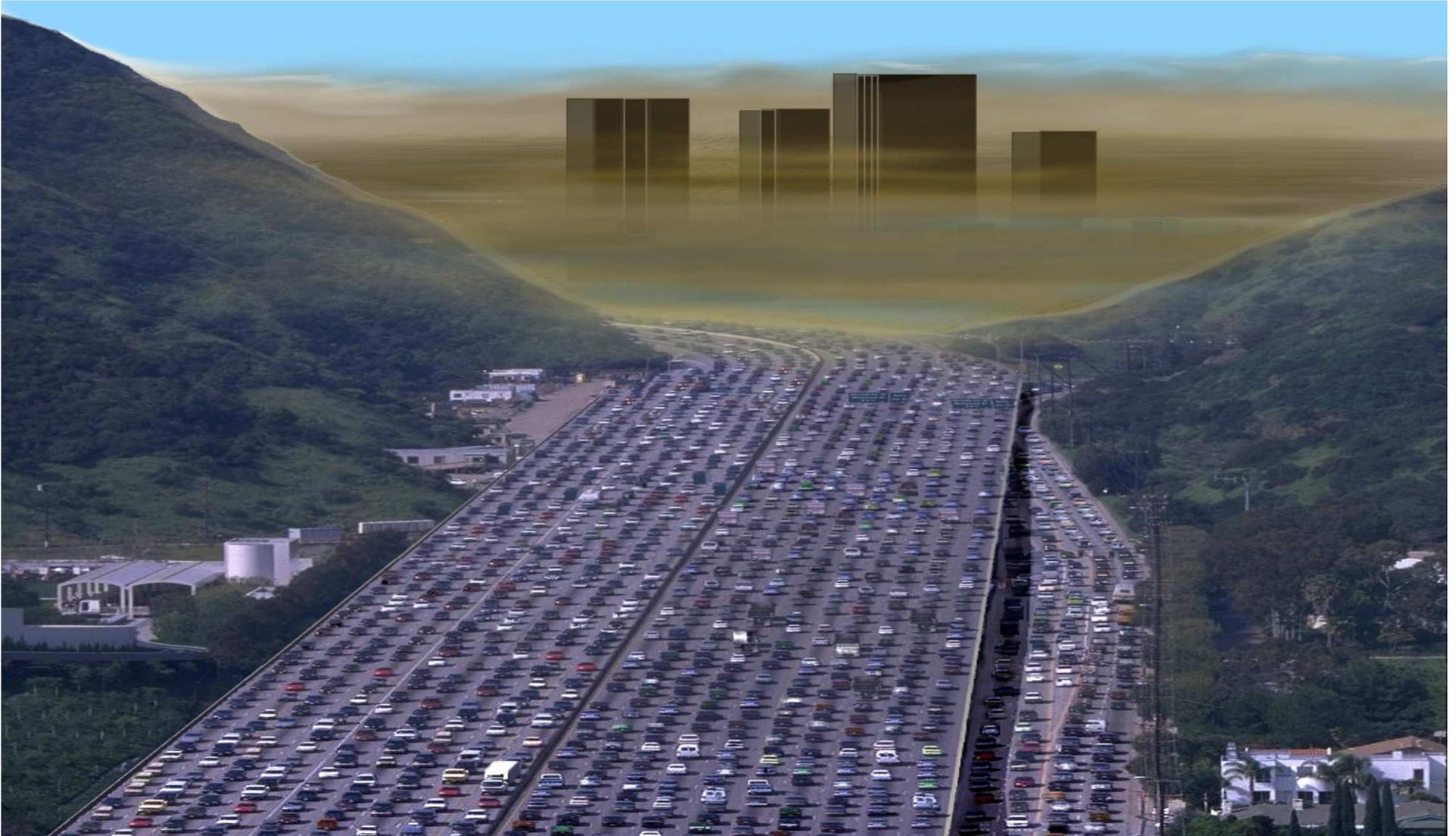


Are cars our future?

