWA only fund projects with a demonstrable value beyond the immediate employment they might offer, projects that "contribute something of value to the community and not merely be a makeshift to supply work."[13] In a speech to the American Conference of Mayors two months later Ickes expanded on that theme, suggesting that PWA programs offered "the greatest opportunity for municipal improvements in the history of the country."[14] While Ickes received criticism for his parsimonious appropriation of PWA funds, the more profligate Harry Hopkins embraced similar sentiments. In his 1936 book *Spending to Save: The Complete Story of Relief*, Hopkins went to great pains to distinguish mere "work relief projects" from a "long-term, well planned and integrated employment program such as the WPA." In the latter, Hopkins emphasized that "projects must be sponsored by local citizens, and scrutinized by state and Federal officials to see that they meet rigid procedural requirements." Those projects, moreover, needed to encompass "work that should be done even if there were no unemployed demanding jobs."[15] Hopkins reiterated that message in press releases and interviews in subsequent months and years, consistently arguing the WPA's central goal was to sponsor "projects of useful public value."[16]

Aviation infrastructure development efforts offer the clearest example of new dealers' ability to implement that philosophy. When Franklin Roosevelt assumed the presidency, the majority of American airports were little more than level grass fields with a windsock, a hangar or two, and possibly a lighted beacon. Although the Commerce Department worked steadily to improve navigation and radio aids for pilots and to construct emergency landing fields along major airmail routes following passage of the Air Commerce Act and the establishment of the Bureau of Air Commerce in 1926, by the early 1930s the majority of U.S. airports remained unimproved.

This unfortunate situation emerged from the intersection of federal policy, local interests, and economic realities. Federal policy reflected Herbert Hoover's associationalist vision for American aeronautics. With regard to airports, Hoover emphasized that the government's role should follow the precedent set by federal shipping policy—the so-called dock concept—whereby the government assumed responsibility for constructing and maintaining shipping lanes and harbors, but not piers or docks. Transferring that philosophy to aeronautics, the 1926 Air Commerce Act allowed the federal government to construct airways, including navigational aids and emergency landing fields, but forbade the government from building, owning, or operating nonmilitary airfields. These legislative strictures defined airfields as a local responsibility, but did little to delineate the nature of local control. As a result, U.S. airports developed haphazardly during the 1920s under the control of a variety of public and private interests. As commercial flying expanded in the early 1930s, federal regulation and technological development increased support for municipal ownership. Advocates pointed to the leading role the federal government embraced in licensing, safety regulation, and infrastructure creation, arguing that municipal control should begin where federal control ended. Airports also proved to be unprofitable enterprises in many cases, a problem for private owners but less of a concern for local governments that increasingly viewed airfields as a municipal asset—attracting air service, promoting modernization, and serving as a visible example of a town or city's modernity. By the mid-1930s the template for America's airports was largely in place. Airfields would serve as public utilities, embracing standardized operational principles as they promoted local, state, and national interests. That template, however, predominantly applied to fields lacking the infrastructure and services necessary for modern commercial operations.[17]

Airports' shortcomings became an increasingly acute problem as air commerce matured in the early 1930s. As early as 1930 observers called attention to the unacceptable state of America's airfields. That year, the *Annals of the American Academy of Political and Social Science* reported that a majority of American airports "fall considerably short of any reasonable standard of adequacy." Most lacked sufficient lighting, drainage, hangars, repair facilities, and transport links to their associated population centers. Many, in fact, were "only one or two stages removed from cow pastures."[18] By the time Franklin Roosevelt took office, it was abundantly clear that virtually all American airports needed significant improvements.[19]

The turmoil wrought by the Depression, however, meant that just when municipal governments had the greatest need to fund airport development,

they were the least able to do so. Municipalities unable to pay for basic government services had little opportunity to fund paved runways, airport perimeter lighting, and new terminal buildings. By the mid-1930s hundreds of American towns and cities found their ability to provide commercial service limited by obsolete airports, while hundreds of others lacked fields at all.[20]

Roosevelt's embrace of public works inaugurated an increased federal willingness to support aviation infrastructure development, initiating a break with prevailing policy that culminated in significant legislative changes. While the strictures imposed by public works agencies' enabling legislation limited their freedom of action—for example, the WPA could not hire skilled laborers, could not appropriate monies for materials, and could only perform work on public land—these agencies brought tremendous benefits to American airways and airfields.

New Deal agencies operated in close collaboration with the Bureau of Air Commerce—after 1938, the Civil Aeronautics Authority—and municipalities to maximize the utility of federal investment. Federal officials, most notably in the WPA's Airways and Airports Division, focused on funding projects with the greatest benefit to local communities and the nation at large. Localities had to apply for federal dollars and substantiate the utility of the proposed work. Federal administrators and engineers weighed applications carefully before forwarding them to the Bureau of Air Commerce for further evaluation. After Commerce approval, WPA engineers subjected applications to an additional engineering review. Trivial, unnecessary, and overbudgeted requests faced calls for revision or outright rejection. Both the WPA and Commerce officials oversaw ongoing work and strove to ensure its utility and quality. They understood their actions as part of a comprehensive effort to remake U.S. air transport infrastructure to benefit local economies, commercial aviation, and national defense. These efforts offer a useful counterpoint to the wasteful, corrupt, "boondoggling" stereotype many opponents applied to public works activities; at least with regard to aviation infrastructure, New Deal agencies attempted to maximize the value of their contributions.

Local government and business leaders responded to these programs enthusiastically, viewing federal monies as an opportunity to promote local and regional economic development. Public officials inundated federal agencies with applications; by 1939 the vast majority of U.S. airports displayed federally funded improvements, not to mention the hundreds of new fields that owed their existence to New Deal disbursements. The volume of applications was so high, in fact, that Bureau of Air Commerce officials reported that public-works-related work overwhelmed their engineering staff.[21] More significant,

the business community served as a consistent cheerleader for this work. WPA officials reported that local business leaders supported public works activities and were "amazed" at the depth and breadth of those agencies' accomplishments.[22] The Chamber of Commerce took the lead in advocating local governments' embrace federal largesse. In Tennessee, for example, the Chamber's National Director and Southeast Division Manager emphasized the connection between aeronautical and economic development as they highlighted the need for more and better airports in the state. The Knoxville chapter proved even more vocal, providing a representative to the City's "Airport Committee" and in 1935 pillorying the municipal government when that body hesitated to accept a large WPA grant.[23] This public and private support, along with the consistent federal effort to maximize the value of public works agencies' aviation-related activities, highlights these programs' unique nature and emphasizes their contributions to both the New Deal and federal aviation policy.

