

The Low Carbon Fuel Standard

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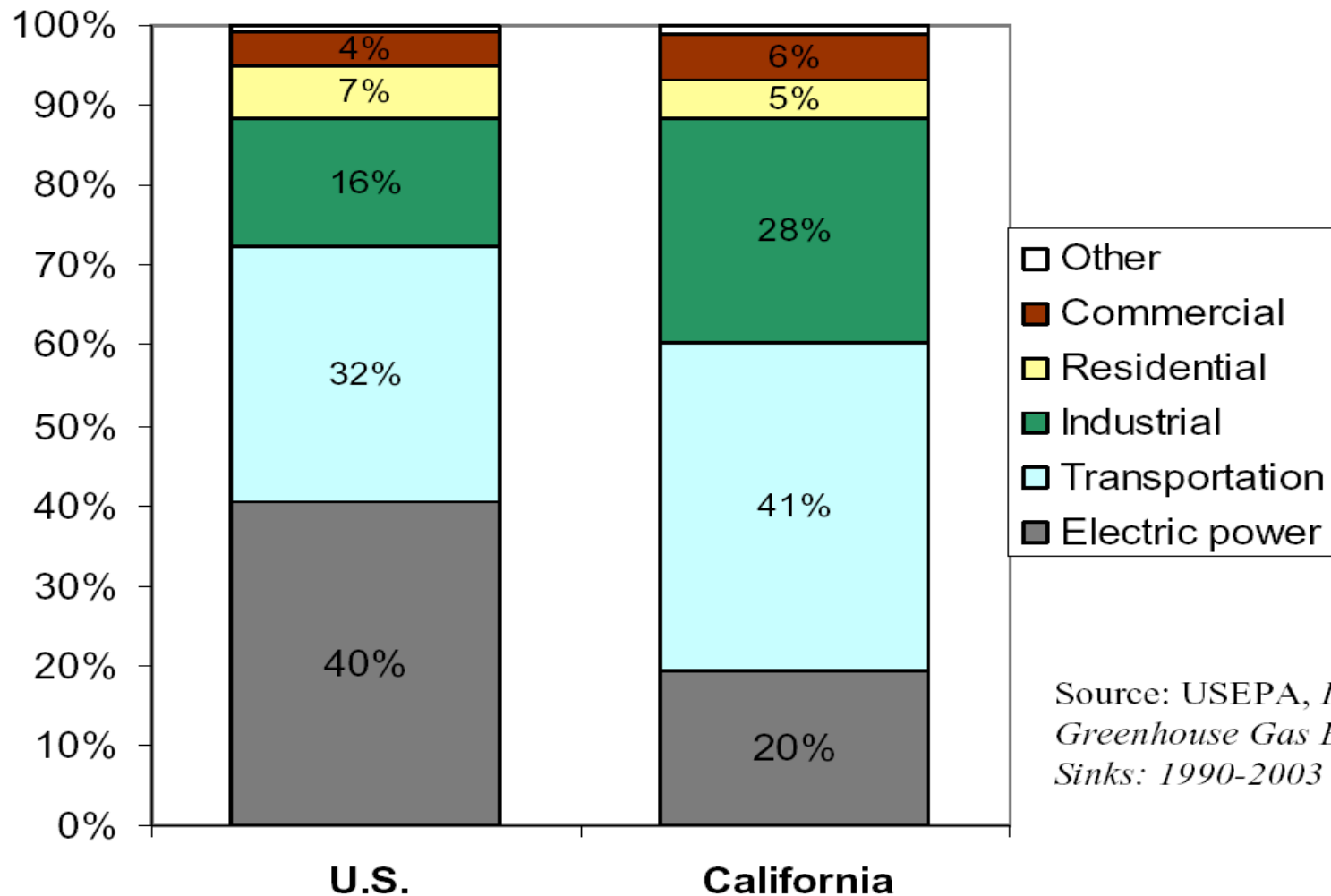
Climate & Energy Consulting

October 5, 2007

UC Berkeley



Transportation is a Major Source of Greenhouse Gas Emissions



Source: USEPA, *Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2003*



World's First Greenhouse Gas Fuel Standard

- In January 2007, Gov. Schwarzenegger established the LCFS by Executive Order.
- The LCFS is a statewide goal to reduce the *carbon intensity* of California's transportation fuels by at least 10 percent by 2020.
- Goal will be accomplished by establishing a **Low Carbon Fuel Standard** ("LCFS") for transportation fuels sold in California.



