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Auctioning the Upzone

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AUCTIONING THE UPZONE

Christopher S. Elmendorf and Darien Shanske[†]

ABSTRACT

This Article proposes a new framework for inducing cities with severely supply-constrained housing markets to allow a lot more high-density housing. Local governments that rezone for larger buildings would (with the approval of a state agency) be permitted to auction, and thus profit from, the newly created buildable space. Winning bidders would acquire tradeable development allowances, which developers would have to acquire and redeem as a condition of project approval. We argue that this framework would expand the supply and density of urban housing through three channels. First, it would enable municipal governments to capture much more of the economic value created by upzoning and regulatory streamlining than they do today, which in turn would create new and better opportunities for local political entrepreneurs to assemble pro-development coalitions. Second, our framework would make local upzoning and regulatory streamlining deals more durable than they are today. This is so because local factions whose policy goals align with the state housing agency’s would be able to use auction contracts and state law to entrench their policies, and because the after-auction allowance market would act as a shock absorber, reducing allowance prices as necessary to offset regulatory and other shocks to the cost of development. Third, our framework would help to rectify informational asymmetries that presently hinder state oversight of local land-use plans.

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INTRODUCTION

This Article begins with a puzzle. Americans who identify as Democrats tend to have very different land-use preferences than those who identify as Republicans.¹ Many Democrats, given their druthers, would prefer to live in dense, diverse, walkable communities; whereas Republicans generally favor the classic suburban ideal of single-family homes on large lots.² These personal preferences line up with larger ideological commitments. Urban lifestyles have smaller carbon footprints,³ and diverse communities are more conducive to socio-

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1. See Jonathan Mummolo & Clayton Nall, *Why Partisans Do Not Sort: The Constraints on Political Segregation*, 79 J. POL. 45, 46–49 (2016) (reviewing literature).
 2. *Id.* at 50.
 3. See Gabriel Ahlfeldt & Elisabetta Pietrostefani, *Demystifying Compact Urban Growth: Evidence from 300 Studies from Across the World* 32 (Coalition for Urban Transitions, working paper, 2017), <https://newclimateeconomy.report/workingpapers/workingpaper/demystifying-compact-urban-growth/> [<https://perma.cc/K854-4MHJ>] (reporting estimate from meta-analysis of studies of impact of densification on carbon emissions). See generally Stephen M. Wheeler et al., *Carbon Footprint Planning: Quantifying Local and State*

economic mobility.⁴ Yet (and here is the puzzle) Democratic policymakers have done very little to repurpose for dense urban development land that was zoned for suburban uses long ago. If one could watch time-lapse films of metropolitan development in “red” and “blue” states, one would notice some differences: more suburban sprawl in the red states; more protected parks and open space in the blue states. But the commonalities would be even more striking: since World War II, there has been virtually no intensification of land use in existing residential neighborhoods.⁵

In the early-twentieth century, it was common for developers in booming cities to tear down existing single-family homes and replace them with small apartment buildings.⁶ Yet by the 1940s, this pattern was nowhere to be seen.⁷ The spread of zoning evidently put an end to it.⁸ In city after city, affluent homeowners prevailed upon municipal officials to zone out “parasitic” apartment buildings from their neighborhoods.⁹

Mitigation Opportunities for 700 California Cities, 3 URB. PLAN. 35 (2018).

4. See Raj Chetty et al., *Where Is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States*, 129 Q.J. ECON. 1553, 1555–56 (2014) (finding that racial and socioeconomic homogeneity is negatively correlated with intergenerational mobility); Arthur Acolin & Susan Wachter, *Opportunity and Housing Access*, 19 Cityscape 135, 135 (2017) (finding that “areas[] from which lower-income households are increasingly priced out, [economically thriving but supply-constrained cities] are also more likely to have higher levels of intergenerational mobility.”).
5. See Issi Romem, *America’s New Metropolitan Landscape: Pockets of Dense Construction in a Dormant Suburban Interior*, Buildzoom (Feb. 1, 2018), <https://www.buildzoom.com/blog/pockets-of-dense-construction-in-a-dormant-suburban-interior> [<https://perma.cc/C9BQ-QAKT>] (using building-permit data to chart development patterns).
6. *Id.*
7. *Id.*
8. See Robert C. Ellickson, *The Zoning Strait-Jacket: Evidence from the Silicon Valley, Greater New Haven, and Greater Austin* 5 (Jan. 7, 2020) (unpublished manuscript) (on file with authors) (explaining how restrictive zoning ordinances suppress housing production), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3507803 [<https://perma.cc/ZDZ9-V8L2>].
9. The U.S. Supreme Court characterized apartment buildings as “parasite[s]” in its seminal decision upholding the constitutionality of a municipality’s zoning power. See *Vill. of Euclid v. Ambler Realty Co.*, 272 U.S. 365, 394 (1926) (“[V]ery often the apartment house is a mere parasite [in neighborhoods of detached homes], constructed in order to take advantage of the open spaces and attractive surroundings created by the residential character of the district.”).

Today, despite skyrocketing demand that has pushed the price of new apartments and condominiums far above the cost of construction in the most economically productive American metropolises,¹⁰ vast swaths of the cityscape remain zoned exclusively for single-family homes.¹¹ Homeowners strongly resist intensifying land use in their neighborhoods, and they wield outsized influence in local politics by voting and otherwise participating at disproportionately high rates.¹² Because of this, the vision of the thriving city as an engine of socio-

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10. See Edward Glaeser & Joseph Gyourko, *The Economic Implications of Housing Supply*, 32 J. ECON. PERSP. 3, 13 tbl.2 (2018) (showing growth in share of U.S. municipalities with housing prices more than 25% greater than construction costs); Issi Romem, *Paying for Dirt: Where Have Home Values Detached from Construction Costs?*, Buildzoom (Oct. 17, 2017), <https://www.buildzoom.com/blog/paying-for-dirt-where-have-home-values-detached-from-construction-costs> [https://perma.cc/C3US-6JJK] (providing metro-area estimates of home values relative to construction costs). In a competitive market that is not supply-constrained, housing prices in the long run will be very close to construction costs. See Glaeser & Gyourko, *supra*.
 11. See, e.g., Emily Badger & Quoc Trung Bui, *Cities Start to Question an American Ideal: A House with a Yard on Every Lot*, N.Y. TIMES (June 18, 2018), <https://www.nytimes.com/interactive/2019/06/18/upshot/cities-across-america-question-single-family-zoning.html> [https://perma.cc/5BYK-AMJH] (mapping share of land zoned for single-family homes in ten cities).
 12. See generally Michael Hankinson, *When Do Renters Behave Like Homeowners? High Rent, Price Anxiety, and NIMBYism*, 112 AM. POL. SCI. REV. 473 (2018) (regarding differences in land-use preferences between homeowners and renters); William Marble & Clayton Nall, *Where Interests Trump Ideology: Homeownership's Persistent Role in Local Housing Development Politics* (Oct. 23, 2018) (unpublished manuscript) (on file with authors), available at <http://www.nallresearch.com/uploads/7/9/1/7/7917910/interest.3.3.pdf>; MARK BALDASSARE ET AL., PUB. POL'Y INST. OF CAL., CALIFORNIANS & THEIR GOVERNMENT (2019), available at <https://www.ppic.org/wp-content/uploads/ppic-statewide-survey-californians-and-their-government-may-2019.pdf> [https://perma.cc/5QDS-WZXM] (same). Regarding differences in political participation between homeowners and renters, see Andrew Hall & Jesse Yoder, *Does Homeownership Influence Political Behavior? Evidence from Administrative Data* (Mar. 26, 2019) (unpublished manuscript) (on file with author) (reviewing literature and estimating causal effect of becoming a homeowner on political participation); Brian J McCabe, *Are Homeowners Better Citizens? Homeownership and Community Participation in the United States*, 91 SOC. FORCES 929, 947-48 (2013) (finding that homeownership positively correlates with turnout in elections but not with forms of civic participation that do not affect value of home); Katherine L. Einstein et al., *Who Participates in Local Government? Evidence from Meeting Minutes*, 17 PERSP. ON POL. 28 (2019) (studying minutes of planning and zoning board meetings in Boston area and finding that homeowners are vastly overrepresented among people who comment on land use issues, and nearly always speak in opposition to proposed developments).

economic mobility is increasingly a thing of the past.¹³ In today's high-cost cities, the wage premium paid to low-skilled workers no longer offsets the cost of rent.¹⁴

The problem of the housing-supply-constrained city has very serious consequences for socioeconomic mobility, the environment, and national economic welfare.¹⁵ Policymakers are starting to pay attention, prodded by a nascent Yes In My Backyard (“YIMBY”) movement that is challenging incumbent homeowners’ prerogative to keep their neighborhoods just as they have “always” been.¹⁶ The YIMBYs have scored some early victories. After a public reckoning with the racist history of single-family zoning, the Minneapolis City Council voted in 2018 to authorize four-unit dwellings on every lot in the city and to allow taller and denser buildings along transit corridors.¹⁷ The state of Oregon followed suit with a 2019 statute that requires larger cities to allow duplexes or fourplexes on all parcels zoned for residential use.¹⁸ A number of other states have directed local governments to allow so-called “accessory dwelling units” in single-family neighborhoods.¹⁹

No state, however, has made much headway getting cities to allow substantially larger buildings in previously low-density residential

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13. See generally David Schleicher, *Stuck! The Law and Economics of Residential Stagnation*, 127 YALE L.J. 78 (2017); Peter Ganong & Daniel Shoag, *Why Has Regional Income Convergence in the U.S. Declined?*, 102 J. URB. ECON. 76 (2017).
 14. Hankinson, *supra* note 12, at 2–5.
 15. Christopher S. Elmendorf, *Beyond the Double Veto: Housing Plans as Preemptive Intergovernmental Compacts*, 71 HASTINGS L.J. 79, 92 (2019).
 16. See generally Kenneth Stahl, “Yes in My Backyard”: Can a New Pro-Housing Movement Overcome the Power of NIMBYs?, 41 ZONING & PLAN. L. REP. 1 (2018).
 17. Sarah Mervosh, *Minneapolis, Tackling Housing Crisis and Inequity, Votes to End Single-Family Zoning*, N.Y. TIMES (Dec. 13, 2018), <https://www.nytimes.com/2018/12/13/us/minneapolis-single-family-zoning.html> [<https://perma.cc/8DUY-QLTM>].
 18. Laura Bliss, *Oregon’s Single-Family Zoning Ban Was a ‘Long Time Coming’*, Citylab (July 2, 2019), <https://www.citylab.com/equity/2019/07/oregon-single-family-zoning-reform-yimby-affordable-housing/593137/> [<https://perma.cc/8QA6-7XD9>]; H.B. 2001, 80th Legis. Assemb., Reg. Sess. § 2 (Or. 2019)(the duplex/fourplex requirement applies to cities of more than 10,000 or 25,000 people, respectively).
 19. See generally Elmendorf, *supra* note 15, at 83; John Infranca, *Housing Changing Households: Regulatory Challenges for Micro-Units and Accessory Dwelling Units*, 25 STAN. L. & POL’Y REV. 53, 68 (2014). California, Oregon, Washington, and New Jersey have also pushed local governments to rezone for somewhat greater density by establishing “default densities” that provide a safe harbor against certain requirements under state law. See Elmendorf, *supra* note 15, at 54 n.283.

neighborhoods.²⁰ In California, state senator Scott Wiener made waves in 2018 and 2019 by introducing bills that would require local governments to permit four- to five-story buildings within one-quarter mile of a transit stop, but the legislature’s Democratic leadership deemed the idea too incendiary and doused it.²¹ Similar bills were also introduced in 2019 in Washington and Oregon, but each failed to receive even a favorable committee vote.²²

This Article proposes a new tool to induce high-cost cities to accommodate more housing: the state-supervised development-rights auction. Local governments that expand their zoning envelopes pursuant to a state-approved plan would be entitled to auction, and thus profit from, the newly created developable space. We argue that this auction model would bring about greater residential density through three channels. First, it would enable municipal governments to capture much more of the economic value created by upzoning and regulatory streamlining than they do today, which in turn would create new and better opportunities for local political entrepreneurs to assemble pro-development coalitions. By way of illustration, our back-of-the-envelope calculations suggest that auction revenues have the

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20. See generally Romem, *supra* note 5. See also Issi Romem, *Can U.S. Cities Compensate for Curbing Sprawl by Growing Denser?*, BUILDZOOM (Sept. 14, 2016), <https://www.buildzoom.com/blog/can-cities-compensate-for-curbing-sprawl-by-growing-denser> [<https://perma.cc/BEC7-X8WV>] (noting that while state laws in Oregon and Washington have induced somewhat denser development than is typical of other states, “the increase in [Portland and Seattle’s] rate of housing production pales in comparison to what similarly-sized cities like Phoenix and Atlanta have achieved through outward expansion”); PAAVO MONKKONEN & SPIKE FRIEDMAN, UCLA LEWIS CTR. FOR REGIONAL POL’Y STUD., NOT NEARLY ENOUGH: CALIFORNIA LACKS CAPACITY TO MEET LOFTY HOUSING GOALS 3 (2019) (demonstrating that “zoned capacity” for new residential in California is strongly skewed toward less productive regions and, within regions, toward the exurban periphery, notwithstanding state policies favoring infill development in urban locations), *available at* http://www.lewis.ucla.edu/wp-content/uploads/sites/17/2019/03/2019-Planned-Capacity_Monkkonen-Friedman.pdf <https://perma.cc/BN7C-MG9P>].
 21. See Julia Wick, *Essential California: Inside the Demise of SB 50, the State’s Most Talked-about Bill*, L.A. TIMES (May 17, 2019), <https://www.latimes.com/newsletters/la-me-ln-essential-california-20190517-story.html> [<https://perma.cc/EDD2-ZCPX>] (“The bill died because it was held in the Senate Appropriations Committee. Essentially, this is a way that the Legislature can hold bills without having a formal vote, particularly sticky bills where they don’t want to leave fingerprints on who actually killed them.”).
 22. See S.B. 5769, 66th Leg., Reg. Sess. (Wash. 2019); S.B. 10, 80th Legis. Assemb., Reg. Sess. (Or. 2019). For the Washington bill’s status, visit <https://app.leg.wa.gov/bills/summary?BillNumber=5769&Year=2019&initiative;> for the Oregon bill’s, visit <https://olis.leg.state.or.us/liz/2019R1/Measures/Overview/SB10>.

potential to *double* the size of San Francisco’s discretionary general fund. Second, our model would give local political actors whose policy preferences align with the state’s a simple tool for entrenching upzoning and permit-streamlining policies. Third, the model would improve state oversight of local land-use regulation by reducing informational asymmetries between the state and local governments.²³

This Article’s proposal builds on the work of economists William Fischel and Robert Nelson, and law professors Rick Hills and David Schleicher. A generation ago, Fischel and Nelson concluded that local governments should have more or less unfettered discretion to sell rezoning for cash.²⁴ More recently, Hills and Schleicher have argued that so-called “transferable development rights” programs can be used to redistribute among landowners upzoning’s economic gains, shifting value toward more politically popular landowners and thereby generating public support for otherwise tough-to-sell rezonings.²⁵

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23. We are not the only scholars to have conceived of development-rights auctions. After we published a white paper laying out the idea, a reader referred us to a couple of studies in Brazil of development-rights auctions, *see infra* note 92, and to a proposal from the Canadian economist Tom Davidoff for development-rights auctions in Vancouver and Toronto. Thomas Davidoff, *Redevelopment Auctions* (unpublished manuscript) (on file with authors). Professor Vicki Been has also suggested in passing that an “auction scheme[]” of some sort might improve on existing programs for awarding density bonuses to developers who contribute public-improvement funds. *See* N.Y.U. FURMAN CTR. FOR REAL ESTATE & URB. POL’Y, *BUYING SKY: THE MARKET FOR TRANSFERABLE DEVELOPMENT RIGHTS IN NEW YORK CITY* 18 (2013), *available at* https://furmancenter.org/files/BuyingSky_PolicyBrief_21OCT2013.pdf [<https://perma.cc/QD7A-A676>]. As best we can tell, however, we are the first to argue for development-rights auctions not only as a means of value capture, but also as a device for enabling local pro-housing factions to entrench their policy preferences, and as a device for rectifying informational asymmetries between state oversight agencies and local governments.
24. Nelson envisioned groups of homeowners banding together with the help of a local government to collectively sell their parcels for redevelopment. *See* ROBERT H. NELSON, *ZONING AND PROPERTY RIGHTS: AN ANALYSIS OF THE AMERICAN SYSTEM OF LAND-USE REGULATION* 178–81 (1977). Fischel, observing that rezoning decisions often instantiate *de facto* bargains between a developer, neighborhood groups, and the local government, sought to facilitate efficient bargains by introducing the efficient medium of exchange: money. *See* WILLIAM A. FISCHEL, *THE ECONOMICS OF ZONING LAWS: A PROPERTY RIGHTS APPROACH TO AMERICAN LAND USE CONTROLS* 75–101 (1985) (suggesting some fetters, principally that local governments should not be allowed to sell the right to develop certain “normal” land uses).
25. Roderick M. Hills, Jr. & David Schleicher, *Building Coalitions Out of Thin Air: Transferable Development Rights and “Constituency Effects”* in *Land Use Law*, 12 *J. LEG. ANALYSIS*, 79 (2020); Roderick M. Hills, Jr. & David Schleicher, *Planning an Affordable City*, 101 *IOWA L. REV.* 91, 125–27 (2015).

The common thread running through these scholars' work is the notion that if local governments could capture or strategically redistribute more of upzoning's economic gains, they would allow more efficient upzoning to occur. This Article starts with the same idea, while contributing a new mode of value-capture (auctions), and a couple of new layers to the argument: one about asymmetric entrenchment of land-use policies; the other about informational barriers to effective state superintendence of local regulation.

Part I sets the stage by explaining the cumbersome methods local governments now use to extract value from new residential development. These methods either destroy or fail to collect a good part of the value that upzoning ought to create. Part II introduces the proposal. It explains the logic of value capture through auctions (relative to present-day alternatives), as well as our rationale for conditioning the local right to auction development allowances on a state agency's approval of the plan. Part III discusses the likely effects of our proposal on the local political economy of land-use regulation, and on the monitoring capacity of state agencies charged with overseeing local plans. Part IV responds to objections. The final Part concludes.²⁶

I. VALUE CAPTURE, DONE BADLY

A. *The Transformation of Zoning: From Nuisance Prevention to Tacit Value Capture*

The original theory of zoning presupposed that land uses should be separated so that noisome industrial and commercial activities would not interfere with peaceable residential living. Zoning was envisioned as a clear-cut, ex-ante substitute for the unpredictable common law of nuisance.²⁷ Projects conforming to objective requirements—use, height, bulk, setbacks, etc.—would be permitted “as of right.” The actual practice of zoning today bears little resemblance to the theory. Especially in high-cost housing markets, development permitting has become thoroughly discretionary, often requiring project-by-project negotiations over design, scale, public benefits, affordable-housing set asides, and so much more.²⁸ What happened?

