Regional Planning and Research

Creating Tools for Climate Change Mitigation in our Region

2/12/2020

Transportation Advisory Committee

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Sustainability

“Providing leadership, information, and technical assistance to support local governments’ consideration of climate change mitigation, adaptation, and resilience”.

More Information on ...

Calming the Storm: Localized Flooding in the Twin Cities Region

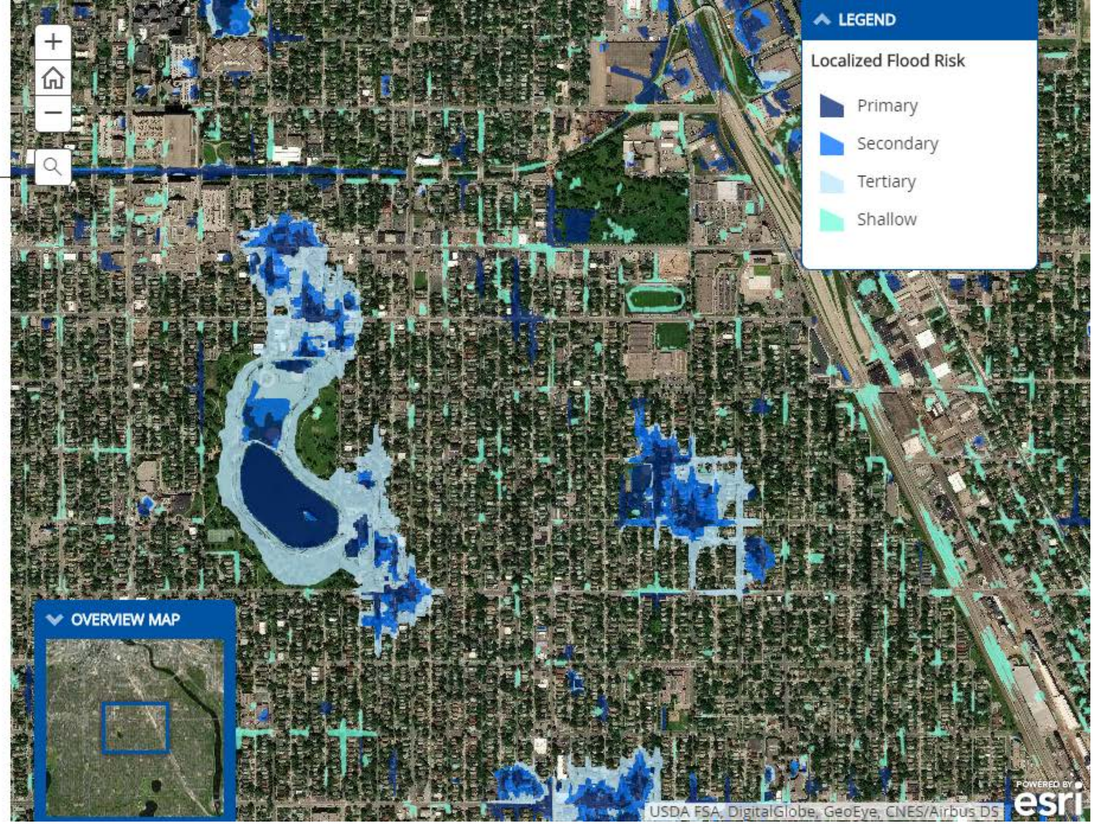
Mapping Localized Flood Risk

What is the Localized Flood Map Layer?

Our **Localized Flood Map For Climate Vulnerability Screening** was created using remote sensing data which determines the topography of the earth. The elevation information forms the basis for our localized flood map to determine areas that may experience localized flooding during short, high intensity rain events. An **interactive version of the map**, similar to the map displayed to the right, is available on our CVA website.

How is localized flooding categorized?

Potential flood areas are categorized into three Flood Impact Zones (FIZ): Primary,



SOLSMART
NATIONALLY DISTINGUISHED. LOCALLY POWERED.

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Metro Climate Stats

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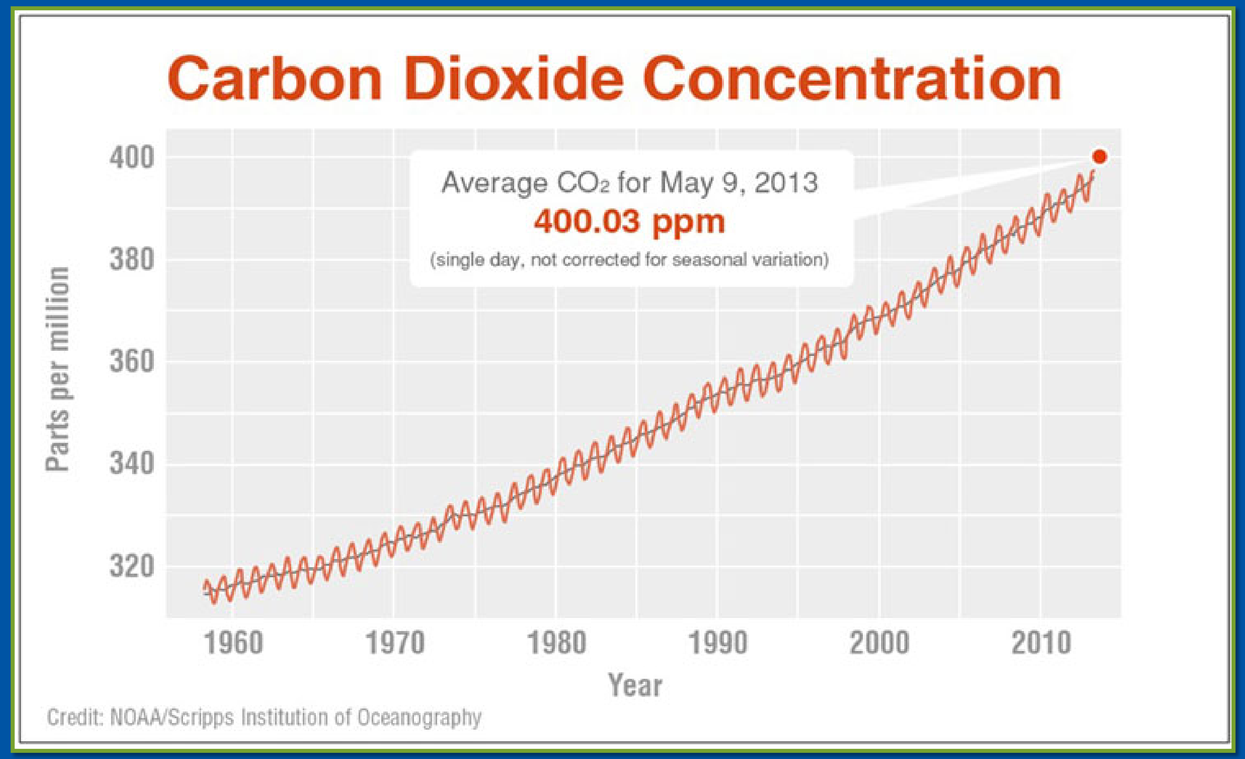

