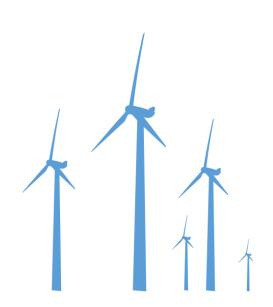
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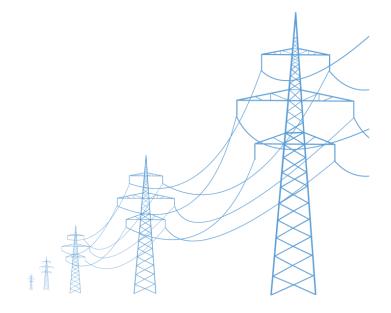
Proposal for Multi-Sector Approach to Reducing Greenhouse Gas Emissions in the Metropolitan Washington Region - Copy

Metropolitan Washington Council of Governments Reference Number: RFP No. 15-010

March 6, 2015

DNV GL Document No. 108073





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About this Proposal

This proposal in its entirety is valid for 60 days after its submittal date of March 6, 2015 and is being submitted by KEMA, Inc., a U.S. subsidiary within the DNV GL family of companies.

March 6, 2015

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

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

Dear Mr. Hohmann.

DNV GL Energy Services USA Inc. (DNV GL), with subcontractors VHB, BuroHappold, and Justice and Sustainability (the DNV GL team) is pleased to submit this proposal to the Metropolitan Washington Council of Governments (COG) in response to the Multi-Sector Approach to Reducing Greenhouse Gas Emissions in the Metropolitan Washington Region RFP (RFP No. 15-010).

Our team understands that the Metropolitan Washington COG has convened this project to develop a sector-based approach that will reduce greenhouse gas (GHG) emissions across the region, coordinate and align multiple on-going planning activities related to sustainability, and be based on a stakeholder-driven process. The DNV GL team will provide GHG-planning advice and technical assistance based on over 30 years' experience working with leading local governments locally and nationally on proven sustainability policies and programs. The National Capital Region has made significant initial strides for visioning a path for the GHG emissions reductions needed to avoid potentially irreversible and catastrophic climate change. This project seeks to build on existing efforts at the municipal level in order to enhance a multijurisdictional regional approach to GHG emission reductions.

As one of the East Coast's leading energy and GHG consulting firms, DNV GL has developed strong climate action planning experience at both the local and regional levels. In order to address all GHG emissions sectors, we have assembled a team of firms who are experts in each area. DNV GL will be responsible for overall project management and energy related strategies. VHB is a leader in developing strategies for emission reductions from the transportation and land-use sectors. BuroHappold Consulting (BuroHappold) also possesses key expertise related to strategies for GHG reductions in the built-environment. Further, Justice and Sustainability, LLC, (JSA) brings civic engagement expertise and consensus-based facilitation approaches for bringing together diverse stakeholders.

Our team has worked with over 15 cities on the east coast as well as public agency clients to develop multi-sector GHG reduction strategies that provide a roadmap for reducing emissions

from both municipal operations and the community-at-large. In each case, we work closely with cities and counties to incorporate the unique attributes of each community.

Most important, the DNV GL team has worked with several Metropolitan Planning Organizations (MPOs)/Council of Governments (COGs) to develop regional approaches to climate action plans. Through each of these projects, we ensure that the regional GHG reduction strategy highlights synergies in region- and city-specific sustainability initiatives, while incorporating new or extended strategies for GHG emissions reductions that are appropriate for each city/county.

Together, the DNV GL team brings to Metropolitan Washington COG and its participating jurisdictions:

- Understanding of the interplay between local GHG reduction activities and regional
 approaches, and how to find the most appropriate balance between regional consistency and
 the flexibility to customize jurisdiction-level initiatives to respond to local conditions.
- A wealth of experience from similar projects completed or underway in the region and throughout the U.S., including a regional climate action planning template completed for the municipalities in major metropolitan regions across the United States.
- Unsurpassed knowledge of all key topics for climate action planning in the eight counties
 and District of Columbia that comprise the Metropolitan Washington COG region, across
 energy, land use, transportation, and the built environment.
- Experience with innovative approaches to GHG emission reduction, including the use of new energy technologies, with a solid database of local government GHG reducing strategies and case studies.

DNV GL's Arlington-based team is excited about the opportunity to work with the Metropolitan Washington COG and the Multi-sector Working Group to continue to build upon a history of leadership in the area of sustainability.

With kind regards,

for DNVGL Energy Services USA Inc.

Betty Seto

Head of Section, Sustainable Buildings and Communities

DNV GL - Energy

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EXECUTIVE SUMMARY

The Metropolitan Washington COG project is seeking a consultant to provide technical assistance to a multi-disciplinary working group of staff from member jurisdictions to work collaboratively to identify specific cost-effective strategies for GHG reductions across multiple sectors. We understand that multi-jurisdictional entities, such as the Metropolitan Washington COG, must develop strategies and implementation modalities that target both local (i.e. municipal) and regional organizations. Jointly developing an action plan for the region, recognizing the unique attributes of many different communities in a regional approach represents great opportunities for significant GHG reductions, as well as implementation and coordination challenges.

DNV GL has partnered with VHB, BuroHappold Consulting, and Justice and Sustainability to provide the Metropolitan Washington COG and its member jurisdictions with a project team consisting of subject matter experts in key areas for regional GHG planning. Our core team includes:

- Betty Seto, Project Sponsor, DNV GL
- Kara Kokernak, Project Manager, DNV GL
- Jim Leahy, Strategy Development, DNV GL
- Jerome Paige, Sector Subgroup Facilitation, JSA
- Angela Vincent, Land Use, VHB
- Kari Hewitt, Transportation, VHB
- Jessica Harrison, Energy, DNV GL
- Ariella Maron, Built Environment, BuroHappold

Our proposal outlines how the DNV GL team combines decades of experience working with local governments on energy efficiency, renewable energy, green buildings, transportation, and land use strategies that lead to GHG emissions reductions. Our team provides the Metropolitan Washington COG the benefit of our hands-on experience with many councils of governments and multi-jurisdictional clients to develop regional approaches to greenhouse gas emissions reductions, in addition to our lessons learned and best practices from individual cities.

The DNV GL team brings on-the-ground experience in the Metropolitan Washington COG region, including support for the Commuter Connections program, the Transportation Planning Board's regional travel forecasting model, transit-oriented design in Montgomery County, as well as energy-related programs for the built environment in partnership with the local utilities such as PEPCO and Dominion Power.

Members of our team have direct experience in working with Metropolitan Washington COG on GHG reduction initiatives. In 2010, Ms. Angela Vincent worked closely with Jeff King (at the time, Senior Environmental Planner) to organize a mini-conference at the Metropolitan Washington COG for local governments to discuss efforts related to greenhouse gas emissions inventories, climate action planning, climate adaptation, and overall sustainability. She has also

regularly served as a resource to Mr. King and his staff on matters related to developing GHG inventories and climate action planning.

Our goal is to build upon existing efforts by the Metropolitan Washington COG and local governments to enhance multi-jurisdictional or regional approaches to GHG emission reductions. We will work with the Multi-sector Working Group (MSWG) to identify viable and implementable local GHG reduction strategies in the four sectors of interest - energy, land use, transportation and the built environment.

For the Metropolitan Washington COG Multi-Sector Approach to Reducing GHG Emissions in the Metropolitan Washington Region project, we have carefully considered the local factors and what it would take to create success for this project. The Metropolitan Washington region is a unique region as the seat of the government of the United States, and headquarters of many international organizations, trade unions, no-profit organizations, lobbying groups and professional associations. The project stakeholders for this effort are numerous and highly sophisticated. We know this, because the DNV GL team has worked extensively with many of them.

Our knowledge of local initiatives combined with our experience with regional and individual jurisdictions enables the DNV GL team to provide targeted technical assistance, cost-benefit analysis, modeling of GHG reduction scenarios and recommendations for a regional and sector-based GHG reduction targets. Our proposal demonstrates that we can achieve project outcomes that are in alignment with the MSWG's goals to:

- Identify viable, implementable local, regional and state strategies for reducing GHG emissions across the energy, transportation, land use and built environment sectors
- Analyze and quantify the associated benefits, costs, and co-benefits and implementation timeframes of these GHG reduction strategies
- Explore specific GHG reduction goals, measures and targets

DNV GL understands that the ultimate goal is for the MSWG to develop a GHG reduction action plan for the region that results in economic prosperity, more livable communities and long-term environmental sustainability. Through our work with the Metropolitan Washington COG and other multi-jurisdictional climate planning projects, the DNV GL team has experienced first-hand the complex issues and decision-points related to a regional approach to GHG reductions. For example, one issue is how broadly or narrowly to define specific GHG reduction strategies to allow for flexibility in implementation according to local conditions. Member jurisdictions in the Metropolitan Washington COG ranges from dense, urban areas with commercial buildings, industry and multi-modal transportation options to more rural and residential areas that are dominated by single occupancy vehicle transportation. This spectrum of development can be challenging to address, but we have recently succeeded with this approach in other jurisdictions. We will work closely with the Metropolitan Washington COG to leverage lessons learned and best practices from other regional GHG reduction planning projects.

The Metropolitan Washington COG Multi-Sector Approach to Reducing GHG Emissions project is an important step for bringing all its cities and counties to the forefront of sustainable community development that mitigates GHG emissions and plans for resilience again climate change. In this spirit, the DNV GL team presents our proposal and expertise to help the Metropolitan Washington COG and its member jurisdictions to share resources and work collaboratively towards an innovative, healthy and prosperous future.

1 QUALIFICATIONS OF THE OFFEROR AND PERSONNEL

DNV GL has assembled an unmatched team of experts to support the Metropolitan Washington COG's Multi-sector greenhouse gas emissions (GHG) reduction initiative. The team consists of 4 premier consulting firms in the field of GHG emissions reduction planning including DNV GL Energy and Sustainability, VHB, BuroHappold, and Justice and Sustainability Associates. Our team has a history of collaboration and working cohesively together to support multijurisdictional, and multi-stakeholder initiatives to reduce GHG emissions and enhance their economic viability.

The DNV GL team encompasses GHG emissions reduction experts across energy, transportation, land use, and built environment. Our multi-disciplinary group of professionals understands the unique challenges of regional climate planning in the mid-Atlantic region and nationwide. Specific project descriptions are included in the staff resumes provided in Appendix B. Table 1-1 provides a summary of selected examples of our team's multi-sector technical assistance project experience.

Table 1-1 Highlights of Relevant Multi-Sector GHG Reduction Projects

	Project Component					
	Multi-jurisdictional project	Energy	Land Use	Transportation	Built Environment	Facilitation of Professional Project Working Group
DNV GI	L					
City and County Associated Governments of San Mateo County - 21 cities Climate Action Plans for GHG Reductions	•	•	•	•	•	•
Kern Council of Governments – 5 cities Energy Action Plans		•			•	•
County of Santa Clara – 6 cities and county Energy Action Plans for GHG Reductions	•	•	•		•	•
San Gabriel Valley COG- 4 cities Energy and Climate Action Plans for GHG Reductions	•	•	-		•	•
City of Albany, NY Energy Master Plan	•	•	•	•	•	
Massachusetts Department of Environmental Resources – Clean Energy Plans for the 6 MA Military Bases		•	•			•

New York City – Greenhouse Gas Reduction Initiative	•	•			•	•
City of Palo Alto Sustainability and GHG Reduction Strategy		•	•	•	-	
City of Watsonville – Climate Action Plan and Carbon Fund		•	•	•	-	•
City of East Palo Alto Greenhouse Gas Reduction Strategy		•	•	•	•	
County of San Mateo						
Energy and Climate Action Plan for GHG Reductions		•	-		-	•
VHВ						
Transportation Planning Board Travel Model						
Development	-		-	-		
Washington, D.C.						
Emergency Transportation Planning for the						
Metropolitan Washington COG				-		
Washington, D.C.						
Metropolitan Washington COG/WMATA Priority						
Corridor Network						_
Washington, DC	_			_		_
Climate Smart Communities Regional						
Coordinator Program		_				_
Capital and Mid-Hudson Regions, New York	_	_	_	_	_	_
City of Richmond Sustainability Plan						
Richmond, Virginia		•	-	-	-	•
Metropolitan Washington COG Transportation Land-Use Connections (TLC) Projects	_		_	_	_	_
Washington, DC	-		-	•	-	-
3 ,						
Metropolitan Washington COG Commuter Connections	_					
	-			-		
Washington, DC						
Cleaner Greener Communities Regional	_	_	_	_	_	_
Sustainability Plans (Capital Region and Mid-Hudson Region), NY	-	-	-	-	-	-
BuroHappold						
New York Power Authority Five Cities Energy Plans					•	•
World Bank						
Sustainable Urban Energy and Emissions Planning					•	
The New School Sustainability Plan					•	
George Mason University Master Plan						

Building Energy Economic Coefficient Study			•	
Greater London Authority Mayor's Energy and Carbon Mitigation Strategy				
West of England Low Carbon Initiative Bath and North East Somerset, UK				
Justice and Sustainability				
DC Office of Planning Anacostia Waterfront Corporation Major League Baseball Park District				_
Master Plan				_
Master Plan Schuylkill River Development Corporation Tidal Schuylkill River Master Plan		•		•

1.1 DNV GL

DNV GL specializes in working with councils of governments, cities, and county governments to provide regional energy management and climate strategy consulting. We have worked with more than 500 local governments, regional agencies, corporations, and utility clients worldwide. Though our Arlington, Virginia-based team we offer a breadth of knowledge that spans GHG accounting methodology, technical emissions reduction expertise, planning, environmental review, and a broad understanding of relevant local, state, and national climate policies and programs. DNV GL staff has been at the forefront of climate action planning and carbon markets for over 20 years and has helped numerous organizations evaluate and pursue opportunities to reduce GHG emissions. For this project, DNV GL will be responsible for overall project management and energy-related strategies, including green buildings.

Experience with Multi-Sector Greenhouse Gas Reduction Strategies

DNV GL has developed GHG reduction roadmaps (e.g., climate action plans) for over 30 municipalities across the United States. Our team has deep technical experience in all the key aspects needed to assist the ') Multi-Sector Working Groups, including facilitating working group meetings and aggregating input to develop appropriate GHG reduction strategies.

Our assessments are based on robust analysis, local data sources and tailored performance metrics that provide an informed decision-making process across the full range of energy reduction, transportation, land use, and built environment opportunities. This approach helps our clients to engage stakeholders to develop strategic GHG reduction action plans and roadmaps for climate protection.

Our GHG reduction planning projects have involved working with both citizen and professional working groups who provide oversight and direction to the planning process. This deep experience will help us to assist the Metropolitan Washington COG in developing consensus and a path forward for GHG reductions in the region.

Specific relevant project experience includes:

- City of Albany, NY Energy Master Plan. As a subcontractor to VHB, DNV GL provided technical expertise related to energy planning and coordination, energy delivery infrastructure, transportation energy efficiency, and energy efficiency in buildings. The Energy Master Plan project analyzed the GHG reduction potential of myriad strategies including zoning ordinance changes, building code changes, building energy benchmarking, electric vehicles, distributed generation, solar PV, energy efficient street lighting, smart grid, district heating, and other strategies related to energy and the built environment.
- City of New York, NY Greenhouse Gas Reduction Initiative. As a subcontractor, DNV GL developed the implementation plan to help government of the City of New York realize its commitment to a 30% reduction in GHG emissions by 2017. The key elements of this project included analysis of technical and economic potential to reduce GHG emissions in all aspects of City operations, including existing buildings, new construction, vehicles, wastewater treatment, purchasing and recycling, and sanitation. The project developed a detailed plan document for delivery to the Mayor, as required by executive orders and local laws.
- City and County Associated Governments of San Mateo, Northern California Greenhouse Gas Reduction Technical Assistance Program. For more than 5 years, DNV GL has served as the prime contractor to facilitate multi-sector GHG reduction strategies for 21 local government members. DNV GL has developed numerous template materials to assist jurisdictions, including an example GHG reduction strategy (climate action plan) report, a tool for cost-benefit analysis of implementation strategies, and detailed manual of calculations in order to prioritize the potential measures. The climate action plans are developed in accordance with the California Environmental Quality Act guidelines for a qualified GHG reduction strategy that can be used to streamline environmental review. DNV GL also facilitates monthly stakeholder meetings to help implement and provide county-wide direction for GHG reduction strategy coordination.
- Efficiency Greenhouse Gas Reduction Strategy Development As part of a regional initiative spearheaded by San Gabriel Valley Council of Governments for 18 participating jurisdictions, DNV GL assisted participating cities in the San Gabriel Valley to complete the energy efficiency portion of climate action plans. The chapter addressed both municipal operations and community-wide activities. The plans provided a roadmap for GHG emissions reductions, and were customized based on individual community characteristics including demographics, economic drivers, culture, and sustainability initiatives completed to date. The individual plans served as guiding documents for municipalities in identifying GHG mitigation activities and strategies appropriate to their local context.

Expertise in Energy and the Built Environment

Since 1998, we have been the primary sustainability consultant for over 120 construction projects, worked closely with local governments, written several comprehensive guidelines, and trained over 4,000 people in green building and clean energy technologies. Our expertise also includes sustainable community development, commercial, mixed-use, and multi-family projects, building design, construction and renovation, and climate advisory services.

Our experience with cities is extensive. For 10 cities, we have developed green building ordinances applicable to new construction projects, with a threshold of achieving at least LEED®-Certified or higher LEED-certification levels. Because we believe innovation is the key to continued sustainability, we encourage our clients to push beyond standard certification levels and focus on the highest level of efficiency achievable, often times with the end goal of net zero energy buildings.

DNV GL is well-versed in the myriad energy efficiency programs and energy technologies that are applicable to residential, commercial, industrial, educational, and government customers. DNV GL provides deep technical expertise through our core energy and built environment consulting services for clients including Dominion Power, Southern Maryland Electric Cooperative (SMECO), Potomac Electric Power Company (PEPCO), Baltimore Gas and Electric (BG&E), Old Dominion Electric Cooperative (ODEC) and Northern Virginia Electric Cooperative (NOVEC).

Our local experience will enable us to advise Metropolitan Washington COG working groups on effective strategies for GHG reductions and best practices in implementation across a wide range of local distributed energy, energy efficiency and green building practices. Key project experience includes:

- **Dominion Power.** DNV GL has completed impact evaluations of almost all of Dominion Power's energy efficiency programs including Air-Conditioning (AC) Cycling, Commercial/Industrial Lighting, and Smart Pricing Pilot. Additionally, DNV GL has been closely involved with Dominion Virginia's recent studies on electric vehicle charging opportunities and technical constraints. DNV GL also conducted a study of appliance saturation of residential and non-residential buildings to inform understanding of energy conservation policy and program opportunities.
- PEPCO. DNV GL has provided services to analyze the technical challenges associated with solar PV installation within the PEPCO service territory. DNV GL conducted a feasibly study, including computer modeling of distribution circuits.
- **SMECO.** DNV GL recently evaluated programs related to reducing energy usage related to air-conditioning. As part of this project, DNV GL analyzed programs and policies for homes to reduce energy.
- BG&E. DNV GL completed a technology characterization and market assessment for BG&E that encompassed a wide range of electric and gas generation, transmission, and delivery technologies.
- **ODEC.** DNV GL provided technical support for ODEC's impact analysis of its residential load control programs and pilots.
- NOVEC. DNV GL provides load research and analysis support for their demand response programs to meet PJM requirements for bidding them into the PJM capacity market.

In addition, DNV GL is the lead contractor to develop the National Awareness of ENERGY STAR report to provide recommendations for promoting the program and increasing awareness of energy efficiency opportunities in buildings.

DNV GL also specializes in distributed generation technical assistance related to technologies such as solar PV, solar thermal, and micro-combined heat and power. Our projects include assisting local jurisdictions to leverage technical resources for streamlining permitting processes consistent with U.S. Department of Energy's American Solar Transformation Initiative.

1.2 VHB

VHB provides integrated sustainability, land use and transportation planning services to hundreds of local governments and other public and private sector clients in New York and around the country. With over 1,000 employees throughout 23 offices, four of which are in Virginia, VHB has a wealth of experience and resources to support sustainability and greenhouse gas emissions initiatives. For this project, VHB would lead strategy development and analysis related to transportation and land-use sectors.

Since 1979, VHB has partnered with private- and public-sector clients to provide high-quality technical skills to provide solutions for more efficient movement of people and goods across all modes of transportation. VHB knows what cities and towns are up against—aging infrastructure, growing land-use pressure, new environmental regulations, and challenging state and federal funding requirements. And, we know what it takes to set our clients up for success. It takes people on the ground that have local knowledge and honorable relationships. People that know the rules and regulations and can drive the process. People that are passionate about making things better in the communities where they live and work.

At VHB, sustainability is a common denominator for our projects. It is not a separate element or theme—VHB incorporates the core principals of sustainability into projects from early planning stages throughout implementation and performance monitoring, and they are addressed throughout our service areas. Sustainability has been an active component all the market sectors that VHB serves.

VHB brings demonstrated experience in educating the public on climate and sustainability measures and a proven ability to design and execute effective climate and sustainability planning processes, including activities such as goal setting, strategy identification and prioritization, and community engagement.

The VHB team was the prime contractor for the Climate Smart Communities (CSC) program in the Capital and Mid-Hudson Region of New York. This unprecedented state-local partnership aims to reduce greenhouse gas emissions and advance community goals for health and safety, economic vitality, energy independence, and quality of life. Our team created a baseline to gauge the overall success of the program by conducting a regional GHG emissions inventory and participated in development of a statewide protocol for regional GHG inventories. VHB works with 68 local governments throughout both regions of New York that have taken the Climate Smart Communities pledge. VHB also led the development of the Climate Smart Communities Certification Program, which provides a framework for taking action within each of ten Pledge

Elements while also providing detailed guidance on how to implement those actions, including best practices, tools, and resources communities can utilize.

