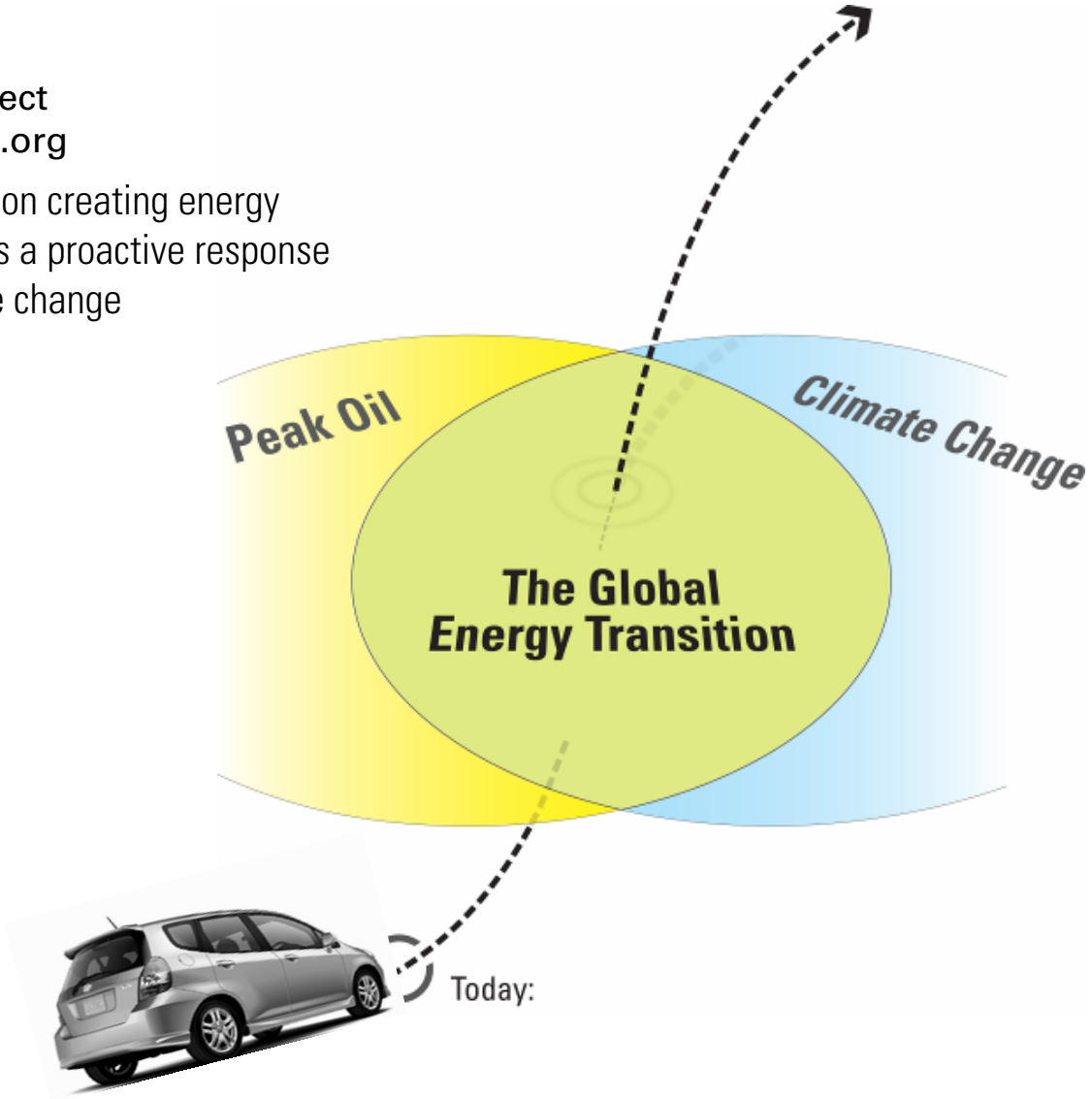
Peak Oil, Climate Change & Transportation

Metro Vancouver Community Sustainability Breakfast May 22, 2008

Bryn Davidson

Dynamic Cities Project
www.dynamiccities.org

A non-profit organization creating energy transition strategies as a proactive response to peak oil and climate change



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1. Energy Transition = Peak Oil + Climate Change
2. Thinking outside the extrapolation
   (using scenarios to plan)

1. Energy Transition = Peak Oil + Climate Change

1. Energy Transition > Emerging Challenges...

Peak Oil

Global
crisis for capitalism
and economic growth

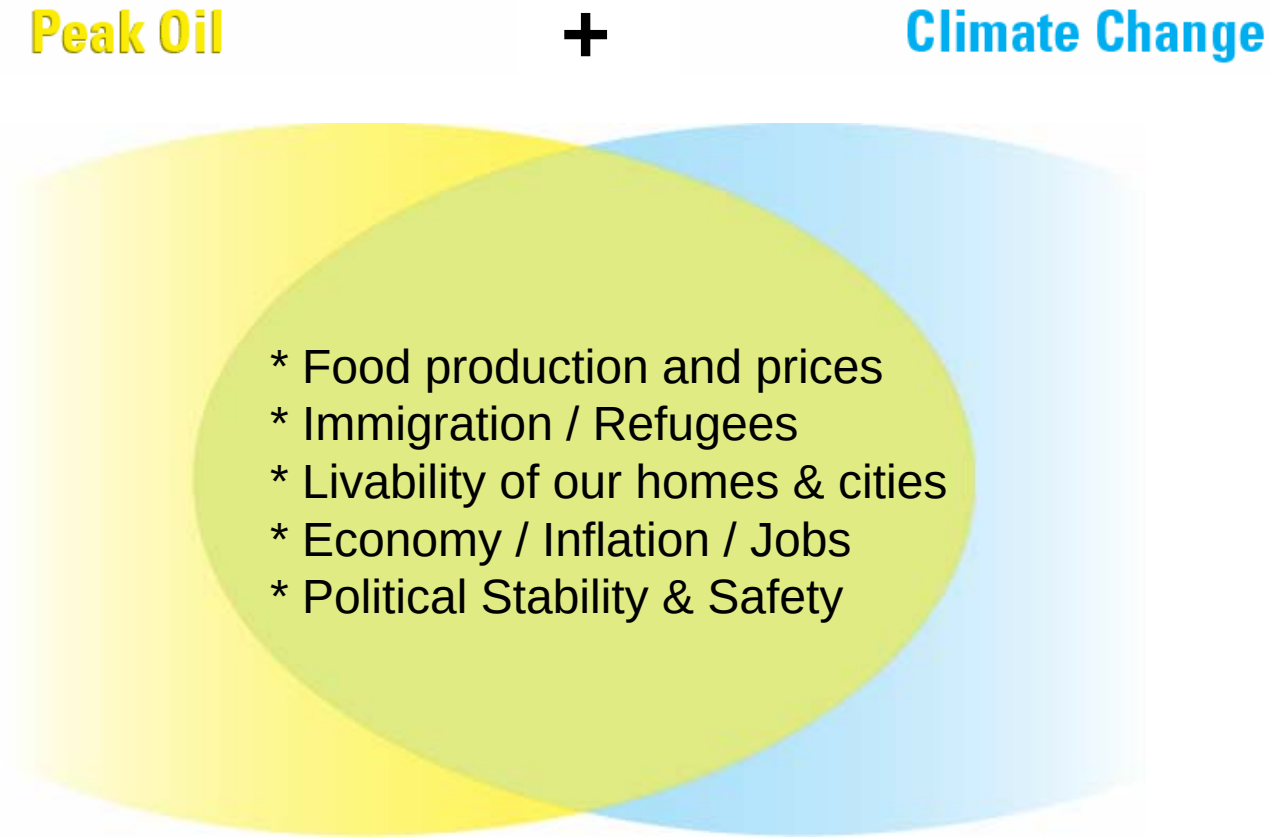
...potentially causing global
humanitarian crises

Climate Change

Global
ecological and
humanitarian crisis

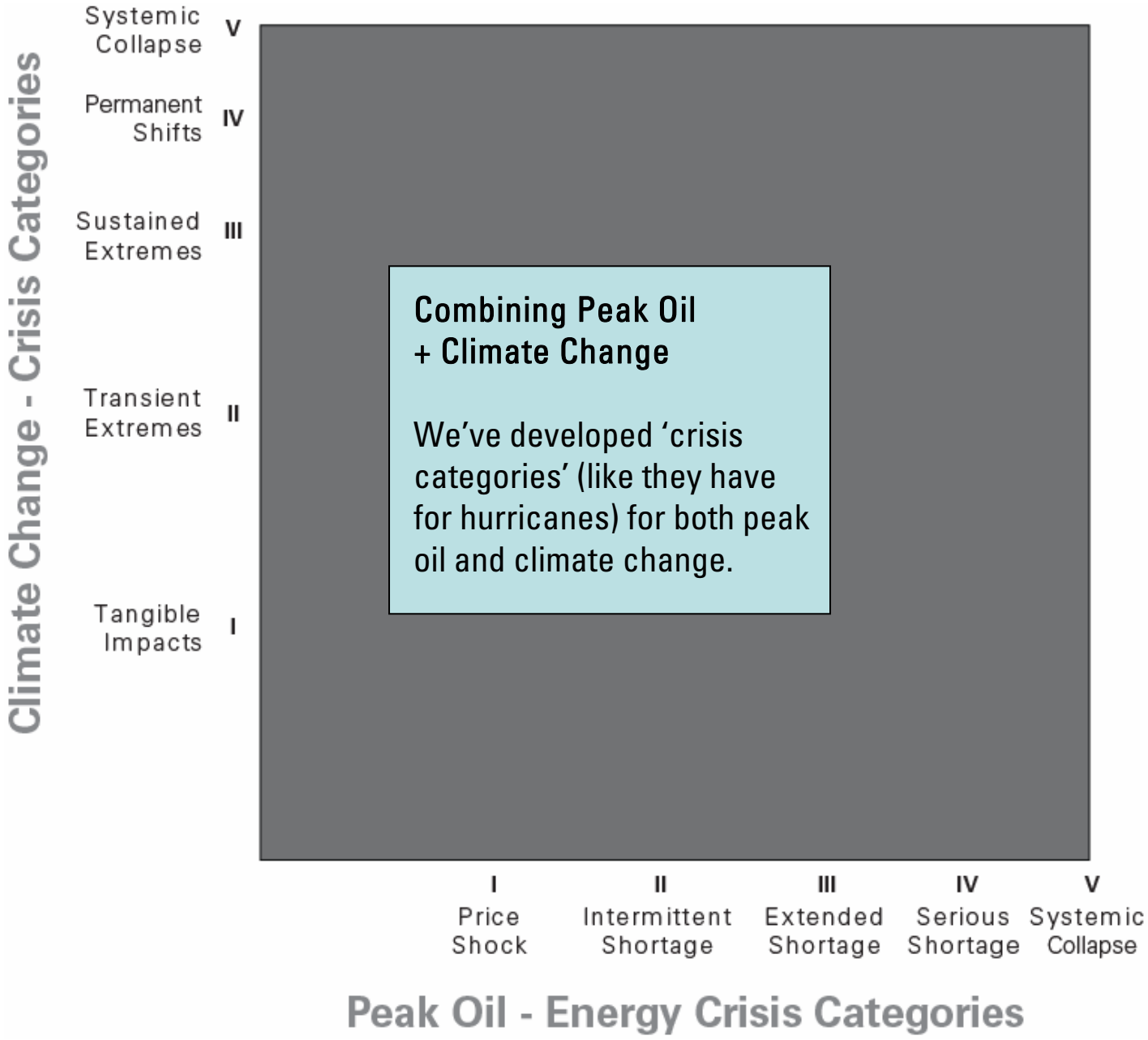
..potentially causing
global economic crises

1. Energy Transition > Emerging Challenges...



There are certain local impacts that will be driven by both peak oil *and* climate change.

1. Energy Transition > Emerging Challenges...



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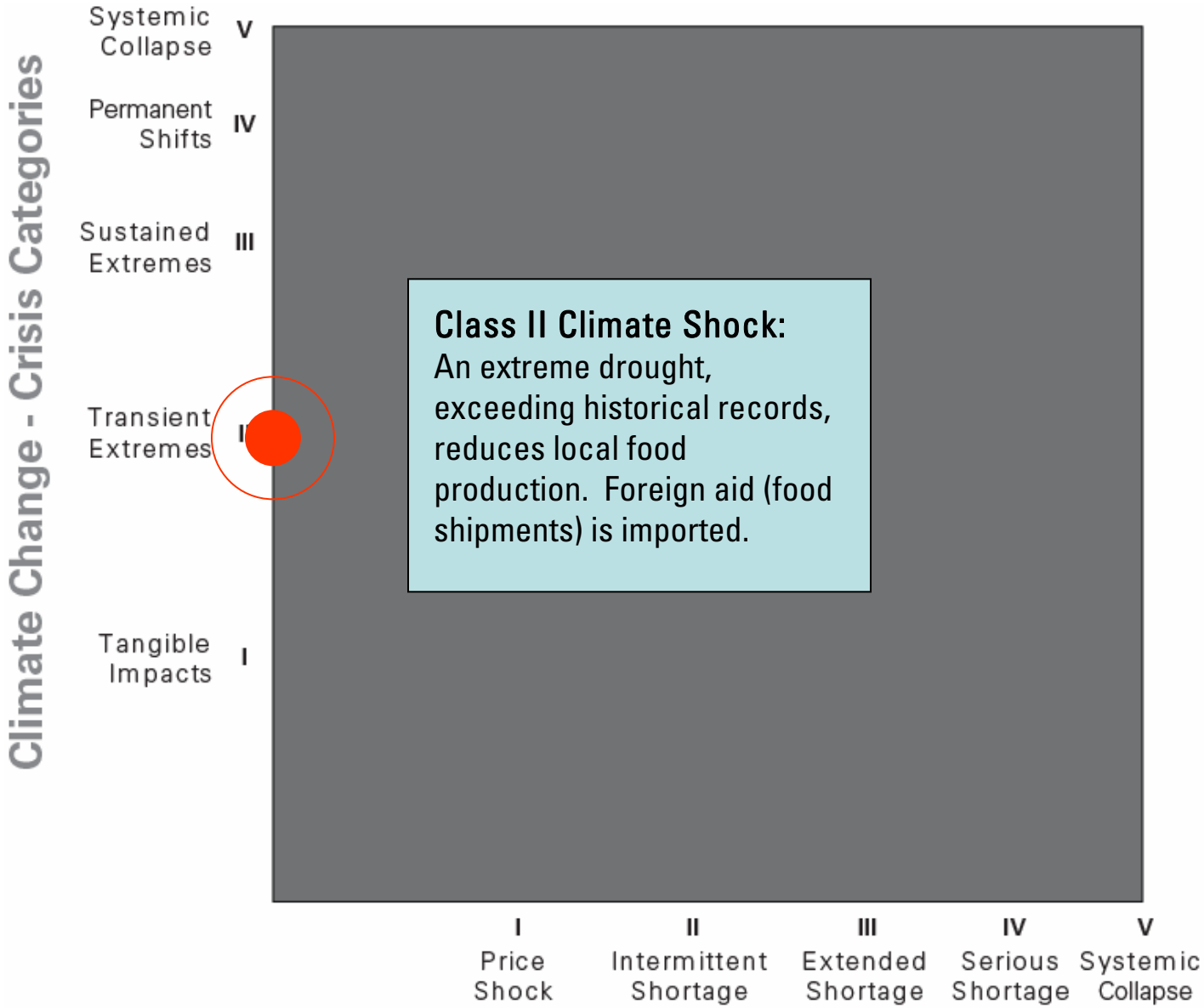

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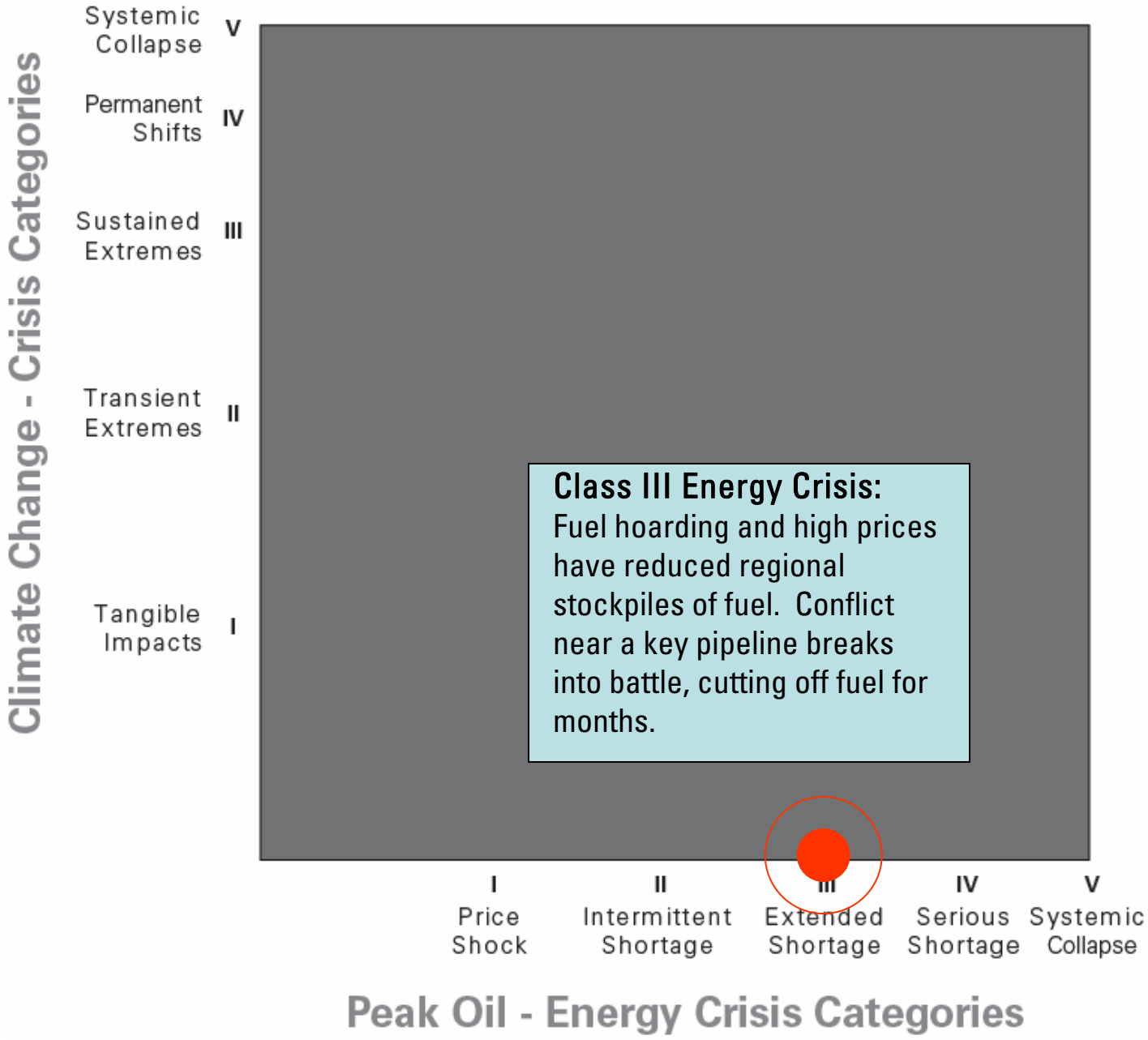