Humans releasing greenhouse gas into the atmosphere are responsible for climate change

Climate change could cost Minnesotans billions

Hsiang, Solomon, et al. "Estimating economic damage from climate change in the United States." *Science* 356.6345 (2017): 1362-1369.

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Estimates suggest that cities are responsible for 75 percent of global CO2 emissions, with transport and buildings being among the largest contributors.

United Nations
Environmental Panel

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Challenges

Technical expertise required

Expensive

Staff time

Uncertainty

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Metro Climate Stats

Inventory

Scenario Planning

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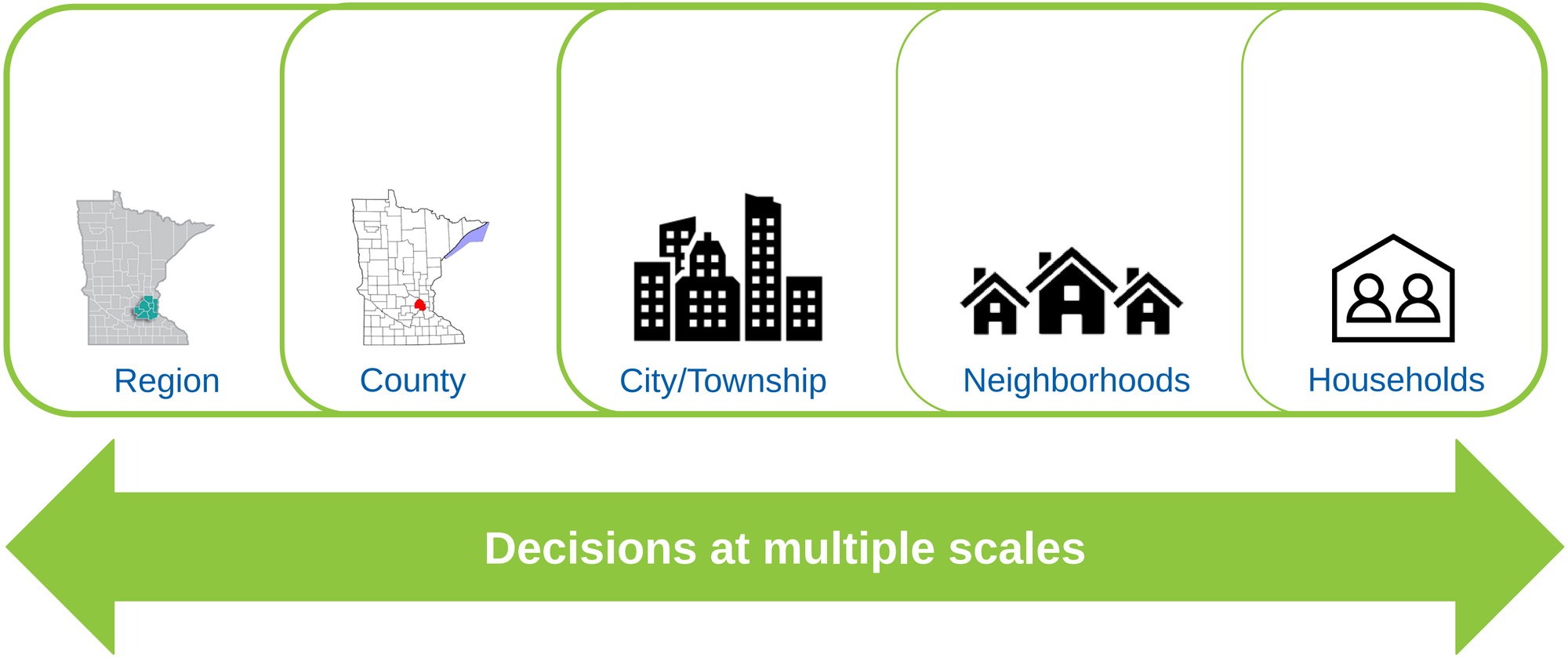

Greenhouse emissions planning occurs at multiple scales

County

Neighborhoods

Public Transit	Bicycle Advisory Committee, Ride Hennepin	Green Fleet Policy	Community groups, non profits	Travel behavior

Greenhouse reduction solutions occur at multiple scales

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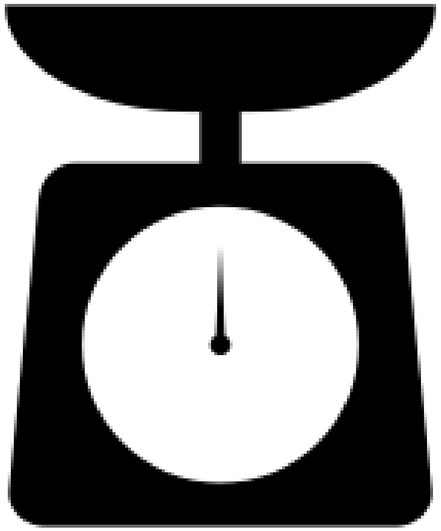
INVENTORY

