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**Quantifying the Impacts of Regulatory Delay on Housing Affordability  
and Quality in Austin, Texas**

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**Quantifying the Impacts of Regulatory Delay on Housing Affordability  
and Quality in Austin, Texas**

**by**

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**Report**

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## **Abstract**

# **Quantifying the Impacts of Regulatory Delay on Housing Affordability and Quality in Austin, Texas**

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Regulatory delay during site plan review of multifamily projects in Austin has three primary impacts: 1) it generates unexpected development costs which increases housing prices over-time; 2) it stifles innovation and decreases quality of development; and 3) it promotes exurban growth. These impacts reduce affordability and quality of life for all Austinites and thwart the goals of the *Imagine Austin* comprehensive plan.

As regulatory delays have increased remarkably since 2009, strong rent growth has compensated for this growing uncertainty throughout the Austin market. If regulatory delays are eliminated and developers receive approvals for multifamily projects within the 120 day mandate instead of the 223 day average, renters could see relief of 4-5% on their rent, or an average of \$60 per month or \$720 annually in Central Austin. Interviews with 14 Austin-area residential developers confirm these delays, costs, and impacts on their projects.

On average it takes 3.5 additional months to receive site plan approvals in Austin in addition to the code mandated four month cycle. Austin's peer cities fare differently. The average delay in Denver, Colorado is three weeks, and is just several days in Raleigh, North Carolina. Whereas land use regulations theoretically generate positive

externalities, *delays* in administering those regulations generate no benefits to the community.

During this unforeseen 3.5 months, developers accrue unexpected costs such as legal fees, and developer overhead which includes the opportunity costs of not pursuing other deals. Construction costs increase during delays, and developers must continue to pay for land options and carry costs. In the short-term, developers pay for these unexpected costs out-of-pocket, and by reducing construction costs, which can result in lower quality materials or amenities. Unexpected costs roll into the project's overall budget, resulting in more expensive development projects. More expensive projects require higher rents in order to maintain the development team's expected yield on cost.

Further, interviews with urban designers and civil engineers reveal that regulatory delay stifles private sector innovation in the built environment. Developer interviews and case studies suggest that regulatory delay promotes exurban growth instead of urban infill in the Austin metropolitan area.

## Table of Contents

List of Tables .....	ix
List of Figures .....	x
Chapter I: Introduction .....	1
Methods.....	3
Delay in Austin .....	4
Chapter II: Characterizing Delay .....	8
The Role of Regulation.....	8
What is Delay? What isn't Delay? .....	9
Chapter III: Identifying & Addressing Delay .....	14
Sources of Delay .....	14
Not a New Issue .....	15
Not Unique to Austin .....	16
Delay & Reform in Denver.....	17
Delay & Reform in Portland.....	19
Delay & Reform in Silicon Valley.....	19
Performance in Raleigh .....	21
Chapter IV: Delay Hurts Communities.....	22
Prevents the Construction & Filtering of Housing .....	22
In Practice is an Exclusionary Tactic.....	24
Fuels Growth at the Urban Edges .....	25
Reduces the Quality of Development .....	26
Chapter V: Relationship among Delay, Cost, and Price .....	30
Increases Total Project Development Costs .....	31
Developers Pass-On Costs .....	32
Delays Cost the Local Government .....	32
Increases End-User Prices .....	34
Delay Constrains the Supply of Housing .....	35

Disproportionately Impacts Affordable Housing Developers .....	36
Chapter VI: Costs and the Development Process .....	37
Soft Costs .....	37
Land Costs .....	39
Carry Costs .....	40
Hard Costs .....	42
Chapter VII: The Cost of Delay in Austin .....	43
Costs of Regulatory Delay in Site Plan Review .....	44
Costs of Regulatory Delay During Construction .....	51
Chapter VIII: Conclusions .....	52
Macro Impacts of Regulatory Delay .....	52
Factors for Further Study .....	53
Final Thoughts .....	55
Appendix: Project Budget Assumptions .....	56
Works Cited .....	57
Vita .....	62



## **List of Tables**

Table I:	Site Plan Permit Cycle Delay in Austin.....	6
Table II:	Comparative Data for Austin’s Peer Cities.....	17
Table III:	Comparative Site Plan Permit Cycles .....	20
Table IV:	Costs Impacted During Regulatory Delay .....	44
Table V:	Example Project Assumptions .....	45
Table VI:	Current Property Comparables .....	46
Table VII:	Base Rent Calculations .....	47
Table VIII:	Delayed Rent Calculations.....	48
Table IX:	Comparison of Base to Delay Rental Rates.....	49

## **List of Figures**

Figure I:	Site Plan Review Cycle in Austin.....	11
Figure II:	Statutory vs. Average Site Plan Review Cycle Work Flow.....	11

## Chapter I: Introduction

For at least 30 years there has been a strong local public debate over the efficacy of the City of Austin’s development review process. Neighborhood groups perceive too much power resting with developers, while the real estate community perceives an anti-development sentiment from city staff and neighborhoods (Zucker 2015). The debate has morphed into a problematic dialectic, where stakeholders espouse an “us vs. them” attitude. A highly anticipated report which reviewed the workflow and staff and stakeholder perceptions of the Planning and Development Review Department (PDRD) was published in March 2015 by Zucker Systems Inc. This report identifies many of the same problems and recommends many of the same strategies for improvement as a strikingly similar report published by the same company in 1987. Some stakeholders in Austin’s planning and development community have participated in focus groups in both study periods 27 years apart, and wonder why nothing has changed (Zucker 2015). The report identifies that significant delays during permit approvals have for many years been a prominent community issue. Civil engineers report a lengthening of approximately one month per year since the economic recovery began in 2010.<sup>1</sup>

The City of Austin’s current and aspirational peer cities such as Denver, CO, Portland, OR and communities within California’s Silicon Valley region<sup>2</sup> have experienced similar public debate and regulatory delays. Similar to Austin, third parties published documents resembling Austin’s troubling Zucker Report. As a result, leadership in these cities streamlined permitting processes and tightened review timelines. These communities continue to monitor staff and stakeholder satisfaction against realistic and measurable performance metrics. As a result, they incentivize strong local economies and moderate housing prices, and increase the quality of the built

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<sup>1</sup> Anonymous civil engineer firm in Austin, in discussion with the author, March 2015.

<sup>2</sup> While Silicon Valley is not typically referred to as a peer city to Austin, often the two are considered economic competitors for tech companies, educated workers, and millennials. In this context it is a useful comparison for a discussion around economic competitiveness and quality of life as it is impacted by delay.

environment. These communities identified problems and implemented solutions in just a few years. If Austin truly wishes to be likened to the renowned urban design and quality of life enjoyed by Denver and Portland, and remain economically competitive with other technologically innovative and creative regions such as Raleigh, NC and Silicon Valley, there is much work to be done.

Austin is making forward progress in its planning processes as it rewrites its land development code through 2018 and grapples with ways to meaningfully apply the *Imagine Austin* comprehensive plan. However, for some time city staff and stakeholders alike have identified a strong undercurrent of inefficient administration of the city's land use regulations, recently highlighted in the Zucker Report (2015). One of the prominent issues within PDRD identified by both staff and stakeholders is excessive and frequent *delays* in the development review and permit approval process.

The Zucker Report found from focus groups and staff interviews that site plan reviews 1) take too long, 2) are not comprehensive and lack consistency among reviews and plans, and 3) reviewers continue to add items throughout the review process and “nit-pick” on insignificant issues unrelated to the standards of the land development code (Zucker 2015). Further, the Zucker team found that the 90% performance standard for on-time review cycles for these site plans (120 calendar days) is simply not being met. “Many of the reviews are not comprehensive which leads to too many multiple review cycles”, and multiple reviews increases the total cycle approval time (Zucker 2015, 266). In the context of this paper, *regulatory delay* refers to unmet timelines in the exchange of comments and permits between development applicants and city staff.

The sources of and solutions to regulatory delay are well documented in Austin (Opticos Design 2014; Austin Business Journal 2014; Community Impact News 2014; Zucker Report 2015). Also well documented are the effects of land use regulations themselves on housing markets and development costs (Ben-Joseph 2003; Glaeser & Gyourko 2003; Malpezzi 1996; May 2005; Mayer 2000; Quigley & Raphael 2004). What is not as well documented however are the impacts of regulatory *delay* on a city's

economy and built environment. But one study published in March 2015 explores the effects of regulatory delay on residential subdivision development and is referenced throughout this paper (Wrenn & Irwin 2015). The intent of this report is to quantify the costs of delay in order to elevate the conversation from one of blame and mistrust to one of economic vitality and affordability. Through quantitative analysis and qualitative methods this work develops a tangible discussion about the impacts of delay on housing affordability, quality, and regional success both in the public and private interest.

### ***Methods***

This paper is separated into six sections. Following the introduction, the second section characterizes and defines regulatory delay by distinguishing between the regulations themselves and the administration of regulations. Section III defines timeframes and sources of delay in Austin, and looks at case studies from current and aspirational peer cities. Section IV describes how delay hurts communities as a whole more than it hurts individual developers. Section V studies the existing empirical evidence and academic regression analyses which suggest a significant relationship between time and cost of development, and time and price to consumer. Section VI describes the development process and the categories of costs that are impacted by delay, and how developers accrue and account for implicit costs as a result of regulatory delay. Finally, Section VII summarizes the quantitative analysis of how delays during site plan review and construction increase the cost of development and ultimately the price of housing to consumers throughout the region.

In addition to a review of the academic literature on this issue, this study benefited greatly from the ever evolving and hotly debated public process centered on the release of the Zucker Report (March 2015) in Austin and the forthcoming changes to Austin's Planning and Development Review Department. Further, this study benefited from interviews with 14 Austin-based developers, two contractors, two urban designers, and three civil engineers who represent developers. All interviewees elected to remain

anonymous. While not all are quoted in this paper, their insights, experiences, and conversations enabled the analysis throughout this study.

### ***Delay in Austin***

A hot topic of conversation among all stakeholders amidst Austin's rapid urbanization is the rate at which the city is becoming unaffordable for many long-time residents and middle and lower income people. In the 1990s Austin became the least affordable housing market in Texas when median home prices rose by 71% between 1990 and 1998 (Mueller 2004). In more recent years, the Harvard Joint Center for Housing Studies' report *The State of the Nation's Housing 2014* found that among renters and homeowners, 36% of Austin households spend more than 30% of their monthly income on housing, and 17% spend more than 50% of their income on housing.

Renters are disproportionately impacted; 49% of all renters in Austin are spending more than 30% of their monthly income on rent and an additional 26% spend more than 50% of their monthly income on rent (HJCHS 2014). However, Austin's housing affordability is in-line with trends across the rest of the United States. The same Harvard study found that 50% of renters in the United States spend 30% or more on housing, and 28% pay more than 50% of their income on housing (HJCHS 2014). In Austin, this dynamic is due in large part to the combination of factors affecting the supply and demand of housing: considerable population growth, increasingly high land costs, uneven wage growth, and a legacy of low density development patterns (Community Action Network 2000).

Between 2004 and 2013 average rents in the Austin area increased by 50%, while median incomes increased by just 9% (Toohey 2014). Regulatory factors such as significant delays in the city's permit review processes, lack of developable land zoned for high density residential development, minimal "by-right" entitlements, and fierce neighborhood opposition to density and affordable housing also contribute to increasing housing prices in Austin. However striking, few of these factors are new to Austin's 2015 development landscape. For years advocates for affordable and attainable housing have

promoted land use and regulatory solutions to increase affordable housing, citing concerns over low-density development patterns and an overemphasis on the protection of single-family neighborhoods.

Pressure to reform is growing from both for- and non-profit housing developers who wish to provide subsidized affordable and unsubsidized attainable housing, and from large employers dependent on a robust local workforce that can afford to live close to employment centers. While findings from the harsh Zucker Report (2015) and the land development code rewrite process led by Opticos Design provide vehicles for legal reform, what Austin also needs is a new way of framing this issue. Regulatory delay and inefficiency contributes to ever increasing housing prices for new and existing residents, pushing growth to exurban areas divorced from employment centers and public transportation. This dynamic, if unchanged, will affect the City of Austin's ability to attract and retain large employers, manage traffic congestion, and continue to promote the quality of life for which the city has become famous. This paper quantifies the impact of regulatory delay on affordability, quality, and regional growth, thus developing a new lens for promoting and evaluating reform.

Assessing the impacts of regulatory delay during permit approvals is particularly compelling at present because there is an opportunity to reduce and eliminate delay before Austin's land development code is rewritten. Laws do not need to change to make improvements. Austin has reasonable benchmarks that can be better enforced and supported *before* the city's land use regulations are streamlined and clarified by the code rewrite process.

The land development code mandates timeframes by which the city must return comments to applicants, and a timeframe by which full-cycle applications should be approved/disapproved. According to the land development Code Diagnosis Report (Opticos 2014), only 50% of site plans are returned with *initial* comments to applicants within the legally mandated time frame of 20 days. Further, among all site plan applications in FY2014, just 10 to 24% of site plan applications were approved within the

120 calendar day timeframe (City of Austin Monthly Development Process Tracking 2015). These figures strongly suggest that regulatory delay is real in Austin.

