Multi-Sector Approach to Reducing Greenhouse Gas Emissions in the Metropolitan Washington Region

RFP No. 15-010

Submitted to:
Metropolitan Washington Council of Governments

Michael Baker INTERNATIONAL

CELEBRATING 75 YEARS 1940-2015

Submitted by:
Michael Baker Jr., Inc.
A Michael Baker International Company

March 6, 2015

ORIGINAL

Table of Contents

Cover Letter

Michael Baker
INTERNATIONAL

Innovation Done Right...We Make a Difference

March 5, 2015

Mr. George Hohmann
Contracts and Purchasing Manager
Metropolitan Washington Council of Governments
777 North Capitol Street, NE, Suite 300
Washington, DC 20002

Re: RFP No. 15-010 Multi-Sector Approach to Reducing Greenhouse Gas Emissions in the Metropolitan Washington Region

Dear Mr. Hohmann:

Michael Baker Jr, Inc. (Baker), a company of Michael Baker International, is pleased to provide this response to RFP No. 15-010 for the Metropolitan Washington Council of Governments (MWCOG) to provide technical assistance to the MSWG to prepare a Technical Report on reducing greenhouse gas emissions in the Metropolitan Washington Region. We are confident that our proposal will reflect our qualifications to provide such services.

The Baker team has a storied history of providing streamlined solutions to analytical problems, particularly with respect to transportation planning, air quality / greenhouse gas (GHG) analysis, and climate action planning. **We have been at the forefront of transportation and air quality policy and analysis for over 20 years**. We do not believe in a one-size-fits-all approach, which simply draws from previous work efforts and scales them based on client's needs. Rather, we will rely on the local knowledge and input of the MWCOG multi-sector working groups to develop collaborative and meaningful solutions, using accurate and efficient tools customized for MWCOG.

Some key points regarding the Baker Team:

- We are local and have diverse experience working with local, regional, county, and state agencies.
- We know how to meet short, quick deadlines without relying on a one-size fits all approach.
- We have the knowledge and expertise in all areas required to successfully complete each task.
- We are known for quality work, and we have an established and proven QA/QC program.
- We are available to begin work immediately and have an established record of bringing projects in on-time or ahead of schedule.

Baker understands the importance of having staff that are readily available to collaborate, facilitate, and respond quickly to the MWCOG's needs. With three (3) Baker offices located in Baltimore, MD, Alexandria, VA, and Manassas, VA employing more than 300 staff, we are all in the Metropolitan Washington Region and within 30 minutes from MWCOG's office. **We live, work, and play here!**

The Baker team represents a diverse group of professionals with proven experience in implementing GHG mitigation analyses and climate action planning from coast to coast. To ensure that a full range of technical expertise will be readily available to MWCOG, Baker has teamed with RSG, PMC, KB Environmental Services, Inc. (KBE) and Sharp & Company. PMC is a division of Baker and boasts award-wining experience in sustainability and climate change. KBE and Sharp & Company are certified Disadvantaged Businesses and will assist us in meeting the **DBE commitment** stated in the RFP.

Baker has reviewed Attachment A of the RFP and agrees to the terms and conditions as described therein, with comments. These comments are located in the Attachments Tab of this written proposal.

Baker's proposed **Project Manager, Colleen Turner**, will serve as point of contact for this work. Questions concerning this written proposal and potential contract may be directed to her at (410) 689-3469 or at cmturner@mbakerintl.com. Thank you for this opportunity to support COG on such an important work assignment and we appreciate your strong consideration of our team during your review.

Sincerely,

Victor J. Siaurusaitis
Vice President and Office Executive

Chapter 1: Qualifications of the Offeror and Personnel

Chapter 1. Qualifications of the Offeror and Personnel

The Baker Team

Michael Baker Jr., Inc. (Baker), a division of Michael Baker International, was founded in 1940 as a civil engineering and surveying firm. Today the Baker International group is home to over 6,000 professionals and is a leading provider of high-end engineering, planning and environmental services throughout the United States and abroad.

Baker has been at the forefront of delivering climate change expertise through technical and policy support to state, regional and local clients. We are a recognized leader in climate change planning activities for promoting sustainable growth alternatives, developing baseline and forecast emissions inventories, mitigation and adaptation to vulnerabilities and risks, and developing policy goals and options. Our climate change efforts are supported by our Transportation and Air Quality practice which specializes in applying an array of tools from the transportation planning, engineering and air quality professions. Our Team of planners, engineers, and transportation and environmental specialists provide integrated, multi-disciplinary solutions for congestion, planning, smart growth and air quality needs. We focus on solving immediate challenges and creating plans and processes to meet client's current and future needs.

Baker has three strategically located offices in the Metropolitan Washington Region (Baltimore, MD, Alexandria, VA, and Manassas, VA) with over 300 locally based professionals, including licensed engineers, surveyors, environmental planners, natural resources specialists, construction engineering, and inspection staff.

Pacific Municipal Consultants (PMC) is the newest firm in the Michael Baker International portfolio of companies. PMC is a recognized leader in planning, environmental and municipal services, with award-winning expertise in environmental services and customized development projects. PMC is simply on the leading edge of climate change and sustainability planning.

PMC's Sustainability and Climate Change services team provides a complete range of services to advance community resiliency, economic vitality, and environmental sustainability goals. PMC collaborates with clients to create strategies to reduce greenhouse gas (GHG) emissions while responding to the challenge of a changing climate. PMC understands both the hurdles and opportunities in addressing climate change, assisting regional and local leaders in developing supportive, successful land use and environmental planning policies and programs.

PMC is one of the most experienced teams of climate action planners in the nation, providing in-depth qualifications analyzing GHG emissions and solutions. Their expertise spans multiple disciplines allowing them to excel at providing technical data analysis, developing feasible and effective local government policy, and creating clear and accessible communication strategies. PMC has developed GHG emissions inventories, forecasts, GHG reduction strategies, implementation strategies and toolkits, and guidelines/protocols for GHG emissions accounting practices. In the last five years alone, PMC has worked with clients to prepare **over 50 climate action and GHG reduction plans** and **more than 100 GHG inventories**.

To augment Baker's professional in-house team, we are very pleased to present our partners: specialty firms that include many of the foremost experts in their respective fields.

RSG creatively applies state-of-the-art modeling and analytics to transportation planning, market strategy, environmental management and software development, allowing organizations make critical decisions with confidence. Since its founding by Dartmouth professors in 1986, RSG has provided actionable insights through the skilled application of advanced, creative, and customized techniques and tools to serve a broad portfolio of public and private-sector clients locally, regionally, nationally, and internationally.

RSG's air quality professionals evaluate greenhouse gas emissions from both mobile and stationary sources for their clients. RSG also helps agencies achieve full compliance with complex air pollution control regulations for all criteria and related pollutants. At a macroeconomic level, RSG creates tools that allow policy makers to evaluate the impact of policy changes (e.g., land-use and road improvements) on air quality. At the microeconomic level, RSG works on

specific projects that include mobile (e.g., vehicles) and stationary (e.g., smokestack) sources. The professionals at RSG are national leaders in the use of the EPA's MOVES model for analyzing the impact of mobile emissions—a service that enables us to provide excellent supporting analysis for Congestion Mitigation Air Quality (CMAQ) grant applications. RSG's work has also included permitting and calculating reductions in overall lifecycle emissions through the use of renewable energy sources.

RSG's customized dispersion models simulate how air pollutant emissions from mobile and stationary sources are dispersed in the atmosphere and how they concentrate near adjacent activity centers, reflecting topography, land use, buildings, roads, weather, etc. RSG excels at integrating these models into other analyses to help clients design and operate projects complying with air quality standards.

Sharp & Company has significant experience providing communication services and handling public relations for urban projects with stakeholders with diverse backgrounds and conflicting interests. From its roots in advertising and graphic design, the 32-year-old **DBE-certified firm** has built a significant practice in transportation communications. The firm's high-tech tool set addresses communication needs and maintains positive community and public relations throughout the project life cycle.

Sharp & Company has provided outreach and public engagement services for MWCOG on the Old Lee Highway Great Street Multimodal Improvement Plan Project, Montgomery County/MWCOG Friendship Heights and Silver Spring Transit Management District Employer Outreach project, VDOT I-66 - Inside the Beltway Multimodal Study, South Capitol Street Supplemental Final Environmental Impact Statement (SFEIS), and MDOT's 2035 Transportation Plan. Sharp & Company's work for the Virginia Department of Rail and Public Transportation (DRPT) resulted in unprecedented acceptance of the Statewide Rail Plan which was subsequently recognized by AASHTO as an example of national best practice. In supporting the National Surface Transportation Policy/Revenue Commission with public hearings, outreach, and media relations, the firm was able to foster relationships and understanding between elected and appointed officials and multiple stakeholders with divergent interests.

KB Environmental Sciences, Inc. (KBE) specializes in providing air quality, noise, hazardous materials, climate change, and health risk assessment services to a wide array of private and public clients located throughout the east coast and across North America. These services include (but are not limited to) climate action plans, impact mitigation strategy development and work with MOVES, NONROAD as well as other analytical tools.

With an emphasis on transportation-related facilities, few companies can match the level of expertise and breadth of experience in these highly specialized fields like KBE can. KBE has successfully provided these services to highway departments, planning agencies and private developers resulting in outcomes and products that are easily understood and applied. **KBE is a certified DBE firm in all 50 U.S. states and by the Metropolitan Washington Unified Certification Program**.

Team's Experience and Capabilities

The following project examples illustrate our Team's vast experience and expertise in providing similar services anticipated in the RFP.

Maryland Climate Action Plan and Implementation Support

Statewide, Maryland

Under successive contracts with MDOT since 1998, **Baker provided technical, programmatic expertise and policy support** to the Office of Planning to support MDOT's efforts developing Maryland's Climate Action Plan (CAP) and implementation strategies to support the CAP. This included technical support to MDOT on the MD Climate Change Commission and Mitigation Work Group, reviewing potential transportation and land use (TLU) policy options.

Baker assisted MDOT through three phases identifying transportation and land use (TLU) strategies to support the CAP policy options. The first phase established a coordinating committee of senior MDOT and modal agency management to oversee eight TLU working groups that were charged with identifying and analyzing potential strategies that reduce greenhouse gases (GHG) under each policy option. Baker facilitated two of working groups that identified 71 strategies and prioritized them for further analysis in next phase of the project.

For Phase 2, Baker defined, evaluated and prioritized 45 potential strategies and all on-going and planned projects for GHG reductions. They include measures to reduce VMT and fuel consumption, low-carbon fuel alternatives, vehicle technology improvements, and impacts of smart growth land use on transportation energy consumption, pricing measures, transit and bike/pedestrian projects and pay as you drive insurance.

Client

Maryland Department of Transportation

Completed

2009 (within schedule)

Project Cost

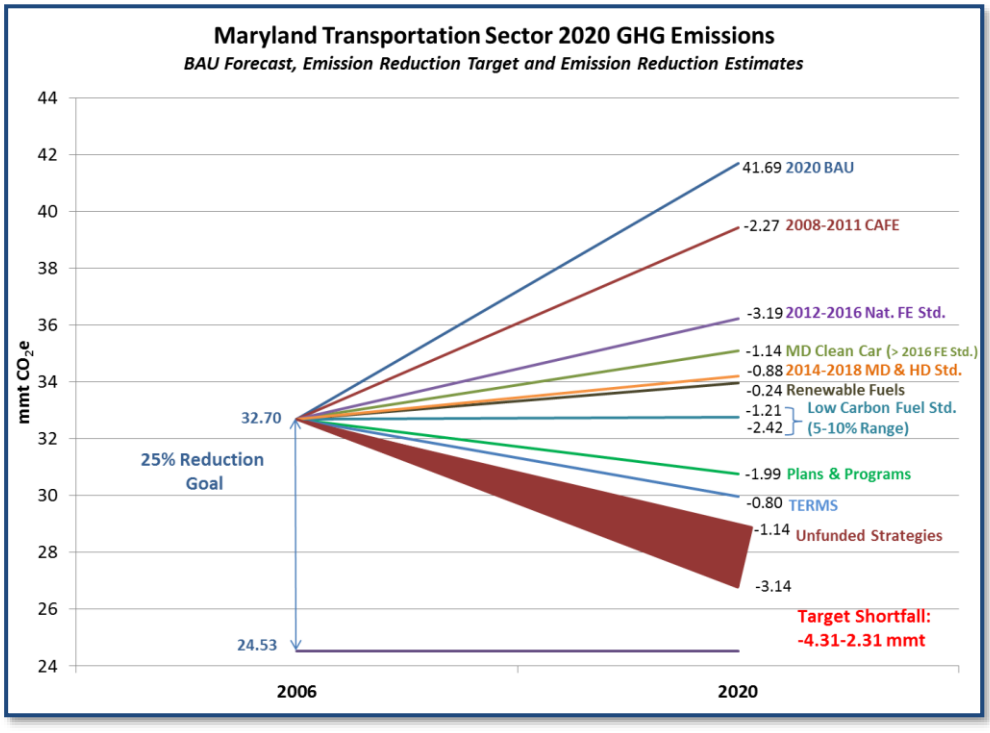
$313,000 (within budget)

Baker's Role

- Technical, Mobile Source GHG Inventory and Forecast
- Technical Support to TLU Working Group
- GHG Reduction Strategy Identification, Research and Analysis

For Phase 3, Baker recreated base and future year GHG inventories for all mobile sources (highway, off road, maritime, airport) incorporating the new national fuel economy standards and Maryland Clean Car using EPA's MOVES model. Produced the transportation sector of the GRRA Implementation Plan that provides GHG reductions for state's the planned and programmed projects scheduled to be implemented by 2020, additional unfunded strategies necessary to meet the GHG reduction target.

Proposed Baker personnel included: Colleen Turner, Jim Frazier, Robert Kaiser, Dan Szekeres, Robert d'Abadie, Ying-Tzu Chung



Maryland Carbon Neutral Corridor

Statewide, Maryland

As part of a consultant team, **Baker is performing emissions modeling and preparing baseline transportation- and non-transportation-sector greenhouse gas (GHG) emissions estimates** to support the development of an implementation action program for the conversion of U.S. 40 to a carbon-neutral corridor (CNC).

The overall goal of the CNC concept is to use a strategic coalition building process to develop a comprehensive corridor vision that will result in attaining smart growth, conservation, transportation and climate change goals where the net emissions from the corridor are significantly reduced. Thirteen alternatives were subject to in-depth screening, which involved evaluating potential corridors using four emphasis areas: modal mix, land use and development, manageability, and transferability. 13 pilot alternatives in the U.S. 40 corridor were developed using the carbon-neutral concept, traversing a 10-mile section in northern Maryland, from Baltimore to Havre de Grace, encompassing areas ranging from farmland to urban areas.

The mid-term goal established for the CNC project was to reduce carbon emissions below 2006 levels by 2035; the long-term goal is to achieve net zero-level carbon emission by 2050. By ultimately reducing the carbon footprint within the corridor, the project is intended to support Maryland's smart growth, conservation, transportation, and climate-change initiatives.

Client

Maryland Department of Transportation

Completed

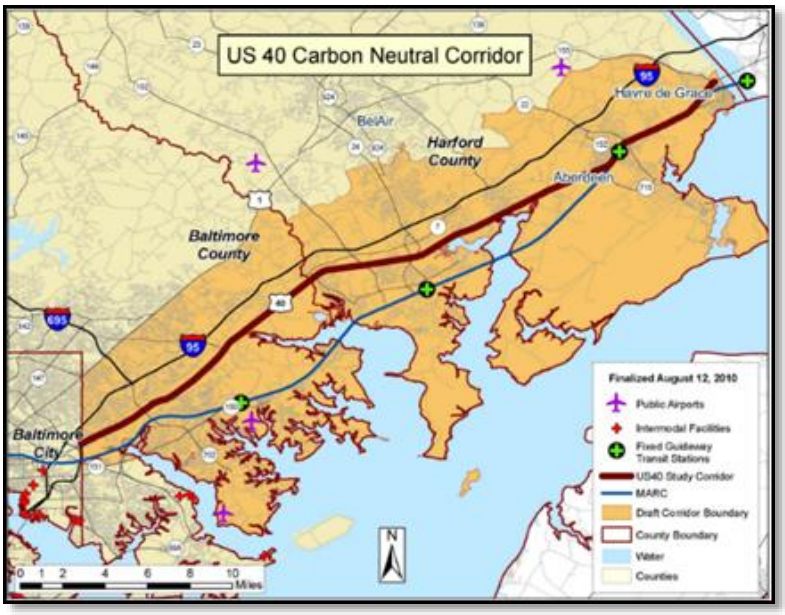
2011 (within schedule)

Project Cost

$62,026 (within budget)

Baker's Role

- GHG Inventory and Forecast
- GHG Reduction Strategy Evaluation
- Climate Change Policy Support



Baker developed the corridor-level GHG inventories for the 2006 baseline and 2035/50 Business As Usual (BAU) scenarios for the transportation and non-transportation sectors. It was used to evaluate the carbon neutral goals of four alternative scenarios that consisted of various combinations of planning reforms promoting mixed-use development; resources to support affordable housing development; and enforcement of state, local, and corridor growth-management plans. The evaluation of CNC transportation-related strategies focused on transit; intercity travel; bicycle and pedestrian infrastructure; GHG emission-based road user fees and other measures; and transportation technologies, including incentives for implementing low-energy highway lighting, purchasing low-GHG vehicles, and using alternative fuels. Smart conservation strategies were developed that encourage investment in green infrastructure while fostering growth, and non-transportation strategies including those relating to improvements in agriculture, forestry, and waste management; energy supply; and residential, commercial, and industrial construction were also evaluated. The analysis of transportation, land use, and conservation strategies considered five major factors: effectiveness, cost, co-benefits (from shared environmental, economic, and social goals), stewardship (strategy "ownership"), and implementation barriers (such as feasibility and time constraints).

Proposed Baker personnel included: Victor Siaurusaitis, Colleen Turner, Ying-Tzu Chung, James Frazier, Daniel Szekeres

Greenhouse Gas Emission Reduction Expert Guidance and Technical and Programmatic Support

Statewide, Pennsylvania

Baker provided technical, programmatic, logistical, and organizational support to the client and the Governor's Climate Change Advisory Committee (CCAC) for the development of strategies to reduce greenhouse gas emissions.

Baker's services were provided under an omnibus contract with the client. The Pennsylvania Department of Environmental Protection (PADEP) managed the overall CCAC effort.

The Land Use/Transportation Subcommittee of CCAC, which consisted of CCAC members and invited experts, was charged with developing a base-year mobile emissions source inventory, researching and analyzing strategies to reduce greenhouse gas emissions, and creating future-year emissions inventory projections under multiple assumptions.

PADEP requested support from various agencies. Baker was tasked with providing technical support to PADEP and CCAC for mobile emissions-source inventories, control measures, and analyses. Baker formed an analysis team that provided expert guidance and technical support to the Land Use/Transportation Subcommittee. Baker created base- and future-year baseline inventories for all mobile emission sources (highway, off-road, maritime, and airport sites); researched and analyzed more than 20 potential control strategies, including multiple variations of land use (with urban, suburban, and rural area differentiation); and identified transit service levels, reach, and new starts. Baker researched vehicle technology and fuels (the 2007 Energy Independence and Security Act and the Obama Administration proposal for renewable fuel standards; the California Low-Emission Vehicle Program, and the Pennsylvania Clean Vehicles Program) and created future-year control strategy inventories. Baker also developed and delivered presentations for the foregoing initiatives.

Logistical and organizational support provided by Baker to the Land Use/Transportation Subcommittee involved developing agendas, coordinating meetings and conference calls, and preparing minutes.

Baker provided ongoing input and technical support to the client and PADEP and worked with multiple metropolitan planning organizations and outside experts.

CCAC accepted all of the Land Use/Transportation Subcommittee recommendations and analyses.

Proposed Baker personnel included: Victor Siaurusaitis, Colleen Turner, Ying-Tzu Chung, Robert D'Abadie, James Frazier, Lorna Parkins, Avinash Sinha, Daniel Szekeres

Client

Pennsylvania Department of Transportation

Completed

2009 (ahead of schedule)

Project Cost

$50,000 (within budget)

Baker's Role

- Technical, logistical, and organizational support to CCAC Land Use / Transportation Subcommittee
- Mobile emissions-source greenhouse gas inventories
- Greenhouse gas control strategy identification, research, and analysis

Smart Energy Grant Action & Energy Reduction Plan Development

Prince George's County, Maryland

Baker provided planning and grant administration support service, assisting the county in developing their renewable energy and petroleum consumption reduction plans. Baker's services included data collection and analysis, documentation of baseline conditions, identification of feasible implementation measures and performance metrics, action plan preparation, and stakeholder coordination. Additionally, Baker provided planning and grant administration services. Other services included data collection and analysis, action plan preparation, and client coordination.

Client

Prince George's County Government

Completed

2015 est. (on schedule)

Project Cost

$92,968 est. (within budget)

Baker's Role

- Grant administration support
- Renewable energy action plan development
- Petroleum reduction action plan development
- Energy reduction plan development
- Client and Stakeholder coordination

Background

In 2012, Prince George's County secured a Maryland Smart Energy Communities grant from the Maryland Energy Administration to reduce conventional electrical generation in county buildings and reduce petroleum consumption by local government on-road vehicles.

The specific electrical generation reduction goal was to meet 20 percent of county buildings' electrical demand with distributed, renewable energy generation by 2022. The specific petroleum consumption reduction goal was to reduce petroleum consumption by the county's on-road vehicles by 20 percent within five years. Baker developed an action plan to meet each of these goals under a three-year master services agreement to provide comprehensive engineering and environmental services to the county.

The Maryland Energy Administration awarded Maryland Smart Energy Communities grant to the county in 2013. The grant required the development of action plans to achieve specific renewable energy and petroleum consumption reduction goals. The grant requirements also included implementation of a county energy efficiency policy and the development of an overall energy reduction plan.

Baker prepared the petroleum consumption reduction action plan. This effort included development a specific energy reduction plan to meet the requirements of the grant agreement and to achieve energy efficiency goals set forth in county's smart energy communities policy.

Renewable Energy Action Plan Development

Baker developed baseline and policy documentation by collecting 2012 energy usage from the county's electrical power providers and processing this raw data source to developing energy usage baseline in kilowatt hours. Baker also formulated a comprehensive smart energy policy for the county approved in 2013.

To develop the action plan that would meet the 2022 goal of supplying 20 percent of the county's buildings' energy demand with distributed, renewable energy generation, Baker worked closely with county staff to identify the areas with the greatest potential. Baker conducted a renewable energy resource assessment and identified the most appropriate renewable energy technologies for implementation in the county. Baker prepared a preliminary list of measures for consideration by stakeholders to choose preferred approaches, quantified in kilowatt hours.

The preliminary plan included projects to be implemented, timeframes for implementation, project costs and funding sources, projected annual renewable energy output potential, and projected annual net reductions in electricity needed from the grid. Baker created a program management plan for implementation, monitoring, and oversight that specified roles and responsibilities and included provisions for education and outreach. Following review meetings with county staff, Baker incorporated review comments into draft and final renewable energy action plans.

Petroleum Consumption Reduction Plan Development

The petroleum consumption reduction plan included development of baseline fuel use and policy documentation. Baker conducted research to identify the most recent, best available practices in fleet replacement and fuel purchases to achieve the goal of reducing petroleum consumption by 20 percent within five years.

Baker assessed fleet management efforts to minimize vehicle travel; evaluated technologies, such as plug-in hybrid, electric, and alternative fuel engines; and assessed the use of biofuels as a blended mix for the entire fleet and for specially adapted vehicles. Baker evaluated the refueling infrastructure that was available to support alternative fueling for the fleet,

and identified near-term improvements, such as the installation of electrical charging stations, that would allow for greater use of alternative-fuel vehicles. Baker also reviewed the county's fleet renewal plans for opportunities to incorporate alternative-fuel vehicles, documented county policies and plans to reduce vehicle use, and documented stakeholder suggestions to reduce vehicle use.

Baker developed initial, draft, and final petroleum consumption reduction action plans that included specific projects to be implemented, timeframes for implementation, project costs and funding sources, roles and responsibilities, education and outreach, projected annual percentage of biofuels and fuel savings through complementary efforts, and projected annual reductions that would be required to meet the program goals within 5 years.

Energy Reduction Plan Development

The primary goal of the energy reduction plan was to reduce per-square-foot electricity consumption of applicable county buildings by 20 percent from the 2012 baseline by 2019. Baker used data collected to develop the 2012 baseline for the preparation of the renewable energy action plan to express the energy baseline data in total kilowatts per square foot. Baker compiled data from energy conservation improvements at 10 buildings in the county's capital improvements plan to forecast potential energy reduction. The planned building improvements included electrical and lighting system upgrades; heating, ventilation, and air conditioning system upgrades; and insulation improvements.

Other data included investment-grade energy audits and energy and water retrofits for 23 buildings, Energy Star® benchmarking data, existing energy service agreements and performance contracts with the county's electrical utility provider and a heating and cooling system manufacturer, high-performance building practices, demand response and demand management data, and the replacement of 4,000 desktop computers with Energy Star®-labeled laptops.

The final energy reduction plan documented the planned capital improvement program projects, timeframes for implementation, project capital costs and funding sources, and projected annual energy reduction potential quantified in kilowatts per square foot. The plan included calculations of total capital costs and benefits in terms of electricity consumption reduction, greenhouse gas reduction, and cost savings.

Proposed Baker personnel included: Victor Siaurusaitis, Colleen Turner, Robert D'Abadie

Prince George's County, Maryland
Maryland Smart Energy Communities (MSEC) Benefits Tracking Estimator

Petroleum Consumption Reduction (PCRP) | *Renewable Energy Action (REAP)* | *Energy Reduction Plans(ERP)*

MSEC Benefits Summary

Annual Petroleum Consumption Reduced (gal.)	328,412
Annual Conventional Electricity Reduced (kWh)	28,695,315
Annual GHG Reduction ($MTCO_2$)	21,779.2
Annual Cost Savings	$4,231,958

Disclaimer

This tracking tool was prepared by Michael Baker Jr., Inc. on behalf of the Prince George's County Department of the Environment and Office of Central Services using the most current information available at the time it was developed. The tracking tool has been designed as a reflection of the Maryland Smart Energy Communities Grant, living planning documents (the PCRP, REAP and ERP) and is subject to change. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the Prince George's County Government or any agency thereof.

	Petroleum Consumption Reduction Strategies	Change	Annual Petroleum Consumption Reduction (Gallons / Year)	Annual GHG Reduction ($MTCO_2$)	Capital Cost (Total $)	Annual Cost Savings
1	*1-to-1 vehicle replacement*		103,256	917.6	$2,045,750	$1,265,803
2	*County Fleet Efficiency (Planned, Non-Behavioral)*		49,973	416.4	$3,044,125	$170,407
3	*County Fleet Efficiency (Behavioral)*		48,552	431.5	NA	$165,562
4	*Adoption of Biodiesel (B10)*		36,512	23.2	$43,525	NA
5	*Conversion of Refuse Trucks to Natural Gas*		90,119	203.6	$1,700,000	$159,511
	Estimated Petroleum Consumption Reduction Plan Benefits		***328,412***	***1,992.3***	***$6,833,401***	***$1,761,284***

	Renewable Energy Strategies	Change	Annual Conventional Electricity Reduction (kWh)	Annual GHG Reduction ($MTCO_2$)	Capital Cost (Total $)	Cost Savings ($/Year)
1	*Existing 404 kW Solar PV*		527,479	363.7	NA - Existing	15,824
2	*Existing Landfill Gas*		25,130,250	17,328.6	NA - Existing	2,363,723
3	*2.4 MW Solar PV at Landfill*		2,944,800	2,030.6	NA - Power Purchase Agreement	88,344
4	*41 kW Solar PV at the County Animal Shelter*		50,307	34.7	230,000	1,509
5	*Solar PV Electric Car Charging Stations (3 dual-head)*		42,479	29.3	100,000	1,274
	Estimated Renewable Energy Action Plan Benefits		***28,695,315***	***19,786.9***	***$330,000***	***$2,470,674***

Transportation Project Sustainability Plan Development

Washington, District of Columbia

Working in close coordination with the client, **Baker developed a sustainability plan** to enable the client to minimize impacts from its operations on area residents and the environment and to demonstrate its efforts in achieving sustainable transportation. The plan is built upon the client's vision, environment policy, and strategic actions, as well as the District of Columbia's "Green DC" agenda. The plan discusses focus areas, goals, and roles and responsibilities; provides tools for measuring performance and reporting on progress; and identifies education and training initiatives.

The sustainability plan encompasses all aspects of sustainability in the District of Columbia, addressing economic, social, environmental, energy, and climate-change challenges. Sustainability aspects covered include transportation and land-use linkage, multimodal and demand management solutions, research and technology, cost and life cycle, economy, operations and project development, environment, energy and resource conservation, climate change, and livability.

The plan identifies training initiatives to facilitate implementation and develops monitoring, reviewing, and reporting mechanisms to evaluate performance in meeting sustainability objectives and to ensure its continuing suitability and effectiveness.

