Benefits of Standardized People Transportation in Maritime

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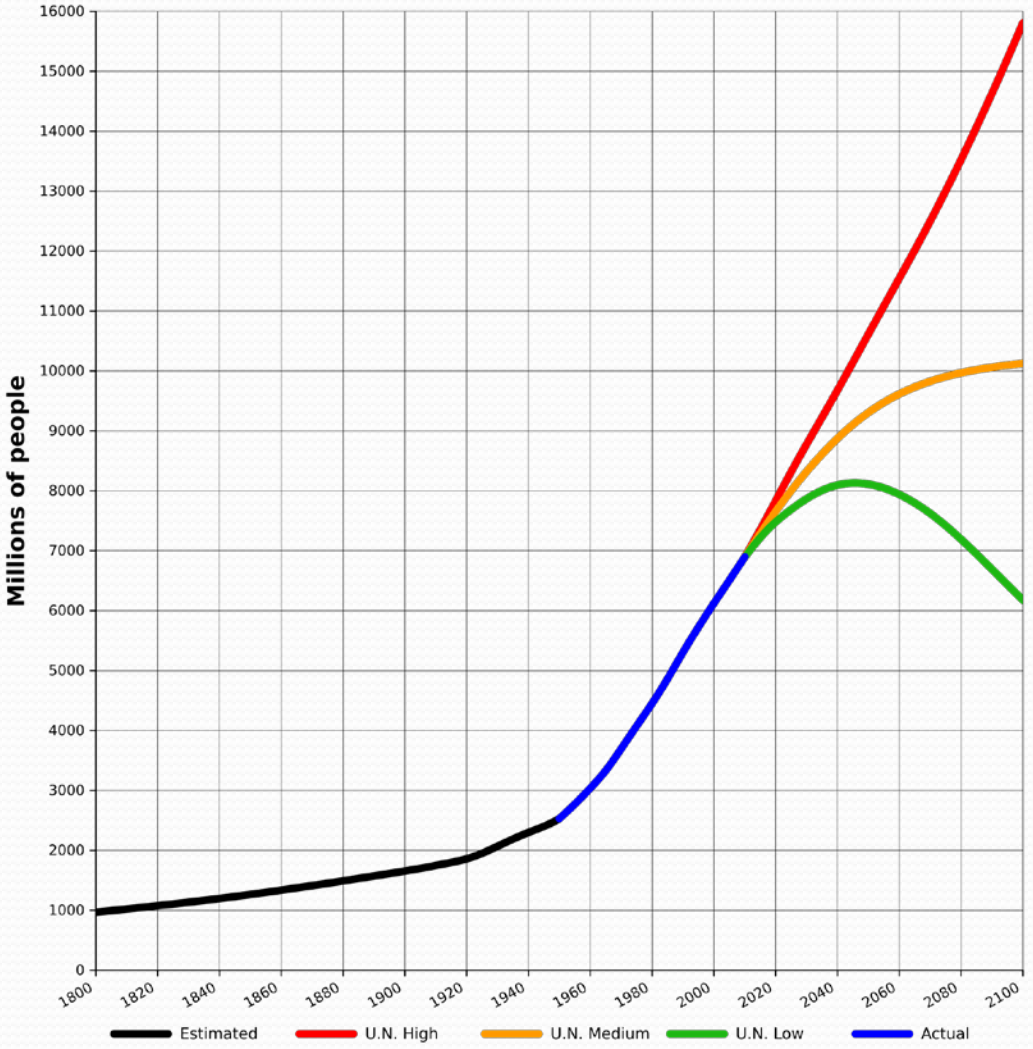
Our life today is a Strange Trip

- Sustainability for all is deeply related to efficiencies and birth control
- Birth control; not great, but not scary
- Efficiencies:
- Reduce land use; difficult
- Reduce energy use: difficult
- Reduce environmental impact: difficult



Why are we inefficient?

- Because we can
- And hopefully so can 9 billion people in a world economy
- Can we return to greater inherent efficiencies?
- Rural living? Impossible
- A form of facism or communism? Possible
- Moderators? Huge energy taxes, restrictions etc. or maybe clever design.

Have we become more efficient at Anything?

- Better refrigerators
- More effective Photo Voltaics
- Really inexpensive communications
- More fuel efficient cars?
- All implemented with some level of regulation

Anything more efficient without regulation?

