THESIS COMMITTEE

SUPERVISOR:
Alexander D’Hooghe, MAUD, PhD
Associate Professor of Architecture and Urbanism

READERS:
Neeraj Bhatia, SMArchS
Assistant Professor of Architecture, California College of the Arts

Fadi Masoud, MLA
Lecturer in Urban Studies and Planning
INFRASTRUCTURAL OPPORTUNISM
Inhabiting the Los Angeles Hinterland
by Laura Williams

ABSTRACT

Los Angeles is a vast, dense, and notorious city that overshadows the individualities of its outlying territories. California is likewise divided between urban center and middle land, with inland acting as producer and collector, and coast as consumer. However, there is the potential in this middle zone, stuck between the urban and rural, to re-imagine the way that cities develop and function based on infrastructural opportunities. North of Los Angeles over the San Gabriel mountains, Palmdale, Victorville, and Bakersfield operate together as the production and logistics staging grounds for Los Angeles, a collective back of house to the largest city on the west coast. Of these, Palmdale is used as the testing ground for infrastructural opportunism and edge expansion; but while Palmdale acts as producer, staging ground, and dormitory for Los Angeles, it will not be defined by this adjacency. Instead, Palmdale and its neighbors are re-imagined as a collective of edge cities that signify a new region both in service of and independent from Los Angeles: The High Desert Triangle.

To address the edge region, this thesis proposes a new typology for expansion that identifies infrastructural overlaps between road, rail, and water as opportunities to link across fragmented city fabric. This method of aggregation and stitching operates at an urban scale within Palmdale, a territorial scale between cities, and site-specifically in bridging the scalar gap between humans and logistics. By operating opportunistically with infrastructure, this thesis proposes that 1) concentrating infrastructure and logistics development at multi-modal intersections reduces redundancy and de-frags city fabric, 2) demographic segmentation can be altered by mixing communities and improving access to transit both locally and regionally, and 3) the cost efficiency of bundling infrastructures allows for iteration and experimentation at the architectural scale to address changing programmatic and demographic needs.

The aim of this thesis is not to imitate existing city fabric, but instead to design the typological tools for urban edge development and re-imagine how essential logistics spaces can be integrated with living spaces. It does not propose to segment, buffer, or zone out the overlaps between logistics and people, but rather seeks out those intersections as infrastructural opportunities with inherent value.

Submitted to the Department of Architecture on May 19th, 2016 in Partial Fulfillment of the Requirements for the Degree of Master of Science in Architecture Studies

Infrastructural Opportunism
CONTENTS

Abstract 7
Introduction 13

1 PRODUCER - CONSUMER CONFLICT
negotiating the two Californias
The Edge City 21
Inland-Coastal Clash 25
The Suburban Blanket 25
Metropolitan Back of House 27
The Employment Gradient 31
The California Commute 43
Expanded Edge 45

2 THE HIGH DESERT TRIANGLE
networked intervention for the Los Angeles hinterland
Infrastructural Overlap 49
High Desert Triangle 51
Congestion 53
High Speed Rail 55
Social Potential 61

3 LABOR AS COMPONENT
giving form to the commodification of labor
A Brief Formal History of Labor 66
Typologies of Labor 67
Demographics in the High Desert Triangle 69
Time-Share Employment 70
Componentization of Labor 71
ACKNOWLEDGEMENTS

Thank you first and foremost to my advising committee, without your guidance and specificity this thesis would not have come together.

To Alexander D’Hooghe, for pushing me to question my own assumptions and to work through thesis using design. Thank you for your constant support and enthusiasm for the topic, and for sharing your own work and methodology that helped inform my own; I so much appreciate your input during my time at MIT, in both thesis and teaching.

To Fadi Masoud, for provoking my interest in the topic of suburbia, seeing me through a new permutation of that research each semester, and for pushing me to think about more than just the architectural implications of the project.

To Neeraj Bhatia, for your longtime guidance and feedback, and for taking the time out of your own commitments and advise me. From my first undergraduate studio under your direction to this thesis, you have been an incredible mentor and colleague.

Thank you to the MIT Architecture department, for your financial and administrative support, without this thesis could not exist.

To my family and friends, for all your care and support.
INTRODUCTION

This thesis addresses the pervasive condition of the unbound metropolitan edge. Over the past fifty years, with the rise of the suburban home and gradual disappearances of both the traditional urban core and medium-density forms of domestic inhabitation, more and more Americans live in places without geographic specificity, faceless subdivisions which are duplicated and dispersed across all types of infrastructure and ecology. California is at the heart of this phenomenon due to its seemingly infinite supply of open land and anchoring coastal cores, Los Angeles and San Francisco. By 2050, Los Angeles County projects to grow by 1.3 million new residents¹, the majority of whom will not live in the Los Angeles Basin but instead in the less populated and more affordable Los Angeles metropolitan region.

This thesis began by investigating the fringe condition of the suburb, and rather than debate whether or not suburbs should be built, it takes the suburban condition as a given, but not in its current form. Where there is value in the fringe is in its affordability, its existence as an urban exchange point, and its future in housing the growing 'urban' population. The condition of the expanded edge of Los Angeles is most physically apparent at the northern border, where there is a division between the two Californias, the coast and the middle land, and where the majority of new metropolitan residents will live over the next thirty years.

This seemingly new frontier of the metropolitan fringe, however, already operates as an instrumental part of the Los Angeles region: as staging ground and back of house to the largest city on the west coast. What, then, will result when residential expansion attempts to erode vital logistics spaces: cohabitation? Regulation? A territorial shift of logistics even further away from the core? At the overlap of two contradictory programs, domestic space and infrastructure, there is the potential to rethink the way in which cities across the United States grow horizontally; and this thesis speculates that by overlapping living and logistics spaces there can be mutually beneficial results for both people and the flows of goods.

¹ Los Angeles County Metropolitan Planning Commission (2010). "Los Angeles County 2050: A Regional Vision for Sustainable Growth and Livability."
To understand the condition of the metropolitan fringe and the potential in overlapping domestic and logistic spaces, California's hinterland is used as a design testing ground. As a benchmark to understand this territory, the average population density of the Los Angeles-Long Beach-Anaheim region is near 2,646 people per square mile, the second highest in the nation after New York-Northern New Jersey-Long Island, at 2,826 people per square mile. On the opposite side of the density spectrum is Palmdale, in the Antelope valley of Los Angeles' northern hinterland, at just 1,400 people per square mile, and with some of the longest average commute times in the nation. Palmdale is a city in transition. It is part logistics hub, part bedroom community, part rest stop upon entering or exiting the Los Angeles basin.