Proposed Baker personnel included: Victor Siaurusaitis, Colleen Turner, Avinash Sinha, Robert d'Abadie, Ying-Tzu Chung, James Frazier

Client

District Department of Transportation

Completed

2013 (within schedule)

Project Cost

$19,634 (within budget)

Baker's Role

- Plan preparation
- Reproduction coordination

Technical Support for Air Quality Analysis and Travel Demand Modeling

Statewide, New Jersey

Under the fourth consecutive agreement, **Baker continues to provide fast response & large-scale technical assistance** to NJDOT in Air Quality analysis, transportation planning, energy planning and carbon/GHG emissions issues. For over 11 years, Baker has provided NJDOT with the analysis, software and policy guidance needed to ensure the agency succeeds in maintaining compliance with the vast array of air quality regulations. Current contract activities include:

Energy and Greenhouse Gas (GHG) Analyses

Baker provided evaluations and critiques of transportation & land use elements in the NJ Energy Master Plan. We researched and reviewed GHG issues and provided project and regional analyses for framing department GHG goals. We evaluated GHG emissions for projects, including lifecycle emissions (construction activities, materials, maintenance and operation), and developed spreadsheet analysis tools to estimate lifecycle greenhouse gas emissions by project type.

Baker re-evaluated the draft energy plan in terms of GHG impacts, including lifecycle emissions. This provides the basis for evaluation & ranking of individual programs/projects.

Project Level Transportation and Emissions Evaluation

Evaluation of project level transportation and emissions impacts was undertaken for all NJ MPO's, NJ-Transit and NJDOT. Baker completed the CMAQ analysis for all NJDOT-sponsored projects, and developed and maintains the NJ Air Quality Off-Network Estimator (NJ-AQONE) software for evaluating TCM & related projects. We briefed NJDOT on approaches by other state DOTs on $PM_{2.5}$ hot spot screening & and qualitative analyses, and Mobile Source Air Toxics.

Policy Review and Support

Baker keeps NJDOT abreast of present & future federal policy and rulemaking, and continually providing NJDOT with evaluations these as they become known. Baker maintains a comprehensive compendium of rules and policy along with associated MPO, EPA and NJ-DEP documentation in order to keep the agency at the forefront of the decision making process. On request, Baker provides comment and review on NJ-DEP and other state agency's sponsored activities. Baker assists the agency by providing supportive analysis and research for discussions with other agencies including NJ-DEP and the governor's office. Included in this work are assessments of the impacts of the new air quality standards on NJDOT Capital Program and planning activities. Baker also provided NJDOT with the analysis, evaluation and ranking of projects and programs as part of the Reasonably Available Control Measures (RACM) submission to NJDEP.

Proposed Baker personnel included: Victor Siaurusaitis, Colleen Turner, Avinash Sinha, Daniel Szekeres, Ying-Tzu Chung, Robert d'Abadie, James Frazier,

Client

New Jersey Department of Transportation

Completed

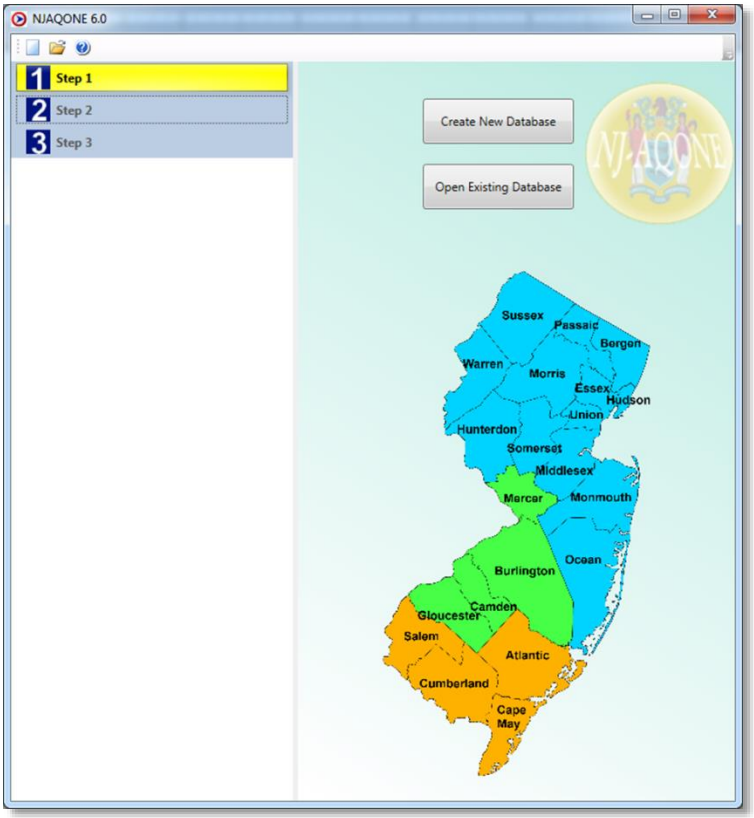
2014 (within schedule)

Project Cost

$900,000 (within budget)

Baker's Role

- Quantitative and Qualitative Air Quality and Emissions Analysis
- Policy and Program Review
- Evaluation of Innovative Transportation Control Measures
- Evaluation of Transportation Demand Management Strategies
- Evaluation of Energy and Greenhouse Gas Projects and Programs



VDOT Statewide Limited Services Contract for the Development of Project Level Air Quality Studies and Related Services

Statewide, Virginia

Client

Virginia Department of Transportation

Completed

2015 (within schedule)

Project Cost

$125,045 (within budget)

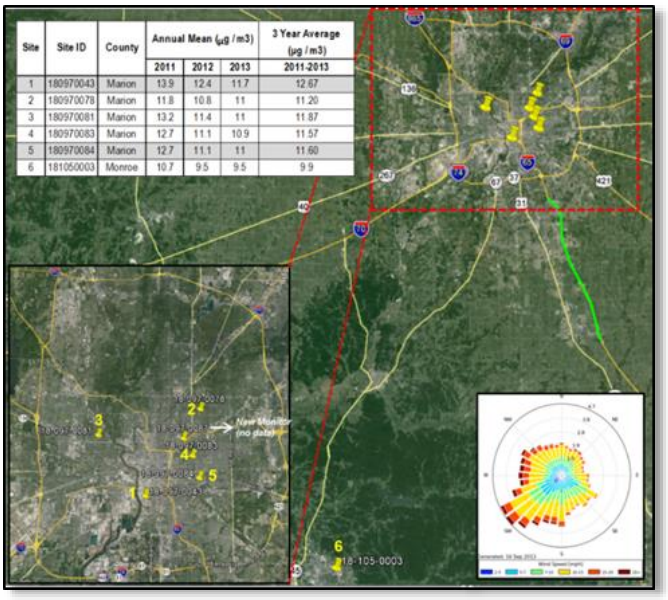
Baker's Role

- Project Level CO, MSAT and $PM_{2.5/10}$ air quality analysis
- Advanced Air Quality and emission rate modeling

Baker is leading the consultant team providing the Virginia DOT with project level air quality technical support for Particulate Matter ($PM_{2.5}$ and PM_{10}), Carbon Monoxide (CO) and Mobile Source Air Toxics (MSAT) in support of environmental evaluations and to meet regulatory requirements. Under an on-call agreement, Baker will perform and oversee the integration of traffic analysis, the development of vehicle emission rates and perform the air quality dispersion modeling that is necessary to demonstrate air quality compliance.

To meet the project analysis needs, Baker provides a full array of capabilities, including travel demand modeling, traffic operations/micro-simulation, emissions and air quality modeling, air quality policy/regulatory interpretation and response, stakeholder and public outreach, CADD and GIS support. Baker is also facilitating the interagency consultation process that is pivotal to these analyses.

Quantitative project-level air quality is a recent requirement specifically for PM_{10} & $PM_{2.5}$. In addition to requiring application of a new emission rate model (EPA's MOVES 2010B and 2014 models), project level analyses are refined in nature and require dispersion modeling at a level of precision not traditionally associated transportation projects. As an evolving field of analysis, Baker's work is helping to define the state of the practice.



Site	Site ID	County	Annual Mean (µg/m3)			3 Year Average (µg/m3)
			2011	2012	2013	2011-2013
1	180970043	Marion	13.9	12.4	11.7	12.67
2	180970078	Marion	11.8	10.8	11	11.20
3	180970081	Marion	13.2	11.4	11	11.87
4	180970083	Marion	12.7	11.1	10.9	11.57
5	180970084	Marion	12.7	11.1	11	11.60
6	181050003	Monroe	10.7	9.5	9.5	9.9

Having been at the forefront of the field, Baker is providing VDOT with and array of innovative services:

- Direct support for project-level analyses for VDOT and other project sponsors spanning from helping to identify potential projects, through analysis and on to federal approval.
- Facilitating and supporting the multi-agency consultation process required of these analyses, including consensus building as needed.
- Working directly with the EPA and FHWA technical and regulatory staff to ensure ready approval of analyses as they are completed.
- Providing additional strategic planning, supporting VDOT with their air quality planning and analytic needs and avoiding unnecessary analysis and identifying potential projects sooner.
- Providing technical expertise on companion analysis such as traffic micro-simulation, regional air quality, and travel demand modeling to provide turnkey analysis solutions in support of air quality and other analyses.
- Utilizing our unique experience and skill set, combined with a thorough understanding of EPA and FHWA requirements, allows Baker to perform the required analyses efficiently.

The Baker Team is leveraging its prior experience in developed a project-level air quality resource guide for Virginia DOT to this effort. Baker's prior experience developing $PM_{2.5}$ project level analyses for other national clients has also been well received. Having our prior work distributed by EPA's Office of Transportation and Air Quality as template for other agencies to follows ensures the highest level of support to the VDOT projects. This expertise is critical to large and complex projects, such as the I-66 Corridor Analysis now underway, where knowledgeable and demanding local stakeholders requires a compelling and well documented analysis, able to withstand intense scrutiny.

Proposed Baker personnel included: Ying-Tzu Chung, Robert D'Abadie, Lorna Parkins, Robyn Hartz

Air Quality Guidebook for Transportation Conformity

Statewide, Arizona

Baker assisted the client with simplifying the transportation conformity process and establishing a general uniformity through the development of an Air Quality Guidebook for Transportation Conformity.

The guidebook was designed as a tool for technical staff and included comprehensive examples and procedures, calculation methodologies, guidance, and detailed tables and maps highlighting nonattainment and maintenance areas by criteria pollutant, Metropolitan Planning Organization (MPO), and Council of Governments (COG).

Client

Arizona Department of Transportation

Completed

2014 (within schedule)

Project Cost

$207,777 (within budget)

Baker's Role

- Transportation conformity guidance
- Quantitative and qualitative air quality and emissions analysis
- Policy and program review
- Interagency consultation
- Methodology development and evaluation of innovative transportation control measures
- Review of particulate matter control measures|
- Evaluation of transportation demand management strategies

Overview of Air Quality Requirements in Arizona
Baker summarized the history of the National Ambient Air Quality Standards (NAAQS) and how they have applied and changed over time throughout the state. Baker utilized GIS to develop maps and tables identifying nonattainment and maintenance areas statewide and by MPO and COG. The overview included a summary of federal and state regulations and guidance related to the development of NAAQS, nonattainment/maintenance area designations, and the State Implementation Plan (SIP) and regional and project-level transportation conformity processes.

Update Interagency Consultation Procedures
Baker reviewed existing federal and state interagency consultation requirements, provided an overview of processes in other states, and recommended an approach for meeting interagency consultation and conformity SIP requirements.

Conformity Procedures
Baker provided recommendations for conducting regional and project-level transportation conformity analyses in areas statewide (outside of the Maricopa Association of Governments). Baker assessed past analysis procedures, provided an overview of the U.S. Environmental Protection Agency's (USEPA) Motor Vehicle Emissions Simulator (MOVES) model, assessed available VMT data sources for air quality analyses, and provided recommendations for operating MOVES and addressing project-level PM2.5 and PM10 hotspot requirements. To assist in streamlining the project-level conformity process, Baker developed a sample project information template for interagency review.

Development of Mitigation Measures and Transportation Control Measures
Baker developed and documented methodologies for four groups of transportation control measures (TCM): dust mitigation, vehicle emissions controls, trip reduction measures, and traffic flow improvements. Baker summarized existing requirements and practices analytical tools, and provided spreadsheet-based calculation methodologies for use in future conformity analyses.

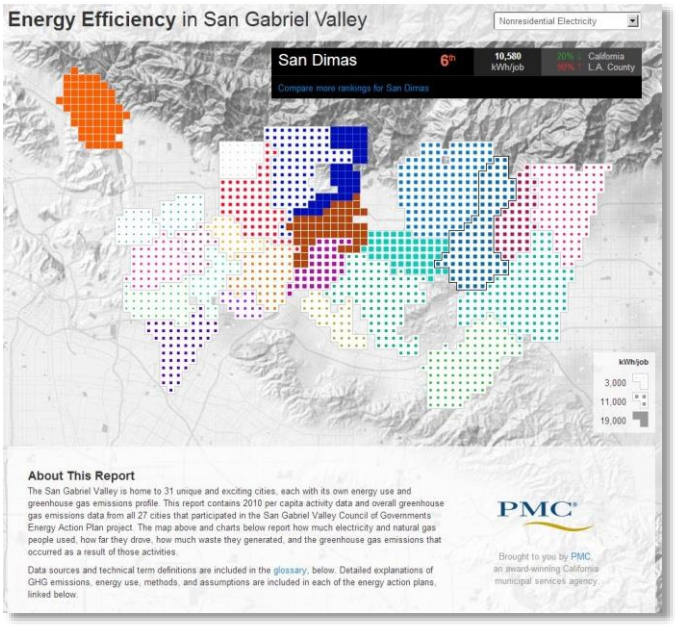
Review of Particulate Matter Control Measures|
A research effort was undertaken to identify control measures directly and indirectly related to on-road sources that might be reasonably pursued in the Nogales Nonattainment Area to reduce particulate matter emissions. The effort was intended to go beyond vehicle retrofit technologies, which typically tend to dominate particulate matter emission reduction efforts, and to expand on airborne dust reduction measures (fugitive sources) and other projects that indirectly impact vehicle running emissions. As available, analysis techniques were identified to assist the agency in evaluating the potential benefits.

Nogales PM2.5/PM10 Nonattainment Areas Case Study Development
Baker designed a case study that provides an example that can be followed each time a conformity analysis is performed. The Nogales Case Study was designed as a model to assist state and local stakeholders and staff through the conformity process form interagency consultation through technical analysis. It outlines a sample regional conformity analysis and the supporting documentation for analysis year 2008.

Proposed Baker personnel included: Colleen Turner, Avinash Sinha, Robert d'Abadie, Daniel Szekeres, Chung, Ying-Tzu

San Gabriel Valley Council of Governments, Energy Efficiency Climate Action Plan

Los Angeles County, California



PMC served as the prime contractor working with the San Gabriel Valley Council of Governments (SGVCOG), Southern California Edison (SCE), Fehr & Peers, DNV KEMA, and Stamen Design to develop a regional energy efficiency framework and energy efficiency chapters of climate action plans (EECAPs) for 27 cities in the San Gabriel Valley region of Los Angeles County. SCE awarded $2.2 million to the SGVCOG to implement activities to achieve statewide energy efficiency and greenhouse gas reduction goals. Participation in this regional process maximized funding and technical resources and brought cities together to develop and implement climate change and energy efficiency policies and programs.

The SGVCOG is the largest and most diverse sub-regional council of governments in Los Angeles County, California. It encompasses more than 374 square miles and has more than 2 million residents. While each community has a unique character and history, they have also many shared issues and have developed a unified voice to maximize resources, achieve sustainable solutions, and advocate for regional and member interests to improve the quality of life in the San Gabriel Valley.

The project offered a unique opportunity to identify actionable policies, projects, and programs to achieve 2020 energy efficiency and greenhouse gas reduction targets. PMC prepared a Planning and Assessment Report, Best Practices Report, and Regional Framework as the initial tasks to provide a foundation and framework for the project. The Regional Framework and each EECAP identified regional solutions with opportunities for effective local implementation. All 27 EECAPs were shaped by the Regional Framework, an overarching document that identified shared regional goals, priorities, and strategies; however, each EECAP was developed through a "bottom-up," collaborative process to ensure a locally customized plan. EECAPs included a baseline inventory and forecast of each community's energy use and activities, both for municipal operations and community-wide activities. The EECAP meets each city's local goals and assist in meeting the regional goals of AB 32, SB 375, and long-term energy efficiency.

PMC led an extensive outreach program for this project, including creation of a tailored public outreach strategy and events for each participating city, including project fact sheets in seven languages, website content, online and paper surveys, workshops, open houses, mobile workshops at community events, online tools, and engagement of business stakeholders. The team leveraged concurrent education and outreach of the SGVCOG Energy Wise Partnership and Los Angeles County Energy Upgrade programs, allowing for full engagement while minimizing "meeting fatigue" in the region. The project supported 8 staff workshops, 2 sets of stakeholder interviews, 7 community meetings, 20 community events/workshops, and 1,839 personal energy action surveys completed. The project culminated with a regional climate change conference led by PMC, the COG and the participating cities, to share strategies and lessons learned and facilitate ongoing implementation and collaboration at a regional scale.

PMC provided all participating cities received a complete Energy Action Plan and an EAP implementation toolkit. The implementation toolkit includes a model energy efficiency code and audit, a model energy efficiency checklist for building and plan checks, a model energy program and program manager description, and a model energy efficiency procurement program. Through implementation of the EAP Project, the region has the potential to reduce average household energy use by at least 15% by 2020 through implementation of a Regional Energy Efficiency Framework and 27 local Energy Action Plans by 2020.

Proposed PMC personnel included: Tammy Seale, Xico Manarolla, Jennifer Venema, Eli Krispi, Chris Read

Western Riverside Council of Governments, Subregional Climate Action Plan and Public Health and Climate Action Plan Implementation Program

Riverside, California

PMC provided project management services and technical assistance to the Western Riverside Council of Governments (WRCOG) to support development of a regional Climate Action Plan (CAP). For each of 17 cities and the County of Riverside, the project included a baseline GHG emissions inventory, 2020 and 2035 emissions forecasts, identification of suitable GHG reduction targets, and developing a range of measures that will be feasible and applicable to participating jurisdictions. The CAP established policies and priorities to enable member jurisdictions to implement strategies contained in the CAP to fulfill AB 32 requirements.

Currently, PMC is assisting with the development of a public health and CAP implementation program that will identify vulnerable populations and hazards most affected by climate change; outline adaptation strategies and measures; develop model codes and policies to create a "plug and play" implementation toolkit for the CAP; prepare public health planning programs; and develop a CAP monitoring and reporting tool. This effort is funded through a Sustainability Program grant provided by the Southern California Association of Governments.

Proposed personnel included: Eli Krispi, Chris Read, Tammy Seale, Xico Manarolla

City of Santa Clara Climate Action Plan

City of Santa Clara, California

PMC developed a CAP for the City of Santa Clara (CA) and its municipal electric utility, Silicon Valley Power (SVP). Santa Clara is located 45 miles south of San Francisco and at the center of Silicon Valley. The City is approximately 18 square miles with an estimated population of 116,000. The CAP is an important component of the City's recently adopted General Plan (comprehensive plan), addressing both emissions reduction and economic development opportunities within the community. The CAP included an interactive MS Excel-based emissions monitoring tool developed by PMC to track both annual changes in activity data driving the GHG emissions inventory, and annual changes to progress indicators identified for each CAP measure resulting in emissions reductions. The monitoring tool includes a reporting function that staff can use to provide annual updates on CAP implementation to the City Council.

While some of the nation's most forward-thinking, high-tech industries have chosen to call Santa Clara home, the energy use and transportation associated with this important economic driver also contribute to the majority of community emissions. Given Santa Clara's special emissions and business profile, the measures identified in the CAP to reduce emissions also take a unique approach, and include:

- A district-based approach to implementing transportation demand management measures for multi-family and nonresidential developments.
- Leadership by SVP to reduce the GHG intensity of the energy portfolio by eliminating the purchase of coal
- Introduction of innovative technologies to improve energy efficiency in the high-tech industry.

PMC used multiple strategies to engage a cross-section of community stakeholders by hosting meetings with SVP's largest commercial and industrial customers; "pop-up" workshops at the library, senior center, and community events; study sessions with the Planning Commission and City Council; and a community open house.

Proposed PMC personnel included: Tammy Seale

Butte County Climate Action Plan

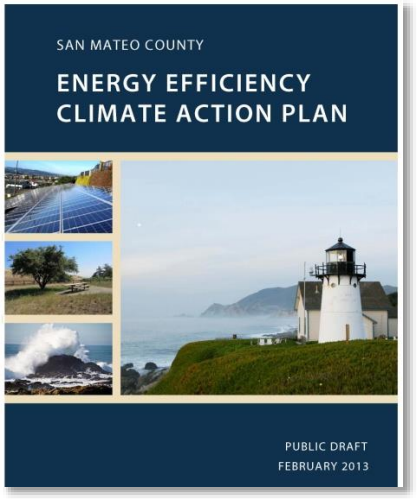
Butte County, California

PMC prepared a CAP for Butte County (CA) to address GHG emissions generated within the unincorporated area. Butte County is a rural county in northern California known for its scenic beauty, nature-based recreation, and farmlands. The county is 1,636 square miles with a population of 220,000. The CAP included updating community-wide emissions inventories and forecasts developed for the 2030 General Plan update, preparing a baseline inventory for government operations emissions, identifying emissions reduction goals consistent with AB 32, and developing a range of feasible and effective GHG reduction and climate change adaptation measures that will help the County achieve reduction targets. A key focus of this CAP is developing emissions reduction and adaptation measures addressing the agriculture and forestry sectors. PMC conducted stakeholder meetings with key members of the agricultural community to identify key issues concerning use of appropriate, locally informed methods and feasibility of potential emissions reduction strategies. In addition, the project included a community workshop and a "pop-up" workshop at the Butte County Fair.

Proposed PMC personnel included: Tammy Seale, Xico Manarolla, Jennifer Venema, Eli Krispi, Chris Read

County of San Mateo, Energy Efficiency Climate Action Plan, General Plan Amendment, and EIR

County of San Mateo, California



PMC prepared the San Mateo County (CA) Energy Efficiency Climate Action Plan (EECAP), Energy and Climate Change Element, General Plan amendment, and Environmental Impact Report (EIR) in partnership with San Mateo County Department of Planning and Building, Fehr & Peers, DNV KEMA, and ICLEI USA. San Mateo County is part of the San Francisco Bay area, home to approximately 720,000 residents. The EECAP builds on San Mateo County's longstanding commitment to implementing environmental programs and proactively working to reduce GHG emissions. In addition to providing a strategic plan and policy framework to reduce GHG emissions and the local contribution to climate change, the project addresses the current and potential future impacts resulting from climate change and adaptation strategies to improve resiliency and minimize exposure in the unincorporated county. PMC partnered with ICLEI-USA Local Governments for Sustainability and a technical working group to prepare a vulnerability assessment used to develop the County's adaptation strategy.

Proposed PMC personnel included: Tammy Seale, Jennifer Venema, Chris Read

RSG
the science of insight

Maryland EERPAT Pilot/Baltimore Metropolitan Council Application

Baltimore, Maryland

For this project, **RSG worked with Baltimore Metropolitan Council (BMC)** staff to construct the statewide and metropolitan applications of the Energy and **Emissions Reduction Policy Analysis Tool (EERPAT)**. The State of Maryland enacted legislation (Maryland Greenhouse Gas Emissions Reductions Act of 2009 [Act]) requiring the State to achieve a 25% reduction in statewide greenhouse gas (GHG) emissions from 2006 levels by 2020. The Act also establishes a long-term goal of reducing GHG statewide emissions 80% below 2006 levels by 2050. To help meet these statewide goals, RSG developed state-level and metropolitan (Baltimore) EERPAT models to explore scenarios capturing synergies in technology, fuel, land use, and transportation supply/management policies/strategies with varying initiative levels. Individual policies were initially tested to understand the response of household travel demand. As a second round of analysis, policies were combined to determine the most effective mix of policy measures for achieving the state's GHG reduction goals.

Proposed RSG personnel included: Robert Chamberlin, Eric Talbot; Haiyun Lin; John Hinckley; Vince Bernardin

Washington EERPAT Pilot

Statewide, Washington

RSG worked with staff from the Washington Department of Transportation (WSDOT) Urban Planning office to develop a calibrated EERPAT model for Washington State. The model was calibrated to historic levels of vehicle miles traveled (VMT), fuel consumption, and auto ownership/fleet characteristics. WSDOT employed the model to inform policy for achieving the State's greenhouse gas (GHG) reduction goals established in the Governor's "Washington Climate Change Challenge." The targets established by the State of Washington aim to reduce GHG emissions to 1990 levels by the year 2020, and 50% below 1990 levels by 2050. WSDOT staff worked with RSG to test EERPAT's new Graphic User Interface (GUI), created by RSG, to set up scenarios, change input data, and perform policy analysis. The scenario analysis included individual and blends of policies covering travel demand management, vehicle technology, alternative fuel and fuel efficiency, parking, and pricing.

Proposed RSG personnel included: Robert Chamberlin, Eric Talbot; Haiyun Lin; John Hinckley; Vince Bernardin

Transportation Infrastructure Vulnerability Assessment

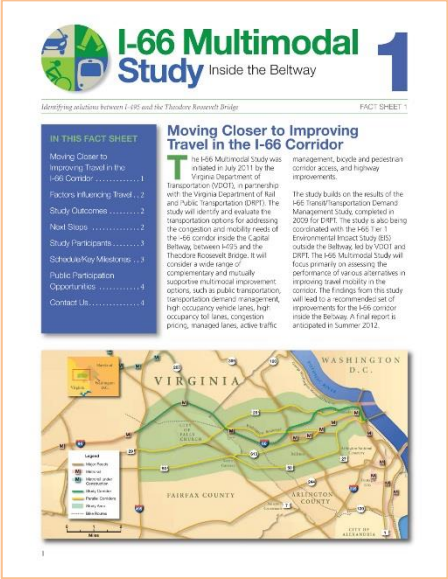
Statewide, Ohio

Ohio Department of Transportation (ODOT) **selected RSG to perform a transportation vulnerability assessment**. The goal of the transportation vulnerability assessment was to determine consequences from a broad range of potential climate changes. As part of the project, RSG provided the foundation for ODOT to integrate the results of this vulnerability assessment into future decision-making processes and future adaptation/resiliency studies. Throughout the project, RSG collaborated with ODOT to identify segments or facilities at risk from climate change impacts within Ohio; these impacts were then categorized by region or type. As a result of this work, RSG identified a range of adaptation and/or sustainability options or activities that ODOT can consider during future adaptation studies.

Proposed RSG personnel included: Robert Chamberlin, Eric Talbot; Haiyun Lin; John Hinckley; Vince Bernardin

I-66 Multimodal Study

Statewide, Virginia



I-66 Multimodal Study Inside the Beltway 1

Identifying solutions between I-495 and the Theodore Roosevelt Bridge FACT SHEET 1

IN THIS FACT SHEET

Moving Closer to Improving Travel in the I-66 Corridor 1
Factors Influencing Travel 2
Study Outcomes 2
Next Steps 2
Study Participants 3
Schedule/Key Milestones 3
Public Participation Opportunities 4
Contact Us 4

Moving Closer to Improving Travel in the I-66 Corridor

The I-66 Multimodal Study was initiated in July 2011 by the Virginia Department of Transportation (VDOT), in partnership with the Virginia Department of Rail and Public Transportation (DRPT). The study will identify and evaluate the transportation options for addressing the congestion and mobility needs of the I-66 corridor inside the Capital Beltway, between I-495 and the Theodore Roosevelt Bridge. It will consider a wide range of complementary and mutually supportive multimodal improvement options, such as public transportation, transportation demand management, high occupancy vehicle lanes, high occupancy toll lanes, congestion pricing, managed lanes, active traffic management, bicycle and pedestrian corridor access, and highway improvements.

The study builds on the results of the I-66 Transit/Transportation Demand Management Study, completed in 2009 for DRPT. The study is also being coordinated with the I-66 Tier 1 Environmental Impact Study (EIS) outside the Beltway, led by VDOT and DRPT. The I-66 Multimodal Study will focus primarily on assessing the performance of various alternatives in improving travel mobility in the corridor. The findings from this study will lead to a recommended set of improvements for the I-66 corridor inside the Beltway. A final report is anticipated in Summer 2012.

Sharp & Company supported this study that identified highway, transit, bicycle, and pedestrian alternatives along this critical Northern Virginia commuter corridor from the beltway to the District line. Sharp & Company developed and implemented a public process that reached out to and gathered input from stakeholders affected by the study. These stakeholders included state and local jurisdiction technical staff, local transportation agencies, elected officials, residents, commuters, businesses, and the general public. Sharp & Company conducted over 25 individual stakeholder interviews to inform and learn about project concerns.

A key element of the public involvement effort was keeping the focus on the multimodal nature of the study. To avoid confusion with other studies and programs being conducted along the I-66 corridor, Sharp & Company created a simple, unique identifier for all study materials, including special signage for public meetings. Sharp & Company developed templates for the design of presentation materials to retain the consistency of the identifier and color selections.

An important part of the public outreach process was reaching out to Spanish speaking populations surrounding the Study area. To accomplish this, public meeting advertisements were crafted in Spanish and placed in local newspapers such as El Tiempo Latino and Washington Hispanic. Sharp & Company also ensured all public meetings materials were translated into Spanish and a Spanish language interpreter was available at public meetings. More than simple translations of English language materials, special products were developed to resonate with this specific community. In addition, Walter Tejada, a prominent Hispanic Arlington County Board member, was interviewed by Susan Sharp to receive his input on the study.

