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Preliminary WSPA Comments Regarding the Oregon LCFS

ENERGY YOU CAN DEPEND ON

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What Measures Will Work to Reduce GHG Emissions from Transportation Sector?

- LCFS
  - Misaligns compliance obligations
  - No additional reductions if implemented under broader program
  - No additional biofuels produced beyond RFS2
  - Promotes fuel and crude oil shuffling
  - Uncertain "CI" values inherently pick winners and losers
- Other
  - Federal RFS 2 in place, requires GHG reductions
  - Programs for "non-conventional" fuels specific to suppliers
  - Vehicle programs in place to reduce GHGs – CAFE, CARB "Pavley" Regs
  - Other programs to reduce operation/fuel consumption

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Questions with LCFS in Oregon

- Objectives?
  - Multiple societal objectives problematic
  - Unintended consequences (air quality, foreign imports)
- Other Transportation Sector GHG Emissions Reduction Strategies?
  - Other options may be more cost-effective – fuels, vehicles, consumers
  - Greater innovation required on fuel side than vehicle

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Questions with LCFS in Oregon (cont.)

- Impacts of LCFS?
  - Economic – especially in current climate
  - Energy & Fuel Supply
  - Environmental
- Structurally appropriate?
  - Fuels global commodities, Cross-border inequities, Disruptions in marketplace
  - Petroleum industry not an electricity industry
  - Federal programs

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What are the Goals of the Oregon LCFS?

Statement by Governor Ted Kulongoski on HB 2186 (6/24/2009):

*This is the most significant step taken this session to **reduce greenhouse gas emissions** in every corner of the state. Establishing a low carbon fuel standard will not only result in cleaner burning gasoline for all of our cars, but will also **encourage the development of new, renewable and lower emission transportation fuels**.*

*With this bill, Oregon remains at the forefront of **advancing innovative policies** …*

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Presentation Outline

1. Is a LCFS the best way to reduce GHG emissions?
2. Is a LCFS the best way to stimulate production and use of new, renewable, and lower emission fuels?
3. Is a LCFS the best way to advance innovative policies?

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Strategies to Reduce GHG Emissions from the Transportation Sector

1. Reducing fuel consumption – leads to proportional reductions in GHG emissions
2. Changes in fuels – may or may not reduce GHG emissions depending on CI and other factors.

Measures to Reduce Fuel Consumption

Complementary Measures in CARB Scoping Plan to Reduce Transportation Sector GHG Emissions		
Measure	Effect	Oregon Adopted or Considering
Pavley 1 – AB1493	Reduce Fuel Consumption	Yes
Pavley 2	Reduce Fuel Consumption	?
Truck Aerodynamics	Reduce Fuel Consumption	Yes
Port Trucks	Reduce Fuel Consumption	No
Cool Cars	Reduce Fuel Consumption	No
Tire Programs	Reduce Fuel Consumption	Considering
TRUs	Reduce Fuel Consumption	Yes
New Vehicle Feebates	Reduce Fuel Consumption	No
High Speed Rail	Reduce Fuel Consumption	No
Regional Transportation	Reduce Fuel Consumption	No
Heavy-Duty Hybrids	Reduce Fuel Consumption	No
Cargo Handling Equip.	Reduce Fuel Consumption	No
Harbor Craft, Speed Red.	Reduce Fuel Consumption	No
Goods Movement	Reduce Fuel Consumption	No
LCFS	**Reduce Fuel CI**	**Yes**

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Issues Remain Regarding GHG Benefits of Petroleum Alternatives:

- CI values for different alternative fuels continue to change.
- Indirect land-use impacts and other indirect effects such as farming intensity (more fertilizer and water per acre) are still being assessed and have not been finalized.
- CARB EER values to adjust CI for electric and fuel cell vehicles are speculative and subject to review.

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Comparison of EPA and CARB Lifecycle GHG Reductions

Biofuel	Percent Reduction CARB	EPA Proposal	EPA FINAL
Averaging time/Discount rate	30 Yr/0% DR	30 Yr/0% DR	30 Yr/0% DR
Corn Ethanol			
-- (Cal, NG, Dry Mill, wet DGS)	-15.80%	-6%	-27%
-- (MW, NG, Dry Mill, Wet DGS)	-6%	-6%	-27%
-- (Best Case)	-19.30%	-26%	-48%
Sugarcane Ethanol	-23.40%	-27%	-61%
Cellulosic Ethanol			
-- Switchgrass		-124%	-72/-110%
-- Corn Stover		-116%	-93/-130%
-- Forest Waste	-76.80%		
Soy-Based Biodiesel	-12.1%	4%	-57%
Waste Biodiesel	-83.3/-87.5%	-80%	-86%

