Connected Vehicle Pilot Deployment Program Independent Evaluation:

Program Evaluation Survey Plan

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16. Abstract

This document describes the approach to be taken by the TTI Connected Vehicle Pilot Deployment (CVPD) Evaluation Team for eliciting feedback and lessons learned pertaining to the benefits and challenges of the CVPD Program structure and process from CVPD Program stakeholders. For the purposes of this document, a stakeholder is defined as a person associated with USDOT CVPD Program manager and deployment teams; site deployers; safety evaluator (Volpe); deployment site leads and evaluation team; and other critical stakeholders. The stakeholder data collection will implement qualitative interviews and a workshop.

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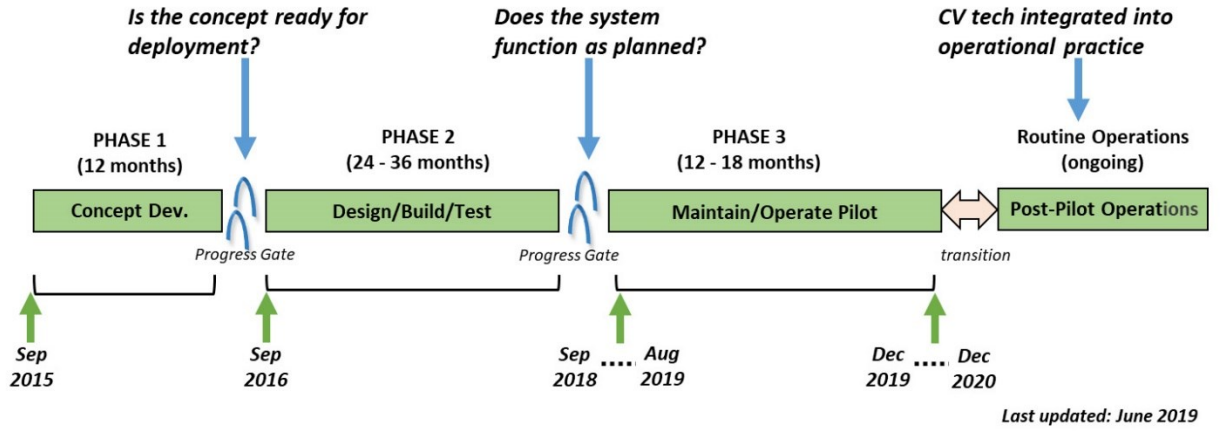
Chapter 1. Introduction

This document describes the approach that the Texas A&M Transportation Institute (TTI) Connected Vehicle Pilot Deployment (CVPD) Evaluation Team will use to gather information on the impacts of the U.S. Department of Transportation (USDOT) CVPD Program's structure and processes. The purpose of this data collection is to gather information from those persons highly involved in the CVPD Program (i.e., stakeholders) to assess whether the program's structure and processes facilitated or hindered the attainment of its vision and goals. The CVPD Program vision was to use USDOT-initiated pilot deployments in Wyoming, Tampa, and New York City to achieve three goals: (a) spur innovation among early adopters of connected vehicle (CV) application concepts; (b) demonstrate the potential safety, mobility, and environmental benefits associated with CV deployments; and (c) create sustainable momentum for nationwide deployment of CV technologies (*1*). The results of this stakeholder data collection will be valued by other entities seeking to undertake a similar large-scale pilot in the future. Figure 1 shows the general activities and timeline associated with each phase of the CVPD Program. This timeline will be used in the scheduling of interviews, as noted on the next page.



Source: USDOT, ITS JPO

Figure 1. Timeline of the Connected Vehicle Pilot Deployment Program.

Scope

The stakeholder data collection is being conducted as part of the overall Task E CVPD Program evaluation. For the purposes of this plan, a stakeholder is defined as a person associated with USDOT CVPD Program manager and deployment teams; site deployers; safety evaluator (Volpe); deployment site leads and evaluation team; and other critical stakeholders.

Data Collection Design

The stakeholder data collection will implement qualitative interviews and a workshop. The interviews will be implemented at two points in time: (a) toward the end of the design/build/test phase (Phase 2), and (b) toward the end of the maintain/operate pilot phase (Phase 3).

