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Transit-Oriented Development: The Quest for Sustainable Cities in the Age of the Automobile

Franklyn P. Salimbene

William P. Wiggins

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TRANSIT-ORIENTED DEVELOPMENT: THE QUEST FOR SUSTAINABLE CITIES IN THE AGE OF THE AUTOMOBILE

FRANKLYN P. SALIMBENE* & WILLIAM P. WIGGINS**

ABSTRACT

During the early and mid-twentieth century the automobile captured the imagination of the American public. Superhighways, which were the vision, became the reality with the promise of speedy and safe travel. During this visioning, little attention was given to the impacts the highway system would have on urban America. Of course, by the end of the century the impacts were quite clear and distressing. Traffic congestion and air pollution became, and now are, among the most challenging aspects of life in American cities. In contemplating measures to alleviate the negative effects of these twin challenges, federal, state, and local agencies, encouraged by the environmental movement and transit advocacy, have promoted transit-oriented development (“TOD”) as a potential remedy. Paralleling efforts in foreign cities like Munich and Singapore, U.S. cities including Denver, Atlanta, Indianapolis, San Diego, and Somerville (MA) have all invested themselves in urban development projects built at public transit nodes aimed at building walkable, bikeable communities that provide mobility from home to work and recreational sites without the use of automobiles. In the process, TOD has had to deal with its own set of issues from funding and value capture to zoning and low-income housing. This Article provides an in-depth study of five American and two international TOD projects in an attempt to discover the variety among approaches to TOD and some of the issues TOD raises.

INTRODUCTION	52
I. THE AUTOMOBILE AND THE CITY IN THE TWENTIETH CENTURY	55

* Franklyn P. Salimbene, JD, LL.M. is Senior Lecturer in Law, Bentley University, Waltham, Massachusetts.

** William Wiggins, JD is Professor of Law, Bentley University, Waltham, Massachusetts. Special thanks for feedback and insights to participants at the Annual Conference of the Academy of Legal Studies in Business, Montreal, Canada, and to Amanda Pine of Boston University for her editorial assistance in preparing this Article.

II.	THE ENVIRONMENTAL MOVEMENT, AIR POLLUTION LEGISLATION, AND “SMART GROWTH”	63
	A. <i>The Environmental Movement</i>	63
	B. <i>A Significant Legislative Response</i>	68
	C. <i>The EPA, Urban Sprawl, and “Smart Growth”</i>	70
III.	SMART GROWTH AND TRANSIT-ORIENTED DEVELOPMENT	71
	A. <i>Atlanta and the Atlantic Station Project</i>	73
	B. <i>Indianapolis “Complete Communities” and Bus Rapid Transit</i>	78
	C. <i>San Diego Light Rail and Affordable Housing</i>	82
	D. <i>Denver Union Station and Value Capture</i>	87
	E. <i>Somerville (MA) Red Line and the Creation of a Walkable, Bikeable Community</i>	90
IV.	INTERNATIONAL TRANSIT-ORIENTED DEVELOPMENT	93
	A. <i>Introduction</i>	93
	B. <i>TOD in Germany: Munich’s “Central Rail Corridor”</i>	94
	C. <i>TOD in Singapore: The Neighborhood Principle</i>	97
	CONCLUSION	100

INTRODUCTION

Today traffic and congestion are everywhere in America’s urban landscape,¹ and their impacts on mobility and the environment have been well chronicled over the years.² In September 2018, in a rare bipartisan effort, four members of the United States Senate introduced a bill referred to as the COMMUTE Act (Connecting Opportunities through Mobility Metrics and Unlocking Transportation Efficiencies Act).³ The

¹ For an assessment of congestion trends, see FED. HIGHWAY ADMIN., U.S. DEP’T TRANSP., 2017 URBAN CONGESTION TRENDS, <https://ops.fhwa.dot.gov/publications/fhwahop18025/index.htm> [<https://perma.cc/XE92-XGXQ>] (last modified Aug. 27, 2018). For a general discussion on the role of the automobile as a cause of traffic and congestion, see Martin V. Melosi, *The Automobile Shapes the City: Traffic and Congestion*, AUTO. AM. LIFE & SOC’Y, http://autolife.umd.umich.edu/Environment/E_Casestudy/E_casestudy5.htm [<https://perma.cc/X9P6-B2A3>] (last visited Oct. 13, 2020).

² *Id.* For an assessment of environmental impacts, see EPA, NEAR ROADWAY AIR POLLUTION AND HEALTH: FREQUENTLY ASKED QUESTIONS (Aug. 2014), <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100NFFD.PDF?Dockey=P100NFFD.PDF> [<https://perma.cc/2YQ4-ASKT>].

³ S. 3491, 115th Cong. (2018). A similar act had previously been introduced in the House of Representatives, H.R. 1517, 116th Cong. (2019). Neither bill has yet been enacted. For example, the Senate bill in the 116th Congress has been read twice and was referred to

bill is intended to provide helpful data to local and state transportation agencies to assist them in assessing whether their transportation networks are functioning effectively in getting people to jobs and services.⁴

For the urban environment in particular, such data are critical as agencies seek to address the impacts on the quality of life caused by dysfunctional transportation systems.⁵ In a primer on how best to manage those systems so that they function effectively in moving people from place to place, the Federal Highway Administration (“FHWA”) has pinpointed several fundamental steps that agencies should take.⁶ These include the need to identify community priorities, manage travel demand, increase opportunities for walking and bicycling, provide information to the public on transportation options, and improve the public transit experience.⁷

In the midst of this quest to provide effective options, several approaches have emerged, driven by both the federal government⁸ and non-governmental interests.⁹ The “smart growth”¹⁰ and “complete

the Committee on Commerce, Science, and Transportation on March 5, 2019. *S.654—COMMUTE Act*, CONGRESS.GOV, <https://www.congress.gov/bill/116th-congress/senate-bill/654> [<https://perma.cc/2YQ4-ASKT>] (last visited Oct. 13, 2020).

⁴ For instance, the House bill seeks to develop a data pilot program that measures the level of access by multiple modes of transportation to important destinations including, among others, jobs, health care facilities, educational facilities, and food sources. H.R. 1517, 116th Cong. § 2(b) (2019).

⁵ FED. HIGHWAY ADMIN., U.S. DEP’T TRANSP., CONGESTION PRICING—A PRIMER, https://ops.fhwa.dot.gov/publications/fhwahop08039/cp_prim1_02.htm [<https://perma.cc/PG3R-LMD7>] (last modified Feb. 1, 2017).

⁶ FED. HIGHWAY ADMIN., U.S. DEP’T TRANSP., FUNDAMENTALS: HOW TO MANAGE AND OPERATE TRANSPORTATION SYSTEMS TO SUPPORT LIVABILITY AND SUSTAINABILITY, <https://ops.fhwa.dot.gov/publications/fhwahop12004/c3.htm#s7> [<https://perma.cc/HAC2-GH3P>] (last visited Oct. 13, 2020).

⁷ *Id.*

⁸ *E.g.*, FED. HIGHWAY ADMIN., U.S. DEP’T TRANSP., *supra* note 5.

⁹ For example, U.S. Public Interest Research Group (“PIRG”), a public interest group that advocates for solutions to a range of problems, has initiated its 21st Century Transportation program that promotes alternatives to the automobile and highway construction. *21st Century Transportation*, U.S. PUB. INT. RSCH. GRP., <https://uspig.org/issues/usp/21st-century-transportation> [<https://perma.cc/57TH-TBQS>] (last visited Oct. 13, 2020). *See also About NCBW*, NAT’L CTR. FOR BICYCLING & WALKING, <http://www.bikewalk.org/aboutus.php> [<https://perma.cc/8YSH-MK9D>] (last visited Oct. 13, 2020) (“The aim of the NCBW’s program is to change the way communities are planned, designed and managed to ensure that people of all ages and abilities can walk and bike easily, safely and regularly.”).

¹⁰ EPA defines “smart growth” as “a range of development and conservation strategies that help protect our health and natural environment and make our communities more attractive, economically stronger, and more socially diverse.” *About Smart Growth*, EPA, <https://www.epa.gov/smartgrowth/about-smart-growth#smartgrowth> [<https://perma.cc>

streets”¹¹ movements are two examples of approaches advocated by public-sector interest groups. Another related movement, and the focus of this Article, is “transit-oriented development” (“TOD”).¹² As a movement, TOD seeks to build walkable mixed-use communities centered around public transit nodes that increase transit ridership, promote congestion relief and environmental benefits, and improve safety for pedestrians and cyclists by engaging both public and private investment.¹³ The desire to achieve these goals has resulted in a number of TOD projects across the United States, some already completed and others under way.¹⁴

In assessing TOD, this Article divides into several parts. Beginning with a brief historical overview of the impact of the automobile on the urban environment during the early twentieth century, the Article proceeds to provide: 1) a review of the Clean Air Act (1970) and the environmental movement that led to a reevaluation of how people move within the urban environment; 2) an overview of five federally funded TOD projects and the issues that they raised; 3) an overview of two international approaches to TOD; and 4) a concluding summary of some of the elements that contribute to successful TODs.

/8MAQ-6VYM] (last updated Apr. 19, 2019). Smart Growth America describes “smart growth” as “an approach to development that encourages a mix of building types and uses, diverse housing and transportation options, development within existing neighborhoods, and community engagement.” *What Is Smart Growth?*, SMARTGROWTHAM., <https://smartgrowthamerica.org/our-vision/what-is-smart-growth/> [<https://perma.cc/L4H4-J5U7>] (last visited Oct. 13, 2020).

¹¹ The U.S. Department of Transportation describes “complete streets” as encompassing “many approaches to planning, designing, and operating roadways and rights of way with all users in mind to make the transportation network safer and more efficient.” *Complete Streets*, U.S. DEPT. TRANSP., <https://www.transportation.gov/mission/health/complete-streets> [<https://perma.cc/X7LA-C8JQ>] (last updated Aug. 24, 2015). The American Planning Association identifies “complete streets” as those that “include ample sidewalks, improved standards for street tree planting and other landscape elements, bike lanes, dedicated bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, and curb extensions.” *Complete Streets Come of Age*, AM. PLAN. ASS’N, <https://www.planning.org/planning/2014/may/completestreets.htm> [<https://perma.cc/8TCL-MD4L>] (last updated May 2014).

¹² *Transit-Oriented Development*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., <https://www.transit.dot.gov/TOD> [<https://perma.cc/QZ9U-PMAE>] (last updated Apr. 11, 2019).

¹³ *Id.*

¹⁴ See *infra* notes 159–314 and accompanying text. For a list of all TOD planning projects funded by FTA during fiscal year 2018, see *Fiscal Year 2018 Transit-Oriented Development (TOD) Planning Projects*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., <https://www.transit.dot.gov/funding/grants/grant-programs/fiscal-year-2018-transit-oriented-development-tod-planning-projects> [<https://perma.cc/97ZX-3X6U>] (last updated June 8, 2020).

I. THE AUTOMOBILE AND THE CITY IN THE TWENTIETH CENTURY

The starting point for any discussion related to TOD is the automobile. In the United States there are just over 111,000,000 automobiles on the road,¹⁵ and the average number of vehicle miles traveled by each of those automobiles for work and pleasure is almost 12,000 miles annually.¹⁶ It is difficult, therefore, to imagine a time when the automobile was not dominant, when people moved about cities by other means. The late 1800s and the early 1900s was such a time, however. Then, the main means of assisted travel in the urban environment were bicycles and then streetcars.¹⁷

As for the bicycle, it was accepted as an essential element of American commerce. The Michigan Supreme Court noted as much when it observed in 1901 that “[t]he bicycle has become almost a necessity for the use of workmen, clerks, and others in going to and from their places of work.”¹⁸ The prevalence of the bicycle as a means of travel at the time is supported by statistics showing that between 1890 and 1899, the number of bicycles manufactured in the United States increased from 200,000 to 1,000,000.¹⁹ This popularity was enhanced by improving the riding experience through advances in bicycle design including rear-wheel chain

¹⁵ THE WORLD ALMANAC AND BOOK OF FACTS 2020 82 (Sarah Janssen ed., 2020). The 111,000,000 figure is accurate as of 2017. *Id.*

¹⁶ *Id.* at 84. Additionally, new car sales in the U.S. have topped more than 17,000,000 for ten of the years between 2000 and 2018. *Id.* at 80.

¹⁷ For an overview of the transition from bicycles to streetcars, see Franklyn P. Salimbene, *Seeking Peaceful Coexistence: Streetcars and Bicycles in the New Urban Environment*, 7 WAKE FOREST J.L. & POL’Y 365, 368–69, 374, 376 (2017).

¹⁸ *Lee v. Port Huron*, 87 N.W. 637, 637 (Mich. 1901) (ruling that where streets are unpaved, a municipality was authorized to allow bicycling on sidewalks). For a brief history of the bicycle generally and its role at the turn of the century, see *Smithsonian Bicycle Collection*, NAT’L MUSEUM AM. HIST., <https://americanhistory.si.edu/collections/object-groups/si-bikes/> [<https://perma.cc/CR7N-WLKV>] (last visited Oct. 13, 2020).

¹⁹ *Rise of the Ordinary*, NAT’L MUSEUM AM. HIST., <https://americanhistory.si.edu/collections/object-groups/si-bikes/si-bikes-ordinary> [<https://perma.cc/3ZSX-VMRG>] (last visited Oct. 13, 2020). This rapid rise of the bicycle did not last long, however. As evidence, the Smithsonian indicates that between 1900 and 1905, the number of bicycle manufacturers in the U.S. declined precipitously from 312 to 101. *The Safety Bicycle and Beyond*, NAT’L MUSEUM AM. HIST., <https://americanhistory.si.edu/collections/object-groups/si-bikes/si-bikes-safety> [<https://perma.cc/W3VP-9WCT>] (last visited Oct. 13, 2020). Further, by 1920, with the rise of the automobile, bicycle use declined to the point where it was considered only as a children’s toy. David Mozer, *Chronology of the Growth of Bicycling and the Development of Bicycle Technology*, INT’L BICYCLE FUND, <http://www.ibike.org/library/history-timeline.htm> [<https://perma.cc/2ZNR-5CEN>] (last visited Oct. 13, 2020).

drive and pneumatic tires.²⁰ Despite the popularity of bicycles, however, traveling on a bike was often impeded by poor road conditions.²¹ Those conditions led to a major effort championed by the League of American Wheelman to improve roadways for safe and comfortable use by bicyclists.²² That effort prodded the federal government in 1893 to establish the Office of Road Inquiry (“ORI”) within the Department of Agriculture.²³ The Office, which much later became the FHWA,²⁴ received a budget at its inception of \$10,000.²⁵ It is ironic that this movement to promote better roads for bicycling through the creation of the ORI ultimately benefited automobile travel, which in turn contributed to the demise of the bicycle as a common means of travel and commerce.²⁶ Also contributing to the demise of the bicycle in the early years of the twentieth century was the streetcar.²⁷

Like the bicycle, the streetcar was introduced as an advance in urban transportation at the end of the nineteenth century.²⁸ By the early twentieth century streetcars had eclipsed bicycles as the dominant means of moving people within cities.²⁹ Considering road conditions at

²⁰ *The Safety Bicycle and Beyond*, *supra* note 19.

²¹ “The problem was that roads outside cities were in terrible shape Since the advent of the railroad in the 1830s, roads had devolved to the lowest levels of government . . . that had the least incentive and resources to improve them.” *Highway History: The Bicycle Revolution*, FED. HIGHWAY ADMIN., U.S. DEP’T TRANSP., <https://www.fhwa.dot.gov/infrastructure/bicycle.cfm> [<https://perma.cc/CAH9-YAB3>] (last updated June 27, 2017).

²² Ross D. Petty, *The Impact of the Sport of Bicycle Riding on Safety Law*, 35 AM. BUS. L.J. 185, 202 (1998) (“Bicyclists, led by the League of American Wheelmen, and financed by [American] manufacturers assembled a coalition of interests, including farmers and railroads, that advocated for improved roads financed by the government. This ‘Good Roads Movement’ led to our modern system of roads and their system of financing that literally paved the way for motorized road transportation.”).

²³ FED. HIGHWAY ADMIN., U.S. DEP’T TRANSP., *supra* note 21.

²⁴ *Id.*

²⁵ *Id.*

²⁶ *Id.*

²⁷ Contributing to the decline in the popularity of the bicycle was “the fact that a considerable number of electric railways took over the sidepaths originally constructed for bicycle use.” *The Safety Bicycle and Beyond*, *supra* note 19.

²⁸ Frank Sprague is recognized as instrumental in developing the electric streetcar as an advance in nineteenth century transportation. An associate of Thomas Edison, Sprague successfully built the first large scale streetcar system in the U.S. in Richmond, Virginia, in 1888. DOUG MOST, *THE RACE UNDERGROUND* 77–80, 92–100 (2014).

