

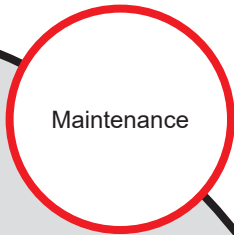


Caltrans Division of Research,
Innovation and System Information

Research



Results



Maintenance

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Project Title:

Continued Evaluation of the TowPlow Trailer System

Task Number: 3085

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Continued Evaluation of the TowPlow Trailer System

This task completed the evaluation of two TowPlow Trailer systems, started under a previous research task (2336). Viking-Cives, the TowPlow manufacturer, advertises that operating TowPlow systems reduces the number of vehicles and drivers needed in multiple-lane highway plowing operations.

WHAT IS THE NEED?

Effective snow and ice removal is essential for keeping Caltrans roadways open and safe for the traveling public. Also, snow removal operations can be resource intensive for Caltrans. There is a need to investigate new equipment with potential for improving the efficiency of seasonal snowfighting operations.

WHAT WAS OUR GOAL?

The main goal of this research was to complete an in-service evaluation, and determine if this equipment could improve the level of service and reduce the cost of Caltrans winter snowfighting operations.

WHAT DID WE DO?

Caltrans Division of Research, Innovation and Systems Information (DRISI) in partnership with the Advanced Highway Maintenance and Construction Technology (AHMCT) Research Center at UC Davis evaluated two TowPlows from Viking-Cives that were modified by Caltrans Division of Equipment to operate within Caltrans guidelines and were deployed to the Kingvale Maintenance Station for winter operation trials.

Both TowPlows were equipped with a 500-gallon brine tank, work lighting, warning lighting, and PreCise mobile data collection units. The PreCise units were capable of detecting the truck speed, truck location, whether or not the TowPlow was deployed, and if the plow blade was up or down. One of the TowPlows was paired to a 475-Horsepower (HP) standard Caltrans plow



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truck. The other TowPlow was paired with a Non-standard 550 HP plow truck.

Field observation of the TowPlows was done at the Kingvale Maintenance Station during the 2016-2017 snow season. During these observations, the researchers monitored both the TowPlow equipment as well as the PreCise data collection units. TowPlow operators and support staff were interviewed and provided valuable feedback on the TowPlow usage. A conceptual cost benefit analysis was performed based on the information obtained in the field observations.

WHAT WAS THE OUTCOME?

The TowPlow evaluation suffered due to issues with the PreCise units not always functioning properly. Because of this, it was difficult to draw conclusions regarding the usage and effectiveness of the TowPlow units in Caltrans snow clearing operations. The results of the Caltrans TowPlow trial deployment can be attributed to a number of factors. First is the cost saving claim that a TowPlow clears two traffic lanes while a standard snowplow truck clears one lane. In the case of Caltrans winter operations, wing plow trucks, which clear a path just a few feet narrower than the TowPlow, are common and the additional snowplowing width gained with the using the TowPlow is minimal. Another major factor is the application of traction sand while snowplowing. Most Caltrans snowplowing operations involve the spreading of sand. Caltrans was unable to utilize a sander-configured TowPlow due to axle weight concerns; therefore, an additional sander truck was needed to follow the TowPlow to apply sand. One benefit of this configuration is the trailing sander truck can prevent motorists from getting next to the steered-out TowPlow trailer (Figure 1). However, this increases the overall operating costs of the TowPlow by adding an additional sander truck to the snowplowing echelon. The additional

costs of adding this sander truck, combined with minimal benefits the TowPlow provides do not justify using the TowPlow to assist in Caltrans snow clearing operations.

WHAT IS THE BENEFIT?

Caltrans is dedicated to evaluating new technologies and equipment that have the potential to help improve the efficiency and safety of snow clearing operations, which directly benefit the traveling public. Sometimes these new technologies and equipment do not give the expected benefits that were envisioned at the outset of the evaluation, as was the case with the TowPlow. Nevertheless Caltrans is dedicated to being a leader in evaluating new technologies that have potential to deliver direct benefits to the traveling public.

LEARN MORE

<http://ahmct.ucdavis.edu/pdf/UCD-ARR-18-01-12-01.pdf>

IMAGES



Figure 1: Additional Sander Truck Trailing TowPlow on I-80