Panel 3: Spatial Analytical Methods and Future Scenarios

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Overview of Presentation

1. Project Background

2. The role and use of scenarios

3. Creating Scenarios for the Boston Region

4. Discussion

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1. Project Background

- Increasing global interconnectedness has led to urgent large-scale problems -- clear need for preventative approaches & linking local with global

- Developing scenarios to support regional planning for sustainability by providing tools and methods

- Piloting this approach in Boston region

2. Role of Scenarios

- Scenarios=Future Images + Possible Pathways
- Stories, both qualitative and quantitative, about how the future *could* unfold
- Fire up imagination, inspire and motivate action
- Early warnings about imminent dangers based on current trends
- Generate knowledge to conceive and evaluate alternative pathways
- Provide social legitimacy for early action

Branch Points

a time for choices

Sources of Uncertainty

- *Ignorance*
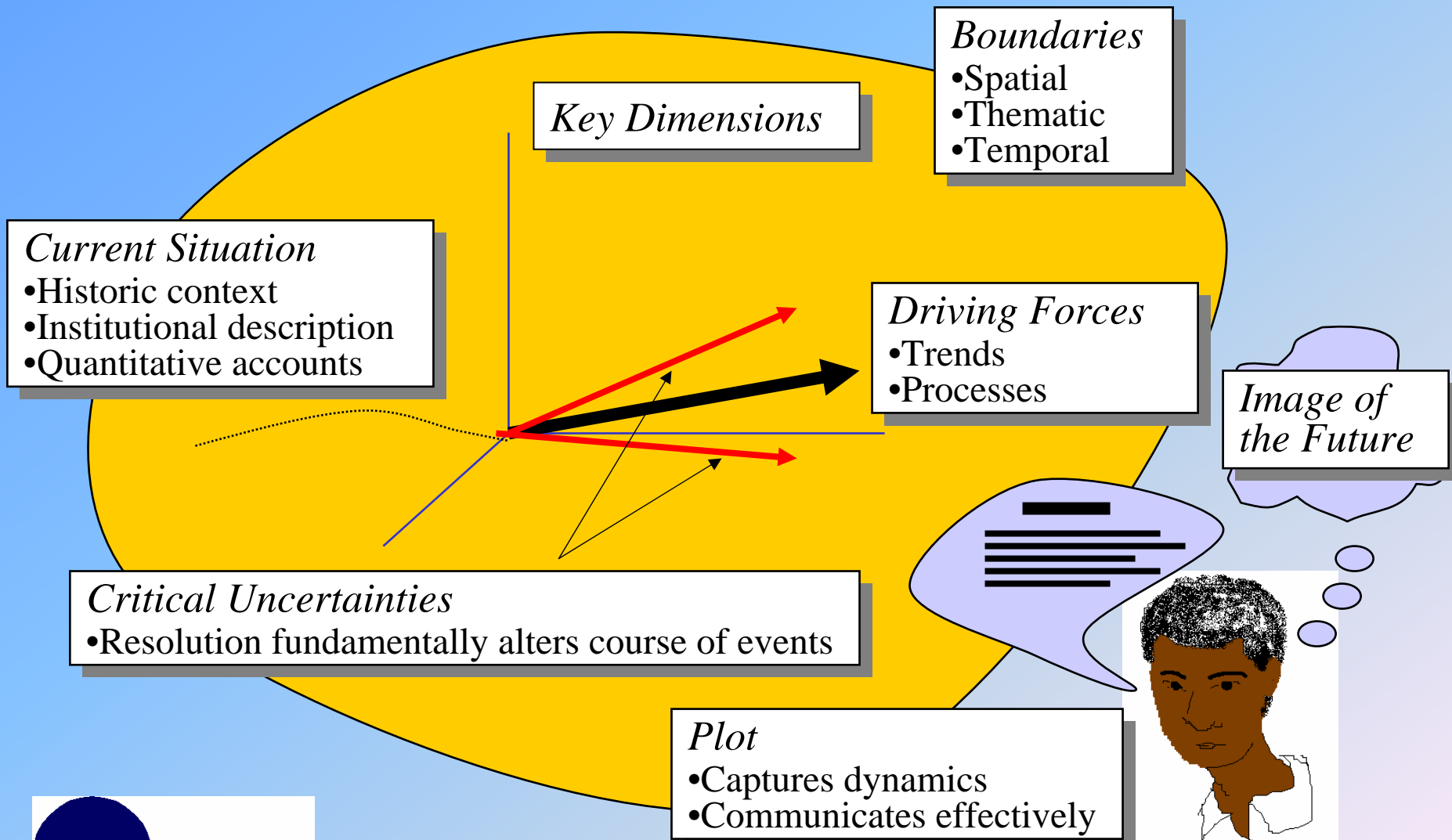- *Surprise*
- *Volition*

SCENARIOS

Components of Scenarios

- Where do we want to go?
    - *Images* of economy, politics, culture and society that suggest coherent and plausible futures
- How do we get there?
    - *Pathways* to bridge today's conditions with the images of the future
    - *Actions*: gathering resources, motivating people

Anatomy of Scenarios

Boundaries
- Spatial
- Thematic
- Temporal

Key Dimensions

Current Situation
- Historic context
- Institutional description
- Quantitative accounts

Driving Forces
- Trends
- Processes

Image of the Future

Critical Uncertainties
- Resolution fundamentally alters course of events

Plot
- Captures dynamics
- Communicates effectively

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Global Links:
Implications for Local Scenarios

- Local scenarios may connect more tangibly to social change processes than global scenarios

- Enlarges and enriches stakeholder process

- Promotes linkage to initiatives around the world; builds global solidarity

- Introduces exogenous variables that condition local planning and decision-making

- Identifies new goals and indicators

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Multi-Stakeholder Processes

- Normative visions and scenarios without broad stakeholder endorsement will never be realized

- On the other hand, stakeholders have difficulties thinking "out of the box"