INVENTORY

Identifying sources of greenhouse gas emissions at the community level

Quantifying the greenhouse gas emissions



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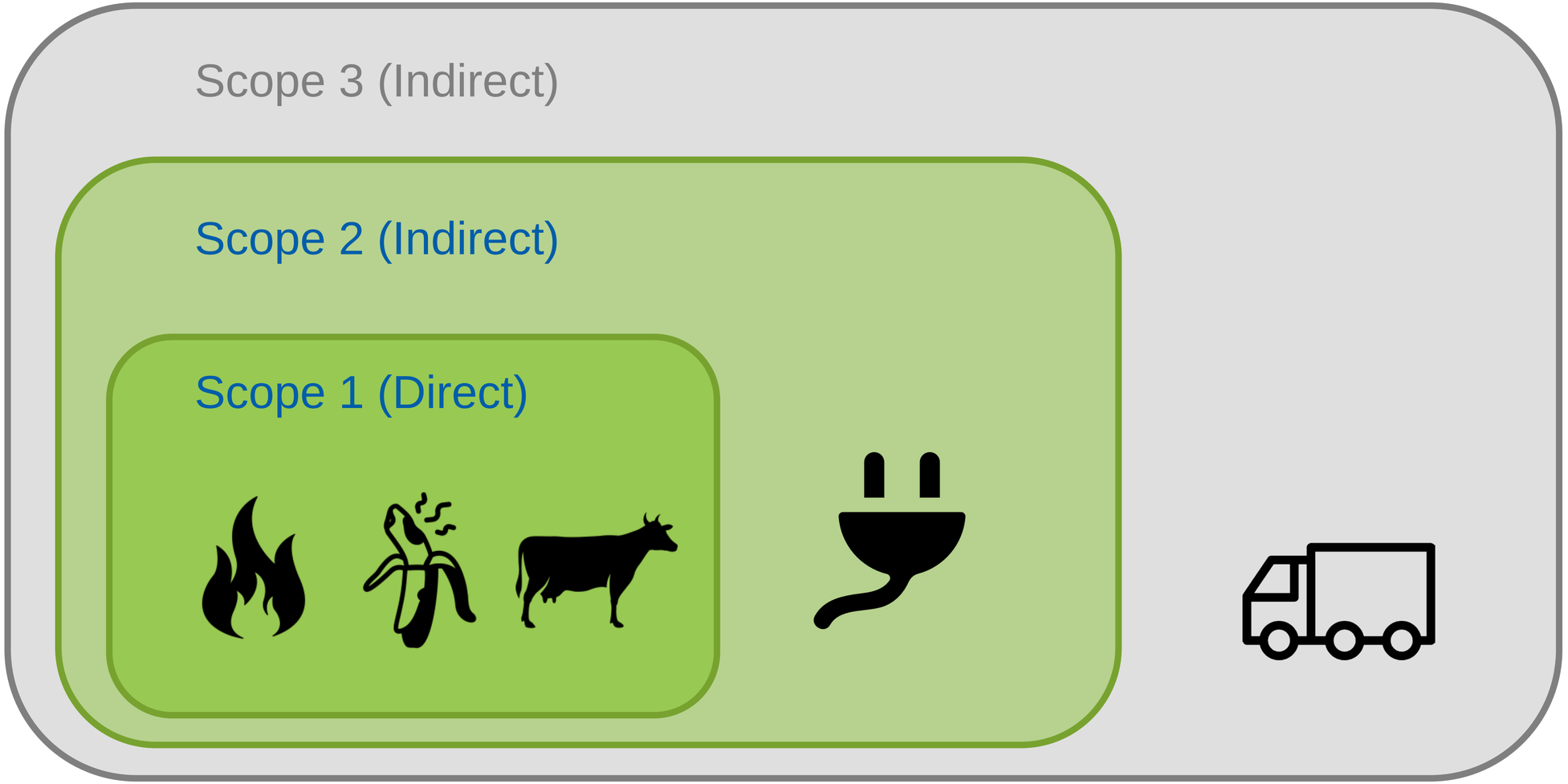
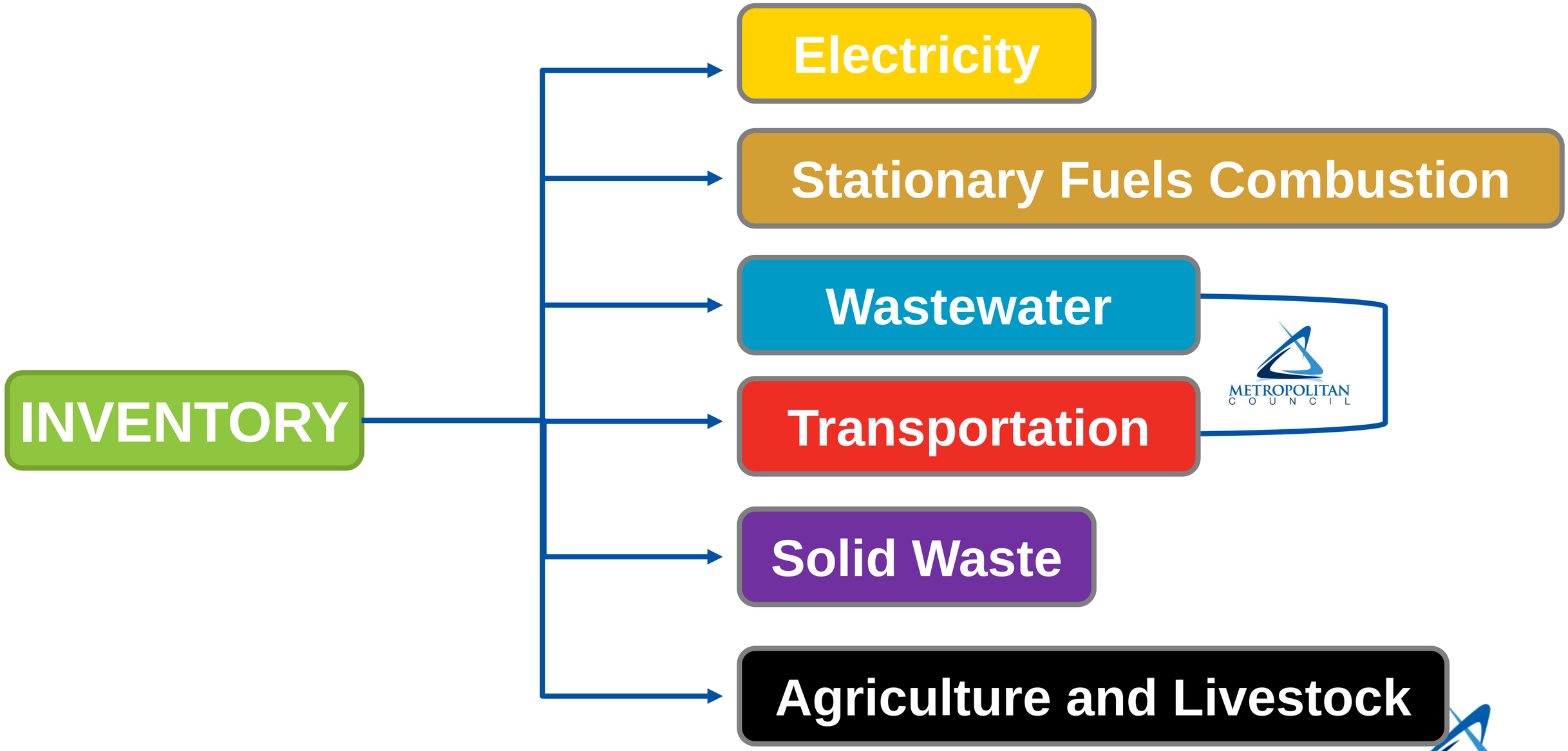
INVENTORY