²⁹ Between 1902 and 1917, streetcar ridership grew from 5.84 passenger trips to 14,500,000,000. CHARLES E. ELMQUIST, 3 FED. ELEC. RYS. COMM’N, PROCEEDINGS OF THE FEDERAL ELECTRIC RAILWAYS COMMISSION TOGETHER WITH FINAL REPORT OF THE COMMISSION TO THE PRESIDENT 2222 chart C-102 (1920).

the time, streetcars provided workers with a more comfortable ride as they traveled on smooth steel rails rather than the bumpy roads confronted by the bicycle. Streetcars could also allow for travel over longer distances, creating for many cities what have become known as “streetcar suburbs.”³⁰ Like the bicycle, however, the streetcar’s dominance in urban transit was not to last. In fact, concern regarding the long term prospects of the streetcar as a means of transportation was voiced as early as 1919 by the Secretaries of Commerce and Labor, who asked President Wilson to create a commission to study the condition and viability of the country’s streetcar systems.³¹ The commission, known as the Federal Electric Railways Commission (“FERC”), cited the role of the streetcar as “a factor of essential importance in the urban life”³² of the United States and also identified a number of factors that created challenges for the ongoing stability of streetcar companies.³³ Among these, FERC went on to note was “[t]he great increase in the use of private automobiles[.]”³⁴ Statistics show FERC’s observation to have been prescient. For example, between 1920 and 1930, while streetcar passenger trips fell approximately from 16,000,000,000 to 14,000,000,000,³⁵ the number of registered automobiles on the road ballooned from 8,100,000 to 23,000,000.³⁶ The writing was on the wall. As the streetcar had eclipsed the bicycle, the automobile was eclipsing the streetcar. The irony, however, in the context of today’s efforts regarding TOD is that many cities are seeking the return of bicycles, streetcars, and other means of moving people as alternatives to the automobile, presaging a movement “back to the future.”³⁷

³⁰ Writing on the role of the electric streetcar in increasing the range of travel for city dwellers in Boston, Warner notes: “In the late 1880’s and 1890’s the electrification of street railways brought convenient transportation to at least the range of six miles from City Hall. The rate of building and settlement in this period became so rapid that the whole scale and plan of Greater Boston was entirely made over.” SAM BASS WARNER, JR., *STREETCAR SUBURBS: THE PROCESS OF GROWTH IN BOSTON (1870–1900)* 22 (2d ed. 1978).

³¹ In their letter to President Wilson requesting the creation of a commission, Secretaries Redfield and Wilson of Commerce and Labor respectively, noted that at least fifty large urban streetcar systems were already in the hands of receivers and other systems were on the verge of insolvency. ELMQUIST, *supra* note 29, at III–IV.

³² *Id.* at 2264.

³³ *Id.* at 2263. These included financial mismanagement by company owners, increasing labor and equipment costs, and the practice of municipalities of requiring companies to keep fares low even while operating cost were increasing. *Id.*

³⁴ *Id.* FERC also cited competition from jitneys and motor buses. *Id.*

³⁵ TRANSP. RES. BOARD, *MAKING TRANSIT WORK: INSIGHT FROM WESTERN EUROPE, CANADA, AND THE UNITED STATES—SPECIAL REPORT 257* 23 fig. 2-1 (2001).

³⁶ *THE WORLD ALMANAC AND BOOK OF FACTS 2020*, *supra* note 15, at 82.

³⁷ See Shannon Bouton et al., *Urban Mobility at a Tipping Point*, MCKINSEY & CO. (Sept. 1,

The story of the automobile and its transformation of twentieth century urban transportation beyond bicycles and streetcars began in the late 1800s in part with George Selden's patent application in 1879 for a road engine.³⁸ Selden's efforts at developing a self-propelled vehicle were not the first,³⁹ but had a significant effect on a burgeoning industry in the United States.⁴⁰ Two pioneers of particular note were Charles Brady King and Henry Ford.⁴¹ King developed a four-cylinder gasoline automobile engine that could travel at twenty miles per hour, and he used it in 1896, in the first automobile ever driven on the streets of Detroit, Michigan.⁴² Later that year, King disassembled his vehicle and gave several parts of the engine to Henry Ford, who incorporated them into his first automobile.⁴³ Ford quickly moved from there to develop the Model-A, a two-cylinder machine offered to the public in 1903 by his newly organized

2015), <https://www.mckinsey.com/business-functions/sustainability/our-insights/urban-mobility-at-a-tipping-point> [<https://perma.cc/KM73-HV2T>] (provides national and international perspectives on the move in urban environments away from the automobiles and to public transit, bicycles, and other alternatives).

³⁸ *Selden Automobile Patent Model, 1879*, NAT'L MUSEUM AM. HIST., https://americanhistory.si.edu/collections/search/object/nmah_1305689 [<https://perma.cc/GE2P-3G53>] (last visited Oct. 13, 2020). The patent applied for in 1879 was finally issued in 1895. *Id.* The first motor vehicle offered to the American public, however, was manufactured by Charles and Franklin Duryea in 1893. Kenneth L. Hess, *The Growth of Automotive Transportation*, KENNETH LAFFERTY HESS (Sept. 23, 1984), https://klhess.com/growth-automotive-transportation/car_essy.html [<https://perma.cc/LYB4-9EYP>] (last updated June 9, 1996).

³⁹ Steam propelled vehicles were developed before the vehicles by Selden and the Dureyas. The first true automobile, which was powered by steam, was developed by Nicolas-Joseph Cugnot in mid-eighteenth century France. In the U.S., early steam-powered vehicles appeared around 1790. *History of the Automobile*, ENCYC. BRITANNICA, <https://www.britannica.com/technology/automobile/History-of-the-automobile> [<https://perma.cc/GU7V-X3AM>] (last visited Oct. 13, 2020).

⁴⁰ The impact came more from Selden's patent than from his automobile "invention." The patent rights were purchased by a newly formed Association of Automobile Manufacturers ("AAM") with some of the royalties retained by Selden and some reverting to AAM as AAM sold patent rights to other manufacturers. One manufacturer not allowed to join AAM was Henry Ford. For a fuller discussion of Selden and AAM, see Donna Harris, *Landmark Patent Case Broke Selden's Lock on Auto Industry*, AUTO. NEWS (June 16, 2003), <https://www.autonews.com/article/20030616/SUB/306160708/landmark-patent-case-broke-selden-s-lock-on-auto-industry> [<https://perma.cc/5R58-V7TH>].

⁴¹ Deb Tracy, *Charles Brady King*, AM. CAR HISTORIAN (Feb. 13, 2019), <https://americancarhistorian.com/tag/charles-brady-king/> [<https://perma.cc/B37P-BSA7>].

⁴² Robert Tate, *Charles Brady King: The Man Who Ignited a Revolution*, MOTORCITIES (Oct. 31, 2016), <https://www.motorcities.org/story-of-the-week/2016/charles-brady-king-the-man-who-ignited-a-revolution> [<https://perma.cc/MKE5-Z2FL>].

⁴³ Tracy, *supra* note 41.

Ford Motor Company.⁴⁴ Ford's mass production of the automobile, however, was not realized and perfected until the 1920s.⁴⁵

During this period of pioneering in the development of automobiles, the federal government was moving to develop roadways to accommodate them.⁴⁶ The ORI's initial 1893 budget of \$10,000 had increased by 1905 to \$50,000.⁴⁷ A complimentary \$500,000 was appropriated in 1913 for the development by the Post Office Department of an "experimental post road program."⁴⁸ By 1915, the ORI had become the Office of Public Roads and Rural Engineering ("OPRRE") with a significant increase in budgetary authority to \$75,000,000 to be spent during a five-year period.⁴⁹ In 1921, as a step in developing a long-distance road system, federal funding was restricted for roads that only linked at state lines.⁵⁰ During the 1930s, as the number of automobiles on American roads continued to increase,⁵¹ Congress in 1938 passed legislation that required the Bureau of Public Roads (formerly OPRRE) to study the potential for developing a national network of toll roads.⁵² That was followed in 1944 by the passage of legislation calling for the development of a 40,000-mile network of free highways, to be known as the National System of Interstate Highways.⁵³ A mechanism for fully funding the construction of such a national system was finally realized when President Eisenhower signed into law the Federal-Aid Highway Act of 1956.⁵⁴

⁴⁴ *1903 Ford Model A Runabout*, HENRY FORD, <https://www.thehenryford.org/collections-and-research/digital-collections/artifact/48168/#slide=gs-214129> [<https://perma.cc/HV8F-PE4X>] (last visited Oct. 13, 2020).

⁴⁵ *Aerial View of Ford Motor Company Highland Park Plant, 1923*, HENRY FORD, <https://www.thehenryford.org/collections-and-research/digital-collections/artifact/96204/> [<https://perma.cc/59S6-TKBX>] (last visited Oct. 13, 2020).

⁴⁶ See Richard F. Weingroff, *Highway Existence: 100 Years and Beyond*, FED. HIGHWAY ADMIN., U.S. DEP'T TRANSP., <https://www.fhwa.dot.gov/publications/publicroads/93fall/p93au1.cfm> [<https://perma.cc/2SR3-U892>] (last modified Jan. 31, 2017).

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ *Id.* See FED. HIGHWAY ADMIN., U.S. DEP'T TRANSP., STATE MOTOR VEHICLE REGISTRATIONS, BY YEARS, 1900–1995 (1997), <https://www.fhwa.dot.gov/ohim/summary95/mv200.pdf> [<https://perma.cc/ZT8H-4Z4L>] (demonstrating that despite the Depression from 1930 to 1940, automobile registrations increased from 23,030,000 to 27,470,000).

⁵² Weingroff, *supra* note 46.

⁵³ *Id.*

⁵⁴ Pub. L. No. 627, 70 Stat. 462 (1956) (codified as amended in scattered sections of 23 U.S.C.) (commonly known as the National Interstate and Defense Highways Act of 1956). FHWA has published a historical overview of the Eisenhower administration's efforts to

This federal focus on developing an infrastructure for automobiles had significant impacts on cities.⁵⁵ While urban street congestion existed in some cities before automobiles became predominant,⁵⁶ its most common manifestation today is automobile traffic. Some posit that the construction of urban expressways as part of the interstate system promoted the use of automobiles to the point of contributing to the very congestion that urban planners thought highways would reduce.⁵⁷ Along with the congestion came a number of negative side effects,⁵⁸ including increased air pollution and land-use policies that led to the destruction of urban neighborhoods in order to make way for highways feeding into the urban core.⁵⁹

These impacts were not unforeseen. In 1957, the Joint Highway Research Project at Purdue University listed a number of implications for cities that would flow from the development of the interstate highway system.⁶⁰ Specific to interstate highways routing traffic around and

pass the legislation). See Richard F. Weingroff, *Federal-Aid Highway Act of 1956: Creating the Interstate System*, FED. HIGHWAY ADMIN., U.S. DEP'T TRANSP. (1996), <http://www.fhwa.dot.gov/publications/publicroads/96summer/p96su10.cfm> [<https://perma.cc/5X75-AZYK>] (referring to an earlier federal study undertaken during the Franklin Roosevelt administration that foreshadowed the approach to constructing interstate highways in cities that was ultimately implemented through the 1956 Act. Referencing the study, Weingroff states: "Within the large cities, the routes should be depressed or elevated, with the former preferable. Limited-access belt lines were needed for traffic wishing to bypass the city and to link radial expressways directed toward the center of the city. Inner belts surrounding the central business district would link the radial expressways while providing a way around the district for vehicles not destined for it." In retrospect, this approach is one that arguably has caused many of the environmental and mobility issues that have led to the TOD movement); see *infra* notes 55–74 and accompanying text.

⁵⁵ Melosi, *supra* note 1.

⁵⁶ BRADLEY H. CLARKE & O.R. CUMMINGS, TREMONT STREET SUBWAY: A CENTURY OF PUBLIC SERVICE 9 (1997) (stating that a very early example of urban congestion is depicted in an 1893 photograph of Tremont Street in downtown Boston showing a line of streetcars "so tightly packed that one could literally walk along their roofs without interruption for several blocks.").

⁵⁷ Melosi, *supra* note 1.

⁵⁸ *Id.* (demonstrating that it would be myopic to maintain that the automobile is the sole cause of the ills faced by the urban core. Other factors, social, economic, technical, and political, all played a part.).

⁵⁹ *Id.* See also Jeffrey R. Brown et al., *Planning for Cars in Cities: Planners, Engineers, and Freeways in the 20th Century*, 75 J. AM. PLAN. ASS'N 161, 172 (2009) (citing a range of commentators and researchers who held that planners in designing urban interstates preempted park land, divided neighborhoods, destroyed historic districts, and discounted minority and low-income populations.)

⁶⁰ A.K. Branham, *The Federal Aid Highway Act of 1956—Its Implications, Benefits, and the Problem of Highway Cost Allocation*, PURDUE (Dec. 1957), <https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1885&context=jtrp> [<https://perma.cc/BA6Q-ZEGZ>].

through cities, the Joint Highway Research Project identified resultant impacts on urban redevelopment, land use and values, urban sprawl, rail transportation, and traffic and congestion.⁶¹ Succinctly put, this project understatedly forewarned, “[s]peedier highway transportation may not be a blessing to urban centers.”⁶² Examples from Chicago and Boston supported the warning.

In the 1950s, in an attempt to provide easier access to downtown Chicago, planners built a number of expressways linked to Chicago’s suburbs.⁶³ The construction as planned and executed caused the destruction of whole inner-city neighborhoods on Chicago’s south, west, and northwest sides, disproportionately affecting Black, Latino, and older immigrant communities.⁶⁴ Intended to ease traffic flow, the expressways actually increased automobile traffic in Chicago causing the city to construct scores of new parking garages to accommodate the more than 14,000 automobiles traveling daily into the center of the city.⁶⁵ It was not until 1972, when confronted by the potential loss of 30,000 more city housing units in order to build the Crosstown Expressway that residents were able finally to stop Chicago’s urban expressway mania.⁶⁶

Boston had a similar experience. During the 1960s, highway planners were preparing for the construction of an interstate interchange and a circumferential highway within the city that would have significantly affected downtown Boston and destroyed several of its close-in residential neighborhoods.⁶⁷ The project aimed to bring I-95 into the city to connect with I-93 and a proposed inner circumferential, known as the “Inner Belt.”⁶⁸ By the late 1960s, much land for the construction of I-95 had

⁶¹ *Id.* at 6–8.

⁶² *Id.* at 9.

⁶³ *America on the Move: Expressways, Congestion, and Urban Renewal*, NAT’L MUSEUM AM. HIST., <https://americanhistory.si.edu/america-on-the-move/city-and-suburb> [<https://perma.cc/VH7C-YTGC>] (last visited Oct. 13, 2020).

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.* (stating that “[b]etween 1948 and 1956, more than 6,000 Chicago families lost their homes to ‘highway takes.’ Most of the new expressways went through poor and minority neighborhoods. . .”).

⁶⁷ Anthony Flint, *Boston’s Highway That Went Nowhere: Lessons from the Inner Belt Fight, 40 Years Later*, BLOOMBERG CITYLAB (May 1, 2012), <https://www.citylab.com/transportation/2012/05/bostons-highway-went-nowhere-look-back-inner-belt-fight-40-years-later/1884/> [<https://perma.cc/PB9A-F75Z>].

⁶⁸ MIT Libraries, *Year 105—1965: Boston Inner Belt Expressway, I-695 in Boston Brookline & Cambridge: Basic Design Report*, MASS. INST. TECH. (Apr. 21, 2011), <https://libraries.mit.edu/150books/2011/04/21/1965/> [<https://perma.cc/XV58-92ZF>].

already been taken in city neighborhoods to the south,⁶⁹ and more demolition and land takings were scheduled for other Boston neighborhoods as well as residential neighborhoods in the adjoining cities of Somerville and Cambridge.⁷⁰ As plans for these takings became clearer, resident opposition mounted. It became so strong that in 1970, Massachusetts Governor Francis Sargent ordered a halt to all new highway construction within all of greater Boston, including the inner circumferential.⁷¹

While Chicago and Boston were examples of the impacts on urban neighborhoods and land use caused by the increase in the number of automobiles and resultant highway construction to accommodate them, other cities across the country were having similar experiences.⁷² The impact of these experiences generally was a decrease in public transit ridership, an increase in urban air pollution, and negative impacts on public health.⁷³ The ultimate effect of these national impacts, however, was to invigorate a long-simmering environmental movement and ultimately contribute to the passage of the 1970 Clean Air Act.⁷⁴

⁶⁹ Catherine Foster, *Subway with a Park on Top. Boston's Southwest Corridor Has Train Tracks Below, Green Areas and Recreation Above*, CHRISTIAN SCI. MONITOR (Feb. 24, 1989), <https://www.csmonitor.com/1989/0224/dorange.html> [<https://perma.cc/XXH2-EZ64>] (demonstrating that 120 acres in parts of Boston's Back Bay and South End had already been cleared along with approximately 1,000 houses).

⁷⁰ Flint, *supra* note 67 (demonstrating that affected were the Boston neighborhoods of Roxbury and the Fenway along with Central Square in Cambridge and parts of Somerville).

⁷¹ *The Inner Belt: When Boston Said 'No' to New Highways*, WBUR RADIO BROAD. (Mar. 26, 2012), <https://www.wbur.org/radioboston/2012/03/26/inner-belt-highways> [<https://perma.cc/45ZK-PZX3>].

⁷² See Richard F. Weingroff, *Highway History: The Greatest Decade 1956–1966*, FED. HIGHWAY ADMIN., U.S. DEP'T TRANSP., <https://www.fhwa.dot.gov/infrastructure/50interstate.cfm> [<https://perma.cc/WH7U-2H97>] (last updated June 27, 2017). Referencing the urban revolt caused by highway construction, Weingroff notes, “[s]everal cities were experiencing resistance to Interstates, particularly from those whose homes or businesses would be acquired to make room for the right-of-way.” *Id.*

⁷³ For an overview of the air pollution problem for cities caused by motor vehicles in the mid-1960s, see *History of Reducing Air Pollution from Transportation in the United States*, EPA, <https://www.epa.gov/transportation-air-pollution-and-climate-change/accomplishments-and-success-air-pollution-transportation> [<https://perma.cc/E323-GE8U>] (last updated Jan. 23, 2020).

