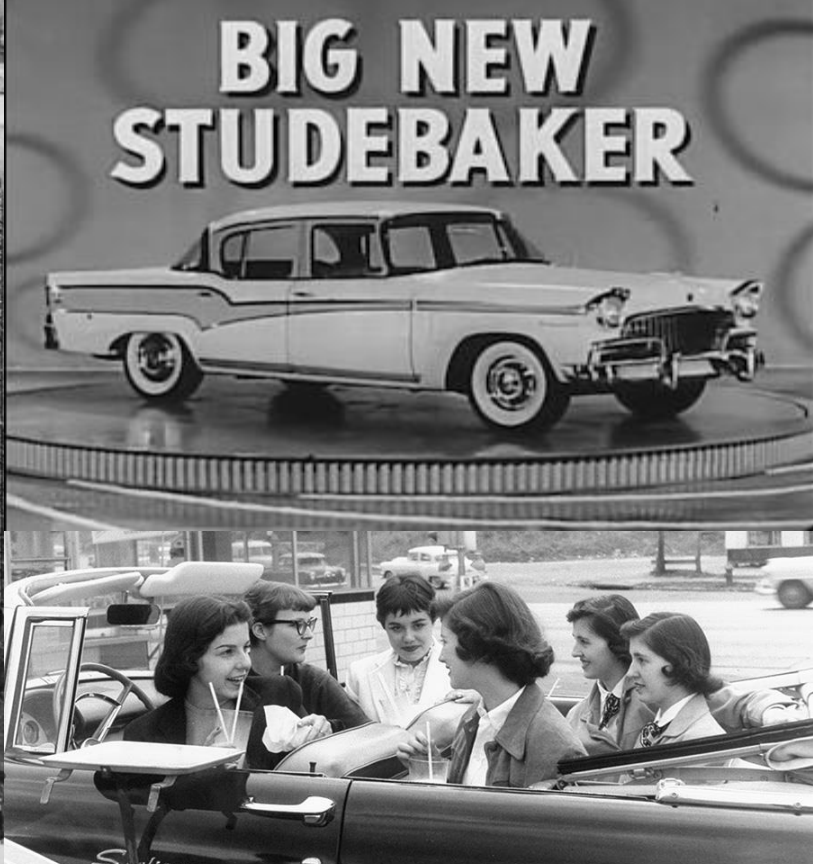


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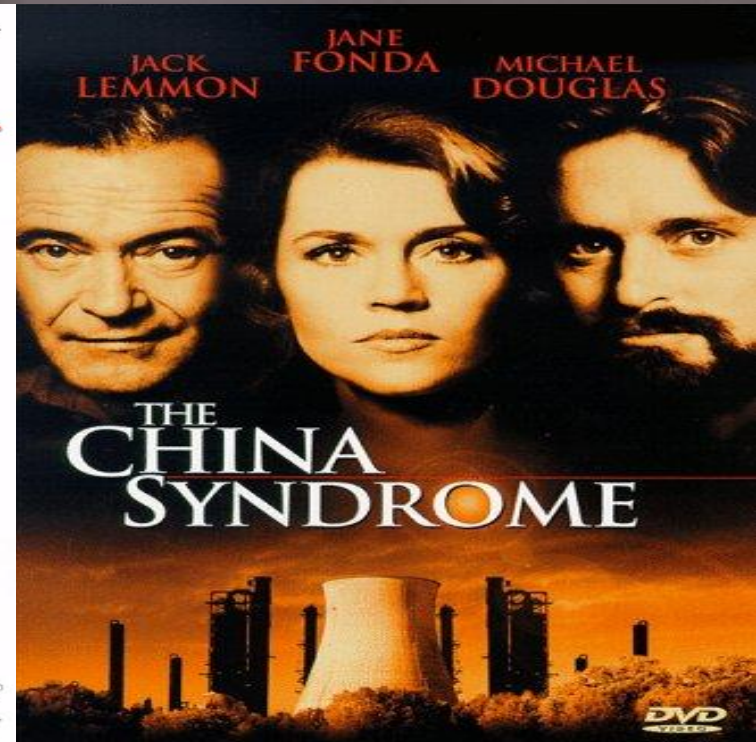
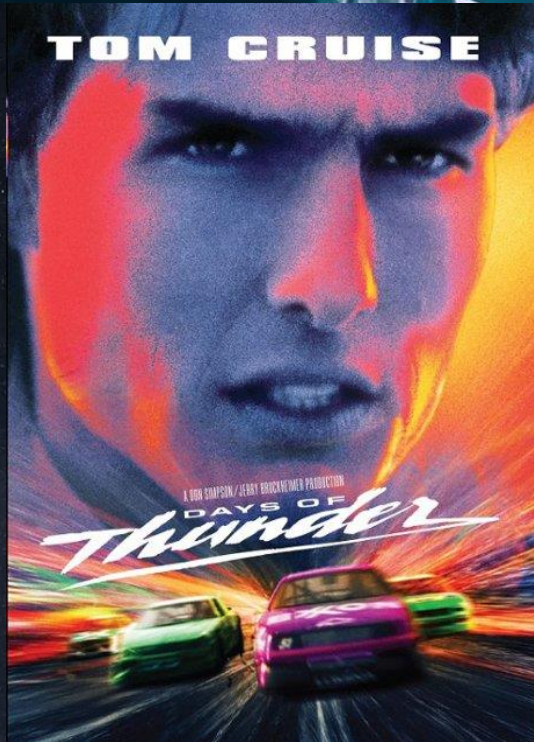