*Table I: Site Plan Permit Cycle Delay in Austin*

<b>Austin Site Plan Cycle Review Times (Completeness Check Through Approval), Days</b>						
	Average	Min Avg/Month	Max Avg/Month	% On Time (Min)	% On Time (Max)	Volume (#)
FY 15*	252	238	257	10%	14%	222
FY 14	223	208	232	17%	23%	530
FY 13	223	208	238	16%	24%	502

Source: City of Austin Monthly Development Process Tracking

\*Indicates data available for October 2014-February 2015

Min & Max: First (Sep) & last (Oct) month of each fiscal year was removed

Percent on-time is based on a 120 calendar day cycle review timeline, as reported by the Development Process Tracking monthly reports

The table above shows the average site plan review cycles in Austin. As the code mandates 120 calendar days, this paper uses the *difference* between the 120 day mandate and the actual recorded average timeframe of 223 calendar days as the *average regulatory delay in Austin*. In FY13 and FY 14, this difference was 103 calendar days on average, approximately 3.5 months. For the purposes of this paper, the average delay in Austin adds on average 3.5 additional months to an already 120 day long, four month process. These figures include all site plans, including applicants that received time extensions. Including site plans with extensions is necessary because as the Zucker Report (2015) identifies through interviews of plan review staff, time extensions are very common, especially for discretionary projects. Nearly all of the developers interviewed for this project shared stories of delay on discretionary projects, and said that recently it has taken approximately 12 months to gain site plan approvals for these projects. As such, the average delay for projects which require increased density to provide more housing units is likely longer than 3-4 months, compounding the costs of delay over this time. However for simplicity and to remain conservative, 3.5 months of delay is modeled in this paper.

Half of these developers separately suggested that they would accept a longer initial review period (for example 40 days instead of 20) if it was the *only* comprehensive



review period, thus eliminating the multiple cycles of comments, many of which are considered “boilerplate” by civil engineers who process many separate applications.

A common public perception in Austin is that prompt development review, streamlined permitting approvals, and uninterrupted construction only increases developer’s profits, and reduces the power of neighborhood input. In fact, members of the public have a much greater stake in development review than they may realize. **The findings of this report suggest that over-time, eliminating regulatory delays benefits the community at-large as much or more than individual developers.**

This work focuses on how the inefficient administration of land use regulations affects housing prices and the quality of development, and promotes growth in exurban areas. Quantitatively, this work examines how regulatory delay 1) increases housing prices (sales & rents) in new and existing development, and qualitatively explains how regulatory delay 2) diminishes the quality and innovative characteristics of this development, and 3) promotes leapfrog development. All three impacts degrade a community’s aesthetic appeal and quality of life.

## Chapter II: Characterizing Delay

### *The Role of Regulation*

It is first critical to distinguish between land use regulations themselves and the process by which those regulations are administered and applied to development applications. This paper does not focus on the merits of land use regulations but instead on the administration of those regulations. A number of studies over past decades have found “strong relationships between the overall degree of land use regulation and housing prices” (Quigley 2004, 206). In Quigley’s study (2004), his regression analysis indicates that “moving from a relatively unregulated to a highly regulated metropolitan area increases bottom quartile rents by more than a fifth and bottom quartile house values by more than three fifths.”

Later a study by Quigley & Raphael concluded “housing prices and rents are indeed higher in cities with more stringent regulation of development and land use” (2005, 325). However, these studies on the relationship between land use regulation and housing prices do not account separately for regulatory delays associated with administering those regulations, nor do they account for the positive externalities that some regulations may produce. Schill’s work on the effects of regulation on new housing development reminds readers to consider other factors, where “in seeking to separate ‘bad’ regulations from ‘good’ ones, it is extremely perilous to look solely at the effects of these regulations on the price of housing” (Schill 2005, 7). As such, this paper’s analysis is useful in its effort to separate regulatory *delay* from the regulations themselves.

Austin land use activist Richard Maier’s 2014 paper quantified the effects of some of Austin’s land use regulations on housing costs. Maier analyzed how the cost to build a new single family home in Central Austin is increased by a menu of local land use regulations such as the Heritage Tree and McMansion Ordinances, among others. In this case the Heritage Tree Ordinance gives the builder the option of paying into an off-site mitigation/replacement fund, which by standard calculations would have cost this standard single family property with one Heritage Tree \$14,400. The other option is to develop an on-site tree care plan for the tree, although the arborist recommended removal

due to its condition. The tree care plan cost \$2,742; thus the builder elected this option as the less expensive route (Maier 2014).

Austin's McMansion Ordinance limits the height, massing, and impervious cover of single-family homes, making it difficult in this case to justify the land cost because of strict house size limits. Maier found that designing new homes to comply with the McMansion Ordinance require builders to commission custom floor plans and designs because each lot's calculations are unique. The cost to the builder is \$12,500 more than the typical \$2,500 for stock floor plans (Maier 2014). While combined these ordinances could add \$12,742 to the base home price, Maier's work does not include the administration of those regulations and how delays increases housing costs and quality; indeed the impacts are greater if delay is taken into consideration.

However, in some cases land use regulations generate positive externalities to the community at large that should be accounted for in a cost-benefit analysis. For example, while the Heritage Tree Ordinance may increase costs to build and prices to purchase housing, mature tree cover provides quantifiable benefits such as improved air quality, shade, reduced electric bills, and increased property values. These benefits should be considered in a true cost-benefit analysis. But whereas there are at least in principle broader public benefits of land use regulations, there are no quantifiable benefits to society to offset individual costs of regulatory *delay*.

### ***What is Delay? What isn't Delay?***

Regulatory delays have been of concern to the development community for some time. This section clarifies what does and does not characterize modern regulatory delay. Working definitions come from a variety of sources. In the context of examining barriers to implementing new land use regulations, often regulatory approvals "consist of delays associated with permit processes and approvals that arise from cumbersome decision making processes and duplication of regulations" (May 2005, 2). Wrenn & Irwin's work looks at expected approval times where delay is the discrepancy "between the time that the developer first applies for conditional approval and the time by which the developer

expects to gain final approval” (2015, 29). While the popular perception among neighborhood groups and city staff is that developers are concerned primarily with the merits of land use regulations, the reality is that developers across the United States cite few issues with clear and easy to interpret regulations that are applied with straightforward and predictable review processes.

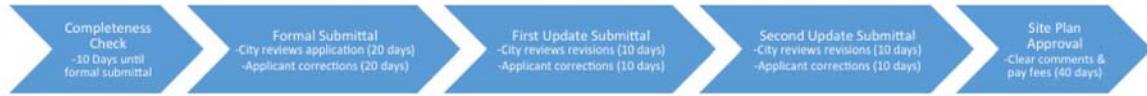
Developer interviews conducted during Eran Ben-Joseph’s study (2003, 7) on practices and attitudes toward subdivision regulations identified that “what hurt[s] are the inconsistent approval times and regulation changes [...] the biggest problem [...] with regulations is not the regulations themselves, but the various interpretations by staff and zoning officials.” Delay is most problematic to developers because it is unpredictable, hard to control, and ultimately expensive. Further, the uncertainty produced during periods of regulatory delay is especially problematic for developers because it increases investment risk in projects. Investment risk must be compensated by higher returns, which in turn increase the price of the real estate project for the consumer up to the point the market will bear. If the expected returns and resulting base rents or sales prices are higher than the market can bear, projects will not get built.

For the purposes of this paper, regulatory delay is the difference between *statutory* review and approval periods and actual *recorded* review and approval periods. Delay during construction is harder to track, but theoretically straightforward to analyze from a time value of money and cost of capital perspective. In the absence of reliable data recording delays during construction, this paper relies on interviews with local developers and consultants to understand common sources and lengths of regulatory delay during construction. Both delays during approvals and construction are characterized by inefficiency within the local government’s land use reviewing body.

The land development code mandates a time frame by which comments, reviews, and approvals to permit applications must occur. Within the umbrella of development review there are three categories of commercial real estate permits in Austin: site plans, subdivisions/plats, and building permits. For a multifamily development, a developer will

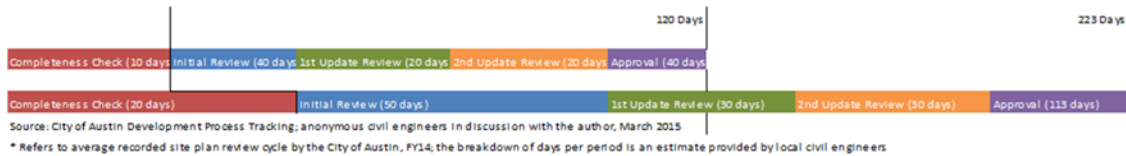
typically apply for subdivision plats, a site plan permit, and a building permit(s) for vertical construction.

*Chart I: Site Plan Review Cycle in Austin (120 Day Code Requirement)*



This paper focuses on site plan permits, as these permits are associated with the longest delays and experience the highest level of scrutiny in Austin. The chart above reflects Austin’s site plan permit approval workflow as mandated by the land development code. Austin as well as most mid-large size municipalities track actual review and approval times as part of departmental performance measures, often reporting a percentage of on-time completions within these legal mandates. Delays technically begin within the first lapsed day after the legal benchmark period. As such delay can vary widely from one day to even theoretically 1,000 days. The chart below shows the mandated vs. average recorded site plan approval cycle in Austin.

*Chart II: Statutory vs Average Site Plan Review Cycle Work Flow in Austin*



The chart above reflects the differences in Austin between the statutory approval guidelines vs. the actual recorded site plan approval time lines. The difference between the 120 day benchmark and the 223<sup>3</sup> actual recorded average figure for FY14 is the average regulatory delay period in Austin’s site plan approval process.

<sup>3</sup>The City of Austin tracks average monthly site plan review timeline for all applications. For FY14, the average site plan review timeline was 223 calendar days, which is 103 days longer than the 120-day code

Delay is not necessarily, although it can be, a direct product of land use regulations. As found in Austin’s Code Diagnosis (Opticos 2014) and Zucker Report (2015), Austin’s complex land use regulations are difficult to administer and interpret by city staff, which can create delays. However, successful reform in other cities (ie Denver, Portland, & Raleigh) shows that with well versed staff and an educated development, design, and engineering community, even complex and clearly defined regulations can be well managed. As a report published by the American Institute of Architects states, “there are differences in the way that municipalities apply these controls. Successful processes can be extensive, but clear. Their expectations can be great, but known. The reviews can be deliberate, but timely” (AIA 2003, 4). As such, regulatory delay is the product of inconsistent and unpredictable administration of regulation that results in unexpected lengthening of the mandated review timelines.

Ben-Joseph’s survey (2003, 7) asked developers to choose the most burdensome among seven components of land use regulations, including the limits of the regulations themselves. Among the seven choices, “unnecessary delays” and the “impacts of local administrative discretion” (tied) each were cited as the most burdensome aspects of regulation. Here the option “limits of the regulations themselves” ranked last (excluding “other”) among the choices.

Regulatory delay is not caused by fees imposed on developers. Many municipalities require developers to pay impact fees to help cities pay for infrastructure that will serve the new development. A well regarded and cited study by Mayer & Somerville (2000, 1) on the impacts of fees finds that “development or impact fees have relatively little impact on new construction.” A separate framework established by Pindyck (1993) and elaborated on by Wrenn & Irwin (2015) considers these one-time expected fees *de jure* costs, as opposed to the *de facto* costs incurred during unexpected delay. As such, “regulations that lengthen the development process [...] have larger and

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mandated timeline. This number is the average of ten months of monthly average review timeline data, removing the minimum and maximum among the 12 monthly averages.

more significant effects” (Mayer & Somerville 2000, 1), largely due to these ongoing and unpredictable *de facto* costs. This finding is significant but not surprising, as a developer can include these expected *de jure* costs in their project or land budget, given that the timing is clear and well communicated by the municipality. *De facto* costs, by contrast, are difficult to manage.

There are some cases of regulatory delay caused by a municipality that are not due to administrative inefficiency but are instead the result of rules involving adequate public facilities, known as concurrency. Such rules “raise the possibility of denying new development because of its anticipated effects on road congestion, water supply, or sewage treatment facilities” (Quigley 1997, 53). Some communities may legally craft concurrency regulations, sometimes in the form of adequate public facility ordinances (APFO), without imposing an illegal development moratorium. As described by White & Paster (2003, 753), an adequate public facilities ordinance is a

land use regulation that is designed to ensure that necessary public facilities and services to support new development are available and adequate, based on adopted level of service (LOS) standards, at the time that the impacts of new development occur. APFOs are designed to manage the timing, not the location or quality, of new development.

This version of delay can be anticipated by developers – indeed, an APFO provides developers predictable enough information about where, when, and how much development may occur. An APFO is legally justified by its strong public purpose: cities need adequate public facilities to provide uniform standards of service across the jurisdiction. In this way, concurrency rules are not included within this paper’s discussion of regulatory delay.

## Chapter III: Identifying & Addressing Delay

### *Sources of Delay*

While not the focus of this paper, it is useful to identify the most common sources of regulatory delay. In recent investigations, the Zucker Report (2015, 286) and Code Diagnosis (2014) have outlined several key sources of regulatory delay in Austin:

Lengthy review time frames; Multiple review cycles; Heavy case volumes and uneven caseloads; Lengthy applicant turn-around times; Incomplete plans; Lack of good first reviews; An overly complex Land Development Code, that is continually amended; City policies that generally require all issues to be resolved prior to project approval instead of allowing project approval subject to conditions that resolve outstanding issues; Postponements and appeals by interested parties; and Time extensions.