The workshop will bring together key stakeholders at the USDOT to review and discuss the findings of the interviews and to provide strategic and operational recommendations (and lessons learned) for subsequent activities. It will be held after all of the post-completion interviews have been conducted. The common themes identified in the post-deployment interviews will be used to frame the group discussion, which will explore the themes and other topics in more detail.

Guiding the information collected from stakeholders will be 14 hypotheses that USDOT established when developing the CVPD Program, as noted in the overall program evaluation plan (*2*). Table 1 (also in the program evaluation plan) presents the hypotheses along with their underlying rationale. The topics covered are wide ranging and include solicitation planning; program structure; technological maturity; dedicated short-range communication (DSRC) focus; open data; security/privacy; security credential management system; financial and institutional sustainability; performance measurement/evaluation; communication process; and vision, goals, and impacts. Included in the table are two hypotheses added by TTI (numbers 15 and 16).

Table 1. CVPD Program Foundational Hypotheses.

Topic	Structure & Process Activities	Foundational Hypothesis	Rationale
Solicitation Planning	Pre-Solicitation Outreach	#1—Extensive pre-solicitation outreach will increase the number and enhance the quality of submitted proposals.	The CV pilot program committed a nine-month period prior to the initial solicitation that included a workshop, multiple webinars, and outreach efforts articulating the program vision.
Solicitation Planning	Emphasize Real-World Problem-Solving	#2—Focusing on real-world problem-solving will lead to proposals/projects where a definitive impact could be realized, even if only a limited total number of devices, vehicles, and technology might be deployed.	Pre-solicitation outreach and solicitation criteria emphasized that there must be a problem to be solved (rather than the technology to be deployed). Hypothetical deployment concepts illustrating a problem-focused approach were developed and used extensively in workshops, webinars, and other outreach. The goal was to avoid proposals for technology showcases or temporary field tests that would be dismantled at the end of the deployment period.
Solicitation Planning	Two-Phase Solicitation Structure	#3—Expand the set of potential proposers to include agencies otherwise too small or with cumbersome contracting methods to respond to the pace of Phase 1 activity.	The solicitation structure would allow agencies without the ability to contract/subcontract quickly to respond to the BAA as a sub to a private-sector entity (with presumably more nimble contracting capabilities). Once the deployment concept was fully vetted in Phase 1, then a cooperative agreement (with a longer lead time) could be put in place with a public agency.
Solicitation Planning	Phases with “Go, No-Go” Gates	#4—Two-phase gates (one financial, the other operational) would provide USDOT with needed leverage to encourage sites to adhere to schedule, cost, and scope.	Teams had to show progress toward a unified deployment concept or lack of flaws in institutional or technical planning or be dropped after Phase 1. The Phase 3 gate was operational (i.e., a decision at the site and federal levels to proceed to operations or not based on a risk assessment—will deployments operate safely, securely, and as designed?).