Well before the WPA's establishment in 1935, members of the Roosevelt Administration identified airports as sites that would benefit from public works expenditures. In late 1933 the CWA and Bureau of Air Commerce began collaboration on an ambitious airport improvement program designed to stimulate new construction and fund updates to virtually every U.S. airfield. CWA Director Harry Hopkins emphasized the program's comprehensive nature, writing that it embraced improvement "on a very elaborate and extensive scale" as the CWA invited communities to acquire land for the creation of new or improvement of existing facilities. More than two thousand did so, a figure approaching the total number of contemporary U.S. airports. CWA efforts, like their WPA successors, mandated local buy-in, basing appropriations on communities' willingness and ability to contribute to the process. Municipalities and states "were wholehearted in their support" of CWA activities, Hopkins reported, highlighting the public's widespread enthusiasm for aeronautical development and the collaborative nature of New Deal public works policy.[24]

CWA administrators worked closely with the Commerce Department to ascertain the most beneficial way to disburse federal funds, setting a precedent that would guide subsequent WPA activities. Hopkins lauded the collaboration between the CWA and Bureau of Air Commerce officials as they worked "to determine a plan likely to give the best results from an aviation standpoint considering the needs and requirements of our national defense branches, the probable extension of commercial air transport, and the necessity for emergency facilities." The result was a renewed focus on airport safety,

clearly reflected in the CWA's request that participating communities confine expenditures to projects that would result in "the best possible landing fields" designed to "directly add to the safety of commercial air transport."[25]

Though it lasted less than six months, the CWA program was remarkably successful. During its tenure the CWA disbursed more than $9 million to fund two thousand aviation projects, half of which achieved completion. Though this fell short of Commerce Department officials' desire to construct an airport in every American population center with more than five thousand residents, in Hopkins's opinion the CWA effort "resulted in the greatest contribution to the safety and convenience of air transport during the history of its development."[26] The program also demonstrated communities' and states' enthusiastic support for—and willingness to play an active role in—aviation infrastructure development. In fact, as the program wound down the *New York Times* reported that administration officials found themselves overwhelmed with local and state protests over the program's termination.[27] While the CWA was unable to redress all—or even most—of U.S. aviation infrastructure deficiencies, the airport program provided evidence that public works could bring material benefit to airports; moreover, its effectiveness established a template that Hopkins would utilize moving forward.

The CWA program's success built support for an expanded public works agenda vis-à-vis aviation. In late 1934 reference to CWA activities appeared in testimony before Roosevelt's Federal Aviation Commission—a body Roosevelt tasked with gathering information on all aspects of U.S. aviation and making comprehensive policy recommendations.[28] John Geisse, head of the Bureau of Air Commerce's Development Section, spoke at length about the CWA program's value, emphasizing the ongoing need for infrastructure improvements. Geisse's opinions echoed those of other federal officials, including Secretary of Commerce Daniel Roper, but Geisse's role in the Bureau of Air Commerce provided him with a privileged position from which to comment on the intersection of public works and aeronautical development.

Geisse began by emphasizing the material benefit public works expenditures brought to communities, the nation, and the aviation industry. Arguing that federal spending benefitted "every man, woman and child in the United States," he suggested that public works projects served both "as a stimulus to recovery and as an aid to national defense." Geisse argued that the CWA program provided a template for expanded federal action, emphasizing the value of cooperation between the federal and local governments. Like Hopkins, Geisse highlighted the immediate and enthusiastic local response to CWA

efforts, relating that his office "was absolutely swamped with requests for assistance." In Geisse's opinion, had the program continued it would have resulted in every American community of substance having its own airport. Emphasizing the pressing need for additional airfield construction, Geisse reported that more than a thousand American cities with populations of five thousand or more lacked landing facilities, in addition to more than fifteen thousand communities with populations under five thousand. For Geisse, public works represented the best way to address the need for improved infrastructure during difficult economic times. Federal expenditures would "accomplish much in eliminating this unfortunate condition," he testified, and "permit the airplane to attain the utility of which it is capable."[29]

Federal activities accelerated dramatically following Roosevelt's creation of the WPA in the spring of 1935. Roosevelt tasked the WPA with providing direct employment—largely to unskilled laborers—on building projects around the country. Unlike the PWA, which operated through private contractors, the WPA focused on maximizing the number of workers on government payrolls, leading many observers to criticize Hopkins and other WPA administrators for promoting make-work projects emphasizing employment over productivity.[30] While those criticisms were not without merit, the WPA's aviation-related efforts challenge that stereotype, as within the limits of their mandate officials strove to fund projects of value.

From the outset, WPA activities reflected the influence of the CWA airport program preceding it even as the new organization embraced a more expansive agenda. Administration officials began work with the explicit objective of realizing the unfulfilled goals the CWA and Bureau of Air Commerce had identified two years earlier. The WPA also established a close working relationship with the bureau that helped guide its aeronautical efforts moving forward. In early October 1935, the bureau's director, Eugene Vidal, appointed seven regional and thirteen district supervisors to oversee what the *New York Times* dubbed the WPA's "airport program." Vidal tasked those officials—all experienced engineers and pilots—with providing WPA State Administrators with technical advice, evaluating aviation-related proposals, and aiding in ongoing development programs.[31] At the national level, WPA Administrators used bureau airport guidelines as a basis for project evaluation and forwarded all aviation-related requests to the Bureau for technical review before engaging in a "stringent" internal engineering review.[32] This relationship continued to inform WPA activities as they expanded, ensuring the quality and relevance of WPA aeronautics projects.

The WPA's airport program hit the ground running, with expenditures immediately dwarfing those of the CWA. In September 1935, Airways and Airports Division Technical Supervisor L. L. Odell reported that as of the 14th of the month, the WPA had approved work on 459 projects, encompassing total federal appropriations of $57.5 million.[33] That figure represented more than 600 percent of total CWA expenditures for airport construction, giving a sense of the scale of WPA efforts ultimately totaling more than $400 billion.[34] Odell, however, provided those figures to demonstrate how far short appropriations fell of the goals set by the Bureau of Air Commerce. Odell related that the CWA/Commerce program had identified 1,229 "first priority" work projects, necessitating the allocation of $80.4 million in federal funds. He suggested, however, that Commerce had undervalued the cost of many of those ventures. In Odell's opinion, the completion of all 1,229 projects would require the disbursement of $76.5 million above and beyond Commerce estimates. Despite the enormity of this sum, Odell "respectfully suggested that WPA funds in the total amount . . . be earmarked for allocation to Airway and Airport work" in order to "meet the requirements of the Bureau of Air Commerce program."[35]

By spring 1936, WPA administrators realized they would be unable to bring the Commerce program to fruition. The limitations on WPA appropriations imposed by the agency's mandate to promote employment, inability to pay for skilled labor or materials, and inability to perform work on privately owned land confirmed the WPA could not achieve the Bureau of Air Commerce's goals alone. Many proposed projects were located in localities with little or no need for additional employment, for instance, and others necessitated materials, rather than labor, for completion. Nonetheless, WPA officials maintained a clear focus on doing all they could to promote aeronautical development. In February, the *Times* reported that Harry Hopkins viewed the Airways and Airports Division as holding the solution to the aviation infrastructure problems facing the nation. The division, he argued, would enable the government to build a "nation-wide airway system to create permanent value to the general welfare and common defense of the nation" as well as promoting "the economic development of the country as a whole."[36]

