



Request for Proposals

Vermont Road Usage Charge Feasibility and Implementation Plan 2021



WEST TO INTERSTATE 89 NORTH



Burlington



Vermont Road Usage Charge Feasibility and Implementation Plan 2021

A. Cover Letter

Dear Vermont Agency of Transportation Selection Committee:

VTrans has put forth an ambitious scope to study significant potential reforms to Vermont transportation funding policy, culminating in a draft legislative proposal by November 2021. This ambition reflects Vermont's urgency to eliminate greenhouse gas emissions. Among the first states to sound the alarm, Vermont's official goals aim to reduce emissions 50 percent below 1990 levels by 2028 and 75 percent by 2050. In parallel with achieving these goals, Vermont requires a new approach to pay for roads and bridges, which rely today on fuel taxes for over a third of state funding. To answer this challenge, we at **Milestone Solutions, RSG, and CDM Smith** (collectively the Milestone Team) enthusiastically submit this proposal to support VTrans' successful delivery of the Vermont Road Usage Charge (RUC) Feasibility and Implementation Plan.

Milestone Solutions is the global leader in mileage-based user fees (MBUF) and innovative vehicle fees as gas tax alternatives. **Milestone has led the most impactful MBUF explorations, pilots, and implementations, including in Oregon, Utah, Washington, California, and Hawaii, from conception to implementation.** RSG will serve as a critical Vermont-based partner for navigating public opinion research and stakeholder outreach. In addition to local relationships, VTrans project experience, and institutional knowledge, RSG brings subject matter knowledge from supporting MBUF studies for Utah and the Federal Highway Administration (FHWA). **CDM Smith, a full-service, national transportation and energy consulting firm with roots in New England, brings subject matter leadership on electric vehicle (EV) charging business models and the utility industry.** As Milestone's key strategic partner for alternative revenue studies, CDM Smith also brings industry-leading financial modeling skills and transportation policy insights.

With the Advisory Committee as the focal point of our approach, **we offer a thorough roadmap for determining feasibility of a Vermont RUC System, deciding its key policy and system design features, and drafting a bill for introduction to the legislature by the target date of November 2021.** Our roadmap includes a schedule and detailed agendas for four Advisory Committee meetings, along with plans for technical, financial, and other analytical inputs to each meeting. Our proposed approach ensures VTrans a successful project outcome, improving the likelihood of a politically viable proposal, and accompanied by an implementation plan.

Within our proposal, you will meet the individual experts we propose to help VTrans achieve its objectives. As project manager, we propose **Jim Whitty, J.D.,** who led Oregon's effort to implement an MBUF system from scratch in 2001, through two pilot tests, to legislative enactment in 2013, and finally to launch in 2015. **A skilled attorney, policy designer, communicator, and problem solver,** Jim has translated his state department of transportation experience to help public sector clients navigate gas tax alternatives as a consultant. Supporting Jim is a team of experts in Vermont stakeholder outreach and public opinion research, revenue system design, policy design, rate design, financial analysis, and system implementation.

VTrans clearly has the situational understanding and capability to advance funding reforms for Vermont. Our team is excited by the prospect of helping VTrans and its Advisory Committee through an inclusive, informed, efficient decision-making process to create a more sustainable and equitable transportation funding future that works for Vermonters. We look forward to the opportunity to work with you.



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B. Technical Capability/Approach

B.1. Our Understanding

On January 28, 2021, General Motors announced it will sell exclusively zero-emission light-duty vehicles starting in 2035. With a \$27 billion investment, the world's fifth-largest automaker will introduce 30 new electric vehicle models over the next five years – and they're not alone.



Our Keys to Success:

- Unparalleled team experience in MBUF
- Savvy stakeholder engagement and local knowledge
- Quick mobilization of subject matter experts to hit the ground running
- A thorough plan to help VTrans to succeed crafting draft legislation by November 2021

As governments and automakers around the world race to address climate concerns and meet evolving consumer demands for clean vehicles, the transition away from fossil fuels has suddenly become a near-term prospect. Among the many collateral impacts of increasing vehicle electrification is a reduction in funding for agencies like VTrans who rely on fossil fuel taxation. The shift in the vehicle fleet from internal combustion engine vehicles (ICEVs) to all-electric vehicles (AEVs), plug-in hybrid electric vehicles (PHEVs) and high-mileage ICEVs not only impairs the long-term viability of transportation funding, but also threatens the equity of fuel taxation. As fuel consumption declines, a shrinking group of motorists will bear an increasing share of the burden of paying for roads and bridges.

Over this coming decade, the fleet shift will accelerate, quickly undermining Vermont's State Transportation and Transportation Infrastructure Bond Funds and

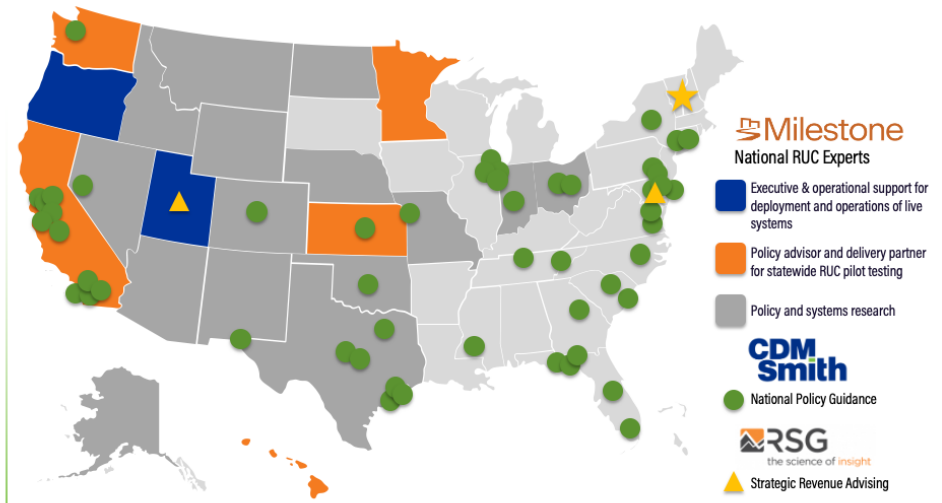


The Vermont Road Usage Charge System

- Internal combustion engine vehicles:
 - Fuel taxes
- Vermont-registered electric vehicles:
 - Flat fees (FF) or
 - Mileage-based user fees (MBUF) "FF/MBUF"
- Non-Vermont-registered electric vehicles:
 - Per-kilowatt hour fees (kWh fees)

exacerbating inequities in who pays for road usage. To maintain the "user pays" principle for highways, an assortment of road usage charges (RUC) aside from fuel taxes—including annual Flat Fees (FF), mileage-based user fees (MBUF), and per-kilowatt hour fees (kWh Fees)—render the most promising set of choices for examination. Together, these user fees constitute the proposed Vermont RUC System.

Vermont is not alone in examining these alternatives. Over 20 states have undertaken serious examination of MBUF feasibility, and 13 have undertaken MBUF pilot demonstrations, either alone or as part of a regional effort. Oregon and Utah adopted and implemented operational MBUF programs, with Virginia legislatively directed to do so by July 1, 2022. Thirty states impose a registration surcharge (FF) on electric vehicles, with 14 of those also imposing FF on hybrid vehicles. **The state of Oklahoma just became the first to enact legislation to impose a kWh fee on electric vehicles.**



Primary Project Objectives:

- Determine feasibility of a Vermont RUC System
- Design legislation for implementing and/or pilot testing a Vermont RUC System by November 2021

Supporting objectives:

- Define specifics of each component of the Vermont RUC System
- Start an inclusive conversation about the Vermont RUC System with stakeholders, the general public, and the media
- Determine rates for the FF, MBUF, and kWh fee
- Estimate implementation and annual operational costs for the Vermont RUC System
- Evaluate financial performance of the Vermont RUC System
- Determine whether to proceed with a pilot program or implementation of FF/MBUF for vehicles registered in Vermont
- Determine whether to proceed with a pilot program or implementation of kWh fees for out-of-state vehicles
- Prepare an implementation plan for the Vermont RUC System including a feasibility finding, steps to implement, and a communications strategy

The Milestone Team is excited to help Vermont confront this challenge. As the nation's leading advisors on fuel tax alternatives, including MBUF, we understand the policy and technical issues that VTrans must navigate to bring forward a viable legislative proposal that works for Vermont to reform transportation funding. Drawing on our team's deep understanding of both Vermont and the subject matter, our comprehensive approach tailored for Vermont, and our industry-leading experience, we will help VTrans deliver a viable system design and legislative proposal for a RUC System by November 2021, as well as an implementation plan.

B.1.1. Our Understanding of Project Objectives

The Milestone Team's articulation of primary and supporting objectives of this project are shown to the left. Every aspect of our approach, as detailed in Section B.2, aims to achieve these objectives. Our team is prepared to assess the feasibility of a Vermont RUC System, critical to which is determining whether or not pilot testing is needed prior to implementation.

The State of Vermont can go straight to implementation of an operational program without a pilot if sufficient political will exists within the state legislature. Utah and Virginia had political will. After passage of a legislative directive to deploy a combined MBUF and FF system, Utah DOT spent 20 months setting up its operational program, which launched January 1, 2020. Virginia is poised to do the same, launching on July 1, 2022 after passage of a legislative directive in 2020.

Other states pursuing an MBUF program started with a pilot. A pilot always receives media coverage and can directly involve participation of the public, stakeholders, policymakers, and journalists. It can help Vermont develop and show a cost-effective approach to transportation revenue collection that provides a good user experience.

If the political will to enact an operational program does not emerge like it did in Utah and Virginia, Vermont policymakers may require additional knowledge on the topic. They may not understand the reason for the Vermont RUC System or how it would work. If the work on MBUF over the past 20 years is any indication, concerns about the system may erupt before anyone understands its particulars. In that instance, Vermont has the option of showing policymakers, stakeholders, and the general public how the new user fee system could work via a public pilot test. In either scenario, the Advisory Committee process will reveal policy and system design decisions essential to advancing a RUC System for Vermont.

B.1.2. Our Plan to Achieve Project Objectives

The focal point of our plan for helping VTrans achieve its objectives is the Advisory Committee process. We propose to use the Advisory Committee process to share technical information, explore alternatives, and achieve consensus on key questions including the feasibility of the Vermont RUC System, whether or not to pilot the system before pursuing implementation, key policy and system design details, and draft legislation for either implementation or a pilot by mid-November 2021. **We have prepared agendas for four Advisory Committee meetings, along with a schedule of technical deliverables to support the Committee's deliberations and advice, as shown on the following page.**

ADVISORY COMMITTEE MEETINGS

KICK-OFF MEETING AGENDA

(July 2021)

- Explanation of AC duties
- Timeline review
- White Paper on background of MBUF and Per kWh fees in US
- Stakeholder and driver outreach plan; stakeholder engagement process
- Overview of RUC issues for decisions at coming meetings:
 - System design
 - vehicle eligibility
 - reporting methods
 - which miles to charge: public/private roads, out-of-state miles
 - privacy protection
 - enrollment of vehicles
 - commercial v. state account management services
 - Fee structure and rate setting
 - Penalties for non-payment and tampering
 - Management and operational structure
 - Findings on feasibility
 - Implementation or pilot

SECOND MEETING AGENDA

(September 2021)

- Stakeholder and driver engagement results
- Technical memos on MBUF system definition:
 - system design
 - fee structure and rate setting
 - penalties for tampering
- MBUF system decisions:
 - MBUF system design:
 - vehicle eligibility
 - reporting method
 - integration of DMV systems
 - which miles to charge: public/private roads, out-of-state miles
 - interoperability with other states
 - privacy protection: choice of flat fee or reporting method, data retention and distribution rules, user agreements, statutory usage prohibition
 - enrollment, withdrawal, removal processes, change of ownership, switching from FF to MBUF and vice versa
 - open system
 - commercial v. state account management services for enrollment, mileage data collection, billing and customer service
- MBUF fee structure and rate setting
- MBUF enforcement and penalties for non-payment and tampering
- Per kWh fee systems decisions:
 - Information reporting requirements
 - Mitigation of privacy concerns

THIRD MEETING AGENDA

(October 2021)

- Address carryover issues from 2nd meeting
- Presentations:
 - Technical memo on financial analysis
 - Technical memo on management and operational structure
 - Technical memo on pilot test v. implementation
- Decisions:
 - Management and operational structure
 - Finding on feasibility
 - Recommendation on implementation or pilot

FOURTH MEETING AGENDA

(November 2021)

- Catch-up topics
- Additional topics

- We will prepare a **brief white paper on the background of RUC** (including FF, MBUF, and kWh fees), including both the need and approaches used elsewhere, for the *Advisory Committee's Kick-off meeting*.
- We have **timed deliverables for stakeholder engagement and public opinion research** between the *Advisory Committee's Kick-off meeting and the second meeting*.
- We plan to present **technical memoranda on system definition and fee structures** for the *Advisory Committee's second meeting*.
- We will also prepare **technical memoranda for financial analysis, management and operational structure, and pilot testing** for the *Advisory Committee's third meeting*.
- In addition, we propose that the Advisory Committee make a **finding on feasibility and a recommendation on whether to proceed with implementation or a pilot** at the conclusion of the *third meeting*.
- Further, we advise scheduling a *fourth Advisory Committee meeting* before mid-November for **any issues that flow over from the earlier meetings and any new issues that arise**.

Through the Advisory Committee process, VTrans can explore alternatives and trade-offs in an open forum, build essential stakeholder support, and achieve consensus on a legislative proposal by November 2021. Our team has supported advisory committees and task forces in achieving similar outcomes for innovative and sometimes-controversial transportation funding proposals. We produce technical materials efficiently and present them in a manner accessible to lawmakers, agency executives, and stakeholders, including many not versed in transportation tax policy or revenue collection system technology.

The Advisory Committee’s technical analysis and decisions constitute the principal inputs to the RUC System implementation plan. Whether VTrans elects to pursue a pilot or an operational program, many elements of the implementation plan will be the same, including instructions on how to proceed with system design, technology procurement, public communication (including participant recruitment in the case of a pilot), and evaluation, among others. By assembling the key elements and vetting them through the Advisory Committee process, the implementation plan becomes more efficient to craft.

B.1.3. Our Experience and Capabilities to Achieve Project Objectives

Although the timeline proposed for drafting legislation is short, **our team has the experience and know-how to run the Advisory Committee through a decision-making process to meet the mid-November target date for a draft of bill language for either an operational program or a pilot program.** Only one state—Oregon—has used an advisory committee to build and pass legislation for an operational program. Oregon DOT’s agency lead for that effort was Jim Whitty, *our team’s proposed project manager for this project.* Jim’s work with Oregon’s Road User Fee Task Force (RUFTF) and the Oregon Legislature, supported by Milestone, led to passage of the legislation creating the nation’s first operational MBUF program, branded OReGO, which launched on July 1, 2015, 24 months after enactment.

Please refer to Section E for summaries and CVs of the key personnel whose experience and capabilities we describe in this section.

Working closely with Jim is a team of transportation funding policy and system experts with not only the relevant experience, skills, and local knowledge, but also the proven ability to work together as one team. The Milestone Team authored the foundational technical documents for the Oregon MBUF system and evolved them as the leaders of subsequent, successful large pilots in California (5,000 participants), Washington (2,000 participants), and Hawaii (2,000 participants), and the operational program in Utah (3,000+ participants). **Members of our proposed team are the only consultants who**

can claim direct implementation support experience for both operational MBUF programs (Oregon and Utah). Members of our team also worked with task forces for essential MBUF policy development in Oregon, California, Washington, and Hawaii.

Project Spotlight:

Milestone conceived, designed, implemented, and operated a pilot odometer-based MBUF system for the state of Hawaii. Drawing on the state’s annual vehicle inspection process, where inspectors record odometer readings into a state-owned database, the Milestone Team designed, printed, and mailed Driving Reports to over 300,000 households as a mechanism for surveying public opinion. This manual method of mileage reporting was welcomed by Hawaii drivers and proved viable as a low-cost MBUF system approach with minimal disruption to vehicle owners. It offers an easy entry point for states considering MBUF. Vermont is one of a handful of states with a periodic vehicle inspection requirement and, like Hawaii, already collects odometer readings.

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We want to hear from you!
Complete a short survey at www.HiRUC.org/survey

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“The gas tax is no longer doing its job. Help us by joining the conversation on a new way to pay for our roads.” – **Jade Butay, HDOT**

Hawaii is aiming for 100% clean energy by 2045. Already, there are more fuel-efficient cars on our roads, including some electric ones. Great news, but there’s a downside. The per-gallon gas tax is becoming less effective at funding our needed road and bridge upkeep and improvements, because we are using less gas.

Instead of the gas tax, might a system where we pay for how many miles we drive—a road usage charge—work better? Hawaii, along with other states, is taking a careful look. This Driving Report shows how a road usage charge would affect you based on the vehicle you recently had inspected.

Please review the information below and take the short survey online to share your thoughts. Mahalo for sharing your voice.

Your 2012 Toyota RAV4 (HGX212)

Report number	SRX9A	Compare estimated gas taxes paid...	to a potential road usage charge.
Safety inspection	Dec 20, 2019	\$155 About \$13/mo.	\$168 About \$14/mo.
Period covered	Jan 2019 to Dec 2019		
Total miles driven	10,523	Based on estimated gallons purchased over 12 months.	Based on miles driven between two passed safety inspections over 12 months.

[View details on back](#)

HiRUC
HAWAII ROAD USAGE CHARGE DEMONSTRATION

Complete a short survey at www.HiRUC.org/survey

To address the kWh Fee concept, we augment our MBUF subject matter leadership with team members who bring understanding of electric infrastructure requirements and the range of business models for EV charging networks. We will apply this knowledge to craft workable approaches for the collection of kWh fees from out-of-state AEVs traveling along Vermont's public roadways. CDM Smith is currently working with Argonne National Lab to develop a strategic plan for upgrades and expansion of their electric charging infrastructure, including smart chargers. We also understand that electric utilities (regardless of their corporate, municipal, or cooperative form) are critical players in the transportation electrification ecosystem. CDM Smith regularly works with electric utilities of all types and sizes across the U.S. regarding service upgrades, system interconnections, power systems studies, coordination, and analysis. As a recent example, our team supported the development of a Vermont Public Utilities Commission (PUC) – Certificate of Public Good for an industrial cogeneration system.

For all our subject matter knowledge and leadership, the hallmark of a Milestone project is the ability to customize analysis, insights, and policy and system design recommendations to suit local geography, culture, and politics. Vermont-based RSG brings essential local knowledge and experience to the Milestone Team. As experts in Vermont stakeholder facilitation, public outreach, and opinion research, including virtual and online outreach, RSG leads VTrans' Direct to Consumer projects, as well as engagement efforts for local authorities throughout the state. RSG's support and local insights will ensure the collective Milestone Team creates innovative solutions to funding policy preferences, challenges, and issues unique to Vermont.

B.2. Scope of Work

Task 1. Stakeholder Engagement

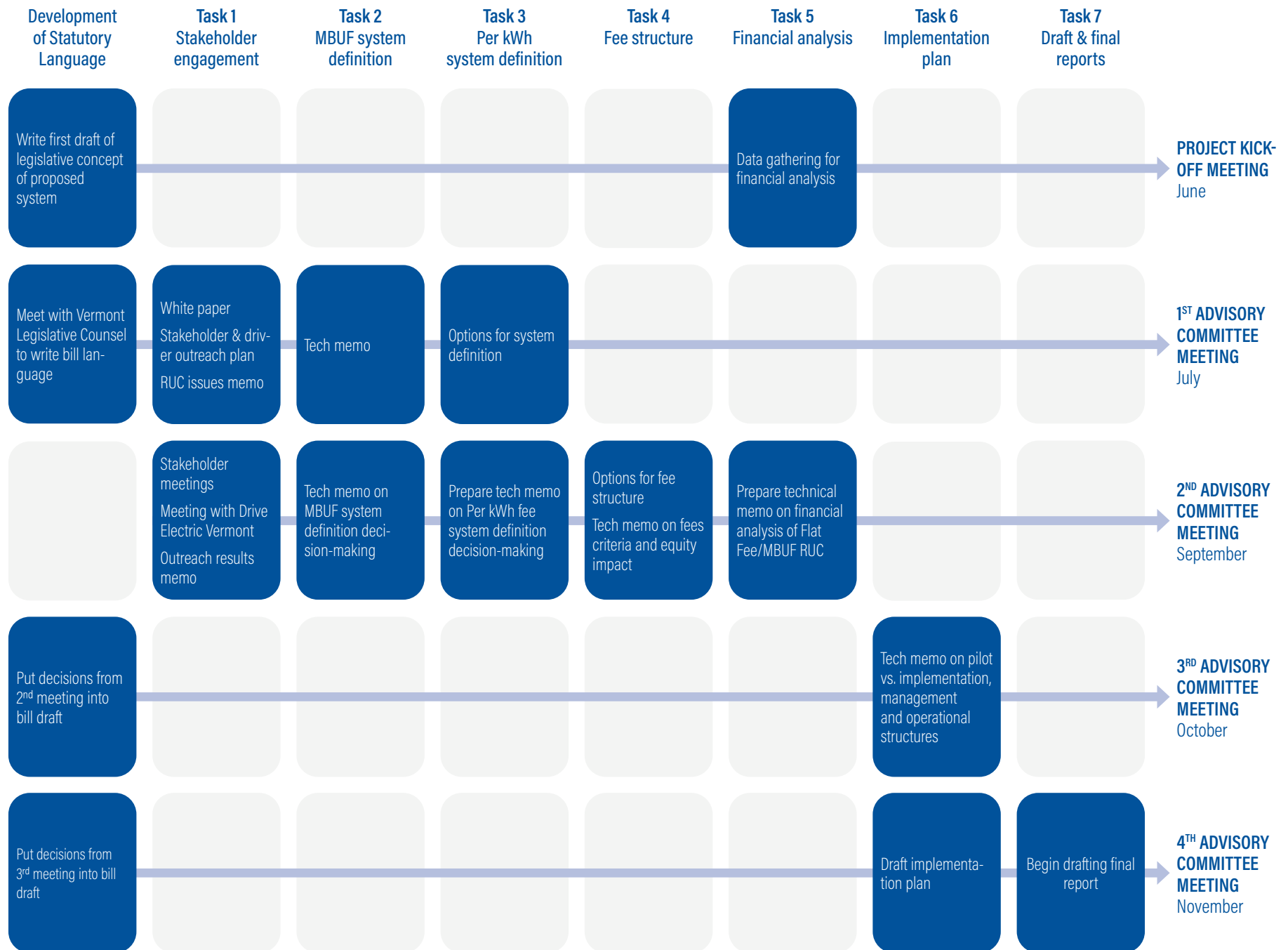
Jim Whitty, attorney, communicator, policy designer, and problem solver with four decades of experience crafting and building support for innovative environmental and transportation public policies, particularly around funding and MBUF, will lead this task. He will collaborate closely with colleagues from VTrans, the Advisory Committee, and RSG, including Mark Fowler who will lead public opinion research, and Jonathan Slason, who will lead outreach efforts for Vermont-based stakeholders.

Advisory Committee

To achieve the objective of completing draft legislation quickly for either RUC System implementation or a pilot, we have planned the Advisory Committee meetings in advance. Page 4 shows the agendas of all four proposed Advisory Committee meetings. Further, we provide a timeline of meetings and preparatory materials in flowchart manner to show exactly how the Advisory Committee process can work to prepare draft legislation by the November target, shown on the next page. To ensure a steady process flow, we propose meetings between VTrans and our team before and after each Advisory Committee meeting, as well as meetings with the Office of Legislative Counsel. We also propose meetings with VTrans before, during, and after stakeholder engagement and public opinion research (between the kickoff and second Advisory Committee meetings), as well as ad hoc meetings as necessary.

