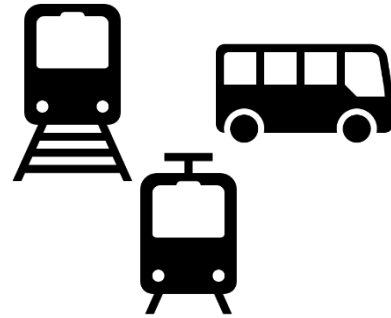


TOD Finance and M&E

TOD: Types of Capital Investment

When considering financing strategies for TOD corridor development, what needs to be financed?

Transit Infrastructure



- **Investment Size: Large**
- Capital costs for BRT, LRT, or metro systems
- Often paid by public sector, but funding can be raised through capturing land value uplift and real estate improvements

Street Infrastructure & Public Realm



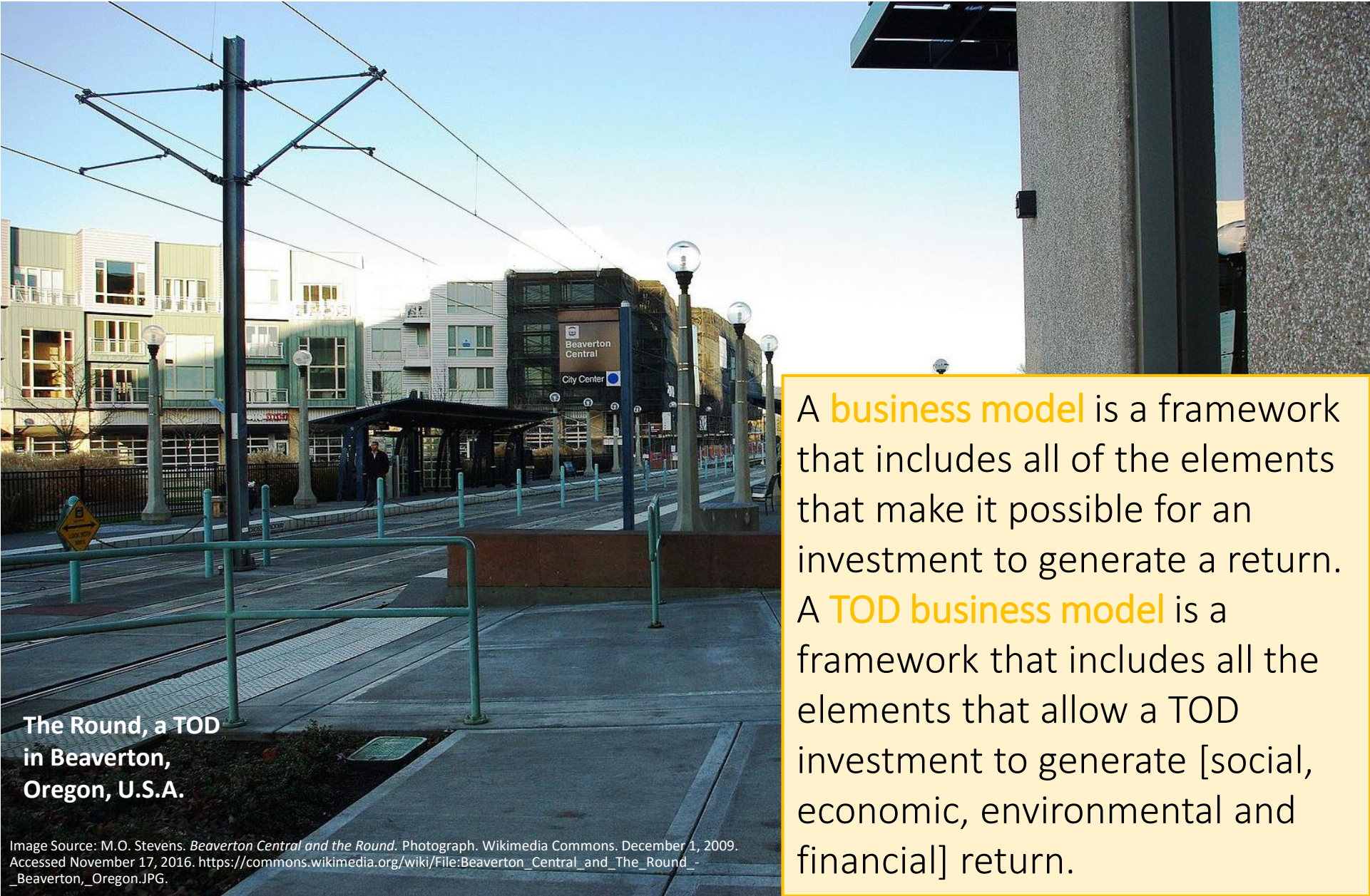
- **Investment Size: Small-Medium**
- Local street improvements & sidewalk/ NMT infrastructure
- Can be paid by developers in strong markets or by local government

