Questions and Answers Regarding the 2016 ZEV Tutorial and ZEV Regulatory Requirements for 2018 and Subsequent MY Vehicles

On May 31, 2016, the California Air Resources Board conducted a webinar describing the regulatory requirements established under the ZEV Regulation for 2018 and subsequent model year vehicles (CCR, Title 13, 1962.2). This document provides written responses to all questions submitted during the webinar. Where possible, citations have been added to each response for additional reference.

Volume Status and Production Volume

1. Comment: What is the transition period for a manufacturer that is considered an intermediate volume manufacturer (IVM) in 2017 model year (MY) and considered a large volume manufacturer (LVM) 2018 MY+?

   Response: Through MY 2017, any manufacturer with average California sales of new passenger cars (PC), light-duty trucks (LDT) and medium duty vehicles (MDV) exceeding 60,000 units based on the three previous consecutive model years will be considered a LVM. The manufacturer will be subject to LVM requirements "beginning with the sixth model year after the last of the three consecutive model years, or in MY 2018 (whichever comes first)". For example, if a manufacturer's average sales in MY 2017 (based on MY 2014 through 2016 sales) exceed 60,000 units, it will become an LVM in MY 2017 and will be subject to LVM requirements starting in 2018. [California Code of Regulations (CCR), Title13, 1962.1(b)(7)(A)]

2. Comment: How is revenue defined for the intermediate to large volume manufacturer transition rules? E.g., if OEM is a subsidiary of a larger corporation?

   Response: Global revenue is based on the average annual automotive-related revenue for the three previous consecutive fiscal years. For example, MY 2018 average annual automotive-related global revenue is based on MY 2014 – 2016 annual automotive-related global revenue. Automotive-related global revenue is further defined under the "Definitions and Terminology" section of the "California Exhaust Emissions Standards and Test Procedures for 2018 and Subsequent [MY vehicles]" as the "global net revenues in U.S. dollars derived from the sale of passenger cars, light-duty trucks and medium-duty vehicles, as reported in the most recently available audited annual consolidated financial statements and reports."

3. Comment: Regarding one of the condition for IVM to LVM, the global revenue, does it mean the profit from whole of 18MY vehicles or 19MY or 20MY?

   Response: Please see response to Comment 2.

4. Comment: How is the three year average sales calculated for a manufacturer that begins selling in CA in 2018?

Response: For a new vehicle manufacturer certifying for the first time in California, volume status is based on projected California sales of vehicles. For the purposes of transition in volume status, the first three year average that will be considered starting in MY 2018 will be MYs 2015 – 2017. [Transition in Volume Status: CCR, Title13, 1962.2(b)(7)(A), Volume Status Definition: CCR, Title 13, 1900 (Definitions)]

5. Comment: Assuming a SVM begins to sell in 2018 at 4,000 vehicles and 2019 is 5,003 vehicles, what is the 3 year average for MY 2020: 3,001 or 4,501?

Response: Please see Response to Comment 4 for background on calculation method. In the example provided, a small volume manufacturer (SVM) that starts selling in California MY 2018, the first three year average that would count toward transition would be MY 2021 and would be based on the average of MYs 2018-2020.

6. Comment: What weight classes are being applied to the Medium Duty classification?

Response: Vehicles with a manufacturer's gross vehicle weight rating between 8,501 and 14,000 pounds. [CCR, Title 13, 1900 (Definitions)]

Credits

7. Comment: Is the BEVx credit phasing out in 2018+?

Response: Range Extended Battery Electric Vehicles (BEVx) may still earn credits for 2018 and subsequent MY ZEV compliance. [CCR, Title13, 1962.2(d)(5)(G)]

8. Comment: Could a non-Plug-in Hybrid Electric Vehicle qualify for TZEV?

Response: No. Starting in MY 2018 non-Plug-in Hybrid Electric Vehicles, referred to as Advanced Technology Transitional Zero Emission Vehicles (AT-PZEV), will no longer be allowed to earn credits under the ZEV Regulation.

