城市增长管理和城市交通规划:
美国波特兰市经验的启示

Urban Growth Management and Transportation Planning
-- Implications of Portland's Experience to Chinese Cities

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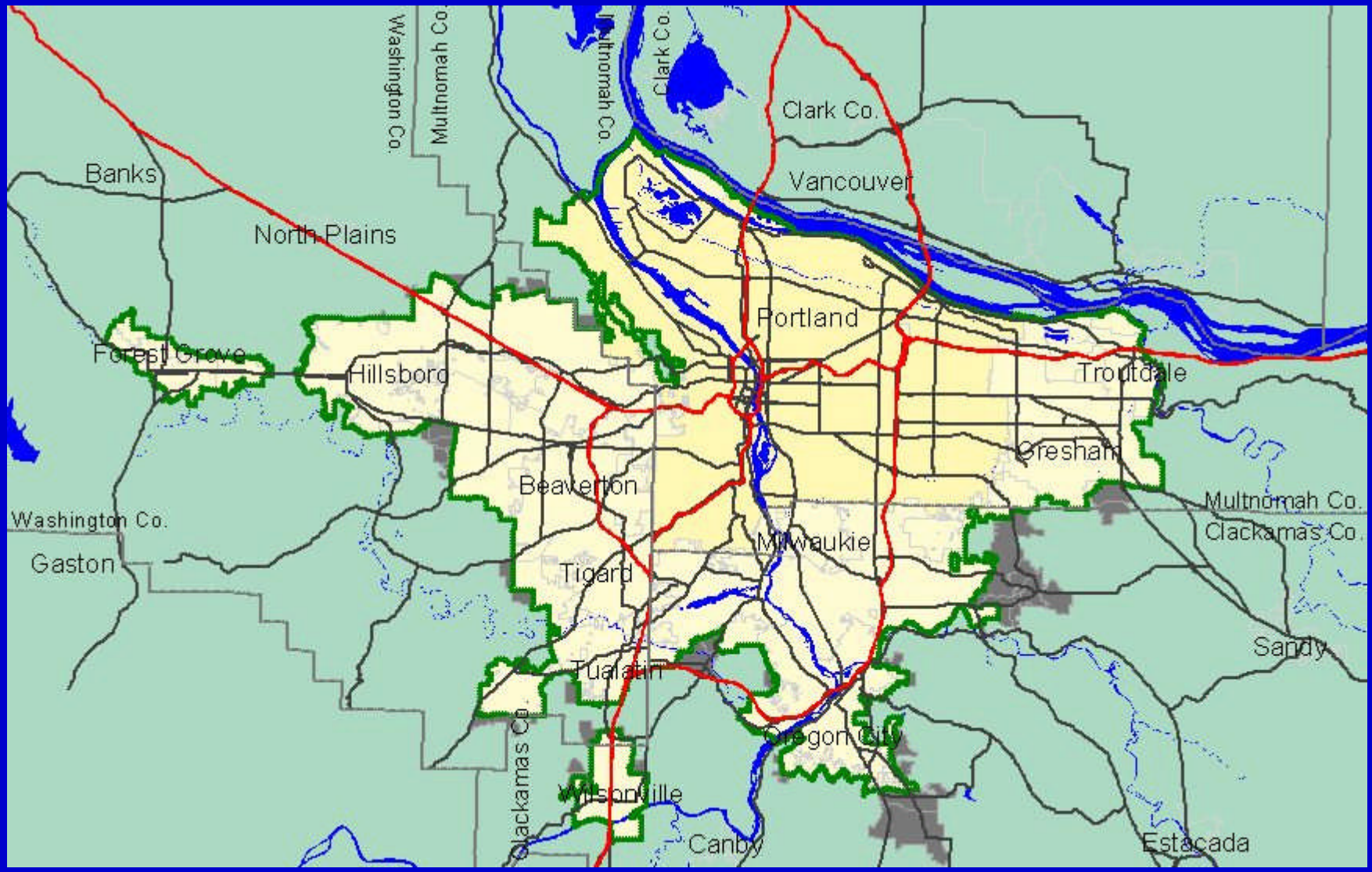
汇报大纲 Outline

- 什么是有控制的城市增长？What is Managed Growth in Portland, OR?
- 在城市增长管理政策引导下城市交通政策和规划 Transportation policy and planning under urban growth management policy
- 城市交通政策和规划的影响 The impacts
  - 对交通投资和交通堵塞的影响, Impacts on transportation investment and congestion?
  - 对出行者交通行为的影响, Impacts on travel behavior
  - 对用地和房价的影响， Impacts on urban form, land use pattern and housing pricing，
- 波特兰市在这方面的经验对中国城市又有什么借鉴意义? What can be learned from Portland’s experience?

什么是波特兰有控制的城市增长？
What is Managed Growth in Portland, OR?

- 用“城市增长边界”的方式来控制城市增长。
  Managing urban growth by using Urban Growth Boundary (UGB).
- 加强高密度和旧城区可利用空地的发展。
  Demand high density and in-fill land use development.
- 以公共交通为主、高速公路发展为辅的交通发展战略。 Favor transit investment over highway expansion.

什么是波特兰的“城市增长边界”
What is Portland’s Urban Growth Boundary?



什么是波特兰的“城市增长边界”
What is Portland’s Urban Growth Boundary?

促成波特兰市城市增长控制的主要因素?
What contributed to Portland's urban growth management program

- 俄勒冈州的土地利用规划系统
  Oregon land use planning system
  - LCDC – 土地保护和发展委员会
    Land Conservation and Development Commission
  - UGB –城市增长边界
    Urban Growth Boundary
  - TPR – 交通规划条例
    Transportation Planning Rule
- 波特兰地区各城市及部门间的协调和整合
  Strong political coalition in Portland Region
  - Metro – 地区政府和大都市规划组织，regional government and MPO
  - 1000 Friends of Oregon -俄勒冈州的土地利用规划系统的守护者
    the guardian of Oregon LU planning system

Metro – 一个区域性的政府机构
Metro – A Regional Government

- 包含三郡的城市区域
  Urban portions of 3 counties
- 460平方英里，130万人口，
  460 sq mi. （1191 sq. KM）, 1.3 million people
- 24 座城市，　24 cities
- 有执行政策的责任和征税权
  Operational duties and taxing authority
- 有选定的议员(一般是7人），执行人员和审计人员
  Elected councilors (7), executive, and auditor

俄勒冈的1000个朋友组织
1000 Friends of Oregon

- 由前州长McCall 在1975年时成立
  Created by former Gov. McCall in 1975
- “致力于将好的土地利用规划变成现实”
  “A powerful tool to make good land use planning a reality”
- 使用法律诉讼作为主要的谈判筹码
  Uses threat of lawsuits as primary bargaining chip
- 1987的法律诉讼使交通规划法规开始出现并发展
  1987 lawsuit initiated development of Transportation Planning Rule
- LUTRAQ(土地利用，交通和空气质量）计划 的研究
  LUTRAQ Study

交通规划法规
Transportation Planning Rule (TPR)

- 作为1974年交通发展目标的加强版在1999年被正式采纳

  Adopted 1991 as a stronger version of former Transportation Goal (1974)
- 法规强调减少对汽车的依赖

  Rule emphasizes reduction in reliance on autos
  - 在未来20年内减少20%的总行车历程

    decrease in VMT within 20 years
  - 在未来30年内减少25%的总行车历程

    additional 5% reduction in VMT within 30 years
  - 减少10%的停车需求

    10% decrease in parking spaces

2040年增长理念 2040 Growth Concept

- 包括土地和交通政策以鼓励 Includes land-use and transportation policies that encourage.
  - 有效利用土地 efficient use of land
  - 保护耕地和自然资源 protection of farmland and natural areas
  - 平衡发展交通系统 a balanced transportation system
  - 保证经济健康发展 a healthy economy
  - 提供多种多样的住宅 diverse housing options.