That expansive goal drove a burgeoning Airways and Airports Division program. According to an Administration press release, as of February 15 the division had released funds for 410 airport and airway projects. Those projects, 325 of which were already under construction, would employ 50,000 men and involved funds totaling $21.1 million.[37] The same document also provided an update on the number of Washington-approved projects—to date, Roosevelt

had signed off on more than fourteen hundred, encompassing total allocations of $110.2 million.[38]

Hopkins noted that those approvals reflected a concerted effort by WPA administrators to work with other federal agencies to maximize the value of administration expenditures. As the director explained, "The WPA airways and airport program illustrates the co-ordinated [*sic*] effort required in the creation of works of national value through employment of labor formerly on relief." WPA staff, he related, worked closely with the Departments of Treasury, War, Navy, Commerce, and the Post Office to maximize the value of WPA public works. The Airways and Airport Division continued to cooperate with the Bureau of Air Commerce; experts from Commerce, Hopkins noted, inspected "all WPA airway and airport projects as to their aeronautical fitness."[39] The level of interagency cooperation would only increase in the future. By the summer of 1936 the WPA was coordinating with the Army, Navy, Post Office, and Commerce Department on a nationwide airport survey made, as the *Times* reported, "in the interest of a well-rounded airport and air transport program valuable to both civil and military aviation."[40]

Speaking at a Bureau of Air Commerce-sponsored National Airport Conference almost eighteen months later, WPA Chief Engineer F. C. Harrington—who in December 1938 would succeed Hopkins as WPA Administrator—reflected on the administration's commitment to maximizing the value of its investment in aviation infrastructure. Addressing representatives from the Aeronautical Chamber of Commerce, Air Transport Association, Airline Pilots Association, National Aeronautic Association, Treasury Department, U.S. Conference of Mayors, and War Department, Harrington emphasized that the WPA continued to do its utmost to fund only the most worthwhile aviation-related projects. While granting that the WPA's lack of ability to expend funds on materials or skilled labor limited administration activities, Harrington argued that "within this limitation, the Works Progress Administration endeavors to produce a maximum in permanent public improvements which are beneficial to the local communities and to the nation as a whole." Ultimately, the WPA Chief Engineer concluded that he and other senior WPA administrators regarded the "airport program . . . as perhaps the most worth while [*sic*] program that [the WPA has] carried out."[41]

The CWA and WPA programs significantly expanded federal engagement with aeronautics, signaling a break from Hoover's view that governmental responsibility should end at the airport boundary. Although the new federal willingness to fund aviation-related construction had its roots in the dire economic conditions of the 1930s, Roosevelt and Hopkins understood the objective

value of federal action. In 1938 the Civil Aeronautics Act—legislation that Roosevelt played a key role in crafting—removed proscriptions on federal funding for airports. The bill included a proviso authorizing an immediate federal survey of the nation's airports, established a federal airport-aid program to support airfield development with an initial appropriation of $12 million, and allowed the government to fund a national air traffic control system.[42] These actions confirmed that moving forward, the federal government would take a leading role in shaping airport development.

Roosevelt's embrace of expanded federal activism, moreover, reinforced the central role public works programs would play in federal efforts. When the Civil Aeronautics Authority—created by the Act—completed its airport survey and presented a proposal for a national airport program to Congress in the spring of 1939, Authority officials suggested that a substantial percentage of the necessary funds come from WPA coffers.[43] The WPA also made key contributions to national defense efforts between 1940 and 1943. Working closely with the Army and Navy, WPA officials oversaw a wide-ranging effort to construct "strategic" airfields that played an important role in wartime air transport.[44] These contributions once again highlight New Deal agencies' central place in the narrative of American aviation infrastructure development as they exemplified the changing federal relationship with aeronautics.

As state administrators released funds on increasing numbers of projects, WPA employees and the American public began to appreciate the development fostered by the Airways and Airports Division. In the fall of 1937, the WPA's Washington office sent a party of senior officials on a three-week airport inspection trip, eventually encompassing more than eleven thousand miles of travel and visits to thirty states. Designed to evaluate WPA efforts to date, members' interactions with local officials and the general public offer powerful evidence of Americans' support for administration activities. A. B. McMullen, chief of the administrations' Airport Section Safety and Planning Division, reported that he "found the highest praise for the work the WPA has done, particularly on airports."[45] W. Sumpter Smith, the WPA's principal aeronautical engineer, noted that many businessmen "were amazed to know the extent of actual worthwhile permanent physical facilities" being constructed with WPA funds.[46]

Public appreciation for WPA projects sprung in large part from Americans' support for aeronautical development. McMullen wrote that his most significant takeaway from the trip "was the keen interest in aviation demonstrated by the public officials, business men [*sic*] and influential citizens wherever we went." The public clearly understood the government's central role in development efforts.

"In all sections of the country," McMullan related, Americans highlighted the "necessity for a well planned long-term program of airport and airway development with the Federal Government," specifically, "a nationwide system of airports adequate to permit the continual growth and safe operation of air transportation in the United States."[47] Media reports and public actions confirm Americans' thoroughgoing interest in development. Reporting on the WPA's "big airport program," the *New York Times* pointed to "the large volume of projects sponsored by public bodies throughout the country" as evidence of Americans' "widespread interest in aviation."[48] The *Times* and papers around the country provided readers with a steady stream of articles lauding airport construction; in Knoxville, Tennessee, the *News Sentinel* published more than thirteen hundred pieces on airports and related topics between 1927 and 1938. In that city WPA workers had to erect a fence around ongoing airport construction to hold back the thousands of locals flocking to see the new field, and the city council found itself forced to open the new terminal building on Sundays to satisfy citizens who wanted to tour the facility.[49] In Knoxville and elsewhere, tens—and in large cities, hundreds—of thousands flocked to airport dedication ceremonies featuring addresses from leading local and state dignitaries.[50] These examples provide telling evidence of contemporary American "air-mindedness" and emphasize local governments' and the American public's shared hopes for continued development.

