

Caltrans

Public Workshop Minutes

Proposed Changes to State's AVI Protocol Specifications Workshop Conducted Virtually Using Cisco WebEx on July 25, 2024

Attendees: Bob Olafson (TransCore), Rupinder Jawanda (Caltrans), Stephen Lockhart (Star Systems International), Tim Lew (LA Metro), Tyler Patterson (WSDOT), Clara Brotcke (OCTA), Reinland Jones (RCTC), Jillian Peterson (SBCTA), Myung Park (TCA), Rick DiTullio (Golden Gate), Yusuf Shatnawi (Caltrans), Patrick Vu (Silicon Transportation Consultants, 6C Coalition Technical Chair), Robert Campbell (LA Metro ExpressLanes), Vincent (Vinny) Valdez (TCA), Arshad Syed (Santa Clara Valley Transportation Authority), David Missimer (Neology), Eric Davis (Bay Area Metro), Monica Serrano (MTC), Steve Hancock (Silicon Transportation Consultants), Jeff Gerbracht (Bay Area Toll Authority), Lucinda Broussard (SANDAG), Arie Naaktgeboren (HNTB Corporation), Kary Witt (HNTB), Jennifer Crosson (RCTC), Joe Rouse (Caltrans), Suzanne Bardasz (Caltrans)

Notes:

1. Joe Rouse welcomed participants and stated the purpose of the workshop is to discuss the proposed changes to the States' regulations on Automatic Vehicle Identification (AVI) systems replacing the California Electronic Toll Collection Standard with the 6C Coalition AVI Standard Version 4.0 and to include ISO 18000-63 2021 version of the standard as an option. A PowerPoint presentation was given to provide a background on the proposed changes that were requested by the California Toll Collectors Committee (CTOC).
2. Mr. Rouse solicited input from the attendees to the workshop:
 - a. Jeff Gerbracht, BATA, responsible for 7 state owned, and also speaking for BAIFA
 - i. 5.4M toll tags, with 3.1M title-21, 6C 2.4. 6.4k 6C tag. Since 2019, been issuing 6C
 - ii. Supports the changes, does not believe there are any cost incurred to implement the AVI Standard.
 - b. Supports including the 2021 version of the ISO Standard as an option. Rick DiTullio, GGB
 - i. No official position to add, says to refer to the

Public Workshop Minutes

- submitted questionnaire.
- ii. Working with BATA on technical decisions
- iii. Joe Rouse asked about questionnaire response about incurring cost. Rick: refers to a one time cost, potential, but no ongoing costs.
- c. Arshad Syed, VTA
 - i. VTA supports the rulemaking.
 - ii. Will have to do minor changes to roadside system
- d. Robert Campbell, LA Metro Express Lanes
 - i. Echoing what bay area, supports the regulations
 - ii. Have issued 80K with another swap out of 800k
 - iii. Regarding cost, same trivial cost to configure and ad hoc testing to ensure can read transponders
- e. Julien Peterson, SBCTA
 - i. No additional comments, refer to questionnaire response
 - ii. SBCTA does support the rulemaking
- f. Reinland Jones, RCTC
 - i. Supports the rulemaking
 - ii. Supports ISO
 - iii. Doesn't anticipate any costs impacts and would be considered firmware maintenance items.
- g. Clara Brotcke, OCTA
 - i. Does not have authority but doesn't see any big issue
- h. Vincent Valdez, TCA
 - i. Echo's what RCTC said
 - ii. Support both 6C Coalition and ISO standard option
 - iii. Minimal incurred cost to implement
- i. Tyler Patterson, WSDOT
 - i. Present to lend support to the rulemaking
 - ii. WSDOT supports the changes
- j. Dave Missimer, Neology

Public Workshop Minutes

- i. Supports the rulemaking
 - k. Stephen Lockhart, Star Systems
 - i. Supports the rulemaking
 - ii. Replacing the CA standard with 6C Coalition will make it more streamline for vendors
 - l. Bob Olafson, TransCore
 - i. Supports the rulemaking changes
 - ii. Echo's going to the 6C coalition standard will make it easier for vendors
- 3. After going through a roll call of the toll agencies and vendors Mr. Rouse asked if anyone else in attendance would like to speak. There were no additional comments or questions.
- 4. Joe made closing remarks and provided next steps with a fall timeframe of future activities and closed out the workshop thanking attendees for their participation.

