Minnesota Distance-Based Fee Demonstration Technical Advisory Committee

March 2nd, 2021

Scott Peterson, MNDOT Deputy Commissioner,

TAC Chair

DEPARTMENT OF TRANSPORTATION

Agenda

1. Welcome – Scott Peterson
2. Review of agenda - Ken Buckeye, MnDOT (3 min)
3. National overview – Lee Munich, HHH (5 min)
4. State overview and plan moving forward – Ken Buckeye, MnDOT (10 min)
5. C/AV Alliance Update – Frank Douma, HHH (2 min)
6. Review of social equity survey – Raihana Zeerak, HHH (15 min)
7. Rural/Urban equity – Lee Munich, HHH (15 min)
8. Administrative costs – Camila Fonseca, HHH (15 min)
9. Open discussion – TAC Members (15 min)
10. Demonstration update – Mike Warren, WSP (10 min)
11. Adjourn

National Overview

Lee Munnich, munni001@umn.edu
Humphrey School of Public Affairs
University of Minnesota

DEPARTMENT OF TRANSPORTATION

State Overview and Plan Moving Forward

Ken Buckeye, kenneth.buckeye@state.mn.us
MnDOT

DEPARTMENT OF TRANSPORTATION

State Overview

- Motor Fuel Tax forecast
- Electric Vehicles: manufactures are aggressively moving toward EV production
  - 230 new EV models will be introduced in 2021 world-wide, 65 in US
  - Promise of more vehicle embedded telematics
  - Longer battery life
- Rep. Elkins bill, HF 523
  - Similar to Utah RUC law

H.F. 523: Road Usage Charges for EVs

- HF 523 has been introduced
- Replaces $75 EV surcharge with a mileage-based rate
- Assumes DVS will enter into agreement with account providers
  - Cost of account provider service cost passed onto vehicle owner
  - Vehicles not enrolled are charged based on formula
- Rates base on gas powered equivalent vehicles
  - Recognizes five classes of vehicles (EPA);
- Report required

Moving Forward

- Toward project completion
- Two meetings to wrap up this demonstration
  - April, review draft report
  - June, final report
- What is our destination?
  - Federal influence
  - State desire
- More discussion during the wrap-up

C/AV Alliance Update

Frank Douma, douma002@umn.edu
Humphrey School of Public Affairs
University of Minnesota

DEPARTMENT OF TRANSPORTATION

Review of Social Equity Survey

Raihana Zeerak, zeera001@umn.edu
Humphrey School of Public Affairs
University of Minnesota

DEPARTMENT OF TRANSPORTATION

Summary of Social Equity Survey Results

Inequities in DBF vs MFT

Themes	Reasons
Inequities of a DBF (4)	*Low-income people paying more for traveling longer distances *Exacerbating disparities based on accurate payment for road damage between large and small vehicles *The need for of a bank account
DBF as equitable solution (2)	*DBFs could become more equitable than the current motor fuel tax
Depends (3)	*How DBF is instituted *DBF pricing structure *DBF revenue allocation *Changes to other transportation revenue sources

Summary of Social Equity Survey Results

- **Social aspects and other characteristics to be considered in a DBF design**
  - Income (8), disabilities (8), race (5), other underserved populations (3), gender (2)
  - Time of day (6), vehicle occupancy (5), income level (3)
- **Policies outside the fee structure**

	General Public	Certain Populations
Public transit	7	7
Active transportation	7	7
Access to ridesharing and car-sharing	6	8

Summary of Social Equity Survey Results

- **Changes in the current transportation revenue system**
  - Potential to allocate transportation revenues differently under a DBF (2)
  - Progressivity in some elements of the current revenue system (2)
- **Implementation of a credit/subsidy**
  - Eligibility: Geographic areas, income, and time of day
  - Administration: Other income-based program eligibility, income tax data, application process; provided with income tax return
  - Funding: Surcharge on a DBF (5), surcharge on vehicle registration (1) general fund (1), other (3)

Summary of Social Equity Survey Results

- **Additional Considerations**
  - Determining the constitutional requirements for how DBF funds would be used
  - A simultaneous fuel tax and DBF to properly price fuels given their negative environmental impacts
  - Starting with a simple program with room for added complexity later
  - Handling out-of-state road users

Rural/Urban Equity

Lee Munnich, munni001@umn.edu
Humphrey School of Public Affairs
University of Minnesota

DEPARTMENT OF TRANSPORTATION

Rural/Urban Equity in Distance-Based Fees

- One of the greatest concerns in consideration of distance-based fees as a future source of transportation system funding is whether drivers in rural areas would be disadvantaged relative to their urban counterparts.
- Given the greater travel distances to work and other destinations in rural areas compared to the shorter travel distances in more densely-populated urban areas, it stands to reason that, all things being equal, rural drivers would be paying more for the miles they traveled with a fixed fee based on miles-traveled. The question is are all things equal between urban and rural drivers.
- Recent studies on how rural and urban drivers would be affected by distance-based fees show that rural drivers may in fact be better off financially with distance-based fees than under the current gas tax.