This thesis is grounded in a few influential texts, those on suburban domesticity by Dolores Hayden, *Building Suburbia* and *Redesigning the American Dream* and on the opportunities of infrastructure in Keller Easterling’s *Organization Space*. On the basis of these two texts, this thesis proposes two primary ideas: the first is the strategy of infrastructural opportunism, and the second of the flexible live-work intervention.

Infrastructural opportunism refers to a new proposed strategy of considering infrastructural overlaps as points of focus in the metropolitan hinterland. These specific conditions exist in an expanded edge that serves as back of house and staging ground to the more urban core, in the case of this thesis, Los Angeles. I propose that by rethinking the way that architects, planners, and developers ‘deal’ with infrastructure, and rather than segment or buffer out infrastructural lines, opportunities for employment, exchange of culture and identities between mobile populations, and a new typology for living with infrastructure can be developed.

This strategy is targeted at the metropolitan fringe in particular due to the rampant low density development that characterizes American city edges,
and the positive implications of designing for an underserved population of transitional and temporary workers that live just outside of the metropolitan core.

The second proposal, for a new typology to address living and working flexibly on the fringe, is based on the need for a reaction to suburban fabric and the current method of horizontal expansion in the United States. This proposal is for a development of domestic space in conjunction with employment and logistics space, and a focus on flexible structures to allow for internal fluctuation and time-based space sharing. This typology is specific, again, to the fringe, in that it can serve the transitional and temporary employee sector, while giving back dignity to domestic spaces in transition and allowing workers to both live together with their families and maintain employment year-round.

The following chapters are split into three parts, the first is a study on the metropolitan edge and its geographic and psychological situation as an in between zone sandwiched in the middle of the affluent coastal metropolis and inland hinterland. This study culminates in a territorial proposal for the urban fringe that would link cities of similar economic and demographic characters together as a single entity, separate from the contrasting urban core but still intrinsically linked to it.

The second part (chapters 3 and 4) explore the typological framework for the thesis, bringing in backgrounds of labor-based form and the forms of domesticity. This section analyzes the historic and theoretical backgrounds of each of these strains, living, working, and the combination of both, to propose a new method of living in the California hinterland. Simultaneously, this part studies the existing demographics and employment sector in the California hinterland, and takes these existing conditions as a starting point in designing an intervention for Palmdale, California.

Finally, the third section is both a site analysis of Palmdale, California, and an outline of the new proposed strategy of infrastructural opportunism. The resulting proposal is both urban and architectural in nature, and proposes that infrastructural overlaps be used as impetus for community and employment development.
Million new Los Angeles County residents by 2050

Los Angeles area jobs located 10+ miles from the core
48%
Inland California population growth rate, compared to 17% Coastal growth rate

40+
Average commute time in minutes, compared to the 25 minute average U.S. commute
"Americans are creating the biggest change in a hundred years in how we build cities. Every single American city that is growing is growing in the fashion of Los Angeles."

--Joel Garreau
04. Edge City, Los Angeles (prev. page)
Mapping by Joel Garreau of the edge
cities of Los Angeles, 1992 8

05. 'Urban' Los Angeles
Blanket of sprawl with vertical punctures

Laura Williams
THE EDGE CITY

Los Angeles is a vast, dense, and notorious city that overshadows the individualities of its outlying territories. It is the embodiment of the edgeless city, a metropolis of many cores that extends outwards over mountains and in spite of a natural predisposition to drought, fire, and earthquake. If it were not for the Pacific Ocean, Los Angeles would be limitless on all sides, but this oceanic boundary forces the city to merely extend in three.

There are similarities between Los Angeles and other metropolises in the United States, particularly in their need for an area just outside the urban core, with excellent connectivity, but in a location with lower land value and more open space. This is Newark to New York City, Joliet to Chicago, and here, in Los Angeles, the most expansive metropolis in the country, this is a group of staging grounds: Palmdale, Victorville, San Bernadino, and Riverside, among others.
Size and Scope of Los Angeles (prev. page)
The Los Angeles City boundaries, urban boundaries, county lines, and metropolitan limits, as compared to the city of New York at the same scale.

07. Ticky Tacky Houses
Identical Homes typical of the suburban subdivision

08. Non-specific Development
A subdivision in California inhabits a hillside by flat grading and paving to create the same pattern as typical of other subdivisions.
INLAND - COASTAL CLASH

California is divided between urban center and middle land vocationally, socioeconomicly, and politically, with inland acting as producer and coast as consumer. This chasm between the coast and inland is especially apparent at the edge of metropolitan Los Angeles and San Francisco, where the liberal and conservative clash and there is a threshold at the periphery that is rarely crossed by residents, but which must be crossed and inhabited to allow for goods to enter the Los Angeles basin. At the territorial scale, this thesis will address this consumer conflict between coastal hub and productive hinterland, and the opportunities that infrastructure affords by connecting those hinterland cities and allowing them to develop their own economies and characters.

THE SUBURBAN BLANKET

Currently, the most opportunistic use of infrastructure in Los Angeles is the blanket of low density residential units that extends in every direction but the ocean: a typology that simultaneously takes advantage of infrastructure for its connective capacity and also ignores infrastructure by internalizing and segmenting into gated residential enclaves. The result is a fragmented California, with the coast and inland removed from one another, and residents removed from the global economy, and where this condition is most noticeable is at the border between coast and hinterland. In particular this occurs at the northern edge of Los Angeles, which is so geologically extreme that the ubiquitous low density single family home has not fully jumped the San Gabriel mountains and filled the territories beyond.

Instead, there is a condition which is wholly different than both the Los Angeles basin and the central valley, a region that is the back of house to Los Angeles, and which acts simultaneously as producer, staging ground, and bedroom community to the largest metropolitan area on the west coast.
Global Trade
California Imports and Exports by destination and amount, current and future

Laura Williams
By 2050 Los Angeles County projects to grow by 1.3 million new residents, the majority of whom will not live in the Los Angeles Basin, but instead in the less populated and more economically accessible metropolitan edge from Palmdale to Riverside. The urban center as it is historically defined no longer exists in Los Angeles: 63% of jobs are located 10 miles or more from the designated core, and where a traditional employment gradient may have once existed, today Los Angeles exhibits a polycentric gradient where residences and workplaces have formed in clusters outside the traditional core and the average commute time for residents of the periphery is 160% longer than for the average American.