- Need concrete small steps that can be realized in the short term to demonstrate success

- Visioning and backcasting together with stakeholders can facilitate social learning

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3. Developing Scenarios for the Boston Region

- Three archetype scenarios being developed:
    - **Business-As-Usual** (BAU): little change in production and consumption patterns; GHG emissions and ecological footprints grow; equity not addressed
    - **Policy Reform**: technological and policy measures emphasized to moderate ecological destruction and social inequality
    - **Deep Change**: changes in values lead to changes in lifestyles and institutions (along with technological innovations) to achieve sustainability with global responsibility

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Scenario 1: Business-As-Usual

Boston in 2050 stays the course of Boston in 2005:

- Dominant values ("the American dream") and consumerism persist
- Income and health inequalities become deeper
- Dependence on imported raw materials increases
- Urban sprawl and car dependence grows
- Increased CO_2 emissions and footprints leads to climate change with global as well as local impacts

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Scenario 2: Policy Reform

Boston in 2050 has seen government-led policies and technological change to address many of the problems of the BAU scenario:

- CO_2 emissions have decreased somewhat
- Income and social inequalities reduced
- Resources are used more efficiently
- Sprawl mitigated to a degree
- Global resource depletion continues
- Climate change and global inequality persist

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Scenario 3: Deep Change

By 2050, Boston has seen political engagement towards transformation of values and lifestyles:

- Growing awareness of global connectedness and responsibility

- Deep changes in lifestyles, behavior, and institutions have led to huge reductions in CO_2 emissions and footprint

- Quality-of-life (clean environment, sense of community, social equity) replaces economic growth and material consumption as key driver

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Business-As-Usual Transportation & Land Use

- Most growth seen in communities outside Rte. 128
- Private car use and VMT greater than in 2005; GHG emissions continue to grow
- Congestion and commuting times worsen
- Large inefficient vehicles continue to dominate
- Modest improvements in public transportation, but transit ridership low

