NOTE

PLANES, TRAINS & AUTOMOBILES: REGULATING THE TRANSPORTATION TECHNOLOGIES OF TOMORROW

ADAM P. WALD*

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* Boston University School of Law, J.D. 2019. Associate, Meltzer, Lippe, Goldstein & Breitstone, LLP. I would like to thank Professor Jay Wexler, Olivia Share, Dana Dobbins, and the editors of the Boston University Journal of Science & Technology Law for their invaluable guidance and insight throughout the editorial process.

I. INTRODUCTION

On the morning of July 20, 2017, Elon Musk, the transportation magnate behind such ventures as Tesla Motors, SpaceX, and The Boring Company,[1] issued the following tweet: "Just received verbal govt approval for The Boring Company to build an underground NY-Phil-Balt-DC Hyperloop. NY-DC in 29 mins."[2] In the hours following Musk's tweet, journalists scrambled to determine who had given the aforementioned verbal government approval — eventually coming to learn that the White House, to the exclusion of state and local decision-makers, had issued it.[3]

Unfortunately for Musk, coordination with state and local actors is a necessary evil for all who hope to initiate interstate transportation projects. Recent attempts at fostering modernization in transportation have largely relied on federal legislative solutions which appropriate funds to, and vest project management in, state actors.[4] The result of this shared system of federalism is that many approved, federally funded, transportation infrastructure projects exist solely as archived schematics, having never survived the gauntlet of state and local politics.[5]

This note envisions a regulatory regime under which large-scale innovative infrastructure projects, as opposed to minor modifications of centuries-old technologies, are possible. For this to be a reality, authorization, funding, and management of transportation programs would need to occur at the federal level, where long term national planning is not subject to the sort of fluctuations that have come to accompany state-level input into contemporary federal transportation projects.[6]

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[1] Andrew Smith, *Who is Elon Musk? Tech Billionaire, SpaceX Cowboy, Tesla Pioneer – and Real Life Iron Man*, TELEGRAPH (May 24, 2017, 4:20 PM), http://www.telegraph.co.uk/technology/0/elon-musk-tech-billionaire-spacex-cowboy-real-life-iron-man/ [https://perma.cc/6WNV-65H4].

[2] Elon Musk (@elonmusk), TWITTER (July 20, 2017, 8:09 AM), https://twitter.com/elonmusk/status/888053175155949572 [https://perma.cc/NG8J-CWQ6].

[3] Michael Laris & Brian Fung, *Elon Musk Says He has 'verbal govt approval' for D.C.-to-New York Hyperloop*, WASH. POST (July 20, 2017), https://www.washingtonpost.com/local/trafficandcommuting/musk-says-he-has-verbal-approval-for-dc-to-new-york-hyperloop/2017/07/20/0754628e-6d62-11e7-b9e2-2056e768a7e5_story.html [https://perma.cc/KN4E-36FV]; Danielle Muoio, *Elon Musk Sent Another Cryptic Tweet About His Plan to Build a Hyperloop that Could Travel Between NY and DC in 29 Minutes*, BUS. INSIDER (July 21, 2017, 12:03 AM), https://www.businessinsider.com.au/elon-musk-hyperloop-verbal-white-house-2017-7 [https://perma.cc/UG8N-UYBE].

[4] *See infra* Section II.B.

[5] *See id.*

[6] For a discussion of some such projects, including abandoned high-speed rail lines in both Wisconsin and Ohio, as well as Florida's now-privately funded "fast train," see *infra* notes 30-46 and accompanying text.

First, this Note will discuss the degree to which failed attempts at modernizing an archaic and outdated system of interstate transportation infrastructure have come to define the current state of transportation innovation in the United States. Those failures are the result of two problems: (1) "lock-in," a phenomenon whereby existing transportation technologies limit the scope of transportation innovation to those technologies that fit within an established framework; and (2) the politicization of federal funding for interstate transportation projects, which has led individual state and local actors to vacillate in their support for said projects and consequently, has forced those projects to fold.

This Note will further assert that in order to mitigate the problems of lock-in and state-level politicization of federal infrastructure projects, legislators should look to the Natural Gas Act as a template for crafting a regulatory regime that supports and facilitates modernization and development of innovative technologies in mass transit. In so asserting, this Note will discuss the strengths of the Natural Gas Act — near-complete federal preemption of state law, a right of federal eminent domain for pipeline developers, agency oversight which conditions project permitting on the degree to which a pipeline will serve the public good and an exemption from federal control for wholly intrastate projects — and the applicability of those strengths to the transportation context.

II. THE CURRENT STATE OF TRANSPORTATION INNOVATION

A. Lock-In: Transportation Innovation is Dictated by, and Limited to, Existing Platforms

Advances in computing notwithstanding, United States transportation technology exists in a fixed continuum. Innovation extends, for the most part, only as far as existing infrastructure will allow it.[7] Unlike many other technologies, transportation systems are largely subject to lock-in, wherein the technological improvements made at and around a transportation system's genesis — the purpose of which are to solve problems existing at that moment in time — serve to incentivize innovation which is directed to and builds upon the existing elements of that system.[8] This incentive is rooted in the reality that such innovation is necessarily less costly than would be the creation of a new transportation system.[9] Consequently, a substantial brunt of major innovation occurs at the moment of a transportation system's inception.[10] That innovation dictates the framework within which future advancements are likely to occur, limiting said advancements to concepts that can fit within that existing framework.[11]

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[7] William L. Garrison, *Innovation and Transportation's Technologies*, 34 J. ADVANCED TRANSP. 31, 52-54 (2000).

[8] *Id.* at 52-53.

[9] *Id.*

[10] *Id.* at 52-54.

[11] *Id.*

As a result, oftentimes the most widely implemented transit technologies are not the best, but rather simply the ones that happen to be introduced first.[12] This issue is not merely an academic finding, it is an evident aspect of daily life. Where the United States federal government once made good on its commitment to put a man on the moon within a decade,[13] it has largely failed to honor its commitment to implement modern transportation technologies,[14] regardless of the degree to which such technologies have taken hold elsewhere.[15]

To some degree, however, it is not too late. The United States still has the opportunity to set the global standard for innovative transportation infrastructure, as global innovation in transportation is likewise symptomatic of lock-in, albeit to an arguably lesser degree.[16] Despite limited breakthroughs in the middle of the twentieth century, the platforms upon which those breakthroughs occurred — airplanes, railroads, and automobiles — are relics of a bygone era, with many of the more 'recent' innovative advancements in their technology, such as Japan's Tōkaidō Shinkansen high-speed rail system and jet-engine propelled airplanes, coming in the middle of the twentieth century.[17]

B. Congressional Attempts at Modernization of National Transportation Infrastructure Have Failed

In the United States, the administrative landscape pervading transportation infrastructure projects makes the problem of lock-in more acute. In the late 2000s, Congress passed two major pieces of legislation regarding the modernization of the U.S. transportation system. The Passenger Rail Investment

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[12] *Id.*

[13] President John F. Kennedy, Address at Rice University on the Nation's Space Effort: We Choose to Go to the Moon (Sept. 12, 1962) (transcript available at https://er.jsc.nasa.gov/seh/ricetalk.htm). More than mere rhetoric, the United States' commitment to innovation *vis-à-vi* NASA is evident in its willingness to fund the agency. NASA's percentage of total U.S. budgetary spending peaked in 1966 at 4.41% and has since dropped precipitously, representing what has been estimated to amount to 0.47% of total U.S. spending in 2015. *Nasa Budgets: US Spending on Space Travel Since 1958*, GUARDIAN: DATABLOG (Feb. 1, 2020), https://www.theguardian.com/news/datablog/2010/feb/01/nasa-budgets-us-spending-space-travel [https://perma.cc/AF2P-NDTF].

[14] *See infra* Section II.B.

[15] Richard Nunno, *Fact Sheet: High Speed Rail Development Worldwide*, ENVTL. & ENERGY STUDY INST. (July 19, 2018), https://www.eesi.org/papers/view/fact-sheet-high-speed-rail-development-worldwide [https://perma.cc/6TU8-UGNW] (discussing global development of high-speed rail infrastructure, and entitling the section regarding high-speed rail in the United States as "United States: Lagging Behind but Catching Up?").

[16] *See, e.g.*, Jack E. Doomernik, *Performance and Efficiency of High-Speed Rail Systems*, 8 TRANSP. RES. PROCEDIA 136, 141-43 (2015).

[17] For example, the jet engine was first used to successfully power an aircraft in 1939. Lee S. Langston, *Gems of Turbine Efficiency*, 136 MECHANICAL ENGINEERING 76, 76 (2014). Japan's Tōkaidō Shinkansen high-speed rail began service in 1964. Christopher P. Hood, *From Polling Station to Political Station? Politics and the Shinkansen*, 18 JAPAN F. 45, 48 (2006).

and Improvement Act of 2008 (PRIIA)[18] established a regime in which states create rail plans that serve as the basis for federal rail investments within the state.[19]

The American Recovery and Reinvestment Act of 2009 ("ARRA") furthered PRIIA's ends, utilizing its framework to distribute more than $8 billion in available funds.[20] "State and local governments or transit agencies,"[21] including "U.S. territories, transit agencies, port authorities, metropolitan planning organizations (MPOs), and other political subdivisions of [s]tate or local governments" are eligible to receive funds under the ARRA.[22] To date, the Department of Transportation has been the primary entity distributing ARRA transit funding and has done so via initiatives such as the High-Speed Rail and Transportation Investment Generating Economic Recovery (TIGER) program[23] as well as its successor, the Better Utilizing Investments to Leverage Development ("BUILD") Transportation Discretionary Grants program.[24]

To qualify for ARRA funding, a state must list a project as part of its state rail plan[25] — a document, issued by the state's rail transportation authority seeking federal rail funding and approved by the Secretary of Transportation — which both expresses that state's policy positions on transportation and serves as the basis for future rail investment in that state.[26] Adoption of a state rail plan requires consideration of ongoing regional transportation projects, as well as the recommendations of regional agencies, authorities, and municipalities.[27] As a result of this limitation, the attainment of ARRA's goal — a transportation system in which high-speed rail reduces national dependence on automobile

[18] Passenger Rail Investment and Improvement Act of 2008, Pub. L. No. 110-432, 122 Stat. 4848 (codified in scattered sections of 49 U.S.C).