The result of this decentralization is a bloated periphery that neither links nor blocks Los Angeles and its hinterland. And which by nature of the low cost of land and ease of metropolitan access, has the potential to be used as a testing ground to redefined the traditional producer-consumer relationship between hinterland and hub.

Infrastructural Opportunism
10. Red & Blue
Political threshold between the liberal majority of the coastal metropolis and conservative majority of the inland territories at the border of the Los Angeles Basin

Laura Williams
11. The Corporate Campus
Pastoral depiction of the workplace

Laura Williams
THE EMPLOYMENT GRADIENT

As Louise Mozingo writes in *Pastoral Capitalism*, her study of the corporate pastoral landscape, the postwar economic boom in the United States led to widespread decentralization and suburban expansion in the employment sector. She writes, “As the corporation was growing ever more powerful at midcentury, the American city was also undergoing a period of fundamental change...the postwar milieu tipped the balance toward the rapid decentralization of urban cores and their concentrations of commerce, industry, and residential neighborhoods. It precipitously accelerated the restructuring of the American city into the lower-density, dispersed, multifocal, auto-dependent metropolitan pattern that characterizes it early in the twenty-first century...enterprises previously resistant to edgeward movement joined the energetic rush to the urban periphery” (6). This geographic shift across sectors fundamentally changed the forms of cities across the United States. In Los Angeles, the decentralization of the downtown core has created a city structure that is based on access to infrastructure rather than focal points, and has led to the fragmentation and segregation of communities across Los Angeles and its hinterland.

This thesis does not attempt to change the trajectory of urban expansion as a whole, but rather takes the trend of decentralization across sectors of housing, employment, and manufacturing, and proposes that by overlapping programs and sharing infrastructure, a less segmented metropolitan edge can be constructed.
12. Traditional Employment Gradient
Traditionally, the majority of jobs would fall within 10 miles of the designated urban core.
13. The New Normal
Only 32% of jobs fall within the 10 miles radius of the core, with 62% lying between 10 and 50 miles from downtown Los Angeles.
Secondary employment clusters have emerged in Los Angeles.
15. Polycentric Employment Gradient
Secondary employment clusters become more formalized as employment centers
Employment is clustered far from the designated downtown core of Los Angeles.
The California Commute
Los Angeles has some of the longest commute times in the nation, not only for those who work in downtown LA but also in polycentric employment clusters.
Polycentric employment, long commute times, and the expansive territory that lies within the LA metropolitan area allow for a bloated peripheral zone between urban and hinterland.
THE HIGH DESERT TRIANGLE

networked intervention for the Los Angeles hinterland
19. Infrastructural Overlap
Santa Clarita freeway exchange after the 1994 Northridge Earthquake

Laura Williams
INFRASTRUCTURAL OVERLAP

Palmdale lies at a logistical pinch point in the southern California transit system: at the confluence of road and rail lines that stretch between the Los Angeles basin, high desert, and central valley. It is representative of each producer-consumer issue: the de-humanizing scale of infrastructure and construction, a lack of awareness of the global economy, and the static traditional forms of working and living that attempt to mitigate infrastructural overlap. Palmdale is also in a unique position as the potential terminal and terminus of the California High Speed Rail project that proposes to link Los Angeles and San Francisco by 2029.12
HIGH DESERT TRIANGLE

Territorially, Palmdale is part of a larger back of house network that I am defining as the high desert triangle, delineated by its infrastructural connections, road and proposed high speed rail, and which links the economically and socially diverse but intrinsically connected Los Angeles Basin, Central Valley, and High Desert. It is part of a network of back of house cities, the locations of production, staging, and shelter for the population of urban Los Angeles. Each of these staging cities is valuable due to proximity to low cost land, low cost labor, and a perpetual market.
By re-imagining Palmdale as part of a larger system and evaluating it based on its infrastructural connections, there are opportunities for consistent employment between multiple cities, a more communal and inclusive mode of living, and an alternative to the insensitive method of urban expansion that currently dominates the fringe. Finally, at the scale of the city, rather than emulate existing urban fabrics or segment, buffer, or zone out the overlaps between logistics and people, this thesis proposes to seek out infrastructural overlaps in Palmdale and propose a new framework in which systems of logistics and humans can cohabitate.
CONGESTION

Los Angeles has one of the most robust and also most congested road systems in the nation. It allows for the trucking of goods in multiple directions, north-south and east-west with interstate highways serving the territories beyond. Where these infrastructural lines become inefficient and clogged are at the pinch points of access into the Los Angeles Basin, particularly from the north. Geologically, Los Angeles is a coastal valley surrounded by mountain ranges on all sides but the ocean. This geology has many positive aspects such as cooling, the presence of oil, diverse climates and atmospheres, but also forces all traffic through a few passes when entering the basin.

One of these pinch points is at Palmdale, which lies just north of the LA basin over the San Gabriel mountains, and houses trucking, freight, and staging spaces for goods entering Los Angeles.
HIGH SPEED RAIL

The problem with Palmdale as a logistic pinch point and traffic bottleneck is also its potential. The California High Speed Rail Authority (HSRA) plans to link Los Angeles and San Francisco by 2029\(^2\), but this tentative date estimate does not take into account the lack of funding for connecting from Palmdale to the Los Angeles Basin through the San Gabriel Mountains. This section of the high speed rail will be the last phase implemented, and is the most costly, a fact which pushed the California HSRA to realign their phasing plan and connect into the San Francisco Bay area from the central valley before connecting into the Los Angeles Basin, as originally planned.

The result of this uncertainty of high speed rail connection is that Palmdale stands to be both the terminal between existing public transport options serving the LA basin and Antelope Valley and the incoming High Speed Rail, and the terminus of the high speed rail system. As such, there will be even more pressure on it as a logistical pinch point in the southern California transit system, and the need for overlapping infrastructure opportunistically will be greater.
High Desert Triangle Infrastructure

Overlaid road and rail networks create the figure of the High Desert Triangle, which spans from Palmdale to Fresno and Victorville, and beyond to Los Angeles, San Francisco, and Las Vegas.