1.3 BuroHappold

BuroHappold is an engineering and strategy consulting firm that delivers practical and forward-thinking solutions for the built environment. We focus on solutions related to efficient and green design of buildings, integrated design, intelligent reuse of buildings, intelligent reuse of sites, operational effectiveness of buildings, as well as infrastructure and city system optimization.



Using integrated approaches that aim to create innovative, holistic and flexible solutions, the BuroHappold is designing and managing the most innovative projects in the U.S. across all sectors, from the greenest office towers to sustainability designed stadiums and transportation hubs; from district-scale integrated infrastructure planning to statewide plans and implementation processes to scale-up energy efficiency efforts.

Recently, BuroHappold worked closely with NYPA to support the energy management and efficiency efforts of its clients, including State agencies and municipalities. Specifically, to support achievement of Governor Cuomo's BuildSmart energy reduction mandate, BuroHappold interviewed staff from each of the State's largest energy-consuming agencies to identify their individual and combined needs and opportunities to enhance facility operations and maintenance (O&M) and improve energy performance. From this analysis, BuroHappold provided recommendations to NYPA on how best to support the agencies' efforts and to set up a framework for the agencies to develop individualized O&M plans.

Under NYPA's Five Cities Energy Master Plans program, BuroHappold provided project management, coordination, and quality assurance services to ensure the final plans will be impactful and implementable, with particular focus on identifying the participating cities' challenges to implement these plans and the solutions to overcome these challenges. BuroHappold has provided similar services for a large list of universities, including Case Western Reserve University, The New School, Hofstra University, University of the Sciences, and Syracuse University.

1.4 Justice and Sustainability

Justice & Sustainability Associates, LLC (JSA) is an African American-owned civic engagement firm focusing on land use and development decision-making. JSA specializes in designing and implementing large and small group multi-stakeholder



processes that combine stakeholder engagement, information, and education with consensusdriven facilitation and mediation. Our mission is to help community and neighborhood residents, government agencies and officials, businesses and non-governmental organizations reach just and sustainable agreements about land uses. Since 1999, JSA has built a sterling track record of successfully designing and implementing policy setting, constituency development, and capacity building processes. JSA excels at collaborating with interdisciplinary teams on all kinds of planning and implementation projects including master planning, transportation planning, environmental impact studies, waterfront development, parks and open space, zoning, construction program management and visioning.

JSA processes are designed and managed to be fair, transparent, and culturally competent. Utilizing consensus-based techniques it has developed, JSA actively promotes transparency, openness, and participation by all relevant public audiences from diverse communities. JSA's vision is of highly participatory civic cultures where residents and stakeholders weave an agenda setting and decision making fabric that creates culturally competent, environmentally secure, economically just, technologically smart, humane and livable "beloved communities" around the world.

Justice & Sustainability Associates, LLC is a domestic Limited Liability Company in the District of Columbia. JSA's Founder/CEO, Don Edwards, has decades of experience managing projects from international U.N. summits to neighborhood visioning. Reflecting its founder's long-held personal commitment to increasing justice and sustainability in measureable ways, JSA delivers exactly what its name suggests.

The transformation of community visioning and planning practices into implementation of GHG reduction strategies and actions requires highly credible, "best practice" processes. It also requires beliefs, values, and behaviors that recognize and respect the deep significance of land use, transportation and energy decisions to communities. Justice & Sustainability Associates, LLC has established itself as an essential resource for this very task because it combines vision with integrity and consistent behaviors with high standards.

1.5 Organization Chart

DNV GL is pleased to present a team of well-qualified and well-versed resources for this project. Our team of experts covers every aspect of land use, transportation, energy and the built environment to provide the proper level of technical and strategic advice needed to assess the strategies for this project and explore what goals are appropriate for the MSWG.

Figure 1-1 displays the team organization, and the roles and responsibilities of key individuals committed to support the project.

PROJECT SPONSOR **Betty Seto** QUALITY PROJECT MANAGER **ASSURANCE LEAD** Karl Van Orsdol Task 1 Task 3 SECTOR **WORK PLAN STRATEGY TECHNICAL SUBGROUP DEVELOPMENT** DEVELOPMENT **ANALYSES FACILITATION** Kara Kokernak Jim Leahy Jim Leahy Jerome Paige **DNV GL DNV GL DNV GL JSA** Task 5 Task 6 FINAL **INTERIM GOAL TECHNICAL** REPORT **SETTING REPORT** Kara Kokernak Joe Teng Kara Kokernak **DNV GL DNV GL DNV GL LAND USE TRANSPORTATION ENERGY BUILT ENVIRONMENT** VHB / JSA **Lead Firm: DNV GL BUROHAPPOLD VHB** Staff: Jerome Paige, JSA Nathaniel Grier, VHB Max Neubauer, DNV GL Steve Baumgartner, BH Ana Hagerup, VHB Christopher Conklin, VHB Ben Butterworth, DNV GL Alasdair Young, BH Paul Moyer, VHB Dan Goldfarb, VHB Blake Herrschaft, DNV GL Christopher Rhie, BH **Technical** Angela Vincent, VHB Kari Hewitt, VHB Jessica Harrison, DNV GL Ariella Maron, BH advisors:

Figure 1-1 Proposed Team Organization Chart

1.6 Key Personnel

The DNV GL team plans to staff this project with local resources from our Arlington, VA office; VHB's Tysons Corner, VA office; and Justice and Sustainability's location in Washington, D.C. We will provide supplemental expertise through our staff in Philadelphia, PA; New York, NY; Boston, MA; and Oakland, CA.

Local staff will provide the project management and be available for overall coordination while our experts in other areas will act in advisory roles and be called on as needed to provide guidance or technical analyses. Our range of expertise in this area is provided in this brief presentation of proposed project members.

The proposed resources are based on the DNV GL team's current availability. Should project personnel availability change at the time of contract award or during the project execution, DNV GL will inform Metropolitan Washington COG of the changes of resources. DNV GL will aim to provide resources with the same level of competence as those listed. Please refer to Appendix B for resumes.

2 SCOPE OF WORK

This section describes the activities that the DNV GL team will undertake in order to accomplish the objectives of the project. The primary objective of our work is to provide technical assistance to the Multi-Sector Working Group (MSWG) and associated Sector Subgroups to help the Metropolitan Washington COG to achieve its regional greenhouse gas reduction goals. The project will develop through a robust professional stakeholder process a Technical Report that:

- Quantifies the benefits, costs, and co-benefits of viable, implementable greenhouse gas reductions strategies in each of four sectors (Energy, Transportation, Land Use, and the Built Environment) in the Metropolitan Washington Region, and
- 2. Describes the possible implementation approaches and timeframes for these strategies.

The final Technical Report will include an exploration of a range of greenhouse gas goals and targets for each sector based on achievable goals and targets, stretch goals and targets at the local, regional, and state levels, and other goals and targets that would require action in each sector at the federal level to achieve the overall GHG reduction goals adopted by the Metropolitan Washington COG.

The project is divided into 7 tasks structured to ensure that expectations are clear from the outset, enable us to quickly collect feedback from the Sector Subgroups on proposed strategies, conduct a technical assessment of the preferred strategies, and document those findings. The result will be a range of goals that are determined to be appropriate for the MSWG to consider.

It is our understanding that the analyses are to be based on the 2012 regional greenhouse gas emissions inventory. This inventory is based on consumption data provided by the region's energy utilities, non-utility energy consumption data from the US Energy Information Administration, data on water and wastewater from the region's water and wastewater utilities, solid waste data from the region's localities, on-road and off-road emissions data from modeling performed by COG for air emissions conformity purposes, and commercial airline emissions data from the 2012 US Greenhouse Gas Emissions Inventory.

2.1 Task 1. Finalize DNV GL Work Plan and Schedule

Upon contract execution, DNV GL will provide a detailed project work plan and project schedule for review. Within 10-days of delivering the work plan and project schedule, we will then coordinate a time to meet with the project director to finalize the work plan.

The work plan will include a work breakdown structure for each task, project schedule, a staff resources plan, communication/reporting procedures, health, safety, and environmental (HSE)/quality activities, and risk management activities. This structure and content align with DNV GL's Management System (DMS)—an ISO 9001-based quality management system established to ensure that our products and services meet specific quality standards, are delivered to our clients consistently, and most important, meet client needs.

DNV GL anticipates delivering the final project work plan and schedule in April, 2015.

2.2 Task 2. Meet with Sector Subgroups and Review Proposed Strategies

The three Sector Subgroups are tasked with identifying an initial set of GHG reduction strategies that they consider viable and implementable in the short-term and longer-term. The DNV GL team will meet with each group to discuss the list of identified strategies, suggest ways of organizing the strategies, and provide advice on potential analysis methodologies. Based on our experience, we know that Metropolitan Washington COG consists of many varied communities ranging from the urban center of DC to the surrounding bustling cities of Alexandria, Falls Church, and Gaithersburg, to the popular suburbs of Fairfax and Montgomery counties, and the picturesque rural regions and small towns of Northern Virginia and Maryland.

We anticipate that a key challenge will be integrating the varying needs and interests of many unique jurisdictions. For example, in working with C/CAG San Mateo to develop integrated climate planning tools, we worked with a similarly diverse set of member jurisdictions. Several jurisdictions had already completed GHG reduction plans (i.e., climate action plans), all with varying levels of detail, and ways of organizing the strategies. As part of this project, as well as our many other GHG reduction planning projects, DNV GL has compiled a database of GHG reduction strategies from over 20 jurisdictions, categorized according to sector, with initial costs and effectiveness.

The DNV GL team will leverage past experience with similar projects to assist the Sector Subgroups to review their initial lists, compare against our database of best practices, and recommend a cohesive set of strategies to be analyzed. We anticipate that each Sector Subgroup may have a wide range of GHG strategies, potentially in different levels of detail. Figure 2-1provides one example of how different GHG reducing strategies may be organized to capture different ideas and actions proposed by each Sector Subgroup.

Figure 2-1 Typical Diagram for Approaching GHG Reductions Strategies



The Climate Energy and Environment Policy Committee (CEEPC) has utilized a similar structure for its Final 2013-2016 Action Plan to achieve a GHG reduction of 20% below 2005 levels by 2020. The DNV GL team will work with the Sector Subgroups to determine what level

activities should be categorized as, with implementing actions operating at the most detailed level. The DNV GL team will assist the Sector Subgroups to further define strategies and implementing actions.

Many cross-sector strategies would be applicable to one or more Sector Subgroups. Example cross-sector strategies include electric vehicle and associated charging infrastructure requirements, transit-oriented development, green building policies for specific development areas, or water conservation and efficiency ordinances.

The Project Team will meet with each MSWG Subgroup twice under this task.

It is our understanding that each Subgroup will have developed a preliminary list of GHG reduction strategies. In preparation for the first meeting, the Project Team will review this preliminary list in order to:

- Combine strategies with similar intent;
- Reword or clarify details of particular strategies in order to best analyze the intended benefits;
- Identify gaps in types of strategies identified and provide additional recommendations for consideration; and
- Assess best methods for evaluating each strategy, including a recommended approach for quantifying the potential GHG reduction benefits.

While the focus of strategy evaluation will be on potential for GHG reduction, the Project Team believes that an evaluation of strategies against additional criteria may be beneficial for prioritizing strategies for short-term or long-term implementation. The Team has extensive experience carrying out evaluation and prioritization processes for municipal and regional climate action planning efforts, including developing Excel-based tools to support such processes. The Team will work closely with the MSWG to establish a set of clearly defined quantitative and qualitative criteria, in addition to GHG reductions, by which to evaluate identified strategies and rank them for priority implementation. Such criteria may include, but not be limited to: energy reduction, capital cost, cost savings potential, manpower required, funding availability, technical feasibility, job creation potential, VMT reduction, waste reduction, consistency with other regional goals. While the team expects over-arching themes from each of the Subgroups there will be variances throughout each strategy. The first meeting with each Subgroup will identify the over-arching themes and work to understand the importance of the varying aspects of the strategy to the particular Subgroup. This approach will allow The Team to identify what aspects of the strategies the Subgroups are willing to negotiate and use them as platforms to build a dialog that will lead to consensus building.

In preparation for the second round of sector subgroup meetings, the Project Team will prepare a draft technical memorandum that summarizes a prioritized list of strategies based on this evaluation process. The memorandum will also include the quantitative and qualitative assessment of each strategy. High-level estimates for quantitative benefits, including GHG

reductions, will be based on the Team's research and experience with industry best practices, case studies, and rule of thumb estimates for benefits. The Team relies on extensive experience with, and knowledge of, tools and resources for estimating benefit values. At this stage of the process, an exact quantitative analysis may not be feasible for all initiatives, but can be further analyzed once implementation plans are fleshed out for prioritized strategies.

During the second meeting with each Subgroup, the Project Team will review the list of strategies, discuss most appropriate methods for quantifying benefits, and select a set of strategies to be analyzed in more detail throughout later project tasks.

The DNV GL team will provide experienced facilitators with relevant subject-matter expertise for each sector subgroup meeting. Our approach is designed and managed to be fair, transparent, and culturally competent, by utilizing public dispute resolution techniques we have developed. We actively promote transparency, openness and participation by all relevant stakeholders. To assist in consensus building, JSA will implement processes that combine stakeholder engagement, information-sharing, and education with impartial facilitation and mediation, where necessary.

As a result of these meetings we will prepare Technical Memorandum #1 summarizing the proposed subgroup strategies and highlight any cross-sector strategies.

Task 2.1 – Experience and Approach to Assessing Land Use Strategies

JSA has worked extensively in the District of Columbia for over 16 years conducting engagement and consensus building on major land use projects. JSA is the "go-to" firm because of its track record of success. JSA has established a high level of credibility with diverse audiences who have experienced our work methods and deep understanding of important local constituencies (e.g., historic preservation, transportation, neighborhood, local government, economic development) is a significant asset. Our sensitivity to cost-effectiveness, "right-sizing" and "fit" (cultural competence) means that we will encourage and involve stakeholders to inform the methods and scope of the engagement process.

JSA's success in the in land use include the Tidal Schuylkill River Master Plan where JSA coordinated the work of a multi-stakeholder Community Engagement Team, which implemented a 12-month participation process that defined narratives and interpretive modalities that made engagement meaningful. For the Major League Baseball Park District Master Plan, JSA accomplished an expedited engagement process that insured accuracy of information being presented to the public through a series of meetings that included an Open House, a two-day Public Charrette and a number of smaller public meetings. JSA led civic engagement for the Washington DC Comprehensive Plan Evaluation Revision, which involved an intense level of meetings designed to bring consensus resulting in the development of a diverse, city-wide constituency for planning the District's future growth. JSA will use similar techniques to facilitate consensus where there may be disagreements on the results of the strategy analysis and assist the project team in incorporating the discussion of identified areas of disagreement into the final Interim Technical Report.

Task 2.2 – Experience and Approach to Assessing Transportation Strategies

Our team brings decades of experience in developing transportation strategies, traffic modeling and forecasting, air quality modeling, and estimating GHG reduction benefits from strategies in the areas of:

- Bicycle and pedestrian planning/infrastructure
- Transit-oriented development
- Transportation Demand Management
- Electric vehicle charging infrastructure
- Fleet efficiency management
- Complete streets
- Multimodal and transit planning
- Parking analysis
- Traffic signal optimization

2.2.1 Task 2.3 – Experience and Approach to Assessing Energy / Environmental Strategies

DNV GL staff will lead the engagement and facilitation of the Energy/Environmental Sector Subgroup and work with them to develop reduction strategies related to:

- Energy supply and generation (both utility, retail and procurement),
- Renewable energy
- Building energy efficiency and green building,
- Energy security and resiliency

Our team has worked closely with the U.S. Green Building Council (USGBC) since 2003, has expertise in the Leadership in Energy and Environmental Design (LEED®) certification process, and is considered a LEED Proven Provider by the USGBC. We have expertise in the development of green building ordinances, energy efficiency program implementation



and evaluation, a market understanding of the DC area building stock, expertise in new construction green building practices, and effective existing building intervention points (e.g., incentives, time-of-sale ordinances, permitting, etc.).

The DNV GL team uses intuitive graphics to assist with the visualization of baseline energy performance and the trade-offs between different green building initiatives. For the World Bank, our subcontractor BuroHappold helped benchmark the energy profile of cities in developing

countries and help those cities prioritize actions to promote energy efficiency across a range of sectors leading to a sustainable and progressive programmatic investment plan. Specifically, the project helped cities understand and integrate energy use across all sectors, identify and prioritize specific energy efficiency interventions, enable the cities to compare the quantified impacts of those interventions with each other and with international best-practice benchmarks.

2.3 Task 3. Presentation of GHG Reduction Strategies for Analysis to MSWG

To prepare for the presentation of GHG Reduction Strategies for analysis to the full MSWG desired to be on May 8th, 2015, the DNV GL team will prepare a Draft Technical Memorandum #2 on the combined list of strategies across the entire project, based on the feedback on the individual memorandum developed in Task 2. The Task 3 Draft Technical Memorandum will include proposed methodologies for analyzing each strategy (e.g., based on approach previously utilized by specific jurisdictions within Metropolitan Washington COG or guidance from U.S. EPA), including a summary of any additional data that would be needed from Metropolitan Washington COG, individual jurisdictions, utility providers, or other regional agencies.

Based on our experience providing technical assistance for GHG reduction strategies and decision-making processes, we have wide expertise utilizing many different metrics for evaluating different strategies. The DNV GL team will work closely with the Sector Subgroups to determine the overall analytical framework and associated key performance indicators (KPIs). These include:

- GHG reduction impact (Tons of GHG saved)
- Marginal abatement costs (Net cost per ton)
- Net present value
- Return on investment
- Payback
- Internal rate of return
- Co-benefits (e.g., water, local jobs, economic development, beautification, local air quality, and youth engagement)

The purpose of the Draft Technical Memorandum is to provide sufficient background and detail to the entire MSWG for review prior to the May 8th, 2015 meeting. The presentation will review the list of strategies to allow all members to comment on the full set of recommended strategies and further identify cross-sector approaches and areas for coordination going forward.

During the meeting, the DNV GL team will review the proposed approaches for analyzing each strategy, including the associated key performance indicators. As part of the discussion of the relative cost and benefits, we will also review the data needed for analysis and possible data sources. Example data include any projections related to future development (e.g., square feet of new development), population, and jobs growth. Typically, we would also require other data about current conditions, such as number of electric vehicle charging stations already in place, number of car-sharing pods in place, and number of LEED-certified buildings.

We will also review with the MSWG the approach for analysis of a three-phase GHG reduction plan comprising the time periods 2012 to 2020, 2020 to 2040, and 2040 to 2050. The GHG estimates and cost-benefit analysis for the first two periods will be most robust, and then more speculative for the 2040 to 2050 time period. The DNV GL team proposes to outline important actions in the first two phases that will support continued GHG reductions in the 2040 to 2050 time period. Most of our GHG-reduction projects have utilized a quantitative approach through 2040 and a more qualitative assessment to achieving a 2050 GHG reduction target.

The DNV GL team has worked with many regional organizations to respond to various comments. We generally seek to gain consensus on the selected strategies and analytical approaches, recognizing that project working groups have many different personalities, with different perspectives and also different community needs and planning approaches.

Specific examples relating to the three sectors of interest in this project include:

Land Use: JSA's success in the in land use include the Tidal Schuylkill River Master Plan where JSA coordinated the work of a multi-stakeholder Community Engagement Team, which implemented a 12-month participation process that defined narratives and interpretive modalities that made engagement meaningful. For the Major League Baseball Park District Master Plan, JSA accomplished an expedited engagement process that insured accuracy of information being presented to the public through a series of meetings that included an Open House, a two-day Public Charrette and a number of smaller public meetings. JSA led civic engagement for the Washington DC Comprehensive Plan Evaluation Revision, which involved an intense level of meetings designed to bring consensus resulting in the development of a diverse, city-wide constituency for planning the District's future growth. JSA will use similar techniques to facilitate consensus where there may be disagreements on the results of the strategy analysis and assist the project team in incorporating the discussion of identified areas of disagreement into the final Interim Technical Report.

Transportation: For a number of municipal clients, VHB has developed a suite of sustainability planning tools called Sustainability Planning Optimization Tools (SPOT™). This set of Excel-based tools provides a streamlined and integrated system for populating a list of potential strategies, screening them against a set of established (customizable) evaluation criteria, rank them for prioritization, compile details and identify steps for implementation, and assess progress and track metrics. Client users have found that this set of tools provides a transparent and consistent process by which they can plan, implement, and track sustainability initiatives, and that the system allows for a process of reevaluation and continuous improvement.

Energy / Environmental: DNV GL has developed many tools for the analysis of energy and building-related GHG reduction strategies, ranging from energy efficiency measure database tool to estimate energy and GHG savings to our Micro-grid Optimizer (MGO) planning tool for integrating distributed renewable resources/storage/flexible demand to community-level strategies for green building ordinances, reach codes for both mandatory and voluntary approaches (CAP Planning Tool). The tools and/or embedded assumptions and calculation methodologies will be used to analyze of GHG reduction strategies selected by the Sector Subgroups. Our tools allow users both within the Sector Subgroups and other Metropolitan Washington COG staff or member jurisdictions to quickly run scenarios of future reduction

options: from existing building energy improvements. Our tools are set-up to assess the most critical KPIs to the client including total energy, energy costs, and GHG.

Following the meeting, the DNV GL team will prepare a Final Technical Memorandum #2 that provides a final set of strategies to be analyzed, including the associated methodologies and KPIs. This memorandum will document all the various comments and suggestions received.

