The Manchester Project

The Next Generation Mixed-Use (Residential, Commercial, Industrial) Urban District

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Keywords:
Sustainability transitions, low-carbon cities, socio-industrial ecology, complex systems, urban design, urban planning, mixed use, backcasting.

Research Questions:
What is the spatial manifestation of a transition to a low-carbon, sustainable mixed use (residential, commercial, industrial) urban district?
What are the key social, cultural, regulatory, economic and technological impediments to transition to a post-carbon sustainable city design?
What practical strategies can be employed to overcome these impediments?
What are potential sustainability transitions pathways?

Theory/Conceptual Framework
Cities are vibrant complex socio-industrial ecologies of reproduction, production and consumption. This paper presents a conceptual design informed by theory and practice of complex systems and industrial ecology.

Urban design methodologies (e.g. New Urbanism and Sustainable Cities) have shaped leading edge design in North America and Europe. These have resulted in recognized successes in The Pearl District, Portland; Olympic Village – East False Creek, Vancouver; Malmo, Sweden; Arabianranta, Helsinki; Vauban, Germany, and Hammerby Sjostad, Stockholm. In each of these cases a new city district was built on a derelict industrial site.

Critiques of these developments, especially those in Vancouver are two-fold. First, these developments quickly become very exclusive, pricing all but the most wealthy households and foreign investors out of the market. Second, industrial land conversion displaces industrial and manufacturing jobs – a kind of industrial hollowing-out of the city.

This paper presents a conceptual framework of a large city-district design concept that proposes a Next Generation Post-Carbon Sustainable Urban District with the recognized attributes of existing developments but also addresses the issue of affordability, blue collar jobs and a sustainable and diversified industrial and manufacturing base.

Methods

This project uses backcasting design methodology to produce a spatial design that responds to design parameters derived from the conceptual literature on urban design and planning, industrial ecology and complexity; consideration of international best practices; techno-ecological targets (e.g. zero-waste, 100% renewable energy powered, human-powered and mass-transit mobility, affordable, mixed use and Kyoto carbon reduction), and City of Calgary policy including the Municipal Development Plan, and the Ecological Footprint Reduction Strategy.

The design evolved through a series of design projects conducted with undergraduate students in the urban studies program and graduate students in the Faculty of Environmental Design and the current Manchester Project supported by the University of Calgary's Institute for Sustainable Energy, Environment and Economy and in collaboration with city planners and transportation engineers.

The Manchester Project is unique in several ways. Calgary, one of the fastest growing cities in NA, is a predominantly low-density, market-dominated development regime, The City anticipates a doubling of population in the next 50 years. Half of the additional 1.2 million people are forecast to be accommodated by infilling within the existing city boundaries. The project site is located in an inner city industrial district – five square kilometres of low intensity, light-industrial, warehousing, retail, and commercial and office professional activity. The cities Light Rail Transit runs through the middle of the district.

Results

The Manchester Project imagines the transformation and intensification to a mixed-use residential, commercial and industrial district that accommodates 100,000 new residents and 35,000 jobs.

The energy system is based on the maximum capture of solar energy falling on the district and its integration into a distributed and district energy system. The water and waste infrastructure is based on maximum capture and recycling of rainwater augmented by regional water supply drawn from the Bow and Elbow Rivers.

Affordability will be achieved by the leveraging of city-owned land to support non-market or alternative market housing including land trusts, housing cooperatives and co-housing.

The backbone of the transportation system will be an integrated walking/biking, network supported by a streetcar grid. The industrial base is conceived as an industrial ecology built around strategic existing industries and the recruitment of 'anchor tenants; a periphery logistics centre to manage fixed infrastructure and material flow into and out of the district with the streetcar grid doubling as a material movement system within the district.