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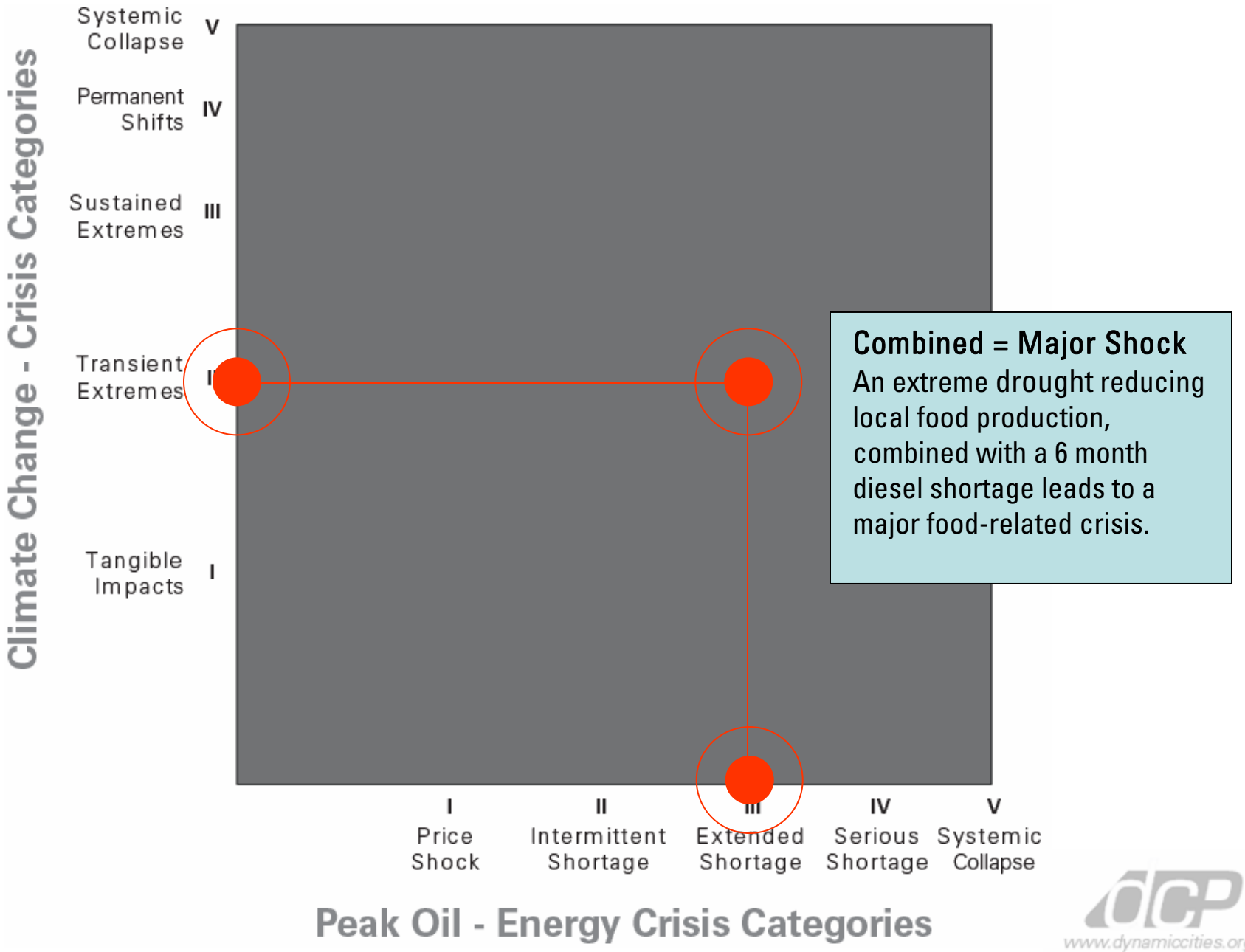

Combined = Major Shock
An extreme drought reducing local food production, combined with a 6 month diesel shortage leads to a major food-related crisis.

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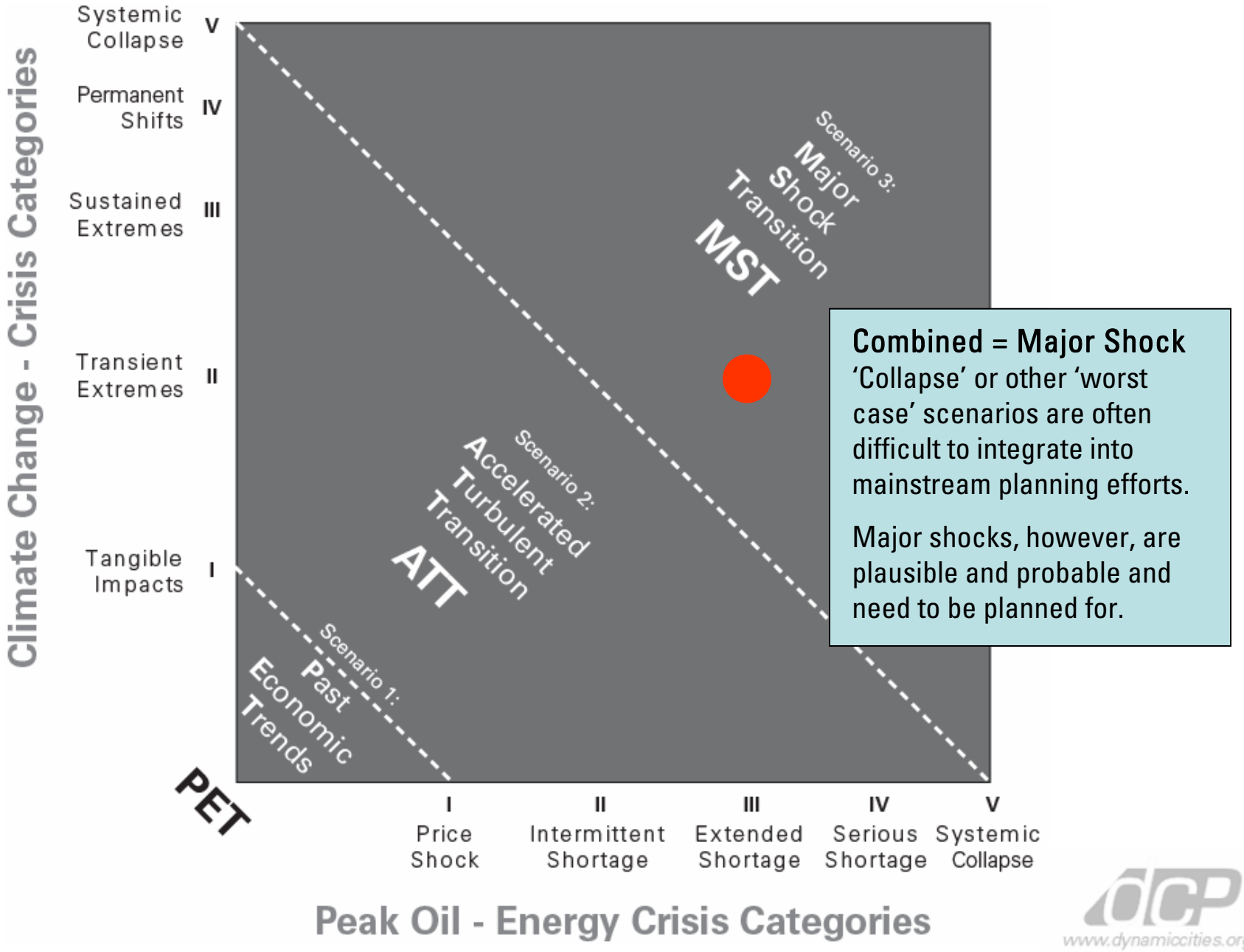
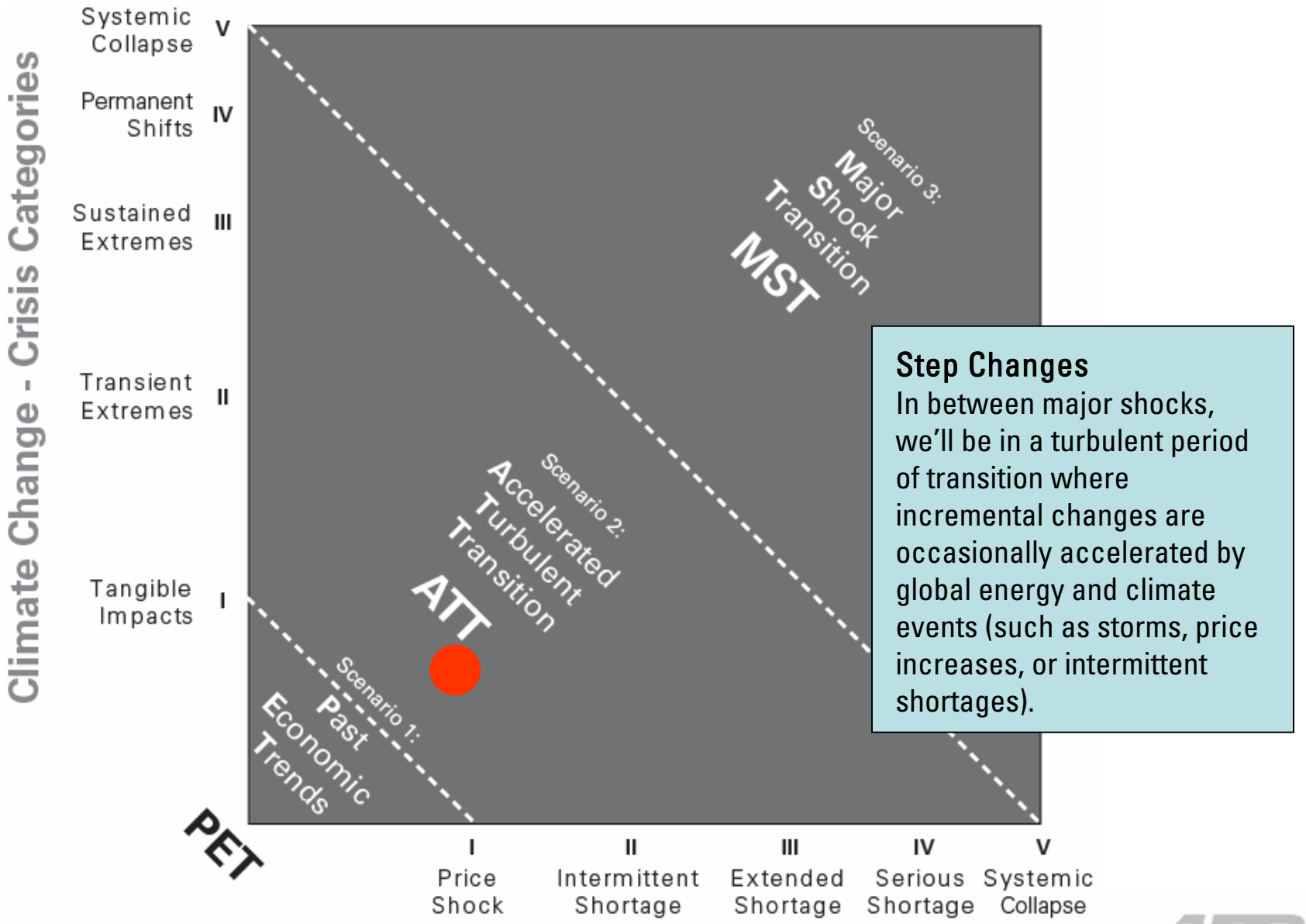
1. Energy Transition > Emerging Challenges...



Combined = Major Shock
'Collapse' or other 'worst case' scenarios are often difficult to integrate into mainstream planning efforts.

Major shocks, however, are plausible and probable and need to be planned for.

1. Energy Transition > Emerging Challenges...



Step Changes
In between major shocks, we'll be in a turbulent period of transition where incremental changes are occasionally accelerated by global energy and climate events (such as storms, price increases, or intermittent shortages).

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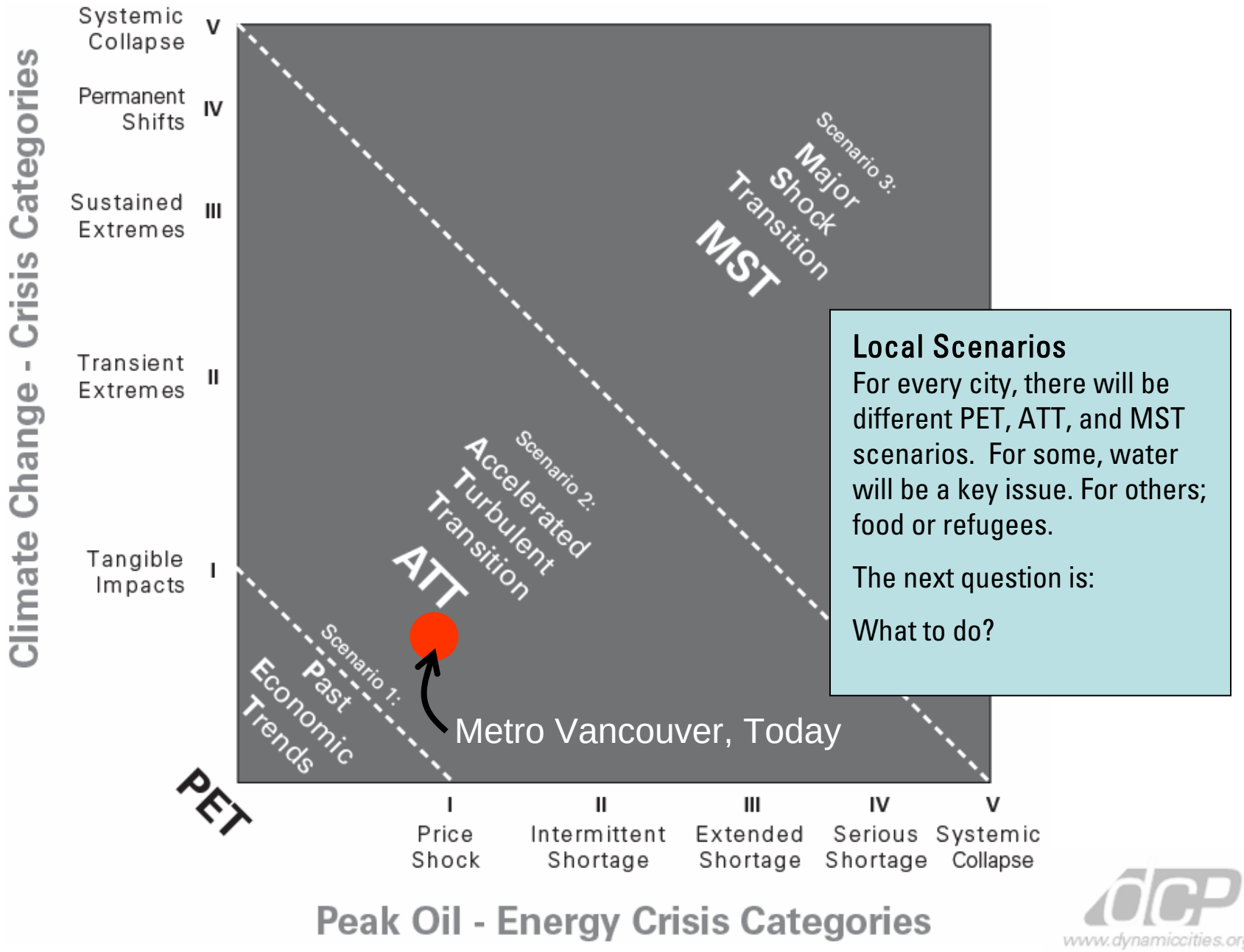
1. Energy Transition > Emerging Challenges...



Local Scenarios

For every city, there will be different PET, ATT, and MST scenarios. For some, water will be a key issue. For others; food or refugees.

The next question is:

What to do?

1. Energy Transition > What to do?

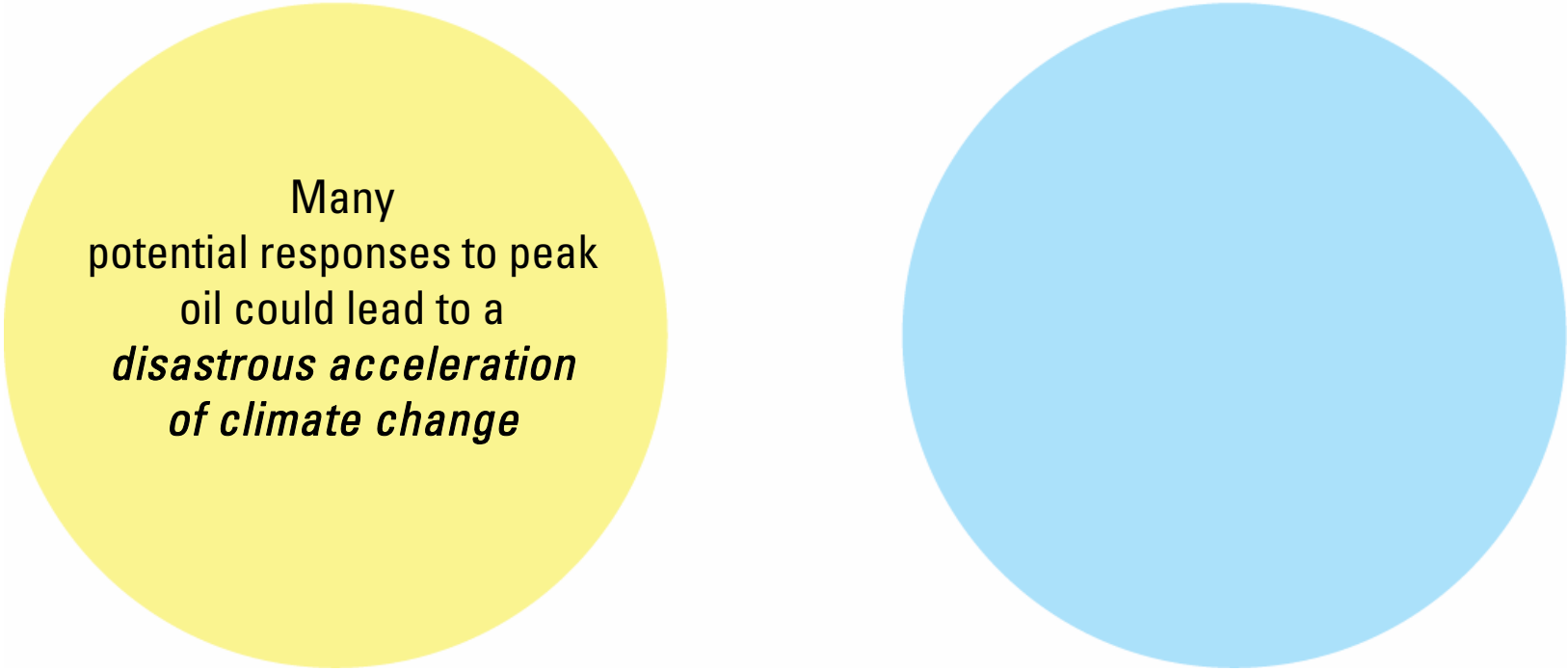
Peak Oil

Vs.