9. Comment: Are Advanced Technology Demonstration Program credits open to LVM, IVM, and SVM?

Response: Starting in MY 2018, only IVMs and SVMs will be allowed to earn credits for vehicles placed as part of an Advanced Technology Demonstration

Program. Note: this has been revised on the PowerPoint for clarity. [CCR, Title13, 1962.2(g)(4)(B)]

10. Comment: Are there any battery warranty requirements for ZEVs and BEVxs similar to the 10 year/150k mi for TZEV vehicle batteries?

Response: There is a 10 year/150,000 mile extended warranty on the zero emission energy storage device used for traction power on TZEVs and BEVxs. There is no warranty on the traction battery for ZEVs. [CCR, Title13, 1962.2(c)(2)(D)]

11. Comment: What are the traction battery requirements for warranty on ZEV vehicles, both BEV and FCV?

Response: Please see response to Comment 10 above.

12. Comment: Will TZEV requirements such as the battery storage requirement be extended to the 177states?

Response: There are no battery storage requirements, only the extended battery warranty requirement for TZEVs and BEVxs described in response to Comment 10 above. Vehicles meeting the certification requirements outlined by the ZEV Regulation may earn credits in California or any of the Section 177 (S177) States.

GHG-ZEV Over Compliance

13. Comment: GHG-ZEV over compliance - is taking into account GHG off-cycle credits?

Response: No, GHG-ZEV over compliance does not take into effect off-cycle credits. Please see the LEV III regulatory requirements for calculating a manufacturer's GHG Fleet Average Program Requirement and GHG Fleet Average Value [CCR, Title 13, 1961.3] and the ZEV Regulation for details in how to calculate the GHG-ZEV Over Compliance Credits [CCR, Title 13, 1962.2(g)(5)(C)]

Travel

14. Comment: Could you please repeat the difference between traveling a credit from CA and from other states?

Response: As a result of travel, credits are earned in all states (California and the S177 States) at a proportional value equal to the ratio of a manufacturer's applicable production volume [calculation method described in 1962.2(b)(1)(B)] in the state receiving credit to its production volume in California. Should a manufacturer choose to travel credits earned in California, its California State credit bank remains unchanged. Should a manufacturer choose to travel credits earned in any of the S177 States, the credit bank in the state the credits are traveled from will most likely decrease by the proportional value. If a manufacturer's applicable production volume in a S177 State exceeds that of its applicable production volume in California, the credits in that state would increase as a result of travel. However, due to the size of California's new car market, this is unlikely to occur.

For example: If a manufacturer had 4000 credits in California, and chose to travel all 4000 credits, it would end up with 4000 credits in California and 2000 credits in State B (a state with an applicable production volume that is half that of California). If that same manufacturer had 4000 credits in State B and it chose to travel all 4000 credits, it would end up with 2000 credits in State B and 4000 in California.

Another way to describe travel is to say that all credits travel through California. In other words, credits traveled from any state (California or a S177 State) are first earned in California at full value, and then earned in all the other states at a proportional value. [CCR, Title13, 1962.1(d)(5)(E)1.]

15. <u>Comment:</u> On slide 40 talking about Travel; it did not appear that there was a reduction of credits earned in each state while "travelling", no matter which state the 1000 models were sold. Each ended w/ 4000 credits in California down to 1000 in State C., yet it was spoken that there was a reduction in credits.

<u>Response:</u> In most cases, a manufacturer's applicable production volume in a S177 State is lower than that of its California applicable production volume. When a manufacturer chooses to travel credits from a state with a production volume less than California, the credit value is reduced within that state. However, given that credits are earned in all states as a result of travel, the aggregate number of credits earned across all states as will increase.

16. <u>Comment:</u> In slide 40 (in the state B example), 1000 vehicles are sold in the state B so the credit for the state B must be 4000. Or, did you mean it can be earned the basic 4000 + 2000 credit from the travel provision (i.e. totally 6000 credit in the state B)?

<u>Response:</u> Credits are not added to a manufacturer's account as a result of travel. Please see response to comments 14 and 15 above for additional background.

17. <u>Comment:</u> Will the Travel Provision loophole end as of January 1, 2018 or for Model Year 2018?

Response: Starting in model year 2018, manufacturers will be allowed to travel credits earned from FCEVs. Credits earned for BEVs or BEVxs after MY 2017 will no longer be allowed to travel.