2.4 Task 4. Analyze Selected Strategies

Following the agreed set of GHG reduction strategies and analytical approach (including KPIs), the DNV GL team will complete the analysis of each strategy. Typically, the DNV GL team prepares both a Technical Memorandum (e.g., report or user's guide) as well as an Excel-based database tool that provides the client with full access to the calculation methodology, inputs, and assumptions.

For each strategy, the DNV GL team will provide a description of the approach and associated implementing actions (e.g., next steps or near-term activities), approximate timeframe implementation, cumulative GHG reductions (e.g., reductions achieved in target year), costs, and co-benefits. The approach for the cost analysis will be agreed upon as part of Task 3. Based on our experience, costs are typically the most difficult KPI to estimate due to wide variability in the level of implementation, staff time needed, and availability of grant or other funding sources.

Other important information that DNV GL would suggest for the analysis includes guidance on the implementing agency (e.g., specific city departments, city versus county versus Metropolitan Washington COG, partnership with utility or other organizations). The DNV GL team has compiled a robust set of case studies and success stories that can be used to demonstrate feasibility of different innovative approaches for GHG reductions.

Each strategy will include some implementation details related to the intervention actions. The first step of an implementation plan is to prioritize the strategies in each scenario, based on the previous analysis considering technical issues, costs, savings, feasibility, behavioral changes needed, and other factors. While we expect that all strategies could be implemented, some strategies will be implemented sooner rather than later.

There will be at least three phases for each scenario, as illustrated in Figure 2-2. Each phase will be designed to naturally build upon the earlier phases, so that emission reductions will increase over time.

Figure 2-2 Analysis of GHG Reduction Strategies

Phase 1 2012 to 2020	Phase 2 2020 to 2040	Phase 3 2040 to 2050
Immediate strategies for implemention. Includes all actions in progress now and some new actions deemed to be technically feasible and implemented with existing resources Example: Expand energy efficiency program marketing and outreach based on currrent incentive programs	5 Years from Plan Adoption Includes strategie sthat may take time to become feasible, or may involve regional or public-private partnerships, which need time to fully develop. Also includes strategies dependent on implementation of Phase 1. Example: National Capital Region extensive bicycling sharing program, which requires the current pilot program to be expanded	25-30 Years from Plan Adoption Includes strategies not yet feasible for various reasons. Could include emerging technologies. Also includes strategies dependent on implementation of Phases 1 and 2. Example: Support a autonomous vehicle neighborhood sharing system, orhyperloop connecting the region to other urban centers (e.g., New York City)

The Technical Memorandum #3 will document the analysis of each strategy to each of the Sector Subgroups and for the applicable cross-sector strategies. The Technical Memorandum #3 will include a detailed implementation matrix will include everything MSWG staff and partners need to know to implement each strategy, including:

- Description of each GHG reduction strategy
- Sector
- Responsible department or organization for implement the strategy
- Specific time-bound actions, in a checklist style, needed to implement the strategy
- Metrics that will be used to evaluate success, and instructions for gathering and evaluating the required metric data
- Funding sources, financial implications and budget needed
- Example case studies (locally and nationally)

For each of our GHG-planning clients, the DNV GL team has developed Excel-based planning tools that summarize the selected GHG-reduction strategies. The tool is customized for each client based on their community characteristics, GHG emissions factors (e.g., water, electricity and transportation mix), energy use intensities, building types, and projections.

Our analysis leverages our understanding of how local government works, including procurement processes, budget development, staff and labor, facility operations, regulatory

requirements, and regional relationships. For the Metropolitan Washington COG, we will set up the analysis to facilitate an exploration of GHG reduction goals and targets, which will be completed as part of Task 6. The Excel-based analysis will have flexibility for users to adjust inputs and assumptions, including a sensitivity analysis of potential GHG reductions at the regional level.

Task 4.1 – Experience Quantifying GHG Reductions from Land Use and Transportation Strategies

Our subcontractors VHB will be the major contributors to assessing strategies related to transportation and land use. VHB will lead the effort to integrate the land use and urban mobility elements, with overall responsibility for assessing emissions reduction strategies associated with land use and urban mobility. VHB will collaborate with JSA in reviewing/developing City policies and actions related to GHG reduction, and will provide technical support and diagnostic testing where appropriate to refine emissions reductions associated with individual measures.

The assessment of strategies to reduce GHG emissions associated with land use and transportation generally fall into two groups: integrated, and focused. The strategies are typically combined where appropriate after initial meeting with stakeholders.

Integrated Land Use and Transportation Emission Reduction Strategies

Our approach is to work the local stakeholders to generate a land use profile that provides a baseline description of the current context, opportunities, and constraints regarding land use and transportation emissions. We review and assess land use conditions and other related factors, together with existing local and regional plans and programs that impact them to fully understand the existing strategies and other potential opportunities that may exist. In particular, existing programs intended to further the City's sustainability goals will be identified and assessed in terms of where their impact may be increased.

We then work with project stakeholders to review the City's General Plan, Zoning Maps, and Municipal Code to determine where policies and ordinances might be refined or modified. As a result we provide our clients a draft a land use baseline matrix that identifies barriers – programs, policies, and other conditions – that contribute to increased motor vehicle trips and mileage, and decreased non-vehicle mobility. The matrix provides a baseline against which any future land use efforts may be measured and evaluated.

Focused Transportation Emission Reduction Strategies.

Quantifying transportation-related GHG reductions requires a comprehensive understanding of the proposed strategies. Many strategies overlap or are affected by other strategies, including land use strategies. One of the first steps is working with the MSWG to ensure that the boundaries are clearly drawn and any overlapping or mutually exclusive actions are identified. This effort also includes clearly identifying the actions that the strategy is expected to have, whether a shift in vehicle occupancy, reduction in average miles driven per household, improved fuel efficiency or one of many other actuators.

For each strategy, we identify how the strategy would affect the key inputs and the resulting reduction in GHG. In some cases, the changes are inherent in the strategy, others, must be estimated from a combination of experience elsewhere and professional judgment. The key element is ensuring that the process is transparent and that the MWSG has an opportunity to review and discuss in the input and output assumptions. In some cases, the evaluation may include coordination with Metropolitan Washington COG staff to apply the travel model or execute MOVES runs where the actions are highly interdependent or not otherwise easily determined.

The Team has extensive knowledge of methods for utilizing baseline and forecast data to model or estimate VMT reductions, fuel savings, and other metrics, which can then be easily quantified for GHG reductions and air quality improvements.

In the end, the focus is on the collaborative process with MWSG. The reductions calculations must be fully transparent to ensure buy-in and understanding of their potential. While the Metropolitan Washington COG may be able to directly pursue some actions, many of the actions will require efforts from the member jurisdictions or states. Without buy-in and transparency for how the strategies have been quantified, the ability for ultimate success is severely hampered.

Task 4.3 – Experience Quantifying GHG Reductions from Energy/Environmental Strategies

The DNV GL team has significant experience quantifying the GHG reductions and estimated costs associated with GHG reduction strategies related to energy and the built environment. Some of this experience comes from staff previously responsible for the City of New York reducing its own carbon footprint 30% by 2017; these team members developed a data-driven strategic plan to achieve this goal, managing the creation of the implementation details and managing the actual implementation.

The DNV GL team has also developed implementation strategies for a variety of clients, including universities, military bases and land developers.

We will utilize our experience, data collection (including utility bills, previous project documentation, etc.) and tools to estimate costs and benefits for each energy and built environment strategy, based on input from the Sector Subgroups.

For previous project our team has assessed the GHG reductions potential from a range of energy and building related projects including energy efficiency projects, renewables, combined heat and power systems, energy procurement, meter and management. Following the identification of potential clean energy opportunities we worked project stakeholders to develop a framework and methodology to assess and help prioritize projects. The prioritization methodology included a comparison of costs and benefits of each clean energy opportunities. Example approaches include a composite score summarizing different categories of benefits (e.g. energy saving, GHG savings), cost, co-benefits, and/or a ranking based on return on investment, payback or other financial metric.

The benefit to a scoring approach is that other co-benefits can be explicitly considered in the initial prioritization. For example, in addition to energy reductions, projects that increase system security, reliability and resiliency with respect to hazards causing grid outages would receive higher scores compared to the same cost-effectiveness using traditional financial metrics. Other qualitative factors were also scored, such as project feasibility, technical complexity and resources. The DNV GL team worked with military staff to build upon ongoing initiatives and developed a list priority projects to move forward with.

2.5 Task 5. Prepare and Present Interim Technical Report

Following the presentation of Technical Memorandum #3 to each of the sector sub-groups, the DNV GL team will prepare a Draft Interim Technical Report that summarizes the strategies as a packaged roadmap for regional GHG reductions. This Draft Interim Technical Report will incorporate the comments received from the Sector Subgroups on the work completed to date and be presented to the MSWG at the July 31, 2015 meeting.

During the July 31, 2015 MSWG meeting, the DNV GL team will facilitate consensus on revisions to the Interim Technical Report. Our team works closely with many professional working groups charged with developing important strategic documents. Our approach for reconciling disagreements for consensus-building is based on inclusion of all participants and not just of those who are most vocal, and commitment by participants to collaborate and build upon each other's concerns and suggestions. The DNV GL team assists clients with effective decision-making through collaboratively shaping a proposal until it meets as many of the participants' concerns as possible. Based on our other multi-jurisdictional GHG reduction projects, one way to address differences is to build flexibility into approaches for implementation of strategies, yet achieves regional goals.

If complete consensus cannot be reached on over-arching goals or other key components, the DNV GL team will incorporate discussion of these areas into the Interim Technical Report. Following the MSWG meetings, the DNV GL team will assist COG staff to prepare a presentation on the results of the project to-date and key recommendations to TPB, MWAQC, CEEPC and the COG Board. We will also accompany COG staff to participate in these meetings, as requested.

2.6 Task 6. Explore GHG Goals and Targets in each Sector

In this task, the DNV GL team will research and review by sector, the range of GHG goals and targets that have been established in other metropolitan regions. We will also identify from the strategies analyzed a range of potential GHG goals and targets for each sector. We will present these goals and targets in three tiers:

- 1. Achievable goals and targets based on currently viable, implementable strategies,
- 2. Stretch goals and targets based on strategies that could become viable in the future if certain changes were made in existing state and local regulations, and future investments

3. Goals and targets that would require action by other levels of government.

The DNV GL team will use an Excel-based Climate Action Planning Model (CAP Model) built up from the GHG strategy analysis completed in Task 4. The Metropolitan Washington COG CAP Model of potential GHG reductions and regional targets and goals will be based on the 2005 baseline GHG emissions inventory and most recent 2012 regional GHG inventory update. Each GHG emissions category (e.g., Scope 1 natural gas use, transportation emissions) will be further disaggregated into more specific source categories. For instance, natural gas usage may be divided into commercial and residential natural gas usage, and transportation emissions into commute and non-commute miles. These pieces form the foundation of the analysis and goal setting.

The Metropolitan Washington COG CAP Model will incorporate the GHG strategies developed throughout the project, including any policy frameworks, funding plans, and social readiness to implement action and required timeframes for action. The analysis will have the same basic challenges and components but will be constrained to a greater or lesser degree by time and the region's ability to take advantage of new information, market transformation, technology, and social readiness.

The Metropolitan Washington COG CAP Model will identify the time scales, key actors, dependencies, and developments that would need to occur over time in order to achieve the different emissions targets out to specific dates aligned with proposed goals. The specifics of the model will address all the basic building blocks that need to be in place for goal attainment, as well as specific policies, programs, and changes that need to be in place by the target year.

The final Metropolitan Washington COG CAP Model tool will allow the MSWG to explore different actions and timeframes to achieve the specific goals and stretch targets for GHG reductions. The tool will allow the Metropolitan Washington COG to model different GHG reduction glidepaths though user controlled assumptions and intervention adoption rates. The analysis will identify how emissions reductions are needed from:

- Enhancing current Metropolitan Washington COG participant-city and regional programs to expand emissions reduction potential
- New actions and strategies not yet deployed in the region
- Key early actions that must be pursued in the near-term to set the region on a critical path to implement the long-term, high-impact strategies necessary to achieve the proposed goals.

Table 2-1 presents an example of user-controlled assumptions and adoption rates that may be used to explore GHG reduction potential of different scenarios and levels of implementation for specific GHG reduction strategies.

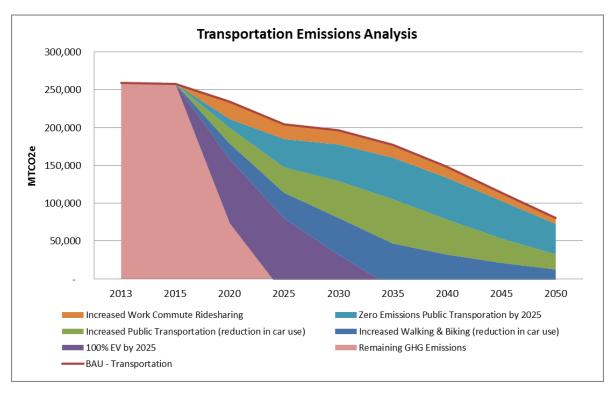
Table 2-1 Example User Controlled Assumptions and Adoption Rates

Emissions	Levers	Selected?	Annual Adoption
Category		(Yes/No)	Rate (Enter Value)
Transportation	BAU - Transportation		

Increased Walking & Biking (reduction in car use)	Yes	2.00%
Increased Public Transportation (reduction in car use)	Yes	2.00%
Increased Work Commute Ridesharing	Yes	20.00%
100% EV by 2025	Yes	
Zero Emissions Public Transportation by 2025	Yes	
Remaining GHG Emissions		

Based on the selected actions and adoption rates, the tool will estimate emissions levels for the sector as well as the potential for achieving selected targets. Figure 2-3 illustrates a wedge chart the output from the CAP Model tool.

Figure 2-3 Example of Analytical Tool Results of Transportation Actions and Schedule for Achieving Reduction Goals



The CAP Model developed by DNV GL already incorporates GHG reduction strategies underway at the national level, including the increase in federal CAFE standards and state-level renewable portfolio standards (RPS). Furthermore, the CAP Model will account for the Clean Air Action Section 111(d) that regulates carbon emission related to power plants, as well as expected increases in national appliance efficiency standards that will reduce both the emissions intensity of electricity, and by buildings.

Technical Memorandum #4 will summarize the exploration of three tiers of GHG goals and targets, and provide an overview of "what it would take" to achieve different targets. The DNV GL team will present the results to the full MSWG on September 25th, 2015 and incorporate the comments and input in a Final Technical Report.

2.7 Task 7. Prepare and Present Final Technical Report

In this final Task, the DNV GL team will develop the Final Technical Report to document the findings from the MSWG process, results and next steps. The report will incorporate the information developed from the exploration of GHG goals and targets in each sector along with the analysis of the strategies analyzed and documented in the Interim Technical Report. Key discussion topics and areas of debate or non-consensus will also be documented, including comments received during the September 25th, 2015 MSWG meeting in this report. We understand that presentations on the Final Technical Report will be made by COG staff to the Transportation Planning Board, Metropolitan Washington Air Quality Committee, and the Climate, Energy, and Environmental Policy Committee in December 2015 and to the COG Board in January 2016. The DNV GL team will assist COG staff in preparing these presentations, accompany COG staff to these presentations and participate in them as requested.

3 SERVICES, PRICING, AND SCHEDULE

3.1 Services Description

DNV GL's approach to developing strategies and delivering results is focused on providing exceptional service to our clients through a clearly defined but flexible organizational structure that maximizes the value of our resources.

The DNV GL team has a proven record of:

Building strong partnerships. Our project teams are designed to engage project stakeholders and our partner firms to build trust, share knowledge, and ensure maximum value is created from each engagement. The effectiveness of this approach was especially in our recent completion of the NYPA 5 Cities Energy Master Planning effort where DNV GL, VHB, and BuroHappold worked to meet NYPA and City stakeholders' expectations from this planning effort.

Collaborating with our client to strengthen results. Our team brings a deep understanding of the complex political context of the DMV market, allowing us to anticipate and be responsive to MSWG needs —saving time, effort, and money. As a locally based team, we have a vested interest in the success of this project, and a demonstrated history of showing care

and concern for our clients' needs. Our commitment to supporting our clients has been demonstrated on several occasions through our responsiveness to short-notice requests, including requests for fast-turnaround information and assistance leading or participating in local meetings with clients and other stakeholders.

Seeking out and being responsive to client feedback. We regularly seek feedback to learn how we can better serve our clients. As a result of this open dialogue, we have enhanced communication, planning, and quality by through the development of project management standards; implementing regular planning and decision-making meetings; providing internal project management training for DNV GL staff

Developing best-in-class practices that can be leveraged across multiple jurisdictions. We have extensive experience working with multi-jurisdictional entities. Often such entities need to integrate diversified staff from multiple cities, understand the complex regulatory and policy environments impacting specific cities or counties within the entity, and assess the impacts of GHG reduction emissions on neighboring communities, especially with regard to transportation, water and air management. Our experience allows us to understand what strategies and implementation methodologies are most affective at the regional multijurisdictional level, and which are most effective at the municipal level.

Quality management. DNV GL has implemented an ISO 9001-based quality management system called the DNV GL Management System (DMS). We established the DMS to ensure that our products and services meet specific quality standards, are delivered to our clients consistently, and meet client needs.

3.1.1 Project Management Approach

To achieve the overall objectives of this project, the project manager will need to manage a complex process likely to involve engaging and coordinating with many different players, stakeholders and across technical disciplines. The project manager must ensure that the Multisector GHG Reductions Assessments development stays on schedule, includes high-quality analysis and concrete recommendations, and leverages lessons learned from similar endeavors to meet the objectives of the MSWG.

We use a continuous stakeholder engagement process that begins with a project's kick-off meeting and extends throughout the technical analysis component and into project goal-setting to ensure that the strategies identified are actionable and meet the needs of the region not only for GHG emissions reductions but also in terms of sustainability, reliability, and economic growth.

The DNV GL team offers a proven contract management approach with best-in-class components. Our team has a demonstrated record of being responsive to client feedback, building strong partnerships, and producing high-quality technical documents that anticipate and meet the needs of project stakeholders.

We aim to be a true partner to the Metropolitan Washington COG providing reliable and proactive support to help coordinate across various activities, promote stakeholder engagement via in-person presentations, and facilitate information exchanges with all project stakeholders.

DNV GL has implemented an ISO 9001-based quality management system called the DNV GL Management System (DMS) which includes:

- Establishing and maintaining the project work plan
- Ensuring subcontracted resources are well-integrated
- Assigning appropriate personnel to the project
- Directing and managing project execution
- Monitoring and controlling project work
- Monitoring, assessing, and mitigating project risks
- Performing integrated change control
- Scheduling and reporting along with financial controls and cash flow projections
- Inspecting the quality of the plans
- Delivering final products
- Performing project close-out.

As part of the DMS, DNV GL has implemented project management processes and systems in its Project Management Playbook (PM Playbook). We based our PM Playbook on the Project Management Body of Knowledge (PMBOK), as published by the Project Management Institute (PMI).

Our adoption of these proven project management principles—as related to project initiation and planning, budget management, client communication, schedule adherence, scope validation, personnel guidance, risk management, and quality assurance—for client deliverables provides assurance that DNV GL will proactively manage and deliver the MSWG's Multi-sector Approach to Reducing GHG Emissions project on budget, as scheduled, and as promised.

3.1.2 Deliverables

A summary of the Key Deliverables associated with this project is as follows:

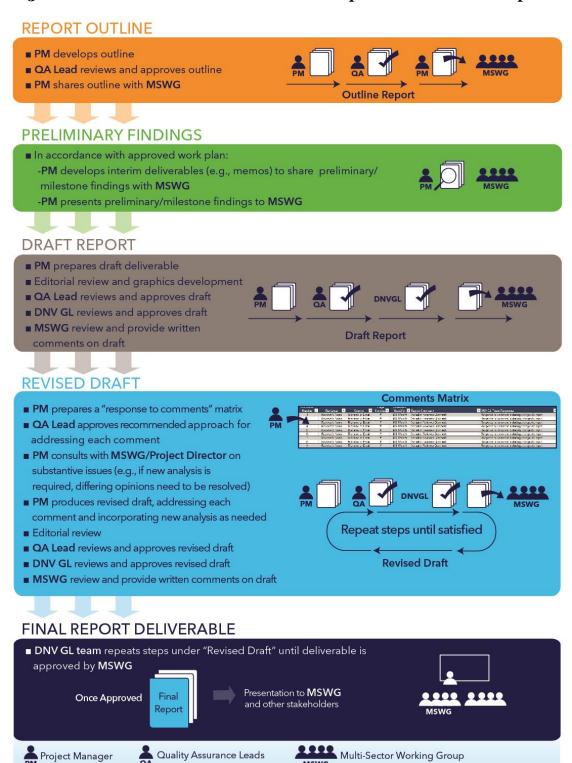
- 1. **Task 1 Work Plan** identifying tasks, schedule, critical paths, and resources including a project personnel directory identifying all personnel, roles, and contact information
- 2. Task 2 Technical Memorandum #1 Proposed subgroup strategies.
- 3. Task 3 Draft and Final Technical Memorandum #2 Combined list of strategies across the entire project for detailed analysis
- 4. **Task 4 Technical Memorandum #4** Results of strategy analysis including any data, models, and supporting documentation used for the analysis
- Task 5 Interim Technical Report and presentation slides for the TPB, MWAQC, CEEPC and COG Board meetings

- 6. **Task 6 Technical Memorandum #5** Summary of findings from the exploration of GHG goals and targets
- 7. **Task 7 Final Technical Report** and presentation slides for meetings with the TPB, MWAQC, CEEPC and COG Board.