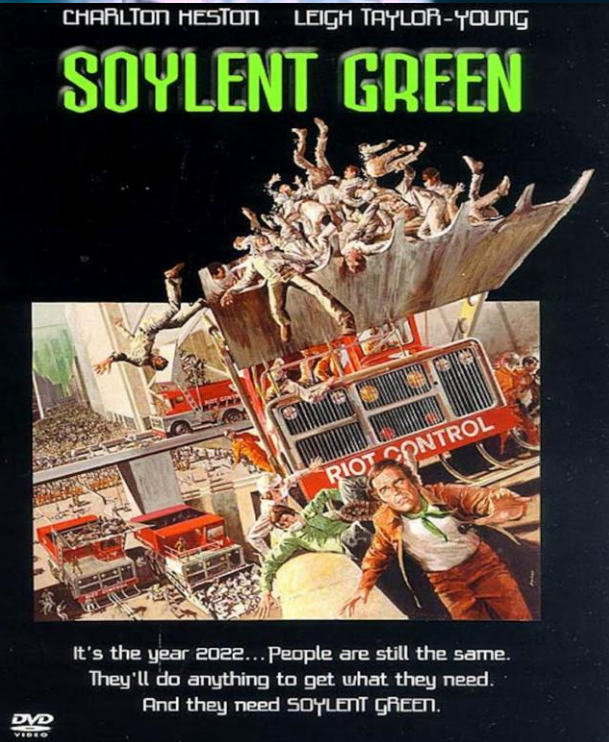
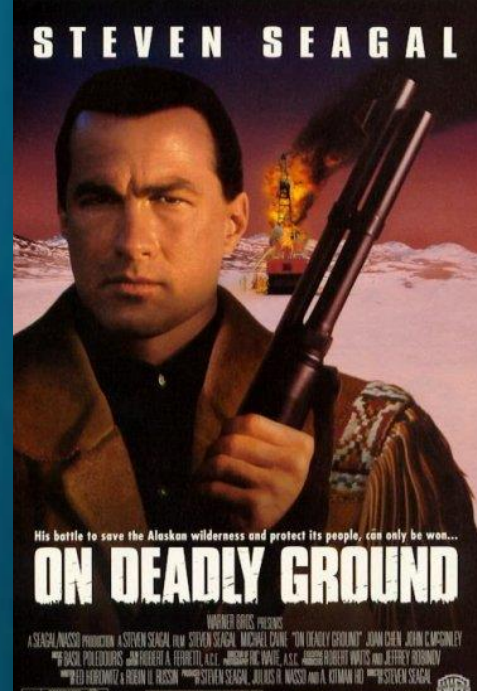
# **Energy and Its Footprint in the US Culture and Way of Life**

Martin Jirušek, PhD.