Attachments:

Introductory Presentation

Public Workshop Minutes

Introductory Presentation



Public Workshop

Proposed Changes to State Regulations Governing AVI Systems

Adoption of 6C Coalition AVI Standard in lieu of California 6C Technical Specifications

NOTE: THIS WORKSHOP WILL BE RECORDED

Logistics

- HOST: Joe Rouse, Caltrans Division of Traffic Operations
- SUPPORT: Suzanne Bardasz
- This workshop is scheduled to end at 11:30 AM PST
 - May end earlier
- Minutes will be taken
- Agenda
 - Background/Overview
 - Discussion



Purpose of this Workshop

6C TOLL OPERATORS COALITION AVI TRANSPONDER PROGRAMMING

2.3.1 MEMORY MAP

Area	#	Memory Address	Section	Description	Values
Stored CRC	1-16	00h-0Fh (16 bits)	Calculated	Area is calculated based on other transponder memory values per ISO 18000-63 specification.	Varies
	Stored PC	1-5	10h-14h (5 bits)	Length	Number of 16 bit words in the Ull
6		15h (1 bit)	User Memory	Indicates status of the User Memory	0 = no user memory 1 = user memory available
7		16h (1 bit)	XPC	Indicates status of extended tag features	0 = no XPC 1 = XPC available
8		17h (1 bit)	Numbering System Indicator	Indicates if the tag is coded as an EPC or ISO tag.	0 = EPC 1 = ISO
9-16		18h-1Fh (8 bits)	AFI	Application Family Identifier for 6C TOC – B0	1011 0000 = 6C TOC AFI (B0)
	1-21	20h-34h (21 bits)	Agency Use	Individual agencies may add agency specific information here.	Assigned by agency

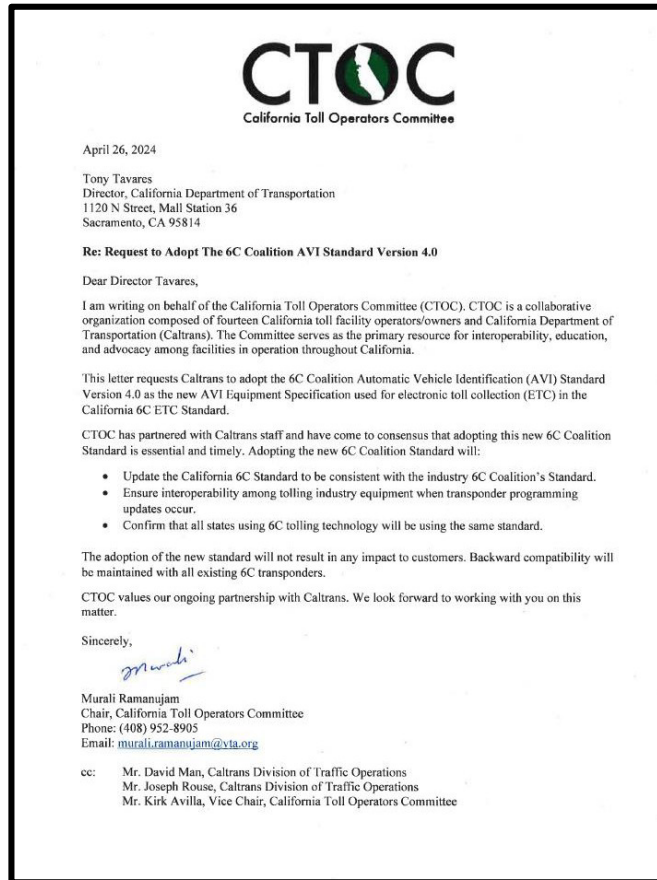
- Caltrans has received a request to adopt the “6C AVI Standard v4.0” in lieu of the “California 6C Electronic Toll Collection Standard”
- This workshop is intended to provide all parties an opportunity to discuss this proposal in more detail

Background

- The move to the 6C AVI protocol required creation of the California 6C Electronic Toll Standard Version 1.0, dated May 5, 2017
 - Based on 6C Coalition's 6C Standard Rev 3.1.
 - Did not incorporate a requirement for certification by OmniAir
 - CTOC also adopted a 6C ETC Supplemental to reference OmniAir certification since the CA 6C ETC Standard does not.