Real-estate development / Housing Construction



- **Investment Size: Varies**
- Consists of construction costs of residential/commercial buildings
- Most costs to be paid by developer, but public subsidy sometimes required if weak market or affordable housing is required

A Business Model for TOD Investments



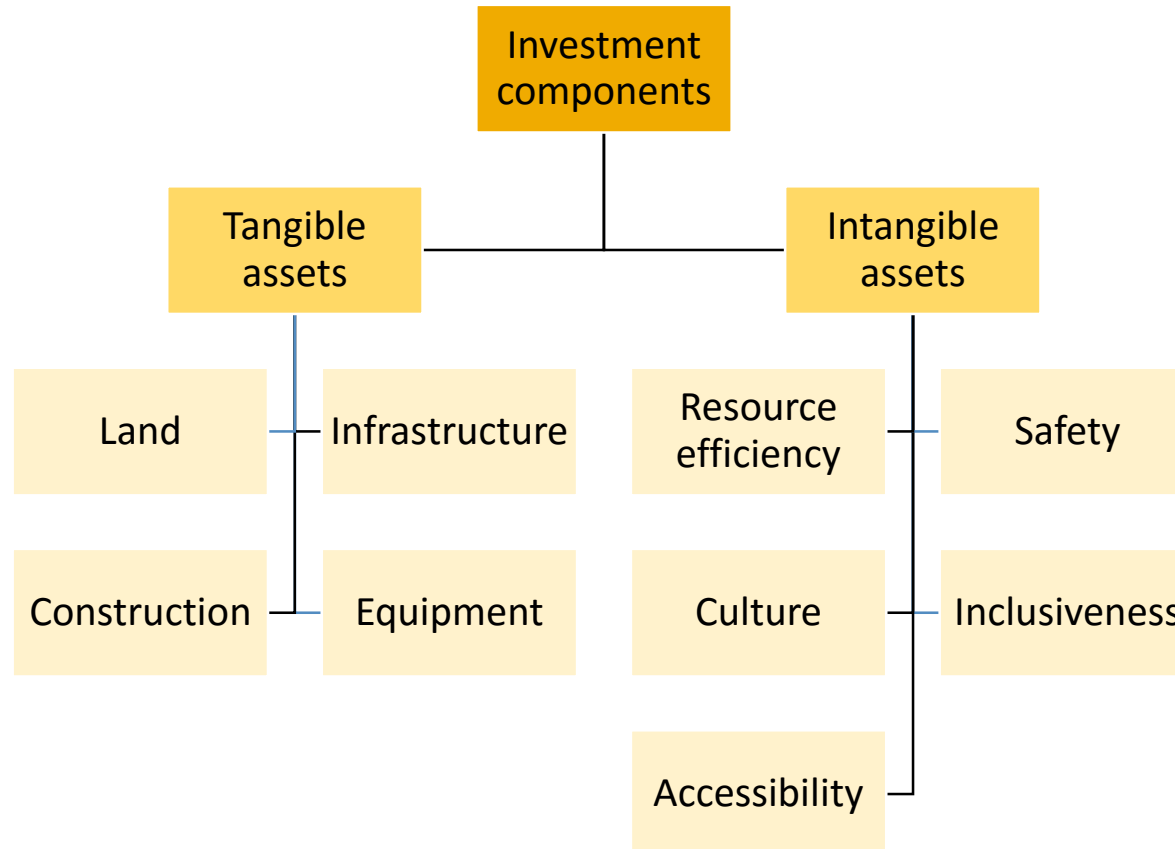
The Round, a TOD
in Beaverton,
Oregon, U.S.A.

