

# 2023 Transportation Research Board (TRB) Annual Meeting



## Key Takeaways & Lessons Learned



**DRISI**

CALTRANS DIVISION OF RESEARCH,  
INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

Report Designed by:  
Caltrans, Division of Planning and  
Modal Program Management



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# 2023 TRB Annual Meeting Overview

In order to amplify the knowledge captured at the event, this report is intended to summarize key take-aways and improve the return on investment.

This report details Caltrans staff participation at the 2023 Transportation Research Board (TRB) Annual Meeting held January 8 - 12, 2023. Caltrans was able to send 31 delegates representing 16 different Districts/Divisions/Programs within the Department to Washington D.C for this significant meeting. Last year, due to the on-going COVID-19 pandemic, only 6 Caltrans staff attended the 2022 TRB Annual Meeting. The 2023 TRB Annual Meeting was held in-person marking a return to normalcy.

The 2023 TRB Annual Meeting program covers all transportation modes, with sessions and workshops addressing topics of interest to policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions. A number of sessions and workshops focus on the spotlight theme for the 2023 meeting: ***Rejuvenation Out of Disruption: Envisioning a Transportation System for a Dynamic Future.***

TRB is the major national multimodal transportation organization that brings practitioners and researchers together to solve critical transportation problems. TRB provides an information infrastructure that is designed to serve the nation's highly decentralized transportation system in which no single organization dominates. With more than 200 committees, almost every transportation topic is represented in the standing committee structure. Each committee proposes research, shares research findings, sponsors special activities, and provides a forum for transportation professionals to discuss today's and tomorrow's transportation issues.

Caltrans receives substantial benefits from being a sponsoring organization of TRB. Participants of the various TRB activities include management as well as professional staff who keep the focus on practical solutions to issues being addressed.



# Caltrans Delegation



**Tony Tavares**  
Director



**Alan Steinberg**  
Deputy Chief Counsel



**Amar Cid**  
Program Manager,  
Office on Race and  
Equity



**Andrew Quinn**  
Assistant Deputy  
Director, Roadway  
Pricing



**Chad Baker**  
Geospatial Data  
Officer



**Cory Binns**  
Deputy Director,  
Maintenance &  
Operations



**Dara Wheeler**  
Chief, Division of  
Research, Innovation  
& System Information



**David Deluz**  
Deputy Director,  
Office of Civil Rights



**David Moore**  
Director, District 2



**Diana Gomez**  
Director, District 6



**Dina El-Tawansy**  
Director, District 4



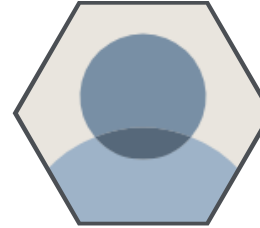
**Eric Sundquist**  
Sustainability Advisor



**Erin Holbrook**  
Chief Counsel



**Gillian Gillette**  
Assistant Deputy  
Director, California  
Integrated Mobility



**Heidi Skinner**  
Assistant Chief  
Counsel

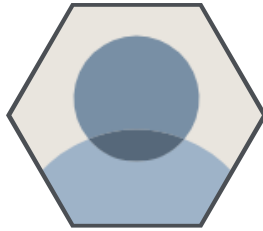


**Jeanie Ward-Waller**  
Deputy Director,  
Planning & Modal  
Programs

# Caltrans Delegation Cont.



**Joe Horton**  
Chief, Office of  
Safety Innovation &  
Cooperative Research



**Jessica Downing**  
Pedestrian and  
Bicyclist Safety  
Specialist



**Ken Murray**  
Chief, Office of  
Standards and  
Procedures



**Leah Fisher**  
Chief, Office of Air  
Quality & Climate Change



**Marlon Flournoy**  
Chief, Division of  
Transportation  
Planning



**Mathew Brady**  
Director, District 1



**Michael B. Johnson**  
Program Manager,  
Asset Management



**Pauline Valenzuela**  
Statewide Innovation  
Coordinator



**Rachel Carpenter**  
Chief Safety Officer



**Ramon Hopkins**  
Chief, Division of  
Construction



**Sang Le**  
Cooperative Research  
Specialist



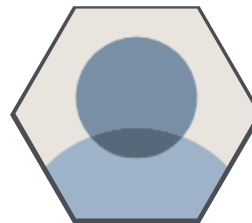
**Sean Nozzari**  
Deputy District  
Director, District 4  
Operations



