The Smart Jitney
Rapid, Realistic, Transport Reinvention

Real Time Rides:
The Smart Roadmap to Energy & Infrastructure Efficiency

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Community Solutions – Vision & Mission

- **Vision** – To reduce energy consumption everywhere in every way through community and personal action

- **Mission** – To provide knowledge and practices to support low energy lifestyles in the household economic sector (food, housing, transportation)

- **Key Assumptions**
  - Peak Oil and Climate Change are interrelated
  - Must become “sustainable” – watchword of our times
  - “Sustainability” can be, and must be, measured
The Beginning of the End

- Running low on oil
  - Petroleum Geologists (ASPO)
  - All fossil fuels finite
  - Predictions began in 1970s

- Running low on atmosphere
  - Climate scientists (NOAA)
  - Carbon absorption finite
  - Predictions began in 1970s
Sustainability defined – ~ 1 ton/CO₂ per person per year

- 20 of ~200 nations with 70% of population
The “Inconvenient” Truth

- Western Industrial “life style” is threatening life itself

- China & India (2.5 billion people) have chosen industrialism
  - Consumerism replaced socialism/communism
  - Ecological deterioration is accelerating

- “What kind of world will we leave our children, grandchildren and great grandchildren? What will they say of us? Will our great grandchildren say, "What kind of monsters must they have been?“

  – US Representative Roscoe Bartlett (Rep) ASPO 2006
Beginning the Change (to Sustainability?)

Three options – Plan A, Plan B, Plan C
- Plan A – Business as usual (new fuels). Same lifestyle
- Plan B – Replace fossil fuels with wind/solar. Same lifestyle
- Plan C – The party’s over. Change lifestyle. Cut back fuels

Plan A – *Denial* – Fuel Cell, Nuclear Fusion, Carbon Capture
- The record is bleak. Big potential for war.

Plan B – *Substitution* – Wind, solar, biofuels
- Wind & solar still about 1%. Agri-fuels (food of the poor)

Plan C – *Redesign* – Curtailment and Community
- Use “intermediate” technologies
- Reduce consumption – change life style
- Focus on household sector – food, house, car
Private Auto Statistics

- U.S. has 250 million cars/SUVs/pickups
  - 30% of the 700+ million cars in use worldwide

- 75 million new cars and trucks are built each year worldwide
  - Net addition to world car population – 55 million yearly
  - World growth in terms of auto fuel – 8%

- U.S. cars/trucks generate 45% of auto CO2 in world

- Average American buys 13 cars in his/her lifetime

- U.S. fleet mileage – 21 mpg, Europe 42 mpg, Japan 47 mpg
The Hirsch Report

<table>
<thead>
<tr>
<th>Fleet</th>
<th>Size</th>
<th>Median Life (years)</th>
<th>Cost to replace half the fleet (2003 $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automobiles</td>
<td>130 Million</td>
<td>17</td>
<td>$1.3 trillion</td>
</tr>
<tr>
<td>Light trucks SUVS, etc.</td>
<td>80 Million</td>
<td>16</td>
<td>$1 trillion</td>
</tr>
<tr>
<td>Heavy Trucks, Buses</td>
<td>7 Million</td>
<td>28</td>
<td>$1.5 trillion</td>
</tr>
<tr>
<td>Aircraft</td>
<td>8,500</td>
<td>22</td>
<td>$.25 trillion</td>
</tr>
</tbody>
</table>

- Low mileage cars still being made – with a 15-20 year life
- Hirsch concludes we can’t change the fleet
U.S. Drivers Tend to Drive Alone

Number of Passengers per Trip for Different Vehicles

- **Passengers per trip**
### Current Paradigm Results – Deaths

<table>
<thead>
<tr>
<th>Region</th>
<th>Deaths 1998</th>
<th>Injuries 1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor Nations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>170,118</td>
<td>6,116,559</td>
</tr>
<tr>
<td>Americas</td>
<td>125,959</td>
<td>4,410,736</td>
</tr>
<tr>
<td>China</td>
<td>178,894</td>
<td>5,384,909</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>70,677</td>
<td>2,533,771</td>
</tr>
<tr>
<td>Europe</td>
<td>106,757</td>
<td>3,213,104</td>
</tr>
<tr>
<td>India</td>
<td>216,859</td>
<td>7,203,864</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>118,608</td>
<td>3,997,631</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>41,165</td>
<td>1,432,539</td>
</tr>
<tr>
<td>Combined Total</td>
<td></td>
<td>1,170,694</td>
</tr>
</tbody>
</table>

| Wealthy Nations         |             |               |
| Eastern Mediterranean   | 923         | 29,979        |
| Europe                  | 66,099      | 2,082,321     |
| North America           | 49,304      | 1,670,374     |
| Western Pacific         | 25,330      | 772,838       |
| Combined Total          |             | 38,848,625    |