These sources of delay are neither new nor unique to Austin. Locally, longtime stakeholders cite lack of motivation by staff to review applications quickly, and cite staff's lack of understanding of the developer's process as other key reasons for delay. The city's frequent deference to powerful and vocal neighborhood groups can also increase the development timeline, particularly in rezoning cases. Zucker (2015, 286) reports of "numerous code and policy issues that are intended to provide lots of neighborhood input," allowing for delay of up to 365 days over the normal 180-day application expiration. Zucker makes 464 separate recommendations for improving the entire PDRD, 74 of which are directed toward land use review services alone. Many of these 464 recommendations were first made in the 1987 publication. It is important to recognize that some delay is caused by applicants. Though these reasons are not as well documented, delays by applicants can be caused by lenders and financial partners making changes to the project, changes to building uses and layouts due to tenant negotiations, and ongoing negotiations with landowners. The timeline for applicants to turn-around comments has been increasing as well. A large Central Austin civil engineering firm comments that a primary source is because many complex projects receive 6-10 pages of "boilerplate" comments that review staff include with most first round comments, many



of which are indeed answered throughout the application and construction documents.<sup>4</sup> Reviewers have increased the level of scrutiny for a site development permit in recent years, including detailed and specific engineering questions that take time to answer.

### ***Regulatory Delay is Not a New Issue***

The issue of delay is not new in the United States. Studies observing development approvals began in the 1970s and show that since then “there has been a steady increase in approval and processing time” (Ben-Joseph 2003, 1). Other studies show that a marked increase in housing prices occurred toward the end of the 1970s, which some researchers link to the rapid increase in regulation on development, particularly environmental regulation and growth management controls enacted during the 1970s in coastal cities (Glaeser 2003). Over the past four decades, “the cost of housing is being driven up by an increasingly expensive and time-consuming permit approval process [...] though such debates are not new” (Ben-Joseph 2003, 1). As stated, the relationship among regulation, delay, and housing prices is not a new phenomenon. However the impacts are multiplying across the United States and as time progresses: “since 1976, the process has increased in its complexity, in the number of agencies involved, the number of delays in the approval process, and the adding of new requirements” (Ben-Joseph 2003, 1). Further, this same study cites no change in the percent of developer respondents who cite delay as the most burdensome aspect of regulation between 1976 and 2002 (26%). This is striking and suggests that quickening review timelines has not been of high priority in many American cities over the last 30 years.

As mentioned previously, regulatory delay is not new in Austin either. The first page of the draft Zucker Report (2015, 3) states: “Paul Zucker, President of Zucker Systems led a team of five national planning and development experts on a three day trip to Austin in 1987 and issued a report called, *Improving the Development Regulatory Process in Austin*. Many of the issues discussed in 1987 (some 27 years ago) still

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<sup>4</sup> Anonymous civil engineering firm in discussion with the author, February 2015.

remain.” A critical issue identified in 1987 still exists – the so called “Austin Way.” The 1987 report (Zucker 2015, 3) described it in this way:

The so called “Austin Way” contains an unhealthy dose of suspicion. This lack of trust became evident in the desire by both staff and citizens to over-document everything, to dot every “i” and cross every “t”, the tendency to create new commissions along with each new ordinance, unwillingness to delegate more decisions to staff and staff’s feelings that if they make a mistake, they may be crucified. In the long run every detail cannot be documented. This kind of system will break down and sink of its own weight. We are not suggesting that the Austin Way be abandoned, rather that it be kept in perspective.

The Zucker team remains supportive of such reforms amidst today’s development landscape. If change is to happen within the City of Austin’s land use review department, the city must employ strong leadership, enforce existing time lines, and streamline complex land use review processes. In March 2015, Austin city manager Marc Ott divided the PDRD into two separate departments: planning and zoning, and development review (Austin Business Journal 2015). The impacts of this new structure are unrealized.

### *Delay is not Unique to Austin*

Regulatory delay does not afflict Austin alone. Regulatory delay and pressures to reform are most prevalent in expensive and fast growing cities that struggle to keep pace with increasing volume of development applications and adjust their systems and psyche to rapid infill development. Indeed, studies published in Denver (2003), Portland (2002), Philadelphia (2010), and Silicon Valley (1994) reflect nearly the same sources of delay and frustration by stakeholders as in Austin. These cities cite stifling economic effects and increases in development costs as the drivers for reform. In response to reports, these cities have made explicit decisions to reform their land use review processes. If the City of Austin’s elected officials, departmental leaders, and urban populace wish to emulate the cities it so often describes as peers, then it is useful to examine several of these case studies.

While Philadelphia is not a peer city, it is interesting to briefly look into the analysis of how regulatory delay affects development costs in Philadelphia. A

consultant’s analysis of Philadelphia’s development review process reports that 5% of development costs are attributed to administrative delays (Hseuh 2010), not dissimilar to the later findings of this study (2015). Communities more comparable to Austin, and communities to which Austin strives to be likened are examined here and include Denver, CO, Portland, OR, Raleigh, NC, and economic competitors within California’s Silicon Valley. All of these communities cite economic growth and competitiveness as a key and primary driver for regulatory reform.

*Table II: Comparative Data for Austin’s Current Peer & Aspirational Peer Cities*

<b>Austin’s Current Peer &amp; Aspirational Cities</b>						
City	Population/ Square Mile	Median Household Income (U.S. \$52,176)	Growth Rate 2000-2010	% of Pop. 25+ With Bachelor’s	Employed in Creative Occupation (U.S. 19%)	
Austin (Travis Co.)	2,907	\$58,084	20%	45%	36%	
Denver (Denver Co.)	3,874	\$50,728	8%	40%	32%	
Portland (Mult. Co.)	4,567	\$51,859	10%	44%	30%	
Raleigh (Wake Co.)	2,789	\$64,993	46%	47%	38%	

Sources: American Community Survey 2013 3-Year Estimate; USDA Creative Class County Codes  
Income & employment figures are for the county, all other figures are for the city proper

### ***Delay and Reform in Denver***

In 2003, the Denver chapter of the American Institute of Architects commissioned a study titled “Denver’s Development Review Process: Can It Be Fixed?” The report was supported by a larger inclusive group of stakeholders, called the Citizens to Streamline Our Permitting Process (STOPP), who presented the report to then Mayor John Hickenlooper, now governor of Colorado. The report focused on how delays and inefficiencies in the development review process hurt Denver’s economy. Many of the issues reported in Denver are similar to those outlined in Austin’s Zucker reports from 1987 and 2015, including (AIA 2005, 2):

Unnecessary delays; Unpredictability, including reversals of direction and additions of requirements late in the process; Personal interpretations of lawfully promulgated regulations; Conflicting requirements between departments; Lack of a mechanism to resolve conflicts; Lack of a coherent process for accommodating unconventional projects.

These issues were not unique to Denver, nor are they unique to Austin. The difference among communities is how leadership decides to move forward and reform these

problematic processes. The STOPP report powerfully stated that “wasted time in plan review limbo means wasted costs to owners, design professionals and the City, alike” (AIA 2003,16), successfully making the case that regulatory delay affects the entire community.

Since 2003, Denver has made great strides to streamline its development review and permitting processes, including enforcement of existing timelines for approvals. Denver has realized a boom in commercial development, much of which is high quality and award winning for its adaptive reuse and innovation. For example many qualified and deserving projects compete annually for ULI Colorado’s Impact Award categories for *Infill* and *Innovation*. One notable reform is the institution of pre-application conferences, as is also done in Dallas and San Diego. Before an applicant submits a formal application for site plan review, the City of Denver requires an in-person concept plan conference. Applicants bring in preliminary site drawings and/or building elevations in order for reviewers to make sure the plan has a high likelihood of approval and is in regulatory compliance before formal submission. During the conference, a case manager and representatives from all reviewing departments – fire, zoning, water, survey and planning – are present.

This pre-submission conference prevents delay during official review periods and saves applicants costs to their consultants. Once formal plans are submitted, and the application is deemed complete, the development review case manager distributes the plans to different reviewers within one business day. Comparatively, it takes four to six weeks for applicants to navigate the City of Austin’s completeness check process, where it should take no more than five to ten days, according to the land development code (City of Austin 2014). After intake, Denver’s reviewers are required to return coordinated written comments on the formal plans within three weeks to the applicant. With exceptions for large complex commercial projects, generally the three week comment review period threshold is met, largely because complex issues are resolved in person during concept plan review (City of Denver Development Services 2015). In Austin this initial review period is recorded as 30-45 days instead of 20 (Austin Performance Metrics

2015). The impacts of this simple, efficient reform are considerable for developers and the community, as review times in Denver have been reduced by half to two-thirds. Now the average delay is approximately three weeks total (City of Denver Performance Review), or 21 calendar days compared to Austin's 103 average calendar days of delay.

### ***Delay and Reform in Portland***

Portland serves as a strong model of development service regulatory reform in the United States. Motivated to maintain long term economic stability and success, in 2002 the mayor and city council drafted the *Final Regulatory Improvement Workplan* which was designed to streamline permitting and established a flexible regulatory system highly responsive to the market. The workplan also built into city government the process of continuous improvement to land use regulations, administration, customer service, procedures and fee calculations. This report reflects an ongoing community wide approach to constant improvement and responsiveness to the market. Each year the council and mayor report on and draft improvements to the workplan; thus, it is an ever evolving document. The discussion draft for 2015 includes mandatory (as opposed to voluntary) pre-application conferences to be held prior to land use review, expedited procedures for smaller projects, and 45 other feasible, ongoing recommendations for clarifying, streamlining, and improving the development process in Portland in 2015.

### ***Delay and Reform in the Silicon Valley***

In 1994 a non-profit task force representing the cities of Palo Alto, Sunnyvale, San Jose, Fremont, Mountain View, and San Carlos, CA was created in response to examples of local government's slow permitting processes hindering the competitive position of these fast growing cities. Hewlett Packard reported that the cost of building permit delays cost the company \$1 million for every month a permit was delayed (AIA 2003, 23). This local task force challenged local leadership and municipal development services to streamline and overhaul permit approvals as a way to stimulate economic development.

As a result of this grassroots pressure, combined with innovation among the Silicon Valley workforce, the *SmartPermit* system was established and used in these cities throughout the 1990s, and served as a model across the country. While seemingly rudimentary by 2015, the *SmartPermit* system was revolutionary in 1994, allowing applicants to check status of permits, submit plans, and apply and pay for permits online. Twenty-one years later, the City of Austin still does not offer electronic plan submission and electronic payment options. Though in March 2015 the Austin Business Journal reported that the City of Austin is testing a new electronic payment and plan submission system, to go live sometime in 2015, which will greatly improve upon the current system.

As in Denver and Portland, reform in the Silicon Valley was motivated by the region’s need to stay responsive to the market and continue to provide a robust housing and commercial development sector, vital to its prominent role in economic development and innovation in the United States.

*Table III: Comparative Site Plan Permit Cycles*

<b>Comparative Site Plan Review Times, Working Days</b>			
	Initial Review: Benchmark	Initial Review: Recorded	Percent On-Time
Austin	20	27	38%
Denver	15	n/a	n/a
Portland	20	n/a	70%
Raleigh	10	10.96	72%
San Antonio	34	9.25	n/a
San Marcos	10	9	n/a

Sources: City of Austin Monthly Development Process Tracking; Cities of Denver, Portland, Raleigh, and San Antonio development services performance measures; City of San Marcos *Year in Review*; n/a indicates city did not provide this information at time of writing

### ***Performance in Raleigh***

The City of Raleigh's Development Services department posts quarterly reports reflecting careful and rigorous performance measures for all types of plan reviews and approval rates. Raleigh reports the benchmark number of days for plan review next to the average actual days of review. The department has an ambitious goal of returning 90% of plans within the benchmark periods of 10 days for all submission cycles. The department also reports how late plans were, from 1-2 days, 3-4 days, and 5+ days. This level of reporting provides enough context for the average number of days to approval to be meaningful for purposes of anticipation by developers. The department is highly successful; the actual number of days to review initial site plans was between 10.36-11.89 (Raleigh 2015).

Other examples include Phoenix's Customized Plan Review and Permit by Appointment processes. Established teams of reviewers work together in the same room to process coordinated comments in which the applicant is directly involved. The city reported reductions in approval cycles from 60-90 days to 10-45 days. Dallas, Denver, Phoenix, Raleigh, and San Diego offer or require concept plan conferences before formal site plan review periods, greatly reducing the turnaround time and complexity of comments during formal review periods.

Key lessons for Austin include:

- Coordinated, face-to-face time early in the process reduces review days;
- Cities should report minimum and maximum review times, not just averages;
- Regional economic vitality and preservation of local quality of life are key drivers for reform; and

Successful reform begins with local groups who build a broad coalition of stakeholders and apply constant and well-informed pressure to local governments.

## **Chapter IV: Delay Hurts Communities**

Regulatory delay should be an important planning & public policy issue. Thus far this paper has established how and why regulatory delay exists in Austin and in other cities across the United States. This section discusses the key impacts of regulatory delay on a community, supporting the previously emboldened thesis that *over-time delay hurts communities more than individual developers*. The following categories of effects have serious, wide reaching impacts on nearly all members of the community. These issues should be of utmost concern to planners and policymakers in the context of regulatory reform, housing affordability, and growth management.

### ***Delay prevents the construction and filtering of housing***

Regulatory delay slows the construction of all new housing types and has two notable impacts on housing affordability: 1) stalling filtering, where filtering refers to the process where “construction of new housing for middle-income people frees up their old housing for lower-income people to occupy” (Baer & Myers 1998, 189); and 2) preventing lower end housing from being built entirely, when the minimum cost of the cheapest feasible development is raised. Further, Quigley’s research found that, although without separating the regulation from the administration, the largest price effects of regulation occur in the low end housing market (Quigley 2004, 207). Costs to develop with the additional burden of implicit costs caused by regulatory delay disproportionately affect developers in the market for housing attainable to low income populations. As housing prices have risen at a much fast rate than incomes, housing for the critical workforce has become increasing scarce. Further findings suggest that “to the extent that cities make it difficult to build new housing, any type of housing, the availability of low-cost housing will be reduced and the affordability of all housing will decline” (Quigley 2004, 205).