Sharp & Company also provided regular study factsheets to inform the public of study progress and key findings and solicited input through a dedicated web page on the VDOT website.

Press was favorable and focused on this aspect of the study, supporting an environment where groups formerly polarized on the issue of additional lane capacity are now working together to forge solutions.

Proposed Sharp & Co. personnel included: Susan Sharp, Marty Arzt, Charise Geiling

South Capitol Street SFEIS

Washington, DC

Sharp & Company supported The South Capitol Street Corridor Project calls for replacing the Frederick Douglass Memorial Bridge and transforming related sections of urban freeway into a scenic boulevard to increase pedestrian and vehicular safety, improve multi-modal transportation options, increase community accessibility, and supports economic development on both sides of the Anacostia River.

Critical to the successful completion of this phase of the project was re-introducing the plan to the community and generating public awareness about the new Proposed Alternative. Sharp & Company recommended a variety of public information activities to bring this project back into the minds of key stakeholders and affected communities, all of which are currently being implemented.

Four public meetings are planned in Wards 6 and 8 to discuss the project and disseminate information on the new Proposed Alternative. To promote the meetings, Sharp & Company is placing meeting notices in the Washington Post Express, The Washington Times, The Hill Rag, East of the River, and The Southwestern.

To further increase visibility, Sharp & Company is re-designing the project website with a fresh new look and updated content. In addition, Sharp & Company will develop three newsletters about the project to inform the community of project progress since the project left off in 2011, share project updates, and announce opportunities for participation. All communication materials include new, concise, and clear graphics and maps of the project study area.

Proposed Sharp & Co. personnel included: Susan Sharp, Marty Arzt, Charise Geiling

Statewide Rail Plan

Statewide, Virginia

Sharp & Company was responsible for rewriting and designing this strategic document, transforming it from a technical manuscript into one suitable for public distribution. This involved taking different authors' manuscripts and editing them into a consistent "voice" and viewpoint. Design entailed the re-creation of numerous maps, charts and graphs as well as the research and editing of photo images.

In addition, Sharp & Company re-purposed the material, developing a PowerPoint presentation and a set of posters illustrating specific projects of public interest.

The report was cited by AASHTO in its best practices for communicating about rail plans. By adding iconography that clearly and quickly delineated the benefits of proposed projects, AASHTO credited the report with easily building public understanding and support. Feedback DRPT has received has been consistently positive, noting that the reorganization of the material and its presentation greatly facilitates understanding of the agency's goals — internally and externally — and has helped engender support. The success of that project led DRPT to engage Sharp & Company to develop the Statewide Public Transportation Plan.

Proposed Sharp & Co. personnel included: Susan Sharp, Marty Arzt, Charise Geiling

Oregon Avenue NW Improvements

Washington, DC

Sharp & Company is providing public outreach support for the District of Columbia Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) controversial rehabilitation of the 1.7-mile segment of Oregon Avenue, NW, between Military Road and Western Avenue. In 2011, residents along Oregon Avenue had expressed major concerns about the reconstruction and its impact on their neighbors. Many residents were not pleased with the environmental assessment preferred alternative recommendation that included sidewalks but no designated bike lanes.

In 2014 Sharp & Company was asked to work with the design consultant to help constructively engage the community using context sensitive principles. Crucial to the success of the outreach effort has been the interactive website (www.oregonaveddot.com) developed for the project. Like most project sites, it provides general project information, project resources, project schedule, public participation opportunities, comment section, meeting materials, and email notification sign-up page. But this website goes further. Residents have been invited to participate in polls to determine their preferences for everything from construction materials to landscaping elements. Materials being considered – such as street lighting options – are shared on the website and comments and conversation are encouraged.

This has completely changed the tone of public interactions with the community. During the environmental assessment many residents were upset by the lack of public meetings, and initial meetings for the design phase became the outlet for the community's frustration. By patiently and persistently sharing information about every aspect of the design – explaining the engineering necessities, clarifying the District's design requirements, demonstrating (literally) how pedestrians, bicycles, strollers, and wheelchairs would interact on differing sidewalk widths, residents began engaging with the design process.

Public meetings are conducted at every design milestone. The website is updated after each meeting and the issues and elements to be determined for the next design phase are laid out so the community knows what its attention needs to turn to next.

What began as an antagonistic process has, through the use of context sensitive methods, turned into a productive collaboration that provides a model for other contentious transportation projects.

Proposed Sharp & Co. personnel included: Susan Sharp, Marty Arzt, Charise Geiling

2035 Maryland Transportation Plan

Statewide, Maryland

Sharp & Company facilitated four roundtable workshops in support of the 2035 Maryland Transportation Plan, a 20-year vision for transportation in Maryland that will ultimately guide statewide investment decisions across all modes of transportation. Each roundtable was attended by up to 100 stakeholders from various specialties, including local and elected officials, transportation agency officials, business owners, and Maryland residents. Sharp & Company has designed the sessions as interactive workshops that will engage stakeholders in discussion and provide the MDOT team with a set of preliminary goals and suggested strategies.

In addition to the roundtable sessions, a survey was used to gather information about the transportation issues that are important to Maryland residents. With the assistance of Sharp & Company, MDOT entered into a partnership with 24 library systems in Maryland. Each library system agreed to assist the MTP public outreach efforts by displaying a small icon on the home pages that links to a survey. Library patrons were able to click on the link to participate in the survey and provide input. Sharp & Company enlisted the help of MetroQuest to build and monitor the survey results. Sharp & Company advertised the survey on Facebook, allowing it to reach millions of additional Maryland residents.

Proposed Sharp & Co. personnel included: Susan Sharp, Marty Arzt, Charise Geiling

South Jersey Transportation Planning Organization (SJTPO) Regional Greenhouse Gas (GHG) Emissions Inventory

Statewide, Maryland

This assignment involved the collaboration of several team members in the development of the "first ever" GHG emissions inventory for the region. Extensive coordination between team-member, subject-matter experts as well as the staff of the SJTPO was required. KBE's specific role was the preparation of the GHG emissions inventories for transportation-related sources (i.e., motor vehicles, aircraft, off-road equipment) for the region-wide ne networks under current conditions. A similar assessment of future-year conditions is presently underway.

Proposed KBE personnel included: Michael Kenney, Carol Fowler

Federal Aviation Administration (FAA) Airport Air Quality Guidebook

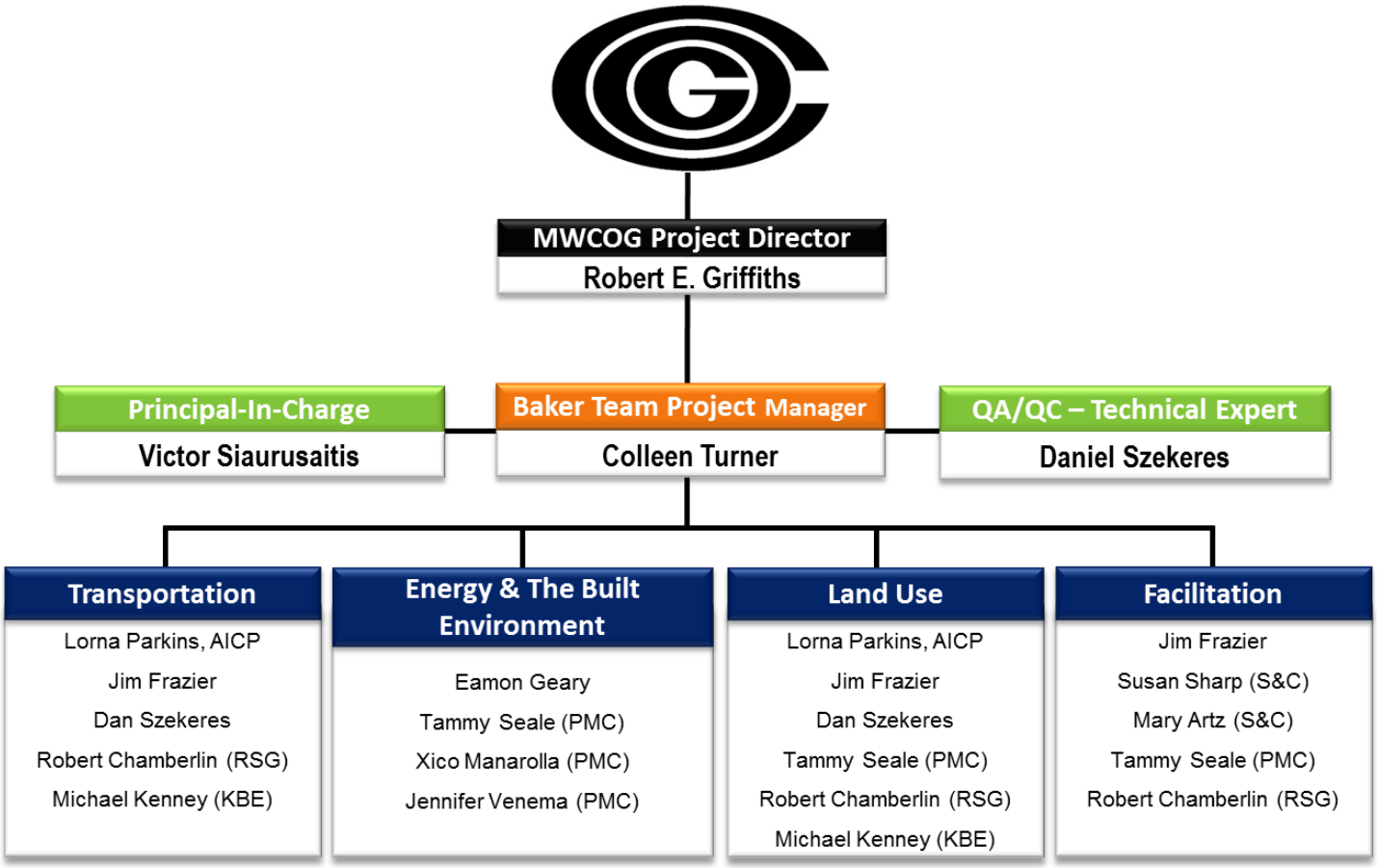
Countrywide, United States

KBE staff were responsible for the development of the FAA's new handbook for addressing air quality issues near aviation sources of emissions. This guidebook included recommendations on how to prepare emissions inventories, conduct dispersion modeling, document results and engage in agency participation. Background information on air quality, in general, and aviation, in particular, was also provided. This guidebook is now used by FAA staff in all regions as well as their contractors.

Proposed KBE personnel included: Michael Kenney, Carol Fowler

Team Organization

This contract requires a highly-qualified and experienced team with a strong background in implementing GHG mitigation analyses and climate action planning that can respond quickly, efficiently, and cost-effectively to the immediate requirements of the MWCOG. The proposed organizational structure for this contract is shown below. Resumes of key project staff follow the organizational chart.



Subcontractors

Pacific Municipal Consultants (PMC)
RSG, Inc. (RSG)
Sharp & Company DBE (S&C)
KB Environmental Sciences, Inc. DBE (KBE)

Key Staff Resumes

COLLEEN TURNER

BAKER PROJECT TEAM MANAGER

Firm Name: Baker

Years of Experience: 15

Education

B.A., Environmental Analysis/Policy and Economics, Boston University

At all times, the contract will be directed and coordinated by Colleen. She will assign task leaders and team members to tasks, based on project requirements and specialties. Colleen is responsible for fiscal control management, technical excellence, team productivity, and the timely completion of tasks received under this contract.

Ms. Turner is a project manager / environmental specialist with experience in economics, regulatory research and review, policy analyses, quantitative analyses, impact analyses, and public outreach. Ms. Turner works closely with Baker's transportation planning and air quality planning practices, supporting regulatory reviews, impact assessments and analyses, the development of Long Range Transportation Plans, conformity analyses and documentation, CMAQ analyses, SIP development, greenhouse gas / climate change analyses, and alternatives analyses. Sample project experience includes the following:

Climate Change Support, Statewide, Maryland. *Maryland Department of Transportation.* Project Manager. Responsibilities included assisting in the evaluation of selected transportation emission reduction measures (TERMS) for the Washington DC area, which required the development of methodologies and emissions estimates for each measure. Assisted in greenhouse gas/climate change policy analysis, including: the development of presentations, conducting policy analysis of other state's initiatives, tracking state legislatures actions, and analyzing the implications of the statewide policy initiatives proposed by the Maryland Climate Change Commission's Transportation Land Use Work Group. Led MDOT working group meetings where transportation policy option implementation strategies were developed in response to Maryland's Climate Action Plan, assisted in refining and analyzing the strategies and authoring MDOT's Draft Climate Change Implementation Document.

Greenhouse Gas Emissions Analysis for U.S. 40 Carbon-Neutral Corridor, Baltimore and Harford Counties, Maryland. *Maryland Department of Transportation.* Project Manager. Assisted in outlining the inventory methodology and data sources for the development of a 27-mile long, 5-mile wide corridor GHG inventory. Led the development of the non-transportation source portion of the inventory using EPA's Statewide Inventory Tool encompassing the following sectors: electricity consumption, fuel consumption, fossil fuel industry, industrial processes, agriculture, waste management, and emission sinks. As part of a consultant team, Baker prepared the 2006 baseline and 2035 business-as-usual inventories for transportation- and non-transportation-sector greenhouse gas (GHG) emissions for the U.S. 40 Carbon-Neutral Corridor. Baker developed a project assessment tool to evaluate GHG impacts under multiple potential GHG reduction strategy, action, and policy scenarios. Baker's strategy evaluation of transportation efficiencies, smart growth, and energy consumption scenarios led to a comprehensive, best-value scenario selected by stakeholders.

Greenhouse Gas Emission Reduction Expert Guidance and Technical and Programmatic Support, Statewide, Pennsylvania. *Pennsylvania Department of Transportation, Central Office*. Environmental Specialist. Attended and documented transportation working group meetings. Provided technical expertise in developing GHG emissions reduction strategies and determining which strategies would be put forward to the CAC and, ultimately, into the Climate Action Plan. Baker provided technical, programmatic, logistical, and organizational support to the client and the Governor's Climate Change Advisory Committee for the development of strategies to reduce greenhouse gas emissions. Baker's tasks included developing base- and future-year baseline inventories for all mobile emission sources and researching and developing strategies for greenhouse gas emission control.

Mobile-Source Air Quality Modeling Support, Statewide, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Task Manager. Based on EPA guidance, conducted and documented a technical analysis to determine the future efficacy of Stage II technology and whether / when Pennsylvania could begin legally phasing out Stage II. Baker provided mobile-source air quality modeling support to the Pennsylvania Department of Environmental Protection to meet regulatory requirements. Work included performing mobile-source modeling for the U.S. Environmental Protection Agency's National Emissions Inventory, analyses to support Stage II control and low-RVP programs in portions of the state, and statewide greenhouse gas emissions inventories for the governor's Climate Change Advisory Committee.

Air Quality Support, Maryland. *Maryland Department of Transportation.* Project Manager. As project manager, responsible for the delivery of three tasks including the annual CMAQ reporting to FHWA, MAP-21 CMAQ-related support, and a cost / benefit analysis. Continued to ensure accurate and timely delivery of the annual CMAQ report by: Reviewing project data from the 2011 CMAQ Report; Coordinating with SHA, MTA and the MPOs to collect accurate CMAQ project data; Ensuring that the CMAQ reporting tool is up-to-date and compatible with FHWA's on-line reporting system; Providing accurate and well documented emissions reductions estimations for CMAQ projects; Maintaining access to FHWA's online reporting system by monitoring any changes to protocol (e.g., the implementation of the ORC User Identification System); and Drafting the CMAQ Annual Report for MDOT.

Maryland Air Quality Planning and Support: DC Region, Statewide, Maryland. *Maryland Department of Transportation.* Environmental Specialist. Evaluated selected transportation emission reduction measures (TERMS) for the Washington DC and Baltimore areas. Assisted in the development of "white papers" toward policy development regarding CAL LEV vehicle legislation and Maryland's vehicle emission inspection program. Participated in an interagency working group designed to assist MDOT and MDE with policy decisions; in conjunction with other Baker staff, MDOT, and MDE, developed an Early Action Compact for Washington County, Maryland. Responsible for drafting progress reports and EAP and analyzing selective control measures. Assisted in developing semi-annual EAC progress reports which were submitted to and approved by EPA. Assisted in the development of the final EAC attainment demonstration which was submitted to and approved by EPA and resulted in a re-designation to attainment of the 8-hour ozone NAAQs for the Martinsburg, WV – Hagerstown, MD nonattainment area.

NSA Bethesda Sustainability Action Plan, Bethesda, Maryland. *U.S. Navy NAVFAC Washington.* Task Manager. Acted as task manager for the Outdoor AQ portion of the plan, which primarily included the quantification of historic and future GHG emissions (from all outdoor AQ sources) and developing reduction goals. Worked with the team to develop client presentations and attended briefings / workshops on base. Baker developed a sustainability action plan for the base to create specific sustainable actions, requirements, and projects. Baker's services included analysis of existing conditions, establishment of a baseline, development of goals and targets based on available and forecasted funds, generation of consensus from stakeholders, development of specific recommendations and strategies to meet sustainability goals, and development of timelines for expected progress.

Long-Range Multimodal Transportation Plan, Hagerstown, Maryland. *Hagerstown/Eastern Panhandle MPO.* Environmental Specialist. Responsibilities included designing and compiling the final document, authoring the environmental stewardship and climate change and greenhouse gas emissions sections of the document, supporting public and stakeholder meetings, and organizing/addressing public comments. Baker updated the client's long-range multimodal transportation plan (LRTP). Baker was responsible for all phases of the multistate LRTP update, including consulting with other agencies, conducting public meetings and coordinating stakeholder involvement, performing technical analyses, identifying and ranking projects, and preparing documentation and presentation materials. This effort entailed extensive coordination and planning among Baker staff, client staff, and the Technical Advisory Committee, along with other West Virginia and Maryland state and local entities and transit agencies.

Air Quality Guidebook for Transportation Conformity, Statewide, Arizona. *Arizona Department of Transportation.* Assistant Project Manager. Baker assisted the client with simplifying the transportation conformity process and establishing a general uniformity through the development of an Air Quality Guidebook for Transportation Conformity. The guidebook was designed as a tool for technical staff and included comprehensive examples and procedures, calculation methodologies, guidance, and detailed tables and maps highlighting nonattainment and maintenance areas by criteria pollutant, Metropolitan Planning Organization (MPO), and Council of Governments (COG).

Transportation Project Sustainability Plan Development, Washington, DC. *District Department of Transportation*. Project Manager. Baker developed a sustainability plan to enable the client to minimize impacts from its operations on area residents and the environment. The plan discusses areas of focus, goals, and roles and responsibilities; provides tools for measuring and reporting on progress; and identifies education and training initiatives, in support of the client's strategic service initiatives and the District of Columbia's "Green DC" agenda. Topics addressed include transportation and land use strategies, multimodal and demand management strategies, environmental and climate change impact reduction, project and life-cycle cost reduction, energy and resource conservation, economic vitality, and livability enhancement.

VICTOR J. SIAURUSAITIS

PRINCIPAL-IN-CHARGE

Firm Name: Baker

Years of Experience: 29

Education

M.A., Transportation Engineering, University of Maryland, College Park Campus

B.A., Urban Planning, University of Maryland, College Park Campus

Mr. Siaurusaitis serves as the regional office executive for Baker's Baltimore, Maryland, office. He also manages the office's Planning/Transportation Department, which is staffed by approximately 25 professional, technical, and support personnel who provide services on a wide variety of planning, civil and transportation projects to federal, state and local agencies.

Mr. Siaurusaitis has extensive experience in the field of transportation analysis and travel demand planning. His technical expertise includes regional and sub-area planning studies, travel demand forecasting, air quality analysis, bridge and roadway alternatives analyses, intersection traffic analysis, rail planning, intelligent transportation systems, freight planning, traffic surveys, classroom instruction, and systems operations analysis. Mr. Siaurusaitis has consistently been involved with innovative quantitative methodology in support of new transportation planning initiatives. His efforts include performing alternatives analysis for passenger and freight rail in New Orleans, Louisiana, and Washington, D.C.; researching traffic model and specialized software outputs in conjunction with sustainable growth development; and creating specialized utilities to migrate information between travel demand models and traffic engineering studies. He is also involved in training courses and workshops in which he teaches transportation modeling theory as well as software applications related to transportation. Sample project experience includes the following:

Air Quality Planning and Support Services, Hanover, Maryland. *Maryland Department of Transportation – Office of Planning.* Principal-In-Charge. Oversight of congestion mitigation and air quality (CMAQ) reporting and program analysis. Responsible for assisting in programmatic decisions and review of final products. Baker developed and utilized a customized reporting tool to interface with the federal reporting system to ensure consistent and accurate project data reporting. The tool allows the client to upload project data directly to FHWA's online reporting system, avoiding costly and time-consuming manual entry. Oversaw technical support for a cost/benefit analysis of potential CMAQ projects and the development of MAP 21's CMAQ-related performance measures (traffic congestion and on-road mobile source emissions). As part of successive contracts since 1998, he has overseen technical and programmatic expertise to the Office of Planning for transportation and air quality planning and technical analyses. Major work areas included: transportation planning; transportation conformity; data and tools development; SIP development and mobile source air quality planning.

Pennsylvania Air Quality and Climate Emissions Modeling, Harrisburg, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Principal-In-Charge. Contractual oversight and product quality assurance spanning five contract cycles over 20 years. Projects have provided technical, policy, and programmatic support for the Commonwealth of Pennsylvania's efforts to implement the mobile-source requirements of the Clean Air Act, greenhouse gas inventories, and planning activities. The contract vehicle is a hybrid of five fixed-price tasks and 10 indefinite delivery-indefinite quantity work-order tasks. Efforts have resulted in 100-percent conformity compliance since 1992. Notable accomplishments include designing innovative inspection systems, establishing and maintaining five metropolitan planning organization travel demand models, implementing conformity process controls, authoring a project-level air quality analysis handbook, and performing all mobile-source inventories.

Greenhouse Gas Emissions Analysis for U.S. 40 Carbon-Neutral Corridor, Baltimore and Harford Counties, Maryland. *Maryland Department of Transportation.* Principal-In-Charge. Conduct and oversight for preparing the 2006 baseline and 2035 business-as-usual inventories for transportation- and non-transportation-sector greenhouse gas (GHG) emissions for the U.S. 40 Carbon-Neutral Corridor. Review and input on a project assessment tool to evaluate GHG impacts under multiple potential GHG reduction strategy, action, and policy scenarios. Strategy evaluation of transportation efficiencies, smart growth, and energy consumption scenarios led to a comprehensive, best-value scenario selected by stakeholders.

Mobile-Source Air Quality Modeling Support, Statewide, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Principal-In-Charge. Oversight and quality control for providing mobile-source air quality modeling support to the Pennsylvania Department of Environmental Protection to meet regulatory requirements. Work included performing mobile-source modeling for the U.S. Environmental Protection Agency's National Emissions Inventory, analyses to support Stage II control and low-RVP programs in portions of the state, and statewide greenhouse gas emissions inventories for the governor's Climate Change Advisory Committee.

Air Quality and Support Open-End Contract 98-01, Statewide, Maryland. *Maryland Department of Transportation.* Senior Manager. Responsible for client interface, management of specific tasks and task oversight

for various planning projects. Specific responsibilities included technical review of new demand forecasting procedures developed at the Baltimore Metropolitan Council (BMC) for a new traffic model including a feasibility assessment of the Baltimore Vision 2030 Plan. Quantified vehicle-miles traveled changes and regional emissions results of Bethesda-New Carrolton Purple Line and the InterCounty Connector. Quantified transportation and emissions benefits of Smart Growth initiatives in Annapolis and Owings Mills. Assisted MDOT in completing the regional conformity analysis for the Baltimore non-attainment area. Work included a detailed technical review of different versions of the area wide MINUTP traffic model as well as the MOBILE emissions and post-processes to complete the determination. Responsibilities included a one-day workshop at the Baltimore Metropolitan Council on the findings of the evaluation as well as a teaching seminar detailing the conformity determination process. Assisted MDOT in determining the specifications of area wide models for air quality analysis in potential non-attainment areas in Washington County and the Maryland Eastern Shore. Oversight of technical and programmatic expertise to the client's Office of Planning regarding mobile source air quality issues, smart growth programs and related TDM and TCM activities. The Office of Planning is responsible for TIP and Plan development, programming funds, MPO liaison, air quality conformity and plans, and a variety of other technical and environmental missions.

Virginia DOT Transportation and Conformity Analyses I, Richmond and Hampton Roads, Virginia. *Virginia Department of Transportation.* Project Manager. Responsible for the technical coordination and review of preparation and delivery of regional conformity documentation. Part of a team that performed 1995-1999 transportation/air quality modeling for TIPs and LRPs for these two areas involving three metropolitan planning organizations, four transportation planning models, and several geographic areas not included in network transportation models.

Evaluation of EPA Ozone - Crater 8-Hr Ozone Program, Petersburg, Virginia. *Crater Planning District Commission (CPDC).* Supervisor. Responsible for assessment of options with CPDC to attain air quality conformity. On behalf of the CPDC, provided EPA new data and new analyses which demonstrate that the City of Petersburg and Prince George County should not be designated as nonattainment of the 8-hour ozone standard, and that the existing 1-hour ozone maintenance area should be retained under the 8-hour ozone standard.

Technical Support for Air Quality Analysis I - NJDOT, Statewide, New Jersey. *New Jersey Department of Transportation (NJDOT).* Supervisor. Responsible for providing quick turnaround technical analysis to assist NJDOT in a variety of transportation and air quality planning activities. Completed a statewide goods movement assessment including quantitative methods to measure: expanded hours for truck operations, shifting competing truck route traffic to the New Jersey Turnpike, converting auto/truck lanes to truck only lanes, and conformity testing of regional truck improvements.

Transportation Project Sustainability Plan Development, Washington, DC. *District Department of Transportation*. Principal-In-Charge. Baker developed a sustainability plan to enable the client to minimize impacts from its operations on area residents and the environment. The plan discusses areas of focus, goals, and roles and responsibilities; provides tools for measuring and reporting on progress; and identifies education and training initiatives, in support of the client's strategic service initiatives and the District of Columbia's "Green DC" agenda. Topics addressed include transportation and land use strategies, multimodal and demand management strategies, environmental and climate change impact reduction, project and life-cycle cost reduction, energy and resource conservation, economic vitality, and livability enhancement.

DANIEL J. SZEKERES

TECHNICAL MANAGER-AIR QUALITY

Firm Name: Baker

Years of Experience: 19

Education

M.E., Civil Engineering, The Pennsylvania State University

B.S., Civil Engineering, The Pennsylvania State University

Mr. Szekeres is a Technical Manager specializing in air quality analyses related to criteria pollutant requirements, greenhouse gas inventories, and the potential impacts of sustainable transportation strategies. He has been actively involved in climate change efforts in Maryland and Pennsylvania and has led greenhouse gas analyses for multiple traffic and planning studies. For nearly 20 years, he has provided support to the state departments of transportation in Pennsylvania, Maryland and New Jersey in conducting transportation conformity analyses and transportation sector SIP emissions modeling. Sample project experience includes the following:

Climate Change Support, Statewide, Maryland. *Maryland Department of Transportation.* Task Manager. Baker has provided technical, programmatic expertise and policy support to the Office of Planning to support MDOT's efforts developing Maryland's Climate Action Plan (CAP) and implementation strategies to support the CAP. This has included technical support to MDOT on the MD Climate Change Commission and Mitigation Work Group, reviewing potential transportation and land use (TLU) policy options. Mr. Szekeres has led technical efforts to develop statewide inventories of transportation related greenhouse gas emissions and the emissions benefits of alternative mitigation strategies. The inventories have been used to develop goals and targets for potential strategies to address regional emissions. Inventory assessments have included the evaluation of alternative federal and state vehicle technology programs and included integration of EPA's MOVES emission model.

Greenhouse Gas Emission Reduction Expert Guidance and Technical and Programmatic Support, Statewide, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Task Manager. Baker provided technical, programmatic, logistical, and organizational support to the client and the Governor's Climate Change Advisory Committee for the development of strategies to reduce greenhouse gas emissions. Mr. Szekeres led the development of base and future-year emission inventories for all mobile emission sources under alternative vehicle technology assumptions. In addition, he led technical efforts to analyze the emission benefits of alternative transportation and land use mitigation strategies.

Transportation Impacts on Greenhouse Gas, Statewide, New Jersey. *New Jersey Department of Transportation (NJDOT).* Senior Planner. As part of Baker's on-call air quality support contract with NJDOT, Mr. Szekeres provided support in quantifying the greenhouse gas emission impacts of typical highway and bridge construction projects. This included the review of typical material and equipment usage for several example projects, compilation of emission factors and life-cycle costs, and the estimation of the carbon footprint of construction activities.

Air Quality Non-Attainment Prevention Report, Fort Gordon, Georgia. *U.S. Army Garrison.* Task Manager. Led efforts to prepare a report that identifies strategies to reduce key criteria pollutants and greenhouse gas emissions at Fort Gordon. The report was developed to provide a comprehensive review of available strategies and examples of practices utilized by other military installations. Separate sections were provided to document sustainable practices to reduce the carbon footprint of the facility and to summarize sustainable practice success examples from other military installations.