- 1,200,000 deaths yearly
- 38,848,000 injuries yearly
- Enormous suffering
- Massive property losses
- More casualties in 3rd world
  - Poor road infrastructure
New Car Considerations

- Much new car research hasn’t worked well
  - Fuel Cell
  - EV
  - PNGV

- Very successful hybrid Prius model
  - About 1.5 million out of 250 million in 10 years

- PHEV is a coal car
Mass Transit Option

- Density determines success of mass transit

- Historically residences laid out in dense corridors
  - Many walkable small towns along the rail line

- Between corridors, there was open space and farms

- Suburban growth filled in the corridors
  - Filled in area (suburbs) are car dependent

- A true mass transit system for U.S. today might be impossible
  - Our sprawl has no precedent in history
New Mass Transit Success Questionable

- Mass transit typically just supplements cars

- Mass transit overrated (BTU per passenger mile)
  - Private Car – 3,496
  - SUV – 4,329
  - Bus Transit – 4,318
  - Airplane – 3,959
  - Amtrak Train – 2,760
  - Rail transit – 2,569
  - Vanpool – 1.294

- How much and how long for a mass transit system?
  - Can it even be done in places like Los Angeles?
The Current Car Paradigm – No Future

- Heavily subsidized car-based transport through:
  - publicly funded loans, grants, road building
  - cheap fuel, health care, policing & courts

- Encourages people to make as many car trips as possible

- Encourages the largest possible cars

- Ensures that cars are rarely delayed by even a couple minutes

- Makes buses and trains generally unpleasant experiences

- Makes walking & cycling as inconvenient & dangerous as possible

- Ignores the health, aesthetics, ethical & cost advantages of walking/cycling
What About a Jitney?

- A small bus that carries passengers over a regular route on a flexible schedule
- An unlicensed taxicab
- Essence of the Jitney
  - Mass transit with cars, not buses
- Common in 85% of world
What is a “Smart” Jitney?

- Like any jitney, it’s for a small number of people
- Not mass transit – anyone, with a good record, can drive
- Made possible by basic communications/GPS technology
  - A software problem – not a hardware problem
- Will provide anywhere/anytime/anyplace pickup and drop off
  - Not limited to tracks/lines/schedules
- Will provide a high level of security and safety
- “Smart” enough to cut transport energy use 75%
  - Climate people say 80% cut in CO₂ is needed
Smart Jitney Hardware

- A vehicle
  - New or old, small or large
  - Includes a “wired in” Smart Jitney cell phone
  - Includes an Auto Event Recorder (speed, etc.)
  - May have a speed governor – a social question

- A cell phone for each rider/passenger
  - Includes GPS
  - Includes emergency call button for security

- A reservation and tracking computer system

- All hardware is in existence
Smart Jitney Process

- Passenger requests a ride via cell phone
  - Enters Pickup/Destination Location, Pickup/Arrival Time
  - Selects Kind of Service

- Smart Jitney computer assigns rider to vehicle
  - Evaluates all seats in transit
  - Determines optimum pick up and drop-off path
  - Monitors pickup and drop-off process
  - Monitors for emergency warning

- Pick up and drop off made
  - Rider submits evaluation entered by cell phone
  - Smart Jitney computer summarizes ride evaluations
    - E Bay methodology
The Big Issue – Individualism

- Competition is a top cultural value
  - Basis of our economic system
  - Cooperation is viewed as weakness
  - 2005 had the highest income inequity since records began

- Our neighborhoods are organized by income level
  - School funding via taxes supports social separation
  - Perpetuates inequity through generations
  - Competition between children

- How could we ride with just anybody?
  - Easy for most cultures in the world
  - Very hard for us
A Much Lower Risk Option

- New technology fuel cell – 30 years and counting

- Electrical cars (EVs and PHEVs) fueled by coal power plants
  - Risk of runaway climate change

- New liquid fuels – high risk, decades away, low EROEI
  - Oil shale, coal to liquids, gas to liquids, biofuels
  - The Hirsch Option – designed to perpetuate large cars

- Efficiency vision won’t do it – Jevon’s paradox
  - The more efficient the car the more energy will be consumed