

Transportation Secure Data Center (TSDC) Overview



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Operated by: The National Renewable Energy Laboratory (NREL), Center for Transportation Technologies and Systems (CTTS)

Contact: Jeff.Gonder@nrel.gov

Sponsored by: U.S. Department of Transportation (DOT), Federal Highway Administration (FHWA)

Contact: Elaine.Murakami@dot.gov

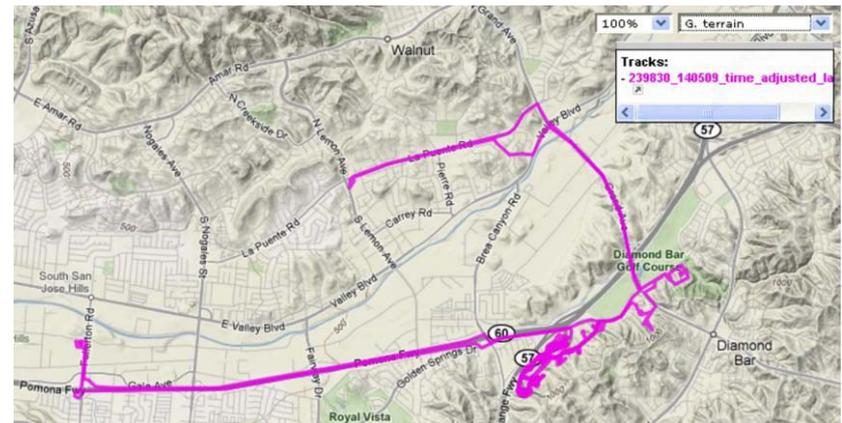
Transportation Secure Data Center (TSDC): What is it?



The TSDC provides secure archival of and access to detailed transportation data

E.g., GPS travel survey data

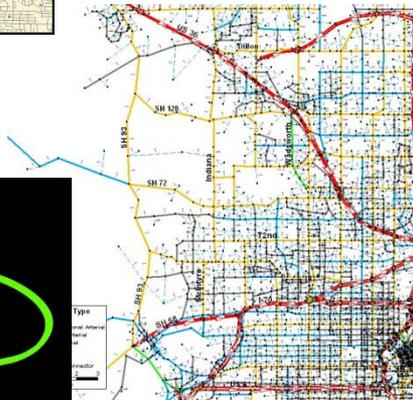
- Detailed global positioning system (GPS) location information
- Could identify an “anonymous” respondent from the data
- Access must be controlled



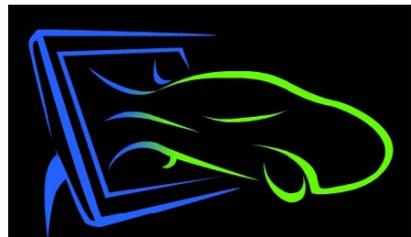
Transportation Secure Data Center (TSDC): Why was it created?



Travel studies in recent years have increasingly begun **including GPS**



The data can be **expensive to collect**, **but very valuable** for many existing and emerging applications



The secure central repository **increases research returns while safeguarding** the data

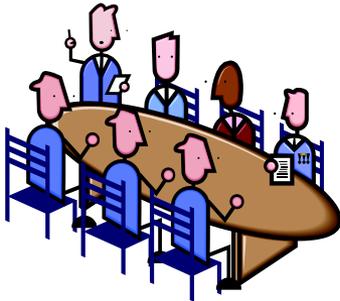
- Consistent with NRC report* recommendations
- Benefits data providers and users

* See this 2007 National Research Council report:
http://books.nap.edu/openbook.php?record_id=11865

Transportation Secure Data Center (TSDC): What is the approach?

Maintain **balanced focus** on dual priorities

- Privacy protection first and foremost
- Maximize usability (within constraints)



An **advisory committee** helps support FHWA oversight

- Group includes data providers and users
- Represents industry, academia and government

Structure divided into **three distinct areas**

- Secure enclave for raw data – no external access
- Cleansed data for download – publicly accessible
- Controlled-access area – for screened users through secure remote interface



Transportation Secure Data Center (TSDC): How is the data handled?