Rural/Urban Equity Studies

- In a 2010 study, a quantitative analysis was conducted of the impact of switching from a fuel tax of 24 cents per mile to a flat 1.2 cent per mile VMT tax using the example of the state of Oregon.
- The study found that, contrary to expectations, households in rural areas would actually benefit from a change in tax regimes from a fuel tax to a VMT tax.
- This is due to the fact that on average, rural households own vehicles that have lower miles per gallon even though they drive more miles than urban households.

Source: Starr McMullen, Lei Zhang, Kyle Nakahar. Distributional impacts of changing from a gasoline tax to a vehicle-mile tax for light vehicles: A case study of Oregon. Transport Policy, Volume 17, Issue 6, November 2010, Pages 359-366. https://www-sciencedirect-com.ezp2.lib.umn.edu/science/article/pii/S0967070X1000051X.

Rural/Urban Equity Studies

- In 2017 EDR Group completed a study for the Western Road Usage Charge Consortium (RUC West) to assess the financial impacts of moving from a fuel-based tax to a mileage-based fee system.
- Using estimates of vehicle miles driven by geographic area, vehicle type information from motor vehicle registrations, and gas tax revenue information for each of the participating states, the study determined the "revenue-neutral" equivalent mileage-based road usage fee rates that would be required to replace current gas tax revenues in each state.
- The study projects that, on average, rural households would pay 1.9%-6.3% less and urban households would pay 0.3%-1.4% more state tax in a RUC system than they currently pay in state gas tax.

Percent savings with RUC

	Urban	Mixed	Rural
Arizona	-0.7%	1.7%	6.1%
California	-0.3%	2.4%	6.3%
Idaho	-1.0%	0.9%	3.1%
Montana	-1.4%	-0.4%	1.9%
Oregon	-1.0%	2.9%	4.8%
Texas	-0.5%	1.6%	3.1%
Utah	-0.6%	3.4%	5.5%
Washington	-1.0%	3.6%	4.8%

Positive numbers show a savings with RUC, in the Rural and Mixed columns.

Source: RUC West: Rural Drivers and Communities. https://www.rucwest.org/wp-content/uploads/2018/07/RUC_RuralDrivers_folio_final-LTR.pdf

Rural/Urban Equity Studies

- Rob Atkinson in a 2019 paper points out that rural drivers are currently paying more in fuel taxes simply because they drive more – 34 percent more miles per year than people in urban areas—and the difference is even greater in rural western states. However, even with this reality, there should be no difference in how switching to road user charges impacts rural drivers.
- Consider a driver who commutes 50 miles a day from their small town to a big metropolitan area in a car that gets 20 miles per gallon, and assume they pay a combined state/federal gas tax of 45 cents per gallon for a total tax of $1.12 per day. In comparison, a suburban driver who commutes downtown and drives 16 miles a day would pay 36 cents a day in fuel taxes. If the drivers each paid only a fee of 2.25 cents per mile (and paid no fuel taxes), the rural driver would still pay $1.12 per day, with the suburban driver still paying 36 cents. In other words, on average, rural drivers today pay more in fuel taxes than urban drivers—and would continue to pay more under a RUC system.

Source: Atkinson, Robert, "A Policymakers Guide to Road User Charges," Information Technology and Innovation Foundation, Web. https://itif.org/publications/2019/04/22/policymakers-guide-road-user-charges, April 22, 2019.

Rural/Urban Equity Studies

- A 2017 study found that a vehicle-miles traveled (VMT) system that includes congestion pricing would impact urban and higher-income drivers more than rural and lower-income drivers. This is another reason why a RUC system would be beneficial for rural drivers: It enables congestion pricing—and the vast majority of recurring congestion is in metropolitan areas. Under a RUC system that uses congestion pricing, metro area drivers will pay more than rural drivers, but also benefit from congestion pricing.