Climate Change

1. Energy Transition > What to do?

Peak Oil **Vs.** **Climate Change**



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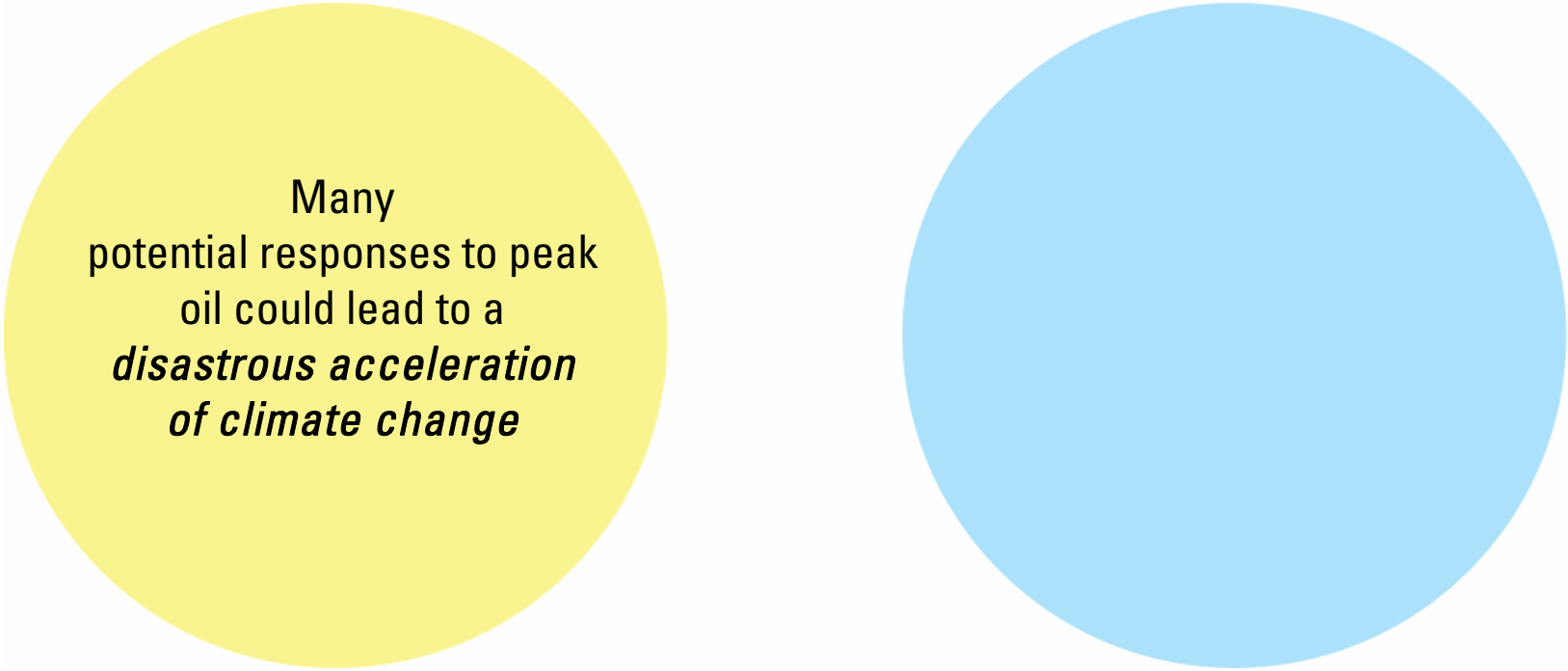

* Gas to Coal Switching
* Coal to Liquids
* Tar Sands and Shale
* Forest Removal for Biofuels

1. Energy Transition > What to do?

Peak Oil **Vs.** **Climate Change**

Many
potential responses to peak
oil could lead to a
disastrous acceleration
of climate change

Many strategies
for addressing
climate change
do nothing to reduce
oil dependence

* Gas to Coal Switching
* Coal to Liquids
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Many strategies
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* Emissions Trading
* Forestry Based Offsets
* Atmospheric Carbon Capture

1. Energy Transition > What to do?

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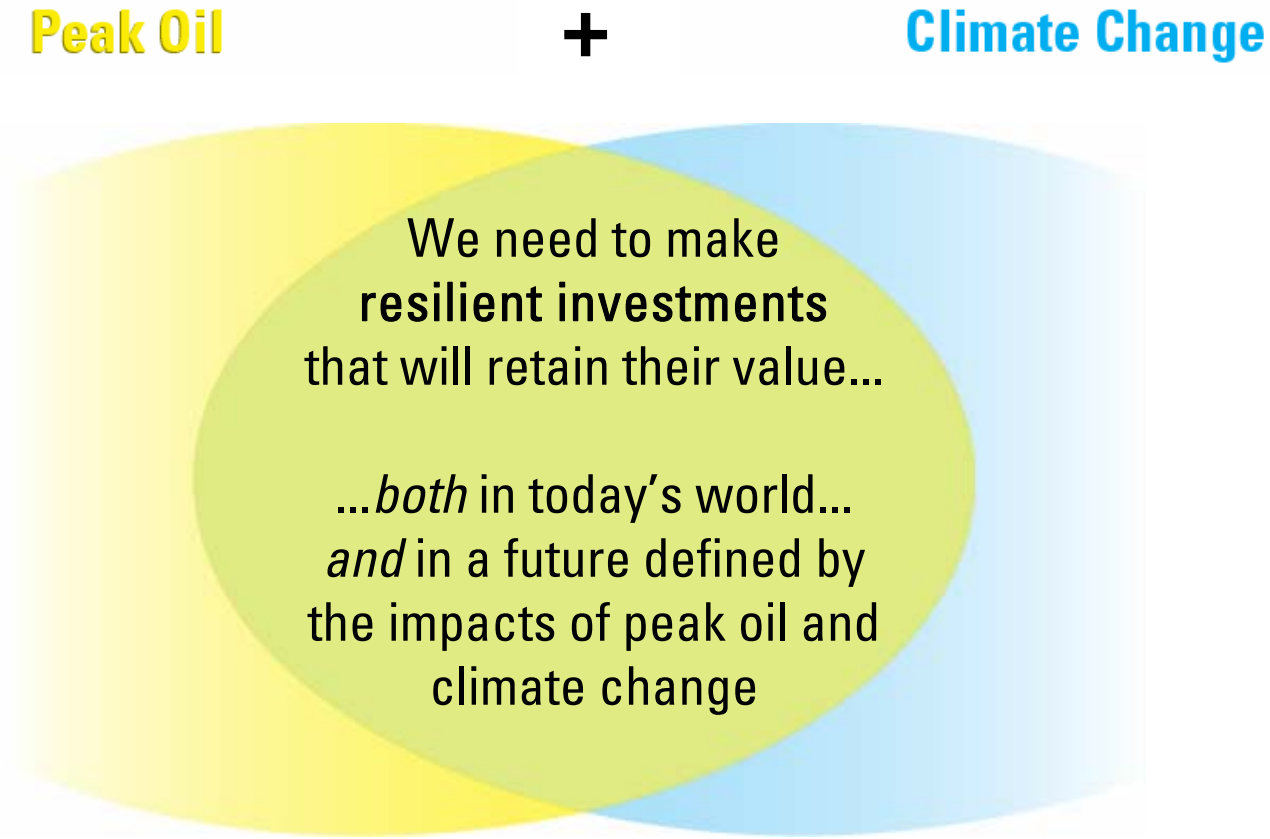

1. Energy Transition > What to do?

PLANETIZEN
THE PLANNING & DEVELOPMENT NETWORK

Airlines Desert Small Towns, Despite Costly Investments in Infrastructure

If you build it, will they come? Not in Hagerstown, Maryland, where airlines have left town despite a brand new runway.

"Earlier this decade, city officials in Hagerstown, Md., started making the case to build a longer runway at their airport to lure service by regional jets, instead of the turboprop planes that provided its only flights.

Several years and $61.4 million later, the city opened its concrete welcome mat, a new 7,000 foot runway, last November — two months after the airport lost scheduled air service altogether.

Despite its costly investment, a dogged marketing effort by local officials and even help from Congress, the airport has had no luck attracting a new carrier, as the industry struggles under soaring fuel prices.

"Could we pick a worse time to go out and get commercial service? Probably not,"

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"Could we pick a worse time to go out and get commercial service? Probably not,"

This investment in infrastructure didn't retain its value in a future increasingly defined by rising fuel prices.

The city spent $60m on a *stranded asset*.

1. Energy Transition = Peak Oil + Climate Change

2. **Thinking outside the extrapolation**
   (using scenarios to plan)

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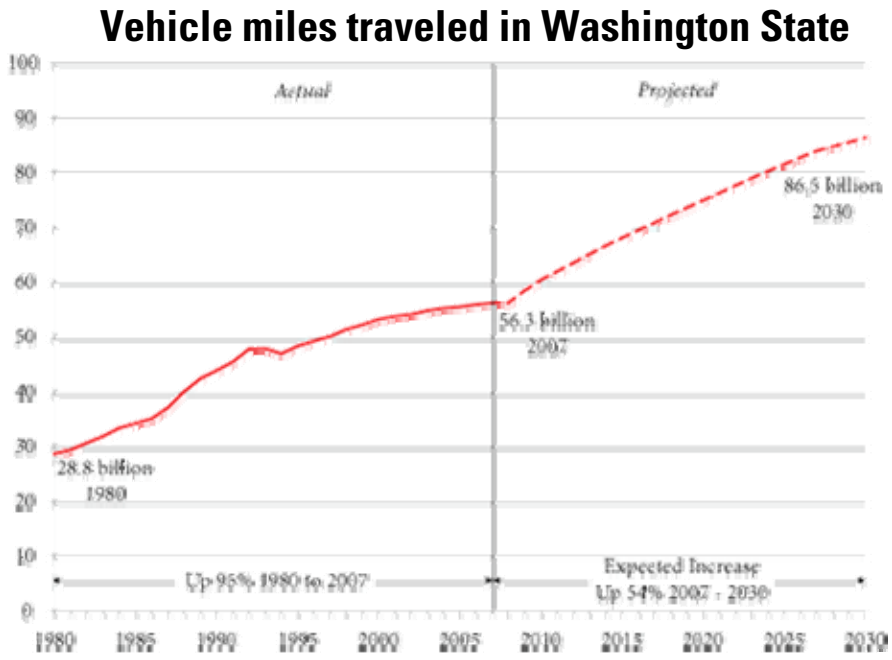


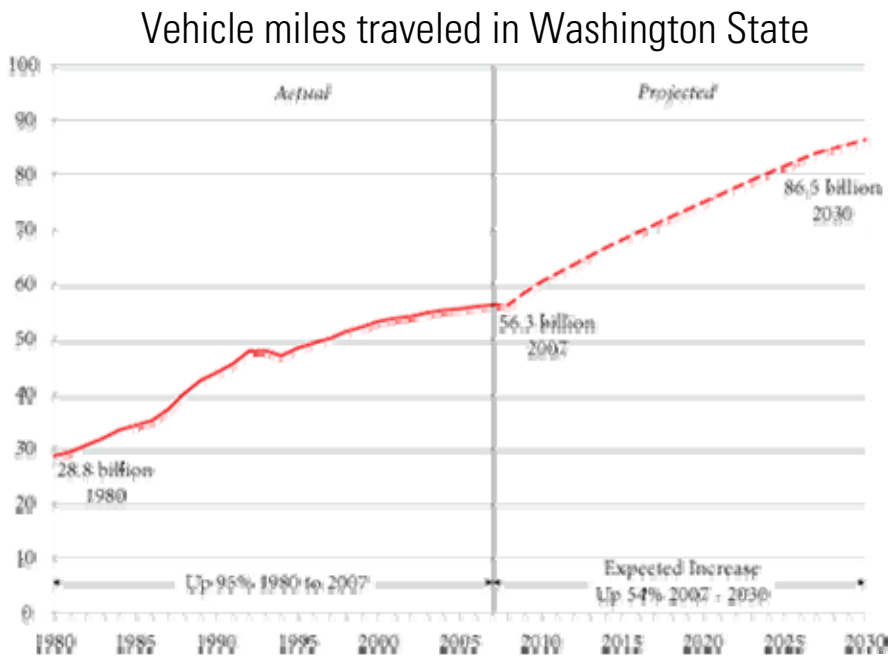
The Past
1980 to 2007:
Up 95%

The Future
2007 to 2030:
Up 54%

Buried within most planning and engineering organizations are charts such as this that show extrapolations of past trends as the only potential future.

chart source = sightline.org

2. Thinking outside the extrapolation



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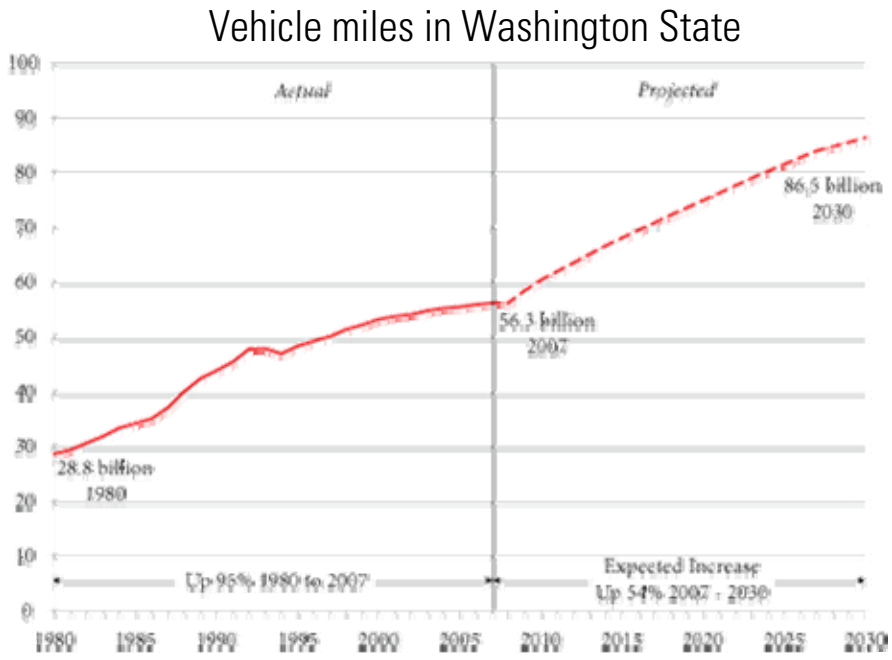


Posted by Stacey W-H
04/22/2008 04:14 PM

“This model was used in Olympia when locals tried to convert a section of Old 99 from 4 lanes to 2, adding a center turn lane, bike lanes and pedestrian amenities.

... the traffic engineers rejected the plan because the projections showed the road would eventually exceed capacity.”

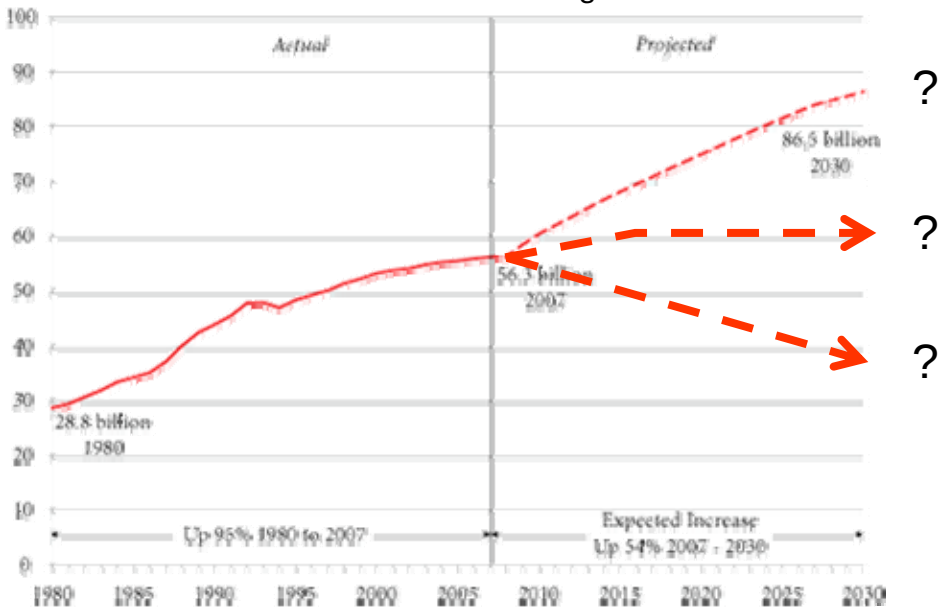
Buried within most planning and engineering organizations are charts such as this that show extrapolations of past trends as the only potential future.

This inevitably leads to a ‘more of the same’ approach.
An approach that is difficult to question...

chart source = sightline.org

2. Thinking outside the extrapolation

Vehicle miles in Washington State



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What if the future is different than the past?

chart source = sightline.org

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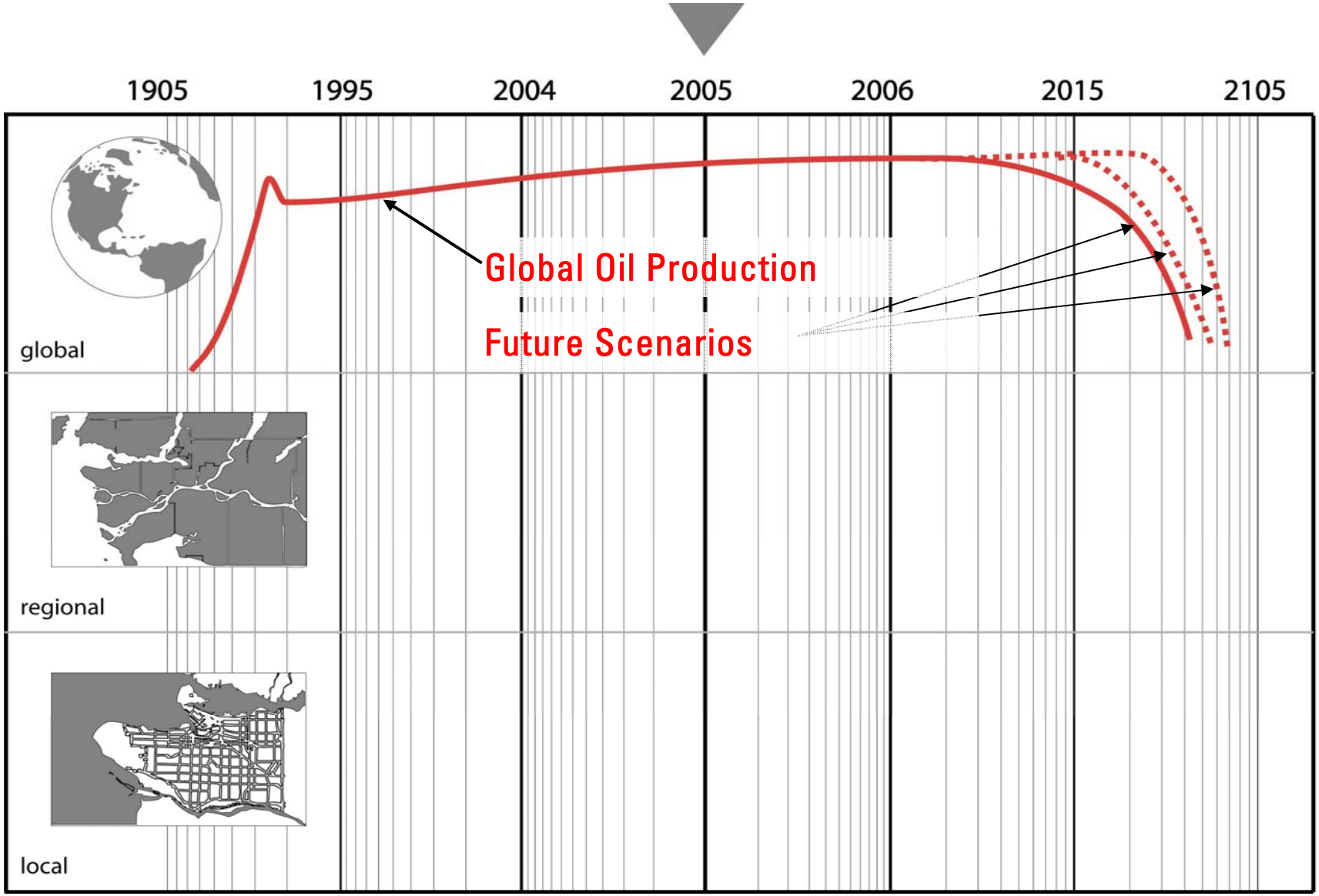