18. Comment: Typo on slide 40 of presentation.

Response: Note: on slide 40 of the presentation, the example in the video lists the manufacturer's California production volume as 100,00; this should read 100,000. This error has been corrected on the PDF copy of the PowerPoint that has been posted along with the video.

Optional S177 Compliance Path

19. Comment: Can an OEM opt out of the Optional S177 State Compliance Path?

Response: Yes, however penalties shall be calculated separately by each 177 State where a manufacturer fails to make up the ZEV deficits within the specified time.

20. Comment: If IVMs miss OptCompPath ZEV volume targets are they subject to fines, even though OCP is optional?

Response: Yes, penalties shall be calculated separately by each 177 State where a manufacturer fails to make up the ZEV deficits within the specified time.

21. Comment: Clarification the "30% Penalty" and the example calculation listed on the slide [43].

Response: The penalty is an additional 30% of the credits that are being transferred. A better example would be to say, if a manufacturer needed 100 credits to meet their compliance in Oregon (the West Region Pool), they would need to transfer 130 credits from the East Region Pool. Note: This language has been revised on the slide for clarity.

Demonstration of Compliance and Penalty

22. Comment: So, paying the ZEV penalty will not be a pathway to compliance by itself?

Response: That is correct. An OEM must meet the ZEV credit requirement and in addition if they are not able to meet their requirement within the specified time frame, pay a penalty.

23. Comment: With regard to the $5,000 penalty per ZEV credit, you mentioned that it was in addition to the ZEV credits owed. Can you explain?

Response: See response to Comment 22 above.

24. Comment: Does ARB make available specific OEM requirements and compliance data? If so, where is that found?

Response: Specific annual OEM requirements and the specific details of what types of credits used by each OEM to meet those credit requirements are not available. However, ARB annually posts production data, which the requirements are based on, and posts the credit balances of each OEM. In addition, transfers by OEMs are also published. This information is posted annually in October and can be found on ARB's ZEV program page at:

http://www.arb.ca.gov/msprog/zevprog/zevprog.htm

25. Comment: Will ARB disclose either total GHG over compliance credits or manufacturer-level GHG credits as part of the credit bank disclosures?

Response: No, total Greenhouse Gas over compliance credits or manufacturer level Greenhouse Gas credits will not be provided by ARB. ARB does not disclose OEM specific information except as noted in the response above.

ZEV Credit Percentage Requirements and Credit Usage

26. Comment: In 2018+, can BEVx credits be applied to the min ZEV requirement? If so, how is this possible given the vehicles have emissions?

Response: Credits for BEVxs are calculated in the same manner as all credits from ZEVs: using the vehicle's All-Electric Range (AER) as determined by the UDDS test cycle. However, these vehicles must meet a higher minimum AER mileage requirement than pure ZEVs, 75 miles as opposed to 50 miles, and credits earned from these types of vehicles are only ever allowed to meet 50% manufacturer's minimum ZEV floor. Credits earned from BEVxs will be allowed to meet a manufacturer's entire ZEV requirement that may be met with credits from TZEVs.

27. Comment: What happens to PZEV credits after 2018? Can they be used toward ZEV or TZEV requirements?

Resonse: Credits earned from Partial Zero Emission Vehicles (PZEV) and Advanced Technology PZEVs (AT-PZEV) will be discounted following MY 2017 compliance. For LVMs, credits earned from PZEVs will be discounted 93.25% and credits earned from AT-PZEVs will be discounted 75%. For IVMs, credits earned from both PZEVs and AT-PZEVs will be discounted 75%. Discounted credits earned from PZEVs and AT-PZEVs will be allowed to meet 25% of a manufacturer's requirement that may be met with credits from TZEVs for MY 2018 through 2025 compliance, 100% of an IVMs requirement for MYs 2018 and

2019, and will no longer be allowed after MY 2025 compliance. [Converting PZEV and AT PZEV Credits after MY 2017: CCR, Title13, 1962.1((g)(2)(F), Use of Discounted PZEV and AT PZEV Credits and NEV Credits: CCR, Title13, 1962.2(g)(6)(A)]

28. Comment: When will the 2025MY+ requirements be discussed?

Response: The requirements outlined in this tutorial are for 2018 and subsequent MY vehicles.