Source: Ashley Langer et al., "From Gallons to Miles: A Disaggregate Analysis of Automobile Travel and Externality Taxes," Journal of Public Economics, 152 (2017), 43. https://www.brookings.edu/wp-content/uploads/2017/06/jpube-vmt-paper.pdf.

Scenarios

1. **Status quo.** Continue the reliance on the motor fuel tax with no new distance-based fees. This will mean that rural drivers will continue to pay more than urban drivers based on their greater annual mileage as well as reliance on older, less fuel-efficient vehicles.
2. **Flat distance-based fee.** If the motor fuel tax were replaced by a flat distance-based fee in the future, rural drivers would pay less than their urban counterparts.
3. **Distance-based fee with congestion pricing.** If a distance-based fee were combined with congestion pricing affecting urban areas, rural drivers would pay less than urban drivers, though the urban drivers would get the benefit of less congestion.
4. **Parallel systems.** Continue the motor fuel tax but initiate distance-based fees on some vehicles such as electric vehicles, autonomous vehicles, fleets, those who choose to pay distance-based fees in lieu of the fuel tax, or a separate distance-based fee for the Metro region or Metro counties only. This system would leave most rural drivers with the status quo of the motor fuel tax but could increase revenue in urban areas. Of course, rural drivers would also pay these distance-based fees to the extent they used roads in urban areas.

Conclusion

- Given the challenges and costs of retrofitting a system for distance-based fees, it is most likely that this last scenario of parallel systems would be the way that distance-based fees might be introduced in Minnesota. The current Minnesota pilot offers an opportunity to test a system which could build upon in-vehicle technology and platform technology.
- Under this scenario, distance-based fees would be introduced incrementally with policies designed to assure equitable treatment among various user groups. Shared mobility services such as car sharing as well as electric vehicles and autonomous vehicles are likely to be most common in urban areas, and thus would not have an impact on the tax burdens of rural drivers who would continue to pay the motor vehicle tax.

Administrative Costs

Camila Fonseca, fonse024@umn.edu
Humphrey School of Public Affairs
University of Minnesota

DEPARTMENT OF TRANSPORTATION

Administrative Costs: DBF vs MFT

The administrative costs of a Distance-Based Fee system are higher than those of the motor fuel tax system.

- As a share of total revenue collected
  - DBF system: 5% to 13%
  - MFT: less than 1%
- Per vehicle mile traveled (VMT)
  - DBF system: $1.79 to $65 per 1,000 VMT
  - MFT: $0.10 per 1,000 VMT