Conclusions
The project identifies the key barriers and challenges to the realization of such a district with the goal of engaging stakeholders in creating scenarios of how the district could evolve over a 50-year time frame; identifying solutions to overcome the key barriers. The barriers are in part technological (the design of industrial ecological systems is in its infancy); regulatory (building codes and land use practice and regulations) and economic (fragmented land ownership and access to capital for infrastructure investment) and cultural (North American political culture that favours private accumulation and consumption over public and collective investment.

The project establishes a vision and image of a preferred future for Manchester, alternative scenarios of how to overcome foreseeable barriers in getting from here to there and value propositions to citizens that would gain support and buy-in for the vision.

Stakeholder Identified Barriers to Achieving Transition

1.Formation of a Project Champion/Transition Group.
2. Marketing/Branding. Why would people be attracted to this district?
3. Stigma of an Industrial Area.
4.Attitudes: Car dependence and lack of carbon urgency
5. 50 Year time horizon too difficult to imagine
6. The need for a solid business case for development of the district
7. Risk and Challenge of Contaminated Sites
8. Land Fragmentation – multiple owners
9. Financing
10. Connectivity with the larger City

Key References

Special Issue Journal of Industrial Ecology (2012) Sustainable Urban Systems, Volume 16, Issue 6.
Special Issue Journal of Industrial Ecology, (2009) Industrial Ecology and Complexity Vol 13, Issue 2.

Leigh, N. and N. Z. Hoelzel (2012). "Smart Growth's Blind Side." Journal of the American Planning Association 78(1): 87-103.

Condon, Patrick (2010) Seven rules for sustainable communities: design strategies for a post-carbon world, Washington DC, Island Press.

Gehl, J. (2010). Cities for people. Washington, DC, Island Press.

Geels, F. (2011) The multi-level perspective on sustainability transitions: Responses to seven criticisms. Environmental Innovations and Societal Transitions 1(1): 24-40.

Special Issue Progress in Industrial Ecology, An International Journal (2009) Strategic Sustainable Development and Real Change, Volume 6, No. 3.

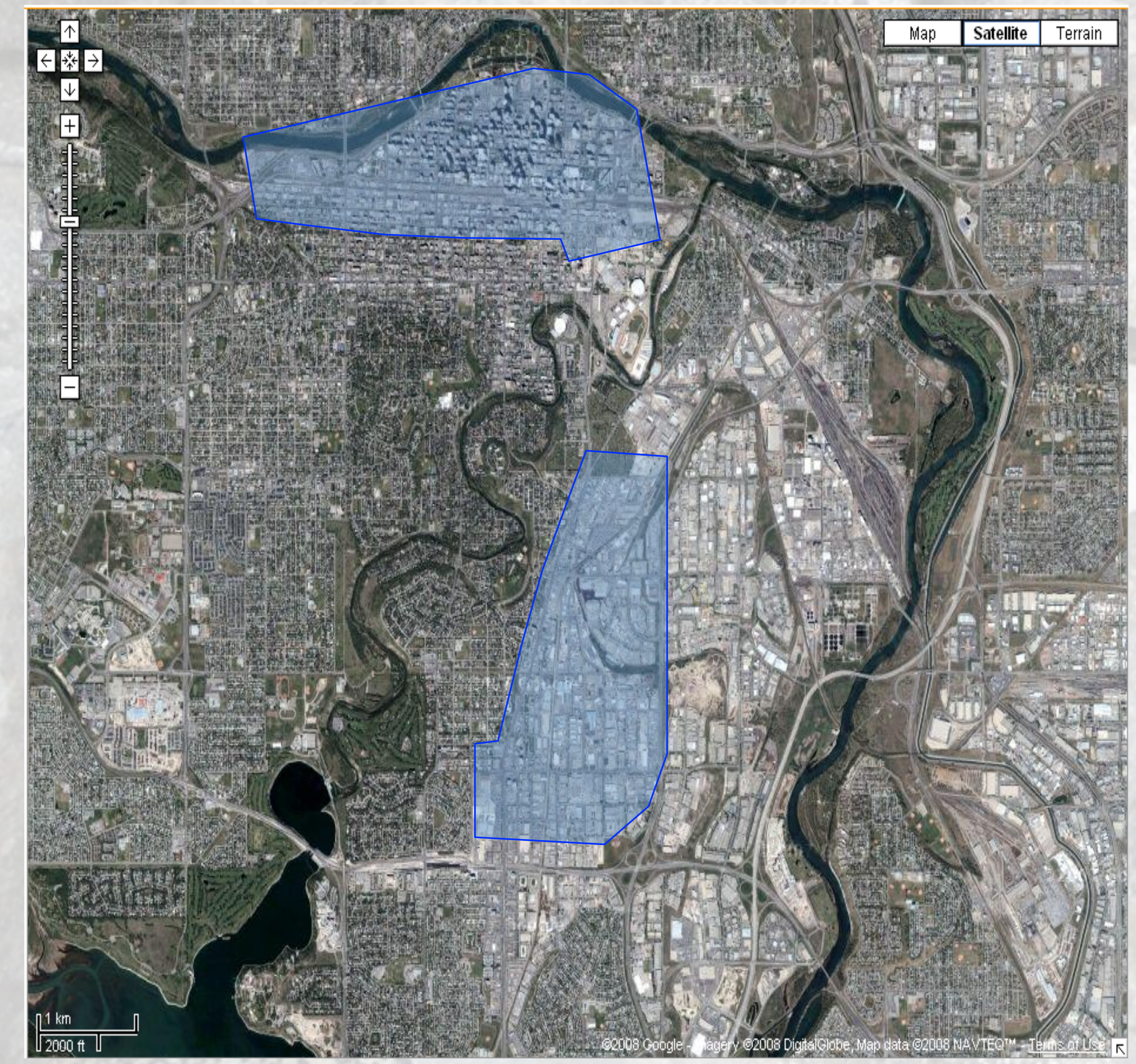
Wolf, Anna; Mats Eklund and Mats Soderstrom (2005) Towards cooperation in industrial symbiosis: considering the importance of the human dimension, Progress in Industrial Ecology, Volume 2, No. 2 pp. 185-199.