2040年增长理念下的交通规划
Transportation Planning

- 投资重点：公交，尤其是轨道交通，人行道，自行车道，以及街道设计 Investment priorities: transit, particularly rail transit, pedestrian, bicycle and street design
- 限制建设新道路，重点放在利用智能交通技术提高现有道路管理效率 Cap highway construction but focus on the efficient management of the overall system using Intelligent Transportation Systems.
- 采用目标导向性规划方式 Goal-oriented planning approach – set up a future goal and identify ways to achieve it.
- 从80年代起就没有大的道路建设 No major highway construction since 1980s.

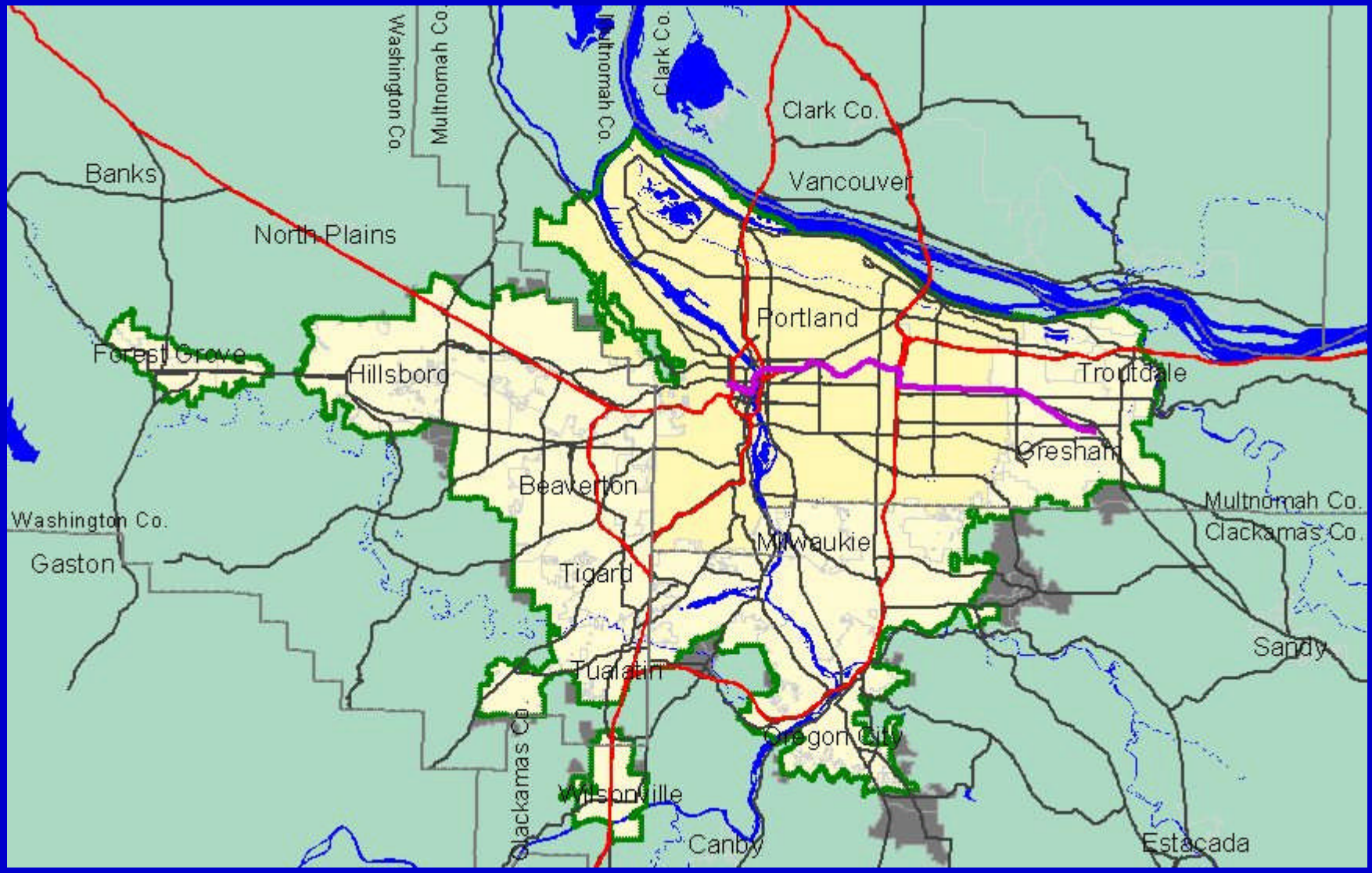
自行车网络规划 Bike Plan

- 建设安全而便捷的自行车道网， provide a regional network of safe and convenient bikeways, including bike lanes, multi-use paths and bicycle boulevards;
- 增加自行车出行率 increase the number of bicycle trips throughout the region;
- 在任何交通项目规划建设中要保障自行车使用者的权益 ensure that transportation projects use appropriate design guidelines to accommodate bicyclists;
- 鼓励自行车使用者和开车者共享道路 encourage bicyclists and motorists to share the road safely.

