
GETTING TO ZERO: REMARKS AT THE STEPS WORKSHOP



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Key Findings from U.C. Davis-Led Review of GHG Studies

“In all deep reduction scenarios, the electricity grid shifts towards renewable generation – particularly after 2030 – and most end-uses are electrified by 2050.”

“Regardless of the exact fleet composition, hydrogen and electricity with near-zero lifecycle GHGs (e.g., from wind, solar, biomass, NG with CCS) are needed to power virtually all the LDV fleet by 2050.”

“The optimization models (CA-TIMES, SWITCH) suggest that the least expensive path to make these transitions includes aggressive decarbonization of our electricity supply, electrification of most end-uses, increases in energy efficiency and deployment of low-carbon transportation fuels and technologies.”

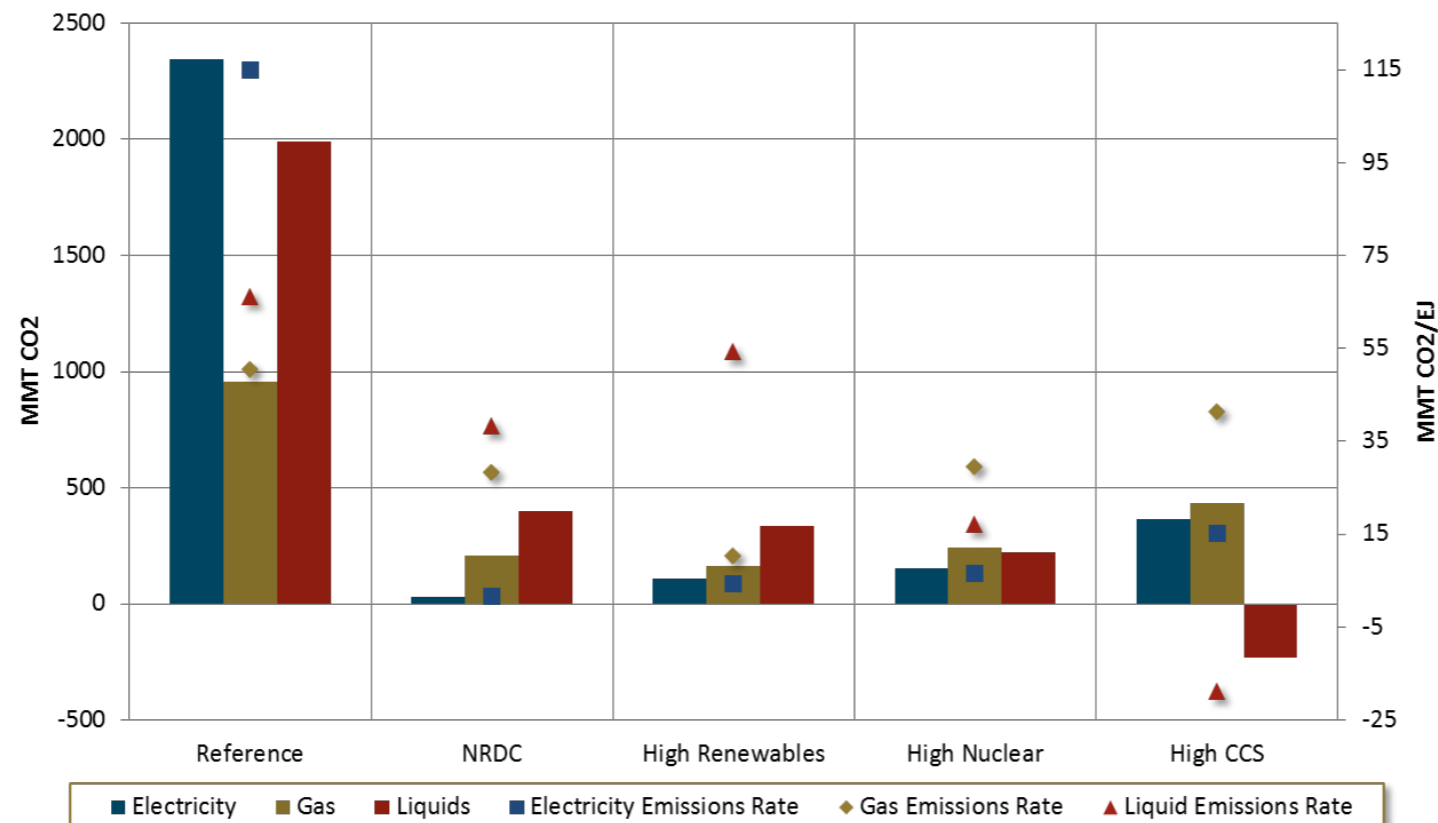
- Morrison et al., “Comparison of low-carbon pathways for California”, *Climatic Change*, July 11, 2014.

U.S. PATHWAYS

Fundamental challenge is shifting to zero-carbon sources of primary energy. Since sustainable biomass is constrained, electrification becomes a key strategy.

NRDC PATHWAY (Aggressive Efficiency, Renewables and Electrification) demonstrates do not need to rely upon increasing Nuclear, high levels of CCS, or “unsustainable” levels of Biomass to meet 80% 2050 reduction goal.

Key challenges to accelerating renewable electricity are: siting renewable projects, building transmission lines, and creating smarter grids with more flexible loads and storage.



Key Policy and Technology Questions

Generally, there is increasing consensus on higher level end goals and California already has a rich set of policy tools: Programs & Standards + Carbon Caps + Investments in Low Carbon Technology

Policy research should focus on:

- Mix of policies need to speed deployment of electrification technologies
- Understanding when and if pathway choices have to be made (e.g., PEVs vs HFCV)
- Finding synergies between strategies (i.e., EVs as grid storage, EV car-sharing)

Technical research:

- Benefits of PEVs for grid services to integrate renewables
- Feasibility of Power to Gas
- HDV ZEVs

Thank You!

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