Laura Williams
26. Palmdale in the Triangle
Selected cities of the high desert triangle, centered around Palmdale as a logistics attraction point
27. High Desert Triangle Region
Palmdale sits at the intersection of three distinct but interconnected regions
SOCIAL POTENTIAL

The High Desert Triangle, between the Central Valley, High Desert, and Los Angeles Basin is a unique grouping of geographically independent regions with interconnected markets and logistics supply chains. While corporations focused on shipping, staging, and the transfer of goods certainly take advantage of the low cost land in the high desert and its proximity to the market of Los Angeles, the social opportunities of linking cities of similar economies and demographics have not been acted upon.

By formalizing the infrastructural links between the cities that make up Los Angeles' back of house, a new social network between Palmdale, Bakersfield, Victorville, and cities beyond is established to complement the existing logistics network; and the feedbacks between low cost labor, low cost land, and a perpetual market that exist in the back of house region can become defined by their inhabitants as well as their infrastructure.

28. Perceived Region
The Central Valley, High Desert, and Los Angeles basin are re-interpreted for their perceived roles in the logistics supply chain.
29. The High Desert Triangle
LABOR AS COMPONENT

giving form to the commodification of labor
A BRIEF FORMAL HISTORY OF LABOR

The focus of this chapter is on building the formal and theoretical background that the strategy of infrastructural opportunism sits in. This analysis converges on two main typologies: one is the formal representation of labor (i.e. the miners camp, company town) and the expansion of programs situated on the metropolitan fringe (i.e. suburban housing, warehouse, big box store).

Labor has always had form, but where form tends to follow context in the case of employment-based living quarters, I propose that the forms of living spaces and those of working spaces be considered together within a single system that is externally structured but internally flexible. Much of this typological analysis is based on Charlie Hailey's *Camps: A Guide to 21st-Century Space*, an extensive and holistic study of camps though time and geographies. This text guided the programmatic and typological framework of this thesis in many ways: through its analysis of camps, but also in the method by which these camps are not categorized solely by programmatic use but also the goals or implications of their very existence.

30. Industrial Towns
A series of city forms from Keller Easterling's *American Town Plans* illustrating the history of developing industrial/logistics and living spaces in tandem.
TYPOLOGIES OF LABOR

Four camp typologies, defined by Hailey, were used as a basis for understanding the needs of an employment-based settlement: The Suburban Camp, The Mining Camp, The Permanent Accommodation Camp, and the autonomous Foo Camp. The permanent accommodation and mining camps call for the dual development of living, working, and community programs. The suburban camp, of the autonomy provided by a family vehicle and having the ability to move freely at will with ones' kin. And the Foo camp, a flexibility of spaces taken over by undetermined users and uses within a structured system.

While none of these camps is the sole ancestor to the high desert triangle or its opportunistic nodes, each gives a piece of programmatic or functional DNA to the urban and architectural interventions of the thesis.
California High Speed Rail Construction workers construct segments of the California high-speed rail in the central valley.

California Pickers
Agricultural workers in California work in teams during harvest time.
DEMOGRAPHICS IN THE HIGH DESERT TRIANGLE

The demographic proposition for Palmdale is centered around the High Desert Triangle network and the potential of connecting cities of similar economic and demographic characters. Taking the cities of Bakersfield, Victorville, and Palmdale as the framework for the economy and demographics of the High Desert Triangle interventions, a pattern of employment in production-related fields (logistics, trucking, agriculture), and temporary fields (service, waiting, cashiering) emerge. To create a more robust economy for each city, these employment sectors were mapped according to seasonality and the potential for time-based employment sharing.
TIME-SHARE EMPLOYMENT

In the High Desert Triangle that Palmdale anchors, a worker would have the opportunity to move between multi-modal connected hubs with employment opportunities in related sectors of the same production chain. Likewise, employers would have the ability to expand and contract in a flexible spatial system to allow for the flux of goods cycles without the cost of renting excess square footages. By exploiting time-based overlaps and gaps in the employment cycle, manufacturing, logistics, or agriculture could potentially take over flexible spaces when those are not being used for human inhabitation.
COMPONENTIZATION OF LABOR

The trend towards temporary employment and workers holding multiple jobs at once and throughout the year necessitates a new approach to the static forms of working and living that exist today. This thesis proposes that the commodification of labor be recognized and accepted, and the system that it works within addressed.

Labor is another component in the same balance sheet as a storage facility, a robotic sorter, a delivery truck, or a manufacturing plant. Though we would like to think of labor as a separate component because it involves humans, the reality of any manufacturing chain is that people are treated as moving hands, not as individuals. I am not proposing that we fully accept this reality, or that it can be readily changed, but instead that a system is developed that works within the current supply chain but also promotes workers as individuals, meets their needs with dignity, and is synergistically productive for all involved.

This may seem like a dystopian view of the labor market and logistics supply chain, but all signs point to this being the new reality in America, where manufacturing and industry are on the decline. In order to maintain the last vestiges of production in the country, workers need to be part of the conversation along with materials and shipping.

Infrastructural opportunism is a strategy to have this conversation between employers and employee. By pairing living, working, and logistics spaces and offering a positive feature for all, flexibility, a structured but changeable system can incorporate the needs of all and replace the static forms that mitigate infrastructure currently.
34. Occupational Variety
Map of California depicting the variety of industrial and seasonal occupations based on census block.

35. Tenureship
Map of California depicting proportion of tenant and owner-occupied property to show a statewide scale of permanence.
37. Bakersfield, California
Occupational composition of Bakersfield, CA in the high desert triangle

Infrastructural Opportunism
38. Victorville, California
Occupational composition of Victorville, CA in the high desert triangle
39. Palmdale, California
Occupational composition of Victorville, CA in the high desert triangle
“When any culture clings to a rural house type—the sacred hut—rather than devising a successful urban house type, it remains a culture of people trying to be farmers and rejecting city life. The United States is particularly vulnerable to this charge, underlined by the predominance of the isolated farm on the Jeffersonian grid.”

—Dolores Hayden
A family poses for a photo outside their new Levittown suburban home.
ARCHETYPE OF THE SINGLE FAMILY HOME

The preceding quote from Dolores Hayden gives a comprehensive snapshot into the mind of an American when it comes to their nostalgia for the single family detached home. Hayden suggests that by taking attention away from program and focusing on the form of the single family home as primitive hut, American housing in the twentieth century has created a quasi-religious aesthetic of the suburban home, and the nuclear family that lives within it, bound by a white picket fence. She continues, “by the time the Levitts grappled with the aesthetics of the sacred hut in Levittown in the late 1940s, almost all of the serious aesthetic and spiritual dilemmas about the suburban tract house had been resolved for them by the formulas of architects, household engineers, and corporate marketing experts. The Levitts had only to deliver the cultural and architectural package more effectively than the competition, which they did(105)”.

