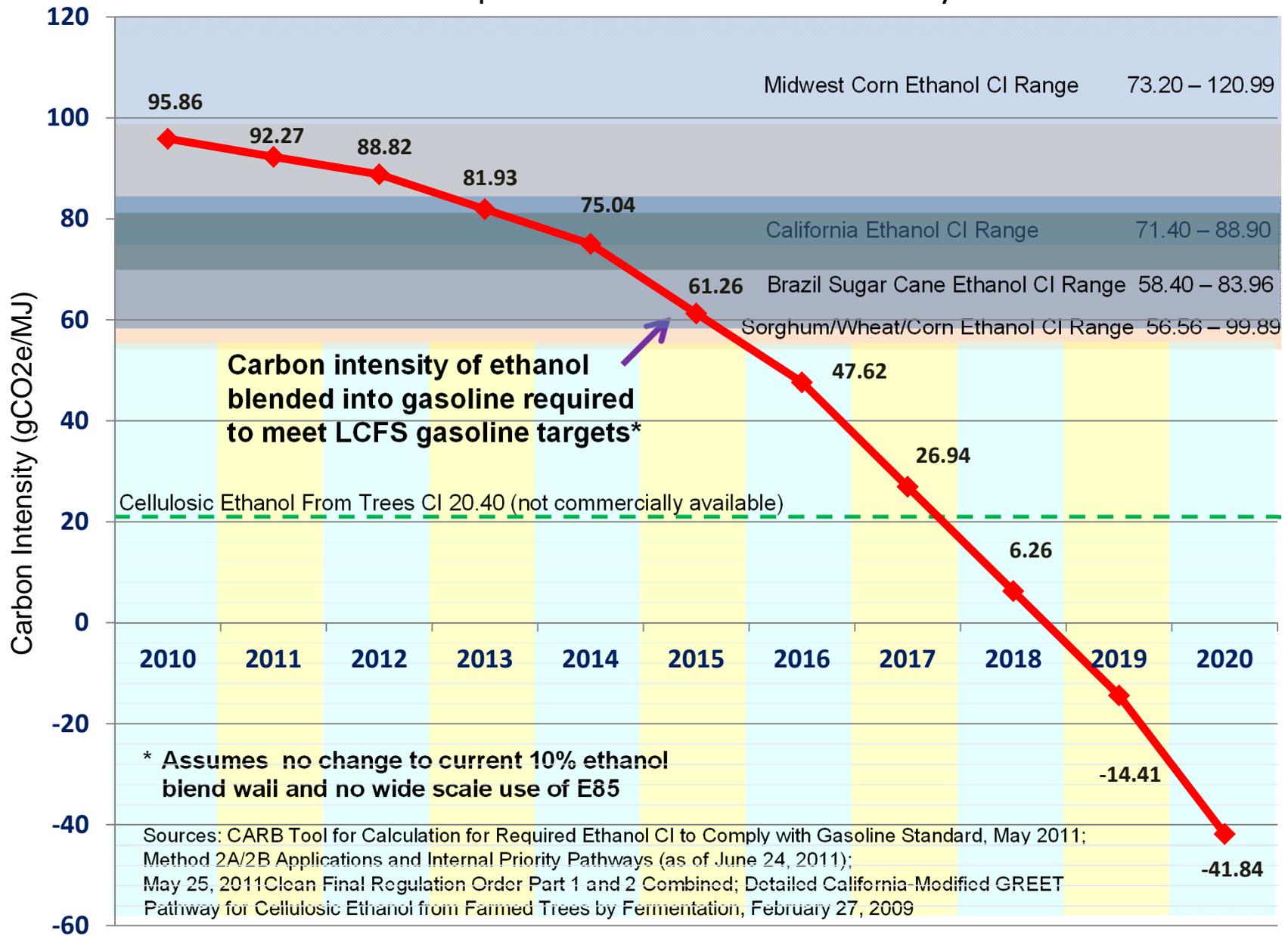


LCFS Compliance Scenario – Gasoline Only



Note: The following explanation/talking points pertain only to the gasoline only chart

Ethanol Carbon Intensity Needed for LCFS Compliance

The LCFS assumes development and/or commercialization of technology that will allow for compliance through means other than the blending of currently available low-carbon biofuels. These technologies are essential if the LCFS is to be successful within the designated time frame.

This chart shows that ethanol blending no longer provides compliance with the LCFS in the 2016 time frame. If new technologies are not available at scales required to meet market demands, the LCFS becomes infeasible.

Compliance with the LCFS for diesel is even more of a challenge for fuel providers as fewer economical blending options are available. Some providers may elect to over comply with the gasoline LCFS requirement as a means of bringing their entire fuel pool into compliance. Doing so, however, requires even lower carbon intensities for blended biofuels and therefore moves the compliance need for new technologies to an earlier time frame.

In order to provide guidance to California fuel producers, CARB developed a simple tool (Excel spreadsheet) that calculates the carbon intensity values of biofuels that will be necessary to meet LCFS targets in successive years. The tool assumes no change to the current 10 percent biofuels blend wall and assumes no E85.