Even without separating the costs of regulation from the delays caused by administering the regulations, researchers found that “moving from a lightly regulated environment to a heavily regulated environment would raise rents by 17%, increase



house values by 51%, and lower homeownership rates by 10%” (Malpezzi 2003, 225). While this finding cannot be used as a proxy for delay alone, the difference in rents and homeownership rates is striking. Highly regulated markets with delays remove several layers of affordability from the housing market entirely. In the most highly regulated markets such as New York and San Francisco, the market will fail to produce even middle income housing without subsidies, let alone low income housing.

While Austin has not reached this level of regulation and constrained supply, and because of much of the city’s current development is happening in the outskirts, concentrated pockets within Central Austin are beginning to produce housing for only high income residents. For example, the newly delivered 311 Bowie Street multifamily project in downtown Austin is commanding average rents of \$3.42 per square foot, catering to residents with average incomes of \$1M annually. The added burdens of regulatory delay will discourage development and housing rehabilitation in the first place, which limits the number of units produced entirely, and increases all levels of housing prices (May 2005, 4).

Multifamily developments, the projects that tend to provide the majority of attainable and affordable housing in communities, suffer the most from this dynamic. The responsiveness of a community’s housing stock is weaker in more regulated areas. Quigley found that the slowest response among all housing starts is in the supply of multifamily housing units, “the source of supply that is most frequently the target of regulation” (Quigley & Raphael 2005, 328) and the most frequent source of attainable housing in communities. Because multifamily housing is subject to more stringent review and regulation, its developers suffer disproportionately from delays and therefore incur more implicit costs, which leads to higher base rents among new multifamily housing. If the market is not strong enough to absorb higher rents, developers will anticipate lower than expected returns, and thus projects will not be built.

### ***Delay in practice is an exclusionary tactic***

In planning practice, exclusionary tactics refer to activities deployed by municipalities and neighborhood groups that regardless of intent, in effect greatly reduce or eliminate opportunities for certain segments of the population to access housing and services. For example, by limiting the amount of parcels zoned for multifamily development, a municipality effectively eliminates opportunities for affordable and attainable housing by reducing density and promoting single-family homes, regardless of their intent to do so. Researchers have found that “delays and length may be used as a tactic to exclude development” (Ben-Joseph 2003, 24) and to stall projects that a community does not want, to the point at which the project is significantly modified or abandoned by the developer. The same study found that “in higher income communities, approval of development takes longer than in those with lower incomes” (Ben-Joseph 2003, 11). Across the country, “the time it takes to get an approval is much shorter in low and moderate income communities” (Ben-Joseph 2003, 24). The results of this study find that as the percent of jurisdictions that implement growth control measures increases, the median income of those jurisdictions increases. Ben-Joseph concludes that “regulations are often a barrier to affordable housing, and are used as an exclusionary device by higher income communities” (Ben-Joseph 2003, 24).

Another study found that “efforts to reduce construction through delay can be quite effective. In fact, repeated delay can be much more effective than the imposition of fees” (Mayer 2000, 21). As previously discussed, one-time *de jure* development costs (i.e. impact fees, taxes) are predictable and do not deter new construction cycles. However implicit costs incurred by developers during delay may move a project’s net present value below zero, forcing the developer and her investors to take serious risk, modify the project, or abandon it completely (Wrenn & Irwin 2015). In this way regulatory delay is a powerful deterrent of new construction.

### *Delay fuels growth at the urban edges*

Difficult and lengthy regulatory approval processes in central cities pushes developers to work in exurban communities. Bar-Ilan & Strange's regression results indicate that "lags and uncertainty together can lead to so-called leapfrog development, where distant land is developed prior to the development of land that is closer to the city center" (1996, 88). In these edge communities, review times are quicker, neighborhood opposition is less robust, and in many cases the local government is motivated to incent new development. Indeed, slow and frustrating approval processes in Austin are pushing developers to work in other areas; as one developer says, "I can process projects in Round Rock, Cedar Park, Leander, Georgetown, Dripping Springs, etc. in less than ½ time with cooperation and helpful City Staff and Management."<sup>5</sup> Wrenn & Irwin found that "a one-month increase in expected approval time leads to a 13% reduction in the probability of development in areas primed for development, but that only leads to an 8% reduction in areas not primed for development" (2015, 26). This dynamic is counter to the intentions of the policies of the *Imagine Austin* comprehensive plan which aim to direct growth to specific, denser areas of the region.

Further, the implicit costs incurred by developers during regulatory delay have also resulted in fragmented urban growth and leapfrog development. Wrenn & Irwin (2015) argue that implicit costs favor the development of smaller residential subdivisions that are lower cost to developers. And because "smaller subdivisions tend to occur farther from urban areas, this difference in implicit costs has fostered greater exurban development" (Wrenn & Irwin 2015, 26). Regulatory delay has altered the spatial patterns of development in metropolitan areas in which it occurs.

Regulatory delay pushes residential growth to exurban communities that may not necessarily have adequate public infrastructure or commercial development and employment to financially support a high volume of new residents. New development in these communities increases congestion as employment remains in Austin's city center

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<sup>5</sup> Anonymous in discussion with the author, March 2015.

and nearby nodes, which increases demand for already overloaded freeways and grossly inadequate alternatives to them. These new edge developments outside of Austin do not provide the taxes necessary to support these expenses within the City of Austin, further burdening already high property taxes in Austin compared to other cities.

***Delay reduces the quality of development in communities***

Regulatory delay stifles innovation in real estate development and rewards prototypical development patterns. Delays during Austin’s review process combined with the overly prescriptive nature of the land development code inadvertently incentivizes monotonous ‘big box’ development patterns. This is true because such development is simple to review, complies with standard regulations, and requires no innovative thinking by reviewers.

As a result, there is little incentive for developers within communities suffering from delay to innovate because the review time is so much longer compared to standard development practices. For example, in one case a developer of a new residential subdivision with a mixed use town center located in a designated *Imagine Austin* “activity node” ultimately abandoned its extensive green infrastructure water treatment plan for a traditional end-of-pipe system after experiencing delays during the site plan review process. Originally the developer, engineer, and land planner designed a green infrastructure system to detain and treat stormwater runoff using a network of rain gardens and a gray water system that would have provided enough water for the neighboring golf course. The developer experienced such pushback from review staff and delay in reviewing this water treatment plan that they ultimately chose to redesign the entire system to save time. This developer posed the ultimate question: “*do you pay to wait, or pay to redesign?*”<sup>6</sup>

In this case, the developer could wait no longer for the city to comment and process their legal but innovative and atypical plan; instead they redesigned for a

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<sup>6</sup> Anonymous in discussion with the author, February 2015.

standard water treatment system, which the city reviewed promptly. This developer expressed a very human reaction to this process: frustration, of course, but failed attempts to be innovative and fulfill the promise of green infrastructure were perhaps the greatest disappointment of all. Further, future residents will pay in the sales price of their new home for the increased soft costs that the developer incurred by doing two sets of plans, and the time lost to delays. The developer said that he will spread these implicit costs out over the base price of the new homes. The developer wonders how serious the plan review staff is not only about implementing *Imagine Austin*, but more importantly providing Austin residents with attractive, environmentally sensitive, and high quality growth. Two civil engineering consultants who handle many projects in Austin cited similar delays and lack of cooperation from staff with getting approvals on green infrastructure projects, while within the legal confines of the current land development code, and fulfilling of *Imagine Austin's* aspirational goals.<sup>7</sup> Public green infrastructure projects provide an important precedent for future private sector approval. For example, the Ridglea Greenspace Beautification Project in West Austin was awarded public matching funds for stormwater right of way improvements. Infrastructure is in place and plantings will occur in the fall of 2015.<sup>8</sup>

After two developers and consultants representing developers also mentioned the same issue of “pay to wait, or pay to redesign?,” I began to ask other interviewees about this issue. Nine of the 14 developers said that during their last or current project they considered whether to wait out the delay and pay for it over time, or pay immediately to redesign plans and move forward with an alternative design that was, they admitted, less than ideal, but would either appease reviewers or be easier to review. However, redesign is expensive. In one case, “we’ve charged the client \$105,000 for two zoning applications, a replat, and a giant site development plan set that went in the trash [...and]

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<sup>7</sup> Anonymous in discussion with the author, March 2015.

<sup>8</sup> See [https://austintexas.gov/sites/default/files/files/Public\\_Works/Neighborhood\\_Partnering\\_Program/Revised\\_Ridglea\\_Application\\_Summary.pdf](https://austintexas.gov/sites/default/files/files/Public_Works/Neighborhood_Partnering_Program/Revised_Ridglea_Application_Summary.pdf) for more information.

he's not even in the door for review yet.”<sup>9</sup> Developers must weigh costs of redesign with carry costs accrued during delays. Development review departments, such as Austin's, beleaguered by delays are actually incentivizing the standard development patterns they so desperately wish to discourage.

There are other ways that quality is diminished by regulatory delay. In theory there is a finite amount of money a developer can spend on a given portion of a project in order to meet expected returns. Money spent on extensive use of consultants and carry costs during delays could otherwise be spent on amenities and innovative design. One developer severely impacted by regulatory delays in the license agreement process, caused by discrepancies in plan interpretations between Austin Energy and PDRD, lamented that money he is spending on attorney fees and plan redesigns “could have been money spent elsewhere on the project”<sup>10</sup> to improve amenities or unit finishes. Eight of the 14 developers I interviewed considered money spent during periods of regulatory delay as “wasted” and wished they had spent it on parts of the project that would have increased its value and appeal to future consumers. One way for a developer to sustain the implicit costs accrued during regulatory delay is to take money out of other project budget items, which can reduce the quality and value of the project.

Developers of an infill residential community in South Austin described a situation where delays caused by a neighborhood zoning case degraded the ultimate quality of the project and raised the sales prices of the units. As originally proposed, this project achieved many goals of *Imagine Austin* and the city's written design guidelines for how it wishes to grow in a compact and connected manner: rear alleys for parking, clustered units to allow for maximum open space, and centrally located amenities. Closely clustered and in some cases attached units allowed per square foot construction prices to be lower, which would keep the sales price lower relative to construction costs. However as the neighborhood fought the increased density and as time dragged on, the

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<sup>9</sup> Anonymous in discussion with the author, February 2015.

<sup>10</sup> Anonymous in discussion with the author, March 2015.

developer decided to settle for a less dense zoning category in order to keep the project viable. Now the units are detached and farther apart than originally planned. As a result, the entire community suffers from a greatly reduced amount of open space to accommodate the new distance between each unit. The developer noted that the quality of the overall project and its amenities were diminished by the delay, as the soft cost budget was inflated due to redesigning the site plan after the zoning compromise.<sup>11</sup>

Of concern to an entire jurisdiction is the issue that lower density development is expensive for the municipality to maintain, and thus costs taxpayers more in the long term. Kotchen & Schulte's (2009) cost of community services analysis of a low density suburb in Virginia found that providing municipal services to large lot homes costs the local government \$1,600 more than is returned in taxes and other revenues. As a result, the entire community will pay more in taxes in the long term to subsidize the cost to maintain infrastructure serving low density development.

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<sup>11</sup> Anonymous in discussion with the author, February 2015.

## **Chapter V: The Relationship among Delay, Cost, and Price**

The previous section demonstrated that regulatory delay creates new costs for the community at large. This section explains how delay increases costs to developers and eventually prices to end-users. Cost refers to the total costs the developer incurs to actually build a project. Price refers to the payment made by the end user to the developer. Price and cost are not the same, but increases to cost often results in increases to price up to the point that the market will bear. In some cases when the price must rise above the market to cover costs and meet returns, developers will abandon the project. This next section explores the empirical relationships between time and cost, and between time and price. Using time as a proxy for delay, the relationship between delay and price becomes evident.

The academic literature and mainstream research which investigates regulatory delay is unambiguous in its conclusion that delays in permitting increase real estate prices and reduce a city's overall affordability (Ben-Joseph 2003; Wrenn & Irwin 2015). An economic study by PriceWaterhouseCooper (PWC) concludes that "higher rents for all tenants are caused by permitting delays" (2005). As such higher rents are a product of increased development costs. As established by Pindyck (1993), costs outside of the control of the developer generated during regulatory delay are referred to as implicit costs. The term *implicit costs* is used throughout this paper to refer to these unforeseen costs that the developer accrues during periods of regulatory delay. Ben-Joseph (2003, 17) summarizes the types of individual expenses within implicit costs: "ultimately, the delay caused by the regulatory maze produces higher cost housing through holding costs, increased expenses due to risk, uncertainty, overhead, and inflated cost of labor and materials, and other more hidden costs." As discussed previously, the level of stringency of land use regulations affects the cost of housing, though there may be quantifiable positive externalities generated by some of those. However, "the costs of regulation are multiplied as a result of inefficient and duplicative government administrative processes"



(Schill 2005, 12). This suggests that delay causes a multiplier effect, where the one-time *de facto* cost of regulation is multiplied by the *de jure* implicit costs of regulatory delay.