Policy Reform
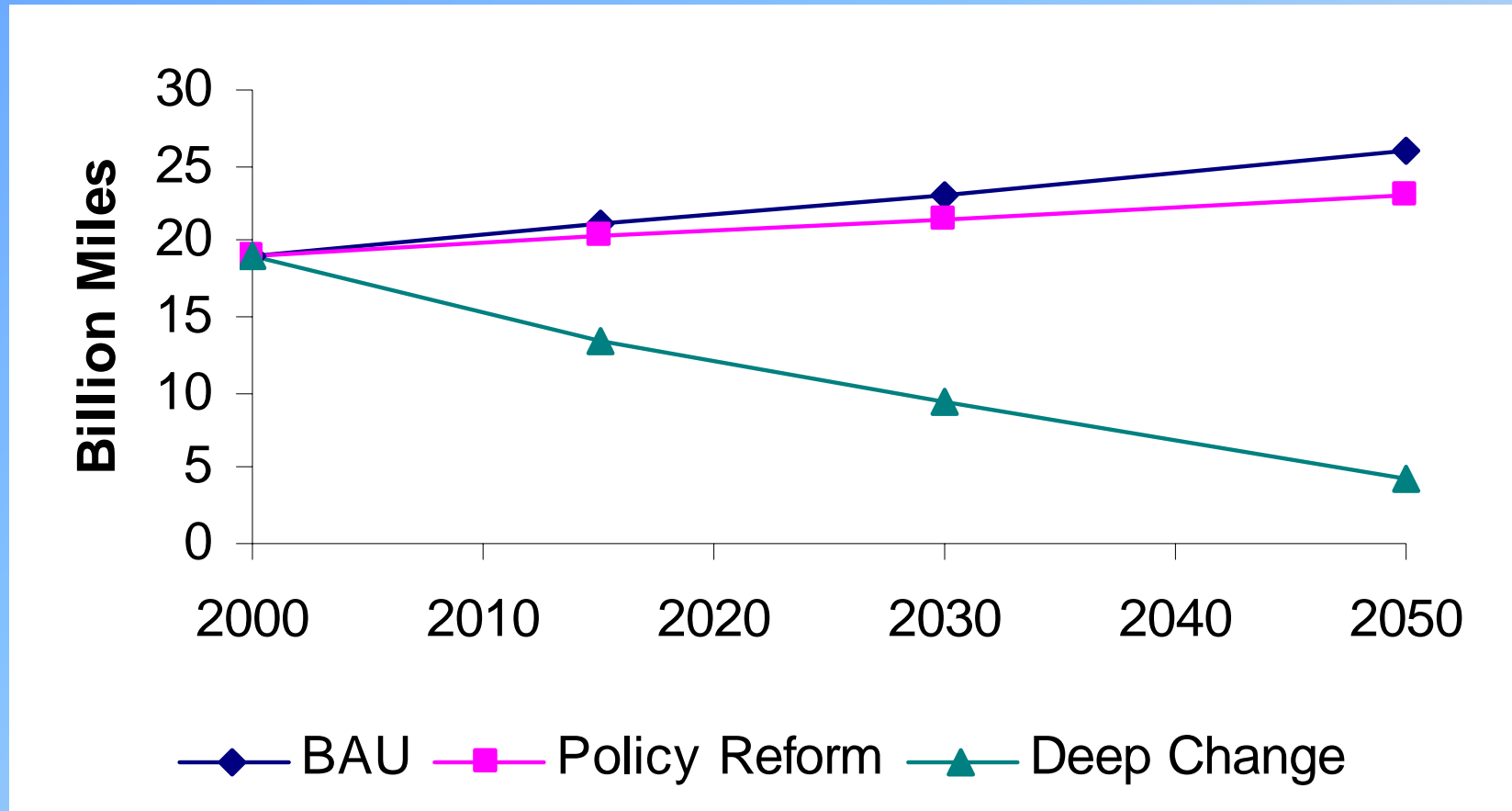# Transportation & Land Use

- High fuel and vehicle taxes curtail private vehicle use; VMT reduced modestly

- Congestion and commuting time stabilized at 2005 levels

- Transport-related GHGs reduced moderately through efficiency improvements

- Improved rail and transit links (e.g., North & South Stations)

- TOD popular in much of the inner core communities

- Lack of regionally coordinated land-use planning; sprawling development in outer ring