This thesis is a reaction to that archetype which Hayden so eloquently outlines. It takes the American Dream of the single family home, isolates the elements that truly make that home, besides the built in color television or General Electric washer dryer, and regroups these into a typology built for the modern world. This typology is not based on the historic mortgage-based system, nor on the single-ownership model, but as a hybrid between the company town, the single family home, and AirBnB.
41. Levittown Subdivision
Levittown, NY from above, one of the first suburban subdivisions in the United States

Laura Williams
PLACEMAKING IN THE TWENTY-FIRST CENTURY

Shared units reduce waste by limiting the housing stock to what a total population needs over their lifespan, rather than what a single family wants at a certain moment in time, but employes many of the place-making methods present in that single family home. However, some remnants of the organization of domesticity remain in the intervention, to create a sense of security and place that roots Americans. These include the development of a neighborhood, but with the inclusion of public amenities, the courtyard, and the private domestic space. Each of these principles is present in the design of a new typology for living and working, but also diverges from them, most prominently in the building of collective space and permanence of private domestic space.

I propose that domestic space no longer be strictly private, but that it operate on a sliding scale of privacy and permanence, from the internal single family unit to the shared bunk house. In this way, space is valued at a premium, and collective space is given preference over private space. In placemaking, a focus will be on designing a totality of public infrastructures and spaces to root and serve the private lives of many. This is also where this thesis somewhat diverges from the strategies outlined by Hayden, who argues that adaptive reuse, retrofit, and building small but with a large scale intentions is how to address the future of housing.18

While I agree that there needs to be a larger conversation about housing and the political and environmental impacts of development, formally and typologically, I do not believe that a drastic change can be made by only addressing the current housing stock. Instead, there needs to be territorial, regional, and site-specific strategies for addressing not just the single family home but the space of suburbia itself, the condition of the metropolitan edge, that incorporates domestic space, common space, and employment and service space.
FLEXIBLE HOUSING

To better understand the demographics of the high desert triangle, existing dwelling types in Palmdale and the region were categorized and located on a scale of permanence, from the globally ubiquitous single family home to the temporary shelter and mobile home. For families and individuals that work in agriculture, industry, extraction, and even education, and who change geographic locations or employment positions frequently, the High Desert Triangle will provide a framework for shared and flexible housing at each regional node. This new network of shared living and communal spaces is paired with infrastructure access points and employment opportunities to allow free movement between nodes by workers of any status.

SUBSCRIPTION-BASED DOMESTICITY

The high desert triangle employment network is further categorized as a new type of living for the modern era: a subscription housing service to complement our already-subscription driven lives. Whether a worker is employed in multiple sectors at the same node year-round, or he or she travels between cities seeking employment, a similar apartment suited to their needs and the needs of their families will exist at each node. By pairing community programs, education facilities, and testing and prototyping labs with living and logistics spaces at each point in the high desert triangle, a diverse cross section of residents can be served and each given the flexibility to live year-round with their families and have consistent employment.

This strategy incorporates a number of pedagogical ideas that have been tested in drawings but not in practice, and some that have been tested in practice but in small batches. One of these influential theoretical ideas is Andrea Branzi’s ‘Models of Weak Urbanization’ and resulting Agronica-Weak Urbanization’ project. Agronica is an open system for inhabitation, where any function can be mobilized and plugged in to a larger totalizing grid, and “the function of places no longer corresponds to a visible stylistic code, but to a software that changes places’ use(134)”. This open system for intervention refers, though, more to an open system for urban intervention
by users than this thesis proposes. The influence of Branzi is in the way she considers the design of a system for territory without designing the programs inside, but in this thesis I take that one step more towards formalization, and create a structured system of inhabitable spaces rather than a non-formal organization method for a territory.

However, the weak urbanization model of Branzi, as well as the experiments of other methods of structured and/or plug-in utopias proposed by Archigram and Superstudio in the late 1960s and early 1970s reads through the strategy of infrastructural opportunism and its formal manifestation. This thesis uses a flexible framework for inhabitation, with some programmatic determination, but always operating on the basis of overlapping programs for the most productive outcome, whether that be for housing, logistics, public programs, or working spaces. This integrated model can function as a group of a few modules, of programmatic variety, or as an open field that uses infrastructural overlaps as points of focus in an expansive territory. The result is an open and flexible system that rethinks the inhabitation of the metropolitan fringe using flexibility and shared spaces as an underlying spatial system rather than the private domestic space and garage, as currently exists in the suburbs.
43. Time-Based Occupation
Calendar-based mapping of the spatial occupations of industries and growing cycles over one calendar year

Laura Williams
44. Time-Based Opportunism
Viewing spatial occupation over a single month reveals possibilities for space sharing.

Laura Williams
45. Spatial Exchange
Industries share and exchange spaces, allowing flux according to cycles of goods, foods, and people.
Typologies of Permanence

Typical housing typologies of Palmdale and the high desert triangle region are mapped over a scale of permanence.

Laura Williams
BUNK HOUSE
- 0-6 bedrooms
- 400-600 square feet
- 75-150sf per person

SHARED UNIT
- 0-1 bedrooms
- 250 square feet
- 250sf per person

TRAVEL TRAILER
- 0 bedrooms
- 130-250 square feet
- 50-125sf per person

TEMPORARY SHELTER
- 0 bedrooms
- 100 square feet
- 50-100sf per person

MOBILE HOME
- 0 bedrooms
- 200-240 square feet
- 60-100sf per person

Infrastructure Opportunism
Housing typologies are shared between multiple user groups, and distilled into square footages and occupancy.
5

THE EXPANDED EDGE
structured flexibility for Palmdale, California
48. Palmdale, California
Palmdale, California from Lake Palmdale
at the foothills of the San Gabriel
mountains

Laura Williams
LIVING & WORKING

By typifying the most common forms of living in the high desert triangle, the basic module of intervention at Palmdale is developed. This unit, at 32 feet by 65 feet, is based on the most permanent use to inhabit it: logistics, and is based on the US Department of Transit guidelines for warehousing of unknown contents. Using this basic structural grid allows for both interior variation, and the flexibility to grow, shrink, and shift unit programming to allow for trucking and loading, the storage of goods, and ultimately, the inhabitation of humans. While each unit is highly regularized and could potentially turn into a deterministic megastructure, by using a specific but flexible framework of inhabitation, the Palmdale intervention can fluctuate and be inhabited by many uses or users at any moment in time.