Air Quality Emissions Impacts at U.S. Land Ports of Entry, U.S. Border Crossings with Canada & Mexico. *U.S. Army Corps of Engineers, Fort Worth District.* Senior Planner. Baker provided emissions impact analyses at 22 U.S. land ports of entry (LPOE) that were in designated non-attainment air quality regions using local air quality modeling parameters, models, and planning assumptions. Mr. Szekeres led technical work efforts for the evaluation of greenhouse gas and particulate matter (PM) emissions for key locations. Work efforts included the development of an Emissions Estimator User Interface Tool (EE-Box) that calculated the regional impacts on emissions due to the hourly traffic changes occurring at the LPOE for air quality planning and conformity considerations.

MD Carbon Neutral Corridor. *Cambridge Systematics, Inc.* Task Manager. Baker provided technical emissions inventory support for a test project conducted by MDOT to examine corridor-level emissions and mitigation strategies. Mr. Szekeres served as the technical lead for the development of the corridor greenhouse gas inventory encompassing the following sectors: transportation, electricity consumption, fuel consumption, fossil fuel industry, industrial processes, agriculture, waste management, and emission sinks. Work efforts included developing the inventory methodology and identifying key data sources. Work efforts included developing a transportation sector inventory using EPA's MOVES emission model integrated with roadway traffic information and BMC travel demand model forecasts.

Pennsylvania Air Quality and Climate Emissions Modeling, Harrisburg, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Project Manager. Leading technical work efforts for air quality and travel model support activities under the statewide agreement. Work efforts include support for travel demand modeling, transportation conformity analyses, data preparation, and integration of EPA's MOVES emission model with regional travel demand models. The project included participation on interagency consultation meetings, conducting conformity analyses for rural planning organizations, assisting urban area MPOs with conformity determinations and travel modeling, conducting highway emission inventories and other supporting studies for the PADEP, and providing climate change support for the client. Through five contracts, spanning more than 24 years, Baker has provided technical, policy, and programmatic support for the Commonwealth of Pennsylvania's efforts to implement the mobile-source requirements of the Clean Air Act, greenhouse gas inventories, and planning activities.

I-69 Improvements Engineering and Environmental Services, Madison County, Indiana. *Indiana Department of Transportation.* Task Manager. Led work efforts to conduct a PM2.5 project level hot-spot conformity determination. Work included support for interagency consultation, collection and processing of project traffic data, MOVES emission modeling, AERMOD dispersion modeling, and documentation efforts. Baker is providing road and bridge design, environmental documentation, topographic survey data collection, geotechnical services, and construction phase services for improvements to I-69 from Exit 214 (S.R. 13) to Exit 219 (S.R. 38).

Air Quality Guidebook for Transportation Conformity, Statewide, Arizona. *Arizona Department of Transportation.* Task Manager. Baker assisted the client with simplifying the transportation conformity process and establishing a general uniformity through the development of an Air Quality Guidebook for Transportation Conformity. The guidebook was designed as a tool for technical staff and included comprehensive examples and procedures, calculation methodologies, guidance, and detailed tables and maps highlighting nonattainment and maintenance areas by criteria pollutant, Metropolitan Planning Organization (MPO), and Council of Governments (COG).

JAMES A. FRAZIER, PMP

SR. AIR QUALITY SPECIALIST

Firm Name: Baker

Years of Experience: 28

Education

M.E., Environmental Pollution Control, The Pennsylvania State University

B.S., Civil Engineering, Virginia Military Institute

Licenses/Certifications

Project Management Professional (PMP)

Mr. Frazier leads Baker's transportation planning and air-quality modeling group that performs transportation planning services and emissions analyses related to transportation planning. His areas of specialization include air quality and transportation planning studies, climate change and greenhouse gases, strategic planning and policy analysis, corridor studies, conformity, and emissions modeling and control strategies. He is a certified Project Management Professional and a retired major from the U.S. Army Corps of Engineers. He manages projects related to climate change planning, transportation planning, transportation improvement program and long-range planning development and conformity, and air quality policy and support. Sample project experience includes the following:

Climate Change Support, Statewide, Maryland. *Maryland Department of Transportation.* Project Manager. Responsible for leading the Baker team supporting the client's climate change planning efforts. Assisted in developing the multi-phase approach of developing working groups and an oversight committee to review potential GHG reduction strategies and policy options. Developed the draft implementation status report that provides recommendations to the governor. Baker provided crucial support to the client for multiphased climate change planning efforts in response to the Maryland Climate Action Plan. Baker assisted in identifying specific programs, actions, and strategies categorized under eight broad transportation and land use (TLU) mitigation and policy areas. This effort focused on defining, evaluating, ranking, and determining the feasibility of achieving greenhouse gas reduction targets through the stated TLU measures and policies.

Climate Action Plan and Implementation Support, Statewide, Maryland. *Maryland Department of Transportation.* Project Manager. Led two transportation and land use working groups in developing greenhouse gas reduction strategies that support the transportation technologies and major capital project policy options. Assisted in organizing the coordinating committee and presented the group recommendations totally 71 different strategies. Baker provided technical, programmatic expertise and policy support to the Office of Planning to support MDOT's efforts developing Maryland's Climate Action Plan (CAP) and implementation strategies to support the CAP. This included technical support to MDOT on the MD Climate Change Commission and Mitigation Work Group, reviewing potential transportation and land use (TLU) policy options.

Greenhouse Gas Emission Reduction Expert Guidance and Technical and Programmatic Support, Statewide, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Transportation Planner. Assisted in the development of the statewide greenhouse gases inventory that included developing modeling protocols and methodology. Baker provided technical, programmatic, logistical, and organizational support to the client and the Governor's Climate Change Advisory Committee for the development of strategies to reduce greenhouse gas emissions. Baker's tasks included developing base- and future-year baseline inventories for all mobile emission sources and researching and developing strategies for greenhouse gas emission control.

Greenhouse Gas Emissions Analysis for U.S. 40 Carbon-Neutral Corridor, Baltimore and Harford Counties, Maryland. *Maryland Department of Transportation.* Project Manager. Responsible for managing the corridor level greenhouse gas inventory for the baseyear and future years out to 2050 using MOVES and EPA SIT models. Developed methodology to estimate the GHG impacts of the four scenarios of land conservation, efficient energy consumption, and sequestration and energy consumption policies and programs. Baker prepared the 2006 baseline and 2035 business-as-usual inventories for transportation- and non-transportation-sector greenhouse gas (GHG) emissions for the U.S. 40 Carbon-Neutral Corridor. Baker developed a project assessment tool to evaluate GHG impacts under multiple potential GHG reduction strategy, action, and policy scenarios. Baker's strategy evaluation of transportation efficiencies, smart growth, and energy consumption scenarios led to a comprehensive, best-value scenario selected by stakeholders.

Maryland Air Quality Planning and Support: DC Region, Statewide, Maryland. *Maryland Department of Transportation.* Task Manager. Managed the evaluation of selected transportation emissions reduction measures (TERMS) for the Washington DC area. The process required the development of methodologies and emissions estimates for each TERMS. The methodologies were incorporated into MAQONE, the new off-network model recently completed for all nonattainment areas in the state. Directed the air quality modeling review of the conformity process for the Baltimore Metropolitan Council (BMC) and Maryland Department of the Environment (MDE). As part of

successive contracts since 1998, Baker has provided technical and programmatic expertise to the MDOT Office of Planning and Capital Programming (OPCP) for transportation and air quality planning and technical analyses.

Transportation Project Sustainability Plan Development. ***Washington DC Department of Transportation.*** Project Manager. Responsible for updating the client's Sustainability Plan, to include identifying performance indicators, evaluation measures, and targets for each sustainability objective. Baker developed a sustainability plan to enable the client to minimize impacts from its operations on area residents and the environment. The plan discusses areas of focus, goals, and roles and responsibilities; provides tools for measuring and reporting on progress; and identifies education and training initiatives, in support of the client's strategic service initiatives and the District of Columbia's "Green DC" agenda.

Pennsylvania Air Quality and Climate Emissions Modeling, Harrisburg, Pennsylvania. Pennsylvania Department of Transportation, Central Office. Task Manager. Responsible for providing technical assistance for various tasks related to the PA conformity process, SIP development that establish emissions budgets, and the transitions to MOVES modeling for emissions inventories. Through five contracts, spanning more than 24 years, Baker has provided technical, policy, and programmatic support for the Commonwealth of Pennsylvania's efforts to implement the mobile-source requirements of the Clean Air Act, greenhouse gas inventories, and planning activities. Baker's efforts have resulted in 100-percent conformity compliance since 1992. Notable accomplishments include designing innovative inspection systems, establishing and maintaining five metropolitan planning organization travel demand models, implementing conformity process controls, authoring a project-level air quality analysis handbook, and performing all mobile-source inventories.

HEPMPO Long Range Transportation Plan Update. ***Hagerstown/Eastern Panhandle MPO.*** Project Manager. Managed the development of the long range transportation plan update. Developed the MAP-21-compliant multimodal plan, incorporated performance measures and ranking for fiscal constraint analyses, and presented results to the decision making board for project selection. Utilized MetroQuest surveys for public and stakeholder outreach and coordinated with multistate and federal agencies to ensure compliance. Baker was responsible for all phases of multi-modal LRTP including consultation with other agencies, public outreach and stakeholder involvement, project identification and ranking, and the preparation of documentation and presentation materials.

Air Quality Off-Network Emissions Software (AQONE), Nationwide. ***Maryland Department of Transportation.*** Project Manager. Responsible for developing the various transportation methodologies and integrating MOVES the tool to calculate the transportation and emissions impacts. AQONE is a windows-based customized software that analyzes a wide array of projects including roadway and traffic signal improvements, transit projects, TDM, ITS projects as well as other project types.

Transportation Project Sustainability Plan Development, Washington, DC. *District Department of Transportation*. Task Manager. Baker developed a sustainability plan to enable the client to minimize impacts from its operations on area residents and the environment. The plan discusses areas of focus, goals, and roles and responsibilities; provides tools for measuring and reporting on progress; and identifies education and training initiatives, in support of the client's strategic service initiatives and the District of Columbia's "Green DC" agenda. Topics addressed include transportation and land use strategies, multimodal and demand management strategies, environmental and climate change impact reduction, project and life-cycle cost reduction, energy and resource conservation, economic vitality, and livability enhancement.

EAMON T. GEARY, LEED AP ID+C

SUSTAINABLE DESIGN COORDINATOR

Firm Name: Baker

Years of Experience: 13

Education

B.A., Environmental Policy, Allegheny College Institute and State University

Licenses/Certifications

LEED Accredited Professional ID+C

Mr. Geary has spent the last eight years working in the Pittsburgh-region, nationally, and internationally, to encourage and support green development and to curb greenhouse gas emissions. Since 2010, he has been responsible for overseeing and auditing sustainable design and construction for Baker's projects. For building projects, he ensures that all sustainable design and Energy Policy Act of 2005 features have been incorporated in order to meet the appropriate levels of LEED® certification, as well as the owner's energy requirements. He is an excellent choice for reviewing and evaluating energy and water consumption of facilities at ORD and MDW and assisting in the development of a sustainable asset management plan for the CDA's airport. He has performed this role many times as part of a compliance review team for projects for the U.S. Army Corps of Engineers. In this capacity he was responsible for overseeing and auditing aspects of sustainable design and construction including water and electrical efficiency, day lighting, green space, and recycled content.

Project types include: U.S. Army and Armed Forces Reserve Centers with administrative offices, training centers, vehicle maintenance facilities, and storage buildings; NCO Academy; training mobilization barracks; billets; container loading facility; 1000-room lodge; company operations facility; tactical equipment maintenance facilities; fitness center; cargo logistics training complex; warfighter and family support center; research and development laboratory building; parking garage; and aviation hangar.

In November, 2011, Mr. Geary received an additional LEED AP credential, specifically for Neighborhood Development. The LEED AP ND credential provides a standard for professionals participating in the design and development of neighborhoods that meet accepted high levels of environmentally responsible, sustainable development. The Green Building Certification Institute (GBCI) created this specialty credential to denote practical knowledge of the LEED for Neighborhood Development rating system. In 2010, Mr. Geary received the ID+C credential, representing a standard for professionals participating in the design and construction of environmentally responsible, high-performance, commercial spaces and tenant improvements.

Mr. Geary's previous positions include project specialist for Green Building Alliance (GBA) and program officer for International Council for Local Environmental Initiatives (ICLEI), Local Governments for Sustainability. During his tenure at GBA, Mr. Geary provided technical assistance to large-scale development projects that were interested in sustainable design and construction. His enthusiasm for sustainable design motivated a partnership with Pittsburgh City Councilman Bill Peduto and led to two unique pieces of local legislation that were designed to encourage the development of green buildings in Pittsburgh. In addition, Mr. Geary served as project manager for the Pittsburgh Climate Initiative (PCI). PCI worked to develop a comprehensive carbon-reduction strategy for Pittsburgh's municipal, business, community, and higher-education sectors. Governor Edward G. Rendell recognized the project with a Governor's Award for Environmental Excellence saying "Their leadership is inspiring."

In 2008, Mr. Geary was invited by the British Consulate to visit London as part of an international program to promote cooperation and thought sharing among the nations and participants involved. During this time, he worked with ICLEI to develop a national-level sustainability initiative in the cities of Cleveland, Denver, and Pittsburgh, to assist with the successful implementation of their greenhouse gas emission-reduction goals. Through assisting local governments, he also serves as a community resource for reducing greenhouse gas emissions. Sample project experience includes the following:

Cargo Logistics Training Complex, Naval Weapons Station Yorktown, Cheatham Annex, Williamsburg, Virginia. *NAVFAC Atlantic.* As a member of the design team, developed the LEED scorecard for the project and supervised the integration of green building features into the project. In addition, was responsible for all LEED documentation and submittal. Baker is serving as the designer of record for the design-build Cargo Logistics Training Complex, which includes a 21,835-gross-square-foot logistics building; a 15,011-gross-square-foot vehicle maintenance building; a mock cargo hold; a mock pier; a chemical, biological, and radiological testing chamber; and renovation of a portion of the first floor of a former barracks to allow it to be used for temporary office space. The project was awarded a prestigious LEED Platinum rating.

Design of 1,000-Room Lodge, Fort Lee, Virginia. *U.S. Army Family, Morale, Welfare and Recreation Command (FMWRC).* As a member of the design team, developed the LEED checklist for the project and supervised the integration of green building features into the project. Green features of this project include daylighting, high-efficiency

LED lighting and water fixtures, low-VOC paint and adhesives, green space, regional and recycled construction materials and stormwater management. Baker provided design services for a 500,000-square-foot, 1,000-room Lodge, comparable to a commercially branded hotel, with associated grounds building and site development. The "green building" achieving LEED points in the categories of Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation In Design. Energy conservation is integral with the building envelope design and includes a continuous, spray-applied, soy-based polyurethane foam insulating air barrier system. The project was awarded a LEED Silver rating.

International Council for Local Environmental Initiatives (ICLEI), Local Governments for Sustainability. Developed a national-level sustainability initiative in Cleveland, Denver, and Pittsburgh to assist with the successful implementation of measures to achieve the cities' greenhouse gas emission reduction goals. Also conducted greenhouse gas emission inventories for a multitude of cities and counties.

Green Building Alliance. Directly involved with more than 25 LEED-registered and certified projects, including managing the documentation of Pittsburgh's first LEED-Platinum building. Developed curriculum, study guides, and practice tests to provide a thorough understanding of green building and the LEED® rating system to building industry professionals. Served as project manager for the Pittsburgh Climate Initiative. PCI worked with the Green Government Task Force and four subgroups to develop a comprehensive carbon reduction strategy for Pittsburgh's municipal, business, community, and higher-education sectors. Incorporated feedback from local elected officials and the community through public hearings and working charrettes. Successfully spearheaded the adoption of the action plan through the Pittsburgh City Council as a guiding document for city government.

Lower Hill Redevelopment Infrastructure Project, City of Pittsburgh, Allegheny County, Pittsburgh, Pennsylvania. *Sports and Exhibition Authority of Pittsburgh and Allegheny County.* Provided LEED management for the project. Documented sustainable features and coordinated with owner to develop specifications. Baker is performing preliminary engineering and final design services for the infrastructure associated with re-creation of the street grid system for the Lower Hill Redevelopment Infrastructure Project (former Civic Arena site). The project includes the infrastructure (streets, sidewalks, utilities, and landscaping) necessary to support proposed development of the site to attain LEED® certification. Baker provided design services, including preliminary engineering, final design, and construction phase services.

LORNA PARKINS, AICP

SENIOR TRANSPORTATION PLANNER

Firm Name: Baker

Years of Experience: 27

Education

M.S., Applied Economics, University of Minnesota

B.A., Planning/Urban Affairs, Virginia Polytechnic Institute and State University

Licenses/Certifications

American Institute of Certified Planners (AICP)

Ms. Parkins has worked for both private engineering firms and the Southwestern Pennsylvania Commission, the metropolitan planning organization headquartered in Pittsburgh, Pennsylvania. She specializes in the relationships between transportation, land use, and economic development. She has performed land use, environmental and economic work on over 40 major investment or feasibility studies and environmental impact documents. She has worked with land use allocation and economic models in the context of alternatives analysis, scenario planning, and indirect and cumulative impacts analysis. She has prepared long-range transit and multimodal plans as well as corridor and area studies for transit-oriented development and integrated land use/transportation planning. She has managed a variety of projects ranging up to $5 million in contract value. As Technical Service Manager for Transportation Planning at Baker, she leads internal coordination, strategic planning, technical development, and quality control practices for planners across the company. Sample project experience includes the following:

Sheltering and Evacuation Guide and Resource Database, National Capital Region. *Metropolitan Washington Council of Governments (MWCOG).* Technical Advisor. Responsible for rewriting/restructuring the final report to present the project findings as a resource guide as per the client's direction. Baker developed an integrated evacuation and sheltering plan for the National Capital Region focused on catastrophic events. Each jurisdiction in the region has evacuation and sheltering plans, but the plans lacked uniformity and coordination among jurisdictions. Baker researched and evaluated routes, transportation resources, population profiles, infrastructure, and other current data and established a regional evacuation and shelter plan that coordinates local emergency plans and combines all critical elements into a single plan with a common format.

Greenhouse Gas Emission Reduction Expert Guidance and Technical and Programmatic Support, Statewide, Pennsylvania. *Pennsylvania Department of Transportation, Central Office.* Planner. Technical advisor for research. Baker provided technical, programmatic, logistical, and organizational support to the client and the Governor's Climate Change Advisory Committee for the development of strategies to reduce greenhouse gas emissions. Baker's tasks included developing base- and future-year baseline inventories for all mobile emission sources and researching and developing strategies for greenhouse gas emission control.

Technical Support for Air Quality Analysis I - NJDOT, Statewide, New Jersey. *New Jersey Department of Transportation (NJDOT).* Planner. Responsible for conducting research and quantitative analysis of the potential for alternate land use patterns to reduce vehicle travel and improve regional air quality. Baker provided quick turnaround technical analysis to assist the New Jersey Department of Transportation in a variety of transportation and air quality planning activities.

Long Range Transportation Plan (LRTP) Update, Charleston, West Virginia. *BCKP Regional Intergovernmental Council.* Project Manager. Responsible for all aspects of a regional long range transportation plan update, including stakeholder and public outreach, needs assessment, development of recommendations, regional model update and forecasts, and prioritization of projects to meet the plan's fiscal constraint. Baker assisted in updating the client's Long Range Multimodal Transportation Plan (LRTP). Baker was responsible for all phases of multi-modal LRTP consultation with other agencies, public outreach and stakeholder involvement, project identification and ranking, and preparation of documentation and presentation materials. Baker's technical services pertained to travel demand modeling, database management, air quality conformity, and GIS analysis and visualization.

Potomac River Crossing Data Development Study, Virginia, Maryland, and Washington, D.C. *Virginia Department of Transportation.* Principal-In-Charge. Responsible for project scoping and contract management. Baker provided traffic engineering services to develop a common dataset describing multimodal travel patterns and conditions on Potomac River crossings. Baker's services included project management, data collection and analysis, travel demand forecasting, website development, and public and stakeholder involvement.

Eastern Shore Toll Reduction. *Virginia Department of Transportation.* Project Manager. Responsible for planning study of the land use impacts of a toll reduction on the Chesapeake Bay Bridge-Tunnel. Used travel demand modeling, case studies, and local research to identify land use effects of the proposed policy change.

Transportation Planning Division On-Call Services, Various Locations, Virginia. *Virginia Department of Transportation.* Task Manager. Managed Task Orders on the economic impacts of bicycle events and facilities in Virginia and land use study of impacts resulting from a proposed toll reduction on the Chesapeake Bay Bridge-Tunnel. Baker was hired to provide transportation planning and traffic engineering services in a 3-year on-call format for one third of the state of Virginia. Assignments included corridor studies, regional travel demand modeling, bicycle studies, environmental investigations, traffic operations analyses, site impact studies and data collection.

Roadway Widening Improvements for S.R. 68, Woods Cross and West Bountiful, Utah. *Utah Department of Transportation, Region 1.* Technical Advisor. Responsible for providing input on methodologies and reviewing of findings for socioeconomic and indirect and cumulative impact assessments. Baker performed environmental investigations and prepared an environmental assessment for the widening of approximately 3.5 miles of S.R. 68, from 2600 South in Woods Cross to I-15 in West Bountiful. Baker's tasks included noise and air quality analysis, wetland delineation, hazardous material investigation, Section 4(f) compliance, environmental assessment document preparation, and public involvement program support.

Prince William County Mass Transit Plan, Prince William, Virginia. *Prince William, County of.* Project Director. Provided technical oversight of entire project. Under an on-call contract with the Virginia Department of Transportation's Multimodal Transportation Planning Office, Baker developed a mass transit plan for Prince William County, Virginia. The purpose of this project was to incorporate a Mass Transit Plan into the county's 2008 Comprehensive Plan Update, in order to identify how different transit systems and facilities can work together to create a more efficient transportation and transit network. The plan considered how the proposed transit facilities would interact with the road, pedestrian, and bicycle improvements proposed in the county's comprehensive plan. It also examined how the county could further fund planned transit improvements identified throughout the Plan and identified areas that may be suitable for future transit oriented development (TOD). The project combined the recently-completed mass transit plans by Virginia Rail Express and Potomac-Rappahannock Transit Commission with analysis of land use and transportation markets that indicate support for additional transit and/or travel demand management services.

Huntington 2040 Metropolitan Transportation Plan Central Business District Access Study, Huntington, West Virginia and Ironton, Ohio. *Kimley-Horn and Associates, Inc.* Project Manager. Responsible for Baker tasks including GIS assessment, socioeconomic data development, technical support to land use planning, and focus area transportation studies. As a subconsultant for a Metropolitan Planning Organization regional long-range transportation plan update, Baker is responsible for land-use related tasks and associated technical studies. The KYOVA Interstate Council is a multi-state region that includes Huntington, West Virginia and Ironton, Ohio. Baker is responsible for collecting all existing GIS data for the MPO plan through outreach and interviews with local jurisdictions, as well as assembling data from state and federal sources. GIS data types include socioeconomic data, environmental features data, land use, and detailed data regarding the roadway system. Baker is also developing a GIS implementation framework to develop a complete GIS data set for the MPO. Other tasks include analysis of existing land use and land suitability, review of all local planning documents and related stakeholder outreach, and development of future year land use forecasts. Baker also provided graphic design support for a downtown Huntington design charrette.

TAMMY L. SEALE

SUSTAINABILITY SPECIALIST

Firm Name: PMC

Years of Experience: 20

Education

B.A., Environmental Science, University of Maine

MSP, Urban and Regional Planning, Florida State University

Professional Affiliations

American Planning Association (APA), Member. Sub-Section Director, Central Coast Section, California Chapter APA

Association of Environmental Professionals (AEP), Member

AEP Climate Change Committee

Ms. Seale is director of PMC's Sustainability and Climate Change services team with 20 years of experience serving public agencies. She is a leader in the field of climate action planning with contributions as a practitioner, researcher, and educator. Ms. Seale serves as a project director, manager, or advisor for comprehensive planning projects in the areas of sustainability, climate action planning, and conservation planning, and is also a frequent presenter and lecturer at local, regional, state, and national conferences, seminars, courses, and special lectures on local climate action planning. Sample project experience includes the following:

San Mateo County, Energy Efficiency and Climate Action Plan, Climate Change Vulnerability Assessment, Climate Change and Energy Element General Plan Update, Environmental Impact Report. Coordinated with staff to facilitate a project steering committee and technical advisory committee and led the consultant team's preparation of all plans and technical analyses. This project addressed community-wide activities and included a CAP, General Plan, and adaptation program. PMC partnered with ICLEI-USA to prepare a vulnerability assessment, which provided the foundation for adaptation policies.

City of San Mateo, Climate Action Plan. Served as project manager for preparation of a CAP that provides a streamlined plan to address climate change and existing sustainability initiatives and serve as a Qualified GHG Reduction Strategy consistent with BAAQMD GHG Plan Level Guidance. The effort included updates to existing GHG inventories and forecasts, measure development, preparation of a monitoring and implementation tool, and a General Plan Amendment for CAP consistency. Efforts included analysis of early progress, resulting in a "local adjustment" to the forecast that captures the full impact of early efforts toward GHG reduction targets. Adoption of the CAP is anticipated in March 2015.

Bay Area Air Quality Management District, Guidance on Developing Qualified GHG Reduction Strategies. Directed the PMC team to update the Bay Area Air Quality Management District (BAAQMD) guidance to local governments on preparing GHG reduction strategies that meet the air district's guidelines for use in future California Environmental Quality Act (CEQA) streamlining efforts.

Butte County, Climate Action Plan, Project Director. Provided direction and guidance to the Butte County CAP project team. The project included an update to the county's GHG inventory and forecasts, community outreach, and preparation of a CAP that will serve as a Qualified GHG Reduction Strategy.

San Luis Obispo County, EnergyWise Plan (Climate Action Plan, Government Operations and Community-Wide Greenhouse Gas Emissions 2006 Baseline Inventories. The County's plan relied on the goals, policies, and targets established in the recently adopted Conservation and Open Space Element as well as the baseline GHG inventory. The plan provided a 2020 GHG reduction target, GHG reduction strategies to reduce emissions from the energy, transportation, waste, and agricultural sectors, climate adaptation policies, and an overall implementation and monitoring program. The plan was prepared with extensive stakeholder public outreach tailored to the county's character and needs.

City of South San Francisco, Greenhouse Gas Emissions Inventory, Strategic Growth Council Grant Application, and Climate Action Plan. Served as project manager in the development of a GHG inventory and forecast for community-wide emissions in the city. Led the preparation of the City's successful grant application to the Strategic Growth Council to prepare a CAP and Pedestrian Master Plan. Served as project director for the CAP and Pedestrian Master Plan adopted by the City in early 2014.

City of Sunnyvale, Climate Action Plan, Land Use and Transportation Element, and EIR. Led preparation of the CAP, which was prepared concurrently with the City's Land Use and Transportation Element update. The CAP was adopted on May 20, 2014. PMC will next assist the City with development of a CAP monitoring and implementation program, including development of a monitoring tool and ongoing support to City staff.

XICO MANAROLLA

SENIOR GHG ANALYST

Firm Name: PMC

Years of Experience: 10

Education

M.A., Public Policy, Environmental Policy, University of Maryland

B.A., English and Philosophy, St. Mary's College of Maryland

Mr. Manarolla is responsible for preparation of greenhouse gas emissions inventories, policy research, analysis, and development to support climate action plans, general plan updates and sustainability plans, public workshop facilitation, presentations, development and implementation of Energy Efficiency and Conservation Strategies, and assistance with environmental review of projects. He serves as PMC's lead technical analyst for greenhouse gas emission analysis, including quality control and assurance that all tools, inventories, and assessments prepared by PMC in support of GHG inventories and climate action plans are robust, transparent, accurate, and consistent with industry-supported protocols, state guidelines, and current methodologies. Mr. Manarolla served on the ICLEI-USA Steering Committee for the preparation of a nationwide GHG Community Protocol and currently serves on the ICLEI-USA Clear Path Advisory Committee for the development of their new online GHG calculator. Sample project experience includes the following:

San Gabriel Valley Council of Governments, Energy Action Plans. Mr. Manarolla was the technical lead on all greenhouse gas emissions analyses in support of the development of Energy Action Plans for community-wide and municipal activities for 27 cities in the San Gabriel Valley. He provided QA/QC on greenhouse gas emissions inventories, forecasts, and reduction measure quantification in support of each city's Energy Action Plan. Mr. Manarolla assisted with the development of all quantification tools involved in the GHG inventory and emission reduction measure process.

WRCOG Subregional Climate Action Plan and Public Health and Climate Action Implementation Plan. Mr. Manarolla provided critical and technical review of quantification methods used in the development of GHG inventory reports for select cities in region and is the technical lead for developing tools that will monitor GHG reduction progress for all communities. Mr. Manarolla serves on the SEEC Clear Path Advisory Committee which guides the development of ICLEI-USA's new online GHG Inventory/Forecast/Planning/Monitoring tool that will be utilized in the WRCOG project.

Santa Clara Climate Action Plan. Mr. Manarolla provided technical assistance on the CAP project and reviewed all tools and quantification for Santa Clara.

