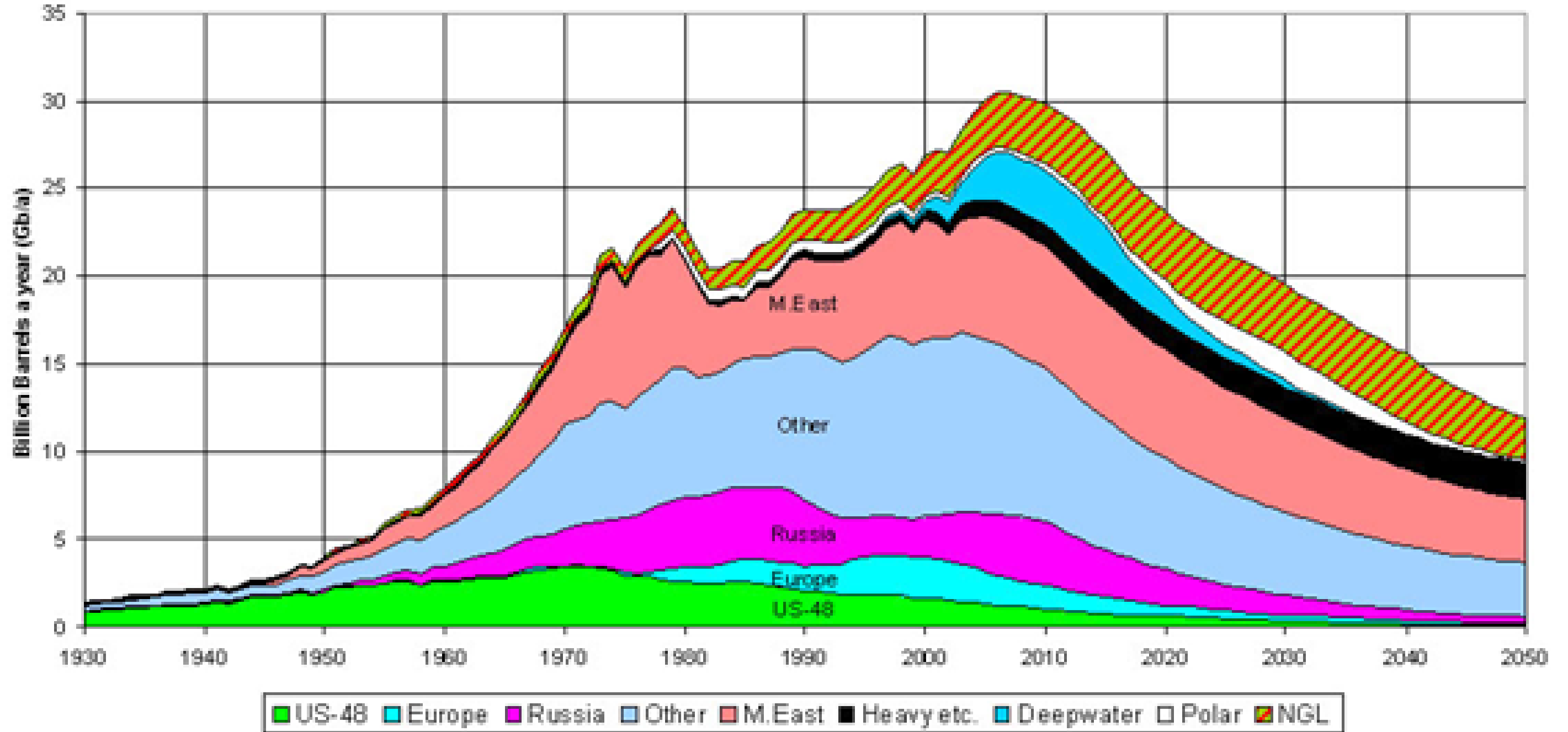


Peak Oil

OIL AND GAS LIQUIDS 2004 Scenario

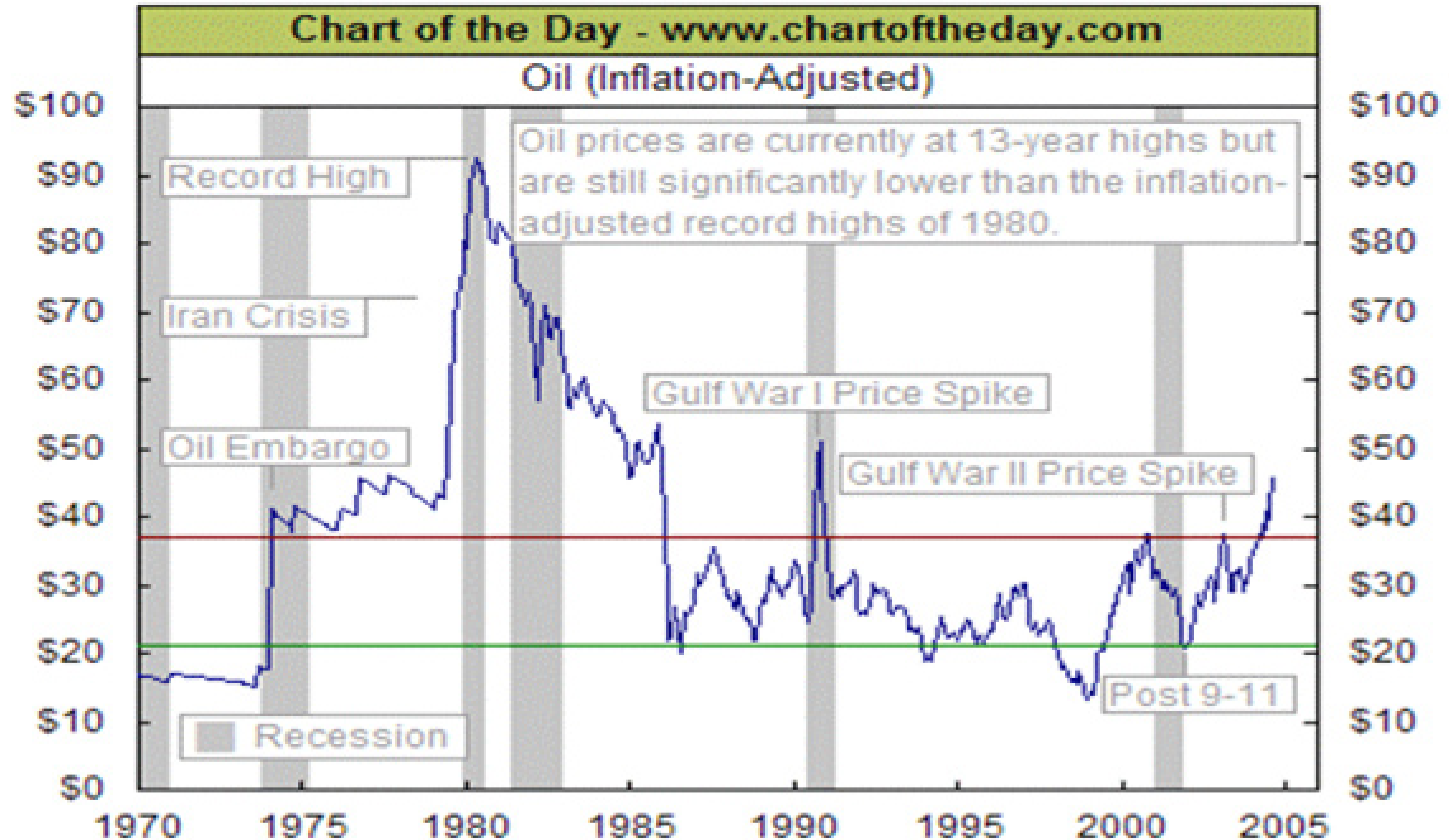