⁷⁴ See Martin V. Melosi, *The Automobile and the Environment in American History: Auto Emissions and Air Pollution*, AUTO. AM. LIFE & SOC'Y, http://autolife.umd.umich.edu/Environment/E_Overview/E_Overview4.htm [<https://perma.cc/X3WU-FN2S>] (last visited Oct. 13, 2020). “The meteoric rise in environmental concern, the dissatisfaction with existing federal laws, and the lackluster accomplishments of the states provided the momentum for the 1970 Clean Air Amendments.” *Id.*

II. THE ENVIRONMENTAL MOVEMENT, AIR POLLUTION LEGISLATION, AND “SMART GROWTH”

A. *The Environmental Movement*

No definitive record exists about when the environmental movement began in the United States.⁷⁵ However, the second half of the nineteenth century witnessed the beginnings of an environmental awareness,⁷⁶ which often took the form of conservation, preservation, and activism.⁷⁷ Activism became an important part of the early environmental movement because of the contradictory relationship that individuals and organizations often had with the country’s natural resources.⁷⁸ For example, Americans had a long history of exploiting the nation’s natural resources and polluting the environment during the latter part of the nineteenth century;⁷⁹ yet, at the same time, Americans took pride in safeguarding the nation’s natural resources through organized activism.⁸⁰ Thus, environmental activism was seen early on as a necessary counterweight to America’s drive for economic and land development.⁸¹

The early history of environmentalism in the United States consisted of three movements.⁸² The first movement, known as the “conservation movement,” dealt with concern about depletion of the nation’s natural resources, while concurrently recognizing the need for individual and commercial use of such resources.⁸³ The second movement, referred to as the “preservation movement,” assumed a more absolutist attitude about the country’s pristine wilderness and natural resources.⁸⁴ The preservationists viewed the nation’s natural resources as precious resources that needed to be protected, not exploited.⁸⁵ The third movement,

⁷⁵ See Larry West, *The Origins of the Environmental Movement*, THOUGHTCO., <https://www.thoughtco.com/origins-of-the-environmental-movement-1203559> [<https://perma.cc/MVE6-ARP9>] (last updated Mar. 10, 2019).

⁷⁶ See Cary Coglianese, *Social Movements, Law, and Society: The Institutionalization of the Environmental Movement*, 150 U. PA. L. REV. 85, 88 (2001).

⁷⁷ *Conservation, Preservation, and Environmental Activism: A Survey of the Historical Literature*, NAT’L PARK SERV. [hereinafter *Conservation, Preservation, and Environmental Activism*], <https://www.nps.gov/parkhistory/hisnps/NPSThinking/nps-oah.htm> [<https://perma.cc/MLM9-MQ7L>] (last modified Jan. 16, 2003).

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Conservation, Preservation, and Environmental Activism*, *supra* note 77.

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ *Id.*

colloquially referred to as the “anti-pollution movement,” focused on health problems associated with pollution and other human-made toxins and contaminants, particularly as experienced in the nation’s increasingly populated cities.⁸⁶ The first two movements consisted of the combined efforts of explorers and naturalists who became concerned about the fate of the nation’s forests, rivers, lakes, and other natural resources.⁸⁷ Scientists, doctors, and urban reformers served as the catalyst for the third movement.⁸⁸

Although many people and organizations were involved with the early development of the environmental movement, two individuals in particular are generally viewed as seminal leaders in the nation’s conservation and preservation campaigns: Gifford Pinchot and John Muir.⁸⁹ Pinchot (the first chief of the United States Forest Service) advanced ideas, theories, and practices surrounding conservationism, while Muir (naturalist, explorer, author, and founder of the Sierra Club) promoted the need to preserve the nation’s natural resources.⁹⁰ “Conservation” and “preservation” may appear similar, as both focus on protecting the environment;⁹¹ however, the underlying goals, principles, and practices of each differ quite significantly.⁹² Regulating the use of the country’s natural resources exemplifies conservationism, while minimizing the human impact on such resources characterizes the preservation movement.⁹³

The mission, objectives, and practices of two major federal agencies demonstrate the distinction between preservation and conservation. The United States Department of Agriculture through its National Forest Service Division (“NFS”) focuses on managing and conserving over 193,000,000 acres of federally owned forests, mountain ranges, and open-space grass lands.⁹⁴ As part of the management process, the NFS oversees the recreational and commercial use of these lands.⁹⁵ Using a conservation model,

⁸⁶ *Id.*

⁸⁷ Coglianese, *supra* note 76, at 89.

⁸⁸ *Id.*

⁸⁹ See Robert Hudson Westover, *Conservation versus Preservation?*, U.S. DEP’T AGRIC., FOREST SERV. (Mar. 22, 2016), <https://www.fs.usda.gov/features/conservation-versus-preservation> [<https://perma.cc/3Y36-3F7G>].

⁹⁰ *John Muir*, NAT’L PARK SERV., <https://www.nps.gov/yose/learn/historyculture/muir.htm> [<https://perma.cc/LTA4-4YJ2>] (last updated May 13, 2018).

⁹¹ *Conservation vs Preservation and the National Park Service*, NAT’L PARK SERV., <https://www.nps.gov/teachers/classrooms/conservation-preservation-and-the-national-park-service.htm> [<https://perma.cc/4UZL-VWRD>] (last updated Oct. 29, 2019).

⁹² *Id.*

⁹³ *Id.*

⁹⁴ Westover, *supra* note 89.

⁹⁵ *Id.*

which accommodates both recreational and commercial use of the lands, the NFS balances the need to protect the nation's natural resources for public use while concurrently allowing managed commercial use.⁹⁶

On the other hand, the United States Department of the Interior through its National Park Service Division ("NPS") embraces a preservation model and welcomes more than 318,000,000 visitors every year for recreational use of the property it manages.⁹⁷ The NPS's preservation model "preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations."⁹⁸

Separate from although closely aligned with the conservation and preservation movements, scientists, doctors, and urban reformers focused on the impact of pollution and other contaminants on human health and living conditions.⁹⁹ During the first part of the twentieth century, much of the pollution and human health narrative focused on the deterioration of living conditions in the nation's growing cities.¹⁰⁰ By mid-century the deleterious consequences of increased human waste in rapidly expanding cities combined with a deterioration of the country's waterways and air quality helped ignite a national call for new legislation to curb the negative effects of toxins and other chemical contaminants.¹⁰¹

In response, Congress enacted the Federal Water Pollution Control Act of 1948, which involved the federal government, although indirectly, in fighting pollution by providing guidance and advice to the states along with limited funding to develop plans and programs to eliminate or reduce water pollution.¹⁰² Other early federal legislation followed: the Air

⁹⁶ See, e.g., *Obtaining a Special-Use Authorization with the Forest Service*, U.S. DEP'T AGRIC., FOREST SERV., <https://www.fs.fed.us/specialuses/documents/broch.htm> [<https://perma.cc/WB55-JJFG>] (last visited Oct. 13, 2020) (By way of illustration, NFS "receives thousands of individual and business applications for authorization for use of NFS land for such activities as water transmission, agriculture, outfitting and guiding, recreation, telecommunication, research, photography and video productions, and granting road and utility rights-of-ways. The Forest Service carefully reviews each application to determine how the request affects the public's use of NFS land. Normally, NFS land is not made available if the overall needs of the individual or business can be met on nonfederal lands.").

⁹⁷ *About Us*, NAT'L PARK SERV., <https://www.nps.gov/aboutus/index.htm> [<https://perma.cc/VV5T-BA8G>] (last updated Aug. 18, 2020).

⁹⁸ *Id.*

⁹⁹ Coglianese, *supra* note 76, at 89.

¹⁰⁰ *Id.* at 90.

¹⁰¹ *Id.*

¹⁰² The *Federal Water Pollution Control Act of 1948*, Pub. L. No. 845, 62 Stat. 1155, was the first major federal legislation to deal with environmental issues. *History of the Clean*

Pollution Control Act of 1955,¹⁰³ the Water Quality Act of 1965,¹⁰⁴ and similar legislative acts aimed at providing indirect means of addressing environmental issues, usually in the form of funds and guidance.¹⁰⁵

By the second half of the twentieth century, a new form of environmentalism captured the imagination of the American public.¹⁰⁶ Inspired by the 1962 publication of *Silent Spring*, Rachel Carson's groundbreaking and highly influential book, the public became acutely aware of the pervasive use of toxic chemicals, such as DDT, and their risk to human health.¹⁰⁷ Other environmental thinkers and authors also contributed to the national debate during the 1960s. For example, in 1963, Stewart

Water Act, EPA, <https://www.epa.gov/laws-regulations/history-clean-water-act> [<https://perma.cc/Q4L8-RYCY>] (last updated June 15, 2020). The 1948 Act "authorized the Surgeon General of the Public Health Service, in cooperation with other Federal, state and local entities, to prepare comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries and improving the sanitary condition of surface and underground waters. During the development of such plans, due regard was to be given to improvements necessary to conserve waters for public water supplies, propagation of fish and aquatic life, recreational purposes, and agricultural and industrial uses. The original statute also authorized the Federal Works Administrator to assist states, municipalities, and interstate agencies in constructing treatment plants to prevent discharges of inadequately treated sewage and other wastes into interstate waters or tributaries." *Federal Water Pollution Control Act (Clean Water Act)*, DIG. FED. RES. L. INT. TO U.S. FISH & WILDLIFE SERV., <https://www.fws.gov/laws/lawsdigest/FWATRPO.HTML> [<https://perma.cc/MS8M-2TYN>] (last visited Oct. 13, 2020).

¹⁰³ The Air Pollution Control Act of 1955, Pub. L. No. 84-159, 69 Stat. 322, addressed air pollution at the federal level for the first time. Its scope was minimal and essentially provided funding for researching issues associated with air pollution. *Evolution of the Clean Air Act*, EPA, <https://www.epa.gov/clean-air-act-overview/evolution-clean-air-act> [<https://perma.cc/ACG6-7RDT>] (last updated Jan. 3, 2017).

¹⁰⁴ For the first time, the Water Quality Act of 1965, Pub. L. No. 89-243, 79 Stat. 903, established water quality standards at the federal level, including first-stage interstate water quality standards. *EPA History: Water—The Challenge of the Environment: A Primer on EPA's Statutory Authority*, EPA, <https://archive.epa.gov/epa/aboutepa/epa-history-water-challenge-environment-primer-epas-statutory-authority.html> [<https://perma.cc/LY43-C7FZ>] (last updated Oct. 4, 2016).

¹⁰⁵ David W. Case, *The Lost Generation: Environmental Regulatory Reform in the Era of Congressional Abdication*, 25 DUKE ENV'T L. & POL'Y F. 49, 54 (2014).

¹⁰⁶ *Id.* at 55.

¹⁰⁷ Oladele A. Ogunseitan, *Embracing Global Warmth and Climate Resilience Through Green Chemistry Legislation*, 25 HASTINGS ENV'T L.J. 301, 315 (2019) ("The United Nation's Stockholm Convention on Persistent Organic Pollutants recognizes DDT as one of those 'chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment.'") (quoting Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Mar. 22, 1989, 1673 U.N.T.S. 57).

Udall, Secretary of the Department of the Interior under the Kennedy and Johnson administrations, expressed his concerns about the growing threat of pollution in his book, *The Quiet Crisis*.¹⁰⁸ The combination of these books helped move the public to favor greater governmental involvement in protecting human health and the environment.¹⁰⁹ Other events of the 1960s heightened public awareness of environmental problems and issues. For example, along with the increase of urban highway construction and automobile congestion as discussed above,¹¹⁰ concerns also grew regarding industrial pollution and environmental disasters.¹¹¹ These disasters, such as the Cuyahoga River fire in Cleveland in 1969,¹¹² and the Santa Barbara oil spill in the same year,¹¹³ drove public calls for greater federal engagement and intervention.¹¹⁴ The result was to cause the federal government in the 1970s to take direct control of protecting the environment and human health.¹¹⁵

¹⁰⁸ Lauren Kalisek, *The Principle of Antidegradation and Its Place in Texas Water Quality Permitting*, 41 TEX. ENV'T L.J. 1, 5 (2010).

¹⁰⁹ *Id.*

¹¹⁰ See *supra* notes 60–70 and accompanying text.

¹¹¹ Case, *supra* note 105, at 55.

¹¹² *Cuyahoga River Fire*, OHIO HIST. CENT., http://www.ohiohistorycentral.org/w/Cuyahoga_River_Fire [<https://perma.cc/N573-JXV7>] (last visited Oct. 13, 2020) (“The Cuyahoga River was once one of the most polluted rivers in the United States as represented by the multitude of times it has caught fire, a recorded number of thirteen starting in 1868. The most potent blaze occurred in 1952 which caused over \$1.3 million in damages however, the most fatal fire happened in 1912 with a documented five deaths. The 1969 fire, which did not incur maximum damages or fatally wound any citizen, was the most covered incident occurring on the river. This was in part because of the developing precedence that sanitation held over industrial actions; the United States was becoming more eco-aware. Also, due to the shift from industry to technology, waste dumping to recycling Time Magazine produced an article about the incident. This brought mass amount of attention to the Cleveland area and added pressure for hygienic regulation. Inspired by the 1969 river fire, Congress was determined to resolve the issue of land pollution, not just in Cleveland, but throughout the United States. The legislature passed the National Environment Policy Act (NEPA) which was signed into law on January 1, 1970.”).

¹¹³ See generally Jon Hamilton, *How California's Worst Oil Spill Turned Beaches Black and the Nation Green*, NAT. PUB. RADIO (Jan. 28, 2019), <https://www.npr.org/2019/01/28/688219307/how-californias-worst-oil-spill-turned-beaches-black-and-the-nation-green> [<https://perma.cc/JTG9-K6RG>] (The Santa Barbara oil spill occurred on January 28, 1969, a little more than fifty years ago. An oil well exploded six miles of the coast of California and created the largest oil spill in U.S. history at that time. The result “turned beaches black and the nation green.”).

¹¹⁴ Case, *supra* note 105, at 55.

¹¹⁵ *Id.*

B. A Significant Legislative Response

The 1970s witnessed what is often referred to as the start of “contemporary environmentalism.”¹¹⁶ However, the start of the decade was quite bleak from an environmental perspective.¹¹⁷ As described cogently and convincingly by Professor Denis Binder:

Although Justice Oliver Wendell Holmes was widely quoted for saying, in 1931, “A river is more than an amenity, it is a treasure,” the legal realities in 1970 were in stark contrast to his sentiment: (1) The exploitation of natural resources was legally encouraged and favored by the law; (2) Land use planning was reserved to state and local governments; (3) Energy development in the form of coal, gas, hydro, nuclear, and oil was the past, present and the future; (4) Citizens had little legal power to challenge or change governmental actions, approvals or denials, permits or variances; (5) International environmental issues were essentially unrecognized, even though pollution does not respect artificial political boundaries; and (6) Native American rights were not considered.¹¹⁸

Perhaps the most memorable event signaling the beginning of the contemporary phase of the environmental movement was “Earth Day,” celebrated on April 22, 1970.¹¹⁹ From coast to coast, more than twenty million people participated in the inaugural Earth Day.¹²⁰ For fifty years since, Earth Day has been celebrated worldwide each year on April 22, with more than a billion people participating in what has become the world’s largest secular event.¹²¹ In 1970, Earth Day offered a powerful way to galvanize the tactics, energy, and revolutionary spirit engulfing the country at the height of the Vietnam War for a different kind of revolutionary movement, one that started in earnest in the 1960s and blossomed in the

¹¹⁶ See Coglianese, *supra* note 76, at 94.

¹¹⁷ See Denis Binder, *Perspectives on Forty Years of Environmental Law*, 3 GEO. WASH. J. ENERGY & ENV'T L. 143, 143–44 (2012).

¹¹⁸ *Id.* at 145–46 (internal citations omitted).

¹¹⁹ Coglianese, *supra* note 76, at 94.

¹²⁰ *The History of Earth Day*, EARTH DAY, <https://www.earthday.org/about/the-history-of-earth-day/> [<https://perma.cc/9MGD-4FTM>] (last visited Oct. 13, 2020).

¹²¹ *Id.*

1970s—the environmental movement.¹²² Senator Gaylord Nelson from Wisconsin envisioned Earth Day as a national day of awakening about the consequences of unchecked ravaging of the planet.¹²³

Building from the energy generated by Earth Day and coupled with a growing awareness of the need to protect the environment, politicians began to view environmental pollution as a political issue.¹²⁴ Indeed, in 1970, Congress enacted the first major proactive environmental statute at the federal level, the National Environmental Policy Act (“NEPA”).¹²⁵ The significance of NEPA cannot be overstated. This seminal legislation launched the inaugural federal framework and a set of policy guidelines for protecting the environment.¹²⁶ NEPA mandates that each branch of the federal government assess environmental considerations before initiating federal plans and activities that may affect the environment.¹²⁷

Following enactment of NEPA, Congress took two major additional steps in 1970 to protect the environment. It established the Environmental Protection Agency (“EPA”)¹²⁸ and passed sweeping legislation to combat the perils of air pollution, the Clean Air Act of 1970.¹²⁹ During the remainder of the decade, Congress passed significant additional environmental legislation,¹³⁰ including the Clean Water Act of 1972,¹³¹

¹²² *See id.*

¹²³ *See id.*

¹²⁴ Case, *supra* note 105, at 55.

¹²⁵ National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852; *see also What is the National Environmental Policy Act?*, EPA, <https://www.epa.gov/nepa/what-national-environmental-policy-act> [https://perma.cc/2HTS-C87S] (last updated Jan. 24, 2017).

¹²⁶ *Summary of the National Environmental Policy Act*, EPA, <https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act> [https://perma.cc/8S3S-JUVW] (last updated Aug. 15, 2019).

¹²⁷ *Id.*

¹²⁸ *The Origins of EPA*, EPA, <https://www.epa.gov/history/origins-epa> [https://perma.cc/RVK2-KAKH] (last updated Nov. 19, 2018) (explaining that Congress established the EPA on December 2, 1970. The EPA was formed by combining a variety of environmental activities, such as research and standard setting, occurring in other federal agencies.).

¹²⁹ *See infra* notes 194–201 and accompanying text.

¹³⁰ Case, *supra* note 105, at 56.