Principles of the LCFS

- Requires fuel providers to decrease carbon intensity of average annual fuel sales
- Intensity Standard – gCO₂e/mj
- Standard measured on a lifecycle analysis
- Flexible compliance -allows averaging, banking and trading
- Fuel Neutral – no mandates. Fuel providers will choose which fuels to sell and in what volumes



Rationale for the LCFS

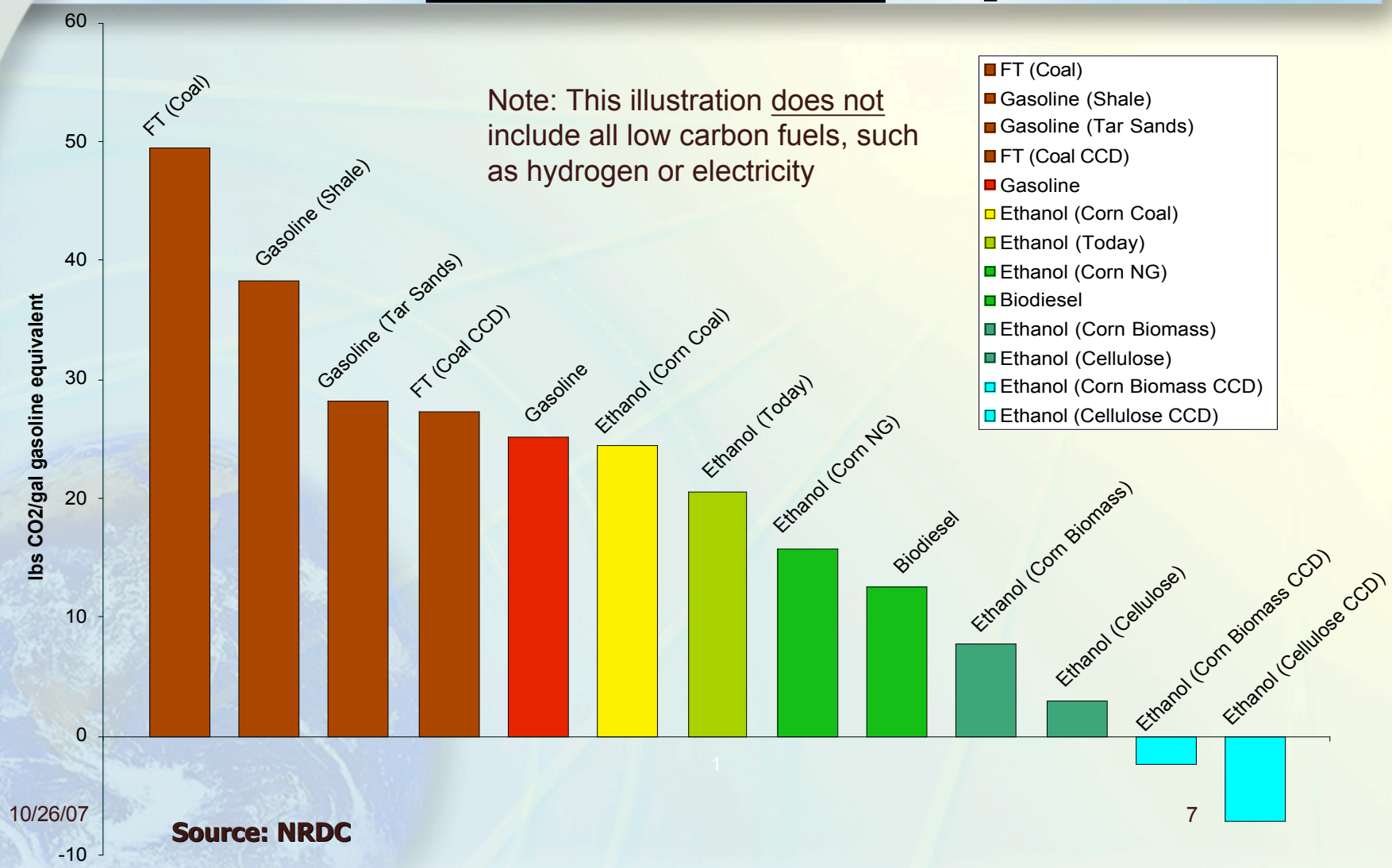
- A statewide cap-and-trade system alone unlikely to create a large enough price signal to induce sufficient, timely investments in new fuel and vehicle technologies
- LCFS creates a substantial, certain market for low carbon fuels and a stable investment environment
- Benefits versus Renewable Fuel Standard
 - **More flexible** since it includes electricity, hydrogen, natural gas, etc, rather than just biofuels
 - Ensures greenhouse gas reductions
 - Penalizes the use of high carbon, fossil fuels (coal to liquids, tar sands)