26. One note before proceeding: to keep this Article reasonably short and to the point, we have omitted the usual literature review about the serious social costs of urban housing-supply restrictions and the obduracy of low-density residential zones. We have cited some of the relevant literature in this Introduction, *see supra* notes 5–15, and readers who want a more extensive review are referred to other work. *E.g.*, Elmendorf, *supra* note 15, at 86–94 (reviewing literature).

27. *See* ROBERT C. ELLICKSON & A. DAN TARLOCK, LAND USE CONTROLS: CASES AND MATERIALS 57–60 (3rd ed. 1981).

28. For an in-depth look at current development-permitting practices in California, see generally Moira O'Neill et al., *Developing Policy from the*

The original theory of zoning was badly eroded by two developments in the 1970s.²⁹ Home equity, particularly in coastal cities, began to rise faster than the general level of inflation, and property-tax bills went up, too.³⁰ This contributed to tax revolts such as California's infamous Proposition 13, which dramatically cut property taxes and strictly limited their future growth. Because property taxes were the traditional source of local government revenue³¹—and voters apparently did not want dramatic cuts to local services—local officials started looking for other revenue streams. Requiring new development to “pay its own way” was both politically appealing and theoretically reasonable.

Under the old pre-Proposition 13 regime, it was expected that new residential development would support the cost of associated infrastructure through property taxes paid over time. Proposition 13 (and similar measures in other states) called this assumption into doubt. Because new development could no longer be counted on to pay for itself after the fact, it needed to do so beforehand. “Flexible” zoning got the job done.³² By establishing discretionary-development regimes, local officials could condition a project's approval on the developer's provision of public infrastructure, parks, funding for schools, or whatever else officialdom prioritized at the time.³³

Ground Up: Examining Entitlement in the Bay Area to Inform California's Housing Policy Debates, 25 HASTINGS ENVTL. L.J. 1 (2019).

29. Other forces, long at work, also contributed to the erosion, such as planners' lack of foresight about where development would be most valuable, and in what form. See ELLICKSON & TARLOCK, *supra* note 27, at 75–79 (reviewing literature that challenges the supposition that planners can foresee where housing-stock growth would be valuable).
30. See WILLIAM A. FISCHER, ZONING RULES!: THE ECONOMICS OF LAND USE REGULATION 212–15 (2015). In an inflationary environment, the nominal rise in prices translates to a real gain for homeowners who have a fixed-rate mortgage. Moreover, as Fischer explains, because the nominal increase in most other investments' values was subject to capital-gains taxation, owner-occupied homes became uniquely attractive investments during the 1970s inflationary period (owing to a capital-gains exclusion). *Id.* at 212–13.
31. See Richard A. Musgrave, *The Tax Revolt*, 59 SOC. SCI. Q. 697, 697–98 (1979).
32. See Daniel P. Selmi, *The Contract Transformation in Land Use Regulation*, 63 STAN. L. REV. 591, 601 (2010); Keith R. Ihlanfeldt, *Introduction: Exclusionary Land-Use Regulations*, 41 URB. STUD. 225, 257 (2004).
33. See, e.g., MARLA DRESCH & STEVEN M. SHEFFRIN, WHO PAYS FOR DEVELOPMENT FEES AND EXACTIONS? 25–28 (1997) (recounting history and analyzing incidence of exactions).

The other source of pressure on the traditional model of zoning was homeowner activism.³⁴ As Fischel has argued, inflation and a rise in home equity during the 1970s made homeowners ever more concerned about protecting their homes' values, which for most was their largest asset.³⁵ Discretionary-permitting regimes, sometimes coupled with neighborhood-level review boards, gave homeowners a chance to shape and customize each potential project in their neighborhood. By fettering new development with ad hoc conditions and limitations, homeowners could protect their views, maintain open spaces, ensure architectural-style compatibility, and keep poor people out of their communities. All of this reduced the likelihood of an adverse shock to home values in the neighborhood.

No device better exemplifies the 1970s' transformation of land-use regulation than the "development agreement."³⁶ This is a contract whereby a local government agrees to allow certain forms and densities of development on identified parcels in the future, in return for the developer providing specified benefits to the city.³⁷

Development agreements positioned local elected officials to balance their city's fiscal needs against the demands of neighbors and interest groups. By zoning for much less housing than market conditions warranted, or by threatening to downzone specific parcels on which a project had been proposed, local governments could push developers to propose a deal. Proposal in hand, officials could take the pulse of neighbors, and then either quash the project or demand a better deal.

34. See FISCHEL, *supra* note 30, at 205–12.

35. See *id.* at 214–15.

36. See generally DAVID L. CALLIES ET AL., DEVELOPMENT BY AGREEMENT: A TOOL KIT FOR LAND DEVELOPERS AND LOCAL GOVERNMENTS 2–3, 15–36 (2012); ARDEN H. RATHKOPF ET AL., RATHKOPF'S THE LAW OF ZONING AND PLANNING § 44:1 (Sarah C. Bronin & Dwight H. Merriam eds., 4th ed. 2019). Development agreements emerged after courts held that local governments have essentially unlimited discretion to change the zoning and development regulations applicable to a given site long after the developer has submitted her project application. For example, the California Supreme Court ruled in 1976 that developer who had spent millions of dollars preparing a site and putting in roads and utilities, all with proper permits, had no vested right to complete her project under the rules in place at the time she submitted her application. *AVCO Cmty. Developers, Inc. v. S. Coast Reg'l Comm'n.*, 553 P.2d 546, 549–50, 554 (Cal. 1976). The only way the developer could protect herself against possibly calamitous regulatory changes was to bind the city with a contract. Though many courts had held that local governments could not limit their future regulatory power by contract, the California legislature in 1979 expressly authorized such limitation through development agreements, see Cal. Gov't Code §§ 65864–65 (1984), and courts and legislatures in other states followed suit.

37. CALLIES ET AL., *supra* note 36, at 15–22.

Development agreements are but one example of the numerous devices that local governments utilize as a condition of project approval to extract resources from developers.³⁸ Broadly speaking, we can categorize these devices by the medium of exchange (cash versus in-kind benefits), and the rigidity of the local government’s demand (a fixed schedule versus case-by-case negotiation). No public demand is inexorably fixed, but there is a big difference between legislated requirements that govern all projects until changed through the legislative process, and exactions negotiated case-by-case for each project. Table 1 provides examples in each category.

Table 1. Typology of Value Capture Devices

	Fixed Schedule	Case-by-Case Negotiation
Money	Impact fees (which may finance roads, sewers, schools, parks, transportation, public art, or any other service that the local government provides, at least in part, to service the development)	Development agreements; ad hoc exactions and site-improvement requirements; community-benefit agreements
In-Kind Benefits	Inclusionary zoning; density-bonus ordinances; green-building standards; street-and-sidewalk improvement requirements; historic-façade-preservation requirements	

Inclusionary zoning and its near cousin, the density-bonus or “incentive-zoning” ordinance, have emerged as particularly important examples of the fixed-schedule/in-kind-benefits quadrant.³⁹ Inclusionary

38. For a comprehensive review, see Selmi, *supra* note 32, at 597, 602–03.

39. See David L. Callies & Derek B. Simon, *Fair Housing, Discrimination and Inclusionary Zoning in the United States*, 4 J. INT’L & COMP. L. 39, 65–66 (2017); BRIAN STROMBERG & LISA STURTEVANT, WHAT MAKES INCLUSIONARY ZONING HAPPEN? 1–4 (2016), available at <http://landuselaw.wustl.edu/Articles/Inclusionary%20Zoning%20Rept%202016.pdf> [<https://perma.cc/JC6F-RUT>].

All of the recent state-level and citywide upzoning proposals with which we are familiar have affordable-housing conditions. For example, California now has a statewide density bonus statute that allows developers to build a story higher than the applicable zoning (and demand other concessions) if the developer meets certain affordability targets. See JON GOETZ & TOM SAKAI, MEYERSNAVE, GUIDE TO THE CALIFORNIA DENSITY BONUS LAW 3, 5, 8 (2020), available at <https://www.meyersnave.com/wp-content/uploads/California-Density-Bonus-Law.pdf> [<https://perma.cc/EPL4-7QZE>]. Prominent citywide upzonings in Seattle, Austin, and Minneapolis all featured affordable-housing conditions. See Daniel Beekman, *Seattle Upzones 27 Neighborhood Hubs, Passes Affordable-Housing Requirements*, Seattle Times (Mar. 18, 2019, 4:30 PM),

zoning requires developers of market-rate projects to set aside a designated fraction of the units as price-restricted housing for low- or moderate-income households. Density-bonus ordinances relax otherwise-applicable density, size, parking, and other restrictions in exchange for additional price-restricted units.⁴⁰ Some local governments also use density bonuses to reward environmentally exceptional projects or projects with other public benefits.⁴¹

B. “Public Benefit Zoning”: Value Capture Becomes Explicit

Zoning’s transformation into a tool of value extraction was not without controversy. Early on, a few state courts harshly criticized and tried to shut down the overt exchange of rezoning for money.⁴² In 1987, the U.S. Supreme Court stepped in, holding that the Takings Clause requires a qualitative “nexus” between any property exaction that a government demands as a condition of project approval and the project’s identifiable harms or infrastructure needs.⁴³ A local government may not, for example, demand a public right of beach access through a landowner’s property if the proposed development would merely impinge on public views, rather than encroach on public rights of way.⁴⁴ Soon afterwards, the Court also held that exactions may not

<https://www.seattletimes.com/seattle-news/politics/seattle-upzones-27-neighborhood-hubs-passes-affordable-housing-requirements/> [https://perma.cc/YK2X-NVRY]; Ryan Thornton, *Council Passes Affordable Housing Density Bonus Program*, AUSTIN MONITOR (May 10, 2019), <https://www.austinmonitor.com/stories/2019/05/council-passes-affordable-housing-density-bonus-program/> [https://perma.cc/LB9N-HES9]; *Amended and Restated Unified Housing Policy of the City of Minneapolis, Community Planning & Economic Development* (Dec. 7, 2018), http://www.minneapolismn.gov/cped/housing/cped_affordable_housing_resolution [https://perma.cc/C479-54ZZ]. A 2017 California statute that streamlines permits for certain projects in jurisdictions that have failed to meet state housing goals requires qualifying projects to include a percentage of below-market-rate (BMR) units. *See* CAL. GOV’T CODE § 65400 (2017). And the upzoning-near-transit bills recently debated in California and Washington would similarly have required qualifying projects to satisfy BMR-share conditions. *See supra* notes 23–24.

40. *See, e.g.*, Goetz & Sakai, *supra* note 39, at 3–6 (summarizing concessions available under state density-bonus law).
41. *E.g.*, SEATTLE, WASH., MUNICIPAL CODE § 23.41.004 (2020).
42. *See, e.g.*, *Mun. Art Soc’y v. City of New York*, 522 N.Y.S.2d 800, 803–04 (N.Y. Sup. Ct. 1987) (reversing the city’s sale of site to a developer because developer was promised a \$57 million price reduction if the city did not provide a zoning bonus); Jerold S. Kayden, *Zoning for Dollars: New Rules for an Old Game: Comments on the Municipal Art Society and Nollan Cases*, 39 WASH. U. J. URB. & CONTEMP. L. 3, 12–13, 37 (1991).
43. *Nollan v. Cal. Coastal Comm’n*, 483 U.S. 825, 837 (1987).
44. *See id.* at 838–39.

be grossly disproportional in magnitude to the project's reasonably foreseeable harms or infrastructure needs.⁴⁵ The most recent Supreme Court decision in this lineage extended in-kind exactions' nexus-and-proportionality requirement to monetary fees.⁴⁶

The economist William Fischel was an early critic of this jurisprudence.⁴⁷ He argued that the nexus requirement just made land-use bargains less efficient. It pushed local governments to barter with developers, negotiating in-kind exactions when a cash transfer would have been cheaper for the developer and more valuable to the local government. The nexus-and-proportionality requirement also made local governments waste time and money on pointless justificatory studies, studies that any consultant worth her salt would reverse-engineer to reach whatever conclusion about "impacts" served her client's interests.

Fischel urged local governments and their judicial and legislative overseers to abandon the pretense of rational planning in the public interest. Developers have better information than public officials about what prospective homeowners and tenants actually want, and about how to provide those forms of housing at the lowest cost, so developers rather than planners and politicians should initiate rezonings. To facilitate rezoning, courts ought to let local governments put whatever price and other conditions they want on development permits, at least if the permits would allow developers to build at more than the "normal" (median) density of developed parcels in the jurisdiction.

Fischel's plea did not move the federal courts: The nexus requirement remains the law of the land. Yet the actual practice of urban land-use regulation today bears more than a passing resemblance to what Fischel envisioned a generation ago. Sophisticated local governments make no effort to conceal their value-extraction ambitions.⁴⁸ A cottage industry of consultants has sprung into action,

45. *Dolan v. City of Tigard*, 512 U.S. 374, 391 (1994) ("We think a term such as 'rough proportionality' best encapsulates what we hold to be the requirement of the Fifth Amendment. No precise mathematical calculation is required, but the city must make some sort of individualized determination that the required dedication is related both in nature *and extent* to the impact of the proposed development.") (emphasis added).

46. *Koontz v. St. John's River Water Mgmt. Dist.*, 570 U.S. 595, 599 (2013).

47. This paragraph summarizes Fischel's thinking on the topic in 1985. *See supra* note 24, at 75–101. For his latest approach, see FISCHEL, *supra* note 30.

48. For example, many city officials in California said that they opposed the recent statewide upzoning bills because the bills would deprive cities of their ability to condition rezoning so as to capture the value conferred by the rezoning. *See, e.g.*, Joe Fitzgerald Rodriguez, *SF Lawmaker Threatens to Sue State if Transit-Oriented Development Bill Passes*, S.F. EXAMINER (Mar. 13, 2018), <https://www.sfexaminer.com/news/sf-lawmaker-threatens-to-sue-state-if-transit-oriented-development-bill-passes/mggallery/image/>

helping local governments that are open to some form of upzoning get the most buck for their bang⁴⁹ The consultants' mantra is simple: "No densities without amenities."⁵⁰ Rezoning for more development should never occur "until Public Benefit Zoning policies are established."⁵¹ And what, precisely, is a "public-benefit zoning policy"? To quote a leading practitioner, it is an "*explicit* attempt to recapture land value increases"⁵² in the form of impact fees, affordable housing units, land dedications, and other "community benefits."⁵³

The linchpin of public-benefit zoning is the "residual land value analysis."⁵⁴ A consultant evaluates development possibilities for parcels that may be rezoned, estimating total development costs and likely developer revenues under several rezoning scenarios. The difference (the residual) is "what the developer can pay for land and still make a profit."⁵⁵ The local government uses the estimated residual to "determine the level of required community benefits from a new development, while at the same time maintaining the development's financial feasibility."⁵⁶ The idea is to set community-benefit demands at a level that makes development or redevelopment of a parcel just slightly more profitable than the parcel's next most remunerative use.

Of course, none of this tracks with the notion that fees and exactions may only be used to recover costs that a development imposes on the public. But no matter. More consultants are called into service to gin up nexus studies premised on every imaginable cost-inflating assumption.⁵⁷ Treating those studies' results as a legally defensible

sf-sb827001/ [https://perma.cc/8J97-V9F4] (reporting on San Francisco Board of Supervisors' resolutions to oppose the statewide upzoning bill).

49. For examples of their handiwork, see, e.g., DYETT & BHATIA, REDWOOD CITY COMMUNITY BENEFITS PROGRAM, COMMUNITY BENEFITS PROGRAM BRIEF (2014), available at <http://www.redwoodcity.org/Home/ShowDocument?id=4180> [https://perma.cc/GC8U-F954]; NICO CALAVITA & MARIAN WOLFE, WHITE PAPER ON THE THEORY, ECONOMICS AND PRACTICE OF PUBLIC BENEFIT ZONING (2014), available at http://ebho.org/wp-content/uploads/2011/09/LVR-White-Paper-ExecSum_141113.compressed.pdf [https://perma.cc/H794-PHMF].
50. CALAVITA & WOLFE, *supra* note 49, at iv.
51. *Id.* at ix.
52. *Id.* (emphasis added).
53. *Id.* at 11–12.
54. *Id.* at 5.
55. *Id.*
56. *Id.*
57. *Cf.* GEOFFREY L. ROBINSON & CHRISTOPHER A. CHOU, DO POST-PALMER AND PATTERSON RESIDENTIAL NEXUS STUDIES SATISFY APPLICABLE CONSTITUTIONAL AND STATUTORY REQUIREMENTS? (2014)

upper bound, the local government then adopts a *tiered* impact-fee ordinance, with lower per-housing-unit or per-square-foot fees applied to parcels where building in the expanded zoning envelope would be relatively costly compared to the market value of the finished units.⁵⁸ To illustrate, imagine a neighborhood in which all parcels have traditionally been zoned for buildings up to forty feet tall. A contemplated rezoning would allow one-hundred-foot buildings near two major intersections, fifty-foot buildings along certain corridors, and otherwise leave the forty-foot cap in place. Concurrent with the rezoning, the local government enacts a three-tier impact fee, with one rate set at the level that would recover the estimated residual for projects that build to one-hundred feet, another rate set to recover the estimated residual for fifty-foot buildings, and still another to recover the residual for forty-foot buildings. This is the state of the art today, exemplified by recent upzonings in San Francisco and Santa Monica.⁵⁹

If the nexus study does not support a fee schedule that would recover the full residual, the local government can always supplement impact fees with other community-benefit demands, such as requiring developers of high-value sites to set aside more units as affordable housing, to pay union wages, to install public art, to plant gardens and street trees, or to do pretty much anything else that the local government might want. The lower federal and state courts have facilitated this in various ways, such as by categorizing inclusionary zoning as an ordinary commercial regulation, exempt from the heightened scrutiny accorded to property exactions and fees.⁶⁰

C. *A Critique of Contemporary Value Capture*

Though local governments have embraced the “public-benefit zoning” theory, there remain serious problems with its practice. Cities today have three basic tools for recapturing upzoning’s value: legislated schedules of fees, legislated schedules of in-kind benefits, and ad-hoc exchanges (see Table 1). None of these tools does value capture very well.

To see the difficulties, consider the best-case scenario: a legislated impact-fee schedule that is perfectly calibrated to extract the land-value residual from every parcel, tantamount to a special assessment on upzoning.⁶¹ The fee per square foot of new construction is very high on

(critiquing methods used in nexus studies for affordable-housing impact fees).