CITIES AFTER PEAK OIL

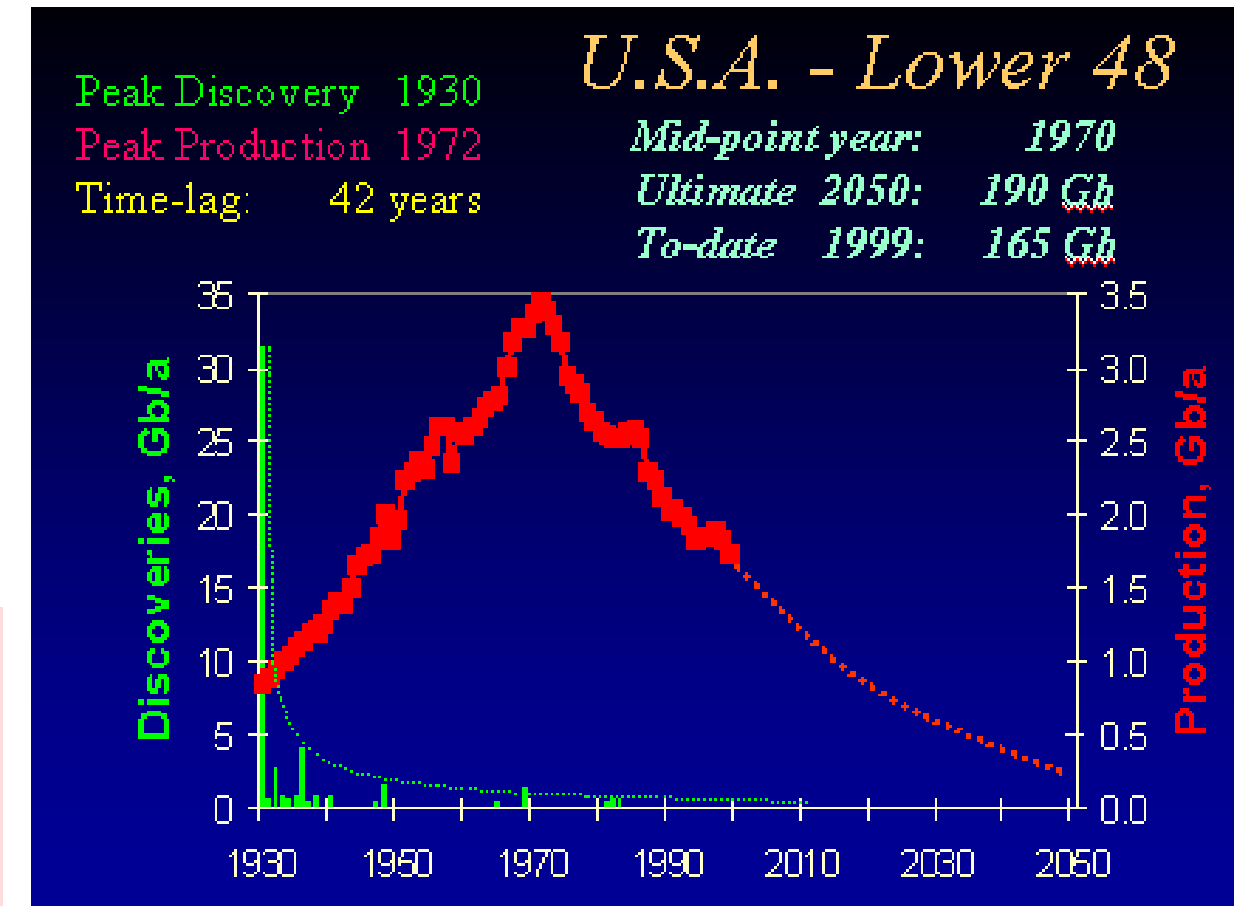
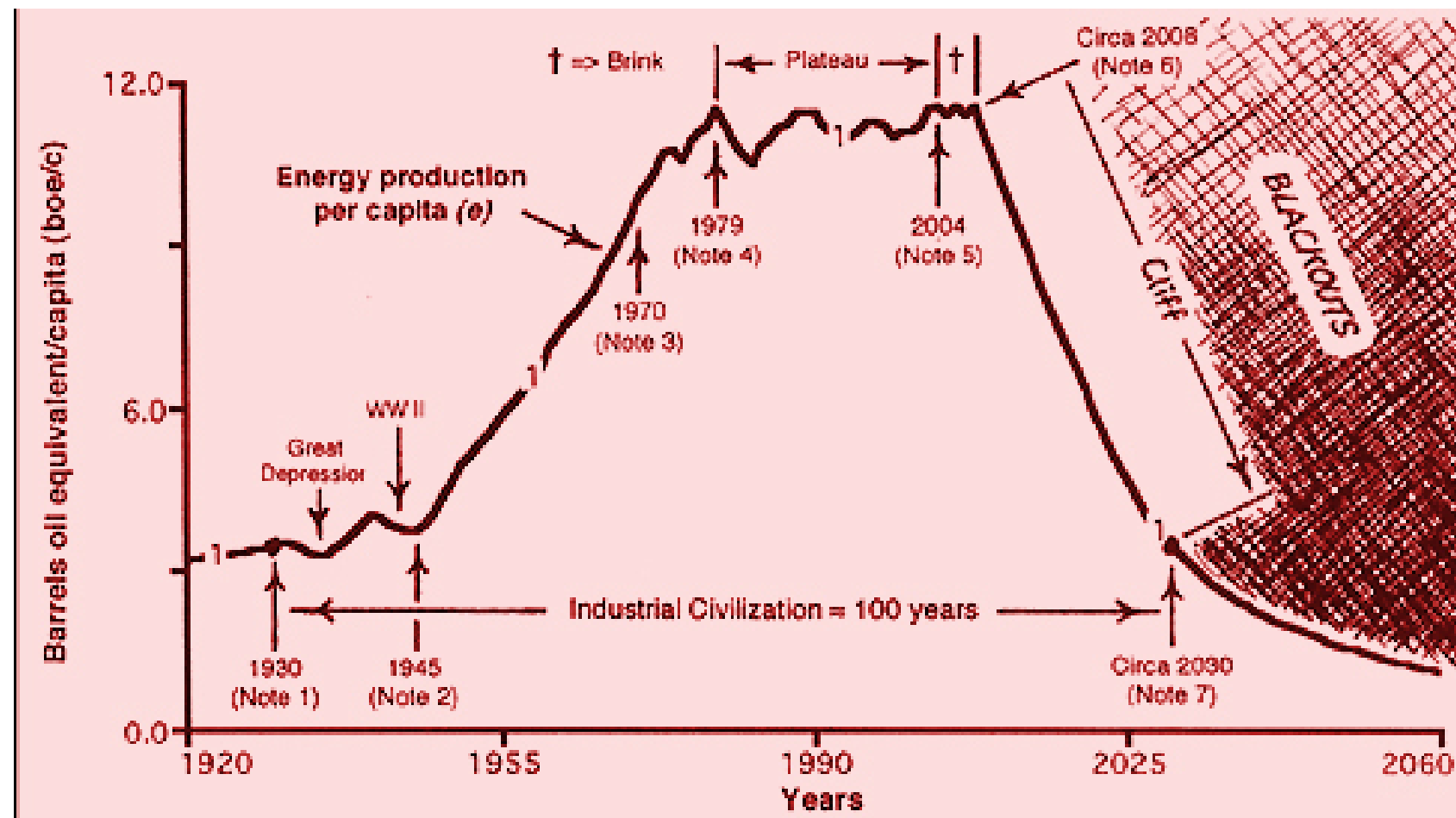
Team Crazy Kitten