Issues for Advisory Committee Input:

- Rate setting, including evaluate criteria and fee amounts
- System design
 - Vehicle type eligibility
 - Privacy protection: choice of flat fee or reporting method, data retention and distribution rules, user agreements, statutory usage prohibition
 - Reporting method(s)
 - Integration of DMV systems
 - Mileage to charge: public roads, private roads, out-of-state miles
 - Interoperability with other states
 - Enrollment, withdrawal, removal processes, change of ownership, switching from FF to MBUF and vice versa
 - Open vs. closed system architecture
 - Procurement approach for services for enrollment, mileage data collection, billing, and customer service
- Penalties for non-payment and tampering
- Management and operational structure
- Per kWh fee systems decisions:
 - Information reporting requirements
 - Mitigation of privacy concerns
- Findings on feasibility
- Implementation or pilot



Meeting the mid-November target is less challenging than one might think. In its *Scope of Work*, VTrans provides much of the essential information for draft legislation for implementation or a pilot of the Vermont Road Usage Charge System, see below. The remaining necessary inputs will involve discussion among and input from the Advisory Committee, but the choices are not that thorny. A full

list of decisions is illustrated below. Based on our PM Jim Whitty's experience with a very similar exercise in Oregon, we are confident the Advisory Committee, supported by excellent subject matter, public opinion, and stakeholder issue analysis from the Milestone Team, can reach decisions on the remaining issues over the course of three meetings.

Outline of Proposed Vermont FF/MBUF Legislation

White text = language could be written now

Green text = language could be added during Advisory Committee process

MINIMUM STATUTORY REQUIREMENTS

1. Identify authorized agency [VTrans, DMV, Dept. of Taxes or other]
2. Identify subject vehicles: EVs, PHEVs, [and high mileage ICE vehicles]
3. Identify miles to charge: Vermont public road miles [or all Vermont miles, or all miles]
4. Impose annual FF of \$120 for EVs and \$71 for PHEVs [or a different rate]
5. Define how annual FF is collected
6. Establishment clause for MBUF program
7. Impose alternative of paying MBUF at 1.5 cents per mile [or a different revenue neutral rate] with a cap at annual flat fee amount
8. Define how MBUF is collected [state account management, commercial account management, or both]
9. Grant authority to agency to determine by rule the following:
 - How MBUF is collected (processes, terms for enrollment, payment periods, other methods and procedures)
 - How vehicles are enrolled and withdrawn from MBUF system
 - Standards for mileage reporting and program functions
 - Process for collecting unpaid MBUF or penalty

10. Establish penalties for failure to pay: collections process, interest [or add late fee, hold on vehicle registration, other (for failure to pay) and criminal penalty (for tampering)]
11. Grant agency authority to impose penalties for failure to pay or tampering
12. Direct DMV to share and provide access to vehicle information for FF and MBUF program
13. Revenue generated shall be deposited into Vermont's Transportation Fund

POSSIBLE ADDITIONAL PROVISIONS

1. CAMs v. state-provided services for enrollment, mileage data collection, billing and customer service
 - a. If CAMs, define authority for CAM services
 - b. If CAMs, grant authorized agency authority for contracting and oversight with CAMs
2. Definition of open system
3. Requirement for motorist choice of mileage reporting method and/account manager
4. Statutory protection of privacy and security of personal information
5. Additional enforcement provisions
6. Statement of Vermont's intention regarding collaboration with other states on system interoperability
7. Exemptions
8. Program phase-in provisions

At the [project kick-off meeting](#), the Milestone Team will discuss with VTrans an often-overlooked critical first step: careful, strategic design of the Advisory Committee, including membership, operating rules, and role/authority. [Design of the Advisory Committee sets the stage for the success of the remaining effort.](#)

Given the quick pace of meetings and the technical nature of meeting content, we advise [approximately 15 members](#) with some knowledge of transportation fiscal matters and a reputation for constructive solution-finding. Based on our experience with agency-initiated Advisory Committees, we advise a broad mix of cabinet agency representation and influential stakeholders, as contemplated in the RFP. If VTrans is amenable, we may also suggest legislative members or, at minimum, a liaison to communicate updates to key legislative members like transportation committee chairs. [We can support VTrans with crafting initial invitations to desired members. We further propose to join VTrans in conducting introductory one-on-one virtual meetings with individual Advisory Committee members to learn about their roles and interests,](#) present key members of the project team, and introduce the subject matter. This early engagement will help prepare members for the Advisory Committee work and allow the team to identify priorities and issue areas for each member early in the process.

The Advisory Committee's Kick-off meeting provides the opportunity to prepare members for decision-making during the second and third meetings. Committee members will receive a more in-depth education on both subject matter and process. At the Kick-off meeting, we will present findings from a [white paper on the background of the Vermont RUC System](#), including a presentation of the need for change in funding policy for Vermont's roads and bridges; description of MBUF, FF, and kWh Fees, including learnings, opportunities, and challenges for each; summary of advances on these fees in other states; and projections of the future of alternative funding in the United States. The aim is for each committee member to find themselves on roughly the same page by the end of the first meeting. Committee members will have the opportunity to provide input

for the stakeholder and public engagement process that follows the Kick-off meeting.

With a draft bill as the end product of the Advisory Committee process, our team can work with Vermont Office of Legislative Counsel from project kickoff to build it,¹ writing the entire structure of the bill in the first month, and leaving placeholders for important details. The Advisory Committee can also add additional provisions along the way that should not thwart the deadline goal. Vermont's FF/MBUF and kWh fee statute may well contain many of these provisions, so legislative counsel may not need to write them from scratch. See a list of the Minimum Statutory Requirements for a draft RUC bill on the preceding page.

The necessary elements required for FF/MBUF legislation are known. The Utah and Virginia FF/MBUF legislation provide the essential statutory language, leaving many of the details to agency rulemaking after passage. The Oregon legislation has more detailed language, leaving less to agency rulemaking. The necessary elements for kWh fees appear less developed. Fortunately, the VTrans concept is well sketched, containing many of the essentials. Furthermore, the recently passed Oklahoma EV charging tax bill lays out some relevant provisions for consideration in writing bill language.

Vermont's use of an Advisory Committee to wade through the elements of funding policy and systems has occurred at least five times among the states, in Oregon, California, Washington, Utah and Colorado. The requirement to advise whether Vermont should do an implementation or a pilot is new, although four of those states' advisory committees/task forces (Oregon, California, Washington, Colorado) opined on the policies and structure of the pilot and two (Oregon, Utah) opined separately on the policies and structure of an operational program. As the Advisory Committee works on the policy and systems, as well as considering the views of stakeholders

¹ Since the Vermont Office of Legislative Counsel works for the Vermont Legislature, it may be necessary to find a state legislator willing to sponsor the legislation in order to work with the Office of Legislative Counsel on the bill draft.

and the general public, whether political will exists should become readily apparent during the process.

Outreach to Eligible Vehicle Owners and Stakeholders

Our team proposes to solicit stakeholder and public input in a feedback loop not only with the Advisory Committee, but also with those involved with revenue policy and technical system development, including state personnel, stakeholders, the driving public, VTrans, and our team, to make viable adjustments to the proposed Vermont RUC System. Our team has found a feedback loop useful for policy and system design adjustments in the Oregon, Washington, and Hawaii projects. Therefore, we propose to support VTrans with **additional public and stakeholder engagement** after the Kick-off Advisory Committee meeting. With near-term, in-person rendered impractical by the pandemic, our team includes seasoned experts in online and virtual public opinion gathering and meeting facilitation. These additional interactions have three purposes:

- Introduce the Vermont RUC System to Vermonters for feedback.
- Present the top issues (and resolutions) coming from other states that seem applicable to Vermont to get the take of Vermonters.
- Discover new issues unique to Vermonters.

Public Opinion Research

To present the RUC System concept and assess initial reactions to the various features and options, we propose **public opinion research via targeted online surveys of affected vehicle owners**. This will establish a quantitative baseline for understanding public sentiment and preferences to help guide policy and system design in advance of either an implementation or pilot test.

The Milestone Team will work with VTrans to develop an online survey primarily targeting the full population of AEV, PHEV, and high-mileage ICEV owners in Vermont. RSG will design and implement the questionnaire, drawing on their knowledge of Vermont drivers and their deep experience in market research methodologies

to measure complex user preferences. The survey will establish a baseline understanding of motorist behaviors, general familiarity with various road usage tax and fee concepts, opinions about various policies, and potential behavioral modifications in response to such taxes and fees. The questionnaire will also collect a demographic profile of respondents to ensure broad representation from this community. Because transportation revenue is a topic of public interest, the survey will also include a separate branch of questions for any drivers who currently own an ICEV vehicle. These respondents could be shown a brief set of questions about their receptivity to EV ownership and collect general information about road funding policies and future vehicle ownership.

The survey will rely on a sample of available listservs of current Vermont owners of affected vehicles classes. The same contact list developed by VTrans through their partnership with Drive Electric Vermont will serve as the primary sampling frame for the survey. RSG will also leverage its relationships with local stakeholders, including Vermont Planning Association, regional planning commissions, and other interested organizations to help drive participation. Participants will be recruited through an email invitation distributed by RSG or VTrans. Based on RSG's recent survey experience in Vermont, and the engaged nature of the user base, we suggest survey response rate targets of 10 percent or more of the sample population. **To achieve this target, we recommend an incentive in the form of a small prize drawing.**

Additional Stakeholder Engagement

We propose an additional stakeholder engagement process in parallel with the Advisory Committee and public opinion research. The additional effort aims to engage with public-facing organizations and advocacy groups. VTrans, in partnership with Drive Electric Vermont and the Milestone Team, will develop and prioritize a list of key stakeholders. The Advisory Committee can assist the team in vetting the list. **Examples of organizations to reach, if not already represented on the Advisory Committee, include AAA Northern New England, Sierra Club - Vermont Chapter, Vermont Vehicle and Automotive Distributors Association, Renewable Energy Vermont,**

Vermont League of Cities and Towns, ACLU of Vermont, the Public Utility Commission, Green Mountain Power, and Vermont Electric Co-op, among other organizations representing electric energy interests, rural interests, local government, privacy advocacy, and environmental advocacy.

We propose the bulk of this engagement process occur through **extensive one-on-one, online meetings with identified stakeholders**. Along with VTrans, we propose at least two members of the Milestone Team attend each meeting. The meetings should take place relatively quickly, from project initiation through the second meeting of the Advisory Committee. The purpose of each meeting is to introduce the situation summary regarding transportation revenue, present the basic concepts of the RUC System proposal, and elicit feedback from individual stakeholders.

We will compile the issues, concerns, and questions stakeholders share at these meetings, along with the survey-based public opinion research findings, protecting anonymity and sensitive information as appropriate. The Milestone Team and VTrans will present the compiled findings to the Advisory Committee at its second meeting. The findings will inform discussion and recommendations regarding policy and system design for the RUC System concept that the Advisory Committee offers at its second, third, and fourth meetings.

Media Engagement

We advise VTrans to begin media engagement at the start of the Advisory Committee process, if not slightly before. The Advisory Committee process provides an opportunity to introduce the media to the proposed RUC System. The media can learn the essentials of the concept before the reporting begins. Further, the media will learn the results of the stakeholder and public engagement process at the same time as the Advisory Committee. Later, during any implementation, the media will likely write about the process in a way that reveals the openness required by Vermont's Public Meetings Law and preserves the inclusion of Vermonters and stakeholder groups during the public process of the Advisory Committee. *An open, well-run process enables the process of public acceptance. Our*

proposed PM Jim Whitty has conducted over 150 media interviews on the topic of MBUF and, along with our full team of subject matter experts, is well positioned to **provide VTrans advice on when and how to engage with the media, including key messages and talking points to convey at various points during the process**. This experience includes *strategies for proactive outreach* to reduce the risk that poor coverage thwarts VTrans' research effort.

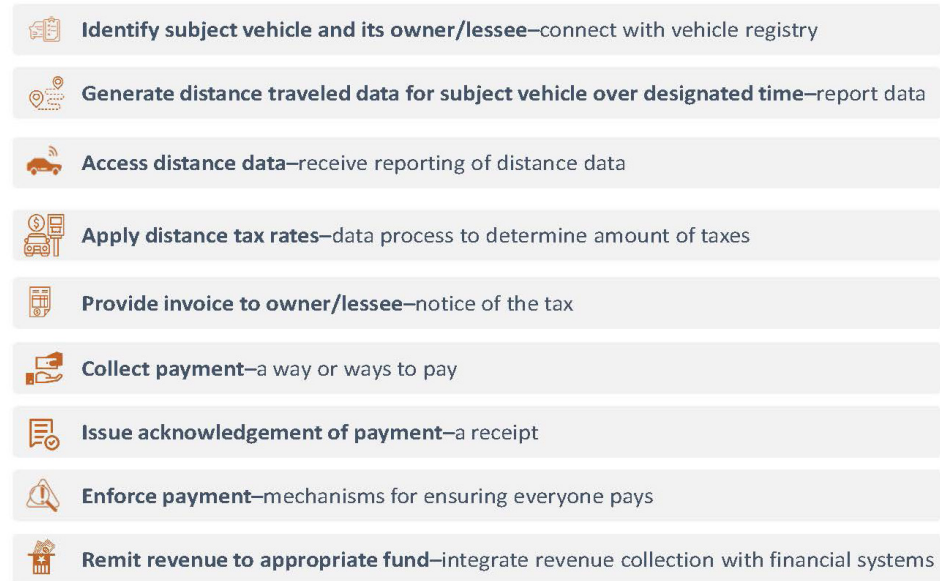
Our team will prepare a **summary of the stakeholder and public engagements and media contacts** for presentation at the Advisory Committee's second meeting. The summary will describe the general impressions of Vermonters to Vermont's RUC System, including a *comprehensive list of the principle issues raised and reactions to solutions proposed for the same issues in other states*. The list will include any issues specific to Vermont. The summary will include any engagement with the media that has occurred, including news stories. The summary will describe the nature of the feedback loop and how it can shape the Vermont RUC System design.

Task 2. FF/MBUF RUC System Definition

Matthew Dorfman, engineer with 20 years of experience in technology, system, and policy for transportation revenue collection, and over a decade of experience specifically in policy and system design of MBUF systems, will lead this task.

The Milestone Team will prepare a **report on possibilities for the FF/MBUF system**, delivered as a technical memorandum to the Advisory Committee in advance of its Kick-off meeting. The team will deliver a **summary presentation of the analysis** at the Kick-off meeting. The analysis of alternatives will cover a range of dimensions (**financial, technical, equity, flexibility, and more**). As an input to this analysis, we will create a **cost model**, which will allow the team to prepare estimates of the cost of collecting various new fees across a range of system design assumptions. This cost model will integrate with the financial model (Task 5).

To guide our report we will use our nine essential elements framework as illustrated:



Written in plain language accessible to a broad audience, the initial technical memorandum will include background information and analysis to enable the Advisory Committee to discuss alternatives and offer advice and recommendations on key design choices at its second meeting. Based on those decisions, the Milestone Team will prepare a System Definition, including capital and annual operating costs and expected state staff resources by year (based on expected system adoption rates) for inclusion in the implementation plan (Task 6).

In the sub-sections that follow, we describe contents our team will cover in the FF/MBUF system definition materials. Our deep experience developing FF/MBUF systems in Oregon, Utah, Washington, California, and Hawaii allows our team to efficiently develop comprehensive, accurate content, appropriately tailored to Vermont.

Define eligible vehicles

Defining eligible vehicles for the FF/MBUF system is a policy choice that has implications for system design. Our technical memorandum

will include alternative definitions of eligible vehicles for Vermont, along with implications of each choice on revenue potential, state systems, fairness, and transition flexibility.

- Drawing on the financial analysis (Task 5), we will examine the financial impacts of charging various types of vehicles. This analysis will illustrate the financial tradeoffs of vehicle eligibility for the Advisory Committee.
- Vehicle eligibility also impacts state systems. Specifically, drawing on our understanding of the Vermont Department of Motor Vehicles (DMV) vehicle classification system and information technology flexibility, we will explain the realm of feasible vehicle eligibility options for Vermont. Our team will compile this information to present the system and technology impacts to the DMV of various vehicle eligibility choices.
- *The choice of vehicle eligibility also impacts fairness.* Understanding these impacts depends on how rates are determined for subject vehicles, so we will draw on our analysis of rate setting in Task 4. For example, if only EVs are eligible, setting the per-mile rate equal to that of the gas tax paid by the average ICEV results in lower road taxes for an ICEV of high fuel efficiency than for an electric vehicle. Options exist for addressing these challenges. For example, Virginia created variable rates by MPG.
- Our analysis will consider *various options for phasing in the FF/MBUF to eligible vehicles.* Vermont may wish to start the MBUF programs with EVs only and include high mileage ICEVs later. Vermont could phase in high mileage vehicles by MPG band to avoid overwhelming a system. We will explore these options in the technical memorandum and presentation at the Kick-off Advisory Committee meeting.

Evaluate and recommend the appropriate mileage data collection technology

The Milestone Team will prepare a section of the technical memorandum on appropriate mileage data collection technologies for MBUF. Drawing on our extensive pilot and operational system

experience, we can prepare this information thoroughly, accurately, and efficiently. The information will be designed to *support Advisory Committee recommendations regarding mileage reporting technologies to include in an initial MBUF program for Vermont.*

One helpful way to break down mileage reporting technologies is *location-based versus non-location-based*. Location-based options such as OBD-II devices equipped with GPS allow motorists to avoid paying for miles driven out-of-state or off-road with precision, but they are significantly more expensive to administer than non-location-based options. Non-location-based reporting will be sufficient for many vehicle owners. Those especially concerned about privacy almost always prefer non-location-based reporting. Options exist for excluding non-Vermont road miles under these approaches, including standard deductions and manual refunds. These considerations will inform Advisory Committee input to the relative desirability of each reporting method.

Vermont may also consider *leveraging data already collected through vehicle inspections*. Vermont's Automated Vehicle Inspection Program (AVIP) system already collects some odometer data. The Milestone Team is uniquely qualified to evaluate such a system, as we integrated a similar vehicle inspection system (including odometer readings) with DMV data in Hawaii to generate annual driving reports, which compared estimated fuel taxes with potential mileage-based fees.

We have conducted analysis of current and emerging mileage reporting methods in all the pilots we have run and are currently conducting similar analyses for several clients. In addition, we can offer perspectives from our work on long-term future possibilities such as fleet mileage reporting through ridesharing firms and autonomous vehicles. For VTrans and the Advisory Committee, we propose to evaluate the most practical near-term applications for the proposed RUC System as follows:

- **OBD-II plug-in devices** are widely used in pilots and reliable, but expensive to operate. They come with or without GPS.

- **Odometer capture using mobile devices with cameras** works well and is inexpensive but cannot record location of miles traveled. Odometer capture can be offered on its own, or to supplement data from the vehicle inspection system, or to support periodic payment of MBUF (e.g., quarterly instead of annually).
- **Native automaker telematics** can currently only be utilized for MBUF via third-party access, such as those offered by the companies Smartcar and Otonomo. In the future, automakers may choose to offer this service directly to vehicle owners.
- **Smartphone apps** using location data have been tested in California, Washington, and the Eastern Transportation Coalition (formerly I-95 Corridor Coalition), but none are ready for revenue use. The biggest challenge for a standalone smartphone app is the ability to reliably associate the phone to a given vehicle, ensuring that all miles are captured for only that vehicle.
- **Odometer capture using vehicle inspection**, including the existing Vermont system, could offer a low-cost means of measuring miles traveled at minimum for enforcement purposes. Data quality will need to be examined.

As part of this analysis of technologies, the Milestone Team will *estimate expected capital and annual costs for each reporting option*, including options on what costs can be covered by users (potentially the cost of OBD-II devices, for vehicle owners who choose this method), versus costs that would be borne by the state, as well as overall advantages and disadvantages of each of the mileage reporting technology options.

Define business processes and system assumptions

The Milestone Team will prepare background information on business processes and system assumptions for the FF/MBUF system. Through our pilot work in Washington and California, and operational system work in Utah, we are very familiar with how state agency systems and Commercial Account Manager (CAM) systems operate. CAMs are private sector companies that provide mileage reporting,

fee collection, account management, and customer service functions to motorists in an MBUF system.

Perhaps the most important business process/system assumption is the decision whether to use commercial account managers for some or all motorists. If so, oversight becomes a very important business process. The use of one or more commercial account managers is advantageous if Vermont wants to offer a location-based option using OBD-II devices or telematics support. By contrast, for non-location-based options such as odometer capture and safety inspection-based reporting, the State may be able to provide the service directly in a cost-competitive manner.

Another important business process/system assumption is whether to cap the MBUF at the FF. This is a policy choice for which the Advisory Committee can offer advice. Capping the MBUF at the FF level may be helpful for public acceptance, as vehicle owners will feel that they have nothing to lose by choosing the MBUF. Very high mileage drivers may get a bargain, but they are likely to choose FF anyway.

A full FF/MBUF system design features *a number of other, lower-level business process and system decisions.* These need not be addressed by the Advisory Committee, but for completeness we propose to present them for awareness. Examples include:

- Whether the FF/MBUF system requires pre-payment or post-payment by customers.
- Whether to integrate the FF/MBUF system with existing DMV systems or to build a new system with interfaces to DMV.
- How to assign FF/MBUF in scenarios such as customers buying and selling vehicles (title transactions), moving to Vermont, or leaving the state.

A further set of processes that will need to be defined are enforcement processes – ensuring vehicles are reporting and paying on

time, checking against odometer fraud, etc. The Milestone Team authored a comprehensive, 75-page report on MBUF enforcement for the RUC West Consortium and will apply the lessons from that research for Vermont. In general, all mileage reporting methods should include reporting and payment reminders, and late fees should apply when these go unheeded. The highest level of MBUF penalty is typically a registration hold. Odometer rollback is already a crime.

Identify future needs

The Milestone Team is constantly looking at the future of MBUF and has studied further transition plans for states including Washington and Utah. The technical memorandum on the FF/MBUF system will identify potential future needs of the system, including the following:

- Regional/national interoperability
- Integration of native automaker telematics
- Potential for transition to MBUF for all vehicles
- Operational needs for a future with more commercial fleets, specifically including ridesharing and autonomous fleets
- Inclusion of commercial (specifically, heavy) vehicles

Identify process options to address and manage anticipated privacy concerns

The Milestone Team will prepare background information *identifying options to address and manage privacy concerns.* The most important such process is to ensure the availability of non-location-based reporting options, like the FF option. The state may wish to offer payment installment plans for this fee, to avoid burdening lower income individuals. Allowing a commercial account manager to operate location-based options also may reassure some individuals who do not want the state to have their location data.

Further, the state must adopt a strong privacy policy and security requirements. The privacy policy should include provisions such as

limited data retention (e.g., 30 days from billing for location data), no distribution to third parties, and requiring user agreements and opting into location-based services. Security requirements are technical requirements of information systems used in FF/MBUF systems. They should include provisions such as requiring that data should be encrypted at rest and in transit, and strong user authentication (username/password) requirements.

Define enrollment, withdrawal, and removal processes for Vermont-registered vehicles
The Milestone Team will define enrollment, withdrawal, and removal process options for the FF/MBUF system for Vermont vehicles as part of the technical memorandum. *A technical decision will be whether to use prepayment, electronic wallets, or allow post-payment*, but this detail does not necessarily need to be decided as an input to the draft legislation.

If enrollment is integrated with DMV, vehicle owners should be presented with the option to pay the FF or MBUF. If they choose the MBUF, they should be presented with mileage reporting and payment choices. Clear communication up front of enrollment steps, compliance requirements, fees, and withdrawal options is critical to a positive user experience, which our team has learned through successive design iterations in numerous pilot projects.

Removal includes vehicle sales, moving out of state, or scrapping of the vehicle. In these cases, vehicles paying MBUF would likely need to have a captured odometer record to close the account, which may allow processing of RUC owed – either refunding of any prepayment, or billing for any final payment required. In limited cases, dashboard damage may prevent obtaining a final odometer image, in which case other business rules such as charging a fee based on elapsed time may be adopted.

The Milestone Team will summarize options for enrollment, withdrawal, and removal, and capital and operating cost and organizational impacts of those options.

Define the services that a Commercial Account Manager should provide

The Milestone Team will prepare background information *defining the services that a commercial account manager can provide*, drawing on our knowledge of and experience working with such firms in Oregon, Washington, California, Utah, and Hawaii. Commercial account managers are very useful for providing OBD-II location-based MBUF reporting and telematics integration. They may also support odometer image capture but are not necessary for that—the state can procure odometer image capture software directly. For a vehicle inspection-based odometer reporting system, commercial account managers are not necessary—only integration of inspection and vehicle registry (DMV) systems.