[19] Passenger Rail Investment and Improvement Act of 2008 § 303(a), 49 U.S.C. § 22703(a)(4) (2012).

[20] American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, Title XII, 123 Stat. 115, 208 (2009); U.S. DEP'T OF TRANSP., SHOVEL WORTHY: THE LASTING IMPACTS OF THE AMERICAN RECOVERY AND REINVESTMENT ACT ON AMERICA'S TRANSPORTATION INFRASTRUCTURE 5 (2016), https://www.transportation.gov/sites/dot.gov/files/docs/American%20Recovery%20and%20Reinvestment%20Act%20Final%20Report.pdf [https://perma.cc/7GFL-KXC8].

[21] American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, Title XII, 123 Stat. 115, 203 (2009).

[22] Notice of Funding Opportunity for the Department of Transportation's National Infrastructure Investments Under the Consolidated Appropriations Act, 2017, 82 Fed. Reg. 42,426 (Sept. 7, 2017).

[23] U.S. DEP'T OF TRANSP., *supra* note 20, at 14-15.

[24] *BUILD Discretionary Grants*, U.S. DEP'T OF TRANSP., https://www.transportation.gov/BUILDgrants [https://perma.cc/9WQW-FXTL].

[25] 49 U.S.C. § 24402(b)(1) (2012).

[26] 49 U.S.C. §§ 22701-06 (2012).

[27] 49 U.S.C. § 22704(b) (2012); Requirements for State Rail Plan, 49 C.F.R. § 266.15(a) (2018).

transport and aviation[28] — is left to the divergent and inconsistent whims of numerous states and localities.

Predictably, high-speed rail has not taken hold in the manner PRIIA's and ARRA's proponents envisioned.[29] For example, despite having allocated more than $11 billion to the attainment of a national high-speed rail system, ARRA has primarily funded upgrades to Amtrak's Acela service — which, even at top-speeds, is still far slower than its Japanese counterpart.[30] This is due to a number of factors including an underappreciation for the politicization of, and vacillation amongst, state and local government support for large high-speed rail projects.[31]

For example, in March of 2011, Florida Governor Rick Scott rejected $2.4 billion of federal ARRA funding for a high-speed rail project that was supposed to connect the cities of Tampa and Orlando, which Governor Scott referred to as a "spending boondoggle."[32] In its stead, All Aboard Florida, a private subsidiary company to Florida East Coast Industries, has invested $3 billion into a "fast train" called "Brightline,"[33] which is a slower alternative to the high-speed rail

[28] *Lagging Behind: The State of High-Speed Rail in the United States: Hearing Before the Subcomm. on Transp. & Pub. Assets of the H. Comm. on Oversight and Gov't Reform*, 114th Cong. 7-9 (2016) (statement of Sarah Feinberg, Administrator, Federal Railroad Administration).

[29] *See id.* at 2-4 (statement of Rep. Rodney Davis).

[30] Ron Nixon, *$11 Billion Later, High-Speed Rail is Inching Along*, N.Y. TIMES (Aug. 6, 2014), https://www.nytimes.com/2014/08/07/us/delays-persist-for-us-high-speed-rail.html [https://perma.cc/Q5TT-PSTN].

[31] *See, e.g.*, Janet Moore, *GOP Legislators Halt Minnesota-Wisconsin High-Speed Rail Study*, STAR TRIB. (Jan. 9, 2018), http://www.startribune.com/not-everyone-on-board-for-mn-high-speed-rail/468357413/ [https://perma.cc/7A6C-TRRS] (quoting Rep. Paul Torkelson and Sen. Scott Newman, two Republican members of the Minnesota state legislature and the chairmen of the state Senate and House transportation committees, as explaining their role in preventing further spending to complete an environmental impact study because "Minnesota should not be squandering precious tax dollars — whether local, state or federal — on a wasteful project actively opposed by other states whose support is necessary to proceed").

[32] Jennifer Grzeskowiak, *High-Speed Rail Struggles to Build Steam*, AM. CITY & COUNTY, Apr. 2011, at 22; Michael Cooper, *How Flaws Undid Obama's Hope for High-Speed Rail in Florida*, N.Y. TIMES (Mar. 11, 2011), https://www.nytimes.com/2011/03/12/us/12rail.html [https://perma.cc/7635-3NED].

[33] Rene Rodriguez, *The Massive Station is Rising. But the Train Service is Not Quite Ready to Roll*, MIAMI HERALD (Aug. 8, 2017, 12:01 AM), http://www.miamiherald.com/news/business/real-estate-news/article165962727.html. The Brightline project is a "fast train" rather than a high-speed rail. *Work Begins — Finally — on Miami-to-Orlando Fast Train*, MIAMI HERALD (Aug. 25, 2014, 7:48 AM) http://www.miamiherald.com/news/business/article1981627.html. Some have alleged that Florida Governor Rick Scott's administration "secretly assist[ed]" the project via state investment in infrastructure such as a transportation hub at Orlando International Airport. *Id.*

project that it replaced.[34] Brightline began service on January 13, 2018, seven years after its more ambitious predecessor was shelved.[35]

Likewise, in the wake of his 2010 election as Governor of Wisconsin, Governor Scott Walker requested the reallocation of $810 million in ARRA funding which had been allocated to build a high-speed rail line between Madison and Milwaukee.[36] He hoped to utilize the monies to instead fund "infrastructure projects," including road and bridge development.[37] The Department of Transportation refused to allow Governor Walker to reallocate the funds, resulting in Wisconsin's forfeiture of the allocation.[38] Governor Walker would later petition for some of the funds surrendered by Florida in

[34] As a general matter, per the Federal Railroad Administration "high-speed rail" refers to rail service with top speeds between 110 and 150 miles per hour. FED. R.R. ADMIN., U.S. DEP'T OF TRANSP., VISION FOR HIGH-SPEED RAIL IN AMERICA 2 (2009), https://www.fra.dot.gov/eLib/Details/L02833 [https://perma.cc/B2SR-H934]; DAVID RANDALL PETERMAN, JOHN FRITTELLI & WILLIAM J. MALLET, CONG. RESEARCH SERV., R42584, THE DEVELOPMENT OF HIGH SPEED RAIL IN THE UNITED STATES: ISSUES AND RECENT EVENTS 5 (2013). "Fast trains" such as Brightline — also categorized as "higher speed rail" — have top speeds between 90 and 110 miles per hour. *Id.* Florida's high-speed rail project was to "briefly reach speeds of 168 miles per hour." WENDELL COX, REASON FOUND., THE TAMPA TO ORLANDO HIGH-SPEED RAIL PROJECT: FLORIDA TAXPAYER RISK ASSESSMENT 17 n.5 (2011), https://reason.org/wp-content/uploads/files/florida_high_speed_rail_analysis.pdf [https://perma.cc/UHZ3-DSKX]. Brightline, on the other hand, has a top speed of 120 miles per hour, and "will run even slower – around 80 mph – during [its] rollout." Samantha Raphelson, *Florida Set to Launch Country's First Private High-Speed Train Service*, NAT'L PUB. RADIO (Dec. 7, 2017, 4:25 PM), https://www.npr.org/2017/12/07/569183423/florida-set-to-launch-countrys-first-private-high-speed-train-service [https://perma.cc/9WGD-RDLZ].

[35] Keith Barrow, *Brightline Begins Passenger Operations*, INT'L RAILWAY J. (Jan. 15, 2018), http://www.railjournal.com/index.php/north-america/brightline-begins-passenger-operations [https://perma.cc/TY3N-GSCC].

[36] Cooper, *supra* note 31.

[37] Clay Barbour & Mary Spicuzza, *$810 Million Madison-to-Milwaukee Passenger Rail Project Probably Dead*, WIS. ST. J. (Nov. 9, 2010), http://host.madison.com/wsj/news/local/govt-and-politics/million-madison-to-milwaukee-passenger-rail-project-probably-dead/article_c5b19d5c-eb76-11df-9da3-001cc4c03286.html. The state eventually settled with Spanish train manufacturer Talgo, who had assembled trains the for project before Walker's election, for roughly $50 million. Jason Stein, *Talgo to Keep Trains, Get $10 Million More in Settlement*, MILWAUKEE J. SENTINEL (Aug. 19, 2015), http://archive.jsonline.com/news/wisconsin/talgo-to-keep-trains-get-10-million-more-in-settlement-b99560687z1-322348321.html [https://perma.cc/J56X-L4MZ]. Talgo kept the trains as part of its settlement with the state. *Id.*

[38] Steve Kastenbaum, *LaHood to States: Proceed with Rail Projects or Give up Stimulus Funds*, CNN (Nov. 17, 2010, 7:54 AM), http://www.cnn.com/2010/POLITICS/11/09/lahood.transportation.stimulus/index.html [https://perma.cc/VEY7-7Y7X]; *see* Grzeskowiak, *supra* note 31, at 22.