Peak Oil



Peak Oil

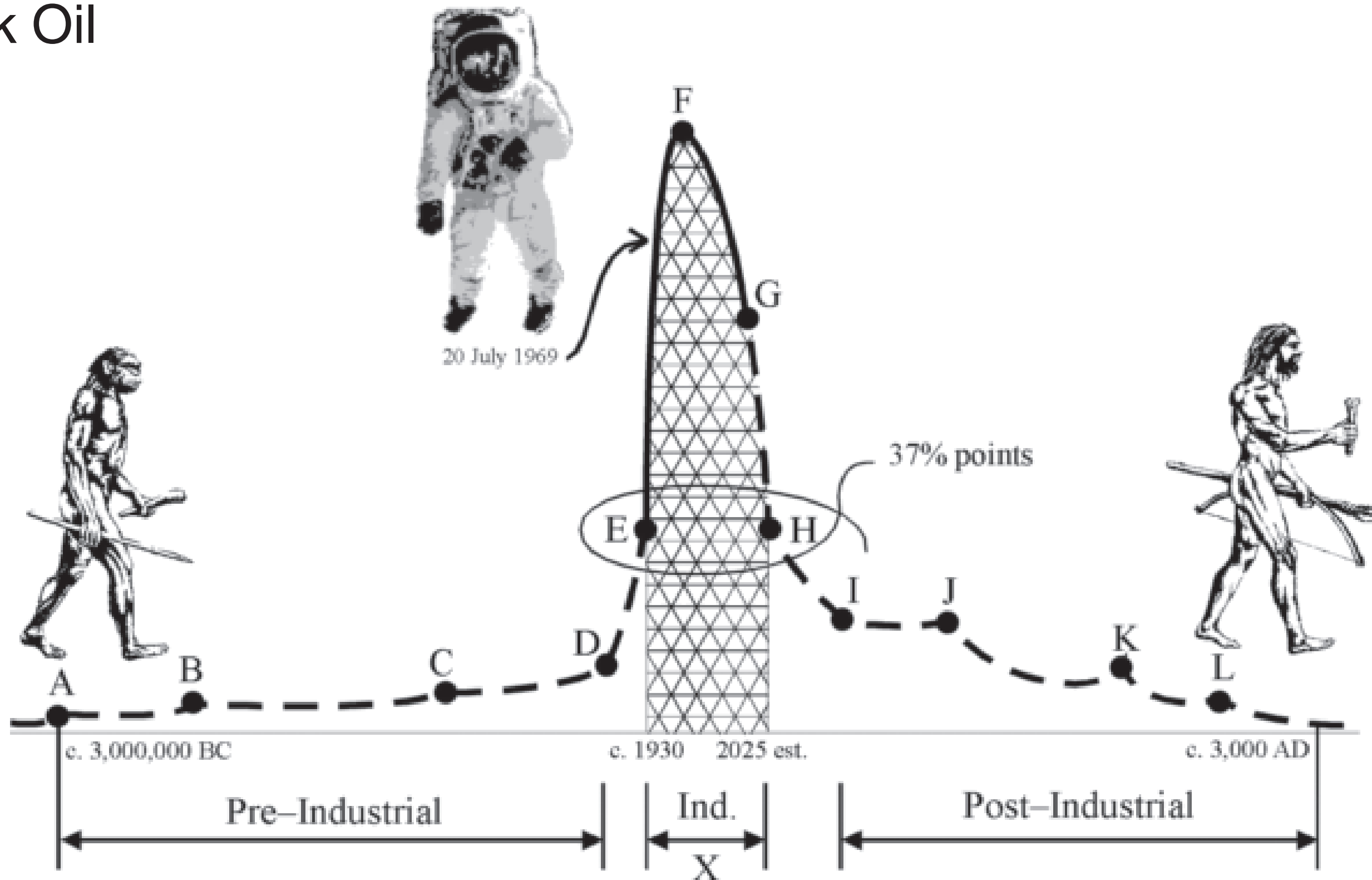


CITIES AFTER PEAK OIL

Team Crazy Kitten

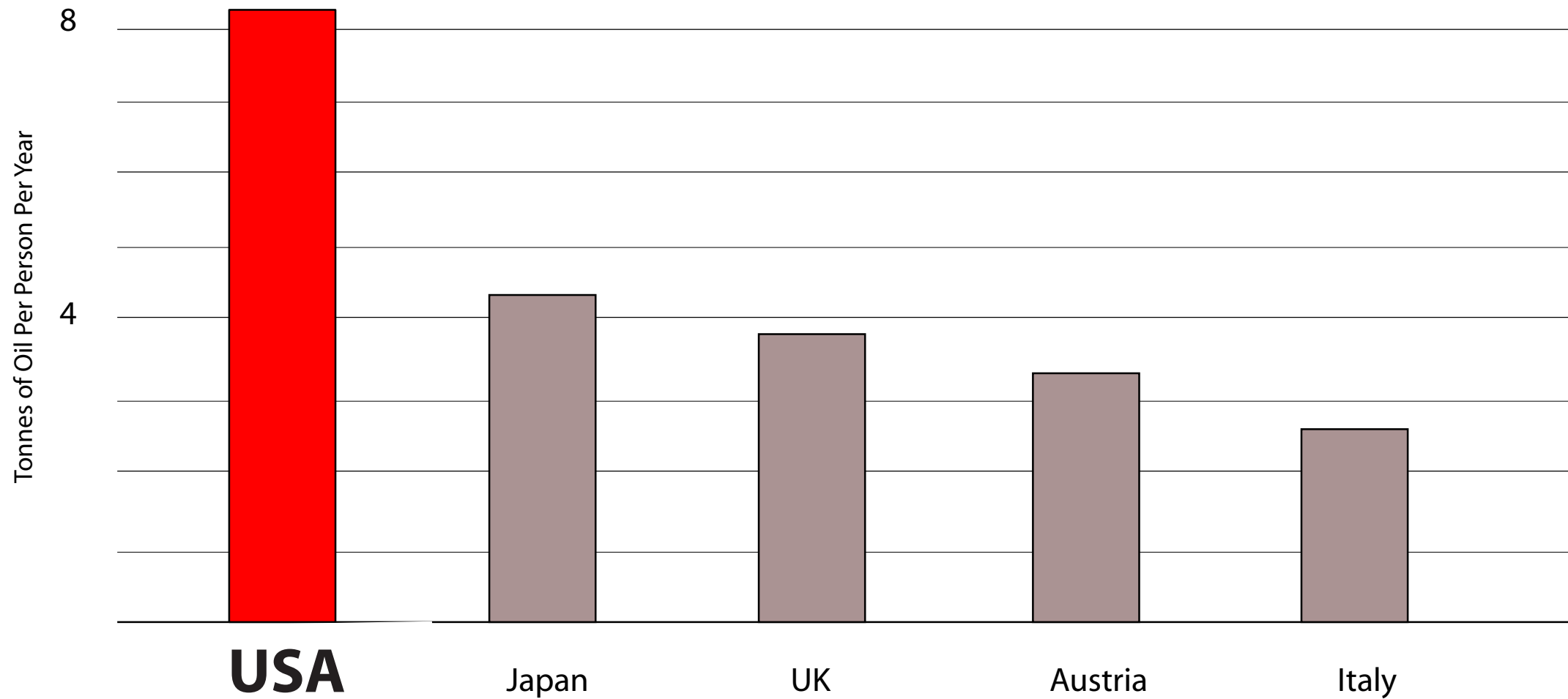