*Green shading indicates that the biofuel meets the EISA lifecycle GHG threshold

Source: American Petroleum Institute 2010

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Encourage the Development of New, Renewable, and Lower Emissions Fuels

- Biofuels
- Natural Gas
- Electricity
- Hydrogen

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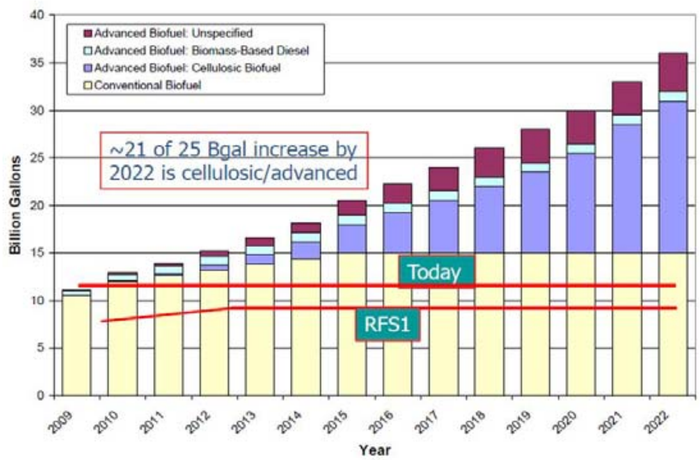
RFS2 - Not Oregon LCFS - Will Drive Biofuels



Source: Federal Clean Fuel Standards, Detroit Advisory Panel Meeting, Paul Machiele, EPA/Office of Transportation and Air Quality, 12/1/2009

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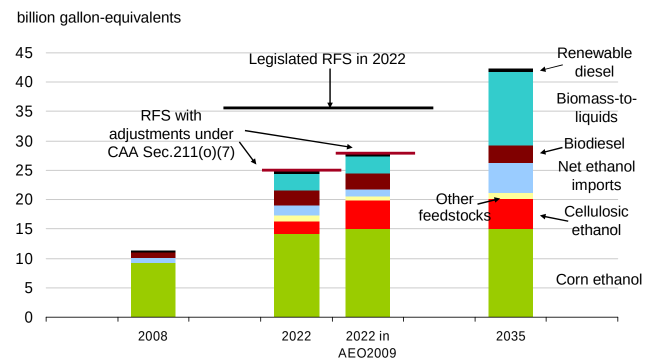
EIA 2010 Assessment of Biofuel Production

Biofuels grow, but fall short of the 36 billion gallon RFS target in 2022, exceed it in 2035



Richard Newell, SAIS, December 14, 2009

Source: *Annual Energy Outlook 2010*

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Electricity

- Effective electric vehicle program requires large incentives for:
  - Ensuring low CI sources of marginal electricity
  - Offsetting high cost of electric vehicles
  - Paying for infrastructure required for renewables and vehicle recharging
- LCFS requirements for current transportation fuel providers to buy credits from electricity providers put the carrot behind the horse and will not succeed.

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Advancing Innovative Policies

- Issues
  1. RFS2 will drive biofuels policies and fuel availability, not Oregon LCFS.
  2. Market for electric and hydrogen vehicles, refueling infrastructure, or renewable fuel sources cannot be created through Oregon LCFS and must be driven by automakers, utilities, and government.

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Costs and Impacts - California

LCFS

CARB[1]	Sierra Research[2]
$3.4 billion in annual cost savings by 2020	Fuel costs increase by $3.7 billion per year in 2020
Net reduction in criteria pollutants	NOx emissions increase by more than 5 tons per day
Large reductions in GHG emissions	Uncertain reductions in GHG emissions

Source: [1] California Air Resources Board, Staff Report: Initial Statement Of Reasons, Proposed Regulation To Implement The Low Carbon Fuel Standard, March 5, 2009
[2] Preliminary Review of the CARB Staff Analysis of the Proposed Low Carbon Fuel Standard (LCFS), Sierra Research, Inc. April 8, 2009

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Costs of Advanced Technology Vehicles Left Out of CARB Economic Analysis

Incremental 2010 to 2020 Advanced Vehicle Costs in CARB LCFS Compliance Scenarios	
Compliance Scenario	Cost (Billions of Dollars)
1	14.5
2	14.6
3	23.9
4	47.0
5	23.9

Preliminary Estimate of Oregon LCFS Costs Based on Sierra's California Analysis

- Transportation fuel volume approximately 10% of California's volume
  - Scaling California costs, 2020 fuel costs are ~ $370 million higher under LCFS
  - Potential for lost state fuel tax revenues
  - Scaling California vehicle volumes, incremental costs (without infrastructure) will require $1.5 to $5 billion investment from 2010 to 2020

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Conclusions

Goal: Reduce GHG emissions

- Many other options exist that offer much greater certainty for success and for being more cost-effective than LCFS.