While WPA administrators exhibited pride in public works programs' accomplishments, they also recognized the continued need for federal guidance and funding. McMullen wrote that as a result of WPA actions, "airport construction has advanced at least 15 years." In his judgment, "present day transport planes could not be economically operated had it not been for the new airports constructed and the improvements and enlargements made on existing airports by . . . Work Relief agencies." Progress to date, however, merely emphasized the need for additional action. U.S. airports, McMullen reported, "are still far behind the development of the airplane and the air transport requirements."[51]

For both McMullen and Smith, that context dictated the ongoing need for federal guidance. Smith emphasized the "absolute necessity" of "a national plan for the logical development of a Federal Airways System," including an expanded construction program and the creation of uniform standards and layouts for airports and other ground-based facilities. Doing so would require constructing and/or improving more than one thousand airports beyond those already benefiting from WPA investment, a task he considered the baseline for "an adequate national airways system [able] to accommodate

flying equipment already in use or actually under construction." Smith estimated the additional cost at more than $300 million.[52] McMullen also supported an expanded program of infrastructure development, emphasizing the need to "make a modern airport usable 24 hours a day, 12 months a year." That necessity, coupled with the rapid enlargement of transport aircraft, made paving, lighting, and other associated infrastructure "absolutely necessary" for the successful operation of flying fields. McMullen estimated achieving those goals would cost $285 million—strikingly close to Smith's valuation.[53]

Both men conceded, however, that it would be difficult for the WPA to bring comprehensive development plans to fruition. McMullen recognized that the WPA's mission limited appropriations for nonemployment purposes, undermining his desire to see the agency expand its aviation-related activities. He nonetheless remained focused on using federal monies to realize a mature air transport system, recommending "an annual appropriation for airport construction be made available to and administered by some Federal agency."[54] Smith expressed an even clearer understanding of the limitations imposed by work relief programs. "It is obvious," he wrote, "that a relief program should be concerned primarily with work only at those locations where needy unemployed persons are eligible for relief . . . funds available for non-labor purposes will very likely be inadequate for any high-type construction." From these facts, Smith drew the obvious conclusion, recording, "I do not believe it practicable for a relief organization, such as the WPA, to carry out a nationwide airport program if preference is to be given to the necessity for aviation facilities rather than to the requirement for relief." Like McMullen, he suggested the need for a federal airport program administered by "some federal agency," within which the WPA would operate as a source of labor where conditions permitted—a prescient observation that prefaced the WPA's role under the Civil Aeronautics Authority's airport program almost exactly.[55]

While Smith and McMullen were understandably frustrated by the WPA's inability to complete a comprehensive aviation infrastructure program, they remained focused on maximizing administration contributions to aeronautical development. Reflecting on the lengthy inspection trip, McMullen summarized Airways and Airports Division activities to date. "In general," he wrote, "the airport program conducted by the WPA is popular throughout the United States and the permanent improvements made on airports, which are the foundation of all aviation, have done a great deal to counteract or silence critics of the Works Progress."[56] Though not without limitations, from McMullen's perspective at least, WPA actions were a rousing success.

Observing WPA activities at the local level largely confirms McMullen's assessment. The WPA's wide-ranging aviation-infrastructure activities transformed U.S. airports and related infrastructure. While airport construction lay at the heart of the Airways and Airports Division's mission, WPA monies funded everything from an air-marking campaign to new weather forecasting models. Local governments, business leaders, and the public at large demonstrated consistent support for these activities, viewing both the jobs WPA projects brought and the resulting infrastructure as key facets of local and regional economic development. The WPA's contributions to cities like Chicago, Knoxville, Newark, San Diego, and St. Louis, moreover, confirm the Airways and Airports Division's focus on funding projects of value.

In Chicago, local and civic leaders looked to the WPA to help fund an aggressive airport expansion project. In 1936 the inadequacy of the city's existing field prompted Edgar Gorrell, president of the Air Transport Association of America, to warn the city that airlines would be forced to "cut Chicago off their main travel lines" barring significant improvements.[57] In response, in 1937 Chicago applied to the WPA for more than $2.4 million to expand the municipal airfield.[58] Chicago subsequently requested additional funds to construct a light lane for an Instrument Approach System.[59] These projects employed more than 4,000, achieving completion by the fall of 1939 and, according to Mayor Edward Kelley, creating "one of the finest [airports] in the country devoted to commercial purposes."[60]

Like Chicago, Newark applied to the WPA for funds to improve an already active municipal airport—the busiest airport in the United States in the prewar era. By the mid 1930s Newark desperately needed improvements to maintain its level of service. While Newark city officials had a history of utilizing public works monies to improve the airport even before the WPA's establishment in 1935—the city received more than $1 million from the PWA to build a new terminal building in 1934—they hoped that the WPA would fund a raft of improvements.[61] Ultimately, Newark applied for almost $4 million in WPA monies to fund airport expansion and construct new hangars.[62] With total expenditures rising to more than $5 million, the Newark project was a qualified success. Although the construction improved the airport's ability to accommodate the increasing demands of planes and passengers, in the end the construction of LaGuardia Field in New York—completed in October of 1939 and largely funded by WPA grants—signaled the beginning of the end for Newark's preeminence in the New York area.

WPA work in San Diego and St. Louis reveals a similar pattern. Lindbergh Field served both the city of San Diego and the military facilities in the vicinity

with land- and sea-based facilities. Between September 1937 and January 1939, the city applied for almost $600,000 in WPA funds to elongate and pave runways, improve drainage, construct a new wharf for seaplanes, and build several new hangars. Thanks to that construction, Lindbergh Field served as an important wartime transport center, offering facilities for ground and seaplanes and addressing both civilian and military needs. In St. Louis, public works funded much more modest improvements to Lambert Field. An appropriation of slightly less than $110,000 funded runway extension and drainage, and additional requests financed a new hangar and radio towers.[63]

The WPA also embraced a number of nonairport projects. In California the WPA financed an air-marking program. State officials applied for funds to paint "508 roof markers in 508 towns as an aid to air navigation."[64] Designed to make air travel safer, the San Diego *Evening Tribune* reported that ten-foot high directional signs would be painted on barns, factories, and mountains.[65] Quaint by modern standards, this project formed a valuable safety aid for both private and commercial pilots and expanded a program initiated by the Commerce Department more than ten years earlier. The WPA weather bureau also engaged in an ambitious five-year-long weather study designed to help meteorologists accurately forecast conditions in the upper atmosphere. WPA employees took hourly surface readings at 260 airports around the country over a five-year period, and used balloons to measure high-level air currents at 120 sites. The study, the New York *Times* reported, was the "only one of its type in the United States," encompassing tremendous value for commercial flying and national defense.[66]

Beyond the material benefits these projects encompassed, the mechanics of Airways and Airports Division activities provides insight into the dynamics shaping WPA actions. Most prominently, WPA engagement at the local and regional level confirms the close working relationship between the Administration and the Bureau of Air Commerce and both organizations' focus on creating valuable infrastructure. In 1937, A. B. McMullen wrote Earl Popp, the bureau's western regional supervisor, in reference to San Diego's application for WPA funds. McMullen noted that while his superiors in the Administration's Project Control Division supported San Diego's application, they awaited Commerce review and approval as a precondition to any release of funds. Clarifying his instructions to Popp, McMullen emphasized that his superiors required "complete working plans be prepared and submitted to and approved by the Bureau of Air Commerce and the Chief Regional Engineer" before the WPA State Administrator authorized any operations.[67] In Chicago the WPA's Engineering Division recommended the approval of that city's application for more than $2.4 million in

federal funds, "subject to approval of plans and specifications by the Bureau of Air Commerce and the Regional Engineer-WPA." Subsequently, the Regional Engineer raised concerns about the proposed work, forcing local authorities to modify their proposal until it met with WPA and Commerce approval.[68]