¹³¹ Pub. L. No. 92-500, 86 Stat. 816 (1972); *see also History of the Clean Water Act*, *supra* note 102 (The Clean Water Act of 1972 significantly amended the Federal Water Pollution Control Act of 1948. Some of the major amendments to the 1948 Act include “establishing the basic structure for regulating pollutant discharges into the waters of the United States, giving the EPA the authority to implement pollution control programs such as setting wastewater standards for industry, and making it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions.”).

the Safe Drinking Water Act of 1974,¹³² and the Toxic Substances Control Act of 1976.¹³³

The decade of the 1970s represents a remarkable period of direct and sweeping federal involvement in the environment.¹³⁴ It also witnessed the marshalling of nonpartisan cooperation on environmental issues in ways not seen since.¹³⁵ Remarkably, this nonpartisan cooperation withstood tremendous opposition from powerful industry forces.¹³⁶

C. *The EPA, Urban Sprawl, and “Smart Growth”*

Despite this burst of federal legislation to combat pollution in the 1970s, land use and development patterns remained intact.¹³⁷ These patterns, which had been encouraged in part by road-building under the Federal-Aid Highway Act of 1956,¹³⁸ and subsequent highway expansion, contributed to urban “sprawl.”¹³⁹ Although no uniform definition exists, sprawl is generally viewed as a geographic area with low-density and scattered housing dominated by heavy reliance on automobiles for transportation.¹⁴⁰ This increased reliance on the automobile caused by sprawl contributes significantly to transportation sector air pollution, which produces more anthropogenic greenhouse gas (“GHG”) emissions than any other sector.¹⁴¹ Indeed, of the amount of GHG emissions generated

¹³² Pub. L. No. 93-523, 88 Stat. 1660 (1974); *see also Summary of the Safe Drinking Water Act*, EPA, <https://www.epa.gov/laws-regulations/summary-safe-drinking-water-act> [<https://perma.cc/GPY4-3JWR>] (last visited Oct. 13, 2020) (The Safe Drinking Water Act (“SDWA”) safeguards the drinking water of the United States. Of significance, the provisions of the Act cover all potential drinking waters, both above ground and underground. Additionally, the Act directs the EPA to establish minimum standards for public water systems.).

¹³³ Pub. L. No. 94-469, 90 Stat. 2003 (1976); *see also Summary of the Toxic Substances Control Act*, EPA, <https://www.epa.gov/laws-regulations/summary-toxic-substances-control-act> [<https://perma.cc/6VDC-UG5R>] (last visited Oct. 13, 2020) (The Toxic Substances Control Act of 1976 authorizes the EPA to mandate reporting, testing, and recordkeeping requirements.).

¹³⁴ Case, *supra* note 105, at 57.

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ Case, *supra* note 105, at 51.

¹³⁸ *See supra* notes 54–73 and accompanying text.

¹³⁹ *See Old Regionalism, New Regionalism, and Envision Utah: Making Regionalism Work*, 118 HARV. L. REV. 2291, 2307 (2005).

¹⁴⁰ Edward J. Sullivan & Jessica Yeh, *Smart Growth: State Strategies in Managing Sprawl*, 45 URB. LAW. 349, 350 (2013).

¹⁴¹ *Fast Facts on Transportation Greenhouse Gas Emissions*, EPA, <https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions> [<https://perma.cc/S5DE-4XGR>] (last updated July 29, 2020) (As noted by the EPA, “the following sectors

by this sector, automobiles and light-duty vehicles contribute nearly 60%.¹⁴² Because these emissions adversely affect the urban environment, EPA has adopted a strategy to help resolve air pollution problems associated with sprawl.¹⁴³ That strategy is “smart growth.”¹⁴⁴ Defined as “a range of development and conservation strategies that help protect our health and natural environment and make our communities more attractive, economically stronger, and more socially diverse,”¹⁴⁵ “smart growth” helps guide transportation and land development decisions that affect the ways people live, shop, commute, and recreate.¹⁴⁶

In promoting its smart growth strategy, EPA focuses on four major urban policies.¹⁴⁷ These include: 1) smart and sustainable street design; 2) TOD; 3) parking management; and 4) sustainable transportation planning.¹⁴⁸ These policies are augmented by resources including grants and funding opportunities, descriptions of smart growth projects, technical assistance, tool kits, publications and webinars, videos, podcasts, and a partners program.¹⁴⁹ Although all four policies are important for achieving the goal of protecting the environment and human health, this Article focuses on the second policy, TOD.

III. SMART GROWTH AND TRANSIT-ORIENTED DEVELOPMENT

TOD combines walkable communities with environmentally focused transportation alternatives:

produced the following percentages of greenhouse gas emissions: transportation (28%), electricity (27%), industry (22%), agriculture (10%), commercial (7%), and residential (6%). According to the EPA, totals may not add to 100% due to rounding.”)

¹⁴² *Id.* (As noted by the EPA, “the following modes of transportation produced the following percentages of greenhouse gas emissions: light-duty vehicles (59%), medium and heavy-duty trucks (23%), aircraft (9%), other (5%), ships and boats (2%), and rail (2%). According to the EPA, totals may not add to 100% due to rounding.”)

¹⁴³ *Smart Growth and Transportation*, EPA, <https://www.epa.gov/smartgrowth/smart-growth-and-transportation> [<https://perma.cc/H5HW-GRXE>] (last visited Oct. 13, 2020); see, e.g., *infra* notes 226–28 and 302–03 and accompanying text (The U.S. Department of Transportation through both the Federal Transit Administration (“FTA”) and the FHWA also support smart growth strategies.)

¹⁴⁴ *Old Regionalism, New Regionalism, and Envision Utah: Making Regionalism Work*, *supra* note 139, at 2291.

¹⁴⁵ *What Is Smart Growth?*, EPA, <https://www.epa.gov/smartgrowth/about-smart-growth> [<https://perma.cc/Y9WM-GFHT>] (last visited Oct. 13, 2020).

¹⁴⁶ *Id.*

¹⁴⁷ EPA, *supra* note 143.

¹⁴⁸ *Id.*

¹⁴⁹ See, e.g., *Smart Growth*, EPA, <https://www.epa.gov/smartgrowth> [<https://perma.cc/5T-HY-NGZ4>] (last visited Oct. 13, 2020).

TOD is compact development built around a transit station or within easy walking distance (typically a half-mile) of a station and containing a mix of land uses such as housing, offices, shops, restaurants, and entertainment. TOD can help lower household transportation costs, boost public transit ridership, reduce greenhouse gas emissions and air pollution, spur economic development, and make housing more affordable by reducing developer expenditures on parking and allowing higher-density zoning.¹⁵⁰

As noted in the definition, TOD emphasizes the integral relationship between transportation options, land use patterns and development, and protection of the environment and human health.¹⁵¹ This relationship has the power to transform neighborhoods and produce significant environmental benefits, including improvements in air quality and reductions in GHG emissions.¹⁵² As stated previously, automobiles and light-duty trucks generate a significant amount of GHG emissions.¹⁵³ TOD planning can help reduce this percentage by developing strategies to decrease sprawl and incentivize community planners to develop compact, walkable neighborhoods with easy access to public transportation alternatives.¹⁵⁴ It encourages the development of living and transportation arrangements that offer attractive alternatives to driving, such as walking, bicycling, and using public transportation for shopping, recreation, and commuting to work.¹⁵⁵ Such planning can result in improving the quality of neighborhood life, developing open space, and protecting the environment.¹⁵⁶ Because of these and other benefits, an increasing number of adults in the United States find transit-oriented projects appealing,¹⁵⁷ and a number of United States cities with federal assistance have opted to implement TOD.¹⁵⁸ Five examples of such urban TOD projects follow.

¹⁵⁰ EPA, *supra* note 143.

¹⁵¹ *Id.*

¹⁵² *Id.*

¹⁵³ *See id.*

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ EPA, *supra* note 143.

¹⁵⁷ *TOD 101: Why Transit-Oriented Development And Why Now?*, RECONNECTING AM. & CTR. FOR TRANSIT-ORIENTED DEV. 1, 3 (2007), <http://reconnectingamerica.org/assets/Uploads/tod101full.pdf> [<https://perma.cc/NP8E-3BEJ>].

¹⁵⁸ *Id.* at 5.

A. *Atlanta and the Atlantic Station Project*

Between 1995 and 2002, the EPA offered a national program known as Project XL, eXcellence in Leadership.¹⁵⁹ Project XL was a pilot program designed to encourage collaboration among the private sector, state officials, and local governments to test alternative and innovative strategies for designing projects that offer cost-effective techniques for protecting human health and the environment.¹⁶⁰ Over a span of nearly seven years, the EPA worked with communities around the nation to support and develop over fifty projects under the Project XL program.¹⁶¹

One of the XL projects supported by the EPA under its “smart growth” program was the Atlantic Station project, known formally as the Atlantic Steel Site Redevelopment Project.¹⁶² Located on the site of the former Atlantic Steel Company in midtown Atlanta,¹⁶³ the Atlantic Station project represented a \$2,000,000,000 investment.¹⁶⁴ With much of the development completed around fifteen years ago, residents began moving into Atlantic Station in 2003, with restaurants and shops opening in 2005.¹⁶⁵ Today, Atlantic Station boasts a residential population of about 3,000, and its stores and other businesses employ around 3,500 workers.¹⁶⁶ As a multi-use development project, Atlantic Station represents a model for “smart growth” strategies that have produced many economic and environmental benefits.¹⁶⁷ For example, some of the benefits include decreases in light vehicle emissions, restoration of a former contaminated steel factory site, reconstruction of a previously inefficient and unsafe sewer

¹⁵⁹ *Project XL*, EPA, <https://archive.epa.gov/projectxl/web/html/index.html> [https://perma.cc/773D-AEAQ] (last visited Oct. 13, 2020).

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Atlantic Station (Atlantic Steel Site Redevelopment Project)*, EPA, <https://www.epa.gov/smartgrowth/atlantic-station-atlantic-steel-site-redevelopment-project> [https://perma.cc/FFU2-C5JX] (last visited Oct. 13, 2020).

¹⁶³ The Atlantic Steel Company operated in the City of Atlanta from 1901 to 1998. It reorganized several times during its nearly 100-year history, but revenues and profits began to decline in the 1970s with the slumping steel industry in the U.S. In 1996, the plant was sold, and the midtown Atlanta property on which the plant was located was purchased the following year by Jacoby Development. Shortly thereafter, Atlantic Steel ceased operations in 1998. *Atlantic Steel Company Records*, ATLANTA HIST. CTR., <http://ahc.galileo.usg.edu/ahc/view?docId=ead/ahc.MSS929-ead.xml> [https://perma.cc/W3WY-VR4Z] (last visited Oct. 13, 2020).

¹⁶⁴ EPA, *supra* note 162.

¹⁶⁵ *Id.*

¹⁶⁶ *Id.*

¹⁶⁷ *Id.*

system, development of high density housing, establishment of a walkable neighborhood with easy bicycling and access to public transportation, and creation of new employment opportunities for residents and other workers.¹⁶⁸

Providing access to public transportation was a critically important part of the Atlantic Station project, which required the construction of a new bridge to connect Atlantic Station with other parts of the city.¹⁶⁹ Dubbed “building a gateway to the city within a city,” the 17th Street Bridge connects Atlantic Station with midtown Atlanta.¹⁷⁰ Construction of the bridge was necessary because twenty-one lanes of traffic (I-75/I-85) isolated Atlantic Station from other popular destinations within midtown for work, recreation, and shopping.¹⁷¹ This isolation was the result of the operational requirements of the prior occupant of the site, the Atlantic Steel Company.¹⁷² To minimize the isolation and connect the newly developed Atlantic Station project with midtown Atlanta and public transportation at Metropolitan Atlanta Rapid Transit Authority’s Arts Center transit station, the bridge was constructed.¹⁷³ Crossing the bridge on foot, Arts Center station is about a ten- to fifteen-minute walk from the Atlantic Station project.¹⁷⁴ A free ten- to fifteen-minute shuttle service also uses the bridge to access Arts Center.¹⁷⁵ Spanning more than 130 feet, the bridge additionally includes travel lanes for vehicles, a dedicated section for passenger rail travel, extra-wide sidewalks for pedestrians, and accommodations for bicycles.¹⁷⁶ In fact, the design of the whole Atlantic Station project encourages bicycle travel as a convenient mode

¹⁶⁸ *Id.*

¹⁶⁹ *See infra* note 189 and accompanying text (discussing the need to view Atlantic Station as a “transportation control measure” site pursuant to EPA guidelines). The guidelines are designed for city planners, local transportation managers, and other local government officials to assist them by providing strategies to reduce air pollution caused by passenger vehicle emissions, and to identify alternative transportation modes such as public transportation. *See* EPA, EPA-430-R-09-040, TRANSPORTATION CONTROL MEASURES (2011).

¹⁷⁰ *17th Street Bridge*, C.W. MATTHEWS CONSTR. CO., <https://cwmatthews.com/projects/17th-street-bridge> [<https://perma.cc/MHV2-PKDD>] (last visited Oct. 13, 2020).

¹⁷¹ *Id.*

¹⁷² Christopher De Sousa & Lily-Ann D’Souza, *Atlantic Station, Atlanta, Georgia: A Sustainable Brownfield Revitalization Best Practice*, U. ILL. CHI. INST. ENV’T SCI. & POL.: SUSTAINABLE BROWNFIELDS CONSORTIUM 1, 5 (2013).

¹⁷³ *Id.*

¹⁷⁴ *MARTA to Atlantic Station*, MARTA GUIDE, <https://martaguide.com/2009/07/07/marta-to-atlantic-station/> [<https://perma.cc/EL83-NKGP>] (last visited Oct. 13, 2020).

¹⁷⁵ *Id.*; *Getting Here*, ATL. STATION, <https://www.atlanticstation.com/getting-here> [<https://perma.cc/TKG9-KK9K>] (last visited Oct. 13, 2020).

¹⁷⁶ C.W. MATTHEWS CONSTR. CO., *supra* note 170.

of transportation.¹⁷⁷ For instance, the 17th Street Bridge was the first to include dedicated bike lanes in the city of Atlanta.¹⁷⁸ Bike racks, strategically located throughout Atlantic Station, further encourage the use of bicycles for traveling within the community as well as using the dedicated bike lanes on the bridge.¹⁷⁹

In addition to developing alternative means for making Atlantic Station a walkable and bikeable community with easy access to public transportation, community planners created an innovative transportation program known as the Atlantic Station Access and Mobility Program, or “ASAP+[,]”¹⁸⁰ The concept upon which the strategy is based, known as Transportation Demand Management (“TDM”), offers community residents and workers a variety of transportation options to mitigate the customary reliance on single-occupancy commuting.¹⁸¹ These options include a carpool and vanpool brokerage system, an array of subscription cars and bicycles, and as mentioned previously, a free shuttle to and from nearby public transportation at Arts Center station.¹⁸² Rounding out the strategy of reducing reliance on single-passenger vehicles, community planners designed a parking garage that accommodates far fewer parking spaces than the 15,000,000 square feet of developed property would normally have required in a community where TOD was not emphasized and employed.¹⁸³

The overall impact of the Atlantic Station TOD project has been to contribute to an environmental situation in Atlanta today that is very different from that experienced in the 1990s.¹⁸⁴ At that time, sprawl dominated city development.¹⁸⁵ Atlanta’s metropolitan area expanded approximately forty-five miles from north to south, growing from 65 miles to 110 miles in a seven-year period.¹⁸⁶ The corresponding increase in Atlanta’s

¹⁷⁷ EPA, *supra* note 162.

¹⁷⁸ ATL. STATION, *supra* note 175.

¹⁷⁹ *Id.*

¹⁸⁰ *Transit-Oriented Development Guidelines*, MARTA 1, 97 (2010), https://www.itsmarta.com/uploadedFiles/More/Transit_Oriented_Development/TOD%20Guidelines%202010-11.pdf [<https://perma.cc/RNX9-DMBW>].

¹⁸¹ *Id.*

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ See De Sousa & D’Souza, *supra* note 172.

¹⁸⁵ Jacoby Development Corporation, *An Application for Designation Under Project XL*, EPA WEB ARCHIVE 1, 5, 24 (1998), <https://archive.epa.gov/projectxl/web/pdf/091198.pdf> [<https://perma.cc/TJ4L-HPSZ>].

¹⁸⁶ *Facing the Facts about Atlanta’s Air Quality*, S. ENV’T L. CTR. (2005), <https://www.southernenvironment.org/cases-and-projects/fact-sheets/facing-the-facts-about-atlantas-air-quality> [<https://perma.cc/8DGC-8SX5>].

population translated into a ratio of a 10 to 15% increase in land development for every 1% increase in population.¹⁸⁷ This rapid growth resulted in Atlanta losing fifty acres of green space each day.¹⁸⁸ The consequence of this type of rapid growth was a greater use of automobiles, as work, home, schools, and recreational areas became more and more dispersed.¹⁸⁹ In response to these alarming statistics, city officials and Jacoby Development, the owners of the former Atlantic Steel Company property, requested assistance from the EPA's Project XL Program to implement a 'smart growth' strategy in developing Atlantic Station.¹⁹⁰

The EPA accepted the invitation to work with Atlanta under the Project XL Program, allowing a more cost-effective way of improving the environment than would have been available under other existing EPA regulations and mandates.¹⁹¹ In accepting the project, EPA took a unique approach to work with city officials and the developer.¹⁹² For the first time, EPA used a direct land use development strategy rather than its usual approach of regulating those entities falling under its purview.¹⁹³

During the early stages of the project, the development team faced a major environmental obstacle.¹⁹⁴ In addition to the normal impediments to "smart growth" development, such as local zoning ordinances and state law requirements and restrictions, the Atlantic Station project failed to satisfy the requirements of the Clean Air Act ("CAA").¹⁹⁵ When Atlantic Station was first being considered, EPA determined that Atlanta

¹⁸⁷ See *Population Estimates for the Atlanta Region: Another Steady Year of Growth*, ATLANTA REG'L COMM'N (2016), <http://www.documents.atlantaregional.com/snapshots/PopulationEstimates2016Snapshot.pdf> [<https://perma.cc/KXT6-EGRQ>]; James E. Kundell & Margaret Myszewski, *Urban Sprawl*, NEW GA. ENCYC., <https://www.georgiaencyclopedia.org/articles/arts-culture/urban-sprawl#:~:text=Atlanta's%20urban%20land%20area%20expanded,population%20could%20double%20by%202050> [<https://perma.cc/ACZ7-W34N>] (last updated June 8, 2017).