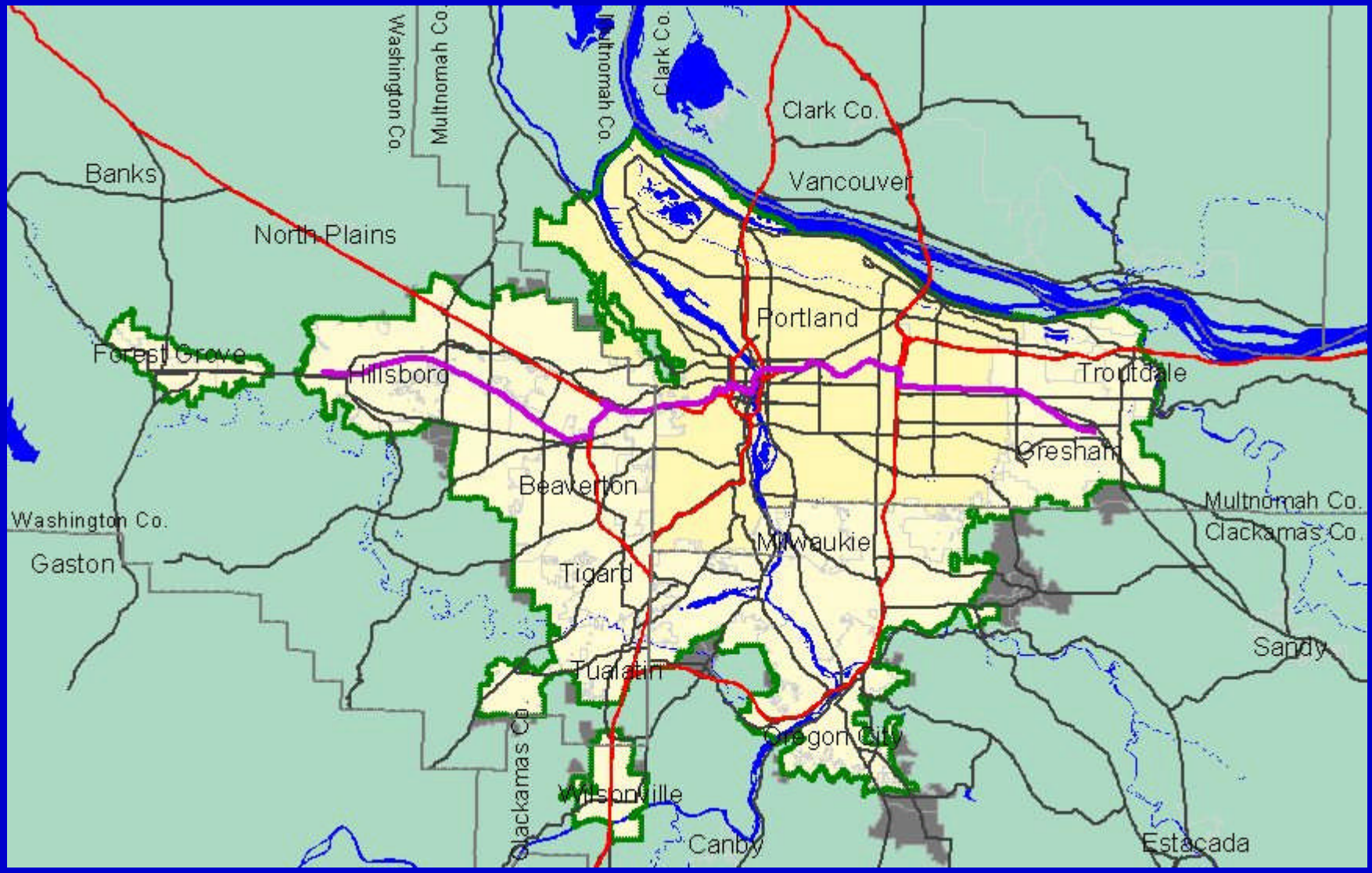
步行道路规划
Planning for Pedestrians

- 政策：提供安全、方便、连续的步行环境
  Policy focus: to make walking safe, convenient and accessible to all and addresses the need for continuous sidewalks and safe pedestrian crossings.
- 重点：改善步行环境，提供连续的步行网络
  Priority: improving the walking environment to provide safe, continuous and direct connections between destinations.
- 目标：提高短途步行的出行比例，提高到公交站网的可达性和安全性 **Goal**: to increase the number of people who walk for short trips and to improve pedestrian safety and access to transit.