2011, with the intent of improving an existing commuter rail line.[39] Ohio similarly lost $400 million in ARRA funding for the "Ohio Hub" project — a line connecting Cleveland, Columbus, Dayton, and Cincinnati — when then Governor-Elect, John Kasich, premised acceptance of the ARRA funding on its reallocation.[40]

The lesson of Florida, Wisconsin, and Ohio is simple: high-speed rail projects are "a political football."[41] While the true basis for each Governor's refusal to accept federal funding for high-speed rail is unclear — with some claiming that the allocations in question represented wasteful government spending, but later seeking to recapture those allocations for use in similar projects[42] — it seems evident that such rejections were politically motivated. Each Governor was a member of the Republican party,[43] which would not have been motivated to offer a first-term opposition-party President a major policy victory[44] —

[39] Grzeskowiak, *supra* note 31, at 22.

[40] Kastenbaum, *supra* note 37. Ohio's statewide rail plan, last updated eight months prior to John Kasich taking office, still includes the Ohio Hub project — a vestigial reminder of unrealized potential. *See* OHIO RAIL DEV. COMM'N, OHIO STATEWIDE RAIL PLAN 10-10 (May 10, 2010).

[41] Adam Nagourney, *A $100 Billion Train: The Future of California or a Boondoggle?*, N.Y. TIMES (July 30, 2018), https://www.nytimes.com/2018/07/30/us/california-high-speed-rail.html [https://perma.cc/9FPU-EBSK] (quoting Brian Kelly, the head of California's high-speed rail authority, as saying that a state-wide high-speed rail project "has been a political football for some time").

[42] Kastenbaum, *supra* note 37; Dinesh Ramde, *Walker Seeks $150M for Milwaukee-to-Chicago Train Upgrade*, WIS. ST. J. (Mar. 29, 2011) (noting that Governor Scott Walker later attempted to secure federal funding to develop an existing commuter rail line); *Work Begins — Finally — on Miami-to-Orlando Fast Train*, *supra* note 33 (explaining that some have alleged that Governor Scott's administration used state funds to assist the private entity that has undertaken the construction and maintenance of Florida's new "fast train").

[43] CHRIS EDWARDS, CATO INST., FISCAL POLICY REPORT CARD ON AMERICA'S GOVERNORS 7 (2018). Both Governor Walker and Governor Kasich would later go on to seek the Republican nomination for President. *See, e.g.*, E.J. Dionne Jr., *Walker, Kasich and the GOP's Midwest Bracket*, WASH. POST (July 19, 2015), https://www.washingtonpost.com/opinions/walker-kasich-and-the-midwest-bracket/2015/07/19/cf4b5244-2cbd-11e5-bd33-395c05608059_story.html [https://perma.cc/E3UL-K78F]. As a general matter, the Republican party has generally opposed deviation from America's existing model of transportation. *See* COMM. ON ARRANGEMENTS FOR THE 2016 REPUBLICAN NAT'L CONVENTION, REPUBLICAN PLATFORM 2016 5 (2016) [hereinafter REPUBLICAN PLATFORM 2016] ("We propose to remove from the Highway Trust Fund programs that should not be the business of the federal government. . . . We reaffirm our intention to end federal support for boondoggles like California's high-speed train to nowhere.").

[44] Keith Laing, *Obama's Proposed High-Speed Rail Network Stuck in Station*, THE HILL (Dec. 20, 2015, 2:30 PM), https://thehill.com/policy/transportation/263782-obama-high-speed-rail-stuck-in-station ("President Obama is entering his final year in office with one of his most ambitious first-term promises — a nationwide network of high speed railways — largely unfilled. Obama spoke frequently in his first term about developing the network. . . .

especially given the fact that the allocations themselves seem to have been politically motivated.[45] Moreover, though often employed in rhetoric underscoring the need for investment in U.S. national infrastructure,[46] investment in high-speed rail requires a substantial amount of investment in existing infrastructure and likewise requires imposition of tax increases, which some actors find ideologically unpalatable.[47] As a result, while development of high-speed rail has national support,[48] the fact that multiple actors across multiple levels of government are given control over implementation of federal funding often leads to such projects' downfall.

In contrast, Japan vests the power to determine the location of rail lines for its high-speed rail system, the Tōkaidō Shinkansen, in a single actor — the Minister of Land, Infrastructure, Transportation, and Tourism (the "Minister") [49] — who

But seven years later, Obama has little to show for the effort. His stimulus offer was rebuffed by Republican governors in states including Ohio, Wisconsin and Florida, who rejected the money.").

[45] Cooper, *supra* note 31 ("When the Obama administration chose Florida . . . to build the nation's first high-speed rail line, some Republicans in Washington worried privately that the project might prove too popular. It was, after all, a multibillion-dollar federal project . . . [in] Florida, an important swing state that President Obama had won in the last election, with the money focused squarely on . . . the home of one of the most crucial blocs of independent voters in the state. . . . President Obama announced the selection of Florida in 2010 in the most visible possible setting: his State of the Union address.").

[46] Martine Powers, *The Irony of the GOP's New Promise to Cut Mass Transit Funding? Donald Trump Loves Trains*, WASH. POST (July 20, 2016), https://www.washingtonpost.com/news/dr-gridlock/wp/2016/07/20/the-irony-of-the-gops-new-promise-to-cut-mass-transit-funding-donald-trump-loves-trains/ [https://perma.cc/JTM5-852M] (reporting that then Republican presidential nominee made prioritizing national improvements to public transit a part of his platform, employing rhetoric such as "[y]ou go to China, they have trains that go 300 miles an hour. We have trains that go 'Chug, chug, chug.' And then they have to stop because the tracks split, right?").

[47] *Id.* (further reporting that the 2016 GOP platform "includ[ed] a sizable section on transportation" amounting to a "plan to eliminate Highway Trust Fund spending on projects such as mass transit, bike-share programs, sidewalk improvements, and rail-to-trail projects" — projects which draw their funding from the 18.4-cent-per-gallon federal gas tax that has been in place since 1993); *see also* REPUBLICAN PLATFORM 2016, *supra* note 42, at 5 ("We propose to remove from the Highway Trust Fund programs that should not be the business of the federal government. . . . We reaffirm our intention to end federal support for boondoggles like California's high-speed train to nowhere.").

[48] AM. PUB. TRANSP. ASS'N, HIGH-SPEED RAIL IN AMERICA 2015 6-7 (2015) (publishing a survey conducted by market research group TechnoMetrica which found that 63% of Americans "report that they are likely to use high-speed train service for business or leisure travel, if such a mode of transportation were available to them today" and that "Republicans represent the largest growth in intended use, as their likelihood to use high-speed rail increased from 58% to 65% when notified of the benefits of this service.").

[49] Shinkansen tetsudō seibi hō [Nationwide Shinkansen Railway Development Act], Law No. 71 of 1970, art. 4, para. 1 (Japan).

is a Cabinet member appointed by the sitting Prime Minister.[50] While local interests play some role in Japan's rail infrastructure construction,[51] the Minister ultimately receives and makes determinations on applications that prospective rail operators, rather than municipalities, submit.[52] The Minister makes such determinations based on set criteria, none of which include the degree to which a project serves an individual political actor's personal or ideological goals.[53] Under this system, Japan has successfully achieved arguably the most efficient and technologically advanced national high-speed rail system in the world.[54] What's more, they did it first.[55]

In sum, modernization of transportation systems on a national scale is unachievable under a statutory regime that relies on appropriations to, and vests authority over project management in, a given transportation system's constituent states. If the United States hopes to meet its once-lofty goals, it must centralize the power to initiate and carry out transportation infrastructure projects in a single, centralized, body — ideally composed of relatively apolitical experts.

[50] NIHONKOKU KENPŌ [KENPŌ] [CONSTITUTION], art. 68, *translated in The Constitution of Japan*, KANTEI [PRIME MINISTER OF JAPAN & HIS CABINET], https://japan.kantei.go.jp/constitution_and_government_of_japan/constitution_e.html [https://perma.cc/C537-3QE6].

[51] Nationwide Shinkansen Railway Development Act, art. 13, para. 3 (empowering municipal councils to determine the portion of their respective prefecture's financial obligations related to development of Shinkansen infrastructure).

[52] *Id.* art. 18, para. 1 (explaining the application and approval process); Tetsudō jigyō hō [Railway Business Act], Law No. 92 of 1986, art. 4 (Japan) (further explaining the application process and requirements).

[53] Railway Business Act, art. 5, para. 1 (setting out the following criteria: (i) operational appropriateness; (ii) safety; (iii) business operability; and (iv) the ability to operate independently of the government). The Minister does, however, have a duty to consider the public impact of *abolishing* a rail line. *Id.* art. 28-2, para. 2. This is illustrative of how Japan balances expert and individual opinions as they apply to determinations regarding rail infrastructure: while experts make determinations regarding the necessity and merit of a rail infrastructure project, individuals have a voice with regards to whether such a public good is worth maintaining. *See id.*

[54] Doomernik, *supra* note 16, at 141-43.

[55] *Id.* at 136.

C. The Interstate Commerce Commission Termination Act of 1995 and its Limits

There is a strong argument to be made that the failures of PRIIA and ARRA were avoidable under established law. The Interstate Commerce Commission Termination Act of 1995 ("ICCTA") preempts state law on matters expressly delegated to the Surface Transportation Board ("STB"),[56] and only applies to rail carriers who transport over the "interstate rail network."[57] Indeed, the STB has exclusive jurisdiction over "transportation by rail carriers" as well as "construction, acquisition,[58] [and] operation" of tracks, even if wholly located in a single state.[59] This raises two questions: (1) whether preemption under the ICCTA applies to innovative transportation technologies; and (2) if it does, why it has not served to quash state opposition to federal high-speed rail projects?