WPA and Commerce administrators often tabled or rejected wasteful or unnecessary applications outright. Chicago's application for $8.5 million to fund a new island airport received close scrutiny, as WPA administrator Harry Goldberg expressed concern that the project did not cohere with Administration goals. Goldberg highlighted the fact that "other airports proposed in the same general location" would offer similar benefits "for a smaller or no expenditure of government money," concluding that Chicago's plan ran "counter to the provision of the spirit and provisions of the Work Relief Act." He also emphasized the central role the Bureau of Air Commerce played in the decision, reminding his superiors that "final decisions rest first, upon the Department of Air Commerce [*sic*]."[69]

Even more striking are WPA and Commerce assessments of several St. Louis proposals. Correspondence between Airport Engineer W. M. Aldous and John Wynne, Chief of the Bureau's Airport Section, shows that St. Louis had a history of presenting hastily prepared and inadequately researched proposals—a fact the Bureau did not look well upon. Late in 1936 Aldous reported that the WPA had rejected a September 1935 proposal to reconstruct the banks of a creek, and that approved proposals from the summer and fall of 1936 were far over budget. In reference to an October 1936 proposal, Aldous wrote, "it is just as well . . . that it was rejected as the quantities [of materials] involved are sheerest guesswork." Summing up St. Louis's efforts to secure public works appropriations to date, he concluded that the city's proposals were "classified as purely relief . . . the estimates as submitted on all past projects represented just guesses." The engineer therefore recommended that the WPA allocate the funds for "desirable work" rather than the make-work projects St. Louis proposed.[70] Aldous's concerns, however, did not result in significant change to St. Louis officials' behavior. In 1939, B. M. Harloe, WPA Chief Engineer, warned the Missouri State WPA Administrator that city officials needed to submit plans for "suitable public projects representing permanent improvements," not merely make-work ventures. Harloe emphasized that the WPA "may not properly recommend the approval of applications which require disproportionate expenditures of Federal funds . . . for work whose permanent value is not commensurate with the expenditures required."[71]

Coordination between the WPA and Bureau of Air Commerce also resulted in more constructive outcomes. In Newark, the Bureau pushed the WPA to undertake additional construction with the goal of improving safety.

Writing to WPA Assistant Administrator F. C. Harrington, John Wynne noted that "the Department of Commerce has been trying for some time to interest the City of Newark in installing . . . [a] new airway traffic control unit." According to Wynne, Newark had been unwilling to pay for the project and, as a result, Wynne hoped Harrington would include it "in the present enormous investment plan now going on at Newark Airport." Highlighting the significance of the air traffic control unit, Wynne argued, "from a safety viewpoint, the Department of Commerce is more interested in the unit than any item of improvement for the new airport."[72]

The WPA's focus on work relief did have the potential to restrict Administration activities. In Newark, WPA-funded construction on a hangar stalled when engineers realized that work on the building's large, sliding doors could not be completed with the existing workforce. Fred Childs, Chief Engineer for the WPA State Division of Operations, wrote that completing the hangar necessitated "skilled craftsmen be engaged to perform special construction work." He suggested that "it would be most desirable . . . to carefully consider the practicability of having all special work performed under private contracts."[73] That, of course, would mean that funds for such contracts would not come from WPA appropriations, forcing the city to pay for them itself or look to another government agency like the PWA.

In some cases, local funding limitations restricted WPA activities. Because the WPA did not provide funds for materials, that responsibility fell upon local communities. Although theoretically the WPA's procurement of local matching funds would provide for necessary materials and, if necessary, skilled labor, in reality these strictures could limit WPA actions. Additionally, its focus on work relief meant that the Administration could only embark on work in areas containing sufficient numbers of needy workers. This precluded the Administration undertaking important projects in sparsely populated areas or areas with low unemployment.

The WPA's inability to undertake construction on private land could also limit and disrupt operations. Chicago struggled with that stricture during a 1937 airport-expansion program that aimed to double the size of its municipal field. As part of that effort, the city purchased a large tract of land from the Chicago and Western Indiana Railroad. Unfortunately, the railroad maintained a right-of-way for tracks bisecting the enlarged airport property. That strip of private property precluded WPA workers from extending two runways, threatening to undermine the entire project. Eventually, the city reached a compromise, acquiring a right of way for the railroad around the new field at an estimated cost of more than $800,000 to be borne by the city.[74]

Although not a common barrier to airport improvements nationally, this issue, like those above, demonstrates the sometimes-difficult nature of public works agencies' efforts to promote America's air transport network.

A detailed examination of one community's history of engagement with New Deal public works further underlines the multifaceted factors shaping infrastructure development while confirming the support WPA activities enjoyed from municipal governments, the public, and the business community. Knoxville, Tennessee, offers a representative example; there, despite controversy in the city council, public and private actors embraced WPA-funded development with open arms.[75] Knoxville's desire to take advantage of New Deal largesse stretched back to 1933, when the city applied for $10,000 in CWA funds to improve the city's small municipal airport.[76] Knoxville had purchased the field in the fall of 1929, but almost immediately found it to be inadequate; despite sustained efforts from the City Manager, city council, Chamber of Commerce, and leading businessmen to bring an airline to Knoxville, the field lacked the size and facilities to host commercial service.[77] City applications to both the Reconstruction Finance Corporation (RFC) and the CWA yielded limited federal aid, but the resulting work left the field well short of airline, and Commerce Department, requirements.[78] In 1934, American Airlines finally inaugurated airmail service to the city, but it did so at a competing private airport. American's service was plagued by difficulties from the outset, however. Their chosen field was so short that aircraft could not land without a steady wind; as a result, American's planes often bypassed Knoxville, to the great frustration of local leaders.[79] Even worse, Post Office Department officials informed Knoxville that the field was not suitable for modern passenger liners. In a letter to the Knoxville postmaster, Second Assistant Postmaster General Harllee Branch defined the stakes in no uncertain terms: "If your community expects to continue to receive air mail service," Branch wrote, "the airport will have to be placed in suitable condition for the use of the type of planes which will be used on the transcontinental route."[80] City officials responded by looking to establish a new municipal field outside the city limits. Following a survey by representatives from American Airlines and the Bureau of Air Commerce that strongly encouraged the city to construct a new, larger airport on a rural site, the city council created an "Airport Committee" to investigate that possibility.[81] Unfortunately, Knoxville lacked the funds to complete such a project, leaving the city at an impasse.