INVENTORY
Electricity
Stationary Fuels Combustion
Wastewater
Transportation
Solid Waste
Agriculture and Livestock
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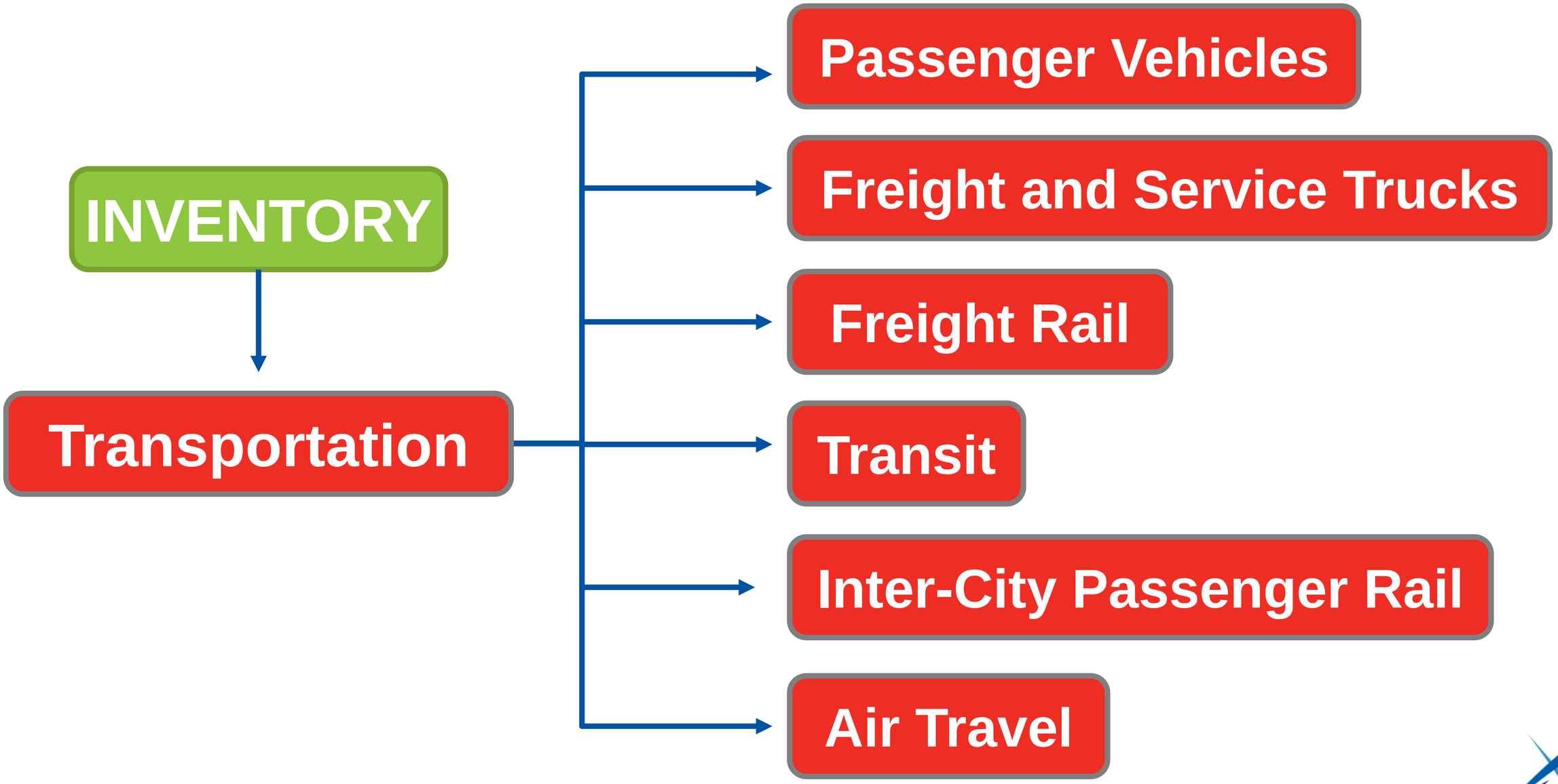

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SCENARIO PLANNING

SCENARIO PLANNING

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Bike lanes?