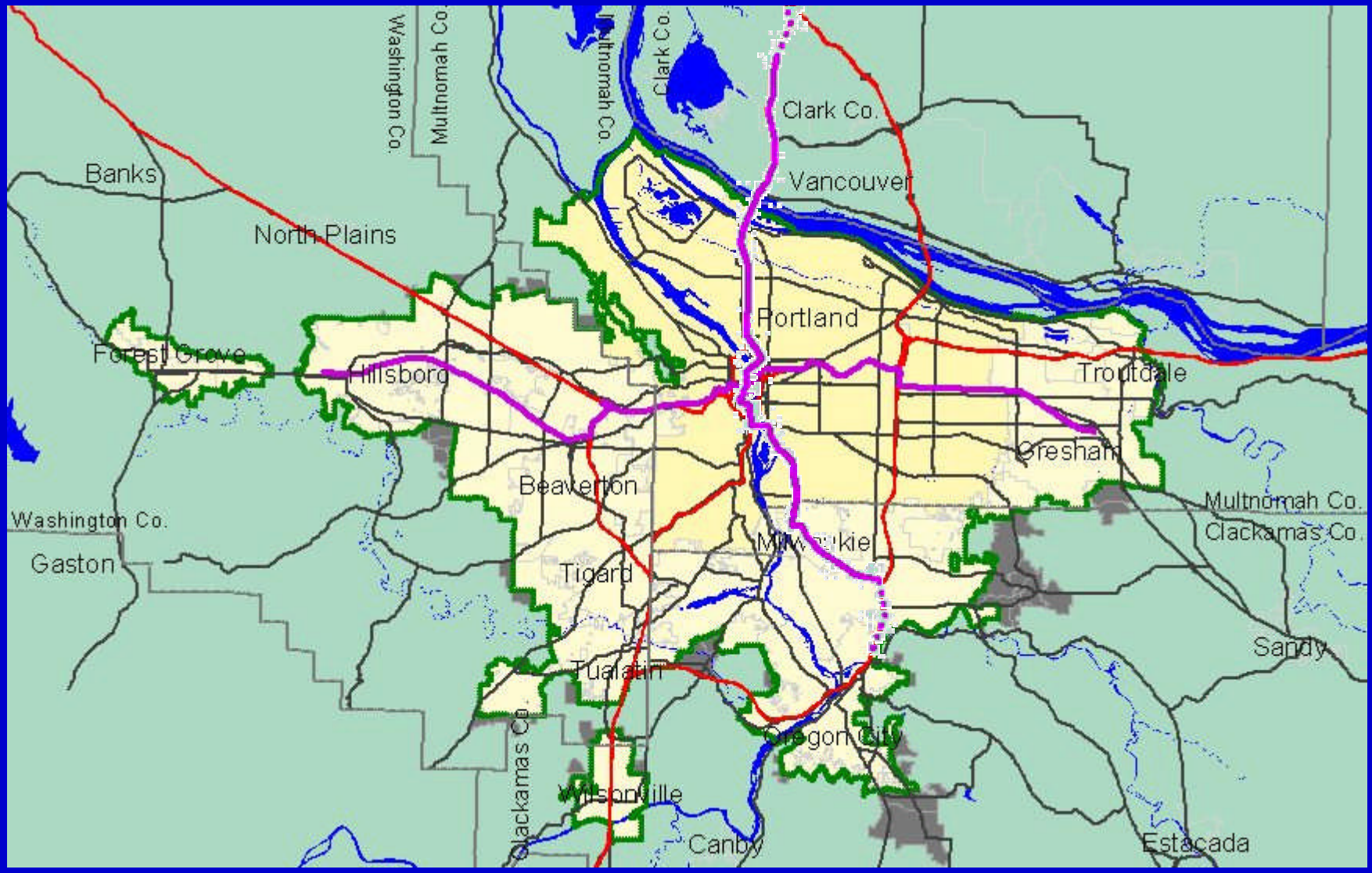
东区轻轨路线 Eastside Light Rail Line



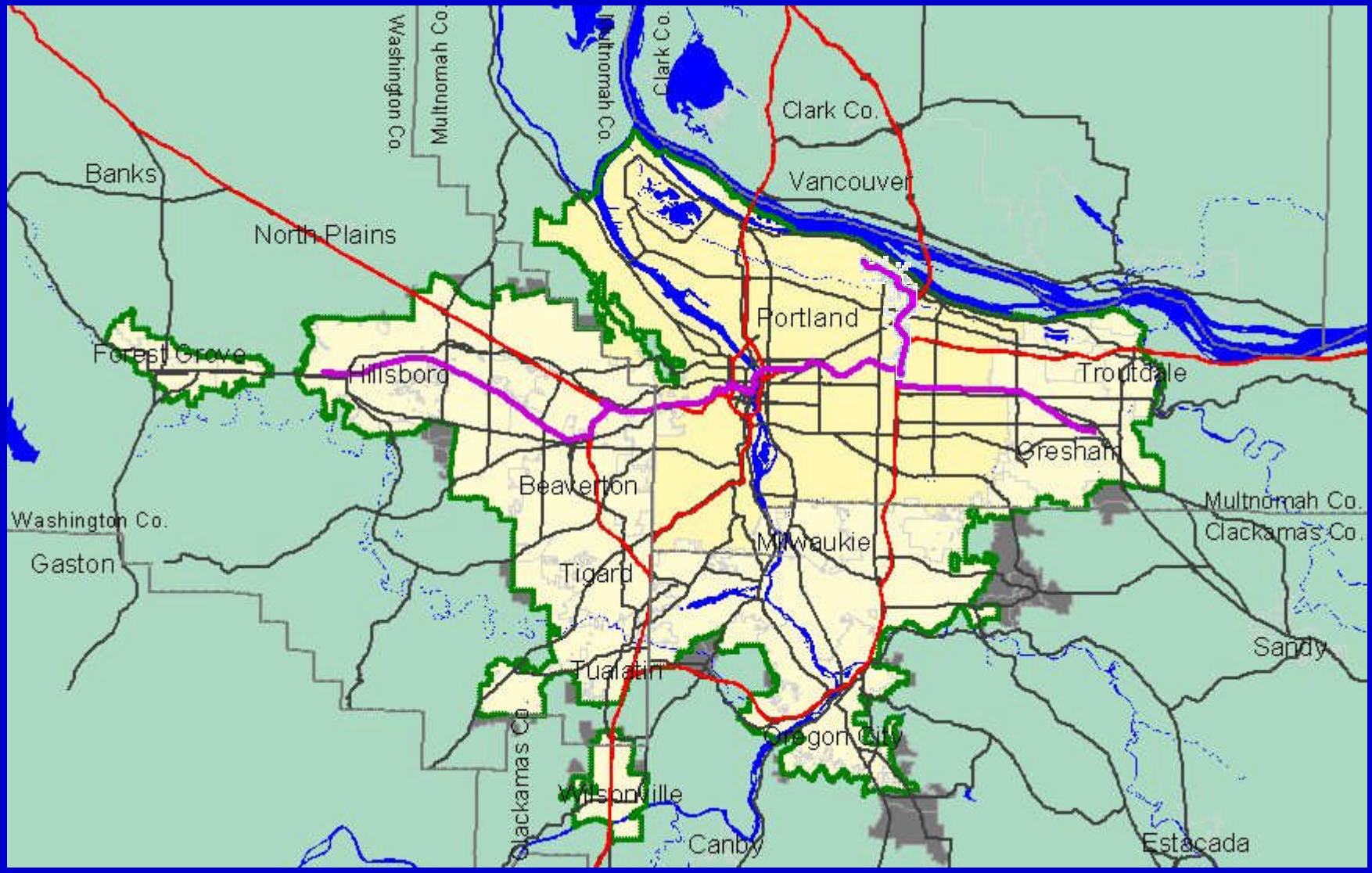
西区轻轨路线 Westside Light Rail Line



南北向轻轨议案 North-south LRT (proposed)



机场轻轨 Airport LRT



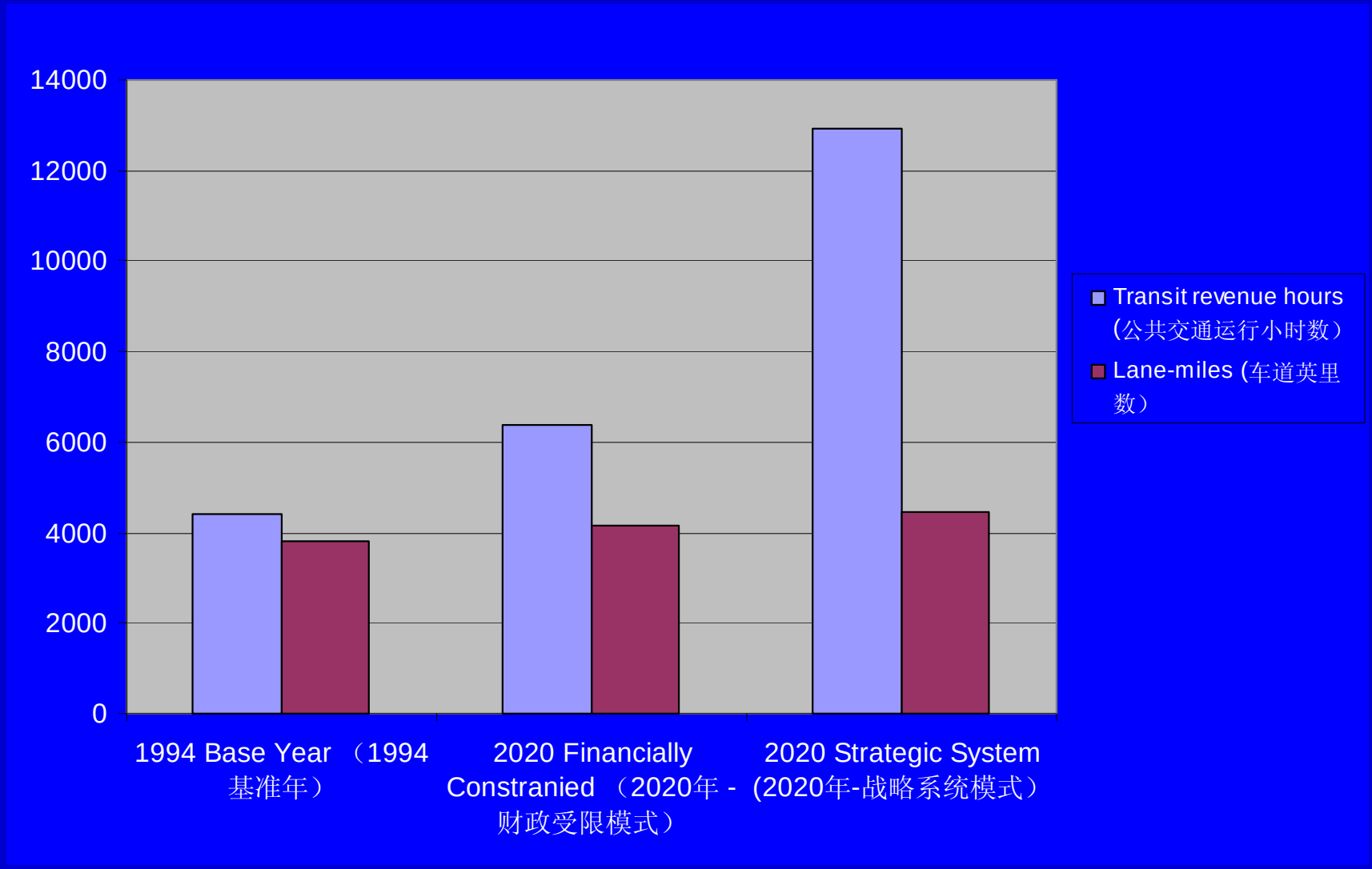
2004年区域框架规划:对系统表现的有条件的预测
2004 RTP: A Conditional Forecast of System Performance