Peak Oil



Energy Usage

Energy Usage Per Capita

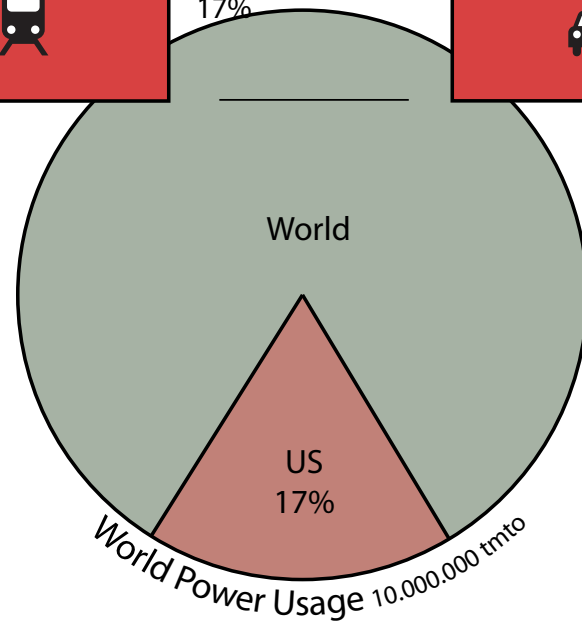
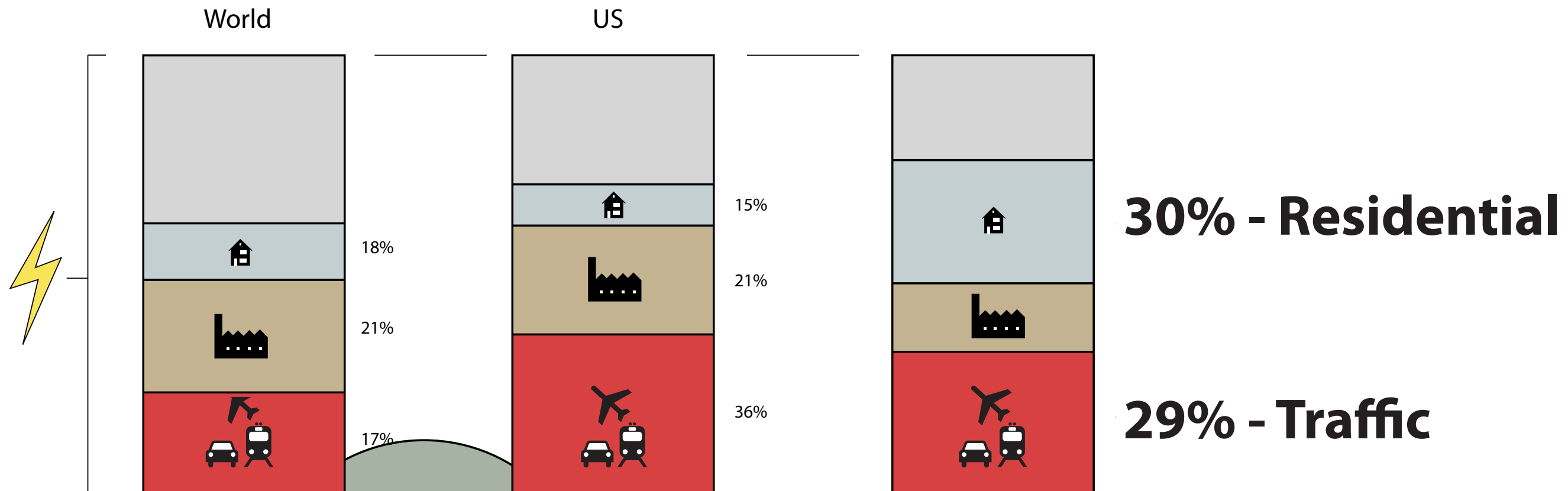