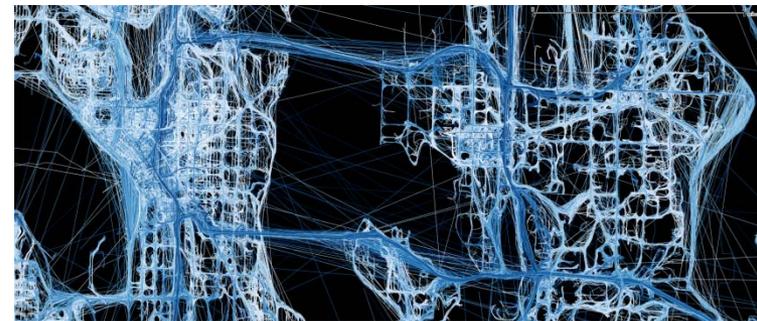
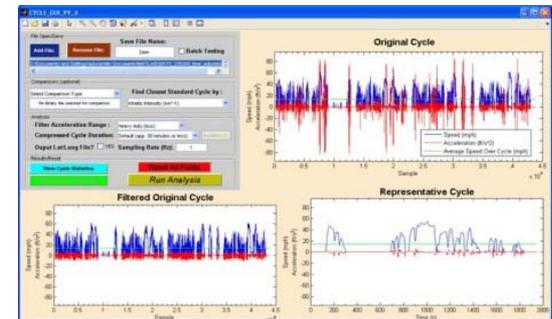


Secure enclave leverages existing data center

- Extensive safeguards
 - Restricted badge and PIN access, isolated network, alarm system, security force
- Data archived and backed-up

Data processing

- Standardize formatting
 - Raw point lat/long, timestamp, precision
 - Trip-level distance and time summary
 - Household/vehicle demographic information
- Quality control
 - Flag and remove or correct errant GPS points
- Add value and make accessible
 - Remove identifying information
 - Fuel economy, vehicle class, base maps
 - Road grade (planned)



Transportation Secure Data Center (TSDC): How is the cleansed data accessed?

Public website

- Project overview
- Simple user registration to access data
- Sec-by-sec point data and trip summary (no lat/long)

Data packaged to support multiple analyses

- By household
- By vehicle
- By day of week
- By hour of day
- Available both processed and uncorrected



Secure Transportation Data Project

Working quickly and in the confidence of our research team, NREL is working to identify and provide access to datasets from transportation data that have been de-identified to protect privacy.

Transportation data collected by entities such as transportation planning organizations (TPOs) have become increasingly relevant. Data-relating arrangements involve the use of global positioning systems (GPS), cell phones, video, and other means, which can gather personal information. Privacy concerns often make a collecting agency reluctant to share the data for secondary research. Therefore, extremely valuable data about a vehicle's location, speed, and direction are not of demand.

Data Privacy at NREL

NREL is addressing the challenges of providing the Transportation Secure Data Center (TSDC) to ensure the data is available for research and development. The TSDC will make data and future data available to broader groups, such as other states or municipalities, as well as to other data users at universities, national laboratories, the U.S. Department of Homeland Security, and the U.S. Department of Energy (DOE). Having a centralized secure repository will reduce individual agencies from the burden of having numerous data access requests and provide additional benefits such as temporary statistics, which offer an overview and comparison of user-selected data. A data center solution is consistent with the requirements in [Public Trust in the New Technology Landscape](#) and [U.S. Dept. of Energy Data Policy](#).

NREL recognizes the importance of ensuring the data center and the secure information access will bring in its research to DOE. The laboratory is performing with the U.S. Department of Transportation (DOT) in this area and has the TSDC as a [Center for Transportation, Transportation and Security](#).

Transportation Data

The Transportation Secure Data Center provides users with access to research transportation data from a variety of travel surveys and studies.