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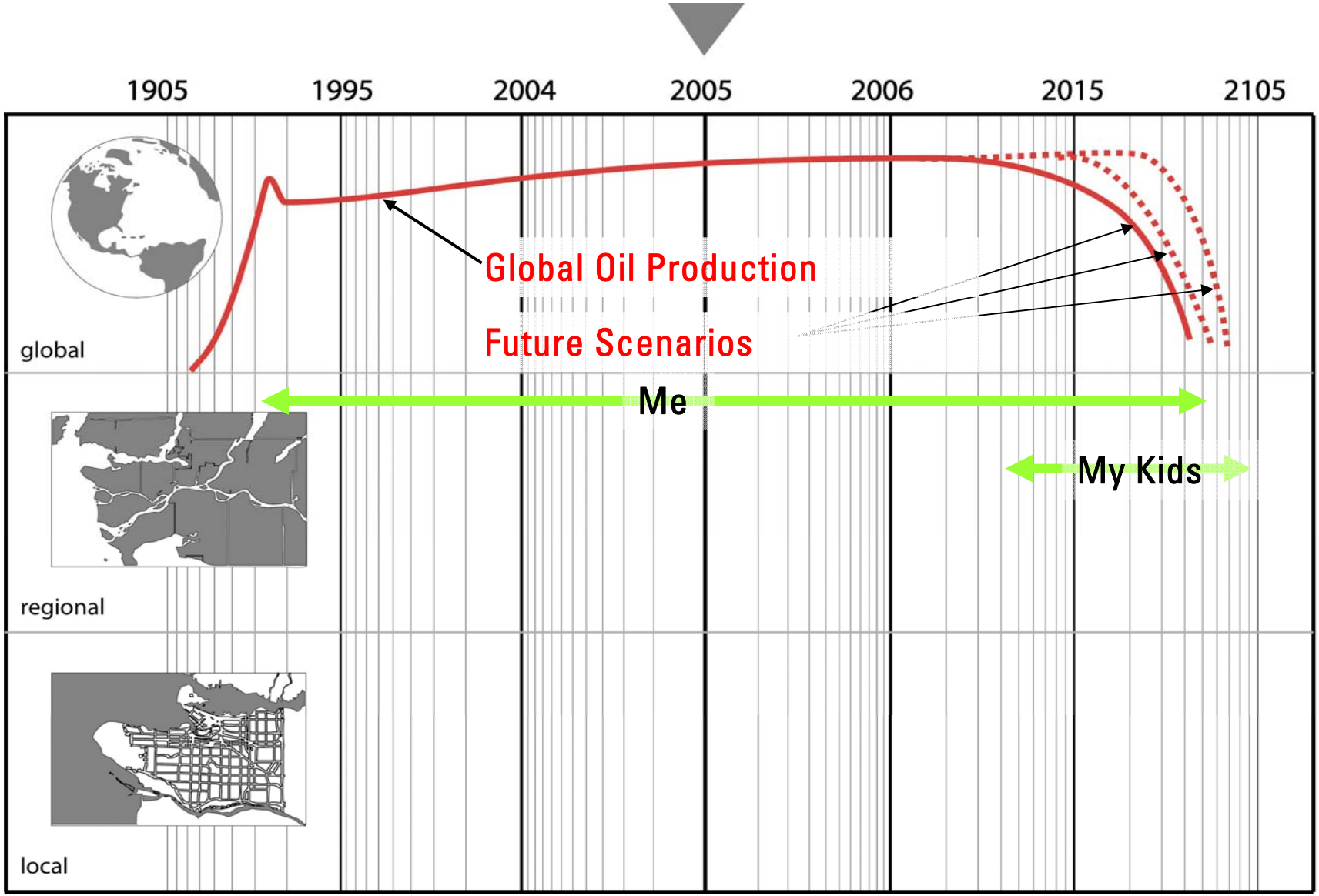

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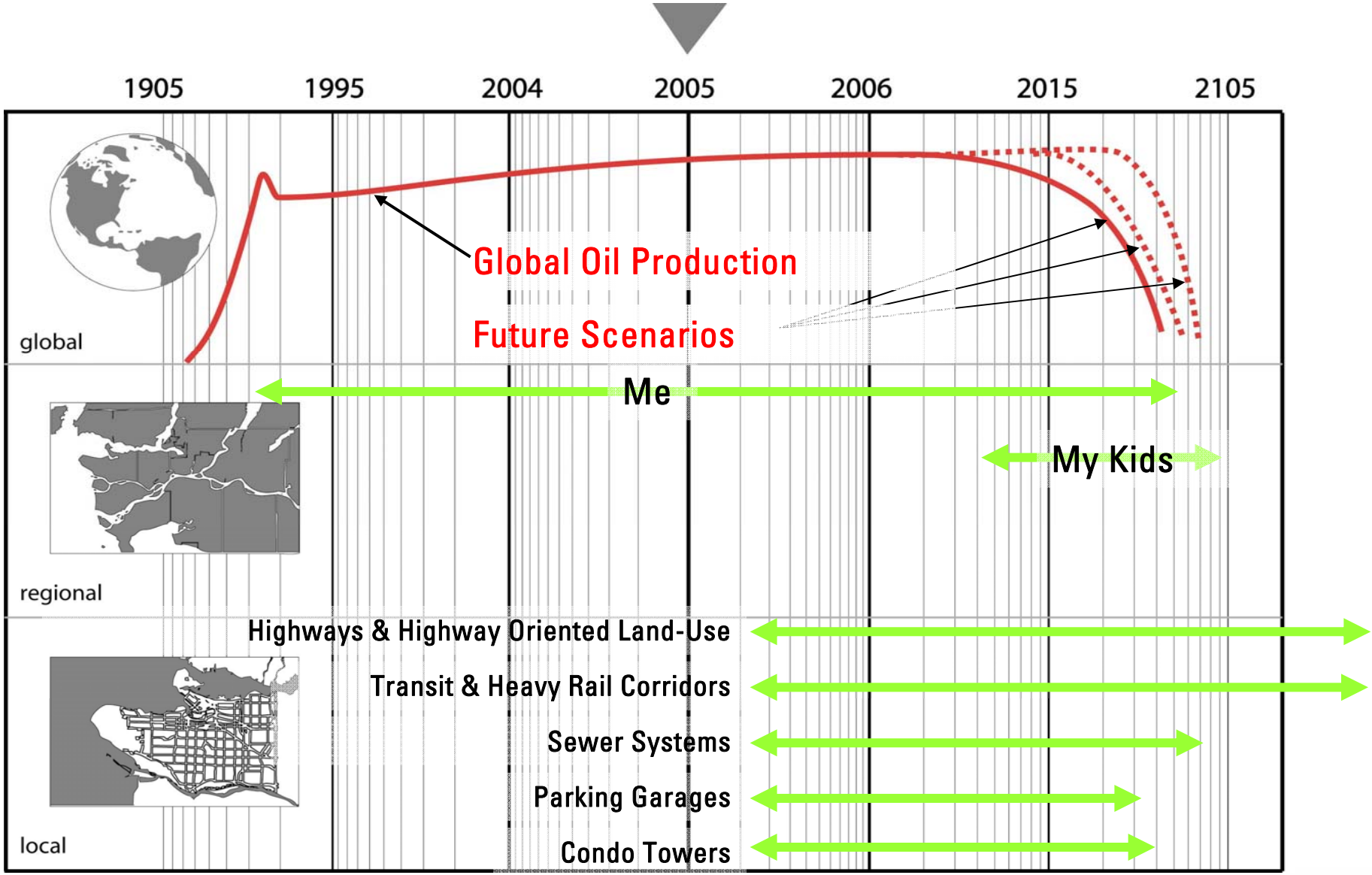

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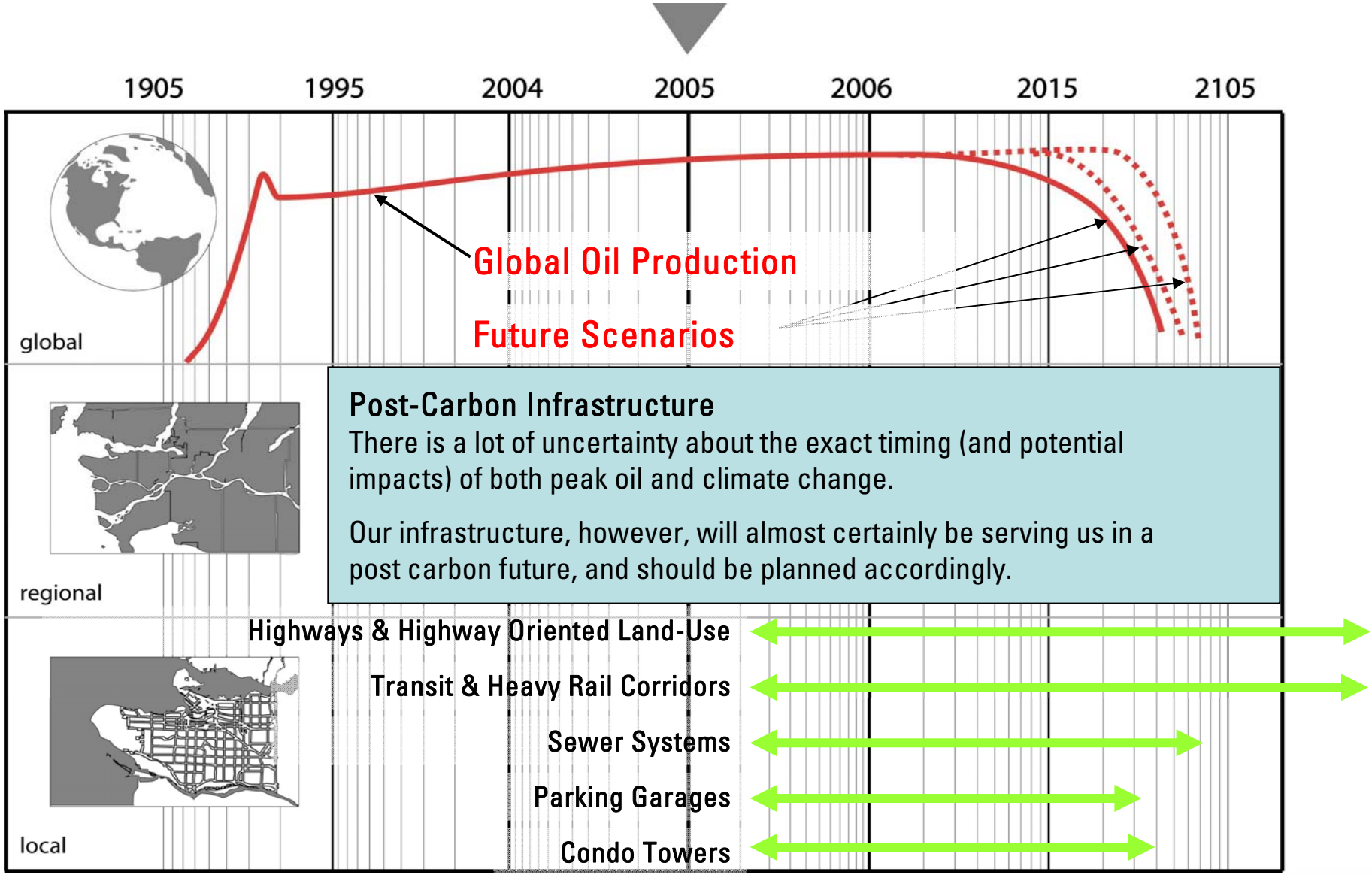
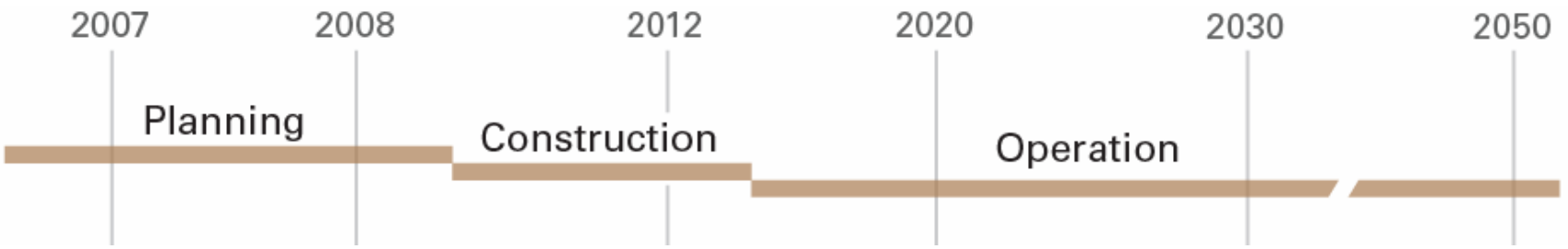


2. Thinking outside the extrapolation

(using 3 scenarios to plan)



Will your project serve you past 2012?

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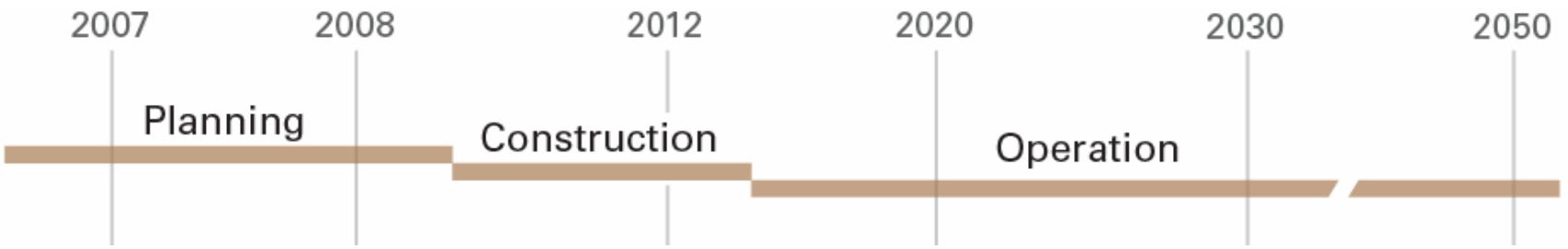

Will your project serve you past 2012?

> Use scenario based planning to test your assumptions

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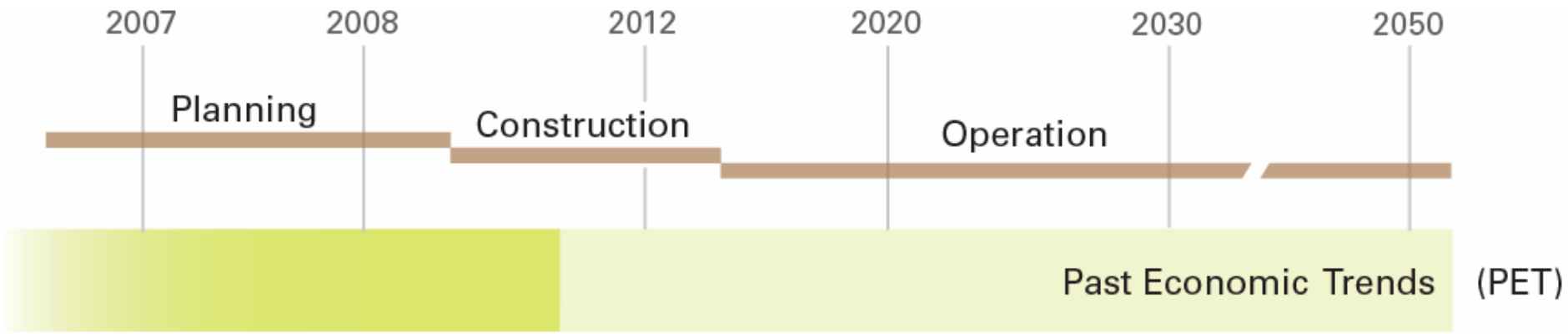

The provincial government of British Columbia uses this statistic (about future growth in truck traffic) as a justification for a new highway expansion project called ‘Gateway’.

Fast Fact The BC Trucking Association estimates trucks are stopped or slowed in the Lower Mainland 75% of the time – and truck traffic is expected to rise by 50% by 2021

www.th.gov.bc.ca/gateway

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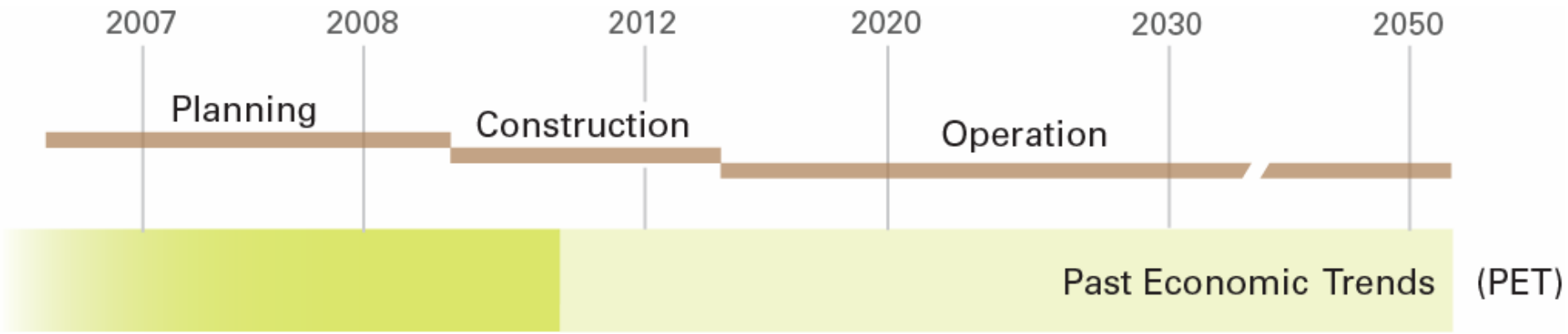

Understanding that there is tremendous political and organizational inertia behind these projections, we can keep using them, but rename them the **PET** scenario.