DVD VIDEO

DVD VIDEO



# The New Car Market

- Rapid motorization after WW I
  - 1907: 1,65 car/1000 citizens
  - 1913: 12,9 cars/1000 citizens
  - 1929: 219 cars/1000 citizens
  - 1955: 377 cars/1000 citizens
  - 2017: 800 cars/1000 citizens (Europe: 580/1000, China: 128/1000, Bangladesh: 3/1000)
- Transport sector's consumption growth at the expense of kerosene (lamp oil – basis of the Standard Oil's success story)

# America's Love Affair with Automobile

- Current state: 1,2 vehicles/1 license holder
- 800 cars/1000 citizens
- American culture, way of life as well as energy demands largely driven by living conditions
- Largest manufacturing industry
- Among the biggest employers
- Sensitive political issue (e.g. Trump's tariff war with Europe)
  - Subject to technological changes
  - Litmus test of the economic output



# The 'Tin Lizzie' and the New Car Market

- Post WWI period
- Car industry spurred by the war
- Internal combustion engine revolutionized transport
  - Cars, planes
  - Individualization/emancipation of transport
  - Expansive at the outset, economy of scale
- Ford T
  - Mass production (assembly line) – head-start comp. to Europe
  - Priced so that the average American could buy it
  - The car that 'put America on wheels'
  - Another nail in the coffin of mass public transport



# Post WWII Boom - Cars

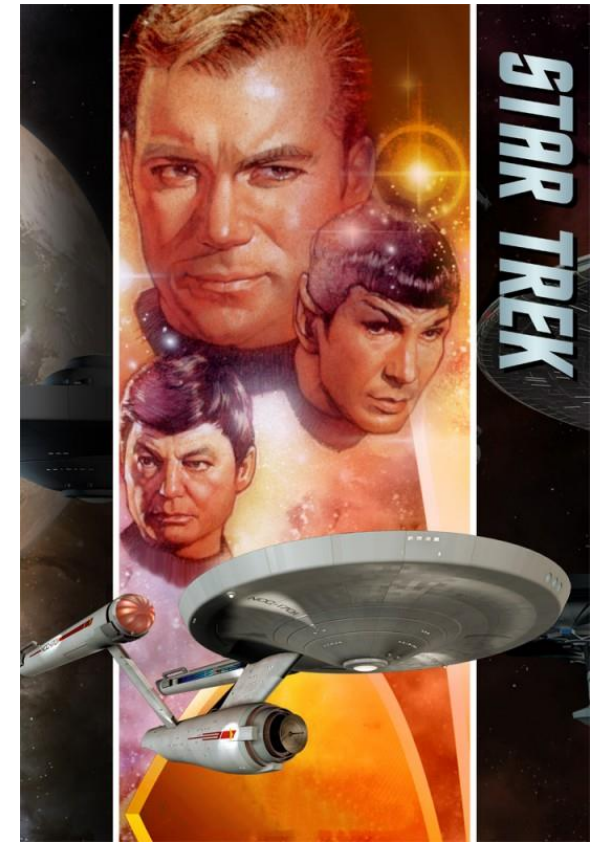
- Post WWII economic boom
- Cars as a sign of wealth and modern life
  - Returning soldiers longing for cars they saw and used during the war
  - Moto gangs ('Rebel Without a Cause')
  - Opulent styling as an expression of post-war joy and hope and economic prosperity
  - Car was no more just a way of transport, rather an expression of a lifestyle
- Car sales surged
  - 65 bn. USD in 1955 alone – 20% of US GNP
- Cars became part of the pop culture
- Growing demand for oil; determining factor for oil crises





# Post WWII Boom – Energy Consumption

- Economic growth, rising living standards and consumerism
- 1950s – 1960s as an era of unprecedented prosperity ('boomers')
- Growing demand for home appliances
  - TVs, radios, fridges, electric appliances, etc.
  - Growing electricity demand
- Factor in expansion of power generation (nuclear power in 1960s & 1970s)
  - Atoms for Peace
- 1960s as an era of trust in technological development
  - nuclear energy, space explorations,...
  - TV series and movies





# Nuclear Energy in American Culture



- Revered as a pathway to energy-sustainable future, feared, demonized,...
- Fears of Nuclear War and Global Catastrophe (Planet of The Apes, Terminator,...)
  - Part of the Cold War narrative
  - Shelter building in 1960s
- Stifled by TMI Incident, Chernobyl



# Motorisation of America, Reinventing of Public Transport and Way of Life

- Carmaker's push into public transport
  - City transit systems privately owned; went bankrupt
  - Governmental support limited
- Need for intra- and inter- city transport
  - Early mass motorization aligned with urbanization
    - cities adjusted to cars from the beginning
  - Tautological effect (more cars - cities adjusted to cars - more cars)
  - Sprawling suburbs
  - National Interstate Highway System (transportation but also defense purposes, max. throughput) - 1956
  - Large interstate highways cut through urban areas, creating the need for car-based transportation
  - Services getting accustomed to higher motorization