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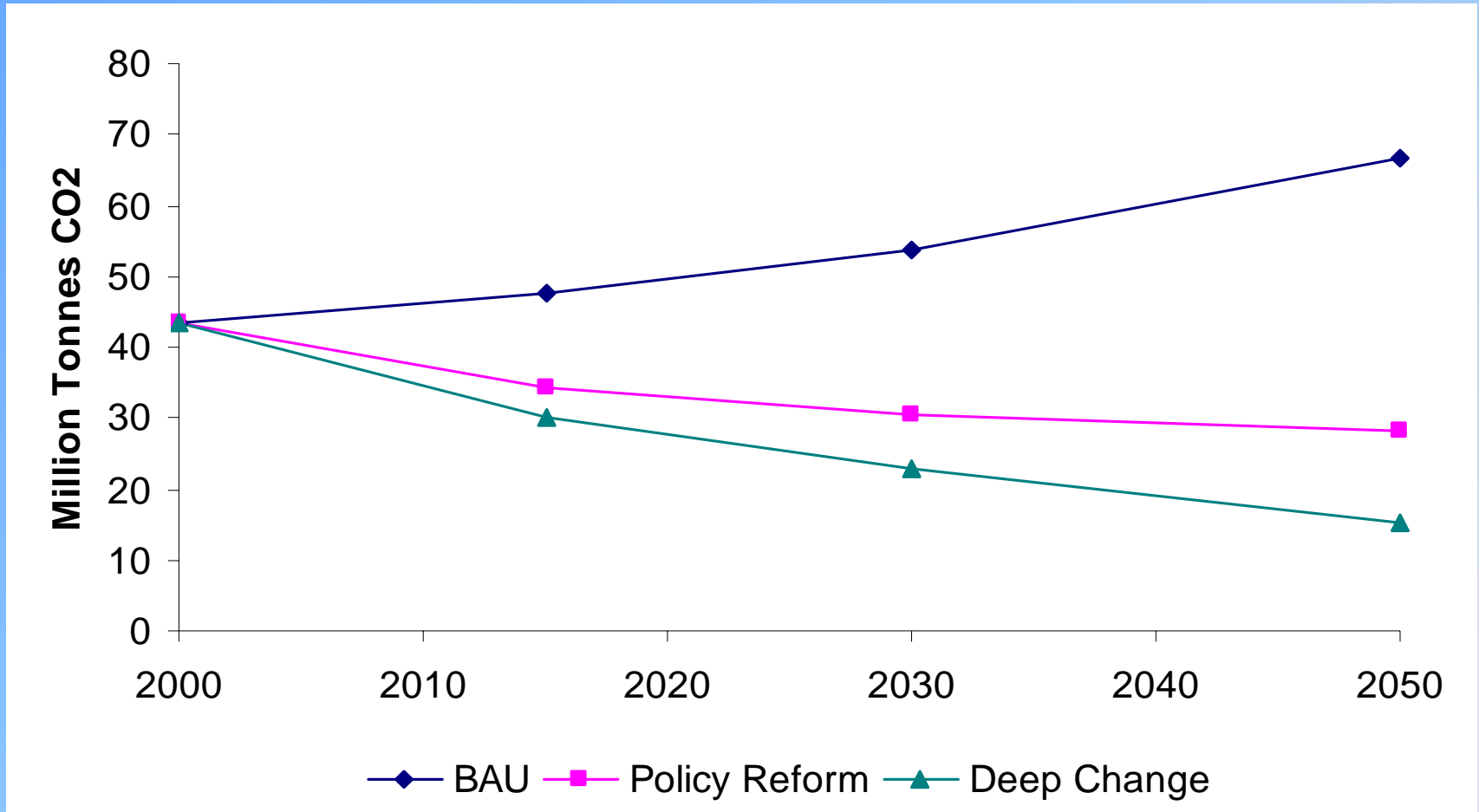*A Collaborative Project for the Boston Region*

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Deep Change
Transportation & Land Use

- GHG emissions from transportation reduced by 70%

- New regional governing body coordinates land-use decision-making; promotes density, transit, and healthy lifestyles and mixed use