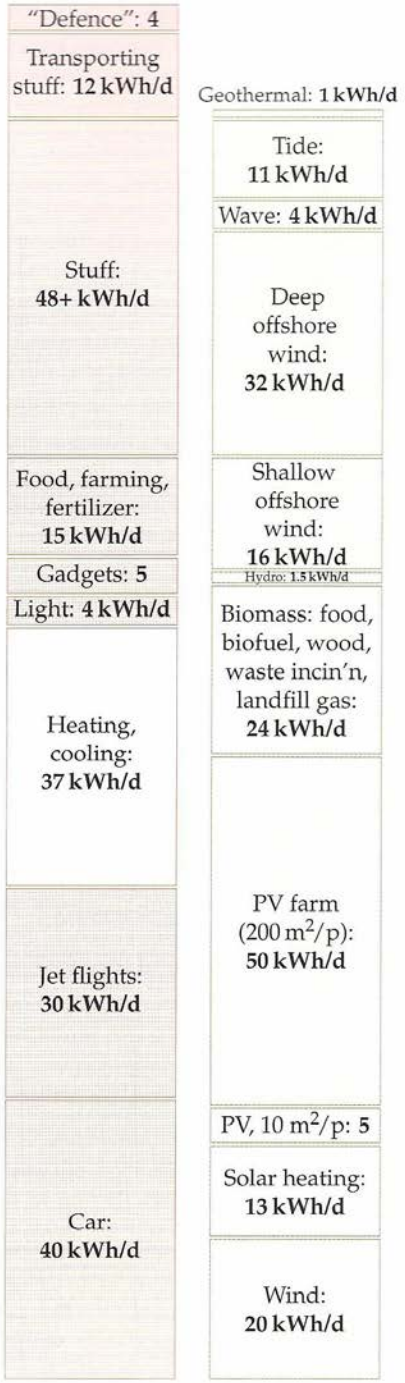
- Containerization?
- Make a box 8 feet wide
- Put the vast majority of our cargo in this box
- Make it possible to fit this box in ships, on trains and on roads.
- Astonishing increases in transport efficiencies
- Astonishing benefit to humanity?

Maybe

- Per human, we have become vastly bigger energy consumers.
- Part of that is the cost of moving our consumer goods all over the globe due to containerization
- However, an even bigger lack of efficiency is related to humans dragging themselves all over the globe.

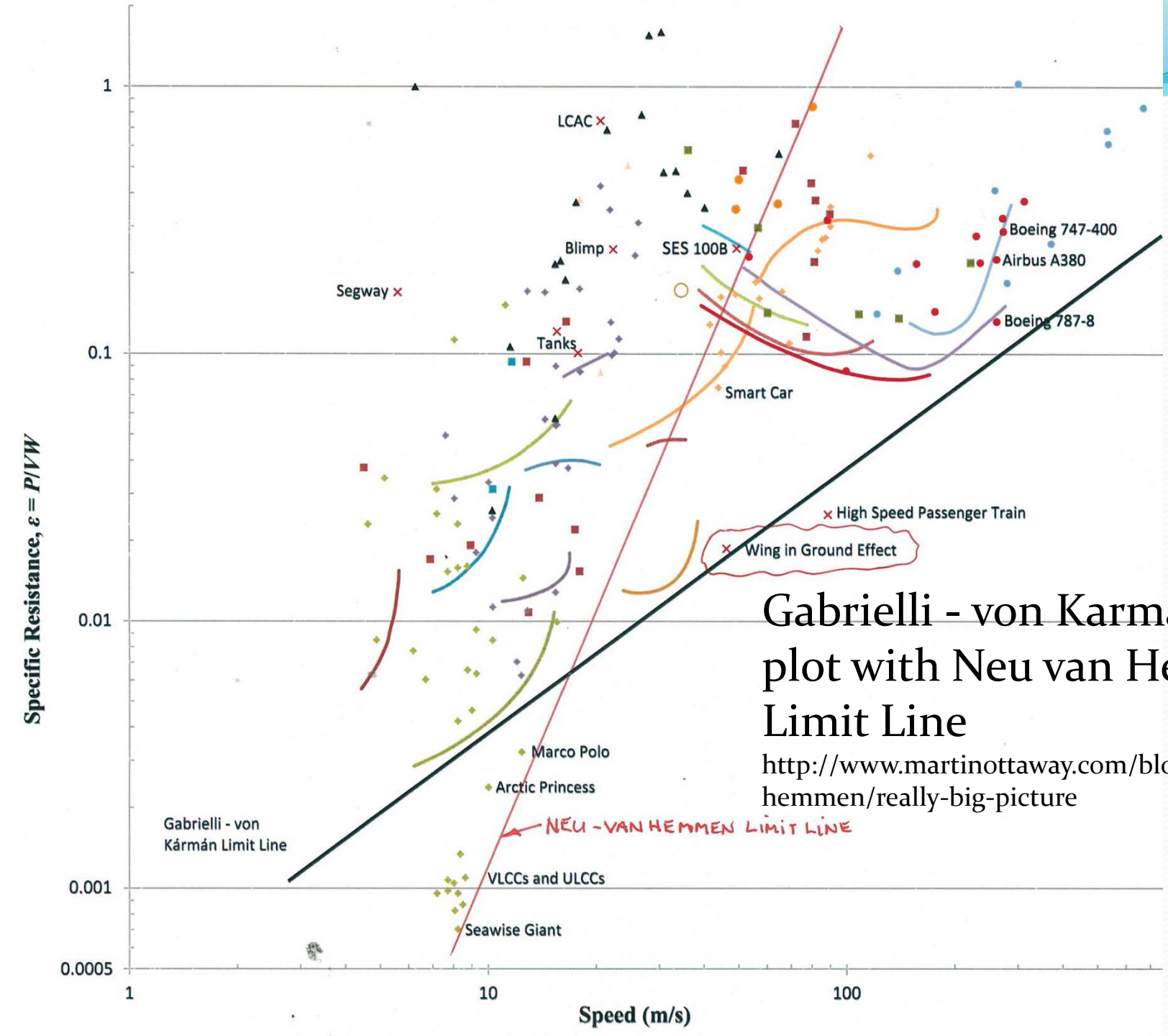
David JC MacKay
Energy Sustainability without the hot air