Topic	Structure & Process Activities	Foundational Hypothesis	Rationale
Program Structure	Post-Award Collaboration among Deployment Sites, Not Competition	#5—Collaboration among sites would provide more value than creating a competitive "funnel" program with roughly twice as many Phase 1 participants than Phase 2–3 awardees.	Cooperation/collaboration among site cohort, using positive peer pressure rather than competitive structure, would ensure schedule/scope adherence and drive innovation.
Program Structure	High Rate of Interaction Post-Award: Meeting Cadence and Topics/ Roundtables	#6—A set of regular structured topical roundtables plus monthly check-ins would ensure sites knew of each other's challenges, resolutions, and progress.	Related to Hypothesis 5, this decision was to engage the sites in a steady set of meetings and roundtables to encourage the sites to compare notes/progress.
Technological Maturity	CV Tech Mature Enough to Mount a Successful Deployment Program	#7—The level of CV readiness was high enough to mount a deployment program. Further, the deployment program would help the industrial base to make these technologies more robust and deployable.	The maturity of CV technologies and applications were known to be in a mixed state—some developed at a research level and others available commercially but not yet deployed at scale or in combination.
DSRC Focus	DSRC—Element of Each Deployment but Not Requirement	#8—Requiring sites to use DSRC in some way as a part of the deployment, but not requiring use for all applications, would allow more realistic, practical, and effective deployment concept.	The program wanted to encourage deployers to consider logical utilization of DSRC technologies, both to determine their level of readiness and to test utilizing the 5.9 GHz spectrum at a deployment-level scale.
Open Data/Open Source	Open Data and Open Source Required of All Deployments	#9—The open source/data requirement would not put off serious deployers, would not prove too onerous, and would assist in technology transfer to deployments outside of the CV pilot program.	The sharing of deployment-related data and code was a requirement from pre-solicitation and through all three phases.
Security/ Privacy	Cyber Security and Privacy Protection Emphasized	#10—An early emphasis on cyber security and privacy would reduce the risk of cyber- or privacy-related issues in the operational phase of the deployments.	Phase 1 deliverables on security and privacy would ensure that sites considered these topics early, rather than late, in the project.
Security Credential Management System/ Certification	Certified Devices Connected with a Credential Management System Required	#11—Similar to the technical maturity hypothesis (#7), the dependence of the program on external certification and credential management would speed technology maturation without the program itself having to directly finance/manage their creation.	The CV pilot program recognized the need for device certification and centralized credential management and made these requirements for the sites, although neither a proven certification process nor a large-scale Security Credential Management System (SCMS) existed.

Topic	Structure & Process Activities	Foundational Hypothesis	Rationale
Financial/ Institutional Sustainability	Financial Sustainability after Federal Funding Emphasized	#12—By reiterating the need for long-term financial sustainability of the deployments, the program would reduce the risk of the deployed technologies being removed at the end of the funding period (as in field test) and the risk of the sites developing a long-term need for federal funding to continue.	Phase 1 deployment concepts evaluated for financial sustainability before Phase 2 funding. Independent evaluation of financial sustainability.
Performance Measurement/ Evaluation	Sites Required to Implement a Performance Measurement Capability	#13—A performance measurement capability would reinforce a performance-driven management of the system, allowing impacts to be more easily observed and quantified—even after a transient, complementary independent evaluation was completed.	Integrated performance measurement for sites was required, in addition to support of a supplementary independent evaluation.
Communication Process	Sites Required to Participate in a Range of Structured, Coordinated Communication Activities	#14—Communication in a variety of forms, but structured and coordinated by the program, would help early deployers and shield the sites from numerous repetitive information requests.	Sites were required to participate in outreach events, conduct webinars/showcases, and document plans and findings in some detail so other early deployers would benefit.
Program Vision and Goals	Overall Program Structure and Process Assessment	#15—The overall effect of the program's innovative approaches and roadmap of activities resulted in outcomes that were positive to the USDOT team.	A set of new program structures and processes were introduced.
Program Vision and Goals	Overall Program Vision	#16—The CV pilot program met the vision laid out at the onset of the program.	A set of new program structures and processes were introduced to achieve a specific vision and goals.

Source: Email from Karl Wunderlich, Noblis. Received March 29, 2019.

Chapter 2. Target Stakeholders

For the purposes of this program evaluation plan, a stakeholder is a person at USDOT or one of the three pilot sites who is directly responsible for planning, managing, and guiding the CV pilot deployments. USDOT stakeholders are staff of the Intelligent Transportation Systems Joint Program Office (ITS JPO), Federal Highway Administration (FHWA), and Volpe, as well as CV pilot USDOT team contractors from Noblis. Stakeholders also include the CV pilot site deployment managers and team members; however, their input on the program structure and process will be gathered as part of the stakeholder satisfaction and acceptance surveys/interviews (Task C) (*3*). To the extent possible, the TTI team will ensure that the wording of questions asked in both the stakeholder satisfaction and acceptance surveys/interviews and the program evaluation are the same.

Potential Target USDOT Stakeholders

Different data collection activities will be used to collect information from the stakeholders due to varying roles in the CVPD Program.