58. CALAVITA & WOLFE, *supra* note 49, at vii–viii.

59. *Id.* at 19–29.

60. *See, e.g.*, Cal. Bldg. Indus. Ass’n v. City of San Jose, 351 P.3d 974, 978–79 (Cal. 2015).

61. States that authorize special assessments typically require them to be used for recapturing the benefit provided by a specific piece of infrastructure rather than a change in zoning. There are a few examples from other

parcels that are large, flat, vacant, and well-located. It is smaller on parcels that are awkwardly shaped, already in use, and those that would otherwise be expensive to redevelop. The fee, being perfectly calibrated, reduces the land-value residual on every parcel to just above zero. Each parcel that would have been profitable to develop or redevelop absent the fee is *just barely* profitable to develop with the fee in place.

Now imagine that the President imposes a tariff on steel, or that an immigration crackdown dries up the supply of low-wage labor. Suddenly the cost of construction is much higher than the residual-land-value analysis had anticipated, and the actual residual is negative.⁶² New development will grind to a halt unless the fees are reduced.⁶³

For the same reason, a fee schedule calibrated for value capture will increase the returns to NIMBY activism. Once such a schedule is in place, any modest, across-the-board increase in the cost of development will make the land-value residual negative *everywhere* in the jurisdiction, bringing development to a screeching halt. All it would take is (say) a ballot measure that either modestly increases the city's inclusionary-zoning requirement, imposes a somewhat costly set of environmental standards, or gives neighbors of proposed projects new procedural rights that can be used for delay. By contrast, in the absence of the fee schedule, a ballot initiative that modestly increases development costs across the board would kill development only on the hardest-to-develop sites. Elsewhere the land-value residual would remain positive.

Of course, real-world fee schedules are not perfectly calibrated to extract 99% of the residual on every parcel included in a rezoning. Yet the imperfections may not make the fee schedule any more conducive to efficient land use. Under a lumpy, imperfectly calibrated schedule, the required fee is bound to exceed the land-value residual on some,

countries of special assessments on upzonings. *See infra* notes 192–195 and accompanying text.

62. We are using “negative” here a bit loosely, to refer to a residual that is smaller in expectation than the residual that would be necessary for the developer to earn a normal, risk-adjusted rate of return.
63. *Cf.* J.K. Dineen, *SF Residential Projects Languish as Rising Costs Force Developers to Cash Out*, S.F. CHRONICLE (Aug. 27, 2018), <https://www.sfchronicle.com/bayarea/article/SF-residential-projects-languish-as-rising-costs-13183841.php> [<https://perma.cc/TMV3-WGMP>] (reporting that 10% to 15% annual increases in construction costs over five-year period made many already-entitled residential projects no longer profitable to build, given fee and exaction schedule, notwithstanding San Francisco's sky-high housing prices).

perhaps many, sites. Indeed, if neighborhood NIMBYs had a hand in its development, the fee may have this effect by design.⁶⁴

No real-world fee schedule is entirely rigid. If a trade shock, economic downturn, or NIMBY win turns the land-value residual negative on a big swath of parcels, the city council may revisit and relax the fees. But negotiations to revise the schedule will be difficult. Developers, for competitive reasons, will not want to reveal their actual cost structures. NIMBYs will lobby to keep the fees high, probably hiding behind a professed concern for affordable housing or the environment. Other pressing matters may compete for the legislative body's time and attention. Time that should be spent debating where new housing should go will instead be consumed fighting about the level of the fees.

To do value capture with legislated impact fees is to either embark on a never-ending, always-contentious project of fee-schedule adjustment, commit to high fees that end up deterring development on many sites, or to lowball the fees and leave most of the value conferred by upzoning uncaptured.

What is the alternative? Well, a city can always do value extraction using a fixed schedule of in-kind benefits such as affordable-housing units. But this is even worse. It carries forward the principal vice of impact fees—the setting of rigid “prices,” which will deter the development of marginal sites and reward NIMBY activism—while abandoning the fees' principal virtue, an efficient medium of exchange. As Fischel observed long ago, in-kind benefits are generally worth less than their cash equivalent to local governments.⁶⁵ This of course raises the question of why local governments ever choose the in-kind alternative. One reason is that it allows local governments to end-run certain legal limitations on the size of fees.⁶⁶

The remaining mode of value capture is the negotiated, ad hoc deal, hashed out between the developer and the planning agency or city council. Fischel rightly emphasized that this mode has certain advantages, particularly if cash is the medium of exchange.⁶⁷ Most significantly, the ad hoc approach reduces demands on planners' foresight. Developers (who know the market better) make the initial

64. A high fee may deter redevelopment of smaller parcels with existing homes (where the land-assembly, demolition, and opportunity cost of redevelopment would be substantial), while still allowing development on large vacant sites—which are unlikely to be found in residential neighborhoods.

65. *See supra* Part I.C.

66. *See, e.g.*, *Cal. Bldg. Indus. Ass'n v. City of San Jose*, 351 P.3d 974, 979 (Cal. 2015) (holding inclusionary zoning to be an ordinary exercise of the police power, not subject to constitutional limitations on exactions and fees); *see also* Part IV.F (exploring the question of whether local politicians sometimes prefer in-kind exactions).

67. *See supra* note 47 and accompanying text.

proposal about what should be built where, and the government decisionmaker needs to decide only whether a developer's cash proposal is sufficient to pay off the project's opponents or otherwise make the project worthwhile. Moreover, because the development price is negotiated case-by-case, it can be adjusted in response to construction-cost shocks, NIMBY activism, parcel-specific characteristics, or anything else that affects the land-value residual associated with a given project at a given time.

Yet as Hills and Schleicher have argued, the case-by-case modality of rezoning and development permitting has two very significant downsides.⁶⁸ First, as a matter of political economy, project-specific decision-making tends to mobilize nearby homeowners and neighborhood interest groups, who have a lot at stake in each such decision.⁶⁹ Homeowners and neighborhood groups generally oppose local intensification of land use, so any decision-making procedure that mobilizes their participation will tend to result in land-use stasis rather than an increase in density. By contrast, if rezoning is done on a citywide basis, business and municipal-labor interests—groups that would benefit from lower housing prices and a bigger tax base—will mobilize. It is not worth their while to lobby extensively on behalf of individual projects, because no one project will greatly affect the city-wide tax base or the regional housing prices.⁷⁰

Second, while discretionary, project-specific decision-making may reduce informational burdens on planners, it creates huge informational costs for developers.⁷¹ A developer has to figure out who the relevant decision-makers are in each neighborhood—not only which public officials are nominally in charge, but also which interest groups have clout—and then learn what they want and what their reservation price is to consent to a rezoning. Interest groups will hold their cards tight to their vests in the hopes of getting better offers from developers. The developers who fare best in this game are likely to be local actors with deep local networks and intimate knowledge of city politics. Yet the most cost-effective developers are big, publicly traded homebuilders,⁷² which mass produce single-family housing on exurban, lightly regulated “greenfields.” In California today, the cost of cookie-cutter greenfield

68. See Hills & Schleicher, *supra* note 25, at 111–12.

69. *Id.* at 112–13.

70. *Id.* at 112–15.

71. *Id.* at 116–20.

72. Housing for LA, *25 Solutions From A Builder's Perspective To Fix The California Housing Crisis*, URBANIZE L.A. (Jan. 10, 2018, 12:00 PM), <https://urbanize.la/post/25-solutions-builder%E2%80%99s-perspective-fix-california-housing-crisis> [<https://perma.cc/8VHL-FC35>] (reporting that national builders “can construct housing for around 15-to-30 percent cheaper” than local builders).

development is roughly *one-fifth* that of customized infill development.⁷³ Although some of this difference probably reflects reasonable building-code requirements and unavoidable site conditions, it is surely the case that competition, economies of scale, and transaction-cost savings would reduce the cost of urban infill development if the law created simple, standardized rights to build simple, standardized apartment and condo buildings in cities.

The public administrative costs of case-by-case value extraction should not be overlooked. Santa Monica's recent experience is illustrative.⁷⁴ The city has a long tradition of using ad hoc development agreements, but local officials decided in the 2000s that they needed to provide a little more guidance. To this end, the city adopted a general plan that designates several areas near transit for greater density, inviting developers to choose among three tiers of additional height and floor-to-area ratio ("FAR"). Developers that pick Tier 1 get a modest three- to seven-foot height increase above base zoning in return for providing affordable housing on site. Those that choose Tier 2 or Tier 3 were allowed more height and FAR in exchange for community benefits. The original plan provided that if a developer elected Tier 2 or 3, the developer and the city would each prepare a residual-value analysis for the site. After reconciling their value estimates, the developer and planning officials were to negotiate a community benefits package and memorialize the deal in a development agreement ratified by the city council. It all sounded great in theory, but the city was soon overwhelmed by the logistics of haggling over dozens of development agreements.⁷⁵ The city council ultimately decided to make Tier 2 height and FAR available in return for a standardized package of price-restricted units and fees, reserving ad hoc deal-making for larger Tier 3 projects.⁷⁶

To sum up: value capture is now central to the practice of municipal land-use regulation, but the available tools to do it have serious downsides. Legislated-fee and in-kind-benefit schedules are likely to

73. JACQUES BUGHIN ET AL., MCKINSEY GLOBAL INST., A TOOL KIT TO CLOSE CALIFORNIA'S HOUSING GAP: 3.5 MILLION HOMES BY 2025, AT 31 (2016), <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Urbanization/Closing%20Californias%20housing%20gap/Closing-Californias-housing-gap-Full-report.ashx> [<https://perma.cc/8KJ6-6W54>].

74. See CALAVITA & WOLFE, *supra* note 49, at 27–29.

75. See CITY OF SANTA MONICA, PLANNING COMMISSION REPORT 2 (Apr. 3, 2013), <https://www.smgov.net/departments/pcd/agendas/planning-commission/2013/20130403/s2013040309b.pdf> [<https://perma.cc/3QRJ-SYV5>] (arguing for administrative "simplicity" over "flexibility" with respect to Tier 2 projects).

76. For background, see CALAVITA & WOLFE, *supra* note 49, at 28–29. For the current schedule, see SANTA MONICA, CAL., ZONING ORDINANCE § 9.23.010 (2017).

deter development of marginal sites while incentivizing NIMBY activism. The closer the schedule comes to realizing the value-capture ideal, the more brittle the city's development regime will become, vulnerable to external shocks and home-grown NIMBY wins alike. The ad hoc alternative is more resilient, but it creates enormous informational costs for developers and administrative costs for cities. Needless to say, the ad hoc approach is also highly conducive to corruption, a further drag on the public's tolerance for development.⁷⁷

II. THE AUCTION MODEL

We propose a regime for rezoning with value capture that combines the informational and administrative advantages of the citywide, schedule-of-fees modality, with the resiliency of piecemeal negotiated deals. In fact, we think our approach will prove easier to administer than a legislated schedule of fees, while also doing a better job than case-by-case deal-making of accommodating changes in the cost of development. Relative to the legislated-schedule approach, our model obviates the need for nexus studies and for updating the schedule in response to changed conditions. Relative to ad hoc deal-making, our approach eliminates project-specific research and haggling over what a particular developer can afford to pay, as well as over how to divide a developer's "community benefits" contribution among the many interest groups that want a piece of it.

Our proposal is to do value capture with auctions. Local governments would decide which parcels to upzone (consistent with state policy), while bidders at the auction and participants in the after-auction market would price the right to build in the upzoned area. Proceeds from the auction would be dedicated to whatever projects or causes must be funded in order to assemble a political coalition *ex ante* for the upzoning.

A. *A Sketch of the Model*

Under the model we envision, state legislatures would authorize local governments that upzone in furtherance of state policy to apply to a state agency, such as California's Department of Housing and Community Development, for permission to auction the newly created development rights. Winning bidders would acquire tradeable development allowances, roughly analogous to the emissions allowances that are now bought and sold under California's cap-and-trade regime

77. See Michael Manville & Taner Osman, *Motivations for Growth Revolts: Discretion and Pretext as Sources of Development Conflict*, 16 CITY & COMMUNITY 66, 76–77 (2017) (arguing, based on case studies, that anti-growth ballot measures are often driven by perceptions of corrupt relationships between local elected officials and developers).

for greenhouse gas emissions⁷⁸ or the transferable quotas used to assign rights to fisheries.⁷⁹

A developer applying to build within the expanded zoning envelope would have to acquire and redeem allowances. The number of allowances would be determined by the size of her project relative to the “development baseline.” For example, if the developer could have built 5,000 square feet under the baseline but the site has been upzoned for 40,000 square feet, and the developer proposes 38,000 square feet, the developer would have to redeem allowances for 33,000 square feet.

To protect landowners’ reasonable expectations, the state legislature should carefully bound the development baseline, rather than leaving it entirely to local governments’ discretion. As Ellickson and Fischel have argued, landowners should not have to pay for the privilege of building something similar to what others have already built.⁸⁰ Longstanding zoning classifications also shape expectations. Accordingly, we recommend defining the baseline as the greater of: (1) the number of square feet that could have been built on the parcel under the zoning map and overlays in effect on the date of the state statute authorizing the auctions; or (2) the median floor-to-area ratio (building size divided by lot size) of parcels that had already been developed for housing within the local government’s territory as of that date.

The number of allowances created by an upzoning would depend on the government’s estimate of the total number of buildable square feet post-upzoning, and the corresponding number under the development baseline. For example, if a total of 2,000,000 square feet may be built after rezoning, but only 500,000 square feet could have been developed under the baseline, allowances for up to 1,500,000 square feet would be auctioned. (Whether these allowances should be time-limited is an important question.⁸¹)

To maximize auction revenues, local governments would delimit market zones or tiers within which the right to build additional housing units is of roughly equal value. Development allowances would be fungible within, but not across, these tiers. A developer who seeks to build in downtown San Francisco, for example, would have to redeem “city center” development allowances, rather than the presumably

78. See AIR RES. BD., CAL. ENVTL. PROT. AGENCY, ARB EMISSIONS TRADING PROGRAM (2015), https://ww3.arb.ca.gov/cc/capandtrade/guidance/cap_trade_overview.pdf [<https://perma.cc/2KNK-AFD7>].

79. See Anna M. Birkenbach et al., *Taking Stock of Catch Shares: Lessons from the Past and Directions for the Future*, 13 REV. OF ENVTL. ECON. & POL’Y 139 (2019).

80. Robert C. Ellickson, *Suburban Growth Controls: An Economic and Legal Analysis*, 86 YALE L.J. 385, 418–24 (1977); WILLIAM A. FISCHEL, REGULATORY TAKINGS: LAW, ECONOMICS, AND POLITICS (1995).

81. See *infra* Part III.B.

much cheaper allowances for building in outlying areas. A local government's assignment of land parcels to tiers could also account for existing uses. A parcel with a three-story building that has been upzoned to allow five stories might be worth redeveloping if housing prices were very high, but probably only if the price of the necessary allowances was modest, as the cost of reengineering or tearing down the existing structure would be substantial.

Assigning parcels to development-allowance tiers will be second nature for local governments that are already engaged in public-benefit zoning.⁸² The underlying logic is the same as assigning upzoned parcels to impact-fee tiers based on location-specific differences in the private costs and benefits of development. But a city doing value capture with auctions need not figure out each parcel's exact residual. A rough ordering of parcels by the difference between redevelopment costs and expected project revenue would suffice.⁸³

Our upzoning-with-auctions model bears a family resemblance to existing transferable-development-rights (TDR) programs.⁸⁴ Under a TDR program, the zoning authority designates separate "sending" and "receiving" zones, and gives landowners in the sending zone tradeable development credits, which are usable only by landowners in the receiving zone.⁸⁵ Receiving-zone landowners who purchase these credits are allowed to build in excess of the otherwise-permitted density on their sites. TDR programs are, in effect, a way to redistribute among landowners the value created by selective upzoning.⁸⁶ The auction

82. *See supra* Part I.B.

83. The reason the local government would not need to know the exact residual is that the allowance market rather than the government would set the price of the right to build. The reason the local government would want an approximate ranking of parcels by the residual is that, in a competitive market, the price of development allowances (like the price of any other good) will be determined by the marginal buyers and sellers—those which value the allowances the least. If a significant number of low-residual sites were included in a mostly high-residual tier, the price of allowances would fail to reflect the value conferred by upzoning on the high-residual sites.

84. *See generally* RICK PRUETZ, *SAVED BY DEVELOPMENT: PRESERVING ENVIRONMENTAL AREAS, FARMLAND AND HISTORIC LANDMARKS WITH TRANSFER OF DEVELOPMENT RIGHTS* 14–17 (1997) (identifying over 100 TDR programs then in effect in the U.S.).

85. *See* John J. Costonis, *Development Rights Transfer: An Exploratory Essay*, 83 *YALE L.J.* 75, 86–87 (1973).

86. *See* Hills, Jr. & Schleicher, *supra* note 25, at 125–27; *cf.* Vicki Been & John Infranca, *Transferable Development Rights Programs: "Post-Zoning"?*, 78 *BROOK. L. REV.* 435, 464 (2013) (explaining various measures in recent TDR programs in New York, meant to ensure that the transferable rights have substantial value).

model allows that value to be redistributed to the general public, not just reshuffled among landowners.⁸⁷

The main differences between our auction proposal and existing models for public-benefit zoning are, first, the mechanism of value capture (auctions rather than scheduled or negotiated public benefits); and, second, the state-approval requirement (most states allow local governments to enact impact-fee and inclusionary-zoning ordinances without getting state approval). Why do it with auctions, and why require state-agency approval? We turn to this next.

B. Why Auctions?

In contrast to existing mechanisms for value capture, the auction's great advantage is that it obtains "public benefits" in their most generally useful form—i.e., as money, which can be spent on anything⁸⁸—while using markets rather than planners to set *and continually adjust* the price. The auction model solves the problem of the mispriced regulatory exaction, one which deters development rather than extracting value from it.

In contrast to legislated affordable-housing mandates and impact-fee schedules, the price of tradeable development allowances would automatically adjust to a level that allows all otherwise-viable projects in the upzoned area to proceed. To see the intuition, imagine a site—say, a commercial warehouse—that has been rezoned for high-density housing. A developer will pay less for this site under a regime in which she must also pay for allowances, compared to an otherwise-similar regime in which she could develop the site without redeeming allowances. Yet with or without the allowance requirement, competition among developers trying to purchase sites will raise the price of the site plus the right to build X square feet on the site to the level at which developers earn a normal (risk-adjusted) rate of return. The effect of introducing the development-allowance requirement is just to redistribute the site-plus-right-to-build price between the site's owner and the development allowances' owners.⁸⁹

Because the price of allowances on the after-auction market would constantly adjust as conditions change, the auction method of value

87. Several of New York City's recent TDR programs also allow receiving-zone landowners to receive extra density or floor-to-area ratio if they make a cash payment to the city for public benefits. *See* Been & Infranca, *supra* note 86, at 450–55. This is very similar to "auctioning the upzone," except that the price of the extra density is set legislatively rather than by auction.