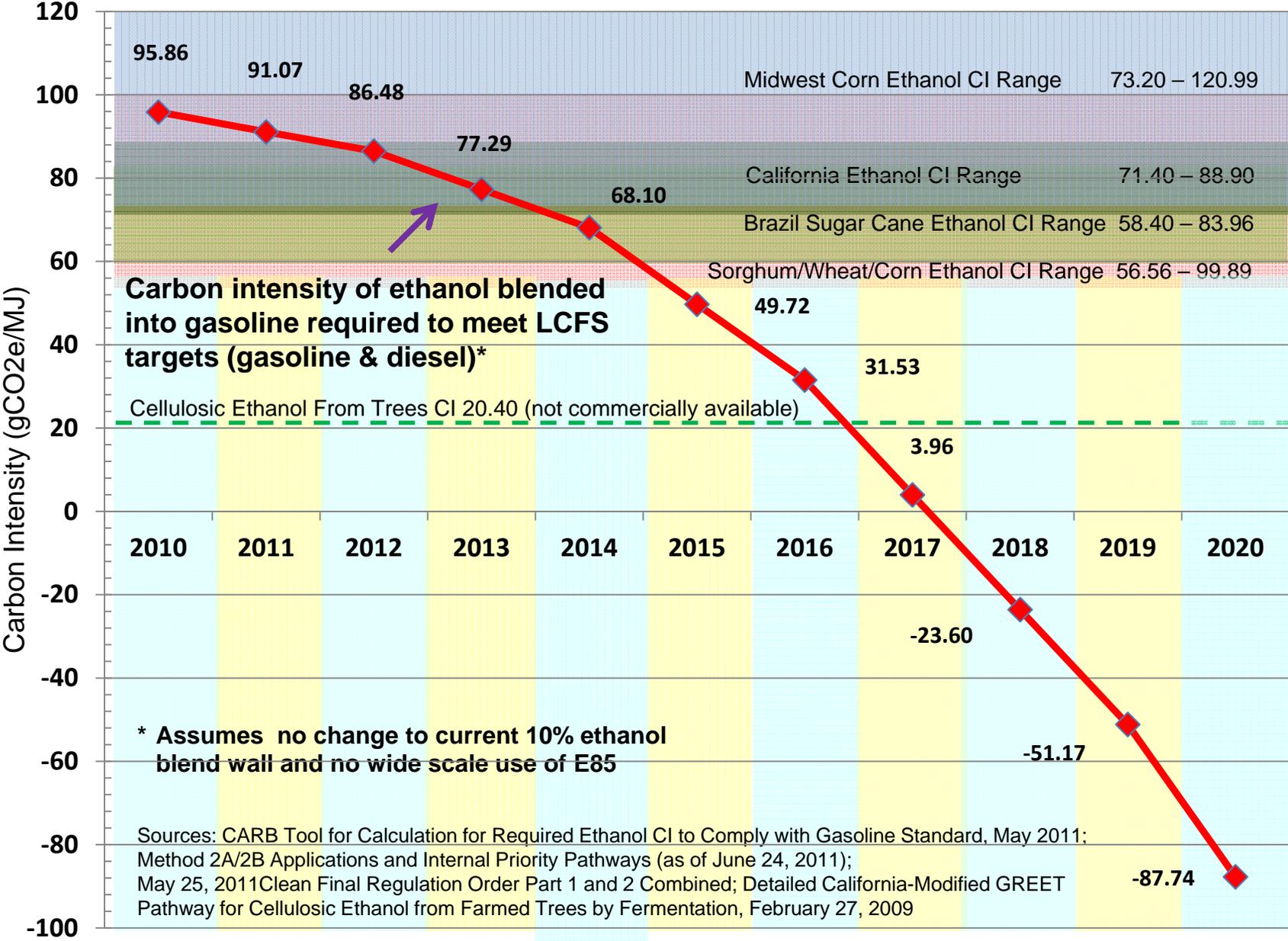
The red line on the accompanying chart depicts the rapidly descending carbon intensities required for biofuels blend stocks to meet just the LCFS gasoline targets.

Superimposed over the biofuels carbon intensity values are the current carbon intensity ranges calculated by CARB for the low-carbon biofuels currently available and technically feasible to help meet LCFS targets.

Conclusions:

- Absent a dramatic technology or production breakthrough, LCFS compliance becomes impossible for gasoline with currently available biofuels blending in 2016.
- As the chart demonstrates, carbon intensity values approach zero and then fall substantially below zero.
- The chart also makes it abundantly clear that the compliance timeline in the LCFS is entirely infeasible if based on conventional biofuels blending.

LCFS Compliance Scenario – Gasoline & Diesel



Gasoline/Diesel Chart

Compliance with the LCFS for diesel is even more of a challenge for fuel providers as fewer economical blending options are available. Some providers may elect to over comply with the gasoline LCFS requirement as a means of bringing their entire fuel pool into compliance. Doing so, however, requires even lower carbon intensities for blended biofuels and therefore moves the compliance need for new technologies to an earlier time frame.

For the gasoline & diesel compliance scenario, the deficit and credit calculations from the regulations employed in the CARB tool were supplemented with diesel deficit calculations also from the regulations. The gasoline/diesel split is assumed to be 75/25 on an energy basis (since the LCFS standards are on an energy basis). WSPA used the 2011 fuel volume estimates presented in Appendix E of the staff report (nominally Scenario 1, although all of the scenarios are the same for 2011) and the energy density numbers included in the regulations, producing the following:

	Volume, Bgal	Energy Density, MJ/gal	Energy B MJ	Energy Split
Gasoline:				
CARBOB	13.88	119.53	1659.1	
Ethanol	1.44	80.53	116.0	
Total	15.32		1775.0	75%
Diesel:				
Biodiesel	0.006	126.13	0.8	
Renewable Diesel	0.011	126.13	1.4	
Conventional Diesel *	4.465	134.47	600.4	
Total Diesel	4.482		602.6	25%

*** Volume calculated by difference.**