Image Source: M.O. Stevens. *Beaverton Central and the Round*. Photograph. Wikimedia Commons. December 1, 2009. Accessed November 17, 2016. https://commons.wikimedia.org/wiki/File:Beaverton_Central_and_The_Round_-_Beaverton,_Oregon.JPG.

A **business model** is a framework that includes all of the elements that make it possible for an investment to generate a return. A **TOD business model** is a framework that includes all the elements that allow a TOD investment to generate [social, economic, environmental and financial] return.

Investment Components

The various assets and processes that generate cost and revenues over the course of a TOD investment



Corridor scale Investment components

Tangible assets

- Land
- Transit Track (Bus Lanes, Railways etc) and Transit stations
- Roads, street networks, pedestrians, bike lanes,
- Other TOD related investments (station plaza, bus terminal, public amenities, etc)
- Public and private buildings
- Public utilities

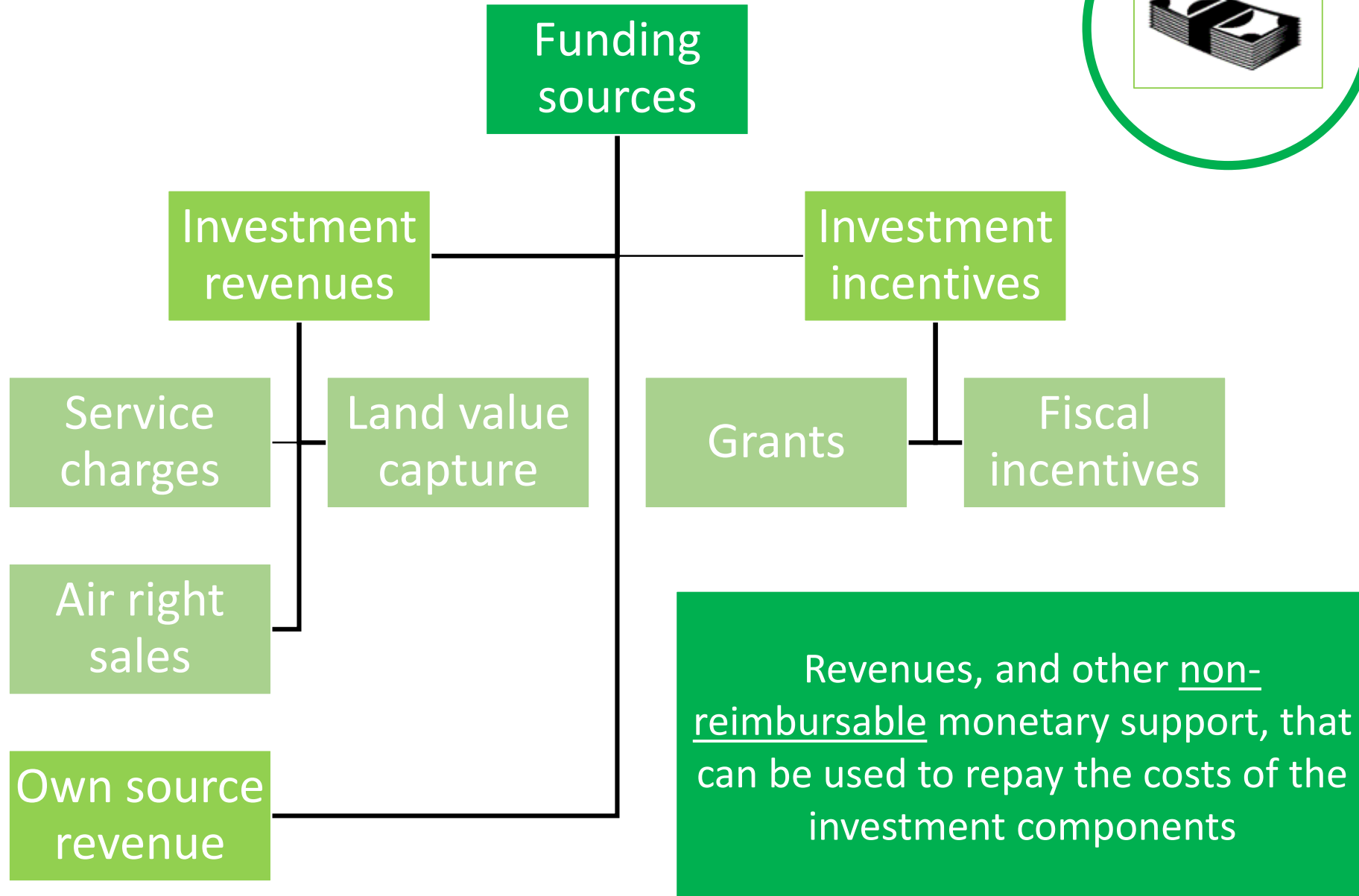
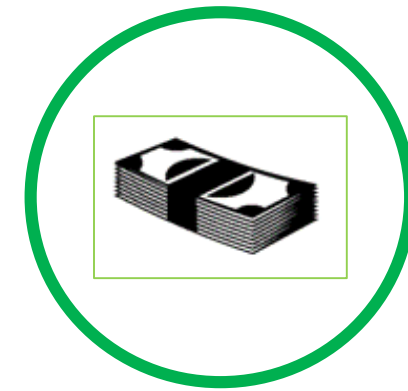
Intangible assets