- Stuff (48 kWh/d) is the world economy and it takes 12 kWh/d to move it
- Food (15 kWh/d will not change much)
- Heating cooling (37kWh/d) could still become a lot better.
- People moving is 70 kWh/d. Hard to make jets better, but what if we use them less?
- Cars: Too much lightweight versus deadweight



Travel

- Our biggest energy consumer:
- Commuting
- Business
- Recreation
- We travel less when the price of energy goes up
- More efficient, but less convenient modes of transportation when cost of energy goes up
- Trains
- Carpools
- Customized systems
- Too much infrastructure



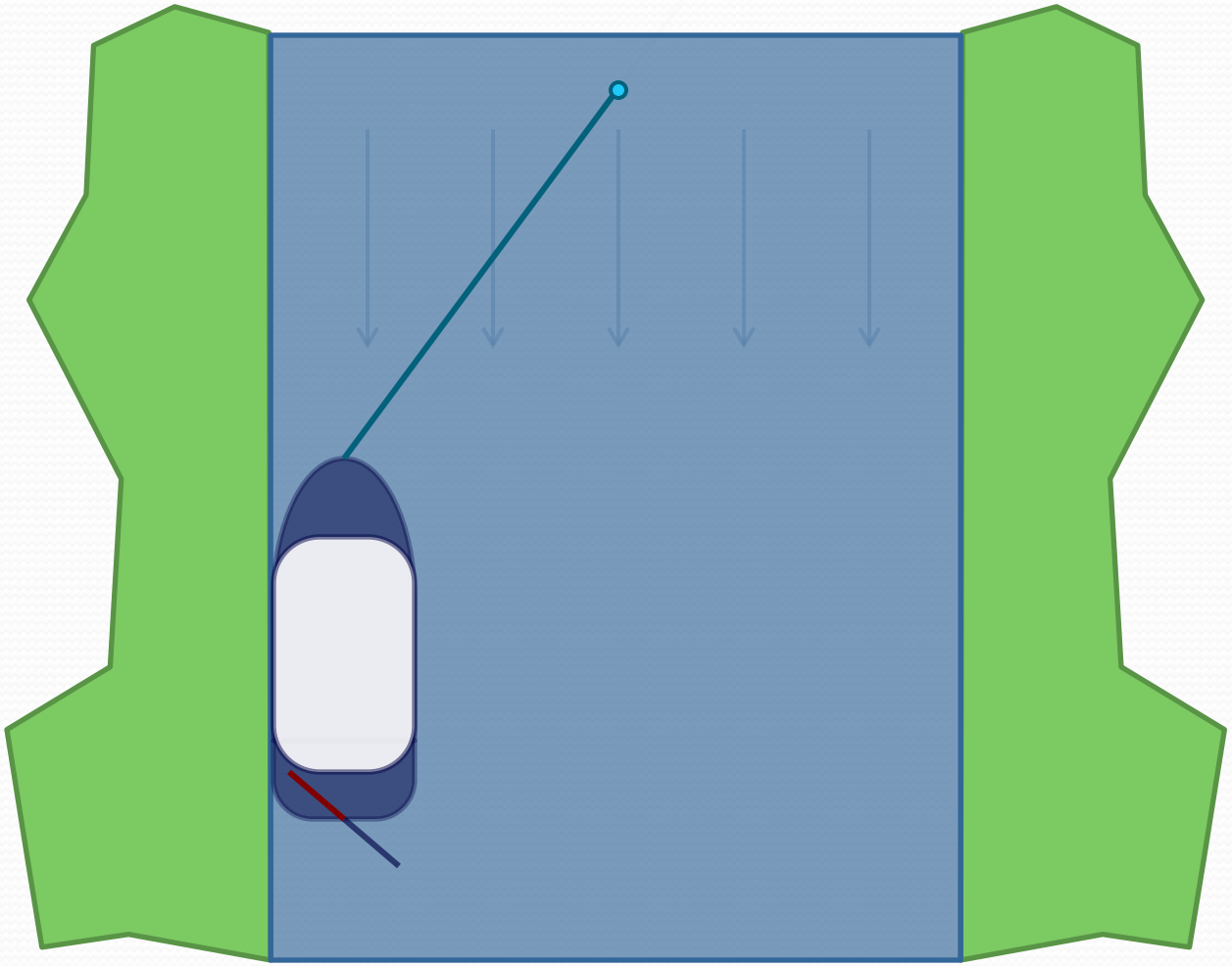
Gabrielli - von Karman plot with Neu van Hemmen Limit Line

http://www.martinottaway.com/blog/rik-van-hemmen/really-big-picture

High(er) Impact ferry

Source: Mark Harrison for *The Seattle Times*

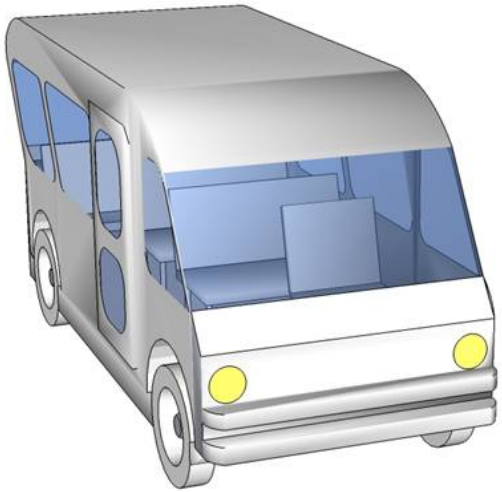
Zero IMPACT Ferry (Old But Current)