88. Though note that this does not mean there could not be a state mandate to use a set percentage to subsidize housing for poor people. There's a lot to be said for such a rule, although it would limit the range of deals that could be struck locally in order to forge a city-council majority for upzoning.

89. This assumes a competitive market for development.

capture would cushion economic and regulatory shocks. Whereas a fixed schedule of fees or in-kind benefits would bring development to a halt if changes in developers' costs make it infeasible to build (while paying the fees), the same shock in the auction world would simply reduce what developers bid for the allowances. Development would proceed apace, albeit with less money flowing into public coffers.⁹⁰ The auction model's price-adjustment feature also frees up city councils and planners to focus their energies on forward-looking, big-picture questions about which areas to upzone, rather than being constantly diverted by calls to adjust existing fee and public-benefit schedules in response to supposedly changed conditions.

In addition to the fiscal reward for upzoning, our auction model would create powerful fiscal incentives for local governments to streamline and clarify their permitting protocols, design standards, and the like. If a local government continued to use a highly discretionary process, the costs of regulatory uncertainty would be borne by the local government itself in the form of foregone revenue.⁹¹ Bidders would not offer very much money for development allowances that merely license the owner to haggle with city officials.⁹² But if the allowances actually functioned as entitlements to build, they would be enormously valuable in the high-cost, supply-constrained markets that are increasingly characteristic of today's big cities.⁹³

C. *Why State Approval?*

For several mutually reinforcing reasons, we recommend conditioning the local right to auction development allowances on state approval of the upzoning-with-auctions plan. These reasons include:

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90. In an extreme case, the price could fall all the way to zero. The price of development allowances on the after-auction market will remain positive only to the extent that market participants believe the price of a new unit of housing may exceed the cost of developing it on the most-costly-to-develop sites in the zone. As in any competitive market, prices will be set by the marginal buyers and sellers.
 91. One study based on a survey of local planners estimates that permitting times for a typical project are three times as long in heavily regulated than in lightly regulated communities. See Glaeser & Gyourko, *supra* note 10, at 7; see also Housing for LA, *supra* note 72 (providing pro-forma examples of how construction delays plus holding costs rapidly erode the amount that developers will bid for sites).
 92. Brazil has experimented with development rights auctions, and in the City of San Paolo, the allowances sold at depressed prices during a period of political uncertainty about whether developers would be able to build in the upzoned area. See Julie Kim, *CePACs and Their Value Capture Viability in the U.S. for Infrastructure Funding* 10–11 (Lincoln Inst. of Land Pol'y, Working Paper No. WP18JK1, 2018) (describing effects of political transition from a mayor who had supported the auctions to a new mayor who had criticized the auctions during his campaign).
 93. For a ballpark illustration, see *infra* text accompanying notes 117–131.

screening local regulatory commitments; discouraging “strategic downzoning”; answering certain legal objections to the auction model; and nudging local governments toward welfare-enhancing standardization of property rights.⁹⁴

1. Screening Local Regulatory Commitments

The auctioning of development allowances would create a contract between the local government and the allowances’ purchaser.⁹⁵ Winning bidders would convey money to the local government in exchange for promises about the terms for the development-allowances’ use. To the extent that these exchanges amount to legally enforceable contracts,⁹⁶ they can restrict or condition local regulation of land use in the future—for good or ill.⁹⁷ A critical function of state administrative review of auction plans is to filter out bad regulatory commitments while allowing good ones to take effect.⁹⁸

94. If the legislature authorizes local governments to set minimum “reservation prices” for the auction, state review will also be necessary to ensure that the reservation price is set at a reasonable level to guard against market failures (e.g., a shortage of bidders due to some exigency), rather than at a level which is intended to prevent most of the allowances from being sold (as NIMBY groups may wish).

It might also be argued that the state-approval step should be used to check possible overinvestment in housing construction during market “bubbles.” Yet bubbles are notoriously hard to identify in real time, see Edward Glaeser et al., *A Real Estate Boom with Chinese Characteristics*, 31 J. ECON. PERSP. 93, 106–07 (2017) (showing that answering the question of whether there is a bubble in Chinese real estate requires knowledge of the path of future economic growth for decades), and much mischief could result from a state power to tackle bubbles by restricting development, rather than with other tools, such as informational remedies or restrictions on leveraged investments. Given the scale and consequences of the housing shortage in Northeastern and West Coast metro areas, it seems delusional to worry about over-building. See Elmendorf, *supra* note 15 at 86–89.

95. Cf. Christopher Serkin, *Public Entrenchment Through Private Law: Binding Local Governments*, 78 U. CHI. L. REV. 879 (2011) (examining various ways in which property and contract law are used by local governments to entrench land use regulations).

96. In general, local governments may bind themselves to perform or pay damages for breaching a contractual regulatory commitment, but the remedy of specific performance is only available if expressly authorized by the state legislature. See *id.* at 892–94.

97. For an illuminating investigation of the use of private law to entrench land use regulation, see generally *id.*

98. Cf. Serkin, *supra* note 95, at 933–63 (arguing that regulatory entrenchment through private law is neither good nor bad per se, but that, because of the stakes, it should be subject to greater deliberation or review than regular, non-entrenching public decisions).

A short-sighted local government (or one that is controlled by NIMBYs) might auction the development allowances created by a modest upzone while promising that the local government will *never upzone again*, either citywide or in targeted areas. This promise might make the auctioned allowances more valuable, but only by entrenching a welfare-reducing, supply-constricting regulatory commitment.

Other regulatory commitments would probably be welfare enhancing. A local government seeking to increase the value of its development allowances might bind itself to reforms that curtail neighborhood-gadfly obstructionism, such as by removing certain public-hearing requirements, or by limiting neighbors' rights of internal appeal.⁹⁹ If the city's planning department has a terrible reputation, the city might even transfer its project review and approval responsibilities to a state agency, or it might promise to compensate the developer if the city loses an appeal of a project's denial. A city could also promise not to unilaterally change certain rules that apply to the upzoned sites, while reserving the right to change those rules with the state agency's consent. This would create a safety valve to accommodate change if a genuine need arises, while giving market participants some assurance that if local NIMBYs win the next election, they will not be able to shut down new construction and gut the value of extant development allowances.¹⁰⁰

The point of these examples is not to say exactly which regulatory commitments should or should not be made in connection with a development-allowance action. It is merely to illustrate a range of possible commitments, some of which are almost surely welfare-reducing—but perhaps tempting for a NIMBY-dominated or fiscally pressured local government—and others of which are very likely welfare-enhancing. By conditioning the right to auction development allowances on state administrative approval, the state can ensure that

99. Cf. Einstein et al., *supra* note 12, at 13–14 (documenting severe overrepresentation of homeowners at public meetings on development projects); SAN FRANCISCO GENERAL PLAN, 2014 HOUSING ELEMENT I.90–I.91 (2015), https://default.sfplanning.org/plans-and-programs/planning-for-the-city/housing-element/2014HousingElement-AllParts_ADOPTED_web.pdf [<https://perma.cc/4BTP-E75Z>] (discussing neighbor-initiated “discretionary reviews” by Planning Commission as a significant barrier to development in “high income areas” of the city).

100. Technically, if the mechanism for entrenching the regulatory commitment is the contract by which development allowances are conveyed to winning bidders, a local government would probably be allowed to break the commitment so long as it compensated allowance holders for any associated reduction in the value of their investment. See Serkin, *supra* note 95, at 916–17 (noting that reliance damages are usually the only remedy for counterparties when a government breaches a contract). For local regulatory commitments to be specifically enforceable, the state would have to authorize this in enabling legislation. See *infra* note 175 and accompanying text.

local regulatory commitments made in connection with the auctions are reasonable and aligned with state goals.

2. A Check on Strategic Downzoning

Another reason for the state-approval requirement is to curtail strategic downzoning. The concern is that a city with market power might try to boost auction prices by reducing permissible densities or building envelopes on non-upzoned sites, or by enacting extremely cumbersome permitting requirements for projects within the development baseline. This concern is not just theoretical: local officials in São Paulo, Brazil (the one country that has authorized development-rights auctions) downzoned the entire city before auctioning an upzone in select locations.¹⁰¹

The risk of strategic downzoning is not unique to our proposal. It exists whenever cities have an opportunity to extract value via land-use regulation.¹⁰² A handbook on density-bonus zoning notes the importance of reducing the existing base zoning in many cases.¹⁰³ Taking this message to heart, Culver City, California, cut the base density of its mixed-use zone roughly in half when it adopted a density bonus ordinance in 2008.¹⁰⁴

A state-approval requirement would not end all abuses, but it should help to limit them. The state agency could deny approval to local governments that have downsized their aggregate building envelope since the auction-authorizing statute took effect, or that discriminate against projects that do not require development allowances (for example, by subjecting within-baseline projects to more onerous review standards or procedures than above-baseline projects).

3. Answering Legal Objections to “Zoning for Dollars”

There is also a legalistic reason for the state-approval requirement. We noted earlier that some courts have objected to the explicit exchange of rezoning for cash, seeing it as corrupting what should be a

101. HIROAKI SUZUKI ET AL., *THE WORLD BANK, FINANCING TRANSIT-ORIENTED DEVELOPMENT WITH LAND VALUES* 218 (2015), *available at* <http://documents.worldbank.org/curated/en/468551468165570019/pdf/936860PUB001SB0TransportDevLV0final.pdf> [<https://perma.cc/BX5Z-N3G5>].

102. *See generally* Steven J. Eagle, *The Perils of Regulatory Property in Land Use Litigation*, 54 *WASHBURN L.J.* 1, 1–3 (2014) (examining the social costs of regulatory property).

103. *See* 2 ERIC DAMIAN KELLY & PATRICK J. ROHAN, *ZONING AND LAND USE CONTROLS* § 8.01 (2020), <https://advance.lexis.com/document/?pdmfid=1000516&crd=774a19b1-b5f0-4c57-bcba-f60e7bc2a6b4&Pd docfullpath=%2Fshared%2Fdocument%2Fanalytical-materials%2Furn%3AcontentItem%3A52DD-3F70-R03M-K423-00000-00&pdtocnodeidentifier=N10FAF&eomp=yd5dk&prid=9e278ce1-6542-474c-9b55-7a5d3ccaef39>.

104. *See* CALAVITA & WOLFE, *supra* note 49, at 29.

rational, public-spirited planning process.¹⁰⁵ The state-approval requirement defangs this objection.

Under our proposal, the state, without a hand in the till, would choose the criteria that make an upzone in the public interest. A similarly disinterested state agency would decide whether a particular proposed upzoning meets those criteria. The criteria could be narrow and rigid (e.g., “Are the sites to be upzoned located within one-quarter mile of a transit stop?”), or very broad (e.g., “Are the sites to be upzoned safe for housing, and located in a region where the price of housing materially exceeds the usual cost of construction?”).

In a legal challenge, our scheme’s public-profit quality could be defended not as a way of raising revenue, but as a rational means by which the state incentivizes local compliance with the state’s housing and land-use policies.

4. Standardizing Vertical Property Rights

The final reason for the state-approval requirement is to nudge local governments toward the welfare-enhancing standardization of property rights.¹⁰⁶ As we explained earlier, one of the principal problems with case-by-case land-use regulation is that it makes the contours of urban property rights very difficult for outsiders to discern.¹⁰⁷ These information costs are probably responsible in part for the massive disparity between the costs of infill and greenfield housing development.¹⁰⁸

It is possible to accommodate variation in urban character and preferences within a framework of fairly standardized property rights. Japan provides a good example. The Japanese government has created a menu of twelve zoning classifications.¹⁰⁹ Local governments have broad leeway to decide which zones to select from the menu and where to put them; but local governments have only limited authority to

105. *See supra* note 42 and accompanying text.

106. *Cf.* Henry E. Smith, *Standardization in Property Law*, in RESEARCH HANDBOOK ON THE ECONOMICS OF PROPERTY LAW (Kenneth Ayotte & Henry E. Smith eds., 2012) (restating the information-costs theory of standardization in Anglo-American property law); Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: the Numerus Clausus Principle*, 110 YALE L.J. 1, 8 (2000) (developing non-canonical theory about property rights and information costs); Hills & Schleicher, *supra* note 25, at 135 (critiquing Merrill and Smith for not addressing contemporary public-law sources of information costs concerning property rights).

107. *See supra* text accompanying notes 71–76.

108. *See supra* notes 72–73 and accompanying text.

109. André Sorensen et al., *Urban Renaissance as Intensification: Building Regulation and the Rescaling of Place Governance in Tokyo’s High-Rise Manshon Boom*, 47 URBAN STUDIES 556, 562 (2010).

supplement the nationally defined zones with custom local overlays.¹¹⁰ Nor can local governments use permitting delays or discretion as leverage to impose de facto requirements that go beyond the written standards, because developers may elect to have their projects privately certified for compliance with the applicable de jure standards.¹¹¹ It is probably not a coincidence that, since the 1990s, Tokyo has experienced a huge expansion of its housing stock with little runup in prices, while similar “superstar” cities in the U.S. and other industrialized countries have experienced huge price increases but little housing-stock growth.¹¹²

The case for auctioning the upzone certainly does not depend on a state’s adoption of the Japanese model of land-use regulation, but we think the auction model (with a state-approval requirement) could bring about the gradual, voluntary standardization of zoning in American states. Initially, a state’s housing agency would promulgate a Japan-like menu of standardized zones and procedures, while letting local governments decide whether to opt in to menu-based zoning. No local government would be required to use the menu, but in cases where an upzoning plan’s approval is a close call (maybe there is some evidence of strategic downzoning), the state agency could give the benefit of the doubt to local governments that opt for menu-based zoning in the upzoned area.

Menu-based upzoning is likely to be especially attractive to smaller jurisdictions. Other things equal, a smaller jurisdiction will have fewer resources for crafting and implementing its own customized arrangements. National developers also have less of an incentive to learn smaller jurisdictions’ idiosyncratic rules (compared to localities with numerous high-value parcels), so smaller jurisdictions are likely to realize much higher prices for their development allowances if they use

110. A landscape preservation law adopted in 2005 allows some local overlays. See André Sorensen, *Evolving Property Rights in Japan: Patterns and Logics of Change*, 48 URBAN STUDIES 471, 486 (2011); Konomi Ikebe, *A Study About the Japanese Landscape Law Including Cultural Landscape and Historic City Preservation and Restoration Act*, 66 HortResearch 1, 2 (2012). Cities also have some authority to create special use districts. See Anthony C. Petrillo Jr., *Japanese Zoning and Its Applicability in American Cities* 36–37 (Mar. 2017) (unpublished B.S. student project, California Polytechnic State University), <https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1173&context=crpsp> [<https://perma.cc/8J2S-KQUB>].

111. Sorensen et al., *supra* note 109, at 570.

112. See DANIEL SHOAG, *THE HAMILTON PROJECT, REMOVING BARRIERS TO ACCESSING HIGH-PRODUCTIVITY PLACES* 13–14 (2019), https://www.hamiltonproject.org/assets/files/Shoag_PP_web_20190128.pdf [<https://perma.cc/E477-ZBEN>]. To be sure, the reason for this may have as much or more to do with the national government’s ability to effectively upzone urban land with subtle administrative changes to the Building Standards Law, than with cost savings from standardization of urban property rights. See Sorensen et al., *supra* note 109, at 565–71 (detailing a series of changes made from 1987 to 2003 that increased building envelopes within existing zones).

menu-based zoning. As more and more small jurisdictions elect to use the menu, developers will become increasingly familiar with it, and the value of using the menu will therefore increase for everyone. Eventually some bigger jurisdictions may start to participate, too. In this way, the fiscal incentives created by auctioning the upzone could help to bring about the gradual standardization, within states, of vertical property rights in American cities.¹¹³

III. AUCTIONS AND THE POLITICAL ECONOMY OF RESIDENTIAL DENSIFICATION

Whether or to what extent our model generates denser residential land use ultimately depends not on whether auctions are theoretically more efficient than legislated-schedule or negotiated-deal modes of value capture, but on how our model affects the political economy of land-use regulation at local and state levels. Part II touched on some of the relevant local dynamics. This Part pulls those threads together, and also considers how the auction model would interact with existing state frameworks for superintending local regulation.

A. *Auctions in Local Political Context: Facilitating Sticky Upzoning Deals*

It is now widely accepted that neighborhood-level interests—and particularly but not exclusively homeowners' interests—are the main source of political resistance to increased density in residential metro areas.¹¹⁴ Hills and Schleicher have argued that upzoning is therefore more likely to occur if zoning changes are enacted through a procedural framework that knits multiple neighborhoods together into a citywide deal, rather than by addressing each neighborhood or project in isolation.¹¹⁵ The prospect of a citywide deal should engage business and municipal union interests, both of which would benefit from a substantial increase in the citywide housing supply even though they have little at stake in any given project. Neighbors, by contrast, tend

113. To be clear, if the zoning menu is state-promulgated, the standardization is likely to occur within but perhaps not across states. (Japan achieved national standardizations, but only through a national menu.)

Note that one of us has argued at length that local government finance would be improved generally if local governments were provided with state-approved menus of financing tools accompanied by state oversight. See generally Darien Shanske, *The (Now Urgent) Case for State-Level Monitoring of Local Government Finances: Protecting Localities from Trump's "Potemkin Villages of Nothing"*, 20 N.Y.U. J. LEGIS. & PUB. POL'Y 773 (2017).

114. See sources cited in *supra* note 12.

115. Hills & Schleicher, *supra* note 25, at 111–15.

to be most engaged by concrete projects and less attentive to generalized plans.

Our auction model is congruent with Hills and Schleicher’s “citywide deals” approach, and in fact should make such deals both easier to assemble initially and harder to unravel later on. First, because the auction model offers a more efficient mode of value capture than legislated fees and in-kind benefits, it should generate much more revenue from upzoning, which local politicians can use to pay off groups on the margins of the NIMBY coalition and to bring bystanders into the pro-development coalition.¹¹⁶

The potential surplus is truly enormous. A back-of-the-envelope calculation for San Francisco makes this clear. On average each year, a paltry 2500 new housing units are produced in San Francisco.¹¹⁷ Construction costs (at the time of this writing) are very high—about \$350 per square foot—reflecting the city’s byzantine code requirements and high labor costs.¹¹⁸ Housing in the city sells on average for about \$1150 per square foot.¹¹⁹ San Francisco’s impact and processing fees for a typical 1000 square-foot apartment or condo come to roughly \$70,000,¹²⁰ or \$70 per square foot. Soft costs—architectural, engineering, and permitting fees—are commonly estimated at twenty percent of construction costs.¹²¹

116. The upzoning surplus will be especially big if the deal standardizes property rights by selecting zones from a Japan-style menu and commits the city to streamlined permitting.