- Articulated Density
- Public safety
- Walkability
- Mixed land use
- Cohesive Community
- High Quality Public places and Cultural heritage

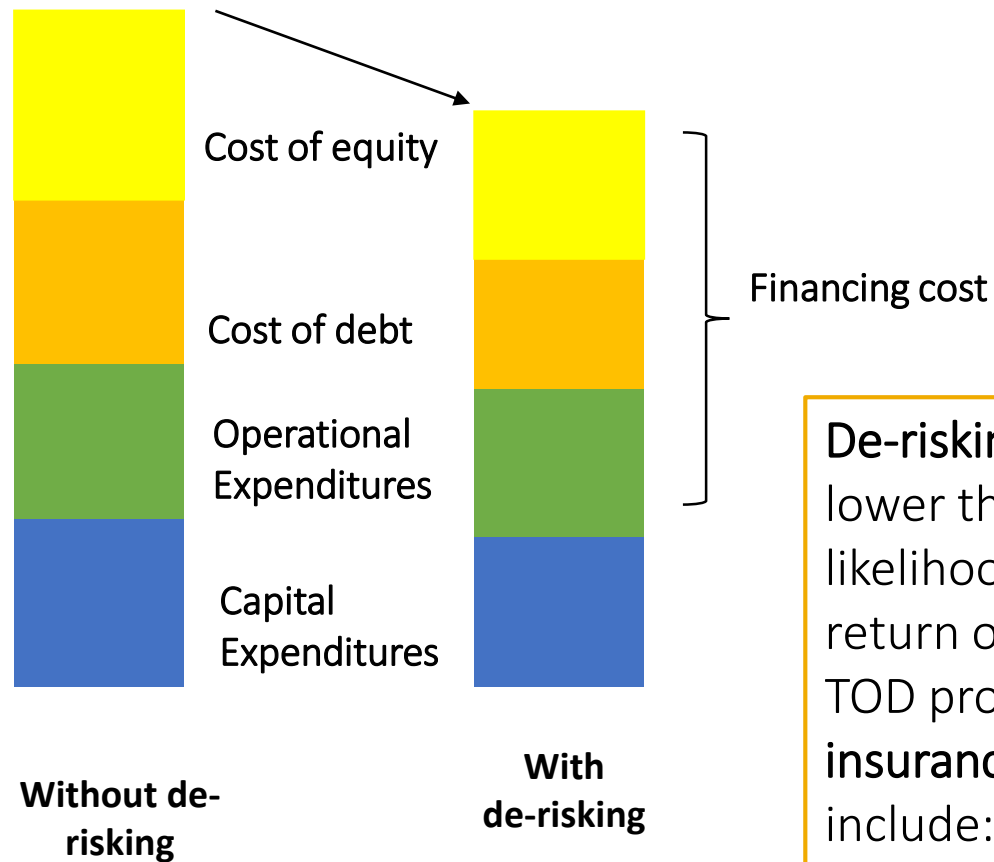
Processes

- Feasibility studies
- Detailed engineering and investment cost estimate
- Financing arrangement
- Securing lands and site preparation
- Procurement and construction
- Monitoring and evaluation
- Operation and Maintenance
- Community engagement (all through critical stage from planning to implementation)