The Ferry Conundrum

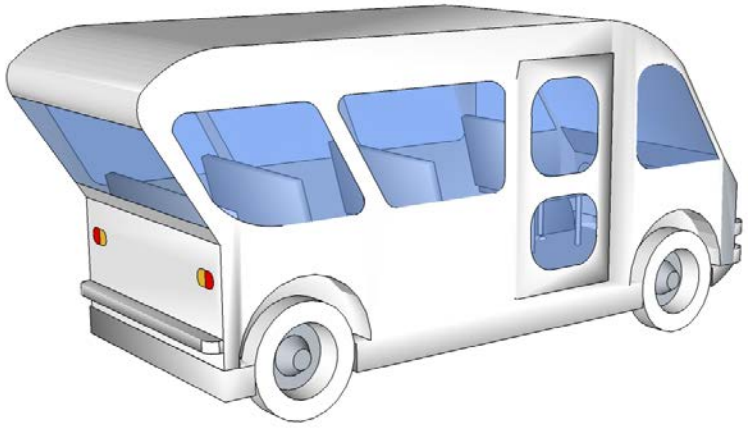
- Ferries can cut time and distance (fuel) in commutes
- Lack of door to ferry transportation
- Wasteful parking
- Lack of ferry to door transportation
- Automated parking as a new technology

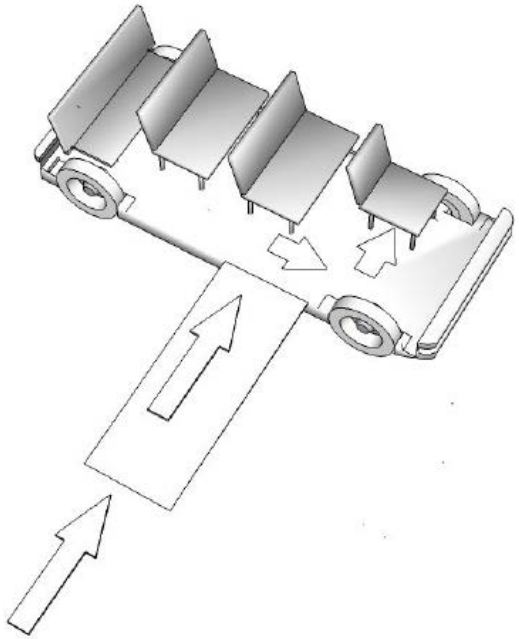
- All of this can be increased in efficiency if people transportation can be standardized (containerized)



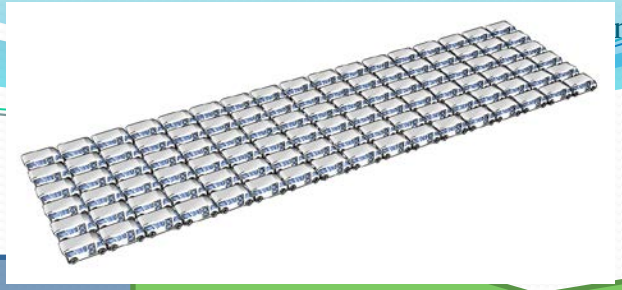
MAXITAXI (2006)