Figure 3-1 shows our typical approach for review and presentation of all deliverables including the Technical Memorandums, Draft Interim Technical Reports, presentation slides, and the Final Technical Report. To ensure successful delivery of these materials, we implement this process under the following principles:

- **Consistency:** Collecting feedback and preparing reports and presentation materials will be implemented consistently across sub-groups, committee, and COG Board.
- Governance: Our contract management team, which includes members from each subcontractor organization, will monitor and control the execution of the deliverable development process.
- Planning: We will build adequate time into project schedules to execute each step in our
 process. The appropriate length of time for each step (e.g., stakeholder comments, draft
 revision) will be determined in concert with the MSWG.
- **Frequent communication:** Progress on deliverables will be tracked and reported to the MSWG via weekly updates.

Figure 3-1 DNV GL Standard Process for Development of Technical Reports



3.2 Pricing

The DNV GL proposes the following fixed price for the scope of work described in this document. DNV GL is pleased to provide a proposal that exceeds the 19% DBE goal established for this project. Please refer to Appendix C for the DBE Participation Plan.

Table 3-1 Pricing

Task	Fixed Price
Task 1. Finalize Workplan and Schedule	\$12,520
Task 2. Meet with Sector Subgroups and Review Proposed Strategies	\$58,160
Task 3. Present GHG Reduction Strategies for Analysis to MSWG	\$33,150
Task 4. Analyze Selected Strategies	\$79,180
Task 5. Prepare and Present Interim Technical Report	\$53,180
Task 6. Explore GHG Goals and Targets in each Sector	\$35,030
Task 7. Prepare and Present Final Technical Report	\$28,780
Total	\$300,000

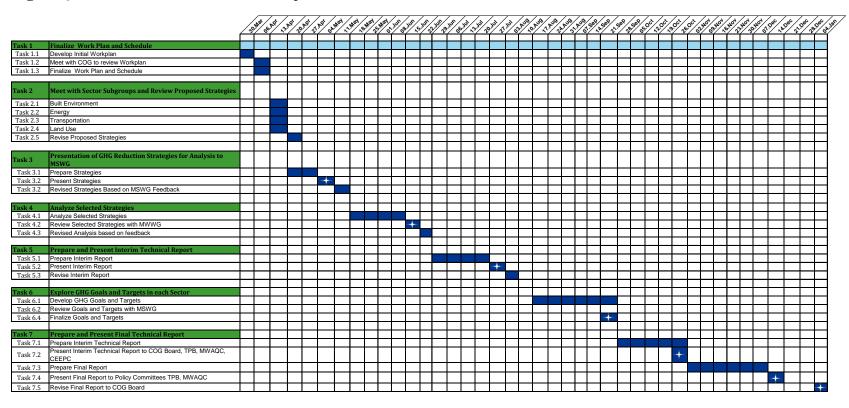
Table 3-2 Team Firm Work Allocation

Team Firm	Percentage of Contract
DNV GL	40%
VHB	24%
BuroHappold	20%
Justice and Sustainability (DBE)	16%

3.3 Schedule

The schedule proposed by the Metropolitan Washington Council of Governments is aggressive. Where possible, we will initiate work in parallel, but much of the work is contingent on the Sector Subgroup input and meeting schedule. To meet the aggressive schedule our team has compiled sufficient resources to ensure completion of each task on-time. Based on the response to questions at the pre-briefing meeting on February 26, 2015, the team understands that selection and contracting will be finalized in late March 2015. Therefore, for scheduling purposes, as reflected in the initial project schedule presented in Figure 3-2, we are assuming a start date of March 30, 2015 for the start of work.

Figure 3-2 DNV GL Team Initial Project Schedule



4 REFERENCES

Table 4-1 provides references for each of the firms on the proposed team.

Table 4-1 Team Firm References

Team Firm	Client	Project Name	Client Contact
	New York Power Authority (NYPA)	Five Cities Energy Master Plans	Katherine M. Rougeux Office of Strategic Planning 123 Main Street Mail Stop 10 - H White Plains, NY 10601-3170 P: 914.355.0682
DNV GL	City and County Associated Governments of San Mateo	Regionally Integrated Climate Action Planning Suite (RICAPS) - GHG Reduction Technical Assistance Program	Resource Conservation Programs Manager County of San Mateo - Public Works 555 County Center, Fifth Floor Redwood City, CA 94063 650-599-1412 (work) 650-361-8227 (fax) kspringer@co.sanmate o.ca.us
VНВ	Metropolitan Washington COG/NCRTPB	Technical Support Commuter Connections Workplace Travel Survey	Ronald Milone Travel Forecasting Program Director Metropolitan Washington COG / NCRTPB 777 N. Capitol Street, NE Suite 300 Washington, DC 20002- 4290 (202) 962-3283

Team Firm	Client	Project Name	Client Contact
BuroHappold	The World Bank Group	Social, Urban, Rural and Resilience Global Practice Project	Stephen A. Hammer, PhD Lead Specialist – Cities and Climate Change Global Urban and DRM Unit 1818 H St NW Washington, D.C. 20433 202.473.1220
JSA	Metropolitan Washington (COG)	2050 Plan	Chuck Bean Executive Director 777 N. Capitol Street, NE Suite 300 Washington, DC 20002- 4290 202.962.3260

5 APPENDIXES

Appendix A TERMS AND CONDITIONS RESPONSE

In this Appendix, DNV GL has provided its response to the terms and conditions provided with the RFP.

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, <u>KEMA</u>, <u>Inc.</u> (<u>DNV GL</u>), 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	of Contractor's	Authorized	Official

Name and Title	of Contr	actor's Author	orized Official
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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 with reasonable notice 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 as long as such copies are held as Confidential Information.
- 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** COGBoth parties, by written notice, may terminate this contract, in whole or in part, at any time by written notice to the Contractor other party when it is in COG's the other party'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 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 or known as force majeure, 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 defect. In 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 default 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. <u>Age</u> 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. <u>Disabilities</u> 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.

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 third party claims of 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 (<u>i.e.</u>, 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.
- (g) Notwithstanding the above, Contractor shall retain and may use the general knowledge acquired as a result of its creation of the work product or the performance of services hereunder, for its general reference, enhancement of its technical capabilities, and for other purposes. All information and material which is owned by Contractor and used by Contractor in the performance of the Agreement shall remain the exclusive property of Contractor whether or not such information or material was incorporated in or used to produce any of the work products delivered under this Agreement.
- 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.
- (3)(4) Contractor shall retain and may use the general knowledge acquired as a result of its creation of the work product or the performance of services hereunder, for its general reference, enhancement of its technical capabilities, and for other purposes. All information and material which is owned by Contractor and used by Contractor in the performance of the Agreement shall remain the exclusive property of Contractor whether or not such information or material was incorporated in or used to produce any of the work products delivered under this Agreement.

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

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 <u>third party</u> claims for loss, <u>personal bodily</u> injury, death, property damage_, or otherwise, arising out of <u>any act of omission or the</u> negligence of its employees or agents in connection with the performance of this work.

In no event shall either party be liable to the other for any indirect, consequential, exemplary, special, incidental or punitive damages including, without limitation, lost profits or revenues even if such damages are foreseeable or the damaged party has been advised of the possibility of such damages. The liability of Contractor for any claim whatsoever related to or arising under this Agreement, including any cause of action in contract, tort or strict liability, shall not exceed the total amount of payments made to Contractor or \$300,000, whichever is less.

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. Warranty

CONTRACTOR DISCLAIMS ALL WARRANTIES AND CONDITIONS EXPRESS OR IMPLIED INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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.

5.1.1 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:

The [CONTRACTOR or other party] shall indemnify and hold COG harmless from and shall be solely responsible, for the payment of any and all third party 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 provided that if Contractor's computer system automatically backs up confidential information disclosed pursuant to this Agreement making specific deletion thereof impractical, Contractor shall maintain the confidentiality of such back-up copies (if any) until such back-up copies are destroyed in the ordinary course of business.

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.

Appendix B RESUMES

B.1 DNV GL Resumes

Betty Seto

Senior Consultant

Personal Statistics:

Citizenship: United States

Language Capabilities:

Language	Level
English	Native



- Masters of Environmental Science and Management, UC Santa Barbara, 2006
- Bachelor of Science, Rice University, Mechanical Engineering, 2001

Summary of Professional Experience:

Betty Seto has over 13 years' experience developing multi-sector greenhouse gas reduction strategies for local government clients. She specializes in sustainable energy solutions, policies and programs (e.g., energy efficiency, renewable resources and demand response) to meet client sustainability, economic development and climate resiliency goals. Ms. Seto is responsible for building DNV GL's successful practice related to sustainability services for cities, counties and councils of governments. In this capacity, she specializes in managing multi-disciplinary project teams to deliver innovative local government climate action plans, green building and energy action plan consulting services. Her work today is aimed at transforming the new construction and existing building markets across both the residential and non-residential sectors, utilizing certification standards such as the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED). Ms. Seto has deep expertise working with clients across the U.S. on net zero energy goals, smart city technologies, energy efficiency, renewable energy, clean energy, and greenhouse gas reduction planning projects. Prior to DNV GL, Ms. Seto worked at the U.S. Environmental Protection Agency (U.S. EPA) and World Resources Institute in Washington, DC, where she focused on developing the business case for energy efficiency and demand-side management as a cost-effective greenhouse gas emissions reduction strategy.

Present Position:

Betty Seto is serving as Interim Head of Section at DNV GL for the Sustainable Buildings and Communities (SBC) team. She specializes in greenhouse gas inventories and climate action plans (CAPs) for local government, utility, and university clients. Ms. Seto has served as project manager and technical lead for over two dozen CAP projects. In particular, Ms. Seto was responsible for overseeing the climate action plans for the jurisdictions participating in the San Mateo County and Santa Clara County Councils of Government regional climate action plan



projects, including a transportation climate action plan for C/CAG San Mateo. For the cities of East Palo Alto, Watsonville, San Leandro, Oxnard and American Canyon, Ms. Seto served as DNV GL's project manager for GHG reduction strategies related to energy and water. Ms. Seto has worked closely with the local air districts (e.g., Bay Area Air Quality Management District) and Office of Planning and Research to ensure compliance with applicable California Environmental Quality Act (CEQA) guidelines. Ms. Seto has also advised jurisdictions on processes for conducting environmental review of climate action plans and coordination with general plan/comprehensive plan update and amendment projects.

Publications and Papers:

- Author, "City of Watsonville, CA Enabling Climate Action." American Council for an Energy-Efficient Economy. Summer Study. Pacific Grove, CA. August 2014.
- Lead author, "Regional Climate Action Plans: A New Approach to Facilitating Local Government Greenhouse Gas Reductions." American Council for an Energy-Efficient Economy. Summer Study. Pacific Grove, CA. August 2012.
- Lead author, "Toward Net Zero Energy College Campuses: A Case Study of Community Colleges." Association of Energy Services Professionals. 21st National Energy Services Conference & Expo. Orlando, FL. January 20, 2011.
- Moderator, "Getting the Best Bang for the Buck: Which Public Policy Programs are Likely to Produce the Greatest GHG Reductions." Association of Energy Services Professionals. Webinar/Brown bag. January 21, 2010.
- Moderator, "Energy Efficiency Evaluation and Climate Mitigation Projects." Association of Energy Services Professionals. 19th National Energy Services Conference & Expo. San Diego, CA. January 26-29, 2009.
- Panelist/Presentation, "From Net Energy Impacts to Additionality: Transfer of Evaluation Lessons Learned to the Carbon Offset Market." American Evaluation Association. Annual Conference. Denver, CO. November 4-6, 2008.
- Lead author, "Addressing Climate Change Concerns at the Municipal Level: A Case Study on the City of Sunnyvale, California." American Council for an Energy-Efficient Economy. Summer Study. Pacific Grove, CA. 2008.
- Panelist/Presentation, "Addressing Climate Change Concerns at the Municipal Level: A Case Study on the City of Sunnyvale, California." Association of Energy Services Professionals. 18th National Energy Services Conference & Expo. Tampa, FL. January 29-31, 2008.
- Presentation, "Changing the Campus Climate: UC Santa Barbara Climate Action Plan."
 UC/CSU/CCC Sustainability Conference, Santa Barbara, CA. June 25, 2006.

Professional Training

- 2014: Introduction to DMSE
- 2014: Introduction to Energy's PM Standard
- 2014: PM Essentials WEB-course for Energy
- 2013: We in DNV GL, web
- 2013: Coaching and Feedback

2012: SPIN Training

Detailed Professional Experience:

DNV GL: 2006, present

As project sponsor, oversees project managers and provides technical guidance for project work. Manages climate action plan projects and greenhouse gas quantification studies for local governments, as well as energy efficiency program evaluations for utility and state government clients. Interfaces with clients to ensure timely deliverables, within project budget. Evaluates opportunities for energy savings and greenhouse gas emissions reductions across all customer sectors, including residential, commercial, industrial and government operations. Assists clients to develop roadmap and strategy documents to guide planning efforts and reduce environmental and financial risks.

Performs engineering analyses, and oversee survey efforts for energy efficiency and renewable energy program evaluations. Facilitates stakeholder meetings and create interview guides and conduct in-depth interviews to understand organizational priorities and specific concerns. Ensures quality of final reports and other deliverables to clients. Recent projects include:

- York Power Authority: Provided technical expertise related to energy planning and coordination, energy delivery infrastructure, transportation energy efficiency and energy efficiency in buildings. The Energy Master Plan project analyzed the GHG reduction potential of myriad strategies including zoning ordinance changes, building code changes, building energy benchmarking, electric vehicles, distributed generation, solar PV, energy efficient street lighting, smart grid, district heating, and other strategies related to energy and the built environment.
- C/CAG Climate Action Plan Technical Assistance, 2010-11, present: For City and County Associated Governments (C/CAG) of San Mateo County: Project manager to produce a suite of climate action planning tools for 21 local government members in San Mateo County. Provided technical assistance for 7 cities to complete climate action plans consistent with local air district and Attorney General requirements for CEQA. Worked closely with Bay Area Air Quality Management District, Office of Planning and Research, and PG&E to develop appropriate GHG reduction strategies and estimation methods. The project includes managing subcontractor work and facilitating the stakeholder process with a client working group.
- SGVCOG Greenhouse Gas and Energy Efficiency Chapter, 2011-09, 2012-12: For San Gabriel Valley Council of Governments (SGVCOG): Project manager and task lead to assist cities in the San Gabriel Valley to complete the energy efficiency portion of a climate action plan. The chapter will address both municipal operations and community-wide activities. The climate action plans will serve as a guiding document for municipalities in identifying greenhouse gas mitigation activities and strategies that are appropriate to their local context.

- **Kern County COG Regional Energy Action Plans, 2011-10, 2013-12:** For Kern County Council of Governments: Task lead to develop a cost/benefit tool to accompany the Regional Energy Action Plan project. Responsible for developing and analyzing the energy strategies and measures for the municipal Energy Action Plans for five cities in the region, and for the County of Kern. Final tasks included conducting analyses and developing tools to track the effectiveness of various energy efficiency projects and policies.
- Climate Action Plan and Carbon Fund, 2014-04, present: For City of Watsonville: Project manager to develop a greenhouse gas reduction strategies for community-wide impact and development of a carbon fund program. The project included 2 community workshops, greenhouse gas inventory review and forecast, greenhouse gas reduction strategy cost-benefit analysis and monthly technical advisory committee meetings. The project developed a carbon fund program that incentivizes energy efficiency and on-site solar generation for new construction and major remodel, based on enacting a new climate impact fee.
- Military Bases Clean Energy Strategic Plan, 2014-05, present: For Massachusetts Department of Energy Resources: Technical data collection lead to manage activities of four subcontracting firms to conduct baseline clean energy assessments and field work across six military bases. Oversaw the development of clean and strategic energy plan for each bases to recommend a set of high priority projects to meet the state's goals for energy efficiency, emissions reductions, economic prosperity and resiliency.

U.S. Environmental Protection Agency: 2005, 2005

Supported the Waste Division to promote energy efficient lighting technologies, building energy efficiency and waste cooking oil reduction opportunities. Conducted outreach to California municipalities and school systems to transfer energy efficient lighting technology lessons learned. Worked on building environmental management system (EMS) energy projects to promote energy efficiency and conservation measures with building management, PG&E and vendors. Spearheaded biodiesel initiative to reduce the disposal of waste cooking oil from restaurants and grease haulers.

World Resources Institute: 2003, 2004

Supported the Green Power Market Development Group consisting of 12 corporate partners committed to attaining 1000 MW of new renewable energy by 2010. Performed quantification of greenhouse gas emissions benefits related to renewable energy. Compiled energy load data for individual industrial and office facilities to develop strategies for renewable energy procurement to reduce facility greenhouse gas emissions. Performed market research of corporate greenhouse gas emissions reduction targets.

Horizon Wind (formerly Zilkha Renewable Energy): 2002, 2002

Assisted with wind farm project development and operations management. Prepared materials for project proposals by researching utility emissions rates, and framing the business case for renewable energy procurement. Completed permit applications and worked with bureaucratic agencies to ensure compliance with local and state requirements. Used SCADA data to assess the

performance of operational wind turbines, and addressed concerns of landowners about noise and flicker.

Halliburton, Brown & Root: 2000, 2000

Completed engineering calculations for large-scale water transmission infrastructure for City of Austin, Texas, and country of Libya. Tasks included assessing different project design options based on public right-away and construction equipment specification constraints, and modeled transient pressures in water transport structures to size compressors to prevent pipeline failure (e.g., under power failure conditions). Provided summary report and presentation detailing impacts of transient pressures and the different technological solutions to prevent pipeline failure.

James Leahy

Senior Engineer

Personal Statistics:

Citizenship: United States

Language Capabilities:

Language	Level
English	Native



Bachelor of Science, Wentworth Institute of Tech, Environmental Engineering, 1999

Summary of Professional Experience:

Jim Leahy is a Senior Engineer for DNV GL. He is a professional Civil Engineer registered by the State of California with a diverse background that includes work in design and construction, planning, policy advisory, and energy management. As an engineering consultant, Mr. Leahy assists clients in establishing energy performance and environmental standards, and provides the support necessary to help them implement clean energy and energy efficiency projects to meet their goals. His background in design, planning, and resource management lends to fully comprehensive solutions for sustainable infrastructure, community development, and building design.

Understanding that education plays a vital role in the advancement of the sustainability of our built environment, Mr. Leahy has volunteered time with the U.S. Green Building Council (USGBC) and has conducted workshops and coordinated various events on energy and water efficiency strategies. Mr. Leahy is a former member of the USGBC – Upper Northeast Regional Council, a former member of the Board of Directors for the Los Angeles Chapter of the USGBC and a former member of the USGBC–Pacific Regional Council, and was most recently a presenter at GreenBuild on the benefits of energy master planning.

Professional Training

- 2015: PM Essentials WEB-course for Energy
- 2014: PM the Energy way
- 2014: Introduction to DMSE
- 2014: Introduction to Energy's PM standard
- 2014: Consultant Development Program
- 2013: WE in DNV GL, classroom



Other Information

Professional Affiliations

- U.S. Green Building Council (USGBC)
- Water Environment Federation (WEF)

Other Information

- Professional Engineer registered by the State of California
- LEED® Accredited Professional Building Design and Construction
- Certified Green Building Professional

Detailed Professional Experience:

DNV GL Energy: 2008, 2014

Provides guidance on sustainable construction design and building technologies, energy resource management planning, and greenhouse gas emissions reduction strategies. Assists with climate action plan projects and greenhouse gas quantification studies for local governments, as well as energy efficiency program evaluations for utility and state government clients.

Interfaces with clients to ensure timely deliverables, within project budget. Evaluates opportunities for energy savings and greenhouse gas emissions reductions across all customer sectors, including residential, commercial, industrial, and government operations. Assists clients to develop roadmap and strategy documents to guide planning efforts and reduce environmental and financial risks. Perform engineering analyses, and oversee survey efforts for energy efficiency and renewable energy program evaluations. Facilitate stakeholder meetings and create interview guides and conduct in-depth interviews to understand organizational priorities and specific concerns. Ensure quality of final reports and other deliverables to clients.

- Climate Action Plan, City of Watsonville, CA: Project engineer assisting in the development of greenhouse gas emissions reductions strategies and the development of the Climate Action Plan for the City. The primary focus was on energy efficiency, water efficiency, and waste reduction strategies, and comparing and evaluating other local, regional and state climate action plans for applicability to the City plan.
- Southern California Edison, Sustainable Communities Program: Former Program Manager and Subject matter expert on zero net energy building strategies and community design offering design assistance to development teams for master-planned community development projects seeking significant levels of energy efficiency and green design.
- Energy Efficiency Climate Action Plan Template, County of Santa Clara: Project Engineer, assisted in development and delivery of the climate action plan template focused on energy efficiency of the templates, compared and evaluated other local, regional and state climate action plans for content and structure of templates, applicability to the County, and potential strategies to incorporate into the template.
- Climate Action Plan, Los Angeles Community College District: Task Lead to develop Climate Action Plans for each of the nine college campus and the district

- headquarters. The project includes summarizing the existing greenhouse gas inventory in the context of greenhouse gas emissions reductions. The CAP strategies include green building new construction, energy efficiency retrofits, transit subsidies for students, fleet vehicle electrification, waste reduction, and recycling programs.
- New York Power Authority, City of Albany Energy Master Plan: As a subconsultant to VHB, Inc., project manager for DNV KEMA leading a team of experts to assess opportunities for improvements in energy procurement practices and energy infrastructure, as well as opportunities for renewable energy integration, and building energy efficiency and support the development of an energy master plan for city facilities.
- National Grid / MA Energy Efficiency Program Administrators, Existing Buildings Market Characterization, C&I Customer On-site Assessments: As the project manager, developed the project work plan, oversaw the budget and schedule, planned and coordinated efforts to develop the on-site data collection instrument, and oversaw data collection from 350 C&I customers.
- National Grid / MA Energy Efficiency Program Administrators, Existing Buildings Market Characterization, C&I Customer Telephone Survey: As the project manager, planned and coordinated efforts to research the existing buildings market in Massachusetts, including the development of a telephone survey instrument, overseeing the recruitment efforts and data collection, and oversaw the analysis and development of the final report and three industry profiles.
- CPFL Energia S.A., Brazil: Program engineer evaluating green roof construction standards and researching international standards for green roof performance testing methodologies. Conducting green building research and reporting on the latest energy systems, water system and materials available in today's market.
- New York State Energy Research and Development Authority (NYSERDA), Green Grocer Initiative: Program engineer, conducting research and various outreach activities to convey information on the NYSERDA incentives programs to the grocer sector and collect data to understand better the needs of the grocer industry in relation to energy efficiency. Researching latest trends and technologies for supermarket retrofits and new construction projects.
- New York State Energy Research and Development Authority (NYSERDA), HVAC Business Partners Program: Program engineer, conducting outreach to various HVAC technicians and organizations and assisting in the development of a quality installation and quality maintenance program for NYSERDA. Developing a computer modeling methodology to help NYSERDA predict savings from such practices.
- U.S. Green Building Council, Green Building Certification Institute: LEED certification application reviewer; confirmed the new construction building designs met the design and documentation requirements for LEED Certification for the USGBC.

