The future of transportation in a carbon-constrained world

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Threats to Sustainability
Our Urban Habitat

Population of Developing Countries
millions of people

- RURAL
- URBAN

World Car Population
millions of cars

- 1960
- 1970
- 1980
- 1990
- 2000
AIR POLLUTION & FATALITIES

800,000 deaths per year from urban air pollution

1 million + road traffic fatalities
GHGs from Transportation

Transport 14%

Rest of Global GHGs 86%
We must solve this problem approximately in the span of current students’ careers.
Cleaner Fuels and More Efficient Vehicles Are Not Enough
Less VMT Impacts Other Areas

- Safety
- Livability
- Water
- Smog
- Congestion
How did we get here?

1. First National Conference on City Planning (1909)
2. Futurama (1939)
3. Interstate Highway Act (1956)
First National Conference on City Planning (1909)
Planning is on the right track

• Early “freeway” designs were multi-modal, denser networks, lower speed
• Thought about land use
• Transportation seen as tool for urban renewal, directing growth
First National Conference on City Planning (1909)

Planning Derailed by Great Depression

1. City property tax
2. Reliance on federal funds
3. Federal Control of Planning
4. Focus On Integrated Urban Mobility
“There should be no more reason for a motorist who is passing through a city to slow down than there is for an airplane which is passing over it.”

2 Futurama (1939)
• Funding = Gas tax
  – Justification for auto-only infrastructure

• Federal $$$ → Loss of local control
  – Sole objective = moving cars quickly
  – Focus on interregional travel
  – Little local input in planning process

• 90% federal match irresistible to municipalities
  – Freeway or nothing
Freeway Construction

Gas Tax

Auto Dependency

Destruction of communities

Global Warming

Air Pollution

Collision Deaths

Suburban Sprawl

Local Livability

State/Federal Engineer-Perspective, Single-Mode, Single-Objective Planning
ISSUES EMERGE...
 Besides destroying the Black business district and splitting the community by this 8-lane ditch, the DC Highway Dept. in 1969 estimated that the NORTH LEG would:

- Destroy 2,393 family housing units
- Build 4,376 persons out of homes
- Lose 221 jobs
- Remove 40 acres of taxable land

Organize to Defend Your Community from...

White Men's Roads thru Black Men's Homes!

Photo by Richard Layman
"I’m not stealing it. I’m moving it closer to my house."
Now It’s Our Turn

What does our “Futurama” look like?
Reduction Strategy (Technical constraint)

Transportation Demand Management (Minor infrastructure)

Transit (Infrastructure, street reconfiguration)

Fuel Decarbonization (Fuel production, distribution infrastructure)

CAFE Standards (Progress in vehicle technology; Vehicle fleet turnover)

Land Use (City growth rate; building turnover; roadway network reconfiguration)
Thinking About Access
In German Suburb, Life Goes On Without Cars

Biking and walking are the principal means of transport within the suburb of Vauban, Germany. More Photos>

By ELISABETH ROSENTHAL
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VAUBAN, Germany — Residents of this upscale community are suburban pioneers, going where few soccer moms or commuting
The Trip of The Future
Or?
Or?