Breton, Wendy, Tracy Casavant and Ray Cote (2004) Small-scale eco-industrial networking: inter-organizational collaboration to yield system wide benefits in communities. Progress in Industrial Ecology, Volume 1, No. 4, pp 432-453.

McDonough William and Michael Braungart (2002) Cradle to Cradle: Remaking the Way We Make Things, North Point Press

Calgary City Centre and The Manchester District

Source: Google Earth

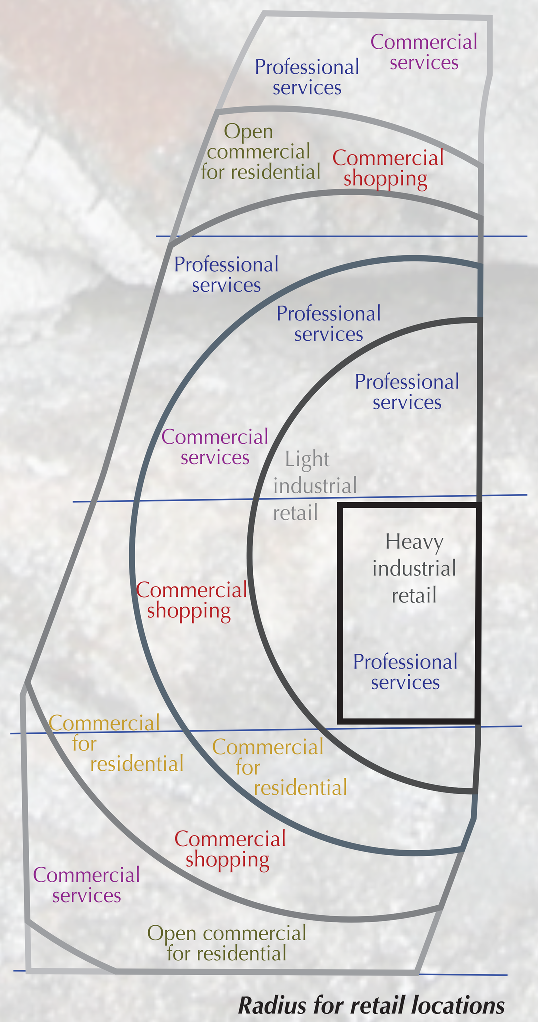


The Light Rail and Streetcar Network

Source: Rob Birch, Student EVDS 683.91, Sustainable Design

The Mixed Use Radial Transition

Source: Ana Karinna Hidalgo, Student EVDS 683.91, Sustainable Design



Project Objectives

Provide housing for 100,000 people and create 30,000-40,000 jobs within the Manchester District in Calgary. This can be done through any combination of housing types and land uses. Housing may make up no more than 50% of the total area of Manchester.

Manchester:

- Located in SE Inner Calgary south of downtown, between Macleod Trail and Blackfoot Trail
- Primarily light industrial, manufacturing and commercial-uses are changing to office mid and high rises
- Contains South LRT line and 3 LRT stations: Chinook Station, 39 Ave Station and a proposed 51 Ave Station
- CP Rail Line runs through site beside LRT and in the east

Population and Job Projections

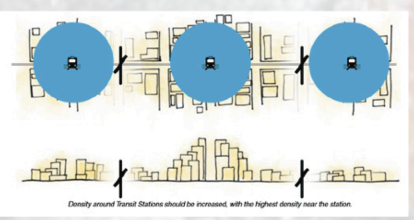
Total Population: 100,500 Total Jobs: 35,000

Sector	Size (ha)	Density	Population
Chinook TOD	50	575 people/ ha	28,750
51 Ave TOD	60	575 people/ ha	34,500
39 Ave TOD	40	575 people/ ha	23,000
58 Ave Commercial Corridor	20	200 people/ ha	8,000
East Manchester Centre	40	300 people/ ha	6,000
Total	210	475 people/ ha	100,250

Project Vision

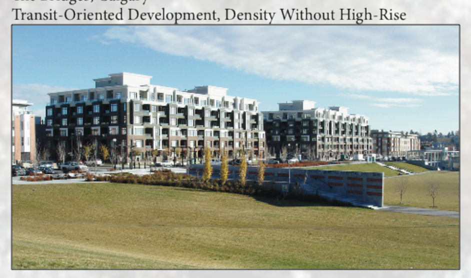
Create a vibrant, transit-oriented mixed use district that can provide a diversity of housing and employment in a dense, walkable and flexible manner while utilizing the existing land uses and infrastructure.

- Design the district so that at least 80% of all new residential population is within 600 meters (a 5-10 minute walk) of an LRT station
- Promote a mixof transit-supportive uses throughout the district including residential, office and retail
- Follow TOD Policy Guidelines by increasing density around LRT stations while also transitioning to adjacent low-density uses
- Provide a mix of housing types wherever possible, and plan for affordable housing



Precedents

The Bridges, Calgary
Transit-Oriented Development, Density Without High-Rise



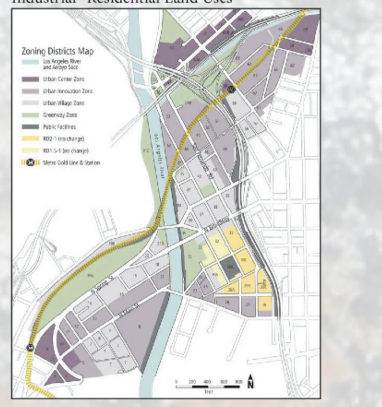
Ramsay Exchange, Calgary
Industrial Redevelopment, Mixed Use