Gaia Development, LLC: 2007, 2008

Managed the LEED NC Certification process for multiple clients including the W-Hotel and Residence, Port of Long Beach, and Hotel Miyako. Manage the LEED for Homes process for clients including Habitat for Humanity of Greater Los Angeles, and Archstone-Smith.

Contracted as a LEED for Homes Representative under the California/Nevada LEED for Homes Provider. Conducted Design Charrettes. Gave presentations to clients on Green Buildings and LEED. Evaluated potential cost impacts of LEED for clientele. Reviewed design documentation and LEED Templates to ensure accuracy and completeness of information. Evaluated projects for LEED certification potential. Acted as a liaison between local government agencies and clients.

Stantec, Inc.: 2004, 2007

Developed conceptual plans, studies, and construction documents for residential and commercial development projects including evaluating water demand, wastewater generation and potential sewer, water, and storm drain facilities. Developed hydrology studies to analyze pre-developed and post developed conditions and the impact on the local watershed. Developed models to analyze the impacts of development to local watercourses using the U.S. Army Corp. of Engineers HEC-RAS program. Assisted private developers in mitigating issues with stormwater runoff, nuisance water. Ensured project compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP) and the Stormwater Pollution Prevention Plan (SWPPP) requirements of local governing agencies. Provided construction administrative services to ensure quality of workmanship. Coordinated with clientele to help them evaluate potential projects and provide them with potential site layouts, and potential site restraints. Educated clientele on the benefits of green building. Evaluated project potential for LEED certification. Assisted in strategizing to obtain LEED certification and complete necessary documentation related to LEED certification.

Tetra Tech, Inc.: 2001, 2004

Developed preliminary plans, studies, and construction documents for the construction of sewer systems, water mains, reservoirs, and pump stations for private and public entities. Developed sanitary sewer studies for private and public entities. Designed and developed plans to construct a wastewater collection system and methane gas recovery system for a large central California dairy. Completed preliminary cost estimates and preliminary facility layouts for the purpose of obtaining funding for two potential central California dairy parks. Developed grading and drainage plans for the Advanced Water Treatment Facility (AWTF) for the Orange County Water District/Orange County Sanitation District. Developed preliminary design studies and financial analyses for recycled water systems including pipelines, reservoirs and pump stations. Converted multiple facilities, parks and golf courses from potable to recycled water systems. Obtained grant funding for local water agencies from the Metropolitan Water District's Local Resource Program. Calculated and sized pumps for a stormwater pump stations for the City of Hemet, and the city of Huntington Beach, Ca. Oversaw the construction activities for various pipeline projects including reviewing shop drawings and reporting daily progress for various construction projects.

Rizzo Associates (a Tetra Tech company): 1999, 2001

Water/Wastewater Division – Designed and developed combined sewer separation plans, drainage improvement plans, water supply line plans and special structure details for the City of

Boston. Designed and developed plans for water control valve vaults and meter vaults for Massachusetts Water Resource Authority and the New England Patriot's Foxboro Stadium. Performed stormwater modeling using StormCAD. Estimated construction costs for various projects. Developed construction specifications for various projects.

Telecommunications Division – Designed and developed infrastructure plans for fiber optic networks. Developed construction and design specifications for fiber optic conduit installations. Researched and collected site specific information for the upgrade of cellular antennas networks. Developed construction and design specifications for fiber optic conduit installations. Researched and collected site specific information for the upgrade of cellular antennas.

Karl van Orsdol

Principal Consultant - Sustainable Buildings and Communities

Personal Statistics:

Citizenship: United States

Language Capabilities:

Language	Level
English	Native
French	Low

Academic and Professional Attainment:

- Master Business Administration, UCLA, Business, 1986
- Doctor of Philosophy, University of Cambridge, Applied Biology, 1982
- Bachelor, Grinnell, Biology, 1975

Present Position:

Energy management specialist with extensive international and municipal experience in energy data management systems, energy markets and risk management, climate risk assessment, energy efficiency programs, multi-modal transportation technologies, smart grid, renewable energy development and technologies, energy regulation, energy procurement and end-use energy management. Strong strategy development skills combined with excellent cross-business line coordination, networking and significant business development capabilities. Author of numerous publications and frequent public speaker.

Publications and Papers:

- A Practical Look at Managing Climate Risk A Municipal Utility Perspective. Presentation and Paper Delivered at the 15th Annual Electric Utility and Environment Conference, Tucson, AZ. January 20, 2007.
- Air Toxics: The Utility Perspective. Air Pollution Control Association Annual Meeting. 1989.
- Air Toxics: Changing Scientific and Legislative Environment. 1988. Electric Power Research Institute, Palo Alto, CA.
- Algeria: Environmental Impact Assessment of Housing Industry Loan. 1992. World Bank, Washington, D.C.
- Assessment of USAID Industrial and Energy Projects. 1992. Center for Development Information and Evaluation, U.S. Agency for International Development, Washington, D.C.
- Agricultural encroachment in Uganda's Kibale Forest. 1986 Oryx. 20:115–117.



- Agroforestry Buffer Zones: Technologies for Sustainable Development. 1987. Report to the U.S. Agency for International Development. Washington, D.C.
- Ecological Correlates of Lion Social Organization (Panthera leo). 1985. J. Zool. London. 206:97–112. Citation as: Van Orsdol, K.G., Hanby, J.P., and Bygott. J.D.
- Environmental Audit of Two Food Processing Companies in Bulgaria. Report to Bulgaria Ministry of Industry Deloitte and Touche, and U.S. Agency for International Development, Washington, D.C.
- Environmental Labeling: A Market Based Incentive for Sustainable Forest Management in the Tropics. 1992. In: Conservation of West and Central Africa Rainforest, Edited by Cleaver, K. et al. World Bank Technical Paper: Environmental Series. Washington, D.C.
- Environmental Policy Paper. 1990. African Development Bank, Abidjan, Cote d'Ivoire.
- Executive Briefing: Ozone and Forest Health. 1988. Electric Power Research Institute, Palo Alto, CA.
- Forest Health and Acidic Deposition. 1986. Electric Power Research Institute, Palo Alto, CA.
- Forest Health and Ozone. 1987. Electric Power Research Institute, Palo Alto, CA.
- Greenhouse Gas Abatement Through Non-Forest Biomass Production. 1993. Environment Department Technical Paper No. 59, World Bank, Washington, D.C.
- Market and Commercialization Assessment: Carbon Cycle Model. 1992. Environment Division, Electric Power Research Institute, Palo Alto, CA.
- National Conservation Strategy For Uganda. 1983. Report to the Ministry of Tourism and Wildlife, Kampala, Uganda. Cited as Malpas, R and Van Orsdol, K.
- Song matching in the great tit Parus major L. 1981. Animal Behaviour, 29, 918–923. Cited as Krebs, J. R., Ashcroft, R. & van Orsdol, K.
- Ranges and food habits of lions in Rwenzori National Park, Uganda. 1982 Symp. zool. Soc. Lond. No.49: 326–340.
- Status of Kibale Forest Reserve of Western Uganda and Recommendations for its Conservation and Management. 1983. Report to the New York Zoological Society, New York.
- Tomorrow The Global Environmental Magazine Strategic Opportunities. 1991. Tomorrow Media, Stockholm, Sweden.
- Wetland Management Options for Utility Companies Market Assessment. Electric Power Research Institute, Palo Alto, CA.

Professional Training

- 2014: Compliance for Managers U.S
- 2014: Introduction to DMSE
- 2014: Introduction to Energy's PM standard
- 2014: Basic Health, Safety and Environment, web

Detailed Professional Experience:

Hewlett Packard: 2012, 2013

Served as a leader on the cross-functional team implementing an enterprise-wide energy management system across 1,200 HP facilities and data centers in 170 countries. This implementation involved assessing the firm's energy consumption patterns, procurement processes, and billing data flows and developing a comprehensive and transparent system for more effectively managing HP's energy expenditures. Extended the functionality of this system by linking in a supply chain environmental analytics tool and developing ISO 50001 compliance documentation through enterprise energy systems implementation.

• Advanced Municipal Energy Management Systems: 2012-01, 2013-08: Served as a consultant to City of Boston developing a strategic approach to energy management, assessing vendor offerings in the EEMS space, and developing a leading energy management system to address the City's \$60 million energy budget. This project included an assessment of energy consumption in buildings owned or leased by the City, a comparison of facility energy consumption against key benchmarking parameters, and initial assessment of areas of opportunity where energy efficiency measures may be the most appropriate.

City of Palo Alto: 2003, 2011

Directed \$500 million energy procurement strategy and managed operational, volumetric and financial risks from power purchase agreements involving fixed, variable, optioned, and indexed pricing. Led the development and implementation of \$150 million in wind and land-fill power projects with developers at 7 sites and developed compelling business cases for power purchase agreements, power plants purchases, demand response, ancillary services, distributed generation programs and new tariff structures.

- Advanced Municipal Energy Consumption Management, 2009-01, 2011-12: Pioneered the implementation of an EEMS system in government operations to reduce energy expenditures, enhance public transparency of government energy budgets, and increase operational efficiency. Developed the organizational needs assessment, recognized the value of an enterprise approach to managing the City's energy expenditures, and led the configuration and implementation of the system across all City departments. The system saved the City over \$1 million in energy costs in less than two years and won awards from IT, municipal governance, and high-tech organizations.
- Electric Vehicle and Mobility Strategy, 2010-01, 2010-12: Represented the City of Palo Alto in regional strategy to implement electric vehicle infrastructure throughout 9 Bay Area counties and develop financing mechanisms to fund charging station and data management actions.
- Energy Advisor Western (WAPA): 2010-06, 2010-12: Seconded to US Department of Interior's Western Area Power Administration, evaluated the agency's \$2.6 billion electricity generation portfolio and energy risk management practices, identifying inefficiencies as well as operational, volumetric and financial risks in current operating procedures.

 Community Based Approach to Managing GHG, 2007-01, 2009-12: Prepared the City's Climate Action Plan, developing cost-effective initiatives for reducing sustainabilityrelated costs, and key climate risks to the City's infrastructure and operational security.

Deloitte and Touche: 2000, 2003

Expanded Deloitte's energy practice by developing business opportunities and managing and implementing technology solutions for clients, including the delivery of specialized risk management technologies for energy trading and risk management. Managed and implemented projects involving a team of over 25 staff assembled from clients, software vendors and Deloitte.

- Hillenbrand Ind Energy and Natural Resource Risk, 2002-09, 2002-12: Advised Chief Financial Officer of this \$1.2 billion manufacturer on company's risk profile related to energy, material supplies, logistics and operations. Established infrastructure to support the systematic identification, assessment and mitigation of risks throughout supply chain. Trained senior managers in manufacturing subsidiaries to identify and report on sustainability risks
- Czech Utility Energy Risk, 2002-02, 2002-08: Led an evaluation of CEZ's energy procurement and risk management practices, assessed risks of current long term supply portfolio, and developed new processes to enhance CEZ's ability to respond to the deregulation of the energy markets in Europe.
- Managing Energy Supplies, 1999-05, 2001-12: Served as project manager of a 15-person, \$12 million project over 18 months to redesign Delta Nutzbedjriven regional utility's wind and gas-fired energy transacting policies, portfolio structure, transacting procedures, and corporate governance. This work included creating new portfolio book structure used by traders to maximize the value of renewable generation and applying technical analyses such as Value at Risk, Mark to Market and Gross Margin at Risk to the client's existing trading portfolio to manage market and volumetric risk.

Electric Power Research Institute: 1994, 1999

Let marketing, sales and technical activities in the emerging markets for EPRI in Europe, Middle East and Africa. A assisted major utilities in region in addressing market changes resulting from deregulation by leading a new technical offering in "Power Marketing and Risk Management." Developed multi-year technology alliances valued at \$49.6 million in first 18 months. Drove annual revenues from \$5 million to \$32 million in four years. Negotiated complex agreements and operational protocols. Led EPRI corporate-wide reorganization, with responsibility for redesigning and implementing business processes for sales, marketing and technical delivery divisions. Received six corporate awards.

- **Southern Africa Utility Operations, 1995-01, 1997-10:** Led the technology delivery program in region to deliver sustainable energy projects with a focus on innovative solutions in rural and underserved regions. Major projects included:
 - NamPower, Namibia: Power quality of energy delivery in remote locations.
 - Eskom, South Africa: Environmental and climate impacts of coal-fired power production.
 - Eskom, Southern Africa Power Pool: Energy management technologies in energy transmission in Southern Africa.

 Eskom, South Africa: Developed new technologies around closed cycle water usage at power stations in water-stressed regions.

Environmental Strategies, 1990, 1994:

Director of consulting firm providing technical services in environmental planning, marketing environmental products and services, impact assessment, environmental auditing, natural resource management, policy and strategy, legislation monitoring, and environmental labeling. Fully responsible for management, profitability and marketing

- All projects, 1990-01, 1994-12:
 - Energy Strategy for Amman, Jordan. 1995. Consultant on USAID project developing national energy strategy focusing on energy development in Amman.
 - Developing Community Based Technologies and Processes to Manage Water Quality. Fez, Morocco. US Agency for International Development funded. 1993 1994. Team leader on consulting project to improve water quality by reducing discharges from artisanal, agricultural and industrial sources. Developed outreach, training and incentive program to maximize participation from industrial sources of heavy metals and toxic emissions.
 - Municipal Transportation Strategies Shenyang, China. World Bank Funded. 1992.
 Project manager on World Bank consulting initiative targeting vehicle manufacturers and provincial and national environmental protection agencies to develop comprehensive regional strategy for mitigating increases in air pollution from due to the rapid increase in vehicle traffic.
 - Managing Municipal Transportation Strategies in Mexico's 21 Largest Cities, Environmental Protection Agency of Mexico—World Bank Funded. 1992. Led consulting project on the development of a 5-year action plan to alleviate mobile source air pollution emissions in 21 of Mexico's large cities. Evaluated urban air pollution, assessed the importance of mobile sources in ambient air quality, designed a program to monitor air quality, and assessed transportation strategies to reduce emissions.
 - Environmental Management of State Owned Industries Poland, Romania and Bulgaria.
 US Agency for International Development funded. 1989. Chief environmental advisor on the privatization of manufacturing firms in multiple industries in Eastern Europe.
 Responsible for carrying out environmental audits, assessing the environmental liability potential for prospective investors and reviewing company records against international environmental regulations.
 - Developing Regional Water Pollution Management Capabilities in Southern Sri Lanka, Funded by US Agency for International Development. 1991. Team lead on project to reduce water pollution from selected metal processing and manufacturing industries. Carried out environmental audits, assessed process efficiencies, and developed remediation recommendations to reduce emissions of multiple pollutants.

African Development Bank: 1986, 1988

Responsible for managing energy projects in the Bank's \$2.3 billion lending portfolio. Projects included major hydro-electric generation, energy distribution in remote rural areas and

 $upgrading\ grid\ infrastructure.\ Prepared\ the\ Bank's\ Environmental\ Strategy\ and\ developed\ environmental\ guidelines\ for\ lending\ program.$

Kara Kokernak

Senior Project Professional

Personal Statistics:

Citizenship : United States

Language Capabilities:

Language	Levei
English	Native

Academic and Professional Attainment:

- Master's Degree, University of California, Santa Barbara, Environment Science & Management, 2006
- Bachelor of Science, American University, Biology, 2002

Summary of Professional Experience:

Kara Shuster Kokernak is a LEED Accredited Professional specializing in utility program management, sustainability services for small scale (single building) and large scale (communities), and greenhouse gas reduction accounting and road-mapping. She joined KEMA after gaining experience in sustainable building practices as a Green Building Consultant in the Southern California region. She offers expertise and assistance on developing new construction and green building programs, facilitating contracts with utilities, and managing LEED and sustainable building projects, with a particular interest in supporting Zero Net Energy buildings and communities. She has a great deal of experience in meeting and presentation facilitation, both for private trainings and meetings, and in public forums. Her professional interests include improving indoor air quality and using innovative green building materials to increase the comfort, safety, and beauty of our buildings and homes.

Present Position:

Kara Shuster Kokernak currently manages a multi-year contract with Southern California Edison to facilitate the utility's Sustainable Communities Program, including: 1) Budgeting for overall program needs and per individual program participants building project, including managing internal and external subcontractors, 2) Facilitating sustainability services to 20+ projects from small multi-family and commercial buildings to master planned communities. Services include, but are not limited to: development of community energy action plans, building and site energy modeling, and research and recommendations on innovation materials and building systems, 3) Marketing and outreach including presenting at conferences and events to educate public and recruit program participants. Mrs. Kokernak also serves as LEED



Project Manager for new construction, commercial interior, existing building, and schools and campus projects, including facilitating trainings and eco-charrettes.

Publications and Papers:

- Delmas M, Blass VD, Shuster K (2006) Ceago Vinegarden: How green is your wine? Donald Bren School of Environmental Science and Management Program on Governance for Sustainable Development Paper:
 - http://repositories.cdlib.org/gsdprogram/TeachingCaseStudy1
- Kim K, Alker AP, Shuster K, Quirolo C, Harvell CD (2006) Longitudinal study of aspergillosis of sea fan corals. Diseases of Aquatic Organisms 69:95-99.

Detailed Professional Experience:

Allen Associates: 2007, 2008

Served as LEED Project Administrator for commercial new construction and commercial interior projects; provided general green building counsel and advice for residential projects.

- West Coast Asset Management LEED Certification, 2007-07, 2008-07: LEED CI Platinum Certification. Eco-charette facilitation, design assistance and LEED documentation for commercial office building and neighborhood carbon neutral plan.
- Green Building Training, 2007-07, 2008-07: Developed curriculum, presentation, and facilitation of Green Building Workshop series in Ventura and Santa Barbara counties.

Greenform, LLC: 2007, 2008

Managed and facilitated the LEED Certification process for NC, CI, and CS projects; researched and develop various green building and sustainability how-to guides.

Build It Green: 2007, 2007

Delivered project-specific green building assistance to homeowners, contractors, architects, etc.; represented Build It Green at outreach events and presented informative seminars for professionals

Channel Island National Marine Sanctuary (CINMS): 2005, 2006

Assisted with organizing and editing the CINMS Marine Reserves Management Plan; planned and facilitated the CINMS Marine Reserves Social Science Program Workshop.

Oryzatech, Inc.: 2006, 2006

DNV GL - Energy

www.dnvgl.com/energy

Contracted for 3 months to research the potential consumer market for a new green building material; assisted in business plan and marketing strategy revision and development.

National Oceanic & Atmospheric Administration: 2002, 2004

Provided planning, process design, and web development for coastal management projects and initiatives, including multi-agency Portfields Initiative (www.brownfields.noaa.gov).

Jessica Harrison

Team Lead for Energy Strategy, Markets & Policy Development

Personal Statistics:

Citizenship : United States

Language Capabilities:

Language	Level
English	Native
Spanish	Medium

Academic and Professional Attainment:

- Master of Science, Massachusetts Institute of Technology, Technology and Policy, 2005
- Master of Science, Massachusetts Institute of Technology, Civil and Environmental Engineering, 2005
- Bachelor of Science, University of Michigan, Physics, 2000

Summary of Professional Experience:

Jessica Harrison has an interdisciplinary background in the electric power industry, including experience in engineering analysis, public policy and economic analysis. Her area of focus is the integration of innovative technologies with electricity markets and power systems. Clients include OEMs, technology integrators, ISO/RTOs, utilities and state agencies. Projects include market potential studies, technology and business impact assessments, and strategy development. Most recently she has focused on distributed energy resources (DER), demand response (DR) and conservation voltage reduction (CVR).

Present Position:

Jessica Harrison serves as Team Lead for Energy Strategy within DNV GL's Markets and Policy Development group. Recently, she managed the development of a distribution storage valuation tool for assessing business cases for energy storage applications on the distribution systems. She has managed numerous EV projects at DNV GL, including grid impact assessments, business cases for OEMs seeking to explore opportunities in the utility space and roadmaps and impact assessments for ISO/RTOs. In addition, she has been assisting in DER integration studies for utilities and ISO/RTOs.