***Delay increases total project development costs (time and cost)***

Regulatory delays increases overall total development project costs. PWC found that “various economic studies have confirmed that onerous permit processes drive up the cost of the building stock” among a variety of communities (2005, 3). Specific implicit costs include increased consultant costs and developer overhead (referred to as soft costs), and increased carry costs (interest and fees). In Philadelphia, stricken with extreme delay, a study found that “delay can add as much as [...] 5 percent to the total development costs” (Hsueh 2010, 1). The National Association of Home Builders report that “10% of the cost of building a typical new home is attributed to unnecessary regulation, regulatory delay, and fees” (May 2005, 5). While unnecessary regulation is subjective, and fees are found to have a negligible impact, a portion of the 10% is surely attributable to delay.

Peter May’s work (2005, 4) examines barriers to affordable housing posed by regulatory implementation and concludes that “delays add to the cost of construction”. Austin developers cited situations where because of regulatory delay they had to hire new consultants or extend contracts of existing consultants. Eight of 14 developers mentioned that the combination of engineer and land use attorney fees, plus permit reapplication and revision fees together greatly increased their soft cost budget. One developer needed a land use attorney to write a new amendment to the land development code in order for him to legally fulfill a discretionary condition placed on the site plan permit applications by a city commission.<sup>12</sup> Six of 14 developer interviewees mentioned needing attorneys to help navigate interpretation discrepancies in grandfathering cases, which often include meetings of multiple department directors, assistant city managers, and the city manager.

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<sup>12</sup> Anonymous in discussion with the author, March 2015.

Further, four interviewees (one developer, one engineer, two contractors) discussed how Austin based consultants and subcontractors are changing their billing model to a time & materials basis as opposed to lump sum, at least for permitting and approvals: “all contractors and subs in this case said that they will (if they don’t already) now only quote permit obtainment strictly on a time and materials basis.”<sup>13</sup> Many are losing any profits to delays. Consultants must compensate by either charging time & materials for permitting, or readjusting their lump sum fees based on a much longer expected timeline for regulatory review. Regulatory delay makes development more expensive.

### ***Delay costs the local government***

Delays also increase costs to municipalities. Delays during approvals and construction temporarily postpone the delivery of new development, which postpones property tax collection. PWC’s study (2005, 1) indicates that “accelerating permit processes provides a temporary acceleration of property tax collections.” In this way, regulatory reforms could be self-financed through more rapid collection of property taxes, especially because by national standards Austin has unusually high property taxes.

### ***Developers pass-on costs to consumers***

Developers will pass on as much cost to the consumers as the market will bear, particularly in a strong market such as Austin. Developers pass on implicit costs to consumers by spreading these costs out over the number of units in a project. Implicit costs are added to each unit’s base cost (cost of construction and cost of capital), which increases the end state price of the unit to the consumer. Often the public misperceives that developers absorb these implicit costs and therefore receive less in profits. However, real estate finance theory indicates developers will pass on their costs to consumers up to the point that the market will support. Nine of the 14 developers talked about passing on

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<sup>13</sup> Anonymous in discussion with the author, February 2015.

the costs of delay as a given.<sup>14</sup> Developers emphasize the **as the market will bear** clause, especially because Austin's market has been strong it has essentially made invisible the effects of years of regulatory delay on project quality and pricing. The process of spreading out costs over all the units is a typical part of the development process in Austin and in all strong markets. If developers need to raise prices beyond the point the market will bear, land prices must drop in order for deals to work. If landowners are unwilling to drop their prices, then the development cannot meet the investor's and the developer's own expected returns, and thus the project will not be built.

Developers are not willing to enter a deal knowing that their returns will not meet their expectations. Instead developers will invest in another location locally or nationally, or develop a different type of real estate. Researchers have for years shown that "the extent to which communities recognize the impact that uncertainty and delay have in deterring additional construction" is negligible (Mayer 2000, 21). In an older study (Seidel 1978), researchers found that the final selling price of housing units increased by 1-2% for each additional month after the initial completion date.

Developers operate among a complex stack of capital partners, of which their equity is usually the smallest slice. Often during regulatory review, developers and lenders have already agreed upon a set number of units and/or amenities to justify the land costs and support projected cash flows. A significant delay and/or loss of density to a developer at this point means an increase in price for every other remaining unit to make up this difference. Alternatively, delay reduces the amount of capital a developer has to spend on amenities. However the lender may have already required a pool or fitness center as part of loan terms in response to market analysis. In such cases, developers must increase future cash flows via rents to cover implicit costs in order to deliver amenities. PWC's study (2005, A-1) notes that "permitting delays raise tenant costs both in new buildings and existing buildings. When permitting delays are the norm, the increased costs and delayed returns on investment are built into rents paid by all

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<sup>14</sup> Anonymous in discussion with the author, March 2015.

tenants.” When members of the public and city staff perceive that by delaying a project or reducing a developer’s density that they are taking money out of his pocket, they are in effect actually raising the cost of housing for everyone.

***Delay increases end-user prices (time and price)***

As the previous section establishes, developers will pass on as much cost to end-users as the market will bear. Therefore, delays have a direct impact on price, as research also indicates a positive correlation between time and price. A study by renowned economists Glaeser & Gyourko (2003, 34) found a statistically significant relationship between time and price, where “the increase in time to obtain a permit is strongly associated with rising land and housing prices.” This means that there is a linear relationship between these two variables, where as time (length of permitting) increases, price increases. In a 2003 study, Glaeser conducted a regression analysis where the independent variable represents *time to permit issuance for a rezoning request* against the dependent variable as the *number of units above 140% of construction costs*.

The results of the regression proved a statistically significant relationship, implying that the longer a rezoning permit takes, the more units in a community that are priced above 140% of construction costs (Glaeser 2003). This research explains in part the widening gap between construction costs and the end-state price of housing (Quigley 2004). These results can be interpreted to show how delay during rezoning acts as a tax on new development. Austin’s Planning and Development Review Department reports that there were 217 rezoning cases in 2014. For comparison, Round Rock had 29 cases, and San Marcos had 9 cases (Zucker Report 2015). To verify whether the “zoning tax” is in effect in Austin, a further study could collect and analyze rezoning case data against homes priced above a certain threshold of construction costs in Austin, and do the same in Round Rock and San Marcos.

### *Delay constrains the supply of housing*

Delay affects the supply of housing, which interacts with demand to determine price. Regulatory delay constricts supply as it lengthens the time it takes to begin construction of new housing, and in the long term reduces the number of projects entirely. Regulatory delay slows the delivery of new construction. Basic economic theory says that as supply is constricted, demand and consumer willingness to pay increases; subsequently developers raise rents in response to the supply-constrained market. Studies indicate that the “implications of regulatory delays are clear: the financial and time costs will reduce steady-state [housing] starts” (Mayer 2000, 13). While only looking at single family housing starts, Mayer’s study (2000, 13) found that just “a one standard deviation increase in the number of months of delay results in a reduction of 20-25% in the number of permits obtained by builders.” Here supply is reduced, affecting the demand curve and end user price range.

Regulatory delay also decreases the probability of future development. Wrenn & Irwin’s work found that “a 1% increase in average expected approval time results in a decrease in the probability of development by 0.94%” (Wrenn & Irwin 2015, 34). As implicit costs increase via regulatory delay, real options theory<sup>15</sup> explains that the probability that developers will begin new projects decreases, further tightening the housing market supply.

Not only does the constriction of supply increase consumer costs for new housing, it increases costs across the market for existing stock. The market wide effect is that delays discourage investment, which results in less construction and a tighter real estate market, and “as a result, rents are higher for all tenants” (PWC 2005, 1). This dynamic has significant negative effects for long-time residents whose incomes do not inflate at the same rate as their property taxes or rents, which can result in displacement. Certainly in overbuilt markets delays do not have the same effect on supply, demand, and price, as

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<sup>15</sup> Real options theory of real estate refers to the process by which a developer considers the amount of uncertainty in the market and exercises “options” on when to start a project based on expected future returns (Brueggeman 2014).

the market is already oversupplied and rents are stagnant. However, in strong under-supplied markets, this effect is multiplied. Austin's Real Estate Council published a report in 2014 calling for 100,000 new housing units within Austin city limits by 2025 (RECA 2015). Accordingly, Austin's housing supply is not overbuilt as demand remains high due to continuous population and employment growth, and residents' desire for high quality urban lifestyles. When left to the market, housing supply in Austin does respond to demand. For example, in February of 2015 the *Austin American Statesman* reported that after years of rising rents, "Austin area apartment dwellers are about to get some relief this year, as thousands of new units enter the market and ease the metro area's demand crunch" (Novak 2015). This article suggests that housing supply does indeed follow demand, though it took many years to catch up to the point that rents eased.

### ***Delay disproportionately impacts affordable housing developers***

With few exceptions<sup>16</sup>, affordable housing developers face the same regulatory process, site constraints, building codes, and review timelines as market rate developers. A recent report by the Urban Land Institute and Enterprise Community Partners (2014) titled *Bending the Cost Curve* posits solutions to lower development costs in order to increase viability of affordable housing projects. The report cites delays during regulatory processes as a key issue, for example "time delays can have significant cost implications, most notably in securing sites and contractor services" (ULI 2014, 16).

These implicit costs include land option extensions and difficulty locking in hard cost prices, issues also faced by market rate developers experiencing delay. Delay may actually disproportionately affect affordable housing developers, particularly in their ability to assemble the complex and often time-sensitive sources of capital necessary for affordable projects. Low income housing tax credits are allocated only once per year, so time delays which affect securing land and hard cost prices hurt the affordable housing developer's ability to pull a competitive proposal together.

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<sup>16</sup> For example, Austin's S.M.A.R.T. housing program offered expedited review timelines and reduced fees for affordable housing development projects.

## Chapter VI: Costs and the Development Process

The previous section established a relationship between regulatory delay and development costs, and the relationship between costs to the developer and price to the consumer. This next section explores when and where in the development process and budget the developer incurs implicit costs. A recent ULI report found that “extended time frames and unpredictability associated with the zoning, permitting, and entitlement process can increase both hard and soft costs” (ULI 2014, 18). Developers I interviewed indicated that delays also impact land costs and land option costs.

### *Soft costs are high*

For a large commercial development project, the developer will prepare a pre-development budget for costs incurred before financing. There is another larger budget for the entire project itself, from site work to vertical construction, and final delivery. In both budgets the developer will have a soft cost category, which includes fees for architecture, land planning, engineering, entitlements, legal, developer management, and other consultants. Typically developers budget upward of \$19-22 per square foot (ULI Case Studies 2014). Many soft cost budgets are higher because developers often include financing costs and contingency in this category. However for the purposes of this study these are their own categories in order to test their sensitivity to time delays.

Project consultants such as civil engineers, planners, designers, and land use attorneys do strong business in communities with complex land development codes and lengthy approval procedures. Consultant costs increase in this environment in two ways: 1) the developer needs more specialized consultants to navigate the process (e.g. land use attorneys), and 2) consultants’ lump sum bids are either higher in anticipation of delays, or are only administered on a time and materials basis. In Austin, this is particularly true. In correspondence regarding a new project on South Lamar, Mr. Van Hyfte, principal of BOKA Powell, who is now well versed in Austin’s code and regulatory process, said his firm “has made a living in Austin from working within the city’s rulebook” (Lanane

2014). In communities with difficult codes and lengthy approvals such as Austin, developers of complex projects use land use attorneys, civil engineers, zoning consultants, and design teams that are fluent in the complexity and high levels of scrutiny in local procedures. The barriers to entry for planning, design, engineering, and legal firms are high in these communities, driving up the cost of existing services. In other cities, these costs can be minimal prior to land use approvals, and most of the design costs are incurred during financing. Developers in Austin need substantial amounts of working capital to get projects approved.

Further, much of Austin's land development code has been written by a select few land use attorneys over the decades, which creates a dynamic unique to Austin where a land use attorney leads the entitlement process. In most communities, a planner or landscape architect who is trained in navigating municipal processes and neighborhood outreach leads entitlements. Land use attorneys are considerably more expensive than a developer's project manager and planning consultants by up to \$500 per hour. In many cases developers retain these consultants through the project longer than they would in other cities with streamlined permitting, which further increases soft costs.

As alluded to previously, because of delay consultants are changing the way they bid projects to anticipate a lengthy and unpredictable process. For example, smaller contractors are bidding on projects only on a time and materials basis instead of a lump sum to protect themselves from delays absorbing all of their profits.<sup>17</sup> This dynamic makes it difficult for developers to predict the ultimate cost of their projects.

In the 2015 land use landscape of Austin, a prominent civil engineering firm reports that the cost to a developer to obtain a site plan permit for a commercial project is now more (and in cases of complex projects, considerably more) expensive than preparing the engineered site plan itself.<sup>18</sup> The sensitivity of rent rates and sales prices of

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<sup>17</sup> Anonymous in discussions with the author, February and March 2015.

<sup>18</sup> Typically a developer would hire a civil engineer to prepare construction documents and verify that the design drawings prepared by land planners and architects are buildable. In Austin, civil engineers are increasingly relied upon to navigate the city's approval process, which has become so time consuming that engineers bid more to get projects approved than to engineer the actual plans.



new homes to increases in soft costs due to regulatory delay are explored in the next section of this paper.

### ***Developers and builders struggle to price land appropriately***

It is more difficult for a developer or builder to price land appropriately if there is uncertainty around the delivery date of the development. Regulatory delay makes it difficult for a developer to know when the project will deliver, which creates uncertainty around price. Uncertainty around the approval process forces developers to consider future scenarios for when they should build and what they should build on their land, referred to as a “real option” in real estate. The amount of uncertainty in the approval process and of future market conditions is an important determinant of present land values. Titman's classic work on real options theory indicates that "if the amount of uncertainty increases, the value of the vacant land increases, decreasing the relative attractiveness of constructing a building at the current time" (Titman 1985, 510). This is because if the value of the land exceeds the profit from building at the present date, the landowner will choose not to develop/sell the land at the present time.