Ultimately, this framework for seasonal and transitional inhabitation services the larger goal of the high desert triangle for free movement between employment centers; and is a platform by which to decrease suburban vacancy, improve living and community conditions, and offer an alternative to the largely inaccessible dream of owning property in the United States. As part of a larger system, this live-work unit has the potential to be replicated across the Los Angeles hinterland to link High Desert Triangle nodes from Palmdale to Bakersfield and beyond into the central valley.
49. Basic Live-Work Module
Based on the US DOT standards for storing unknown interior contents

50. Loading Docks - 3
What fits?

Laura Williams
51. Storage Pallets - 210
What fits?

52. Beds - 4-5
What fits?

106  Laura Williams
A PROPOSAL FOR PALMDALE, CALIFORNIA

Palmdale is a knot of logistics and fragmented land use, dictated by the underlying Jeffersonian grid but not focused on any specific conditions within that framework. Where some cities suffer from a lack of infrastructure, Palmdale suffers from overly robust infrastructure, a lack of civic or social focus, and a highly fragmented single use zoning map with significant North-South grain. This thesis proposes that infrastructure is considered for the potential of its overlaps, between road, rail, water, and development, and that these infrastructural overlaps are used as points of focus and exchange that link Palmdale across its grain.

These opportunistic interventions on infrastructure will range in scale and scope, from the logistic to the domestic, and will deploy a new typology of infrastructural opportunism that bridges the scalar gap between humans and logistics. The first of these focal points to be developed is located at the overlap of high speed rail, multiple interstate highways, freight rail, and the potential to link directly south to Los Angeles, north to the High Desert Triangle, and east to Las Vegas.
If Palmdale is left to develop in the same fashion as the rest of the metropolitan fringe, it will most likely continue in the pattern of single use zoning and fragmented fabric. This thesis proposes that there is an alternative to the fragmented edge, a future for Palmdale that operates opportunistically on its already-established infrastructure lines and explores a new typology for living and working in the high desert.
56. Palmdale, California
Projective dystopia-extrapolation of suburban and single use zoning policies if Palmdale develops without intervention

Laura Williams
INFRASTRUCTURAL OPPORTUNITIES

First, infrastructural opportunities are identified, the existing fragments of urban fabric are mapped, and the imaginary borders of the zoning map are drawn. When overlaid, this messy glue of semi-urban fabric and zoning is stitched across the existing North-South grain and organized as a new ground for intervention.
Logistics + Staging
loading - sorting - storage
4224 ft²

Compact Family Living
2 bedroom structure + expandable unit
200-300 ft²/person

Community Programming
education - child care - professional skill building
2112 ft²

Agricultural Innovation + Greenhouse
2112 ft²

Manufacturing + Prototyping
1850 ft²

Worker Housing - Short Term
communal sleeping room
100 ft²/person

Office
130 ft²/person

Shared Workspace
25 ft²/person

Worker Housing - Long Term - Singles
private bedroom
275 ft²/person
LIVE-WORK MODULE

A series of module types was designed, according to program, and each with the flexibility to expand, shift, and group. The primary programmatic functions of these modules are living, gathering, working, and staging, with secondary programmatic uses of testing and prototyping for both manufacturing and agriculture.
However, these programmatic uses are designed to be flexible, and are not deterministic for the user or uses. Rather, they are designed to create a basic system for inhabitation and act as a platform for workers of all statuses to live, work, and improve their skills.
Finally, modules of both interior programmatic uses and outdoor/indoor flexible uses are deployed on the site in a structured but malleable fashion with three designations: solid, adaptable, and open. Groups of programs, clustered around infrastructure access are the first to be built in the intervention. Second are the surrounding adaptable spaces which can be inhabited, internalized, and programmed according to the needs of neighboring modules. Finally, the open spaces are designated for recreation, trucking, parking, or transit, resulting in a series of spaces of varying programs, inhabitants, and uses, that can be altered throughout their life span and used seasonally for inhabitation, logistics, manufacturing, and staging according to need.
Infrastructural Opportunism

Interior and Exterior combinations in Palmdale, CA
Identified infrastructural overlaps to re-focus the urban fabric of Palmdale, CA
63. Palmdale Overlap - Intervention 01
The selected infrastructural overlap and intervention at the confluence of highway, freight rail, and passenger connection to the north, south, and east.
66. Imaginary Glue - Zoning

67. Stitch Across the Grain

132

Laura Williams
Palmdale Base Grid
The organized ground plane for operation
in Palmdale, California
Laura Williams
Infrastructural Opportunism
70. Palmdale Aerial (prev. page)
Projective image of the first intervention in Palmdale, California

71. Infrastructural Overlap
Projective scenario of the form of infrastructural opportunism, with a focus on infrastructure, transportation, and logistics

72. Perspectives
Projective image of a live-community unit in Palmdale, California
Projective scenario of the form of infrastructural opportunism, typical of the living, working, and community spaces inside the initial intervention area.

Projective image of the first intervention in Palmdale, California towards the horizon, bridging and interacting with infrastructural lines.
75. Infrastructural Overlap
Projective scenario of the form of infrastructural opportunism, with a focus on ecological interaction and agricultural innovation.

76. Perspectives
Projective image of a live-work-transit unit in Palmdale, California overlooking common space and logistics infrastructure.
77. Projective Plan
The first intervention in Palmdale, California, anchored by points of infrastructural overlap

Laura Williams
78. Phasing & Flexibility
Series of phasing plans depicting the changing form of the intervention at Palmdale as the ground is prepared, the initial live-work unit is deployed, and that unit changes and grows over time
CONCLUSIONS

Forms of domesticity have not evolved to match the current de-humanization of the global economy and the deterioration of the 'American Dream' of owning a home. The idea that a person will live in single dwelling, or even a single city, for the entirety of their adult life is largely a misnomer, both unattainable and undesirable, and the increase in the informal and temporary sector of employment has not been addressed in the case of the Los Angeles hinterland. At its broadest, this thesis is an inquiry into the effects of infrastructure on living and working spaces: the suburban home, the mega-commuter, and the form of the expanding metropolis. It attempts to understand and rectify these contemporary conditions, not through segmentation, buffering, or zoning, but instead by seeking out overlaps between infrastructural lines and using those overlaps as access points to a new kind of urbanism: one that combines programs in a structured but flexible system.