Miscellaneous

29. Comment: Are aftermarket ZEV converters (or TZEV, BEV, etc) able to get ZEV credits that can be sold to other companies?

Response: The ZEV Regulation sets production requirements for new vehicle technology based on a manufacturer's production volume of new vehicles. Companies offering aftermarket conversions for existing vehicles are not subject to these specific regulatory requirements, and are not eligible to earn ZEV credits.

30. Comment: Will the ZEV CRDTS system calculate these various ZEV credit options?

Response: The ZEV-CRDT System, the online reporting tool used for submitting compliance data for the ZEV Regulation, is designed to take into account all of the various compliance flexibilities provided by the regulation.

31. Comment: Are Small Volume ZEV manufacturers (or TZEV, BEV, etc) able to get ZEV credits that can be sold to other companies?

Response: Yes, although small volume manufacturers are not required to produce credits for compliance with the ZEV regulation, they are allowed to earn credits on new vehicles produce and they may trade those credits to other manufacturers.

32. Comment: What happens if a manufacturer decides not to proceed with the production of fuel cell vehicles owing to a non-competitive cost structure? How does such a decision affect the ZEV requirements?

Response: The ZEV Regulation does not set production requirements for specific vehicle technologies. Instead, the regulation sets credit percentage requirements so that a manufacturer will have flexibility in the mix of vehicle technologies produced toward meeting its requirement. In addition the ZEV regulation includes provisions (such as the travel provision and the Section 177

Optional Compliance Path) to help ensure manufacturers are able to meet compliance.

33. Comment: Can medium duty vehicles be grid connected vehicles?

Response: The ZEV Regulation does not set specific regulatory requirements for grid connected vehicles. In order for a vehicle (PC, LDT or MDV) to qualify to earn ZEV credits, it would need to meet the vehicle standards outlined in the regulation. [CCR, Title13, 1962.2(a) and 1962.2(d)(5)(A)]

34. Comment: Is a 48V powertrain architecture qualify as a ZEV?

Response: This question is in reference to 48V mild hybrid vehicles which will not be eligible to earn ZEV credits. Only ZEVs and TZEVs will be eligible to earn credits for 2018 and subsequent MYs. Traditional (non-plugin) hybrid vehicles will no longer be eligible to earn ZEV credits MY 2018 and beyond.

35. Comment: When will ARB's Excel compliance model be released?

Response: This tutorial is intended to take stakeholders through the requirements outlined under the ZEV Regulation for 2018 and Subsequent Model Year Vehicles (CCR, Title 13, 1962.2). Staff is currently in the process of completing the midterm review (MTR) of the regulatory amendments passed in 2012 and is scheduled to present findings at the December 2016 Board Hearing. The MTR will include analysis of compliance scenarios resulting from these regulatory requirements.

36. Comment: Taking into consideration all of the possible compliance scenarios (GHG overcompliance, max/min credits per vehicle, use of banked credits, max/min PHEV compliance), what is the range of possible market share scenarios that CA could achieve?

Response: Please see response to Comment 35.

37. Comment: Could you explain in some detail the rationale for basing ZEV credits on vehicle range? If an automaker is able to sell ZEVs with lower range to a market segment, why do they deserve fewer credits? If more range comes at the expense of higher battery capacity, more credits would not necessarily incent tech innovation. If more range is the result of better efficiency, that would be tech innovation--but this could be incented with credits based on range/kWh.

Response: Prior to 2018, ZEV credits were awarded according to a tiered structure that encouraged manufacturers to meet only a minimum range threshold. As part of the 2012 regulatory amendments, staff sought to create a new crediting system that would directly reward manufacturers for incremental increases in the actual mileage of the vehicle. In an effort to simplify the regulation, staff proposed that per vehicle credit value be based directly off of the All-Electric Range base on the UDDS drive cycle. Section 2.2.6 of the Staff Initial Statement of Reasons for the 2012 Proposed Amendments to the California ZEV Program Regulations provides a detailed rational for the credit structure for 2018 and subsequent MY vehicles.

38. Comment: Could you say again where the discussion is located on the issue of higher credits for higher ranges and lower credits for lower ranges?

Response: Please see response to comment 37 above.