Peak Oil Demand Scenarios: Testing Sensitivities to New Technologies
Forces Impacting Long Term Oil Demand: Old vs. New

“Superior” Technologies
Legislative and Tax Policy
Urbanization
Energy Efficiency (energy per GDP declining)
Millennials Reject Vehicle Ownership
Growth of Alternative Energy
Elimination of Fuel Subsidies

Population Growth
Emerging Economy Expansion
Expanding Global Middle Class

~90 Mil. BBL/day (current)
74 Mil. BBL/day (2DS)
Three Revolutions in Passenger Transport

1. Streetcars (~1890)
2. Automobiles (~1910)
3. Airplanes (~1930)
4. Limited-access highways (1930s….1950s)

2010+
1. **Vehicle electrification**
   - low carbon vehicles and fuels
2. **Real-time, shared mobility**
   - less vehicle use
3. **Vehicle automation (2025?)**
   - Uncertain impacts
I get it, it is hard to eliminate oil demand, but “peak” oil demand no longer viewed as impossible for 2020s or 2030s

<table>
<thead>
<tr>
<th></th>
<th>2040</th>
<th>% change</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>IEA New Policy</td>
<td>103</td>
<td>Up 14%</td>
<td>Fossil fuels remain 75%</td>
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<tr>
<td>IEA 2 Degrees</td>
<td>74.1</td>
<td>Down 19%</td>
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<tr>
<td>Statoil Renewal</td>
<td>79</td>
<td>Down 15%</td>
<td>EV growth = Oil less than 40% of transport</td>
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<tr>
<td>50% Battery cost decline scenario</td>
<td>74.6</td>
<td>Down 19%</td>
<td>EVs at close to 20% of all new car sales by 2030</td>
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</tbody>
</table>
Just Technology: Scenario Outcomes per Inputs

Range of Oil Projection Scenarios

Baseline

"Kitchen Sink"
Potential impact of increased shared mobility/autonomous vehicles: Oil consumption highly sensitive to changes in VMT
What Does It Take to Peak Oil Consumption in Transport by 2040? A Technology-Oriented Scenario

- At least 60% of on-road trucking switches to alternative fuels
- 20% Logistics improvement via digitization
- Ridesharing brings about a 30% reduction in VMT

(Scenario assumes a 20% slower growth in GDP than IEA BAU but adds no climate-oriented policies)

Source: UC Davis analysis, IEA Transport Model
Peak Oil Demand Scenarios – Car-free Urban Areas

Car-free urban areas
- Car stock is reduced proportional to the percentage of inhabitants living in urban centers
- MoMo regions are split into early, middle, and late adopters of the car-free city
- Phasing out of PLDV stock could also be interpreted as a ban on ICE in urban areas
- Literature on car-free urban centers is abundant, but I believe the most powerful documentation to support this scenario is the comprehensive list of car-free urban areas in the world maintained by wiki: [https://en.wikipedia.org/wiki/List_of_car-free_places](https://en.wikipedia.org/wiki/List_of_car-free_places)
Car-free oil consumption

Base Oil

Peak Oil – Car-free Cities

MMbbl/day


Base Oil (Mmbbloe/day) Peak Oil (Mmbbloe/day)