Administrative Costs by DBF program

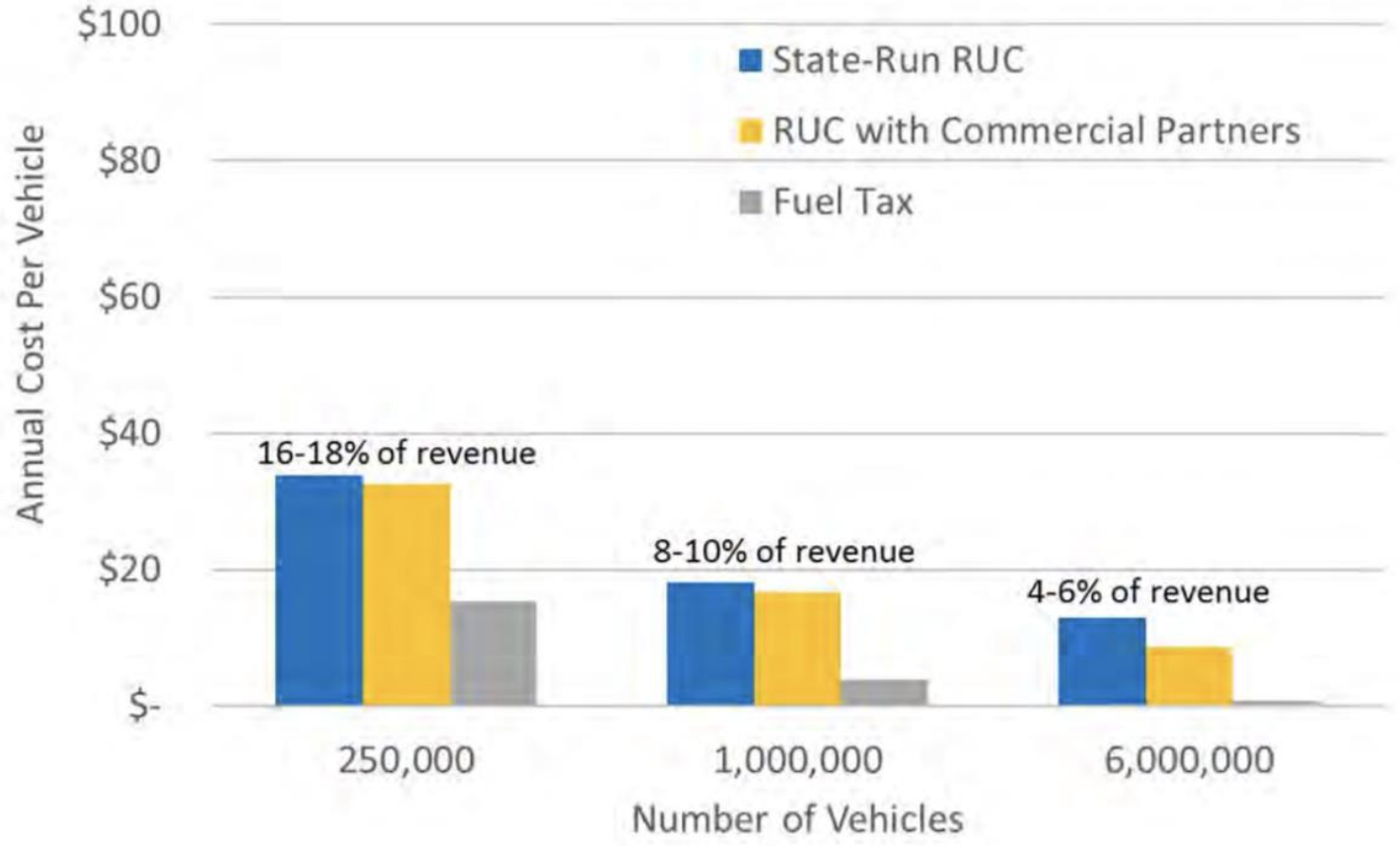
Program	Admin Costs (% total revenue)	Number of Users
Wyoming (2021)	9.4% (est)	N/A
Washington (2020)	**7 - 13% (est)** *7-8% - Manual* *12-13% - Technology-based*	~2,000
OReGO (2019)	40%	5,000
I-95 Corridor Study (2019)	8.0% (est)	N/A
California Road Charge Pilot Program (2017)	**2.5 - 15% (est)** *~2.5% - heavy vehicles only* *~5% - high tech* *~7% - low tech* *~15% - state operated*	N/A
Oregon Road Usage Charge Pilot (2012-2013)	**20%-50% (est)**	10,000