**Sharid Amiri**  
Senior Transportation  
Engineer



**Tim Greutert**  
Chief, Materials  
Engineering and  
Testing Services



**Tom Hicks**  
Acting Chief, Division  
of Human Resources

# Implementation Highlights



The 2023 TRB Annual Meeting provides opportunities for participants to learn about various research and innovations in all transportation modes. However, it is well understood that research and innovation have little value until it is implemented. The phrase technology transfer has come to mean activities supporting the transition of knowledge into practice, including simple dissemination of research results. **To cultivate technology transfer, each Caltrans employee that attended the TRB Annual Meeting was tasked with identifying an innovation that they will be responsible for implementing.**

This report highlights innovations that support Caltrans 2020-2024 Strategic Plan's Goals of:



**Safety First:**  
**5 Innovations**



**Cultivate Excellence:**  
**8 Innovations**



**Enhance & Connect the Multimodal Transportation Network:**  
**4 Innovations**



**Strengthen Stewardship & Drive Efficiency:**  
**7 Innovations**



**Lead Climate Action:**  
**2 Innovations**



**Advance Equity & Livability in all Communities:**  
**3 Innovations**



## Session: Applying the Safe System Approach to Overcome Challenges

**Implementation Champion:** Sean Nozzari



### Takeaway:

Safe System Approach (SSA) is a common priority among DOTs, the IIJA Act, and the National Roadway Safety Strategy. DOTs are looking for procedures to integrate SSA into undertakings. In workshop, examined a typical case study, discussed challenges and potential solutions that equitably served safety for all users and provided ways to measure performance for competitive system needs. New approaches are needed to prioritize safety projects.



### Action Steps:

Sean will share information and prioritization framework obtained in the form of a scoring matrix with District Safe system lead to pilot its use for comparing, prioritizing, and programming potential projects in SHOPP-015. The matrix will use various factors such as operating speed, vehicular/vulnerable users volumes, and roadway geometric features to provide an overall project score relative to exposure, likelihood, and severity which can be used in prioritizing projects for funding and programming.



### Measure of Success:

Various parameters may be considered to measure success, including:

- Number of programmed crash-risk-based proactive safety 015 projects in SHOPP
- Number of elements added in the State Highway System, directly serving vulnerable users
- Number of geometric features in projects that serve to reduce operating speeds (e.g. turning radii)





## Session: Exhibit Hall

**Implementation Champion:** Joe Horton



### Takeaway:

Hill and Smith has a new system to improve worker safety. The system is designed to help prevent workers from being hit by construction equipment in work zones.



### Action Steps:

DRISI will submit a research request to the RDAC. The objective is to perform a pilot project to evaluate if this safety system is reliable and to see if it can be incorporated into Caltrans business practices. If it works, DRISI can adopt in its maintenance operations as well as make it a contract provision.



### Measure of Success:

If funded, DRISI will get a pilot project that will test the product in a controlled environment. If the pilot proves the technology is reliable, Caltrans can incorporate into the Maintenance Manual as well as place it in contract specifications.

## Session: Poster Session

**Implementation Champion:** Eric Sundquist



### Takeaway:

Vehicle occupancy is hard to determine. Few states collect data. One way to do so would be to use crash data, if that data includes information on vehicle occupants. Virginia DOT had a poster showing how they do this and how to use the information in their project development/selection process. Eric spoke with the presenter briefly about data weighting. If Caltrans has the base data available, Caltrans can call Virginia DOT to explore the data processing issue more deeply.



### Action Steps:

Eric has asked a staff member to explore whether TIMS or other crash data in the state could be used for vehicle occupant tracking.



### Measure of Success:

If TIMS or other crash data can be used for vehicle occupant tracking, Caltrans will develop AVO findings by SHS segment and share the findings with Planning and Managed Lanes implementers.





## Session: Mental Health Issues in Construction and Construction Committee Meeting

**Implementation Champion:** Ramon Hopkins



### Takeaway:

Construction has the second highest suicide rate among industries in the US. There are resources available at the Center for Construction Research and Training. Bullying is one key contributing factor to the suicide rate.