Fast Fact The BC Trucking Association estimates trucks are stopped or slowed in the Lower Mainland 75% of the time – and truck traffic is expected to rise by 50% by 2021

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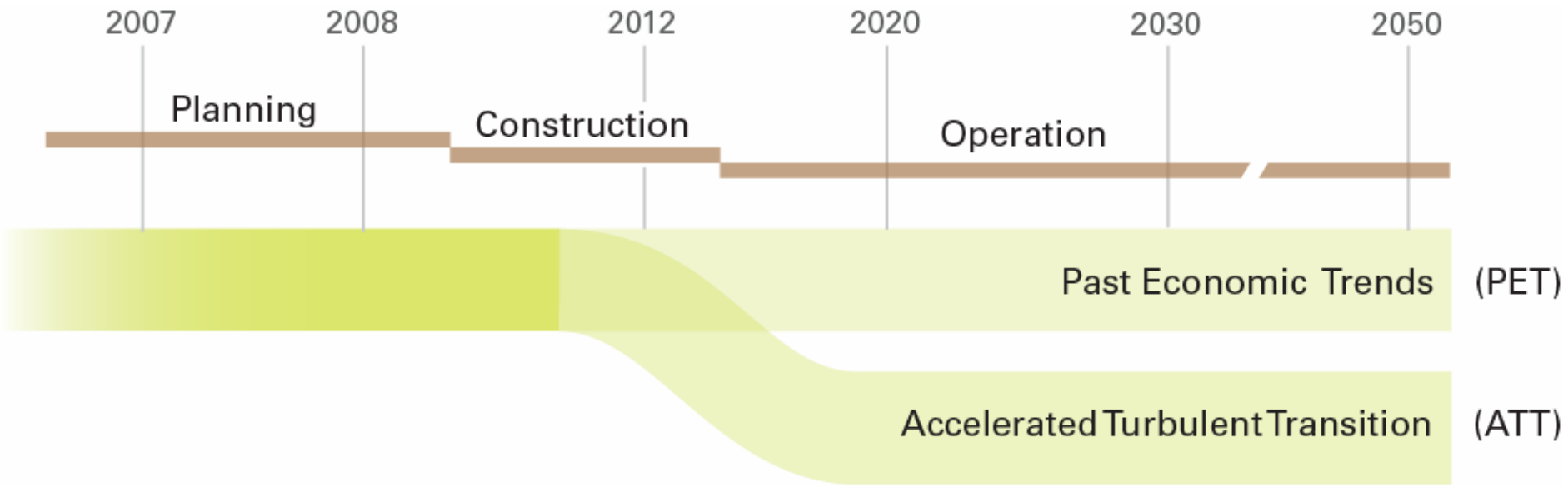
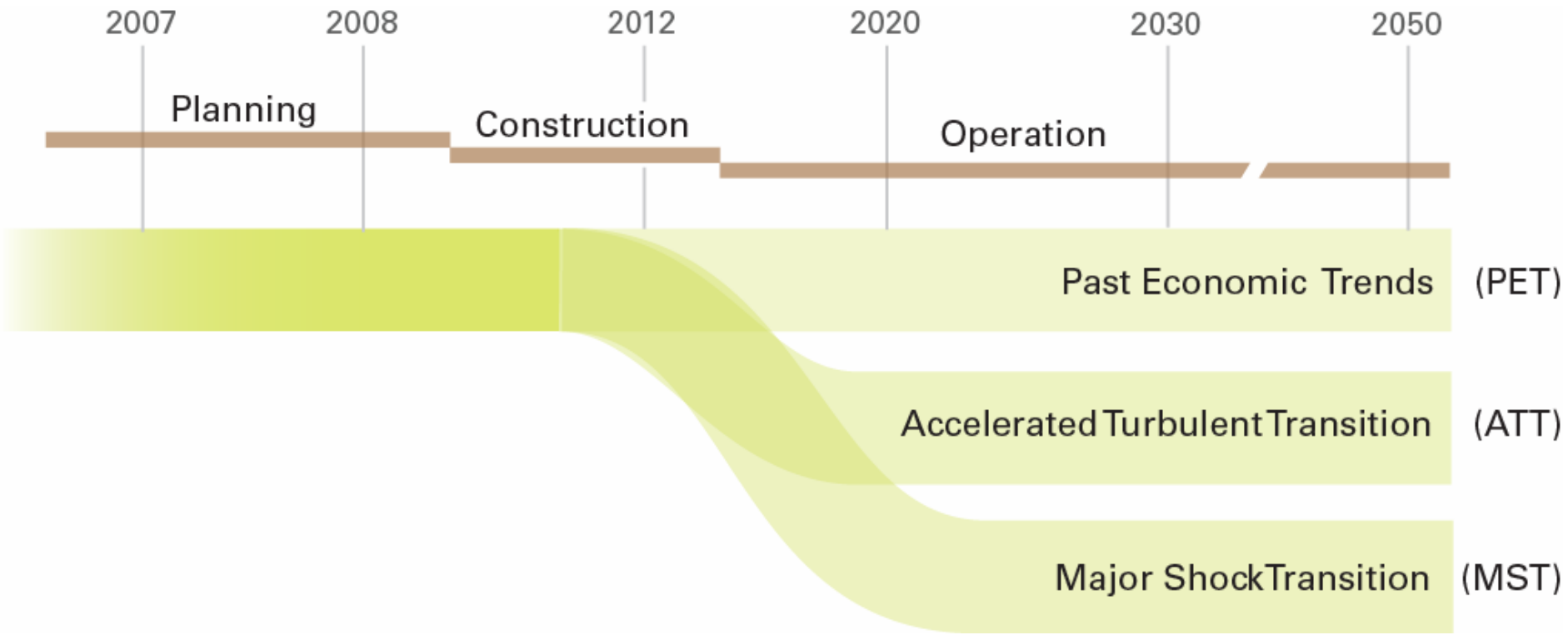


Next to the PET scenario we add an **ATT scenario** which accounts for changes in trucking due to rising fuel prices, carbon laws etc...

- Rising fuel and construction costs
- Intermittent fuel and power shortages
- Rapidly Expanding 'Green Collar' Sector
- Turbulent Stock Market
- Weird Weather

2. Thinking outside the extrapolation

(using 3 scenarios to plan)

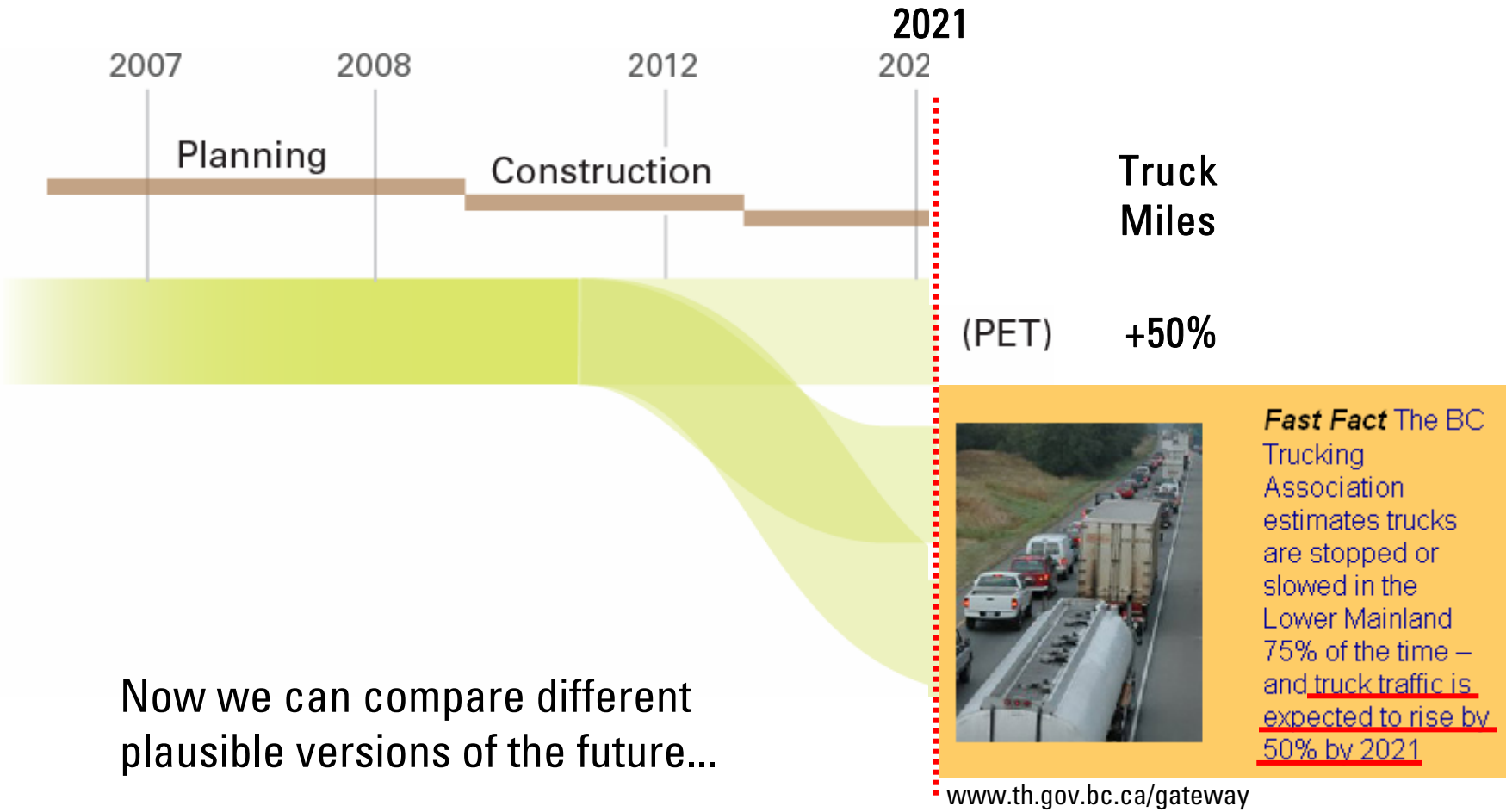


As a final test, we add in the **MST scenario** to account for some of the locally specific shocks that are both plausible and probable.

- Carbon / Fuel Rationing
- Massive Refugee Influx
- Undulating Recessions
- Aging Infrastructure Breakdown
- Rising Sea Levels

2. Thinking outside the extrapolation

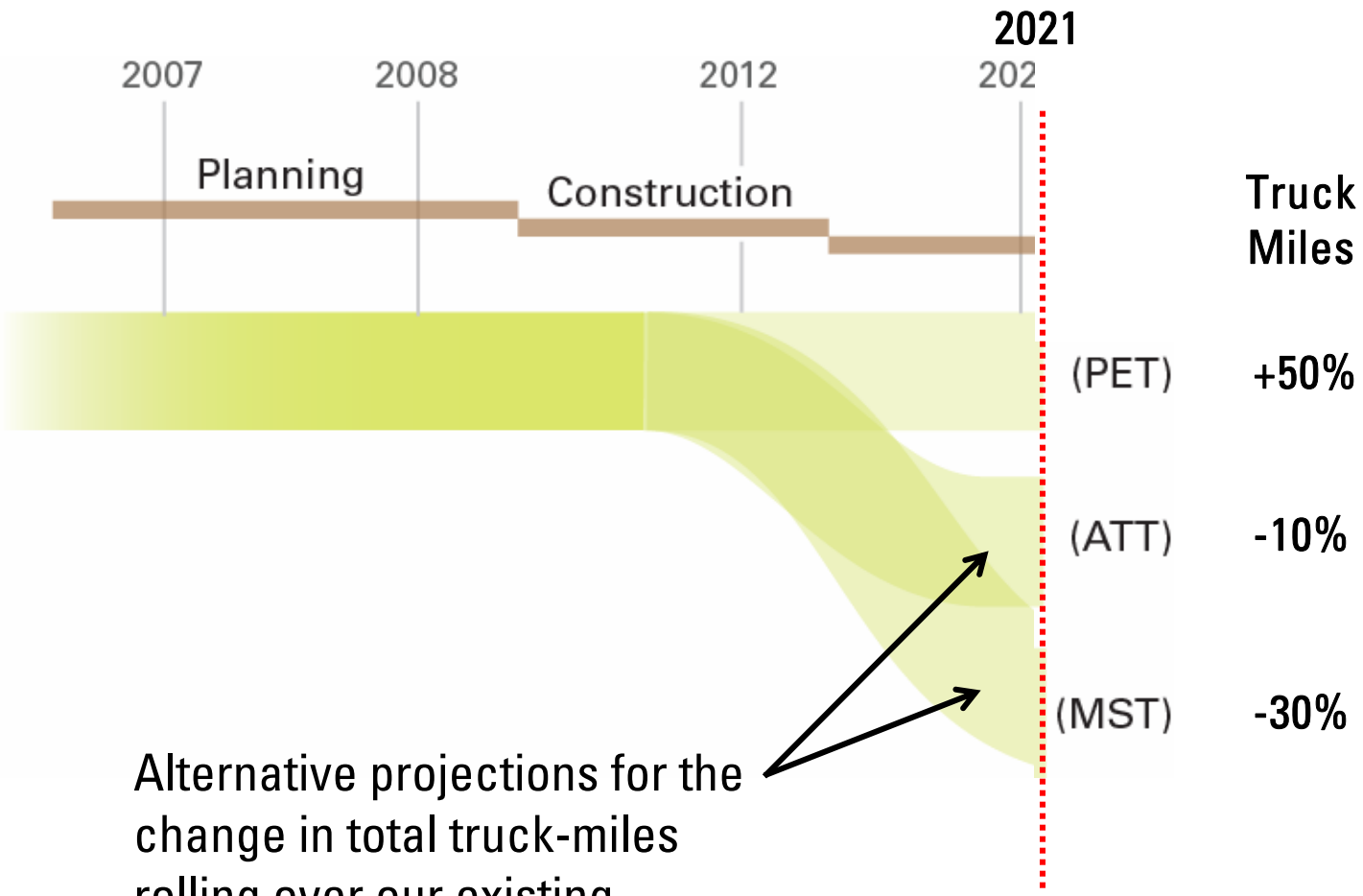
(using 3 scenarios to plan)



Now we can compare different plausible versions of the future...

2. Thinking outside the extrapolation

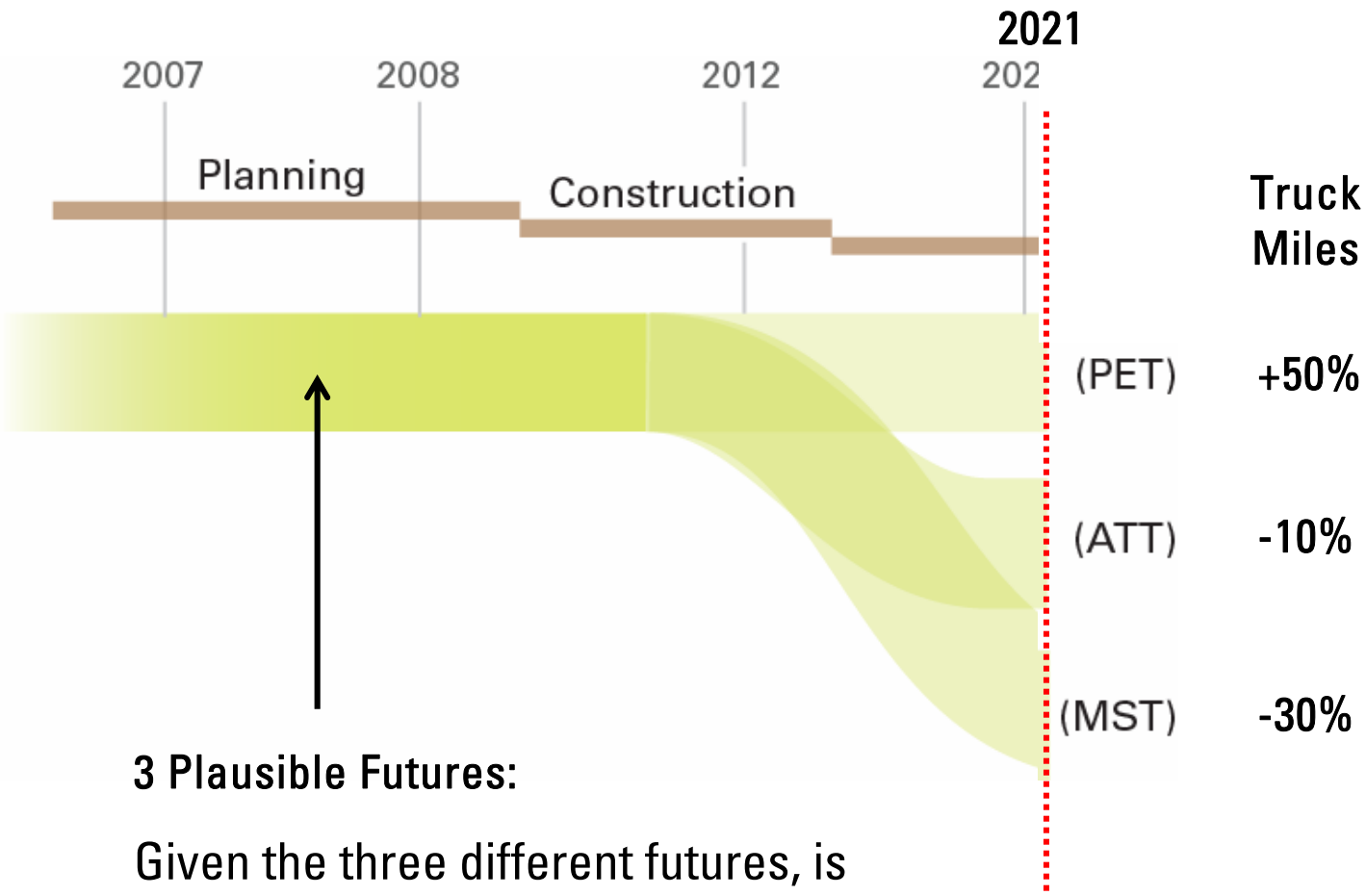
(using 3 scenarios to plan)



Alternative projections for the change in total truck-miles rolling over our existing highways and bridges.

2. Thinking outside the extrapolation

(using 3 scenarios to plan)



3 Plausible Futures:

Given the three different futures, is new road capacity the best way to invest billions?

Could we better spend that money somewhere else?

2. Thinking outside the extrapolation

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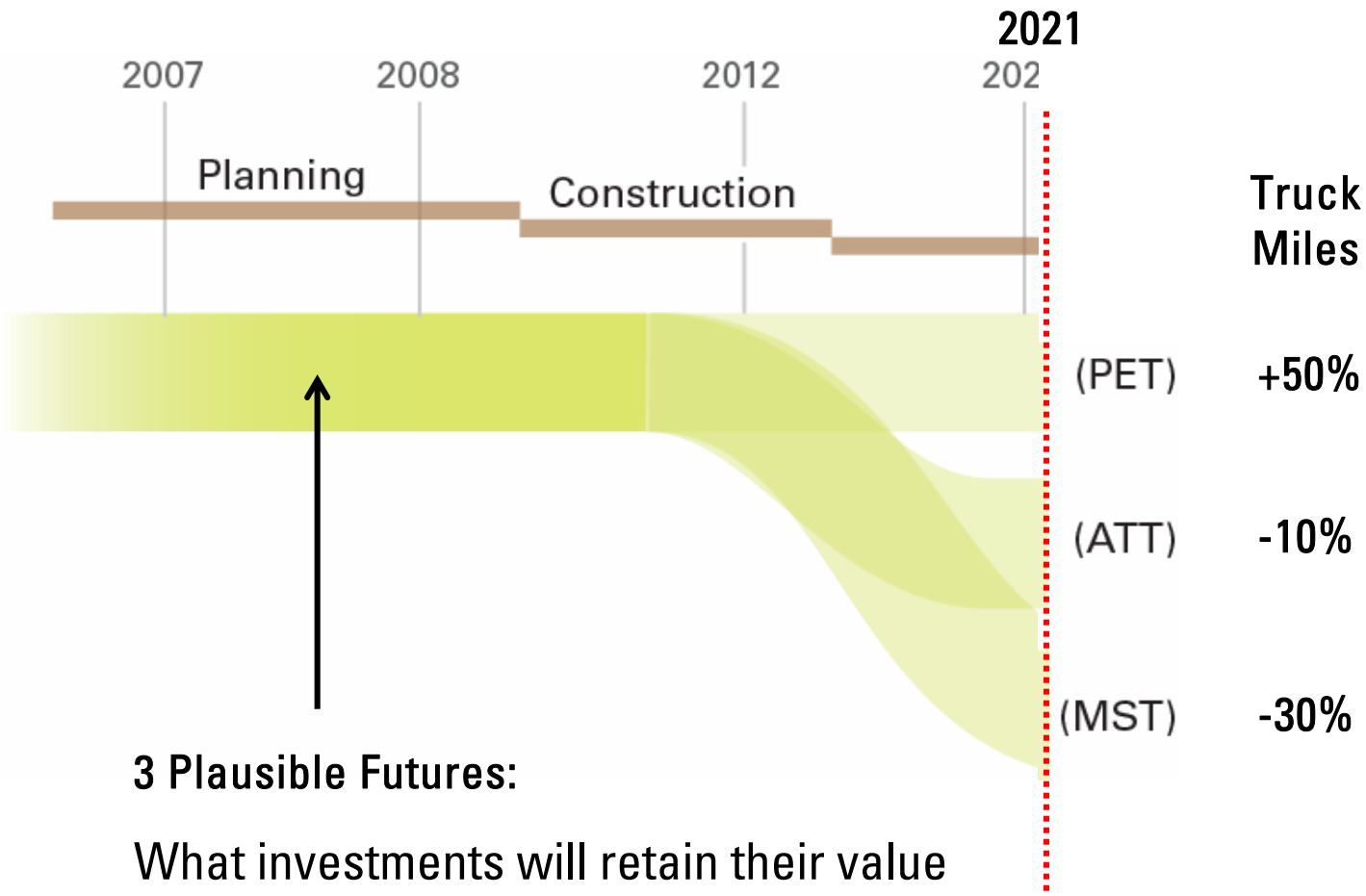


3 Plausible Futures:

What investments will retain their value in any future?