- Qualitative interviews conducted toward the end of Phase 2 will address data needs related to solicitation planning as well as program vision and goals. These interviews will be in the form of one-on-one interviews conducted by phone.
- Qualitative interviews conducted toward the end of Phase 3 will address data needs related to program structure, technological maturity, DSRC, open data, security and privacy, credential management, financial and institutional sustainability, performance measurement, and communication process. These interviews will target all of the potential stakeholders listed in Table 2 and will be in the form of one-on-one interviews conducted by phone.
- The workshop will be held after all interviews have been completed to foster additional dialog among a subset of the stakeholders identified in Table 2 that have been most involved in the CVPD Program for its duration. The workshop will be used to foster cross-stakeholder discussion about challenges, solutions, and lessons learned. It will also be used to confirm and clarify key findings from the interviews.
- Stakeholders from the sites will be interviewed as part of the Task C long-term post-deployment interviews.

Table 2. Potential Persons to Be Interviewed from USDOT.

Role	Agency	Person
CV Pilot USDOT Program Manager and CV Pilot USDOT Site Agreement Officer Representatives (AORs)—Wyoming	ITS JPO	Kate Hartman
CV Pilot USDOT Site AORs—New York City	FHWA	Jonathan Walker
CV Pilot USDOT Site AORs—Tampa	FHWA	Govind Vadakpat
CV Pilot USDOT Evaluation Team	FHWA	Walter During
CV Pilot USDOT Evaluation Team	FHWA	Tom Kearney
CV Pilot USDOT Evaluation Team	FHWA	John Halkias
CV Pilot USDOT Evaluation Team	FHWA	Neil Spiller
CV Pilot USDOT Evaluation Team	FHWA	James Colyar
CV Pilot USDOT Evaluation Team	FHWA	Jim Sturrock
CV Pilot USDOT Evaluation Team	FHWA	Volker Fessman
CV Pilot USDOT Evaluation Team	FHWA	Deb Curtis
CV Pilot USDOT Evaluation Team	FHWA	Ed Fok
CV Pilot USDOT Evaluation Team	ITS JPO	Mike Pina
CV Pilot USDOT Evaluation Team	FHWA	Michelle Noch
CV Pilot USDOT Evaluation Team	FHWA	Gene McHale
CV Pilot USDOT Evaluation Team	FHWA	Steve Sill
CV Pilot USDOT Team Contractor	Noblis	Karl Wunderlich
CV Pilot USDOT Team Contractor	Noblis	Meenakshy Vasudevan
CV Pilot USDOT Team Contractor	Noblis	Sampson Asare
CV Pilot USDOT Team Contractor	Noblis	Peiwei Wang
CV Pilot USDOT Team Contractor	Noblis	Kathy Thompson
USDOT Safety Evaluator	Volpe	Wassim Najm
USDOT User Acceptance Assessment	Volpe	Margaret Petrella
USDOT Secure Data Commons Team	ITS JPO	Ariel Gold
USDOT Secure Data Commons Team	Volpe	Alexis Zubrow

Confidentiality, Informed Consent, and Potential Risks

The data gathered in the qualitative interviews and workshop will be kept confidential. Participants can be identified by the TTI CVPD Evaluation Team; however, only authorized team members will have access to the list of stakeholders that will be interviewed. The list will not be linked to any individual responses to questions posed in the qualitative interviews or workshop. All personally identifiable information (PII) will be kept separate from data for analysis. Data will be kept on secure servers.

Informed consent procedures approved by the Texas A&M University Institutional Review Board (IRB) will be followed in conducting the interviews and workshop. Participants will be sent the consent form via email prior to scheduling an interview appointment or participating in the workshop. Each prospective participant will have an opportunity to ask questions about the study and will be provided with ample time to decide whether or not to participate.

There is minimal risk associated with this stakeholder data collection. Even though the PII will be separated from the information gathered, there is the risk that an individual could be identified through his/her responses to questions. To minimize this risk, the TTI CVPD Evaluation Team will scrub any publicly released reports or technical memoranda to ensure that a specific individual cannot be deciphered through his/her responses.