To developers, the "decision to build or not build can thus be thought of as weighing the opportunity costs associated with keeping the land vacant against the expected gain from constructing a more appropriate building in the future" (Titman 1985, 513). When developers cannot build in uncertain market conditions, two macro-level effects occur: either 1) developers build another product type, for example instead of multifamily they build office, or 2) developers either build in other jurisdictions with less uncertainty, or they do not build at all, which in both cases constrains supply in the current market and drives up prices of all existing units. In limited cases, developers with a long track record working in Austin, or with insider information or relationships, or even flush with cash (like large national companies) can bid up the price of land.

There is a positive empirical relationship between approval time and land costs. Malpezzi's study (1996, 216) on the effects of regulation on housing prices found that “average time for development project approval had a positive and significant effect on

land prices.” As the price of land increases, housing prices are directly increased, also determined by Malpezzi’s study where “the cost of housing prices were driven primarily by the cost of land and construction inputs” (Malpezzi 1996, 215). As construction costs have not risen at the same rate as housing prices (Glaeser 2003), research implies that land costs and regulatory issues are the most significant factors driving up the price of housing in the United States.

For the purposes of this study, the price of land itself will remain fixed throughout the quantitative analysis. However the developer’s option to purchase the land will be tested. In order to reduce risk, developers typically do not complete a land purchase until after successfully navigating regulatory approvals and receiving permits. Developers will pay an option to landowners during the time they seek approvals, known as a land option agreement. In a strong market such as Austin, landowners will typically use their leverage to contract a penalty option where the monthly payment from the developer does not contribute toward the agreed upon purchase price.<sup>19</sup> Typically a land option is paid monthly by the developer, and so the average 3.5 month delay in Austin requires developers to extend their land option agreement by at least four months length of time. The cost/price impact of land option extensions is modeled in the next section.

### ***Developers must account for carry costs***

Carrying costs include interest on construction and land loans, property taxes, and other costs a developer must ‘carry’ through the construction period while no income is generated. Wrenn & Irwin (2015, 24) found that “any policy that extends the time it takes to gain final approval for a project will extend the time that capital must be tied up, thereby increasing costs and reducing the probability of investments.” Carry costs are typically recovered both in future cash flows and upon sale of the development when the outstanding loan balance is paid off completely. However, delays “delay revenue

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<sup>19</sup> Anonymous in discussion with the author, December 2015.

generation by postponing the time of sale of the asset,” (Wrenn & Irwin 2015, 25) further increasing the amount of cash flow recovery necessary to account for these carry costs.

As the cost of capital tends to be higher during construction than permanent financing, delays during construction are very costly to the developer. One developer in Austin reported that every day he carries \$2,000 in interest costs alone, citing frustration with a delay in the construction inspection process.<sup>20</sup> A common source of delay during construction in Austin is discrepancies between field inspectors and desk reviewers, who may lack the on-site experience to properly enforce regulations or foresee issues in the field. Austin based developers report many instances of field inspectors making changes to plans on the fly because the site plan reviewers did not catch critical issues during review. Four of the 14 developers mentioned lengthy delays in construction due to discrepancies between field inspectors and the site and building plans approved by plan reviewers in One Texas Center. For example, a consultant representing a developer mentioned significant construction delays caused by very lengthy processes to what should be straightforward processes such as right-of-way permits: “it will nearly be impossible to get a right-of-way permit under two weeks, unless it’s for a parking spot or a dumpster. Even then, you’ve got to factor 3-4 days.”<sup>21</sup> This process not only increases carry costs and delays future income, but often results in one-time monetary losses such as change orders to infrastructure or construction materials that are altered by inspectors after plans have been approved and started.

For the purposes of this study, carry costs are calculated using the loan constant of a typical commercial multifamily construction loan to estimate the cost of capital for a project. Impacts of carry costs on housing prices are tested in the next chapter.

### ***Delay creates uncertainty around hard costs***

Delays during the approvals process creates uncertainty around future hard cost prices. Developers cite that hard costs have been increasing 12-15% annually in Austin

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<sup>20</sup> Anonymous in discussion with the author, March 2015.

<sup>21</sup> Anonymous in discussion with the author, March 2015.

for the past three years.<sup>22</sup> Extrapolated, hard costs should increase between 4-5% during Austin's typical 3.5 month delay during site plan review. Increases in hard costs immediately increase the project's overall price per square foot, thus hiking base rents. This sensitivity is tested in the next chapter.

Ultimately the effect of these implicit costs – soft costs, land and land option costs, carry costs, and hard costs – increase the total development project cost and thus the price of development to consumers. Regulatory delay results in the delay of future anticipated income to the developer and their capital partners. The PWC study notes that “longer construction periods delay the receipt of rental income and require a higher level of rents relative to costs to be economically viable” (PWC 2005, A-1). In order for a project to meet the agreed upon returns between the developer and their equity investors, and for the project to be able to cover its debt service ratio, increased rents or sales prices relative to the costs of delay are necessary for projects to remain viable.

The next section of this paper quantitatively tests the sensitivity of the implicit costs (soft, hard, land, and carry) incurred by developers during regulatory delay on base rents of new multifamily housing in Austin.

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<sup>22</sup> Anonymous in discussion with the author, December 2015.

## **Chapter VII: The Cost of Delay in Austin**

The previous chapters and empirical studies establish that regulatory delay increases total development project costs in critical ways: increases to land costs, soft costs, hard costs, and carry costs. The previous work also establishes that regulatory delay causes a loss of expected rental income to developers. As these implicit costs raise the total cost of development relative to original expectations, and because the developer gets paid after debt servicers and the preferred return to equity, the implicit costs come out of the developer's pocket during predevelopment. Further, if rents are not raised relative to costs, then the developer receives reduced profits both from the cash flows and from the sale of the project. Over time, developers will not pursue projects in which they will continue to receive less than expected returns. Therefore, in order for the developer to maintain her expected profits as originally projected, she will deal with implicit costs in the following ways:

- Pass on costs to consumers by increasing base rents or starting sales price of the units, as much as the market will bear;
- Reduce development costs in other parts of the budget, for example by reducing amenities or downgrading finishes; and
- Draw down contingency funds, if available and if costs occur after financing, which reduces the developer's ability to use this fund to deal with future issues.

This section of the paper quantifies these impacts and demonstrates how in theory developers must raise the price to the consumer to account for the costs accrued during regulatory delay. It is important to note, however, that if the developer is to raise prices, there must be unique qualities about the project relative to competing projects that justify the rents. In this way it becomes difficult to simultaneously remove or downgrade amenities, raise prices, and remain competitive. The chart below summarizes the different costs that are affected during the site plan review and construction period of the development process.

Table IV: Costs Impacted During Regulatory Delay

Costs Effected During Regulatory Delay					
	Soft Costs	Hard Costs	Land Option	Carry Equity	Carry Loan
SITE PLAN REVIEW	x	x	x		
CONSTRUCTION	x			x	x

Austin is a city of renters. Austin’s recent *Comprehensive Housing Market Analysis* found homeownership rates of 45% unchanged over the last decade, indicting a majority 55% of Austin’s residents rent their homes (BBC Research & Consulting 2014, 6). Nationally, new household formation is primarily comprised of renters as millennials and boomers continue to move to inner-cities where rental housing is a dominant option, as young people move out of their parents dwellings, and as the United States’ housing market continues its slow decline in homeownership. Therefore this analysis focuses on how delay increases base rent prices, instead of sales prices, under the assumption that most implicit costs can be passed on to consumers because Austin’s market is strong. The first section analyses the sensitivity of base rents to delay during site plan review. A brief discussion of how delays during construction affect base rent prices follows this section.

### ***Regulatory Delay During Site Plan Review***

Per the City of Austin’s land development code, site plans must be approved within 120 calendar days, measured from completeness check through formal approval. I will use this 120 day mandate as the benchmark from which to determine a timeframe for delay. According to the development review performance measures (2014), the average number of calendar days<sup>23</sup> for a site plan approval was 223.<sup>24</sup> This figure includes all site plans including applicants that received time extensions. Including site plans with extensions is necessary because as the Zucker Report (2015) identifies through interviews

<sup>23</sup> The city only reports the average number of days for approval, which according to case studies and best practices from other cities, is not the ideal measurement. A better metric would be to record the minimum and maximum amount of days. Other cities subtract the minimum from the maximum to establish average delay in the city. However for the purposes of this study I use averages as calculated by the city. The Zucker Report (2015) suggests report “% on-time”.

<sup>24</sup> This number was calculated by averaging the monthly averages for approval times for all site plans for 2014. I removed the highest (max) and lowest (min) average months from the annual averaging process.

of plan review staff, time extensions are very common, especially for discretionary projects. All of the developers interviewed for this project shared stories of delay on discretionary projects. As the land development code mandates that site plan review approvals should take no more than 120 calendar days, and Austin’s average cycle is 223 days, the average delay is calculated as 223 minus 120 which equals 103 days. One hundred and three days computes to about 3.43 months. Thus rounded this 3.5 months is the average recorded delay by the City of Austin for all site plan review cycles. All 14 developers said it takes them 12 months to gain site plan approvals for discretionary projects. As such, the average delay for many projects is likely longer than 3.5 months, compounding the costs of delay over this time. However for simplicity, 3.5 months of delay is modeled in this paper.

To calculate the impacts of a 3.5 month regulatory delay during site plan approvals on development in Austin, I first built a base case scenario for a standard multifamily project. For a standard multifamily “Texas donut” project just outside of the downtown core, on a per square foot basis I assume \$50 for total land (not just buildable land), \$17 for soft costs, \$155 for hard costs, and \$8 for financing costs, which includes a loan fee (1%) and 20 months of interest carry. Combined these together make a total development budget of \$230 per square foot. This hypothetical project has 187 units at an average 750 square feet for a total size of 161,250 square feet at 85% gross floor area efficiency.

*Table V: Example Project Assumptions, Central Texas Multifamily*

<b>Project Assumptions</b>			
Units	187	Interest Rate (%)	6
Size/Unit	750	Term (Years)	25
Building SF (at 85% efficiency)	161,250	Exit Cap Rate (%)	6
Loan Constant (Monthly)	0.0064	Loan Constant (Annual)	0.0773

To verify these costs, I first looked at comparable projects in Central Austin (south, east, and northwest markets within five miles of the CBD). I then workshopped the proposed budget with seven developers and civil engineers active in Austin and incorporated their comments. Rent rates as of April 2015 for five comparable projects are available below. Comparatively, the rents that this example project must charge to cover costs and returns are the lowest among available rents. Because Austin’s housing market is strong, I assume that the developer can and would be able to charge higher rents in the current climate.

*Table VI: Current Rental Property Comparables, April 2015*

<b>Rental Rates in Central Austin, Delivered 2014-2015</b>					
<u>Project</u>	<u>Location</u>	<u>BR/BA</u>	<u>SF</u>	<u>Monthly</u>	<u>PSF</u>
Corazon	East	1/1	730	\$1,850	\$2.53
Hanover	South	1/1	726	\$1,749	\$2.41
Lamar Union	South	1/1	796	\$1,780	\$2.24
Example - Delayed	Central	1/1	750	\$1,488	\$1.98
AMLI Mueller	North	1/1	730	\$1,445	\$1.98
Elan East	East	1/1	725	\$1,392	\$1.92
Example - Original	Central	1/1	750	\$1,430	\$1.91

Source: Online property management

Current rental rates as of April 27, 2015 for 12 month lease

To calculate base rents for this project, I first calculated the borrower’s cost of capital using an assumption of 6% interest on a 25 year amortization period. I then multiplied this loan constant (cost of capital in Project Assumptions table above) by the \$230 per square foot base cost. This simple multiplication requires the developer to charge annually \$17.76 per square foot to the project. I then multiplied the base rents by 12% to account for the preferred return to the project’s equity source. The developer must then yield \$19.89 per year on the project, which calculates to base rents of \$1.91 per square foot per unit. Based on the average unit size in this project, monthly base rents would start at \$1,430, well within current market comparables as listed in Table VI above. The standard housing to income ratio of 30% of monthly income indicates that this rent level is available to Austinites earning \$51,463 per year, or 97% of median family income for a one person household in Travis County (2014).



Table VII: Base Rent Calculations

<b>Base Rental Rates</b>	
Project Costs PSF	
Land Cost	\$50
Soft Cost	\$17
Hard Cost	\$155
Financing Costs	\$8
Total PSF	\$230
Required Rents PSF/Year	
Cost of Capital (PSF x Constant)	\$17.76
Preferred Return (Plus 12%)	\$19.89
<b>Unit PSF/Month</b>	<b>\$1.91</b>
<b>Monthly Rent</b>	<b>\$1,430</b>
<b>Renter Income</b>	<b>\$51,463</b>

I then quantified the implicit costs that a developer would accrue during an extra 3.5 months of approvals. During this time, developers said that:

- soft costs increase primarily due to legal fees, as well as developer overhead which includes standard overhead charges (rent, project manager salary) as well as the opportunity cost of not pursuing other deals while dealing with delays (calculated using a modest partner salary allocation);
- hard costs have steadily increased 12-15% annually in Austin for several years. Over 3.5 months of delay, it is assumed that hard costs increase by 5%;
- developers continue to pay an option on the land. During strong markets, the option is paid as a penalty (not contributed to the price of the land), and is either a fee or calculated as a percent of the purchase price. In this case, developers said 10% of the purchase price per year is appropriate. Here in this analysis the monthly land option rate was calculated using 10%/12 months for four months.

