

POLICY OPTIONS FOR FCV MARKET INTRODUCTION

Prepared for:
Hydrogen 2010-2025 Scenario Analysis Meeting



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Introduction Phases

- ◆ Phase 1 – sales of few hundred FCVs per year. Cost of vehicles will be 5 x over average vehicle and refueling infrastructure will be in an urban area.
- ◆ Phase 2 – ten to twenty thousand FCVs per model and one/two models per major manufacturer. Cost of vehicles will be 2 x over average vehicle, and urban and limited regional refueling infrastructure.
- ◆ Phase 3 – Mass market introduction, FCV cost at 1.1 to 1.2 x . Good regional refueling and limited city pair refueling sites.



Policies for Phase 1

- ◆ Vehicles will not be sold commercially but leased to select fleets and owners. Government fleet buy-down expected
- ◆ DOE will negotiate with each manufacturer on FCV subsidy-cost share up to 50%.
- ◆ DOE funds 50% of capital cost for refueling sites, with energy firms contributing 50%.
- ◆ Hydrogen fuel cost subsidy to approximately equalize cost with gasoline.
- ◆ All three subsidies and ZEV mandate needed.



Strategies for Phase 2

- ◆ FCV subsidy policy could be dependent on manufacturer strategy.
- ◆ Introduction in “near luxury” car market (\$30k-40K price) could provide reasonable sales volume with shared subsidy of \$8K to \$15K per vehicle.
- ◆ FCV introduction in mass market vehicles may require larger subsidy to reach same sales volume due to consumer price resistance in non-luxury markets.
- ◆ Strategies can be explored to minimize subsidies.



Policies for Phase 2

- ◆ Supplementary policies considered include
 - CAFÉ credits similar to those for EV,
 - ZEV mandates in California and the Northeast states at levels similar to existing requirement, potentially different timing relative to requirement.
 - motor fuel tax exemption for hydrogen, and
 - 50% cost-sharing for regional infrastructure
 - Consumer purchase tax credit
 - Guaranteed trade in value?
 - Government fleet buy-down continues



Policies for Phase 2

- ◆ Capital cost for refueling infrastructure at regional level (within lighthouse) could be phased out and replaced with accelerated depreciation or loan guarantees to reduce risk of stranded assets.
- ◆ Non-regional refueling sites will require full capital cost coverage.
- ◆ Fuel cost subsidy will be required to maintain near-parity with gasoline.



Policies for Phase 3

- ◆ FCV incremental price will be similar to current hybrid vehicle incremental price.
- ◆ Vehicle related policies could be similar to current hybrid vehicle polices:
 - tax credit of \$2500 to \$5000
 - local/state sales tax and registration exemption.
 - CAFÉ credits for FCV production
 - continued forcing function of ZEV mandate?