Urban Boulevard, Los Angeles

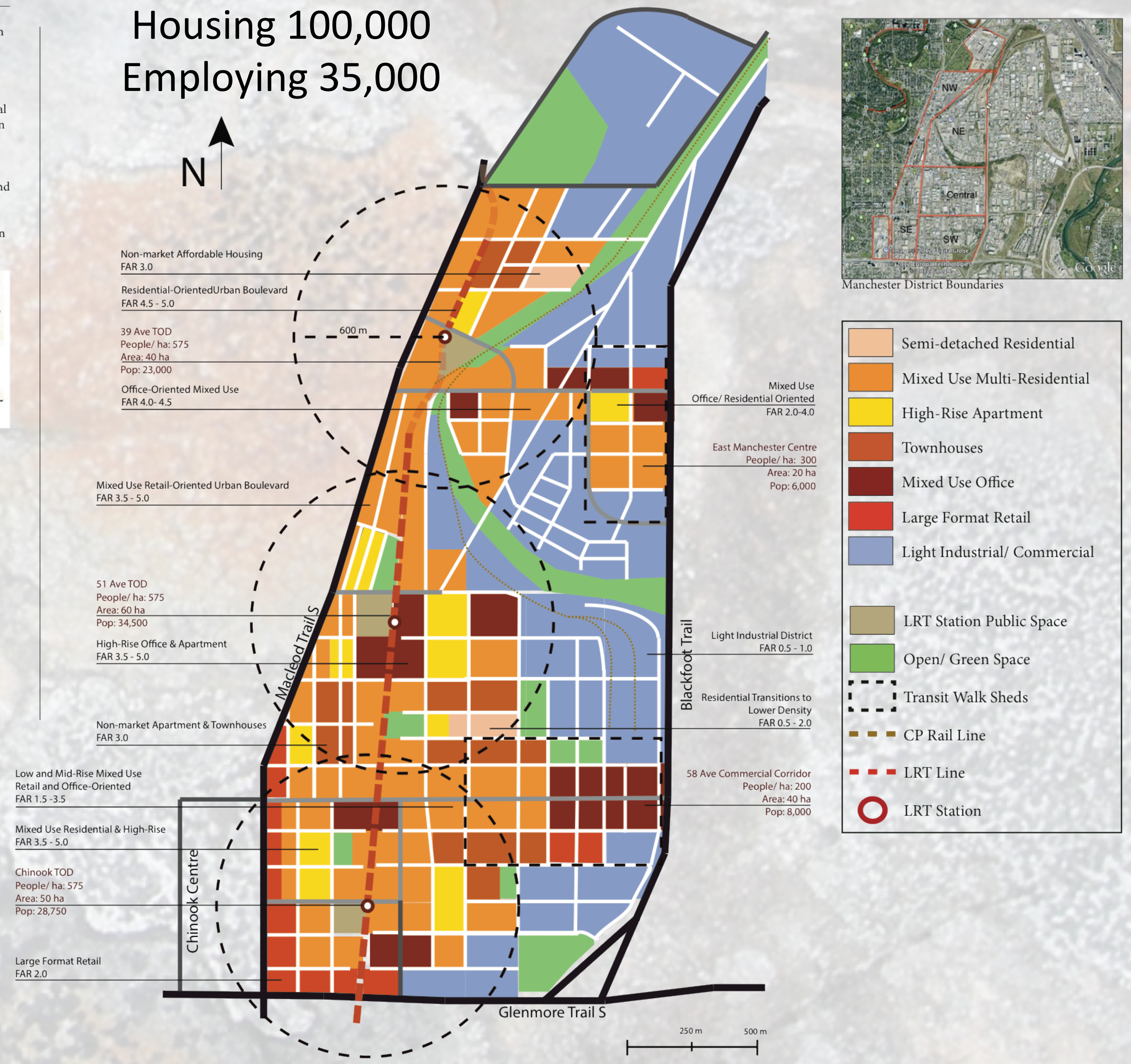
Whalley Boulevard, Surrey

CityVista, Washington D.C.

Cornfield Arroyo Seco, L.A.
Industrial - Residential Land Uses



Housing 100,000 Employing 35,000



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