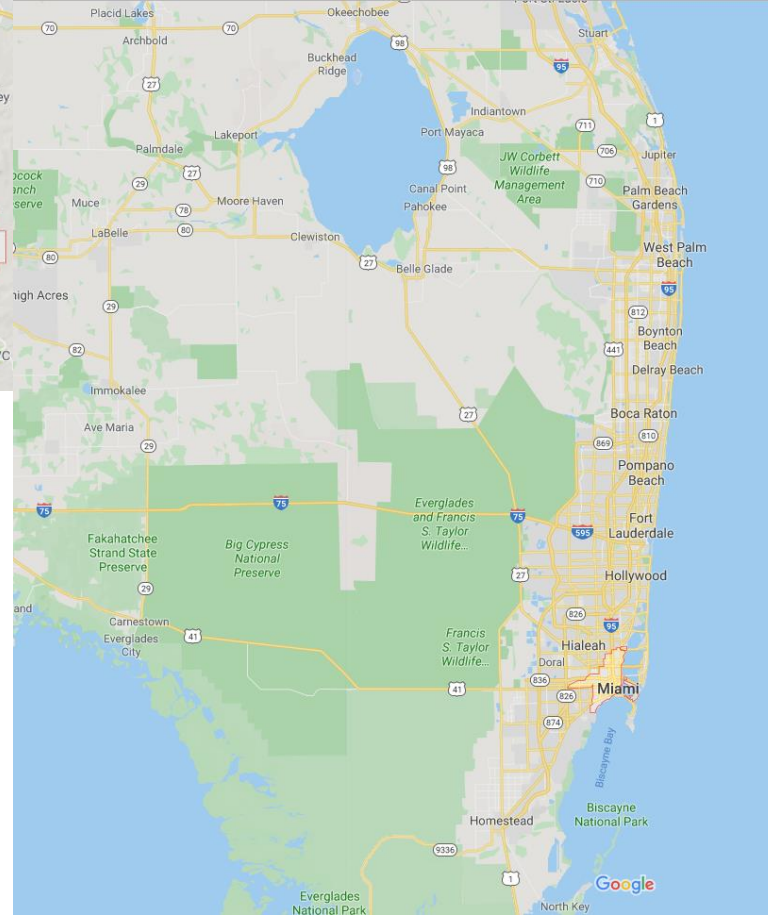
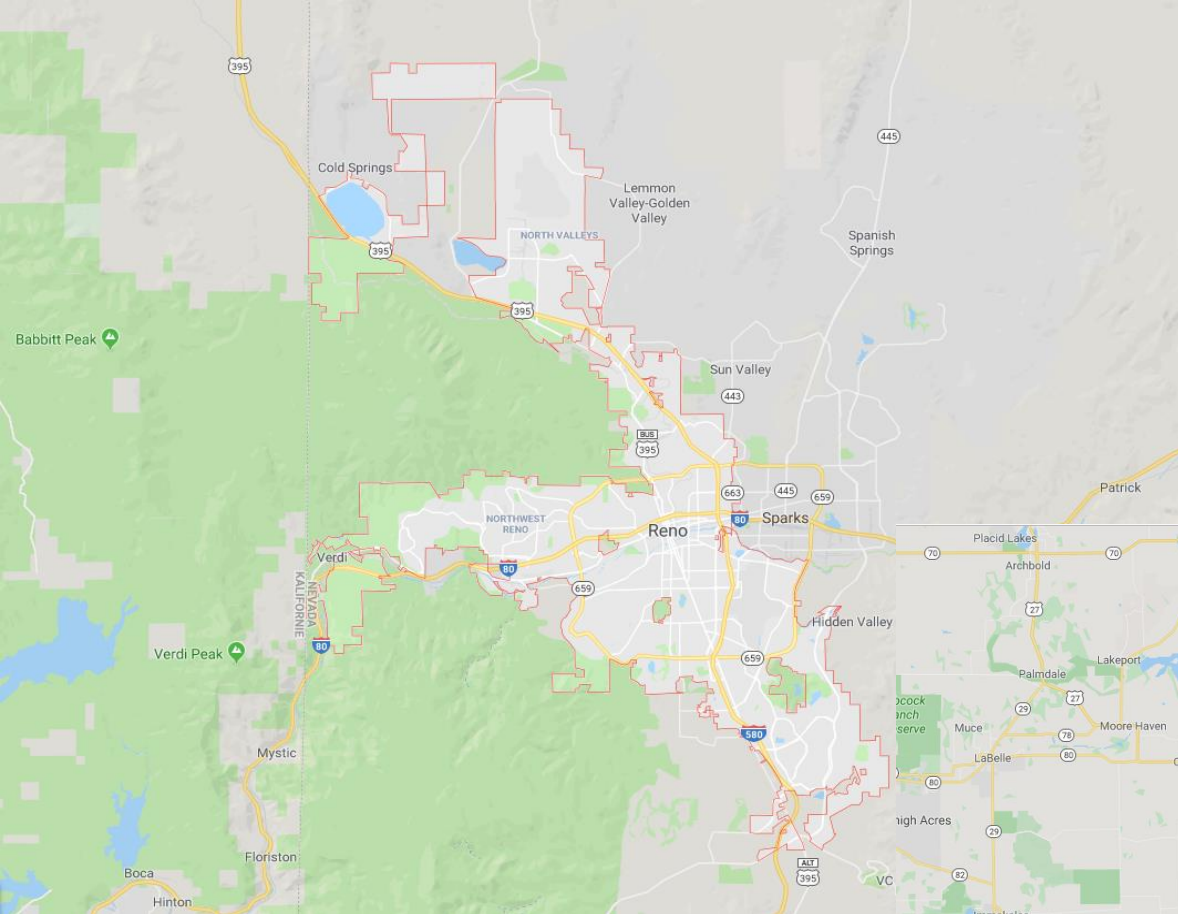
# Motorisation of America, Reinventing of Public Transport and Way of Life

