Mobility Video Tutorial

A Freeway Performance Metrics Tool

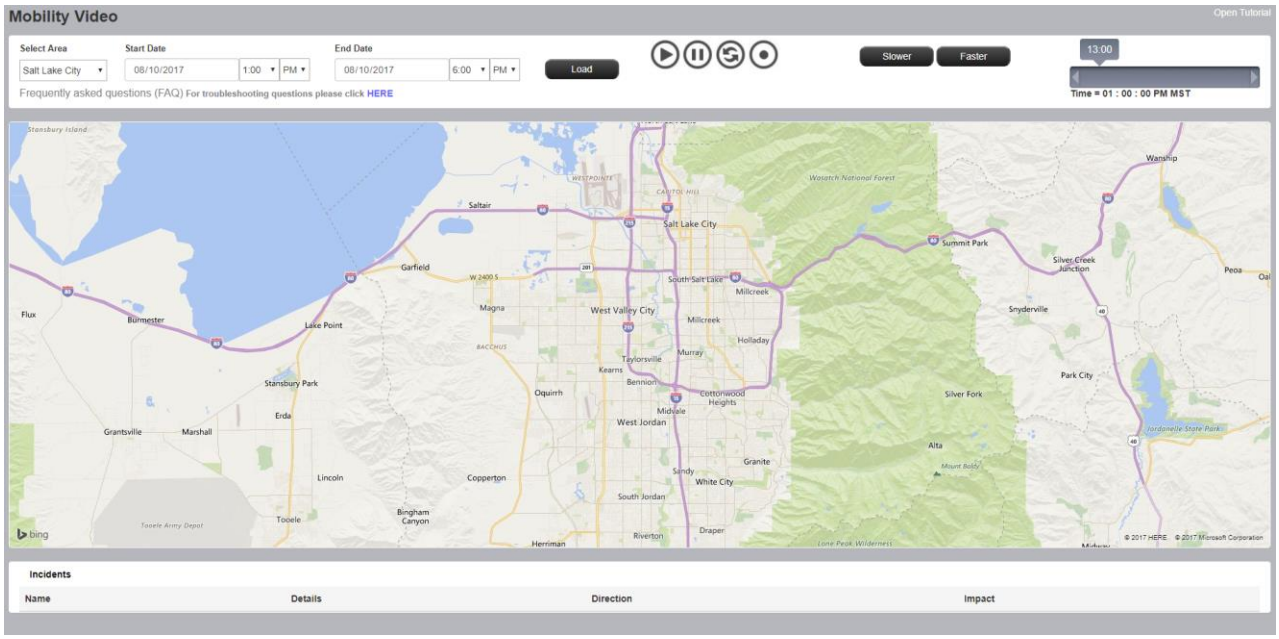
Contents

Overview

The Mobility Video tool is part of the UDOT Freeway Performance Metrics web site. The tool allows users to view and record historical traffic flow, congestion patterns and incidents for a selected date range. This document will describe each section of the Mobility Video website and its uses. Additionally, it provides information and instructions on how the data is processed for mobility video and how it gets downloaded to a user's computer.

Screen Layout

When a user navigates to the Freeway Performance Metrics web site, they access the Mobility Video page by clicking on the "Mobility Video" menu option. The user is then presented with the following web page:



Mobility video screen is divided into three sections - control panel, map and incidents grid.

Control panel

The control panel has the following controls:

- **Select Area:** a dropdown list whereby the user can zoom to a specific area on the map e.g. Salt Lake City.
- **Start Date/ End Date:** date time control for defining the time period for gathering traffic data. Because of the amount of data needed for the video display process, a single video session is limited to a maximum range of 24 hours. The date controls will adjust automatically if a range greater than 24 hours is selected.
- **Load Button:** click this control to start the process for gathering the traffic data between the selected start and end times. When this button is pressed, the web page connects to a separate service responsible for retrieving the data from the database. Because of the large amount of data being processed, the length of the date/time range will directly affect the load times.

- **Play:** once the data is loaded, press this button to begin the animation.
- **Pause:** press this button to pause the animation or recording
- **Reset:** press this button to reset the animation back to the beginning. A confirmation box will pop up for the user to acknowledge before the reset is executed.
- **Record:** press this button to begin the recording of the animation.
- **Slower/ Faster:** video frame rate controls – fast view or slow-motion view for the video. By default the animation frame rate is 1 frame per second. The slower button reduces the frame rate to a minimum of 1 frame per 4 seconds. The faster button increases the frame rate to a maximum of 1 frame per 0.5 seconds.

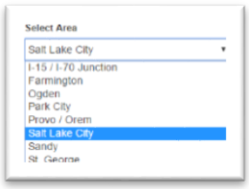
Incidents Grid

The grid will show the real-time incidents that occurred during the span of the animation. The incident grid contains the following information last entered by Traffic Operations during the time of the incident:

- **Name:** the name of the incident, typically contains information about the location of the incident.
- **Details:** displays the description of the incident that was available to the public.
- **Direction:** displays the direction of the incident. Note: direction is a field that Traffic Opperations can set during the incident, there is a possiblity an incident has an incorrect direction.
- **Impact:** This will show the level of impact assigned by Traffic Operations.