For the mileage reporting options that they provide, commercial account managers need to provide and manage enrollment, customer service (by email and phone), mileage reporting technology and devices, and electronic payments. They should also provide an online portal that illustrates essential account information including driving and payment history. Commercial account managers should also provide the first level of enforcement for their customers.

Task 3. Per kWh Hour System Definition

Marius Popescu, CDM Smith's lead for electric vehicle charging infrastructure planning initiatives with over 25 years of experience, including transportation, renewable energy, energy storage, microgrids and utilities, will lead this task.

The Milestone Team will prepare a [report on challenges, opportunities, and options for the kWh Fee portion of the Road Usage Charge System](#), delivered as a technical memorandum to the Advisory Committee in advance of its Kick-off meeting, with a [summary presented](#) at the meeting. As a companion to the FF/MBUF report, the kWh Fee technical memorandum will likewise include background information and analysis, written in plain language, to enable the Advisory Committee to discuss alternatives and offer input and recommendations on key design choices. Such choices include on whom to impose the kWh Fee and how to design a legal system that ensures Vermont residents avoid paying the fee. The

analysis of alternatives will document challenges and opportunities for utilities, business processes and revenue flows for fee collection, costs, reporting requirements, and privacy protection measures, as well as legal analysis where appropriate.

Based on Advisory Committee feedback on design choices at the second Advisory Committee meeting, we will compile a full System Definition, which will become part of the implementation plan and final report. Our approach will draw on our team's deep knowledge of the utility industry, as well as EV charging infrastructure technical features, operations, and business models, including consumer pricing and relationships with utilities in Vermont.

Document challenges and opportunities for utilities

EV drivers typically pay for two main costs associated with charging stations: the equipment to recharge the vehicle (fixed costs) and the power consumed (variable or energy costs). The fixed costs associated with different types of charging equipment have three main components:

- Make-ready charging infrastructure
- Utility infrastructure upgrade
- Cost of charging equipment

Adding a new tax or fee on top of this nascent industry represents an additional challenge. The Vermont PUC December 2019 report to the legislature recommended against imposing any sort of per-kWh fee on EVs, whether for funding transportation infrastructure or electrification infrastructure.² The report cited several flaws in the concept and difficulties in implementation, focused largely on the challenges of assessing fees on home-based charging.

² Vermont Public Utility Commission. Report to the Vermont State Legislature: Supplemental Electric Vehicle Report Submitted Pursuant to Section 35 of Act 59 of the 2019-2020 Vermont Legislative Session. 13 December 2019.

VTrans' revised concept focuses on public charging stations, which resolves many of the PUC's concerns. Still, challenges remain for this revised kWh Fee concept. Among the challenges to confront and resolve are how to ensure equitable and consistent application of the fee, how to maintain a low cost of fee collection, how to recover the added cost of fee collection from consumers, and how to ensure the "right" customers pay the fee. Solving these challenges creates an opportunity for Vermont to ensure contribution to the road system from out-of-state EV drivers who otherwise would have no way to contribute.

A key issue to decide is "on whom does the tax fall." In other words, if the legislature enacts a kWh Fee, who is legally required to pay the fee? We turn now to this question.

Define business processes for collection of fees at public charging stations, revenue flows from utilities to the State

The 17 electric distribution companies presently operating throughout Vermont range in size and sophistication. They include one investor-owned utility, 14 municipal electrical departments and two staff- and member-owned rural electrical cooperatives that serve anywhere from a few hundred consumers to just under 300,000.

Each utility brings unique pricing methodologies and customer service attributes. Electricity used by commercial type EV charging stations (AC Level 2 and DCFC) is usually metered using commercial and industrial electricity rates, which in most cases incorporate a "\$ per peak-kW" (demand charge) plus a "\$ per kWh" (volumetric charge). The demand charge rises proportionally for additional chargers since it depends only on maximum demand. Commercial tariffs typically offer lower volumetric charges, but also requires the demand charges (set by the highest level of demand over any 15-minute period over the course of one month). Demand charges reflect the projected cost to the utility of providing the generation and distribution infrastructure required to meet peak demand on both a system level and a local distributional level. Demand charges are applied widely in Vermont. All electric utilities in Vermont apply demand charges to their larger (higher usage) customers. Several

Public Charging Network			Blink		EVGo		Electrify America		Tesla	ChargePoint		
Charging Speed Level			AC Level 2 (240V)	DC Fast Charging (Level 3)	AC Level 2 (240V)	DC Fast Charging (Level 3)	AC Level 2 (240V)	DC Fast Charging (Level 3)	DC Fast Charging (Level 3)	AC Level 2 (240V)	DC Fast Charging (Level 3)	DC Fast Charging (Level 3)
Application			Fleet depot charging and personal charging at blocks of flats	Ultra-fast charging on major roads and urban areas where drivers want to recharge at fastest charging speeds; high power charging for electric buses and service vehicles	Fleet depot charging and personal charging at blocks of flats	Ultra-fast charging on major roads and urban areas where drivers want to recharge at fastest charging speeds; high power charging for electric buses and service vehicles	Workplace, residential, and retail space; auto dealerships and manufacturers; light- or heavy-duty fleets; and public charging stations	Ultra-fast charging on major roads and urban areas where drivers want to recharge at fastest charging speeds; high power charging for electric buses and service vehicles	located near desirable amenities like restaurants, shops and WiFi hot spots	Fleet depot charging and personal charging at blocks of flats	Rapid charging for short dwell time parking, motorway corridor locations where drivers need to quickly recharge and light-duty fleets	Ultra-fast charging on major roads and urban areas where drivers want to recharge at fastest charging speeds; high power charging for electric buses and service vehicles
Charging Time (up to 80% of battery capacity)			65 miles/hour	10-30 minutes	20 miles/hour	75 miles/30 minutes	25 miles/hour	30-50 miles/30 minutes (25 kW charger); 80-180 miles/30 minutes (150 kW public charging station)	15 miles/minute	25 miles/hour	30-60 minutes	10 Minutes
Pricing/ Cost of Charge	Based on electricity used	[\$/kWh]	Blink Member: \$ 0.2-0.49/kWh Blink Guest: \$0.59/kWh	n/a	n/a	n/a	In per-kWh locations, you pay the same per-kWh rate for Level 2 charging as for DC fast charging at that station location	n/a	<i>\$0.28/kWh (most common for Tesla network). Free charging for cars purchased before January 2017. Idle fees of \$0.50 per minute apply to any car within 5 minutes of charge completion if the station is >50% full and \$1.00 per minute when the station is 100% full.</i>	n/a	The pricing across the network is very inconsistent; \$2/charging session + \$0.35-0.53/kWh	
	Per-Minute Basis	[\$/minute]	n/a	\$0.35/minute	Pay As you Go - \$1.5/hour	Pay As you Go - \$0.35/min (session time limit: 60 minutes); Membership - \$0.31/min; save 10% off/min; min. charging commitment of \$7.99/month; session time limit: 60 minutes)	Pay As you Go type - Level 2 charging costs \$0.03/min. Idle Fee: Once charging stops, \$0.40/min	Guest Charging (Pay As you Go) and Pass Member: \$0.43/kWh (no monthly fee) Pass+Member: 1-90kW: \$0.31/kWh, plus \$4/mo fee 1-350kW: \$0.24/kWh, plus \$4/mo fee Idle Fee: Once charging stops, \$0.40/min	When billing per minute, there are two tiers to account for changes in charging speeds. Tier 1 applies at or below 60 kW and tier 2 above 60 kW. Tier 1 is half the cost of tier 2.	\$ 0.52/hour	n/a	n/a
Payment Options			Easy payment* via RFID, Apple Pay, Google Wallet, and all major credit cards	Authentication Method RFID: MI-FARE ISO/IEC14443A/B, ISO/IEC15693, ISO/IEC18000-3,FeliCa, NFC; Optional Contactless or 3-in-1 (region dependent)	credit and debit cards	credit and debit cards	credit and debit cards	New technology featuring the IEC/ISO 15118 standard to make paying for a charge easier; Guest: Swipe or tap debit or credit card to pay; Contactless payment using cell phone for members.	Tesla app for iPhone and Android to control and remotely monitor Tesla's products	RFID card, mobile app, calling customer support and contactless debit and credit cards		

distribution utilities also apply a non-optional demand charge to their larger-demand residential customers. In turn, EV charging stations pass on these costs to end consumers (motorists charging their EVs) using a variety of commercial models, as summarized in the table above.

An approach familiar to Vermont for recovery of the kWh Fee is the gas-tax model. As the 2019 PUC report to the legislature concluded, *“the gas-tax model would be appropriate because it obligates the operator of the [EV charging] station to collect and remit that tax. This would require either a dedicated utility meter or an accurate submeter to measure the electricity consumed by EV charging at the station.*

The taxes collected, like the gas tax, would presumably be tendered to the Commissioner of the Department of Motor Vehicles.” Under this concept, the legislature imposes taxes on owners or operators of EV charging stations. On a monthly basis, they can remit fees collected to the State.

To preserve the desire to target EV charging fees on out-of-state drivers under this approach, Vermont resident EV owners could input a discount number (similar to retail advantage programs) at the point of charging and receive a discount equal to the state recovery fee. Based on legal research we conducted for the Washington State Transportation Commission on mileage-based user fees, and a report authored by Jim Whitty, we believe such arrangements, if structured properly, do not run afoul of the U.S. Constitution’s Interstate Commerce or Equal Protection Clauses. Further research may be required to confirm this assumption, but the work required is marginal when building upon the prior analysis we conducted for Washington State.

Alternatives to the concept of applying a kWh Fee at the EV charging owner/operator level exist. One option is to apply the tax requirement to the end consumer. To avoid complexities of passing along a consumption-based fee across diverse commercial pricing models, the state could require drivers to report and pay their kWh consumption to the state separately from the EV charging payment (e.g., through a smartphone application at the point of sale). Alternatively, EV charging stations could build the separate fee collection infrastructure, passing the costs of fee collection along to end consumers, or taking the costs out of the kWh Fee funds collected and remitted to the state. Another option is to require out-of-state EV owners to report their miles driven at EV charging stations and assess a per-mile fee at the time of transaction, an approach being tested in California that builds upon the original “pay-at-the-pump” MBUF concept conceived by Jim Whitty and pilot tested in Oregon in 2006-2007. Alternatively, EV owners visiting from out of state could pay a time-based fee (“time permit”) for time spent in the state as a proxy for road usage. Lastly, the state could impose the tax

on the utilities themselves, with an option or requirement to flow the cost down to EV charging station owners.

Determine additional capital and operational costs to utilities

The project team will include estimates of costs of the various possible kWh Fee approaches as part of the technical memorandum for the kick-off Advisory Committee.

The recovery of any fees imposed at public charging stations will have costs to the EV charging station owner, whether private operator or utility company. Charging station systems will need to be developed or modified to capture the data, process the information, obtain payment and remit funds to the state. For many charging stations, these may only be software upgrades, but the cost of such upgrades could be significant, in particular if the charging station provides subscription-based charging or unlimited free charging, as neither of these lend themselves to assessing kWh Fees easily.

Some charging stations may require hardware upgrades to accommodate payment and/or to accommodate the input of vehicle residency cards to ensure in-state vehicles are not charged the kWh fee. Hardware upgrades will be more expensive to carry out, and also imply more extensive software upgrades.

In addition, as is typical for gas stations, letters of credit or surety bonds will need to be obtained by the operator to ensure revenue collected on behalf of the state is appropriately remitted. Therefore, there will be initial capital costs to implement the fee recovery program and on-going operations expense, both from the charging station owner side, nominal at best, and the state, as is typical for audit and compliance purposes of the Vermont Department of Taxes.

Define reporting requirements

Data reporting needs are a function of the favored approach to collecting payments and identifying in-state vehicles for exemption. Entities subject to the kWh Fee will need to report kWh consumption, estimated or measured consumption by in-state versus

out-of-state vehicles, and the corresponding total fees collected and remitted.

Depending on the approach used to identify vehicles as in-state or out-of-state, some form of vehicle identification may be required. Our technical memorandum will include options for policy and/or system design approaches that protect any private information that forms part of these transactions, similar to how privacy is protected in MBUF systems.

Task 4. Fee Structure Recommendation

Scott Wilson, an economist and attorney with over two decades of experience in road pricing initiatives and special expertise in utilities rate setting methodologies theory and practice globally, will lead this task.

While rate setting is a political choice, VTrans has an opportunity to *provide input to policymakers on the technical justifications behind a range of choices available*, drawing on the Milestone Team's broad experience with designing rate setting for MBUF and Flat Fee systems across the U.S. and internationally. We will prepare a technical memorandum on rate setting criteria, methodologies, and equity impacts for presentation at the second Advisory Committee meeting. In addition, integrated to the financial analysis in Task 5, we will construct a [spreadsheet tool for developing rates](#) based on data provided by VTrans and DMV, including existing rates of fuel taxation and vehicle fees, vehicle fleet population by technology (ICEV, PHEV, AEV), and miles traveled by light-duty vehicles. This spreadsheet tool will allow the Advisory Committee to *see in real time how the selection of a rate setting methodologies and specific criteria result in actual rates per mile or per vehicle, and how those rates in turn impact typical motorists and households in Vermont*. Rates, in turn, determine the revenue collected, which will feed into the financial analysis (Task 5).

This tool will specifically incorporate the *ability to establish rates* for AEVs, PHEVs, and ICEVs by fuel economy, thereby allowing the Advisory Committee to understand the impacts of including

high-MPG ICEVs as part of an early or transitional Flat Fee/MBUF system.

Develop Rate Setting Criteria

When setting rates for a new type of fee, in parallel with existing fees for similar road users, we advise consideration of several important elements. Fees are designed first and foremost to raise revenue, but placing fees on owning, using, or charging a vehicle has impacts on those required to pay. Those impacts may be significant on specific groups, with negative social impacts particularly on already marginalized groups. Fees may also have behavioral impacts to reduce the activities that result in payment of the fee—in this case EV ownership or usage, which may at times conflict with broader environmental and sustainability goals.

We assume that Vermont is only considering light vehicles, not heavy vehicles, which have additional weight factors to consider. However, if heavy vehicles are included, we have detailed experience with incorporating such vehicles through rate setting in flat fees and per mile fees, by vehicle type, weight, and, critically, configuration.

With three types of fees (Flat Fee, MBUF, and kWh Fee), we propose assessing them together as part of a single model with the ability to vary each one. Equitable rate setting should be an iterative process based on a series of policy objectives and principles. Rates are essentially a function of the following:

- The chargeable event: ownership of a vehicle, use of a vehicle, or energy consumption of a vehicle
- The number of vehicles forecast to be subject to the charge, based on policy choices around eligibility
- Forecast consumption of the chargeable event: vehicles sold, miles driven, and energy consumed
- Target revenue sought

- Costs of collecting the fee, including long-run capital as well as operating costs
- Defined time interval over which the fees apply (e.g., one year)

To determine an equitable set of rates, the **first step develops the criteria to establish the fee rates**. As all three types of fees have a relationship to each other this needs to be done with care. For example, the Flat Fee can act as a cap on the MBUF and will directly affect expected revenues. These involve trade-offs between potentially different outcomes or objectives, including:

- The **relative appeal of a Flat Fee (certain, but with a higher payment amount) vs. MBUF** (less certain, but with smaller increments to pay) and how this influences how motorists choosing between the fee options.
- **Revenue generation potential**. The number of miles driven limits MBUF revenues, while the number of registered eligible vehicles determines the potential Flat Fee revenue.
- For a **revenue target**, a Flat Fee, or cap on MBUF, enables transfer of the revenue raising burden from higher mileage users to lower mileage users, noting that there is no cap on state fuel tax paid (so high mileage users of gasoline powered cars pay regardless of the amount of gasoline used).
- **Behavioral change** – how various fees might change choices on vehicle ownership, vehicle usage or EV/PHEV vehicle charging/ power source.

A **second step** for rate setting determines revenue potential of the fees. A key goal is revenue neutrality. Vermont should consider revenue neutrality in both net terms (after collection costs) and over time. Although charges should remain neutral by vehicle type, revenue neutrality as a medium-term goal is insufficient in itself, as gasoline-powered vehicles become increasingly fuel efficient, using less fuel (and be subject to less fuel tax) per mile traveled.

A **third step** of the rate setting process ensures subject vehicles will not pay more, on average, than owners of other types of vehicles, but also that other users do not unduly cross-subsidize them. This should consider not just fee rates, but the road usage patterns of such vehicles, and the demographics of owners of such vehicles (i.e., to what extent do users drive vehicles used as secondary vehicles in a household). It should also forecast likely use of Vermont roads by out-of-state EVs and PHEVs, and the ability to charge fees on such vehicles as well as the impacts of not charging such vehicles, both on revenue and on equity. The process should undertake a wider equity analysis after development of a series of rates under a range of forecast scenarios (based on different fleet, vehicle usage and revenue target options).

Finally, our examination of rate setting criteria will integrate climate change policy considerations. Vermont seeks to encourage adoption of EVs, PHEVs, and high efficiency ICEVs to meet climate change policy goals, and it does not wish to diminish adoption of such vehicles. Although theoretically any road use fees could have an impact, other factors will likely prove more important and decisive in informing vehicle purchase and usage choices. Rate setting analysis should seek to identify the level at which Flat Fees, MBUF, and kWh Fees would measurably impact on such choices. Evidence elsewhere shows such fees will unlikely have such an impact at the levels currently under consideration, especially given that state and federal purchase price incentives outweigh them (up to \$11,500 combined).

Update Previous Flat Fee Estimates

The state's previous estimates of Flat Fees will be updated using new data on fleet MPG and average annual miles driven by passenger cars, so that Flat Fees incorporated in the revenue modeling are appropriate and relevant. The assumptions and key variables in this update will be clearly identified and subject to scenario testing. Several considerations factor in this analysis:

- Ensure the FF is fair. A FF is too high when it truly penalizes ownership of a particular type of vehicle. The level at which this

occurs is difficult to say, but likely in the several hundreds of dollars per year or higher. A Flat Fee is likewise too high when it equates to an equivalent per-mile charge for a very high number of miles. The average vehicle in Vermont drives around 12,000 miles per year, while the 95th percentile drivers of passenger cars tend to drive more than 40,000 miles. A Flat Fee equal to driving 100,000 miles, for example, is likely too high. On the other hand, a Flat Fee can be too low if it does not adequately capture at least a portion of road costs attributable to even a low-mileage (several thousand miles per year) vehicle.

- Ensure the FF does not discourage participation in the MBUF program. When choosing between the Flat Fee and the MBUF, drivers make an active choice that incorporates not only the price (or expected price) but also the perceived hassle of compliance. A Flat Fee that is set at the average or below average miles driven will attract most motorists with only those deal-seekers opting to try and save money on MBUF.
- Ensure the FF raises sufficient revenue to be worthwhile in the long run. A FF that does not raise substantial revenue (in the long run) may not be worth the political capital to implement.

Evaluate Equity Impacts

The equity impacts of the three fee concepts will vary and require a separate analysis following modeling of likely revenues. In consultation with VTrans, the Advisory Committee, and key stakeholders, we will identify key groups of interest, particularly marginalized populations, taking into account income, demographics, geography and other relevant factors. This will ensure we can collect data on what members of such groups pay now compared to what they would pay with the new fee concepts. With a similar revenue target, a higher flat fee can result in a lower per-mile fee, because the state can generate more money by actual usage rather than by owning a vehicle, although the equity impacts lack clarity without data as to which groups of interest drive the most miles.

Analysis in other states has varied, with some indicating that rural drivers do not drive more miles than urban drivers, because they make fewer trips (although each trip may be longer). Forecast usage should break down by urban and rural categories, and by income groups, with the possibility of additional categories, if appropriate. We recognize that Vermont lacks one description of rural, with many small villages and towns and a widely dispersed residential population. The Milestone team **will attempt to summarize** these statewide travel behaviors to better capture the nuances that exist within the state and portray a more locally resonant description than simply urban vs. rural. Although a kWh Fee may target out-of-state drivers, equity analysis will forecast which types of vehicle users, on what types of trips, use such facilities, and whether pricing them will unduly burden them. As with the revenue analysis, we will consider the existence of each fee type in isolation, and in the three possible combinations, to assess impacts.

This also should take into account the equity impacts of not introducing such charges, if found that the incidence of such charges will primarily burden higher-income groups or households with multiple vehicles. The equity impact analysis will consider the same alternative scenarios as the revenue analysis, and the distributional effects of the fees. Although outside the scope of the study, it will note the potential for using net revenues to offset negative impacts or to generate positive impacts through spending decisions that may benefit groups of interest.

Complete State of Vermont Equity Impact Assessment Tool

Following on from the equity impact analysis, we will apply the Vermont Equity Impact Assessment Tool, informed by the results of that analysis. If the equity impact analysis identifies notable impacts on marginalized populations, we will consider policy options to address this (such as geographically or user defined discounts), taking into account other policy objectives. The wider equity impact analysis should take into account the requirements of the Vermont Equity Impact Assessment Tool as an integral part of its approach. Questions posed in the tool include considerations on how the fee will be structured to minimize disproportionate effects on any one

demographic or population segment but also how historically underserved populations can be better served by these policies.

The survey instruments and focus groups carried out in Task 1 will be designed to understand the interests and responses of various population segments by race and cultural identity, age, income, geography, and others as identified by the team and VTrans. In addition, the equity assessment will take into consideration temporal effects, given that the fiscal impacts of new funding policies will evolve over time as the vehicle fleet, and the residents who own subject vehicles, evolves with it.

Recommend a Process for Keeping Fees Current

For fees to remain current they need to reflect three key factors:

- Inflation for the types of spending for which the revenue is intended
- Changes in vehicle ownership and usage behavior (e.g., more or fewer miles driven, more or less vehicle ownership)
- Changes in demand for revenue (defining the expenditure needs over time)

A robust fee setting system, with an appropriate revenue and fee setting model, will allow updating inputs over time so that as vehicle fleet numbers and distance driven changes, along with inflation, decision makers can take steps to keep fees current. This includes not only taking into account inflation or demands for more spending, but also the ability to expand the scope of fees to include other vehicles, such as hybrid vehicles, high mileage ICEVs, and heavy vehicles. Options applied elsewhere include reviews every two or three years into actual vs. forecast revenue, against forecast expenditure, and regularly scheduling reviews of rates for revision to reflect these factors.

Task 5. Financial Analysis

Zubair Ghafoor, expert in transportation financial analysis, will lead this task, drawing on his specific experience modeling gas tax alternatives including MBUF and flat fees for the Federal Highway Administration and various states, including most recently Washington State.

To conduct the analysis of Vermont's proposed Road Usage Charge System, we propose to create an accessible **spreadsheet-based financial modeling tool for use by VTrans** to support conversations with Advisory Committee members and legislative staff. In crafting such tools, we always begin with the end in mind: what are the key outputs, insights, or pieces of information that decision makers need to guide their choices? Among the known outputs are *revenue generation potential, break-even points, and annual operating costs based on a variety of scenarios regarding EV adoption and program enrollment*. Given the long lead times required for fully enacting and implementing an MBUF system, we advise a 20- or 30-year analysis horizon. In short, the model must be able to convey revenues and costs of Flat Fees, MBUF, kWh Fees, and fuel taxes under a range of policy choices and economic conditions. The bottom line is the difference between revenues and costs, or net revenues.

To create these outputs, we will work backward through the computational process to identify input data needs. On the revenue side, Vermont's Road Usage Charge System envisions taxing four items: vehicles (specifically, AEVs and PHEVs), miles traveled (specifically, miles traveled by AEVs and PHEVs), kWh consumed by visiting AEVs and PHEVs while in Vermont at public charging stations, and fuel purchased in Vermont. Therefore, we must compile input data that include reliable estimates of the projected number of vehicles and miles traveled broken down by vehicle technology and MPG. In addition, we require at least an estimate of energy consumed at public charging stations and the split of consumption by Vermont-registered vehicles versus out-of-state vehicles. To compile the necessary input data, we will work with VTrans to assemble recent historical data of all of these items as well as any existing official (or unofficial) state forecasts of vehicles, miles traveled, fuel

consumption, and energy consumption. The likely sources of data include DMV, major public utilities (owners of public EV charging stations that could be subject to a kWh Fee), and the Public Utility Commission. Lastly, we must consider the rates for each of these taxes and fees, drawing on the analysis from Task 4 to simulate a range of rates. The amount of VMT associated with non-resident travel will be estimated by using two possible sources of data: A) the EERPAT statewide travel model can be run to compare resident annual vehicle miles vs. total annual vehicle miles traveled on the network, and B) VTrans can request the statewide travel model data from UVM TRC to estimate all non-resident VMT. RSG will assist the team to establish the percentage of non-resident VMT.