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Conclusions (cont.)

Goal: Encourage development of new, renewable, and lower emission fuels

- EPA RFS2 regulations will drive U.S. biofuel production to the maximum extent feasible – Oregon LCFS will not lead to additional biofuel production.
- Oregon LCFS will not create electric vehicle market, renewable electricity, or required infrastructure as evidenced by experience from 20 years of EV production mandates in California.

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Conclusions (cont.)

Goal: Advance Innovative Strategies

- Nationwide strategy is already in place for biofuels – Oregon LCFS will not advance biofuels.
- Electric and hydrogen vehicles will require large incentives that must be provided by programs other than Oregon LCFS.

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Summary

GHG Reduction Strategies for the Transportation Sector

1. Federal RFS2 – Drives biofuel development
2. Specific programs for "non-conventional" fuel suppliers
3. Vehicle efficiency programs (CAFE, Pavley)
4. Other programs to reduce operation/fuel consumption

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Electric Vehicles Are Expensive and Will Likely Require Large Purchase Incentives

Incremental CARB Cost Estimates for PHEVs and BEVs ($/vehicle relative to conventional vehicle)

Type	2010 to 2014[a]	2015 to 2017[a]	2018 to 2020[a]	2035[b]
PHEV	$25,000	$12,500	$6,250	$5,900 - $8,300
BEV	$67,000	$36,000	$18,000	$14,400 - $22,100

[a] Staff Report: Initial Statement Of Reasons 2008 Proposed Amendments To The California Zero Emission Vehicle Program Regulations, California Air Resources Board, February 8, 2008

[b] Appendix A of "Summary of Staff's Preliminary Assessment of the Need for Revisions to the Zero Emission Vehicle Regulation", California Air Resources Board, November 25, 2009

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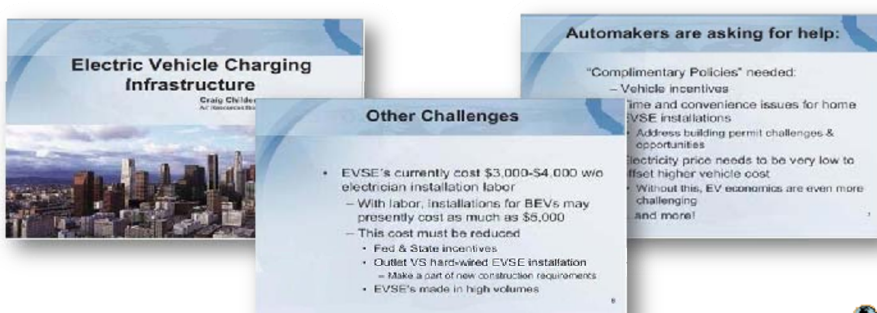
EV Recharging Infrastructure

Costs are high and challenges numerous;
Requires action by utilities, automakers, and government - not current fuel providers



24 Source: http://www.arb.ca.gov/msprog/zevprog/infrastructure/0909meeting/childers.pdf

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Renewable Hydrogen – California SB 1505

CARB minimizing renewable requirement to the maximum extent allowed by law because cost of renewable hydrogen is multiple times cost of hydrogen from conventional sources

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Cellulosic Ethanol Cost (Cost per Gasoline Gallon Equivalent)		
Cost Category	CARB LCFS ISOR	Sierra Estimate[a]
Feedstock	$0.47	$1.08
Capital Amortization	$1.37	$1.94
Production	$0.66	$0.66
Co-Product	-$0.14	-$0.14
Distribution and Marketing	$0.34	$0.44
Federal Tax Credit	-$1.01	$0
TOTAL, excluding taxes	**$1.69**	**$3.98**

[a] Preliminary Review of the CARB Staff Analysis of the Proposed Low Carbon Fuel Standard (LCFS), Thomas C. Austin, James M. Lyons, Frank DiGenova, Sierra Research, Inc., April 8, 2009

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