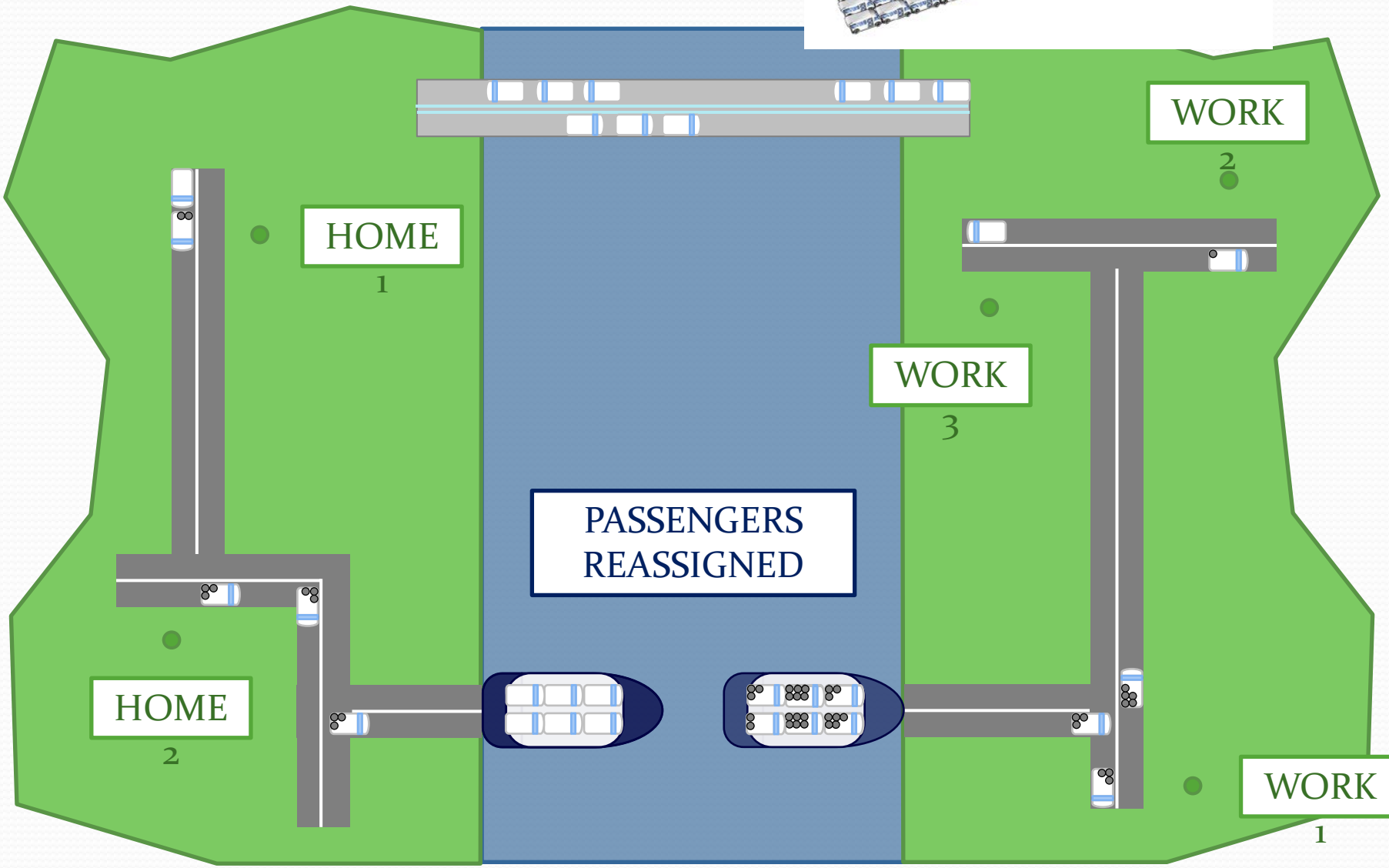
www.martinottaway.com/%5Bmenu-trail-parents-path-raw%5D/maxi-taxi





Beat the Bridge





Could be a Killer App

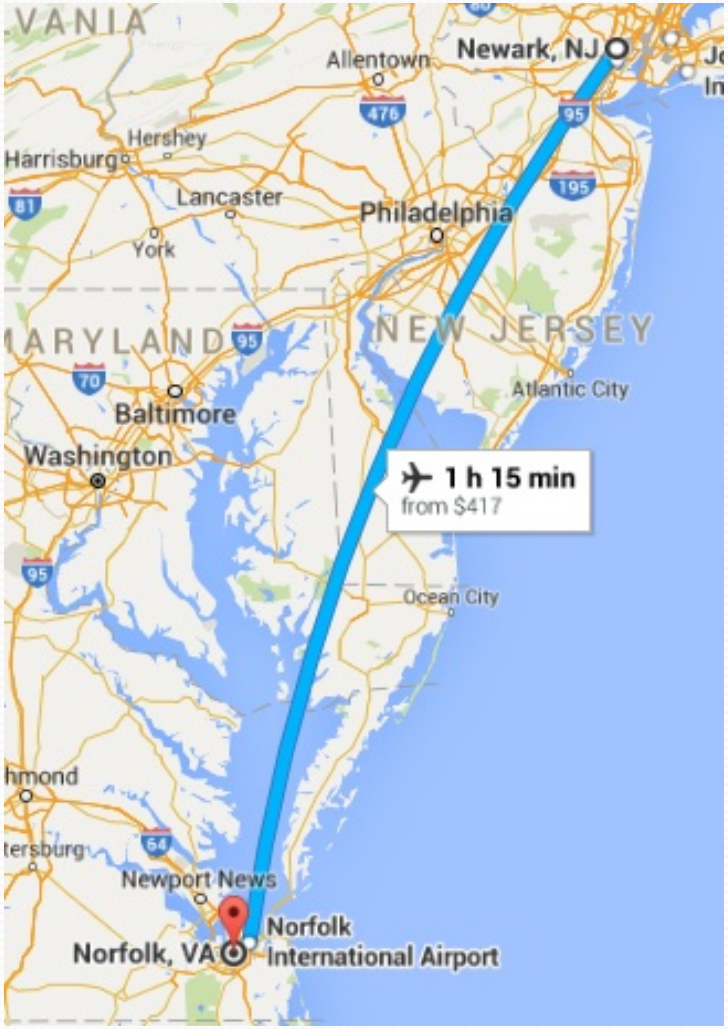
- Malcolm McLean had two killer Apps. Newark to Houston and the Vietnam War
- So let's start these ferry systems in DC and NYC and before long everybody will use Maxi Taxis.