2% growth in VMT = double the traffic in 30 years



Support for PRT Demonstrator

- Growing list of local authorities
 - Los Angeles MTA (see letter in comments)
 - Fountain Valley
 - Marin County
 - NASA Ames
 - Fresno
 - Ithaca/Cornell, NY
 - More coming for final ETAAC report

NASA Green Team

“protecting planet earth”

- Jan 15, 2008 - sustainable transportation seminar (3rd in series)
 - Gary Martin - NASA strategic planning
 - Fred Keeley - former speaker state assembly
 - Michael Jackson - TIAX
 - Chris Perkins - CEO Unimodal
 - Discussion including google.com, google.org, silicon valley, NASA scientists and engineers
- Next Seminar in March - Ecosystem monitoring

Why Honda cancelled PHEV

	Gasoline + Elec.	Energy cost	5 year Savings Energy-(higher car cost)
19 mpg US 2005	601 gal	\$1800	\$0
45 mpg hybrid	266 gal	\$800	\$5,000-(\$3,000) = \$2,000
100 mpg PHEV	12 gal + 2500 kwh	\$36+\$375	\$7,000-(\$9,000)= \$-2,000 (loss)
EV	3000 kwh	\$450	\$6,750-(\$25,000)= \$-18,250 (loss)

Based on: US Senate testimony Jan 26, 2007 by Menahem Anderman
 Assumptions: 12,000 mi/yr, 250 wh/mile, 30 mile phev, \$0.15 per kwh,
 \$3/gallon gasoline

\$4 gas helps Prius more than PHEV

	Gasoline + Elec.	Energy cost	5 year Savings	10 year Savings
19 mpg US 2005	601 gal	\$2400	\$0	\$0
45 mpg hybrid	266 gal	\$1060	\$3,700	\$10,400
100 mpg PHEV	12 gal + 2500 kwh	\$48 +\$375	(-\$2,000)	\$5,000
EV	3000 kwh	\$450	<i>-(18,250)</i>	<i>-(11,500)</i>

Assumptions: 12,000 mi/yr, 250 wh/mile, 30 mile phev
\$0.15 per kwh, \$4 gallon gasoline

Toyota PHEV plan

- CEO Watanabe announced plan to build and test several hundred PHEVs by 2011
- Also said “mass production of PHEV-capable batteries is totally different problem from low volume production.”

Calif Personal Transport Energy

*does not include refining or highway maintenance

Vehicle Type	Meets AB32 goal	Watt hours per mile	20 year cost
25 mpg gasoline car	No	1500*	\$1,000B
50 mpg hybrid	No	750*	\$720B
40' bus (25 pass.)	No	673*	?
100 mpg Plug-in hybrid	No	375**	\$680B
Fully Electric	Yes	200**	\$900B?
London Underground		170	N/a
Maglev PRT (500k miles)	Yes	50**	\$550B

**estimated

US\$ leaving california

Vehicle Type	Meets AB32 goal	1 year	20 year
25 mpg gasoline car	No	\$40B	\$800B
50 mpg hybrid	No	\$35B	\$700B
40' bus (25 pass.)	No		
100 mpg Plug-in hybrid	No	\$34B?	\$680B
Fully Electric	Yes		
London Underground			
Maglev PRT (500k miles)	Yes	\$0B	\$0B

**estimated

California PRT Demonstrator

- Goals
 - Establish state level oversight body
 - Evaluate technologies, generate RFP
 - Beat European competitors to market
 - Add jobs to California
 - Bypass EPA roadblocks, partner with NASA
 - Refine financial model and assist local planners
- Funding
 - \$50m for 5 mile loop in high traffic area
 - Rider fees pay back system over time

US Personal Transport Energy

*does not include refining or highway maintenance

Vehicle Type	Meets AB32 goal	Watt hours per mile	20 year cost
25 mpg gasoline car	No	1500*	\$10T
50 mpg hybrid	No	750*	\$7.2T
40' bus (25 pass.)	No	673*	?
100 mpg Plug-in hybrid	No	375**	\$6.8T
Fully Electric	Yes	200**	\$9-10T?
London Underground		170	N/a
Maglev PRT (500k miles)	Yes	50**	\$5.5T

**estimated

6.9 m metric tons CO2 emission reductions

- All US public transit (APTA/SAIC report)
- 500 miles of PRT on interstate highways
- 13,000 miles of PRT on arterials

Can PRT handle the demand?

Light Rail with 200 passengers running every 5 minutes = 4000 pph

PRT with 2 passengers @ 1 second headway = 7200 pph

Each lane of highway handles 4000 pph with 2 passengers per car.