As a preliminary matter, which technologies classify as part of the "interstate rail network" such that they would be subject to STB jurisdiction is far from a settled issue. The question is whether the STB would have control over technologies, which in some respects resemble rail networks, such as Hyperloop, or if the STB's jurisdiction does not extend beyond rail networks in the traditional sense. While no adjudicatory body has treated this question as of yet, existing precedent suggests that the STB would attempt to exercise jurisdiction, but might be on precarious footing in doing so.

In *DesertXpress Enterprises, LLC*, the STB explicitly interpreted the term "interstate rail network" "to include (but not be limited to) facilities that are part of the general system of rail transportation and are related to the movement of passengers or freight in interstate commerce."[60] In doing so, the STB unambiguously affirmed its jurisdiction over interstate, high-speed rail projects that exclusively transport passengers and are not connected to any other rail

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[56] *See, e.g.*, Emerson v. Kan. City S. Ry. Co., 503 F.3d 1126, 1130 (10th Cir. 2007); Friberg v. Kan. City S. Ry. Co., 267 F.3d 439, 443 (5th Cir. 2001); City of Auburn v. U.S. Gov't, 154 F.3d 1025, 1031 (9th Cir. 1998).

[57] Cuyahoga Falls & Hudson Ry. Co. v. Vill. of Silver Lake, 122 F. App'x 845, 846 (6th Cir. 2005) (denying the Cuyahoga Falls & Hudson Railway Company's attempt to invoke the ICCTA in order to avoid a local zoning ordinance because the Railway's "passenger excursion" trains were to operate wholly within the state of Ohio).

[58] "Acquisition" generally refers to the acquisition of existing tracks or of corporate entities — that is, of existing railroads. It does not apply to acquisition of land. *See infra* Section III.C.

[59] 49 U.S.C. § 10501(b) (2012).

[60] DesertXpress Enters., LLC, No. FD 34914, 2010 WL 1822102, at *9 (S.T.B. May 7, 2010) (finding that construction of the DesertXpress high-speed rail project — which would connect Las Vegas, Nevada and Southern California — required STB approval despite the fact that it would only carry passengers and did not connect to the broader existing national rail system). DesertXpress is now known as "XpressWest." Mick Akers, *Despite Funding Issues, Projections Rosy for High-Speed Train Linking Las Vegas, Victorville*, LAS VEGAS SUN (Aug. 7, 2017, 2:00 AM), https://lasvegassun.com/news/2017/aug/07/despite-funding-issues-projections-rosy-for-high-s/ [https://perma.cc/GU2M-DMQ7].

lines.[61] Operating under this interpretation, which the Ninth Circuit has affirmed,[62] the STB has continued to exercise jurisdiction over interstate high-speed rail projects.[63]

The STB's logic in arriving at the *DesertXpress* decision is of great significance in determining the ICCTA's application to innovative transportation systems. By its own admission, the STB interpreted the ICCTA broadly in *DesertXpress*.[64] In doing so, the STB conceded that the ICCTA had reduced federal control over passenger transit.[65] It nevertheless asserted its role in regulating passenger transportation by making arguments from precedent, statutory construction, and policy.

With regards to precedent, the STB established that the federal courts have historically considered rail lines exclusively carrying passengers to be a part of the "interstate rail network" for the purposes of the ICCTA and its predecessor, the Interstate Commerce Act of 1887.[66] It further established that, where excluded, such rail lines have been wholly intrastate.[67] The STB did not, however, reach the question of what constitutes a "rail network" from a technological standpoint.[68]

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[61] *DesertXpress*, 2010 WL 1822102, at *9.

[62] Or. Coast Scenic R.R. v. Or. Dep't of State Lands, 841 F.3d 1069, 1075 (9th Cir. 2016) (holding that construction to a wholly intrastate portion of railroad track, which had formerly been, and would again become, connected to an interstate railroad network was subject to STB jurisdiction because the construction classified as "transportation by rail carrier" — making it subject to the STB's definition of "interstate rail network" as articulated in the *DesertXpress* decision).

[63] *See, e.g.*, Cal. High-Speed Rail Auth., No. FD 35724, 2014 WL 895435, at *2 (S.T.B Mar. 6, 2014) (denying a request for extension of the STB's comment period for consideration of the California-High Speed Rail Authority's request for an exemption from STB construction authorization).

[64] *DesertXpress*, 2010 WL 1822102, at *8–9 ("Accordingly, we reject Petitioners' restrictive construction as unsupported and contrary to the language of the statute. Instead, we reasonably interpret the term 'interstate rail network' more broadly to include (but not be limited to) facilities that are part of the general system of rail transportation and are related to the movement of passengers or freight in interstate commerce.").

[65] The STB specifically referenced ICCTA's having "expanded the statutory exception for local transit . . . repealed the statutory sections regulating passenger train discontinuance and special passenger rates . . . and . . . clarified that the few 'local governmental authorities' providing 'mass transportation' that remain under Board jurisdiction may invoke 49 U.S.C. §§ 11102 and 11103 (governing access to terminal facilities of, and switch connections to, other carriers, respectively)." *Id.* at *10.

[66] *Id.* at *11.

[67] *Id.*

[68] The most recent case that the STB cited dates back to 1999. *Id.* at *12 (citing RLTD Ry. v. Surface Transp. Bd., 166 F.3d 808 (6th Cir. 1999)). Of the cases that the STB cited, two considered instances in which a railroad actually crossed state lines — both of which were decided before 1940 and thus necessarily did not consider the extent to which technologies such as Hyperloop fit within the framework of a "rail network." *See id.* at *11 (first citing

The STB's argument from statutory construction is similarly limited in its applicability to innovative transportation technologies. The STB interpreted "interstate rail network" in light of the terms "transportation" and "rail carrier" — the latter being defined as "a person providing common carrier railroad transportation for compensation."[69] Taken together, the STB submits that passenger only "rail carriers" are part of the "interstate rail network." Given that Hyperloop and its peers would unquestionably engage in passenger transport, and that the instant question is simply "whether innovative transportation technologies are 'railroads' for the purposes of the ICCTA," neither the STB's conclusion as to passenger-exclusive transit, nor its reference to "railroad transportation" in defining "rail carrier," would necessarily support the STB's exercise of jurisdiction over innovative transportation technologies which, like the Hyperloop, retain certain characteristics of traditional rail travel, but do so utilizing novel technology.

Most relevant is the STB's policy argument. The STB asserts that an interpretation that carves out an exception for such high-speed rail lines would establish a regulatory regime of "conflicting and parochial regulatory action that impedes the flow of people and goods throughout the nation."[70] One can thus argue that excluding innovative mass transit technologies from the STB's jurisdiction would undermine the centralization of transportation regulation for which the STB has advocated.

That being said, the STB's jurisdiction is largely confined to railroads,[71] and the same argument could apply with equal force to other existing modes of transportation. For example, the National Highway Traffic Safety Administration regulates automobile transit, and the Federal Aviation Administration regulates air transit.[72] As Congress has seen it fit to regulate different modes of transportation separately,[73] it likely would not share the STB's concerns regarding decentralized regulation of variant transportation technologies.

Piedmont & N. Ry. v. ICC, 286 U.S. 299, 311 (1932); and then citing Texas Elec. Ry. v. Eastus, 25 F. Supp. 825, 830 (N.D. Tex. 1938), *aff'd per curiam*, 308 U.S. 512 (1939)).

[69] *Id.* at *9 (citing 49 U.S.C. § 10102(5) (2012)).

[70] *Id.* at *13.

[71] *See About STB*, SURFACE TRANSP. BD., https://prod.stb.gov/about-stb/ [https://perma.cc/ML4W-Y9RT]. Interestingly, the STB maintains limited control over pipelines. U.S. GOV'T ACCOUNTABILITY OFF., GAO/RCED-98-99, SURFACE TRANSPORTATION: ISSUES ASSOCIATED WITH PIPELINE REGULATION BY THE SURFACE TRANSPORTATION BOARD 3 (1998). That Congress saw it fit to otherwise regulate railroads separately from pipelines, despite their mutual classifications as interstate common carriers, could be said to contradict the STB's policy concerns.

[72] *Our Administrations*, U.S. DEP'T OF TRANSP., https://www.transportation.gov/administrations [https://perma.cc/LX57-E5TE].

[73] *Id.*

Even so, given the ambiguity attendant to theoretical technological advancements, and given the fact that the STB has maintained control over a form of magnetic levitation transportation system,[74] one must assume that at least some innovative transportation technologies will be subject to STB jurisdiction.

If indeed the STB does have jurisdiction over innovative transportation technologies, the issue becomes whether its exercise of said jurisdiction would obviate the need for further reform. Preemption under the ICCTA, however, has not served as a panacea to the state interference that has stood in the way of innovation in transportation. This is arguably due to the amorphous approach courts take to the application of the ICCTA's preemption provision. The statutory basis for preemption under the ICCTA, 49 U.S.C. § 10501, establishes STB jurisdiction over "rail carrier" transportation,[75] and further provides that:

> (b) The jurisdiction of the Board over—
>
> (1) transportation by rail carriers, and the remedies provided in this part with respect to rates, classifications, rules (including car service, interchange, and other operating rules), practices, routes, services, and facilities of such carriers; and
>
> (2) the construction, acquisition, operation, abandonment, or discontinuance of spur, industrial, team, switching, or side tracks, or facilities, even if the tracks are located, or intended to be located, entirely in one State,
>
> is exclusive.[76]

Courts have thus construed this provision to expressly preempt state law.[77] Judicial inquiry regarding "the substance and scope of Congress' displacement of state law"[78] cabins the ICCTA's express preemption of state law — and the scope of the ICCTA's express preemption is rather narrow.