¹⁸⁸ See Layla Bellows, *It Takes a Forest: How Intown Development Puts Atlanta's Tree Canopy at Risk*, ATLANTA MAG. (July 14, 2015), <https://www.atlantamagazine.com/news-culture-articles/it-takes-a-forest-how-intown-development-puts-atlantas-tree-canopy-at-risk/> [<https://perma.cc/EQT7-ZG2R>].

¹⁸⁹ See Jacoby Development Corporation, *supra* note 185, at 5.

¹⁹⁰ *Id.* at 4–6.

¹⁹¹ Janet L. Bozeman, *Project XL: Should It Be Used to Wage War on Urban Sprawl?*, 16 GA. ST. U. L. REV. 625, 653 n.256 (2000).

¹⁹² *Id.* at 625.

¹⁹³ *Id.*

¹⁹⁴ *Atlantic Steel Redevelopment, Project XL: Final Project Agreement*, EPA WEB ARCHIVE 1, 2 (1999), <https://archive.epa.gov/projectxl/web/pdf/fpa-2.pdf> [<https://perma.cc/FSL3-CBR6>].

¹⁹⁵ *Id.* at 1–2.

was experiencing a “conformity lapse.”¹⁹⁶ As a result of the conformity lapse, a traditional interpretation of the CAA would have prevented the Atlantic Station project from moving forward, as the “conformity” provision in the CAA would have precluded the construction of a bridge necessary to connect Atlantic Station with other parts of the city.¹⁹⁷

Confronted with this obstacle, the developers and city officials requested that EPA rely on provisions included in Project XL to view Atlantic Station as a “[t]ransportation control measure.”¹⁹⁸ Viewing Atlantic Station through the lens of a TCM¹⁹⁹ allowed regular CAA and EPA requirements to be put aside.²⁰⁰ The EPA accepted the TCM request because it viewed Atlantic Station as an outstanding model of its smart growth strategy.²⁰¹

The strategy worked. Atlantic Station is a successful story about urban development²⁰² and environmental progress.²⁰³ For example, a 2012

¹⁹⁶ *Id.* at 2. See Clean Air Act, 42 U.S.C. § 7506(c)(10) (2005); 40 C.F.R. § 93.101 (2012) (A conformity lapse occurs when a determination has been made that a metropolitan transportation plan has expired or that one does not exist.); see also U.S. DEP’T TRANSP., FED. HIGHWAY ADMIN. FHWA-HEP-17-034, TRANSPORTATION CONFORMITY: A BASIC GUIDE FOR STATE & LOCAL OFFICIALS (2017) (“Transportation conformity is required under CAA Section 176(c) to ensure that Federally-supported transportation activities are consistent with (‘conform to’) the purpose of a State’s SIP. Transportation conformity establishes the framework for improving air quality to protect public health and the environment. Conformity to the purpose of the SIP means Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) funding and approvals are given to highway and transit activities that will not cause new air quality violations, worsen existing air quality violations, or delay timely attainment of the relevant air quality standard, or any interim milestone.”).

¹⁹⁷ EPA, *supra* note 159.

¹⁹⁸ Bozeman, *supra* note 191, at 626.

¹⁹⁹ See 40 C.F.R. § 93.101 (2012) (“Transportation control measure (TCM) is any measure that is specifically identified and committed to in the applicable implementation plan, including a substitute or additional TCM that is incorporated into the applicable SIP through the process established in CAA section 176(c)(8), that is either one of the types listed in CAA section 108, or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the first sentence of this definition, vehicle technology-based, fuel-based, and maintenance-based measures which control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of this subpart.”).

²⁰⁰ Bozeman, *supra* note 191, at 627.

²⁰¹ *Id.*

²⁰² See, e.g., David Pendered, *City Audit: Atlantic Station a Success: Shows Need to Rein in Atlanta’s Urban Renewal Program to Improve Results*, SAPORTA REP. (June 4, 2012), <https://saportareport.com/city-audit-atlantic-station-a-success-shows-need-to-rein-in-renewal-program/> [https://perma.cc/Y4ZU-DS4D].

²⁰³ See EPA, *supra* note 162.

Atlanta city audit concluded that “[t]here’s no doubt that Atlantic Station has been a successful financial investment for both its initial investors and the city.”²⁰⁴ Furthermore, based on a 2008 report, the EPA concluded that the residents and employees of Atlantic Station drove significantly less than the remainder of the region.²⁰⁵ Based on average vehicle miles traveled, Atlantic Station residents drove an average of fourteen miles a day and workers at Atlantic station traveled an average of twelve miles compared with a regional average of thirty-four miles per day.²⁰⁶ Also, because Atlantic Station followed a compact development design strategy, its level of land use was much lower than if the project had been developed conventionally.²⁰⁷ Overall, Atlantic Station has met many of the goals of a TOD.²⁰⁸

B. Indianapolis “Complete Communities” and Bus Rapid Transit

In 2016, in anticipation of Indiana’s bicentennial celebration in 2020, Indianapolis’s Metropolitan Development Commission adopted a forward-looking agenda for the city’s future health and resiliency.²⁰⁹ Plan 2020, as it is called, premises that resiliency on vibrant “complete communities”²¹⁰ connects people and those communities to the growth opportunities afforded by Indianapolis.²¹¹ To achieve this connectivity, Plan 2020 (“The Plan”) looks to the development of transportation alternatives to the automobile, identified as critical to Indianapolis’s future economic health.²¹² In proposing new transit alternatives, The Plan aims to provide

²⁰⁴ *Id.*

²⁰⁵ *Id.*

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ *See id.*; *see also Transit-Oriented Development*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., <https://www.transit.dot.gov/TOD> [<https://perma.cc/45Q9-FA6J>] (last updated Apr. 11, 2019).

²⁰⁹ METRO. DEV. COMM’N, 2016-CPS-R-001, BICENTENNIAL AGENDA 30 (2016).

²¹⁰ *Id.* at 46 (The BICENTENNIAL AGENDA describes “[c]omplete communities” as having “the basic elements to support daily life, including economic opportunity and health services for everyone. They include; access to quality education; good jobs; quality housing that is affordable; high-quality choices in reliable and affordable transportation; and access to healthy food.”).

²¹¹ *Id.* at 106.

²¹² *Id.* at 102 (stating that the current “transportation network is limited almost exclusively to accommodating automobile traffic,” the Agenda identifies public transit as part of the economic infrastructure of Indianapolis and not simply a social service).

people with convenient access to jobs, reduce vehicle emissions in the city and reliance on automobiles generally, and promote a healthier lifestyle.²¹³

Working to accomplish this vision, the Indianapolis Metropolitan Planning Organization (“MPO”)²¹⁴ in conjunction with IndyGo, the city’s transit authority, proposed building a new transit infrastructure and obtaining significant funding from the Federal Transit Administration (“FTA”) to do so.²¹⁵ The proposal, Indy Connect,²¹⁶ contemplates a three-branch bus rapid transit (“BRT”)²¹⁷ system using a fleet of electric battery-powered buses that would connect the envisaged “complete communities” with downtown Indianapolis and other important destinations in the greater Indianapolis area.²¹⁸ The BRT system would utilize dedicated travel lanes so that buses would not be impeded by 1) automobile traffic; 2) station stops that mimic rail stations with level boarding, ticket dispensing machines, and other passenger amenities; and, most importantly, 3) frequent service intervals of ten-minute headways.²¹⁹ With Indy Connect in place, city planners seek to accomplish a wide and ambitious set of objectives including, among others, increasing transit ridership;²²⁰ upgrading

²¹³ *Id.* at 104–05.

²¹⁴ *Welcome to the Indianapolis MPO*, INDIANAPOLIS METRO. PLAN. ORG., <https://www.indympo.org/> [<https://perma.cc/K3S8-XDEK>] (last visited Oct. 13, 2020) (“The Indianapolis MPO plans and programs federal transportation funds for highways, transit, non-motorized transportation, and other means of moving people and goods in the 8-county, Central Indiana region.”); *Metropolitan Planning Organization: Overview*, FED. TRANSIT ADMIN., U.S. DEPT TRANSP., <https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/metropolitan-planning-organization-mpo> [<https://perma.cc/AH8H-DCZY>] (last updated Mar. 11, 2019) (stating MPOs are required by the Federal Transit Administration in all urbanized areas in the United States with a population of more than 50,000).

²¹⁵ *See Funding*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., <https://www.transit.dot.gov/funding> [<https://perma.cc/38Z5-8QF9>] (last visited Oct. 13, 2020), for an overview of FTA’s funding program and the application process.

²¹⁶ *The Central Indiana Transit Plan*, INDY CONNECT, <https://indyconnect.org/> [<https://perma.cc/Q9VC-W9PM>] (last visited Oct. 13, 2020).

²¹⁷ *See What is BRT?*, INST. TRANSP. & DEV. POL’Y, <https://www.itdp.org/library/standards-and-guides/the-bus-rapidtransit-standard/what-is-brt/> [<https://perma.cc/3FHR-GPR6>] (last visited Oct. 13, 2020), for an overview of BRT technology and operation.

²¹⁸ *See Red Line*, INDYGO, <https://www.indygo.net/red-line/> [<https://perma.cc/WE6N-GQCY>] (last visited Oct. 13, 2020) (stating the first branch of the system, the Indianapolis Red Line, began operation in 2019), for an overview of the Red Line.

²¹⁹ *See FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., INDYGO RED LINE RAPID TRANSIT PROJECT—PHASE 1: NEPA DOCUMENTED CATEGORICAL EXCLUSION 2*, 11, 27 (Sept. 2016), for a detailed project description including construction and operational impacts.

²²⁰ During September 2019, transit ridership along the Indianapolis Red Line corridor averaged 7,700 riders per day and contributed significantly to an overall 30% increase in ridership systemwide. During the period, however, ridership on the Indianapolis Red

transit to compete with the automobile; making connections easier to other modes of transit and walkable destinations for BRT riders; improving air quality by reducing auto emissions; and leveraging public investment around BRT stations.²²¹

The public investment envisioned by Indy Connect anticipates that BRT with its frequent service will encourage TOD in a number of locations near transit stations along the three branches of the system.²²² Viewing TOD as the development of mixed-use, walkable “complete communities” that include housing, jobs, retail, and entertainment, Indy Connect identifies BRT as the engine for enhancing TOD²²³ while recognizing that the physical readiness of locations around a station and the market strength of those locations are critical to any TOD.²²⁴

This assessment that the success of TOD requires more than simply a rapid transit infrastructure echoes that of FTA, which advises that in addition to access to transit stations, “TOD primarily occurs when regional and local governments encourage it through land use planning, zoning laws, and changes to building codes, among other things.”²²⁵ For this reason, FTA provides TOD funding to local communities to assist them in integrating land use and transportation planning with new rapid transit projects.²²⁶ For example, in 2018 FTA awarded a TOD planning grant of \$320,000 to IndyGo for its BRT Blue Line branch.²²⁷

Line was free; fares were not required. Required fares of \$1.75, which were to be introduced on November 11, 2019, could have an impact on ridership numbers going forward. Kellie Hwang, *Red Line Ridership Numbers for September Are In. Here's How Many Are Riding*, INDYSTAR (Oct. 28, 2019), <https://www.indystar.com/story/news/local/transportation/2019/10/28/indygo-red-line-ridership-numbers-september-released/2455590001/> [<https://perma.cc/TCP8-9HYR>].

²²¹ INDY CONNECT, THE CENTRAL INDIANA TRANSIT PLAN 18 (2016), https://indyconnect.org/wp-content/uploads/2016/06/Central-Indiana-Transit-Plan_2016-06-16.pdf [<https://perma.cc/LZJ9-ZCML>].

²²² *TOD Infographic*, INDY CONNECT (2017), <https://indyconnect.org/wp-content/uploads/2017/11/TOD-Infographic.pdf> [<https://perma.cc/RHC5-MR4T>].

²²³ *Transit-Oriented Development*, INDY CONNECT, <https://indyconnect.org/the-central-indiana-transit-plan/benefits-of-transit/transit-oriented-development/> [<https://perma.cc/XBW5-ZZTS>] (last visited Oct. 13, 2020).

²²⁴ Some elements of physical readiness in the vicinity of TOD projects are employment and residential density and street characteristics, such as sidewalks and intersections. Some elements of market strength are median household incomes, distance to the central business district, and land acquisition opportunities close to the TOD project. *Id.*

²²⁵ FED. TRANSIT ADMIN., U.S. DEP'T TRANSP., *supra* note 12.

²²⁶ *Pilot Program for Transit-Oriented Development Planning—Section 20005(b)*, FED. TRANSIT ADMIN., U.S. DEP'T TRANSP., <https://www.transit.dot.gov/TODPilot> [<https://perma.cc/SFD9-Z5WW>] (last visited Oct. 13, 2020).

²²⁷ *Fiscal Year 2018 Transit-Oriented Development Planning Projects*, FED. TRANSIT

The role of FTA is essential not only in assisting local communities in augmenting TOD, but more specifically in planning and constructing the rapid transit projects that will support development.²²⁸ It is the primary federal funding source for transit projects and it prescribes a detailed application process for those funds.²²⁹ Two important aspects of the process require adherence to NEPA²³⁰ and to United States Department of Transportation’s “environmental justice” (“EJ”) policy.²³¹

NEPA mandates that transit agencies intending to apply for transit funds for fixed rail or BRT projects submit documentation sufficient to determine the environmental impact of the project.²³² Typical documentation submitted for such a determination includes an extensive

ADMIN., U.S. DEP’T TRANSP., <https://www.transit.dot.gov/funding/grants/grant-programs/fiscal-year-2018-transit-oriented-development-tod-planning-projects> [<https://perma.cc/59YF-9ZQH>] (last updated June 8, 2020).

²²⁸ For instance, IndyGo requested significant FTA funding for its BRT projects. It requested \$74,990,000 (77.8% of total project cost) for the Red Line. See *IndyGo Red Line Rapid Transit*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP. (2017), <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/funding/grant-programs/capital-investments/130096/indygo-red-line-rapid-transit-fy-19-profile.pdf> [<https://perma.cc/ZAG4-CCKB>]. IndyGo requested \$70,000,000 (50.0% of total project cost) for the Purple Line. See *IndyGo Purple Line Rapid Transit*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP. (2018), <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/funding/grant-programs/capital-investments/130381/indianapolis-purple-line-profile.pdf> [<https://perma.cc/ZX6Y-8GMU>]. IndyGo requested \$100,000,000 (50.0% of total project cost) for the Blue Line. See *IndyGo Blue Line Rapid Transit*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP. (2018), <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/funding/grant-programs/capital-investments/115311/indianapolis-blue-line-profile.pdf> [<https://perma.cc/3L98-EQGG>].

²²⁹ FTA prescribes a multi-year, multi-step application process as a precondition to receiving funding. See *Capital Investment Grant Program: About the Program*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., <https://www.transit.dot.gov/funding/grant-programs/capital-investments/about-program> [<https://perma.cc/M84A-6FFP>] (last updated June 29, 2018). For the project ranking of IndyGo’s BRT Purple Line, see *IndyGo Purple Line Rapid Transit*, *supra* note 228 and accompanying text.

²³⁰ 42 U.S.C. § 4321 (1970) (“The purposes of [The National Environmental Policy Act] are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.”).

²³¹ *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP. (2012), https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_EJ_Circular_7.14-12_FINAL.pdf [<https://perma.cc/3F7T-9ZD3>].

²³² *Environmental Impact Statement*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., <https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/transit-environmental-sustainability/environmental> [<https://perma.cc/TQ5V-9T7U>] (last updated Dec. 14, 2015).

environmental assessment that goes well beyond impacts to the natural environment.²³³ For instance, IndyGo's environmental submission to FTA for Indianapolis's Red Line funding included project impact assessments not only for carbon monoxide and particulate matter emissions, water quality and wetlands, and ecologically sensitive areas, but also impacts resulting from project noise and vibration, business and resident relocation, social and community disruption, disturbance of cultural and archeological sites, and others.²³⁴

In addition, NEPA and EJ policies requires an assessment of a project's impact on the health and environment of low-income and minority populations.²³⁵ This assessment focuses on impacts during the planning, construction, and ultimate operation of the transit project.²³⁶ Additionally, the EJ policy requires that the transit agency engage in community outreach to allow for meaningful participation by EJ populations to assure that the contemplated transit infrastructure contemplated meets their needs.²³⁷

As of this writing, all three BRT branches of IndyGo's system are at various stages of the FTA process. Indianapolis's Red Line received its final disbursement of FTA funds in September 2018 and construction is nearing completion,²³⁸ while the Purple and Blue Lines are in FTA's project development phase and have been assigned an overall medium-high project rating by FTA.²³⁹

C. *San Diego Light Rail and Affordable Housing*

Unlike Indianapolis, which is planning a rapid transit system and contemplating TOD for the first time, San Diego already has an established

²³³ *Environmental Resources Information*, FED. TRANSIT ADMIN., U.S. DEP'T TRANSP., <https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/environmental-resources-information-0> [<https://perma.cc/SB7W-28FZ>] (updated Nov. 2, 2018).

²³⁴ FED. TRANSIT ADMIN., U.S. DEP'T TRANSP., *supra* note 219.

²³⁵ FED. TRANSIT ADMIN., U.S. DEP'T TRANSP., *supra* note 231.