Transit?

Compact communities?

Electrifying vehicles?

Advanced biofuels?

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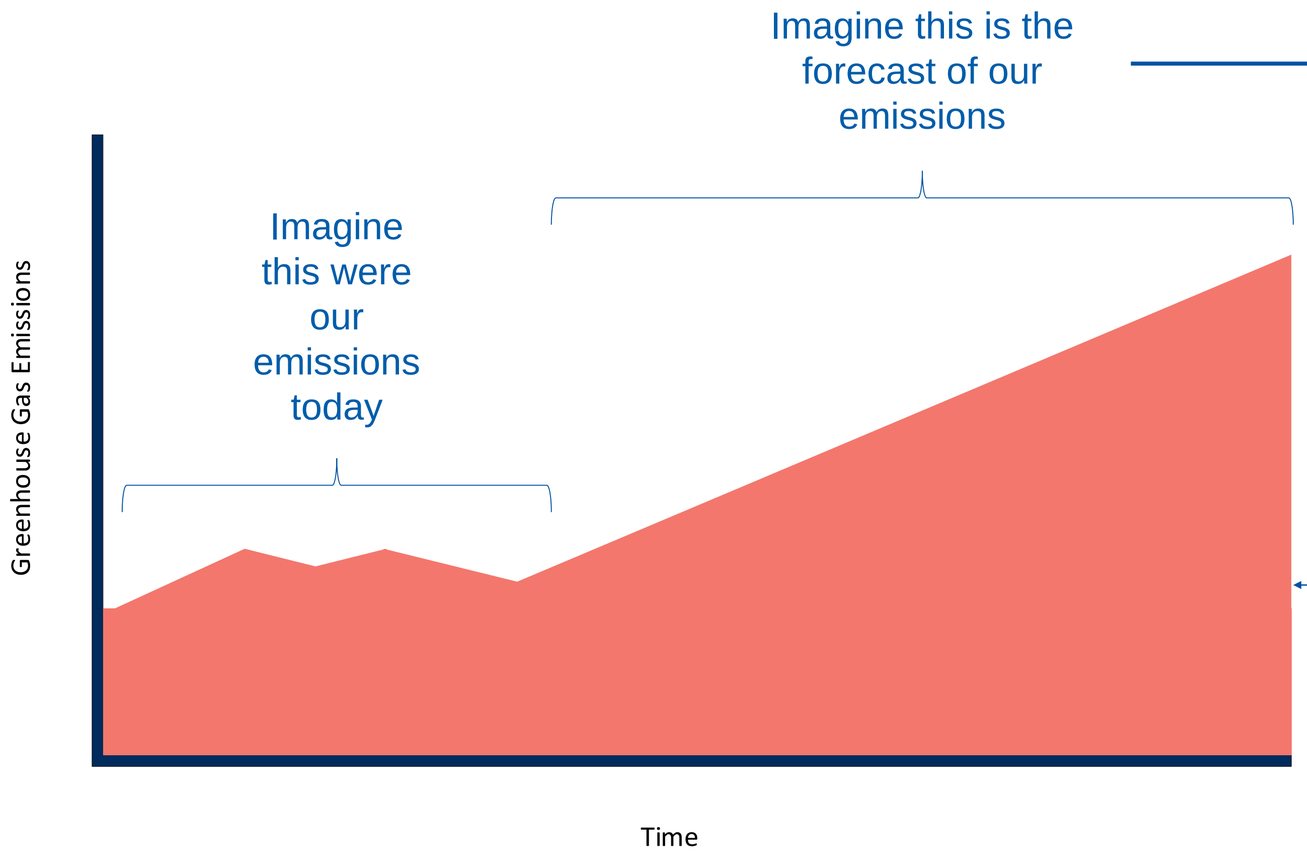
What is Greenhouse Gas Emissions Scenario Planning?



Land Use & Transit

Emerging Technologies

Building Energy + Circular Economy

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These are the strategies to accomplish decarbonization with each bucket