117. S.F. PLANNING DEP’T, 2018 SAN FRANCISCO HOUSING INVENTORY 6 (2019), https://commissions.sfplanning.org/cpcpackets/1996.0013CWP_2018.pdf [<https://perma.cc/MQY2-ECQR>]. The city’s total housing stock is about 400,000 units. *Id.* at 15. The annual rate of production translates into about 25,000 units per decade, barely more than 6% of the current stock. By comparison, economically productive metro regions in the South and Southwest have increased their (*much* less expensive) housing supply by 30–60% in barely more than a decade. *See* Glaeser & Gyourko, *supra* note 10, at 19 fig.3.

118. CAROLINA REID & HAYLEY RAETZ, PERSPECTIVES: PRACTITIONERS WEIGH IN ON DRIVERS OF RISING HOUSING CONSTRUCTION COSTS IN SAN FRANCISCO 1 (2018), http://turnercenter.berkeley.edu/uploads/San_Francisco_Construction_Cost_Brief_-_Turner_Center_January_2018.pdf [<https://perma.cc/QJY4-BV9M>].

119. *See San Francisco, CA Real Estate Trends*, Trulia, https://www.trulia.com/real_estate/San_Francisco-California/market-trends/ [<https://perma.cc/H8XJ-B3NS>] (last visited Mar. 23, 2020) (showing that new construction likely sells for more).

120. SAN FRANCISCO GENERAL PLAN, *supra* note 99, at I.95 tbl.I-62.

121. The Turner Center for Housing Innovation at UC-Berkeley uses this assumption in its pro-forma calculator. *See Housing Development Dashboard: Development Calculator*, U.C.-BERKELEY TURNER CTR. FOR HOUSING INNOVATION, <https://turnercenter2.berkeley.edu/proforma/> [<https://perma.cc/9SXF-UYUL>] (last visited Mar. 23, 2020).

If we further assume that developers must gross about twenty percent on their investment as compensation for risk, transaction, and unavoidable holding costs (time from site acquisition to project completion under a speedy permitting regime),¹²² the potential “uncollected” land value residual on a typical 1000 square foot condo in San Francisco is about \$430 per square foot.¹²³ At the current production rate of 2500 units per year, that is roughly \$1.075 billion each year—a sum approximately half the amount of the city’s discretionary general fund,¹²⁴ and twice the transit agency’s capital budget.¹²⁵

Of course, many of those 2500 units come from projects within the “development baseline,” and so the corresponding development rights could not be auctioned.¹²⁶ By upzoning, however, the city could create a lot of new buildable space above the baseline.¹²⁷ Assume that the city, responding to fiscal incentives, upzones and triples the rate of housing

122. Glaeser & Gyourko, *supra* note 10, at 8 (estimating that the typical developer, nationally, requires a 17% return on land and construction costs).

123. $0.8 * \$1150 - 1.2 * \$350 - 70 = \$430$.

124. *S.F. MTA Board Approves \$1.2B Two-Year Operating Budget*, METRO MAG. (Apr. 9, 2018), <https://www.metro-magazine.com/management-operations/news/729254/san-francisco-mta-board-approves-1-2b-two-year-operating-budget> [<https://perma.cc/F4WM-KGJS>] (reporting capital budget of \$513.5 million for FY19 and \$630.8 million for fiscal year 2020).

125. Dominic Fracassa, *SF’s Budget Soars by \$937 Million and Will Top \$11 Billion for First Time*, S.F. CHRONICLE (May 31, 2018, 6:00 AM), <https://www.sfchronicle.com/bayarea/article/SF-s-budget-soars-by-937-million-and-will-top-12955416.php> [<https://perma.cc/PE56-WKVJ>] (explaining that most of the city’s budget is controlled by enterprise agencies and set-asides, leaving \$2.2 billion to the city council’s discretion).

126. This is factually incorrect; most PROJECTS IN THE CITY REQUIRE A REZONING OR OTHER REGULATORY EXEMPTION. *SEE* MAC TAYLOR, LEGIS. ANALYST’S OFF., DO COMMUNITIES ADEQUATELY PLAN FOR HOUSING? 8–9 (2017), <https://lao.ca.gov/reports/2017/3605/plan-for-housing-030817.pdf> [<https://perma.cc/775D-TPUL>].

127. Hunter Oatman-Stanford, *The Bad Design that Created One of America’s Worst Housing Crises*, FAST COMPANY (Sept. 28, 2018), <https://www.fastcompany.com/90242388/the-bad-design-that-created-one-of-americas-worst-housing-crises> [<https://perma.cc/93AY-LEB6>]. In 1978, the city was drastically downzoned. The 1978 reforms established 40’ height limits in most of the city, eliminating an estimated 180,000 potential units of new housing. *Id.* Today the city’s density is about one-third that of Paris’s. *See* Adam Brinklow, *Mapping What SF Would Be Like if it Were as Dense as New York, Paris, and Manila*, CURBED: S.F. (Mar. 8, 2017, 2:48 PM), <https://sf.curbed.com/2017/3/8/14856316/san-francisco-density-map> [<https://perma.cc/XAG8-SM62>].

production, yielding a still-modest 7500 new units annually.¹²⁸ The potential auction revenue from the additional 5000 units—\$2.15 billion annually—would *double* the city’s discretionary general fund.

These numbers should be taken with several grains of salt. If San Francisco auctioned development allowances while leaving the rest of its regulatory apparatus as-is, we do not think developers would bid up the price of allowances to anywhere near the \$430 per square foot on which our eye-popping calculations rest.¹²⁹ Developers must also account for any in-kind contributions or fees the city demands of them (site improvements, affordable housing, etc.), as well as the city’s notoriously lengthy and unpredictable permitting process.¹³⁰ But that’s precisely the point: if the city *could* auction development allowances, it *would* then face the opportunity cost of its discretionary permitting process, and it *would* have a strong fiscal incentive to eliminate in-kind requirements that generate less value for the city than they cost developers. The city would also bear the cost of its many idiosyncratic building-code amendments, which have pushed construction costs in the city far above the national average for similar buildings.¹³¹

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128. 7,500 units per year translates into a per-decade housing supply increase of about 19%, roughly half of what affordable and economically productive regions manage to produce. *See* Glaeser & Gyourko, *supra* note 10, at 19 fig.3.
129. *See* N.Y.U. FURMAN CTR. FOR REAL ESTATE & URB. POL’Y, *supra* note 23, at 9–10. Researchers in New York City have documented wide variability in the per-square-foot price reflected in TDR transactions, ranging from well under \$100 to nearly \$500 per square foot. *Id.* at 9. Some of this variability may be due to the thinness of the market, and the lack of readily available information about the price of transfers. *See id.* at 13 (reporting that the developer of one project in 2008 bought rights from several sellers at prices ranging from \$248 to \$435 per square foot).
130. Julie Littman, *It May Take a Recession to Solve San Francisco’s Permitting Backlog*, BISNOW (Apr. 26, 2018), <https://www.bisnow.com/san-francisco/news/construction-development/san-francisco-real-estate-business-and-politics-87757> [<https://perma.cc/TX8R-AM3V>]. Developers might also refrain from bidding up allowances to the full \$430 per square foot because they expect housing supply to increase regionally and prices to come down, in response to the auction incentive, or because they expect allowances to be used in some future year and discount their bids accordingly. *See* Vicki Been et al., *The Market for TDRs in New York City* 29 (Nov. 1, 2012) (unpublished paper) (on file with author).
131. REID & RAETZ, *supra* note 118, at 2. In 2017, the national average construction cost for an eight- to twenty-four-story building was about \$230 per square foot, *see* FANNIE MAE, MULTIFAMILY MARKET COMMENTARY—MARCH 2017, at 1 (2017), *available at* https://www.fanniemae.com/resources/file/research/emma/pdf/MF_Market_Commentary_031517.pdf [<https://perma.cc/ZJX6-84ZL>], which is one-third less than San Francisco’s \$350-per-square-foot average for all construction types, *see* REID & RAETZ, *supra* note 118, at 1. If San Francisco could simplify its building code enough to bridge even *half* of the gap (i.e., bringing costs down by \$60 per square foot), that alone would be worth

The bottom line is that for high-cost, supply-constrained cities, the right to auction development allowances would not be a case of fiscal tinkering on the margins. The potential financial payoff from upzoning, permit streamlining, and building-code reform could be massive, and there would be myriad opportunities for ambitious politicians to create or expand pro-development political coalitions. In one city, tax refunds for homeowners might cinch the upzoning deal;¹³² in another, it might be pristine new parks and schools, or a world-class subway system. This is for the politicians to figure out. And there is every reason to think they *would* figure it out, for local governments have proven quite responsive to fiscal incentives in the past.¹³³ The adoption of flexible zoning is one example; another is zoning for commercial development in pursuit of sales tax revenue.¹³⁴

To be sure, there is likely to be considerable heterogeneity in high-cost jurisdictions' responses to this new fiscal incentive. Rich, homogeneous suburbs in which nearly every voter is a homeowner—nay, a *white* homeowner—may remain largely unmoved. Racial animosities and fears undoubtedly play a central role in suburban land-use regulation.¹³⁵ But there is plenty of variation across municipalities

\$150 million annually, or \$450 million if the city tripled the rate of housing production.

132. Cf. William A. Fischel, Commentary, *Recalibrating Local Politics to Increase the Supply of Housing*, 42 Reg. 38, 44–45 (2019) (suggesting, in response to Elmendorf, that some of the upzone-auctioning proceeds should be used to pay off incumbent homeowners); David Schleicher, *City Unplanning*, 122 YALE L.J. 1670, 1725–32 (2013) (suggesting tax-increment financing with payoffs to existing homeowners).
133. The state could also facilitate these deals by making local fiscal commitments undertaken in connection with a state-approved auction plan enforceable as state law. See *infra* Part IV.E.
134. See Karen Chapple, *The Fiscal Trade-off: Sprawl, the Conversion of Land, and Wage Decline in California's Metropolitan Regions*, 177 LANDSCAPE & URB. PLAN. 294, 298 (2018); Robert W. Wassmer, *Fiscalisation of Land Use, Urban Growth Boundaries and Non-Central Retail Sprawl in the Western United States*, 39 URB. STUD. 1307, 1324 (2002); Paul G. Lewis, *Retail Politics: Local Sales Taxes and the Fiscalization of Land Use*, 15 ECON. DEV. Q. 21, 31 (2001). This is not to say that local governments are budget maximizers. Cf. Daryl Levinson, *Empire Building Government in Constitutional Law*, 118 HARV. L. REV. 915 (2004) (critiquing arguments that rest on this assumption). Politicians are directly responsive to political incentives, not financial incentives. Our point is simply that that auction model would make upzoning more politically attractive by giving local officials a more efficient way to tap and distribute the potential surplus from upzoning.
135. See, e.g., JESSICA TROUNSTINE, SEGREGATION BY DESIGN: LOCAL POLITICS AND INEQUALITY IN AMERICAN CITIES 30 (2018); Camille Zubrinsky Charles, *The Dynamics of Racial Residential Segregation*, 29 ANN. REV. SOC. 167, 191 (2003) (“The overall conclusion to be drawn is that active racial prejudice is a critical component of preferences for

in the relative proportions of homeowners versus renters, whites versus nonwhites, residents of multifamily buildings versus residents of single-family homes, and Democrats versus Republicans—all of which are associated with different land-use preferences.¹³⁶ Obviously, in many jurisdictions, there is also significant neighborhood-to-neighborhood variation in these proportions.¹³⁷ So while the fiscal incentive to “auction the upzone” is unlikely to generate pro-development coalitions everywhere, politicians will likely manage to assemble such coalitions in many cities, at least for the purpose of upzoning certain neighborhoods or collections of neighborhoods.

As these coalitions come together, our auction framework will help them to forge more *durable* upzoning deals than are possible today, deals that local anti-development factions would have difficulty unwinding. The deals will be more durable *de facto* because—in contrast to legislated-fee schedules for value extraction—the market’s pricing of the development allowances will act as a shock absorber on NIMBY activism. We saw in Part II that a fee schedule that universally drives the land-value residual down to nearly zero would powerfully motivate NIMBY groups to invest in virtually any potential regulation that promises to even somewhat increase the cost or risks of development. By contrast, under the auction model of value capture, modest NIMBY triumphs would be quickly capitalized into the after-auction price of development allowances and bids at future auctions. Development projects would still be profitable for developers unless the NIMBY measure is so extreme as to drive allowance prices to zero.

Our framework also supports durable upzoning deals by authorizing city councils to enact zoning and permitting reforms that, with the state’s approval, will bind future city councils. The model induces an asymmetry in the stickiness of municipal policymaking: when the city council is controlled by factions whose land-use preferences align with the state agency’s, the council will be able to enact entrenched, hard-to-change zoning and permitting reforms. But when factions opposed to the state’s housing agenda control the city council, they will be able to enact only ordinary, non-entrenched ordinances. This asymmetry cuts in favor of housing development to the extent that the state agency has more consistent pro-housing and pro-density preferences than most city councils. On balance this is likely to be the case, particularly if the

integration, and therefore, the persistence of racially segregated communities.”).

136. See, e.g., Mummolo & Nall, *supra* note 1, at 52 (presenting evidence of land-use preferences across different groups); Hankinson, *supra* note 12, at 473–74; Elmendorf, *supra* note 15, at 139–40 (arguing that geographic variation in preferences for new housing is one of the key stylized facts to which policy should respond).

137. This is in part a legacy of racist policies such as redlining. See TROUNSTINE, *supra* note 135, at 32.

state agency is controlled by the governor.¹³⁸ The governor, responsive to a statewide electorate, is less likely to cater to a specific neighborhood's interests than is a city council whose members answer to small territorial districts.¹³⁹

To be sure, there are other ways for states to enable local pro-housing factions to make binding upzoning and permit-streamlining commitments without auctioning development rights.¹⁴⁰ The auction model is nonetheless useful for this purpose, both because it provides a convenient mechanism for effectuating the commitment (a contract between the local government and development-allowance purchasers) and because development-allowance auctions would make local governments confront the opportunity cost (in foregone auction revenue) of not committing to a quick, predictable process for processing development applications on the upzoned sites.

B. Auctions in Statewide Political Context: Ameliorating Informational Asymmetries

So far we have presented our model as a fiscal inducement for local governments to allow greater density in accordance with state policy. The model increases the size of “pie” that can be split through an upzoning deal, and it creates a policymaking asymmetry such that local YIMBY factions can more easily entrench their land-use preferences. But there is another benefit as well for states, such as California, that require local governments to periodically plan for needed housing and submit those plans for state review.¹⁴¹

138. See Elmendorf, *supra* note 15, at 143–44 (listing structural reasons why governors are likely to be more pro-housing on average than state legislators or local officials).

139. Recent empirical studies find that cities that switch from at-large to districted elections become much less accommodative of development. See Michael Hankinson & Asya Magazinnik, *How Electoral Institutions Shape the Efficiency and Equity of Distributive Policy* (Sept. 17, 2019), http://mhankinson.com/assets/hankinson_magazinnik.pdf (finding that plausibly exogenous shifts from at-large to districted local elections induced by California Voting Rights Act caused 46% decline in multifamily housing production); Evan Mast, *Why Do NIMBYs Win? Local Control and Housing Supply* (Dec. 2019), https://www.dropbox.com/s/76jq4x0x2yc2c54/mast_at_large_ward.pdf?dl=0 (finding similar effect from shifts induced by national Voting Rights Act).

140. See, e.g., Elmendorf, *supra* note 15, at 129 (suggesting revisions to the “West Coast” model for periodically reviewing local land-use plans, which would enable local pro-housing factions to entrench liberal land-use regimes).

141. Many of the nation's high-cost housing markets are located in such states. See *generally id.* at 94–95 (explaining that the West Coast states all require periodic planning subject to state review, and that Massachusetts and New Jersey have also created strong incentives for local governments to submit affordable-housing plans for state review).

State agencies trying to gauge the adequacy of local housing plans operate at an enormous informational disadvantage relative to local governments. The informational problem arises because local governments may comply with state requirements to zone for certain amounts and types of housing while maneuvering to make that housing nearly impossible to build. For example, if the state tells a local government to zone for 10,000 new housing units at a density of at least thirty units per acre,¹⁴² the local government could selectively upzone parcels that are small, steep, contaminated, lacking infrastructure, or occupied by existing uses that make redevelopment unlikely. Or the local government make fees and exactions prohibitively expensive. Or it could make the projects economically infeasible by subjecting them to costly parking and site-improvement requirements, or idiosyncratic building standards. Or it could enact setback requirements, or height and open-space “overlays,” which reduce the effective building envelope on actual lots to a size that cannot accommodate anything like the nominally-allowed density. Or it could impose discretionary design standards and procedures for internal appeals so that project opponents can drag out the permitting process for years, killing development with holding costs.

States can, and do, try to monitor all of this,¹⁴³ but it is a Sisyphean task, made all the more difficult by the fact that many of the tools in the local regulatory toolbox can be used for socially beneficial purposes (maximization of the joint value of nearby properties), neutral purposes (capture and redistribution of value), or deleterious purposes (killing economically efficient projects). For example, any given inclusionary zoning ordinance could be either a reasonable effort to extract locational value and convert it into subsidized housing, a bludgeon designed to

142. California and New Jersey effectively require local governments to plan for affordable housing by zoning at certain minimum densities. *See* CAL. GOV'T CODE § 65583.2 (2011); *In re Adoption of N.J.A.C. 5:96 & 5:97*, 6 A.3d 445, 461–64 (N.J. Super. Ct. App. Div. 2010) (invalidating regulation which, in the court's view, would have allowed local governments to comply with their affordable-housing obligations by zoning land at insufficient density and with excessive BMR requirements), *aff'd as modified sub nom.* *In re Adoption of N.J.A.C. 5:96*, 74 A.3d 893 (N.J. 2013). For large cities, thirty units per acre is the presumptive minimum density under California law for lower-income housing sites. *See* CAL. GOV'T CODE § 65583.2 (2011).