Cleansed Data Access

Users may access data from the following studies to support operations that require detailed travel distance and speed information, but that do not require detailed vehicle and trip-level information. Before cleaning this data for the Road Time, you will be required to fill out a short registration form.

- [Auto and Bus Aerial 2015 Aerial Household Travel Survey](#) by the Texas Department of Transportation and the Texas Transportation Institute
- [Traffic Counts Study](#) by the Road Research Board

Raw Data Access

Users may also be able to request access to data that includes detailed vehicle and trip-level information. Access to this data will be requested and users will need to complete an application process before receiving approval for secondary research access to the data.

Contact Us

Contact [our office](#) if you need the additional information about the project.

Subscribe for updates: [Contact Us](#) when new data sets and features become available in the TSDC.

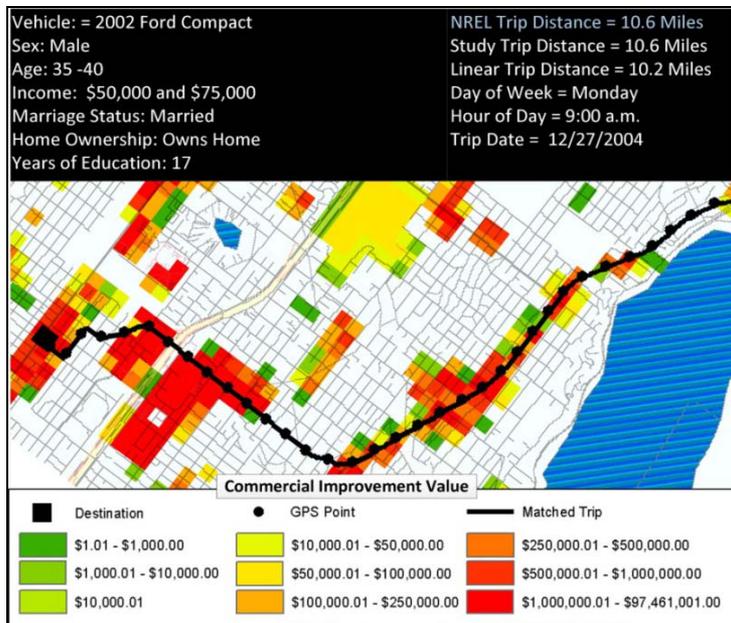
Transportation Secure Data Center

www.nrel.gov/vehiclesandfuels/secure_transportation_data.html

Transportation Secure Data Center (TSDC): How is the spatial data accessed?

Application process (researcher and supervisor)

- Analysis description questionnaire
- Terms of use and confidentiality legal agreements
- NREL, FHWA and advisory group review and approve/deny



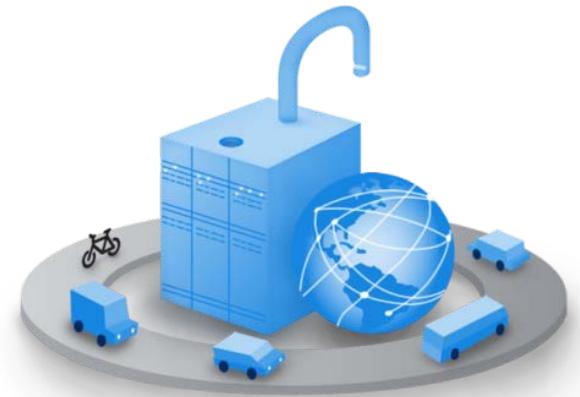
Secure remote connection environment

- Multiple firewalls, data transfer prohibited, researcher may request aggregated results
- Software tools for database query, GIS visualization, statistical analysis
- Reference information provided
 - Underlying road network, demographic and economic grid data
- Additional reference data and tools can be added

Questions?

Contact: Jeff.Gonder@nrel.gov

- For further project details
- To contribute data
- To apply for detailed/spatial data access



**Transportation
Secure Data Center
(TSDC)**

www.nrel.gov/vehiclesandfuels/secure_transportation_data.html