8.3 Tons of Oil
Per Person Per Year



Energy Distribution

Boston



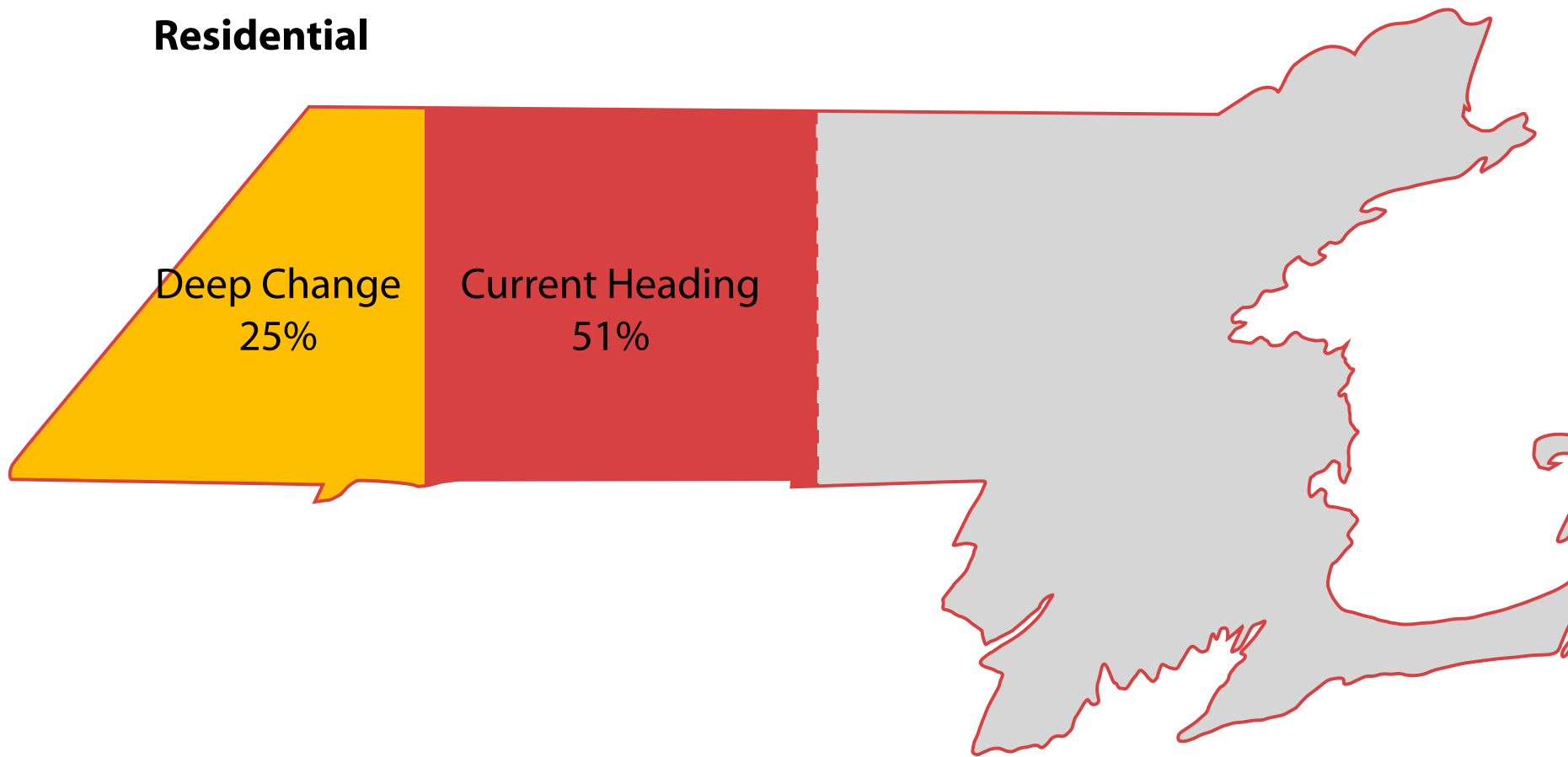
>>> **Decrease Residential & Traffic Energy**



Energy and Land Usage

Future Scenarios: **2050**

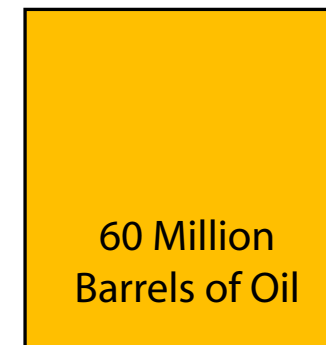
Residential



Energy Usage

Current Heading

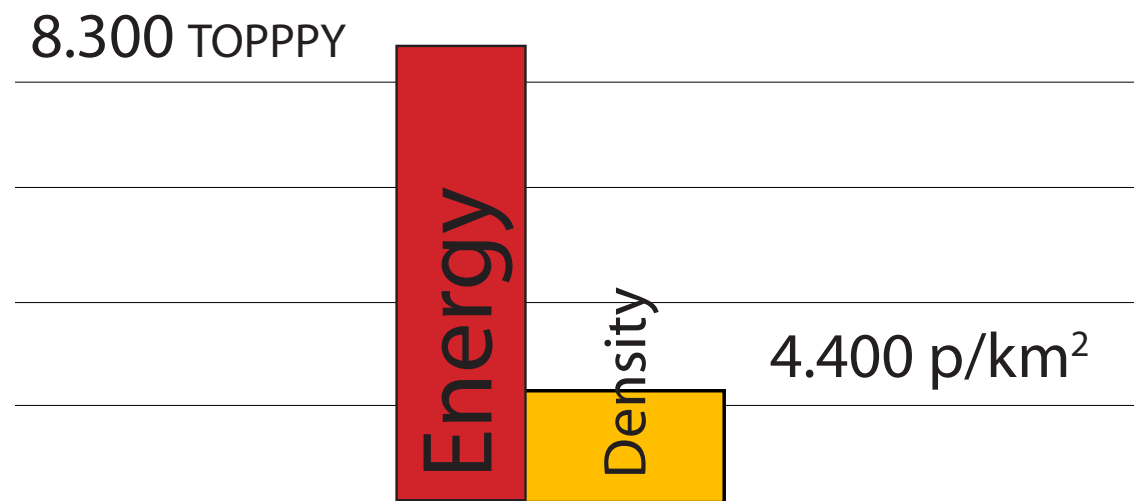
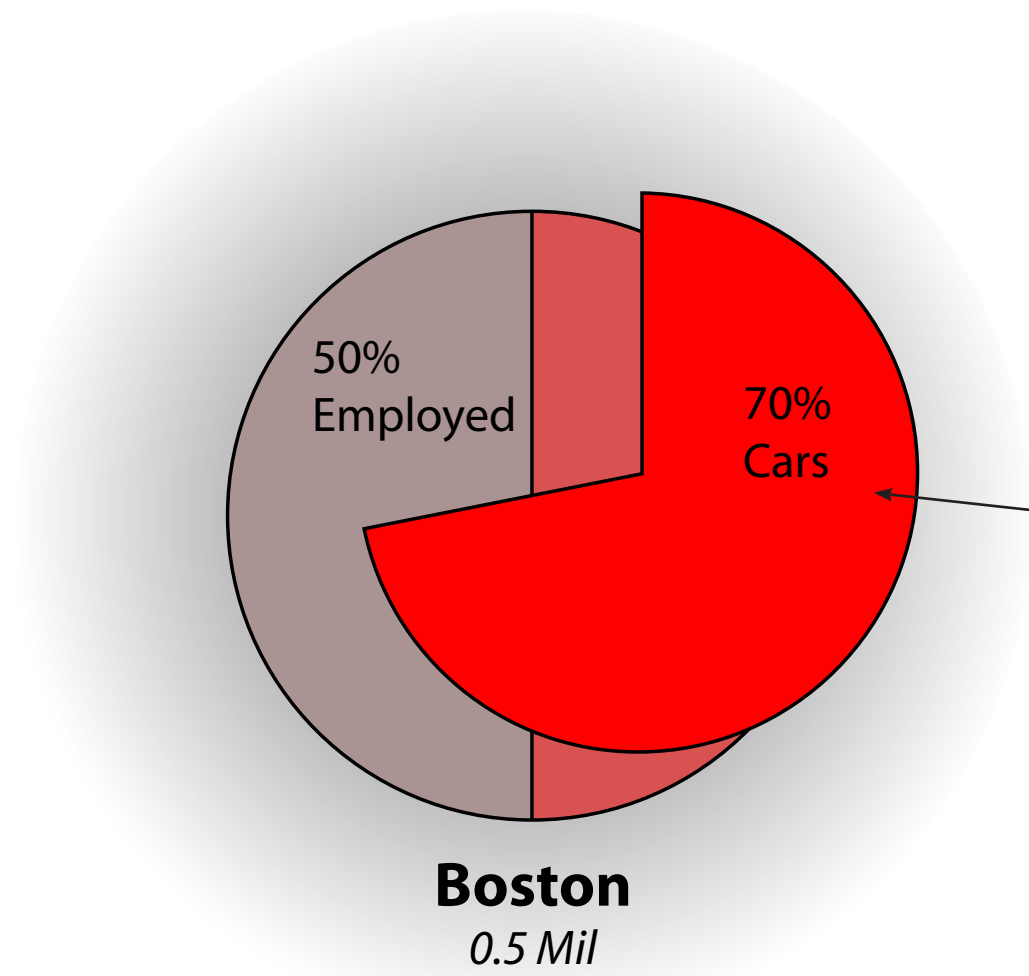
Deep Change