Butte County Climate Action Plan. Mr. Manarolla provided technical assistance on the CAP project and reviewed all tools and quantification for Butte County.

Community GHG Inventory Protocol, Steering Committee Member and Solid Waste Technical Advisory Committee Member. Mr. Manarolla sat on the Steering Committee for the national standard on community-wide inventories being led by ICLEI-Local Governments for Sustainability. The Committee was entrusted with organizing and guiding the Protocol as well as reviewing all quantification methods. Along with his involvement with the Steering Committee, Mr. Manarolla took an active role in the Solid Waste Technical Advisory Committee, providing guidance and content edits for solid waste quantification methods.

ICLEI-Local Governments for Sustainability USA, Oakland; Senior Program Officer. Mr. Manarolla led development of technical protocols and processes in support of greenhouse gas emission inventories for community-scale and municipal operations analyses.

Think Energy, Inc., Tacoma Park, MD, Renewable Energy Research Specialist. Mr. Manarolla managed multiple renewable energy consulting projects with commercial and public sector clients. He investigated renewable energy offerings from wind farms, solar farms, and landfill gas vendors; analyzed greenhouse gas legislation and provided recommendations to meet provisions; proposed a money-making opportunity for Think Energy through use of a credit card for sustainability that would secure a percentage on all products purchased; and created a brochure outlining an expansion of the company into renewable energy investing.

JENNIFER VENEMA

SENIOR PLANNER

Firm Name: PMC

Years of Experience: 7

Education

B.S., City and Regional Planning, California Polytechnic State University

B.A., Political Science, International Affairs concentration, California Polytechnic State University

Professional Affiliations

American Planning Association, Member

Ms. Venema is a senior planner with over five years of experience advising local governments on climate change, land use, and environmental issues. Her portfolio includes plan development and implementation, with over 20 climate action plans (CAP), greenhouse gas (GHG) reduction plans, and energy action plans. She has managed the implementation and monitoring of two CAPs, and has administered grant programs for six cities with awards ranging in size from $565,500 to $1,299,700 to deploy over two dozen diverse programs for energy efficiency and sustainability. Her work has involved development of advanced general plan elements for sustainability, climate change, and renewable energy planning, complemented by preparation of comprehensive code and design guidelines. Her planning experience includes support for diverse public engagement and outreach projects, with experience ranging from energy education to outreach for controversial pipeline alignments. She provides cities and counties with her expertise at communicating complex technical and environmental information to the public. Sample project experience includes the following:

Butte County, Climate Action Plan. Led updates to community-wide emissions inventories and forecasts developed for the 2030 General Plan update for unincorporated communities, and coordinated County resources to create a full government operations emissions inventory. Led team preparation of reduction strategies and targets consistent with Assembly Bill 32, with the priority to integrate all project tasks for an effective, practical California Environmental Quality Act streamlining document to guide new development.

San Gabriel Valley Council of Governments, Energy Action Plans. Led development of seven cities' GHG inventories and Energy Action Plans for both municipal operations and community-wide activities. Included detailed electricity analysis of municipal operations and community-wide building stock. Supported overall project management to prepare a regional approach for the 27 participating jurisdictions in the San Gabriel Valley. Guided and supported all technical analysis, public outreach activities, policy development, client coordination, and ongoing committee meetings. Participated in and facilitated numerous staff work meetings with public staff from planning, public works, and city management departments. Presented electricity topics to the steering committee, and presented municipal energy efficiency planning at the final San Gabriel Valley Energy Efficiency and Climate Change Conference.

City of San Mateo, Qualified Climate Action Plan. Led preparation of a peer review and updates to a GHG inventory and forecast. Guided analysis of existing accomplishments and new opportunities for the development of GHG reduction measures. Ensured plan consistency with guidance from the Bay Area Air Quality Management District and the CEQA Guidelines. Plan development included preparation of a project-level checklist, with a separate monitoring and reporting tool for the city to track annual progress and monitor attainment of the plan's reduction targets. The CAP will serve as a Qualified GHG Reduction Strategy under the CEQA Guidelines and is scheduled for adoption in spring 2015.

San Mateo County, Energy Efficiency and Climate Change Assessment, Energy and Climate Change Update to the General Plan, Climate Action Plan, and Implementation. Served as the technical lead to the county's GHG emissions inventory and CAP. Led preparation of an Energy Efficiency and Climate Change Element for the General Plan, integrating key vulnerabilities and strategies identified in the element into the county's long-term planning framework. This project addressed community-wide activities for the unincorporated areas of the county and includes an Energy Reduction Strategy, CAP, Climate Change Element, and adaptation program.

City of Walnut Creek, Climate Action Plan Implementation. Worked with Public Services and Community Development staff to monitor, prioritize, evaluate and implement the CAP with multiple city departments. Coordinated work efforts of staff from engineering, public works, maintenance, and community development. Presented update to City Council. Analyzed funding recommendations for GHG effectiveness and supported staff with prioritization of work plan efforts. Previously served as the technical lead for development of the city's Climate Action Plan.

City of Tulare, Climate Action Plan Development and Monitoring. Served as the project manager for assessing the city's progress implementing its CAP. Worked with city staff to collect data and directed the development of an analytical spreadsheet to measure progress toward CAP reduction targets. Previously served as the technical lead for development of the city's CAP. This effort included preparation of the city's GHG emissions inventory, forecast, and reduction measures for both community operations and municipal operations.

ROBERT CHAMBERLIN, PE, PTOE

MODEL LEAD (EERPAT)

Firm Name: RSG

Years of Experience: 25

Education

B.E., MS, Engineering Sciences, Dartmouth College

B.A., Economics and German, University of Wisconsin/Madison

Licenses/Certifications

Professional Engineer

Professional Traffic Operations Engineer

Mr. Robert Chamberlin, PE, PTOE, is an expert on land-use and multimodal mitigation of mobile-source air quality problems. Bob has over 25 years of experience in developing software and hardware solutions to traffic-flow problems related to mobile environmental impacts. He is an early innovator in the use of the Environmental Protection Agency's (EPA) Mobile Vehicle Emission Simulator (MOVES) model for regional-and project-level conformity analysis. He recently completed pilot projects with State Departments of Transportation to implement FHWA's Energy and Emissions Reduction Policy Analysis Tool (EERPAT). Sample project experience includes the following:

NCHRP 25-48—Combined Interface for Project Level Air Quality Analysis. Project manager for a Transportation Research Board project to develop a software tool to integrate mobile emissions and air dispersion modeling.

Impact of High Efficiency Vehicles on Fuel Tax Revenues. Implemented the EERPAT model for the Utah DOT to determine how gasoline tax revenues will change under different assumptions for electric vehicle market penetration and heavy duty fuel efficiency.

State Pilot Testing of EERPAT. Project manager for implementation of a policy model to inform state decision-makers on the most effective policies for reducing energy consumption and greenhouse gas emissions from the transportation sector. Model was calibrated for 4 state DOTs.

Developing Pre-Processors and Post-Processors for Use with EPA's MOVES Model. Project manager for USDOT FHWA effort to determine the most important training and tools the FHWA can develop to ease transition to the MOVES model by state DOTs and metropolitan planning organizations (MPOs).

Microsimulation and MOVES with the University of Vermont Transportation Research Center. Managing a project to determine the critical vehicle and drive behavior parameters to calibrate to a measured operating mode distribution. Project utilizes real-world data from multiple vehicle trials equipped with on-board emissions monitoring equipment.

Durham, NH MOVES-Microsimulation Model. Project manager for the development and application of an area-wide traffic microsimulation model for Durham, New Hampshire, utilizing Dynamic Traffic Assignment. Model is connected to a regional model to obtain external traffic fidelity. Model is used for land-use and transportation improvement scenario testing. Model is linked with EPA's MOVES emission model to provide emission inventories and factors associated with each scenario.

Origin-Destination Estimation Utilizing Bluetooth Detection Technology. Project manager for five managed lanes planning projects in Florida (Miami SR80, Miami I-95, Jacksonville SR23, Suncoast Tampa, I-4 Orlando). Projects utilize Bluetooth detectors and custom matching algorithms to produce estimates of origin-destination travel flows to inform revenue forecasting.

NHDOT Signal Optimization for Air Quality Benefits, New Hampshire. Managed the optimization and coordination of over 65 traffic signals in the non-attainment area of New Hampshire. Project funded by a Congestion Mitigation and Air Quality Improvement Program (CMAQ) grant to quantify the air quality benefits of signal optimization.

I-89 Exit 18 Queue Detection. Designed and implemented queue detection for chronic ramp spillback management for Exit 18 (NH120) on I-89. Programmed preemption plan to clear ramps during AM peak periods.

SUSAN SHARP

SENIOR COMMUNICATIONS SPECIALIST

Firm Name: Sharp & Co.

Years of Experience: 42

Education
B.A., Graphic Design, The American University

Professional Affiliations
WTS Washington DC Board, Member

MD Association of Engineers, Member

Susan Sharp has over 40 years of professional experience in electronic and print information communication and marketing, information architecture, creation and implementation of effective communication strategies, strategic planning, marketing communications, and graphic design. She is a successful entrepreneur with experience delivering value and quality to an extensive loyal client base, including profit and non-profit organizations, government agencies, and institutions. Sample project experience includes the following:

Maryland Department of Transportation (MDOT) Maryland Transportation Plan Interviews and Outreach. To assist Maryland in the development of its 2035 Long-Range Transportation Plan, Ms. Sharp developed the communications plan. One innovative concept involved the creation of four interactive workshops presented throughout the state. These involved various stakeholders – including elected officials, advocacy groups, civic association members, community planners, and the general public – mixed into random groupings to address the proposed goals and objectives for the Plan. The state's reservations about randomly assigning group participants were allayed when significant numbers of participants commented that the interaction within the groups fostered a greater level of understanding and positive proposals. In addition, Ms. Sharp proposed and developed an innovative online survey to satisfy statutory requirements while actively engaging the public through traditional and new media.

DC Department of Transportation (DDOT) South Capitol Street Supplemental EIS/ROD. Ms. Sharp provides communication strategy and oversight of the public involvement program where communication is vital to maintaining current public support and addresses project detractors. Ms. Sharp is implemented several public information techniques to achieve this goal such as providing information updates to the website, developing newsletters, and scheduling public meetings in Ward 6 and Ward 8. In addition, Ms. Sharp and Parsons Brinckerhoff are worked with the National Park Service (NPS) and the DC Historic Preservation Office (SHPO) on Section 106 compliance efforts.

DC Department of Transportation (DDOT) Oregon Avenue NW Improvements. Ms. Sharp is working with the design consultant team to present the proposed design plans for the rehabilitation of the 1.7-mile segment of Oregon Avenue, NW, between Military Road and Western Avenue, to impacted residents for their consideration. Ms. Sharp is helping to promote and facilitate four open house public meetings, which have been designed as forums for residents to speak to the design team one on one as well as in small working groups.

DC Department of Transportation (DDOT) ADA Transition Plan. DDOT is required to provide an opportunity for people outside of the agency, people with disabilities, and other interested individuals and organizations to review and comment on the Transition Plan. Ms. Sharp managed the public outreach and involvement throughout the project period via an ADA-compliant website. Specific outreach tactics included creating an ADA advisory group, developing a ADA-compliant website and telephone hotline, and conducting public meetings.

Virginia Department of Rail and Public Transportation (DRPT) Statewide Rail Plan. To help build support for its ambitious rail program, DRPT engaged Ms. Sharp to craft a new document. Working from a technical document created to meet Federal Railroad Administration requirements, Ms. Sharp worked closely with DRPT to devise a strong message, a purpose to the communications. Based on that, she was able to determine and produce the narrative value and story, developing text that engaged stakeholders by communicating a clear vision and strategy to address the Commonwealth's rail needs. Ms. Sharp repurposed material for public meetings, creating PowerPoint presentations and writing text for other meeting materials.

DRPT Statewide Public Transportation Plan. Based on the success of the Statewide Rail Plan, Ms. Sharp was again asked to craft a public document based on numerous planning studies, analyses, and presentations that had been developed. Working closely with DRPT, Ms. Sharp devised a structure and theme, then wrote the copy for the document.

Virginia Department of Transportation (VDOT) I-66 Inside the Beltway Multimodal Study. Ms. Sharp supported this study that identified highway, transit, bicycle, and pedestrian alternatives along this critical Northern Virginia commuter corridor crossing two counties from the beltway to the District line. Ms. Sharp developed and implemented a public process that reached out to, gathered input from, and built consensus among stakeholders affected by the study.

MARY ARZT

CREATIVE DIRECTOR

Firm Name: Sharp & Co.

Years of Experience: 36

Education

B.A., Graphic Design, The American University

Professional Affiliations

Former WTS Washington DC Board Member

As winner of numerous national and international awards including ADDYs, Tellys, the International TV and Radio Gold Award, and the Best of Baltimore, Ms. Arzt has demonstrated expertise in all areas of creative direction including communication strategy and project implementation. She is a partner at Sharp & Company and has worked professionally for over 35 years, earning a reputation for exceptional creative work and management skill. Sample project experience includes the following:

Montgomery County/MWCOG Street Smart Pedestrian Safety Marketing Campaign. To increase pedestrian safety awareness, Ms. Arzt is leading a highly successful pedestrian safety public outreach campaign that included the creation and development of special curb markings along the segment of Piney Branch Road, an area with the highest number of pedestrian collisions in the County. The markers indicate where it is safe and not safe for pedestrians to cross the street. County Executive Ike Legget joined State, local, and regional leaders in commemorating the installation of the curb markers. After their installation, pedestrian collisions decreased by 50%.

BWI Thurgood Marshall International Airport Long-Range Needs Assessment. Sharp & Company provided public outreach and communication services for the airport's long range planning, environmental planning, and terminal and intermodal planning process. This engagement, which lays the groundwork for future airport growth, comprised of the development of public information dissemination strategies, creative direction and production of public outreach and stakeholder materials and activities. Working with hundreds of planning and research documents, Ms. Arzt devised a set of public materials that examine critical planning areas. This hybrid document – more comprehensive than a standard executive summary – provided solid information without overwhelming the audience with a lot of background materials. Each planning area has a separate document that stands alone but can also be read as part of the complete set. BWI considers this one of its best public documents and a model to be used for future public outreach.

DC Department of Transportation (DDOT) DC Circulator Transit Development Plan. Ms. Arzt oversaw all aspects of design and production for numerous presentation materials produced, including the redesign of technical documents for general and public elected officials. To ensure continuous public awareness and involvement in the study, Ms. Arzt created a web presence for the plan. Among the creative outreach approaches utilized was the development of a dynamic video to encourage public participation.

Virginia Department of Rail and Public Transportation (DRPT) Statewide Rail Plan. Ms. Arzt provided all creative direction for this project, including managing art direction, supervising illustrators, and managing workflow to ensure timely delivery and consistent messaging. Ms. Arzt determined the visual design for the Plan based on the copy developed, assuring that it reflected DRPT's image. Numerous graphics were re-conceived to eliminate extraneous information and focus on clearly making the point. This was especially true in the section devoted to outlining specific projects. Ms. Arzt devised a graphic iconography that was used to quickly encapsulate the specific benefits of a project, enabling easier comparison of them. AASHTO cited this work as a best practice for communicating to stakeholders in statewide rail plans.

DRPT Try Transit Week. Six years ago, DRPT determined that it needed to draw more attention to its efforts to reduce single occupancy vehicle (SOV) use. Try Transit Week was launched as a week-long event that encouraged the public to try alternatives to their SOV. Ms. Arzt developed the brand identity so that is stood on its own but could also be co-branded with regional transportation providers who participate in the program. For five years, Ms. Arzt managed the development of all creative materials including website design and development, print and internet advertising, all writing and visitor tracking.

VDOT I-66 Multimodal Study. Ms. Arzt led the design and creation of a consensus building study identifier and website, creating a resource for citizens to find important study information and provide their feedback. The website has given the community a place where their ideas and opinions have been documented by VDOT. All of the suggestions will be considered and many will be incorporated into the final recommendations. Ms. Arzt has also been vital in the creation the factsheets, designing the layout, and developing all the graphics such as tables, charts, and photographic images.

MICHAEL A. KENNEY, CIH

TRANSPORTATION AIR QUALITY SPECIALIST

Firm Name: KB Environmental.

Years of Experience: 32

Education

B.A., Environmental Science, University of Maine

M.S., Environmental Engineering Sciences, University of Florida

Professional Affiliations

Certified Industrial Hygienist

Certified Hazardous Materials Manager

Qualified Environmental Professional

Mr. Kenney's responsibilities include project management as well as hands-on technical involvement with a variety of assignments associated with transportation-related air quality, greenhouse gas/climate change and hazmat issues. He also has considerable experience with regulatory agency coordination and environmental analyses under the National Environmental Policy Act. Sample project experience includes the following:

South Jersey Transportation Planning Organization (SJTPO) Regional Greenhouse Gas (GHG) Emissions Inventory. Involved in the preparation of the GHG emissions inventories for transportation-related sources (i.e., motor vehicles, aircraft, off-road equipment) for this region-wide assessment.

Puerto Rico Department of Highways & Transportation, Transportation Conformity Determination. Project manager for Transportation Conformity Determination for the San Juan Metropolitan Area Transportation Plan. Involved emission inventory and dispersion modeling of PM-10, development of mitigation measures and extensive agency coordination.

Federal Aviation Administration (FAA) Airport Air Quality Handbook. Project Manager for the development of this new resource designed to provide FAA staff, airports and other stakeholders with guidance on assessing aviation-related air quality. This includes (but is not limited to) emissions inventories, atmospheric dispersion modeling, mitigation measures, agency coordination and General/Transportation Conformity.

MDOT US 31, Allegon / Ottawa / Muskegon Counties, Michigan - Performed "CO hot-spot" air dispersion analyses for select worst case conditions along project corridor, presentation of results and preparation of technical memorandum.

I-4 PD&E Study, Osceola, Orange, Seminole and Volusia Counties, Florida. Responsible for air quality studies for this 43-mile Project Development and Environmental study on I-4 from SR 528 in Orange County to east of SR 472 in Volusia County.

I-75 Multimodal Master Plan, Southwest Florida. Responsible for air quality studies for a multimodal master plan for this 125 miles of I-75 from the I-275 interchange in Manatee County south to Alligator Alley in Collier County. Involved multimodal travel demand modeling, traffic operations analyses, alternative concept designs, multimodal evaluations (including high-speed rail) and an extensive public involvement and agency coordination program.

Project Support Staff

The following table illustrates additional project staff available to begin work on this contract immediately.

Staff	Firm	Role/ Category	Years of Experience	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Ying-Tzu Chung	Baker	Air Quality Specialist	14				X			
Rob d'Abadie	Baker	Sr. Planner	21				X		X	
Bill Thomas	Baker	Sr. Travel Demand Modeler	28			X	X			
Robyn Hartz	Baker	Air Quality Specialist	17				X		X	
Chris Read	PMC	Sr. Planner	5		X		X	X		X
Eli Krispi	PMC	Associate Planner	3		X	X	X	X	X	X
Erica Wygonik	RSG	Sr. Model Analyst (EERPAT)	10		X	X	X		X	X
Eric Talbot	RSG	Model Analyst (EERPAT)	5			X	X	X	X	
Haiyun Lin	RSG	Model Analyst (EERPAT)	3			X	X	X	X	
L. Carrol Fowler	KBE	Sr. Air Quality Specialist	32		X	X	X	X		X
Charise Geiling	S&Co	Communication Specialist	21		X	X	X			X
Shelley Johnson	S&Co	Assistant Planner	8		X		X			X

Chapter 2: Scope of Work

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Project Understanding

INTRODUCTION

The Metropolitan Council of Governments (COG) has taken important first steps toward mitigating greenhouse gas (GHG) emissions and preparing for the impacts of climate change in the National Capital Region. Local governments in the metropolitan Washington region lead the nation in adopting programs that reduce their communities' contributions to climate change. By enacting cost effective measures that promote GHG reductions, local governments can play a key role in addressing climate change.

In 2008, COG developed the National Capital Region Climate Change Report, which formally identified the need for the region to address climate change and established a 2050, "business as usual" (BAU) GHG forecast. The report also established regional targets and identified potential mitigation strategies. The Climate, Energy and Environment Policy Committee (CEEPC) was created in 2009 to implement the 2008 Climate Change Report and developed a 2013-2016 Climate Action Plan, which reaffirmed the 2020 regional GHG reduction goal and reported on the status of implementation actions. In 2014, the Multi-Sector Working Group was created to identify implementable, local, regional and state actions within the transportation, land use, energy and built environment sectors.

As the next step in the effort to address climate change, COG requires a customized approach to finalizing GHG reduction strategies and quantifying their impacts. The Baker team will apply proven expertise, current research, and our suite of analysis tools to tailor the best possible analysis for the region, rather than relying on a rote list of potential strategies and analysis methodologies, or a one-size-fits-all approach. Our suite of tools will enable us to use the most up-to-date local data and models to analyze the GHG impacts of the chosen strategies and identify strategy costs, optimal implementation timeframes and co-benefits of the strategies, such as their impacts on criteria pollutant emissions and congestion.

Michael Baker Jr., Inc. (Baker) has been at the forefront of delivering climate change expertise through technical and policy support to state, regional and local clients. We are a recognized leader in climate change planning activities for promoting sustainable growth alternatives, developing baseline and forecast emissions inventories, mitigation and adaptation to vulnerabilities and risks, and developing policy goals and options in close collaboration with our clients and their stakeholders. Our Transportation and Air Quality practice specializes in applying an array of tools from the transportation planning, engineering and air quality professions to effectively meet climate change and air quality challenges. We focus on solving immediate challenges and creating plans and processes to meet COG's current and future needs. Our team is organized with nationally recognized climate change experts ready to perform multiple wide-ranging analyses efficiently and accurately with quantifiable results.

Baker has been at the forefront of Clean Air and reducing Greenhouse Gas Emissions projects for Over 20 Years

The hallmarks of Baker's approach are assisting clients in policy development, using the most up-to-date analytical tools and models, navigating through regulations and policy guidance, and maintaining consistency with client needs and goals. The Baker team has employed multiple techniques and expert modeling capabilities for estimating GHG emissions with MOVES, EPA inventory tools (the National Mobile Inventory Model (NMIM) and State Inventory Tool (SIT)), the Energy and Emissions Policy Analysis Tool (EERPAT), International Council for Local Environmental Initiatives (ICLEI) tools, and other planning tools to produce inventories, evaluate emissions reduction strategies, and address implementation challenges and financial and cost effectiveness constraints.

LOCAL KNOWLEDGE

Our team has been providing support in the COG region for decades. The Baker team has established sound working relationships with COG. In addition, we have worked closely with members of COG's DTB and MWAQ, and the state transportation and environmental agencies from the District of Columbia, Virginia and Maryland. We understand the MPO's challenges related to developing multi-sector GHG analyses and are familiar with local data and models, including the latest version of the regional travel demand forecasting model, which Baker has in-house and EPA's latest emissions model MOVES2014. The Baker team is ready to hit the ground running.

PROVEN TECHNICAL EXPERTISE

The Baker team represents the full spectrum of required services and has extensive experience in providing the technical analyses required in all areas of climate change planning. **Led by Ms. Colleen Turner as the team's Project Manager**, the Baker team has key staff specializing in each sector. **Mr. Daniel Szekeres** will act as a key technical advisor and will oversee strategic issues, analysis and provide quality control / assurance. The Baker team includes PMC, a division of Baker led by **Ms. Tammy Seale**, which boasts award-winning work in sustainability and climate change with the development of energy and built environmental planning tools; and, Resource Systems Group (RSG) led by **Mr. Robert Chamberlin** a national leader in the development of innovative transportation and land use climate change analysis tools. Our team also includes Sharp & Company, an award-winning, local, disadvantaged business enterprise (DBE) specializing in meeting facilitation and professional document development; and KB Environmental (KBE) a certified DBE specializing in air quality and climate change analyses.

The Baker team understands the need to implement a refined approach that will streamline the multi-sector working group meetings (MSWG), the MSWG review, and assist COG staff in presenting the results of the analysis to the appropriate committees including The National Capital Transportation Planning Board (TPB), the Metropolitan Washington Air Quality Committee (MWAQC), the Climate, Energy and Environment Policy Committee (CEEPC) and the COG Board. With our close proximity to COG, we are readily available to provide assistance and technical expertise with timely, cost-effective, and high quality results.

Scope of Work

TASK 1. DETAILED BAKER WORK PLAN AND SCHEDULE

Background and Approach

A detailed project implementation schedule is included in Chapter 3 of this proposal and, per the RFP instructions, it identifies the timeframes to undertake all of the tasks (Tasks 1 through 7) as well as any key product / deliverable due dates. The Baker team's personnel commitments are included in the price proposal in terms of hours per task and total hours. The price proposal / work plan includes an estimate of the total number of hours each team member will spend on this project by task. The work plan further delineates the percent of the budget and hours that will be spent on each task in order to complete the project.

Under Task 1, the Baker team's Project Manager will work closely with the Project Director to review the details of the Baker team's work plan and schedule. It is our goal to ensure that COG fully understands the intentions and activities of the Baker team, while remaining flexible to satisfy the expedited schedule of the project.

Products and Estimated Delivery Dates*

The Baker team will deliver the following productions under Task 1:

1. Finalized project work plan and schedule (March 27, 2015) – All documents will be delivered electronically.

**All products / deliverable / meeting dates are draft and are contingent upon the timely receipt of a notice to proceed (see estimated date in Chapter 3), the finalized implementation schedule developed under this task (Task 1), and any unforeseen, client scheduling conflicts.*

TASK 2. MEETINGS WITH EACH MSWG SECTOR SUBGROUP

Background

In December 2014, MWAQ and TPB affirmed the Region's GHG reduction goals adopted by COG and committed staff and resources to support the MSWG convened by COG. The MSWG established three Sector Subgroups (Land Use, Transportation, and Energy/Environment al) to identify implementable local, regional and state actions in four sectors (Energy, Transportation, Land Use, and the Built Environment), to quantify benefits, costs, co-benefits, and implementation timeframes, and to consider exploration of GHG reduction goals, measures and/or targets for all sectors.

The Sector Subgroups were scheduled to meet for the first time in February 2015, with subsequent meetings in March and beyond as needed. The groups were tasked with:

1. Identifying an initial set of GHG reduction strategies that they consider viable in the short-term and longer term.

2. Identifying "stretch" GHG reduction strategies. Stretch strategies are defined as strategies that are not currently viable, but could be viable in the future if policy, regulatory or investment changes were made.

Approach

The Baker team will meet with each of the three (3) Sector Subgroups two (2) times each under this task for a total of six (6) meetings. The COG Project Director will provide the Baker team with the initial list of strategies developed by the Sector Subgroups by sector (Land Use, Transportation, Energy, and the Built Environment) as soon as possible following the notice to proceed. The Baker team understands that the schedule is very tight in terms of fulfilling all of the requirements of Task 2 in time to brief the full MSWG on May 8, 2015 (under Task 3). The team will conduct an expedited review of the initial list of strategies and a preliminary, existing conditions assessment, and schedule the first round of meetings with Sector Subgroups in a timely manner.

Existing Conditions

Prior to meeting with each Sector Subgroup, the Project Team will confirm its understanding of the existing conditions and implementation capacities through a review of relevant, regional plans and programs. The regional plans include, but are not limited to, the Region Forward Compact, the Climate Energy and Environment Policy Committee Final 2013-2016 Action Plan, the National Capital Region Climate Change Report, greenhouse gas emissions inventories and forecasts, and supporting materials.

The objective of the existing conditions and capacity assessment will be to understand and existing conditions for development of local goals and plans and/or implementation of programs and projects to achieve GHG reduction in the identified sectors. The review would allow for the project team to understand what has been accomplished, is planned, or is in progress. This step will inform development and quantification of draft and final strategies. Recommendations for new strategies will be based on status of existing activities, previous plans, best practices, and input from the Subgroups.

The Baker team will provide COG with a questionnaire for distribution and completion by participating Sector Subgroup members. The questionnaire will ask for the presence/absence of types or categories of goals, policies, programs or strategies, identification of links to strategies, and request additional information to support identification of interests, opportunities and barriers to implementation of similar strategies. The identified categories will be based on the existing regional plan(s) and best practices for local government GHG reductions in the energy, built environment, transportation and land use sectors.

First Round of Meetings

The first round of meetings will follow the review of initial strategies and the preliminary existing conditions assessment. The project team will meet with the Sector Subgroups and discuss existing strategies and any opportunities or barriers to adding new strategies for consideration. The Baker team will provide handouts and links in advance of the meeting to facilitate strategy evaluation. The Baker team will guide the discussion on additional strategies based on our local knowledge and our experience with developing mitigation strategies for clients across the nation. During the meeting, the project team has the option to use polling activities to assess the interest of the Subgroups. For each strategy or category, the project team will poll the Subgroups for a preliminary feasibility, or reality check. Strategies that pass the Committee's check will be retained for further refinement. Strategies with uncertainty will be elevated for discussion to confirm questions, concerns, considerations, and opportunities for additional research, refinement and deliberation in subsequent meetings. The Baker team will facilitate discussions on potential analysis methodologies, provide suggestions for grouping strategies to maximize potential benefits, and priorities with respect to costs, implementation schedule, emission benefits, co-benefits, etc.