143. In California, the housing element of each local government's general plan must include an analysis of constraints to the “development of housing for all income levels,” CAL. GOV'T CODE § 65583(a)(5)–(6) (2011), and a “schedule of actions” to “[a]ddress and, where appropriate and legally possible, remove constraints,” *id.* § 65583(c). The state agency charged with periodically reviewing and certifying housing elements has issued detailed guidelines about this analysis and program. *See Building Blocks*, CAL. DEP'T OF HOUS. & CMTY. DEV., <http://www.hcd.ca.gov/community-development/building-blocks/index.shtml> [<https://perma.cc/G3DB-988B>] (last visited Mar. 28, 2020).

kill market-rate development by making it prohibitively expensive citywide, or a subtly devious device to eliminate market-rate development in most neighborhoods even as development remains profitable on a handful of large, vacant sites in prime locations. It is not enough for the state oversight agency to know that a local government has an inclusionary requirement; the agency must figure out how it actually works, in combination with all the other local requirements. The same can be said for most any other component of the local government's development-regulation regime.

The informational problem comes into stark relief if one peruses a few of the "housing elements" that California requires local governments to submit periodically for state review and approval. A housing element must include an inventory of developable sites and an analysis showing that those sites can accommodate the local government's share of "regional housing need" for the planning cycle.¹⁴⁴ Local governments and the state housing agency both understand that the official zoning classification of a site may badly overstate the site's actual development potential. The housing element must therefore include an assessment of each site's "realistic" capacity.¹⁴⁵ Some housing elements use simple rules of thumb, such as assuming that eighty-five percent of zoned capacity is realistic for inventory sites if recently approved projects have realized about eighty-five percent of nominal capacity.¹⁴⁶ Other housing elements use complicated algorithms, embedding questionable assumptions in pages of computer code.¹⁴⁷ Still others purport to rely on what developers said about the capacity of identified sites.¹⁴⁸ (How is the state agency supposed to judge the credibility of developers whom the local government selected to interview?) Needless to say, the amount of new housing actually permitted by California's local governments

144. See Elmendorf, *supra* note 15, at 105.

145. CAL. GOV'T CODE § 65883.2(c) (2011).

146. See, e.g., CITY OF SAN DIEGO, GENERAL PLAN: HOUSING ELEMENT 2013–2020, at HE-17 (2013), available at <https://www.sandiego.gov/sites/default/files/legacy/planning/genplan/heu/pdf/housingelementfull.pdf> [<https://perma.cc/9U4M-Y5Z6>]. This is a dubious rule of thumb, because the sites on which development is *observed* to occur may be much easier to develop at 85% of zoned capacity than is the typical site in the site inventory. The hard-to-develop sites may not be developed at all.

147. See, e.g., SAN FRANCISCO GENERAL PLAN, *supra* note 99, at app. D (detailing assumptions by zoning district, while doing nothing to verify with housing-outcomes data whether parcels with the stated characteristics are actually *likely* to be developed at the stated densities over the eight-year planning cycle).

148. See, e.g., CITY OF REDWOOD CITY, GENERAL PLAN app. B (2014), available at <https://www.redwoodcity.org/home/showdocument?id=7144> [<https://perma.cc/YM3D-2HQS>].

pales in comparison to the ostensible site capacities claimed in the housing elements.¹⁴⁹

Now imagine that each of California's local governments, at the beginning of the planning cycle, auctioned development allowances equal to their housing element's claimed capacity. Imagine also that the development allowances were time-limited, expiring at the end of the cycle. If a housing element greatly overstated the inventory sites' aggregate capacity, then the price of the corresponding development allowances would be very low, as the marginal development allowance in such a jurisdiction would almost never be used.

The investors who purchase development allowances would also have a strong incentive to ferret out the most problematic constraints and relay this information to state regulators. If they can get the problematic constraints removed, they value of their development-allowance holdings would rise. To be sure, the owners of site-inventory parcels have similar incentives today, but the arbitrage strategy of buying sites in hard-to-develop jurisdictions and then lobbying the state agency to push the local government to remove constraints comes with higher transaction costs. Compared to the market in land, the development-allowance market should be more liquid, standardized, and transparent. Land parcels differ from one another in many ways that affect value: size, location, soils, existing uses, possible contamination, and so forth. Development allowances, by contrast, would be perfectly fungible within market tiers. Each allowance would entitle its owner to exactly the same thing: the opportunity to build a given number of square feet, within the new zoning envelope and above the development baseline, on any parcel within a defined area.

The hypothetical we have sketched is somewhat unrealistic because California probably could not require local governments to auction all of their claimed development capacity.¹⁵⁰ But this thought experiment nonetheless illustrates a number of important points.

First, any time a local government purports to upzone, the actual amount of practically buildable capacity will be a mystery to anyone who lacks detailed, insider knowledge about how the zoning map interacts with site conditions and all of the other local requirements and development-permitting procedures. Investors in the development-allowance market would have an economic incentive to figure this out, and to the extent that they remain uncertain, they will discount their

149. MONKKONEN & FRIEDMAN, *supra* note 20, at 2.

150. Some of those capacities are likely to be within the development baseline. There are also probably constitutional as well as prudential limitations on how low the development baseline could be. A court might find a taking if the local government required parcel owners to purchase development allowances in order to make *any* residential use of their property. Further, as a matter of market design, it may be better not to auction all of the allowances at once. *See infra* Part IV.A.

bids accordingly. Because cities will want to get high prices for their development allowances, they will try not to auction more development-allowance square footage within a zone than actually exists. By monitoring the amount of auctioned capacity in each jurisdiction, and the price at which the allowances trade relative to the price of finished housing in the jurisdiction,¹⁵¹ the state can get a decent how much above-baseline capacity in a zone or tier actually exists.¹⁵² This is a much easier task for a lightly staffed state agency than figuring out how the mass of land-use regulations in each local jurisdiction interact to yield practical development capacity—or lack thereof.

Second, to the extent that state courts or agencies have the authority to make local governments remove constraints, the development-allowance market's existence should improve the flow of information to state regulators about particularly severe constraints. Arbitrageurs who specialize in identifying removable constraints and relaying this information to the state agency will scour the practices of jurisdictions whose development allowances are inexpensive relative to the price of housing. If they find removable constraints, they will buy up those allowances, notify the agency, and sell the allowances at a profit once the agency cracks down on the local government.

Third, the existence of a local right to auction the developable space created by upzoning should make it easier for the state agency to identify bad-actor local governments, those that are using the tools of public-benefit zoning to kill development rather than to extract value from it. Local governments that mean to extract value would opt in to the auction regime; whereas those that intend to thwart development would have little reason to participate. If bad-actor local governments were to participate, it would be easy enough for the state agency to see through their pretenses, since they would either elect to auction only a very small amount of their nominal development capacity, or their allowances' price would be very low, reflecting the market's belief that that jurisdiction's marginal allowances will never be used.

One last point. It is common for local governments to defend barriers to housing development by appealing to convention and peer-

151. To restate this point more precisely: the agency would want to monitor the gap between development allowance price and the counterfactual land value residual that would be realized if the local government did not inflate construction costs with unnecessary code and labor requirements. Monitoring the gap between housing prices and allowance prices should be a pretty good proxy, because the costs of building materials and labor does not vary greatly from one jurisdiction to the next. On interjurisdictional construction-cost variation, see Glaeser & Gyourko, *supra* note 10; Romem, *supra* note 10.

152. To be sure, the reason for the lack of “practical capacity” may not be excessively stringent local land use controls. Maybe the problem is excessively small parcels, or valuable existing uses on many parcels, or contaminated soils, or some other hazard that precludes redevelopment.

jurisdiction practice.¹⁵³ Under the auction regime, local governments would have a meaningful fiscal incentive to figure out whether local requirements that raise development costs and generate permitting delays also reasonably advance an important public purpose. Some practices that are now conventional, such as discretionary design review of mid-size projects that comply with the zoning code's objective requirements, would probably be abandoned.¹⁵⁴ As the auction-participating jurisdictions remove these requirements, other jurisdictions could no longer defend them as conventional. By observing patterns of local regulatory reform in the auction-participating jurisdictions, the state housing agency could ascertain which local requirements and procedures are reasonable methods for coordinating land use, and which are just levers for obstructionists.

IV. OBJECTIONS

There are, of course, a range of possible objections to our proposal. This Part addresses those that we consider most significant.

A. *Allowance Owners as an Antidevelopment Interest Group?*

Our local-political-economy analysis emphasized the opportunities that auctions would provide for city officials to convert latent “developable value” into pro-development political coalitions and major upzonings.¹⁵⁵ Our state-level discussion highlighted ways in which allowance prices and allowance owners could help state regulators identify local barriers to development.¹⁵⁶ But a darker possibility should

153. *See, e.g.*, CITY OF REDWOOD CITY, GENERAL PLAN, *supra* note 148, at H-84 (“A survey of neighboring jurisdictions (East Palo Alto, Belmont, and San Carlos) indicates that permit fees in Redwood City are very similar to those found in neighboring San Carlos and Belmont and slightly less than those in East Palo Alto.”); CITY OF PASADENA, HOUSING ELEMENT 2014–2021, at B-18 (2014) (stating that city’s dedication requirements for new subdivisions “are similar to jurisdictions across southern California and are not deemed to place a unique cost or actual constraints upon the development, improvement, and maintenance of housing”), *available at* <https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/07/Adopted-Housing-Element-2014-02-04.pdf> [<https://perma.cc/7377-M325>]; CITY OF MOUNTAIN VIEW, 2015–2023 HOUSING ELEMENT 106–10 (2014) (justifying Mountain View’s inclusionary-zoning, park-dedication, and impact fees with reference to those in nearby cities), *available at* <https://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=15284> [<https://perma.cc/C8VP-VXR7>].

154. *Cf.* O’Neill et al., *supra* note 28, at 49–50 (finding, in study of San Francisco Bay Area cities, that every housing project of five or more units was subject to discretionary, design-oriented review).

155. *See supra* Part III.A.

156. *See supra* Part III.B.

also be considered. Might the holders of extant development allowances eventually coalesce as a powerful new interest group opposed to *future* upzonings and development-allowance auctions?¹⁵⁷

Consider taxi medallions. Professor Katrina Wyman's study of New York City's canonical medallion regime shows that the regime was not created in response to intense lobbying pressure from taxi companies.¹⁵⁸ Medallions were not scarce initially. But as the city's population and economy grew, medallion prices went up, and medallion owners become forceful opponents of expanding the medallion supply.¹⁵⁹ Mayors responded to the fiscal incentive to auction more allowances, but their liberalizing forays were mostly beaten back by lobbyists for the incumbent medallion owners.¹⁶⁰ This story is not unique to New York. Medallion-style taxi regimes are common elsewhere, and they are generally thought to result in an inefficient shortage of taxi services.¹⁶¹ It was Uber and Lyft, not cities acting on a fiscal incentive to auction more medallions, that finally broke the taxi cartels.¹⁶²

Development allowances under our model would be a type of regulatory property akin to taxi medallions, although, importantly, they would lack some of the characteristics that made medallions so conducive to the formation of a supply-restricting cartel. Whereas taxi-medallion owners had homogeneous interests with respect to the supply of new medallions—restrictions raised all of the owners' incomes and asset values—the owners of development allowances would have conflicting interests. Builders and developers seeking to secure projects would surely be major players in the development-allowance market, and their interests would be at war with buy-and-hold investors'.¹⁶³

157. In New York City, the owner of the TDRs that were issued as part of the historic preservation deal unsuccessfully opposed an upzoning of parcels in the "receiving zone," and subsequently brought a taking claim against the upzoning, which the city settled (reportedly for a nominal sum). See Christopher Serkin, *Penn Central Take Two*, 92 NOTRE DAME L. REV. 913, 914 (2016).

158. Katrina Mariam Wyman, *Problematic Private Property: The Case of New York Taxicab Medallions*, 30 YALE J. ON REG. 125, 168–69 (2013).

159. *Id.* at 173–77 (documenting the role of incumbent taxi medallion holders in blocking mayoral plans to auction additional medallions).

160. *Id.* at 177–85.

161. See *id.* at 147 n.121 and sources cited therein.

162. See generally Katrina M. Wyman, *Taxi Regulation in the Age of Uber*, 20 N.Y.U. J. LEGIS. & PUB. POL'Y 1 (2017). To be sure, there were various earlier efforts in some cities—some successful—to reduce entry barriers to taxi markets through regulatory reform. See Wyman, *supra* note 158, at 147 n.121 and sources cited therein.

163. In the taxi context, only consumers' interests were opposed to the medallion owners', and consumers were not well organized and did not have incentives to organize. See Wyman, *supra* note 158, at 156–63.

Also, whereas taxi medallions were often owned by long-term players who built deep relationships with each other and elected officials,¹⁶⁴ the development allowance market would be more in flux. Development allowances, unlike taxi medallions, would produce income only when sold or redeemed, and the “interest group” consisting of a given upzoned area’s allowance owners would actually be self-liquidating over time, as development occurs and the associated allowances are redeemed.¹⁶⁵

It was easy for big taxi-medallion investors to put a sympathetic face on their lobbying efforts, arguing that issuing new allowances would wreck the small independent drivers whose livelihoods depend on their medallions.¹⁶⁶ But no workers’ livelihoods would depend on restricting future upzonings. And whereas cities wielded monopoly power over their taxi markets, housing markets are regional; housing in one city is a (perhaps imperfect) substitute for housing in a neighboring city.

And yet, none of these distinctions vitiate the basic point that restrictions on future upzonings in a region would likely raise the value of existing, long-term development allowances, benefiting those allowances’ investors-owners. Some investors might form unholy alliances with existing NIMBY groups. (On the other hand, the owners of upzoned, still-developable parcels of *land* may have less reason to lobby against future upzonings elsewhere in the city or region because much of their land’s development value would have been transferred to allowance holders.¹⁶⁷)

164. See Wyman, *supra* note 158, at 156–57, 163–64, 174–77 (discussing “large fleet owners whose families have owned medallions since the late 1930s and 1940s,” organizational costs, and lobbying efforts).

165. This turnover would make it harder for the owners to organize as a potent political force.

166. Cf. Brian M. Rosenthal, *As Thousands of Taxi Drivers Were Trapped in Loans, Top Officials Counted the Money*, N.Y. TIMES (May 19, 2019), <https://www.nytimes.com/2019/05/19/nyregion/taxi-medallions.html> [<https://perma.cc/8C9F-CLZR>] (painting sympathetic portrait of independent taxi drivers trapped by debt); Brian M. Rosenthal, *Facing Ruin, Taxi Drivers to Get \$10 Million Break and Loan Safeguards*, N.Y. TIMES (June 12, 2019), <https://www.nytimes.com/2019/06/12/nyregion/nyc-taxi-medallions.html> [<https://perma.cc/JAK7-QEHT>] (reporting on city initiatives to bail out drivers in debt).

167. The extent to which this is so depends on: (1) the extent to which, under the status quo, land value residuals are captured and/or destroyed by exactions, fees, and permitting regulations; and (2) the extent to which, under the auction regime, the allowances capture the full residual. (Because allowance prices would be determined by marginal buyers and sellers, the market price of allowances for a zone or tier would not capture the full residual for non-marginal parcels in the tier, i.e., those that are more valuable to develop / redevelop than the marginal parcels.)

In any event, there are various *ex ante* ways for the auction framework's designers to mitigate the risk of development-allowance owners eventually becoming a potent anti-upzoning force. For example, the state could set limits on the concentration of allowance holdings, particularly holdings by investors who are not themselves developers, builders, or owners of parcels in the upzoned area.¹⁶⁸ Or, more decisively, the state could put strict time limits on the development allowances, akin to the several-year fuse that cities often put on the entitlements for housing projects.¹⁶⁹ If allowances had short lifespans, developers and builders with ready-to-go projects would dominate the market for allowances, rather than investors who bet on long-term price trends connected to the zoning envelope's future expansion—or lack thereof.

But there are tradeoffs to consider, too. Most notably, short-term allowances would probably be less effective for entrenching, and rewarding, big upzoning deals. To illustrate, imagine an upzoning that removes density limits and increases allowable heights and floor-to-area ratios by fifty percent in existing residential neighborhoods throughout a large city. If the city auctioned the newly developable square footage all at once, and if the development allowances had, say, a three-year fuse, the allowances would probably sell for about \$0. Allowance prices would be extremely low even if it were very profitable to buy up existing homes at fair market value and replace them with larger multi-family structures. The reason is that many homeowners across the city would not want to sell to a developer within the next three years, even at fair market value; and in any event, the building industry would probably lack the capacity to rebuild all of the city's residential neighborhoods in just three years.¹⁷⁰ The *marginal* development allowance in this scenario would therefore be worthless, and because prices in competitive markets are set by the marginal buyers and sellers, development allowances would trade for almost nothing.

By contrast, if the same amount of developable space were auctioned in the form of perpetual-development allowances, the city would probably collect a tidy sum. In the perpetual-allowance world,

168. The goal here is to keep buy-and-hold investors from becoming the dominant players in the market.

169. For a summary of the entitlement periods in Los Angeles, see Fernando Villa & Shelby Q. McMahon, *Los Angeles Enacts Ordinance to Streamline Entitlement Process*, PIRCHER, NICHOLS, & MEEKS LLP (June 5, 2012), <https://www.pircher.com/insights-publications-94.html> [<https://perma.cc/V2PM-6U5L>].

170. Note that staggered allowance auctions also mitigate this problem, but that the volume of allowances might still not be sufficient for large projects.

bids at the auction would reflect the present value of development far into the future.¹⁷¹

To profit from big upzonings in a world of short-term allowances, cities would have to release the associated allowances gradually. Yet if local governments auctioned perhaps a year or two's worth of supply at a time, upzoning deals would not be binding at all, at least not by virtue of the auction contracts.¹⁷² If anti-development forces gained control of the city council, they could scale back, or simply halt, the upcoming auctions. And regardless of who controls the city council, the world of short-term allowances would invite on-going bickering over how much developable space to release each year. The pressures that cities now face about whether to adjust a legislated exaction or fee schedule would return,¹⁷³ but in a slightly different guise: the decision would be about quantity (how much more of the envelope to auction this year), rather than price (whether to raise or lower the fees and exactions).¹⁷⁴

To acknowledge these problems is not to say that the short-term-allowance world would be just as bad as the status quo.¹⁷⁵ The short-

171. Winning bidders would resell some of their allowances to builders today, while banking the rest in the expectation that they will be worth more in the future, as space within the expanded zoning envelope is gradually used up.

172. The auction contract might specify procedures for permitting of projects entitled with the use of the development allowances that the winning bidders acquired, but it is hard to see how the contract could commit the city to auctioning additional developable space in the future. Even if the contract had such a term, the city could breach it at will, since the owner of an existing development allowance would not suffer any damages (indeed, would likely benefit) from the city electing not to make available additional developable space in the future.

173. See *supra* Part I.C.

174. One can also imagine all sorts of dubious public efforts to time the market, with cities downsizing their auctions whenever housing prices fall.