- 改进初期的计划
  Refinement of an earlier plan
- 服务标准被放宽
  LOS standards have been relaxed
- 非单乘客车辆 模式选择假定
  Non-SOV mode choice assumptions
- 三个模式 Three scenarios
  - 财政上受限的 financially constrained
  - 战略上的 strategic
  - 首选的 preferred

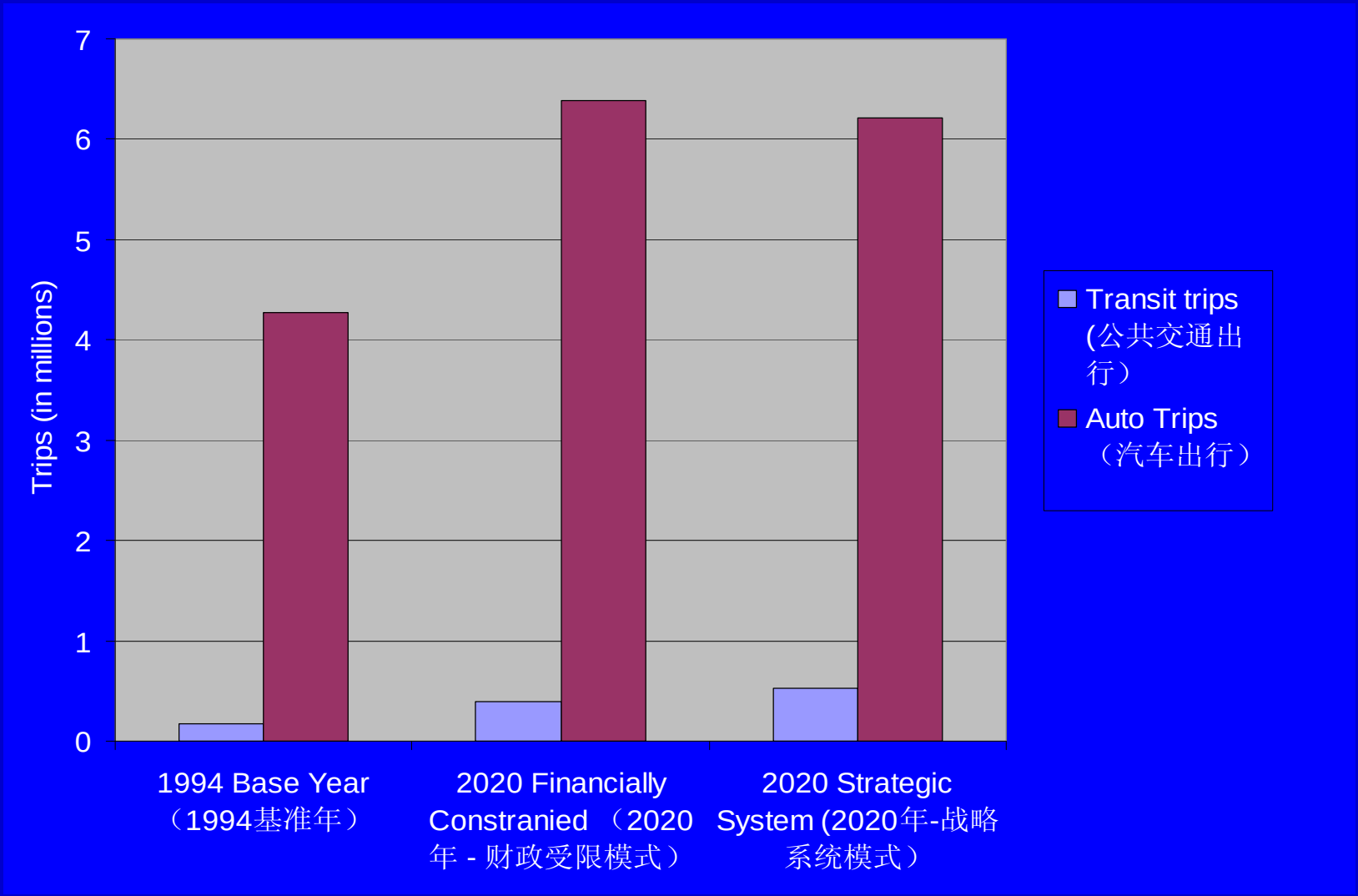
2004年区域框架规划预测
RTP Forecasts

- 公共交通和高速公路供给
  Transit and highway supply
- 公共交通出行，汽车出行和机动车总历程
  Transit trips, auto trips, and VMT
- 交通方式分担率
  Mode shares
- 兄弟城市间的比较
  Peer City comparison
- 交通堵塞
  Congestion
- 各种交通方式每次出行的平均费用
  Annualized capital cost per trip by mode