When considering the extent to which the ICCTA preempts state law, courts generally distinguish between two types of state and local laws — laws preempted categorically as they would, by their "very nature" constitute unreasonable interference with interstate transportation projects, and laws

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[74] *DesertXpress*, 2010 WL 1822102, at *1. While the STB was referring to the DesertXpress project — a traditional high-speed rail project — it's worth noting that Hyperloop does use a variant of magnetic levitation. Casey Handmer, *How and Why We're Levitating the Hyperloop*, HYPERLOOP ONE (Aug. 17, 2016), https://hyperloop-one.com/blog/how-and-why-were-levitating [https://perma.cc/46V5-9WSD].

[75] 49 U.S.C. § 10501(a) (2012).

[76] *Id.* at (b).

[77] Island Park, LLC v. CSX Transp., 559 F.3d 96, 102, 104 (2d Cir. 2009) (finding that the preemptive effect of ICCTA did not bar the state of New York from closing a private railroad crossing because such a closure is outside the scope of rail transportation and consequently "does not burden railroad operations").

[78] *Id.* at 101 (citing Altria Grp., Inc. v. Good, 555 U.S. 70, 76 (2008)).

preempted on an "as applied" basis because they "have the effect of unreasonably burdening or interfering with rail transportation" as a factual matter.[79]

The distinction between state and local actions that are preempted categorically, and those that are preempted on an "as applied" basis, comes down to whether and to what degree the impact of a given state action "may reasonably be said to have the effect of managing or governing rail transportation."[80] However, where state law has "a more remote or incidental effect on rail transportation" it is subject to inquiry to determine whether its effects are of the sort that inherently accompanies a state's exercise of traditional police power, in which case it evades ICCTA preemption.[81]

Some circuits have gone so far as to say that state law affecting rail transport survives preemption if it "does not discriminate against rail carriage and does not unreasonably burden rail carriage."[82] This test, which is in force in at least two of the four circuits that the proposed Hyperloop would traverse,[83] requires that a given law target the railroad industry specifically and be so unsettled and indefinite as to cause "open-ended delays."[84] More clearly stated, where a rail carrier can follow a state law and the state cannot "easily use [it] as a pretext for interfering with or curtailing rail service," then the state law survives federal preemption.[85]

All told, the preemptive effect of the ICCTA is in and of itself, in many ways, so unsettled and indefinite as to cause "open-ended delays." Where courts must undertake case-by-case analyses of individual provisions, across multiple areas

[79] Franks Inv. Co. v. Union Pac. R.R. Co., 593 F.3d 404, 411-15 (5th Cir. 2010) (finding that the Franks Investment Company's assertion of its use right over railroad crossing's that Union Pacific intended on closing was not preempted by the ICCTA because, routine crossing disputes are not categorically preempted and while "all railroad crossings affect rail transportation," the railroad failed to show specific effects related to the crossings at issue).

[80] Fla. E. Coast Ry. Co. v. City of W. Palm Beach, 266 F.3d 1324, 1331, 1339 (11th Cir. 2001) (determining that a where a city attempted to enforce its zoning and licensure ordinances on railway property, those ordinances were not preempted by the ICCTA because they were within the scope of "traditionally local police power" and entitled to a presumption against preemption).

[81] *Id.* at 1331.

[82] N.Y. Susquehanna & W. Ry. Corp. v. Jackson, 500 F.3d 238, 254 (3d Cir. 2007) (holding that environmental regulations over the transfer of solid wastes from rail to truck transport — including fines of $2,000 per day, regulation of construction and operation, and state inspections — did not *per se* unreasonably burden rail carriage and required de novo review on an individual basis).

[83] *See, e.g.*, *id.*; Green Mountain R.R. Corp. v. Vermont, 404 F.3d 638, 643 (2d Cir. 2005).

[84] *N.Y. Susquehanna*, 500 F.3d at 254 n.9 (noting that the "site-specific, burdensome" environmental permit requirements in *Green Mountain*, which were so specific as to mandate the shape and color of a proposed salt-storage shed, "gave the State too much room to delay and burden rail travel").

[85] *Id.* at 254.

of law, and in multiple states, open-ended delays are the only conceivable outcome. So long as those who attempt to implement innovative mass transit technologies must choose between placating every governor, mayor, state legislator, and lay leader whose constituency the technology would serve or facing a possibly catastrophic, judicially imposed mid-project setback, innovation will remain an unattractive prospect.[86] As a result, potential innovative transportation technologies will continue to be relegated to the collective imaginations of most Americans while simultaneously occupying the collective realities of nations the world over.[87]

III. THE NATURAL GAS ACT: A TEMPLATE FOR FOSTERING INNOVATION IN TRANSPORTATION

If existing law — including PRIIA, ARRA, and ICCTA — cannot rectify the chilling effect on implementation of, and advancements to, our national transportation system that lies at the intersection of lock-in and variant political ideologies among federal, state, and local actors, then what prospective solution can? Fortunately, legislators need not reinvent the wheel in order to craft a regulatory regime that facilitates development and implementation of innovative transportation technologies.

Since the early twentieth century, the development, implementation, and operation of natural gas pipelines has been subject to the Natural Gas Act ("NGA").[88] This section asserts that the NGA is the ideal blueprint for a regulatory regime that will foster the advancement of the U.S. national transportation system. In so doing, this section will first discuss the historical underpinnings of the NGA. This section will then highlight various aspects of the NGA which make it so suited to the transportation context.

The first of these aspects, the NGA's near-total preemption over state law, is essential to rectifying the issue posed by state and local political actors' divergent and fickle attitudes toward development of transportation infrastructure. Moreover, the NGA's guarantee of a federal right of eminent domain to developers of federally approved projects would address the issue of lock-in by reducing some of the transaction cost associated with large, multi-state transportation projects. Third, the NGA's mandate that all projects approved under the act further "the public good" could serve to ensure that the U.S. transportation system attends to the users and locales that need it most. Finally, the NGA's deft balancing of seemingly inapposite goals — unilateral implementation of multi-state infrastructure projects and respect for state sovereignty — would afford a state the ability to control and operate a transportation system within the boundary of that state, provided said control

[86] *See* Sara C. Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 93 MINN. L. REV. 231, 240 (2008).

[87] *See* Nunno, *supra* note 15 (discussing the degree to which the United States has lagged behind the world in adopting high-speed rail transit).

[88] Phillips Petroleum Co. v. Wisconsin, 347 U.S. 672, 683 n.13 (1954).

and operation would only affect the citizens of that state. As a result, a state would retain the ability to exercise its police power without retaining a veto over national advancements in transportation infrastructure.

A. Evolution of the Natural Gas Act

In *Public Utilities Commission of Rhode Island v. Attleboro Steam & Electric Co.*, the Supreme Court explicitly specified that state regulation amounting to a direct burden on interstate commerce was "restrained by the force of the commerce clause" and as such, was improper.[89] In doing so, it invoked *Missouri v. Kansas Natural Gas Co.*, a case in which the Supreme Court invalidated an attempt by the Public Utilities Commission of Missouri to regulate a pipeline transmitting natural gas from Oklahoma to Kansas and Missouri.[90] These decisions created a gap in the law — while Congress had not yet regulated interstate transmission of natural gas, the Commerce Clause precluded states from doing so.[91] Absent regulation, the United States natural gas industry became subject to a near-monopoly by a triflingly small consortium of public utility holding companies who came to be known as the "Power Trust."[92] In 1938, Congress enacted the NGA — the express purpose of which was to fill the aforementioned gap created by the Supreme Court's prohibition of state regulation of natural gas pipelines, and consequently, to quash the rapid monopolization of the natural gas industry.[93]

The NGA was born of the need to prevent monopolization of a basic public good essential to national health and welfare.[94] It created a regulatory regime simultaneously capable of fostering innovation and growth, as well as permitting substantive government input. It is transparent, unabashedly subject to Federal Energy Regulatory Commission ("FERC") control, and conducive to private enterprise.[95] Perhaps most importantly, it fosters an environment in which substantive technological advancement is less a policy goal than a defining characteristic.[96] Simply put, U.S. natural gas infrastructure has achieved a state

[89] Pub. Utils. Comm'n of R.I. v. Attleboro Steam & Elec. Co., 273 U.S. 83, 89-90 (1927).

[90] *Id.*; Missouri *ex rel.* Barrett v. Kan. Nat. Gas Co., 265 U.S. 298, 309-10 (1924).

[91] Alexandra B. Klass & Danielle Meinhardt, *Transporting Oil and Gas: U.S. Infrastructure Challenges*, 100 IOWA L. REV. 947, 993-94 (2015).

[92] *Id.*

[93] *Phillips Petroleum*, 347 U.S. at 683 n.13.

[94] *Id.*

[95] Jeff D. Makholm, *Regulation of Natural Gas in the United States, Canada, and Europe: Prospects for a Low Carbon Fuel*, 9 REV. ENVTL. ECON. & POL'Y 107, 112-13 (2015).

[96] Jeff D. Makholm & Laura T. W. Olive, *The Politics of U.S. Oil Pipelines: The First Born Struggles to Learn from the Clever Younger Sibling*, 37 ENERGY L.J. 409, 420 (2016).

under which large scale innovative infrastructure projects are not only possible — they are the norm.[97]

B. Federal Preemption Under the Natural Gas Act

In order for U.S. transportation infrastructure to achieve the successes of U.S. natural gas infrastructure, the establishment of a long-term partner in the federal government is of crucial import. The NGA affords FERC power over the transportation of natural gas to the exclusion of the states, a fact due in large part to its foundational basis in exclusion of state regulation under the Commerce Clause.[98] The preemptive effect of the NGA occupies the entire field of natural gas transportation — from acquisition of property to construction and operation of pipelines — and is not subject to the "categorical" or "as applied" determination which makes the ICCTA so untenable.[99] While courts have held that the NGA does not preempt "every state statute that has some indirect effect on rates and facilities of natural gas companies,"[100] the state laws which have "indirect effect on the rates and facilities of natural gas companies"[101] are neither as indefinite as those preempted by the ICCTA nor as deferential to state exercise of traditional police powers.