175. The world of short-term allowances would have a number of the auction-framework advantages we have discussed. It would allow cities to extract more site value without the risk of overshooting and inadvertently deterring development (because markets, not politicians, would set the price). See *supra* Parts I.C, II.A. It would make cities bear the cost of pointlessly convoluted and discretionary permitting regimes. See *supra* Part III.A. It would provide state regulators with much-needed information about whether the development capacity a city claims to have made available is realistically available. See *supra* Part III.B. And it would obviate the need for pointless "nexus" studies.

Moreover, the state could empower the political coalition behind a major upzoning to commit to future allowance auctions using state administrative law, regardless of the allowances' duration. The auction-enabling statute might provide that if a local government, in a state-approved plan, promises to auction at least x square feet of a specified zoning envelope annually for a defined period of time, then the state

term model has certain advantages; the long-term model has others.¹⁷⁶ We remain agnostic about development allowances' optimal duration. It may also be possible to forestall the emergence of political alliances between NIMBYs and owners of long-term development allowances by creating a class of development allowances whose owners would be entitled to a portion of any additional allowances created by future upzonings. Rick Hills and David Schleicher have sketched a version of this idea for TDR programs.¹⁷⁷ Obviously there are downsides to it as

agency may conduct those auctions on the local government's behalf under the approved plan's terms. The state-approved plan would preempt any downzoning or permitting restrictions to the contrary that a later city council might adopt. If the plan is locked in through a state administrative approval that preempts contrary local regulations, then pro-housing actors will be able to get a court order specifically enforcing the plan (assuming the state statute so provides). By contrast, a party, such as an owner of development allowances, who claims breach of a contract with a local government normally can obtain only reliance damages. *See* Serkin, *supra* note 95, at 916–17, 957–59 (noting that “development agreements” that state statutes expressly authorized often enable the developer to get specific performance against a local government, in contrast to the reliance damages typically available for governmental breaches of a contract).

176. To summarize: The long-term model provides stronger fiscal incentives for big upzonings with big (large number of allowance) auctions, by allowing the local government to capture future development value in the present. It also enables the local government to substantially lock in the terms of that upzoning through allowance contracts. Finally, the long-term model should improve the flow of information to state regulators about particular development constraints, as it would create arbitrage opportunities for investors who locate constraints, buy inexpensive allowances, then prevail upon the state agency or courts to remove the constraints, and finally resell their allowances at a profit. The main advantages of the short-term model are that it will not create a “buy and hold” investor class opposed to future upzoning, and it is less prone to certain transaction-cost problems that may occur after most of the long-term allowances for a zone have been redeemed. *See infra* Part IV.C.

Perhaps it is also worth noting that the long-term model might tempt some local governments to commit to allowing a lot of development in the future, while depriving future city councils of sources of revenue for associated infrastructure (e.g., by writing into the auction contract that no fee or exaction may be charged as a condition of project approval). We are not much concerned about this, however, as the auction market would provide an automatic check: the local government's failure to plan for and finance needed infrastructure would reduce what bidders offer of the allowances. Also, the state agency that approves the auction plan could require the local government to set aside a reasonable portion of the revenue for capital needs.

177. Hills & Schleicher, *Building Coalitions Out of Thin Air*, *supra* note 25, at 116-17 (proposing “constant ratio” TDRs that would provide a bonus defined with reference to base zoning; as base-zoning changes, so too would the amount of additional height and density that could be built by redeeming the TDR).

well, such as reduced flexibility for future politicians to allocate the surplus from future upzonings in the most expedient manner.

The bottom line is that figuring out the best possible structure for a regime of upzoning with auctions will require some trial and error.

B. Transaction Costs and the Allowance Endgame

Another objection to our proposal is that it introduces new transaction costs into the development stream. In the auction world, developers must not only assemble suitable parcels of land for their projects, but also purchase the requisite allowances. If the allowance market were liquid and competitive, this additional step would not squander resources. Allowances would just be one more construction input that the developer must buy, like steel or lumber, and the cost would be similarly easy to budget for. But if the allowance market were thin, with just a few transactions annually and a small number of players, the transaction costs of assembling the necessary allowances for a project could become significant. Development-allowance deals would start to look more like land-assembly deals, with strategic behavior and considerable ex ante uncertainty about what it will take to get the deal done.

There are many ways for a state agency that reviews auction plans to mitigate this problem. The agency could reject plans that would distribute only a small number of allowances for some tiers or zones. It could also set “minimum square footages” for allowance holdings, disallowing the subdivision of allowances into bundles too small to license a typical project in the zone.¹⁷⁸ But eventually most of the allowances in a tier will have been redeemed, and at that point the market will be less than competitive. To keep transaction costs from spiraling, the state might stipulate that all development allowances are subject to a call option that would take effect when the number of allowance holders falls below some threshold, allowing developers with an approved project to force a sale of allowances at either their fair market value or at the project’s estimated residual value.¹⁷⁹ The point is not to get the price just right through a complicated public procedure, but to create a simple mechanism for forced transfers that will dissuade holdout behavior by the last few allowance owners.

The state could also mitigate the end-game problem by making allowances time limited. This is tantamount to a penalty default: if an allowance owner failed to transfer her allowances to developers with ready-to-go projects before the end of an allowance cycle, her allowances

178. There could be an exception allowing owners of small parcels to acquire the number of allowances needed for their site.

179. *Cf.* Lee Anne Fennell, *Revealing Options*, 118 HARV. L. REV. 1399 (2004) (exploring the use of option contracts to mitigate transaction-cost problems resulting from uncertainty about private valuations).

would become worthless.¹⁸⁰ A city could mitigate end-game transaction costs by further upzoning the area in question and selling additional allowances whenever a zone's market becomes thin.¹⁸¹

Though end-game transaction costs are a concern under the auction model, it is important to keep the big picture in view. This is only an end-game problem, assuming each tier has many allowances initially. The limited public role that may be needed to facilitate low-transaction-cost transfers during end-game times should be much less administratively taxing than the never-ending pressures to recalibrate fees and exactions under the legislated-schedule model for value capture, let alone the hassles of negotiating case-by-case development agreements. For most end-game projects, allowance assembly will take place privately, with little fuss, having been negotiated in the shadow of a possible forced sale or penalty default.

C. Upzoning Vetopoints

Another objection to our proposal is that it would give the state an effective veto over local upzoning.¹⁸² Although the housing agency would lack authority to block local upzoning ordinances, the agency's denial of an associated plan to auction allowances might cause the local government to rescind or delay its upzoning in the hope of getting approval for upzoning with auctions at a later date. Anticipating as much, interest groups that favor restrictive housing policies would lobby the agency to reject auction plans.

While we cannot rule out such scenarios, the risks must be weighed against both the dangers of the status quo and the risks of strategic downzoning, or worse, the use of auction contracts to entrench NIMBY

180. As discussed previously, *supra* Part IV.A, short-term allowances are also less likely to generate a new anti-upzoning political force in the form of allowance owners.

181. This assumes that the new allowances and the old allowances would be fungible for use within both the expanded zoning envelope created at time 1 (in connection with the first auction, and the yet-further-expanded zoning envelope created at time 2 (in connection with the second auction). In anticipation of possible end-game issues, the allowance contracts written for the first auction should allow for this. The first-auction contracts should, however, probably disallow the issuance of new allowances that would be merely dilutive of existing allowances, i.e., new allowances for use within the time-1 envelope that do not also license development in some further-expanded (time 2) envelope on the same sites.

182. See FISCHER, *supra* note 30, at 54–55 (noting that many state interventions in the land-use space have had a “double veto” character, giving development opponents a new forum in which to block projects, while doing nothing to help proponents get socially-beneficial projects approved).

policies in a world where local governments could auction development allowances without state approval.¹⁸³

In today's high-cost, supply-constrained metropolitan regions, some further inducement is clearly necessary to get local governments to meet the demand for new housing. The interests that oppose dense residential development at the local level—homeowners and neighborhood groups—are not as well organized at the state level. Business interests, which are well represented in state capitals, have a strong incentive to lobby for pro-housing policies.¹⁸⁴

On balance, we think the risk of the state housing agency being captured by antidevelopment interests pales in comparison to the dangers of the status quo, in which city council members who clog the development pipeline are rewarded by neighborhood constituents.¹⁸⁵

That said, a state policymaker who disagrees with our judgment about relative risks might consider a more limited, targeted version of our proposal, in which the only development rights that cities could auction would be those created by a state statute that directly upzone

183. E.g., by promising through the auction contract not to upzone other parcels in the future.

184. Increases in the regional housing supply will help businesses to recruit more workers, and to the extent that housing-supply increases bring down housing prices, they will raise the effective wage (purchasing power) paid to a business's workers at no cost to the business. See Marisa Kendall, *Stripe Gives \$1 Million to Pro-Development YIMBY Group Tackling Bay Area Housing Shortage*, SAN JOSE MERCURY NEWS (May 3, 2013), <https://www.mercurynews.com/2018/05/03/pro-development-yimby-group-scores-1-million-from-stripe-tackle-housing-shortage/> [<https://perma.cc/3JKR-965V>] (describing how tech companies invest in housing to enable employees to live near their office, reduce commute times, and improve overall quality of life).

It could be objected that these business interests themselves represent a powerful constituency capable of capturing state lawmakers and propelling them to advance a different set of parochial interests. See Clayton P. Gillette, *In Partial Praise of Dillon's Rule, or, Can Public Choice Theory Justify Local Government Law*, 67 Chi.-Kent L. Rev. 959, 988 (1991) (observing that public choice theory does not offer clear prediction which level of government is more susceptible to interest-group capture). Without doubt, the state should not be seen naively as a white knight, and, over the long run, assuming significant mitigation of the current crisis, we acknowledge that the balance on housing policy might swing back to localities. But, for the moment, given the intensity of the crisis and its impact on constituencies better able to influence policy at the state level, we think it is an easy call to support a shift to the state.

185. One might think that the developers would push local governments for streamlined permitting, but politically connected developers benefit from cumbersome, discretionary processes that cut out their competitors. See O'Neill et al., *supra* note 28, at 75 ("Our interview data confirms that well-capitalized developers *with existing relationships and experience in specific jurisdictions* are the best situated to navigate these complex local [development permitting regimes].") (emphasis added).

certain areas that local governments have traditionally resisted developing, such as existing residential neighborhoods near transit.¹⁸⁶ On the other hand, this more limited version of our proposal may result in a thinner, less competitive market in development allowances, and some cities might delay voluntary upzoning outside of the state-upzoned areas with the goal of later winning legislative authorization to couple the contemplated upzoning with an auction.

D. Cities with Market Power

Still another objection to our model is that large cities are not price takers when it comes to housing. If they allow lots of development, housing prices decrease; if they allow very little development, prices stay high. Fiscally minded zoning by cities with market power will therefore yield an inefficiently low quantity of housing, just as any other monopolist produces too little of the good they have monopolized.¹⁸⁷

This is a legitimate concern, but in our view the important question is not whether big cities would allow less than an optimal amount of housing, but rather whether they would allow more housing than they do now. Consider again our San Francisco example. The city surely has some market power. If San Francisco tripled its housing production, housing prices in the city would probably come down somewhat. But even if prices fell by a couple hundred dollars per square foot, the city could still reap enormous sums from the allowance auctions.¹⁸⁸ Whether the city faces a flat demand curve (the price-taker scenario), or a downward-sloping demand curve (the market-power scenario), we are confident that local political entrepreneurs looking to capture and redistribute the land-value residual would push for large-scale upzonings if the city could auction the newly developable space.

We also think the appeal of a go-slow, do-not-upzone-too-much-lest-prices-fall strategy may be undercut by competition among the jurisdictions in a metropolitan region. To continue with our running example, housing units in Oakland, Berkeley, Mountain View, and other Bay Area municipalities are substitutes, albeit imperfect, for housing units in San Francisco. The demand curve for housing in San Francisco therefore depends on the amount of housing that all the other Bay Area jurisdictions have already produced, as well as how much housing they are expected to produce in the future. The regional nature of housing markets means that in the auction world, each jurisdiction

186. Thanks to David Schleicher for offering this suggestion.

187. FISCHER, *supra* note 30, at 272, 277.

188. At housing prices of \$1,150 per square foot, we ballparked the per-square-foot residual at $(0.8 * \$1150) - (2 * \$350 - \$70) = \430 , or \$2.15 billion for 5,000 homes of 1,000 square feet each. At \$950 per square foot, the total residual for 5,000 homes would be about \$1.35 billion.

would benefit from being the first jurisdiction in its region to substantially upzone and auction allowances.¹⁸⁹

Epistemic uncertainties probably cut against the go-slow strategy as well. Economists have shown that demand curves for housing can only be estimated by making strong, basically unverifiable assumptions.¹⁹⁰ Projections of future housing-demand curves in the post-auction world would be even shakier, requiring serious guesswork about how the supply of substitute housing in nearby jurisdictions will change in response to the new fiscal incentive to upzone. So long as allowances continue to fetch prices high enough to finance the goods or transfers that hold the pro-development coalition together, we think most cities (uncertain of the future, and wary of losing a possible early-mover advantage) would enact prospective upzonings as quickly as possible, rather than delaying with the hope of securing a better price for later development allowances.

In principle, state lawmakers could check the market power of big cities by devolving the rezoning-and-auction decision to neighborhood-level entities.¹⁹¹ Neighborhood-level decision-makers would be closer to pure price takers, as there are good substitutes for most neighborhoods, and no one neighborhood could much affect the regional housing supply. But neighborhood-level institutions would probably be even more homeowner-dominated than city councils. And, needless to say, cities would fight mightily against any state initiative to shift rezoning authority from city governments to new neighborhood-level institutions.

E. Do Local Politicians Prefer In-Kind Exactions?

This is less an objection than a question about whether the local right to auction development allowances, if created, would be widely used. Professor Rachelle Alterman has studied land-value-capture practices around the world, and one of her principal conclusions is that indirect modes of value capture are much more common than overt

189. The size of the first mover advantage will depend on the degree of uncertainty about future production throughout the region. If market participants are very confident that prices will come crashing down in the future, they will not pay a lot for allowances today.

190. See generally Saku Aura & Thomas Davidoff, *Supply Constraints and Housing Prices*, 99 *ECON. LETTERS* 275 (2008).

191. Some scholars envision rezoning occurring through a joint decision by homeowners in a neighborhood to sell their properties to a developer. See Nelson, *supra* note 24, 178–79. Japan apparently has a procedure whereby two-thirds of the landowners in an area can petition for rezoning for higher FAR, and the local government is required to act on the petition within six months. Sorenson et al., *supra* note 109, at 570. We do not know whether it is widely used.

taxation of the surplus.¹⁹² She reports that, of the industrialized nations, only Poland, the United Kingdom, and Israel have provided for benefit taxes (special assessments) on upzoning's value.¹⁹³ And to the best of our knowledge, only Brazil has authorized cities to auction development allowances in connection with upzoning—and Brazil requires the auction proceeds to be spent, like a benefit tax, on services for the upzoned area.¹⁹⁴ By contrast, the in-kind exactions, impact fees, development agreements, and incentive-zoning ordinances now in favor among U.S. municipalities have near counterparts around the world.¹⁹⁵

Might we have overlooked some real advantage of these indirect modes of value exaction? Relative to benefit taxation, the indirect methods clearly do have advantages: they will not raise the ire of liquidity-constrained landowners, and they don't require a public agency to accurately forecast the value conferred by upzoning. But these advantages are shared by our auction model.

Another political attraction of in-kind value capture is that it may allow local officials to more credibly commit to spending the value extracted for certain purposes down the road.¹⁹⁶ To illustrate, imagine that affordable-housing advocates have strong allies on a city council that is considering an upzoning plan. If the council pairs the upzoning with a below-market-rate-housing requirement, it is more likely that the upzoning will continue to yield affordable housing units years into the future than if land-value residuals were extracted in cash for the general fund. Though a future city council could repeal the below-market-rate requirement, the political transaction costs of doing so would likely exceed the transaction costs of reducing general-fund appropriations for affordable housing.¹⁹⁷ Nothing intrinsic to our model, however, requires auction revenues to be deposited in the general fund.

192. Rachele Alterman, *Land Use Regulations and Property Values: The "Windfalls Capture" Idea Revisited*, in THE OXFORD HANDBOOK OF URBAN ECONOMICS AND PLANNING 755, 775 (Nancy Brooks et al. eds., 2012).

193. *Id.* at 768.

194. For reviews of the Brazilian experience, see SUZUKI ET AL., *supra* note 101, at 215–16; Paulo Sandroni, *A New Financial Instrument of Value Capture in São Paulo: Certificates of Additional Construction Potential*, in MUNICIPAL REVENUES AND LAND POLICIES (Gregory K. Ingram & Yu-Hung Hong eds., 2010); Kim, *supra* note 92, at 4.

195. Alterman, *supra* note 192.

196. Thanks to John Infranca for suggesting this point.

197. The municipal budget comes up for negotiation automatically every year or two, and these negotiations provide lots of opportunities for horse-trading, whereas repealing a BMR requirement would require opponents of the program to get their repeal measure onto the legislative agenda and then overcome the various forms of status-quo bias that are built into the legislative process (e.g., committee and mayoral veto points).

We think many local governments would want to commit some portion of the revenue to capital projects, and if other spending commitments are reasonably necessary to hold the pro-development coalition together, the state agency that approves the auction plan should let the local government make these commitments.¹⁹⁸ The commitments, once approved by the agency, could become enforceable as a matter of state law,¹⁹⁹ thereby allowing city councils to make more credible spending commitments through auctions than with in-kind public-benefit schedules.

Indirect value capture may also appeal to politicians who want to divide the upzoning pie in a manner that the public would regard as unfair. When upzoning's value is divvied up discreetly and in kind, politicians may be able to divert more of that value to big campaign donors and powerful interest groups than if value extraction were transparent. But the Brazilian experience suggests that if cities receive authority to auction the developable space created by upzoning, they will use it eagerly.²⁰⁰ Brazilian cities jumped on board even though Brazil's capital markets were not well developed, and despite tight restrictions on the use of auction proceeds.²⁰¹ In the U.S., which has well-developed capital markets and experience with other forms of tradeable regulatory property, we expect an even more enthusiastic reception than in Brazil.

F. Would the Auctions Be Unlawful?

So far we have considered functional objections to our proposal, but one might also wonder whether the auction model is simply foreclosed by the Takings Clause, or perhaps by one of the various tax limitations found in states' constitutions.

We have noted that the Supreme Court's Takings-Clause jurisprudence imposes a nexus-and-proportionality requirement on property exactions and fees.²⁰² Under our proposal, the price of development

198. Our model does not require that localities forswear development fees or in-kind exactions, but forces the locality to internalize the costs of these decisions. If a city retains the right to charge fees, and on a discretionary basis, then this would reduce the value of the allowances. However, if a city does give up fees, then prudence requires that it save a portion of its allowance revenue for needed infrastructure. A middle road could be to create a prudent capital fund from allowance revenues.