Together these three implicit costs increase the per square foot costs by \$9, from \$230 to \$239. I then multiplied the original loan constant and 12% preferred hurdle rate to this

new project cost. This yields a higher base rent rate that a developer must charge if she wishes to maintain the development team’s expected profits. The full budget and detailed assumptions for this project are available in the Appendix on page 57.

*Table VIII: Delayed Rent Calculations*

<b>Post-Delay Base Rental Rates</b>	
<i>3.5 Months Delay - Site Plan Review</i>	
Project Costs PSF	
Land Cost	\$50
Soft Cost	\$18
Hard Cost	\$163
Financing Cost	\$8
Total PSF	\$239
Required Rents PSF/Year	
Cost of Capital (PSF x Constant)	\$18.48
Preferred Return (Plus 12%)	\$20.70
<b>Unit PSF/Month</b>	<b>\$1.98</b>
<b>Monthly Rent</b>	<b>\$1,488</b>
<b>Renter Income</b>	<b>\$53,555</b>

These assumptions are modest. I did not include any increases to engineering or design fees, which if included would increase the base rents upwards of 5%. Nor did I include more city fees for permit extensions or reapplications, or unexpected costs associated with meeting conditions of site plan approval.

**Accordingly, the average 3.5 month delay during regulatory approvals in Austin requires a developer to increase base rent prices by 4% in order to meet the project’s expected returns. Similarly, if delay was eliminated from regulatory approvals, renters could expect to save 4% on their monthly rent, which for these newly delivered projects in Austin is about \$60 per month, or \$720 annually.**

If the market is not strong enough to bear these rent increases, projects will either not get built at all or developers will not be properly compensated for taking entitlement risk. Reflected in the table above, this new per month price translates to \$1,488, which is 4% greater than the projected base rents of \$1,430 for the same unit in the same project. This also increases the per square foot price by nearly ten cents to \$1.98. Using the same standard 30% of housing to income ratio, this unit is now available to Austinites earning \$53,555 per year, or 101% of the median family income for one person. Just 3.5 months of delay during site plan review begins to remove a small slice from the pool of available<sup>25</sup> renters.

*Table IX: Comparison of Base to Delay Rental Rates*

<b>Base Rental Rates</b>		<b>Post-Delay Base Rental Rates</b>	
Project Costs PSF		3.5 Months Delay - Site Plan Review Project Costs PSF	
Land Cost	\$50	Land Cost	\$50
Soft Cost	\$17	Soft Cost	\$18
Hard Cost	\$155	Hard Cost	\$163
Financing Costs	\$8	Financing Cost	\$8
<b>Total PSF</b>	<b>\$230</b>	<b>Total PSF</b>	<b>\$239</b>
Required Rents PSF/Year		Required Rents PSF/Year	
Cost of Capital (PSF x Constant)	\$17.76	Cost of Capital (PSF x Constant)	\$18.48
Preferred Return (Plus 12%)	\$19.89	Preferred Return (Plus 12%)	\$20.70
<b>Unit PSF/Month</b>	<b>\$1.91</b>	<b>Unit PSF/Month</b>	<b>\$1.98</b>
<b>Monthly Rent</b>	<b>\$1,430</b>	<b>Monthly Rent</b>	<b>\$1,488</b>
<b>Renter Income</b>	<b>\$51,463</b>	<b>Renter Income</b>	<b>\$53,555</b>
		<b>% Increase Rent</b>	<b>4.06%</b>

<sup>25</sup> Available renters refers to unburdened households; that is, households that do not pay more than 30% of their income on rent. Of course, nearly 50% of American's are burdened, but this work assumes that households are able to make rational housing decisions based on the 30% housing expense to income ratio.

While costs are in theory passed-on to consumers, in reality developers will price rental units according to the market. Renters will not pay a \$60 per month “delay premium” to live in a community that is exactly the same as another community nearby. Developers will charge as much as the market can bear, which according to the rent comparables in Table VI on page 43 could be considerably higher for the example project. However because the market in Austin is strong and developers, as evidenced in market rate rents, are able to command between \$1.92-2.53 per square foot for approximately 750 square foot apartments, and because costs require rents of just \$1.91 psf, we can hypothesize that the costs of delay *are* indeed being passed-on to consumers.

While 103 days is the average, many projects experience longer delays, and of course some projects experience no or short delay. As the costs of delay become too high to pass-on at one time, the developer will value engineer the project by modifying amenities and downgrading finishes on the project to reduce costs relative to rents. If the delay is very long and the necessary price increase is so high that it cannot be passed on, and the developer can only reduce the hard costs of the project to a point, the project will not get built. As the results show, a regulatory delay of 3.5 months would require an increase of base rents by 4% in order to meet investor’s and developer’s expectations. Over time developers will not continue to build projects that do not meet their expected returns, thus decreasing supply if delay persists.

The impacts of this are felt across the housing market. Supply is constricted so prices increase across the existing supply. Word of this 4% “uncertainty premium” spreads among developers and investors, and hurdle rates will increase across the market to account for this risk, which increases base rent prices for all future projects. The 4% increase in rent can also be interpreted as a cost premium to account for risk in the Austin market due to uncertainty in the regulatory approvals process.

### ***Regulatory Delay During Construction***

As identified by interviews with developers, a common form of regulatory delay during construction is lag caused by discrepancies in interpreting and enforcing construction documents between site plan reviewers and field inspectors. Four developers cited examples where during construction, field inspectors make multiple and often significant changes to construction documents because the site plan reviewers did not properly enforce regulations or correctly amend issues in the plans during the plan review cycle.

This kind of delay during construction has critical impacts. The first is increases in one-time hard cost expenses. For example, two different developers had to buy a new set of differently sized pipes and culverts for their site work because the site plan reviewers did not properly apply the required size, which was not corrected until the field inspector caught it, causing significant one-time costs of equipment change orders.<sup>26</sup> These one-time costs come out of the developer's pocket.

The second impact, significantly, is an increase to carry costs. The construction period is an expensive time in the development process for delays to occur. Each day, the developer is carrying interest on construction loans. For the example used in this project, with 65% leverage on a \$32M project and an annual interest rate of 6%, assuming a 50% balance on the construction loan, during 20 months of construction, the developer will pay about \$55,000 per month, or about \$14,000 per week in carry costs alone.

For example, consultants and developers experience frequent delays obtaining right of way permits in Austin. What should be a 2-3 day process is now 2-3 weeks. Using the same financial scenario as in the previous example, a two week delay for a right of way permit caused by backlogs and inefficient payment systems at the City will cost the developer \$28,000 in interest (more when compounded), as well as overhead and opportunity costs. This seemingly simple regulatory process, when delayed, requires the developer to come up with upwards of \$40,000.

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<sup>26</sup> Anonymous in discussion with the author, February 2015.

## Chapter VIII: Conclusions

### *Macro Impacts of Regulatory Delay*

The previous section analyzed how regulatory delay impacts an example project. However the impacts that regulatory delay have on an entire market are substantial and affect not just the individual project, but land use patterns throughout the region.

### *Short-term Impacts*

In the short term, developers will control and reduce hard costs as much as possible in order to maintain a competitive edge. Sometimes this results in reducing the amenities budget and unit finishes, which may decrease the overall quality of the project. Implicit costs in the short-term likely come out of the developer's pocket, however they will seek to charge rents as high as the market will bear upon delivery.

### *Mid-term Impacts*

Each developer and consultant I interviewed expressed frustration, disappointment, and discouragement as they navigate Austin's slow and muddled regulatory process. Particularly interesting among interviewee's emotional reactions are the feelings of disappointment and discouragement, because nearly all of the developers interviewed expressed interest in pursuing more innovative projects in Austin but face regulatory barriers and delays in Austin.

Two of the 14 developers I spoke with said they will either no longer develop in Austin (the city they all call home) or only on a very limited basis, because of this "entitlement risk." Austin is losing quality developers to exurban areas and to competing cities such as Round Rock and San Marcos, where it is quicker to develop: "my time is limited and working on projects in the City of Austin take too much for the processing"<sup>27</sup> of approvals and plans. Not only is Austin losing quality developers, but common regulatory delays in effect incentivize developers to work outside city limits. This increases regional growth pressures that fuel congestion and increases municipal liability

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<sup>27</sup> Anonymous in discussion with the author, March 2015.

for far-flung infrastructure and leapfrog development patterns. Regulatory delay by the City of Austin produces the exact opposite of “compact and connected” development.

### *Long-term Impacts*

As regulatory delays continue to plague projects and drive up base rents to cover costs, investors will begin to increase their hurdle rates to account for this regulatory risk. As hurdle rates increase across the market, two major impacts occur over time: 1) base rents and base sales prices are higher across the board, eliminating possibilities for attainably priced housing as the minimum cost of the cheapest feasible development increases; and 2) reduced land values, which prevents landowners from selling until market conditions improve, which ultimately slows development across the market.

In this situation, land values are reduced because as hurdle rates increase, the projected reversion price of the project decreases. Once construction costs are subtracted from the projected sale price, the residual amount leftover to pay for land is less, thus the developer’s ability to pay for land is decreased. According to real options theory, the uncertainty around the length of approvals will make landowners less likely to sell to developers, since developers cannot pay as much for land as they otherwise would have in a more certain regulatory market.

### *Factors for Further Study*

There are several other factors that likely increase base rents even further that could be explored in future studies. These factors include:

#### *How much expected future cash flow is lost due to regulatory delay?*

In theory the developer will need to make up postponement of rental income by increasing base rents in order for the net operating income in the year of sale to produce a reversion price that meets expected equity returns, pays off the outstanding loan balance, and meets the developer’s expected profit.

*What is the opportunity cost of not pursuing another project?*

Developers who lost time to regulatory delay could instead have been pursuing other real estate deals. It would be interesting to quantify the opportunity cost of not pursuing other deals while losing time to delays, which is considered a “waste” as delay decreases a project’s net present value.

*What are the impacts of compounding?*

In this analysis, I did not account for compounding when calculating interest carry during construction. By accounting for interest compounding in the construction loan, carry costs are higher.

*How long is too long?*

It is difficult to predict exactly how much of an increase to the base rent rate the market can bear. Developers say that renters will only pay what they can afford to pay. In these interviews, developers had assumptions based on experience, but it would be interesting to investigate more case studies to understand the limits of regulatory delay, and how it impacts small versus large developers and developments.



### ***Final Thoughts***

Enforcing existing permitting timeframes is the most straightforward, cheapest, and least politically sensitive action a city can take to reduce or maintain the cost of development and housing prices. This action is entirely within the city's administrative control, and unlike other public improvements supported by bonds, no public vote is required to make a change. As of April 2015 changes within the city planning department's bureaucratic composition provides a path for reducing delays. Austin's housing market, because it is so strong, has been able to bear annual increases to base rents in the range of 4-5% only because of its exceptionally strong population and jobs growth. We must consider that demand will slow eventually and investor's expectations will increase as risk increases.

In this case, the market may not be able to absorb such increases to base rents, which will constrict the supply of housing in the entire Austin area and raise housing prices for everyone. As affordability considerations are of utmost importance, the deteriorated quality of the built environment caused by regulatory delays is striking. If Austin's leaders and citizens truly want our city to evolve into a livable, prosperous, and inclusive heartland city, much work is to be done to incentivize the kind of development and growth we admire in peer cities. As much predictability in timing and process as a city and its neighborhood groups can provide the development community, the greater the development and design team can produce housing that is both high in quality and attainable in price.