Factors influence DBF's Administrative Costs

Reduction in Administrative Costs

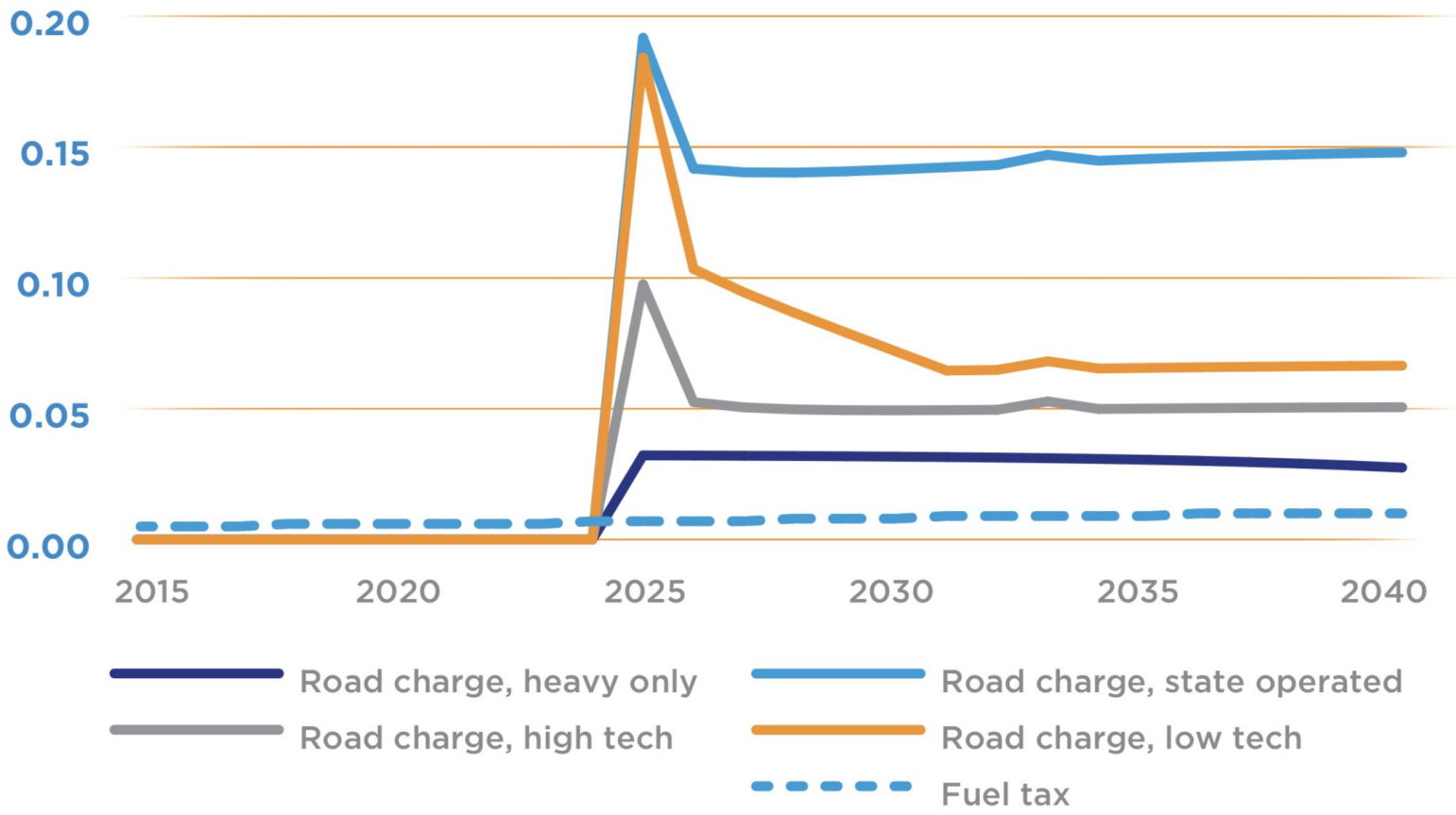
- An increase in the number of vehicles involved in the collection system
- A commercial partner that centralizes the collection of DBFs
- An integration of DBFs with other collection systems

DBF's Administrative Costs



Costs of DBF compared to Fuel Tax, at various volumes (Washington RUC)

DBF's Administrative Costs



Costs of DBF compared to Fuel Tax, at various volumes (California RUC)

Collaboration between MnDOT and SM Providers

Aims to improve the administrative and political feasibility of a DBF system

- Potential for higher political feasibility
  - Address privacy and data protection concerns
- Potential for higher administrative feasibility
  - It reduces collection points
  - It uses existing in-vehicle technologies

Data Transfer:	
Equipment	$3,874,000
Software	$2,250,000
Installation	$10,800,000
Other Service Station Infrastructure:	
Point-of-Sale System Improvements	$9,171,000
Dedicated Telephone Lines	$236,000
Contingencies	$5,270,000
Total Service Station Capital Costs	$31,601,000
State System Capital Costs, Including Contingencies	$1,200,000
Total Capital Costs	**$32,801,000**

Estimated Start-Up Costs of DBF – Oregon (2003)

Potential future benefits of partnering with SM Providers

Reduce collection costs

- SM services are expected to continue growing
- DBF system could be expanded to several SM services (ride-sourcing and car sharing)
- Integrate DBFs and other charges levied on SM services (tabfees, tolls, etc.)
- SM providers can operate in multiple states allowing for easy interoperability of the DBF system

Discussion

TAC Members

DEPARTMENT OF TRANSPORTATION

Discussion / Thoughts

- Rep. Elkins bill is a significant step toward our vision
  - Supports the incremental approach, step forward, not end state
  - Retains the Motor Fuel Tax
- Coming up; interviews with TAC members
  - Two meetings to wrap up this demonstration
  - April, review draft report
  - June, final report
- Proposal for TAC report

Demonstration Update

Michael Warren, Michael.Warren@wsp.com
WSP

DEPARTMENT OF TRANSPORTATION

Timeline and Status

WE ARE HERE

Wrapping up the final month of the demonstration and preparing for closeout and final reporting