Technical Memorandum

Before the second Sector Subgroup meetings, the Baker team will prepare a Technical Memorandum for each Sector Subgroup (Land Use, Transportation, and Energy/Environmental Sector), recommending a prioritized list of the strategies to be analyzed for each sector based on a qualitative assessment of these strategies. The Baker team will use the outcomes of the MSWG meetings, findings from the GHG inventory and forecasts, and its comprehensive knowledge of existing best practices to recommend appropriate, innovative, feasible, and effective GHG reduction strategies. These strategies will provide a plan of action that would allow COG to meet GHG emissions reduction targets and demonstrate progress toward objectives.

Second Round of Meetings

During the second round of Sector Subgroup meetings, the Baker team will discuss the prioritized list of strategies within each sector, and seek consensus, with members of each Sector Subgroup on a list of the most effectual strategies to be analyzed in greater detail under Task 4.

Related Experience

The Baker team has worked with local, regional and state governments to develop distinctive GHG reduction strategies based on diverse stakeholder input. We have helped states such as Maryland and Pennsylvania establish broad working groups ensuring cross-sectional representation among State, regional, and local agencies. While developing the Maryland Department of Transportation (MDOT) Climate Action Implementation Plan, the Baker team assisted in facilitating working group meetings with over 50 individual participants from 19 different agencies to develop over 70 strategies that were summarized and ranked based on criteria such as implementation timeframe, GHG reduction potential, implementation cost, and strategy prioritization. We were able to work with multi-sector stakeholders to narrow the list of 72 strategies down to 57, which were determined to be critical or important and, finally, to 44 which were capable of implementation within the plan's timeframe.

- ✓ *Knowledge / Experience Evaluating a Wide Range of GHG Reductions*
- ✓ *Demonstrated Ability to Facilitate Consensus*

Baker team members have prepared more than 50 sustainability, climate and energy action plans, including regional plans, state plans, transportation climate action plans, and plans that address multi-sector emissions at the corridor level. These plans have involved every aspect of the planning process including evaluating a wide range of GHG reductions in the Land Use, Transportation, Energy and the Built Environment sectors. In addition, the project team has assisted with implementation of GHG reduction programs and understands common challenges, barriers and opportunities for effective development of measurable strategies and outcomes.

Products and Estimated Delivery Dates*

1. First Round of Sector Subgroup Meetings (by April 2, 2015) – This will entail one (1) meeting for each of the three (3) subgroups (Transportation, Land Use, Energy/Environmental).
2. Prepare Technical Memorandums (April 15, 2015) – For each of the three (3) subgroups recommending a prioritized list of strategies. These memorandums will be delivered electronically to the Project Director.
3. Second Round of Sector Subgroup Meetings (by April 23, 2015) – This will entail one (1) meeting for each of the three (3) subgroups (Transportation, Land Use, Energy/Environmental).

**All products / deliverable / meeting dates are draft and are contingent upon the timely receipt of a notice to proceed (see estimated date in Chapter 3), the finalized implementation schedule developed under Task 1, and any unforeseen, client scheduling conflicts.*

TASK 3. PRESENTATION OF GHG REDUCTION STRATEGIES FOR ANALYSIS TO MSWG

Background and Approach

After the meetings with each Sector Subgroup in Task 2, the Baker will prepare a draft Technical Memorandum on the combined list of strategies and the methodologies to be used to analyze these strategies. Where appropriate, the Technical Memorandum will highlight decision points, such as cost, implementation timeframe / ease of implementation, co-benefits / synergies between strategies, etc., that impacted the selection and prioritization of strategies. The Baker team will present and discuss the recommended strategies for detailed analysis with the full MSWG. During the MSWG meeting, the members will have the opportunity to comment on all of the recommended strategies for analysis regardless of the Subsector they represent. They will also have the opportunity to suggest additions or modifications to the recommended list of strategies; identifying synergies among the strategies recommended in different Sectors. Following the full MSWG meeting, the Baker team will make any necessary edits to the draft Technical Memorandum and document the final list of strategies to be analyzed as well as the analysis methodologies.

Related Experience

EERPAT

✓ *Experience Developing Strong Methodologies and Analytical Tools*

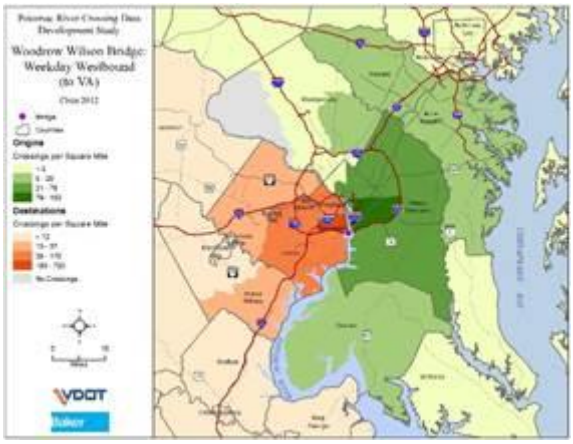
In 2012 the U.S. Department of Transportation-Federal Highway Agency (FHWA) contracted with RSG to pilot test EERPAT with State Departments of Transportation.

In the course of the pilot testing, which concluded in November 2014, RSG enhanced the model by developing a Graphical User Interface to improve is usability. RSG consulted extensively with State DOT staff on developing input data sets and output reports, and on devising policy approaches for achieving greenhouse gas reduction targets.

EERPAT enables a comprehensive policy analysis of the surface transportation sector for analyzing the effects of GHG reduction policies. EERPAT estimates the amount of travel (in terms of vehicle miles traveled) and the resulting GHG emissions, including fuel use (and electricity use for battery charging) by autos, light trucks, transit vehicles, and heavy trucks. EERPAT's GHG estimates reflect "pump to wheels" GHG emissions, including GHG emissions associated with electric vehicle charging.

MOVES / PPSUITE / CENTRAL

Baker has significant experience with the integration of travel data to air quality calculations. Baker utilizes the PPSUITE post processing software for GHG and conformity analyses. The software has been used for GHG inventory and criteria pollutant inventories and conformity submissions in Maryland, Pennsylvania, Virginia, New Jersey, Louisiana and New York. Baker has worked closely in the development of the software and with the software creators. The post processing software is used to calculate roadway speeds, adjust VMT to annual conditions, and apply the MOVES emission factors to produce total emissions. Baker also uses the CENTRAL batch software system to assist in running air quality steps. This software was developed to provide an important quality assurance step when running the process for multiple years and scenarios, and speeds up the analysis process.



MWCOG/NCRTPB Travel Demand Model

The Baker Team has the most recent version of the TPB travel demand model in-house and has used it for the Potomac River Crossing Study and other studies including the Long Bridge Study, Corridor Cities Transitway and the Virginia Megaprojects. Baker has applied the model to various projects including the evaluation of regional travel patterns, the analysis of enhanced and new transit service, as well as HOT/HOV lane analysis and traffic impact studies. We have a thorough understanding of the model process as well as the land use forecasts and transportation networks used for input, and the travel data by mode and time of day provided as output.

Products and Estimated Delivery Dates*

1. Draft Technical Memo on Recommended Strategies for Detailed Analysis (by May 4, 2015) – This Memo will detail the combined list of strategies resulting from the Sector Subgroup Meetings under Task 2 and will include suggested methodologies to analyze those strategies. The memo will be delivered electronically.
2. Presentation of Draft GHG Reduction Strategies for Analysis to the Full MSWG (May 8, 2015)
3. Final Technical Memorandum on Recommended Strategies for Detailed Analysis (by May 22, 2015) – This Memo will include any necessary revisions to the draft Memo as a result of the full MSWG meeting and will be delivered electronically.

**All products / deliverable / meeting dates are draft and are contingent upon the timely receipt of a notice to proceed (see estimated date in Chapter 3), the finalized implementation schedule developed under Task 1, and any unforeseen, client scheduling conflicts.*

TASK 4. ANALYZE SELECTED STRATEGIES

Background

In this task the Baker team will identify the implementation approaches and time frames for each selected strategy finalized under Task 3and quantify the cumulative GHG reductions, costs and co-benefits (including reductions in air quality criteria pollutants and congestion) attributable to each strategy. The quantification of these benefits and costs will be summarized for the 2012 to 2020, the 2020 to 2040, and the 2040 to 2050 time periods. The Baker team will document the results of this analysis in a Technical Memorandum and provide COG with all data, models, and other analytical tools used to perform the analysis of each strategy.

Approach

The Baker team will provide estimated GHG reduction potential for the 2012 to 2020, the 2020 to 2040, and the 2040 to 2050 time periods in addition to co-benefits and potential costs and benefits. GHG emission reductions will be presented for each measure and cumulatively in $MTCO_2e$ (metric tons of carbon dioxide equivalent) and with applicable activity data. The quantitative analysis will also include assumptions and key indicators. Cost or savings will be expressed in dollar amounts per $MTCO_2e$. In addition, the project team will provide implementation details as applicable. Strategies may be bundled for quantification as appropriate, either when multiple strategies are anticipated to achieve a measurable goal and target and the participation rate for each strategy is uncertainty or dependent on factors that are not known during the project timeframe or outside of the control or influence of COG and/or its member agencies.

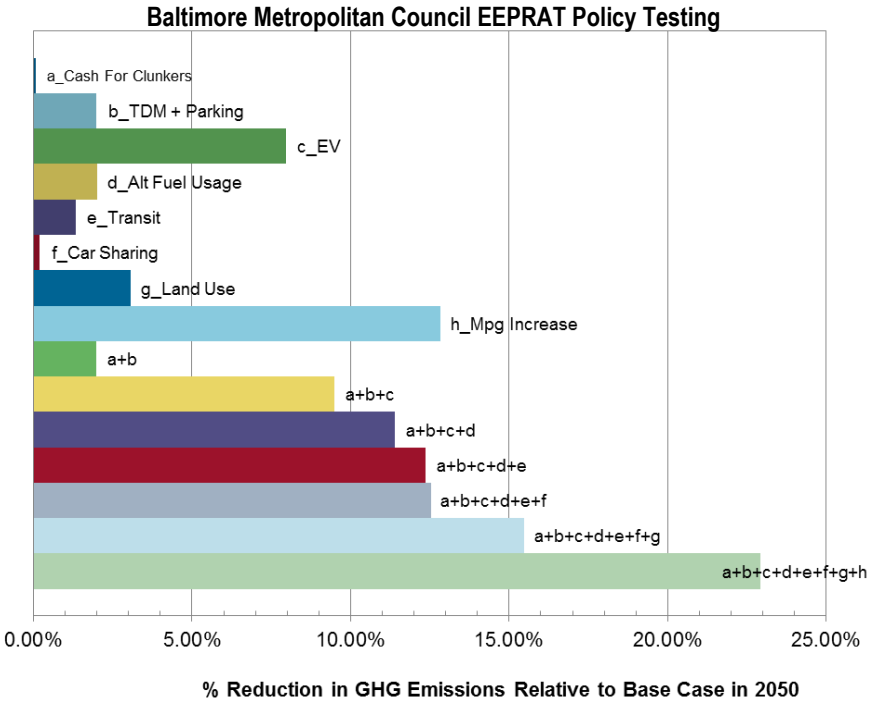
EERPAT Analysis Capabilities

- ✓ Changes in population demographics
- ✓ Changes in personal income
- ✓ Metropolitan, other urban & rural area development
- ✓ Metropolitan, other urban, & rural area densities
- ✓ Urban form
- ✓ Transportation supply
- ✓ Vehicle fleet characteristics
- ✓ Vehicle technologies
- ✓ Alternative fuels
- ✓ Carbon intensity of fuels
- ✓ Pricing
- ✓ Travel demand management
- ✓ Traffic ops/ITS
- ✓ Vehicle operation & maintenance

Transportation and Land Use

The EERPAT tool, developed by RSG, is ideal for analyzing transportation and land use sector GHG reduction strategies and synergies that exist between those strategies. EERPAT estimates the amount of travel (in terms of vehicle miles traveled) and the resulting GHG emissions, including fuel use (and electricity use for battery charging) by autos, light trucks, transit vehicles, and heavy trucks. EERPAT's GHG estimates reflect "pump to wheels" GHG emissions, including GHG emissions associated with electric vehicle charging.

In coordination with the Baltimore Metropolitan Council, RSG tested EERPAT for use in the BMC's "How Far Can We Get" initiative. The EERPAT tool has shown itself to be flexible to address metropolitan applications. The input data sets, processing, and reporting are all adaptable to the metropolitan level.



Addressing transportation-sector and land use GHG emissions is extremely challenging. Some of the most effective policies, for example, fleet efficiency standards (i.e. CAFE standards and the Phase 2 Heavy Duty Vehicle Standards to be announced), are the province of federal initiatives, as opposed to state or regional initiatives. Nevertheless, state and/or regional policies can be fashioned to accelerate or incentivize the purchase of new, fuel efficient vehicles or the use of low carbon fuels.

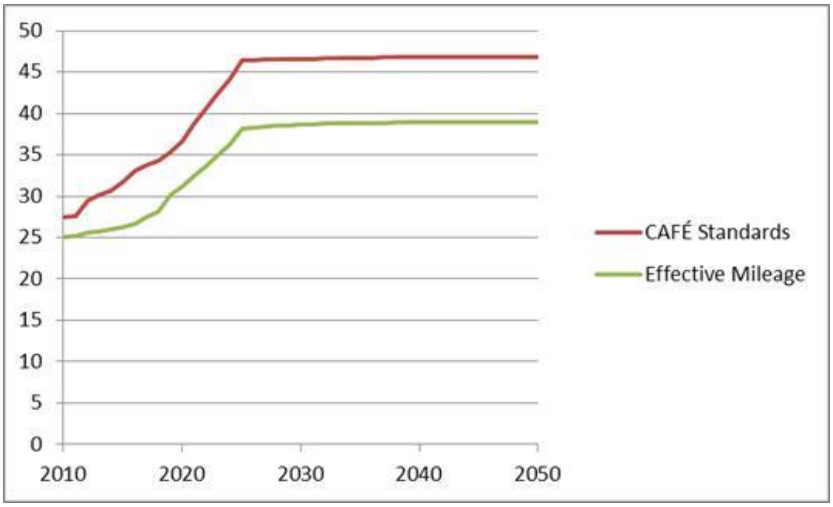
In our meetings with the Transportation Sector Subgroup (under Task 2) we will bring special attention to the GHG emissions associated with commercial vehicles and heavy duty vehicles. With the anticipated significant growth in freight movements nationally, this component of transportation GHG emissions is projected to grow relative to light duty vehicle emissions.

The table below provides an array of the policies that can be discussed for addressing transportation and land use GHG emissions, and also quantitatively tested using EERPAT.

Technology	Alternative Fuels (light duty, commercial, and heavy duty)	Land Use	Pricing	Transportation Supply
Battery Electric Vehicles	Low Sulfur Diesel	Smart growth initiatives	Gasoline Price and Taxes	Expansion of Arterial and Freeway Capacity
Hybrid, Plug-In Hybrid Vehicles	Bio-Diesel	Mixed use development	Road User Fee, VMT Charge	Expansion of Transit Capacity
EV, PHEV Vehicle Range	E80, E85 (ethanol)	Urban population density	Congestion Charges	Expansion of Non-Motorized Facilities
CAFE Standards	CNG/LNG		Pay As You Drive Insurance	Travel Demand Management
Phase I and II Heavy Duty Vehicle Standards			Carbon Taxes	Transportation Supply Management
			Parking Pricing	Carsharing

There are many nuances to this process that increase the challenge of reducing transportation GHGs. The Baker Team would bring an understanding of these nuances to the Sector Subgroups for discussion. As an example, "sticker" fuel economy numbers for new vehicles have been shown to be consistently high by motorists who are experiencing 10-25 percent lower fuel economy than advertised. A host of factors cause the fuel economy of new vehicles to be higher, including impacts of heating/air conditioning, erratic driving, congestion effects and other impacts. The chart below, adapted from the Department of Energy Annual Energy Outlook, shows the discrepancy between the light duty fuel efficiency standards (Phase 1 and Phase 2) and the actual effective mileage experienced by owners of new vehicles.

Light Duty Vehicle MPG comparison, CAFE Standards Versus Actual (Effective) Mileage



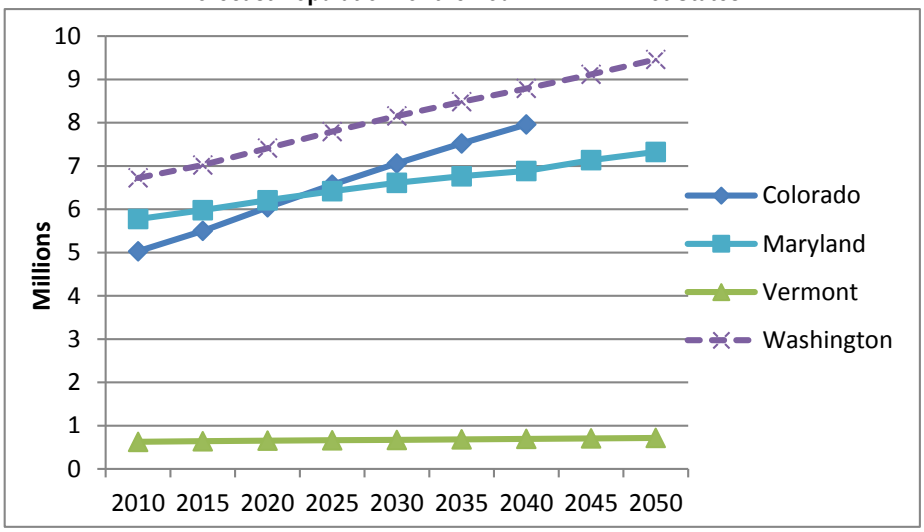
In analyzing GHG reduction strategies under this task, it is important to understand issues such as these so that a more accurate estimate of GHG reduction response can be obtained.

The Baker team will begin the analysis process by developing the necessary data sets to build and calibrate the EERPAT model for the COG region. There are three key drivers of VMT and GHG emissions that combine to determine a future "Base Case" or "Business As Usual" scenario. These key drivers are:

1. Population growth;
2. Income growth;
3. Changes in average fuel efficiency.

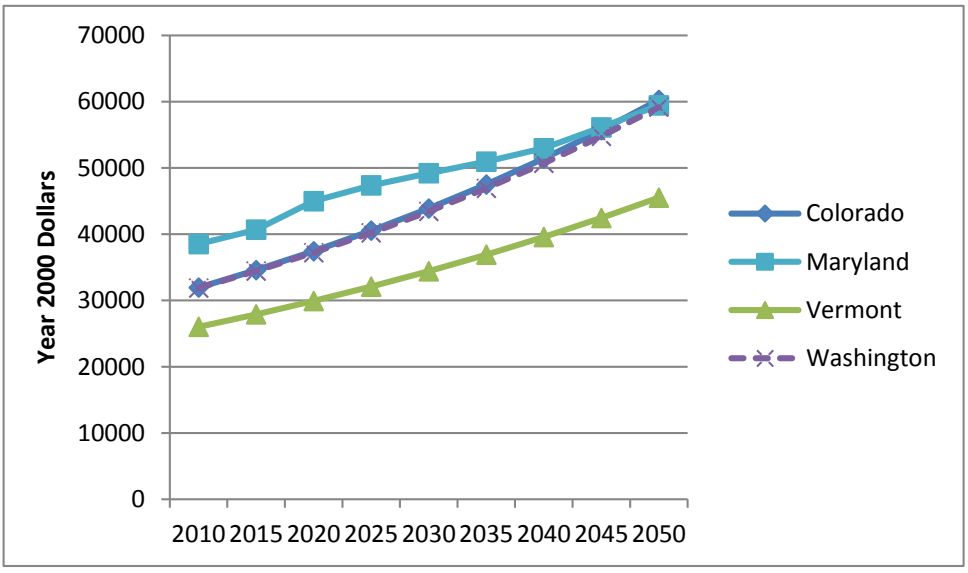
Population is a key driver of travel demand, VMT, and, consequently, GHG emissions. The figure below shows the population change forecast for each of the EERPAT pilot states. All states are projecting increases in overall population, with Washington and Colorado projecting more rapid growth over the forecast horizon.

Forecast Population for the Four EERPAT Pilot States



Another fundamental driver of travel demand within the EERPAT model is per capita income. The figure below shows the forecast change in real per capita income for the four pilot states, in 2000 dollars.

Forecast Per Capita Income for the Four pilot States



The per capita income projections are important as they ultimately lead to the creation of a "household budget" that affects household response to policy initiatives. For example income has multiple impacts on household travel behavior and policy sensitivity:

- Vehicle ownership per household;
- Potential for trips to be diverted to transit and/or non-motorized modes;
- Probability that a household will have an automobile or light truck;
- Vehicle age;
- Plug-in hybrid and electric vehicle usage.

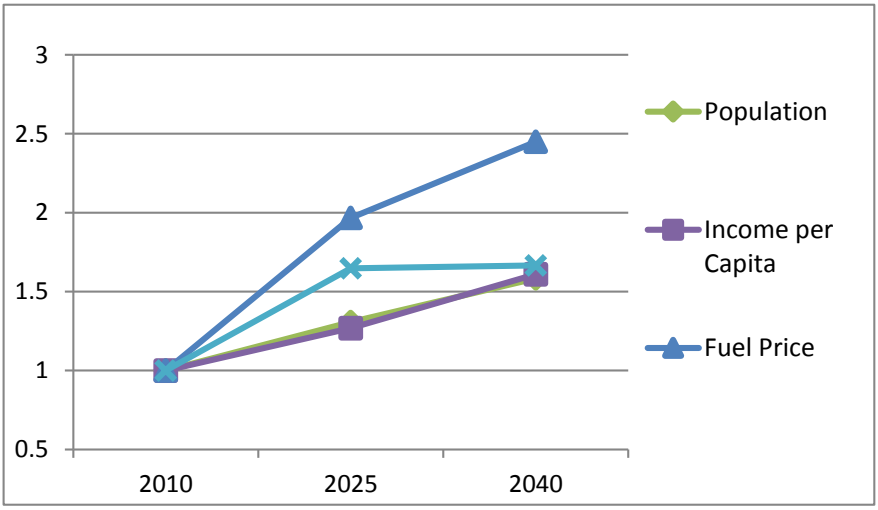
All else equal, higher income will cause higher VMT, causing GHG emissions to increase. Higher incomes also have the effect of reducing household sensitivity to pricing policies. Offsetting these dynamics is the relationship where higher income households tend to own newer model vehicles, which are more fuel efficient.

A final driving force involves fuel economy standards for light-duty vehicles (automobiles and light trucks, including SUVs) and heavy duty vehicles. As discussed above, the CAFE standards establish average fleet mileage efficiencies for vehicles by model year. The CAFE standards provide an upper end for efficiency, with an "effective" fuel economy being a more accurate measure of efficiency. Nevertheless, the increase in average fuel efficiency will help reduce transportation GHG emissions over medium-term (2020-2035). However, higher fuel efficiency also lowers the overall cost of travel. Lower travel costs, all else equal, exert upward pressure on VMT.

Another important factor of note is the leveling off of fuel economy at the 2025 levels extending to 2050, which is a typical forecast horizon of an EERPAT model run. The reductions in GHG emissions experienced in the medium-term may be eventually overcome by the upward pressure on VMT and GHG created by higher population and income.

These dynamics can be seen in the figure below, from Colorado, which shows three factors putting upward pressure on VMT (and GHGs) – population growth, income growth, and increasing fuel efficiency; and one factor exerting downward pressure on VMT, which is the projected increase in gasoline prices (in constant 2005 dollars).

Trends in Factors Impacting VMT Growth (Colorado Example)



These three socio-economic and technology relationships are in effect in all Base Case (Business as Usual) and policy tests of the EERPAT model. These base conditions set the stage for assessing policy sensitivity and help explain, at least partly, the relative effectiveness of policies designed to reduce transportation GHG emissions.

While a broad range of policies can be tested using EERPAT, it is important to acknowledge the potential that the Transportation and Land Use Sector Subgroups will recommend strategies that will require additional analysis outside of the EERPAT model. The Baker team has the ability to run the regional travel demand model and MOVES. This capability will allow us to address additional policies, and to provide additional validation of results from the EERPAT model. In addition, the Baker Team maintains off-model, spreadsheet-based tools that can be used to evaluate transportation and land use strategies such as transit oriented development, mixed-use development, neighborhood center development, and complete streets programs. Land use and transportation sector measures that fall outside of the EERPAT model will be calculated in applicable reductions in energy use, vehicle miles traveled, and fuel use (at a

minimum) and converted to GHGs. All strategies are quantified following protocols that avoid double-counting of reductions toward the targets.

Energy and the Built Environment

The Baker team will estimate the GHG reduction potential of the strategies using vetted and transparent methods and data sources. Our GHG strategy decision support tool is based in Microsoft Excel. We engage with staff throughout the quantification process to ensure our approaches and tools are accessible and feasible. Our methods follow best practices for quantification of local government GHG reduction strategies. We will follow sectors, scopes, and protocols used in the regional and local GHG inventories and forecasts for consistency as appropriate. Strategies will be quantified based on participation rate and reduction assumptions that are informed by peer-reviewed case studies or research papers, best practices from similar processes and regions, and research and guidance from federal agencies. Energy strategies will be quantified in units of measurement appropriate to the measures, such as kilowatt hours of electricity or therms of natural gas, and then converted to GHGs ($MTCO_2e$) using applicable emissions factors.

Example (Not Exhaustive) Local Energy Efficiency Program Types:

- Street Lighting Energy Efficiency Retrofit and/or Upgrade Projects
- Energy Audits – requirements upon sale or similar programs
- Interior Lighting Upgrades
- Appliance Upgrade programs, focus on water heaters, heating and cooling systems, and clothes dryers
- Property Assessed Clean Energy (PACE) Bond-based Financing Program
- Energy Efficient Lease or Mortgage Programs
- Energy efficient building standards
- Energy use benchmarking program participation
- Water System, Water Treatment Energy Efficiency
- Waste Water Treatment Energy Efficiency, Plant Process Energy Optimization
- Wastewater Treatment Plant Equipment/ Collection System Upgrades (e.g. Speed Drives)
- Zero Net Energy Goals
- Urban Heat Island programs
- Shade Tree Planting

Example (Not Exhaustive) Local Renewable Energy Strategies (excluding measurable objectives)

- Renewable Energy Outreach Campaigns
- Renewable Energy Incentives – Permit Streamlining, Reduced Permitting Fees, Bulk Purchasing, Solar Districts, rebates, etc
- Property Assessed Clean Energy (PACE) Bond-based Financing Program
- Municipal Renewable Energy Generation Facilities (Solar, Wind, Bioenergy or other) – Location, size, and use
- Community-wide requirements or guidance to facilitate renewable energy installations in private sector – solar ready regulations, solar shading regulations, solar energy installations

As part of the decision support tool and quantification process, the project team would prepare a feasibility assessment that would allow a review of strategies for implementation and prioritization considerations. The project team will coordinate with staff to confirm evaluation criteria, which may include the timeframe for implementation, ease of implementation, potential costs, and co-benefits (direct and indirect). Exact criteria would be confirmed with the Sector Subgroups. The assessment compares potential GHG reduction of each strategy against one or more evaluation criteria and results in a low, medium, or high effectiveness of each strategy. The results will inform the Sector Subgroups and MSWG discussions of feasibility and prioritization. The Baker team will set-up the tool and confirm options for completion with COG.

The Baker team will document the results of the strategy analyses in a Technical Memorandum and provide COG with all data, models, and other analytical tools used to perform the analysis of each strategy.

Related Experience

Air Quality Off-Network Estimator

✓ *Experience Developing Sketch Planning Models & Other Tools*

Baker has developed the Air Quality Off-Network Estimator (AQONE) windows-based software analysis tool, which is used by multiple states and MPOs. This application provides the Baker Team with a unique, wide set of project analysis skills and a large collection of sample projects to draw from. AQONE is designed to evaluate the emissions reduction potential (for all criteria pollutants) of transportation projects that cannot be readily modeled with existing regional travel models or using traffic datasets. The 2014 update included a conversion to MOVES, a national review of analysis methodologies, and an expansion to include GHGs and MSATs. Appendices in the Users' Guide document all underlying calculations and summarize default data (local, state and MPO), providing a readily-available template.

Baker also maintains spreadsheets that replicate the calculations found in AQONE. Baker has continually supported several DOTs and MPOs with evaluations to support annual CMAQ reporting requirements, TERMS evaluations, RACM/BACT analyses, and similar studies and analyses. Baker has accumulated expertise in a full range of project air quality evaluations that employ MOVES, MOBILE, EMFAC, NONROAD, NMIN and multiple emission rate data sources (e.g., AP-42).

Additional Spreadsheet-Based Tools

Baker has developed a spreadsheet-based, sketch planning tool, the Maryland Smart Energy Communities Benefits Tracking Estimator to assist local governments with calculating the benefits of energy reduction measures, renewable energy generation, and petroleum consumption reduction measures. This tool calculates the benefits and costs of strategies in terms of energy reductions (gallons of fuel, kilowatt hours), GHG ($MTCO_2$) reductions, capital costs and cost savings based on region-specific data. The tool incorporates local data, such as detailed fleet performance, and energy costs for diesel fuel, conventional electricity, solar electricity.