²³⁶ *Id.* at 45.

²³⁷ *Id.* at 20–31.

²³⁸ *U.S. Department of Transportation Announces Final Allocation of \$25 Million for IndyGo Red Line Rapid Transit Project in Indiana*, FED. TRANSIT ADMIN., U.S. DEP'T TRANSP. (Sept. 6, 2018), <https://www.transit.dot.gov/about/news/us-department-transportation-announces-final-allocation-25-million-indygo-red-line-rapid> [<https://perma.cc/G2LW-CRZH>].

²³⁹ FED. TRANSIT ADMIN., U.S. DEP'T TRANSP., ANNUAL REPORT ON FUNDING RECOMMENDATIONS FISCAL YEAR 2020 (2019), <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/funding/grant-programs/capital-investments/131541/fy20-annual-report.pdf> [<https://perma.cc/2RGU-KKV2>].

light rail system consisting of three main lines and a vintage downtown streetcar line.²⁴⁰ The system currently includes fifty-three stations and about fifty-four miles of track.²⁴¹ In addition to having this established rail system, San Diego also has in place fixed TOD guidelines dating from 1992,²⁴² which the San Diego Association of Governments (“SANDAG”)²⁴³ updated and refined in 2015 as part of its Regional Transit Oriented Development Strategy.²⁴⁴ The strategy recognizes, not unlike Indianapolis,²⁴⁵ that proximity to transit creates opportunities for the development of mixed-use, walkable districts where people can live, work, shop, and recreate.²⁴⁶ Because the San Diego region anticipates a population increase of more than 900,000 by 2050,²⁴⁷ the need to promote these walkable, mixed-use districts is clear, especially in view of the fact that recent figures also indicate that approximately 85% of San Diego area residents drive to work in a single-occupancy vehicle.²⁴⁸

In 2010, seeking to accommodate in part this future population growth and to connect the city’s light rail system to important destinations north of downtown San Diego, SANDAG proposed an eleven-mile extension of its light rail Blue Line.²⁴⁹ It submitted the project, known as the Mid-Coast Corridor Project, to FTA for the funding of roughly one-half

²⁴⁰ *San Diego Trolley, Inc.*, METRO. TRANSIT SYS. (2013), https://www.sdmts.com/sites/default/files/attachments/FS_SDTI.pdf [<https://perma.cc/JHX5-CVD7>].

²⁴¹ *Id.*

²⁴² *Transit-Oriented Development Design Guidelines*, CITY OF SAN DIEGO (1992), <https://www.sandiego.gov/sites/default/files/legacy/planning/community/profiles/south-easternsd/pdf/transitorienteddevelopmentdesignguidelines1992.pdf> [<https://perma.cc/TAH3-KW4H>].

²⁴³ *About SANDAG*, SANDAG, <https://www.sandag.org/index.asp?fuseaction=about.home> [<https://perma.cc/2BHU-6J2K>] (last visited Oct. 13, 2020).

²⁴⁴ *Regional Transit Oriented Development Strategy*, SANDAG, <https://www.sandag.org/index.asp?classid=12&projectid=500&fuseaction=projects.detail> [<https://perma.cc/67YF-4WDB>] (last visited Oct. 13, 2020).

²⁴⁵ *See supra* notes 223–25 and accompanying text.

²⁴⁶ *SANDAG Regional Transit Oriented Development Strategy*, SANDAG 2 (2015), https://www.sdforward.com/pdfs/RP_final/AppendixU4-SANDAGRegionalTransitOrientedDevelopmentStrategy.pdf [<https://perma.cc/VX7M-63AH>].

²⁴⁷ *Id.*

²⁴⁸ SANDAG, PARK AND RIDE/COMMUTE SURVEY SUMMARY REPORT 5, 24 (2018), https://www.sandag.org/uploads/publicationid/publicationid_4549_24879.PDF [<https://perma.cc/BNX9-TWS3>].

²⁴⁹ The extension will connect downtown with U.C. San Diego, University Town Center, and Old Town. *See Public Transit: Mid-Coast Trolley*, SANDAG, <https://www.sandag.org/index.asp?projectid=250&fuseaction=projects.detail> [<https://perma.cc/6E4D-YDXC>] (last visited Oct. 13, 2020).

of the \$2,200,000,000 cost.²⁵⁰ The project is estimated to serve 24,600 transit trips per weekday²⁵¹ using light rail vehicles (“LRVs”), descendants of the early twentieth-century city streetcar, which are able to run in a variety of environments including on city streets, along grade-separated rights-of-way, and in tunnels.²⁵²

In assessing applicant requests for such funding, in addition to considering a project’s compliance with NEPA and EJ policies, FTA also considers whether land use and development policies in the jurisdictions requesting funds will provide viable support for the proposed transit project.²⁵³ This is critically important especially to the success of a TOD project, for if TOD is to succeed in developing mixed-use, “complete communities” around transit stations that in turn support transit, then land use and development policies must be conducive to that result.²⁵⁴ FTA, in determining funding, will then assess these impacts and issue a project rating as it did for the Blue Line extension.²⁵⁵

An element of FTA’s land use and development rating is a project’s contribution to affordable housing.²⁵⁶ Considering that residents of affordable housing are most often low-income or elderly, and for this reason likely to rely on public transit, the concern is that TOD will not

²⁵⁰ In 2016, FTA entered into a grant agreement with SANDAG to provide the requested amount. *See U.S. Department of Transportation Announces \$1 Billion to Expand Trolley Service in San Diego*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP. (Sept. 14, 2016), <https://www.transit.dot.gov/about/news/us-department-transportation-announces-1-billion-expand-trolley-service-san-diego> [<https://perma.cc/GL2S-KZLK>].

²⁵¹ *Id.*

²⁵² *See Light Rail Transit*, RAILSYSTEM.NET, <http://www.railsystem.net/light-rail-transit> [<https://perma.cc/P2CD-PCRG>] (last visited Oct. 13, 2020).

²⁵³ For a comprehensive overview of all criteria used by FTA in assessing funding requests for transit projects, see FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., FINAL INTERIM POLICY GUIDANCE FEDERAL TRANSIT ADMINISTRATION CAPITAL INVESTMENT GRANT PROGRAM (2016), https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FAST_Updated_Interim_Policy_Guidance_June%202016.pdf [<https://perma.cc/6SZ5-YU4W>]. “The statutory project justification criteria include: mobility improvements, environmental benefits, congestion relief, economic development effects, land use, and cost-effectiveness.” *Id.* at 2:8.

²⁵⁴ *See supra* notes 225–26 and accompanying text.

²⁵⁵ FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., MID-COAST CORRIDOR TRANSIT PROJECT (2015), https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/CA_San_Diego_Mid_Coast_Corridor_Engineering_Project_Profile.pdf [<https://perma.cc/MR5F-EBL4>].

²⁵⁶ FED. TRANSIT ADMIN., U.S. DEP’T TRANSP., *supra* note 253, at 2:26, 2:27. FTA will give a project a “high” rating for affordable housing plans and policies if they have been developed and are being implemented with identified funding sources, supportive zoning codes, and cooperating developers. *Id.* at 2:26.

make public transit less accessible to those who need it most.²⁵⁷ Yet because living close to a convenient urban rapid transit station is attractive and draws prospective new residents, SANDAG itself has recognized that TOD can result in increased land values and rents to the point of displacing low-income residents.²⁵⁸ SANDAG's appreciation of this potential is echoed elsewhere as the "dark side" of TOD.²⁵⁹ So, as required, SANDAG's successful application to FTA for funding had to provide evidence of San Diego's ability to deal with any potential housing "dark side" to the Blue Line extension.²⁶⁰

These potential negative impacts to affordable housing can be addressed through several accepted approaches, from leveraging the market to direct public investment.²⁶¹ Some of these approaches are set out in a 2017 report by Circulate San Diego, a non-profit advocacy group with a mission to promote transportation options and sustainable growth.²⁶² Referencing TOD, the report focuses on San Diego's "affordable homes

²⁵⁷ See National Low Income Housing Coalition, *Who Lives in Federally Assisted Housing?*, HOUS. SPOTLIGHT (Nov. 2012) 1–2, https://nlihc.org/sites/default/files/Housing_Spotlight2-2.pdf [<https://perma.cc/LY5R-GLSP>].

²⁵⁸ SANDAG itself recognizes this potential in its TOD working paper on housing and affordability. Dena Belzer & Alison Nemirow, *Housing Choices and Affordability*, SANDAG (2015) 4, https://www.sandag.org/uploads/projectid/projectid_500_19060.pdf [<https://perma.cc/5D44-XUV6>] ("The introduction of new transit service in a neighborhood is often accompanied by increasing local property values and rents. While this can have benefits for home owners and local governments, it may also result in displacement of existing low-income renters who are priced out of market-rate rental units.").

²⁵⁹ In discussing rail transit and displacement generally, Karen Chapple and Anastasia Loukaitou-Sideris state:

To our knowledge, while a number of studies have discussed the potential for displacement as a result of transit investments . . . no empirical study has been able to measure the extent of any transit-induced displacement. Nevertheless, since researchers have found that transit neighborhoods tend to have higher concentrations of renters . . . and transit investments have been shown to increase property values and rents, there are enough reasons for community advocates to worry about transit-induced displacement.

KAREN CHAPPLE & ANASTASIA LOUKAITOU-SIDERIS, *TRANSIT-ORIENTED DISPLACEMENT OR COMMUNITY DIVIDENDS?* 58 (2019).

²⁶⁰ FTA gave SANDAG a "medium" rating for its affordable housing policies primarily because San Diego currently has little affordable housing along the Blue Line extension corridor. FED. TRANSIT ADMIN., U.S. DEP'T TRANSP., *supra* note 253.

²⁶¹ CHAPPLE & LOUKAITOU-SIDERIS, *supra* note 259, at 244–45. "In general, affordable housing production strategies can be categorized into those that generate funds to produce [housing] units and those that generate or incentivize the production of units." *Id.* at 244.

²⁶² Kathleen Ferrier, *About Us*, CIRCULATE SAN DIEGO, http://www.circulatesd.org/about_us [<https://perma.cc/2RTW-Z3TJ>] (last visited Oct. 13, 2020).

bonus program” and other land use policies that San Diego could put in place to incentivize affordable housing.²⁶³ These include reducing or eliminating parking space requirements per housing unit constructed, thereby providing more land area on site for building more units;²⁶⁴ recalculating city-mandated construction fees for developers who include more than the required number of affordable units;²⁶⁵ and increasing a building’s permitted total square footage, or floor area, beyond the zoning limits imposed by the size of the lot upon which the building sits.²⁶⁶ Each of these approaches would work to increase developer profits in exchange for adding affordable housing units in the TOD project.

Recently, San Diego began to move on some of these suggested land use proposals. For instance, in the 2019 state of the city speech, the Mayor proposed that within one-half mile of the proposed Blue Line extension, building height limits would be eliminated, density allowances would be increased, and the building permitting process would be expedited.²⁶⁷ In addition, following on the Mayor’s speech, the City Council voted to remove all minimum parking requirements in “transit priority areas.”²⁶⁸ Like San Diego, Indianapolis has also adopted policies to increase affordable housing along its BRT and other major bus routes.²⁶⁹ Because neither transit project is yet in operation the success of these

²⁶³ COLIN PARENT, TRANSIT ORIENTED DEVELOPMENT: A STRATEGY FOR THE CITY OF SAN DIEGO TO ADVANCE THE CLIMATE, AFFORDABILITY, AND THE ECONOMY, CIRCULATE SAN DIEGO, 8–12, https://d3n8a8pro7vnm.cloudfront.net/circulatesd/pages/520/attachments/original/1483663145/Circulate_San_Diego_-_Report_on_TOD_in_City_of_San_Diego.pdf [<https://perma.cc/S7L8-5QZ5>] (last visited Oct. 13, 2020).

²⁶⁴ *Id.* at 16–18.

²⁶⁵ *Id.* at 22–25.

²⁶⁶ *Id.* at 19–21.

²⁶⁷ Jennifer V. Grove, *Mayor Faulconer’s Housing Speech Sounded Good, but Will It Work?*, SAN DIEGO UNION-TRIB. (Jan. 21, 2019), <https://www.sandiegouniontribune.com/business/real-estate/sd-fi-mayor-housing-folo-20190121-story.html> [<https://perma.cc/BB2N-6VQ8>].

²⁶⁸ Alexander Nguyen, *San Diego City Council Votes to Repeal Minimum Parking Requirements for New Housing*, TIMES SAN DIEGO (Mar. 4, 2019), <https://timesofsandiego.com/politics/2019/03/04/san-diego-city-council-votes-to-repeal-minimum-parking-requirements-for-new-housing/> [<https://perma.cc/QSQ7-2CQ6>].

²⁶⁹ Hayleigh Colombo, *Group Launches \$15M Loan Fund for Housing near IndyGo Stops*, INDIANAPOLIS BUS. J. (Feb. 6, 2019), <https://www.ijb.com/articles/72352-group-launches-15m-loan-fund-for-housing-near-indygo-stops> [<https://perma.cc/4QJ4-EC49>]. Indianapolis’s Neighborhood Housing Partnership, with \$12,000,000 pledged by financial institutions and \$3,000,000 more in equity pledged to an Equitable TOD Fund, buys vacant and underused land and buildings along transit corridors for the purpose of renovating or building affordable housing. *Id.*

policy initiatives remains open, but there are, however, a number of examples in other cities of successful TOD affordable housing initiatives.²⁷⁰

D. *Denver Union Station and Value Capture*

As already noted, TOD requires more than a rapid transit line to succeed. It also requires that a TOD location be both physically ready for development and have the necessary market strength to draw in developers.²⁷¹ Denver recognized in 2001 that it had those ingredients in the old Union Station (“DUS”) that sat on a 19.5 acre site in the Lower Downtown Historic District.²⁷² At the time, the site was underperforming as a transit facility with only two AMTRAK trains arriving each day,²⁷³ and the surrounding acreage was being used as a surface parking lot for Coors Field.²⁷⁴ So the Regional Transit District (“RTD”), Denver’s public transit authority, purchased DUS, its rail yards and other vacant and derelict parcels,²⁷⁵ and city rights-of-way in the vicinity.²⁷⁶ Incentivized by the potential for TOD, RTD and its partners began work on developing a vision plan for the area with the historic station building at its center.²⁷⁷

The plan, completed in 2004, envisaged transforming the station into a multimodal transportation facility and the focal point of a vibrant

²⁷⁰ See, e.g., EPA, BROWNFIELDS: ASSETS IN TRANSIT-ORIENTED DEVELOPMENT AND EMISSIONS REDUCTIONS (2016), https://www.cclr.org/sites/default/files/Transit-Oriented%20Development%20BF%20Fact%20Sheet_7-17.pdf [<https://perma.cc/3EUW-KF3T>] (specifically discussing programs in Emeryville, Los Angeles, and Richmond, California).

²⁷¹ See CITY & CNTY. DENVER, TRANSIT ORIENTED DEVELOPMENT STRATEGIC PLAN 38–39 (2014), https://www.denvergov.org/content/dam/denvergov/Portals/193/documents/TOD_Plan/TOD_Strategic_Plan_FINAL.pdf [<https://perma.cc/JD5N-8YQY>] (identifying the City of Denver’s criteria for market readiness and development potential of successful TOD projects).

²⁷² CITY & CNTY. DENVER, DENVER UNION STATION MASTER PLAN (2004), https://www.denvergov.org/content/dam/denvergov/Portals/646/documents/planning/Plans/Denver_Union_Station_Master_Plan.pdf [<https://perma.cc/LY8W-MC98>].

²⁷³ *Id.* at 4. The two AMTRAK train arrivals are those of the famed California Zephyr traveling east and west between Chicago and San Francisco. See *California Zephyr*, AMTRAK, <https://www.amtrak.com/california-zephyr-train> [<https://perma.cc/6PYP-RE7F>] (last visited Oct. 13, 2020).

²⁷⁴ Jeff Wood, *Podcast: Bringing Back Denver’s Union Station*, STREETS BLOG USA (Sept. 20, 2018), <https://usa.streetsblog.org/2018/09/20/podcast-bringing-back-denvers-union-station/> [<https://perma.cc/H8RW-NRQP>].

²⁷⁵ RTD, DENVER UNION STATION 3 (2016), http://www.financingtransportation.org/pdf/events/6_sirois_batic_peer_exchange_dus.pdf [<https://perma.cc/W7BB-LWBY>].

²⁷⁶ For a comparative aerial view of the site before and after development, see *id.* at 2.

²⁷⁷ CITY & CNTY. DENVER, *supra* note 272.

mixed-use community on the underutilized acreage. The 19.5 acres of the station proper would be used to centralize connections for RTD's LRV lines, locate a new local and intercity bus facility, and become the hub of a planned commuter rail system as well as continuing to serve AMTRAK.²⁷⁸ The site would also include a bike station containing locker rooms and facilities for bicycle maintenance and storage.²⁷⁹ The plan proposed automobile parking too, but only to serve transit and future development.²⁸⁰ That development, which included the station site and another thirty acres of adjoining parcels, was to result from a public/private partnership to create a mixed-use community with appropriate densities and easy access for transit, pedestrians, and bicycles.²⁸¹ By 2016, the anticipated results of these ambitious TOD plans centering around the old station were showing not only RTD well on its way to developing DUS as a transit hub, but approximately 400,000 square feet of retail, 700 hotel rooms, and 2800 residential units, and almost 2,000,000 square feet of office space were constructed or in process of construction.²⁸² Overall, the total project had attracted \$1,000,000,000 in private investment.²⁸³

To proceed with such a large TOD project, the public/private partnership utilized a number of funding sources to support its \$519,000,000 budget.²⁸⁴ Those sources included both governmental and private entities. The federal share, approximately \$356,000,000, consisted of loans and grants,²⁸⁵ the largest grant coming from the FHWA under the umbrella of its program for Projects of National and Regional Significance ("PNRS").²⁸⁶ Under PNRS, Congestion Mitigation and Air Quality Improvement ("CMAQ") funds are available to state and local governments as grants

²⁷⁸ *Id.* at 12–17.