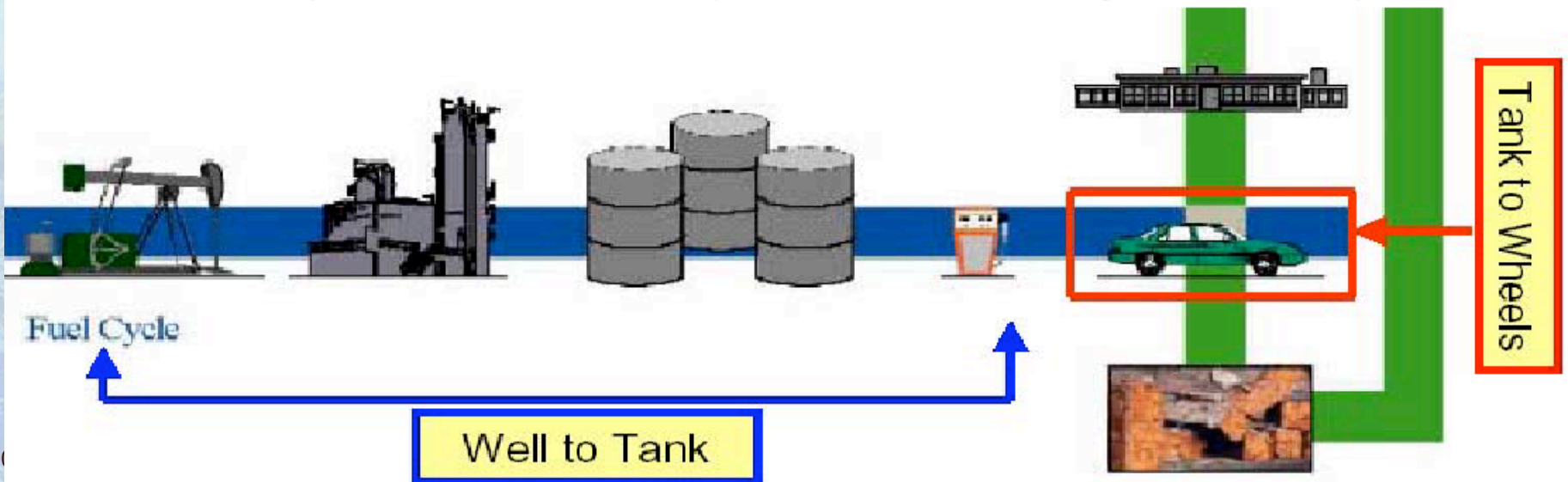
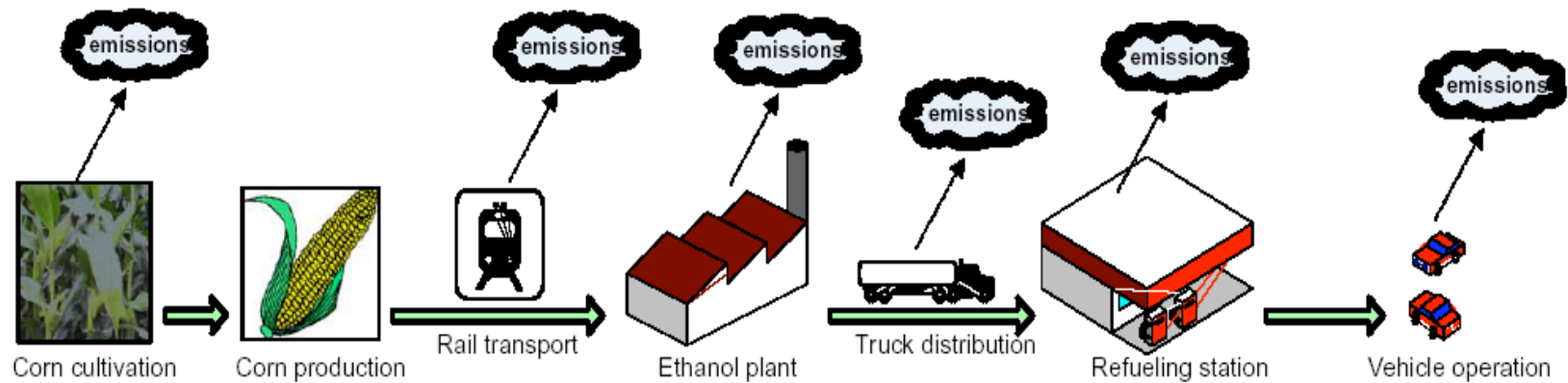
Benefits of LCFS

- **Less Gasoline Consumption:** Displace 20% of gasoline consumption
- **Larger renewable fuels market:** Expand California's alternative fuels markets by 3 to 5 times, while reducing GHG emissions
- **More alternative fuel and hybrid vehicles:** 7 million advanced technology vehicles, more than 20 times current level

Alternative Fuels are Not Created Equal



"Well to Wheels" Analysis – *Ethanol Example*





Process

- ARB established LCFS as an early action item
- UC Team published two part analysis on technical feasibility and policy issues
- ARB begins regulatory process
- ARB workgroups established
 - Lifecycle analysis
 - Compliance & enforcement
 - Policy & regulatory developments
 - Environmental & economic



Timeline

- 2007-08 – ARB holds workshops
- Early 2008 – Draft regulatory language
- Fall 2008 – Staff complete reg. package
- End of 2008 – Reg. package to Board
- 2010 – Implementation begins



Policy Issues

- Sustainability/Land use
- LCA modeling: accuracy; better data
- Default values & opt-in
- Upstream oil production
- Interaction w/ larger cap and trade
- Harmonization w/ US EPA and EU
- Harmonization w/ vehicle policies
(Pavley)



Congressional Action

- Senate bill is RFS on Steroids
- From 7.5 billion gallons/year mandate to 36 billion gallons by 2022
- Carve out for advanced biofuels
- Massive subsidies for production and distribution infrastructure
- A one-sided policy that doesn't address global warming and will have other adverse impacts