On the cost side, we will draw on unit cost estimates from Task 2 for mileage reporting technologies and other system components. We will combine unit costs with vehicle/account volumes to generate total system setup and operations costs. The costs will vary across scenarios for differing vehicle eligibility, MBUF vs. Flat Fee election rates, and economic conditions.

Collecting and assembling the data is the most labor-intensive part of the financial analysis. Our team relies on an efficient model structure developed and refined through similar efforts for seven states that allow for efficient assimilation of typical data available from state DOTs and DMVs. Once assembled, we can run numerous scenarios that vary assumptions such as EV adoption rates, MBUF adoption rates, per-mile and Flat Fee rates, eligible vehicles, and mileage reporting technology choices. Our team can easily prepare estimates of total net revenue potential, break-even rates for the overall program, and operating costs, across a range of scenarios. We will incorporate these financial findings into a technical memorandum and presentation to inform key Advisory Committee decisions at its third meeting.

Task 6. Implementation Plan

Ging Ging Fernandez, PMP, systems engineer, with 20 years of experience deploying innovative transportation revenue collection systems from automated transit fare cards to all-electronic tolling to

MBUF pilots, will lead this task, drawing particularly on her experience as project manager for the Hawaii MBUF demonstration, the world's largest effort of its kind.

The Milestone Team has specific and extensive experience helping state agencies with both pilot testing and implementation of Flat Fee/MBUF programs. Our MBUF program experiences in Oregon and Utah show it takes roughly two years to go from legislative enactment to system launch. Implementation of Vermont's Flat Fee/MBUF program will have many similarities. Depending on the VTrans decision, our team will develop an implementation plan to either move forward with a pilot test or move straight to implementation. In either case, we will draw on lessons learned during implementation in Oregon and Utah, as well as our understanding of local needs for Vermont.

Once the designated lead agency becomes known in the Advisory Committee process (e.g., DMV, Department of Taxes, VTrans), we will work with that agency to *define an organizational structure and estimate necessary staffing levels*. This is similar to work we've done in Oregon for the OReGO program and in Washington and Utah. The nature of staffing will depend largely on the system design selected by the Advisory Committee. For example, state account management requires more personnel than does commercial account management, while integration with existing registration processes and the vehicle inspection program can be less resource intensive.

The key moment for the implementation plan occurs when VTrans decides, based on Advisory Committee input, upon whether to pursue a bill to implement either Flat Fee/MBUF or the kWh Fee without a pilot. In making this decision, the Advisory Committee and VTrans will take into account:

- Statewide sentiment toward the Road Usage Charge System concept, in particular whether there is legislative support for it without a pilot

- Whether any new state-specific technologies and systems will be included in the system that will require additional investigation
- Whether funds are currently available, including potential federal grants for revenue system pilots or implementations

Once VTrans decides whether to pursue a pilot or implementation, the implementation plan will take final shape. Regardless of that decision, many elements of the implementation plan will be similar. Our Team will compile information from prior tasks and conduct additional research and analysis to assemble the elements in parallel with the Advisory Committee process, with final delivery of the implementation plan after its fourth meeting in November.

Pilot programs do four important things:

1. Start the conversation with the general public for identification, management, and resolution of issues that arise.
2. Introduce the topic to the state legislature to begin preparation for political acceptance.
3. Since a pilot should test a system as close to a vision of the final system as practicable, the state can work out bugs, skip starting over from scratch and save cost during program implementation.
4. The agency can develop essential institutional knowledge within.

Planning for Pilot Testing or Implementation

In the following sections, we describe three phases, each comprising steps necessary for implementation or pilot testing of a Flat Fee/MBUF system or kWh Fee that we will expand upon in the detailed [implementation plan](#).

Phase I: Before a FF/MBUF and kWh Fee enabling law (for a pilot or implementation) is passed

- Continue to engage the Advisory Committee to study and advise through the setup, launch, and early evolution of the system.

- Identify and maintain objectives of the revenue system, derived from the Advisory Committee process.
- Build agency capability to perform financial modeling, building on the work in Task 5.
- Build on the key decisions made in the Advisory Committee process (particularly Tasks 2 and 3) and in draft legislation to create detailed system design documentation for the Flat Fee/MBUF and kWh Fee systems, including concepts of operations, interface control definitions, system specifications, business rules, and operating agreements with site owner/operators of EV charging stations and/or utilities.
- Develop a public opinion research plan to supplement the work conducted in Task 1, for example with more in-depth focus groups involving system users to inform final policy and system design choices as well as program evolution over time.
- Develop and begin to implement a communication strategy (more detail below).
- Define additional data analysis methods to precisely estimate the share of Vermont resident travel (among EVs and non-EVs) using sources such as cell phone-based passive data collection to estimate the share of Vermont resident travel that occurs out of state. This data could be aggregated by zip code, county, or state.

If VTrans determines a pilot is warranted, our team will support the agency in defining the pilot's purpose and goals as part of the implementation plan, along with a scope and cost estimates to implement it. The level of detail will be sufficient to support an application for federal grant funding through the Surface Transportation System Funding Alternatives program. Our team has supported over \$20 million in successful state transportation agency applications, representing over a quarter of the funds disbursed under the program. The plan will also identify any legislation that may be necessary to support the pilot program. The implementation plan will also cover

the details of how to implement a pilot program, drawing on our experience leading pilots for numerous jurisdictions. In addition, the implementation plan will cover steps to undertake between a pilot and a system implementation, such as updating system design documents, planning detailed organizational design, and creating an enforcement strategy. Additional statutory language to authorize a program will also be described in the plan, including recommended issues to cover in administrative rule-making by the implementing agency.

Phase II: After enabling law is passed, before pilot or operational system goes live

- Execute any rulemaking specified in Road Usage Charge System enabling legislation, including rate development (if applicable).
- Prepare a detailed public relations/communications plan for execution.
- Conduct a detailed needs assessment with various departments to inform system design documents such as concept of operations.
- Develop new and update impacted regulations not in rulemaking (setting penalties, setting commercial account manager minimum requirements regulations) and business rules (invoicing, accepted payment methods, hours of operations, compliance deadlines).
- Coordinate among impacted organizations (DMV, Department of Taxes, VTrans) and plan detailed organizational design.
- Undertake detailed financial modeling to determine expected costs and revenues for budgeting purposes.
- Set procurement pricing structure.
- Develop final system design documents, including concept of operations, functional requirements, system requirements specification, interface control documents, customer service and operational requirements).

- Plan detailed enforcement procedures.
- Procure vendors, integrators, and/or commercial account managers.
- Refine requirements and undertake detailed design with vendors, integrators, and/or commercial account managers, and state agencies.
- Provide oversight of outsourced service providers (vendors, integrators, and/or commercial account managers).
- Plan for system testing: unit testing, integration testing, end-to-end/system acceptance testing, and user experience testing.
- Execute vendor and system testing, including all remediation and bug-fixes.
- Execute immediate pre-go-live public relations and communication campaign: launch website, flyers in DMV offices, notices at public EV charging stations, messages in registration renewal notices.
- Plan system launch and customer communications.

Phase III: Pilot or operational system is live

- Accept systems for launch.
- Monitor operations, including:
 - Careful monitoring of customer experience and customer service performance metrics
 - Development of dashboards to monitor incoming system data
 - Monitoring of system revenue and operational costs
 - Contractor oversight

- Develop ongoing reports (finance, audit, and legislative).
- Continue customer outreach, communications and refinements.
- Carry out and refine enforcement policies.
- Conduct policy analysis to support modifications (legislative, regulatory, or operational) during phase in of RUC system
- Integrate emerging technologies and system suppliers as necessary.
- Maintain the system.
- Undertake ongoing evaluation of system performance.

Communications Strategy

Once VTrans makes a decision on implementation or pilot testing, Vermont should continue, without lapse, the communication and media work that occurred during the Advisory Committee process. This time will require an expansion of communications activities to educate not only stakeholders, but also the state legislature, media, and a broad segment of drivers who will become subject to the charge. They will need to know the rationale for the policy shift, including the needs and benefits of introducing a Flat Fee/MBUF solution, and a fair amount of details on the Vermont Road Usage Charge System. Responses to their doubts, issues and concerns should result from prior preparation.

We will include in the implementation plan a **communication strategy** to guide the various stages of either an implementation or pilot, including messaging, public opinion research, statewide town hall public meetings, media monitoring and engagement, additional and continual stakeholder assessment, management and engagement, coordination of communication among internal teams—technical, policy, communication—including the feedback loop discussed earlier, issues management, and crisis communication. Communication should seek to educate and take input and target the eligible vehicle

owners for participation in the Vermont Road Usage Charge System, and the public utilities, environmental groups, rural advocacy groups, privacy groups, and local governments. The public information should include information about how to register to participate and a Q&A of the issues raised during earlier stakeholder and public engagement.

Task 7: Draft and Final Reports

Jim Whitty will lead the drafting of the final report in close collaboration with VTrans, incorporating inputs from our team's task leaders and subject matter experts.

A **comprehensive draft and final report** will be written in plain, accessible English that key leaders can use when communicating about this effort, as well as drive public acceptance. It is important for leaders and the public to understand the efforts that went into the Advisory Committee's efforts and resulting recommendations. Clarity of language and intent will ensure a straightforward message and story is relayed that explains the revenue challenges being faced by Vermont, the thoughtful approach to solving those issues via potential Flat Fee and MBUF options for AEVs and PHEVs in addition to a kWh Fee, and next steps to advance these important policies and new revenue options.

A good report should have the flow of a storyline. The report should answer the questions occurring to the reader as they read. The report should also argue its case in a rational way. The report will also include an **executive summary** that can be shared by leaders and drive key messaging as VTrans and the Advisory Committee leaders discuss its results with elected officials.

We propose a final report comprising the following sections:

- Executive summary
- Description of the problem at hand
- How Vermont came to investigate solutions for the problem

- Description of the process to date
- Introduction, description and rationale for the Vermont Road Usage Charge System
- Description of the Advisory Committee process
- Summary of the process and input from the general public and stakeholders
- Outcomes and findings of the Advisory Committee process
- Discussion of the issues related to the Vermont Road Usage Charge System
- Next steps
- Conclusion
- Appendix: The draft bill

The report can cover much more, but these are the essentials for a report that will be used to inform.

We will deliver the [first draft of the report](#) in January 2022. After a period of agency and Advisory Committee review, we will deliver the [final report](#) in time for legislative hearings, as needed. This ensures the key elements of this effort will be ready for presentations at legislative meetings of the House Transportation, House Ways and Means, Senate Transportation and Senate Finance committees.

C. Business and Management Structure

C.1. Overview of Milestone Solutions

Milestone Solutions, LLP (Milestone) specializes in precisely the subject matter of this VTrans Request For Proposals: policy and system design for transportation revenue alternatives, specifically mileage-based user fees (MBUF) and innovative vehicle fees. In the

decade since its founding in 2011 to support Oregon's MBUF policy development and pilot testing, Milestone has supported MBUF and innovative vehicle fee policy explorations, advisory committees, pilot tests, and system implementations for nine state transportation agencies and the 17-member RUC West Consortium. Milestone has also supported MBUF and heavy vehicle charging policy development, pilots, and system development in Canada, Australia, New Zealand, Ireland, and Belgium.

Milestone's staff of 10 experts have created new approaches to road pricing policy and system design through work across the United States, Canada, and Europe, as well as in New Zealand and Australia. As a specialty firm focused on MBUF and innovative transportation revenue policy and system development, Milestone places a premium on client service, offering our most talented and best-fit team members for each project. As a partnership, Milestone also places a premium on client relationships, offering our leadership as key participants in the work and points of contact for issue resolution.

As Managing Partner, Travis Dunn leads Milestone as a firm and will serve as principal-in-charge of the Milestone Team for this engagement with VTrans. He will offer critical review of key project deliverables and serve as an alternative point of contact for issue resolution. All other key firm management personnel will be involved in delivering the work for VTrans, including Partner Jim Whitty, who will serve as project manager, Partners Ging Ging Fernandez and Matthew Dorfman as task leaders, and Principal Consultant Roshini Durand as Deputy Project Manager.

As a geographically distributed firm since its founding in 2011, Milestone's mid- and senior-level professionals were well-prepared to handle remote work during the COVID-19 pandemic. For years we have developed collaboration tools and techniques to optimize the quality of our collaborative work with one another and with clients, even in the absence of travel for in-person meetings.

C.2. Our Partners

The Milestone Team is one team. As a small firm, Milestone highly values partnerships with others in our industry. To maximize the value of our partnerships, we prioritize long-term relationships that feature positive individual interactions and complementary skillsets. **RSG** and **CDM Smith** are two firms who fit our definition of an ideal partner. We believe our strong relationships as companies will provide a solid foundation for building an effective working relationship with VTrans, Advisory Committee members, other project partners, and stakeholders.

To illustrate the depth of our partnerships, Milestone and CDM Smith are currently working together on seven different projects related to MBUFs and congestion pricing across the U.S. RSG has worked with both Milestone and CDM Smith to deliver timely and successful projects in Vermont and elsewhere in the USA. CDM Smith and RSG are regular teaming partners for tolling revenue analysis.

Our team values human relationships and has long-term embedded ethics that we will adhere to throughout the course of the project. Milestone's core values include the following that we believe are directly relevant to our support of VTrans:

- We receive ideas openly, respond transparently, and challenge each other respectfully.
- We work with initiative, creativity, resourcefulness, and intellectual rigor.
- We offer honest judgment in pursuit of our clients' objectives.
- We honor equitable and inclusive participation respecting the dignity of all persons.

With respect to the final point above, Milestone staff recently completed a two-part course on inclusive leadership to underscore our commitment to continual learning and improvement as we strive to be more inclusive across all dimensions of identity.

C.3. Lines of Communication of the Team

The **Project Management leadership team** includes three key people whose job it is to tie everything together: Jim Whitty (Project Manager, Milestone), Roshini Durand (Deputy Project Manager, Milestone), and Mark Fowler (Task 1 Key Support, RSG). The Project Management team has extensive project management experience and has worked together on several MBUF and related projects. Our Project Manager will monitor all project tasks and will be in charge of all lines of communication with VTrans. In addition, we offer two redundant lines of direct communication between Milestone and VTrans: principal-in-charge Travis Dunn, Managing Partner of Milestone, is available for swift resolution of issues, and Deputy Project Manager Roshini Durand is available as a backup in the event Jim Whitty is unavailable. Meanwhile, RSG's Mark Fowler is available as a local, Vermont-based point of contact in the event the project requires a short-notice in-person meeting.

In addition to our Project Management leadership team, we have nominated the most experienced, appropriate staff from across our three firms to serve as task leaders to ensure VTrans the highest quality of support and likelihood of project success. Given the very high public interest and scrutiny this project will likely generate, senior executives from all three firms are directly involved in project leadership team positions. This will ensure prioritization of VTrans and this project from across our team.

C.4. Resource Availability

As illustrated in the project organizational chart, our proposed team members have the resource availability to deliver the proposed scope to VTrans in the time frame indicated. This is particularly crucial for Project Manager Jim Whitty, who has 75 percent of his time available during the period of performance. For complete availability of key staff, refer to the organizational chart in Section D.

C.5. Quality Control and Quality Assurance

We believe the best way to assure quality in our work is to assign the best people to the job at the start, and that is precisely what we propose for VTrans. In addition, our Project Manager will ensure

our team applies [quality assurance procedures](#) during all project phases to deliver superior quality work to VTrans, including the following:

- **Frequent communications:** While the team works on each deliverable, the Project Manager remains in frequent communication with VTrans, discussing progress and issues that may arise, and delivery of draft and interim documents for content management.
- **Internal delivery schedule:** The Project Manager will ensure the team follows the strict internal deliverable completion schedule management and schedule controls included in the Project Management Plan.
- **Multiple internal reviews of all deliverables:** The Project Manager will ensure all deliverables are reviewed by two or more team members. Reviews include proofreading, checks for completeness, clarity, compliance with requirements, and consistency with project approach. Milestone internal reviews are not simply a check-the-box exercise; we only appoint qualified reviewers depending on the content.
- **Final review with client:** We will invite robust VTrans feedback on draft deliverables so final deliverables conform to expectations.

D. Organizational Chart

See the following page for the organizational chart.

E. Key Personnel

Jim Whitty, Project Manager. As the leader of Oregon's exploration of MBUF possibilities for 14 years that culminated in the launch of OReGO and co-founder of RUC West, Jim brings keen understanding of all aspects of MBUF advancement within a state. Jim has overseen many aspects of a major outreach and research effort, including statewide public meetings, stakeholder engagement,

task force management, and media management; technical and user experience design, development, testing, and operations of an MBUF pilot project; policy analysis across numerous issues of local concern; and evaluation of MBUF system performance and public acceptance. Since joining Milestone, Jim has supported MBUF explorations in several states and countries, and has focused on creating viable pathways to MBUF through policy and system design.

Travis Dunn, Principal-in-Charge. As Managing Partner of Milestone, Travis leads the firm's global team in revenue policy and system design engagements with clients including state DOTs, multi-state consortia, and international governments. An expert in policy and financial analysis for MBUF, Flat Fees, and other gas tax alternatives, Travis will serve in an oversight role, offering the project team a check on key deliverables and VTrans an alternative pathway for issue resolution. He is currently leading Milestone's support to the Washington State Transportation Commission's road usage charge research and policy development, including support for crafting and analyzing legislative proposals. Travis's involvement in this project as Principal-in-Charge illustrates Milestone's commitment to VTrans and more broadly our commitment to the careful, steady advancement of innovative transportation revenue policy.

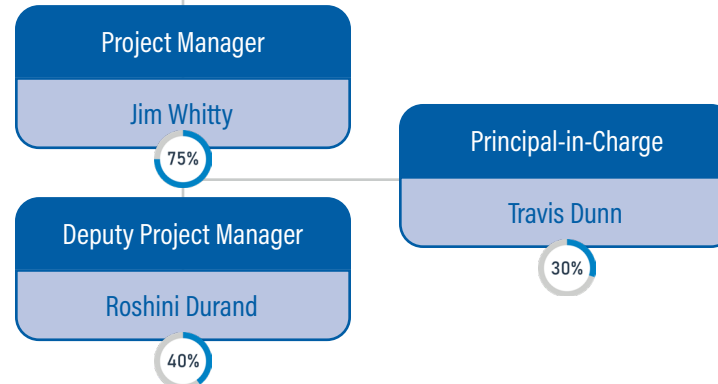
Roshini Durand, Deputy Project Manager. With a background in MBUF, heavy vehicle charging, and tolling systems across the U.S. and Europe, and experience working with nonprofits to improve social services for underserved communities, Roshini brings her practical experience and expertise to design user-centered systems and services that are both forward-looking and equity focused. She serves as Project Manager for the RUC West pilot of MBUF for autonomous vehicles, and is a task leader for innovative and equitable system design for Washington's Forward Drive MBUF research effort. She has supported MBUF pilots in Oregon, California, Washington, Hawaii, and Kansas.

Mark Fowler, public opinion research task leader. Based in Burlington, Mark Fowler helps clients understand traveler behavior and preferences. In his nearly two decades at RSG, Mark has led

Organizational Chart

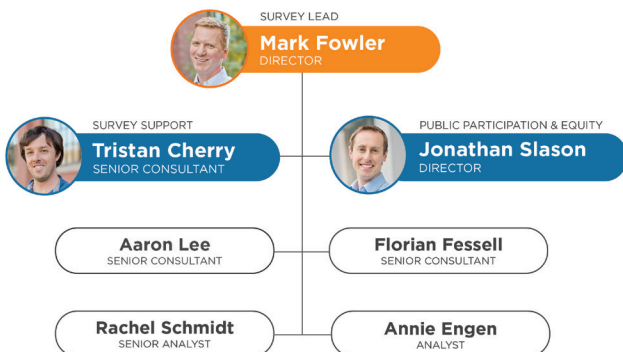
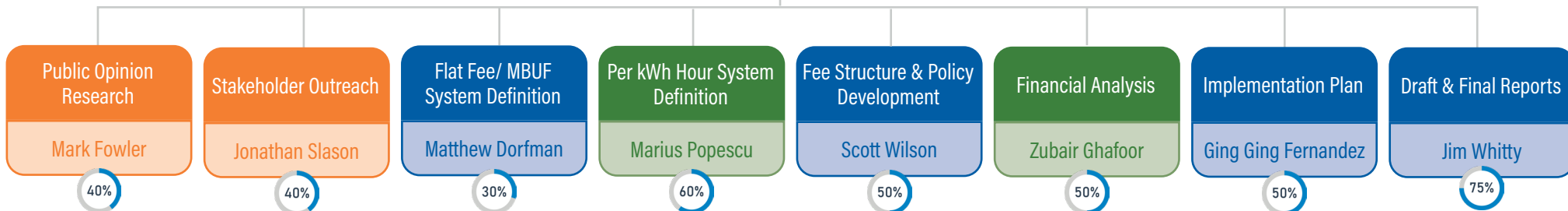


- Key:**
- Milestone
 - CDM Smith
 - RSG
 - Availability



Lines of Communication for Problem Resolution:

As project manager, Jim will work directly with task leads, VTrans, and the Advisory Committee as any problems arise for resolution. Jim will serve as the primary point of contact for VTrans and the Advisory Committee and will proactively monitor for any potential issues, bringing questions to the technical team as needed. Roshini Durand, Deputy PM, will support Jim on this effort, liaising regularly with task leads on project status to proactively identify amongst the technical team potential problems for resolution, as well as make connections to task leads that will need to be engaged. Travis Dunn, as principal-in-charge, will periodically meet with VTrans to discuss the progress and satisfaction of efforts to date and will be available to resolve issues as they arise at a project executive level. *The Milestone Team will utilize RSG's Burlington office as the local base for delivery of services under this contract as needed.*



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Jim Whitty	Project Manager	james.whitty@reachmilestone.com	(503) 484-3356
Travis Dunn	Principal in Charge	travis.dunn@reachmilestone.com	(512) 576-4996
Roshini Durand	Deputy Project Manager	roshini.durand@reachmilestone.com	(425) 505-0003
Mark Fowler	Public Opinion Research	mark.fowler@rsginc.com	(802) 345-5750
Jonathan Slason	Stakeholder Outreach	Jonathan.Slason@rsginc.com	(802) 698-3196
Matthew Dorfman	Flat Fee/ MBUF System Definition	matthew.dorfman@reachmilestone.com	(703) 608-4321
Marius Popescu	Per kWh Hour System Definition	popescum@cdmsmith.com	(312) 780-7751
Scott Wilson	Fee Structure and Policy Development	scott.wilson@reachmilestone.com	+64 27 392 5799
Zubair Ghafoor	Financial Analysis	ghafoorzf@cdmsmith.com	(630) 874-7912
Ging Ging Fernandez	Implementation Plan	gingging@reachmilestone.com	(415) 793-5530

over 100 major research projects to understand how travelers will respond to the pricing of transportation infrastructure, the introduction of new transportation modes and services in cities across the US, and the introduction of new vehicle powertrains and features into the automotive marketplace. His primary area of focus involves the use of pricing as a congestion management technique, including toll roads and bridges, managed/HOT lanes, area/cordon pricing, congestion pricing, MBUF, and parking pricing. The results of these studies are used to support investment-grade traffic and revenue forecasts for transportation infrastructure projects across the United States and Canada. Along with his fellow Vermont-based RSG colleagues, Mark will support public opinion survey research and stakeholder engagement as well as financial analysis.

Jonathan Slason, stakeholder outreach task lead. Based in Burlington, Jon Slason, PE is a Director of Planning at RSG. He provides professional engineering and planning consulting services to public and private clients focused on megatrends in transportation. His interest is on how to leverage emerging technologies to improve our world with a growing population, funding challenges, aging infrastructure, and a changing climate all while creating thriving and desirable places for us to live, work, and play. Jonathan's education in economics and civil engineering enable him to take the conceptual and translate that into tangible action.