This thesis proposes that to address the rapidly expanding edge of Los Angeles, one must operate on multiple scales, the territorial, the urban and the architectural, and through a series of lenses: on infrastructure, employment mobility, politics, demographics, and the global economic condition.

At the territorial scale, the proposal is centered around creating a subscription-based housing network between cities of the Los Angeles and San Francisco hinterlands from the high desert of the Antelope Valley to the fertile central valley. This network would allow workers to seek seasonal and temporary employment in a structured way, and within a system that does not rely on the automobile. By providing series of interventions at infrastructural intersections that focus on creating employment opportunities through logistics, dignified living conditions, and the ability to work year-round in a range of sectors of the same supply chain, a greater portion of the population of California can be brought into the work force and given the ability to both work and live with their families.
As it currently exists, the global economy and logistics supply chain is completely invisible to most Americans. While this invisibility may not be perceived as an immediate problem, an issue arises when cities expand thoughtlessly and endlessly towards the open horizon taking over fertile and ecologically sensitive land mile by mile in the Jeffersonian grid. This is especially relevant in California today, where nearly all prime farmland is at risk for development, and there is concurrently the worst drought seen in recent history. The urban proposal for this project takes the city of Palmdale, California, just north of the Los Angeles, as a testing ground for a strategy of city-wide identification of infrastructure and ecology lines, and focusing of development at the intersections of those lines. This strategy, what I am terming infrastructural opportunism, is a method by which cities can grow with both the large and the small scale in mind: by making the logistics supply chain visible, creating employment opportunities where infrastructural types overlap, conserving sensitive ecological areas, and providing an alternative to the unfocused sprawl that is steadily creeping up over the San Gabriel mountains from the Los Angeles basin.

Infrastructural opportunism at the urban scale is complemented by an architectural strategy that responds to the componentization and commodification of labor and lack of form that addresses temporal living and working spaces in California. This is not a dystopian formalization, but rather one that seeks to return dignity and humanity to a worker without a sense of place or permanent status. The architectural form is composed of regular modules with program-specific wrappers that can house any range of activities from living to working, logistics staging, and gardening. The modular wrapped form is used to address flexibility in a structured way, and to allow for the seasonal fluctuations of working residents, flows of goods, and the need to expand or contract occupied space over ones lifetime. This architectural proposition for Palmdale is a reaction against the static forms of the suburban subdivision and centralized transit oriented development district, and attempts to address the contemporary living condition of many Californians in the inland territories.
The strategy of infrastructural opportunism in the high desert triangle seeks to bridge the scalar gap between humans and logistics both physically and psychologically. In turn, this thesis postulates that by bridging that gap, a new form of urbanism and architecture can exist where infrastructure is not seen as an impediment to development or an instigator of sprawl, but rather an opportunity for creating flexible and dignified living spaces. The pairing of living and working already occurs in the white collar sector, with the rise of work from home options and co-working spaces, but a system has yet to be designed for this overlap at the logistics and blue collar scale. This thesis is in service of empowering workers of all statuses to be employed year round, have flexible and modern living spaces for themselves and their families, and to live with others of their own but also outside of their perceived social status. The intervention at Palmdale is an equalizer, putting logistics, humans, and ecology on the same platform, and designing an open system within which those players can interact and recognize the value in cohabitation.
BIBLIOGRAPHY


16 Ibid, 105.

17 Ibid, 105.

18 Ibid, 142.


20 Ibid, 134.

FIGURES

01 Palmdale, California: Topographic Survey, 1937
University of Texas at Austin, University of Texas Libraries, Perr-Castaneda Library

02. Los Angeles at Three Scales: Metropolitan Area, County, City (from top)
Line data interpreted from U.S. Census Tigerline Data, drawn by Laura Williams

03. California Climate: Economy + Demographics
Data from Social Explorer, U.S. Census Data, interpreted by Laura Williams;
Photographs by Mike Keller

04. Edge City, Los Angeles (prev. page): Mapping by Joel Garreau of the edge cities of Los Angeles, 1992

05. ‘Urban’ Los Angeles: Blanket of sprawl with vertical punctures
http://www.panoramio.com/photo/8702387

06. Size and Scope of Los Angeles: The Los Angeles City boundaries, urban boundaries, county lines, and metropolitan limits, as compared to the city of New York at the same scale
Drawn by Laura Williams

07. Ticky Tacky Houses: Identical Homes typical of the suburban subdivision
http://www.smartgrowthamerica.org/2014/03/18/a-new-measure-of-sprawl-in-america/

08. Non-specific Development: A subdivision in California inhabits a hillside by flat grading and paving to create the same pattern as typical of other subdivisions

09. Global Trade: California Imports and Exports by destination and amount, current and future
Drawn by Laura Williams

10. Red & Blue: Political threshold between the liberal majority of the coastal metropolis and conservative majority of the inland territories at the border of the Los Angeles Basin
Base Image, Google Earth, Drawn by Laura Williams

11. The Corporate Campus: Pastoral depiction of the workplace

12. Traditional Employment Gradient: Traditionally, the majority of jobs would fall within 10 miles of the designated urban core
Drawn by Laura Williams
13. The New Normal: Only 32% of jobs fall within the 10 miles radius of the core, with 62% lying between 10 and 50 miles from downtown Los Angeles
Drawn by Laura Williams

14. Polycentric Employment Gradient: Secondary employment clusters have emerged in Los Angeles
Drawn by Laura Williams

15. Polycentric Employment Gradient: Secondary employment clusters become more formalized as employment centers
Drawn by Laura Williams

16. Polycentric Employment: Employment is clustered far from the designated downtown core of Los Angeles
Drawn by Laura Williams

17. The California Commute: Los Angeles has some of the longest commute times in the nation, not only for those who work in downtown LA but also in polycentric employment clusters
Base map interpreted from Social Explorer, drawn by Laura Williams

18. The Expanded Edge: Polycentric employment, long commute times, and the expansive territory that lies within the LA metropolitan area allow for a bloated peripheral zone between urban and hinterland
Drawn by Laura Williams

19. Infrastructural Overlap: Santa Clarita freeway exchange after the 1994 Northridge Earthquake

20. The High Desert Triangle: Territorial connections of infrastructure between city nodes
Base Image, Google Earth, Drawn by Laura Williams