- Private car use reduced significantly; transit and alternative modes dominate

- Major roadways redesigned to accommodate alternative modes

- Congestion and commuting time markedly reduced

- Parts of downtown Boston closed to private vehicles; served by free transit and other modes
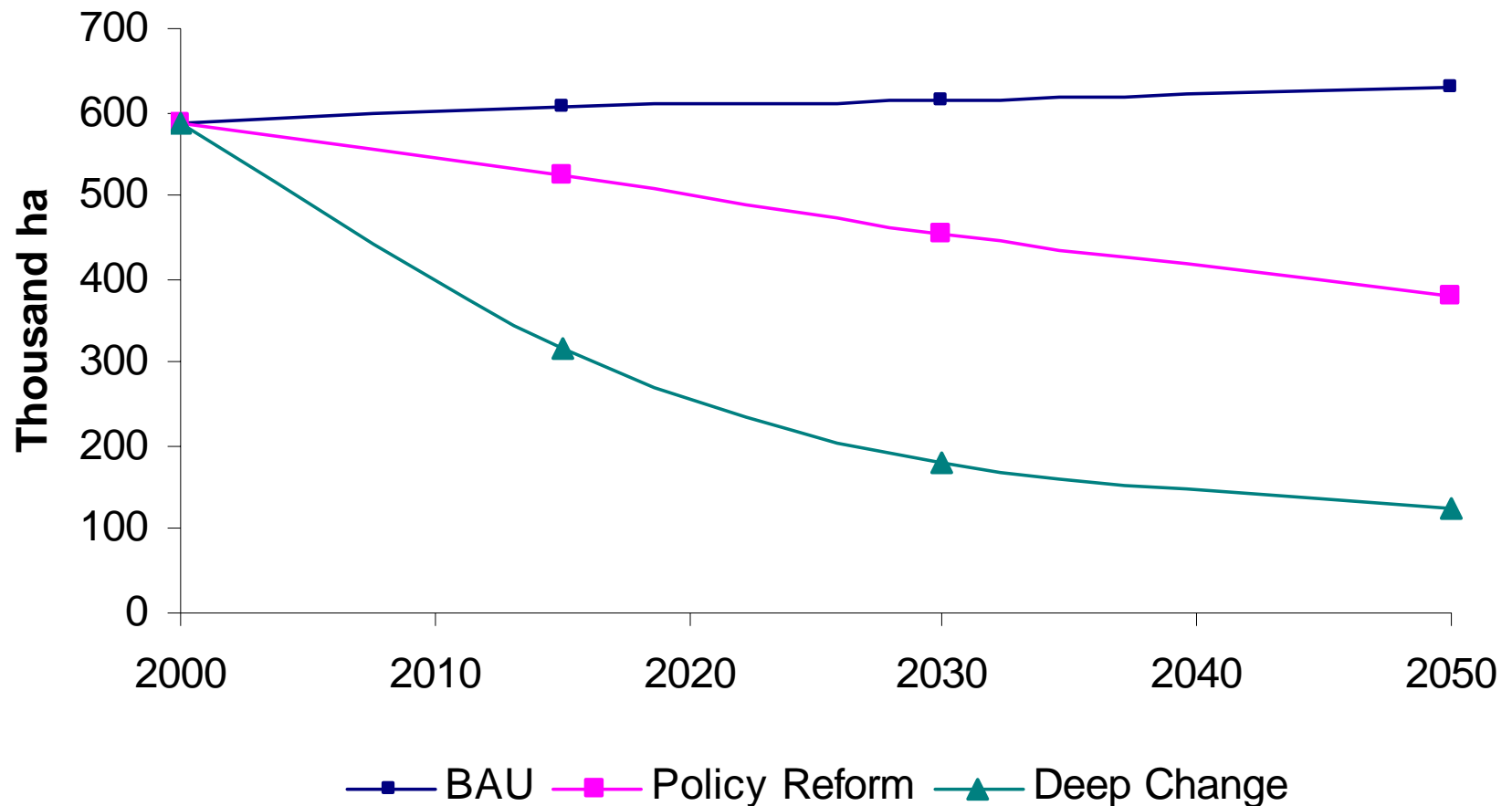
Annual Miles Traveled in Personal Vehicles

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CO$_2$ Emissions

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Land Area Required for Food

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Business-As-Usual
Poverty & Inequality