Deep Change



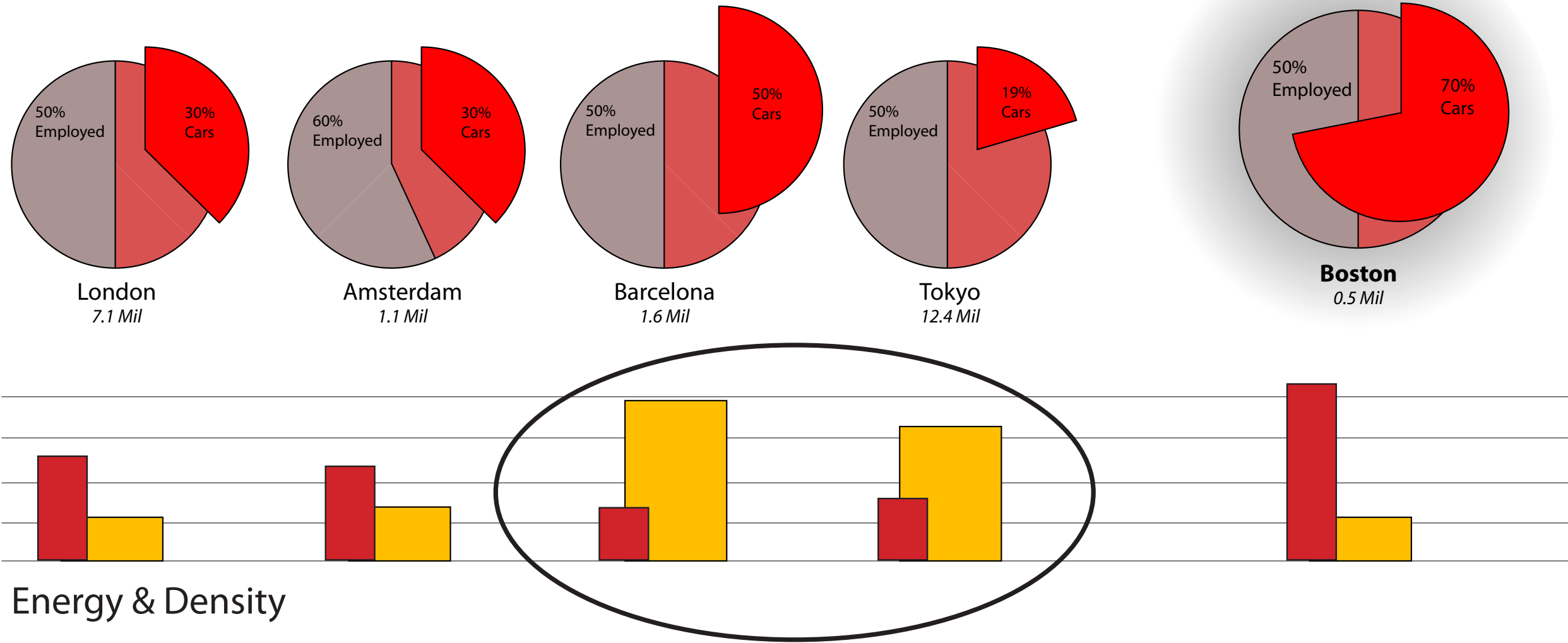
Urban Energy Configuration



70%
Car



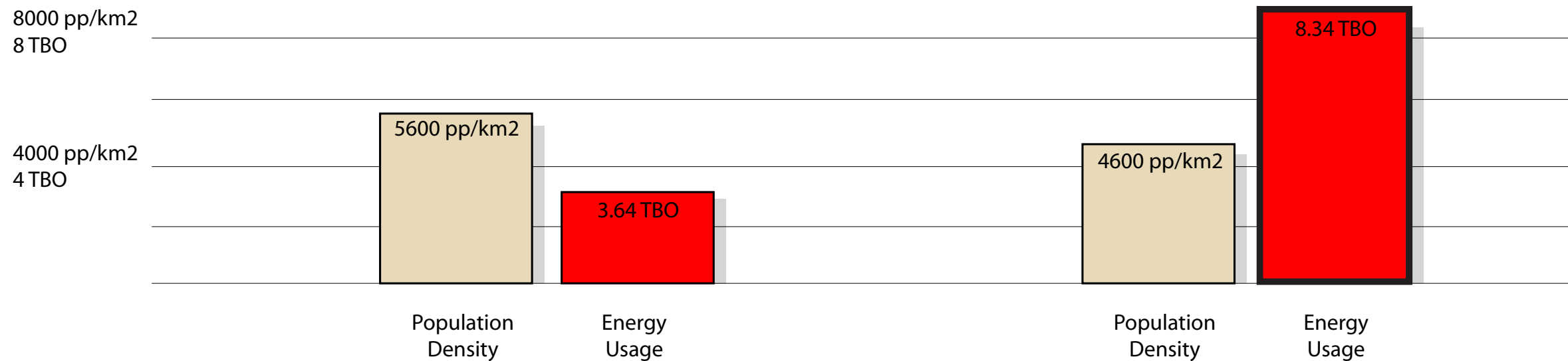
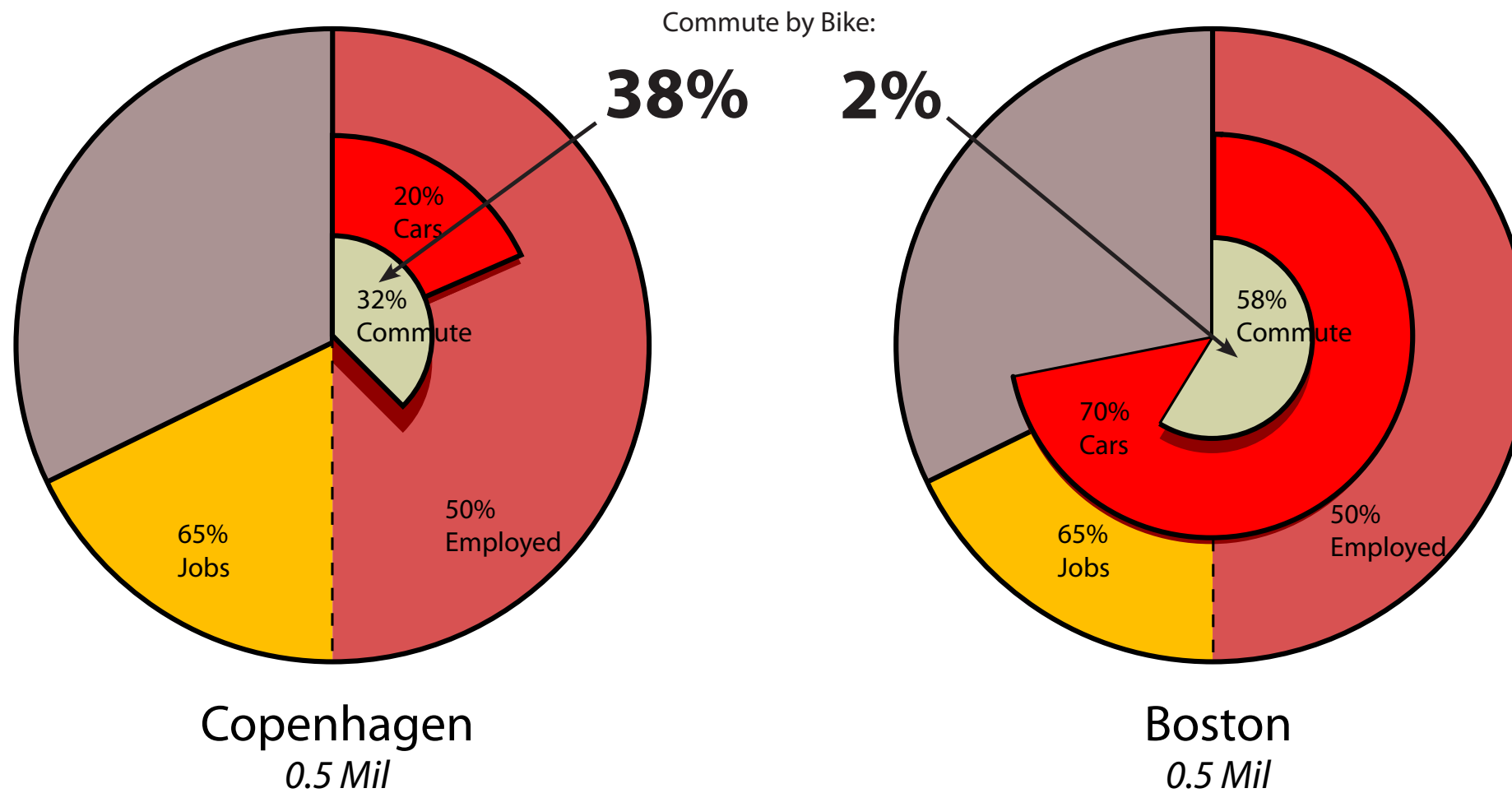
Energy and Land Usage