### Action Steps:

- Make improvements to Caltrans “Character of Worker” specification to directly address unacceptable behavior of contractor employees.
- Invite Dr. Mohammed Mehany (Colorado State University) to moderate a panel on suicide awareness at the next AASHTO Committee on Construction (COC) annual meeting.
- Research and implement best practices from various resources provided during this session.
- Work with EAP to develop appropriate suicide awareness training for field construction staff.



### Measure of Success:

- Publication of an improved specification.
- Simplify the process to remove workers from the project who bully or behave inappropriately.
- Host a panel discussion at AASHTO COC.





## Session: Applying the Safe System Approach to Overcome Challenges

**Implementation Champion:** Rachel Carpenter



### Takeaway:

FHWA is building a Safe System Alignment Framework to identify engineering countermeasures that can be implemented to more effectively achieve safety improvements using Safe System principles. The Framework can also be applied to safety improvement programs in order to increase the program's alignment with the Safe System Approach. A Hierarchy of Effectiveness has also been drafted, in order to communicate the order of importance for types of improvements in order to increase alignment with the Safe System Approach.



### Action Steps:

- **Step #1:** Request detailed information on the Safe System Alignment Framework and Hierarchy of Effectiveness from FHWA Office of Safety.
- **Step #2:** Share Safe System Alignment Framework and Hierarchy of Effectiveness with Division of Safety Programs (DOSP) management team.
- **Step #3:** Pursue a pilot with FHWA for application of the Safe System Alignment Framework either as part of the 010 safety project conceptual approval process or to one of Caltrans safety improvement monitoring programs.



### Measure of Success:

Success will be measured by the following methods for each action step.

- **Step #1:** Detailed information on the Safe System Alignment Framework and Hierarchy of Effectiveness obtained from FHWA Office of Safety.
- **Step #2:** Agenda updated for the 2/14/2023 DOSP Weekly Road Safety Leadership Meeting to include an item on "Safe System Alignment Framework and Hierarchy of Effectiveness." Rachel will use detailed information provided by FHWA to deliver an overview of the Framework and Hierarchy to the DOSP management team and facilitate a discussion on the Framework.
- **Step #3:** Completion of a pilot program for either the 010 conceptual approval process or one of Caltrans safety improvement monitoring programs. The pilot program will assess how well the subject project or safety improvement program aligns with the Safe System Approach and make recommendations for modifications in order to increase alignment of subject project or safety improvement program.



## Session: Complete Streets Workshop/Safe Systems Lectern Session and Torts and Liability Committee Meeting

**Implementation Champion:** Heidi Skinner



### Takeaway:

In order to effectively implement the Safe Systems policy through the use of Complete Streets, and to enhance engineers understanding of design flexibility, it is important that training on the legal and practical constructs of "engineering judgment" need to go behind the professional standards lectures and should be a part of the curriculum for all engineering students within the State. Currently, the professional standards component of the classroom education for engineers is being cut from the syllabus or is being significantly curtailed in programs throughout the country. This translates to engineers who do not understand the necessity of design flexibility and how to address deviations from standards through the use of objective, fact-based, well-documented engineering judgment to create projects representative of Safe Systems & Complete Streets. The loss of institutional knowledge through rapid attrition and retirement at public agencies is significantly hampering efforts to train the next generation of transportation engineers.



### Action Steps:

- Heidi will be working with a recently retired engineer who is a professor of civil engineering at San Diego State University, to implement a teaching segment on the legal and practical implications of the use of engineering judgment to achieve stated policy goals.
- Heidi will be working with members of the TRB Tort Liability and Risk Management Committee who are active professors and/or lecturers within their respective states to implement similar training as part of the educational curriculum/syllabus of their schools civil engineering courses.
- Heidi will engage with the technical advisors who create, oversee and execute civil engineering exams within their respective states to contain a question or questions specifically addressing the concept of proper use and documentation of engineering judgment as a component of the state licensing exam.



### Measure of Success:

Due to the time it will take to implement the plan, success will be measured as follows:

- Adding a series of training modules to the Civil Engineering class taught by Heidi's colleague.
- Sharing the training modules with the members of the TRB Committee to have them shared with all of the professors, lecturers and trainers who are teaching engineering courses throughout the country.
- Seeing that questions specific to the concept of appropriate and well documented engineering decisions are made part of the licensing requirements for each state.