Matthew Dorfman, Flat Fee/MBUF system definition task leader. Matthew has specialized in MBUF technology and policy since 2011, when he led the team that developed the specification documents for Oregon's MBUF system. Since then, Matthew has supported open system architecture design, development, testing, launch, and operations for pilot and live MBUF systems in five states and in Australia, including as consulting Project Manager for the California Road Charge Pilot Program and lead technical consultant to Utah DOT for its MBUF/Flat Fee system, which launched on time on January 1, 2020. Matthew's background in automotive technology, tolling, ITS, standards development, and policy contribute to his well-rounded understanding of MBUF system needs.

Marius Popescu, kWh Fee system definition task leader. Marius leads CDM Smith's electric vehicle charging infrastructure planning initiatives. Marius is a professional engineer with 25+ years' experience in a variety of responsible positions and markets, including commercial and industrial, and federal facilities, municipalities, transportation, renewable energy, energy storage, microgrids and utilities. Marius recently completed the Energy Innovation and Emerging Technologies Certificate Program at Stanford University, School of Engineering. His experience includes supporting clients such as Argonne National Laboratory and the Chicago Transit Authority on planning, establishment, and deployment of electric charging facilities.

Scott Wilson, fee structure and policy development task leader. An economist, attorney, and top global expert in all forms of road pricing, Scott is the lead technical advisor to the Australian government on the design and deployment of a series of heavy vehicle charging trials as well as policy advisor to New Zealand Ministry of Transport and Auckland Transport on the evolution of that nation's distance-based charging system and opportunities for integration of congestion pricing. He has authored technical analysis memoranda on rate setting for road pricing systems for numerous states and countries, drawing on his expertise in highway cost allocation, flat versus variable fees, tax policy, and technology possibilities.

Zubair Ghafoor, financial analysis task leader. Zubair has dedicated his career to transportation planning and modeling, with expertise in complex traffic and revenue analyses, travel demand modeling, software development and Geographic Information System (GIS) technology. He has developed invaluable traffic and revenue forecasts and large-scale travel demand models to support transportation project financing. He supported the development of a national highway revenue alternatives analysis tool for the Federal Highway Administration that included flat fees, MBUF, and fuel taxes. He is also leading the upgrade of the Washington MBUF revenue model to incorporate emerging trends in transportation such as electrification, ride-sharing, and automated driving. He brings a unique understanding of the impacts of these trends on taxable

quantities such as vehicle miles traveled, vehicle ownership and fuel consumption.

Ging Ging Liu Fernandez, implementation plan task leader.

Ging Ging has overseen all aspects of a major MBUF outreach and research effort, including statewide public meetings, stakeholder engagement, and media management; technical and user experience design, development, testing, and operations of a large-scale manual MBUF invoicing system based on odometer readings; technical design, development, testing, and operations of three electronic mileage reporting options; policy analysis across a dozen key issues of local concern; and evaluation of MBUF system performance and public acceptance. In addition to her role as Project Manager for the Hawaii MBUF demonstration project, Ging Ging has led system testing for the Washington MBUF pilot; supported MBUF research for RUC West; served as program manager for tolling and express lane systems; and led standards development for transportation technology and payment systems. With her all-encompassing knowledge

of what it takes to launch a successful revenue system pilot or live system, and with specialized knowledge of the required elements of an MBUF system launch, Ging Ging is the ideal implementation plan task leader.

Please see the key personnel resumes following.



Resume

Jim Whitty, JD, Partner

Qualifications:

As a road pricing innovator and visionary, Jim Whitty conceptualized and directed all aspects of per-mile road usage charging in Oregon's 14-year journey through two distance charge pilot programs and legislative enactment of the first operational per-mile road usage charge program for light vehicles in the United States. Jim brings experience as an executive making policy recommendations and design and implementation decisions, including strategic engagement with legislators, stakeholders and the general public, for road pricing programs. Jim also brings policy analysis and extensive interaction with policy bodies to enact legislation and regulation in transportation and environmental affairs.

As administrator to Oregon's independent policy-making body on road pricing, Jim successfully guided process and development of cutting-edge road pricing policies and implementations from 2001 to 2016, starting with policy development leading to the nation's first road user fee pilot program through to launch of the operational road usage charge program. He combines real-world experience in road pricing policy development with strategic planning, program development and implementation, procurement and business operations.

Jim's work on road pricing includes congestion pricing. A congestion pricing demonstration in the Portland, Oregon metropolitan area tested the concept of area pricing during peak hours, an application designed to reduce the effects of traffic diversion.

Learning from public response to Oregon's first pilot program for distance charging, Jim reconceived Oregon's original distance charge concept, a pay-at-the-pump model, switching from a government-run model to a market-driven, account-based, and open system to increase the potential for public acceptance. This innovation resulted in a second road usage charge pilot program that ultimately culminated in the legislative enactment of OReGO, a world-first in distance charging for light vehicles.

Jim has written several widely-read project and policy reports on distance charging for US states, including, and the Transportation Research Board Executive Committee, and a chapter on US west coast distance charge programs in *Road Pricing: Technologies, Economics and Acceptability* (2018). Jim has spoken on distance charging in Canada (5 times), Europe (7), Australia (4), New Zealand (3) and Singapore (1) and in 24 U.S. states and the District of Columbia, and testified over 50 times before the Oregon Legislature and six other state legislatures and twice before the United States Congress. Jim has conducted several day-long Road Usage Charge Academies for the states of Colorado, California and Texas and the Council of State Governments (US). He is a founder of the Western Road Usage Charge Consortium (RUC West), the 14-state research entity for road pricing in the U.S., serving a full term as steering committee chair.

Education:

- ▶ Doctor of Jurisprudence, University of Oregon, Eugene, OR, 1981.
- ▶ Bachelor of Science (History), University of Oregon, Eugene, OR, 1977.

Employment History:

Milestone Solutions LLP, Portland, OR. 2016-present.

- ▶ **California Transportation Commission's Road Charge Investigation** (2019-Present) Examination of potential implementation of an operational per-mile road charge program. Role: Project lead and strategic adviser.
- ▶ **Ireland Road Pricing Investigations** (2018-Present). Strategies on stakeholder and public engagement, communications and policy development for initiation of a road usage charge program for vehicles in Ireland. Role: Partner-in-charge and strategic adviser.

Resume

- ▶ **Australia Heavy Vehicle Road Usage Charge Pilot Program** (2018-Present). Strategies on stakeholder and public engagement, communications and policy development for a road usage charge pilot program for heavy vehicles for the federal government of Australia. Role: Partner-in-charge, relationships manager and adviser.
- ▶ **Utah Road Usage Charge Program** (2018)-Present). Strategies and policy development for implementation of the nation's second operational road usage charge program for volunteered fuel efficient vehicles. Role: Strategy and policy adviser.
- ▶ **Washington Road Usage Charge Pilot Program** (2017-Present). Development and implementation of interoperability strategies between Washington state's Road Usage Charge Pilot Program with Canadian participants identified by City of Surrey, BC and participants from Oregon and Idaho. Role: Pilot procurement, interoperability and policy analysis.
- ▶ **Missouri Miles Per Gallon-based Registration Fee Structure** (2017-18). Development of operational concept and system requirements for a new light vehicle registration fee structure based on miles-per-gallon. Preparation of draft legislation and outreach communication strategies and materials for legislative and stakeholder engagement. Role: Project manager, guiding data analysis, geographical analysis, financial modelling and development.
- ▶ **Australia Framework for Road Charging and Investment Trials** (2017). Preparation of a national framework for road charging trials for Australia's Department of Infrastructure and Regional Development. Role: Adviser.

Oregon Department of Transportation, Salem, OR. Manager, Office of Innovative Partnerships and Alternative Funding, (2004-2016); Administrator, Transportation Funding Task Forces (2001-2004)

- ▶ **Road User Fee Task Force** (2001-2016). This independent body on road pricing created policies and strategies, approved systems and evaluation criteria for two groundbreaking distance charging pilot projects (2006-07 and 2012-13) and OReGO, the nation's first per-mile road usage charge program (2013 and on-going). The Task Force engaged strategically with legislators, multiple stakeholders and the general public and proposed road pricing legislation, playing a key role in legislative enactment of a per-mile road usage charge program for light vehicles in 2013. Role: Administrator, guiding Task Force work, and representing the Task Force before the legislature.
- ▶ **Per-Mile Road Usage Charge Program (branded as OReGO)** (2013-2016). Development and implementation of the first legislatively enacted distance charge system for light vehicles in the United States. Role: Leader and manager for all aspects of program development, including policy and systems development and all governance, technical development and procurement aspects of implementation, and sponsorship and oversight of project management.
- ▶ **Road Usage Charge Pilot Program** (2009-2013). Oregon's second distance charge pilot project for light vehicles first used an account-based open system for data and fee collection. Role: Leader and manager for all aspects of program development, including policy and systems development, governance, technical development and procurement for pilot operations, and oversight of project.
- ▶ **Road User Fee Pilot Program** (2003-2007). Oregon's first distance charge pilot project for light vehicles, the first in the nation, including a per-mile fee paid at the pump and a 10-month test of congestion pricing in the Portland, Oregon metropolitan area. Role: Leader and manager for all aspects of program development, including policy and systems development, governance and technical development of pilot operations, and sponsorship and oversight of project management.

Private Lobbyist, Salem, OR. Transportation, Environmental Affairs and Education Funding (1997-2001).

Resume**Travis Dunn, PhD, Managing Partner****Qualifications:**

Travis Dunn, Managing Partner, brings 15 years of experience as a policy and financial strategist and analyst for local, state, and national transportation agencies and private clients in the area of transportation funding, including distance-based road usage charging, heavy vehicle charging, and tolling. Since 2011, Dr. Dunn has specialized in road user charging (RUC), working on all aspects of the topic from conception to public and stakeholder engagement to policy design to pilot testing to implementation for both light and heavy vehicles in Oregon, Washington, California, Hawaii, and Utah, and overseas in Australia and New Zealand.

Dr. Dunn led financial modeling, organizational design, urban vs. rural impact analysis, economic viability analysis, and pilot and program evaluation for the Oregon Department of Transportation's RUC program from 2011-2015, supporting its enactment into law in 2013 and implementation in 2015. He later led the policy and financial analysis, including an administrative assessment of road usage charging, for the Washington State Transportation Commission's Road Usage Charge Assessment from 2012-2016. He has served as Deputy Project Manager for the Washington RUC Pilot since 2017, including pilot design, testing, evaluation, and extensive analysis of a wide range of policy issues. For the Hawaii Road Usage Charge Demonstration Project, Dr. Dunn leads the policy, communication, and outreach workstreams. From 2012-2015, he closely studied the International Fuel Tax Agreement (IFTA) and International Registration Plan (IRP), attending annual business meetings and audit workshops, and meeting with IFTA commissioners and audit staff in numerous states, to support the design of an automated, compliant IFTA reporting solution for interstate fleets. He has led or supported five RUC West projects, including leading the first study of inter-jurisdictional study RUC which led to the design of eight approaches for dealing with RUC across borders as well as a clearinghouse approach modeled on IFTA and later deployed by Milestone in Washington's pilot. He has supported successful Surface Transportation System Funding Alternatives grant applications for five states.

In addition to his leadership of policy and financial analysis workstreams, Dr. Dunn has presented on the topic of RUC in dozens of venues including public meetings, special task forces, legislative committees, and governor's offices. He enjoys helping clients develop and mold concepts to achieve funding objectives while balancing political and public acceptance realities with advice always backed by reliable evidence and analysis.

Education:

- ▶ Doctor of Philosophy, Civil & Environmental Systems, Massachusetts Institute of Technology, Cambridge, MA, 2010
- ▶ Master of Science, Transportation, Massachusetts Institute of Technology, Cambridge, MA, 2005
- ▶ Bachelor of Science, Civil Engineering, The University of Texas at Austin, Austin, TX, 2003
- ▶ Bachelor of Arts, Plan II Honors Program (Humanities), The University of Texas at Austin, Austin, TX, 2003

Employment History:

Milestone Solutions LLP, Austin, TX. Partner, 2011-2016 and Managing Partner, 2017-present.

Relevant projects:

- ▶ **Hawaii DOT Road Usage Charge Demonstration Project** (2018-present). Travis is leading the communication and policy work stream for the world's largest RUC demonstration effort. In this role he coordinates a team of communication professionals and supports Hawaii DOT with outreach through a formal stakeholder advisory group, stakeholder meetings, legislative meetings, community meetings, web, social media, and traditional media; translates findings from outreach into the refinement of the policy

Resume

analysis work plan; and leads the design and delivery of the policy analysis work plan. He also supports the technical work stream by providing inputs to technical design and technology procurement.

- ▶ **Utah DOT Road Usage Charge Implementation** (2018-present). Travis provides on-call advice for technology, policy, administration, and financial aspects of RUC as Utah DOT became on January 1, 2020 the second state to deploy an operational program after Oregon. He led the development of a tool for estimating costs and revenues of Utah's RUC program to inform legislative decision making about program expansion.
- ▶ **Washington Transportation Commission Road Usage Charge Assessment and Pilot** (2012-present). As policy task lead, Travis evaluated a range of policy issues, developed a business case decision-analysis tool, and advised the RUC Steering Committee. He also supported all task areas of the 2,000+ vehicle, multi-state pilot program from 2017 to present, including communication and outreach, recruitment, technical design of a multi-state pilot including interoperability hub, coordination with multiple jurisdictions, launch, enrollment, operations/help desk, analysis, and reporting to the Transportation Commission and Legislature.
- ▶ **Australia Department of Infrastructure, Transport, Cities and Regional Development Heavy Vehicle Charging Trials** (2018-present). Travis supported several work streams including technical design for Australia's heavy vehicle charging trials, led the crafting of an evaluation strategy for a multi-phase program of trials, and supported the client in implementing the evaluation strategy.
- ▶ **California Road Charge Pilot Program** (2015-2018). Travis led several policy analysis tasks, evaluation planning, and development of a business case decision-analysis tool; advised a Technical Advisory Committee on policy and technical decisions related to evaluation, per-mile rate-setting, exemptions, and use of revenues; crafted strategies and materials for engagement with stakeholders, media, and the public; and supported the procurement, development, implementation, launch, and operations of California's 9-month road charge pilot with over 5,000 vehicles.
- ▶ **RUC West Roadmap for Considerations of a Road Usage Charge** (2015-2016). As project manager, Travis collaborated with 11 participating U.S. states to formulate tools, create a "roadmap" for agencies to follow in undertaking strategic engagement for controversial road funding initiatives such as RUC, and present findings.
- ▶ **RUC West Study of Inter-jurisdictional Road Usage Charge Issues** (2014). As project manager, Travis collaborated with 6 participating states to develop a comprehensive description of inter-jurisdictional RUC scenarios, analyze each one, and provide approaches for states to move forward with implementation.
- ▶ **Oregon Road Usage Charge Policy Development and Pilot Program** (2011-2015). Travis supported Oregon DOT in developing decision-analysis tools for financial considerations, organizational design, and evaluation of RUC policy alternatives; presented to and engaged with the Road User Fee Task Force on evaluation and financial aspects of RUC; advised agency staff and Task Force members on rate-setting and transition strategies for RUC that became draft legislation in Oregon's 2017 legislative session.
- ▶ **Automated IFTA/IRP/WMT Solution Development** (2012-2015). Travis learned the IFTA and IRP programs including organizational design, reporting requirements, and audit manual, in support of a private client's successful development and deployment of an automated technology-based fleet reporting solution for IFTA and IRP.

Mexican Ministry of Communications & Transport, Mexico City, Mexico. Fulbright-García Robles Scholar, Deputy Ministry for Infrastructure, 2010-2011.

Booz Allen Hamilton, McLean, VA. Senior Transportation Consultant, 2005-2007.

Resume

Roshini Durand, Principal Consultant

Qualifications:

Roshini Durand has over 15 years of experience delivering operational efficiency and information systems projects for public transportation agencies and private service providers. She has experience managing cross-functional teams in multi-cultural and international environments. She has lived and worked in Africa, Europe and North America.

When based in Europe, Ms. Durand lent her expertise to private firms competing for government awarded road charging contracts. She helped firms win, deploy and certify their systems and operations in Europe and North America. She was the systems and operations lead consultant in European Electronic Toll Service (EETS) projects related to interoperability of tolling services on the European Union road network, and the French Ecotax and Belgian ViaPass projects for Heavy Good Vehicles. Ms. Durand led process optimization initiatives on congestion charging and open road tolling operations in the UK. She advised toll road operators and parking lot operators on system design, oversaw systems implementation, and led compliance audits and ISO 9001 certifications.

Prior to joining Milestone Solutions, Ms. Durand worked as an Intelligent Transportation Systems (ITS) consultant in Europe. She was head of the Mobility and Transportation unit of a consulting firm headquartered in Paris where she built key ITS expertise for the firm. Before joining the consulting world, Ms. Durand was the Information Systems Manager of an aerospace company based in France where she was in charge of defining the Information Systems strategy and company-wide software implementation projects.

After relocating to the US in 2014, Ms. Durand supported road usage charge demonstrations in Oregon, Hawaii and California, and conducted technology studies for the RUC West consortium. On the Washington Road Usage Charge Pilot Project, she managed operations and vendor relationships, led data analysis that informed policy papers, and wrote white papers on organizational design, system design and technology choices. She was the systems delivery lead on the Hawaii Demonstration project, led the system design effort and currently fills the role of operations lead.

Education

- ▶ M.A. in Business Administration (Technology Management), University of Washington, USA, 2017 – June 2019
- ▶ M.A. in Engineering, Information Systems and Networks, Université de Technologie de Troyes, France, 1999 – 2002
- ▶ Mathematics, Physics, Chemistry science degree (Diplôme d'Etudes Universitaires Généralisées), Université de la Réunion, Reunion Island, 1997 – 1999

Experience

- ▶ Road Usage Charge West – An Inventory of Devices for RUC communications (2017 – 2018). Built on previous studies on technological aspects of RUC, surveyed industry contacts, and focused specifically on technologies that have been (or could be) used to collect and transmit RUC-related data. Investigated all potential technologies including emerging technologies that could be used for RUC recording and communication. Discussed benefits, drawbacks, opportunities, and policy and technical challenges for each potential device and technology. Role: Project Manager and principal consultant
- ▶ Market Study for private sector companies (2018) – Assisted private companies with market entry and market expansion strategies in North America. This involved research on major road pricing/tolling/congestion charging projects, policy analysis, technology surveys and benchmarks, market

Resume

trend analysis, stakeholder analysis, competitor analysis, business case analysis and recommendations on the firm's positioning. Role: Project manager and principal consultant

- ▶ Study for Ministry of Transport, Auckland, NZ. Assistance with research to build a comprehensive review of pricing initiatives in Europe for Auckland, NZ. This analysis included key policy lessons drawn from pricing initiatives for demand management purposes in Stockholm, Copenhagen and Netherlands, and how these might be applicable to or best avoided, for Auckland. Role: Research consultant
- ▶ Hawaii Road Usage Charge Demonstration (2018 – present). Currently leading the delivery strategy of the manual and automated pilot with private vendors, government agency IT department and IT contractors. Coordinating and aligning the technology and operations workstream with policy and communications workstreams to ensure that systems and operations fully support policy tests and increase public acceptance through enhanced participant experience. Role: Systems delivery Lead, technical stream lead
- ▶ Washington Road Usage Charge Pilot Program (2016 to present). Definition of pilot project design and pilot set-up activities. Refinement of the Concept of operations and development of the overall system design comprising of operational concepts, technology, system and interface requirements for the vendor procurement phase. Assistance with vendor procurement and management of vendors from systems design to pilot operations. Operations lead including vendor coordination and customer service coordination (monitoring service level and ensuring alignment of services between vendor helpdesks and pilot project helpdesks). Analysis of pilot data to inform policy papers and reports to policymakers. Role: Technical design and implementation, operations lead, pilot data analyst lead
- ▶ California Road Charge Pilot Program (2015 to 2017). Definition of technical specifications for vendor procurement. This included the design of technical tender documents (Concept of operations, business requirements, systems specifications, test documents). Design and coordination of end-to-end testing with vendors and the Caltrans project team. Support accounting and analytical reporting functions during the live pilot. Role: Technical design and implementation consultant, pilot project data analyst
- ▶ Oregon Road Usage Charge Pilot Program, Salem, Oregon (April – June 2015) – Oregon's successful second distance charge pilot project for light vehicles was the first to use an account-based open system for data and fee collection. Ms Durand supported one of the two private account management entities in the preparation of the certification required by Oregon Road Usage Charge Pilot Program. This involved evaluating their operational and development processes to operational and security standards specified by the SSAE SOC 2 standards, and defining adequate processes according to industry best practices. Role: Operational efficiency and compliance consultant
- ▶ VIAPASS - Kilometre Charge program for trucks from 3.5 tons, Belgium (June 2013 – February 2014). Ms Durand supported the consortium of private firms in the preparation of the bid response. This entailed describing the complete operations for reporting, collection and processing distance charge, transponder and inventory management, account management, and financial reporting and reconciliation processes. Role: Operational manager
- ▶ ECOTAXE, France (April 2009 – 2010) - ECOTAXE Kilometre Charge for trucks from 3.5 tons circulating on the national French road network. Ms. Durand supported private service provider in the coordination of the technical response. This entailed organizing workshops with private firms of the consortium to define the technical design and operational processes (registration, distribution of onboard equipment, collection of toll parameters, calculation of toll charge, billing, payment of toll charges collected to the state, enforcement, assistance to customs agents) and identify distribution points for the pilot project in Alsace. Ms Durand worked with the project team to define the project implementation plan and operations certification plan for the ECOTAXE operational phase. Role: Operational project manager and principal consultant



MARK FOWLER

Director

EXPERIENCE | 17 Years

EDUCATION | BS, Physics, Bates College

BIO

Mark Fowler helps clients understand traveler behavior and preferences. In his nearly two decades at RSG, Mark has led over 100 major research projects to understand how travelers will respond to the pricing of transportation infrastructure, the introduction of new transportation modes and services in cities across the US, and the introduction of new vehicle powertrains and feature into the automotive marketplace. His primary area of focus involves the use of pricing as a congestion management technique, including toll roads and bridges, managed/HOT lanes, area/cordon pricing, congestion pricing, VMT fees, and parking pricing. The results of these studies are used to support investment-grade traffic and revenue forecasts for transportation infrastructure projects across the United States and Canada.