As described above, the PMC GHG strategy decision support tool is based in Microsoft Excel and incorporates methods that follow best practices for quantification of local government GHG reduction strategies. Strategies are quantified based on participation rate and reduction assumptions that are informed by peer-reviewed case studies or research papers, best practices from similar processes and regions, and research and guidance from federal agencies. The assessment compares potential GHG reduction of each strategy against one or more evaluation criteria and results in a low, medium, or high effectiveness of each strategy.

Example of Co- Benefits of Local GHG Reduction Measures

Reduces Energy Use	Provides Community Savings	Improves Mobility	Provides Educational Opportunities	Adaptation Measure	Supports Local Economy	Conserves Water	Improves Public Health

Products and Estimated Delivery Dates*

1. Develop Draft Technical Memorandum (by June 25, 2015) – One (1) memorandum documenting the analysis of each strategy and the cumulative GHG reductions, costs and co-benefits summarized for the 2012-2020, 2020-2040 and 2040 to 2050 time periods. This memorandum will be delivered electronically.
2. Present Draft Technical Memorandum to each Sector Subgroup (by July 10, 2015) – This will entail one (1) meeting for each of the (3) subgroups.

**All products / deliverable / meeting dates are draft and are contingent upon the timely receipt of a notice to proceed (see estimated date in Chapter 3), the finalized implementation schedule developed under Task 1, and any unforeseen, client scheduling conflicts.*

TASK 5. PREPARE AND PRESENT INTERIM TECHNICAL REPORT

Background and Approach

After the presentation of the draft Technical Memorandum documenting the analysis of each strategy to each of the Sector Subgroups, the Baker team will present a draft Interim Technical Report to the full MSWG at their July 31, 2015 meeting. This draft Interim Technical Report will address the comments on the results of the strategy analysis received from each Subgroup in Task 4. Where there are disagreements on the results of the strategy analysis, the Baker team will attempt to facilitate consensus on revisions to the Interim Technical Report. If a complete consensus cannot be reached, the Baker team will incorporate the discussion of these areas of disagreements into draft final Interim Technical Report.

Presentations on the results of the GHG reduction strategy analysis will be made by COG staff to TPB, MWAQC, CEEPC and the COG Board in September 2015. The Baker team will assist COG staff in preparing these presentations, accompany COG staff to these presentations and participate in them as requested.

Products and Estimated Delivery Dates*

1. Incorporate Sector Subgroup Comments into the Draft Interim Technical Report (by July 24, 2015) – This document will be delivered electronically.
2. Present Draft Interim Technical Report to Full MSWG (on July 31, 2015)
3. As Requested, Assist with Preparing and Attend Presentations (in September 2015) – This will entail four (4) meetings to: 1.) TPB, 2.) MWAQC, 3.) CEEPC, 4.) and the COG Board

**All products / deliverable / meeting dates are draft and are contingent upon the timely receipt of a notice to proceed (see estimated date in Chapter 3), the finalized implementation schedule developed under Task 1, and any unforeseen, client scheduling conflicts.*

TASK 6. EXPLORE GHG GOALS AND TARGETS IN EACH SECTOR

Background and Approach

The Baker team will research and review, by sector, the range of GHG goals and targets that have been established in other metropolitan regions and describe the context in which these goals and targets have been established. Additionally, the Baker team will identify from the strategies analyzed for the MSWG a range of potential GHG reduction goals and targets for each Sector. This range of potential greenhouse gas goals and targets will be presented in three tiers:

(1) Achievable goals and targets based on currently viable, implementable strategies,
(2) "Stretch" goals and targets based strategies that could become viable in the future if certain changes were made in existing state and local regulations and future investments were made in them
(3) Goals and targets that would require action by other levels of government in each Sector in order to achieve the overall GHG reduction goals adopted by COG, if the achievable and stretch strategies identified at the state and local levels are insufficient to meet this overall goal.

The third tier of potential greenhouse gas goals and targets will require the Baker team to quantify some potential highly effectual national level greenhouse reduction strategies. Increasing the federal CAFE standards to 65 mpg in 2035 or national regulations for carbon sequestration of fossil fueled power plants, if this technology is deemed viable, are two examples of the type of federal level strategies that may need to be quantified in exploring third tier goals and targets. The Baker team will utilize the tools highlighted in Tasks 3 and 4 complete the analyses of these types of projects.

The Baker team will document this exploration of GHG goals and targets in a Technical Memorandum and present this memorandum to the full MSWG on September 25, 2015. The Baker team will respond to the comments received on this Technical Memorandum from the MSWG and address these comments in the Final Technical Report in Task 7.

Products and Estimated Delivery Dates*

1. Draft Technical Memorandum Documenting Exploration of GHG Goals and Targets to the Full MSWG (by September 4, 2015) – This memorandum will be delivered electronically.
2. Present Technical Memo Documenting Exploration of GHG goals and Targets to the Full MSWG (on September 25, 2015) – This will entail one (1) meeting of the Full MSWG

**All products / deliverable / meeting dates are draft and are contingent upon the timely receipt of a notice to proceed (see estimated date in Chapter 3), the finalized implementation schedule developed under Task 1, and any unforeseen, client scheduling conflicts.*

TASK 7. PREPARE AND PRESENT FINAL TECHNICAL REPORT

Background and Approach

The Baker team will prepare a Final Technical Report that incorporates the information developed from the exploration of GHG goals and targets in each sector (Task 6) with the analysis of the strategies analyzed and documented in the Interim Technical Report (Task 5). This Final Technical Report will also address the comments received at the September 25th MSWG meeting under Task 6. Products delivered under other tasks may be included in the Final Technical Report as appendix documents.

At the Project Director's request, the Baker team will also assist COG staff with preparing up to four (4) presentations and accompanying COG staff to these presentations, participating in them as requested. These presentations will be made to TPB, MWAQ, CEEPC, and the COG Board of Directors.

Products and Estimated Delivery Dates*

1. Prepare Final Technical Report (by November 20, 2015) – This document will incorporate the information developed and finalized under all previous tasks and will be delivered electronically. A CD/DVD including electronic copies of all draft and final reports, any presentations and all modeling results and data will be provided.
2. Assist with Preparing and Attend Presentations on the Final Technical Report – This may entail up to four (4) presentations as follows:
    a. TPB, estimated December, 2015;
    b. MWAQ, estimated December, 2015;
    c. CEEPC, estimated December, 2015 and
    d. COG Board, estimated January, 2016.

**All products / deliverable / meeting dates are draft and are contingent upon the timely receipt of a notice to proceed (see estimated date in Chapter 3), the finalized implementation schedule developed under Task 1, and any unforeseen, client scheduling conflicts.*

Chapter 3: Services, Pricing, and Schedule

Chapter 3. Services, Pricing & Schedule

The appended 11x17 foldouts include Baker's fixed price cost proposal and implementation schedule. Contractor personnel commitments are included in the price proposal in terms of hours per person, per task (Tasks 1 through 7) and total hours. The rates used in the price proposal represent fully loaded hourly rates. The price proposal also includes an estimate of other direct costs (ODCs) and further delineates the percent of the budget and hours that will be spent on each task in order to complete the project. The implementation schedule is illustrated in a separate table from the cost price proposal and identifies the estimated timeframes to undertake all of the tasks as well as any key product / deliverable due dates. The dates in the implementation schedule are subject to change and will be reviewed / edited under Task 1.

The Baker team's total estimated cost to complete this project is $294,833, with a DBE participation rate of 15 percent.

Price Proposal

* Indicates Key Personnel

Michael Baker Jr., Inc. (Baker), *a Company of Michael Baker International*					Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Employee	**Role / Category**	**Loaded Rates**	**Total Hours**	**Total Cost**	Finalize CONTRACTOR Work Plan & Schedule	Meet with Sector Subgroups & Review Proposed Strategies	Presentation of GHG Reduction Strategies for Analysis to MSWG	Draft & Final Tech. Memo on Recommended Strategies for Detailed Analysis	Prepare & Present Interim Technical Report	Explore GHG Goals and Targets in each Sector	Prepare & Present Final Technical Report
Colleen Turner*	Project Manager	$ 123.93	276	$ 34,204	16	32	40	40	60	40	48
Jim Frazier*	Sr. Air Quality Specialist	$ 178.70	118	$ 21,086	6	24	20	20	16	16	16
Dan Szekeres*	Technical Manager - Air Quality	$ 165.62	56	$ 9,275		8		32			16
Lorna Parkins*	Sr. Transportation Planner	$ 252.00	4	$ 1,008			2	2			
Eamon Geary*	Sustainable Design Coordinator	$ 77.62	100	$ 7,762		16	16	24	16	12	16
Ying-Tzu Chung	Air Quality Specialist	$ 105.73	40	$ 4,229				40			
Rob d'Abadie	Sr. Planner	$ 142.07	16	$ 2,273				8		8	
Bill Thomas	Sr. Travel Demand Modeler	$ 177.13	10	$ 1,771			4	6			
Robyn Hartz	Air Quality Specialist	$ 91.56	44	$ 4,029				24		20	
Hours by Task			**664**		**22**	**80**	**82**	**196**	**92**	**96**	**96**
Total Baker Labor Cost by Task				**$ 85,637**	**$ 3,055**	**$ 10,821**	**$ 10,985**	**$ 24,824**	**$ 11,537**	**$ 11,715**	**$ 12,699**
PMC, *a Company of Michael Baker International*					**Task 1**	**Task 2**	**Task 3**	**Task 4**	**Task 5**	**Task 6**	**Task 7**
Tammy Seale*	Dir. Sustainability	$ 190.00	118	$ 22,420	6	32	24	40	8	4	4
Xico Manarolla*	Sr. GHG Analyst	$ 115.00	100	$ 11,500				80		20	
Jennifer Venema*	Sr. Planner	$ 105.00	74	$ 7,770		8		50	8		8
Chris Read	Sr. Planner	$ 105.00	74	$ 7,770		8		50	8		8
Eli Krispi	Associate Planner	$ 95.00	268	$ 25,460		16	24	160	24	20	24
Hours by Task			**634**	$ -	**6**	**64**	**48**	**380**	**48**	**44**	**44**
Total PMC Labor Cost by Task				**$ 74,920**	**$ 1,140**	**$ 9,280**	**$ 6,840**	**$ 42,500**	**$ 5,480**	**$ 4,960**	**$ 4,720**
RSG					**Task 1**	**Task 2**	**Task 3**	**Task 4**	**Task 5**	**Task 6**	**Task 7**
Robert Chamberlin*	Model Lead (EERPAT)	$ 230.16	202	$ 46,492	6	24	32	60	24	24	32
Erica Wygonik	Sr. Model Analyst (EERPAT)	$ 150.34	80	$ 12,027		8	16	24		16	16
Eric Talbot	Model Analyst (EERPAT)	$ 104.70	116	$ 12,145			8	60	8	40	
Haiyun Lin	Model Analyst (EERPAT)	$ 99.80	140	$ 13,972			8	60	32	40	
Hours by Task			**538**		**6**	**32**	**64**	**204**	**64**	**120**	**48**
Total RSG Labor Cost by Task				**$ 84,637**	**$ 1,381**	**$ 6,727**	**$ 11,407**	**$ 29,688**	**$ 9,555**	**$ 16,109**	**$ 9,771**
KB Environmental					**Task 1**	**Task 2**	**Task 3**	**Task 4**	**Task 5**	**Task 6**	**Task 7**
Michael A. Kenney*	Project Manager	$ 168.92	60	$ 10,135		4	8	20	12		16
L. Carrol Fowler	Sr. Air Quality Specialist	$ 95.00	60	$ 5,700		4	10	20	16		10
Hours by Task			**120**		**0**	**8**	**18**	**40**	**28**	**0**	**26**
Total KB Environmental Labor Cost by Task				**$ 15,835**	**$ -**	**$ 1,056**	**$ 2,301**	**$ 5,278**	**$ 3,547**	**$ -**	**$ 3,653**
Sharp & Company					**Task 1**	**Task 2**	**Task 3**	**Task 4**	**Task 5**	**Task 6**	**Task 7**
Susan Sharp */ Mary Artz*	Project Manager	$ 212.04	54	$ 11,450		16	10	8			20
Charise Geiling	Communication Specialist	$ 133.59	80	$ 10,687		8	16	16			40
Shelley Johnson	Assistant Planner	$ 79.49	64	$ 5,087		8		16			40
Hours by Task			**198**		**0**	**32**	**26**	**40**	**0**	**0**	**100**
Total Sharp & Company Labor Cost by Task				**$ 27,225**	**$ -**	**$ 5,097**	**$ 4,258**	**$ 5,106**	**$ -**	**$ -**	**$ 12,764**
Other Direct Costs / Description		**Unit Cost**	**Units**	**Total Cost**	**Task 1**	**Task 2**	**Task 3**	**Task 4**	**Task 5**	**Task 6**	**Task 7**
Travel Baker		$ 20.00	14	$ 280.00	$ 40.00	$ 40.00	$ 40.00	$ 40.00	$ 40.00	$ 40.00	$ 40.00
Travel (RSG)		$ 500.00	4	$ 2,500.00		$ 1,000.00	$ 500.00		$ 500.00		$ 500.00
Lodging (RSG)		$ 150.00	8	$ 1,200.00		$ 600.00	$ 300.00				$ 300.00
Travel (PMC)		$ 1,000.00	2	$ 2,000.00		$ 1,000.00	$ 1,000.00				
Lodging (PMC)		$ 150.00	4	$ 600.00		$ 300.00	$ 300.00				
Other Direct Costs by Quarter				**$ 6,580.00**	**$ 40.00**	**$ 2,940.00**	**$ 2,140.00**	**$ 40.00**	**$ 540.00**	**$ 40.00**	**$ 840.00**
Total Cost			**2154**	**$ 294,833**							
DBE Precentage				***15%***							

Price Proposal (continued)

Project Budget Summary by Task								
Hours	**Task 1**	**Task 2**	**Task 3**	**Task 4**	**Task 5**	**Task 6**	**Task 7**	**Total**
Baker Hours by Task	22	80	82	196	92	96	96	664
PMC Hours by Task	6	64	48	380	48	44	44	634
RSG Hours by Task	6	32	64	204	64	120	48	538
KB Environmental Hours by Task	0	8	18	40	28	0	26	120
Sharp & Company Hours by Task	0	32	26	40	0	0	100	198
Total Hours by Task	**34**	**216**	**238**	**860**	**232**	**260**	**314**	2154
Percent Hours by Task	*2%*	*10%*	*11%*	*40%*	*11%*	*12%*	*15%*	100%
Costs								
Baker Cost by Task	$ 3,055	$ 10,821	$ 10,985	$ 24,824	$ 11,537	$ 11,715	$ 12,699	$ 85,637
PMC Cost by Task	$ 1,140	$ 9,280	$ 6,840	$ 42,500	$ 5,480	$ 4,960	$ 4,720	$ 74,920
RSG Cost by Task	$ 1,381	$ 6,727	$ 11,407	$ 29,688	$ 9,555	$ 16,109	$ 9,771	$ 84,637
KB Environmental Cost by Task	$ -	$ 1,056	$ 2,301	$ 5,278	$ 3,547	$ -	$ 3,653	$ 15,835
Sharp & Company Cost by Task	$ -	$ 5,097.28	$ 4,257.84	$ 5,105.60	$ -	$ -	$ 12,764.00	$ 27,225
Other Direct Costs	$ 40	$ 2,940	$ 2,140	$ 40	$ 540	$ 40	$ 840	$ 6,580
Total Cost by Task	**$ 5,616**	**$ 35,921**	**$ 37,931**	**$ 107,435**	**$ 30,659**	**$ 32,825**	**$ 44,447**	**$ 294,833**
Percent Cost by Task	*2%*	*12%*	*13%*	*36%*	*10%*	*11%*	*15%*	*100%*

Implementation Schedule

Task #	Task Description	March				April				May					June				July					August				September				October					November				December				January				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
		MAR 2-6	MAR 9-13	MAR 16-20	MAR 23-27	MAR/ APR 30-3	APR 6-10	APR 13-17	APR 20-24	APR/ MAY 27-1	MAY 4-8	MAY 11-15	MAY 18-22	MAY 25-29	JUN 1-5	JUN 8-12	JUN 15-19	JUN 22-26	JUN/ JUL 29-3	JUL 6-10	JUL 13-17	JUL 20-24	JUL 27-31	AUG 3-7	AUG 10-14	AUG 17-21	AUG 24-28	AUG/ SEP 31-4	SEP 7-11	SEP 14-18	SEP 21-25	SEP/ OCT 28-2	OCT 5-9	OCT 12-16	OCT 19-23	OCT 26-30	NOV 2-6	NOV 9-13	NOV 16-20	NOV 23-27	NOV/ DEC 30-4	DEC 7-11	DEC 14-18	DEC 21-25	DEC/ JAN 28-1	JAN 4-8	JAN 11-15	JAN 18-22	JAN 25-29
NA	*Scope of Work Submitted*	3/6																																														
NA	*Anticipated Notice to Proceed*			3/18																																												
NA	*Project Director will Provide Lists of Sector Subgroups' Potential GHG Reduction Strategies*				3/25																																											
1	**Finalize Contractor Work Plan and Schedule**																																															
1	*Finalized Contractor Work Plan & Schedule*				3/27																																										
2	**Meet with Sector Subgroups & Review Proposed Strategies**																																														
2	*1st Round of Meetings - Review List of Identified Strategies Already Defined by Sector Subgroups [3 Meetings - 1 per Sector Subgroup]*					by 4/2																																										
2	*Prepare Technical Memorandums for Each Subgroup Recommending a Prioritized List of Strategies*							4/15																																								
2	*2nd Round of Meetings- Discuss Prioritized List of Strategies & Choose Strategies for Further Analysis [3 Meetings - 1 per Sector Subgroup]*								by 4/23																																							
3	**Presentation of GHG Reduction Strategies for Analysis to MSWG**																																														
3	*Draft Technical Memo on Recommended Strategies for Detailed Analysis*									5/4																																						
3	*Presentation of Draft GHG Reduction Strategies for Analysis to Full MSWG*										5/8																																					
3	*Final Technical Memo on Recommended Strategies for Detailed Analysis*												5/22																																			
4	**Analyze Selected Strategies**																																														
4	*Develop Draft Technical Memo*																	6/25																															
4	*Present Draft Technical Memo to Each Sector Subgroup [3 Meetings - 1 per Sector Subgroup]*																			by 7/10																													
5	**Prepare & Present Interim Technical Report**																																															
5	*Incorporate Sector Subgroup Comments into Draft Interim Technical Report*																					7/24																												
5	*Present Draft Interim Technical Report to Full MSWG*																						7/31																										
5	*Assist with Preparing & Attend Presentations on the Results of GHG Reduction Strategy Analysis to TPB, MWAQ, CEEPC and the COG*																										Meeting Dates TBD																						
6	**Explore GHG Goals & Targets in each Sector**																																														
6	*Draft Technical Memo Documenting Exploration of GHG Goals and Targets to the Full MSWG*																										9/4																						
6	*Present Technical Memo Documenting Exploration of GHG Goals and Targets to the Full MSWG*																													9/25																			
7	**Prepare & Present Final Technical Report**																																														
7	*Prepare Final Technical Report*																																				11/20												
7	*Assist with Preparing & Attend Presentations on the Final Technical Report to TPB, MWAQ and CEEPC*																																								Meeting Dates TBD								
7	*Assist with Preparing & Attend Presentations on the Final Technical Report to the COG Board*																																											Meeting Date TBD				

Estimated Task Duration

XX/XX *Estimated Due Dates / Meeting Dates* · ***

**Meeting dates and product / deliverable dates are subject to change and will be reviewed / edited under Task 1.*

*** "by" indicates that all 3 Sector Subgroup meetings will be held on or before the identified date.*

Chapter 4: References

Chapter 4. References

Below please find the Baker Team's references whom COG may contact regarding similar work performed.

Michael Baker Jr., Inc.

1. Client
Maryland Department of Transportation
7201 Corporate Center Drive
P.O. Box 548
Hanover, MD 21076

Contact
Mr. Howard Simons
Air Quality Specialist
(410) 865-1296
hsimons@mdot.state.md.us

Project: Maryland Climate Action Plan and Implementation Support

Services: Under successive contracts with MDOT since 1998, Baker provided technical, programmatic expertise and policy support to the Office of Planning to support MDOT's efforts developing Maryland's Climate Action Plan (CAP) and implementation strategies to support the CAP. This included technical support to MDOT on the MD Climate Change Commission and Mitigation Work Group, reviewing potential transportation and land use (TLU) policy options.

Proposed key personnel included: Victor Siaurusaitis, Colleen Turner, Ying-Tzu Chung, Robert D'Abadie, James Frazier, Daniel Szekeres

2. Client
Pennsylvania Department of Transportation, Central Office
Commonwealth Keystone Building
400 North Street, 7th Floor
Harrisburg, PA 17120

Contact
Mr. Michael Baker
Section Manager
717-772-0796
michaelba@state.pa.us

Project: Greenhouse Gas Emission Reduction Expert Guidance and Technical and Programmatic Support

Services: Baker provided technical, programmatic, logistical, and organizational support to the client and the Governor's Climate Change Advisory Committee (CCAC) for the development of strategies to reduce greenhouse gas emissions. Baker's services were provided under an omnibus contract with the client. The Pennsylvania Department of Environmental Protection (PADEP) managed the overall CCAC effort.

Proposed key personnel included: Victor Siaurusaitis, Colleen Turner, Ying-Tzu Chung, Robert D'Abadie, James Frazier, Lorna Parkins, Avinash Sinha, Daniel Szekeres

3. Client
Virginia Department of Transportation
Transportation and Mobility Planning Division
1401 East Broad Street
Richmond, VA 23219

Contact
Mr. James Ponticello
Air Quality Program Manager
(804) 371-6769
Jim.Ponticello@VDOT.Virginia.gov

Project: Air Quality Analysis and Related Services On-Call Agreement

Services: Baker is providing project-level air quality technical support for particulate matter, carbon monoxide, and mobile source air toxics in support of environmental evaluations and to meet regulatory requirements. Baker's services include emissions and air quality modeling, air quality policy and regulatory interpretation and response, travel demand modeling, traffic operations and microsimulation, stakeholder and public outreach, and computer-aided drafting and design and geographic information system support.

Proposed key personnel included: Ying-Tzu Chung, Robert D'Abadie, Lorna Parkins, Robyn Hartz

PMC

1. **Client**
Western Riverside Council of Governments
4080 Lemon Street
Riverside, CA 92501

Contact
Ms. Alexa Washburn
Program Manager
(949) 394-7996
washburn@wrcog.cog.ca.us

Project: WRCOG Subregional CAP and Public Health and CAP Implementation Program

Services: PMC provided project management services and technical assistance to the Western Riverside Council of Governments (WRCOG) to support development of a regional CAP. For each of 17 cities and the County of Riverside, the project included a baseline GHG emissions inventory, 2020 and 2035 emissions forecasts, identification of suitable GHG reduction targets, and developing a range of measures that will be feasible and applicable to participating jurisdictions. The CAP established policies and priorities to enable member jurisdictions to implement strategies contained in the CAP to fulfill AB 32 requirements.

Proposed key personnel included: Eli Krispi, Chris Read, Tammy Seale, Xico Manarolla

2. **Client**
City of Santa Clara
1500 Warburton Avenue
Santa Clara, CA 95050

Contact
Payal Bhagat
Assistant Planner II
(408) 615-2458
pbhagat@santaclaraca.gov

Project: City of Santa Clara Climate Action Plan

Services: PMC developed a CAP for the City of Santa Clara (CA) and its municipal electric utility, Silicon Valley Power (SVP). Santa Clara is located 45 miles south of San Francisco and at the center of Silicon Valley. The City is approximately 18 square miles with an estimated population of 116,000. The CAP is an important component of the City's recently adopted General Plan (comprehensive plan), addressing both emissions reduction and economic development opportunities within the community. The CAP included an interactive MS Excel-based emissions monitoring tool developed by PMC to track both annual changes in activity data driving the GHG emissions inventory, and annual changes to progress indicators identified for each CAP measure resulting in emissions reductions. The monitoring tool includes a reporting function that staff can use to provide annual updates on CAP implementation to the City Council.

Proposed key personnel included: Tammy Seale

3. **Client**
County of San Mateo
Planning and Building Department
455 County Center
Redwood City, CA 94063

Contact
Mr. Steve Monowitz
Deputy Director
(650) 363-1855
smonowitz@co.sanmateo.ca.us

Project: County of San Mateo, Energy Efficiency Climate Action Plan, General Plan Amendment, and EIR

Services: PMC prepared the San Mateo County Energy Efficiency Climate Action Plan, Energy and Climate Change Element, General Plan amendment, and Environmental Impact Report in partnership with San Mateo County Department of Planning and Building, Fehr & Peers, DNV KEMA, and ICLEI USA. San Mateo County is part of the San Francisco Bay area, home to approximately 720,000 residents. The EECAP builds on San Mateo County's longstanding commitment to implementing environmental programs and proactively working to reduce GHG emissions. In addition to providing a strategic plan and policy framework to reduce GHG emissions and the local contribution to climate change, the project addresses the current and potential future impacts resulting from climate change and adaptation strategies to improve resiliency and minimize exposure in the unincorporated county. PMC partnered with ICLEI-USA Local Governments for Sustainability and a technical working group to prepare a vulnerability assessment used to develop the County's adaptation strategy.

Proposed key personnel included: Tammy Seale, Jennifer Venema, Chris Read

RSG

1. **Client**
Baltimore Metropolitan Council
Offices at McHenry Row
1500 Whetstone Way, Suite 300
Baltimore, MD 2123

Contact
Mr. Charles Baber
Principal Transportation Planner
(410) 732-0500 x1056
cbaber@baltometro.org

Project: Maryland EERPAT Pilot/Baltimore Metropolitan Council Application

Services: For this project, RSG worked with Baltimore Metropolitan Council (BMC) staff to construct the statewide and metropolitan applications of the Energy and Emissions Reduction Policy Analysis Tool (EERPAT). The State of Maryland enacted legislation (Maryland Greenhouse Gas Emissions Reductions Act of 2009 [Act]) requiring the State to achieve a 25% reduction in statewide greenhouse gas (GHG) emissions from 2006 levels by 2020. The Act also establishes a long-term goal of reducing GHG statewide emissions 80% below 2006 levels by 2050. To help meet these statewide goals, RSG developed state-level and metropolitan (Baltimore) EERPAT models to explore scenarios capturing synergies in technology, fuel, land use, and transportation supply/management policies/strategies with varying initiative levels.

Proposed key personnel included: Robert Chamberlin; Eric Talbot

2. **Client**
Washington State Department of Transportation
310 Maple Park Avenue SE
P.O. Box 47300
Olympia, WA 98504-7300

Contact
Natarajan "Jana" Janarthanen
Traffic & Toll Modeling Manager
(206) 464-1274
JanartN@wsdot.wa.gov

Project: Washington EERPAT Pilot

Services: RSG worked with staff from the Washington Department of Transportation (WSDOT) Urban Planning office to develop a calibrated EERPAT model for Washington State. The model was calibrated to historic levels of vehicle miles traveled (VMT), fuel consumption, and auto ownership/fleet characteristics. WSDOT employed the model to inform policy for achieving the State's greenhouse gas (GHG) reduction goals established in the Governor's "Washington Climate Change Challenge." The targets established by the State of Washington aim to reduce GHG emissions to 1990 levels by the year 2020, and 50% below 1990 levels by 2050.

Proposed key personnel included: Robert Chamberlin; Eric Talbot

3. **Client**
Utah Department of Transportation
4501 South 2700 West
Salt Lake City, UT 84114

Contact
Cameron Kergaye, PhD, PE
Director of Research
(801) 965-2576
ckergaye@utah.gov

Project: Analysis of the Impact of High Efficiency Vehicles on Future Fuel Tax Revenues

Services: UDOT Research Division retained RSG to analyze the potential impact of high-efficiency motor vehicles on future State of Utah revenues used to construct and maintain the highway network. High-efficiency motor vehicle use (including electric, hybrid, natural gas, and other alternative fuel vehicles) is on the rise in Utah and other states across the country. Vehicles with standard gasoline-powered engines are also being made more efficient—studies have been completed showing that the recently adopted Corporate Average Fuel Economy (CAFE) standards could cause a 20–60% drop in revenues across the United States by 2025. To address this question, RSG constructed the Energy and Emissions Reduction Policy Analysis Tool (EERPAT) model and calibrated the model to Utah state vehicle miles traveled (VMT), fleet characteristics (age mix and auto ownership), and demographic characteristics.

Proposed key personnel included: Robert Chamberlin; Eric Talbot; Haiyun Lin

Sharp & Company (DBE)

1. **Client**
District Department of Transportation
1401 K Street, NW,
Suite 701,
Washington, DC 20005

Contact
Mr. Brian McMahon (Parsons Brinckerhoff, Prime)
(202) 661-5332
mcmahonb@pbworld.com

Project: South Capitol Street SFEIS

Services: The South Capitol Street Corridor Project calls for replacing the Frederick Douglass Memorial Bridge and transforming related sections of urban freeway into a beautiful scenic boulevard that increases pedestrian and vehicular safety, improves multi-modal transportation options, increases community accessibility, and supports economic development on both sides of the Anacostia River.