As it did in hundreds of other towns and cities, the WPA offered a path forward. In June 1935 newly appointed State WPA Administrator Harry S. Berry made public his desire to give airport projects high priority; Knoxville

was at the top of his list. Berry fast-tracked a WPA survey of possible sites and, by late August, encouraged the city to file an application for WPA funds. Less than two weeks later the city did so, requesting almost half a million federal dollars. By the end of September the city council approved the new site and in early November, Knoxville learned that the WPA's Washington office had formally released $470,000 for the project.[82]

The city, however, had yet to purchase the land upon which the new field was to be built. In a dramatic turn of events during a December 10 city council meeting, a group of opponents refused to authorize the necessary $40,000. Opposition sprang from diverse sources; the vice mayor joined forces with another councilman to argue that the proposed appropriation, which the city was to draw from a bridge-improvement fund, would be better spent on the local school system. Another member argued that the airlines should build their own airports, while a fourth suggested that there was no need for a new airport, as planes able to land in a "50 foot field" would soon come to market. These opponents ended discussion on the matter and forced a vote before the city manager, who the council had tasked with acquiring the land for the new field, could offer his report. The 5–5 result surprised observers, including the mayor, city manager, airport manager, vice president of the local Chamber of Commerce, and a member of the state aeronautics department, all of whom believed the measure would pass easily.[83]

The sudden opposition certainly reflected some council members' concerns about spending money on a new airport; the nature of the vote, however, suggested other forces at play. The council's refusal to even hear the city manager's report—a report that the council itself had requested after authorizing the manager to acquire options on land for the airport—and what the *Knoxville News Sentinel* reported as an "argumentative mood" during the meeting suggest that personal or political disagreements may have instigated the opposition.[84] The council had for years been working to bring a larger airport to Knoxville and for months had supported and funded the city manager's land-acquisition efforts. This sudden about-face by several former airport proponents appears to represent an anomaly, as two of them resumed support for the appropriation three days later without any change to the measure.[85] Clearly, municipal governments mired in the depths of the Depression were faced with difficult fiscal decisions. The relative bargain offered by the WPA, however—$40,000 of city money in return for a $500,000 airport—represented a powerful inducement to local government, business, and the public alike.

Significantly, the city council's objections reflected local matters, and did not take issue with WPA activities in any meaningful way. While the WPA

often experienced charges of "boondoggling," waste, graft, and political favoritism, the Knoxville airport project aroused little of this sentiment. One city council member did express concern that State WPA Administrator Harry Berry "might go at any time" and be replaced with a successor disinclined to support the airport project, but that concern had little to do with the value of WPA airport development activities.[86] Knoxville's outlook may have reflected East Tennessee's largely positive relationship with the New Deal—in large part due to the activities of the Tennessee Valley Authority and the Rural Electrification Administration—but it also highlights the enthusiasm with which localities around the country responded to aeronautical development projects. In Knoxville, the WPA offered the city an opportunity to build a long-desired airport it would otherwise have been unable to fund.

The council's initial refusal to appropriate monies to purchase land for the new airport initiated a firestorm of criticism that offers some of clearest evidence of the widespread support the WPA airport project enjoyed.[87] The day after the meeting, the *Knoxville News Sentinel*'s editors penned an editorial pillorying the city council's decision. Arguing that the council should "correct at the earliest possible moment the error made last night," editors argued that the city government "owed it to the progress of Knoxville" to fund the new port. "The city cannot afford to isolate itself from aeronautical progress," they wrote; ignoring the opportunity that WPA funds offered was shortsighted and foolish.[88] The following day witnessed even more anger. Under a front-page headline proclaiming "'Don't Muff Chance to Get First Class Airport' Business Leaders Beg Council," the paper ran a series of quotes from leading local businessmen urging the council to reconsider its decision. Representative were the comments of Howell Davis, president of a local cement company. "I don't see how Knoxville can do without an adequate airport if it is to keep up with the march of progress," Davis wrote. "It would be a shame if the Council passed up this opportunity." The Director of the local Chamber of Commerce had stronger words for the city government. Clarence Holland wrote, "I have been working for a Class A airport for this city since 1928 and will continue to do so. I hope that the Council . . . will see its way clear to put this proposition through." The business community's overwhelming support for the new airport reflected both a desire for Knoxville to keep pace with other municipalities—worries about "falling behind" were endemic in business leaders' responses to the council vote—and the hope that a new airport would spur economic growth. Businessmen also highlighted the opportunity offered by the WPA grant, a proposition "too good to turn down" in the words of Dixie Laundry owner Oscar Schwarzenberg.[89]

For years, the Chamber of Commerce and the business community had provided consistent support for airport development in Knoxville. The chamber highlighted airport development in annual agendas, sponsored the dedication ceremonies for Knoxville's first municipal port, which included a weeklong air tour that flew leading Knoxville businessmen around the state, and went so far as to run a series of ads in the *News Sentinel* urging the municipal government to purchase or build an adequate field.[90] That advocacy extended to WPA activities. Though undoubtedly business leaders saw the WPA's airport work as a means to an end—and, unlike the city council, did not have to authorize the relevant funds—they nonetheless served as powerful advocates for public works spending, viewing WPA-enabled airport construction as key to local and regional economic development.

In the face of mounting public criticism, the council reversed course. During a special session on December 14, the body passed an emergency ordinance—introduced by one of the measure's former opponents—to appropriate the necessary funds; on December 20, council members unanimously authorized the city manager to purchase the relevant land.[91] WPA crews began construction in the spring of 1936, and by the summer the project was well underway as the administration funded comprehensive activities including clearing, grading, drainage, paving, lighting, brickwork, and a host of other incidental jobs.[92]

As work on the airport proceeded, Knoxville residents increasingly appreciated the scope of WPA activities. By the fall of 1936 the airport employed hundreds of WPA workers and the administration provided jobs for almost four thousand individuals on more than fifty projects in the Knoxville area.[93] In early 1937 the *News Sentinel* offered clear evidence of Knoxville residents' appreciation for the WPA's contributions to the local economy. In a full-page spread, the paper published numerous photos of WPA projects and lauded the benefits the administration brought to the region. Far from conforming to the popular boondoggling stereotype, author Al Manola argued that WPA projects brought "real value to the city." As one of the most visible—and popular—WPA projects in the area, the new airport represented a point of pride for the paper and the larger Knoxville community. The paper provided readers with consistently laudatory coverage, including regular construction updates and large photo collections. Knoxville residents demonstrated their enthusiasm through their eagerness to visit the construction site. Though it lay more than nine miles from the center of town and the round-trip drive could take well over an hour, thousands of Knoxvillians flocked to the field, eventually forcing WPA crews to erect a fence to hold back the crowds.[94]