# Cultivate Excellence

## Session: Managing through Changing and Evolving Work Environment

**Implementation Champion:** Dina El-Tawansy



### Takeaway:

- All DOTs have significant challenges related to hiring and retaining qualified workforce.
- The hybrid work environment had unintended consequences on the lowest paid jobs in the Department, such as in the Division of Maintenance, where staff cannot keep up with the high cost of living (particularly true in regions like the San Francisco Bay area).



### Action Steps:

- Provide more tele-work flexibility to attract talent across broader geographic areas and appeal to the younger workforce.
- Provide more equitable ways for Maintenance staff to be able to better afford working in the Bay Area by providing "safe parking" or workdays housing for them to stay closer to their jobs on weekdays thus cutting down their travel time and expenses.
- Provide more efficient and timely response on the job.
- Work with HR-Labor relationship towards a geographical deferential



### Measure of Success:

- Ability to hire and retain more people, measured by the percent hired vs. percent still on board a year later.
- Measuring retention in terms of the number of months that staff accumulate prior to leaving the District for a lateral transfer to another region.

## Session: Careers in Motion Networking Fair

**Implementation Champion:** Jeanie Ward-Waller



### Takeaway:

TRB Annual Meeting may provide an opportunity for Caltrans to recruit talented and enthusiastic staff.



### Action Steps:

Work with the new Planning & Modal Program Management Division (PM<sup>2</sup>) to have a recruitment table at next year's meeting. Also, have Planning & Modal Program (PMP) job vacancies advertised through TRB.



### Measure of Success:

A recruitment table at next year's TRB Annual Meeting and all PMP job vacancies advertised through TRB.



## Session: New Attendee Engagement Session

**Implementation Champion:** Sang Le



### Takeaway:

- Learned about the value of continued participation through TRB technical committees.
- Understand the available tools, resources, programs, and extensive research capabilities available to transportation professionals through TRB.
- Networking segment to introduce participants to the committee leadership in their areas of interest.
- Why attendees were at the annual meeting; number one was professional development and number two was finding a new job



### Action Steps:

- The 2022 Caltrans Employee Survey data in which 88% of employees slightly agreed, agreed or strongly agreed that they have the training and development needed to be successful at Caltrans as a guide. Sang plans on incorporating TRB participation to help CT employees further their professional development and maintain a high level of positive response.
- Leveraging TRB participation into opportunities for new career positions that employees may find interesting within Caltrans. This will help the department in having a robust cross-trained, diverse, and more complete workforce



### Measure of Success:

- A good measure may be in the subsequent Caltrans Employee Survey asking if employees have the training and development needed to be successful at Caltrans.
- A higher rate of Caltrans staff on TRB and NCHRP committees and panels.



## Session: Building Resilient Transportation Departments by Recruiting, Retaining, and Training the Workforce of the Future

**Implementation Champion:** Tom Hicks



### Takeaway:

Several DOTs discussed recruiting pipelines such as, but not limited to, veteran and summer internships. FHWA discussed monies made available from The Bipartisan Infrastructure Law (BIL) Section 13007 (Workforce Development, Training, and Education) for workforce development. Additionally, the concept of insulating the talent pipeline was interesting with a focus on stopping the "leaks" through unique ways to retain.

Tom's proposal would be to use dormitory facilities in the off season (summer) to house and train engineering students and or veterans from across the nation. If federal monies would permit it, Caltrans could run a paid summer internship program. Students across the nation could apply. Not only would this aid in building the future workforce, but it would act as a recruiting catalysis when students return to campus. If federal monies can support student travel cost, staffing (cook, on-site management), and operational cost, Caltrans already has four dormitory sites available. If the pilot works and is a benefit to the Department, maybe Caltrans can look at scaling up in future years for other hard-to-recruit/needed occupational groups (surveyors, maintenance, etc.).



### Action Steps:

Tom will reach out to the following contacts he made at TRB: Terri Slaughter, Michigan DOT, and William T. Panos, Gannett Fleming. He wants to better understand the funding opportunities to establish OTJ internships that will benefit those in the community/nation and Caltrans. He also wants to get a better understanding of the utilization of Caltrans' dorm facilities summer operations, operational cost, staffing, and liability concerns in housing interns.



### Measure of Success:

Tom would like to spend 2023 researching, developing partnerships, and building a framework to institute a summer internship academy.