Publications and Papers:

Sample Publications:

- Harrison, J., "Pulse Survey: US Utilities Preparing for Increasingly Distributed Grid,"
 Electric Light & Power, October 8, 2014.
- Kleinberg, M.; Mirhosseini, N.S.; Farzan, F.; Hansell, J.; Abrams, A.; Katzenstein, W.; Harrison, J.; Jafari, M.A., "Energy Storage Valuation Under Different Storage Forms and Functions in Transmission and Distribution Applications," Proceedings of the IEEE (Volume: 102, Issue: 7) June 9, 2014.
- Masiello, R.; Farzan, F.; Harrison, J.; DeIuliis, K., "Markets 3.0 The Impact on Market Behavior of the Integrated Demand Side Resources," submitted for publication to IEEE in 2012.
- Dickerman, L.; Harrison, J., "A New Car, a New Grid," IEEE Power & Energy Society, vol. 8, pp. 55-61, March-April 2010.

Sample Client Reports:

- KEMA, Inc. prepared for California Energy Commission, "California Vehicle-Grid Integration (VGI) Roadmap: Enabling vehicle-based grid services," February, 2014.
- KEMA, Inc. prepared for CenterPoint Energy, "Electric Vehicles in Houston: Motivations, Trends, and Distribution System Impacts," June, 2010.
- KEMA, Inc. prepared for the ISO/RTO Council, "Assessment of Plug-in Electric Vehicle Integration with ISO/RTO Systems," March 2010.
- KEMA, Inc., prepared for the California Energy Commission, "Research Evaluation of Wind Generation, Solar Generation, and Storage Impact on the California Grid," CEC-500-2010-010, June 2010.

Sample Presentations and Lectures:

- J. Harrison, "The Role of Grid Energy Storage: Current Trends and Real World Experiences," Energy Storage 101, presented at the Legislative Energy Horizon Institute. February 7, 2012.
- R. Masiello and J. Harrison, "Price Volatility and Stability in Electric Markets," presented at an MIT Energy Initiative Energy Seminar, Cambridge, Massachusetts. September 12, 2011.
- P. J. Palermo and J. Harrison, "Electricity Supply for Information Professionals: Session 3," presented at the Department of Energy, Energy Information Administration. Washington, D.C. March 5, 2009.

Other Information:

Awards and Honors

Graduated with class honors from the University of Michigan, 2000

Professional Membership and Service

- Member of the Institute of Electrical and Electronics Engineers (IEEE)
- Member of Sigma Pi Sigma physics honor society

Detailed Professional Experience:

DNV GL: 2007, 2014

- Utility Client Measurement & Verification of CVR, 2012-01, 2014-12: Managing the M&V of a utility client's CVR demonstration program. The team has been co-developing approaches to estimate customer energy and demand savings, including a statistical approach and an engineering modeling approach.
- California Vehicle Grid Integration Roadmap, 2013-07, 2013-12: Supported the creation of a Vehicle Grid Integration roadmap for the California Independent System Operator (California ISO), in collaboration with the California Energy Commission, California Public Utilities Commission, and other engaged stakeholders in the State. This included drafting a roadmap document, hosting workshops to solicit stakeholder feedback, and summarizing stakeholder feedback provided at two workshops conducted prior to DNV GL's engagement with the Commission and the California ISO.
- Business Strategy Development Automotive OEM, 2013-05, 2013-11: Managed
 and conducted analysis for an automotive OEM to examine potential business opportunities
 around PEVs and to develop an overall strategy for the OEM to achieve these opportunities.
- **DER Visibility and Control Study, 2011-09, 2012-06:** Managed the development of load profile models for DERs. The DER models generated scenarios used as inputs to market impact models. These scenarios tested the impacts of various amounts and types of DER resources and assessed how visibility and control of DER could mitigate negative effects.
- **Dispatchable DR and Dynamic Price Response**, **2011-04**, **2011-09**: Developed a system dynamics model of the day ahead, hour ahead and real-time, energy market processes for NYISO. The model assessed the potential impacts of integrating dispatchable demand response and dynamic pricing demand response into the wholesale markets.

Navigant Consulting, Inc. Energy Practice: 2005, 2007

Co-managed the first phase of a Department of Energy rulemaking which assessed the technical and economic feasibility of energy-efficiency standards for fluorescent and incandescent lamps.

Massachusetts of Institute of Technology, LFEE: 2004, 2005

Researched decision-making for clean energy systems.

Alliance to Save Energy, Domestic Policy Team: 2001, 2003

Supported energy efficiency initiatives, including work around federal legislation and standards.

Joseph Teng

Consultant



Personal Statistics:

Citizenship : United States

Language Capabilities:

Language	Level
English	Native

Academic and Professional Attainment:

- Master of Management, Yale University, Master of Environmental Management, 2012
- Bachelor of Science w\Honors, University of Illinois, Environmental Science, 2007

Summary of Professional Experience:

Joseph Teng is a clean energy professional with over 7 years of experience in energy policy, technical analysis, and program planning. In his current role at DNV GL, Mr. Teng leads a number of technical and analytical efforts that support the firm's utility energy efficiency programs. Mr. Teng has also worked with clients on conducting detailed analysis on energy and greenhouse gas emissions tracking and use of energy and sustainability focused software. Prior to his time at DNV GL, Mr. Teng received a Master in Environmental Management from Yale University, where he focused on clean energy, life-cycle analysis, and data analysis. Prior to Yale, Mr. Teng worked at the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy, where he reported directly to the Deputy Assistant Secretary for Energy Efficiency. While at the DOE, Mr. Teng supported a number of efforts, including international partnerships, policy analysis, and federal budgeting. Mr. Teng has also worked as a contractor with an energy and sustainability software firm and with a local state energy office.

Present Position:

Joseph Teng is a consultant with the Technical Services Group at DNV GL's energy efficiency implementation group. Mr. Teng leads a number of cross-program initiatives focused on improving forecasting, analysis, and reporting capabilities across DNV GL's 15+ utility energy efficiency programs. Mr. Teng is the manager of 'Data Cube' project, which consists of a dynamic database capable of storing and rapidly analyzing energy efficiency measure and project data across all of DNV GL's programs. To date, the Data Cube is capable of producing 40+ different types of analysis and program metrics and contains data on over 5,000 energy efficiency measures and 230,000 projects. In addition to leading this effort, Mr. Teng also supports

program planning & development efforts, particularly those related to technical analysis & software.

Publications and Papers:

 "What Will it Cost? Exploring Energy Efficiency Measure Cost over Time and Region", presented at the ACEEE Summer Study on Energy Efficiency in Buildings, Pacific Grove, California, August 2014

Professional Training

- 2014: Basic Health, Safety and Environment, web
- 2014: Introduction to DMSE
- 2014: Introduction to Energy's PM standard
- 2014: PM Essentials WEB-course for Energy
- 2013: WE in DNV, web

Detailed Professional Experience:

DNV GL: 2013, 2014

- Data Cube & Reporting, 2013-03, 2014-12: Project Manager for cross-program effort to develop a central database capable of streamlining and expanding reporting and analysis functions for DNV's library of 5,000+ efficiency measures.
- Data Analytics & Remote Auditing, 2013-09, 2014-12: Technical lead for DNV GL's efforts to explore and partner with select firms in the energy-analysis focused software market. Supporting pilot project effort to deploy specialty analysis platform capable of delivering remote-audits using interval data.
- Waste Management, 2014-06, 2014-08: Technical lead for effort to assist client in quantifying historical energy & GHG emission data across all Waste Management facilities and utility vendors across North America.
- **Metro Vancouver**, **2013-11**, **2014-06**: Technical lead for implementation of SoFi software platform, a comprehensive energy and greenhouse gas management and accounting system, for the public works division of the greater Vancouver area.

CT Clean Energy Finance & Investment Authority: 2012, 2012

Assisted in deployment of \$480k federal SunShot grant focused on decreasing non-hardware costs of solar PV installation across the state of Connecticut. Supported core project deliverables including creation of an online application system, improved financing and leasing options, and establishment of state-wide permitting standards.

Hara Energy and Environmental Software: 2011, 2011

Developed data dictionary and programming code to enable automated aggregation of client energy data. Created statistical model for resulting dataset that performs key analytical

functions such as building benchmarking, assessment of data quality, and identification of facilities with greatest cost-savings potential.

U.S. Department of Energy: 2007, 2010

- Office of Strategic Planning and Analysis, 2008-01, 2010-07: Managed deliverables, budget, and communication efforts for newly created team conducting crosscutting analysis of DOE's clean energy technology portfolio. Fulfilled research and policy analysis needs for executive management (e.g., Secretary of Energy and Assistant Secretary) on issues ranging from existing energy statutes to proposed federal greenhouse gas legislation.
- Office of Deputy Assistant Secretary for Energy, 2007-12, 2008-12: Supported day-to-day management of DOE's five efficiency programs and prepared official responses to White House and Congressional requests for briefing materials, policy analysis, and other programmatic information. Collaborated with 19 countries to design and launch a new global initiative on energy efficiency cooperation.

Max Neubauer

Consultant

Personal Statistics:

Citizenship : United States

Language Capabilities:

Language	Level
English	Native
Spanish	Low

Academic and Professional Attainment:

- Master of Arts, Georgia State University, Economics, 2004
- Bachelor, Macalester College, Economics, 2001

Summary of Professional Experience:

Max Neubauer has 10 years of experience in energy and energy efficiency, including market and program analysis, policy and program advisory and evaluation, regulation and compliance, modeling and wholesale energy markets. Mr. Neubauer has experience conducting EE market assessments through active stakeholder engagement and extensive quantitative and qualitative research. This includes conducting statewide EE potential studies and leveraging them to suggest prudent and often complex program and regulatory policy options to maximize cost-effective energy efficiency investments. Mr. Neubauer has extensive experience providing technical assistance to states, coordinating with networks to identify opportunities for TA and conducting EE program/policy evaluations to identify gaps in design or other anomalies, and recommending structural changes to improve overall performance.

Present Position:

Max Neubauer is a consultant in the Markets department of SUS PAR. He conducts energy efficiency program evaluations for a variety of clients in the Midwest and Northeast. He works extensively with Word and Excel for data storage, organization, analysis, and writing.

Publications and Papers:

Lead Author:

- Cracking the TEAPOT: Technical, Economic, and Achievable Potential Studies (August 2014)
- A Guide to Growing an Energy-Efficient Economy in Mississippi (November 2013)
- Ohio's Energy Efficiency Resource Standard: Impacts on the Wholesale Electricity Market and Benefits to the State (March 2013)

- Achieving 20% Energy Savings by 2020 How Can We Get There? An Energy Efficiency Program Analysis for the Southwest U.S. States (ACEEE Summer Study 2012)
- An Assessment of Utility Program Portfolios in the Commonwealth of Kentucky (June 2012)
- Energy Efficiency Cost-Effective Resource Assessment for Kentucky (March 2012)
- An Assessment of Utility Program Portfolios (October 2011)
- Beyond Electricity: Integration of Electricity, Water and Transportation Efficiency Potential in North and South Carolina (ACEEE Summer Study 2010)
- Advancing Energy Efficiency in Arkansas: Opportunities for a Clean Energy Economy (June 2010)
- South Carolina's Energy Future: Minding its Efficiency Resources (November 2009)
- Ka-Boom! The Power of Appliance Standards (October 2009)
- Shaping Ohio's Energy Future: Energy Efficiency Works (March 2009)

Co-Author:

- Achieving High Rates of Participation (Fall 2014)
- Frontiers of Energy Efficiency: Next Generation Programs Reach for High Energy Savings (January 2013)
- The \$20 Billion Bonanza: Best Practice Electric Utility Energy Efficiency Programs and Their Benefits for the Southwest (October 2012)
- The Energy Efficiency Market in the Greater Cincinnati Region: Energy Savings Potential and Strategies to Improve the Performance of Residential and Non-Profit Buildings (August 2011)
- The 2014 State Energy Efficiency Scorecard (September 2014)
- The 2013 State Energy Efficiency Scorecard (November 2013)
- The 2012 State Energy Efficiency Scorecard (October 2012)
- The 2011 State Energy Efficiency Scorecard (October 2011)
- The 2010 State Energy Efficiency Scorecard (October 2010)
- The 2009 State Energy Efficiency Scorecard (October 2009)
- The 2008 State Energy Efficiency Scorecard (October 2008)
- State-Level Energy Efficiency Analysis: Goals, Methods, and Lessons Learned (August 2008)
- Energizing Virginia: Efficiency First (September 2008)
- Energy Efficiency: The First Fuel for a Clean Energy Future Resources for Meeting Maryland's Electricity Needs (February 2008)

Professional Training

- 2014: WE in DNV GL, classroom
- 2014: DNV GL Code of Conduct An introduction to expected conduct and behavior in daily business
- 2014: Basic Health, Safety and Environment, web
- 2014: Introduction to DMSE
- 2014: WE in DNV GL, web

Other Information:

Skills:

Advanced Level - Microsoft Excel and Word

Detailed Professional Experience:

DNV GL: 2014, Ongoing

• P33, MA LCIEC, Differences in PAs, 2014-10, 2014-11: Evaluation of C&I program portfolio for IOUs in MA; detailed analysis of PA differences and how those lead to varied success rates.

American Council for and Energy-Efficient Economy: 2007, 2014

Benjamin Butterworth

Sustainability Consultant

Personal Statistics:

Citizenship : United States

Language Capabilities:

Language	Level
English	Native

Academic and Professional Attainment:

- Bachelor of Science, Trinity College, Environmental Science,
- Master's Degree, Yale School of Forestry & Environment, Environmental Planning & Management

Summary of Professional Experience:

Ben Butterworth has a professional background in energy efficiency, sustainability, technical writing and analytical chemistry. Prior to joining DNV GL, Ben worked as an Environmental Defense Fund Climate Corps fellow at Grace Cathedral. In this position, he was responsible for analyzing the organization's ~\$200,000 annual energy budget and implementing cost-effective energy efficiency projects. In May of 2014, Ben received a Masters of Environmental Management from the Yale School of Forestry & Environmental Studies. Ben's graduates studies focused on the technical, political and economic aspects of energy efficiency. While at Yale, Ben worked in several consulting roles. He helped Bigelow Tea design an energy efficient retrofit of their corporate headquarters and assisted Norwich Public Utilities evaluate the impact of a residential heating conversion program. During the summer of 2013, Ben worked as a research intern at Ecova where he analyzed the cost-effectiveness of utility-sponsored multifamily residential energy efficiency rebate programs and also conducted technical research on the energy efficiency of personal computers. He also has experience working as a state and local policy intern at Efficiency First - the nonprofit trade association for the home retrofit industry, as a technical writer at a certification company and as a lab technician at an analytical chemistry lab. Ben also holds a B.S. in Environmental Science from Trinity College.

Present Position:

Ben currently works as a Sustainability Consultant on DNV GL's Sustainable Buildings & Communities team. His current projects include climate action planning for a number of cities in the Bay Area, energy master planning for military bases in Massachusetts and research related to commercial building resiliency to climate change.



Professional Training

- 2014: DNV GL Code of Conduct An introduction to expected conduct and behavior in daily business
- 2014: 2010w DNV GL's approach to Anti-Corruption and Anti-Trust An Introduction
- 2014: Basic Health, Safety and Environment, web
- 2014: Introduction to DMSE
- 2014: WE in DNV GL, web

Other Information:

Relevant Past Projects & Awards:

- **Bigelow Tea:** Assessed the financial feasibility of LEED for Existing Buildings certification at the company's headquarters. Created an implementation plan for an energy efficient retrofit of the facility.
- Norwich Public Utilities: Assisted utility in evaluating the financial, environmental and community impacts of the Energize Norwich residential oil-to-gas heating conversion program.
- United States Green Building Council: Analyzed database of LEED Existing Buildings credit attainment to identify trends related to commissioning and retrocommissioning.
- U.S. Department of Energy: Won Best Proposal for Electri-City: Energy Management in Public Buildings case competition.

Detailed Professional Experience:

Environmental Defense Fund/Grace Cathedral: 2014, 2014

Analyzed organization's annual energy expenditures (~\$200,000) to identify cost-effective opportunities for energy reduction. Coordinated with management, contractors and utilities to implement energy efficiency projects.

Yale Center for Business and the Environment: 2012, 2014

Developed, planned and organized webinar events for Blueprint for Efficiency speaker series - a series designed to keep professionals in the energy efficiency field aware of the latest developments related to energy efficiency technologies, policies and financing.

Ecova: 2013, 2013

Analyzed cost-effectiveness of utility-run multifamily residential energy efficiency rebate programs and assisted in design of programs to maximize energy savings. Conducted technical research on energy efficiency of personal computers to support proposed updates to the California Energy Commission's Appliance Efficiency Regulations.

Technical Safety Services: 2012, 2012

Authored reports regarding certification of cleanroom laboratories. Coordinated with clients throughout report writing and quality control process to ensure proper adherence to customer-defined standards and preferred report structure.

Efficiency First: 2011, 2012

Researched and summarized proposed bills poised to affect the home retrofitting industry. Edited letters and petitions from local Efficiency First chapters to top government officials promoting specific legislation.

Curtis & Tompkins Laboratories: 2008, 2011

Worked in the metals department of an analytical chemistry laboratory. Responsible for evaluating soil and water samples for presence of toxic metals. Performed a variety of analytical chemistry analyses to simulate the leaching of toxic metals through landfills.

Blake Herrschaft

Senior Engineer

Personal Statistics:

Citizenship : United States

Language Capabilities:

Language	Level
English	Native
Spanish	Low

Academic and Professional Attainment:

Bachelor of Engineering, Pennsylvania State University, Architecture, 2006

Summary of Professional Experience:

Blake Herrschaft, PE, is a Senior Engineer for DNV Building Services. He has 7 years of experience on high performance building consulting, innovative systems design, and energy analysis of commercial buildings and portfolios. His experience working on many high-performance buildings includes a wide range of building types, systems, and locations across the globe. This experience helps bring a comprehensive understanding of the many different approaches used across the sustainable design community. Blake's primary focus is buildings and communities that have a net positive impact on the community around them.

Present Position:

As Senior Engineer, Blake focuses on engineering and energy analysis of buildings and portfolios, leveraging his experience to reduce building energy use and enable a 100% renewable energy future.

Professional Training

- 2015: Introduction to Energy's PM standard
- 2014: Basic Health, Safety and Environment, web
- 2014: WE in DNV GL, web
- 2013: Ergonomics: Office English (Equivalent for: 3520)



Detailed Professional Experience:

DNV GL: 2013, present

- Google X, 2014-08, present: This project involves the major rehabilitation of two existing buildings in Mountain View, California. The details of the project are confidential; however, the goals include LEED-CS and LEED-CI certification of one building using version 3 of the LEED rating system, as well as LEED-NC certification of the other building using version 4.
- **Ten Islands Challenge, 2014-11, present:** This project's goal is to help 10 islands in the Caribbean achieve 100% renewable energy. Blake's role on the project is assist in energy use reduction at large energy users on the islands through implementation of sustainable design strategies.
- LinkedIn LEED Offices, 2014-03, present

Rocky Mountain Institute: 2012, 2013

Rocky Mountain Institute (RMI) is an independent, non-partisan nonprofit that drives the efficient and restorative use of resources. RMI advances market-based solutions, engaging businesses, communities, and institutions to cost-effectively shift to efficiency and renewables. We employ rigorous research, analysis, and whole-systems expertise to develop breakthrough insights. We then convene and collaborate with diverse partners—business, government, academic, nonprofit, philanthropic, and military—to accelerate and scale solutions.

 ASU Carbon Neutrality Implementation Plan: 2013-02, present: Technical lead for plan to make Arizona State University, the largest non-profit university in the United States, carbon neutral by 2025.

MA Engineers: 2009, 2012

As Director of Sustainable Design, Blake led the way in implementing high-performance, sustainable, and net zero design strategies at one of the largest MEP firms in San Diego.

WSP Advanced Environmental: 2006, 2009

At the time, WSP Advanced Environmental was one of the leading sustainable building design consultancies in the world. Blake's experience there, while working in both the San Diego and Sydney, Australia offices helped him garner solid experience while working on green buildings across 5 continents.

B.2 VHB Resumes



Kari Hewitt, LEED AP, CEM, ENV SP

Energy and Transportation



Education

MA, Urban and Environmental Policy and Planning, Tufts University, 2008

BA, Sociology, Smith College,

Registrations

LEED Accredited Professional, 2008

Certified Energy Manager, 2010
Envision™ Sustainability
Professional, 2013

Affiliations/Memberships

United States Green Building Council

American Planning Association

American Society of Adaptation

Professionals

Association of Energy Engineers

Kari is the Director of Sustainability for VHB and a project manager in its Environmental Planning & Sustainability Practice. She has experience working with local governments and airports on sustainability planning and reporting, climate action and strategic energy planning, and stakeholder engagement. Kari oversees technical components of the Team's planning efforts, including conducting greenhouse gas (GHG) emissions inventories and quantifying GHG reduction potential, energy savings, and cost savings from existing and proposed strategies. She also has extensive knowledge of green building practices, energy efficiency strategies, and carbon markets. In addition, Kari oversees VHB's corporate sustainability program, which aims to integrate sustainability throughout the company's projects and operations.

9 years of professional experience

Climate Smart Communities, Mid-Hudson Valley and Capital Region, New York

Kari supports the design and delivery of technical assistance to Climate Smart Communities Members in the Lower Hudson Valley and Capital District regions of New York. Through this project, the VHB Team helps drive local climate and sustainability programs through the provision of direct services related to completing greenhouse gas (GHG) emissions inventories, climate action and sustainability plans, implementation of GHG reduction and other sustainability measures, identification of funding opportunities, and reporting and tracking of sustainability metrics. Kari has led the development of multiple custom technical assistance service strategies for local governments, tasks associated with greenhouse gas inventories, education and training, and supported the development of tools and resources for the project as well.