- Think of Maxi Taxi as a people container
- The power of standardization
- There would be killer apps everywhere
- And what if these containers are self driving?

App Buster

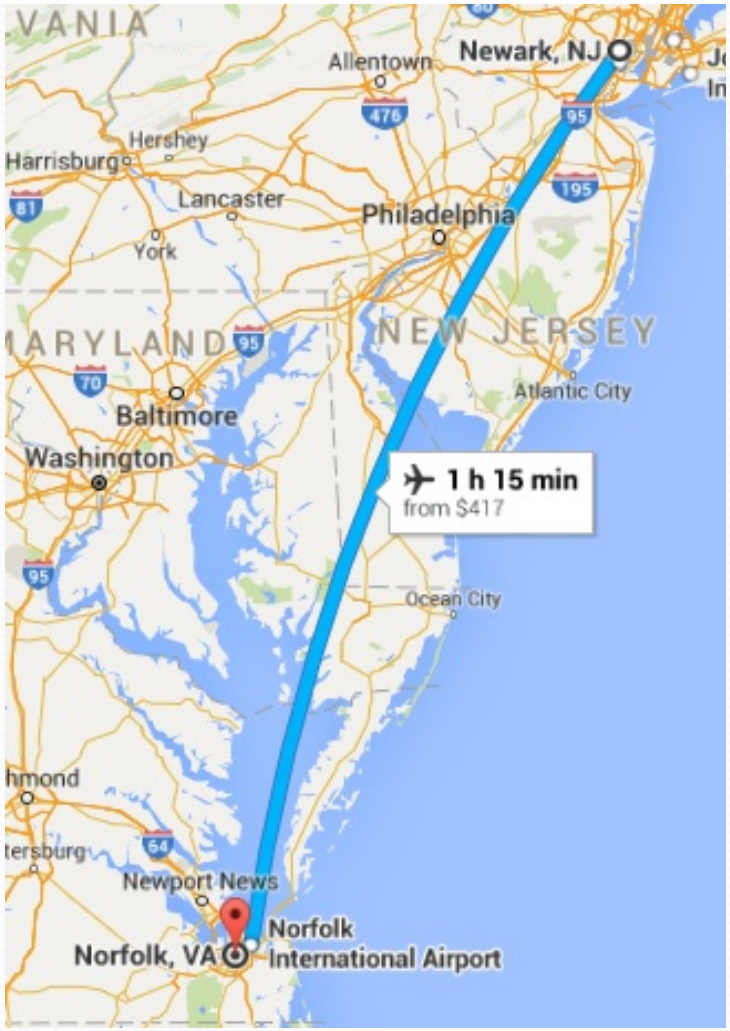
Prettier versions coming to a dealer near you in 2020

A job in Norfolk, a mini case study (1984)



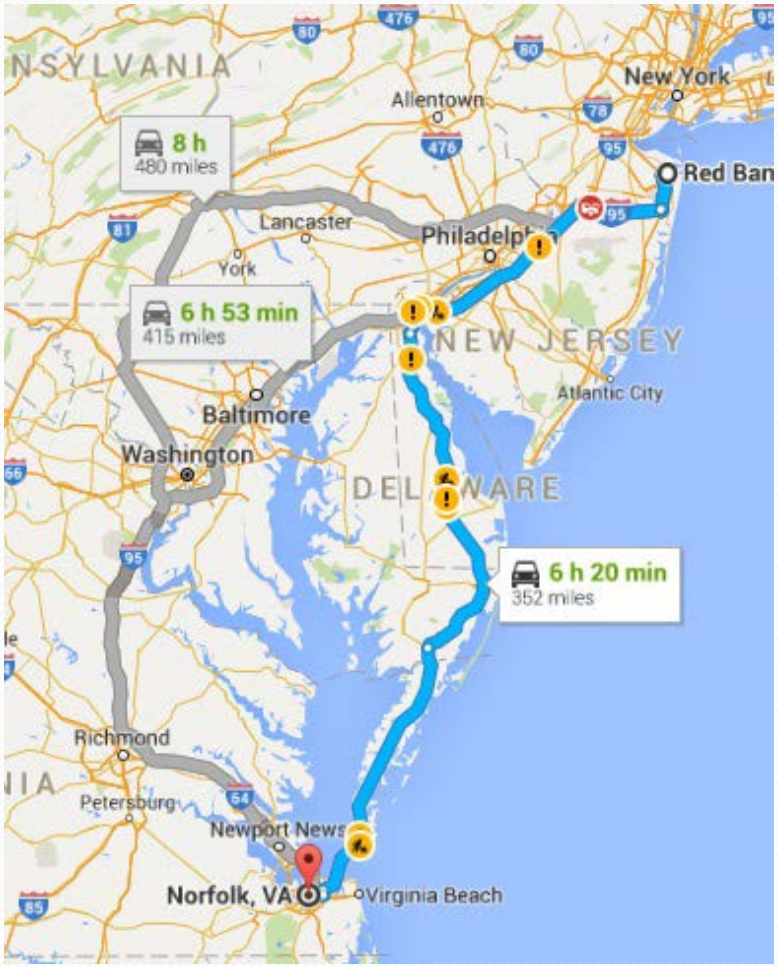
- Leave home at 0615
- Catch flight at 0815 at Newark
- Arrive Norfolk 0945
- Get car 1000
- Do job 1000 to 1500
- Catch flight 1630
- Land Newark 1745
- Home 1830