Map

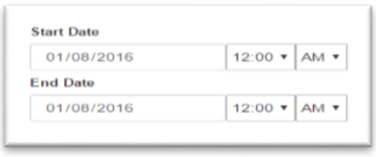
The area drop-down will enable the user to set the map to various predefined locations. Map's default view is set to "Salt Lake City". Users can also use their mouse to grab the map surface and scroll to a location of their choosing.

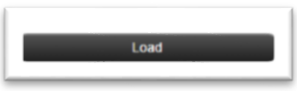


Load Data

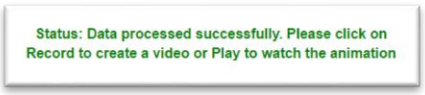
To view an animation, the user needs to identify the parameters by following the steps below:

1. Select the Start Date and Time;
2. Select the End Date and Time;
3. Click on the "load" button to load the data;
4. While the data is loading, the screen becomes disabled. And the Loading… animation is displayed over the map area.





5. Once the data is loaded. A message confirming that request was successfully accomplished or no data found, will appear on the screen.
6. The animation can now be viewed, or video created and/or downloaded (see below)

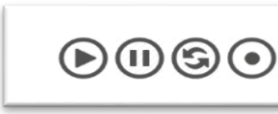


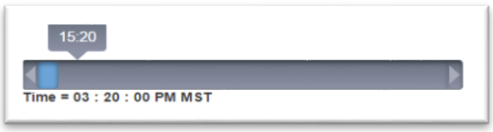
View and Download video

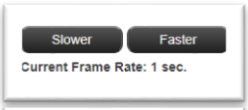
A. View:

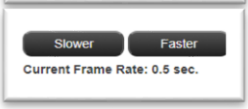
Once the data has been loaded, an animation can be viewed showing the real-time progression of traffic and occurrence of incidents by following the steps below:

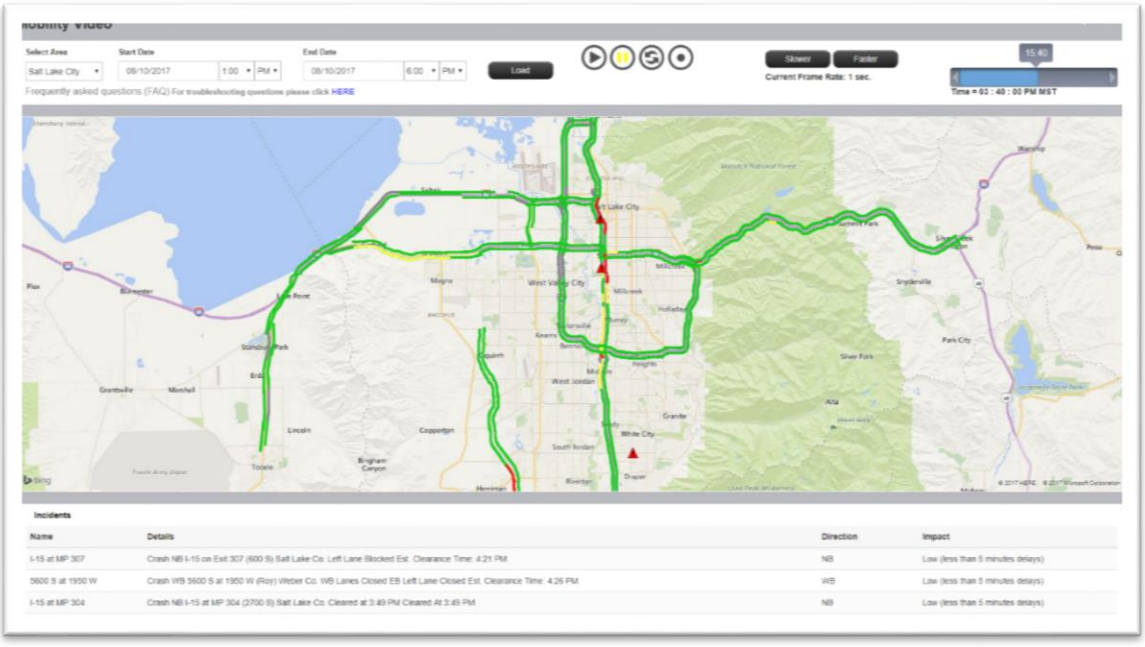
1. Select the play button to play the video on the map showing the incidents and traffic flow as it pertains to the time frame selected.
2. The video can be paused and/or reset as needed using the respective options.
3. The video slider showing the time can be used to rewind and forward the video as needed. To do so, select the time pointer on the slider and move it forward or behind with the mouse. Once it is set to the position along the slider, click the play button to resume watching.
4. The frame rate controls are features that allow the user to view the video in fast forward or slow-motion. By default, the frame rate is set to 1 sec. Selecting the “slower” button will increase the time interval between the making it progresses slowly to a minimum of 4 second intervals. Selecting the “faster” button will decrease the frame rate value. Making the animation progress quicker to a maximum of 0.5 second intervals.