Chapter 3. Qualitative Interviews

The TTI CVPD Evaluation Team will conduct qualitative interviews with persons at USDOT or contractors from Noblis who have been responsible for planning, managing, and guiding the CVPD Program. The objective of the interviews is to gather information on the impacts of the CVPD Program's structure and processes on the attainment of its vision and goals. The interviews will be implemented at two points in time: (a) toward the end of the design/build/test phase (Phase 2), and (b) toward the end of the maintain/operate pilot phase (Phase 3). The interviews will explore contextual issues for the solicitation planning, program structure, technology issues, security and privacy, financial and institutional sustainability, and communication process well as overall perspectives on vision, goals, and desired impacts of the program. The interviews will be conducted by phone.

Identifying, Selecting, and Inviting Interviewees

The TTI CVPD Evaluation Team has selected interviewees using a purposeful sampling methodology. The process involved identifying and selecting individuals that are especially knowledgeable about the history, structure, and processes of the CVPD Program. The target stakeholders for interviews are identified in Table 2 in the preceding chapter. The interview plan is as follows:

- Interviewees for the qualitative interviews conducted toward the end of Phase 2 will be FHWA and Noblis staff who were involved in solicitation activities and knowledgeable about the program vision and goals. The interviews will take place on the phone with one person at a time.
- All persons identified in Table 2 will be potential interviewees for the qualitative interviews conducted toward the end of Phase 3. These interviews will also take place on the phone with one person at a time.

The TTI CVPD Evaluation Team will send email invitations to all potential interviewees. The email will contain information about the study purpose as well as the interview method, questions, and duration. An informed consent document will be included as an attachment to the email invitation. The participants will be asked to provide a convenient day/time for an interview. After a response is received, an interview will be scheduled.

The TTI CVPD Evaluation Team will conduct interviews with one interviewee at a time via telephone.

Interview Guide

A semistructured interview format will be used. In semistructured interviewing, a guide is followed, with questions and topics that must be covered. An interviewer has some discretion about the order in which questions are asked, but the questions are standardized and probes may be provided to ensure that the researcher covers the correct material. This kind of interview collects detailed information, which is needed for the stakeholder assessment, but in a way that is somewhat conversational.

Qualitative interviews toward the end of Phase 2 will be short since information collected will be limited to solicitation planning and program vision and goals. The interview guide will be developed to include 10–15 questions, resulting in an interview length of about 30–45 minutes.

Qualitative interviews toward the end of Phase 3 will be longer since they will collect information on program structure, technological maturity, DSRC focus, open data, security/privacy, security credential management system, financial and institutional sustainability, performance measurement/evaluation, and communication process. The interview guide will contain around 30–35 questions, but interviewees will only be asked questions about the topics they are most familiar with. One person will be interviewed at a time, resulting in an interview length of about 45–90 minutes per person.

All interviews will begin with an explanation of the evaluation purpose, scope, and sponsors as well as a description of the purpose and process for the interviews. Confidentiality of the collected information will be highlighted (i.e., responses will not be attributed to specific individuals) along with the IRB/human subject protection requirements. Following the introduction, the main body of the interview will begin.

Implementing Interviews

The questions will be sent to the individuals in advance of the interviews to help facilitate discussion. Two members of the TTI CVPD Evaluation Team will participate in each interview. One individual will lead the interview, ask the questions, and facilitate the discussion. The second individual will take notes using a laptop computer. The informed consent form will address this process and specify that recording of the session will be voluntary. At the appointed time, the interview will take place. After internal review, an interview summary will be emailed to the participant for his/her review and approval.

The first three interviews will serve as a “rolling pilot” to test the question wording for clarity and efficacy. The interview guide could be tweaked after such interviews.

Table 3 shows the topics with representative questions that TTI will use in the interviews. Links to hypotheses are noted in parentheses, and questions intended for sites (Task C) are indicated. Many of these questions are already in the interview guides for Task C.

Interview Analysis Methods

Immediately following the interviews, the interviewers will review, proof, and clarify the interview notes. The interviewers will then send the interview notes to interviewees to check accuracy and/or to amplify or clarify their answer. The interview data will be entered into an online data capture form that is organized by topic. The TTI CVPD Evaluation Team will summarize the responses by topic and hypothesis across all interviewees. The team will prepare a preliminary report highlighting the common themes emerging from the interviews, as well as unique perspectives. The summary report will be organized by topic and hypothesis, with a final section presenting overarching themes.