Background



- 6C Coalition has adopted a new version of their ETC standard as of November 2023
 - Version 4.0
- CTOC sent a request on April 26, 2024, asking department to consider adopting this standard for use in California. Reasons for this include:
 - Consistency with the latest industry standard
 - Ensure interoperability among tolling industry equipment when transponder programming updates occur
 - Ensure that all states using 6C tolling technology will be using the same standard



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Version 3.1 versus Version 4.0

- What's New in Version 4.0
 - Evolving standard, memory map update (CRC for Ull validation)
 - The User Memory bank (512 bits requirement previously) is made optional; it is not being used and no operator has plans for its use
 - The new standard preserves backwards compatibility with previous standards
 - No longer includes a requirement to use OmniAir for certification



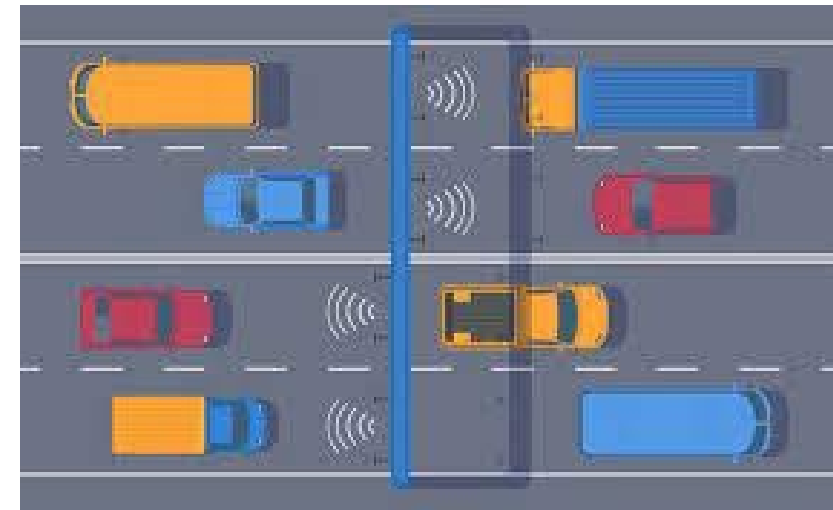
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Version 3.1 versus Version 4.0

- Impacts to Transponder Issuers
 - Can continue issuing CA ETC Standard transponders – no impact
 - If issuing Version 4.0 transponder – must encode CRC check
- Impacts to Toll Operators
 - At minimum must be able to accept transponders with Version “4” – small cost (no cost if all CTOC operators implement reader/system change)
 - Implement the CRC check in their toll system (reader configuration, back-office reporting/notification) – some cost

Options Under Consideration for California

- Option 1: Update to a CA Version 2.0 based off the 6C Coalition Version 4.0
- Option 2: Adopt the 6C Coalition Version 4.0
- As part of both options, Caltrans is considering adding a reference to the ISO/IEC 18000-63 third edition dated November 2021
 - This would be in addition to the older standards already incorporated by reference in the regulation





Questionnaires



- A questionnaire on this proposal was provided to all potentially interested parties
- Questionnaires were due back to Caltrans by July 19
- We will still accept questionnaires until the end of this week
 - Snail Mail: 1120 N Street, Mail Station 36, Sacramento, CA 95814
 - Email: title.21.changes@dot.ca.gov

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Questionnaire

Regarding Adopting the 6C Coalition AVI Standard Version 4.0 in the Title 21 Protocol for Automatic Vehicle Identification (AVI) Regulation

The California Department of Transportation (Caltrans) is currently considering the development of a regulatory change that would replace the "California 6C Electronic Toll Collection Standard" with the "6C Coalition AVI Version 4.0 Standard" as a Document of Reference in the AVI regulation found in Chapter 16 of Division 2 of Title 21 of the California Code of Regulations.

Caltrans would like to receive input from all interested stakeholders as to their views on this proposal and will be holding a public workshop on July 25, 2024 to solicit initial comments.

In anticipation and in connection with this workshop and other activities to facilitate public participation in the regulatory process, Caltrans is providing this questionnaire to all potential stakeholders. This information will greatly assist Caltrans as it begins the process of considering a regulatory change.

Please provide your responses following each question. Please feel free to forward this

Workshop Format



- This is a workshop, not a hearing
 - Agencies that utilize AVI protocol will be called on for input
 - Vendor input
 - “Open forum” for follow up
- What we want to know
 - Which option your agency would support
 - Do you support adding the updated ISO spec?
 - Do you anticipate any additional costs associated with the revision?
- Please provide us with any formal statements shared during the meeting
 - Email: title.21.changes@dot.ca.gov



Next Steps in Rulemaking Process

- Caltrans will take the comments received today and afterwards and will use them in developing the proposed regulation
- The proposed regulation will be made available for public review and comment by September
 - 45-day review and comment period
 - No public hearing planned
- Upon review of comments, the final regulation will be posted
 - Time for final posting TBD



Caltrans AVI Website

Caltrans has a website with information on the AVI protocols: <https://dot.ca.gov/programs/traffic-operations/electronic-toll>

- This site contains a link to the current technical specifications
- It will also host the documents and other data associated with any planned rulemaking
 - Questionnaires
 - Materials from today's workshop