2. Thinking outside the extrapolation

(modeling goods-movement scenarios)

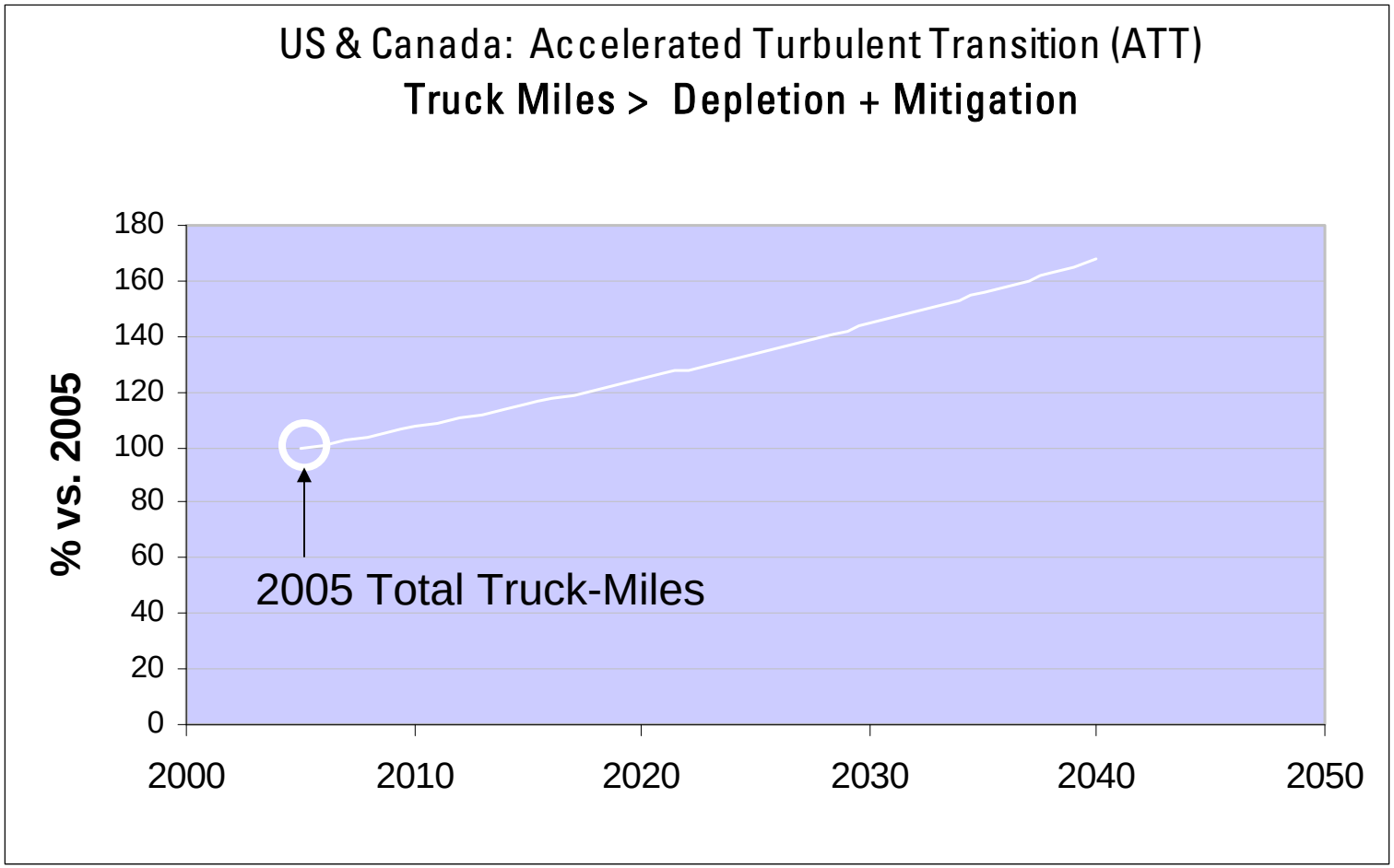
Now, we know where this number came from...

..what about these?

	Truck Miles
(PET)	+50%
(ATT)	-10%
(MST)	-30%

2. Thinking outside the extrapolation

(modeling goods-movement scenarios)



At the DCP we've developed models to predict future transport demand for different scenarios. This is one example.

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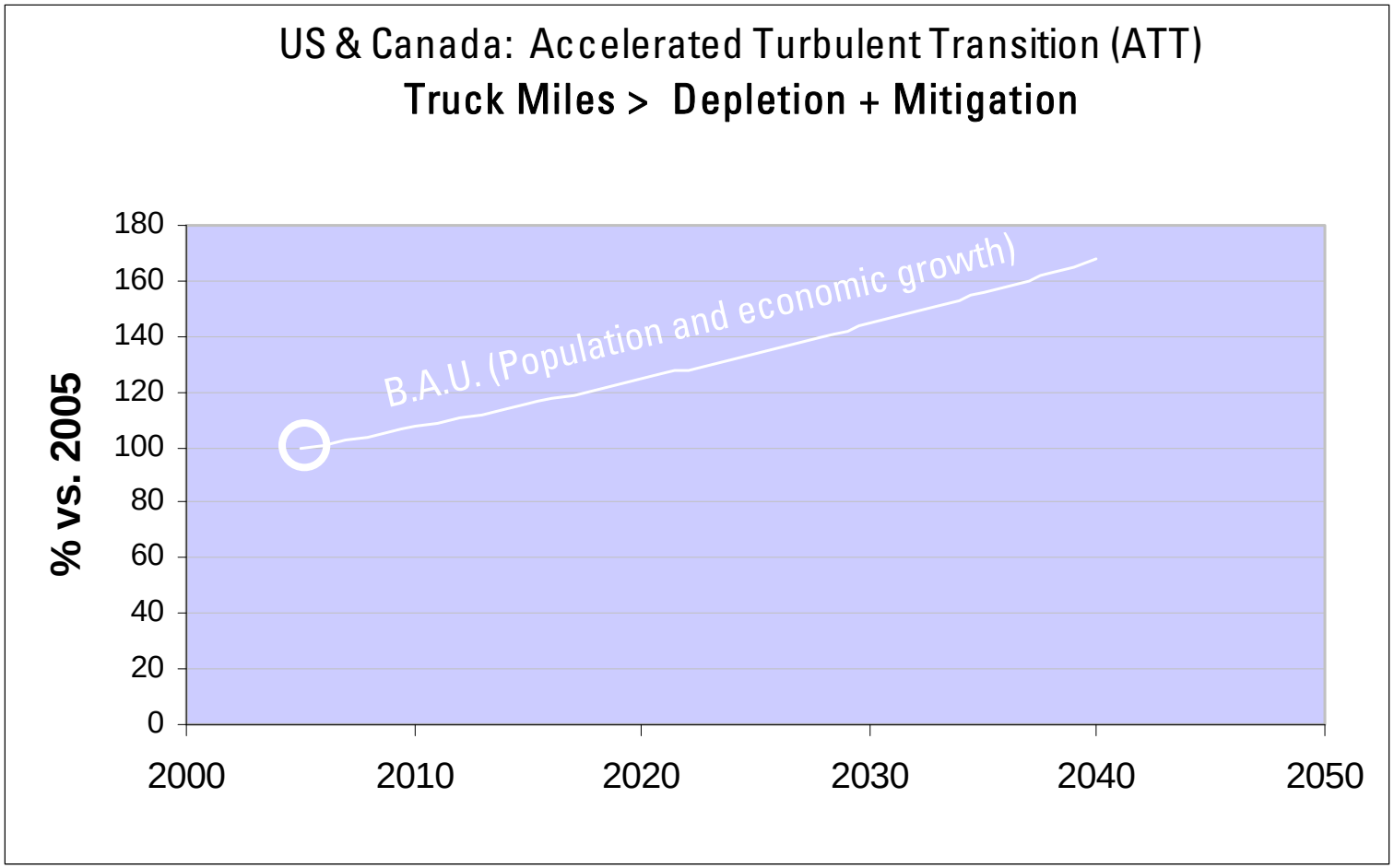

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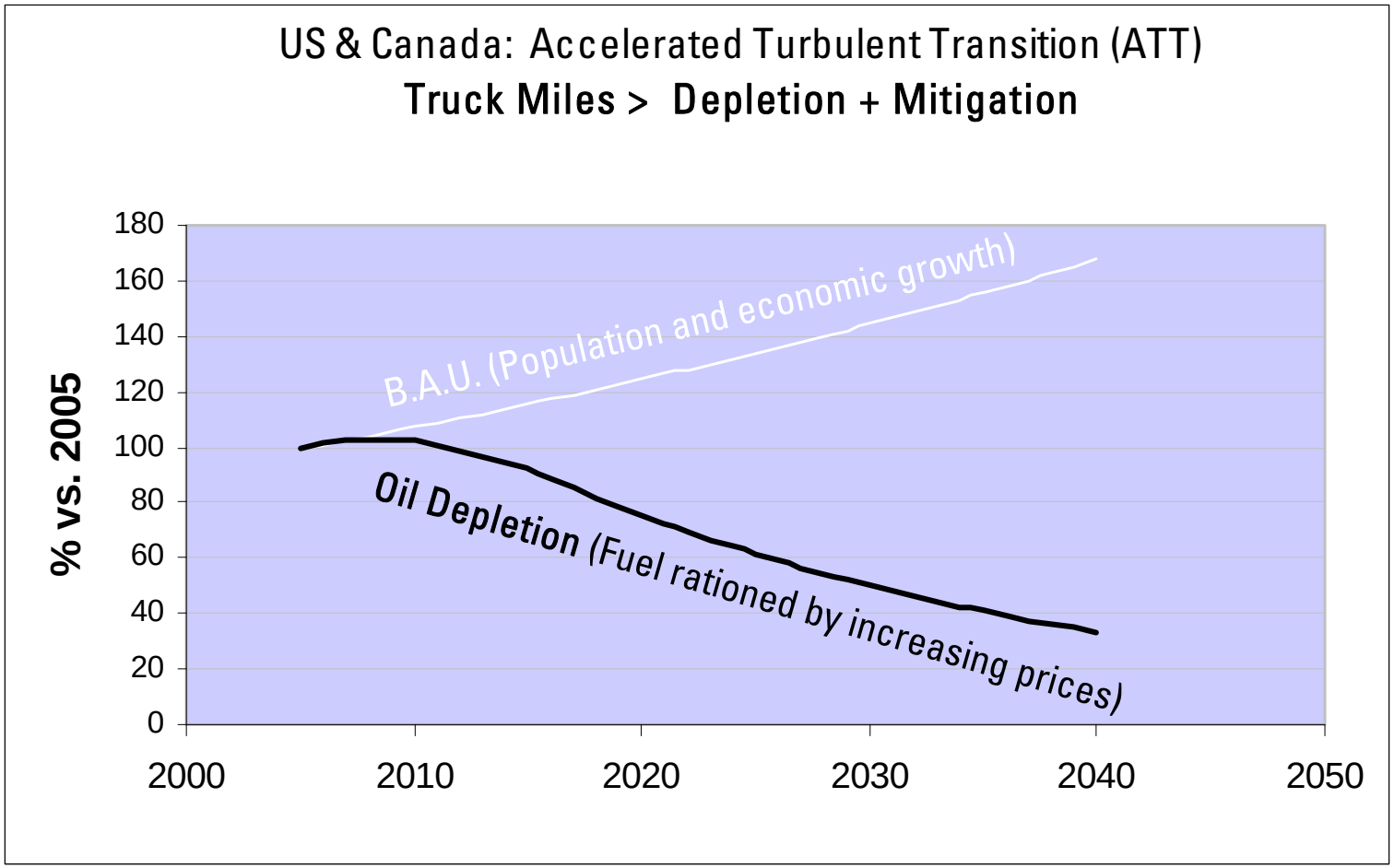

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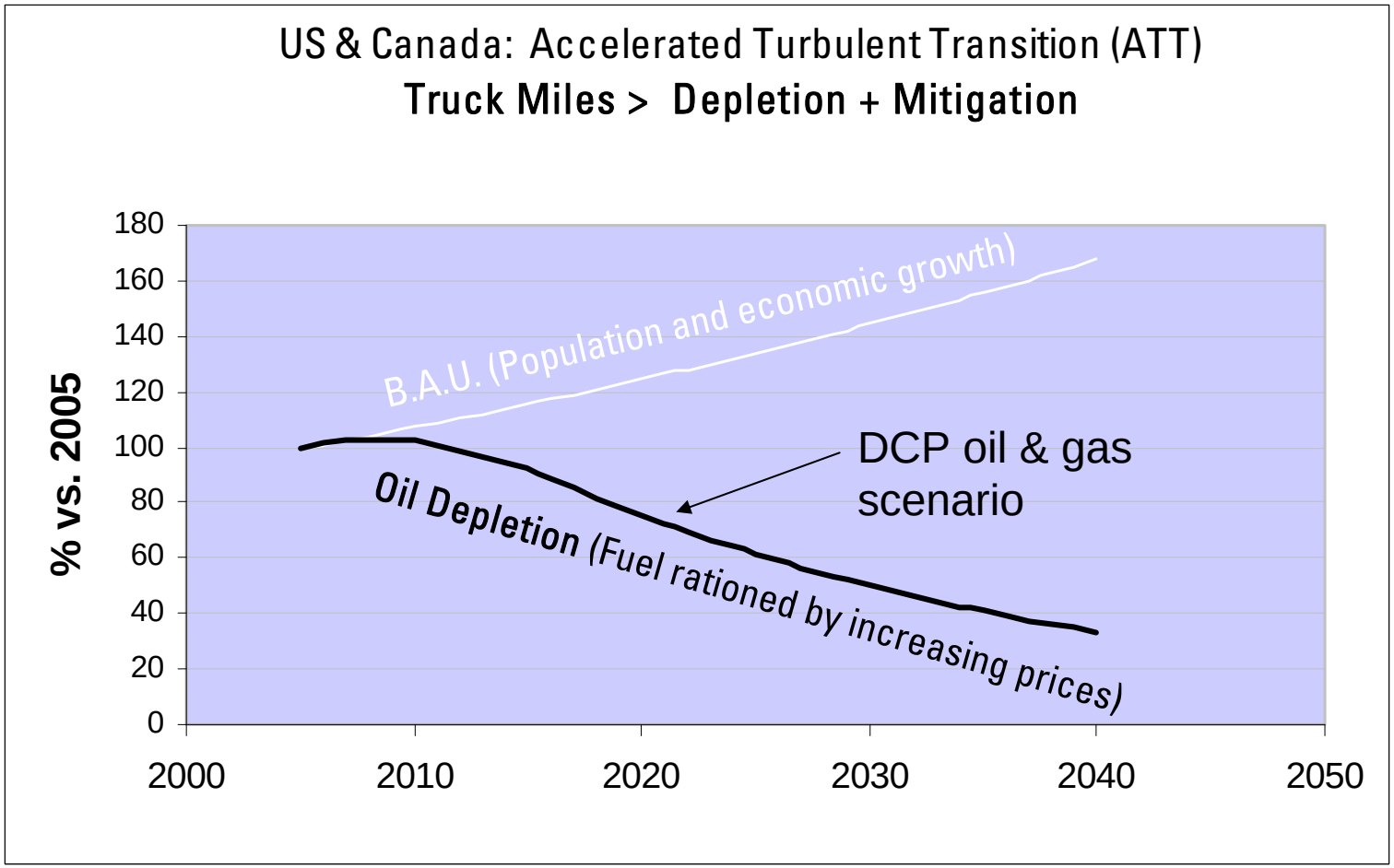

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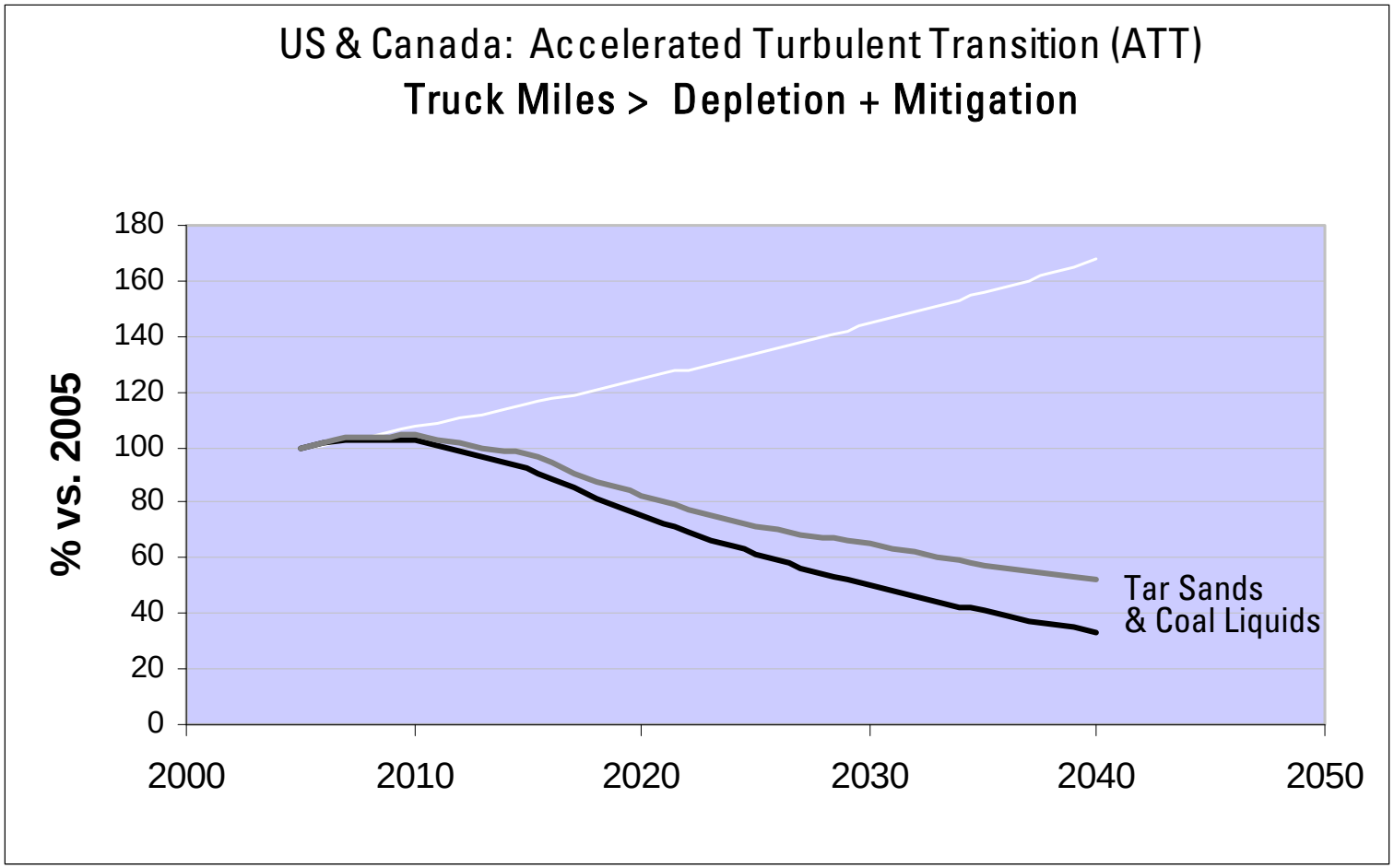