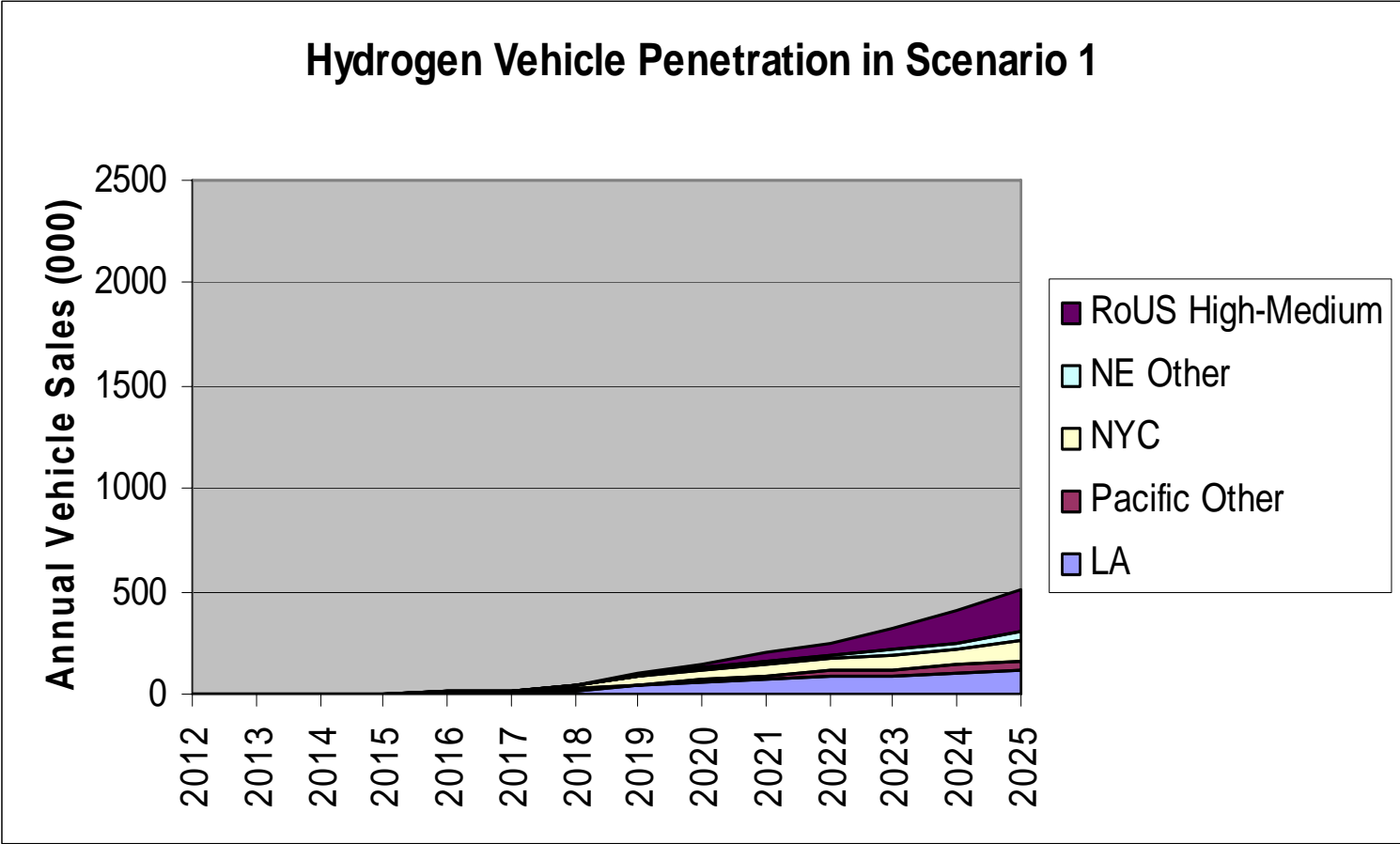


Policies for Phase 3

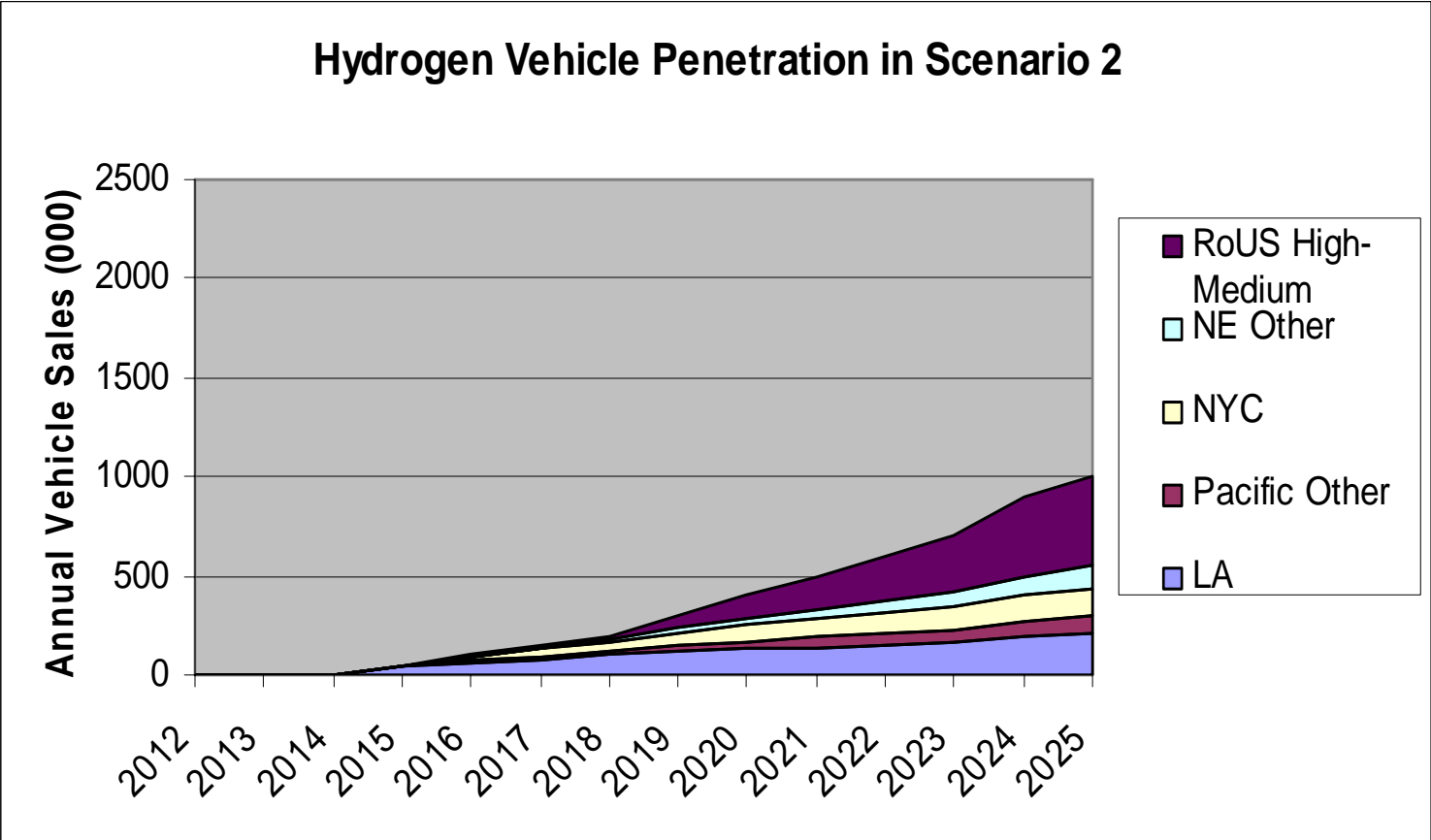
- ◆ With significant existing fleet and high growth of FCV fleet, infrastructure subsidy will likely not be needed in Phase 3.
- ◆ However, to maintain FCV sales, hydrogen fuel price parity with gasoline will be necessary.
- ◆ Hydrogen fuel can have Federal/state fuel tax exemption similar to ethanol, or additional subsidy may be required depending on hydrogen delivered cost and gasoline retail price.