Apr ‘20 – Jul ‘20

STAGE 1

Providers send sanitized data
Project Team creates Revenue Reports

Aug ‘20 – Nov ‘20

STAGE 2

Providers send sanitized data
Providers create Revenue Reports;
sends to Project Team for validation

Dec ‘20 – Mar ‘21

STAGE 3

Providers send sanitized data
Providers create Revenue Reports;
sends directly to State

By the Numbers

Total Miles Traveled	Total Fuel Gallons Purchased	Average Fuel Economy (miles per gallon)
470,654	13,986	33.65

As of data reported through January 31, 2021

- **2 Shared Mobility Providers**
- **64 total vehicles have participated / collected data**
- **60 active vehicles during January 2021**
  - ***Some vehicles are not utilized every month or have been decommissioned***

By the Numbers

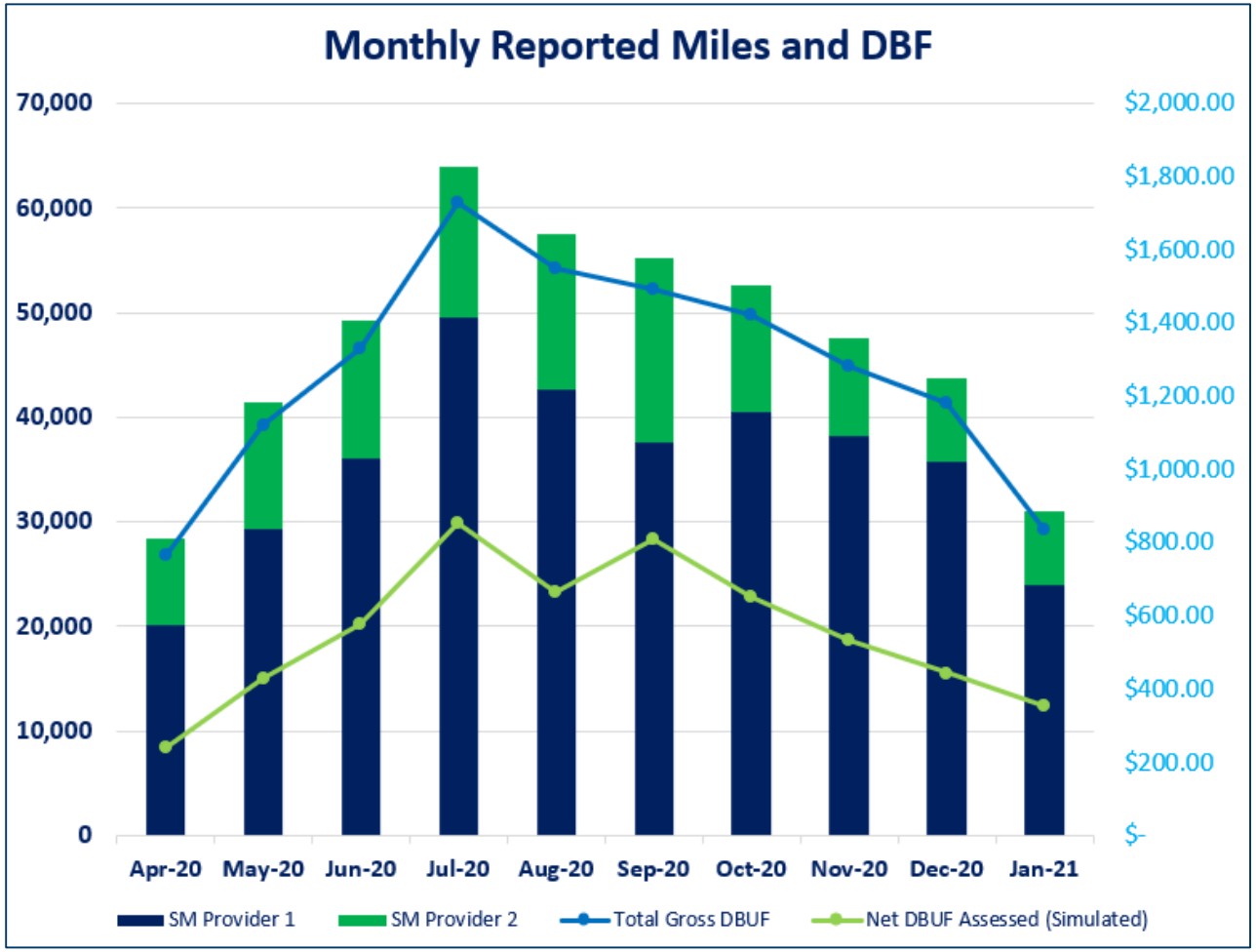
Total Gross Distance Based Fees (DBF) *(state and federal)*	Total Gross Fuels Tax Credits *(state and federal)*	Net Total DBF Assessed *(simulated)*
$12,707.68	$7,146.04	**$5,561.64**