No need for cars
Residential Energy down → Density UP



Walking Cities Compared

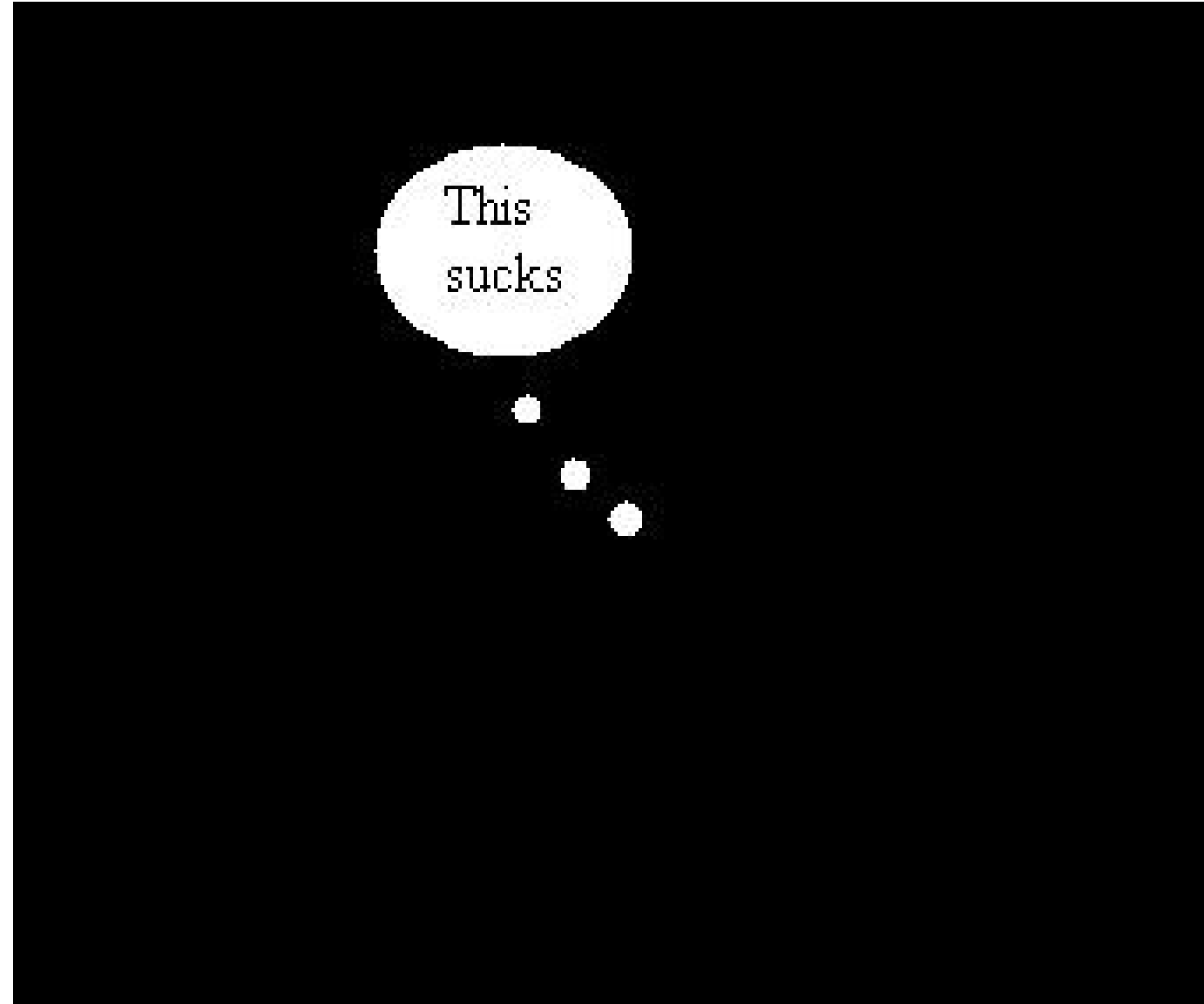


CITIES AFTER PEAK OIL

Team Crazy Kitten



Expected results without intervention



- Blackouts (already happening)
- War (already happening)
- Food competing with Oil for land
- Soaring Food Prices
- Famines
- Decimation of population
- Collapse of states



Case Study: Cuba



History

- Soviet personnel left Cuba in 1991 – Soviet Union collapsed
- Ended economic subsidies – \$6 billion annually.
- GDP down 85% in the first 2 years
- Population lost weight (average 20 lbs.) – 30% per capita calorie decline, Some cases of malnutrition and blindness
- Major decrease in material standard of living

Cuba went from normal to beyond Peak Oil overnight



Case Study: Cuba



Tractors replaced by oxen

Special Period, After Peak Oil

- Cuba abandoned the Soviet Industrial Model
Changed from industrial/petrochemical farming to organic
- Introduced private farms and farmer markets
- Farms are smaller and use animal traction
- Maintained free decentralized medical system
- Used their limited oil resources to generate electricity
- De-emphasized private automobile



Case Study: Cuba



Agricultural Response

Involuntary vegetarianism – more energy efficient

Meat eating went from twice a day to twice a week

Increased vegetable and viandas (starches) consumption

Increased vegetable sources of protein

Decreased wheat and rice (Green Revolution) production

Urban gardens produce 50-80% of vegetables in cities

Rural areas improved education for farmers

Many people moved from Havana to the country

Wages raised for farmers, who are very well paid!