21. Southern California Trucking: Trucking vehicle congestion around the Los Angeles Basin
Drawn by Laura Williams

22. High Desert Triangle Roads: Identifying the Road Network between back of house cities
Drawn by Laura Williams

23. High Speed Rail Route: Proposed route and stops of the southern portion of the future California High Speed Rail
Drawn by Laura Williams

24. High Speed Rail Phasing: Proposed phasing of the California High speed rail project in southern California
Drawn by Laura Williams
25. High Desert Triangle Infrastructure: Overlaid road and rail networks create the figure of the High Desert Triangle, which spans from Palmdale to Fresno and Victorville, and beyond to Los Angeles, San Francisco, and Las Vegas.
Drawn by Laura Williams

26. Palmdale in the Triangle: Selected cities of the high desert triangle, centered around Palmdale as a logistics attraction point.
Drawn by Laura Williams

27. High Desert Triangle Region: Palmdale sits at the intersection of three distinct but interconnected regions.
Drawn by Laura Williams

28. Perceived Region: The Central Valley, High Desert, and Los Angeles basin are re-interpreted for their perceived roles in the logistics supply chain.
Drawn by Laura Williams

29. The High Desert Triangle
Drawn by Laura Williams


32. California High Speed Rail Construction: Workers construct segments of the California high speed rail in the central valley.


33. Logistics Warehouse: Workers pick and sort products in an Amazon distribution facility.

34. Occupational Variety: Map of California depicting the variety of industrial and seasonal occupations based on census block.

35. Tenureship: Map of California depicting proportion of tenant and owner-occupied property to show a statewide scale of permanence.

37. Bakersfield, California: Occupational composition of Bakersfield, CA in the high desert triangle
Census Data, 2010. Drawn by Laura Williams

38. Victorville, California: Occupational composition of Victorville, CA in the high desert triangle
Census Data, 2010. Drawn by Laura Williams

39. Palmdale, California: Occupational composition of Victorville, CA in the high desert triangle
Census Data, 2010. Drawn by Laura Williams

40. Levittown: A family poses for a photo outside their new pre-fabricated suburban home
http://social.rollins.edu/wpsites/thirdsight/2013/11/15/the-racial-make-up-of-suburbanization/

41. Levittown Subdivision: Levittown, NY from above, one of the first suburban subdivisions in the United States
http://social.rollins.edu/wpsites/thirdsight/2013/11/15/the-racial-make-up-of-suburbanization/

42. Free Time Node: Archigram project for the plug-in community of the future
https://s-media-cache-ak0.pinimg.com/736x/1f/e6/3c/1fe63c5abcd6dc4a5c51a862c3433c2.jpg

43. Time-Based Occupation: Calendar-based mapping of the spatial occupations of industries and growing cycles over one calendar year
Drawn by Laura Williams

44. Time-Based Opportunism: Viewing spatial occupation over a single month reveals possibilities for space sharing
Drawn by Laura Williams

45. Spatial Exchange: Industries share and exchange spaces, allowing flux according to cycles of goods, foods, and people
Drawn by Laura Williams

46. Typologies of Permanence: Typical housing typologies of Palmdale and the high desert triangle region are mapped over a scale of permanence
Drawn by Laura Williams

47. Housing Exchange: Housing typologies are shared between multiple user groups, and distilled into square footages and occupancy

48. Palmdale, California: Palmdale, California from Lake Palmdale at the foothills of the San Gabriel mountains
http://www.palmdalecam.com

Infrastructural Opportunism
All of the figures that follow are original work drawn by Laura Williams

49. Basic Live-Work Module: Based on the US DOT standards for storing unknown interior contents

50. Loading Docks - 3: What fits?

51. Storage Pallets - 210: What fits?

52. Beds - 4-5: What fits?

53. Palmdale, California: Map of Palmdale and its surrounding territories, Lancaster and Mojave, and topography of the San Gabriel Mountains to the south

54. Palmdale, California: Zoning map of Palmdale, California up to its city limits

55. Palmdale, California: North-South Infrastructure grain

56. Palmdale, California: Projective dystopia-extrapolation of suburban and single use zoning policies if Palmdale develops without intervention

57. Infrastructural Opportunities: Identification of infrastructural overlaps with development potential


59. Live-Work Flexibility: Each module is distinct and programmed, but can be combined, deleted, externalized, or simplified to its structure

60. Infrastructural Opportunism: Spatial organization derived from considering infrastructural opportunities in Palmdale, CA

61. Infrastructural Opportunism: Interior and Exterior program combinations in Palmdale, CA

62. Infrastructural Overlaps = Opportunities: Identified infrastructural overlaps to re-focus the urban fabric of Palmdale, CA

63. Palmdale Overlap - Intervention 01: The selected infrastructural overlap and intervention at the confluence of highway, freight rail, and passenger connection to to the north, south, and east

64-68. Series of phasing and intervention strategies for the initial intervention site in Palmdale, California

64. Infrastructural Opportunities

65. Messy Glue
66. Imaginary Glue - Zoning
67. Stitch Across the Grain
68. Organize Territory
69. Palmdale Base Grid: The organized ground plane for operation in Palmdale, California
70. Palmdale Aerial: Projective image of the first intervention in Palmdale, California
71. Infrastructural Overlap: Projective scenario of the form of infrastructural opportunism, with a focus on infrastructure, transporation, and logistics
72. Perspectives: Projective Image of a live-community unit in Palmdale, California
73. Infrastructural Overlap: Projective scenario of the form of infrastructural opportunism, typical of the living, working, and community spaces inside the initial intervention area
74. Palmdale Aerial: Projective image of the first intervention in Palmdale, California towards the horizon, bridging and interacting with infrastructural lines
75. Infrastructural Overlap: Projective scenario of the form of infrastructural opportunism, with a focus on ecological interaction and agricultural innovation
76. Perspectives: Projective Image of a live-work-transit unit in Palmdale, California overlooking common space and logistics infrastructure
77. Projective Plan: The first intervention in Palmdale, California, anchored by points of infrastructural overlap
78. Phasing & Flexibility: Series of phasing plans depicting the changing form of the intervention at Palmdale as the ground is prepared, the initial live-work unit is deployed, and that unit changes and grows over time
79-80. Live-Work-Transit-Transfer (pp. 155-157): Plan scenarios of the intervention at Palmdale in its 2050 projected state, with the ability to fluctuate and change over time