Sustainability Plan, Richmond, VA

Kari led efforts for the Environment Focus Area for the City's first Sustainability Plan, covering a variety of environmental, social and economic topics in an effort to make Richmond a healthier, more competitive, and sustainable city. She assisted in the coordination of a Sustainability Advisory Committee, a Stakeholder Group, and an Executive City Staff team as well as facilitation of focus group and community workshop discussions to identify goals, objectives, and initiatives for the Plan. She subsequently helped lead a prioritization of initiatives process and drafted portions of the Sustainability Plan

Albany Energy Master Plan, Albany, NY

Kari was Project Manager for the development of an Energy Master Plan for the City of Albany, New York. This project was part of a larger effort through the New York Power Authority (NYPA) to develop Energy Master Plans for five major cities in New York, including Albany, Buffalo, Rochester, Syracuse, and Yonkers. Kari led efforts associated with conducting a baseline assessment, coordinating with community and state level stakeholders, developing goals, objectives, and targets, identifying strategies, evaluating strategies and quantifying benefits, and developing a plan for implementing actions. The Energy Master Plan focused on areas of energy planning and coordination, energy delivery infrastructure, transportation energy efficiency, and energy efficiency in buildings.

Energy & Sustainability Services, Albany, NY

Kari was responsible for leading the technical components, including development of a comprehensive greenhouse gas (GHG) emissions inventory and climate action plan for municipal operations and the community at large; development of a climate adaptation plan; responding to funding opportunities on behalf of the City; and overseeing the City's Sustainability Working Group. Specifically, she led the data collection, analysis, and QA/QC process. She was also intimately engaged in the quantification of the GHG, energy, and cost benefits associated with identified GHG reduction strategies. Kari played a supporting role with the development of a GHG Data Collection and Management System for the City

Kari Hewitt, LEED AP, CEM, ENV SP

and in development of the City's Climate Action Plan and Energy and GHG components of the Albany 2030 Comprehensive Plan.

Logan International Airport, Sustainability Management Plan, Boston, MA

For the Massachusetts Port Authority (Massport), Kari is serving as Deputy Project Manager for the development of the Logan Airport Sustainability Management Plan and leading efforts associated with the energy focus area of the Plan. She is also leading efforts related to stakeholder engagement for the Plan and a process for evaluating and prioritizing recommended strategies.

Energy Baseline and Greenhouse Gas Emissions Inventory, West Palm Beach, FL

Kari led the data collection and analysis portion of the 2008 energy baseline and greenhouse gas emissions inventory task for the City of West Palm Beach's sustainability planning effort. She worked directly with City staff to collect all data for both government operations and the community at large from Florida Power & Light, the Solid Waste Authority, Treasure Coast Regional Planning Council, and Palm Beach County. Originally completed in 2011, this project continues with a 2013 update to the City's GHG inventory and measurement of progress to date.

Monroe County Sustainability Action Plan, Monroe County, FL

Kari is managing VHB's role on the development of a Sustainability Action Plan for Monroe County, Florida, which included an update of County operations and community scale greenhouse gas inventories, an assessment of progress on energy targets, and development of energy goals, strategies, metrics, and implementation plans. She is also assisting with online and in person public engagement and communication of the plan, which includes both climate change mitigation and climate resiliency components. Building off its role on this projects, VHB was been contracted to support and environmental and greenhouse gas assessment in the County's process of determining its yard waste management vendor and process.

Energy and Climate Footprint Action Planning Services, Schenectady County, NY

Kari served as the task leader for the completion of the greenhouse gas (GHG) emissions inventory and forecast for government operations for the County. She was responsible for working with County staff and other stakeholders to collect data, calculate emissions, conduct emissions forecasting, and develop a report and methodology for the GHG inventory.

${\tt Energy\ Management, GHG\ Inventory, \&\ Bicycle/Pedestrian\ Program\ Initiatives,\ Bethlehem,\ NY}$

Kari was responsible for the completion of numerous tasks associated with the greenhouse gas emissions (GHG) inventory and forecast for the Town of Bethlehem. She was part of the team working with Town staff and other stakeholders to collect data, calculate emissions, conduct emissions forecasting, and develop a report and methodology for the GHG inventory. She also assisted in facilitation of a community workshop as part of the bicycle/pedestrian program.

Cleaner Greener Communities, Capital Region, NY

Kari was involved in a number of components of the Capital Region Sustainability Planning process through the Cleaner Greener Communities program. She oversaw Greenhouse Gas Inventory tasks for the project and was responsible for the design and implementation of an evaluation process for all recommended initiatives for the eight focus areas of the Sustainability Plan: Climate Adaptation, Economic Development, Energy, Food Systems, Land Use and Livable Communities, Transportation, Waste, and Water. She helped lead the work of the Energy Technical Committee in identifying goals, initiatives, and metrics for this focus area of the Plan.



Nathaniel Grier, PE, ENV SP

Transportation



Education

MS, Transportation, Massachusetts Institute of Technology, 2002 BS, Civil Engineering, Massachusetts Institute of Technology, 2000

Registrations

Professional Engineer NC, 2005
Professional Engineer MD, 2008
Envision™ Sustainability
Professional, 2014

Affiliations/ Memberships

Institute of Transportation Engineers Transportation Research Board, TDM Committee, Friend of the Committee Nat has extensive experience in a broad set of disciplines within the field of transportation. He specializes in campus transportation planning and has worked on campuses across the country. In addition to transit, bike and pedestrian planning, his multimodal work includes TOD, scenario analysis and small area planning. He has a strong background in the development of TDM plans as well as parking analysis and financial planning. He supports the sports design practice through his understanding of event and venue transportation planning. In addition to campus planning, Nat has experience with a wide array of public sector transportation planning projects including transit studies, CTP, LRTP development and traffic forecasting, as well as air quality modeling and emissions estimates.

14 years of professional experience

MWCOG/M-NCPPC, US 29/Cherry Hill TOD Scenario Planning, Montgomery County, MD

As Project Manager, Nat oversaw the development of a transportation/transit oriented design (TOD) scenario planning exercise for the employment area and the adjacent Federal Research Center. The work included the development of a sketch planning tool to test the feasibility and cost of various transit alignments and modes to serve the area and the relative impact on traffic of these modes for varying density of future development. The second phase of the study included the use of INDEX software to evaluate the area's sensitivity to land-use, jobs-housing balance, transit and other TOD factors. As the project was part of the larger Master Plan update for the area, it included extensive coordination with an intra agency working group, as well as presentations to the citizen's advisory committee.

Cornell University, Climate Action Plan, Ithaca, NY

Nat was Project Manager for the development of the transportation component of a climate action plan for the University. As part of the American College & University President's Climate Commitment (ACUPCC), Comell has committed to climate neutrality. The plan examined ways of reducing greenhouse gases related to commuter emissions through expansion and improvement of TDM programs as well as other initiatives (such as live/work). Additionally, it included recommendations to reduce GHGs associated with fleet operations and University related air travel.

UNC-Chapel Hill, Climate Action Plan, Chapel Hill, NC

Nat served as Project Manager for the transportation component of a climate action plan for the University. As an American College and University President's Climate Committee signatory, the University of North Carolina at Chapel Hill has committed to long term carbon neutrality and has a long-history of sustainability. This effort will identify implementable next steps that will provide substantial greenhouse gas reductions in the next 15 to 20 years.

GroWNC: Western NC Livable Communities Initiative, Buncombe, Henderson, Haywood, Madison and Transylvania Counties, NC

Nat was Project Planner, assisting with the analysis of existing and future transportation conditions for the region. Technical work included an advisory role for the development of an INDEX model for the area as well as scenario evaluations and recommendations.

Cornell University, Baseline Emissions Estimate, Ithaca, NY

As Project Manager, Nat prepared an estimate of emissions resulting from commuter travel to/from the campus. The analysis was performed in multiple ways and the approaches compared and a methodology developed for the ongoing monitoring of the carbon footprint as required by the American College & University Presidents Climate Commitment.

Nathaniel Grier, PE, ENV SP

Ithaca College, Climate Action Plan, Ithaca, NY

Nat was Project Manager for the transportation component of the climate action plan for the college. As an American College and University President's Climate Committee signatory, Ithaca College has committed to long term carbon neutrality but working within the more constrained resources of a smaller school. The plan focuses on implementable first steps and identify achievable long term targets.

North Carolina State University, Climate Action Plan, Raleigh, NC

Nat was Project Manager for the transportation component of a climate action plan for the University. As an American College and University President's Climate Committee signatory, North Carolina State University has committed to long term carbon neutrality. As the University had already identified many short term actions, the project focused on assisting the University in developing a long term vision for its transportation related initiatives.

UNC-Chapel Hill, Carolina North TIA Air Quality Analysis, Chapel Hill, NC

As Project Transportation Engineer, Nat provided protocol recommendations to the University of North Carolina at Chapel Hill and an outside consultant hired to perform the analysis. He reviewed the resulting analysis for completeness and reasonableness.

Northern Virginia Community College, Parking and Transportation Plan, Annandale, VA

As Project Manager, Nat is overseeing a parking and transportation study to assess the current parking utilization and extent of off-campus parking and traffic impacts. The study includes a sizeable data collection program as well as policy based analysis of the current system. Recommendations will focus on ways to decrease off-site parking through policies as well as TDM and related programs to reduce the overall vehicle demand at the campus. A substantial component of the study includes stakeholder outreach and messaging. The recommendations will also include a monitoring program for gaging the long term impacts of any changes.

Liberty University, Campus Assessment and Master Transportation Plan, Lynchburg, VA

As Project Manager, Nat oversaw development of a parking and transportation study to support the rapid growth at the university. The plan identifies existing and future parking and transportation needs and provides a recommended approach to accommodate the future campus growth. A central element of the analysis was understanding the impact of special events on parking and transit: the physical plan calls for a near doubling of event and sports venue seats.

Rutgers University, Campus Master Plan, New Brunswick, Newark, and Camden, NJ

Nat is the Project Manager, overseeing the transportation elements of a campus master plan. Transportation affects each of the university's campuses in unique ways, but perhaps none more so than the New Brunswick/Piscataway campus which is spread across five campuses on either side of the river and connected by a transit system carrying over 70,000 riders per day. The master plan recommends transforming the physical infrastructure to minimize the need for such movement and making the transit hubs the educational and social centers of the campus. The plan includes enhancements to the bicycle and pedestrian networks and connections to the host communities. It also recognizes that many visitors, students and employees will continue to drive and identifies ways to enhance their access and parking experience. The plan will also be the first comprehensive plan to incorporate planning for Rutgers Biomedical and Health Sciences (former UMDNJ).

Lafayette College, Master Plan, Easton, PA

Nat was Project Leader for the transportation aspects of the Campus Master Plan. The Plan includes a strong focus on the improvement of pedestrian conditions including the recommended closure of several streets through the heart of campus. The plan also addresses campus parking needs on a daily basis and for special events as well as the interface with surrounding neighborhoods.



Angela Jean Vincent

Energy and Land Use



Education

MS, Resource Management and Administration, Antioch University New England, 2002

BS, Environmental Policy and Administration, Western Washington University, Huxley College, 1996

Affiliations/Memberships

American Planning Association, Board Director Elected from Region 1 2010 2014, 2000 Angela has been helping local governments achieve their sustainability goals for nearly 17 years. Her work includes: developing zoning regulations, creating comprehensive plans, marketing and communications on municipal projects and issues, public outreach, and assistance with crafting energy efficiency and renewable energy strategies. She bring a deep understanding of climate and sustainability issues facing MWCOG having served as a resource to develop GHG inventories and climate action planning initiatives.

17 years of professional experience

Climate Smart Communities, Mid-Hudson and Capital Regions, NY

As Project Manager for the Climate Smart Communities Regional Coordinator Program for the Mid Hudson and Capital Regions, Angela coordinates the design and delivery of technical assistance to over 60 Climate Smart Communities in the two regions. Through this project, she works with the VHB Team to advance local climate and sustainability programs through direct assistance including completing greenhouse gas (GHG) emissions inventories; developing climate action and sustainability plans; implementing GHG emissions reduction and other sustainability measures; identifying funding opportunities; and reporting and tracking of sustainability metrics.

Cleaner Greener Communities, Capital Region, NY

Angela assisted with the development of the Capital Region Sustainability Plan through the New York State Cleaner Greener Communities program. In addition to managing the various tasks associated with this program, she worked directly with the Food Systems Technical Committee to identify goals, strategies, and sustainability indicators for this focus area, which are included as a chapter of the Sustainability Plan. VHB also supported the public consultation component of the regional sustainability planning process.

Climate Smart Communities Certification Program, New York

Angela worked directly with the NY State Energy Research and Development Authority (NYSERDA), NYS Department of Environmental Conservation (NYSDEC) and local governments in New York to design a state wide Climate Smart Communities Certification Program to encourage ongoing implementation of climate protection related actions and to recognize achievements of local governments in every phase of the program. Angela managed the Climate Smart Communities Certification Program team that created this program, which included internal staff and subconsultants. The final certification manual was completed in December 2013.

Middletown Comprehensive Master Plan, Implementation Program, Middletown, RI

Angela worked collaboratively with the Town of Middletown, Rhode Island, to create a robust implementation program to finalize the Town's 2014 Comprehensive Master Plan. In addition to working closely with the Town Planners, Administrator, and Solicitor, she coordinated with the Planning Board and organized community engagement workshops to solicit and incorporate input on the draft plan, which will guide the town over the next twenty years.

Comprehensive Sustainable Master Plan, Greenfield, MA

Angela was the Project Manager and Sustainability Specialist for a Comprehensive Sustainability Master Plan for the Town of Greenfield. She guided the Town through an innovative, inclusive community planning process that incorporated sustainability principles throughout the final master plan. Angela created and organized the broad reaching community engagement process which included both in person workshops and virtual tools. The final document included a robust and realistic implementation plan that lays out the people and resources needed to implement the Town's vision and goals.

Angela Jean Vincent

ICLEI-Local Governments for Sustainability USA (ICLEI USA), Boston, MA

Angela managed the work plans, activities, projects, and deliverables of five staff members, and built a strong Regional Office that served the needs of ICLEI USA's local government members in the Northeast and Mid Atlantic region. She managed numerous grant programs focused on addressing sustainability and climate protection in communities in the region. She also served on a transition team to oversee the organizational restructuring of ICLEI with a special focus on project management. Angela provided assistance and guidance to local governments on issues related to greenhouse gas emissions reductions, climate action plan development, networking and partnership opportunities among members, and responded to inquiries regarding sustainability, climate protection and adaptation. She prepared grant proposals to support the Northeast/Mid-Atlantic Region al Office and ICLEI USA and successfully raised over \$4 million in two years. Angela performed this work prior to joining VHB.

Nashua Regional Planning Commission (NRPC), Nashua, NH

As Senior Regional Planner, Angela compiled smart growth resources, organized workshops, and coordinated various projects with three communities in the Nashua Region as part of the Community Technical Assistance Program (CTAP) for the L 93 expansion project in New Hampshire. She organized workshops and trainings to educate local boards on innovative planning techniques such as stormwater management, green buildings, and shoreland protection. A major responsibility involved the creation of a Regional Energy Program for the Nashua Region which included researching grant funds, working with communities and stakeholders to develop strategies for addressing local and regional energy needs, and participating in statewide efforts like the Carbon Coalition and Local Energy Committee Working Group. Angela organized and facilitated working groups, advisory committees, and task forces to support NRPC's Brownfields program and the Nashua Region Solid Waste District; coordinated stormwater management resources in the region; assisted two large watershed organizations (Merrimack and Souhegan Rivers); and formed a Water Supply Mutual Aid Agreement in the Merrimack River Valley. Angela performed this work prior to joining VHB.



Paul H. Moyer, AICP, ENV SP

Planning



Education

BA, Urban Planning, University of Cincinnati, 1987

Graduate Coursework, Business Administration, DeVry University

Registrations

American Institute of Certified Planners, 1991

> Envision™ Sustainability Professional, 2013

Affiliations/Memberships

American Planning Association, National Capital Region and Virginia, Executive Board

Urban Land Institute, Washington DC, Full Sustaining Member

Lambda Alpha, 2014

Paul has extensive experience preparing Master Plans, Redevelopment Plans, Land Use Plans, Corridor Plans, Design Guidelines and detailed Implementation Strategies. He has extensive experience in the Mid-Atlantic Region supporting public and private clients. A certified planner with background in architecture, land use planning and environmental impact analysis, Paul has applied his talents to federal and community-based projects through strong leadership, management and consensus building skills that have helped clients achieve their goals.

27 years of professional experience

Hampton Roads Regional Planning District Commission, Hampton Roads Joint Land Use Study, Hampton, VA

Planning Principal prepared study with the cities of Chesapeake, Norfolk, and Virginia Beach, while partnered with the U.S. Navy, to conduct the Hampton Roads Joint Land Use Study (JLUS). Study explored opportunities to reduce noise impacts on communities surrounding NAS Oceana, NALF Fentress, and Chambers Field, while accommodating necessary growth and maintaining regional economic sustainability.

The University of Virginia, University / Emmet / Ivy District Study, Charlottesville, VA

Lead urban designer for the preparation of the University / Emmet / Ivy District study that focused on improvements to the main entry corridors and entry points to the UVA Central and North Grounds. VHB was part of a larger multidisciplinary team prepared a circulation analysis and plan for this area to address vehicular, bus, pedestrian and bicycle circulation. Key recommendations included modifications to several intersections, improvements to sidewalk circulation and connections, changes to transit stops and bicycle paths.

Charles Village Transportation Master Plan, Baltimore, MD

Lead urban designer for the preparation of the Charles Village Transportation Master Plan, focused on improvements to St Paul's and 33rd Street in Baltimore, Maryland. VHB developed concepts for improvements to these key corridors to support existing and planned retail, office and residential development. The concepts included changes to street right of way to support transit, parking, pedestrians, and bike traffic through the study area. Key recommendations included modifications to several intersections, improvements to sidewalk circulation and connections, changes to transit stops and bicycle paths

Mooretown Road Extension, James City County, VA

Task Manager for the Land Use Planning elements of the Mooretown Road Extension is intended to provide a new roadway connection between two existing roadways. VHB's project tasks include infrastructure and transportation evaluation, including traffic forecasting, capacity analysis and accident analysis; environmental screening for natural and cultural resources; land use and market analysis evaluation; alternatives development for the new connection alignment; and impact evaluation and comparison for the alternatives., In addition to coordinating with key technical advisors for the project, which include James City County, York County, and Virginia Department of Transportation representatives, the project includes ongoing public involvement to engage local stakeholders

The Ohio State University Comprehensive Parking and Transportation Plan, Columbus, OH

Deputy Project Manager for the Columbus, Ohio development of a comprehensive parking and transportation plan (CPTP) for its main campus in Columbus. The CPTP will assess the University's existing transportation needs and guide its growth plans over the coming decades. The CPTP is motivated by a need to address the short term impacts to OSU's parking system associated with development of a major medical center and the relocation of existing access roads and flood control

Paul H. Moyer, AICP, ENV SP

structures. The CPTP also identifies mid—to long term implementation strategies that support the goal of "park once," a foundational principle of the award winning Framework Plan prepared for the campus. As part of the public outreach process, VHB utilized crowdsourcing site MindMixer as a tool to identify transit preferences on and around the Ohio State University campus.

Revitalization Study for the Kenilworth Avenue/Town of Cheverly Industrial Area, Cheverly, MD

Project Manager who led the Revitalization Study for the Kenilworth Avenue/Town of Cheverly Industrial Area. The study sought to understand the economic potential of this industrial area, as well as to develop a strategy for how the area can better contribute to the quality of the surrounding neighborhoods of Cheverly and Bladensburg, as well as the Anacostia River. Key issues considered in the study were traffic, pedestrian, and bicycle circulation, stormwater management, land use, zoning, and economic development. Public involvement included extensive outreach to the adjacent communities, business and property owners, and local advocacy organizations.

City of Fairfax, Fairfax Boulevard Concept Plan, Fairfax, VA

Paul was the lead urban designer in developing a series of development concepts for the redevelopment of the Northfax focus area at the intersection of Rt 123 and Fairfax Boulevard. The concept plan provide a proposed framework of roads, parking, and mixed use development to create a pedestrian friendly environment along a highly traveled corridor. As part of the overall plan, VHB also provided design for the improvements to key intersections along both Fairfax Boulevard and Rt.123.

Kenilworth Avenue Corridor Study, District Department of Transportation, Washington, D.C.

Paul served as Principal in Charge and developed urban design strategies to improve connectivity of the corridor with adjacent neighborhoods and to improve its visual character.

City of Hampton, Hampton Neighborhood Commercial Corridors, Hampton, VA

Paul served as Principal in Charge of revitalization plans for two neighborhood commercial corridors providing a strategy for improving their appearance, function, and development potential. Services included mapping and GIS based analysis.

Hyattsville Community Development Corporation, Hyattsville Community Legacy Revitalization Plan. MD

Paul served as Senior Planner supporting the preparation of a community legacy plan for city, which generated phased recommendations addressing community programs and events, economic development, and physical improvements to help revitalize the city. Specific efforts included interactive public workshops to develop comprehensive revitalization strategies for the aging community and commercial corridor.

East-West Gateway Coordination Council, St. Louis Metro-Link Transit Study, MO (prior to VHB)

Paul was Project Manager of an urban planning and design study for an eight mile light rail transit corridor extending from the downtown to the city of Clayton and Forest Park. Paul led the preparation of station site plans for each station along the corridor as well as supporting the public engagement process.



Christopher R. Conklin, PE, ENV SP

Transportation



Education

MS, Technology and Policy, Massachusetts Institute of Technology, 1999

MS, Transportation, Massachusetts Institute of Technology, 1999

BS, Civil Engineering, Georgia Institute of Technology, 1997

Registrations

Professional Engineer (Civil) MA, 2004

Envision™ Sustainability Professional (Sustainability)

Affiliations/ Memberships

American Society of Civil Engineers

Transportation Research Board, ADD 30 (Transportation and Land Development), Committee Member

> Society of College and University Planners

Chi Epsilon, Omicron Delta Kappa For the last decade, Chris had directed VHB's transportation practice for colleges and universities. He has worked with a diverse set of clients, including 60,000-student state flagship universities, nationally-acclaimed private universities, small private colleges, and community colleges. Chris is a trusted advisor on campus transportation issues including parking planning, transit and shuttle operations, and pedestrian and bicycle issues. Based in Northern Virginia, Chris is also the leader of VHB's regional transportation practice for the Mid-Atlantic and is keenly familiar with regional transportation issues and needs within the metropolitan Washington region.