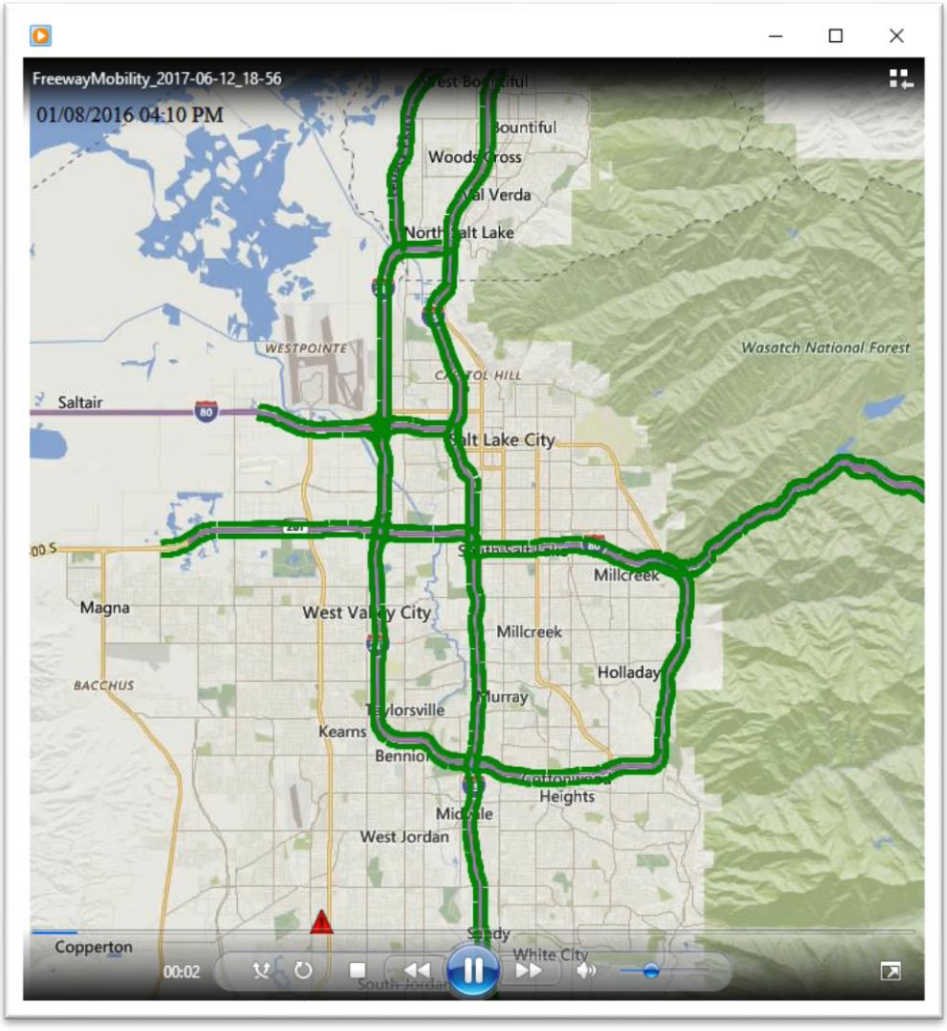


5. Additionally, as the video progresses and incidents occur on the map (indicated by red caution sign), the details of those incidents will appear in the incidents grid and will remain until the incident is removed from the map. Hence, the details of an incident will only be present in the grid when the incident is present on the map. Because all the data for the entire State is being loaded into the web site for creating the animations, all Incidents outside of the current map viewing area are also present in the grid.

B. Download:

Follow the steps outlined below to export an animation to your local computer:

1. To download an animation video, press the record button to start recording the video from the loaded data. Once the recording is completed the option to “Download” the video will appear on the screen.
2. Press the Download Video button to begin the video processing.
3. The user’s browser is responsible for downloading the video file. Make sure your browser settings allow downloading of this type of media content.
4. Once downloaded, the video can be viewed using any media player and can be shared.



How is my video created?

Here is a high level overview of how your mobility video is created and made available for download.

1. When the record button is pressed, the animation of the traffic data begins.
2. During the record animation process, each cycle in which the map is updated a screen shot is saved into a temp directory.
3. Once the entire animation is complete, the download video button appears.
4. Pressing the download video button begins the video file creation process.
5. The video file is created by using a 3rd party tool to "stitch" together all the temporary screen shots.
6. Various algorithms have been developed to control how these screen shots are "stitched" together. This controls whether the video appears to run fast or slow.
7. It's important to note, that the final video may run a bit faster or slower than what the user witnessed on the web page animation. This can be caused by couple different reasons:
    a. The algorithms used to control the speed of the video play back could be off a bit. The frame rate set during the animation should closely match the video file playback and not necessarily the map refresh rate on the website.
    b. The user's machine could affect how quickly the map can refresh during the animation on the web page.
8. Once the video file is complete, the user's browser will download it accordingly.