As of data reported through January 31, 2021

- **Project Monthly Revenue Reports (simulated) generated for April 2020 through January 2021**

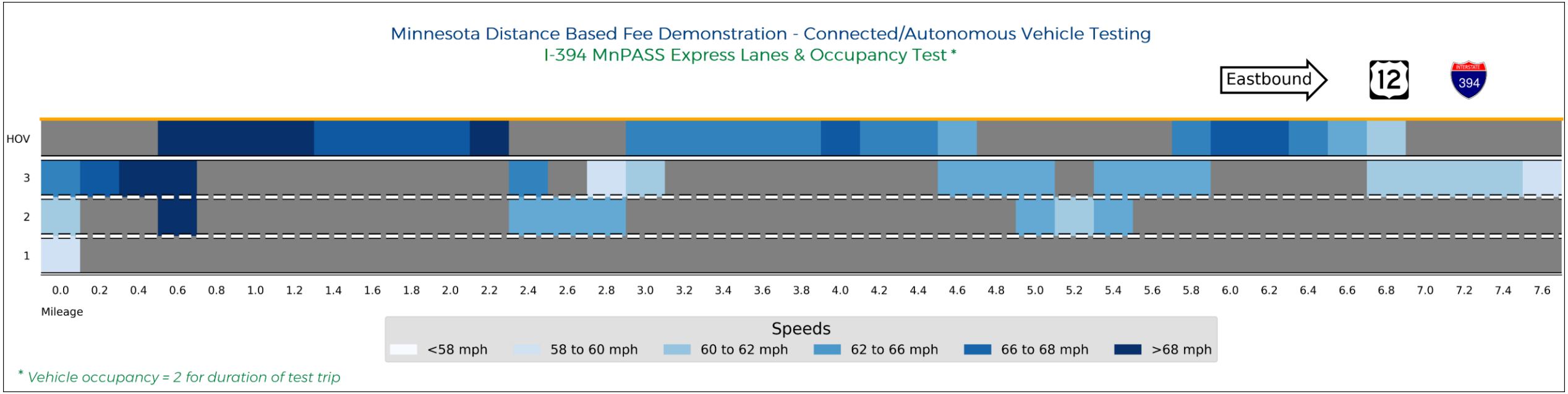
Monthly Averages

- **47,065 Reported Miles**
- **1,523.7 Gallons Purchased**
- **$1,270.77 Gross DBF**
- **$556.16 Net DBF** *(After Fuel Tax Credits)*
  - **$318.80 State DBF**
  - **$237.36 Federal DBF**