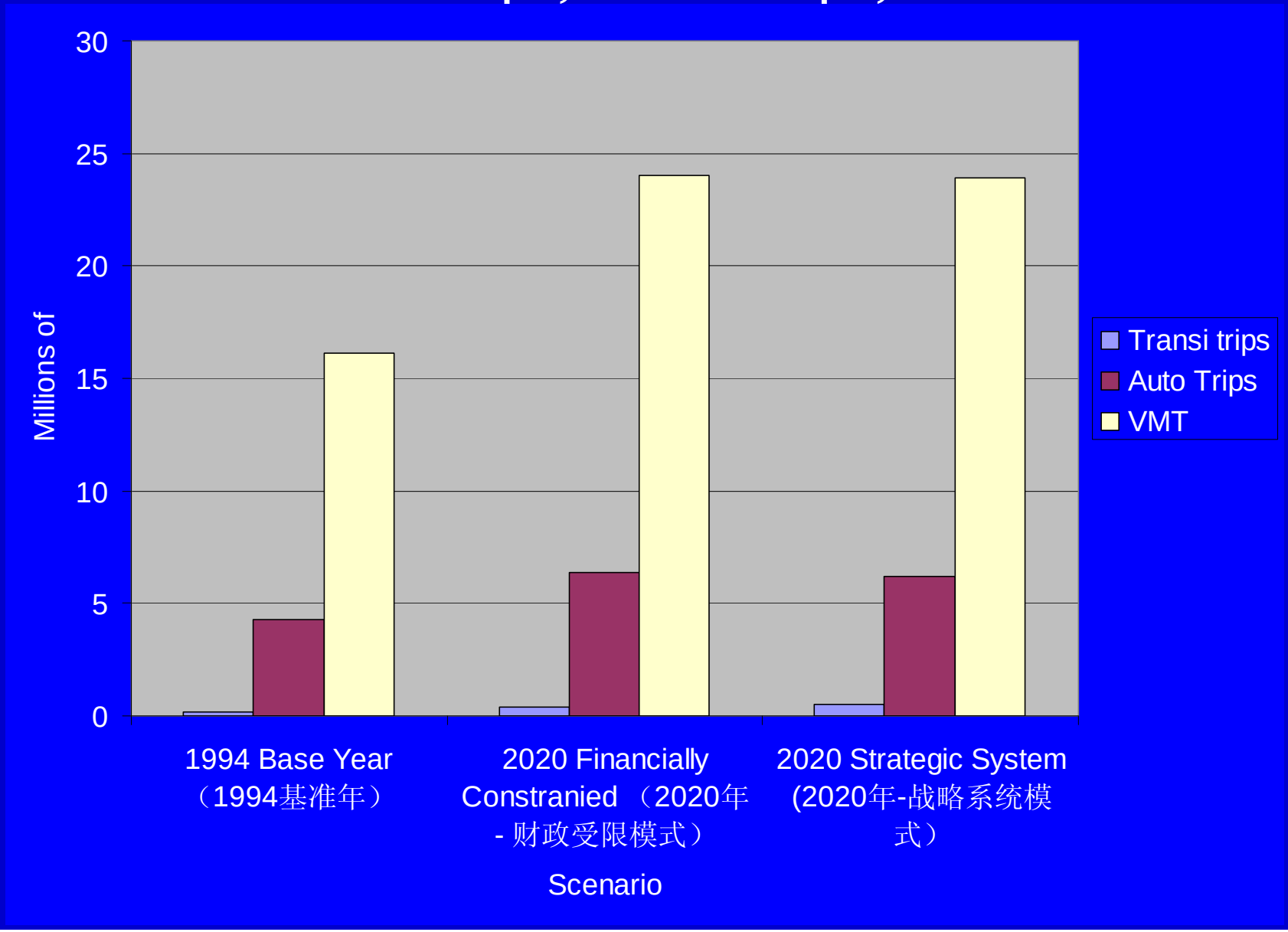
公共交通和高速公路供给
Transit and Highway Supply



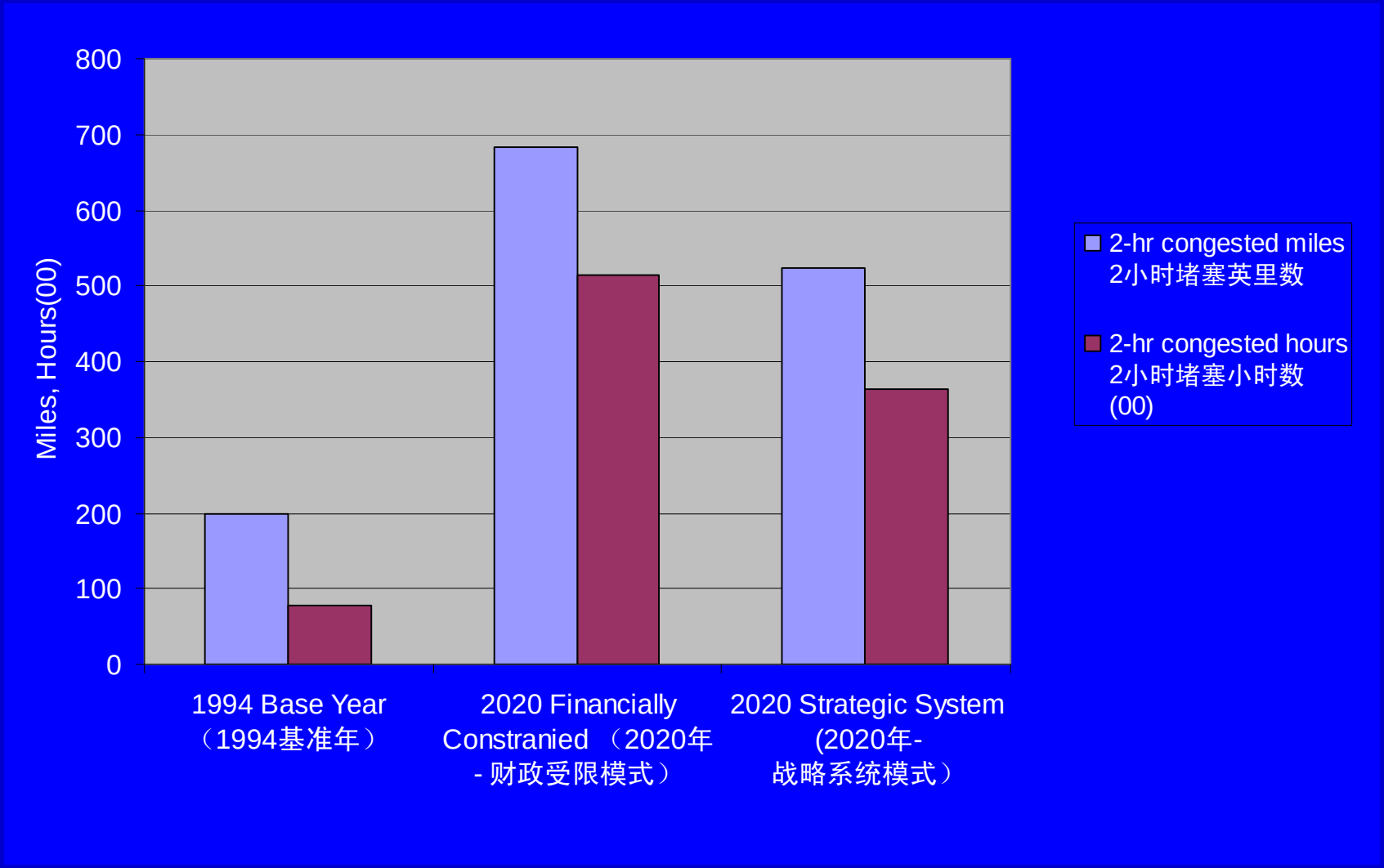
公共交通和汽车出行量
Transit and Auto Trips



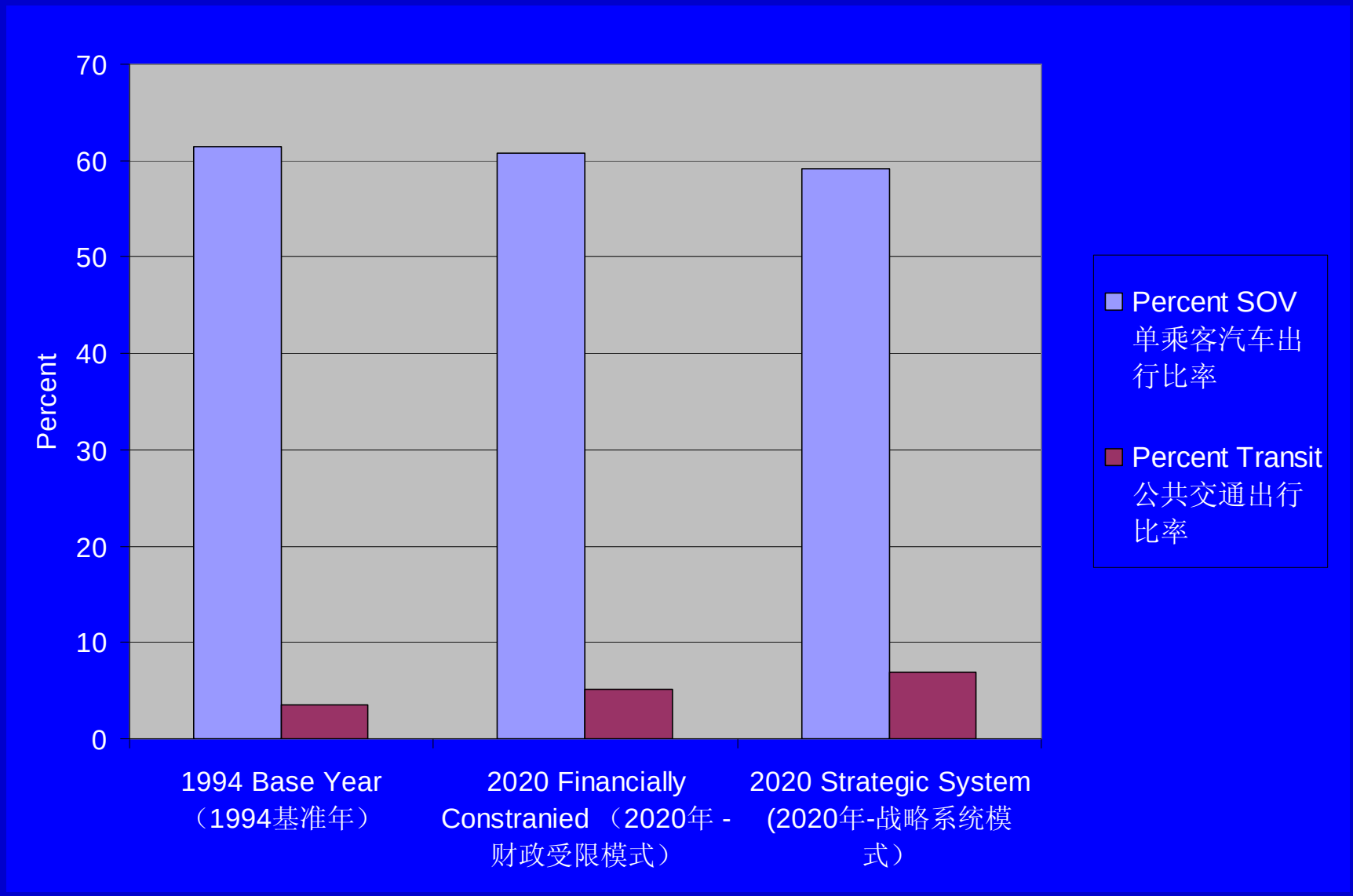
公共交通，汽车和机动车总里程
Transit Trips, Auto Trips, VMT



下午两小时高峰期的交通堵塞
Congestion in PM 2-Hr. peak



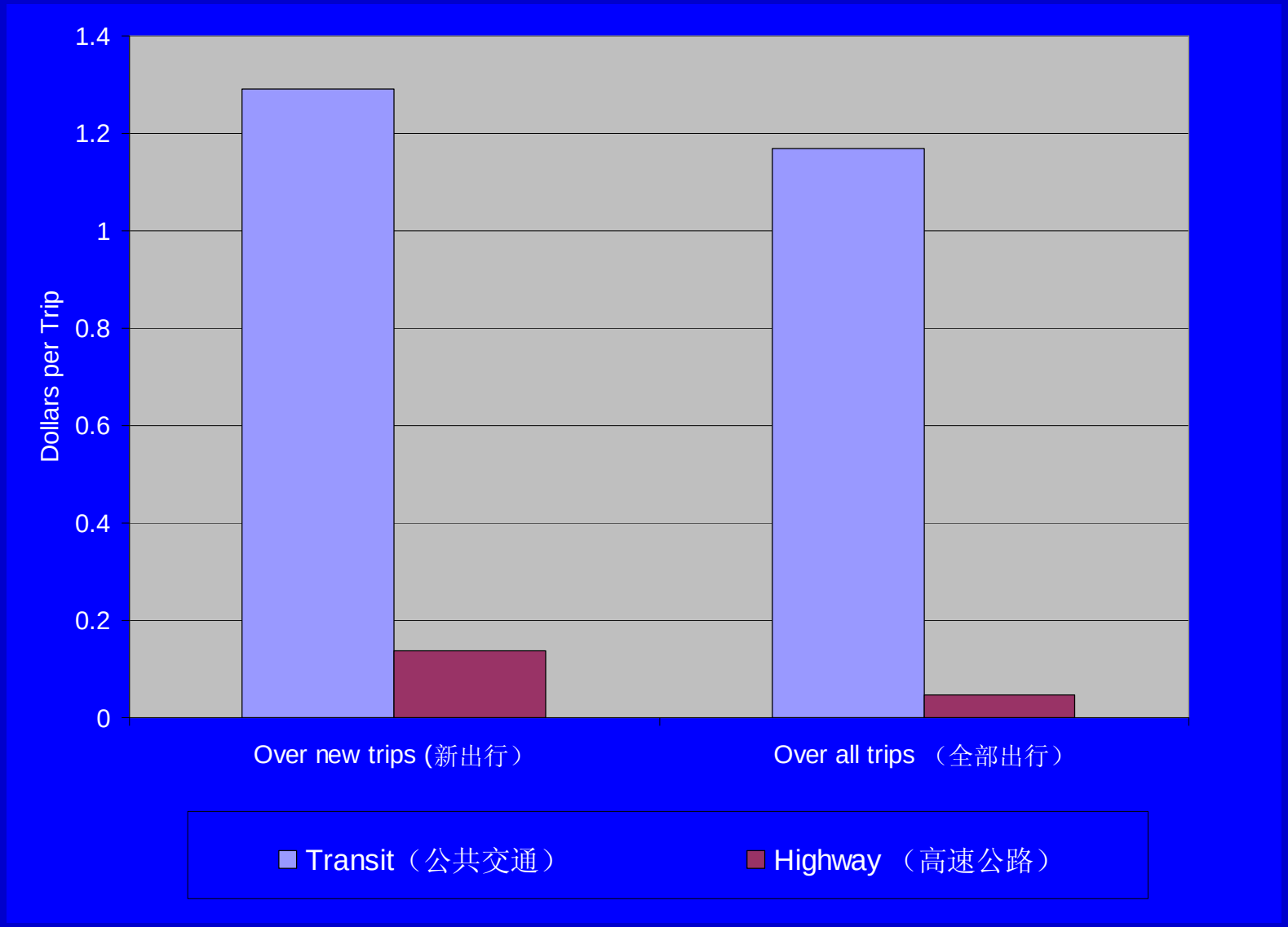
交通方式分担率
Mode Shares



城市间的比较（年增长量）
Peer City Comparison (per year increase)

城市city	%公共交通 %transit	人均机动车里程数 VMT per person	晚高峰平均车速 Ave Speed PM peak
Portland	3.58%	0.14%	-0.57%
phoenix	1.12%	0.34%	-0.30%
San Diego	0.00%	-0.15%	0.17%
San Fran	-0.51%	0.67%	N.A.
Seattle	1.54%	0.26%	-0.33%
Peer Ave	0.69%	0.51%	N.A.