- Region-wide Upzoning
- Transit Oriented Dvlpmnt.
- Urban growth boundaries

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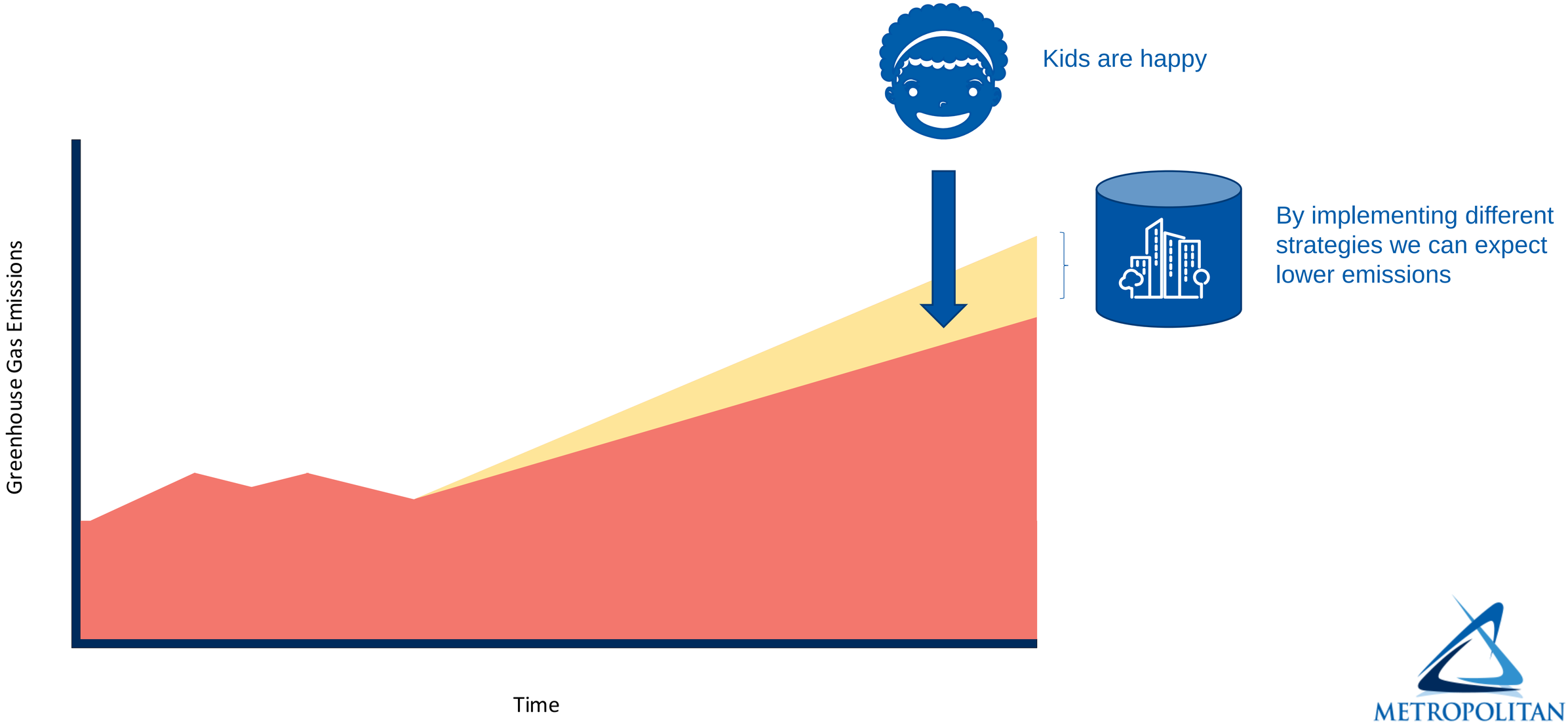
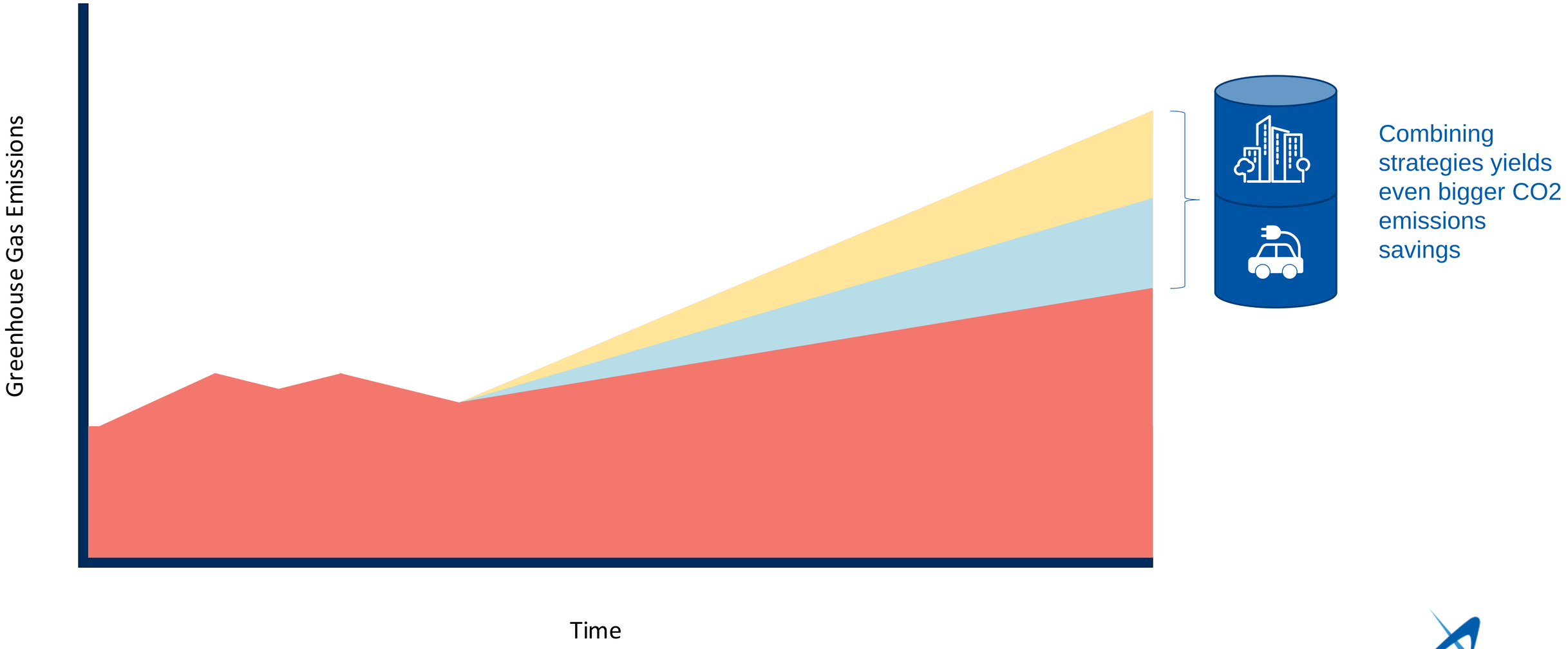

Kids are happy
By implementing different strategies we can expect lower emissions
Greenhouse Gas Emissions
Time