Nowhere was Knoxville's enthusiasm for the new airport more evident than during the field's dedication, which took place in October 1937. Despite poor weather, thousands of citizens made the almost ten-mile trip to witness the festivities. The Knoxville Police Department instituted a new traffic pattern—making several roads one-way—to facilitate travel to and from the event, but though the department's entire motorcycle squad and seven companies of National Guard troops did their best to keep traffic moving, the volume of cars quickly overwhelmed local roads, leading to hours of gridlock. Those difficulties notwithstanding, more than fifteen thousand ultimately made it to the field to enjoy an air show, a visit from famous air racer Al Williams, the arrival of a new American Airlines DC-2, and the dedication ceremony itself.[95] George Dempster, a former city manager and one of the most vocal proponents of the new field, gave the keynote address. Will Cheek, chairman of the State Aeronautics Commission, and Harry Berry also spoke to an audience that included Tennessee governor Gordon Browning. Berry's comments were particularly laudatory as he proclaimed that the opening of McGhee Tyson "marked the most important date in our transportation history since the first locomotive came through here 80 years ago."[96]

The enthusiasm with which state and local officials, the business community, and the public embraced the new field highlights the success and popularity of the WPA's airport program. McGhee Tyson Airport benefited from almost $600,000 in federal funds, without which the city would have been unable to fund a new airport.[97] That new field brought commercial passenger service to Knoxville—American Airlines DC-2 aircraft began landing in Knoxville in July 1937—allowing east Tennessee to benefit from the emerging national air-transport network.[98] McGhee Tyson Airport continues to serve the region today, emphasizing the critical role New Deal Public works programs played in creating foundational aviation infrastructure around the country. Public support for the WPA project, moreover, suggests that not only did the administration's airport program challenge the popular "make-work" stereotype, but it also represented an important pro-business element of the larger public works edifice. These factors confirm that the Airways and Airports Division was uniquely able to realize the WPA's dual goals of employment and economic development.

During the Depression, New Deal public works agencies financed revolutionary improvements to America's aviation infrastructure. These programs offer the clearest and most successful example of New Deal public works policy achieving success in practice as they created conditions facilitating a dramatic postwar commercial air-transport boom. Though perhaps not the

ideal way to make over America's aviation infrastructure, WPA activities demonstrate administrators' and engineers' consistent efforts to identify and fund projects with the greatest value for localities and the nation. Far from promoting a wasteful make-work program, the WPA worked closely with the Bureau of Air Commerce and local communities to encourage construction projects that would have a lasting value for American aeronautics.

Public works programs' aviation-related efforts also underscore Franklin Roosevelt's increasing willingness to break with the policies of his predecessor. New Deal airport funding opened the door to a significant expansion of federal responsibility vis-à-vis aviation, setting the stage for both legislative changes and expanding activism in the wartime and postwar eras. Moving forward, the federal government would exert increasing control over American aeronautics, through programs like the Development of Landing Areas for National Defense (DLAND) and, ultimately, the creation of the Federal Aviation Administration in 1958.

Finally, these programs' history highlights the unique appeal they had for the business community. During a period when many leading businessmen railed against Roosevelt's reforms, public works' aviation infrastructure efforts found significant support with businessmen who saw commercial aviation as a key facet of economic development. New Deal agencies' ability to facilitate that goal resulted in both individuals and organizations like the Chamber of Commerce serving as some of the loudest cheerleaders for aviation-related public works spending. These conclusions stress the need to reevaluate at least part of the New Deal's legacy. While public works programs were unable to pull the country out of the Depression, their aviation-related activities offer powerful evidence that they brought lasting, positive change to the United States.

Virginia Military Institute

NOTES

1. Oliver McKee Jr., "More New Airports: WPA's Expansion Program Aims to Keep Pace with Growing Air Transport," *New York Times*, 6 October 1935, 169.

2. Public Works Administration, *America Builds: The Record of the PWA* (Washington, D.C., 1939), 281–82; 291. Unfortunately, the vast majority of PWA records were destroyed before being transferred to the National Archives and Records Administration. As a result, no specific aviation-related project files remain from the period before 1940. As other records indicate—including references in the PWA publication cited above, Federal Aviation Commission testimony, passing statements in the records of the PWA's

Investigations Division, references in WPA project files, and media reports in publications like the *New York Times*—the PWA did fund a large volume aviation-related projects. Details relating to individual projects, and the nature of aviation-related allocations, however, remain unclear.

3. "$101,000,000 Spent on New Airports," New York *Times*, 27 February 1938, 14; Memorandum, 29 October 1934, Box 51, Airway and Airport Projects Folder, Harry L. Hopkins Papers, Franklin Roosevelt Presidential Library, Hyde Park.

4. *Final Report of the WPA Program, 1935–43* (Washington, D.C., 1947), 122; "Defense Projects Get WPA's Priority," *New York Times*, 7 June 1940, 14.

5. *Final Report of the WPA Program*, 51; "WPA Plans Air Markers," *San Diego Evening Tribune*, 17 November 1936, Box 5, RG 69, NARA; "WPA Weather Data Will Aid Aviation," *New York Times*, 30 July 1940, 37.

6. For more information on the government's expanding regulatory role, see Richard H. K. Vietor, "Contrived Competition: Airline Regulation and Deregulation, 1925–1988," *Business History Review* 64, no. 1 (Spring 1990): 61–108.

7. See Barton J. Bernstein, "The New Deal: The Conservative Achievements of Liberal Reform," in *Towards a New Past: Dissenting Essays in American History* (New York, 1967); William Leuchtenburg, *Franklin D. Roosevelt and the New Deal, 1932–1940* (New York, 1963), 125, 130; Arthur Schlesinger Jr., *The Age of Roosevelt: The Coming of the New Deal* (Boston, 1959), 282–96; and Howard Zinn, "The Limits of the New Deal," in *The Politics of History* (Champaign, 1990), 133–34.

8. Jason Scott Smith, *Building New Deal Liberalism: The Political Economy of Public Works, 1933–1956* (New York, 2006), 19, 22. See also Robert D. Leighninger Jr., *Long Range Public Investment: The Forgotten Legacy of the New Deal* (Columbia, S.C., 2007), and Nick Taylor, *American Made: The Enduring Legacy of the WPA: When FDR Put the Nation to Work* (New York, 2009).

9. Leighninger Jr., *Long Range Public Investment*, 3–10.

10. See Kim Phillips-Fein, *Invisible Hands: The Businessmen's Crusade Against the New Deal* (New York, 2009).

11. Smith, *Building New Deal Liberalism*, 1–2, 87.

12. Ibid., 2, 208, 258; *Final Report of the WPA Program*, 50–51. For more information on New Deal public works, see Leighninger Jr., *Long Range Public Investment*; Taylor, *American Made*; Leuchtenburg, *Franklin D. Roosevelt and the New Deal, 1932–1940*, 118–42; Schlesinger Jr., *The Age of Roosevelt: The Coming of the New Deal*, 282–96; and Gerald D. Nash, *The Great Depression and World War II: Organizing America, 1933–1945* (New York, 1979), 33–36.