Schedule for Interviews

The interviews conducted prior to completion of the deployments will be completed in the fall of 2019. The interviews conducted subsequent to completion of the deployments will be held in calendar year 2020.

Table 3. Interview Questions by Topic.

Topic	Draft Questions
Solicitation Planning	1. Did you participate in the USDOT workshops and webinars prior to release of the RFP? 2. Were you able to answer all the questions raised during the pre-solicitation phase? 3. Were you able to distribute all the information that you believed relevant prior to the release of the RFP in the pre-solicitation phase? 4. After the initiation of the RFP and throughout the execution of the project, did you become aware of additional information that you probably should have distributed in the pre-solicitation? 5. What is your advice for including an extensive pre-solicitation phase in future projects similar to the CV pilot program? 6. Can you give examples of any issues that surfaced among pre-solicitation candidates and the problem-solving communications from USDOT that were meant to resolve them? 7. Was the two-phase solicitation process successful at encouraging proposals? (#1) 8. To what extent did the two-phase solicitation enhance the quality of the submitted proposals? (#1) 9. Do you think the two-phased solicitation approach promoted public-private collaborations (as opposed to the more traditional client-contractor relationship)? (#1) 10. To what extent do you think the proposals emphasized actual, real-world transportation issues that needed solving (rather than showcased technologies)? (#2) 11. Given your experiences with the deployments, what are the advantages and disadvantages of using the two-phase solicitation approach? Did it result in more diverse proposers? Better projects in the end? (#3) 12. Do you think it allowed the applications to reach the deployment phase? Would you recommend the two-phase approach in other deployments? Why/Why not? (#4)
Program Structure	13. To what extent did the program structure (which emphasized cooperation among sites as well as meetings and roundtables) promote collaborations among the sites? In what ways could collaboration have been enhanced? (#5) (sites) 14. Can you give an example of where and how collaboration occurred in addressing issues or problems to the benefit of all the sites? (#5) (sites) 15. In terms of the roundtable discussions, was the frequency adequate? Were the topics of discussion useful? In what ways “yes” and in what ways “no.” (#6) (sites) 16. In your opinion, what benefits did the sites obtain from the topical roundtables? For example, did they increase awareness of each of the site’s challenges, resolutions, and progress? (#6) (sites) 17. To foster communications and collaborations, FWHA used several roundtable meetings including the CV program meetings; the Technical Roundtables; the Stakeholder Outreach Roundtables; and the Performance Management, Evaluation, and Human Use Approval Roundtables. What modifications would you propose for the roundtables in future projects like

Topic	Draft Questions
	the CV pilot program? (#6) (sites) 18. Did a process-oriented approach work? (For this question, the "process-oriented approach" refers to the two-phase approach with the decision-gate separating the planning from design [Phase 1] and design from operation [Phase 2].) 19. Are you familiar with the program roadmap? (Send to all in advance) If yes, did the program roadmap include the appropriate components? 20. To your knowledge, were the guidance documents and templates provided by USDOT helpful to the sites? 21. After your experience with the CVPD Program, what modifications would you recommend to the structure of the program roadmap?
Technological Maturity	22. At the pre-solicitation phase, what was your perception of the readiness of the technologies? Their robustness? Their ability to be deployed? (#7) (sites) 23. How did your perception change at the deployment phase? (#7) (sites) 24. What surprises, if any, did you encounter related to the technology? Were changes made to the scope to contend with the surprises? How did that impact schedule? Cost? (#7) (sites) 25. What changes to the program structure could have improved the alignment of industry readiness with the CVPD Program? 26. In your opinion, did the deployment program help industry make these technologies more robust and deployable? (#7) 27. What recommendations do you have regarding technological maturity for future projects? (#7)
Dedicated Short-Range Communication	28. Based on your experience in the CVPD Program, how would you rate the readiness of DSRC to support pilot deployment? How would you rate its maturity? (sites) 29. What issues were encountered? How did the sites address those issues? (sites) 30. What other communication technologies were used to communicate? And what issues arose? (sites) 31. What are your thoughts on the fact that USDOT did NOT require the use of DSRC for all applications? What impact did this have on the deployments? (#8) (sites)
Open Data	32. How would you characterize the site's adherence to the open data/open source requirement? 33. How was the open data requirement perceived by the sites? (#9) (sites) 34. Were there any surprises relating to the open data requirements? How did that impact schedule? Cost? (#9) 35. Do you think the requirement will assist in tech transfer to deployments outside the CV pilot program? Why or why not?