PROJECT EXPERIENCE

Road Pricing Studies

Cavnue, Michigan Ave Connected and Autonomous Vehicle Corridor, Detroit, MI. Project manager to develop sketch level traffic and revenue forecasts and financial feasibility analysis for Cavnue and Michigan DOT's proposed connected and autonomous vehicle (CAV) corridor between Detroit and Ann Arbor, MI. (2021)

Colorado Department of Transportation, I-70 Mountain Corridor, Clear Creek County, CO. Directed a stated preference survey to understand how travelers would respond to proposed managed lanes on I-70 in Clear Creek County, CO. The survey estimated travelers' value of time and propensity to use the proposed managed lanes under various conditions. (2021)

Virginia Department of Transportation, Capital Region Toll Facilities, Northern Virginia. Directed a stated preference survey to estimate willingness to pay for travel time savings and willingness to pay for travel time reliability of travelers who use toll facilities in the National Capital Region of Virginia, including Express Lanes on I-95, I-395, I-495, and I-66 Outside the beltway, as well as the Dulles Greenway, Dulles Toll Road, and HOT Lanes on I-66 Inside the Beltway. The stated preference survey results supported investment-grade traffic and revenue forecasts for existing and proposed facilities in the region. (2020)

Oregon Department of Transportation, I-205 and I-5 Congestion Pricing Study, Portland, OR. Currently directing a stated preference survey to understand how travelers will respond to proposed congestion pricing on I-205 and I-5 in the greater Portland, OR metropolitan region. The survey will estimate travelers' value of time and toll diversion rates under various conditions. (2020-present)

Build America Bureau, CTRMA 183A Phase 3, Austin, TX. Managed a project to review traffic and revenue forecasts for the CTRMA system of toll facilities to support a proposed TIFIA loan for the construction of 183A Phase III north of Austin, TX. The work included risk analysis and Monte Carlo simulations to estimate revenue outcome probabilities over the term of the loan. (2020)

Build America Bureau, MDTA Nice Bridge Replacement Project, Maryland. Managed a project to review traffic and revenue forecasts for the MDTA system of toll facilities to support a proposed TIFIA loan for the Nice-Middleton Bridge Replacement Project. The work included developing an econometric traffic and revenue forecasting model using historical transaction, toll rate, and socioeconomic data and conducting risk analysis and Monte Carlo simulations to estimate revenue outcome probabilities over the term of the loan. (2020)

West Virginia Parkways Authority, WV Turnpike Pricing Study, West Virginia. Designed and implemented a stated preference survey to understand how travelers would respond to a proposed new fee structure on the WV Turnpike. The results of the survey were used to forecast behavioral response, demand, and revenue for the Turnpike across three different groups of users – those who pay with cash, those who pay using an E-ZPass from another state, and those who pay with a West Virginia E-ZPass. The survey also collected information to understand how trip rates may change under different pricing structures. (2017)

Southern California Association of Governments, Santa Monica Cordon Pricing, Santa Monica, CA. Directed a stated preference survey to evaluate the behavioral response of travelers to a proposed cordon pricing charge for a region directly east of downtown Santa Monica, CA. The behavioral responses evaluated included shifting time of day, route, mode, and destination, as well as trip reduction or suppression. (2016)

Connecticut Department of Transportation, Connecticut I-95 Value Pricing Study, New Haven, CT. Directed a stated preference survey to evaluate proposed congestion pricing implementation in the I-95 corridor between New Haven, Connecticut and the New York State Line. The survey was designed to understand how travelers might respond to two congestion pricing applications: time-of-day pricing on I-95 and/or Route 15 and the construction of express lanes on I-95. The survey data were used to estimate values of time and sensitivities to shifting route, mode, and time-of-day under each congestion pricing scenario. The results of the survey were incorporated into the regional travel forecasting model to support estimates of traffic and revenue in the corridor. (2015)

Mark.Fowler@rsginc.com

Southern California Association of Governments Congestion Pricing Study, Southern California. Managed a stated preference survey to simultaneously evaluate behavioral responses to multiple road pricing applications, including managed lanes, area/cordon pricing, parking pricing, regional freeway pricing, and VMT fees. The behavioral responses evaluated included shifting time of day, route, mode, and destination, as well as trip reduction or suppression. (2010)

Georgia Department of Transportation, Georgia Statewide Pricing Study, Georgia. Conducted a statewide stated preference survey for automobile and commercial vehicle drivers in Georgia to evaluate behavioral response to potential future pricing projects, including the addition of express lanes to existing facilities as well as the construction of new toll roads between major population centers. RSG developed and implemented survey questionnaires for automobile and freight traffic and estimated discrete choice models to support feasibility analysis for the potential pricing projects. (2011)

Other Stated Preference Surveys

California Energy Commission, 2018-2019 California Vehicle Survey, California. Managed a \$650k effort for the California Energy Commission to survey 3,500 residents and 2,000 commercial vehicle fleet managers in each of six regions across the state of California. The survey collected information about household and commercial vehicle ownership and use and the relative preferences of fourteen vehicle attributes (e.g., vehicle type/size, fuel type, miles per gallon, maintenance costs, etc.). An add-on component collected ownership, preference, and use information from a sample of 600 plug-in electric vehicle and hydrogen fuel cell electric vehicle owners. The survey results were used to estimate behavioral choice models to support the 2020 update of the DYNASIM alternative vehicle forecasting model. (2018-2020)

Audi AG, Somerville Mode Choice Survey, Somerville, MA. Managed a stated preference survey to evaluate consumer preference and demand for future mobility options in the greater Somerville, MA region including connected and autonomous ridesharing services, microtransit, and carsharing services. (2018)

Uber Elevate, eVTOL Demand Forecast, Texas and California. Directed a study to help Uber Elevate build a demand forecast for UberAir, a proposed autonomous urban air taxi service utilizing electric vertical takeoff and landing (eVTOL) aircraft. Developed and implemented a stated preference survey and used the results to build a mode choice model incorporating the new service. Assisted Uber in the implementation of the mode choice model in a regional travel forecasting model. (2018-2019)

Other Survey Research

Massport, Logan Airport Parking Freeze Amendment, Boston, MA. Led an internal stakeholder engagement process to coordinate research efforts related to the Logan Airport parking freeze amendment across dozens of Massport stakeholders and departments. Directed a ground access mode choice survey to evaluate proposed policies to reduce vehicle trips, VMT, and congestion at the Logan Airport, and to increase use of public transit and other HOV access modes. (2018-2019)

Vermont Agency of Transportation, Vermont Long Range Transportation Plan Public Opinion Survey. Directed a statewide public

opinion survey to support the development of the Vermont Long Range Transportation Plan. The objective of the public opinion survey was to gather necessary information to understand statewide transportation issues and opportunities, and to inform and prioritize the vision, goals and policies, and investment priorities to sustain Vermont's transportation system for the future. Worked with the project stakeholders to develop the survey approach, statistically valid sampling plan, questionnaire, data weighting scheme, and data analysis. (2016)

Chittenden County Regional Planning Commission (CCRPC), Public Opinion Survey on Transportation, Chittenden County, VT. Served as a technical advisor on this public opinion survey to better understand the transportation-related attitudes and opinions of residents of Chittenden County, VT. The CCRPC was primarily interested in assessing the public's thoughts on the current performance of the region's transportation system and their priorities for future transportation investment and improvement. The results of the survey will help inform potential transportation initiatives grounded in the opinions and expectations of its citizens. (2012)

Chittenden Area Transportation Management Association (CATMA), Annual Student and Employee Transportation Surveys, Burlington, VT. Direct an annual transportation survey of students, faculty, and staff of CATMA member institutions in Burlington, VT. This survey has been conducted annually and biannually since 2001 and collects information about commuting habits, use of alternative modes of transportation, and opinions and attitudes related to transportation issues. The longitudinal data is used to evaluate CATMA's travel demand management programs and monitor transportation trends over time. (2006 to present)

PUBLICATIONS

Bradley, M., T. Adler, S. Hess, and M. Fowler. "The Influence of Anchoring on Value of Time Estimation in Stated Preference Experiments." Proceedings of the 2015 International Choice Modeling Conference (2015).

Gosling, G., S. Landau, T. Adler, and M. Fowler. "Airfare Distribution by Trip Purpose." Transportation Research Record Volume 2569 (2016): p. 16-23.

Tillman, R., T. Adler, and M. Fowler. "Quantified Probability Assessments of Revenue Forecasts." Proceedings of the Second International Conference on Public-Private Partnerships (2015): p. 439-446.

Hess, S., M. Fowler, T. Adler, and A. Bahreinian. "A Joint Model for Vehicle Type and Fuel Type Choice: Evidence from a Cross-nested Logit Study." Transportation: Volume 39, Issue 3 (2012): p. 593-625.

Carpenter, C., M. Fowler, and T. Adler. "Generating Route Specific Origin-Destination Tables Using Bluetooth Technology." Transportation Review Record: Journal of the Transportation Research Board (2012): p. 96-102.



JONATHAN SLASON, PE

Director

EXPERIENCE | 15 Years

EDUCATION | BS, Civil Engineering and BS Economics, RPI

LICENSES/CERTIFICATIONS | PE Vermont #9353

BIO

Jonathan Slason, PE is a Director of Planning at RSG. He provides professional engineering and planning consulting services to public and private clients focused on megatrends in transportation. His interest is on how to leverage emerging technologies to improve our world with a growing population, funding challenges, aging infrastructure, and a changing climate all while creating thriving and desirable places for us to live, work, and play. Jonathan's education in economics and civil engineering enable him to take the conceptual and translate that into tangible action.

Jonathan has always been attuned to conducting analysis, evaluations, and design projects with a degree of humility required. The users of the transportation system are never one homogenous bunch and even with the best outreach and engagement there are always segments of the population that may not participate in the process. Jonathan has worked in jurisdictions across the country and in several parts of the world that has informed his approach to work but also given him the experience to view problems and potential solutions from numerous perspectives and maximize the success of projects.

PROJECT EXPERIENCE

Impact Fees and Innovative Financing. Jonathan is a leader in the State of Vermont and now working nationally on impact fee studies. Engaged with TRB innovative project finance committee and the Growth and Infrastructure Consortium, he is staying up to date with the latest trends and legal issues. Recent work includes: Town of Essex sidewalk and recreation impact fees, Town of Williston transportation impact fees, VTTrans Transportation Improvement District funding analysis, Town of St. Albans alternative local financing options, and the City of Jacksonville, FL impact fee update. Past work includes Blue Ribbon committee white papers on transportation funding, including licensing, registration, gas taxes, and mileage taxes.

Vermont Congestion Policy Review. Technical and project lead for an analysis and review of the congestion policies in Vermont guiding the state Level of Service policy and how state and local governments assess impact of land development. The study reviewed a comprehensive set of policies and approaches. The report is being used by the state and the regional planning commission to take next steps to revise and update the policies to achieve better land use objectives and multimodal mitigation. (2019-2020)

LADOT Accessibility "Connectivity" Modeling. Deputy manager assisting with the delivery of training and a user guide for an accessibility tool for Los Angeles DOT using the Conveyal Analysis software. Innovative solution for the city to use in how land use projects and transportation projects change the quantity of goods and services available within a specific time of the day, travel time, and travel mode. The Connectivity tool integrated a comprehensive approach to equity and inclusion by using the California Healthy Places Index as an overlay segmenting the population across eight dimensions of wellbeing. (2020-2020)

Clay County Mobility Fees. Technical lead on the delivery of the transportation planning elements associated with developing a Mobility Plan and associated Mobility Fee for Clay County Florida. Services include developing service standards, identifying areas suitable for multimodal trips, identifying deficiencies and solutions to offset growth impacts. Technical work included prioritization of projects for funding through mobility fees (impact fees) for projects needed to mitigate for impacts of growth (2020)

I-89 Corridor Study - 2050. Lead transportation planner on the identification of scenarios, land use interactions around secondary growth associated with new interchanges and interstate widening. Oversaw the development of a calibrated base TransModel used to evaluate complex and multimodal corridor operations that was extracted from a TransCAD sub area clip. Reviewing and several TransCAD scenarios testing improvement options. (2019-ongoing)

City of Winooski Transportation Impact Fee. Developed the first impact fee for the city of Winooski around the need for additional transportation capacity to accommodate planned land use growth and development. The study included working with the city to define the goals and objectives, identify the deficiencies and priority projects, evaluate future growth in the city, and create an ordinance for the city. (2018-2020)

City of Jacksonville Mobility Fee Update, City of Jacksonville, Florida. Project manager and technical lead for reviewing the latest regional model forecasts and identifying the multimodal deficiencies across the Jacksonville area. The process included developing goals, objectives to guide what criteria should be used to identify the high priority areas. The plan identified areas that have been historically underinvested in have areas of elevated crashes and often inadequate multimodal infrastructure. The vision of providing complete streets aligned with the new Context

Sensitive typical sections is incorporated into the updated fee. The study assessed the degree of growth in the city and allocates a fair share allocation of the cost of improving the system to be paid for by new land use development. The project includes an updated mobility plan, mobility fee ordinance, and updates to the regional travel model. (2018-2020)

CCRPC Regional Travel Demand Model Update & MTP Prioritization.

Project manager for the complete rebuild of the regional 4-step travel demand model to include new travel behaviors, updated TAZs and network. The future year models included new networks and land use forecasts, identification of future issues and prioritization process for improvements. RSG developed the land use model as well and a prioritization framework accounting for various metrics and outcomes. Future assessments for technology and CAV impacts to demand and network. Energy and GHG modeling using MOVES was completed for 2015 and 2050 years accounting for changes in vehicle fleet. (2016-2020)

Burlington Net Zero by 2030 – Burlington Electric.

Lead transportation planner to develop a baseline TDM energy and emissions analysis of travel behavior within Burlington, VT. The project is focused on finding pathways to meet the City's goal of moving towards Zero Net Energy accounting for electricity, thermal, and ground transportation. The project used the VisionEval strategic planning tool to evaluate how the local population might respond to various changes in pricing and policies. The effects of electrification, demand management and changing the supply and availability of transit and lightweight vehicles were tested. (2018-2019)

DTA-Activity Based Modeling – integration of Highly Automated Vehicles.

Jonathan informed the modeling team on the network and vehicle dynamics associated with connected and automated driving behaviors to be incorporated into the Dynamic Travel Assignment TransModeler model that was built for the North Florida TPO and integrated into the regional TransCAD model. This work was research funded by the FHWA to explore DTA/ABM integration. Some scenarios included assessing various roadway networks and demand assumptions around highly automated vehicles. (2017-2018)

South Burlington Transportation Impact Fee and Land Development Regulation Study.

Lead the complete revision of the transportation impact fee study and ordinance for the city along with a new transportation impact evaluation component within the land development regulation code. The city wanted a tier-based assessment of impact that allowed for more congestion and multimodal trip making in downtown parts of the city with more rural areas less congested. Lead the project prioritization phase of the study and developed a travel model to assess how the growth would be paid for by new growth. (2017-2020)

Williston Vermont Growth Center Transportation Impact Fee District – Pilot, Williston, VT.

Project manager and technical lead to develop the first transportation impact fee district in Vermont to collect fees for impact on the state highway system. The study looks to integrate and account for local impact fees, develop a fee mechanism to meet applicable impact fee laws and requirements, and provide a clear and logical method of funding future multi-modal transportation infrastructure. (2016 – 2018)

Williston Vermont Transportation Impact Fees, Williston, VT. Project manager and lead analyst for the creation of a new transportation impact fee structure. The original process developed fees based on zones of

impact and subsequent infrastructure required to maintain transportation system integrity. Project tasks included: Utilize regional travel demand model data to assess zone by zone travel behaviors and impact of future local development; developed infrastructure projects and costs; assessed projected land use development and associated vehicle trip generation; and derive impact fee values with appropriate credits. (2007. Update in 2018)

Vermont Rural Mobility and Equity Program.

RSG is providing primarily transportation planning and technical support on an innovative transportation program pursued by a collection of social agencies in central Vermont. The agencies identified how access to safe and reliable mobility unlocks social mobility – access to jobs, access to food, access to healthcare, and other services. RSG is carrying out web surveys and focus groups with agencies and local employers and residents, to inform the design of a multimodal MaaS solution facilitated by the social agency. The program is being designed as a rural car-share, on-demand ride hailing and ride sharing, pooled mobility (interfacing in a recent microtransit application with Via), and potentially incorporate some degree of delivery aspect. The program is fundamentally designed to capture to a population often in the shadows of a private market or top-down planning effort – but coming from a bottom-up estimate of need, interest, and design to cater to those most in need. (2019-ongoing)

City of Somerville and International OEM.

Managing the RSG sub-consultant arrangement on a strategic planning and transportation demand assessment of new mobility options being offered by an OEM in Somerville, Massachusetts. Project tasks include: creating a Mobility Plan to design policies and regulations around new mobility options as well as assist in the demand and business cases of new mobility options include fleet vehicles, microtransit, and pooled vehicles. Assess the effects of new mobility options on existing mode shares and future mode split targets and aggressive transportation demand management goals.

Topics Involving Emerging Mobility white papers,

FDOT Policy and Planning Office, 2019. Created three white papers exploring various facets of Mobility as a Service, Electric Vehicles, and Micromobility. The state of the market, the near-term future, and upcoming challenges that these mobility options may present to public agencies. (2019)

Telework Impacts on Travel.

Study for Massachusetts DOT to develop a statewide strategic travel demand model to estimate the effects of teleworking on daily travel behavior. Re-estimating demand models using primary data collected in the study and national travel data. Leading the model evaluation and selection phase as well as the co-lead in the technical modeling application (VE-State strategic model). Fundamentally, the option to work from home is not available to every job type in the economy. Generally skewed to white-collar industries, RSG will be conducting primary surveys as well as comparing them to previous work completed on the access to telework and the respective changes that option leads to. Does it continue to increase a divide between rich and poor, urban and rural? Does it lower transportation costs for some and raise them for others? Does it change home values and increase cost of living for all in certain communities? The research will be rooted in travel changes, but look wider at economic impacts across the population of the state. (2020-ongoing)

Resume

Matthew Dorfman, Partner

Matthew Dorfman has a passion for solving the complex problems that arise at the intersection of technology and policy, and has focused his career on surmounting the challenges of the many forms of road charging and pricing. Matthew's technology, policy, and program leadership skills allow the teams he leads to:

- ▶ provide agencies and stakeholders accurate, thorough, and balanced information from which to make decisions about road charging technologies; and
- ▶ rapidly implement road usage charge systems that implement complex policies yet are technically and financially robust, enforceable, cost-effective, and having a seamless user experience.

Matthew led technology research and development efforts for proposed road usage charging (vehicle mileage tax) systems in Oregon and California, where he was also Project Manager for the 5,000 vehicle 9-month pilot program. Matthew now leads similar efforts for Hawaii, Washington State, and Utah. He also provides expert guidance for congestion charging work in Auckland New Zealand.

Through rigorous systems engineering coupled with policy knowledge and sensitivity, Matthew ensures that the technical systems that his team specifies meet or exceed the program policy goals, while still being operationally feasible, enforceable, and cost-effective, and having a seamless user experience.

Prior to co-founding Milestone Solutions in 2011, Matthew worked in many facets of transportation technology, including intelligent transportation system and road charging consulting (for Booz Allen Hamilton), electronic toll collection (for Kapsch), and transit (for Transport for London). While at Booz Allen Hamilton, Matthew worked on the Greater Manchester UK Passenger Transport Executive Congestion Charge project.

Prior to that, Matthew was an automotive systems engineer for Robert Bosch GmbH, in Stuttgart, Germany.

Education:

- ▶ Master of Science, Technology & Policy, Massachusetts Institute of Technology, Cambridge, MA
- ▶ Master of Science, Electrical Engineering, University of Illinois, Urbana, IL
- ▶ Bachelor of Science, Electrical Engineering and Bachelor of Arts, English and German, Rice University, Houston, TX

Qualifications:

- ▶ **Member of SAE J3217, Tolling Applications Technical Committee.** In November 2020, this SAE committee resumed work on a tolling and RUC message set for connected vehicles. When eventually adopted by the SAE, the standard developed by this committee will allow vehicles to transmit data to participating toll and RUC-collecting agencies through a range of communications technologies, including CV2X and cellular communications. As an SAE standard, major automakers are likely to adopt this committee's work as a default data stand for tolling and RUC collection through native automaker technology.

Experience:

Milestone Solutions LLP, Arlington, VA. 2011-present

- ▶ **Identify and Test Technology Designed to Enable the Implementation of a National Road Usage Charge Pilot, Fderal Highway Administration** (2021-present). Mr. Dorfman is principal investigator (PI) for this ongoing study and test of mileage reporting technologies for a potential future national Road Usage Charge Pilot. After selecting the 3 to 5 most promising technologies for a potential national Road Usage Charge Pilot, the project team will perform a small proof-of-concept test of those technologies.

Resume

- ▶ **Exploring Implementation Strategies, Costs, and Impacts of a Potential National Mileage-Based User Fee, Federal Highway Administration** (2020-present). Mr. Dorfman is principal investigator (PI) for this ongoing study of a range of implementation strategies for a potential future national mileage-based user fee (or RUC). The team is developing a model that will compute the costs and impacts of a potential mileage-based user fee, and investigating legislative, regulatory, and organizational impacts on the federal and state governments of each strategy. The team is analyzing eight strategies or scenarios, each with a different selection of mileage reporting technologies, ranging from manual reporting on an IRS form to data collection through plug-in devices, odometer photo, and native automaker telematics. Role: Principal Investigator.
- ▶ **Utah Road Usage Charge System, Utah Department of Transportation** (2018-present). Matthew is supporting the Utah Department of Transportation's (UDOT's) rollout of a road user charge for alternative fuel vehicles. He has provided extensive policy and technology advice, and has developed a System Requirements Document (SRS), Business Requirements Document (BRD), and Interface Control Document (ICD) for UDOT. Role: Policy and technical advisor. Accomplishments: Developed SRS, ICD, and BRD based on UDOT input. Extensive oversight of account management vendor.
- ▶ **Road Usage Charge Pilot Project, Hawaii Department of Transportation** (2018-present). Matthew is the technical lead for a two-phased demonstration of network-wide Road Usage Charging (RUC) in Hawaii. Phase 1 involves sending user-friendly, intuitive notional RUC charge reports to hundreds of thousands of Hawaii residents based on data gathered in safety inspections. Phase 2 involves RUC based on automated reporting methods. Role: Technical lead for charging system design, including technology evaluation, requirements, interface, and business rule design. Accomplishments: Led team developing SRS, ICD, and BRD for Phases 1 and 2 based on HDOT input.
- ▶ **Washington Road Usage Charge Pilot Program** (2017-present). Matthew leads the technical work stream for a pilot of road usage charging in Washington State that was in live operations with approximately 2000 volunteer drivers Feb 2018-Feb 2019. He provided technology policy and operational concept design to support the Road Usage Charging Feasibility Study. Matthew led the development of a Concept of Operations, System Requirements Document, and Interface Control Document, and leads all technical work streams throughout the pilot. Role: Technical lead. Accomplishments: Led team developing SRS, ICD, and BRD. Led pilot operations during 12-month live pilot.
- ▶ **New Zealand Ministry of Transport Auckland Smarter Pricing Study** (2017-2020). Matthew supported the Auckland, New Zealand Smarter Transport Pricing Project. He provided advice on technologies and infrastructure available to support a variety of congestion charging methods and input into the evaluation of short-listed congestion charging options for the Auckland region. Role: Technical analysis and evaluation support.
- ▶ **Heavy Vehicle Access Charge, Main Roads Western Australia** (2015-2018). As technical lead, Matthew helped develop policy, technology, and procurement plans for a potential heavy vehicle distance-based road charging and access monitoring system for the state of Western Australia. Role: Technical lead
- ▶ **California Road Charge Pilot Program, California Department of Transportation** (2015-2017). Matthew was Project Manager for a 5000-vehicle network-wide road usage charge pilot that was in live operation from July 1, 2016- March 31, 2017. Pilot participants paid simulated road charges per mile driven. Matthew led a team of six technology vendors providing mileage recording and reporting services. In addition to being Project Manager, Matthew was technical lead: he developed several concepts for recording and reporting miles traveled, from simple, manually read odometer methods to smartphone-supported methods to native automaker telematics interfaces. He also specified the customer account management and state accounting systems. Matthew developed a Concept of Operations, SRS, and ICD, and led all technical work streams. Role: Project Manager and technical lead.

Marius Popescu, PE

Senior Electrical Engineer/Project Technical Leader

Mr. Popescu is leading CDM Smith's electric vehicle charging infrastructure planning initiatives. He has over 25 years of experience in a variety of responsible positions and markets, including commercial and industrial, and federal facilities, municipalities, transportation, renewable-solar, wind, hydro, biomass, and utilities. His expertise includes but is not limited to: power grid interconnection, power generation, and distribution, electrical detailed design of power systems (single line diagrams, key diagrams, schematics, switchgear, motor control centers, power distribution panels, cable engineering, cable bus, power transformers, batteries, battery chargers, inverters, uninterruptible power supplies) and power system analysis/computer modeling (short-circuit, load flow, protective device coordination, arc-flash, lightning protection, harmonics, transient, motor starting, voltage drop).

Sr. Electrical Engineer, Smart Mobility Program, US Department of Energy (DoE), Argonne National Laboratory (ANL), Lemont, IL, 2020. Provided technical support to ANL in the decision-making process for autonomous buses acquisition, assist on deployment plan and bus charging facilities needs.

Lead Electrical Engineer, Repair by Conducting Power Distribution Systems Analysis for Buildings, Schriever Air Force, Colorado Springs, CO, 2018-2020. Coordinated a team of engineers in performing critical buildings assessment, data collection, and power system analysis studies (short-circuit, load flow, protective device coordination, arc flash hazard), installation of arc flash labels, and performing breaker settings adjustment to reduce arc flash incident energy

Sr. Electrical Engineer, Fire Detection and Alarm, Chicago Transit Authority (CTA), West Shops, 77th Street Bus Garage and South Shops, Chicago, IL, 2019. Performed Fuel Pump Building NFPA code compliance reviews for the electrical equipment, fire alarm and detection design; proposed power distribution system improvements to improve safety.