²⁷⁹ *Id.* at 15–16.

²⁸⁰ *Id.*

²⁸¹ *Id.* at 31.

²⁸² RTD, *supra* note 275, at slide 12.

²⁸³ Jon Murray, *Denver Plans to Repay Union Station Debt Sooner, and RTD Says It will Save \$134 Million*, DENVER POST (Feb. 9, 2017), <https://www.denverpost.com/2017/02/09/union-station-tax-debt-repayment/> [<https://perma.cc/SK4Z-TXE7>].

²⁸⁴ RTD, *supra* note 275, at slide 8.

²⁸⁵ *Denver Union Station*, U.S. DEP'T TRANSP., <https://www.transportation.gov/buildamerica/projects/denver-union-station> [<https://perma.cc/W4QS-ZCXD>] (last visited Oct. 13, 2020). FHWA and FTA provided \$54,800,000 in grants where the remainder was in the form of loans under Railroad Rehabilitation & Improvement Financing and the Transportation Infrastructure Finance and Innovation Act ("TIFIA"). *Id.*

²⁸⁶ For an overview the PNRS program, see *Projects of National and Regional Significance*, U.S. DEP'T TRANSP., https://ops.fhwa.dot.gov/freight/infrastructure/nat_reg_sig/index.htm [<https://perma.cc/5SJ5-ZDTA>] (last modified Apr. 8, 2020).

that help meet the requirements of the CAA.²⁸⁷ In 2004, at the time of the DUS visioning plan, Denver was not in compliance with EPA's ozone standard.²⁸⁸ As a result, Denver and RTD sought a CMAQ grant as part of their request for funding the DUS project.²⁸⁹

The overall success of the DUS project has allowed Denver and RTS to recapture the value of the old station and the underutilized land surrounding it. This value capture,²⁹⁰ which is a hoped-for result of TOD projects generally, has come from robust real estate and sales tax revenues that would not have been there without DUS.²⁹¹ This revenue, in turn has allowed Denver and RTD to refinance the original project loans at lower rates.²⁹² Further, because RTD, which owns the historic station building, has leased the building to an alliance of private developers,²⁹³ it has captured a continuous stream of revenue, which along with the savings from refinancing the federal loans, can be used for ongoing transit expansion.²⁹⁴

²⁸⁷ For an overview of the CMAQ program, see *Congestion Mitigation and Air Quality (CMAQ) Program: CMAQ Essentials*, U.S. DEP'T TRANSP., https://www.fhwa.dot.gov/environment/air_quality/cmaq/reference/cmaq_essentials/ [<https://perma.cc/ZFW3-E4HC>] (last updated Oct. 4, 2017). Projects for which CMAQ funds are available include transit improvements, and bicycle and pedestrian facilities and programs. *Id.*

²⁸⁸ *History of Ozone in Colorado*, COLO. DEP'T PUB. HEALTH & ENV'T, <https://www.colorado.gov/pacific/cdphe/ozone-planning-chronology> [<https://perma.cc/63NJ-QLY3>] (last visited Oct. 13, 2020). There appears to be some question in 2019 as to whether Denver complied with the ozone requirements under the Clean Air Act. On January 22, 2019, Wild Earth Guardians, a non-profit environmental group, filed notice of its intent to bring a citizen suit against EPA for its failure to make a determination regarding Denver's compliance with the ozone standard. A copy of the notice to sue is at https://www.epa.gov/sites/production/files/2019-02/documents/weg_noi_01222019.pdf [<https://perma.cc/D7CP-ZC9L>].

²⁸⁹ CITY & CNTY. DENVER, *supra* note 272, at 25. Once CMAQ funds are granted for transit projects, the administration of those funds is transferred from FHWA to FTA. See *Interim Program Guidance Under MAP-21*, FED. HIGHWAY ADMIN., U.S. DEP'T TRANSP. (Nov. 12, 2013), https://www.fhwa.dot.gov/environment/air_quality/cmaq/policy_and_guidance/2013_guidance/index.cfm [<https://perma.cc/2K9F-L36J>] (last updated Feb. 14, 2019).

²⁹⁰ For an overview of value capture, see *Value Capture*, FED. TRANSIT ADMIN., U.S. DEP'T TRANSP., <https://www.transit.dot.gov/valuecapture> [<https://perma.cc/3FX4-ZXXG>] (last updated May 20, 2020). "Value capture strategies generate sustainable, long-term revenue streams that can help repay debt used to finance the upfront costs of building infrastructure, such as transit projects. Revenue from value capture strategies can also be used to fund the operations and maintenance costs of transit systems." *Id.*

²⁹¹ See generally Murray, *supra* note 283.

²⁹² *Id.*

²⁹³ The website of the Union Station Alliance is DENVER UNION STATION, <https://unionstationindenvr.com> [<https://perma.cc/ZJ6Q-74RB>] (last visited Oct. 13, 2020).

²⁹⁴ For an overview of RTD projects, see *Projects*, RTD, <http://www.rtd-denver.com/projects.shtml> [<https://perma.cc/HSP4-HSKM>] (last visited Oct. 13, 2020).

E. Somerville (MA) Red Line and the Creation of a Walkable, Bikeable Community

Unlike Denver, which fashioned a TOD project out of fifty acres of underutilized and vacant land, Somerville initiated its project around an active urban center, Davis Square (“Davis”).²⁹⁵ The project was envisioned after Massachusetts Governor Sargent’s decision in 1970 to curtail all highway construction within the greater Boston area.²⁹⁶ Joined by city officials in Cambridge, officials in Somerville, which borders Boston on the northwest, advocated for an extension of Boston’s Red Line²⁹⁷ through both cities as an alternative to the abandoned highway projects.²⁹⁸ The extension as proposed included a subway stop at Davis. In anticipation of the Red Line’s arrival, Somerville established a task force of residents and merchants to advise on revitalizing the Davis area.²⁹⁹ Their overriding objective was to use the Red Line as a catalyst for redeveloping Davis as a commercial center while enhancing the residential character of the surrounding neighborhood.³⁰⁰

²⁹⁵ For a discussion of the history, planning processes, strategies, and obstacles overcome in the Davis Square project, see Cynthia Nikitin, *Davis Square Somerville, MA: Brief History*, PROJECT FOR PUB. SPACES, https://www.bershad.com/gb/davis-square/DavisSq_more_info.html [<https://perma.cc/F9WN-WW59>] (last visited Oct. 13, 2020).

²⁹⁶ See *supra* notes 70–71 and accompanying text.

²⁹⁷ Boston’s Red Line, operated by the Massachusetts Bay Transportation Authority (MBTA) is a traditional heavy rail subway line similar to the subways of the Washington DC Metro and San Francisco’s BART. For a description of and information related to the Red Line, see *Red Line*, MASS. BAY TRANSP. AUTH., <https://www.mbta.com/schedules/Red/line> [<https://perma.cc/DV28-5XDZ>] (last visited Oct. 13, 2020).

²⁹⁸ See *supra* text accompanying note 71.

²⁹⁹ See *Case Studies: Transit Oriented Development (TOD)*, EXEC. OFF. ENERGY & ENV’T AFF’S., <https://www.mass.gov/service-details/case-studies-transit-oriented-development-tod> [<https://perma.cc/6AG3-U5HE>] (last visited Oct. 13, 2020). In addition to involving the community in the planning process, in order to spur development around the Davis Red Line stop, the city created a “design review overlay district” to “ensure that redevelopment and new construction blends in with the existing built environment and encourages pedestrian activity.” *Id.*

³⁰⁰ TRANSP. RES. BD., *TRANSIT FRIENDLY STREETS: DESIGN AND TRAFFIC MGMT. STRATEGIES TO SUPPORT LIVABLE COMMUNITIES*, FED. TRANSIT ADMIN., U.S. DEP’T TRANSP. 32 (1998), https://nacto.org/wp-content/uploads/2016/04/2-2_Transit-Friendly-Streets_TCRP-Report-33_1998.pdf [<https://perma.cc/C6TN-ADFJ>]. In describing the success of the Davis TOD project, the report notes the role played by a sustained commitment development: “The 20-year revitalization of Davis Square has occurred, not as the result of one plan or initiative, but as a series of plans that have evolved over time as the needs of the area have changed. The square’s success is attributable to the city’s sustained commitments coupled with a very involved and energetic residential community.” *Id.*

By 1979, the task force had identified several issues that needed to be addressed in order to achieve their goal.³⁰¹ Not surprisingly, these included land use, real estate development, traffic, and physical improvements to enhance Davis's streetscape.³⁰² Also woven throughout the plan were elements designed to recreate Davis as a walkable, bikeable environment consistent with what has become the hallmark of TOD. For instance, with funds from FHWA's Urban Systems Program, Somerville reconstructed the streetscape to improve the pedestrian experience.³⁰³ Reconstruction included pedestrian safety islands, neck-downs at crosswalks, pedestrian-focused signage and street lighting, widened sidewalks, benches, and plantings.³⁰⁴ Additional funding from state agencies was used to construct new parks, renovate existing ones, and create street art.³⁰⁵ By the late 1980s, five years after Red Line service to Davis began, the vision of the task force to create a pedestrian-friendly environment seemed to have benefited both Davis and transit. For instance, between 1990 and 2013, Davis Red Line ridership more than doubled from 6,300 to 12,800 daily,³⁰⁶ and a majority of those riders were arriving at Davis by foot with only 13% arriving by automobile.³⁰⁷ One commentator noted that at Davis "park and ride" became dirty words and even "kiss and ride" drop offs were discouraged.³⁰⁸

Another pedestrian amenity in Davis, the Somerville Community Path ("SCP"), has become hugely popular not only with pedestrians, but also bicyclists.³⁰⁹ In conjunction with the arrival of the Red Line subway,

³⁰¹ CITY OF SOMERVILLE, DAVIS SQUARE NEIGHBORHOOD PLAN: PUBLIC REVIEW DRAFT 6 (2018), https://2xbcbm3dmbsg12akbzq9ef2k-wpengine.netdna-ssl.com/wp-content/uploads/2018/04/20180427-DSQ-Neighborhood-Plan_PublicReviewDraft_Reduced.pdf [<https://perma.cc/45ZT-HGVY>].

³⁰² *Id.* at 6.

³⁰³ FED. HIGHWAY ADMIN., U.S. DEP'T TRANSP., VALUE CAPTURE: TRANSIT ORIENTED DEVELOPMENT 2 (2018), https://www.fhwa.dot.gov/ipd/pdfs/fact_sheets/program_value_cap_transit_oriented_development.pdf [<https://perma.cc/VK87-ZB5J>].

³⁰⁴ EXEC. OFF. ENERGY & ENV'T AFF'S., *supra* note 299.

³⁰⁵ *Id.*

³⁰⁶ MASS. BAY TRANSP. AUTH., RIDERSHIP AND SERVICE STATISTICS 2-9 (2014), [https://old.mbta.com/uploadedfiles/documents/2014%20BLUEBOOK%2014th%20Edition\(1\).pdf](https://old.mbta.com/uploadedfiles/documents/2014%20BLUEBOOK%2014th%20Edition(1).pdf) [<https://perma.cc/R5LG-49JL>].

³⁰⁷ WE ARE THINK TANK, APPENDIX/HISTORY & RESOURCES ON MBTA GREEN LINE EXPANSION: TRANSIT ORIENTED DEVELOPMENT (TOD) URBAN CASE STUDY (DAVIS SQUARE, SOMERVILLE, MASS) 3-3 (2009), <http://www.wearethethinktank.org/readers/reader-vol4-appendix.pdf> [<https://perma.cc/EZC9-5BSV>].

³⁰⁸ Nitikin, *supra* note 295.

³⁰⁹ The friends of the Somerville Community Path list six bicyclist groups from Somerville and surrounding communities as supporters of SCP. "To the Charles River . . . And

railroad passenger and freight service through Davis on the surface was terminated, leaving for development the above-ground rail right-of-way.³¹⁰ Competing suggestions were offered for the right-of-way, one that would have added parking for shoppers and employees and one that would create a one-mile linear park and bikeway, SCP, connecting Davis by foot and bicycle with the final stop on the Red Line at Alewife in North Cambridge.³¹¹ Ultimately, SCP was chosen as the preferred use.³¹² By 2010, the success of SCP as part of the Davis TOD project had contributed to 10.1% of residents living within one-half mile of SCP walking to work, 4.8% cycling to work, and 33.5% taking public transit.³¹³ Building on this success, with funding from FHWA's CMAQ program, Somerville began work on extending SCP farther east to connect with a proposed bikeway adjacent to a planned extension of Boston's Green Line.³¹⁴

Overall, Davis TOD is viewed as a Somerville success story. Transformed from its decaying past, Davis today is a vibrant mixed-use urban center. Through thoughtful planning, foresight, and community involvement, Somerville has been able to retain and expand housing while developing Davis's retail, entertainment, and commercial character.³¹⁵ True

Beyond!!", FRIENDS CMTY. PATH, <http://pathfriends.org/scp/> [<https://perma.cc/65UJ-N2BE>] (last visited Oct. 13, 2020) (The Friends of the Community Path list six bicyclist groups from Somerville and surrounding communities as supporters of SCP).

³¹⁰ *Getting Ready for the T: A Rep. to the Community*, DAVIS SQUARE TASK FORCE, 9 (1976), <http://www.wearethethinktank.org/readers/reader-vol4-appendix.pdf> [<https://perma.cc/9P39-G7C4>]. A photo of railroad service traveling through Davis prior to Red Line service is at *Red Line*, BOSTON STREETCARS, <http://www.bostonstreetcars.com/red-line.html> [<https://perma.cc/UV5N-43ZC>] (last visited Oct. 13, 2020).

³¹¹ DAVIS SQUARE TASK FORCE, *supra* note 310.

³¹² *Progress/History of Community Path Greenways in Somerville and Surrounding Areas*, FRIENDS CMTY. PATH, <http://pathfriends.org/scp/Comm%20Path%20history%20w%20photos.pdf> [<https://perma.cc/4F8Y-259A>] (last visited Oct. 13, 2020).

³¹³ METRO. AREA PLAN. COUNCIL, THE COMMUNITY PATH EXTENSION: DATA METRICS AND TALKING POINTS 7 (2013), http://www.mapc.org/wp-content/uploads/2017/11/2013-06-07_Final-Metric-Report.pdf [<https://perma.cc/3QNF-BBR7>].

³¹⁴ *Residents Invited to Groundbreaking Ceremony for Community Path Extension*, SOMERVILLETIMES (May 12, 2013), <https://www.thesomervilletimes.com/archives/38034> [<https://perma.cc/BF8R-QTC8>]. For a detailed study of SCP, its impacts on commuting, development, environmental justice, and health, and its proposed extension, see METRO AREA PLAN. COUNCIL, *supra* note 313.

³¹⁵ EXEC. OFF. ENERGY & ENV'T AFF'S., *supra* note 299.

Davis Square is a vibrant urban center that boasts a mix of retail, office, institutional, residential and entertainment uses. Through careful planning and land assembly, the City integrated redevelopment of existing structures with new development of over 170,000 square feet of office and retail space, as well as new multi-family housing.

Id.

to the task force's original vision, Davis today is a walkable, bikeable district with the Red Line as its catalyst and centerpiece.

IV. INTERNATIONAL TRANSIT-ORIENTED DEVELOPMENT

A. Introduction

As discussed, TOD practices and strategies have been used in a variety of cities and neighborhoods throughout the United States. Although the concept of TOD began in the United States in the 1990s as a means of dealing with problems associated with urban sprawl,³¹⁶ TOD principles and the benefits derived therefrom have spread to countries and cities around the globe.³¹⁷ Although the phrase “transit-oriented development” is not used widely outside the United States, for example not in Europe,³¹⁸ its basic principles and strategies³¹⁹ are becoming popular even farther afield in some of Southeast Asia's thriving cities like Singapore.³²⁰ There, economic growth has resulted in increasing demands

³¹⁶ See Wangtu (Ato) Xu et al., *Transit-Oriented Development in China: Literature Review and Evaluation of TOD Potential Across 50 Chinese Cities*, 10 J. TRANSP. & LAND USE 743 (2017) (noting that “[a]lthough concepts similar to TOD were promoted before the 1990s, intentional TOD became popular when Peter Calthrope introduced it in his 1993 book ‘The Next American Metropolis.’”).

³¹⁷ *Id.* at 744 (discussing possible uses of TOD principles and practices in China).

³¹⁸ CASUAL (CO-CREATING ATTRACTIVE SUSTAINABLE URBAN AREAS AND LIFESTYLES), TRANSIT-ORIENTED DEVELOPMENT AND SUSTAINABLE URBAN PLANNING 2 (2016), <https://www.nordregio.org/publications/transit-oriented-development-and-sustainable-urban-planning/> [<https://perma.cc/W4V8-FNHF>].

³¹⁹ *Id.* at 1 (defining transit-oriented development from a European perspective: “Transit-oriented development (TOD) is generally considered to be mixed-use development near, and/or oriented to, public transport facilities. Common TOD traits include urban compactness, pedestrian and cycle-friendly environments, public and civic spaces near stations, and stations as community hubs. Typically, a multimodal TOD neighbourhood is built around a public transport station or stop (e.g., train station, metro station, tram stop, BRT stop (Bus Rapid Transit), bus stop, or even ferry stop), surrounded by relatively high-density development with progressively lower-density development spreading outward from the centre. TODs are generally located within a radius of 400 to 800 meters from the transit stop. This is considered to be an acceptable walking distance at the start or end of a journey by transit. In some parts of the world, the TOD approach reaches further than single locations towards a network or corridor approach, which aims at realigning entire urban regions around rail transport and away from the car. While these are the basic TOD tenets, the model has been revised to fit a variety of contexts (including low-density cities and regions).”).