Funding Sources



Financial products: de-risking products



De-risking products: products designed to lower the costs of finance by reducing the likelihood that an investor will not receive a return on investment

TOD products can access **guarantees and insurance** for de-risking purposes, which include:

- Credit guarantees
- Revenue guarantees
- Political risk insurance

A Review of TOD Benefits



Mobility Benefits

- Increase access to jobs and amenities city wide
- Improve access to a low cost transport solution (public transit/walkable urban space/bicycle infrastructure)
- Reduce automobile-dependency
- Revitalize neighborhoods
- Promote social equity through creation of mixed-income housing near transit
- Increase accessibility for less mobile.
- Improve health and increase physical activity through creation of walkable neighborhoods



Social Benefits



Environmental Benefits

- Lower air pollution and GHG emissions by reducing automobile-dependency and urban sprawl
- Reduce energy consumption
- Conservation of green and natural spaces



Economic Benefits

- Increase agglomeration and access to employees
- Encourage economic resilience through diversity
- Energize local economy
- Increase property values along corridors to help fund needed infrastructure
- Reduce infrastructure costs
- Reduce transport cost

Thoughts on M&E Systems

- When creating a M&E system for a TOD project, the project owner must:
 - Establish project goals, in collaboration with other project stakeholders
 - Set output and outcome performance indicators
 - Collect data on outputs and outcomes at regular intervals
 - Integrate feedback into project implementation



Performance Indicators

Measuring for Mobility Outputs and Outcomes



TRAVEL BEHAVIOR

Output Performance Indicators:

- Changed parking rules (such as limits, pricing, and location)

Outcome Performance Indicators:

- **Automobile usage**, measured in VKT
- **Mode share**
- Auto ownership
- Transit use

ROAD SAFETY

Output Performance Indicators:

- Number of redesigned street intersections and crossings
- Km of bicycle lanes

Outcome Performance Indicators:

- Vehicular speeds on roads
- Public perception of pedestrian and bicycle safety
- Number of vehicular accidents and fatalities

TRANSIT SERVICE & QUALITY

Output Performance Indicators:

- Number of transit options
- Integration of multi-modal options within transit stations

- Frequency of transit service

Outcome Performance Indicators:

- Total area accessible in 45/60 mins
- **Percentage of jobs accessible in 45 mins by public transport+NMT**
- Satisfaction levels
- Changes in travel time

ACCESSIBILITY & WALKABILITY

Output Performance Indicators:

- Number of high-density developments located within a station-area
- Change in length and width of unobstructed sidewalks/footpaths

Outcome Performance Indicators:

- **Walkability Score**
- Number of pedestrian and bicyclist accidents

Performance Indicators

Measuring for Social Outputs and Outcomes



NEIGHBORHOOD REVITALIZATION

Output Performance Indicators:

- Number of community facilities, amenities, and educational services within a project area
- Redesigned streetscapes, public spaces, and building facades throughout a project area
- Number of mixed-use developments within a project area

Outcome Performance Indicators:

- Public perception of a project area

SOCIAL EQUITY

Output Performance Indicators:

- Number of affordable housing units
- Interconnection designed for the less mobile

Outcome Performance Indicators:

- Improved access to transit and services for all socioeconomic groups
- Diversity within a project area, including racial, ethnic, gender, religious, & socioeconomic diversity of local residents, business-owners, and workers
- Increase accessibility for less mobile

SOCIAL CAPITAL & CITIZEN PARTICIPATION

Output Performance Indicators:

- Number of community outreach programs

Outcome Performance Indicators:

- Residents' involvement in community projects and initiatives

Performance Indicators

Measuring for Environmental Outputs and Outcomes



REDUCED EMISSIONS

Output Performance Indicator:

- Transport system and land use prioritizing transit and NMT
- Establishment and implementation of low emission zones around metro stations

Outcome Performance Indicator:

- Number of days of good air quality
- Overall GHG intensity of transport
- Overall energy intensity of transport

CONSERVATION OF GREEN AND NATURAL SPACES

Output Performance Indicator:

- Creation/maintenance of park and/green space as a result compact urban development in TOD areas
- Infill and brownfield reclamation

Outcome Performance Indicator:

- Habitat conservation through preservation of ecological areas
- Increased tree cover and reduced heat island effect