## APPENDIX: PROJECT BUDGET ASSUMPTIONS

Project Assumptions		Construction Loan (Pre-Delay)		Construction Loan (Post-Delay)		Hard Cost Escalator	
Project						Annual	15%
Land SF	52,272	Interest	6.50%	Interest	6.50%	Monthly	1.25%
Units	187	Monthly	0.0054	Monthly Carr	0.0054	3.5 Months	5%
Size/Unit	750	Months Carry	18	65% LTV Loan	\$21,398,643	Land Option	
Rentable SF	140,250	Loan Fee (1%)	\$204,871	Interest/Mo	\$110,972	Base Rate	10%
Total Bldg SF	161,288	Project Cost	\$30,379,563	before fees & interest	\$31,825,241	Delay Rate	12%
(@ 85% efficiency)						Monthly Base	0.0083
						Monthly Delay	0.0100

Soft Cost Budget Per Month (Delayed)	
Consultant Costs	
Legal	8 hrs @ \$650
Engineering	\$5,200
Design	\$0
Developer Costs	
Project Manager Salary + fring	\$5,200
Overhead/Indiri	\$10,000
Opportunity Co:Partners	30% \$3,000
subtotal	\$8,000
City Fees	\$21,000
Total/Month	\$26,200
Delay Factor	Months
	3.5

Delayed Development Project Budget	
Land Costs	\$2,600,000
PSF	\$50
Soft Costs	
Consultants	
/Overhead	\$2,741,700
Land Option	\$234,000
PSF	\$18.45
Hard Costs	\$26,249,541
PSF	\$163
Finance Costs Jan Fee (1%)	\$212,682
Interest (50% bal)	\$1,117,066
18 Months Carry	
PSF	\$8.24
Total Costs	\$32,920,989
PSF Costs	\$239
Sources of Funds	
Debt	65% \$21,398,643
Equity	35% \$11,522,346
Total	\$32,920,989
Uses of Funds	
Land	\$2,600,000
Hard	\$26,249,541
Soft	\$2,741,700
Financing	\$1,329,748
Total	\$32,920,989

Base Case Development Project Budget	
Land Costs	\$2,600,000
PSF	\$50
Soft Costs	
Consultants	
/Overhead	\$2,650,000
Land Option	\$130,000
PSF	\$17.24
Hard Costs	\$24,999,563
PSF	\$155
Finance Costs Jan Fee (1%)	\$202,709
Interest (50% bal)	\$1,066,323
18 Months Carry	
PSF	\$7.87
Total Costs	\$31,518,594
PSF Costs	\$230
Sources of Funds	
Debt	65% \$20,487,086
Equity	35% \$11,031,508
Total	\$31,518,594
Uses of Funds	
Land	\$2,600,000
Hard	\$24,999,563
Soft	\$2,650,000
Financing	\$1,269,032
Total	\$31,518,594

## WORKS CITED

- American Institute of Architects. 2003. "Denver's Development Review Process: Can It Be Fixed?" Paper presented to the City of Denver's Mayoral Office by the AIA Denver STOPP Task Force, Denver, Colorado, September 2003.
- American Institute of Architects. 2005. "Reforming Denver's Development Review Process." Accessed March 25, 2015 at [http://www.aia.org/aiaucmp/groups/ek\\_members/documents/pdf/aiap016699.pdf](http://www.aia.org/aiaucmp/groups/ek_members/documents/pdf/aiap016699.pdf).
- BBC Research & Consulting. 2014. "Comprehensive Housing Market Analysis." Accessed April 26, 2015 at [http://austintexas.gov/sites/default/files/files/NHCD/2014\\_Comprehensive\\_Housing\\_Market\\_Analysis\\_-\\_Document\\_reduced\\_for\\_web.pdf](http://austintexas.gov/sites/default/files/files/NHCD/2014_Comprehensive_Housing_Market_Analysis_-_Document_reduced_for_web.pdf).
- Bar-Ilan, Avner and Strange, William C. 1996. "Urban Development with Lags." *Journal of Urban Economics* 39: 87-113.
- Baer, William and Myers, Dowell. "Filtering." In *The Encyclopedia of Housing*, edited by Andrew T. Carswell, 189-190. Thousand Oaks, CA: Sage Publications, 2012.
- Ben-Joseph, Eran. 2003. "Subdivision Regulations: Practices & Attitudes." Working Paper WP03EB1 presented at the Lincoln Institute of Land Policy Conference: Analysis of Urban Land Markets and the Impact of Land Market Regulation, Cambridge, MA, July 2002.
- Bueggeman, William B, and Fisher, Jeffrey D. 2011. *Real Estate Finance and Investments*. New York: McGraw Hill.
- Brunelli, Richard J. 2014. "The Shopping Center Development Pro Forma." Accessed March 15, 2015 at <http://rjbrunelli.com/in-the-news/the-shopping-center-development-proforma/>.
- Buchholz, Jan. 2015. "Austin city manager shuffles planning department in light of scathing report." *Austin Business Journal*, March 16. Accessed March 17, 2015 at [http://www.bizjournals.com/austin/blog/real-estate/2015/03/austin-city-manager-shuffles-planning-department.html?ana=e\\_aus\\_real&s=newsletter&ed=2015-03-19&u=VA0mmn07AJnViJk6NHP+Uw0ac89e91&t=1426778444](http://www.bizjournals.com/austin/blog/real-estate/2015/03/austin-city-manager-shuffles-planning-department.html?ana=e_aus_real&s=newsletter&ed=2015-03-19&u=VA0mmn07AJnViJk6NHP+Uw0ac89e91&t=1426778444).
- City of Austin. 2015. "Monthly Development Process Tracking." Accessed February 21, 2015 at <http://www.austintexas.gov/department/monthly-development-process-tracking>.

- City of Denver. 2015. "Development Services." Accessed February 21, 2015 at <http://www.denvergov.org/Default.aspx?alias=www.denvergov.org/developmentservices>.
- City of Portland. 2015. "Regulatory Improvement Code Amendment Package 7." Accessed February 21, 2015 at <http://www.portlandoregon.gov/bps/article/511193>.
- City of Portland. 2014. "Development Services Workload Measures." Accessed March 25, 2015 at <https://www.portlandoregon.gov/bds/article/510953>.
- City of Portland. 2004. "2002-2003 and 2003-2004 Regulatory Improvement Workplan." Accessed February 21, 2015 at <https://www.portlandoregon.gov/bps/article/142566>.
- City of Raleigh. 2015. "Development Services Performance Reports." Accessed February 21, 2015 at <http://www.raleighnc.gov/business/content/PlanDev/Articles/DevServ/DSPerformanceReports.html>.
- City of San Antonio. 2014. "Performance Measures." Accessed February 21, 2015 at <https://webapps1.sanantonio.gov/DSDocumentCentral/upload/FY2014.pdf>.
- Community Action Network. 2000. "Through the Roof." Accessed March 15, 2015 at <http://canatx.org/housing/ThroughTheRoofRpt/Chap01.html>.
- DesignWorkshop. 2014. "Bagby Street Reconstruction Project." Accessed March 10, 2015 at <http://www.designworkshop.com/projects/bagby.html>.
- Glaeser, Edward L and Gyourko, Joseph. 2003. "The Impact of Building Restrictions on Housing Affordability." *Federal Reserve Bank of New York Economic Policy Review*. 2:21-39.
- Harvard Joint Center for Housing Studies. 2014. "State of the Nation's Housing 2014." Accessed March 15, 2015 at <http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/sonhr14-color-full.pdf>.
- Hsueh, Natalie. 2010. "Philadelphia's Development Permit Review Process: Recommendations for Reform." Presented to the City of Philadelphia, PA, January 2010.
- Inhanfeldt, Keith R and Shaughnessy, Timothy M. 2002. "An Empirical Investigation of the Effects of Impact Fees on Housing and Land Markets." Presented at the Lincoln Institute of Land Policy Conference: Analysis of Urban Land Markets and the Impact of Land Market Regulation, Cambridge, MA, July 2002.

- Kotchen, Matthew J, and Schulte, Stacey L. 2009. "A Meta-Analysis of Cost of Community Services Studies." *International Regional Science Review* 32: 376-399.
- Lanane, Joe. 2014. "Development Review Process Under Review." *Community Impact News*, August 27. Accessed December 5, 2015 at <http://www.bigreddog.com/82714-community-impact-news-development-review-process-under-review/>.
- Maier, Richard N. 2013. "The Cost of Regulation: The Effect of Municipal Land Use Regulations on Housing Affordability." Accessed April 17, 2013 at <http://www.bigreddog.com/the-cost-of-regulation-the-effect-of-municipal-land-use-regulations-on-housing-affordability/>.
- Malpezzi, S. 1996. "Housing Prices, Externalities, and Regulation in US Metropolitan Areas." *Journal of Housing Research* 7: 209-241.
- May, Peter J. 2005. "Regulatory Implementation: Examining Barriers from Regulatory Processes." *Cityscape* 8: 209-232.
- Mayer, Christopher J and C. Tsurial Somerville. 2000. "Land Use Regulation and New Construction." *Regional Science and Urban Economics*. 30: 639-662.
- Mueller, Elizabeth J. "Crossing the Highway: Prospects for Inclusionary Zoning in Austin, Texas." University of Texas at Austin Working Paper, Austin, Texas, 2004.
- Novak, Shonda. 2015. "Rents Ease As Thousands of New Apartments Come Into Office Market." *Austin American Statesman*. Accessed March 31, 2015 at <http://www.mystatesman.com/news/business/rents-ease-as-thousands-of-new-apartments-come-int/nj3Ys/>.
- Opticos Design. 2014. "Land Development Code Diagnosis." Accessed December 5 at [http://www.austintexas.gov/sites/default/files/files/Planning/CodeNEXT/Austin\\_Cod eDia gnosis PublicDraft web\\_050514.pdf](http://www.austintexas.gov/sites/default/files/files/Planning/CodeNEXT/Austin_Cod eDia gnosis PublicDraft web_050514.pdf).
- Pindyck, Robert S. 1993. "Investments of Uncertain Cost." *Journal of Financial Economics* 34: 53-76.
- PriceWaterhouseCooper. 2005. "The Economic Impact of Accelerating Permit Processes on Local Development and Government Revenues." Accessed December 5 at <http://www.tricc.org/docs/permitstudyreport0206.pdf>.
- Quigley, John M and Raphael, Stephen. 2004. "Is Housing Unaffordable? Why Isn't It More Affordable?" *Journal of Economic Perspectives* 18: 191-214.

- Quigley, John M and Raphael, Stephen. 2005. "Regulation and the High Cost of Housing in California." *American Economics Review* 95: 323-328.
- Real Estate Council of Austin. 2015. "Affordable Austin: Building the Housing We Need at Prices We Can Afford." White Paper. Accessed March 15, 2015 at <http://www.reca.org/public/uploads/files/general/2015RECAAffordabilityWhitePaper.pdf>
- Seidel, Stephen L. 1978. *Housing Costs & Government Regulation: Confronting the Regulatory Maze*. New York: Center for Urban Research.
- Schill, Michael J. 2005. "Regulations & Housing Development: What We Know." *Cityscape* 8: 5-19.
- Theis, Michael. 2015. "After scathing development report, Austin promises credit card upgrade." *Austin Business Journal*, March 19. Accessed March 20, 2015 at [http://www.bizjournals.com/austin/blog/real-estate/2015/03/after-scathing-development-reportaustinpromises.html?ana=e\\_aus\\_real&s=newsletter&ed=20150319&u=VA0mmn07AJnViJk6NHP+Uw0ac89e91&t=1426778415](http://www.bizjournals.com/austin/blog/real-estate/2015/03/after-scathing-development-reportaustinpromises.html?ana=e_aus_real&s=newsletter&ed=20150319&u=VA0mmn07AJnViJk6NHP+Uw0ac89e91&t=1426778415).
- Titman, Sheridan. 1985. "Urban Land Prices Under Uncertainty." *The American Economic Review* 75:505-514.
- Toohey, Marty. 2014. "Austin's renters face soaring costs in 'extraordinary market.'" *Austin American Statesman*, May 3. Accessed March 15, 2015 at <http://www.mystatesman.com/news/news/local/austin-renters-face-soaring-costs-in-extraordinary/nfn7D/>.
- Urban Land Institute. 2014. *Bending the Cost Curve: Solutions to Expand the Supply of Affordable Housing*. Accessed April 1, 2015 at [http://uli.org/wp-content/uploads/ULI-Documents/BendingCostCurve-Solutions\\_2014\\_web.pdf](http://uli.org/wp-content/uploads/ULI-Documents/BendingCostCurve-Solutions_2014_web.pdf).
- U.S. Census Bureau. 2013. Denver County, Colorado, General Population and Housing Characteristics: 2013 [Data]. 2013 Demographic and Housing Estimates. Accessed March 25, 2015 at <http://factfinder2.census.gov>.
- U.S. Census Bureau. 2013. Denver County, Colorado, General Population and Housing Characteristics: 2013 [Data]. 2013 Selected Economic Characteristics. Accessed March 25, 2015 at <http://factfinder2.census.gov>.

- U.S. Census Bureau. 2013. Multnomah County, Oregon, General Population and Housing Characteristics: 2013 [Data]. 2013 Demographic and Housing Estimates. Accessed March 25, 2015 at <http://factfinder2.census.gov>.
- U.S. Census Bureau. 2013. Multnomah County, Oregon, General Population and Housing Characteristics: 2013 [Data]. 2013 Selected Economic Characteristics. Accessed March 25, 2015 at <http://factfinder2.census.gov>.
- U.S. Census Bureau. 2013. Travis County, Texas, General Population and Housing Characteristics: 2013 [Data]. 2013 Demographic and Housing Estimates. Accessed March 25, 2015 at <http://factfinder2.census.gov>.
- U.S. Census Bureau. 2013. Travis County, Texas, General Population and Housing Characteristics: 2013 [Data]. 2013 Selected Economic Characteristics. Accessed March 25, 2015 at <http://factfinder2.census.gov>.
- U.S. Census Bureau. 2013. Wake County, North Carolina, General Population and Housing Characteristics: 2013 [Data]. 2013 Demographic and Housing Estimates. Accessed March 25, 2015 at <http://factfinder2.census.gov>.
- U.S. Census Bureau. 2013. Wake County, North Carolina, General Population and Housing Characteristics: 2013 [Data]. 2013 Selected Economic Characteristics. Accessed March 25, 2015 at <http://factfinder2.census.gov>.
- U.S. Department of Agriculture. 2015. "Creative Class County Codes." *Economic Research Service*, March 15. Accessed March 24, 2015 at <http://www.ers.usda.gov/data-products/creative-class-county-codes/documentation.aspx>.
- U.S. Department of Housing and Urban Development. 2000. "Regulatory Barriers Clearinghouse Archives." Accessed February 21, 2015 at [archives.huduser.org/rbc/archives/newsletter/vol2iss1more.html](http://archives.huduser.org/rbc/archives/newsletter/vol2iss1more.html).
- White, Mark and Paster, Elisa. 2003. "Creating Efficient Land Use Regulations Through Concurrencey." *Natural Resources Journal* 43: 753-779.
- Wrenn, Douglas H and Irwin, Elena G. 2015. "Time is Money: An empirical examination of the effects of regulatory delay on residential subdivision development." *Regional Science and Urban Economics* 51:25-36.
- Zucker Systems Inc. 2015. "Zucker Draft Final Report." Accessed March 16, 2015 at <http://www.austintexas.gov/department/zucker-draft-final-report>.

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