Pursuant to the NGA's savings clause, 15 U.S.C. § 717b(d), "nothing in [the NGA] affects the rights of States under" three federal statutes — (1) the Coastal Zone Management Act (CZMA); (2) the Clean Air Act (CAA); and (3) the Federal Water Pollution Control Act (better known as the Clean Water Act, or CWA).[102] For example, in *Delaware Riverkeeper Network v. Secretary Pennsylvania Department of Environmental Protection*, the Third Circuit said in dicta that the Pennsylvania and New Jersey Departments of Environmental Protection were within their statutory rights when, in response to FERC's issuance of a certificate of public convenience and necessity for expansion of natural gas pipeline, they issued Water Quality Certifications pursuant to § 401 of the Clean Water Act.[103]

The preemptive intent undergirding the NGA is so strong, however, that even where states invoke their rights under those statutes, courts often invoke conflict

[97] *See* Klass & Meinhardt, *supra* note 90, at 1004–06. The Natural Gas Act has been so successful at fostering development of innovative technologies in the United States that competitors have had to adapt — forcing a global boom in natural gas production. *See The Future of Natural Gas - Coming Soon to a Terminal Near You,* ECONOMIST (Aug. 6, 2011), https://www.economist.com/briefing/2011/08/06/coming-soon-to-a-terminal-near-you [https://perma.cc/8GED-BK6T].

[98] Schneidewind v. ANR Pipeline Co., 485 U.S. 293, 300-01 (1988).

[99] *See id.* at 302.

[100] *Id.* at 308.

[101] *Id.*

[102] 15 U.S.C. § 717b(d) (2012).

[103] Del. Riverkeeper Network v. Sec'y Penn. Dep't of Envtl. Prot., 833 F.3d 360, 368 (3d Cir. 2016).

preemption in order to vest ultimate authority in FERC. In *AES Sparrows Point LNG, LLC v. Smith*, the Fourth Circuit found that because Baltimore County failed to properly present an amendment of local zoning ordinances — which effectively barred installation of liquefied natural gas (LNG) terminals — to the National Oceanic and Atmospheric Administration (NOAA), the amendment was not a part of Maryland's Coastal Zone Management Plan.[104] As a result, the amendment fell outside of the state's rights under the CZMA.[105] Consequently, the NGA preempted the amendment.[106]

Likewise, in *Weaver's Cove Energy, LLC v. Rhode Island Coastal Resources Management. Council*, the NGA preempted the Rhode Island Coastal Resources Management Council's (CRMC) authority under the CZMA to block an LNG terminal.[107] CRMC attempted to maintain its permitting authority over coastal dredging, but the court found that the incident dredging was "part of the construction and operation" of the LNG terminal, and thus FERC's ultimate authority under the NGA preempted CRMC's licensure requirement.[108] Thus, precedent suggests that even though the preservation of states' rights theoretically vests when grounded in one of only three statutes listed in 15 U.S.C. § 717b(d), the NGA substantially cabins the exercise of those rights.

Where state or local entities have attempted to invoke authority over natural gas pipelines that lie outside of the three statutes listed in the NGA's savings clause, they have been almost routinely rebuffed.[109] In *National Fuel Gas Supply Corp. v. Public Service Commission of New York*, the NGA preempted a New York law requiring a state-issued "certificate of environmental compatibility and public need" for construction of a natural gas pipeline.[110] Moreover, the Second Circuit held that the NGA's preemptive effect prevented the New York law's "piecemeal" application, which the state asserted would have allowed both laws to function in unison.[111]

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[104] AES Sparrows Point LNG, LLC v. Smith, 527 F.3d 120, 124-25 (4th Cir. 2008).

[105] *Id.* at 126-27.

[106] *Id.* at 127.

[107] Weaver's Cove Energy, LLC v. R.I. Coastal Res. Mgmt. Council, 589 F.3d 458, 474 (1st Cir. 2009).

[108] *Id.* at 472.

[109] There is some authority to suggest that where state or local entities attempt to preserve the aesthetics of a given location, that may be a proper exercise of the state's police powers. In *Texas Midstream Gas Services, LLC v. City of Grand Prairie*, a rule requiring that Natural Gas pipelines be setback so that "bulky, unsightly, noisy compressor stations do not mar neighborhood aesthetics" was found to be valid and to evade preemption under the Pipeline Safety Act. Tex. Midstream Gas Servs., LLC v. City of Grand Prairie, 608 F.3d 200, 211-12 (5th Cir. 2010). However, the Natural Gas Act was not at issue in the case, and thus the applicability of *Texas Midstream* is limited. *See id.*

[110] Nat'l Fuel Gas Supply Corp. v. Pub. Serv. Comm'n of N.Y., 894 F.2d 571, 577 (2d Cir. 1990).

[111] *Id.* at 578.

The result was substantially the same when, in *Northern Natural Gas Co. v. Iowa Utilities Board*, the Iowa legislature passed a law attempting to protect "landowners and tenants from environmental or economic damages" resulting from transport of natural gas because "the Iowa provisions regulate in an area over which the FERC exercises authority granted by Congress," the NGA preempted those provisions.[112] Simply put, the NGA so manifestly vests total authority over ratemaking, construction, and operation of natural gas pipelines in FERC, that if courts can find reason to rebuff state attempts to abrogate FERC's authority, they will.

As a result, natural gas pipeline construction is subject to federal law and federal law alone. This affords implementing parties reasonably foreseeable and static milestones that they must accomplish, as opposed to the hyper-local, multi-tiered regimes that pervade state and local land use law.[113] Such multi-tiered regimes are at best a substantial barrier, and may also be fairly characterized as a deterrent to development,[114] while also failing to protect local interests.[115] Additionally, the stability afforded under a unitary federal standard is crucial given the protracted and imprecise timeline that large-scale infrastructure projects subject to federal regulation under the NGA require.[116]

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[112] N. Nat'l Gas Co. v. Iowa Utils. Bd., 377 F.3d 817, 819, 823 (8th Cir. 2004).

[113] *See* Bronin, *supra* note 85, at 240 (arguing that states are reluctant to interfere with local control of land use, which is largely considered "a historical and political inevitability").

[114] *See* Jan G. Laitos, John A. Carver, Jr. & Elizabeth H. Getches, *Multi-Layered, and Sequential, State and Local Barriers to Extractive Resource Development*, 3 ROCKY MTN. MIN. L. INST. 14 (2003) (asserting that in the context of natural resource development "the sheer extent of these multi-layered, and sequential, state and local barriers to development may be acting to deter otherwise legally valid resource extractive operations" at minimum serving to make projects more lengthy and costly).

[115] Opposition to such a regime based on its representing federal exercise of power to the exclusion of state and local interests is misplaced, as the dissolution of projects under the United States' current system has likewise not served state and local interests, but rather state and local actors. *See, e.g.*, Dave Cieslewicz, *Scott Walker's High-Speed Fail: Train Service Would Have Started Now*, ISTHMUS (June 27, 2013), https://isthmus.com/opinion/opinion/scott-walkers-high-speed-fail-train-service-would-have-started-now/ [https://perma.cc/9JPG-TV96] (noting the positive results that would have accompanied Wisconsin's acceptance of ARRA funding, including, *inter alia*, revitalization of business districts and an increase in manufacturing jobs); Stein, *supra* note 36 (reporting that in rejecting ARRA funding, the State of Wisconsin was forced to default on a contract for construction of high-speed rail cars, resulting in a $50 million settlement with the car manufacturers under which Wisconsin was not permitted to retain cars already built for the project). To the extent that those actors have been elected to represent their localities, so too has the President, who would be empowered to appoint experts to determine the wisdom behind a given project. U.S. CONST. amend. XII ("The Electors shall meet in their respective states and vote by ballot for President and Vice-President . . . ."); *see also supra* notes 48-54 and accompanying text.

[116] *See* Steve Chastain, *How Long Will This Pipeline Project Last? Practical Guidelines for Managing and Staffing a Natural Gas Pipeline Project*, RIGHT OF WAY, Nov./Dec. 2013, at 32, 36.

C. Eminent Domain as a Means of Facilitating Infrastructure Development

An additional aspect of the NGA that makes it particularly applicable to the transportation context is its right to eminent domain.[117] Per the NGA, any party who wishes to build a natural gas pipeline must first receive a "certificate of public convenience and necessity" from FERC.[118] In granting such a certificate, FERC considers a number of factors including "a project's potential impact on pipeline competition, the possibility of overbuilding, subsidization by existing customers, potential environmental impacts, [and] avoiding the unnecessary use of eminent domain."[119] Once issued, a "certificate of public convenience and necessity" entitles a party to a judicially imposed right of federal eminent domain if it is unable to contract for, or reach an agreement with, the owner of the land on which operation and construction of the pipeline is to occur.[120] While eminent domain is a last resort in these cases,[121] by guaranteeing every pipeline project that receives FERC approval an affirmative right to use the land it requires for the development and operation of the proposed project, the NGA obviates many of the issues traditionally associated with infrastructure building.[122]

This differs substantially from federal regulatory structures, such as the FRA and STB's regulation of rail infrastructure, which purport to occupy a given field, but put the onus on developers to ensure project viability.[123] Under the ICCTA, not only is there no guarantee of a right to eminent domain, but also state eminent domain law controls unless "the effect of the eminent domain law

[117] Eminent domain refers to the power of the sovereign to exchange "just compensation" for private land without the consent of the owner. *See*, *e.g.*, Kohl v. United States, 91 U.S. 367, 372 (1875). In the United States, this right is set out in the Takings Clause of the U.S. Constitution, which states "nor shall private property be taken for public use, without just compensation." U.S. CONST. amend. V. The term "public use" does not prevent a sovereign from exercising its right to eminent domain in order to transfer private property from one private entity to another, provided that the land is used for a public purpose, such as "a 'carefully considered' development plan." Kelo v. City of New London, 545 U.S. 469, 477-78 (2005) (quoting Kelo v. City of New London, 843 A.2d 500, 536 (Conn. 2004)).