³²⁰ Seth Tan & Poh M. Yi, *A lesson from Singapore's TOD*, JAKARTA POST (Dec. 14, 2019), <https://www.thejakartapost.com/academia/2019/12/14/a-lesson-from-singapores-tod.html> [<https://perma.cc/3MQC-EC84>].

being placed on its urban infrastructure, including the city's transportation systems.³²¹ So Singapore turned to TOD strategies as a means of addressing its mounting traffic congestion.³²² Today, Singapore is recognized as a city-state that successfully leveraged TOD techniques, practices, and strategies,³²³ serving as a model for other Southeast Asian cities.³²⁴ What follows is a discussion of two contemporary approaches to TOD, one in the European city of Munich and the other in the Asian city-state of Singapore.

B. TOD in Germany: Munich's "Central Rail Corridor"

Unlike many metropolitan areas in Germany, the Munich metropolitan area has witnessed an increase in population.³²⁵ From 1989 to 2007, the population grew from 1,200,000 to 1,300,000, and by the year 2025, the population is expected to reach a level of 1,500,000.³²⁶ The increase in population growth has fueled competition for land use and exacerbated metropolitan sprawl.³²⁷ Recognizing the need to develop a policy to accommodate its expanding population, city planners began developing a sophisticated growth strategy in the 1990s that "combines economic competitiveness with social protection, fairness, and environmental protection."³²⁸ The strategy included, among other elements, mixed-use development, brownfield sites, and transport corridors.³²⁹

Munich's statutory requirements for spatial planning helped to guide community planners as they strategized their approach to development.³³⁰ For example, a compulsory regional planning system governs Munich's Planning Region, which includes 186 municipalities within a fifty kilometer radius of Munich.³³¹ Public transportation planning is also controlled at the regional level through the Munich Transport and Tariff Association ("MTTA").³³² This tight control over the city's transportation system and its development has generated much success, for Munich is recognized

³²¹ *Id.*

³²² *Id.*

³²³ *Id.*

³²⁴ Tan & Yi, *supra* note 320.

³²⁵ Aidan While et al., *The Competition State, City-Regions, and the Territorial Politics of Growth Facilitation*, 45 ENV'T & PLAN. A: ECON. & SPACE 2379, 2384 (2013).

³²⁶ *Id.*

³²⁷ *Id.*

³²⁸ *Id.*

³²⁹ *Id.*

³³⁰ *Id.* at 2386.

³³¹ While et al., *supra* note 325, at 2396.

³³² *Id.*

as having the third best public transit system in the world.³³³ In existence for nearly fifty years, MTTA has witnessed a growth in annual passenger numbers from 360,000,000 in 1973 to nearly 700,000,000 in 2016.³³⁴

The Central Rail Corridor project, a contributor to this growth, was viewed by city planners as a strategic component of their TOD plan.³³⁵ The plan combined strong regional guidance and local insight aimed at determining relevant housing, business, and transportation needs.³³⁶ The overall plan incorporated ten TOD principles.³³⁷ The first principle of balancing density and scale with intimacy and the creation of people-friendly locations reflects the city's historical visions of design and construction.³³⁸ Buildings generally range in size from four to six stories for most structures within the Central Rail Corridor.³³⁹ The guiding policy for limiting the height of buildings within the Corridor is the community's desire to preserve the views that have been an important historical part of the Corridor for many years.³⁴⁰ Balancing density and scale with intimacy achieves an effective mix of human scale and compact development.³⁴¹

³³³ Máté Petrány, *These Ten Cities Have The Best Public Transit In The World*, JALOPNIK (July 25, 2014), <https://jalopnik.com/these-ten-cities-have-the-best-public-transit-in-the-wo-1610824583> [<https://perma.cc/67M9-3TBF>].

³³⁴ Alexander Freitag & Markus Haller, *Munich's Transport System: Infrastructure Development, Multimodality and Tariff Reform*, INTELLIGENT TRANSP. (Feb. 25, 2016), <https://www.intelligenttransport.com/transport-articles/18408/munichs-transport-system/> [<https://perma.cc/SJ25-BXSQ>].

³³⁵ Chris Hale, *The Mega-Project as Crux of Integrated Planning: Insights from Munich's Central Corridor*, 25 PLAN. PRAC. & RES., 587, 597 (2010).

³³⁶ *Id.* at 598.

³³⁷ *Id.* at 599–607 (Following are the ten TOD principles used in the Munich Central Rail Corridor Project: 1) built form should effectively balance density and scale with intimacy and the creation of people-friendly locations; 2) mixed-use zoning is essential for TOD; 3) planned new development must be linked-to, and supportive-of, transport outcomes; 4) effective multi-modal connectivity is vital; 5) convenient transit service levels are needed throughout the day and week; 6) major new TOD initiatives work best when positioned effectively within a comprehensive metropolitan/regional transit network; 7) capital investment commitments for transit in the corridor should be matched to scale and timing of development impacts; 8) a customer-service orientation is vital in making transit attractive to new residents and workers; 9) transit must be competitive with the car as a travel choice; and 10) arrivals to mass transit (i.e., rail) should be encouraged by other sustainable modes (walking, cycling, feeder buses) as much as possible.).

³³⁸ *Id.* at 600.

³³⁹ *Id.*

³⁴⁰ *Id.*

³⁴¹ Hale, *supra* note 335, at 600.

The second principle, mixed-use zoning, matches increased residential units supported by proximate business enterprises.³⁴² Unlike many municipalities in the United States where zoning requirements and restrictions guide many TOD practices and strategies, Munich operates primarily on a model of master-planning and design competition.³⁴³ Munich's master-planning process produces "strategically desirable development configurations, land uses, and a robust mix of uses that meet pre-identified housing and other urban needs."³⁴⁴ The third TOD principle holds that "planned new development must be linked-to, and supportive-of, transport outcomes," recognizing that Munich's highly effective rail transit infrastructure is a driving force in coordinating the city's needs for adequate housing, lifestyle desires, and population distributions within the Central Corridor.³⁴⁵ From the outset, city planners underscored the importance of emphasizing sustainable modes, such as public transportation, cycling, and walking, because limitations on new residential units and commercial development would not support an environment dependent on private passenger vehicle transportation.³⁴⁶

To address the fourth TOD principle of requiring effective "multi-modal connectivity" centers, city planners installed real-time connectivity instruments in buses.³⁴⁷ This in turn addressed the fifth TOD principle of providing residences and workers with convenient transit service throughout the day and week.³⁴⁸ The sixth principle recognizes that major new TOD initiatives work best when positioned effectively within a comprehensive metropolitan/regional transit network.³⁴⁹ For the Munich planners, this principle stems from Munich's stature of having one of the most effective and integrated rail systems in the world.³⁵⁰ The seventh TOD principle of matching capital investment to an appropriate scale of development activities seems simple enough at first, but is rarely achieved globally in TOD projects.³⁵¹ Munich's Central Corridor planners adhered to this principle by infusing capital investments in transit while concurrently investing in real estate development projects for residents and

³⁴² *Id.*

³⁴³ *Id.*

³⁴⁴ *Id.*

³⁴⁵ *Id.* at 601.

³⁴⁶ *Id.*

³⁴⁷ Hale, *supra* note 335, at 601.

³⁴⁸ *Id.* at 603.

³⁴⁹ *Id.*

³⁵⁰ *Id.*

³⁵¹ *Id.* at 604.

businesses.³⁵² The eighth principle, focusing on customer service as a means of making public transportation attractive to new residents and workers, dictated the requirement of establishing quality standards for public transportation, such as “walkable access to transit,” “traffic signal prioritization for buses and trams,” “vehicle standards (cleanliness and accessibility . . .),” and systems for “communication with passengers.”³⁵³

The ninth TOD principle, making public transportation competitive with cars as a travel choice, presented challenges for project planners because Munich’s population includes many high-income residents who have a longstanding affinity with automobile ownership and usage.³⁵⁴ To combat this situation, project planners investigated ways of making alternative modes of transportation like walking, biking, and public transportation more appealing than automobile driving.³⁵⁵ The tenth and final principle of aligning rail travel with the other sustainable transportation modes of walking, cycling, and busing, was addressed by limiting the number of parking spaces for vehicles at “park and ride” stations.³⁵⁶ This strategy runs contrary to the approach used in many United States cities where “park and ride” facilities are the norm.³⁵⁷

Munich’s TOD planning and implementation strategies for its Central Rail Corridor project acknowledge the need to embrace sustainability practices that mitigate urban sprawl and its attendant reliance on passenger vehicles.³⁵⁸ Improving the attractiveness and viability of using public transportation as a vital TOD element and resource creates an environment where “[priority is given] to inner city developments on brown-fields, to increas[ing] housing density and adding new variety in city districts . . . already well developed, and [to increasing] density of urban development in the immediate catchment areas of public mass transport.”³⁵⁹

C. *TOD in Singapore: The Neighborhood Principle*

The city-state of Singapore, officially known as the Republic of Singapore, has become a significant center of banking and finance in

³⁵² *Id.*

³⁵³ Hale, *supra* note 335, at 604.

³⁵⁴ *Id.* at 605–06.

³⁵⁵ *Id.* at 605.

³⁵⁶ *Id.* at 607.

³⁵⁷ See generally PAUL SORENSEN ET AL., MOVING LOS ANGELES: SHORT-TERM POLICY OPTIONS FOR IMPROVING TRANSPORTATION 229–38 (2008).

³⁵⁸ Enrica Papa et al., *An Accessibility Planning Tool for Network Transit Oriented Development: SNAP*, 2 PLANUM J. URBANISM 1, 2 (2013).

³⁵⁹ *Id.*

Southeast Asia.³⁶⁰ Along with Singapore's rising reputation as a financial hub, many of its residents have experienced greater prosperity, which in turn has strained the limited land mass of the island and exacerbated traffic congestion.³⁶¹ Further, with this increased affluence, Singapore experienced a population growth rate of 10% from 1997 to 2004, and a 20% growth rate from 2004 to 2008.³⁶² Recognizing the constraints placed on the city because of its expanding economy, growing population, and high-density urban areas, city officials have taken a dual approach in promoting sustainable development by maintaining strong urban-based governance and engaging in comprehensive long-term planning.³⁶³ Thus, a robust governmental unit, the Urban Redevelopment Authority ("URA"), prepares the comprehensive long-term strategic plan that guides Singapore's development needs as far out as forty to fifty years.³⁶⁴

The vast majority of Singapore's population lives in public housing, which for the most part include resident-owned units.³⁶⁵ The neighborhoods within which the units are located provide a full range of amenities, including "commercial spaces, schools, transport nodes, and parks."³⁶⁶ To accomplish their development goals, city officials follow a TOD strategy that emphasizes effective transport capacity for the city's highly dense neighborhoods,³⁶⁷ guided by a comprehensive sustainability philosophy that influences the planning of new neighborhoods.³⁶⁸ This philosophy is founded upon the "Neighborhood Principle" concept. With a goal of enhancing efficiency and connectivity, the Neighborhood Principle clusters several neighborhoods around a town center. This structural design offers residents easy access to a variety of essential services.³⁶⁹ In the latest iteration of the neighborhood concept, TOD takes the form of small residential estates, where most facilities and services are fully integrated

³⁶⁰ Sreyus Palliyani & Der-Horng Lee, *Case Study: Sustainable Transport Policy—An Evaluation of Singapore's Past, Present and Future*, 1 J. INFRASTRUCTURE, POL'Y & DEV., 112, 113 (2017).

³⁶¹ *Id.*

³⁶² *Id.* at 114.

³⁶³ SING. MINISTRY OF FOREIGN AFF'S., SUSTAINABLE DEVELOPMENT GOALS: TOWARDS A SUSTAINABLE AND RESILIENT SINGAPORE 37 (2018), https://sustainabledevelopment.un.org/content/documents/19439Singapores_Voluntary_National_Review_Report_v2.pdf [<https://perma.cc/2XH7-EWQ4>].

³⁶⁴ *Id.*

³⁶⁵ *Id.*

³⁶⁶ *Id.*

³⁶⁷ *Id.* at 38.

³⁶⁸ *Id.* at 37.

³⁶⁹ SING. MINISTRY OF FOREIGN AFF'S., *supra* note 363, at 37.

with easy access to public transportation.³⁷⁰ An important ingredient in Singapore's TOD success is its system of tight controls and checkpoints in the overall planning process.³⁷¹

Complementing the Neighborhood Principle, Singapore's TOD strategy "guarantee[s] the accessibility of public transport to all, including the elderly, disabled, visually-handicapped, and families with young children."³⁷² For example, approximately 85% of Singapore's rail stations offer barrier-free paths from station entrance to train platform.³⁷³ Priority queues are also becoming a common feature for the boarding of trains and buses.³⁷⁴ To encourage further use of public transportation, construction of covered walkways has become very popular, which affords residents and workers the opportunity to access train stations, buses, and neighborhood stores, shops, and other amenities without concern about inclement weather.³⁷⁵ The city has already constructed over 120 kilometers of covered walkways with a goal of completing another 80 kilometers in the near future.³⁷⁶

Much of Singapore's TOD is captured in its "Walk Cycle Ride SG" plan.³⁷⁷ With an ambitious goal of making walking, cycling, and riding public transport an integral part of everyday life in Singapore, strict requirements mandate that developers must design and construct effective walkways and bikeways, including the construction of ramps, bicycle lots, and supporting facilities.³⁷⁸ To discourage the use of automobiles for commuting and everyday chores, Singapore initiated a program called the National Cycling Plan ("NCP") that foresees cycling not just as a convenience, but as a vital part of the city's transportation system.³⁷⁹ Full implementation of NCP will establish an integrated system of intra-town, off-road cycle trails that provide convenient access to transportation nodes and centers for shopping, services, and recreational activities.³⁸⁰ Impressively, the plan calls for over 700 kilometers of cycle trails by the year 2030.³⁸¹

³⁷⁰ *Id.*

³⁷¹ *Id.* at 38.

³⁷² *Id.*

³⁷³ *Id.*

³⁷⁴ *Id.*

³⁷⁵ SING. MINISTRY OF FOREIGN AFF'S., *supra* note 363, at 38.

³⁷⁶ *Id.*

³⁷⁷ *Id.*

³⁷⁸ *Id.*

³⁷⁹ *Id.*

³⁸⁰ *Id.*

³⁸¹ SING. MINISTRY OF FOREIGN AFF'S., *supra* note 363, at 38.

In sum, Singapore continues to develop new TOD strategies and refine those already in place.³⁸² Its success in implementing TOD can serve as an example for other heavily populated Southeast Asian locations.³⁸³ For example, Indonesia, the fourth most populous nation in the world with more than half its population living on the island of Java, could certainly benefit by adopting Singapore's successful TOD strategies.³⁸⁴

CONCLUSION

Today, in both the domestic and international arenas TOD is a movement with promise. It has the potential to improve the quality of urban life in a substantial and sustainable fashion. To be truly transformative, however, the stars have to align so that funding by government, incentives for developers, and housing for transit-dependent populations come together to promote the goals of TOD—increasing transit ridership, promoting congestion relief and environmental benefits, and improving safety and convenience for pedestrians and bicyclists.³⁸⁵

In a nutshell, as practiced in both Munich and Singapore, regional and local governmental agencies must coordinate in visioning TOD.³⁸⁶ This coordination regarding TOD projects and the transit facilities central to TOD must be undertaken, however, with an ear to the people and neighborhoods that will benefit from them. The examples of the mass destructions of whole neighborhoods required by highway construction in the 1950s and 1960s in Chicago and Boston speak to this need.³⁸⁷ Additionally, governmental agencies tasked with the responsibility of managing land use and zoning must be willing to establish policies that provide incentives to private developers to build TOD projects that increase residential densities critical to viable rapid transit, for as Indianapolis recognized, TOD requires more than just a transit infrastructure.³⁸⁸ These incentives would include, among others, removing or lessening building height restrictions within TOD zones and reducing automobile parking requirements per unit of housing, thereby allowing developers to increase the number of sellable housing units within the TOD zone.

³⁸² Palliyani & Lee, *supra* note 360, at 114.

³⁸³ Tan & Yi, *supra* note 320.

³⁸⁴ *Id.*

³⁸⁵ FED. TRANSIT ADMIN., U.S. DEP'T TRANSP, *supra* note 12.

³⁸⁶ See *supra* notes 329–43, 364–65, and accompanying text.

³⁸⁷ See *supra* notes 63–71 and accompanying text.

³⁸⁸ See *supra* notes 223–25 and accompanying text.

With the creation of new housing convenient to transit in city centers, however, comes the potential for increased property values, taxes, and rents, often resulting in the displacement of low-income residents. To limit such displacement, local governments must be willing to act, as San Diego recognized,³⁸⁹ to incentivize the development of affordable housing units within TOD zones. Of course, local governments along with private developers and low-income residents can benefit from TOD when publicly owned facilities are located within those zones. The value captured through renting and leasing these public facilities, which occurred with Denver's Union Station project, can contribute to further expansions of public transit and accommodating other environmental initiatives.³⁹⁰ Finally, the elephant in the room in most major United States TOD projects is the federal government. Large projects like Atlantic Station³⁹¹ and small projects like building a walkable, bikeable Davis Square³⁹² often come to fruition only with federal funding.

In the end, TOD is a collaborative effort across all levels of government working together with both public and private sector interests. It is a balancing act with the potential to meet its stated objectives. To date, as shown in the projects reviewed in this Article, TOD is showing movement in the right direction.

³⁸⁹ See *supra* notes 260–65 and accompanying text.

³⁹⁰ See *supra* notes 289–93 and accompanying text.

³⁹¹ See *supra* notes 162–68 and accompanying text.

³⁹² See *supra* notes 303–04, 314 and accompanying text.