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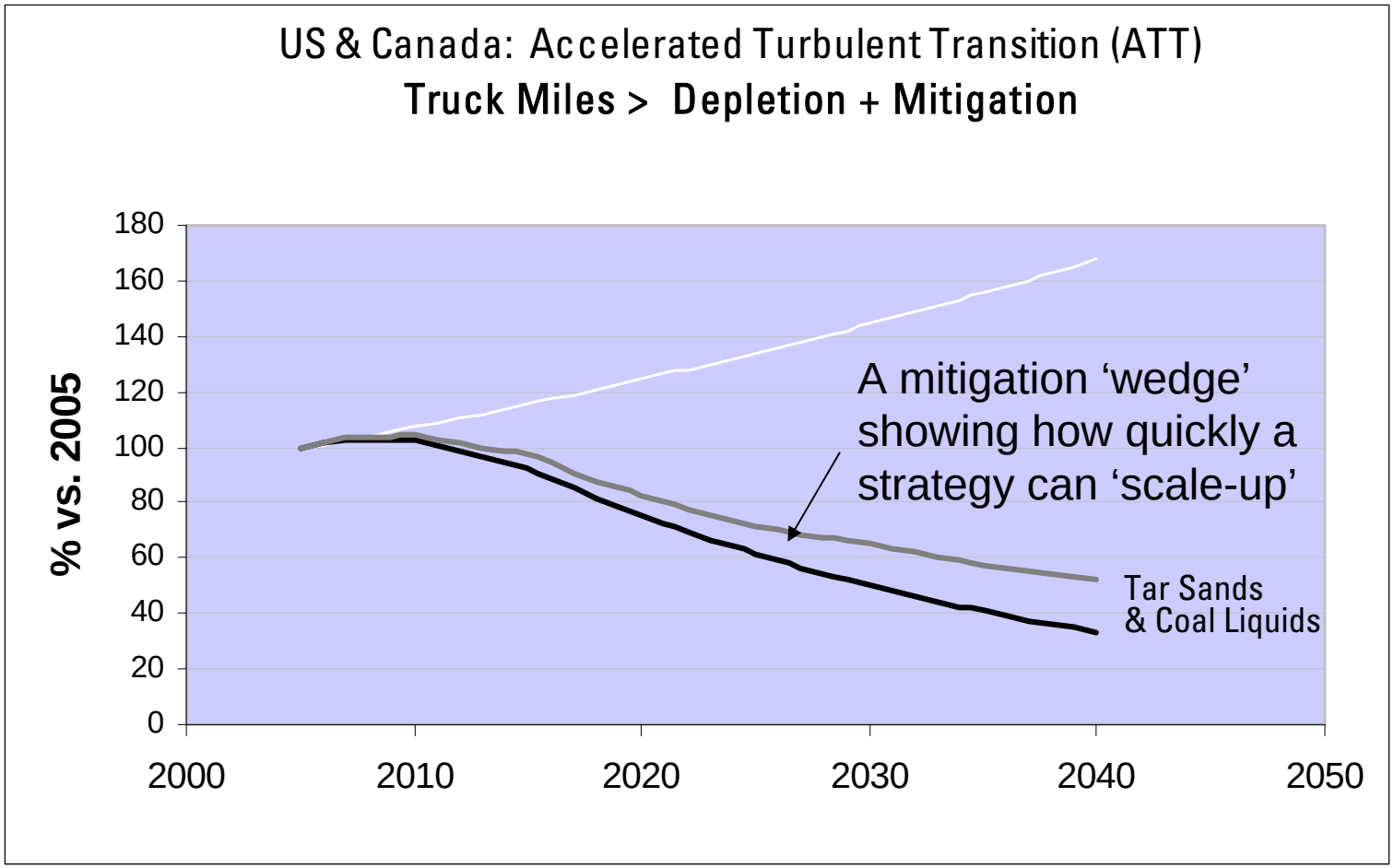

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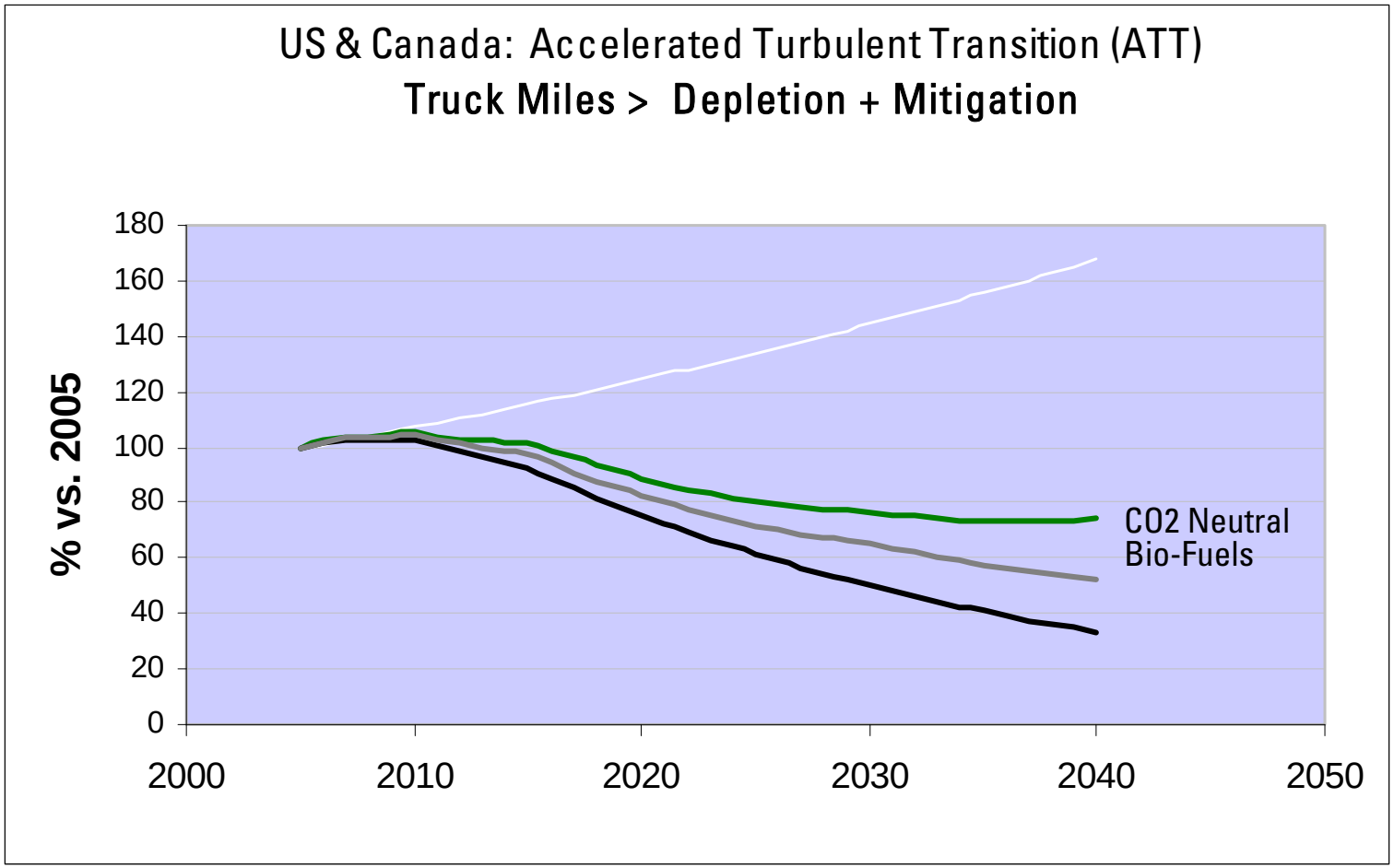

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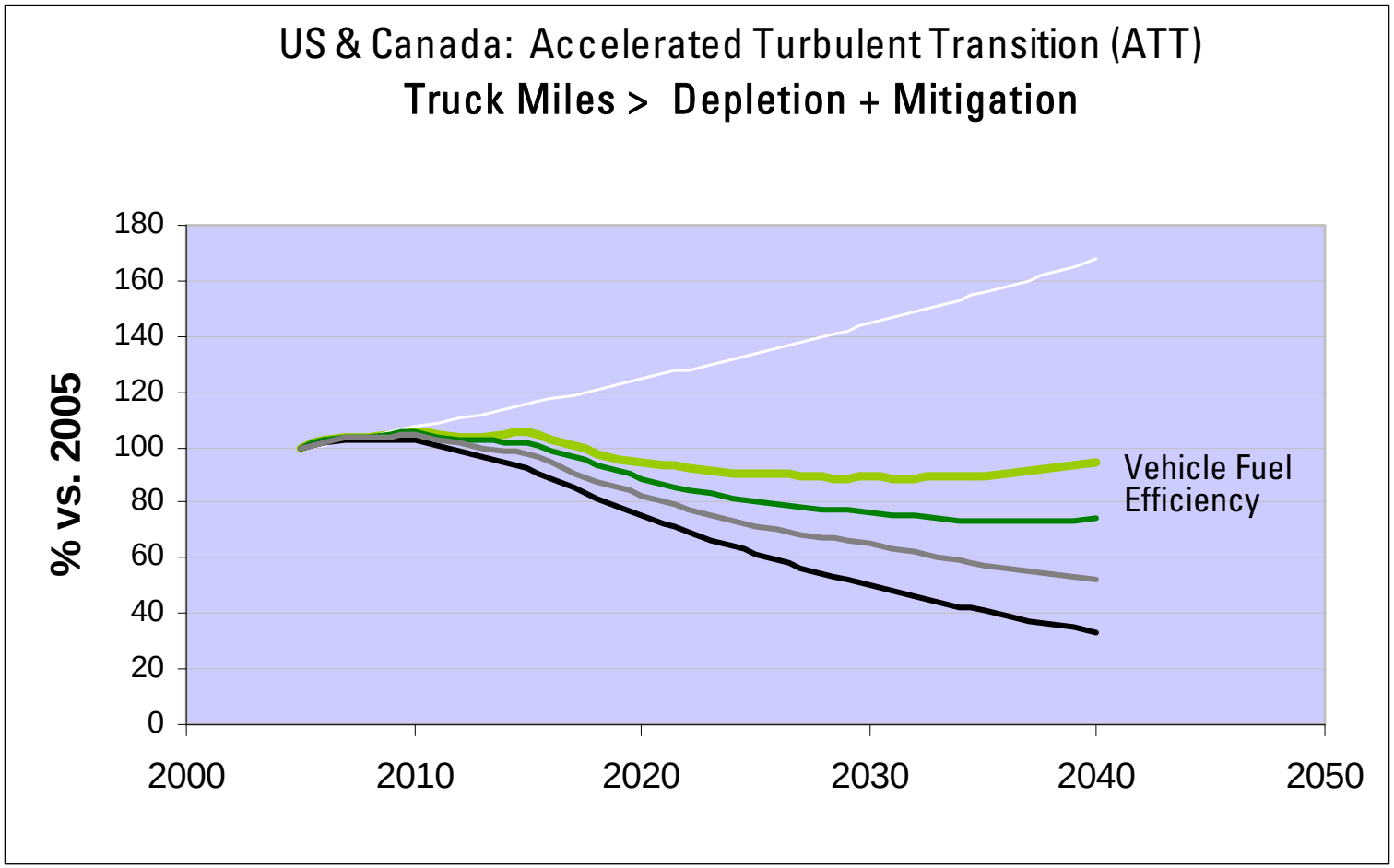

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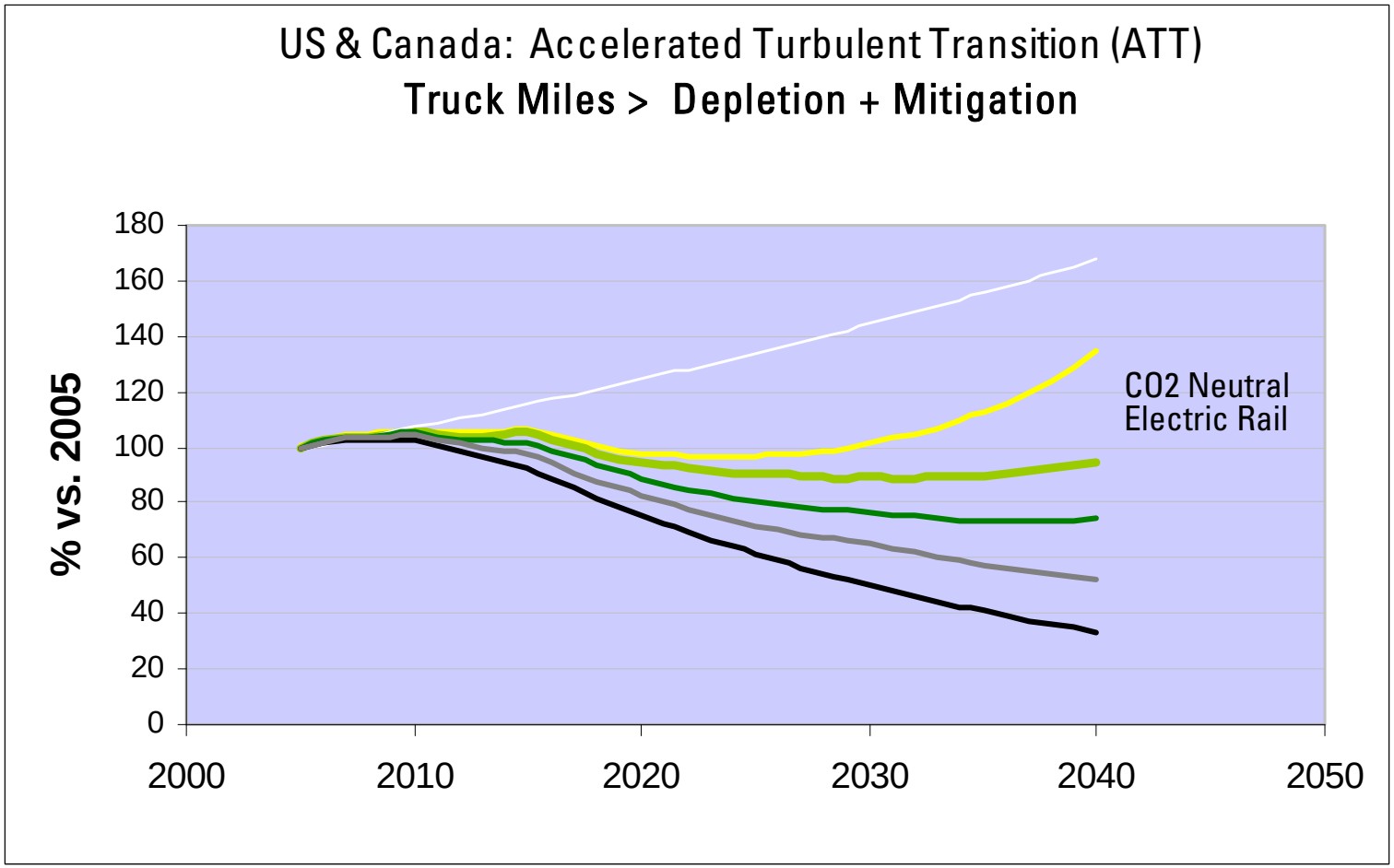

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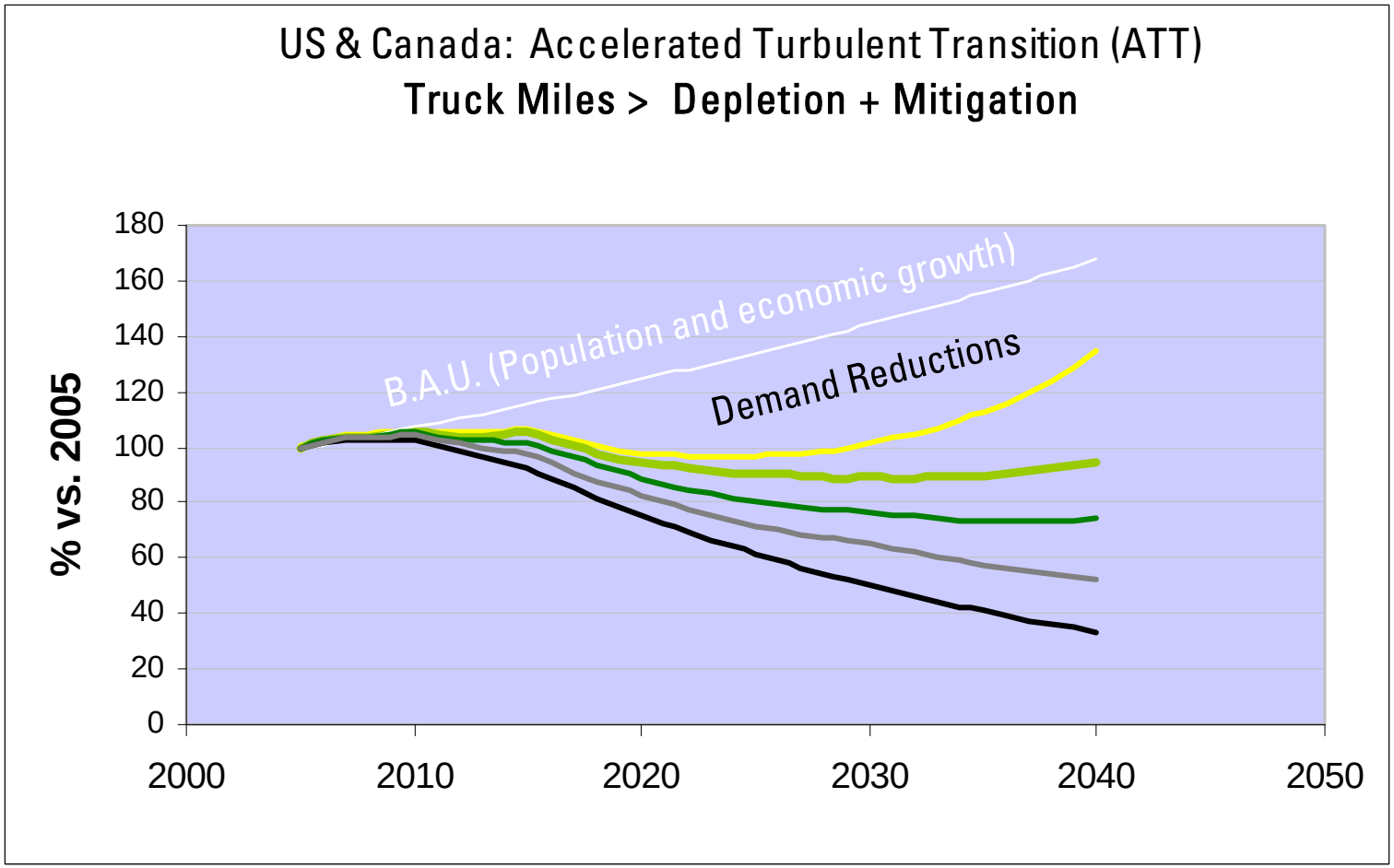
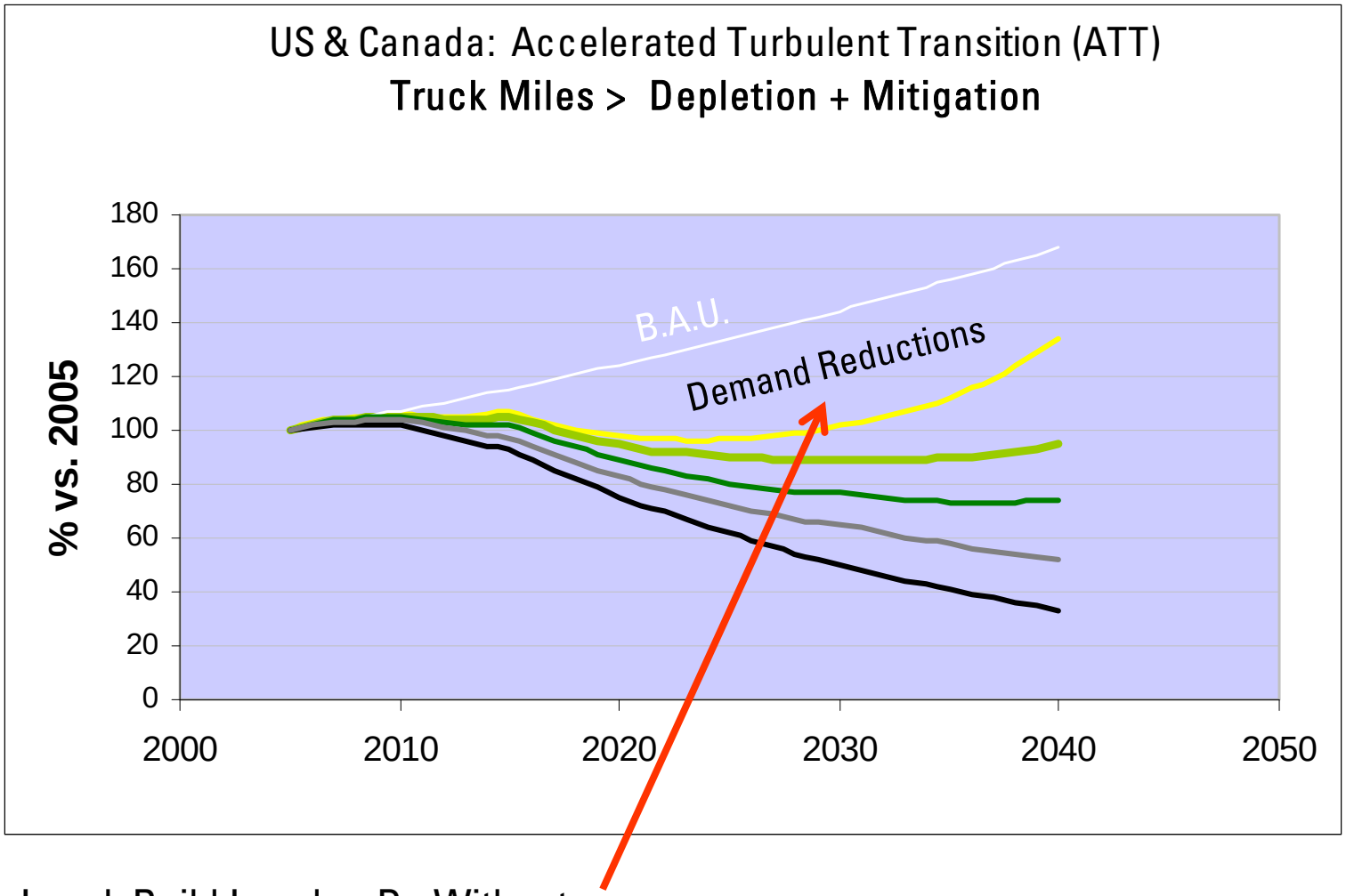