13. Department of the Interior Memorandum to the Press: Interview with Harold L. Ickes, Secretary of the Interior, by Walter Trumbull, 3 July 1933, Box 1, RG 135, NARA.

14. Harold L. Ickes, Secretary of the Interior, Speech to the Conference of Mayors at A Century of Progress Exposition in Chicago, 23 September 1933, Box 1, RG 135, NARA.

15. Harry L. Hopkins, *Spending to Save: The Complete Story of Relief* (New York, 1936), 114–15.

16. Works Progress Administration Press Release, 29 March 1936, Box 51, Airway and Airport Projects Folder, Harry L. Hopkins Papers, Franklin Roosevelt Presidential Library, Hyde Park; "WPA Work is 60% Complete," *New York Times*, 14 March 1937, 21.

17. Janet R. Daly Bednarek, *America's Airports: Airfield Development, 1918–1947* (College Station, Tex., 2001), 6, 14–92.

18. Austin F. MacDonald, "Airport Problems of American Cities," *Annals of the American Academy of Political and Social Science,* vol. 151*, Postwar Progress in Child Welfare* (September 1930), 226.

19. Oliver McKee Jr., "More New Airports: WPA's Expansion Program Aims to Keep Pace with Growing Air Transport," *New York Times*, 6 October 1935b, 169.

20. Ibid.; "Report on Airport Needs," *New York Times*, 13 July 1936, 30; Bednarek, *America's Airports,* 67–92.

21. John Geisse, Testimony Before the Federal Aviation Commission, 18 October 1934, Box 15, RG 197, NARA.

22. A. B. McMullen, Letter to Corrington Gill, Assistant Administrator, Works Progress Administration, 23 November 1937, Box 6, RG 237, NARA; W. Sumpter Smith, Memorandum for Corrington Gill, Assistant Administrator, Works Progress Administration, 25 November 1937, Box 5, RG 237, NARA.

23. "C. of C. Director Warns City to Buy Air Field," *Knoxville News Sentinel*, 18 January 1928, 2; "Airport a Necessity Here, Says Leopold," *Knoxville News Sentinel*, 19 January 1929, 1; "Mynatt to Go Airport Hunting," *Knoxville News Sentinel*, 24 November 1934, 1; "Holland Is Added to Airport Group," *Knoxville News Sentinel*, 20 February 1935, 2; "'Don't Muff Chance to Get First Class Airport,' Business Leaders Beg Council; Point to $500,000 for $50,000 Bargain," *Knoxville News Sentinel*, 12 December 1935, 1.

24. Memorandum, 29 October 1934, Box 51, Airway and Airport Projects Folder, Harry L. Hopkins Papers, Franklin Roosevelt Presidential Library, Hyde Park. Hopkins reported that at the start of the program there were 2,028 airports in existence in the United States. That number referred to all types of fields, including government, army, navy, municipal, emergency, and private. For more information on the CWA, see Bonnie Fox Schwartz, *The Civil Works Administration, 1933–1934: The Business of Emergency Employment in the New Deal* (Princeton, 1984).

25. Memorandum, 29 October 1934, Box 51, Airway and Airport Projects Folder, Harry L. Hopkins Papers, Franklin Roosevelt Presidential Library, Hyde Park.

26. "$101,000,000 Spent on New Airports," *New York Times*, 27 February 1938, 14; Memorandum, 29 October 1934, Box 51, Airway and Airport Projects Folder, Harry L. Hopkins Papers, Franklin Roosevelt Presidential Library, Hyde Park; Schwartz, *The Civil Works Administration*, 183.

27. "Plan to Salvage 1,450 CWA Airports," *New York Times,* 12 April 1934, 3.

28. White House Memo, undated, President's Personal File 39, Franklin Roosevelt Presidential Library, Hyde Park; Nick Komons, *Bonfires to Beacons: Federal Civil Aviation Policy Under the Air Commerce Act* (Washington, D.C., 1989), 348–51.

29. John Geisse, Testimony Before the Federal Aviation Commission, 18 October 1934, Box 15, RG 197, NARA.

30. Exemplifying this interpretation is William Leuchtenburg's analysis. He describes Harry Hopkins's central goal as "putting to work as many men as he could who were currently on relief." Roosevelt's decision to allocate more authority—and more federal dollars—to Hopkins's WPA than to the more parsimonious Ickes's PWA, in Leuchtenburg's words, represented a "regrettable" decision. See Leuchtenburg, *Franklin D. Roosevelt and the New Deal*, 125.

31. Oliver McKee Jr., "More New Airports: WPA's Expansion Program Aims to Keep Pace with Growing Air Transport," *New York Times*, 6 October 1935a, 169.

32. *Final Report of the WPA Program*, 51. See also "Airport Projects Pushed by WPA," *New York Times*, 16 August 1936, 22; "Big Aviation Gains Seen by Vidal," *New York Times*, 25 December 1936, 8; "Airport Projects by WPA Reach 940," *New York Times*, 15 August 1937, 5; "Work Begins Today on Queens Airport," *New York Times*, 9 September 1937, 25.

33. L. L. Odell, Works Progress Administration Division of Airways and Airports Memorandum, 24 September 1935, Box 5, RG 237, NARA.

34. *Final Report of the WPA Program*, 122.

35. L. L. Odell, Works Progress Administration Division of Airways and Airports Memorandum, 24 September 1935, Box 5, RG 237, NARA.

36. "Big Airport Program On," *New York Times*, 9 February 1936, XX7.

37. The discrepancy between these numbers and the ones from L. L. Odell listed above reflect the complex nature of the WPA appropriations process. States and localities applied to the WPA to fund specific projects. The president had to approve all requests, which then had to be cleared by the administration's Washington office and Commerce Department officials. At that point, projects were "approved," but funds could not yet be released. After approval, the Washington office referred applications to WPA state administrators, who provided further review in consultation with Bureau of Air Commerce experts, and only then were funds released for construction. Thus, a project could be "approved," but the release of its funds could be pending for some time. Further complicating matters, these WPA figures only reflect federal allocations, not state and local contributions.

38. Works Progress Administration Press Release, 29 March 1936, Airway and Airport Projects Folder, Harry L. Hopkins Papers, Franklin Roosevelt Presidential Library, Hyde Park.

39. Ibid.

40. "Report Airport Needs," *New York Times*, 13 July 1936, 30.

41. Statement by Lieutenant Colonel F. C. Harrington, Proceedings of the National Airport Conference, 6 and 7 December 1937, p. 75, Box 3, James Roosevelt Papers, Franklin Roosevelt Presidential Library, Hyde Park.

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