- New employment opportunities mostly outside inner core

- Little attention to poverty reduction; poverty rate persists

- Growing income gap between skilled and unskilled jobs

- Inequality continues to increase

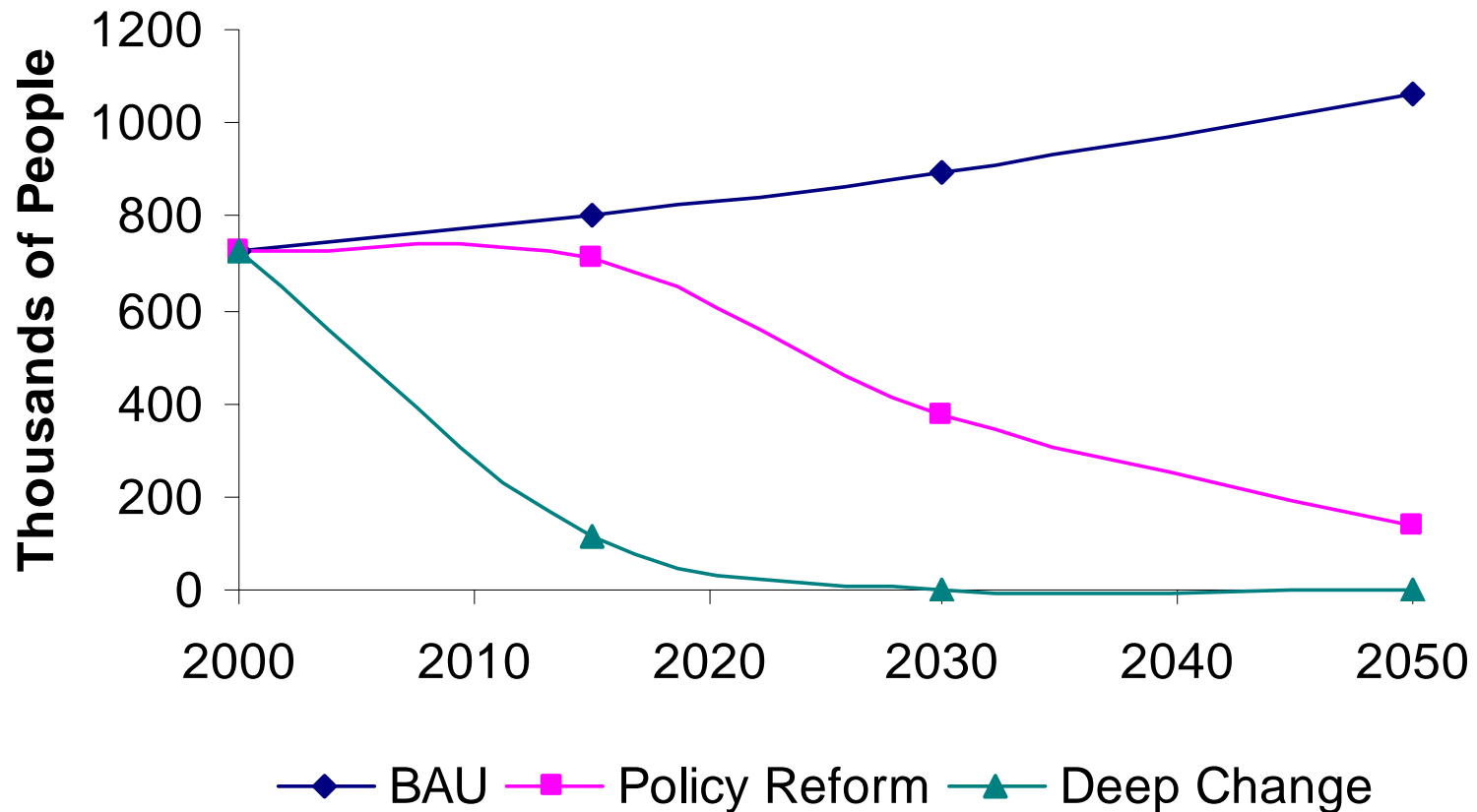# Policy Reform
Poverty & Inequality

- Employment centers develop near transit nodes (diverse opportunities: from service to professional)