Little obesity now due to healthier diet and more physical work



Case Study: Cuba

Transportation Response



Case Study: Cuba

Housing Response



Case Study: Cuba

Housing Response



- Rooftop Gardens & Farming
- Low energy & local materials
- Passive solar designs
- Compact & high density
- Adaptive reuse of existing structures



Pattern (a la Chris Alexander)



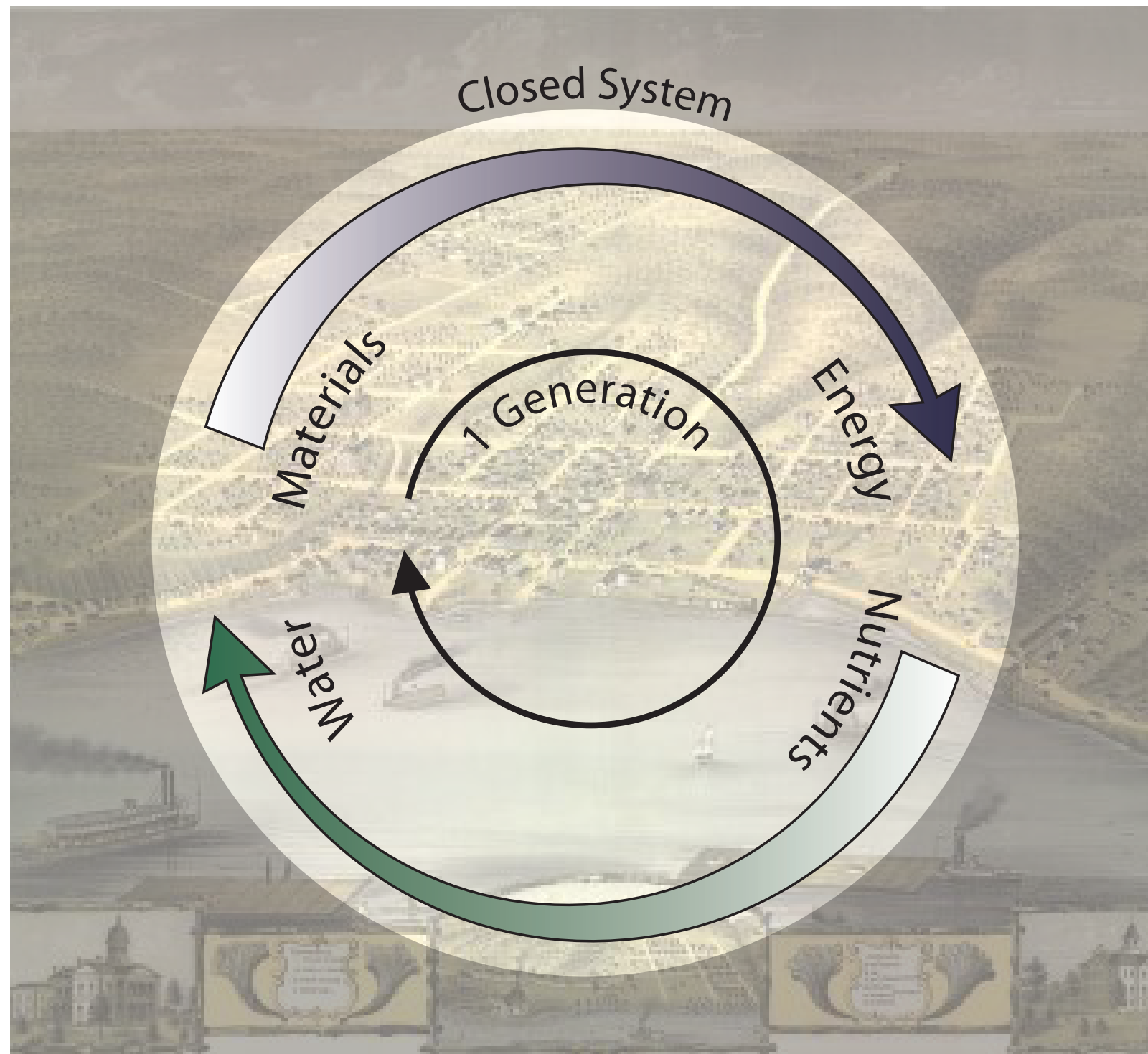
Problem:

Mankind has lost touch with its own process of existence. Ashes to ashes, dust to dust, food to food, energy to energy, life to life. The logical operating parameters of the biological chain of life are broken and we operate within the margin until the buffer zone has been depleted.

Current cities are inherently unsustainable constructs. The chain is not closed, relying on a nonrenewable resource above all else for everything we make and do, causing a spectrum of problems, predominantly when our unbridled hunger for raw energy is confronted with a lack of resources and a destruction of our habitat.



Pattern



Core Solution:

Reconnect civilization with the chain of biological existence. Make the system locally tight and assure that no single revolution within takes longer than a single generation.



Pattern

Tools/Methods for Application in Cities:

- Transport (produce, commute, transport types)
- Public space (lots & parking lots to agriculture, roads to parks & bike lanes, etc)
- Daily life (work at home, local vacations, communal food gardens etc)
- Density (Suburbs gone, smaller cities, more modest space per house, etc)
- Production (Local, symbiotic industry, recycling)
- Resources (full circle reuse of all materials, nutrients and energy)
- Buildings (Towards zero net energy for all residential and commercial existing buildings)



Pattern

Immediate Urban Requirements:

- **High Density** but no elevators
- Elimination of Personalized Motor Traffic
- Minimalization of Transport
- Self-Serviceability
- Full Bicycle and Pedestrian amenities
- Mixed Demographic & Program
- Modesty in Amenities & Space Consumption



Pattern

Immediate Architectural Requirements:

- Long-Life Construction (100+ years)
- Regional/Local & Recycled Materials & Labor
- Programmatically Convertible Design
- Anticipate Work-At-Home
- Increase Biodiversity & Biomass
- Application of Renewable Energy Sources
- Modesty in Provision



Pattern adjusted for Arid climate



Take advantage of local conditions:

Climate: High diurnal swing, dry, high solar radiation

- Use thermal mass, Night Purge, Mass Shading & Wind stacks
- Harness Solar Energy (Boilers, Boiler Plants & PV's)

Fragile & arid soil:

- Necessity of suitable agricultural plant species (limited to no irrigation, regenerative plants...)
- Materials: Rammed Earth, Clay & Wood (high thermal mass)



Pattern adjusted for Arid climate



What NOT to do

- Cities that rely on a completely artificial conditioning of climate
- Buildings that ignore local conditions



Pattern adjusted for Arid climate



What NOT to do

- Low density, spread out settlements
- Climate unaware construction