[118] 15 U.S.C. § 717f(c)(1)(A) (2012).

[119] PAUL W. PARFOMAK, CONG. RESEARCH SERV., R43138, INTERSTATE NATURAL GAS PIPELINES: PROCESS AND TIMING OF FERC PERMIT APPLICATION REVIEW 3 (2015).

[120] 15 U.S.C. § 717f(h) (2012).

[121] PARFOMAK, *supra* note 118, at 6.

[122] *See* Makholm & Olive, *supra* note 95, at 427 (comparing the successes of the NGA to the failures of oil's regulatory structure and concluding that the U.S. national oil pipeline system will operate sub-optimally and fail to expand because "[t]he basic structure of the Hepburn Amendment obstructs the creation of such property rights in oil transport [referring to the property rights created under the NGA] — which is the necessary economic foundation of a market in such rights").

[123] *See supra* Section II.C.

would have been to prevent or unreasonably interfere with railroad operations."[124]

This test engenders two outcomes. First, under the regulatory regime currently in force for railroads, invocation of the ICCTA's preemptive effect over state eminent domain law is only proper to "shield railroad property from state eminent domain law."[125] This means that the ICCTA only becomes a factor after a railroad has begun to operate, and only as a response to attempted interference with said operation. As a result, transportation systems regulated by the STB under the ICCTA do not benefit from the use rights conferred to entities seeking to develop under the NGA.

Further, the results of eminent domain actions are far more varied under the ICCTA than they are under the NGA. By way of illustration, in *Maumee & Western Railroad Corp.*, the STB considered whether the ICCTA preempted the city of Liberty Center, Ohio from establishing an easement over railroad property through exercise of eminent domain.[126] While the STB acknowledged that its precedent suggested that the ICCTA can preempt state eminent domain law, it found that Liberty Center's easement was outside the scope of actions that would warrant preemption.[127]

In doing so, the STB averred that "neither the court cases, nor the Board's precedent, suggest a blanket rule that any eminent domain action against railroad property is impermissible. Rather, routine, non-conflicting uses . . . are not preempted so long as they would not impede rail operations or pose undue safety risks."[128] The *Maumee* decision is thus illustrative of the proposition that a transportation entity seeking to prevent a state eminent domain action by invoking the ICCTA will necessarily be subject to a fact-intensive inquiry to determine whether the basis for the eminent domain action is "routine [and] non-conflicting" or rather if it "would . . . impede rail operations or pose undue safety risks."[129] As a result, under a regulatory regime such as the ICCTA, entities seeking to implement innovative transportation technologies would once again find themselves subject to the political machinations and divergent policy ends of countless state and local actors.

In attempting to foster a climate for innovative transportation policies that comport with national goals, this is a losing strategy. PRIIA and the ARRA are prime examples of how, in the context of transportation, failure to create a regulatory environment that facilitates private development results in stagnancy. PRIIA attempted to offset a $40 million reduction in federal spending[130] by

[124] Lincoln Lumber Co., No. 34915, 2007 WL 2299735, at *2 (S.T.B. Aug. 13, 2007).

[125] Maumee & W. R.R. Corp., No. 34354, 2004 WL 395835, at *2 (S.T.B. Mar. 3, 2004).

[126] *Id.* at *1.

[127] *Id.* at *2.

[128] *Id.*

[129] *Id.*

[130] Passenger Rail Investment and Improvement Act of 2008 § 501(b), 49 U.S.C. § 26104 (2012).

establishing a 270-day window wherein private entities could petition to finance, design, construct, operate, and maintain intercity high-speed rail projects.[131] However, with no guarantees of public funding and no projects addressing the FRA's priorities, PRIIA's request for private entity implementation of high-speed rail projects yielded only eight proposals — none of which were acted upon.[132]

The ARRA took an alternate approach, putting substantial emphasis on ensuring that federal funding is available for transportation projects.[133] This doubtlessly facilitated some development,[134] but much of the intent behind the ARRA's funding was largely stymied by state and local actors.[135] It seems evident that the failures of PRIIA and ARRA should inform any future legislation addressing the antiquated nature of United States transportation infrastructure.

Multi-state transportation infrastructure projects are simply too expensive and time consuming for developers to go it alone. As a result, the federal government must continue to ensure that adequate funding is available to multi-state coalitions and private actors who wish to undertake such initiatives. That being said, funding alone is insufficient. A regulatory regime fostering innovative transportation policies must obviate the barrier to entry posed by divergent and varied interests, or our national transportation infrastructure will continue to be subject to lock-in. Ensuring that developers have a guaranteed federal right of eminent domain over prospective rights of way is an essential element in obviating that barrier.

D. The Public Good

The NGA's regulatory structure and transportation regulation would further make good bedfellows due to the NGA's stated focus on furthering the public good. As set out by policymakers in the context of congressional attempts to develop an American High-Speed Rail system, transportation is inherently a public good — as necessary to stimulate economic growth[136] as it is to foster the

[131] *Id*. § 502(a)(1)–(2); Notice Requesting Expressions of Interest in Implementing a High-Speed Intercity Passenger Rail Corridor, 73 Fed. Reg. 76,443 (Dec. 16, 2008).

[132] OFFICE OF INSPECTOR GEN., FED. R.R. ADMIN., CR-2014-030, FRA CONTINUES TO MAKE PROGRESS IMPLEMENTING PRIIA RESPONSIBILITIES BUT FACES CHALLENGES WITH RAIL PLANNING 21 (2014), https://www.oig.dot.gov/sites/default/files/FRA%20Progress%20Implementating%20PRIIA%5E2-25-14.pdf [https://perma.cc/9RRS-DH9W].

[133] American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, Title XII, 123 Stat. 115, 208 (2009); U.S. DEPT. OF TRANSP., *supra* note 20, at 5.

[134] *See generally* U.S. DEPT. OF TRANSP., *supra* note 20.

[135] *See supra* Section II.B.

[136] *See generally Lagging Behind: The State of High Speed Rail in the United States*, *supra* note 27.

social mobility fundamental to realization of the "American dream."[137] It follows that any federal oversight of mass transit must weigh heavily the public need and benefit before funding and authorizing the construction and operation of a transportation system.

The NGA attempted to strike this balance. In its opening salvo, the NGA sets out its statement of purpose, declaring "that the business of transporting and selling natural gas for ultimate distribution to the public is affected with a public interest, and that Federal regulation . . . is necessary in the public interest."[138] Beyond asserting the public interest as central to its existence, the NGA endeavors to substantively facilitate regulation in the public interest. For example, when determining whether an applicant qualifies for a "certificate of public convenience and necessity," FERC is required to consider whether "the proposed service, sale, operation, construction, extension, or acquisition . . . is or will be required by the present or future public convenience and necessity."[139] If a project does not meet this test, its application must be denied.[140]

To be sure, "public convenience and necessity" is a largely amorphous standard — inuring broad discretion in FERC.[141] Some might assert that the existence of such a broad standard does not serve the public, but rather serves the private business interests that capture FERC.[142] As a preliminary matter, FERC may not be as responsive to private business interests as some allege.[143] Despite FERC's ability to consider "all factors bearing on the public interest"[144] it is subject to a limiting principle — when considering whether or not a project is in the public interest, FERC's primary concern is the prevention of wasteful

[137] *See* Anthony Foxx, U.S. Sec'y of Transp., Pathways to Opportunity: Housing, Transportation and Social Mobility, Panel Discussion at The Brookings Institution 6-7 (Feb. 23, 2016) (transcript available at https://www.brookings.edu/wp-content/uploads/2016/02/20160223_pathway_opportunity_transcript.pdf).

[138] 15 U.S.C. § 717(a) (2012).

[139] 15 U.S.C. § 717f(e) (2012).

[140] *Id.*

[141] Atl. Ref. Co. v. Pub. Serv. Comm'n of N.Y., 360 U.S. 378, 391 (1959) (stating that "7(e) requires the Commission to evaluate all factors bearing on the public interest").

[142] "Agency capture" is the idea that some motivating factor — be it votes, financial contributions, political organization, guidance on policy matters or otherwise — drives agency actors and private interests together. The close bond between private and public entities facilitates the promotion of the private interests' goal to the detriment of parties with comparably less influence. *See* Nicholas Bagley & Richard L. Revesz, *Centralized Oversight of the Regulatory State*, 106 COLUM. L. REV. 1260, 1284–85 (2006).

[143] *See, e.g.*, Candy Woodall, *Federal Agency Funded by Energy Industry Has Never Rejected a Pipeline Plan*, PENN LIVE (Mar. 7, 2016), http://www.pennlive.com/news/2016/03/pipeline_fights_raise_big_ques.html [https://perma.cc/5U4A-C75G].