Topic	Draft Questions
	36. What steps/actions could USDOT take to ensure openness in future deployments?
Security/Privacy	37. What guidance did you give the sites related to privacy and security? 38. In what ways was the early emphasis on privacy and security beneficial to the deployments? (#10) (sites) 39. What issues did the sites encounter related to cybersecurity and privacy protection? (sites) 40. What lessons learned can be drawn from their experiences? (sites)
Security Credential Management System	41. How would you describe the state of SCMS readiness? (#11) (sites) 42. What factors contributed to this? (sites) 43. How did the SCMS state of readiness impact the deployments? (#11) (sites) 44. What are your recommendations regarding the SCMS for future projects similar to the CVPD Program?
Financial/Institutional Sustainability	45. In what ways did USDOT think about the financial sustainability of deployed technologies after federal funding support would cease? (#12) 46. How did USDOT communicate with the sites about this issue? (sites) 47. What are your recommendations to better ensure the financial stability of technologies deployed in the future? (#12) (sites)
Performance Measurement	48. How valid were the performance measures developed by the sites in measuring performance-based impacts of the deployed technologies? How effective? 49. In your opinion, are the sites capable of using the information derived from the analysis of performance measures? If yes, what are potential application areas? If no, what types of resources or guidance would be necessary for them to do that? (#13) (sites)
Communication Process	50. Was the communication process, structured and coordinated through FHWA, effective in shielding the sites from numerous repetitive requests for information? (#14) (sites) 51. Was this communication efficient? (#14) (sites) 52. Was it successful? What modifications could be made to enhance its success? (#14) (sites)
Vision and Goals	53. Overall, would you say that the program's results and outcomes were positive for USDOT? (#15) 54. Was the program successful at encouraging partnerships of multiple stakeholders? What about deploying applications that utilized data captured from multiple sources? Being inclusive of all elements of the surface transportation system?

Topic	Draft Questions
	55. How did USDOT help the sites make the jump from research to practical deployment? What obstacles had to be overcome? What obstacles remain? 56. What recommendations do you have for ensuring successful achievement of vision and goals in future projects like the CVPD Program? (#16) 57. To what extent do you think that the deployments have clearly identified pathways for sustaining the deployments over a significant period? (#16) 58. How replicable are the deployments at the three sites to other regions? (#16) 59. Was the program successful in spurring innovation? If so, how? (#16) 60. Has the program created momentum for more widespread deployment?
Final Thoughts	61. Do you have any final thoughts or comments regarding the CVPD Program? Is there anything we didn't cover in the interview?

Chapter 4. Workshop

One workshop will be conducted after all of the interviews that occur subsequent to completion of the deployments have been done. The purpose of the workshop is to foster additional dialog on the topics of the interviews and to identify lessons learned. The common themes identified in the post-deployment interviews will be used to frame the group discussion, which will explore the themes and topics related to the hypotheses in more detail.

Workshop Participant Recruitment

Workshop participants will represent all of the stakeholders identified in Table 2 that have been most involved in the CVPD Program for its duration. It is expected that about 25 persons will participate in the workshop. All will be individuals who have participated in the interviews. The TTI CVPD Evaluation Team will coordinate with USDOT in identifying persons to be invited to the workshop.

Workshop Format

It is envisioned that this workshop will be one day in duration. It can be held at offices of USDOT or TTI in Washington, DC. The TTI CVPD Evaluation Team will develop open-ended questions designed to facilitate and guide the discussion in the workshop, as indicated in Table 4. The questions will be developed based on the findings from the interviews. Core members of the TTI team will lead this workshop in person. Other TTI team members will be notetakers or will participate via web conference.