# Cultivate Excellence

**Sessions: Legal and Risk Management Considerations, AJL70 Tort Liability and Risk Management Committee, Wildfires and Transportation: Contending with Escalating Risks**

**Implementation Champion:** Alan M. Steinberg



## Takeaway:

- Liability neutral language is critical to implementation of new programs. (Legal issue)
- Do not implement road diets and assess need for widening key corridors in high-risk fire areas along exit routes. (Non-legal issue)



## Action Steps:

Continually engage with programs, divisions, and districts on the development of policies, procedures, guidelines, and talking points using liability neutral language. This includes review of documents and suggested revisions, as well as trainings.



## Measure of Success:

Changing the messaging, policies, procedures, guidelines, and talking points used by the Department.

**Session: Building the Future Transportation Workforce**

**Implementation Champion:** Dave Moore



## Takeaway:

During this session, attendees learned the multitude of activities that one State DOT is doing to build and recruit a workforce. Efforts started at all levels of education in the schools and included other apprenticeship programs. While dozens of activities were noted, nothing extraordinary stood out. The session brought to mind all the past programs and outreach Caltrans used to do in the District to grow the workforce of the future. Caltrans used to participate in elementary school activities, high school career fairs, STEM, Kids Day, Science Bowl and many other items. Most of this has been discontinued over the past several years.



## Action Steps:

Meet with District 2 Executive leadership and discuss the activities Caltrans used to do and in what capacity. Brainstorm what leadership wants to carry forward and bring back while identifying key early adopters that would be interested in leading this effort then develop a plan to implement. The implementation plan should consider an equitable process for determining where to focus efforts.



## Measure of Success:

Implementation of outreach activities.



## Session: FHWA Innovation Community of Practice Committee Meeting

**Implementation Champion:** Pauline Valenzuela



### Takeaway:

Concept from Indiana Department of Transportation.

Employee recognition is important and even small gestures make a big difference. Even a small sticker provokes pride and empowerment.

By installing a sticker/email badge recognition program, innovative employees feel recognized and empowered to be innovative and are able to showcase their efforts to colleagues. The sticker recognition program will handout stickers for hard hats and desks that showcase they have submitted an idea to The Innovation Exchange or other avenue through the headquarters Innovation Team. Besides the actual sticker, employees who have implemented an innovation will receive a photo (.jpg/.png) to add to their signature that showcases they are an innovator.



### Action Steps:

This idea is extremely easy and simple, yet effective. The Innovation Team has already started a similar process but with a different recognition item. It has already proven to be successful.

Steps are simple:

- Assign someone on team to take the lead and maintain the innovation sticker/badge recognition program
- Work with contractor (CSUS) to design and print stickers that indicate they have submitted an innovation. Also create a .jpg with similar design to be added to email signatures.
- Email recipients by email, including the signature badge
- Send out stickers by mail
- On a monthly basis, monitor new innovations added and send new submittals stickers and email badges.



### Measure of Success:

Follow-up and feedback will be the biggest indicator of the sticker recognition program success. An increase in badges in signature lines will also help determine success.

The Innovation Team made an attempt to offer electronic signature badges about 4 months ago and had immediate positive feedback. However, that person left and the effort died with no personnel resources to continue the effort. The plan is to reignite it with new iTeam resource and with support from positive feedback from FHWA, Indiana DOT as well as other states who have similar programs. The sticker for hard hats will also be added to the effort as it has been very successful in other states.





# Enhance & Connect the Multimodal Transportation Network

## Session: Session on ITS Elements

**Implementation Champion:** Cory Binns



### Takeaway:

Caltrans can improve ITS usage by using ITS ideas presented by other states.



### Action Steps:

- Revisiting delegated authority on implementation of ITS element customization to address localized traffic issues. Ped phases, logic processors for signals.
- Learn from Michigan I-94 CAV project. How do smarter roads communicate with smarter vehicles to achieve our transportation goals.
- Follow up on success of free transit pilots being implemented nationally
- Bike superhighways as a transportation option
- Specs for glass aggregate to support GHG reduction
- High tension cable barrier guidance
- Collect national data on SSC's in work zones. Partner with CHP



### Measure of Success:

Exploring/Implementation of the above ideas which leads to at least three process improvements, guidance revisions or spec changes.

## Session: Bicycle Transportation Committee Meeting

**Implementation Champion:** Jessica Downing



### Takeaway:

There is a national effort going on to standardize collection of pedestrian and bicyclist infrastructure data. Standardized pedestrian and bicyclist infrastructure data can improve safety analyses and can enhance exposure data.