- Policy initiatives raise the minimum wage, increase job training opportunities

- Poverty stabilized but remains concentrated in inner core

- Inequality improves slightly

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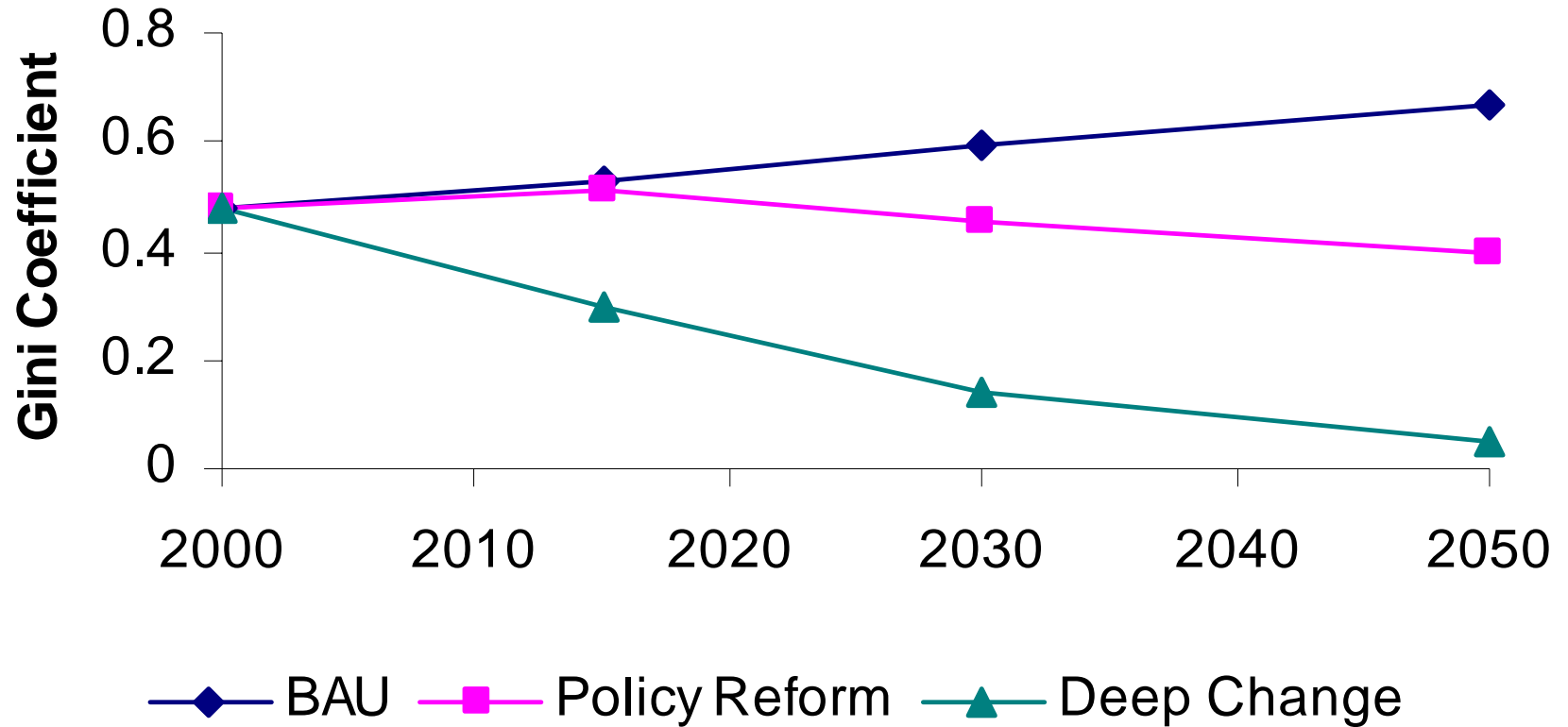*A Collaborative Project for the Boston Region*

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Deep Change
Poverty & Inequality

- Poverty reduction and equality among key values adopted and acted upon
- Shorter work week leads to reduction in unemployment
- Affordable housing and universal health care reduce the financial burden on poor households
- "Living wage" adopted and poverty significantly reduced
- Considerable improvement in income equality

Population Below the Poverty Line

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Income Inequality

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4. Discussion

- What does it mean for the Boston region to pursue a sustainable future when the rest of the country/world is not?
  - Boston could serve as a model for other regions
  - We could assume that similar deep changes are taking place throughout the country and beyond
- What role can scenario development processes play in informing planning and bringing about coherence and a sense of direction?

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