每次出行的年度平均费用
Annualized Capital Cost per Trip



区域框架规划观察
RTP Observations

- 在用地模型中没有信息的反馈这一项
  No feedback loop in land use model
- 交通方式选择模型程序对非单乘客汽车出行估计的过高
  Mode choice model process overestimates non-SOV travel
  - 难以达到目标 Too high to achieve
  - 难以证明公共交通的投资幅度是正当的
    Too low to justify level of transit investment
- 交通堵塞程度 Congestion levels
  - 过高则用地无法增建
    Too high, land use may not build out
  - 如果在可接受程度之内，用地的密度则会增加
    If acceptable, will promote densification

有控制发展的效果
Effects of Managed Growth

- 市中心和街区
  Central City and neighborhood
- 土地利用和住房
  Land use and housing
- 交通堵塞及出行行为
  Traffic congestion and travel behavior

有限的成功: 坚实的基础
Qualified Success: Strong Base

- 有了一个更好中心城区
  Stronger central city than most
  - 更好的市中心 Strong downtown
  - “白人航班”开始减少，住房隔离现象也慢慢减少
    Less white flight and more gentrifications
  - 更好的街区 Strong neighborhoods

- 与城市发展模式的变化相比，新政策在制度上上取得了更大的进展
  More progress on the institutional side than with urban development patterns

有限的成功: 坚实的背景
Qualified Success: Strong Context

- 城郊冲突减少，具有整体区域意识的郊区官员增多

  Less intense central city-suburban conflicts and more regional-minded suburban leaders, due to context
  - 州土地利用规划 State land use planning
  - 地区政府 Regional government
- 轨道交通定向和交通规划法规引起了交通投资模式的变化

  Rail orientation and TPR causes a shift in modal investments.
- 城市增长边界政策对市区范围产生了一定的影响，但对城市内部的发展模式影响有限

  UGB influences extent of urban area, not so much as what goes on inside

对用地和住房的影响
Impacts on Land Use and Housing

- 城市增长边界政策减少了界限内可发展用地
  UGB reduced the supply of developable land within the UGB.
- 城市增长边界政策强化了土地利用模式
  UGB intensified the land use patterns.
- 房价增长的幅度在过去十年中属于增长最快的
  The rate of housing price increase is among the largest over the last decade.

对用地和住房的影响
Impacts on Land Use and Housing

- 城市增长边界政策促成了波特兰地区房价居高不下，这对中低收入阶层有负面影响

  UGB contributed to the least affordability of housing in the Portland area, may have adverse effects to low- to moderate-income households.
- 城市增长边界政策造成新的特殊兴趣的群体-高收入业余农民的出现

  UGB created new special-interest groups -- high-income hobby farmers.
- 城市增长边界政策为土地和住房价格的增长做出了贡献，但其贡献的幅度并不确定

  UGB contributed to the higher cost of land and thus housing, but the magnitude is uncertain .

对交通堵塞和交通行为的影响
Impacts on Traffic Congestion and Travel Behavior

- 公共交通客流量增长较快，但公交出行率在下降
  Transit Ridership Gains better than other cities, but transit share decreased
- 日益严重的交通堵塞
  Growing Congestion -- More rapidly than other cities.
- 对通勤者交通方式的影响很有限
  The impact on changing commuters' behavior is limited.

公共交通客流量增长
Transit Ridership Gains

- 从1993年至2005年，客流量增长了72%。
  72% increase from 1993 through 2005.
- 每年增长约4.3% 。
  Tri-Met ridership is increasing by 4.3% per year.
- 1993年时的客流量6070万。
  In 1993, annual ridership is 60.7 M,
- 1993年时的客流量1亿450万。
  In 2005, annual ridership is 104.5M.

Source: FTA Section 15

公交出行率比较 Transit Share

大都市区 Metropolitan Area	1980	1990	2000	1980-2000 Change
Los Angeles	5.03%	4.56%	4.66%	-7.31%
New York	29.61%	26.57%	24.90%	-15.92%
San Francisco	11.34%	9.29%	9.48%	-16.44%
Seattle	8.12%	6.31%	6.75%	-16.86%
Boston	12.89%	10.64%	9.03%	-29.92%
Chicago	16.43%	13.66%	11.49%	-30.04%
Portland	**8.35%**	**5.42%**	**5.71%**	**-31.59%**
Atlanta	7.39%	4.71%	3.65%	-50.57%

每人汽车里程数
Per Capita Vehicle Miles: 1990-1999

Rank	Urbanized Area	1990	1999	Change
1	Portland	16.2	20.9	28.50%
2	St. Louis	23.1	29.1	26.10%
3	Indianapolis	22.3	27.8	24.60%
4	Fort Worth	23.4	28.7	22.80%
5	Kansas City	23.7	28.9	22.00%
6	Cincinnati	21.1	25.5	20.90%
6	Houston	24.9	30	20.80%
8	Denver	18.3	22.1	20.60%
9	Atlanta	29.1	35.1	20.60%

TTI 交通阻塞指数
TTI Congestion Index, 1982-2003

城市 City	1982	1990	1996	2003	变化 Change
Los Angeles	1.3	1.8	1.78	1.75	0.45
San Francisco	1.21	1.5	1.45	1.54	0.33
Portland	**1.05**	**1.16**	**1.31**	**1.37**	**0.32**
Seattle	1.09	1.33	1.45	1.38	0.29
Boston	1.14	1.27	1.37	1.34	0.20
Chicago	1.19	1.36	1.44	1.57	0.38

公共交通导向发展区的交通产生率
Trip generation rates at TODs

- 调查了Fairview村（一个公共交通导向发展街区）的居民，与另两个传统郊区街区作对照

  Surveys of Fairview Village (a TOD neighborhood) and two traditional suburban neighborhoods.
- Fairview村的居民私人汽车使用减少，步行和自行车出行的比率较多

  Residents in Fairview Village drove significantly fewer miles, made fewer vehicle trips and more walking and bicycling trips.
- Fairview村的居民有较低汽车拥有率和较小的家庭

  Some of this difference is explained by lower vehicle ownership rates and smaller households.
- 对一些态度性问题的回复也显示了自选所造成的一些区别

  The responses to the attitudinal questions also indicate some of the differences are due to "self-selection.”

关键问题
Critical Questions

- 汽车出行减少了么？
  Reduction in auto travel?
- 其它交通方式的出行增加了么？
  Increased use of alternative modes?
- 需要相关的研究 Research is needed on:
  - 公共交通导向发展区居民出行行为
    travel behavior in transit-oriented developments
  - 速度，密度和可达性之间的关系
    relationship between speed,density, and accessibility

中国城市能从波特兰经验中学些什么
What can be learnt from Portland's Experience for Cities in China

- 有控制的增长能阻止城市蔓延么？
  Can managed growth curbing sprawl?
- 可以- 城市增长边界政策能提供一个牢固的边界
  Yes - the UGB provides a hard boundary.
- 不可以-城市增长边界政策需要定期扩张以补充空地（一个可动的边界）
  No - the UGB is required to expand periodically to maintain a 20-year supply of vacant land (a movable urban service boundary).
- 城市增长边界内部居民的行为和其他城市的居民没多大区别Residents' behavior inside the UGB may not be much different from that in other cities without UGB.

对中国城市交通政策的启示
Implications for China's Urban Transportation Policy

- 城市交通的最终目的是为人而不是为车服务的。The goal of urban transportation is to serve the urban residents not cars.
- 交通政策和规划要鼓励骑车、步行和使用公交 Biking, walking and public transit are important travel modes in a livable city.
- 交通规划要重视建设相互联网的自行车道、人行道及公交专用道 Transportation planning should focus more on developing facilities that facilitate walking, biking and transit usage.

提高开车成本的重要性
The importance of cost of driving

- 如果不限制汽车拥有量或增加汽车使用费及停车费用，仅靠公交优先政策会远远达不到预期效果
- Without policies to limit the car ownership and increase the costs of driving and parking, the effect of improving transit services alone may be limited.

Thank you!

Questions?