2. Thinking outside the extrapolation

(municipal & regional impact)



Buy Local, Build Local or Do Without...

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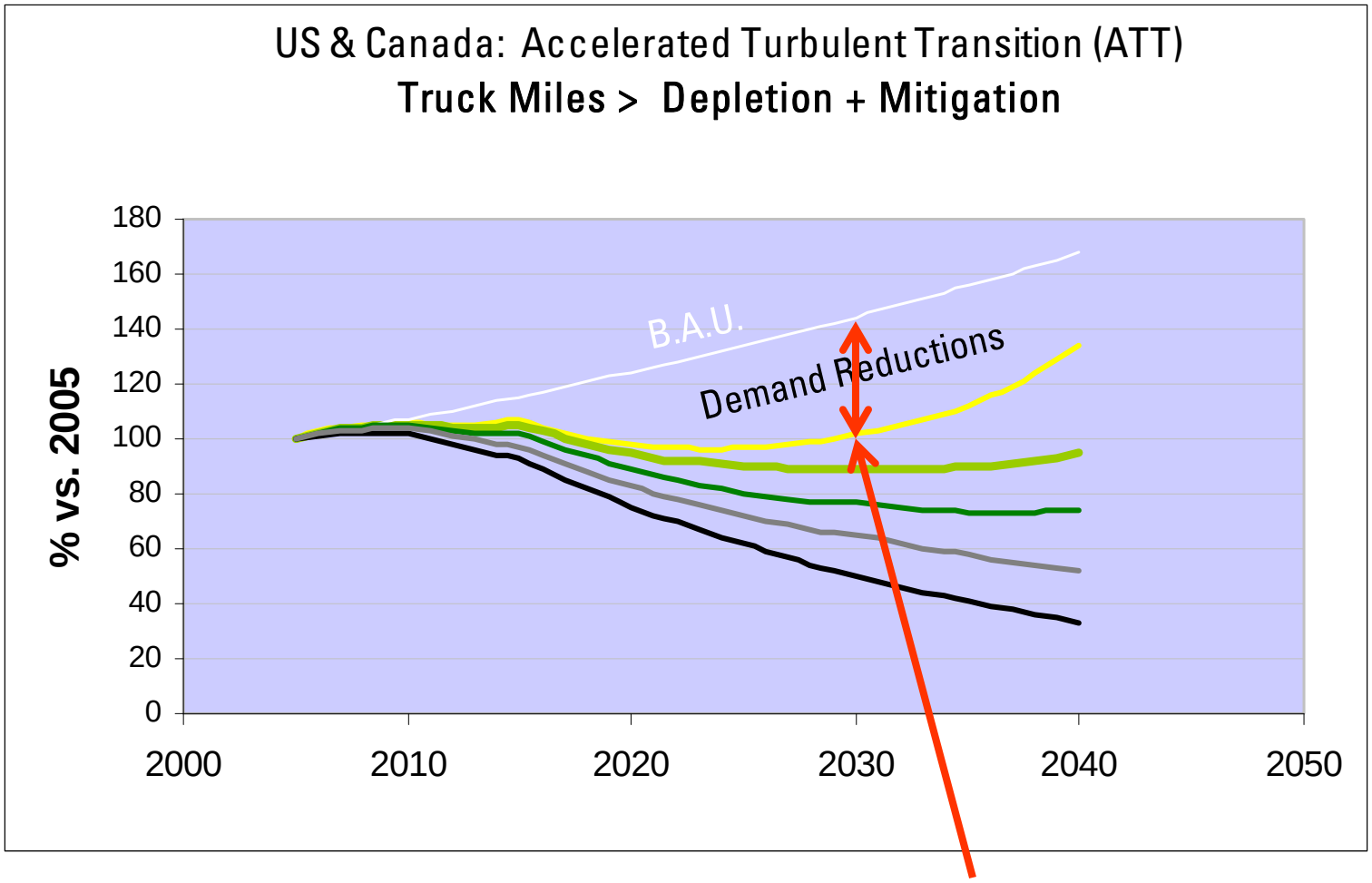
(municipal & regional impact)

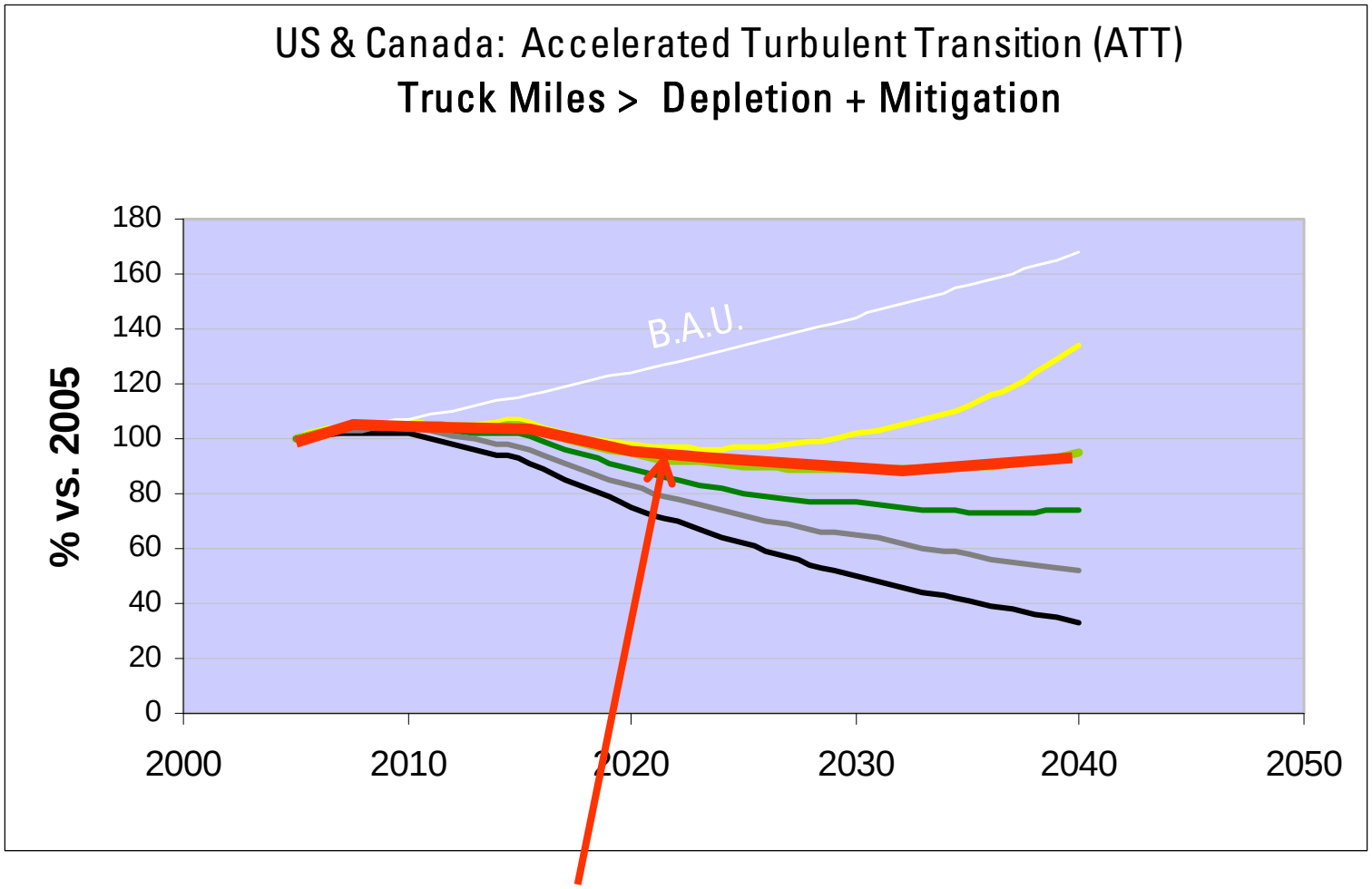


Buy Local, Build Local or Do Without...

2020-2030 = 'peak local'
local food, clothing, building supplies etc...

2. Thinking outside the extrapolation

(municipal & regional impact)



Road Capacity Required for Trucks:

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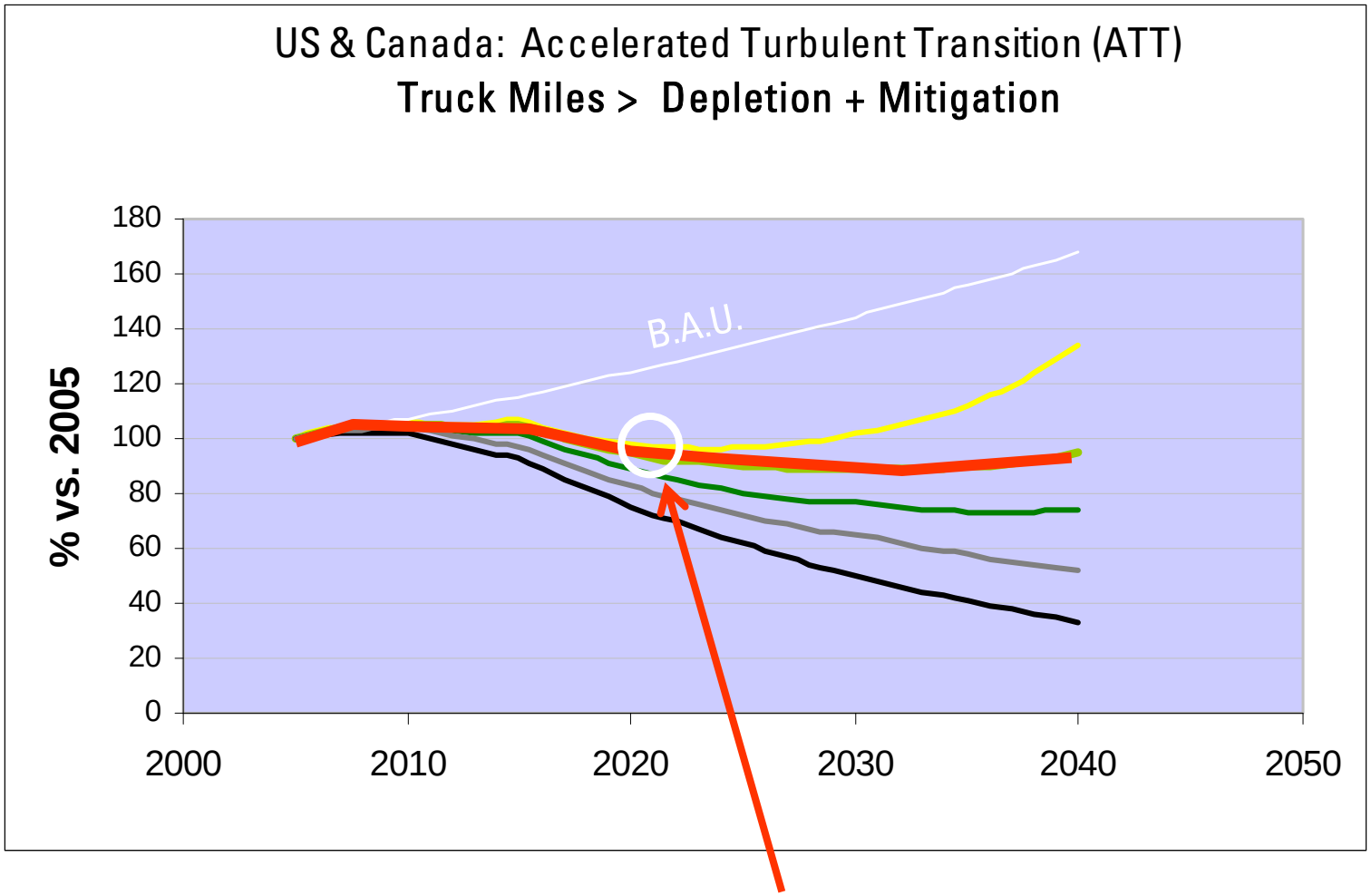
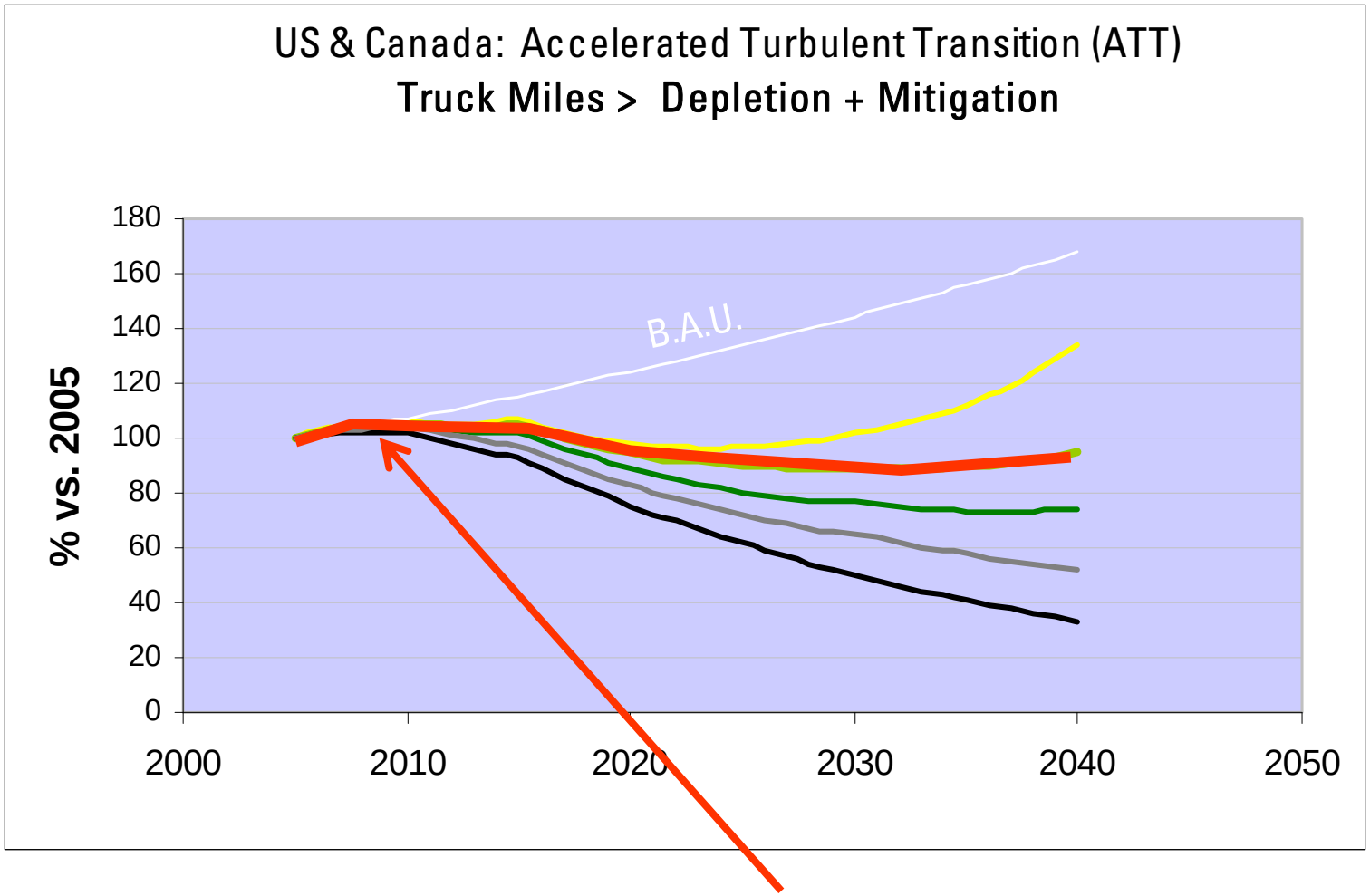
(municipal & regional impact)



Road Capacity Required for Trucks: -10% in 2021

2. Thinking outside the extrapolation

(municipal & regional impact)



Road Capacity Required for Trucks: Are we nearing 'Peak Roads'?

1. **Energy Transition = Peak Oil + Climate Change**

   - focus on shifting investment and jobs to sectors that reduce *both* emissions *and* oil dependence
   - build smart, long-term, infrastructure
     & prepare 'rapid response' local strategies

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2. **Think outside the extrapolation**

   - use scenarios to test any investment that will serve you past 2012 (PET, ATT & MST)
   - make resilient investments (open to multiple futures)

Peak Oil, Climate Change & Transportation

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