Combining strategies yields even bigger CO2 emissions savings

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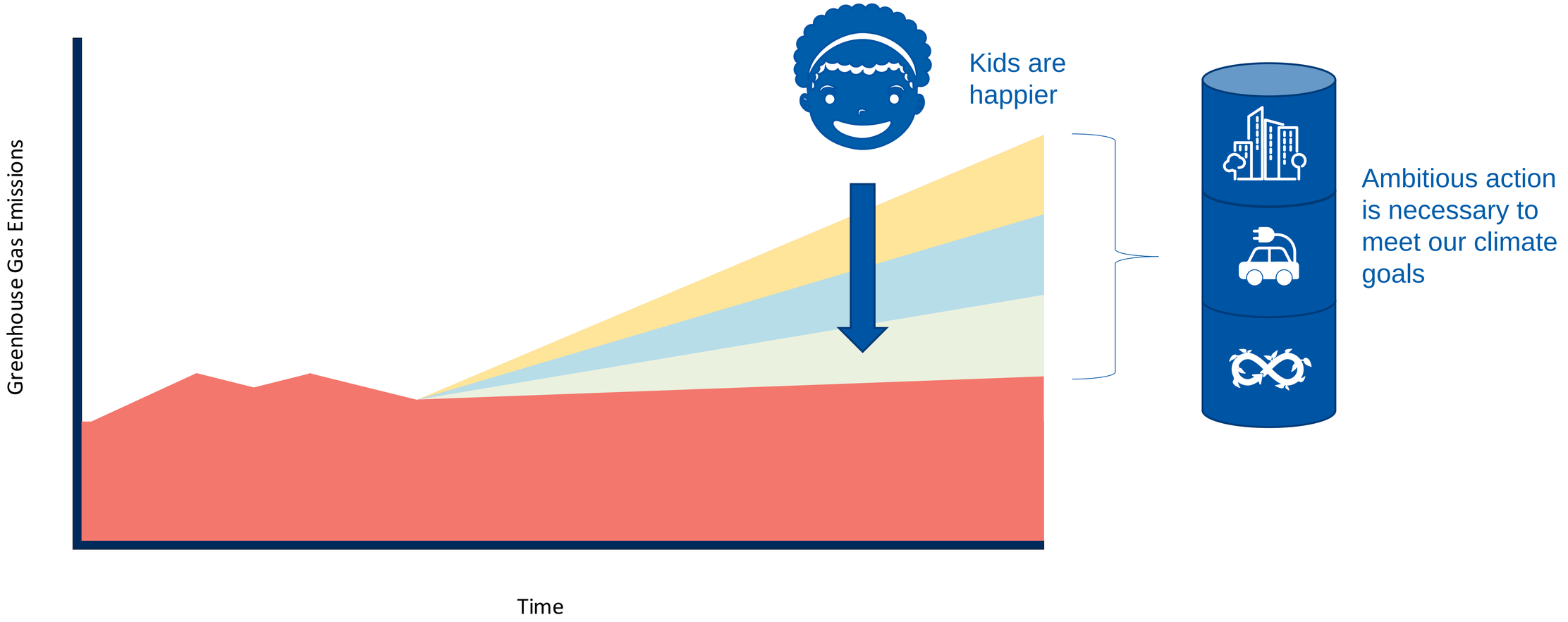
Greenhouse Gas Emissions
Time
Kids are happier
Ambitious action is necessary to meet our climate goals

Sustainable Healthy Cities
A National Science Foundation-supported Sustainability Research Network (SRN)

Kara Kockelman PhD

THE UNIVERSITY OF TEXAS AT AUSTIN

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PRINCETON UNIVERSITY

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UNIVERSITY OF MINNESOTA

UNIVERSITY OF MINNESOTA

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Local Governments for Sustainability

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Land Use & Transit

Example of Strategies

- **TOD** (% growth in TOD areas)
- **New light rail investments** (Blue Line extension)
- **Bus fleet electrification**
- **Operations and policy instruments for travel demand management**
  - Credit-based Congestion Pricing
  - Gas taxes
  - Ride sharing
  - Car sharing incentives
  - Registration fees
  - VMT fees
- **Electric vehicle adoption**

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Equity Assessment

How do we predict the equity impact of climate actions?

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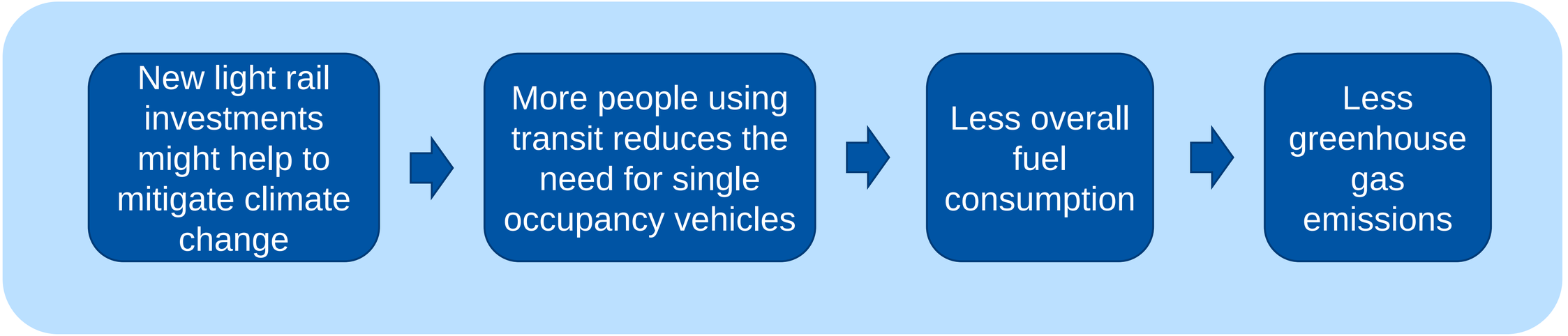
What does the literature say about making these actions equitable?