- Low taxation (X Europe)
  - Cars and related taxes not the only source of financing for infrastructure
  - Parts of the tax revenues designated to funding infrastructure (contributing to the tautological effect)
  - Higher share of crude price component causes higher crude price-induced volatility
- Higher accessibility of remote areas spurring residential development (even far from traditional urban centers) and, in turn, require better road connections (tautological logic again)
  - city planning - ‘centerless’ cities stretched wide or large stretches of urbanized areas (e.g. LA) – conurbation or megalopolis (East coast)
  - ‘suburb’ as an obsolete term
  - access to public transport as a less common asset, public transport effectively eliminated in some areas
- ‘Patches’ of single-purpose areas linked with highways cutting across neighborhoods or beltways
  - Prone to degradation and isolation

# Motorisation of America, Reinventing of Public Transport and Way of Life







# Individualism and Consumerism

- Ca. 40% of US households own 2 cars, ca. 20% of US households own 3 cars
  - City designs support such behaviour
  - In turn, owning a car belongs to ‘basic’ expenses of average American
  - 2nd biggest item of expenditure after housing
- 85% daily trips done by car, majority of trips <1 mile
- 11th in energy consumption per capita (6800 kg of oil equivalent)
- Shared economy seems to strengthen the trend – Uber, Lyft
  - although oil use per capita may decrease
  - further weakening of public mass transport
  - carsharing as a solution with low initial costs, surpassing implementation of state/govt. policies



# Oil Crises

- Impactful due to higher share of crude price component in the fuel price
- Shock for the US and global economy, manufacturing industry, carmakers in particular
  - Broad ramifications
- Immediate saving measures
  - Fuel for cars with odd/even number plates
- Systemic changes
  - Smaller cars, efficient measures (CAFE standards), (national!) speed limit, energy savings and efficiency as the new political 'mantra'
- Influx of imported (smaller, efficient) cars from Japan, Germany
  - Basis for even bigger expansion in following years
  - Japan's car exports boosted (1500% increase between 1965-1975)





# Environmental Issues

- First signs of reflection started to appear in early 1970s
  - Mainly in relation to fears of over-population, starvation or general depletion of planetary resources
- Later reflections focused on consequences of depletion
- 1990s generally marked a period of higher environmental concerns in US politics (although not properly addressed by respective policies)
- Not a real concern for a broader public (general availability of sources – oil)
- Big cars, low oil prices, non-existence of the fear of the world running out of oil