Workshop Analysis Methods

Notetakers will record the workshop discussion. Notes will be reviewed and proofed immediately following the workshop. Analysis will be comparable to the interview analysis in that the discussion summary will be organized by topic. These data will be entered into an online data capture form that is organized by topic.

The TTI CVPD Evaluation Team will integrate the interview data and the workshop data to inform a synthesis of findings by topic and hypothesis. Triangulation, where possible, will be used to corroborate findings, and if agreement among the data cannot be found, the analysis will provide the differing opinions. External sources from other activities in the program evaluation process will also be used in the verification process. The TTI team will prepare a preliminary report highlighting the common themes emerging from this synthesis, as well as unique perspectives. The summary report will be organized by topic and hypothesis, with a final section presenting overarching themes.

Workshop Schedule

The workshop schedule will be determined once all of the post-deployment qualitative interviews have been completed. It is anticipated that the workshop will be performed in 2020/2021.

Table 4. Workshop Topics and Sample Questions.

Topics	Sample Discussion Questions
Solicitation Planning	In what ways did the pre-solicitation outreach increase the number and quality of the submitted proposals? How well did the deployments match what was initially proposed? Were the deployments really based on real-world problems? Were those problems addressed to some degree during the deployment? What is the evidence of that?
Program Structure	What was most effective in terms of the program structure? To what degree was the roadmap followed? What was the biggest lesson learned in terms of program structure?
Technology Maturity	What do you think were the three biggest technical or technology-related challenges in the deployments? Were these challenges effectively addressed? How were they addressed? What lessons learned can be drawn from these challenges? What were your biggest surprises in terms of the readiness or maturity of the technologies deployed? What changes to the solicitation planning or program structure could have improved the alignment of industry and the CVPD Program?
DSRC	In what ways was requiring all sites to use DSRC in some way as part of the deployment a positive thing? In what ways was it a hinderance? Did the DSRC technologies perform as expected? In what ways yes, no? What about any other communication technologies deployed?
Open Data	Was the open data requirement beneficial to the sites? How was it problematic? Do you think open data requirements are necessary for future deployments similar to the CVPD Program?
Security/Privacy	Sites were required to place early emphasis on cyber security and privacy. Did this forestall any issues? What issues were encountered? When and how were they resolved?
SCMS	What lessons learned can be drawn from the challenges encountered with the SCMS?
Financial Sustainability	Will the deployments continue after federal funding ceases? What are the factors that contribute to their sustainability (or not)?
Performance Measures	How useful were the performance measures in the evaluation? What was learned from the data collected? How will USDOT use this information to inform future projects similar to the CVPD Program?
Communication Process	What are the big lessons learned regarding the communication process that was implemented?
Vision and Goals	What are the big “ah-ha” moments in terms of the impacts of the program’s structure and processes on attainment of the program’s vision and goals?

Chapter 5. Issues and Challenges

This chapter discusses key issues and challenges that may impact the data collection activities. The sections also describe mitigation strategies that address some aspects of the identified risks.

Respondent Burden

The CVPD Program has been a complex undertaking with many and varied dimensions (e.g., institutional and technological issues). Many interview questions have been developed in order to effectively cover all of the necessary topics. This situation could lead to extensive respondent burden. The TTI CVPD Evaluation Team has tried to mitigate that burden by implementing the interviews at two points in time and also allowing the respondents to answer only those questions that they are willing or able to answer.

Passage of Time

There will be several years between the determination of the program's vision and goals and the implementation of the solicitation process. Respondents' memories regarding the specifics of these elements may be weakened. Also with the passage of time, it is possible that people may revise their perceptions of original intent based on their knowledge of how events actually played out. Program priorities could change, knowledgeable staff could leave or be reassigned, and documentation could be misplaced. The result could be that informed opinions are unavailable or so few in number that outcomes are not helpful to future program endeavors.

We are capturing information about program vision and goals as well as implementation of the solicitation process in Phase 1, which should limit the duration for memory degradation on these topics. For other topics, the research team will try to use original written documents or other objective information as "ground truth" where they exist. The triangulation of the data from multiple sources should also help to place different people's narrative explanations in context of reality.

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