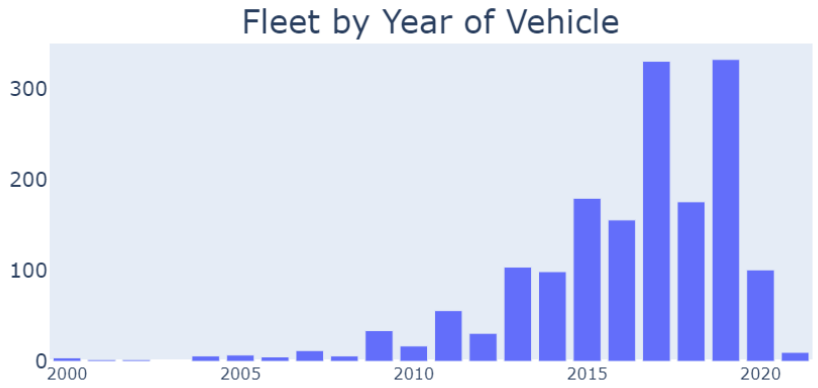
Automated Vehicle Testing

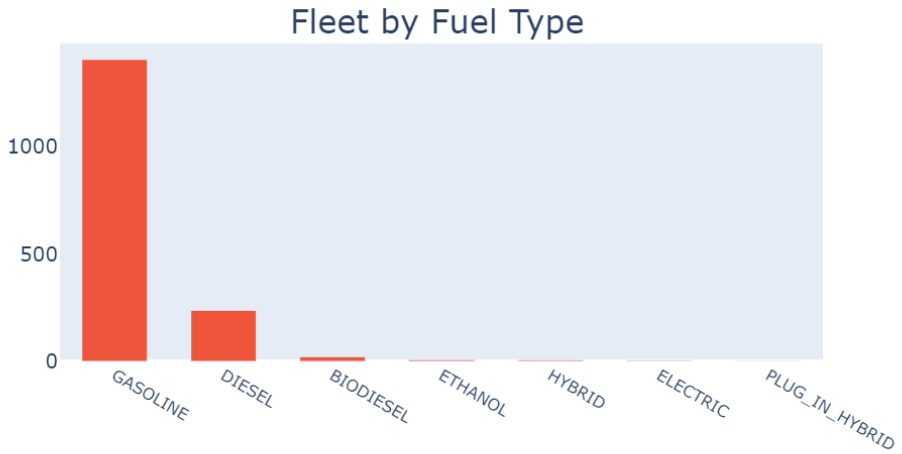
HOV Lane and Vehicle Occupancy Test conducted mid-December

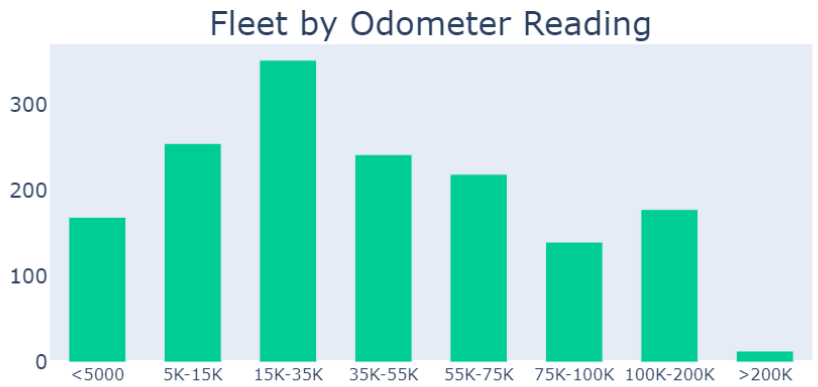


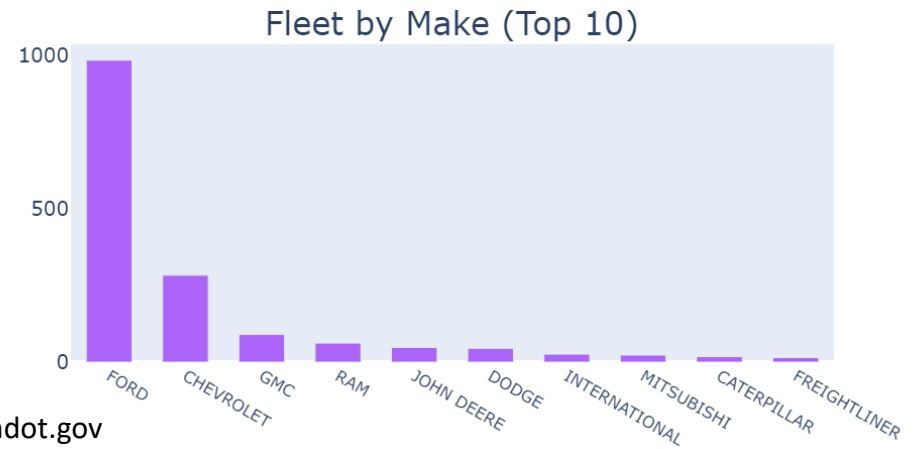
Additional Demonstration Activities

MnDOT Fleet Telematics data – Initial Fleet Statistics









Next Steps

- **SM Providers generate Revenue Reports for February and March 2021**
- **Project Team conduct mock audits with both SM Providers – In Progress**
  - Validate data accuracy and integrity
  - Simulate real-world revenue audit processes
  - Identify areas of alignment with current fuels tax audit processes; areas for improvement
- **Complete Demonstration on March 31, 2021**
- **Continue data mining and analytics on MnDOT Fleet Data**
- **Interview key demonstration and TAC members**
- **Document findings in final demonstration report**
  - Demonstration Observations and Results
  - Alignment with STSFA Grant Program Objectives
  - Opportunities and Challenges
  - Policy Considerations and Recommendations

Adjourn

Thank you for your participation!

DEPARTMENT OF TRANSPORTATION