Proposed key personnel included: Susan Sharp, Mary Arzt, Charise Geiling

2. **Client**
District Department of Transportation
5400 Shawnee Road,
Suite 301,
Alexandria, VA 22312

Contact
Mr. Oliver Boehm (Prime Volkert)
(703) 642-8104
oliver.boehm@volkert.com

Project: Oregon Avenue NW Improvements

Services: Sharp & Company is providing public outreach support for the District of Columbia Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) controversial rehabilitation of the 1.7-mile segment of Oregon Avenue, NW, between Military Road and Western Avenue. In 2011, residents along Oregon Avenue had expressed major concerns about the reconstruction and its impact on their neighbors. Many residents were not pleased with the environmental assessment preferred alternative recommendation that included sidewalks and no designated bike lanes..

Proposed key personnel included: Susan Sharp, Mary Arzt, Charise Geiling

3. **Client**
Maryland Department of Transportation
100 Charles St, Tower 1,
17th Floor,
Baltimore, MD 21201

Contact
Mr. Michael Flood (Prime: Parsons Brinckerhoff)
(410) 246-0528
flood@pbworld.com

Project: 2035 Maryland Transportation Plan

Services: Sharp & Company facilitated four roundtable workshops in support of the 2035 Maryland Transportation Plan, a 20-year vision for transportation in Maryland that will ultimately guide statewide investment decisions across all modes of transportation. Each roundtable was attended by up to 100 stakeholders from various specialties, including local and elected officials, transportation agency officials, business owners, and Maryland residents. Sharp & Company has designed the sessions as interactive workshops that will engage stakeholders in discussion and provide the MDOT team with a set of preliminary goals and suggested strategies.

Proposed key personnel included: Susan Sharp, Charise Geiling

KB Environmental Sciences, Inc. (DBE)

1. **Client**
Federal Aviation Administration
FAA Office of Environment and Energy, AEE-300
800 Independence Avenue SW,
Washington, DC 20591

Contact
Mr. Chris Sequeira
(202) 267-7821
christopher.sequeira@faa.gov

Project: FAA Airport Air Quality Guidebook

Services: For this assignment, KBE staff were responsible for the development of the FAA's new handbook for addressing air quality issues near aviation sources of emissions. This guidebook included recommendations on how to prepare emissions inventories, conduct dispersion modeling, document results and engage in agency participation. Background information on air quality, in general, and aviation, in particular, was also provided. This guidebook is now used by FAA staff in all regions as well as their contractors.

Proposed key personnel included: Michael Kenney and Carrol Fowler

2. **Client**
Florida Department of Transportation
11201 N. McKinley Dr.
Mail Station 7-500 District 7
Tampa, Fl 33612

Contact
Ms. Robin Rhinesmith
Environmental Engineer
(813) 975-6496
robin.rinsesmith@dot.state.fl.us

Project: FDOT Roadway Noise Assessments

Services: KBE has provided the FDOT with compressive noise-related services ranging from noise monitoring, noise modeling, noise barrier design and feasibility and public coordination.

Proposed key personnel included: Michael Kenney and Carrol Fowler

3. **Client**
Port Authority of New York/New Jersey
225 Park Ave. S.
New York, NY 10003

Contact
Mr. Ed Knosesel
Environmental Specialist
(212) 435-3747
eknoesel@panynj.gov

Project: PANYNJ Noise Assessment Services

Services: The staff of KBE provides the Port Authority with expert-level advise on noise-related issues including (but not limited to) noise propagation, noise simulation, noise attenuation and other similar technical matters.

Proposed key personnel included: Michael Kenney and Carrol Fowler

Attachments

ATTACHMENT A
STANDARD TERMS AND CONDITIONS

I. Energy Conservation – 42 U.S.C. 6321 et seq.

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

II. Clean Water Requirements – 33 U.S.C. 1251 et seq.

1. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended. The Contractor agrees to report each violation to COG and understands and agrees that COG will, in turn; report each violation as required to assure notification to appropriate federal agencies including the appropriate EPA Regional Office.
2. The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance.

III. Lobbying – 31 U.S.C. 1352 et seq.

(*To be submitted with each bid or offer exceeding $100,000)*

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 an 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 contract, the making 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 and Federal contract, grant, loan, or cooperative agreement.
2. If any funds or than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of an 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 Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein as been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et.seq.*)]
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients 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 by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). 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.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq*., apply to this certification and disclosure, if any.

_____Signature of Contractor's Authorized Official

_____Name and Title of Contractor's Authorized Official

_____Date

IV. Access to Records and Reports – 49 U.S.C. 5325

1. The Contractor agrees to provide COG, and if applicable the state or federal funding agency, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transactions.
2. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.
3. The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until COG, the applicable state or federal funding agency, the Comptroller General, or any of the their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto.

V. Funding Agency Changes

Contractor shall at all times comply with all applicable state and federal agency regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the funding agreement between such agency and COG, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to comply shall constitute a material breach of this contract.

VI. Clean Air – 42 U.S.C. 7401 et seq

The Clean Air requirements apply to all contracts exceeding $100,000, including indefinite quantities where the amount is expected to exceed $100,000 in any year.

1. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The Contractor agrees to report each violation to COG and understands and agrees that COG will, in turn; report each violation as required to assure notification to the funding federal agency, if any, and the appropriate EPA regional office.
2. The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance.

VII. Recycled Products – 42 U.S.C. 6962

The Recycled Products requirements apply to all contracts for items designated by the EPA, when COG or the contractor procures $10,000 or more of one of these items during the fiscal year, or has procured $10,000 or more of such items in the previous fiscal year, using federal funds.

The Contractor agrees to comply with all requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not limited to regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

VIII. No Government Obligation to Third Parties

1. The Contractor acknowledges and agrees that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities of COG, the Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.
2. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

IX. Program Fraud and False or Fraudulent Statements and Related Acts – 31 U.S.C. 3801 et seq.

1. The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et. seq. and all appropriate federal agency regulations apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract of the Federally assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or caused to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor or to the extent the Federal Government deems appropriate.
2. The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance, the Federal Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n) (1) on the Contractor, to the extent the Federal Government deems appropriate.
3. The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to the provisions.

X. Termination – 49 U.S.C. Part 18

Applicable to all contracts in excess of $10,000

a. **Termination for Convenience** – COG, by written notice, may terminate this contract, in whole or in part, at any time by written notice to the Contractor when it is in COG's best interest. If this contract is terminated, COG shall be liable only for payment under the payment provisions of this contract for services rendered before the effective date of termination.

b. **Termination for Default [Breach or Cause]** – If the Contractor fails to perform in the manner called for in this contract, or if the Contractor fails to comply with any

materially

materially

other provisions of the contract, COG may terminate this contract for default. Termination shall be effected by serving a notice of termination on the Contractor setting forth the manner in which the Contract is in default. The Contractor will only be paid the contract price for services performed in accordance with the manner of performance set forth in the contract. If it is later determined by COG that the Contractor had an excusable reason for not performing, such as strike, fire, or flood, events which are beyond the control of the Contractor, COG, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a termination for convenience.

c. COG in its sole discretion may, in the case of termination for breach or default, allow the Contractor ten (10) working days in which to cure the [material] such case, the notice of termination will state the time period in which cure is permitted and other appropriate conditions.
If the Contractor fails to remedy to COG's satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within the 10 working days after receipt by Contractor of written notice from COG setting forth the nature of said breach or default, COG shall have the right to terminate the Contract without further obligation to Contractor. Any such termination for [material] shall not in any way operate to preclude COG from also pursuing all available remedies against Contractor and its sureties for said breach or default.

d. In the event COG elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this Contract, such waiver by COG shall not limit COG's remedies for any succeeding breach of that or any other term, covenant, or condition of this Contract.

XI. Civil Rights Requirements – 29 U.S.C. § 62, 42 U.S.C. § 2000, 42 U.S.C. § 602, 42 U.S.C. § 12112, 42 U.S.C. § 12132, 49 U.S.C. § 5332

1. **Nondiscrimination** – In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and all other provisions of Federal law, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations.
2. **Equal Employment Opportunity** – The following equal employment opportunity requirements apply to the underlying contract:
    a. **Race, Color, Creed, National Origin, Sex** – In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 CFR Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal Statutes, executive orders, regulations, and Federal policies that may in the future affect activities undertaken in the course of this Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination;

rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements the funding federal agency may issue.

b. **Age** – In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § § 623 and other applicable law, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements the funding federal agency may issue.

c. **Disabilities** – In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements the funding federal agency my issue.

3. The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal Assistance, modified only if necessary to identify the affected parties.

unless set aside by a court of competent jurisdiction as fraudulent, capricious, arbitrary, or so grossly erroneous as to necessarily imply bad faith, or not to be supported by any evidence.

XII. Breaches and Dispute Resolution

Disputes – Disputes arising in the performance of this Contract which are not resolved by agreement of the parties shall be decided in writing by the COG Executive Director or his/her designee. This decision shall be final and conclusive unless within ten (10) working days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the Executive Director or his/her designee. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the Executive Director or his/her designee shall be binding upon the Contractor and the Contractor shall abide the decision.

Performance During Dispute – Unless otherwise directed by COG, Contractor shall continue performance under this Contract while matters in dispute are being resolved.

Claim for Damages – Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of its employees, agents or others for acts it is legally liable, a claim for damages therefore shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

Remedies – Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between COG and the Contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the District of Columbia.

Rights and Remedies – The duties and obligations imposed by the Contract and the rights and remedies available there under shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by COG or the Contractor shall constitute a waiver or any right or duty afforded to them under the Contract, not shall any such action or failure to act constitute an approval of or acquiescence in any breach there under, except as may be specifically agreed in writing.

XIII. Patent and Rights in Data

A. **Rights in Data** - The following requirements apply to each contract involving experimental, developmental or research work:

(1) The term "subject data" used in this clause means recorded information, whether or not copyrighted, that is delivered or specified to be delivered under the contract. The term includes graphic or pictorial delineation in media such as drawings or photographs; text in specifications or related performance or design-type documents; machine forms such as punched cards, magnetic tape, or computer memory printouts; and information retained in computer memory. Examples include, but are not limited to: computer software, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identifications, and related information. The term "subject data" does not include financial reports, cost analyses, and similar information incidental to contract administration.

(2) The following restrictions apply to all subject data first produced in the performance of the contract to which this Attachment has been added:

(a) Except for its own internal use, the Purchaser or Contractor may not publish or reproduce subject data in whole or in part, or in any manner or form, nor may the Purchaser or Contractor authorize others to do so, without the written consent of the Federal Government, until such time as the Federal Government may have either released or approved the release of such data to the public; this restriction on publication, however, does not apply to any contract with an academic institution.

(b) In accordance with 49 C.F.R. § 18.34 and 49 C.F.R. § 19.36, the Federal Government reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use, for "Federal Government purposes," any subject data or copyright described in subsections (2)(b)1 and (2)(b)2 of this clause below. As used in the previous sentence, "for Federal Government purposes," means use only for the direct purposes of the Federal Government. Without the copyright owner's consent, the Federal Government may not extend its Federal license to any other party.

1. Any subject data developed under that contract, whether or not a copyright has been obtained; and

2. Any rights of copyright purchased by the Purchaser or Contractor using Federal assistance.

(c) For FTA Assisted Contracts - When FTA awards Federal assistance for experimental, developmental, or research work, it is FTA's general intention to increase transportation knowledge available to the public, rather than to restrict the benefits resulting from the work to participants in that work. Therefore, unless FTA determines otherwise, the Purchaser and the Contractor performing experimental, developmental, or research work required by the underlying contract to which this Attachment is added agrees to permit FTA to make available to the public, either FTA's license in the copyright to any subject data developed in the course of that contract, or a copy of the subject data first produced under the contract for which a copyright has not been obtained. If the experimental, developmental, or research work, which is the subject of the underlying contract, is not completed for any reason whatsoever, all data developed under that contract shall become subject data as defined in subsection (a) of this clause and shall be delivered as the Federal Government may direct. This subsection (c), however, does not apply to adaptations of automatic data processing equipment or programs for the Purchaser or Contractor's use whose costs are financed in whole or in part with Federal assistance provided by FTA for transportation capital projects.

(d) Unless prohibited by state law, upon request by the Federal Government, the Purchaser and the Contractor agree to indemnify, save, and hold harmless the Federal Government, its officers, agents, and employees acting within the scope of their official duties against any liability, including costs and expenses, resulting from any willful or intentional violation by the Purchaser or Contractor of proprietary rights, copyrights, or right of privacy, arising out of the publication, translation, reproduction, delivery, use, or disposition of any data furnished under that contract. Neither the Purchaser nor the Contractor shall be required to indemnify the Federal Government for any such liability arising out of the wrongful act of any employee, official, or agents of the Federal Government.
(e) Nothing contained in this clause on rights in data shall imply a license to the Federal Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the Federal Government under any patent.

(f) Data developed by the Purchaser or Contractor and financed entirely without using Federal assistance provided by the Federal Government that has been incorporated into work required by the underlying contract to which this Attachment has been added is exempt from the requirements of subsections (b), (c), and (d) of this clause, provided that the Purchaser or Contractor identifies that data in writing at the time of delivery of the contract work.

(g) Unless the federal funding agency determines otherwise, the Contractor agrees to include these requirements in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance.

(3) Unless the Federal Government later makes a contrary determination in writing, irrespective of the Contractor's status (i.e., a large business, small business, state government or state instrumentality, local government, nonprofit organization, institution of higher education, individual, etc.), the Purchaser and the Contractor agree to take the necessary actions to provide, through the federal funding agency, those rights in that invention due the Federal Government as described in

U.S. Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms under Government Grants, Contracts and Cooperative Agreements," 37 C.F.R. Part 401.

(4) The Contractor also agrees to include these requirements in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance provided by FTA.

B. **Patent Rights** - The following requirements apply to each contract involving experimental, developmental, or research work:

(1) General - If any invention, improvement, or discovery is conceived or first actually reduced to practice in the course of or under the contract to which this Attachment has been added, and that invention, improvement, or discovery is patentable under the laws of the United States of America or any foreign country, the Purchaser and Contractor agree to take actions necessary to provide immediate notice and a detailed report to the party at a higher tier until the Federal funding agency is ultimately notified.

(2) Unless the Federal Government later makes a contrary determination in writing, irrespective of the Contractor's status (a large business, small business, state government or state instrumentality, local government, nonprofit organization, institution of higher education, individual), the Purchaser and the Contractor agree to take the necessary actions to provide, through the Federal funding agency, those rights in that invention due the Federal Government as described in U.S. Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 C.F.R. Part 401.

(3) The Contractor also agrees to include the requirements of this clause in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance.

XIV. Interest of Members of Congress

No member of or delegates to the Congress of the United States shall be admitted to a share or part of this Contract or to any benefit arising there from.

XV. Interest of Employees of COG

No employee of COG who exercises any functions or responsibilities in review or approval of the undertaking or carrying out the Project during his or her tenure or one year thereafter shall have any personal interest, direct or indirect, apart from his or her official duties, in this Contract or the proceeds thereof.

XVI. Interest of the Contractor

The Contractor covenants that it has presently no financial interest, shall not acquire any financial interest, direct or indirect, which would conflict in any manner or degree with the performance of services required to be performed under this Contract. The Contractor further covenants that, in the performance of this Contract, no person having any such interest shall be employed.

XVII. Allowable Costs

Only those costs which are consistent with Title 48 Part 31 of the Code of Federal Regulations shall be reimbursed under this Contract.

XVIII. Covenant Against Contingent Fees

The Contractor warrants that it has not employed any person to solicit or secure this Contract upon any agreement for a commission, percentage, brokerage or contingent fee. Breach of warranty shall give the Contracts Officer the right to terminate this Contract or, in his discretion, to deduct from the Contract price or consideration the amount of such commission, percentage, brokerage or contingent fees. This warranty shall not apply to commissions' payable by the Contractor upon contracts or sales secured or made through a bona fide established commercial or selling agency maintained by the Contractor for the purpose of securing business.

XIX. Indemnification

to the extent arising out of any negligent act or omission, or willful misconduct of, Contractor (or Contractor's employees or agents) in its performance of work hereunder.

The Contractor, acting as an independent contractor, shall hold COG harmless from and shall be ~~solely~~ responsible, where found liable, for the payment of any and all claims for loss, personal injury, death, property damage, or otherwise, ~~arising out of any act of omission or negligence of its employees or agents in connection with the performance of this work.~~

XX. Severability

It is understood and agreed by the parties that if any of these provisions shall contravene, or be invalid under, the laws of the particular state, county or jurisdiction where used, such contravention or invalidity shall not invalidate the whole agreement, but the Contract shall be construed as if not containing the particular provision or provisions held to be invalid in the said particular state, county or jurisdiction and the rights and obligations of the parties shall be construed and enforced accordingly.

XXI. Assignments

This Contract shall not be assigned, sublet or transferred in whole or in part by the Contractor, except with the previous written consent of the COG Contracting Officer or his designee.

XXII. Entire Agreement

This Contract sets forth the entire understanding of the parties and supersedes all previous agreements, whether oral or in writing, relating to the subject matter hereof. This Contract may only be altered, amended or modified in accordance with Changes Clause of this Contract.

XXIII Confidential or Personal Data

a. COG respects the privacy or business interests involved in confidential or personal data. It is COG's policy to obtain confidential or personal data or store or allow storage of such data only 1) when necessary to fulfill COG's information-gathering and data collection responsibilities, or 2) in conjunction with COG projects. COG intends to minimize risk of disclosure of such confidential or personal data.

b. Whenever feasible and the requirements of a project allow, the names of survey participants or users of a website or other data collection method shall not be accepted, recorded, stored or retained.

c. When COG engages in a project, which involves the collection or storage of confidential or personal information by or through use of surveys, websites or by other data collection, the following conditions shall be met:

1) The survey, website or other collection method shall contain a set of conditions for use and a disclaimer of any COG liability for use, in language approved by COG in writing.

2) The party(ies) working with COG shall demonstrate adherence to a federal or applicable state standard for protecting confidential or personal information.

3) The confidential or personal information collected or stored by or through the survey, website or other data collection shall be kept confidential. All necessary steps shall be taken to protect the privacy of the users of the website or other data collection. Any confidential or personal information provided by users of the website or other data collection, including but not limited to their names and addresses, shall be protected.

4) COG shall retain control over and ownership of all surveys, WebPages, control files and scripts, database schema, and database contents, in addition to all content which is published on or stored by the website or other data collection, unless COG specifically agrees in writing otherwise.

5) No release of any announcements intended for public dissemination concerning the collection or storage of such information by or through the survey, website or other data collection shall occur until COG has given prior written authorization, unless COG specifically agrees in writing otherwise.

6) In the event that information collected or stored by or through the survey, website or other data collection shall be stolen or handled incorrectly, the party(ies) working with COG on the project shall be responsible for any required notification to persons who have entered personal information in that system and all costs related thereto.

7) The project documents shall provide that other parties working with COG on the survey, website or other data collection or storage shall indemnify COG with at least the following commitment:

to the extent

The [CONTRACTOR or other party] shall indemnify and hold COG harmless from and shall be solely responsible, for the payment of any and all claims for ~~loss, personal injury, death, property damage,~~ infringement or misappropriation of any third party's intellectual property rights, violation of privacy, confidentiality or otherwise, arising out of any act of omission or negligence of its employees or agents in connection with the performance of the work under this [agreement or memorandum of understanding].

8) At the end of the project or contract, any personal or confidential information shall be given to COG or destroyed and a certification of destruction provided to COG by the contractor or other party.

XXIV. COG's Policies and Procedures

When federal law, or any grant conditions, certifications or assurances require COG to utilize competitive procurement procedures for selection of a contractor, COG's policies and procedures shall govern every aspect of the contractor selection process, e.g., the solicitation, evaluation, award, and post-award process (including, without limitation, any protest of an award, and the terms and conditions under which a contract may be approved, executed and administered). Any contractor and potential contractor will be provided with a copy of such policies and procedures, on request.

XXV. Additional Requirements

In addition to the terms and conditions expressly referenced in this CONTRACT, the SUBGRANTEE acknowledges and agrees that the terms and conditions of any federal or state grant that provides funding for this CONTRACT, in whole or in part, shall apply to and shall govern the parties' rights and obligations under this CONTRACT and shall be deemed additional terms, conditions and requirements of this CONTRACT.

XXVI. Priority of Requirements

In the event of a conflict between or among any of the terms, conditions and requirements applicable to this CONTRACT, the conflict shall be resolved by assigning the following priorities, in the order as stated below:

1) Terms and conditions of any grant that provides funding for this CONTRACT, in whole or in part;
2) Terms and conditions set forth or referenced within Attachment A to this CONTRACT;
3) Terms and conditions set forth or referenced within Parts I and II of this CONTRACT;
4) Terms, conditions, specifications, and requirements set forth within any solicitation (e.g., RFP or IFB) pursuant to which this CONTRACT was awarded.

XXVII. Consequential Damages In no event shall either Contractor or COG have any claim or right against the other, whether in contract, warranty, tort (including negligence), strict liability or otherwise, for any special, indirect, incidental, or consequential damages of any kind or nature whatsoever, such as but not limited to loss of revenue, loss of profits on revenue, loss of customers or contracts, loss of use of equipment or loss of data, work interruption, increased cost of work or cost of any financing, howsoever caused, even if same were reasonably foreseeable.

ATTACHMENT B
CERTIFICATION REGARDING
DEBARMENT, SUSPENSION, AND OTHER
RESPONSIBILITY MATTERS

The prospective vendor certifies to the best of its knowledge and belief that it and its principals:

- Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any department or agency of the District of Columbia, State of Maryland or the Commonwealth of Virginia or any of the 22 jurisdictions comprising the membership of the Metropolitan Washington Council of Governments (COG);
- Have not within a three year period preceding this date been convicted of or had a civil judgment rendered against them for commission of fraud or criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated above of this certification; and
- Have not within a three-year period preceding this date had one or more public transactions (Federal, State or local) terminated for cause or default.

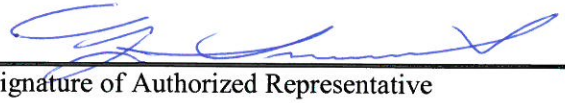
Vendor understands that a false statement on this certification may be grounds for rejection of any submitted proposal or quotation or termination of any award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both if federal funds are being used to support the procurement.

Michael Baker Jr, Inc. (Baker), a company of Michael Baker International

Typed Name of Vendor

Vic Siaurusaitis, Assistant Vice President and Office Executive

Typed Name & Title of Authorized Representative



Signature of Authorized Representative

3/2/2015

Date

ATTACHMENT C
CONTACT INFORMATION SHEET

(*THIS PAGE MUST BE COMPLETED AND SUBMITTED WITH THE PROPOSAL)*

RFP/RFQ No.: 15-010 Federal Tax ID No.: 25-1228638

Name of Offeror: Michael Baker Jr., Inc.

Address of Offeror: 1304 Concourse Drive, Suite 200, Linthicum, MD 21090

Telephone No: 410-689-3469 Fax No.: 410-689-3401 Website: Mbakerintl.com

Name of Authorized Representative: Vic Siaurusaitis, Vice President - Office Executive

Mailing Address (If different from Above):

Telephone No.: 410-689-3455 Mobile No.: 410-353-0580 Other: N/A

Email Address: vsiaurusaitis@mbakerintl.com

Name of Contact Person for this RFP/RFQ: Colleen Turner

Title of Contact Person: Project Manager / Environmental Specialist

Telephone No.: 410-689-3469 Mobile No.: 410-689-3469 Other: N/A

Email Address: cmturner@mbakerintl.com

Maryland Department of Transportation
The Secretary's Office

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

James T. Smith, Jr.
Secretary

December 29, 2014

MARY ARZT
SHARP & COMPANY, INC.
794 NELSON STREET
ROCKVILLE, MD 20850

Dear MARY ARZT (cert # 08-142):

We are pleased to inform you that your company has been found eligible to continue its certification as a Minority Business Enterprise (MBE), Disadvantaged Business Enterprise (DBE), Small Business Enterprise (SBE), and/or Airport Concessions Disadvantaged Business Enterprise (ACDBE) effective December 29, 2014.

Your firm remains certified for the services for which you have been approved and officially notified in writing. Your current certification status can be found in the Maryland Department of Transportation's (MDOT) Directory of Certified MBE/DBE/SBE/ACDBE Firms available online at http://mbe.mdot.state.md.us/directory. MDOT's online directory is the official record of your firm's certification status. It is important that you carefully review the accuracy of your listing in the Directory. If you have any questions about your firm's certification status, contact MDOT's Office of Minority Business Enterprise (OMBE) immediately at 410-865-1269 or 1-800-544-6056.

If you wish to expand the area(s) of work for which your firm is currently certified, you may request an Expansion of Services. The application for expansion of services can be found at http://www.mdot.maryland.gov/Office of Minority Business Enterprise/ExpansionCover.html Please submit your application request to:

Maryland Department of Transportation
Office of Minority Business Enterprise
7201 Corporate Center Drive
Hanover, MD 21076
410-865-1309 (fax) or mbe@mdot.state.md.us

Your firm must be recertified annually in order to maintain its certification. We will contact you when it is time to begin the next recertification process.

Sincerely,

Randy Reynolds
Director, Minority Business Enterprise

My telephone number is _____
Toll Free Number 1-888-713-1414 TTY Users Call Via MD Relay
7201 Corporate Center Drive, Hanover, Maryland 21076

METROPOLITAN WASHINGTON
UNIFIED CERTIFICATION PROGRAM
DDOT • 55 M Street S.E., 3rd Floor • Washington, D. C. 20003• (202) 671-0479
WMATA • 600 Fifth Street, N. W., 3rd Floor • Washington, D. C. 20001• (202) 962-6493

District Department of Transportation

February 25, 2014
Sent *via* Regular Mail

Ms. Leola Carrol Fowler, President
KB Environmental Sciences, Inc.
9500 Koger Blvd. Ste 211
St. Petersburg FL, 33702

RE: Certification No. 14-02-05-N

Dear Ms. Fowler,

We are pleased to inform you that your firm has been found eligible as a Disadvantaged Business Enterprise (DBE) with the Metropolitan Washington Unified Certification Program (MWUCP), effective **February 10, 2014** MWUCP participants include the Metropolitan Washington Area Transit Authority (WMATA) and the District of Columbia Department of Transportation (DDOT). **Your firm is subject to the requirements of the Disadvantaged Business Enterprise regulations, *Title 49, Code of Federal Regulations, Part 26*, as amended and all laws of this jurisdiction applicable to the transaction of business.** You are currently certified in the following North American Industry Classification System (NAICS) Code(s):

541620	Environmental Consulting Services
541310	Architectural Services
541618	Other Management Consulting Services

If you wish to add to the list of approved NAICS Codes, you must make such request in writing with supporting documentation to the MWUCP participant from which the original certification was received.

As a certified DBE, you are required to submit an annual "No Change"/"Notice Regarding Change" statement, attesting to your continued status as a "socially and economically disadvantaged individual". You must also submit the following: (1) a *Personal Net Worth Statement (PNW); (2) the Individual Income Tax Return for that

year; and (3) the Firm's Federal Tax Return for that year. The requisite forms are available at http://dbe.ddot.dc.gov.

You can access *these forms on http://dbe.ddot.dc.gov. The "No Change"/ "Notice Regarding Change" Statement and supporting documentation should be mailed annually on or before your firm's certification date to:.

District Department of Transportation
Office of Civil Rights
55 M Street S.E. 3rd Floor S.E.
Washington, DC 20003

If a change in the ownership, control or management of your firm has occurred, you must complete and submit a "Notice Regarding Change" statement immediately subsequent to the change.

Firms desiring information about DDOT procurement opportunities should go on line at http://dbe.ddot.dc.gov. To do business with WMATA, go on line at www.wmata.com or www.metroopensdoors.com to register as a vendor and for bidding opportunities.

A firm is considered graduated in all or some of the areas of work grouped under the NAICS Codes if the firm exceeds the size standards listed under the NAICS Codes. If a firm exceeds the size standard in any of its approved NAICS Codes, it is no longer certified as a Disadvantaged Business Enterprise under that specific NAICS Code. If a firm exceeds the size standards in all of its approved NAICS Codes or the established Personal Net Worth standard, it is no longer eligible to participate as a Disadvantaged Business Enterprise under the Federal U.S. Department of Transportation Program.

Your certification does not automatically expire, however; your firm must submit the required documents annually on or before your firm's certification date. Failure to provide the requested documents in a timely manner will result in immediate actions to decertify your firm's eligibility as a Disadvantaged Business Enterprise with the Metropolitan Washington Unified Certification Program.

If you have any questions, please contact Malcolm Jackson, Equal Opportunity Specialist Consultant at 202-741-0635 or via email at Malcolm.jackson@dc.gov

Sincerely,

Malcolm Jackson for Lisa Gregory

Lisa Gregory, Chief
Office of Civil Rights
District Department of Transportation (DDOT)

DDOT/GP

DBE Participation

Proposed DBE Participation Plan

DBE SUBCONTRACTOR		PERCENTAGE OF CONTRACT
Subcontractor: Sharp & Company, Inc. **Address:** 9500 Koger Blvd. Ste 211 St. Petersburg FL, 33702		8-10%
Certifying State: Maryland	DBE Certification# No. 08-142	
DBE SUBCONTRACTOR		**PERCENTAGE OF CONTRACT**
Subcontractor: KB Environmental Sciences, Inc. **Address:** 9500 Koger Blvd. Ste 211 St. Petersburg FL, 33702		4-6%
Certifying State: District of Columbia	DBE Certification# No. 14-02-05-N	