### Action Steps:

Jessica met with FHWA and colleagues from other State DOTs, Universities, etc. to discuss challenges and possible solutions. She will provide current research and Caltrans efforts to collect infrastructure data.



### Measure of Success:

Success will be measured by working nationally amongst partners to produce a national schema of recommended infrastructure data to be collected. Caltrans success may be measured by the TSNR project's list of pedestrian and bike infrastructure data to be collected.



## Enhance & Connect the Multimodal Transportation Network

### Session: Managed Lanes' Role in Realizing the Next-Generation Integrated Transportation System

**Implementation Champion:** Andrew Quinn



#### Takeaway:

Managed lanes may have significant safety benefits. Managed lanes have almost zero pedestrian conflict, significantly reduced vehicular conflict, consistent speeds for large vehicles, reduced risk of accidents, and intelligent infrastructure to help monitor road and traffic conditions.



#### Action Steps:

Reach out to Rachel Carpenter, Caltrans Chief Safety Officer, to discuss opportunities for collaboration and to identify any efforts to understand the relationship between priced managed lanes, road safety and collect lessons learned for dissemination to State Roadway Pricing Workgroup.



#### Measure of Success:

By the end of this calendar year, Andrew will meet with Rachel and create a workplan to identify efforts on the relationship between managed lanes and road safety.

### Session: State DOT CEO Roundtable: Developing a Resilient Transportation System for Rapidly Changing World

**Implementation Champion:** Matthew Brady



#### Takeaway:

Found AASHTO President and Washington Secretary of Transportation Roger Millar's points on resiliency to be important. Before Washington State considers widening projects, they want to strengthen and upgrade their existing infrastructure. This also includes rapid bus lines from the north area of Seattle as opposed to widening to add capacity. Millar often gets complaints that "a bus cut me off" when he retorts that with "no, you got in the way of the bus."



#### Action Steps:

To continue to align Caltrans staff with the 2020-2024 Strategic Plan. Caltrans is currently in alignment with using other means of transportation such as rapid transit, buses, rail, walking and bicycling.



#### Measure of Success:

In District 1, the success would be measured by the complete streets elements and making more livable, walkable communities especially in traditionally overlooked communities.



## Strengthen Stewardship & Drive Efficiency

**Session:** Lecture Session related to a Completed Domestic Scan on the Coordination between Asset Management and Bridge Management in the US

**Implementation Champion:** Mike Johnson



### Takeaway:

A number of States practices were presented including a number of methods used to communicate asset management information. A number of these techniques would be beneficial to implement in California.



### Action Steps:

Mike has already presented the information to Asset Management employees in Caltrans and discussed their ability to replicate some of these concepts in dashboards or stand alone graphics to help communicate their asset management messages.



### Measure of Success:

Success will be measured by the availability of graphics, reports or dashboards being developed that utilize these best practices from around the country.





## Session: Leveraging Machine Learning and GIS for Roadway Data Collection

**Implementation Champion:** Chad Baker



### Takeaway:

#### **Determination of speed limits for NHS – Contact: Justin Clarke @ USDOT**

- Project conducted for 5 states to determine the speed limits along the national highway network by using machine vision techniques to locate and read speed limit signs
- Used pavement condition imagery
- Model pulled speed limit info from signs
- Located signs in space (lat/long)
- Obtained directionality based on flow of van
- Used YOLOv5 object detection model
- Used Roboflow SaaS platform (web based computer vision modeling platform) to train and deploy the computer vision model
- Used Google OCR API to read the text off the sign
- Most difficult part was turning the results in a usable GIS layer
  - i. Had to convert point speed data and turn it into linear data
  - ii. Used LRS as basis for creating the layer
- 8 month project

#### **KLD Labs – Tom O'Brien**

- Demonstrated machine vision use case for rail and asset management condition assessments
- Evaluated condition of the rail as well as train cars

#### **SAR-C**

- ML tool to evaluate road condition using satellite imagery
- IRI and Road Quality Index
- Needs specific input data such as pavement type

#### **MassDOT guardrail end treatment detection/determination – David Hurst w/ Patrick Engineering, Jeremy Mei @ MassDOT**

- 9 months, \$400,000 project to use machine vision project to locate and classify guardrail end treatments in state



### Action Steps:

Notify key Caltrans stakeholders of the research efforts so they can use the information to determine if similar efforts would bear fruit for Caltrans. Determine if Caltrans completes the efforts in house or hire others to do it.



