AFV OIR Workshop

April 29, 2016

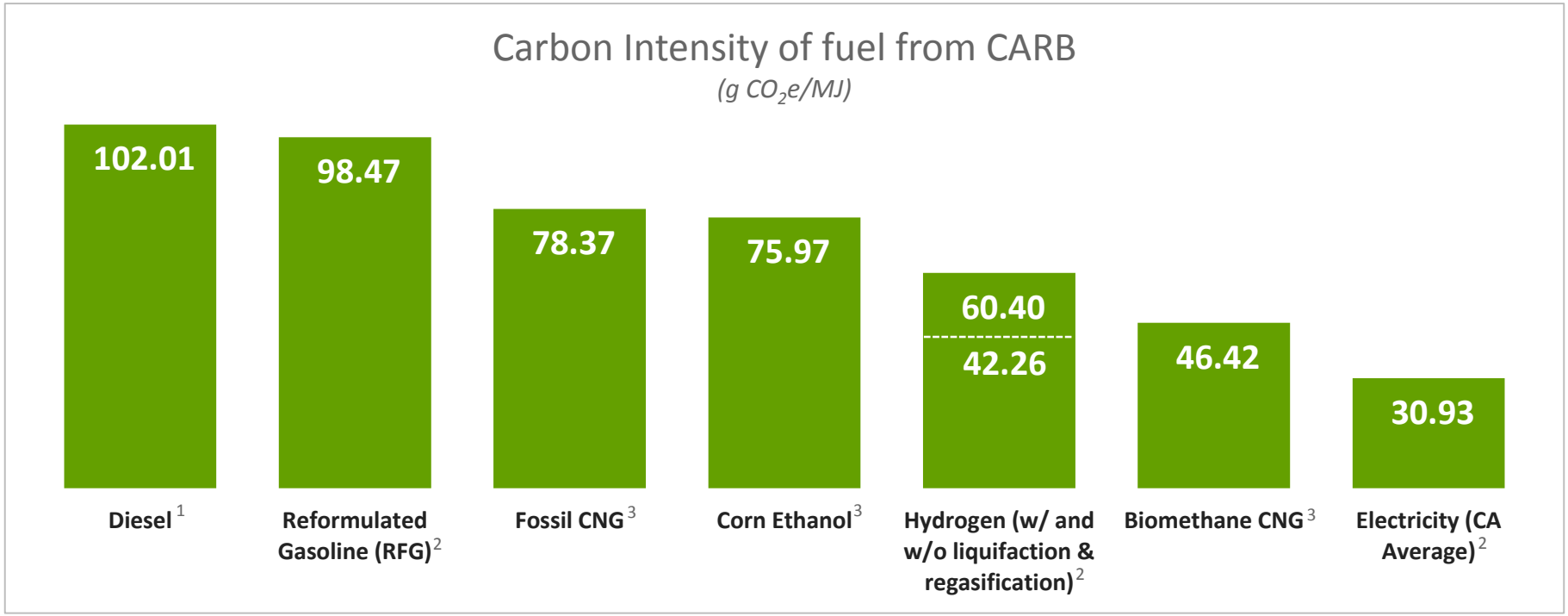
Laura Renger
Principal Manager
Air & Climate
Southern California Edison

SCE enthusiastically supports widespread EV adoption

- Electrification of the transportation sector is essential to realizing California's bold climate and air quality goals
  - Using ARB's emission factors[1], light and heavy-duty EVs reduce 2-3 times more CO_2 per kWh than renewables or energy efficiency programs
  - Light-duty and heavy-duty EVs reduce 100% of smog-forming gases from vehicles in the South Coast Basin[2]
  - Electrification will become even more attractive as reductions grow larger from increased renewable generation
- EV charging load is uniquely flexible and can provide significant grid benefits with both scale and effective load management
  - SCE has been incorporating major EV load growth in its system planning for years
  - Charging mainly takes place in the evening when there is plenty of excess capacity, improving system utilization and potentially providing downward pressure on rates
  - Eventually, EVs may serve as a significant grid resource and help with future solar over-generation
- Pollution and GHG reduction due to electrification will benefit all customers and especially disadvantaged communities

1 Using LCFS emission factors Final Regulation pg. 32 and EERs pg. 45, e-Truck: 1.6x; LDV: 2.2x; e-Bus: 3.1x relative to offsetting CA average emissions per kWh with zero-emission RE or EE 2 Smog-forming gases refer NOx – Relative to RE and EE, light-duty EVs reduce 8 times more NOx and HD EVs reduce 15-60 times more (depending on HD vehicle type). Additionally, light-duty EVs reduce 5 times more particulate matter and HD EVs reduce 3-9 times more PM than either RE or EE.

Electricity is one of the cleanest alternative fuels per unit of energy used



- Electricity is also one of the only truly scalable ultra-low carbon fuels
- Using LCFS methodology, approved by ARB, electricity emissions per MJ of energy used emit 70 % less CO_2 than gasoline or diesel
- Many CA utilities already have more renewables than reflected in the electricity number above which will continue to decrease as RE increases

[1] LCFS Final Regulation Order Table 6 pg.66 [2] LCFS Final pg. 32 [3] LCFS Final Table 7 pg. 82-83 [1,2,3] LCFS Final EER: Table 4 pg. 45

SCE's Proposed Phases for TE Acceleration in IOU Applications

Phases	Phase 1	Phase 2	Phase 3
Goal	**Market Launch**	**Transition**	**Based on Approved Integrated Resources Plan**
Time period	2014-2015	2016-2020	2020 and beyond
Application Examples	First applications to accelerate light duty EVs	First application to accelerate other EVs: e-freight, e-transit and/or e-ports Second application to accelerate light duty EVs	All types of TE applications in an approved IRP (from 2018)
Application design guidelines	Based on D. 14-12-079 case-by-case balancing test in AFV OIR decision	Based on draft guidelines in March 2016 Scoping Memo Appendix A and final Q3 2016 guidelines in future ruling	To be determined

- Phasing allows for both quick action to meet SB 350's call for acceleration of TE now as well as establishes a long-term role for IOUs to help meet the 2050 goals
- A well-designed application "checklist" for TE program approval in the transition period (prior to IRP) is needed
- After an approved IRP, more comprehensive application metrics could become part of the process for securing funds

Benefits of a multi-phased approach

- Provides time for all stakeholders to focus on and develop the IRP and its new core mission on TE investments
- Data provided 2016-2020 will inform and prepare for:
  - IRP scenario modeling and optimization
  - the next decade of TE application design metrics based on an LSE's approved IRPs
  - the development of general TE policy
- Case by case decisions on individual applications (per D.14-12-079) is preferred over broad policy making in initial years
  - Without data from initial programs and investments, a broad policy would be based on hypotheticals about market
- Helps the state meet its goals to accelerate TE this decade