Lead Electrical Engineer, SunEdison Photovoltaic Utility-Scale Projects - Escalante III and Enterprise Solar Farms, Utah (2 plants x 80 MW each); (Solar) Rooftop Projects Bixby Redlands, California (1.4 MW), Kohls DC San Bernardino, CA (1.5 MW) and L&B Sierra Gateway Fontana, California (0.9 MW), 2014-2016. Performed photovoltaic systems design, including sizing calculations, equipment selection and procurement (photovoltaic panels, combiners, inverters, step-up transformers, MV switchgear, LV panels), permit and construction drawings review (equipment layout drawings, grounding plans, wiring, schematics, three-line diagrams, etc.), and provided construction support.

Lead Electrical Engineer, US 35 Sanitary Sewer (Phase 1) and Wastewater Treatment Plant (Phase 2) Design, Preble County, Ohio, 2020. Mr. Popescu coordinated a team of engineers in performing complete electrical design of the power distribution system associated to a new sanitary sewer (three lift pump stations) and new wastewater treatment plant; developed a complete technical specifications package for the new plant and lift pump stations.

Lead Electrical Engineer, WWTP Improvements, Mount Orab, Ohio, 2019-2020. Mr. Popescu coordinated a team of engineers in performing electrical design for the power distribution system upgrade to accommodate an increase in the plant capacity.

Education

BS – Electrical Engineering, University of Craiova, 1994

Registration

Professional Engineer: Ohio, North Carolina, Colorado, Michigan, Pennsylvania, Florida, Washington

Certifications

OSHA 10 Hour for Construction

Power Analysis Programs

ETAP, SKM, Easy Power, EDSA Paladin Designbase, EMTP-RV, SAG10, CalcWare AmpCalc/Underground Systems, HelioScope, pVSyst

Lead Electrical Engineer, Water Treatment Facility – 15kV Primary Switchgear Replacement Study, City of Lancaster, Pennsylvania, 2017-2018. Mr. Popescu prepared a feasibility study to improve efficiency, reliability, and safety of the medium voltage distribution system.

Senior Electrical Engineer, WTP Condition Assessment, City of Bloomington, Illinois, 2017-2018. Mr. Popescu evaluated the existing water treatment facility power distribution system deficiencies, proposes retrofits, and upgrades projects to improve plant safety and reliability, and prepares electrical cost estimate for the proposed projects.

Senior Electrical Engineer, Rolling Hills Booster (RH2) Pump Station Upgrade, Tarrant Regional Water District, Texas, 2017. Mr. Popescu reviewed medium voltage variable frequency drive (VFDs) specification, reviews harmonic distortions study to accommodate new VFDs, and provides technical support on equipment procurement.

Senior Electrical Engineer, Pastor Pump Station and West Loop Water Line Improvements, City of Georgetown, Texas, 2017. Mr. Popescu prepared pump station power distribution system analysis model using SKM Power Tools program. He also prepares power factor correction and harmonic distortion mitigation studies.

Senior Electrical Engineer, Redundant Electrical Service for Masard Wastewater Treatment Plant, City of Fort Smith, Arkansas, 2017. Mr. Popescu reviewed power distribution system analysis studies associated to the Pump Station, Solid Handling and Equipment Storage facilities (short circuit, protective device coordination and arc flash hazard).

Senior Electrical Engineer, North WWTP General Electrical Rehabilitation, Baton Rouge, Louisiana, 2017. Mr. Popescu reviewed power distribution system analysis studies for Pretreatment and Grit facilities (short circuit, protective device coordination, harmonics, motor starting, voltage drop and arc flash hazard).

Lead Electrical Engineer, Sanem Luxembourg Warehouses Design, 2020. Mr. Popescu coordinates a team of engineers in performing electrical IEC-based design, power system analysis and specifications associated to three warehouses addition to meet NATO/USACE requirements and Host-Nation/IEC standards.

Lead Electrical Engineer, Buildings Equipment Assessment and Power Analysis Studies, Schriever AFB, Colorado Springs, Colorado, 2018-2020. Mr. Popescu coordinated a team of engineers in performing critical buildings assessment, power system analysis studies (short-circuit, load flow, protective device coordination, arc flash), installation of arc flash labels and performing breaker settings adjustment to reduce arc flash incident energy.

Lead Electrical Engineer, Short Circuit Analysis, Protective Device Coordination Study and Arc Flash Risk Assessment, JBLM Tacoma, Washington, 2017-2018. Mr. Popescu coordinated a team of engineers in performing power system analysis studies associated to the JBLM facilities, including but not limited to data collection, as-built drawings development, electrical equipment duty evaluation, short-circuit calculations, selective coordination, arc flash hazard assessment and mitigation.

Resume

Scott Wilson, Principal Consultant

Qualifications:

Scott Wilson has over 20 years of experience in transport strategy, policy and regulatory advice, with a further five years of experience in telecommunications, broadcasting, postal and media policy. He has worked with clients in the UK, Ireland, U.S., Middle East, Hong Kong, Australia and New Zealand, as well as the European Commission across road, air and space sectors. He specializes in advising on strategy, policy, regulation and governance for road pricing and tolling. He has broad experience in leading road pricing and tolling studies from the high-level strategic assessment of objectives and options, through to the detailed planning of policy, business rules, organizational design, business case development, and implementation advice. Most recently he has been project manager providing technical advice on Auckland, New Zealand's project to investigate congestion pricing (The Congestion Question project). From 2006-2008 he was project manager for advising on development of congestion pricing options for Manchester, UK.

Scott has worked as part of multi-agency teams to deliver projects and advise on public initiatives across transport and other sectors, including managing a range of stakeholder interests where there are overlapping or conflicting interests and concerns. He has authored numerous policy reports for governments at city, state, national and international (EU) level and presented at conferences around the world, such as the ITS World Congress.

Since he joined Milestone he has led our work in Australia and New Zealand, including studies for Main Roads Western Australia on heavy vehicle charging, for the Department of Infrastructure and Regional Development on a framework for road charging trials. He has been leading our advice on development of options for congestion pricing for Auckland.

Previously with Booz & Co, Scott has advised the European Commission extensively on economic policy and regulation, such as reviewing the policies and practices of heavy vehicle road charging systems in three EU member states and light vehicle charging policies across seven EU Member States. He spent 2.5 years providing advice on policy development for the proposed congestion charging scheme in greater Manchester, including development of options, business case, business rule development, and pricing policy.

Prior to his consultancy career, work Scott was a senior advisor at the New Zealand Ministry of Transport where he advised on a wide range of transport strategic issues in New Zealand. His work included leading the program for a national electronic road user charging (eRUC) scheme that became the basis for the recently implemented reforms to New Zealand's national truck and diesel car distance-based road charging system. He also advised on the Auckland Road Pricing Evaluation Study.

Education:

- ▶ Bachelor of Arts (Hons) (politics, international relations), Victoria University of Wellington, New Zealand
- ▶ LLB, Victoria University of Wellington, New Zealand

Employment History:

Milestone Solutions LLP, Canberra, Australia. 2016-present.

- ▶ **Australia** - National Heavy Vehicle Charging Project (2018-present). Advising on implementation, policy and design for piloting heavy vehicle charging Role: Project Manager.
- ▶ **Auckland - The Congestion Question Project** (2017-present). Review of international best practice in urban demand-management-based road pricing policy, strategy, technology, and operating models.

Resume

Ongoing strategic advice on option development and selection, strategic engagement and consultation and project planning. Role: Project manager, primary analysis and review.

- ▶ **Western Australia - Heavy Vehicle Charging and Access Project** (2016-2018). Development of policy, design, procurement and development of a heavy vehicle road charging, and access monitoring system
Role: Project manager and policy lead.
- ▶ **California Road Charge Pilot Program** (2016-2017). Pilot program for distance and time-based alternative to gas tax. Role: Risk analysis and policy advice.
- ▶ **Australia Framework for Road Charging and Investment Trials** (2017). Preparation of a national framework for road charging trials for Australia's Department of Infrastructure and Regional Development. Role: Project Manager and lead analyst.
- ▶ **Development of a Regulated Access Base based model for road management in Australia** (2016). Review of international best practice in the commercialization and governance reform of roads on a utility model Role: Project Manager and lead analyst.

LeighFisher, London, UK. Associate Director (2012-2015).

- ▶ **Airports Commission**, London, UK. (2013-2015). Development of options to expand airport capacity in the south-east of England and recommendation of a preferred option for government Role: Policy advice, reviewing all proposals for short to medium term improvements to airport capacity, including review of surface access issues.
- ▶ **Road User Fee Pilot Program**, Salem, Oregon. (2001-2007). Oregon's successful first distance charge pilot project for light vehicles, the first in the nation, including a per-mile fee paid at the pump and a 10-month test of congestion pricing in the Portland, Oregon metropolitan area. Role: Advice on international best practice in light vehicle charging.

Booz Allen Hamilton/Booz&Co, London, UK. Associate (2005-2012).

- ▶ **Heavy vehicle charging review of rate setting**, Brussels, Belgium (2011). Review of rate setting practices of two EU member states for weight/distance heavy vehicle road charging systems to establish if they were compliant with EU law around relating rates to infrastructure costs. Role: Primary analyst.
- ▶ **Best practice in light vehicle vignettes**, Brussels, Belgium (2011-2012). Review of practice of light vehicle time based charging for the European Commission, to establish best practice and assess rate setting and operational policies of such systems. Role: Policy analysis.
- ▶ **Manchester Congestion Charging**, Manchester, UK (2006-2008). Development of an urban congestion charging system from scratch including option development, option selection, development of policies, cost, revenue modelling and functional design. Role: Policy manager.
- ▶ **Establishment of a hypothecated roads fund**. European Bank for Reconstruction and Development (2009). Options for best practice in development of hypothecated roads funds.

Ministry of Transport, Wellington, New Zealand. Senior Advisor (2000-2005).

Relevant projects. Electronic Road User Charging functional design and business case. Auckland Road Pricing Evaluation Study. NZ Tolling Systems Project. Wellington transport funding package development.



Zubair F. Ghafoor

Sr. Transportation Planner

Technical Qualifications

Zubair Ghafoor brings over 29 years of diverse professional experience including 19 years with CDM Smith. He has successfully completed numerous transportation planning and traffic and revenue studies as a project manager and senior transportation planner. One of his recent achievements include the “Enhanced Highway Revenue Forecasting Model” and software (Enhanced HRFM) which was developed for FHWA and provides the capability to perform scenario analysis of highway revenue policy options. As part of another study for FHWA titled “Interstate Revenue and Policy Options Study”, Zubair developed a national tolling analysis model and software. This tool provides the capability to analyze any user-specified freeway in any state for potential implementation of tolling. The software and model he developed earned national recognition and was awarded “Private Sector Innovation” award by IBTTA in 2016.

Zubair has a strong experience in dealing with national level datasets for passenger and freight movement. His areas of expertise include, traffic and revenue analysis and modeling, custom software development, database development and geographic information systems (GIS). He is currently leading CDM Smith’s efforts to incorporate Artificial Intelligence into transportation and other practice areas of the firm. Zubair has successfully completed projects of national significance as well as in many states including Washington, Illinois, Colorado, Oregon, Florida, North Carolina, Connecticut and many others. Zubair was also the Project Manager on the SR 520 Investment Grade Traffic and Revenue Study for WSDOT. This study facilitated the eventual implementation of tolling on the new SR 520 bridge in Seattle, WA.

Relevant Project Experience

Financial Analysis Lead, “Forward Drive RUC” project for Washington State Transportation Commission. Zubair is leading the Financial Analysis task on this project for WSTC. He is leading a team of transportation analysts to provide long term revenue forecast using various Road User Charging scenarios. The financial analysis includes the consideration of the impacts of Covid-19 on telecommuting and VMT impacts of emergence of electric and autonomous vehicles.

Project Manager/Primary Investigator, “Enhancing Highway Revenue Forecasting Model”, FHWA. This study was conducted for the Federal Highway Administration (FHWA). As the project manager and technical leader for the development of the Enhanced HRFM, Mr. Ghafoor was responsible for developing an enhanced revenue forecasting model to support policy analysis of highway-related user fees. He also developed user-friendly software as several analytical tools for processing various datasets for the enhanced model. This also included a tool for processing trucks’ weigh-in-motion (WIM) which was selected for presentation at the TRB Freight Data Innovation Workshop in 2017.

Education

M.S.,
Transportation
Engineering

B.S., Civil
Engineering

Experience Highlights

Winner of CDM
Smith Presidents
Award for
Innovation 2019

Winner of 2016
IBTTA Private
Sector Innovation
Award

Development of
state-of-the-art
National Tolling
Analysis model for
FHWA

Development of
WIM data
processing tool for
FHWA

Development of
Highway Revenue
Forecasting model
and software for
FHWA

Task Manager, “Scenario Planning of Future Freight and Passenger Traffic Flows across the US/Mexico and US/Canada Borders”. This study was also conducted for FHWA. As task leader, Mr. Ghafoor managed a team of analysts and modelers to process large quantities of travel data along the US-Canada and US-Mexico borders. He also developed a custom software tool to facilitate the viewing of study results at various levels of detail and presented study findings to stakeholders in US, Canada and Mexico.

Task Manager, “Interstate Revenue and Policy Options Study”. This study was also conducted for FHWA. As task leader for the development of a national tolling analysis tool, Mr. Ghafoor managed a team of analysts and modelers. The task involved utilizing national data sources such as HPMS, FAF, NBI and NHPN to develop a national travel analysis model and several associated applications. Extensive use of technology and GIS/database resources and innovative modeling techniques was involved. Mr. Ghafoor developed a complex, user-friendly software tool to support the analysis of proposed tolling scenarios.

Application of Artificial Intelligence and Machine Learning to identify vehicles using CCTV footage, CDM Smith R&D. This study was conducted in collaboration with Microsoft to develop a Neural network-based model to support traffic counting from videos. This effort involves using traffic videos from several sources to develop and train the model. Several prototype models have been developed and are being tested. Mr. Ghafoor is heavily involved as a SME in transportation as well as a SME in AI due to his academic background in this area.

Project Manager, SR 520 Investment Grade Traffic and Revenue Study, Seattle, Washington. For the Washington State Department of Transportation, as the project manager, Mr. Ghafoor managed a team of analysts and sub-consultants. The study included traffic and revenue forecasting, analysis of impacts due to tolling, application of travel demand models and preparation of final report for the bond rating agencies. Mr. Ghafoor developed a pricing strategy and provided the client with estimates of traffic and revenue for successful project financing.

Project Manager/Senior Analyst, Preliminary Traffic and Revenue Study for I-5/SR 509 Corridor Completion and Freight Improvement Project, Seattle, Washington. For the Washington State Department of Transportation, Mr. Ghafoor conducted the preliminary traffic and revenue study involving traffic and revenue forecasting for several corridors in the Seattle metro area. He managed a team of modelers and analysts to determine the revenue potential of the projects, presented the results to the client, and prepared the final report.

Task Manager, Long Range Traffic and Revenue Forecasts for the Illinois Tollway, Illinois. For the Illinois State Toll Highway Authority, Mr. Ghafoor supervised modelers and analysts, responsible for model update, development of updated model parameters and trip tables. He trained staff in use and application of the new model and applied the model on several traffic and revenue studies in the Chicago metro area.

Project Manager/Senior Analyst, US-23 (Brighton to Ann Arbor) Managed Lanes and Toll Finance Assessment, Michigan. For the Michigan Department of Transportation, Mr. Ghafoor oversaw the preliminary traffic and revenue study involving modeling of managed lanes and preliminary financial analysis including preliminary bonding capacity assessment.

Resume

Ging Ging Liu Fernandez, Partner

Ging Ging Fernandez has over 20 years of experience in the transportation and communications engineering industries. She is a seasoned project manager with experience in strategic planning for transportation pricing and payment programs, overseeing system deployments, and conducting transportation studies. She is currently the project manager for the Hawaii Road Usage Charge Demonstration (HiRUC), assisting the Hawaii Department of Transportation with deploying the country's largest RUC pilot and outreach effort. The project is sending out customized driving reports to all owners of registered vehicles in the state to raise awareness about transportation funding and solicit public feedback on a potential RUC. The team has conducted extensive community and stakeholder outreach since August 2018. Ms. Fernandez has practical, on-the-ground experience coordinating all aspects of the HiRUC project including outreach, communications, technical, and policy work. Ms. Fernandez also worked on the Washington Road User Charge Project on vendor oversight and system testing.

Prior to joining Milestone, Ms. Fernandez worked at Traffic Technologies, Inc. advising toll agencies on strategic planning, procuring systems, and overseeing deployments of innovative road pricing systems including Golden Gate Bridge and MassDOT's conversion to all-electronic tolling, Bay Area's express lanes network, and upgrading various customer service centers. Before that, while with Cambridge Systematics in Boston and then Booz Allen Hamilton in San Francisco, she supported the US Department of Transportation onsite at the Volpe Center and public transit agencies on systems engineering, standards development, outreach, and education in the areas of ITS, electronic fare payment systems, and the Connected Vehicle program. Ms. Fernandez loves the challenge of working with a wide range of stakeholders, from engineers to policymakers, to achieve consensus on how to introduce new concepts and apply new technologies in transportation in a user-friendly manner. She believes that our everyday transportation can be much more efficient, lower impact on the environment, and even enjoyable, and works every day to achieve this dream.

Education:

- ▶ Master of Science, Transportation, Massachusetts Institute of Technology, Cambridge, MA
- ▶ Bachelor of Science, Engineering, Harvey Mudd College, Claremont, CA

Employment History:

Milestone Solutions, Waimanalo, HI. 2016-present.

Relevant projects:

- ▶ **HiRUC Pilot Project** (2018-present). Project manager for the Hawaii Road Usage Charge Pilot, which is the largest operational pilot of road usage charging ever conducted. Role: Project manager.
- ▶ **Washington Road Usage Charge Pilot Program** (2016-present). Setting up, designing, and implementing a pilot program to test road usage charging in Washington. Role: Project management team, requirements, procurement, and testing.
- ▶ **HDOT Feasibility Study for Implementing a Statewide Mileage Based User Fee** (2016-present). Assisting Hawaii DOT with outreach on Road User Charging. Role: Assisted with conducting a workshop on road user fees, making presentations with HDOT to stakeholders on road user charging.

Resume

Traffic Technologies, Inc., Waimanalo, HI. 2010 - 2016.

Relevant projects:

- ▶ **Metropolitan Transportation Commission Express Lanes Network Systems Management Services** (2012-2015). Planning, procurement, design, and technical oversight of the express lanes systems integrator. Development of business rules for the Regional Express Lanes Network, development of requirements and RFP for procuring the toll system integrator, system integrator selection, review of integrator deliverables, and tracking of project risks. Role: Project management team, senior toll consultant.
- ▶ **Bay Area Toll Authority Advance Toll Collection and Accounting System II** (2010-2015). Technical oversight of the system design, installation, and testing of BATA's replacement electronic tolling system. Lead consultant assisting with management of system integrator. Role: Project manager.
- ▶ **Golden Gate Bridge All-Electronic Tolling (AET) Implementation** (2010-2013). Development and implementation of the Strategic Plan for all-electronic tolling for the Golden Gate Bridge. Strategic planning for converting Golden Gate Bridge to all-electronic tolling to reduce cost of operations. Analysis of civil engineering considerations including design of the signage plan and development of a traffic simulation of AET on the Golden Gate Bridge. Development of business rules and specifications for a network of cash payment vendors to ensure fairness of program to underbanked customers, procurement and oversight of the communication firm. Role: Civil lead, senior transportation consultant, image capture performance.

Booz Allen Hamilton, San Francisco, CA. 2007-2010.

Relevant projects:

- ▶ **International Organization for Standards (ISO) Intelligent Transport Systems Public Transport and Emergency Working Group** (2003-2007). Facilitated the development of international public transit standards and managed the work of international transit experts. Revitalized work program and significantly increased participation within the working group. Integral to the development of the Interoperable Fare Management System standard (ISO 24014-1) for electronic transit fare payment. Represented the Federal Transit Administration (FTA) at international and domestic meetings and conferences (including American Public Transit Association, Asia-Pacific Economic Cooperation, Smart Card Alliance) to perform outreach, collaborate domestically and internationally, build consensus, and promote use of transit communication and electronic fare collection standards to improve transit information and service. Role: Rapporteur, acting convener, project management.
- ▶ **Federal Highway Administration Review and Beta Test of TRUCE Model** (2008-2009). Updated the FHWA TRUCE congestion pricing revenue and costs sketch model. The model uses readily available data to evaluate the cost and benefit of congestion pricing in different cities. Validated the model using King County data, refined the generic capital cost estimates, and incorporated congestion pricing scenarios such as HOT lanes into the model. Role: Principal investigator.
- ▶ **San Francisco Municipal Transportation Authority (SFMTA) Radio Replacement Project** (2008-2009). Complete overhaul of the communication system to support transit operations. Facilitated workshops with radio system users, including transit management, operators, and maintenance to develop the Concept of Operations for the System. Developed the Systems Engineering Management Plan for the project. Role: ITS system engineer.

Cambridge Systematics, Cambridge, MA. 2002 - 2007.

DIRECTV, El Segundo, CA. 1997 - 2000.

F. Subcontractors

F.1. CDM Smith

The official company name is CDM Smith, Inc. (CDM Smith).

F.1.1. Principals and corporate officers

- Timothy B. Wall - Director, Chairman of the Board, Chief Executive Officer
- Thierry Desmaris - Director, Chief Financial Officer, Executive Vice President
- Peter W. Tunnicliffe - Director, Senior Vice President
- Mario J. Marcaccio - Director, General Counsel
- Anthony B. Bouchard - Director, President, Chief Operating Officer
- Gae A. Walters - Director
- Howard H. Stevenson - Director
- Jennifer S. Banner - Director
- Christopher R. Campbell - Treasurer
- Paul T. Milligan - Secretary, Assistant General Counsel
- Jason P. Makofsky - Assistant Secretary, Senior Legal Counsel

F.1.2 Resumes of key personnel

Marius Popescu, see section E

Zubair Ghafoor, see section E

F.1.3 Types of work to be performed

CDM Smith will lead Tasks 3 (kWh Fee system definition) and 5 (financial analysis), supporting Tasks 1 (public opinion research and stakeholder engagement support), 4 (rate setting), and 6 (implementation plan).

F.2. RSG

The official company name is Resource Systems Group, Inc. (RSG).

F.2.1 Principals and corporate officers

- Tom Adler - President
- Stephen Lawe - CEO
- Jay Evans - Vice President of Operations & Finance
- Tim Young - CIO

F.2.2 Resumes of key personnel

Mark Fowler, see section E

Jonathan Slason, see section E

F.3.3 Types of work to be performed

RSG will support Tasks 1 (public opinion research and stakeholder engagement support), 4 (rate setting), and 5 (financial analysis).

G. Past Performance

See Past Performance and Reference Forms following.

PAST PERFORMANCE & REFERENCE FORM

Contractor: **Milestone Solutions, LLP**

Provide a summary of six (6) recent projects you provided services for that are in line with the Scope of Work for this RFP. Include any special circumstances that required creative approaches or dispute resolution. Each project must include a reference with contact information.

PROJECT 1

Road Usage Charge System Implementation Support and Policy Advisory Services, 2018-Present

Utah's legislature mandated implementation of a per-mile RUC beginning January 1, 2020 as an alternative for electric, plug-in hybrid, and hybrid vehicles in lieu of registration surcharges already in place for those vehicles. The system recently began operations as scheduled on January 1, 2020 making Utah the second state after Oregon to launch a RUC program. With legislative encouragement, Utah is examining scenarios for the future for RUC policy in the state, including the potential of a statewide mandate for all vehicles.

Milestone provided essential technical and policy support to UDOT in successfully designing, implementing, launching, and operating the RUC system for light vehicles. In addition, Milestone has helped UDOT examine pathways to full statewide implementation, identifying organizational, technological, financial, and policy obstacles that the agency must confront in that endeavor. This experience gives Milestone a unique view to the challenges and opportunities for large-scale expansion of a RUC system in a state without existing odometer inspections for all vehicles.