A job in Norfolk, a mini case study (2016)



- Go to sleep early
- Leave home at 0400
- Catch flight at 0715 at Newark
- Arrive Norfolk 0845
- Get car 0900
- Do job 1000 to 1500
- Sit in airport
- Catch flight 2000
- Land Newark 2200
- Home 2330

A job in Norfolk, a mini case study (Autonomous Driving)



- Cocktails at home, play with dog, watch movie
- Sleep in car Red Bank to Norfolk 2300 to 0600
- Take shower and have breakfast in Norfolk
- Do job 0800 to 1330
- Drive home, have first cocktail, write reports and do correspondence
- Home 2000

Where do I take my shower and have breakfast?

- In my RV?
- At a rest stop?

- I am rich; obviously in my RV

- What does that do to transport efficiencies?

The Curse of Autonomous driving

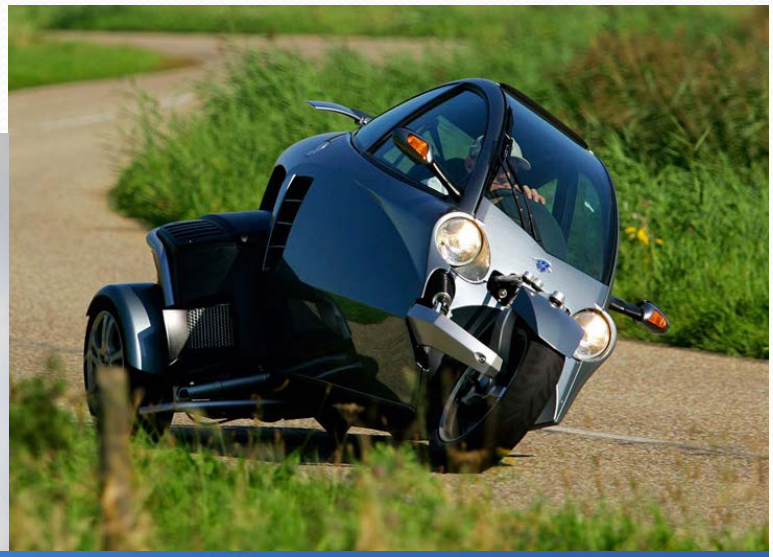
- In rich societies the attractions of autonomous driving will explode the size of cars.
- Join the 500 mile long club
- Large single occupant commuters
- Much longer commuter ranges (urban sprawl)
- Cars with toilets and huge fuel tanks
- Many more cars on the road (no need to drive yourself; so why not drive and do something else?)
- Congestion?
- One benefit?: Some people will not live in homes and the moving homes will only be 440 sq feet each.

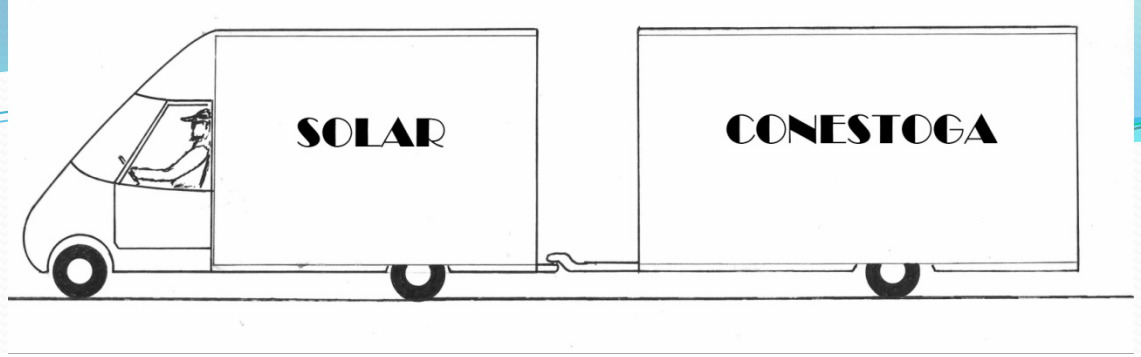
Is there a solution?