199. *See supra* note 175 and accompanying text.

200. *See supra* note 194 and accompanying text. The City of San Paulo has already raised nearly \$2.8 billion with development rights auctions and further auctions are in the offing. *See Kim, supra* note 92, at 8.

201. *See Kim, supra* note 92, at 4 (describing geographic and other limitations on the use of auction proceeds); *id.* at 32 (comparing capital markets in Brazil and the U.S.).

202. *See supra* notes 43–46 and accompanying text.

allowances would be roughly proportional to the market value of new housing, rather than to infrastructure needs or injuries attributable to development. It might therefore be said that requiring landowners to redeem allowances as a condition of receiving development permits is unconstitutional.

This argument should fail, however, because the nexus-and-proportionality requirement is best understood as governing only *discretionary* conditions on development permits.²⁰³ Under the auction model, the requirement that landowners redeem allowances to build above the development baseline would be *mandatory*, and simple math would determine the number of allowances for a given project.

This is not sophistry. Discretionary conditions are particularly susceptible to favoritism and abuse. The courts that have complained about local governments' extortionate behavior should welcome our proposal, for as we have seen, ours would actually encourage local governments to curtail their own discretion, establishing clear-cut standards and speedy procedures for project review.

The doctrinal line between discretionary and nondiscretionary conditions is needed to keep the exactions jurisprudence from swallowing numerous precedents that apply deferential standards of review to everyday taxes and regulations. Property taxation has never faced a congruence-and-proportionality requirement, and even special assessments, which can vary from one parcel to the next, are reviewed deferentially.²⁰⁴ As we explain below, the development-allowance auction is akin to a special assessment on upzoning, but with built-in protections for liquidity-constrained landowners and safeguards against "overshooting," i.e., taxing away more value than was actually conferred. The precedents that give local governments a wide berth for benefit taxation counsel for acceptance of the auction model too.

Or consider economic regulation. Zoning and other limits on economic activity can become a taking in when they go too far, but the Constitution doesn't require nexus-and-proportionality studies as a matter of course when governments enact pollution controls. Nor does a state's decision to control pollution by creating new forms of regulatory property, such as greenhouse-gas emission allowances, trigger special Takings scrutiny. An auctioned right to build pursuant to an upzoning plan is just another form of regulatory property.

We acknowledge, though, that at least one justice of the Supreme Court, Justice Thomas, seems inclined to extend the nexus-and-pro-

203. As the California Supreme Court put it, "[t]he 'sine qua non' for application of *Nollan/Dolan* scrutiny is . . . the 'discretionary deployment of the police power' in 'the imposition of land-use conditions in individual cases.'" *San Remo Hotel v. City & Cty. of S.F.*, 41 P.3d 87, 105 (Cal. 2002). *See also* *Bldg. Indus. Ass'n—Bay Area v. City of Oakland*, 289 F. Supp. 3d 1056, 1057 (N.D. Cal. 2018).

204. *See, e.g.,* *Houck v. Little River Drainage Dist.*, 239 U.S. 254, 265 (1915).

portionality requirement to nondiscretionary development conditions.²⁰⁵ If nothing else, we think our framework would offer a good set of facts to test Justice Thomas's intuitions. Our proposal highlights what should be the real focus of the takings inquiry in cases about nondiscretionary exactions: the definition of the development baseline, not the conditions placed on development in excess of that baseline.²⁰⁶ Our proposal also draws attention to the very strong state interests that can be served by allowing local governments to profit from relaxed land-use controls, and to the pervasiveness and diversity of contemporary value capture practices.

The auctions might also be challenged on state-constitutional takings or tax-limitation grounds. A state-by-state analysis is beyond the scope of this Article. For now, we simply note that California's requirements for raising revenue are particularly fearsome; yet even in California, the state could likely authorize upzoning auctions without amending the state constitution.²⁰⁷

205. *See* Cal. Bldg. Indus. Ass'n v. City of San Jose, 136 S.Ct. 928, 928–29 (2016) (Thomas, J., concurring in cert. denial).

206. *See generally* FISCHER, *supra* note 80.

207. Proposition 13 strictly limits property taxes and imposes a supermajority requirement for most other kinds of taxes. CAL. CONST. art. XIII A, § 1. Proposition 218 limits, among other things, the imposition of “fees” as an “incident of property ownership” or for a “property-related service.” *Id.* art. XIII D. Proposition 26 constrains any government charge for any other kind of public service. *Id.* art. XIII C, §§ 1(e), 2. A challenge to development-allowance auctions in California grounded on some combination of these restrictions would be likely, but we do not think it would succeed.

For starters, the allowances, though related to property value, are not themselves a tax imposed on property value and therefore would not run afoul of Proposition 13's limitation on property taxes. *See, e.g.*, Neilson v. City of California City, 35 Cal. Rptr. 3d 453 (Cal. Dist. Ct. App. 2005) (parcel taxes are not ad valorem property taxes). Further, the allowances are not a fee charged for governmental services, and so they are not likely to fall under Proposition 218; that is, the auction allowances are not like paying for garbage pickup. One might worry that Proposition 218's notion of an “incident of property ownership” might be interpreted broadly so as to include the allowances. The California Supreme Court, however, has already held that this does not extend to voluntary decisions to develop one's property. *Richmond v. Shasta Cmty. Servs. Dist.*, 83 P.3d 518, 526 (Cal. 2004).

Proposition 26, the sweeping catchall, does at first glance restrict “any levy, charge or exaction,” yet it specifically excepts “a charge imposed as a condition of property development.” CAL. CONST. art. XIII C, § 1(e)(6). Tradeable development allowances fall squarely within this exception. While the analogous proviso in Proposition 218 preserved only “existing laws relating to the imposition of fees or charges as a condition of property development,” *id.* art. XIII D, § 1(b), Proposition 26's exception has no such temporal limitation. The tradeable development allowance, as a

G. *Would the Auctions Be Unjust?*

Setting aside the finer, doctrinal points, might there be some more basic, normative objection? Perhaps yes, if the development baseline were set significantly below the typical density of developed parcels in the jurisdiction, or far below the buildable envelope allowed under longstanding zoning classifications.²⁰⁸ But requiring the purchase of development allowances by landowners who want to use the *expanded* zoning envelope created or induced by a change in state law does not deprive them of anything to which they might reasonably have felt entitled.

The airwave spectrum offers an instructive analogy. Congress required television broadcasters to switch to digital signals in 2009.²⁰⁹ This freed up the broadcast spectrum's valuable, low-frequency bands, which wireless phone carriers were eager to use. One might suppose that, because they had previously used it, television stations owned the low-frequency spectrum. But with the advent of digital broadcasting, they no longer needed it, and Congress saw fit to allocate the freed-up spectrum by auction.²¹⁰ Just as technological changes and regulatory mandates have made certain airwave spectrums newly available, the buildable area created by state-induced upzoning is essentially a new resource. The fortuity of owning land within the upzoned area no more entitles landowners to the surplus than did the fortuity of broadcasting over a particular portion of the spectrum entitle television stations to reap the wireless windfall.

Another way of thinking about the fairness issue is by analogy to special-benefit assessments (a form of benefit taxation). Consider a property owner who has purchased a single-family home not far from a transit stop. This homeowner did not buy the home to serve as a rental, much less was she speculating about a zoning change. She bought the home to live in herself at the market clearing-price of, say, \$300,000. Now suppose that a state or local government, having only glanced at the first paragraphs of this Article, upzones all property near transit

novel sort of "charge imposed as a condition of property development," is therefore on safe ground.

Even if a court were to conclude that auctioning the upzone is subject to Proposition 26, that would not kill the idea. Local governments would just have to put their auction programs to a pre-implementation vote of the municipal electorate.

208. Hence our suggestion to define the development baseline as the greater of (1) the zoning of the parcel as of the date of the auction-authorizing state statute, or (2) the median density of already-developed parcels in the jurisdiction as of the same date.

209. DTV Delay Act, Pub. L. No. 111-4, 123 Stat. 122 (2009) (establishing a transition date of June 12, 2009).

210. Jeffrey A. Hart, *The Transition to Digital Television in the United States: The Endgame*, 1 INT'L J. DIGITAL TELEVISION 7, 21–22, 25 (2010).

stops. Our homeowner's lot is actually large enough for a small apartment building. Given the pent-up demand for housing, those apartments would demand a premium and so, very soon after the state law is passed, a developer offers our homeowner \$1,000,000 for her home.

Where did this \$700,000 windfall come from? It was not a result of any investments that were made in the single-family house, nor was it the result of superlative work the developer may do in the future to earn a sizable premium on the apartments she builds. Indeed, the developer, if she knows her business, only offered \$1,000,000 because she knew she could afford to make this payment and still expect to make acceptable profits, given the risk she is bearing. The \$700,000 emerged because of a change in public regulation (zoning) that allowed the property's value to more fully reflect the value of other public improvements, such as to the transit system.

Now suppose there was no public transit stop in this neighborhood, just a collection of single-family homes worth, on average, \$300,000. The city then decides to build a transit system and to upzone the lots nearby. Suddenly, all of the homeowners do not own \$300,000 homes, they own \$1,000,000 homes. This \$700,000 is a windfall from public investment and should be publicly dispersed (at least in significant part). Indeed, it is standard—and best—practice to impose a special assessment on properties near transit stops *before* the project is built, leveraging the projected windfall to make the transit investment in the first place. Suppose this new transit stop will cost \$10,000,000 and the projected windfall to neighboring properties, collectively, is \$5,000,000. If special assessments worth \$5,000,000 are imposed on the land, then other taxpayers need to contribute only \$5,000,000.

This is not only a fair and efficient outcome, but, given resource and political constraints, it might be the only way to get the project funded. A leading economic historian has argued persuasively that the advent of benefit taxation was transformative for economic development.²¹¹ If a major canal was only going to benefit one portion of the state, how could the taxpayers of the entire state be expected to fund it? Utilizing value capture was the key; it was efficient, it was fair, and it broke a political impasse.²¹²

Upzoning-with-auctions is close kin to benefit taxation, but with two significant equitable advantages for current landowners.²¹³ One is

211. See John Joseph Wallis, *Constitutions, Corporations, and Corruption: American States and Constitutional Change 1842 to 1852*, 65 J. ECON. HIST. 211, 235 (2005).

212. *Id.* at 213, 222, 235.

213. Cf. GEORGE E. PETERSON, *THE WORLD BANK, UNLOCKING LAND VALUES TO FINANCE URBAN INFRASTRUCTURE* 37–38 (2009) (“Although the concept of betterment levies is straightforward, implementation under modern conditions has been unexpectedly difficult.”), available at <http://documents.worldbank.org/curated/en/723411468139800644/pdf/46>

the built-in limitation on overshooting, that is, extracting more value than is actually conveyed. In the traditional special-assessment case, the local government must assign some number, prospectively, to each parcel's expected increase in value. This is hard to do. The typical way to proceed is to start with studies that demonstrate, by means of regressions, the additional value similar transit projects generated for nearby properties, and then argue why these results should be replicated in this case. We do not doubt the robust findings that show value added as a result of public improvement,²¹⁴ but it is also well understood that this is, necessarily, an inexact science.²¹⁵

Even if a proposed special assessment does not overshoot, it may stir up strong opposition from liquidity-constrained homeowners.²¹⁶ An assessment is a fixed charge on a parcel of land based on an increase in value that owner-occupants will not have realized as cash flow. That a home near an improved transit system is now worth more doesn't mean that the pensioner who owns it can afford the special assessment. In short, traditional-benefit taxation requires a difficult judgment call on valuation and compounds that difficulty with a liquidity problem for many taxpayers.

The auction mechanism solves these problems. Obviously, only investors with the resources to bid will participate, so there is no imposition of a new obligation on liquidity-constrained landowners. Further, if the market is working, allowance transfers will be voluntary and no one will pay more than they think the allowances are worth. Of course, the price of the development allowances will reflect not only value contributed by public investment in transit, parks, and other amenities—the traditional focus of special assessments—but also the

1290PUB0Box3101OFFICIAL0USE0ONLY1.pdf [https://perma.cc/6TEH-VBD2].

214. See, e.g., Jeffrey J. Smith & Thomas A. Gihring, *Financing Transit Systems Through Value Capture: An Annotated Bibliography*, 65 AM. J. ECON. & SOC. 751, 751 (2006) (showing that “the elevated value effects of transit access are well documented.”).
215. Susan S. Fainstein, *Land Value Capture and Justice*, in VALUE CAPTURE AND LAND POLICIES 21, 23–24 (Gregory K. Ingram & Yu-Hung Hong eds., 2012); Philip A. Booth, *The Unearned Increment: Property and the Capture of Benefit Value in Britain and France*, in VALUE CAPTURE AND LAND POLICIES, *supra*, at 74, 89–90 (summing up disappointing English and French experience). But note that there are numerous case studies of the successful use of value capture, see Peterson, *supra* note 213, and so we are certainly not suggesting that value capture is not a vital and effective tool, just one with limits. For a framework for use of benefit assessments, see Darien Shanske, *Clearing Away Roadblocks to Funding California Infrastructure*, 54 STATE TAX NOTES 567 (2009).
216. Note that John Stuart Mill argued for using value capture and, at different points, the United Kingdom attempted to capture value from upzoning quite ambitiously, although each of these attempts ended in retreat. See Booth, *supra* note 215, at 77–80.

development value created by agglomerations of private enterprises and individuals. Yet it is not clear why a site's owner has any greater claim to that value, as a matter of justice or fairness, than does the general public.²¹⁷ So long as the development baseline is reasonably defined, any value above the baseline is just a windfall.

CONCLUSION

The public auction is a familiar and effective device for allocating publicly owned resources to high-value users while ensuring that the public receives a fair (market) price for its resource. The developable space that could be created by an upzoning plan is a public resource in all but name. Local governments, which control this resource, nowadays expect cash and other benefits when they make this resource available to private developers. This Article has argued that the states should recognize this expressly and authorize local governments to auction the amount of buildable space created by an upzoning plan.

Our argument is a pragmatic one. By authorizing local governments to auction the upzone, states should be able to get high-cost, supply-constrained cities to allow substantially more housing. The framework we have sketched would give local governments a strong fiscal incentive to allow dense development in high-value locations, and to streamline development-permitting regimes. The framework would also generate a policymaking asymmetry within local governments, making it comparatively easy for local factions whose policy preferences align with state goals to entrench their policies. Finally, the framework would help state keep tabs on the amount of buildable space that is realistically available for development within municipalities. Local governments would have a fiscal incentive to not overclaim about the development capacity created by their upzoning plans; and low prices for development allowances (relative to the price of finished housing) would signal the existence of serious development constraints.

We encourage legal scholars and state policymakers to think of auctioning the upzone as one arrow in a quiver of policies for inducing increased residential density in cities. This strategy could be paired with state bills that directly upzone certain priority locations, such as sites near transit (and it may to help soften opposition to such bills).²¹⁸ It

217. Cf. John Costonis, *Development Rights Transfer: An Exploratory Essay*, 83 *YALE L.J.* 75, 127 (1973) (arguing for transferable development rights programs, in part on the ground that “the development potential of private property is in part a community asset allocable to serve the community’s needs”).

218. California state senator Scott Wiener’s S.B. 50, which would have required local governments to allow four- to five-story buildings near transit stops, was drafted to give economically disadvantaged “sensitive communities” a grace period to come into compliance. See Matt R. Richardson, *SB 50: Defining Sensitive Communities*, Medium (Apr. 15, 2019), <https://medium.com/dialogue-and-discourse/sb-50-defining-sensitive->

could be deployed alongside measures to strengthen planning mandates,²¹⁹ such as California's housing element law, or measures to tie transportation funding to housing production.²²⁰ Upzone auctioning could be supplemented with direct subsidies for increased residential density, such as grant funding,²²¹ or, in states like California that have functioning carbon markets, offsets for local governments to sell on the carbon market.²²² Alone or in combination with other tools, auctioning the upzone has the not insignificant virtue that cities are not likely to resist it.

communities-d33e1988e2f8 [https://perma.cc/KRW4-87T9]. Professor Eric Biber has helpfully suggested that our auction model could be combined with an S.B. 50-like intervention, with a proviso giving sensitive communities control over expenditure of auction revenues. Note also that one of the principal lines of attack on state upzoning-near-transit bills has been that they represent giveaways to developers. *See, e.g.,* Tim Redmond, *Hearing on Wiener Housing Bill Points to the Roots of This Crisis*, 48Hills (Mar. 12, 2018), <https://48hills.org/2018/03/hearing-wiener-housing-bill-points-roots-crisis/> [https://perma.cc/WF5N-ZC2T]. This criticism would lose all force if local governments were authorized to auction the newly developable space.

219. *See generally* Elmendorf, *supra* note 15.
220. *Cf.* Laura Bliss, *California's New Governor Would Punish Cities Over Affordable Housing*, Citylab (Jan. 11, 2019), <https://www.citylab.com/transportation/2019/01/gavin-newsom-housing-reform-transportation-budget-homeless/580192/> [https://perma.cc/79R8-XRQZ] (discussing Governor Newsom's since-abandoned plan to tie local transportation funding to housing production); CECILE MURRAY & JENNY SCHUETZ, *IS CALIFORNIA'S APARTMENT MARKET BROKEN?* 13 (2019) (recommending that state policymakers tie transportation and other funding to housing production), *available at* https://www.brookings.edu/wp-content/uploads/2019/07/20190711_metro_Is-California-Apartment-Market-Broken-Schuetz-Murray.pdf [https://perma.cc/VQJ4-8CAS].
221. *Cf.* Madeline Carlisle, *Elizabeth Warren's Ambitious Fix for America's Housing Crisis*, THE ATLANTIC (Sept. 25, 2018), <https://www.theatlantic.com/politics/archive/2018/09/elizabeth-warrens-fix-americas-housing-crisis/571210/> [https://perma.cc/7UBX-KDCB] (discussing Senator Warren's proposal for a competitive block-grant program to reward cities that reduce barriers to housing supply).
222. Dense housing near transit has quantifiable benefits for greenhouse gas emissions and so localities that build denser development could be permitted to profit from that choice by selling offsets on the carbon market. *See* Ahlfeldt & Pietrostefani, *supra* note 3. At the moment, carbon-offset credits might not amount to a large incentive, but the number of allowances in California is set to steadily contract, and the price of allowances is expected to rise accordingly. By 2030, it is imaginable that the fiscal incentive to sell allowances might be quite significant. For some preliminary analysis, see Severin Borenstein et al., *California's Cap-and-Trade Market Through 2030: A Preliminary Supply/Demand Analysis* (Energy Institute at Haas, Working Paper No. 281, 2017), <https://ei.haas.berkeley.edu/research/papers/WP281.pdf> [https://perma.cc/DB88-AX3C].