[144] *Atl. Ref.*, 360 U.S. at 391.

competition over a limited natural resource.[145] A regulatory structure directed at mass transit conferring similarly broad discretion in an agency to determine what constitutes the "public good" can, and indeed must, likewise be directed by purpose.[146]

Even if such a "north star" might be insufficient,[147] broad discretion in determining what best serves the public interest is not a necessary antecedent to a regulatory structure resembling the NGA. Legislative specificity is not prohibited; it is wholly conceivable that drafters of such legislation could set out substantive limits — establishing even numeric baselines that would otherwise be outside the constitutional adjudicatory authority of any agency — and thus control the degree to which the public good is actually reflected in the outcomes of agency proceedings.[148] It is worth noting, however, that constraining administration of a statute to numeric limits could hamper the degree to which the experts empowered to administer it are successful in doing so.

Even so, balance can be the hallmark of such a system. As opposed to variant, incongruent and hyperlocal priorities determining the fate of a crucial public good,[149] national and communal goals can work in concert — assuring that local autonomy is respected and that the United States does not remain resigned to accept outdated and inefficient mass transit solutions.

E. The "Hinshaw" Exemption and its Role in Preserving Balance Between State Sovereignty and Federal Oversight

Reduction in state control is an inherent aspect of a system where power over approval, funding, and project-management is centralized in the federal government. However, that reduction need not mean that states and local governments have no say in determining which transportation systems serve

[145] *See* Clark v. Gulf Oil Corp., 570 F.2d 1138, 1149 (3d Cir. 1977) (holding that the NGA did not allow for a private right of action, in part because it granted the Federal Power Commission, now FERC, broad authority to determine whether a project was in the public convenience or if it merely created wasteful competition).

[146] *See* Panama Ref. Co. v. Ryan, 293 U.S. 388, 429–30 (1935) (citing J.W. Hampton, Jr., & Co. v. United States, 276 U.S. 394, 408 (1928)) (stating the proposition that when delegating legislative authority to an administrative agency, Congress must provide an "intelligible principle" by which said agency's actions are directed).

[147] *See* David B. Spence, *Agency Discretion and the Dynamics of Procedural Reform*, 59 PUB. ADMIN. REV. 425, 436 (1999) (asserting that while Congressional attempts to mitigate capture of FERC via procedural controls were stymied by FERC's narrow construction of the procedural controls, they did enjoy limited success owing to FERC's fidelity to substantive statutory mandates).

[148] *See* Hoctor v. U.S. Dep't of Agric., 82 F.3d 165, 170 (7th Cir. 1996) (holding that a USDA interpretive rule establishing numerical standards for minimum exotic animal enclosure height was improper as numeric standards are likely to be "legislative facts," and thus, pursuant to Administrative Procedure Act § 553, the agency could only set out such a requirement via notice and comment rulemaking).

[149] *See* Bronin, *supra* note 85, at 240; *supra* Section II.B.

their constituents. Pervasive federal regulation to the exclusion of the states sensibly should not reach matters that are wholly local in nature.

In the context of the NGA, that balance is struck via the "Hinshaw Exemption,"[150] which divests regulatory control from FERC over "Hinshaw Pipelines" — pipelines that do not cross state lines and transport gas to be used exclusively within a single state.[151] As such, pipelines that do not reach beyond the boundaries of the state and only serve the citizens of that state are considered to be matters "primarily of local concern."[152]

Indeed, Hinshaw Pipelines are truly local in nature. 15 U.S.C. § 717(c), the section setting out the exemption, is so restrictive that pipelines falling under the provision are not even permitted to take possession of natural gas outside of the state they serve; all of the natural gas must be received within or at the boundary of the state it is to be consumed within.[153] The Hinshaw Exemption provides a template for mitigating otherwise seemingly contradictory policy ends — creation of a unitary, national, regulatory regime for transportation which facilitates the development of innovative mass transit technologies and respect for the state and local autonomy that is characteristic of the law of American land use.[154]

In the context of transportation, the Hinshaw Exemption can be analogized to local commuter rail, "short-haul rail passenger transportation in metropolitan and suburban areas,"[155] as well as some intercity rail, so long as it is not part of the "national rail passenger transportation system."[156] Accordingly, where a state chooses to operate its own transportation system and to hold that system accountable to the state's own rules and regulations, it would be free to do so, provided that the impact of such a choice would be felt exclusively within the state.[157] The state would not, however, retain veto power over the construction and operation of rail projects that service, and consequently impact multiple states.[158] For example, some state-run transportation systems, such as New York's Metropolitan Transportation Authority (MTA), service multiple states.[159] Absent the political power resulting from an individual's ability to

[150] 15 U.S.C. § 717(c) (2012).

[151] *See* Pub. Utils. Comm'n of Cal. v. FERC*,* 143 F.3d 610, 614–15 (D.C. Cir. 1998).

[152] Altamont Gas Transmission Co. v. FERC, 92 F.3d 1239, 1246 (D.C. Cir. 1996).

[153] Note, *The Hinshaw Bill—Amendment to the Natural Gas Act Grants a State Exclusive Jurisdiction Over Companies Which Receive Gas Within the State for Ultimate Consumption Therein*, 103 U. PA. L. REV. 807, 808 (1955).

[154] *See* Bronin, *supra* note 85, at 235-40.

[155] 49 U.S.C. § 24102(3) (2012).

[156] 49 U.S.C. § 24102(3)-(7) (2012).

[157] *See* North Carolina v. United States, 325 U.S. 507, 511 (1945) ("Intra-state transportation is primarily the concern of the state.").

[158] *See id.*

[159] *See* Bruce Berg & Paul Kantor, *New York: The Politics of Conflict and Avoidance*, *in* REGIONAL POLITICS: AMERICA IN A POST-CITY AGE 25, 43-45 (H. V. Savitch & Ronald K.

vote, or refrain from voting, for a given candidate, transportation service users who reside outside of the service's operating state are at the mercy of political actors who may not have their best interests at heart.[160]

This power imbalance could have two problematic outcomes. First, citizens of the controlling state and locality might receive better service than their out-of-state peers.[161] Second, concerns regarding funding, events, use, or cost could lead to tense relations between neighboring states.[162] Under a Hinshaw-like regulatory exemption, such a transportation system would not escape federal oversight, and as a result, a neutral actor would be able to mitigate the power imbalance at issue.

Moreover, an exemption for wholly intrastate projects is arguably better suited to innovative transportation technologies than it is to natural gas. Unlike natural gas pipelines that merely ferry the valuable commodity to its consumers, transportation projects are themselves a valuable commodity. Absent riders, transportation services must rely almost exclusively on government subsidy in order to survive.[163] As a result, if an intrastate transportation system exists and inadequately services the needs of a given state's commuters, the prospects of increased competition over ridership and the need to heavily subsidize a state-operated system that fails to attract sufficient ridership logically may serve as incentive for state acquiescence to federally controlled interstate transportation systems.

Conversely, if a state operates a transportation system that adequately serves the needs of its commuters, developers of new transportation systems will be incentivized to implement their technology elsewhere, and the state will retain autonomy. In essence, such a provision rewards those states who play their part in fostering development of transportation infrastructure by ceding autonomy over their transportation systems to them. It further incentivizes new transportation systems to develop in those states which have been underserved in the past, thus ensuring that new mass transit systems are installed in the locations where they will serve the highest value user.

Vogel eds., 1996) (noting that the MTA, a New York State agency, maintains unitary control over rail service stretching into Connecticut and that the MTA is largely subject to the influence of various New York political actors at the state and local levels).

[160] *Id.*

[161] *See* Suzanne Daley, *State Weighs Its Role in Metro-North*, N.Y. TIMES (Apr. 8, 1984), http://www.nytimes.com/1984/04/08/nyregion/state-weighs-its-role-in-metro-north [https://perma.cc/DQ4N-RVGT].

[162] *Id.*

[163] *See* CTR. FOR URBAN TRANSP. RESEARCH, UNIV. OF S. FLA., EVALUATION OF THE ECONOMIC VIABILITY OF NARROW-GAUGE LOCAL RAIL SYSTEMS 11-21 (2001), https://www.nctr.usf.edu/pdf/narrowgauge.pdf [https://perma.cc/4KMU-EKFQ].

IV. CONCLUSION

Informed by the apparent ease and cost-effectiveness seemingly associated with improving upon existing transportation platforms, transportation innovation has been subject to lock-in, that is, advancements have been made nearly exclusively within the context of existing transportation platforms. Where Congress has taken steps to bring the American transportation system into the twenty-first century, it has taken a hands-off approach — passing legislation that creates funding opportunities for transportation modernization, but vests implementation and project management in state and local actors. A necessary result of this approach is that the success of those projects, and consequently the success of the legislation, turns on the variant and unpredictable political machinations of each project's constituent states. Taken together, lock-in and the gauntlet of state and local politics have served as a near-insurmountable bar to development and implementation of genuinely innovative transportation technologies.

This, however, is not the case in all instances of large, multi-state infrastructure development. For nearly a century, the NGA — a statute which, through its preemption of state law and guarantee of eminent domain for developers, substantially lowers the barrier to entry posed by lock-in and local control — has enabled the development and operation of natural gas pipelines. The NGA's success lies in its balancing of seemingly dichotomous norms. It incentivizes development while ensuring that federally approved projects serve the public good. It protects the rights of a state to operate and develop its own infrastructure while preventing one state from standing in the way of national development.

In sum, the NGA effectively addresses the issues of lock-in and vacillation of support for transportation projects between political subdivisions. Where PRIIA and ARRA have largely failed, the NGA has served to effectively maintain the U.S. natural gas industry's position as a world leader. As such, in crafting a regulatory regime that allows for development and implementation of innovative transportation technologies, legislators need to look no further than the NGA.