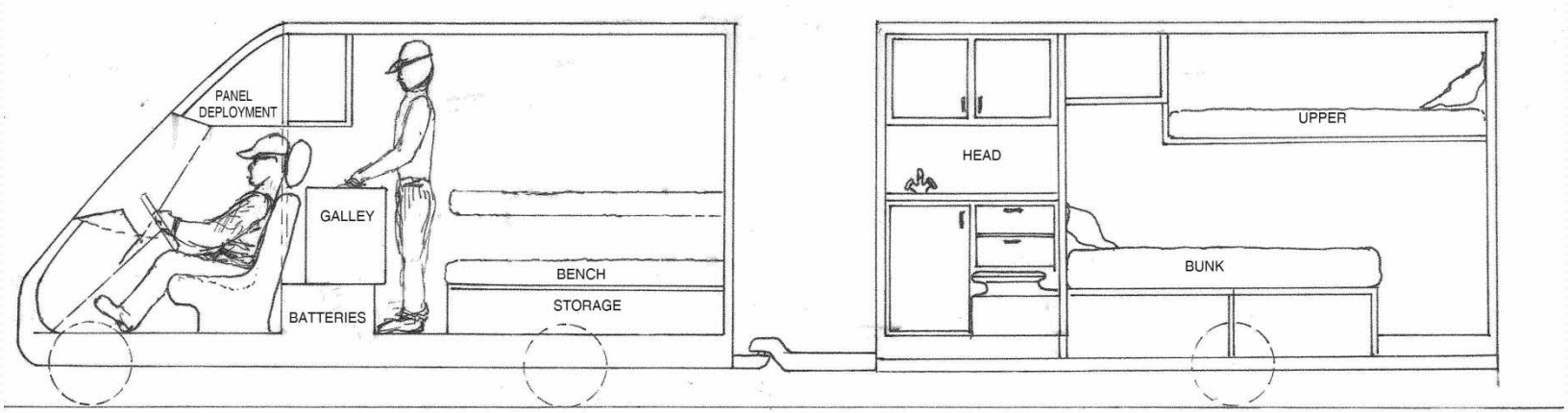
- Incredibly high energy taxes?
- Introduce a moderating standard
- No autonomous car shall be more than five feet wide

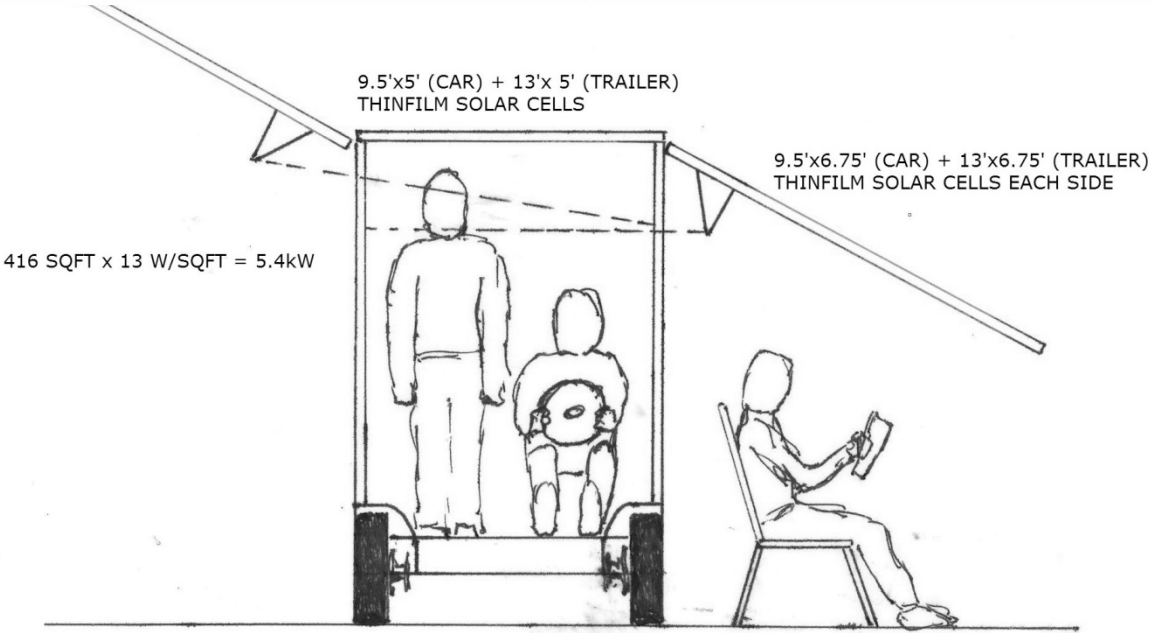
Five-Foot-Wide cars are nothing new. Kei Car

“Nobody wants five-foot-wide cars”




SOLAR
CONESTOGA


PANEL
DEPLOYMENT
GALLEY
BATTERIES
BENCH
STORAGE
HEAD
UPPER
BUNK


9.5'x5' (CAR) + 13'x 5' (TRAILER)
THINFILM SOLAR CELLS
9.5'x6.75' (CAR) + 13'x6.75' (TRAILER)
THINFILM SOLAR CELLS EACH SIDE
416 SQFT x 13 W/SQFT = 5.4kW

What will five foot width do?

- Provide much more urban parking
- Provide at least double capacity on existing roads
- Provide convoy (train) aerodynamics
- Reduce moving tare weight (increase deadweight to lightweight)
- Reduce driveway and garage sizes (very interesting in storm drain run off issues, and urban sprawl issues)
- Provides a social equalizer
- Massively reduces per human travel energy consumption as compared to no width restriction.
- Keeps autonomous cars cheap, and if you need more you buy or rent more

Conclusion

- Maxi Taxi could still be a killer app like containerization and could be implemented through a ferry system
- Automated driving will be a huge game changer
- Automated driving will be an efficiency disaster if we are not careful
- **Initiate legislation that all autonomous cars will be five feet wide**
- **Five feet wide cars and autonomous driving can do all we do today and are the route to stupendous efficiencies**

- Small is beautiful

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