For implementation support, Milestone provided guidance and back-ground on policy and context of other systems to support agency design choices regarding the system roll-out; and supported technology and system development through the creation of System Requirements Specifications (SRS), Business Rules Document (BRD), and an Interface Control Document (ICD) for UDOT. Milestone also provided advice on other road pricing concepts and technologies. Recently, Milestone has overseen Field Operational Testing of the UDOT-procured Commercial Account Manager's system.

For advisory services related to future RUC policy, Milestone has helped UDOT decision-makers design a range of possible scenarios and plan for a range of administrative steps and plans for the future of RUC in Utah, which may involve a ramp-up of RUC services beyond the current option for alternative fuel vehicles to a potential future statewide mandate for all vehicles to pay the RUC. Going forward, Milestone will continue to monitor and evaluate the performance of the current RUC system program, while continuing to help UDOT plan the future of RUC in Utah.

Experience Highlights

- Support for RUC system design, implementation, and launch in less than two years from legislative enactment
- Transition planning, including creation of 10 scenarios and comprehensive assessment of each in a stakeholder workshop, for moving the entire Utah fleet from fuel taxes to RUC by 2031.

Company Name: Utah Department of Transportation, Traffic and Safety

Contact Name: Travis Jensen

Phone: 801-819-2804

E-mail: travisljensen@utah.gov

PAST PERFORMANCE & REFERENCE FORM

Contractor: Milestone Solutions, LLP

Provide a summary of six (6) recent projects you provided services for that are in line with the Scope of Work for this RFP. Include any special circumstances that required creative approaches or dispute resolution. Each project must include a reference with contact information.

PROJECT 2

Road User Fee Task Force Policy Support and Road Usage Charge Pilot and Program Implementation Support, 2011-2016

The Oregon Department of Transportation (ODOT) began its exploration of gas tax alternatives in 2001 in response to legislative direction to convene a Road User Fee Task Force (RUFTF), an independent policy body with the mission of planning and investigating new revenue mechanisms for the road system. The RUFTF recommended a per-mile charge to replace the gas tax as the principal method of road funding and continues to advise ODOT and the state legislature on RUC policies. Following its “pay-at -the-pump” pilot in 2006-2007, ODOT retooled its approach to RUC policy and systems. In 2011, ODOT sought outside expert advice in support of additional financial and policy analysis, pilot testing, and program evaluation in the lead-up to passage of Senate Bill 810 in 2013, which created the first operational RUC program for light vehicles in North America.

Milestone aided ODOT in animating a new per-mile charge concept following the department’s initial “pay-at-the-pump” pilot. Milestone helped the department demonstrate the new account-based, open system per-mile charge concept by developing the nation’s first data transmission protocols (i.e., mileage message, Interface Control Document, System Requirements Specifications) for wireless transmission of mileage data from vehicles for purposes of imposing a per-mile charge. Milestone helped the legislative effort leading to adoption of the nation’s first operational road usage charge for light vehicles through policy analyses of the impact on rural drivers and disadvantaged communities and creation of a financial and economic model. Milestone also assisted with structural analyses such as an open system architecture model, a strategic program plan, an organizational assessment, and a service provider certification process.

While at ODOT, Jim Whitty (now a Milestone Partner) led all aspects of RUC policy and system design, including guiding the RUFTF to design and test two road user fee pilot demonstrations in 2006-07 and 2012-13, leading ultimately to legislative adoption of the nation’s first operational Road Usage Charge Program for light vehicles in 2013. The “real-money” program, branded OReGO, was implemented and launched in 2015 and has been in operation ever since

Experience Highlights

- Developed nation’s first RUC data transmission protocols and system specifications that have extensively influenced other RUC pilots and programs (California, Washington, Colorado, Utah, and Hawaii)
- Originated use of Motorist Choice of Mileage reporting method, including both location-based and non-location-based methods, to help relieve privacy concerns
- Originated use of open system architecture model for collection of light vehicle RUC through private sector service providers or Account Managers
- Led directly to the nation’s first real-money RUC Program, OReGO, which launched in 2015.

Company Name: Oregon Department of Transportation (ODOT)

Contact Name: Randal Thomas

Phone: (971) 240-7094

E-mail: randal.b.thomas@odot.state.or.us

PAST PERFORMANCE & REFERENCE FORM

Contractor: **Milestone Solutions, LLP**

Provide a summary of six (6) recent projects you provided services for that are in line with the Scope of Work for this RFP. Include any special circumstances that required creative approaches or dispute resolution. Each project must include a reference with contact information.

PROJECT 3

Road Usage Charge Assessment, Steering Committee Policy Support, Pilot Program and Research, 2012-Present

Each year beginning in 2012, the Washington legislature has directed the Washington State Transportation Commission (WSTC) to investigate road usage charging (RUC) as a possible future alternative to fuel taxes. The phases of this exploration included: feasibility assessment (2012); business case analysis, organizational assessment, and operational concept development (2013-2014); pilot test planning (2015-2016); pilot test implementation and evaluation (2017-2020); and improvement and implementation research (2020-2023).

Working closely with WSTC staff, commissioners, and a 30-member Steering Committee, Milestone has helped leaders shape state policy on RUC within a complex stakeholder environment. Milestone staff provided key support including leading the business case analysis, technical system design for a pilot test outreach and communication, public opinion research, and regular reporting to the commission, legislative committees, and the Federal Highway Administration.

As delivery partner for the demonstration phase, Milestone designed the mileage reporting methods, including incorporation of features developed by students during a capstone design course competition that Milestone supported at the University of Washington. Milestone also procured the necessary systems and technologies to assemble the pilot building blocks, oversaw pre-launch testing and the 12 months of live operations, conducted pilot data analysis, and reported findings.

With Milestone as lead support and advisor, in October 2019, the RUC Steering Committee adopted its final report of pilot findings. In December 2019, the Commission adopted recommendations for legislative consideration, including the recommendation to advance RUC policy in Washington by beginning with alternative fuel vehicles.

Since 2020, Milestone has been lead contractor to WSTC for its Forward Drive, working with CDM Smith to advance financial modeling, outreach, equity analysis, and approaches to reduce cost of collection in advance of another round of concept testing.

Experience Highlights

- Methodical research into RUC over many years including feasibility assessment, business case analysis, operational concept development, public opinion research, outreach and engagement, pilot testing, and policy issue analysis.
- Successful 12-month trial featuring five mileage reporting and an interoperability HUB reconciling mileage across four jurisdictions and revenue between Washington and Oregon

Company Name: Washington State Transportation Commission (WSTC)

Contact Name: Reema Griffith, Executive Director

Phone: (360) 705-7073

E-mail: griffir@wstc.wa.gov

PAST PERFORMANCE & REFERENCE FORM

Contractor: **Milestone Solutions, LLP**

Provide a summary of six (6) recent projects you provided services for that are in line with the Scope of Work for this RFP. Include any special circumstances that required creative approaches or dispute resolution. Each project must include a reference with contact information.

PROJECT 4

Hawaii Road Usage Charge Demonstration Project, 2018-Present

Funded by the Federal STSF A program, Hawaii DOT is undertaking a two-phase demonstration of network-wide per-mile road usage charging (RUC) in Hawaii. Phase 1 involves sending user-friendly, intuitive notional RUC Driving Reports to hundreds of thousands of Hawaii households based on odometer data gathered in safety inspections. The Driving Reports present customized information about what drivers pay in gas tax compared to what they would pay under a per-mile charge. Phase 2 involves testing RUC based on automated mileage reporting methods. Across both phases, the project features extensive public and stakeholder outreach, work with an Advisory Group, policy research and analysis, financial analysis, and evaluation. HDOT will report findings and recommendations to the legislature at the project's conclusion in 2021.

This project demonstrates Milestone's ability to understand and undertake all aspects of a large-scale RUC program from outreach to policy design to technical design to evaluation. By executing a pilot system that reached hundreds of thousands of households across Hawaii, Milestone successfully led the largest scale pilot of RUC in the country and is helping HDOT evaluate the policy hurdles and technical needs to make such a system operational. Milestone is providing project management, policy research and analysis, public outreach and stakeholder communication, financial modeling, technical and system design for both phases of the demonstration, procurement of technology and software vendors, operations and vendor oversight, data analytics, evaluation (including public opinion and acceptance), and reporting.

Milestone designed the strategic communication approach, including stakeholder and policymaker engagement, public outreach, and public opinion research. Milestone led the design of the Driving Reports for phase 1, including database architecture and business rules. Milestone also designed the automated mileage reporting method procedures for phase 2 and worked with technology and software vendors to deliver the 9-month test. Both demonstrations feature large-scale participant feedback opportunities. In parallel with the strategic communication and demonstration efforts, Milestone has identified approximately one dozen policy issues meriting further analysis and research, crafted an action plan, and begun to conduct the work in collaboration with appropriate stakeholders for each issue.

Milestone is responsible for assembling the results of both demonstration phases, the communication and outreach efforts which span the duration of the project, and the ongoing policy research and analysis into a set of findings and recommendations for HDOT to review prior to forwarding to the legislature for its consideration.

Experience Highlights

- Largest RUC pilot system implementation in the U.S. (based on manual odometer readings statewide)
- Widespread public outreach and engagement, including a stakeholder working group
- Careful treatment of policy issues of high priority to Hawaii
- Thorough analysis of implementation options and transition approaches

Company Name: Hawaii Department of Transportation (HDOT)

Contact Name: Scot Urada

Phone: 808-587-2218

E-mail: scot.t.urada@hawaii.gov

PAST PERFORMANCE & REFERENCE FORM

Contractor: Milestone Solutions, LLP

Provide a summary of six (6) recent projects you provided services for that are in line with the Scope of Work for this RFP. Include any special circumstances that required creative approaches or dispute resolution. Each project must include a reference with contact information.

PROJECT 5

Road Charge Technical Assistance and Policy Advisory Services, 2019-2020

California Transportation Commission (CTC) and the Road Charge Technical Advisory Committee (TAC) sought guidance on next steps for per-mile road charge policy, testing, and implementation in California. Per legislative direction, the TAC advises the CTC, which in turn provides independent policy recommendations to the Legislature and the Governor.

Following its leadership of the then-largest RUC demonstration in the nation (2016-2017) for Caltrans, Milestone conducted policy analysis, identifying remaining topics for research and development pertaining to adoption of a per-mile road charge for the state of California. Issue papers included: transition strategies, the role of an open market, organizational design and data flows, account management approach, impacts to disadvantaged communities, privacy protection, data security, embedded technologies for road charging, revenue forecasting, per-mile charge rate setting, strategies for cost of collection reduction, interoperability with other states, enforcement, testing and system implementation.

For CTC's independent voice on road charge to remain effective, it must be credible and grounded in reality. Milestone provided objective analysis and advice to support CTC and the TAC as they determine possible pathways forward for road charge policy in California, building constructively on efforts already completed and underway by other agencies and stakeholders across the state.

Experience Highlights

- Novel analysis of impacts of California Consumer Privacy Act on a road charge program
- Comprehensive issue identification exercise, including scan and distillation of literature and prior works to address each issue
- Development of concepts for California to begin its transition

Company Name: California Transportation Commission

Contact Name: Hannah Walter

Phone: 916-653-0224

E-mail: hannah.walter@catc.ca.gov

PAST PERFORMANCE & REFERENCE FORM

Contractor: **Resource Systems Group, Inc. (RSG)**

Provide a summary of six (6) recent projects you provided services for that are in line with the Scope of Work for this RFP. Include any special circumstances that required creative approaches or dispute resolution. Each project must include a reference with contact information.

PROJECT 1

In 2016 the Vermont Agency of Transportation (VTTrans) updated the 2009 Long Range Transportation Plan (LRTP) to guide multimodal plans for Vermont's transportation system over the next 25 years. As part of the public participation process for the LRTP VTTrans contracted Resource Systems Group Inc. (RSG) to design and conduct a public opinion survey of Vermont residents. The objective of the public opinion survey was to gather necessary information to understand statewide transportation issues and opportunities and to inform and prioritize the vision goals and policies and investment priorities to sustain Vermont's transportation system for the future. The methodology and survey questionnaire balanced the diverse needs of consistency with past surveys to track behavior and attitudes over time comprehensiveness in addressing current and emerging transportation topics and cost effectiveness in data collection. The questionnaire collected data on respondents' current travel behaviors their satisfaction with transportation infrastructure and services and their opinions on policy and funding mechanisms. Additionally the survey collected data on emerging trends and technology.

Company Name: Vermont Agency of Transportation

Contact Name: Dave Pellitier

Phone: 802-595-9675

E-mail: dave.pellitier@vermont.gov

PAST PERFORMANCE & REFERENCE FORM

Contractor: CDM Smith Inc.

Provide a summary of six (6) recent projects you provided services for that are in line with the Scope of Work for this RFP. Include any special circumstances that required creative approaches or dispute resolution. Each project must include a reference with contact information.

PROJECT 1

Argonne Employee Electric Vehicle (EV) Charging Program

CDM Smith is supporting Argonne National Laboratory (Argonne) staff in evaluating potential changes to charging station use and the reservation system, prioritizing the expansion of charging station equipment, updating to smart stations to support data collection and program administration and oversight, and review of the pricing structure to meet Department of Energy (DOE) requirements. Argonne is a multi-program, DOE Office of Science laboratory. The Argonne site contains 5.1 million square feet of building space and over 200 facility assets on roughly 1,500 acres.

A component of the Argonne Green Ride mobility program is the Employee EV Charging Program. This program launched in late 2014. Prior to this program, no Argonne employee was authorized to use the onsite charging stations for their personal vehicles, as these stations were restricted to fleet and research vehicles only. The charging stations currently installed are part of an ongoing research program under the direction of Argonne's Energy Systems Division.

Today, Argonne has more than 32 single and dual-port charging stations (11 different brands) across the Laboratory, which are used by 100 active users and Argonne fleet vehicles. Through an internal system, employees reserve charging times that fit their individual needs. Employees contribute a monthly fee of \$7.75 to cover the cost of electricity and station maintenance. Payments are currently handled through payroll deduction which restricts participation to Argonne and DOE employees only.

Specifically, CDM Smith is:

- Inventorying and evaluating each location and developing recommendations for repairs/upgrades
- Developing a preventative maintenance program
- Reviewing and recommending changes to the EV charging pricing structure
 - Including pricing for end users, billing practices, service fees, and cost recovery for maintenance and electricity usage
- Evaluating changes to charging station use and the reservation system
 - Including evaluating available usage data and research partner data related to personal mobile applications
- Developing an expansion plan including Argonne fleet electrification
- Creating a process for updating to smart stations to support data collection and program administration and oversight

Company Name: Argonne National Laboratory

Contact Name: Karyn Andersen

Phone: 630-252-5658

E-mail: kandersen@anl.gov

Required Certifications/Documents

State Contract No.
Federal-Aid Project:

CERTIFICATION OF CONTRACTOR / CONSULTANT

I hereby certify that I am the _____ and duly authorized representative of the firm of _____, whose address is _____, and that neither I nor the above firm I here represent has:

- (a) Employed or retained for a commission, percentage, brokerage, contingent fee, or other consideration, any firm or person (other than a bona fide employee working solely for me or the above consultant) to solicit or secure this contract,
- (b) Agreed, as an express or implied condition for obtaining this contract, to employ or retain the services of any firm or person in connection with carrying out the contract, or
- (c) Paid, or agreed to pay, to any firm, organization or person (other than a bona fide employee working solely for me or the above consultant) any fee, contribution, donation, or the consideration of any kind for, or in connection with, procuring or carrying out the contract; except as here expressly stated (if any):

I acknowledge that this certificate is to be furnished to the State Agency of Transportation and the U. S. Department of Transportation, Federal Highway Administration, in connection with this contract involving participation of Federal-Aid highway funds, and is subject to applicable State and Federal laws, both criminal and civil.



Signature

Date

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents of all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, United States Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Organization: _____

Street address: _____

City, State, Zip: _____

CERTIFIED BY: (type or print)

TITLE:



(signature)

(date)

DISCLOSURE OF LOBBYING ACTIVITIES N/A

Approved by OMB

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

0348-0046

(See reverse for public burden disclosure.)

1. Type of Federal Action: <input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change For Material Change Only: year _____ quarter _____ date of last report _____
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known: Congressional District, if known:	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime: Congressional District, if known:	
6. Federal Department/Agency:	7. Federal Program Name/Description: CFDA Number, if applicable: _____	
8. Federal Action Number, if known:	9. Award Amount, if known: \$ _____	
10. a. Name and Address of Lobbying Registrant (if individual, last name, first name, MI):	b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI):	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: <u>Travis P. Ann</u> Print Name: _____ Title: _____ Telephone No.: <u>5126565</u> Date: _____	
Federal Use Only:		Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
DEBARMENT AND NON-COLLUSION CERTIFICATION

I, _____, representing
(Official Authorized to Sign Contracts)

_____ of _____,
(Individual, Partnership or Corporation) (City or State)

hereby certify under the penalties of perjury under the laws of the State of Vermont and the United States that on behalf of the person, firm, association, or corporation submitting the bid certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive bidding in connection with the submitted bid for the Vermont project:

(Project Name)

_____ project located on _____,
(Project Number) (Route or Highway)

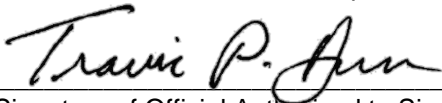
bids opened at _____,
(Town or City)

Vermont on _____.
(Date)

I further certify under the penalties of perjury under the laws of the State of Vermont and the United States that except as noted below said individual, partnership or corporation or any person associated therewith in any capacity is not currently, and has not been within the past three (3) years, suspended, debarred, voluntarily excluded or determined ineligible by any Federal or State Agency; does not have a proposed suspension, debarment, voluntary exclusion or ineligibility determination pending; and has not been indicted, convicted, or had a civil judgement rendered against (it, him, her, them) by a court having jurisdiction in any matter involving fraud or official misconduct within the past three (3) years.

Exceptions: ____ No ____ Yes. (If yes complete second page of this form.)

(Name of Individual, Partnership or Corporation)



(Signature of Official Authorized to Sign Contracts)

(Name of Individual Signing Affidavit)

(Title of Individual Signing Affidavit)

STATE OF VERMONT
AGENCY OF TRANSPORTATION

November, 1985
CA-109

CONTRACTOR'S EEO CERTIFICATION FORM

Certification with regard to the Performance of Previous Contracts of Subcontracts subject to the Equal Opportunity Clause and the filing of Required Reports.

The bidder _____, proposed subcontractor _____, hereby certifies that he/she has _____, has not _____ participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246 as amended, and that he/she has _____, has not _____, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.



Company By Title

NOTE: The above certification is required by the Equal Employment Opportunity regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5 (Generally only contracts or subcontracts of \$10,000 or under are exempt.) Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7 (b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration, or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

November, 1985
CA-109

CONTRACTOR'S EEO CERTIFICATION FORM

Certification with regard to the Performance of Previous Contracts of Subcontracts subject to the Equal Opportunity Clause and the filing of Required Reports.

The bidder , proposed subcontractor , hereby certifies that he/she has , has not participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246 as amended, and that he/she has , has not , filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

Justine Sydello

CDM Smith
Company

Justine Sydello
By

Client Service Leader
Title

NOTE: The above certification is required by the Equal Employment Opportunity regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5 (Generally only contracts or subcontracts of \$10,000 or under are exempt.) Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7 (b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration, or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

RFP/PROJECT NAME & NUMBER:
DATE:

WORKER CLASSIFICATION COMPLIANCE REQUIREMENT

Self Reporting
Form 1 of 2

This form must be completed in its entirety and submitted as part of the response for the proposal to be considered valid.

The Vermont Agency of Transportation, in accordance with Section 32 of Act 54 (2009), as amended by Section 17 of Act 142 (2010) and further amended by Section 6 of Act 50 (2011), and for total projects costs exceeding \$250,000.00, requires bidders comply with the following provisions and requirements.

Bidder is required to self report the following information relating to past violations, convictions, suspensions, and any other information related to past performance and likely compliance with proper coding and classification of employees. The Agency of Transportation is requiring information on any incidents that occurred in the previous 12 months. Attach additional pages as necessary. If not applicable, so state.

Summary of Detailed Information	Date of Notification	Outcome

WORKER CLASSIFICATION COMPLIANCE REQUIREMENT: Bidder hereby certifies that the company/individual is in compliance with the requirements as detailed in Section 32 of Act 54(2009), as amended by Section 17 of Act 142 (2010) and further amended by Section 6 of Act 50 (2011).

Date: _____

Name of Company: _____

Contact Name: _____

Address: _____

Title: _____

Phone Number: _____

E-mail: _____

Fax Number: _____

By: Travis P. Am

Name: _____

Signature (Request/Report Not Valid Unless Signed) *

(Type or Print)

*Form must be signed by individual authorized to sign on the bidder's behalf.

DO NOT WRITE IN THIS SPACE – AGENCY USE ONLY	
VDOL CHECKED RE: ACT 54 2009, AND AMENDMENTS	<input type="checkbox"/>

WORKER CLASSIFICATION COMPLIANCE REQUIREMENT

**Subcontractor Reporting Form
Form 2 of 2**

This form must be completed in its entirety by the Contractor and included in all requests to sublet or assign work as outlined in Section 108.01 of the Standard Specifications for Construction. This form must be updated as necessary and provided to the State as additional subcontractors are hired.

The Agency of Transportation in accordance with Act 54, Section 32 of the Acts of 2009 and for total project costs exceeding \$250,000.00 requires the contractor to comply with the following provisions and requirements:

The Contractor is required to provide a list of subcontractors on the job along with lists of subcontractor's subcontractors and by whom those subcontractors are insured for workers' compensation purposes. Include additional pages if necessary. This is not a requirement for subcontractor's providing supplies only and no labor to the overall contract or project.

Additionally, the Contractor shall collect and retain evidence of subcontractors' workers' compensation insurance, such as the ACORD insurance coverage summary sheet. Agency of Transportation will periodically verify the Contractors' compliance.

Subcontractor	Insured By		Subcontractor's Sub	Insured By
	Hanover Insurance Co.			
	Aon			

Date: _____

Name of Company: _____

Contact Name: _____

Address: _____

Title: _____

Phone Number: _____

E-mail: _____

Fax Number: _____

By: Travis P. Am

Name: _____

Failure to adhere to Act 54, Section 32 of the Acts of 2009 and submit Subcontractor Reporting: Worker Classification Compliance Requirement will constitute non-compliance and may result in cancellation of contract and/or forfeiture of future bidding privileges until resolved.

Send Completed Form to: Vermont Agency of Transportation
Contract Administration
Barre City Place
219 North Main Street, Suite 105
Barre, Vermont 05641

See Section G for Attachment N -
Past Performance and Reference Forms

Contractor and Sub-Contractors Information

Use additional pages as necessary

Name of Your Company	Milestone Solutions, LLP
Mailing Address	1108 Lavaca St. Ste. 110-227, Austin TX 78701
Office Telephone	(830) 448-3866
Contact Person #1 Name	Travis Dunn, Managing Partner
Telephone	(512) 576-4996
Email	travis.dunn@reachmilestone.com
Contact Person #2 Name	Steve Morello, Partner
Telephone	(571) 535-0600
Email	steve.morello@reachmilestone.com
Name of Company (sub)	CDM Smith, Inc.
Mailing Address	125 South Wacker Drive, Suite 700, Chicago, IL 60606
Office Telephone	(312) 780-7798
Contact Person #1 Name	Justine Sydello
Telephone	(513) 374-0797
Email	sydellojl@cdmsmith.com
Contact Person #2 Name	Christopher Martel
Telephone	(312) 807-7777
Email	martelcm@cdmsmith.com
Name of Company (sub)	Resource Systems Group, Inc. (RSG)
Mailing Address	55 Railroad Row, White River Junction, VT 05001
Office Telephone	(802) 295-4999
Contact Person #1 Name	Mark Fowler, Director
Telephone	(802) 345-5750
Email	mark.fowler@rsginc.com
Contact Person #2 Name	Jonathan Slason, Director
Telephone	(802) 698-3196
Email	jonathan.slason@rsginc.com
Name of Company (sub)	
Mailing Address	
Office Telephone	
Contact Person #1 Name	
Telephone	
Email	
Contact Person #2 Name	
Telephone	
Email	