### Measure of Success:

Caltrans takes action to utilize the machine vision/machine learning approach to collect field asset information and/or use it for change detection (e.g., sign is missing).



# Strengthen Stewardship & Drive Efficiency

## Session: Contractors Perspective on Alternative Delivery Methods

**Implementation Champion:** Erin Holbrook



### Takeaway:

Contractors support the use of Progressive Design Build as a project delivery method.



### Action Steps:

Erin's initial intent was to work with the Office of Innovative Project Delivery to develop proposed legislation to obtain authority to use Progressive Design Build as an alternative project delivery method. However, her understanding is that legislation has already been proposed. Therefore, she will track the proposed legislation and if it moves forward and is passed, her office will assist the program in standing up the program so it is another successful method of delivering projects for the department. If the legislation is not approved to move forward, she will work with the program to continue to move forward on additional proposals for the legislation.



### Measure of Success:

It depends on what happens with the current proposed legislation. There are many opportunities for success along the way. Getting approval on the proposed legislation would be the first measure of success. Then, getting it through the process so it becomes actual law would be another measure of success, and finally setting up a progressive design build program would be the ultimate success.





## Strengthen Stewardship & Drive Efficiency

### Sessions: Building Information Modeling for Substructure and Artificial Neural Network (for Bridge Foundation/Session and Lecture Session)

**Implementation Champion:** Sharid Amiri



#### Takeaway:

The importance of achieving interoperability for Soil Structure Interaction (SSI) models as it relates to bridge foundation design and the Building Information Modeling (BIM) ecosystem.



#### Action Steps:

Sharid will share what he learned with their GS (Geotechnical Services) management and DES Innovation committee where he represents GS as a member of that committee. In addition, as the chair of the AKG70 TRB committee, he will lead the development of the technology transfer sessions at the national level.



#### Measure of Success:

Taking incremental steps to bring about changes in our state of practice here in GS and DES by leveraging what he learned from TRB annual events. This will be a work in progress and will depend highly on how DES/GS can 1- develop a culture of innovation 2- develop roadmap to incorporate TRB technology transfer and finally 3- to implement it.

### Session: Poster Session

**Implementation Champion:** Tim Greutert



#### Takeaway:

Caltrans can improve their maintenance activities, emergency response, and programming decisions by leveraging data captured by every day vehicles (accelerating, braking, smoothness, etc.).



#### Action Steps:

Tim will discuss with Tom Ostrom if he has suggestions on which Division(s) would already be working on this and who would benefit from this data stream. Tim's thoughts are that Pavement Maintenance could benefit from the data and possibly Structures Maintenance and Inspection. IT, Division of Equipment and Traffic Operations will also be key stakeholders.

Caltrans would need to determine the appropriate legal mechanism to obtain data from vehicles on the road. They could evaluate data obtained only from Caltrans vehicles.



#### Measure of Success:

Evaluate data from street vehicles (Caltrans fleet) and compare to the data collected using Caltrans Annual Pavement Condition Survey.



## Strengthen Stewardship & Drive Efficiency

### Session: Federal Highway Administration (FHWA) Sponsored Innovation Meet-Up

**Implementation Champion:** Dara Wheeler



#### Takeaway:

Most states do not have funding to implement small grass roots innovations.



#### Action Steps:

- To draft a problem statement to submit to AASHTO Special Committee on Research and Innovation (SCRI) to create a new funding program (based on survey results to state DOTs and the unfunded demand) to fund small grass roots innovations for State DOTs.
- To work with the iTeam to create a list of Caltrans proven innovations and add them to executive annual performance reviews.



#### Measure of Success:

- If the problem statement is selected for funding and if and when we can allocate funds to State DOTs to implement innovations.
- Caltrans proven innovations added to executive annual performance reviews.

### Session: Poster Session

**Implementation Champion:** Ken Murray



#### Takeaway:

The use of "Nature Based Solutions" for enhancing and utilizing natural elements in transportation solutions. The new IIJA funding provides for and encourages use of natural based solutions in transportation activities.



#### Action Steps:

Reading the Nature Based Solutions Roadmap and finding ways to incorporate these elements into landscape architecture project components. Looking at incorporation of language into LAP guidance on the use of nature based solutions.