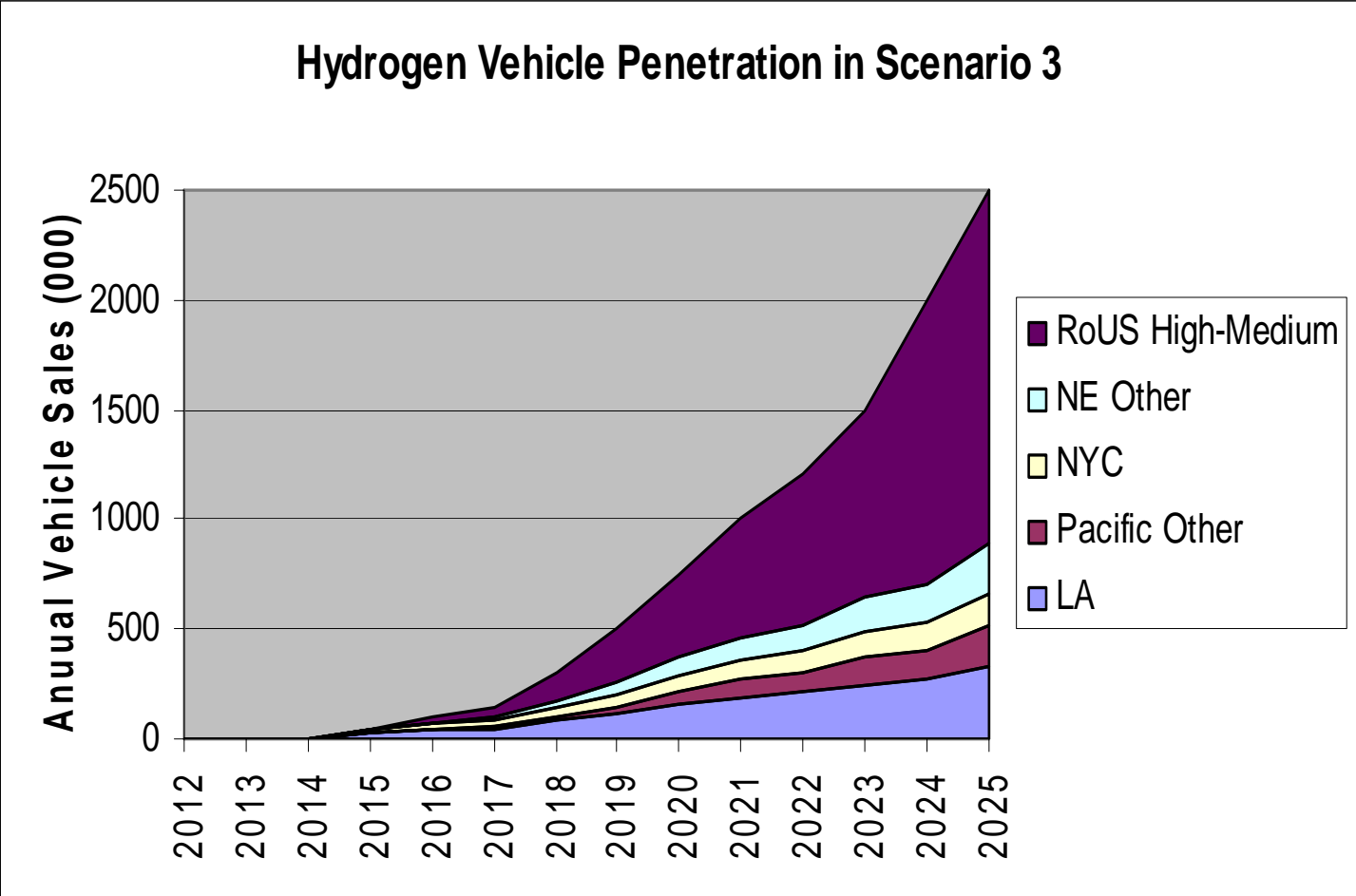
Scenario 1 Regional Volumes



Scenario 2 Regional Volumes



Scenario 3 Regional Volumes



Policies versus Scenarios

- ◆ Phase 1 occurs prior to any “scenario” requirements which start in 2015, and policies are independent of scenarios.
- ◆ Different scenarios could be generated by differing strength of policies, different assumptions about technology progress or different consumer response to FCVs.
- ◆ Future analysis will focus primarily on changing policy strength to attain scenarios.



Future Analysis

- ◆ Analysis of regional co-development of infrastructure and FCV sales will utilize ORNL HyTrans model in combination with NREL inputs
- ◆ Analysis of vehicle and auto-manufacturer related policies (CAFÉ, ZEV mandates) will rely on EEA models such as FEM or FERAM
- ◆ Goal of analysis will be to define optimal policies to meet goals and also determine if FCV markets can progress without continuing subsidy.