# 1980s – 1990s

- SUV sales surge – era of cheap oil, globalization
- Ford F series - the best selling car for 42 years
- SUV/light trucks as the core of the Big Three's production portfolio
  - SUVs classified as light trucks (i.e. milder fuel economy standards)
  - Higher profit margins
- One of the reasons of higher energy intensity in transportation
- American way of life as a hostage to foreign suppliers?
- CAFE Standards (since 1975) heavily criticized
  - 'death by the gallon'
- Cheaper cars and fuel relative to salaries (+lower taxation + high relative GDP per capita)

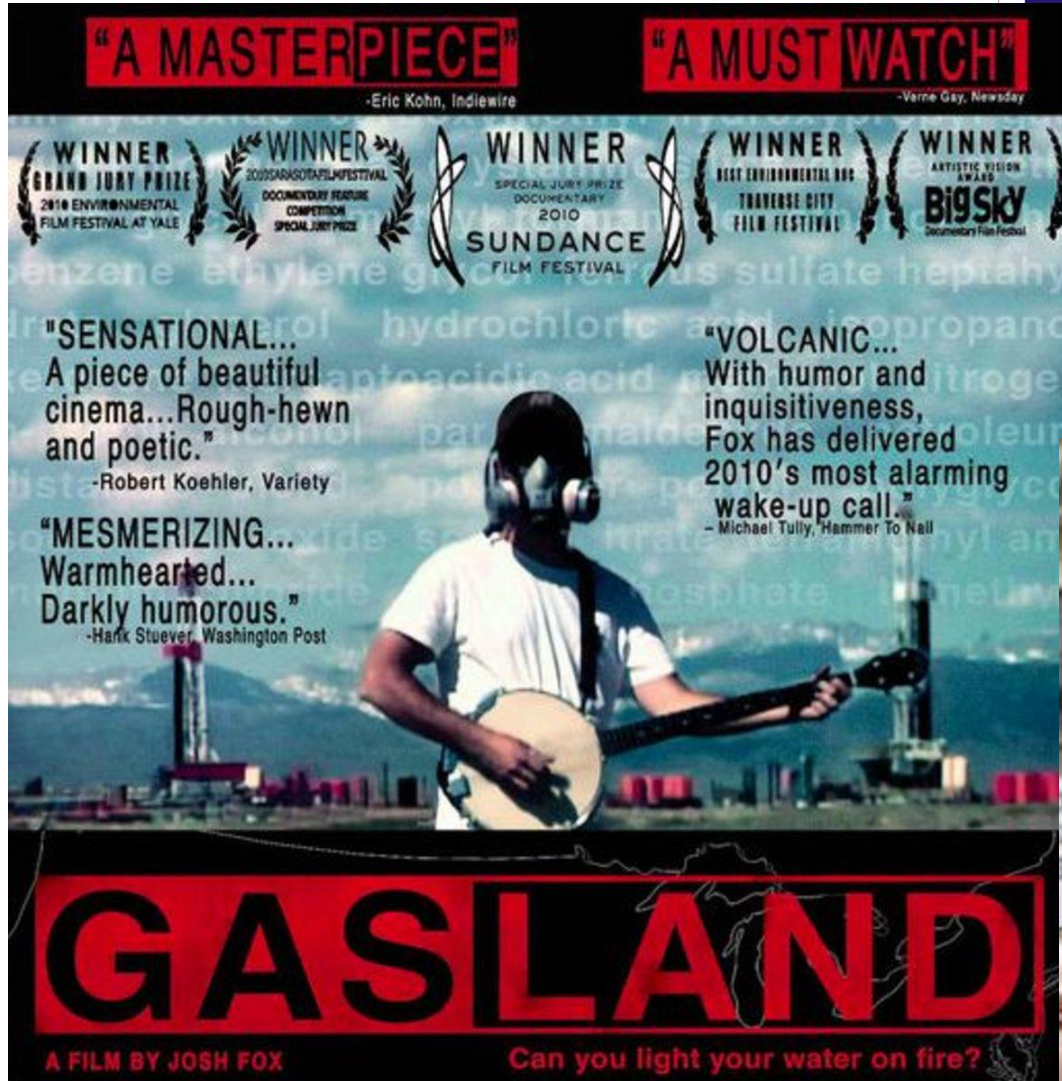




# Unconventionals

- Spurred discussions over supply security and energy independence (delusional)
- Redirected supply patterns and tuned-down concerns of supply dependency
- Revived energy supplies as a part of the US foreign policy toolbox towards Europe
- Later, concerns on overall emissions prevailed over the optimism
- Fracking is not the main issue anymore; unconventionals became part of the general emission-related narrative
- Gasland





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