#### Measure of Success:

Success will be measured by beginning to see the appearance of nature based solutions in project designs. Also, by an increase of IIJA funding that promotes the use of nature based solutions.



# Lead Climate Action

## Session: Sustainability and Emerging Transportation Technology (SETT): Highlights from the 2022 SETT Conference

**Implementation Champion:** Charles Stoll



### Takeaway:

The US Department of Energy, in coordination with the US DOT, issued a National Blueprint for decarbonizing the transportation sector by 2050 on January 10, 2023.



### Action Steps:

- Disseminate report within Sustainability Office.
- Review and match up to existing Caltrans plans.
- Develop action plan to modify existing plans and/or access available federal resources.



### Measure of Success:

Modified plans and/or new resources obtained.

## Session: Wildfires and Transportation: Contending with Escalating Risks and Impacts of Climate Change on Rural Areas

**Implementation Champion:** Dave Moore



### Takeaway:

Research is currently being done at the University level that can help with understanding wildfire risk factors. Utilizing this info can help plan and prioritize our maintenance activities to help reduce the risk of large scale wildfire.



### Action Steps:

Initiate discussions with Dr. Stephen D. Wong with the University of Alberta. Dr. Wong is currently doing research work on past wildfires in California including the Carr and Dixie fires located in District 2. In discussion at the annual meeting, Dr. Wong suggested that he would be interested in discussing opportunities to collaborate and tailor some research. The goal would be to engage Dr. Wong further to see if an opportunity exists to provide research activities that would benefit Caltrans and our efforts in terms of wildfire planning. A second action step would include engaging HQ Maintenance staff with this effort to determine needs beyond District 2 that may benefit the entire state.



### Measure of Success:

Successful engagement that leads to an acknowledgment of a need that can be addressed by research. Further success would be the initiating of that research.





## Session: DBE Goal Setting on ACM Project (Alt Contracting Methods)

**Implementation Champion:** David DeLuz



### Takeaway:

The key takeaway is the flexibility we have in setting goals on different types of projects. Our office (Civil Rights) should be much more active and engaged in the early stages of a project's development, and use our flexibility to maximize DBE participation.



### Action Steps:

- Meet with OCR staff (mine) to discuss our current ACM goal setting processes;
- Meet with Project Delivery staff (and district project staff) to identify opportunities to engage sooner in the goal setting process.
- Monitor our efforts to meet with Primes, negotiate goals and monitor goal attainment - and make adjustments as needed;
- Measure outcomes (compared to baseline efforts before these changes).



### Measure of Success:

Success will be measured by the amount of growth in DBE goal attainment during the life of a project (compared to a baseline measurement).

## Session: USDOT Leadership Session on IIJA Implementation

**Implementation Champion:** Jeanie Ward-Waller



### Takeaway:

This session included a panel of Administrators and Deputies from USDOT agencies talking about their priorities and vision for implementing new programs in IIJA. Their comments about equity and investment in disadvantaged communities are particularly helpful for Jeanie's team as they implement new programs like Reconnecting Communities.



### Action Steps:

Taking insights back to Jeanie's teams in Planning and Local Assistance that are collaborating on their state investments to leverage IIJA programs, and managing IIJA program implementation in CA.



### Measure of Success:

Evidence of success will be the transformative projects that come out of the new programs.



## Sessions: Equity and Climate Equity Sessions

**Implementation Champion:** Leah Fisher



### Takeaway:

There is a lot of interest in climate equity and climate risk in the transportation sector and from DOTs. California is doing a lot of great work already, and we can continue to show leadership by piloting implementation of Caltrans Transportation Equity Index and other work into the climate change planning DOTP is leading. We can also learn from other jurisdictions doing innovative work especially at the regional level around the country.



### Action Steps:

Partner with the Office of Race and Equity on climate change vulnerability data and development of risk metrics that include equity and possibly indicators from the Transportation Equity Index.



### Measure of Success:

- Evaluate percentage of investments that benefit equity priority communities.
- Implement updated climate change vulnerability information that considers impacts to equity priority communities.
- This will lead to prioritization of adaptation projects and planning efforts that benefit underserved communities.





**For more information**

**Transportation Research Board**  
[www.trb.org](http://www.trb.org)

**California Department of  
Transportation**  
[www.dot.ca.gov](http://www.dot.ca.gov)

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and System Information**  
[www.dot.ca.gov/research](http://www.dot.ca.gov/research)