For example…



How can we analyze this through an equity lens?

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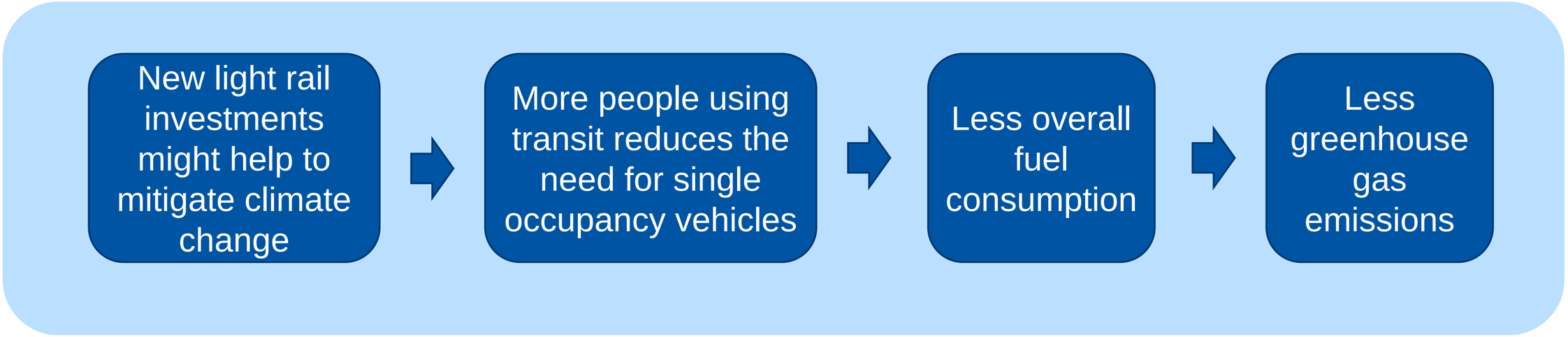
Who uses transit?

How are investments paid for?

Who is most harmed by climate change

What are the economic tradeoffs?



Should transit be made to improve equity?

What is the racial history of our region?

How has transit worked so far in our region?

Do people profit from transit?

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Database

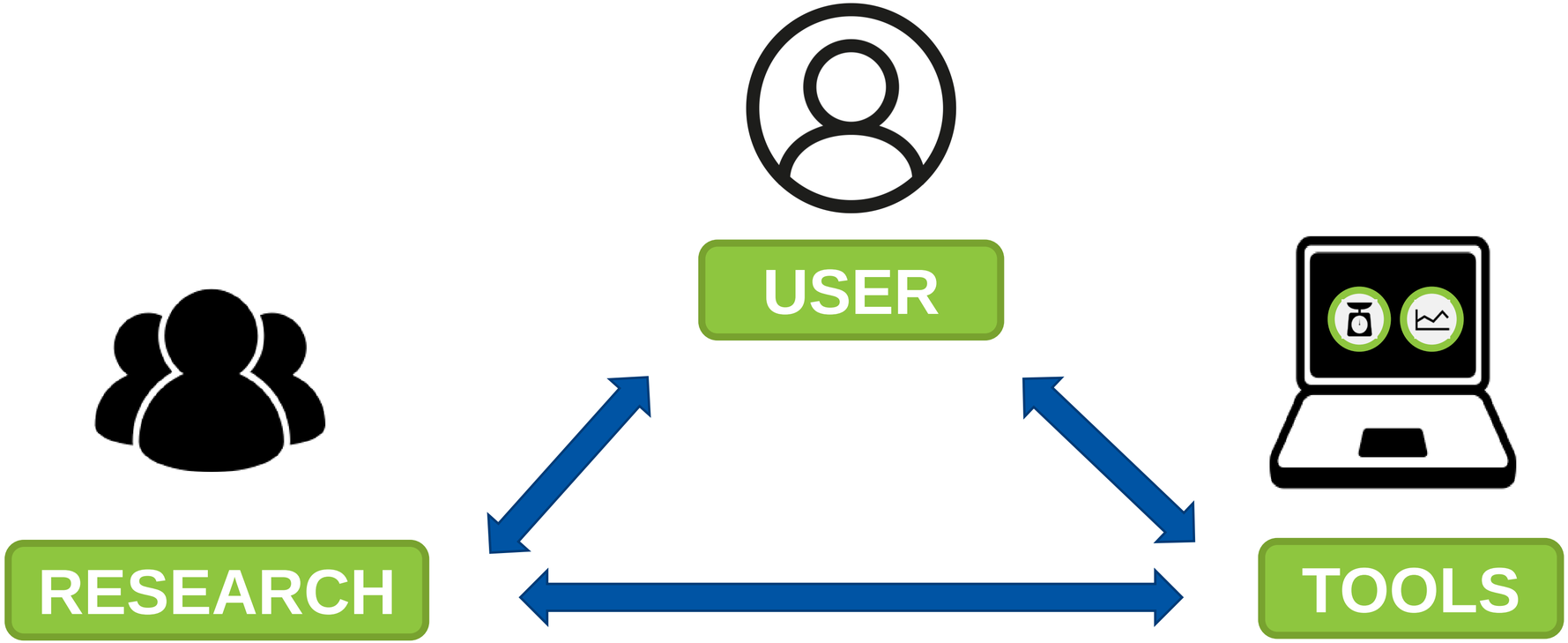
User Interface

Metro Climate Stats

DATABASE

USER INTERFACE

USER INTERFACE



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Contributors

MINNESOTA POLLUTION CONTROL AGENCY

DEPARTMENT OF TRANSPORTATION

GREAT PLAINS INSTITUTE

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Interesting Links

- Delaware Valley Energy and GHG Emissions Profiles
- 2015 Chicago Regional Greenhouse Gas Emissions Inventory
- CoolClimate Maps by University of California, Berkeley

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