22 years of professional experience

Research Triangle Park Master Plan, Durham, NC

As VHB's Project Manager Chris led VHB in providing transportation, civil engineering, and water resources planning services in support of creating a master plan for the Research Triangle Park (RTP), a 7,000 acre parcel zoned and developed for research and development activities. Goals included understanding and improving the mobility and transportation infrastructure for future competitiveness and sustainability. VHB supported the team by developing an understanding of how mobility needs and transportation infrastructure would help shape the plan. Transportation planning services included stakeholder outreach, characterization of the existing transportation infrastructure, identifying and documenting regional plans and programs and/or planning transportation improvements that may influence the future of the RTP, and identifying opportunities to reshape access and mobility to the RTP and in the region. Tasks included identifying opportunities to reshape access and mobility of the park, and involved conceptual design of complete street networks. A truly multi modal network with redevelopment in mind guided the evaluation of existing conditions, identification of challenges, and development of strategies to accomplish the goals.

George Mason University, Transportation Consulting, Fairfax, VA

Chris managed a transportation on call agreement for George Mason University (GMU), a 30,000+ student university with distributed campuses in Northern Virginia. Through this agreement, Chris superted numerous studies for GMU, including a Comprehensive Transportation Master Plan for the main campus in Fairfax, planning for Mason Shuttles, parking planning, pedestrian and bicycle facility planning and design, traffic studies, and design-build owners' representation services.

Catholic University of America Master Plan, Washington, DC

As Principal in Charge, Chris oversaw transportation support for the physical development and operational improvements to the Catholic University of America campus and approval of the master plan before the District of Columbia Zoning Commission. The Catholic University of America includes a 144 acre Main Campus and North Campus, in addition to the recent purchase of the 47 acre West Campus. The University sought to optimize the use of its land holdings, modernize its facilities, and achieve enrollment and retention goals within its student population, while maintaining its academic, cultural, and religious missions. Through the master plan, VHB is developing strategies and plans to support the University's growth and development of new and expanded academic, residential, cultural, and athletic facilities.

Princeton University, Arts & Transit Neighborhood Enabling Project, Princeton, NJ

Chris is Lead Transportation Engineer for Princeton University's Arts & Transit Neighborhood Enabling Project, one of the initial major capital projects resulting from the award winning 2008 campus master plan prepared by Beyer Blinder Belle. This \$40 million, 14-acre project will effectively "enable" the physical transformation of the southwestern edge of campus. The Enabling Project encompasses several clements, including roadway improvements, roundabout design, transit plaza, rail relocation, utility improvements, open space, and the establishment of a new western gateway to campus.

Christopher R. Conklin, PE, ENV SP

Northern Virginia Community College, Parking and Transportation Plan, Annandale, VA

Chris is Principal in Charge of a parking and transportation study to assess the current parking utilization and extent of off-campus parking and traffic impacts. The study includes a sizeable data collection program as well as policy based analysis of the current system. Recommendations will focus on ways to decrease off-site parking through policies as well as TDM and related programs to reduce the overall vehicle demand at the campus. A substantial component of the study includes stakeholder outreach and messaging. The recommendations will also include a monitoring program for gaging the long term impacts of any changes.

George Mason University, Parking and Transportation Master Plan, Fairfax, VA

Chris managed development of a comprehensive parking and transportation master plan that defined a transportation strategy and implementation program to enhance mobility for George Mason University (GMU) staff, students, faculty, and visitors. The plan's three main objectives were to address existing circulation and safety issues for motorized and non motorized travel on and surrounding the Fairfax campus; to understand the implications of enrollment and staffing changes, planned buildings, and infrastructure projects on the campus; and to define an intermediate to long term strategy for managing parking, shuttles, pedestrian and bicycle needs, traffic flow, and wayfinding. The plan was developed using an inclusive stakeholder engagement process that included members of the Virginia Department of Transportation (VDOT), the City of Fairfax, and Fairfax County, and it identified over \$100 million in transportation projects on the campus and facilitated allocation of about \$20 million in state and county support for transportation improvements on and around the campus.

George Mason University, West Campus Connector, Fairfax, VA

Chris was the Principal in Charge for all aspects of the project. His primary focus was to facilitate communications with the adjacent neighborhoods and the University to gain consensus on the connector's location and design strategy for Campus Drive. Campus Drive is a significant piece of the George Mason University Transportation Master Plan. This roadway will connect the East and West portions of the Fairfax campus and allow collegiate traffic to travel without impeding the local roadways. With this roadway in place, the existing road network will see an improvement in the functionality.

Virginia Commonwealth University, Term Traffic and Parking Contract, Richmond, VA

Virginia Commonwealth University (VCU) is a top research institution located in the heart of Richmond's vibrant urban center. With a 30,000 student enrollment that continues to grow, the University is continually improving infrastructure to meet the needs of its students and employees. For more than a decade, Chris provided engineering and planning services in support of a variety of projects on both of its main campuses, Monroe Park and the Medical College of Virginia (MCV) Campus.

${\bf James\ Madison\ University, Transportation\ Study, Harrisonburg, VA}$

As Principal-in-Charge, Chris oversaw a detailed investigation into a number of traffic, transportation, and circulation issues identified throughout James Madison University's (JMU) campus. Various conceptual improvements were identified to improve the efficiency and walkability across campus. VHB was asked to complete a more detailed investigation into the issues identified through the master planning process, and Chris was responsible for completion of conceptual design for several improvements, with specific developable concepts ready to move directly into design phase, if the University desired.



Dan Goldfarb, PE

Transportation



MS, Civil Engineering, Virginia Polytechnic Institute & State University, 2003

BS, Civil Engineering, University of Maryland College Park, 1996 BA, Political Science, University of Florida, 1990

Registrations

Professional Engineer (Civil) VA, 2002

Professional Engineer (Civil) MD, 2002

Affiliations/ Memberships

Institute of Transportation Engineers, 1996 Dan has worked in the transportation field for two decades, both in the United States and abroad. He has experience in multimodal analysis and transportation modeling for planning applications, as well as traffic operational analysis.

23 years of professional experience

M-NCPPC, Regional Transportation Model Conversion to Travel/4 Model & Trip Generation Study, Montgomery County, MD

Dan is serving as Project Manager assisting M NCPPC with the conversion of the current TRAVEL/3 Model into the current MWCOG/TPB Version 2.3 model framework. VHB is leading the effort to update the software and model processes and the validation of the new Travel/4 Model. Along with migrating and validating the new TRAVEL/4 Model, VHB will develop GIS applications that are linked to the TRAVEL/4 Model to help manage data, review and display results, and evaluate travel demand patterns. As an additional part of this study, VHB and our subconsultants are developing new trip generation rates for Transit Oriented Developments in the County.

Rapid Transit System (RTS) Service and Integration Study, Montgomery County, MD

Dan is serving as the Project Manager for this study being done for the Montgomery County Department of Transportation. This effort includes review of the existing studies and development of a service plan for all ten RTS comidors.

MDSHA, Travel Forecasting and Traffic Engineering Analysis Services, Maryland

Dan served as the Lead Engineer and Task Manager for this task order contract. He was responsible for developing traffic forecast and post processing activities for environmental assessments, design volumes, model validation, development of travel forecast for major corridor studies involving highway and transit alternatives, traffic capacity analysis, determination of regional impacts including user cost and travel time saving cost as well as accessibility, and development of travel demand for congested pricing highway facilities. Major assignments included the 1 270 Multimodal Corridor Study, the Intercounty Connector Environmental Impact Study (EIS), and the Capital Beltway HOV/Express Toll Lane Study.

Tysons Corner Land Use and Transportation Study, Fairfax County, VA

Dan completed work with Fairfax County on a multimodal sector area plan for the Tysons Corner area in Northern Virginia. Tasks included travel demand forecast modeling involving different land use and highway and transit network scenarios. The study utilized the Metropolitan Washington Council of Governments (MWCOG) model with the Washington Metropolitan Area Transit Authority (WMATA) Post Processor Mode Choice model and the Fairfax County subzone assignment model.

$Maryland\ Department\ of\ Transportation\ US\ 40\ Carbon\ Neutral\ Corridor\ Study,\ Maryland$

Dan led the travel forecasting effort on this project to develop a carbon neutral corridor along US 40 north of Baltimore. As part of this study Dan evaluated strategies to decrease VMT including cordon and congestion pricing, decrease single occupancy vehicle mobility, increase transit use, and improved non motorized trip making.

M-NCPPC, Travel Demand Model Migration, Montgomery County, MD

Dan was Lead Engineer for assisting the Montgomery County planning agency with the first phase of their adoption of the regional travel demand forecast model and migration from the current county model. This effort has included assisting the planning agency staff with compiling data sets, providing direction on reviewing and refining the network coding, and assistance on understanding the regional model.

Dan Goldfarb, PE

M-NCPPC, Demand Model Development, Prince George's County, MD

Dan was Project Engineer for assisting the Prince George's County planning agency with development of a travel demand forecast model. This project includes refining the regional travel demand forecast model networks and developing the data sets for the county's model validation effort. Model network refinements include both highway and transit elements.

Travel Demand Forecasting Tool Development, Frederick County, MD*

Dan was the Project Manager and lead technical person on this project for the Frederick County Planning Department. The tool developed for the County uses the regional National Capitol Regional Transportation Planning Board (TPB) travel model and assigns the final trip tables to a refined network that addresses the County's planning needs. Dan assisted the County staff in applying the forecasting tool for a subarea study in the New Market area.

George Mason University and City of Fairfax Transit Study, Fairfax, VA

Dan is a senior advisor for this study to assess system usage for both George Mason University (GMU) Shuttles and the City of Fairfax's CUE Bus to identify potential system improvements that could provide cost savings and ridership growth. He oversaw the development of survey instruments to determine stop level ridership, usage patterns and perceptions of existing riders, and community perceptions of non riders. He oversaw the review of existing transit system data, survey results, and other data sources to identify system inefficiencies.

University of Virginia Western Bypass, Charlottesville, VA

Dan reviewed traffic forecast and methodology for developing the forecast and reviewed current traffic patterns. He identified count locations for traffic collection and evaluated future travel patterns for trips potentially using the proposed bypass to enter the North Grounds.

Arlington Bus Stop Inventory, Arlington, VA

Dan served as Project Manager for this project to collect physical data attributes on bus stop facilities in Arlington County for integration into the County's existing Bus Stop Inventory database. Current and reliable inventory information is vital for making capital improvements as well as providing efficient support for transit operations.

Dulles-Reston Transportation Study (Phase I and II), Fairfax County, VA

Dan completed work with Fairfax County on a sector area plan for the Dulles Reston Corridor in Northern Virginia. Tasks included travel demand forecast modeling involving different land use and highway and transit network sessions. The study also focused on intersection level improvements and evaluations. The study combined both macro level analysis with more spot and micro level analysis traffic analysis.

NVTC, Northern Virginia Regional Transportation Plan (TransAction 2040)

Dan served as the Deputy Project Manager and lead travel demand modeler for a long range transportation planning study that included highway, high occupancy vehicle (HOV), transit, bicycle, pedestrian, and intelligent transportation systems (ITS) components for the Northern Virginia Transportation Commission (NVTC). He was responsible for the conduct of the travel demand modeling activities using the TPB Version 2.3 model set, including the base year assignment validation and all future year forecasts.

Travel Demand Forecast Model Development and Support, Fairfax County, VA

Dan was the Project Manager for assisting Fairfax County with its travel demand forecast model. The County uses the National Capitol Regional Transportation Planning Board (TPB) travel demand model and supplements it with a finer, more detailed, highway assignment. As part of this project, Dan redeveloped the tool to better address the disaggregation of the trip tables by applying regional trip generation rates to the subzone data. This effort also included validating the tool for specific growth areas in the County and incorporating a more detailed mode choice tool to supplement the regional model.



Ana Hagerup

Energy



Education
MCP, Boston University, 2013
University of Washington,
International and Policy, 2009

Ana is a Planner who specializes in community and sustainability planning. Her experience includes working with local governments and airports on sustainability planning and reporting, climate action and strategic energy planning, and stakeholder engagement. Technical components of Ana's work include conducting greenhouse gas emissions inventories, analyzing energy data and costs, customizing planning templates, developing climate action and sustainability plans, and designing user-friendly tools for qualitative and quantitative data management.

5 years of professional experience

Logan International Airport, Sustainability Management Plan, Boston, MA

For the Massachusetts Port Authority (Massport), Ana is supporting the development of Logan Airport's first sustainability management plan that will focus on energy efficiency, waste management, community, and water conservation. Ana's role is to work with the internal sustainability working group to create custom tools including a sustainability initiatives screening tool and a tracking and reporting tool that will help to manage and implement sustainability initiatives for the entire airport.

Climate Smart Communities, Mid-Hudson and Capital Regions, NY

The New York State Climate Smart Communities program is a unique state local partnership to meet the state's goals to reduce greenhouse gas emissions, increase renewable energy use, and prepare for the effects of climate change. Funded by the NYS Energy and Research Development Authority (NYSERDA), the VHB team works with 68 local governments who are members of the Climate Smart Communities program in the Mid Hudson Region and the Capital District. As the Project Coordinator, Ana provides support and technical assistance for custom service strategies developed for local governments, including conducting greenhouse gas emissions inventorics; developing climate action and sustainability plans; quantifying greenhouse gas emissions reduction; identifying funding opportunities; compiling best practices for increasing renewable energy use; assessing community vulnerability and developing climate adaptation plans; and reporting and tracking of sustainability metrics. In addition to the development of tools and resources, Ana maintains an online database of community information and leads CSC outreach efforts through website development or mainten ance and managing multiple social media tools.

Energy Master Plan, City of Albany, NY

Ana supported the project by conducting research, drafting sections of the Energy Master Plan, developing visuals and timelines, editing final versions of the Plan, and compiling the technical report with estimates for greenhouse gas emission reductions and steps for implementation. The focus of Ana's work on this project included recommendations for developing a green business program, green jobs training program, residential energy conservation ordinance, removing barriers to solar permitting processes, assessing community microgrid potential, and creating green building overlays.

Monroe County Sustainability Action Plan, Monroe County, FL

Ana supported the development of a Sustainability Action Plan for Monroe County, Florida by providing technical assistance to conduct a greenhouse gas emissions inventory update for County operations and the community. This process involved reviewing the County's past greenhouse gas inventories to evaluate data quality issues and coordinating with utilities to verify and collect energy related data needed to complete the greenhouse gas inventory update.

EnerNOC, Inc., Boston, MA

Ana previously worked at EnerNOC, a leading provider of demand response and energy efficiency solutions that improve grid reliability and the integration of renewable generation. As the Sustainability Coordinator at EnerNOC, Ana worked closely with internal stakeholders and specialists to further

B.3 BuroHappold Resumes

BUROHAPPOLD ENGINEERING



ARIELLA MARON

POSITION Principal

SPECIALISM Project Management & Consultancy

QUALIFICATIONS
Master of City Planning,
Massachusetts Institute
of Technology (2003); Bachelor
of Arts, Economics and
Environmental Studies, University

ACCREDITATIONS LEED Accredited Professional (AP)

MEMBERSHIPS Urban Green Council

of Pennsylvania (1999)

BUROHAPPOLD 2012 – present

Ariella Maron brings a wealth of expertise in the energy sector, and is well-known in New York City for her involvement in PlaNYC and the city's efforts to reshape the energy profile of its building portfolio. Before joining Buro Happold Engineering, Ariella was the Deputy Commissioner for energy management at the NYC Department of Citywide Administrative Services. In this role she developed a data-driven, strategic approach to scale up the City's efforts to improve the energy efficiency of its portfolio, integrate clean energy technologies, and achieve a 30% reduction in greenhouse gas emissions by 2017. She was one of the founders of the New York City Energy Efficiency Corporation, serving as the Board of Directors Secretary. She was also deputy director of the NYC Mayor's Office of Long-Term Planning and Sustainability, the office responsible for the implementation of PlaNYC, the city's long-term sustainability plan, and a member of the core team that developed PlaNYC, focusing on air and water quality, energy, and climate change. Not only does Ariella have significant experience developing energy plans, she has experience implementing these plans, providing her with a realistic understanding of what is achievable and how best to achieve it. Her current work at BuroHappold included the New York Power Authority's (NYPA) Five Cities Energy Master Plans, which involved the development of comprehensive energy master plans for five of the largest cities in New York State and helping the State to create a strategy to support the cities' implementation. Ms. Maron also provided project management of NYPA's "BuildSmart NY," a plan to strategically implement an executive order to improve the energy efficiency of the city's buildings 20% by 2020.

KEY PROJECT INFORMATION

Strengthening NYC's Civic Sustainability Infrastructure: Sandy Success Stories New York, NY

Enterprise Community Partners Resiliency Planning New York, NY

New York City Economic Development Corporation, Citywide Sustainability & Energy Policy Initiatives* New York, NY

New York City Economic Development Corporation RISE : NYC Competition New York, NY

New York Power Authority Five Cities Energy Master Plans Albany, Buffalo, Rochester, Syracuse, Yonkers

Towards a Master Plan for Jamaica Bay Queens, NY

Detroit Works Planning Study Detroit, MI

Archer Avenue

Oueens, NY

New York Power Authority BuildSmart NY

New York

New York City Mayor's Office of Long-Term Planning & Sustainability, PlaNYC*
New York, NY

NYC Municipal Energy Management and Greenhouse Gas Reduction*
New York. NY

 $\hbox{\rm *experience prior to joining BuroHappold}$

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BUROHAPPOLD ENGINEERING



Steven Baumgartner specializes in infrastructure planning and sustainability framework development. He has a history of creating unique solutions to assist his clients in meeting their organizational missions. With a background in mechanical engineering, he has been involved in design and research of energy simulation/analysis and sustainable system design through a number of projects in various stages of design and construction. Steven provides environmental and energy engineer expertise and is responsible for building environmental strategies, conceptual design studies, strategic energy services, sustainable design research, and energy/carbon action plans and implementation plans. He runs multiple sustainability consultancy projects throughout the world. Steven is the former President of the New York Chapter of ASHRAE. He teaches and lectures at colleges and universities throughout the country including a new three part class he co-developed on "High Performance Development" at Columbia University (GSAPP, MSRED).

KEY PROJECT INFORMATION

STEVEN BAUMGARTNER

PE CEM HBDP LEED AP*

POSITION

Associate Principal

SPECIALISM

Sustainability Consulting, Energy and Infrastructure Planning

QUALIFICATIONS

Bachelor of Science, Mechanical Engineering, Union College (1999)

ACCREDITATIONS

Professional Engineer (PE): New York, District of Columbia; LEED Accredited Professional (AP): ASHRAE High Performance Building Design Professional (HBDP); Certified Energy Manager (CEM) from Association of Energy Engineers

MEMBERSHIPS

ASHRAE; US Green Building Council (USGBC); Society for College and University Planning (SCUP)

TEACHING

Adjunct Professor: Columbia GSAPP Center of Urban Real Estate; Lecturer: Cornell, Cooper Union, The New School, Lynn University

BUROHAPPOLD

2007 – present

Arlington Courthouse Master Plan Arlington, VA

Northside Urban Redevelopment Plan St. Louis, MO

NYPA Five Cities Energy Master Plans Albany, Buffalo, Rochester, Syracuse, Yonkers

New York City Economic Development Corporation RISE: NYC Competition

New York NY

World Bank Southeast Asian Cities Energy Efficient Cities Program Asia

Yuzhong District Master Plan Chongqing, China

Seifullina Place Development Almaty, Kazakhstan

Hialeah, Florida Energy Services Master Plan *Hialeah, FL*

Kuala Lumpur International Financial District Kuala Lumpur, Malaysia

King Abdullah City for Atomic and Renewable Energy Riyadh, Saudi Arabia

Vizag Knowledge City Master Plan Vishakhapatnam, India

Yuzhong District Master Plan Chongqing, China

Denver Brookfield Master Plan Abu Dhabi, UAE

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BUROHAPPOLD ENGINEERING



MA (Hons) MEng MSt CEng MIMechE

POSITION

Associate Director

ALASDAIR YOUNG

SPECIALISM

Energy Consulting

QUALIFICATIONS

MA (Hons) MEng Mechanical Engineering;

MSt Interdisciplinary Design for

the Built Environment; Chartered Engineer.

MEMBERSHIPS

Member of the Institution of

Mechanical Engineers.
BUROHAPPOLD

2005 - present

Alasdair Young joined BuroHappold Engineering in 2005 after working in the UK's largest newspaper production plant. Alasdair's main expertise is in designing infrastructure systems which can enable sustainable and low carbon development, particularly when utility systems for energy and water can be designed to 'close the loop' with materials, waste, and wastewater cycles.

Alasdair has led numerous projects involving sustainable energy, water and waste systems at a range of scales. He is the Practice'champion' for CHP and community heating and has worked on projects through optioneering, feasibility, scheme design and procurement. He also has detailed design experience of numerous low and zero carbon energy infrastructure, including solar photovoltaics, biomass and large scale wind. As well as technical expertise Alasdair has experience of developing techno-economic models of low carbon energy and infrastructure systems to develop business cases for funding and procurement. Recent work has focused on delivery of new sustainable utility systems on large redevelopment schemes which has given him strong insights into the energy services and multi-utility market place.

As well as this project based work Alasdair has led a number of policy projects, including work for London First and the Greater London Authority on developing low carbon heat networks throughout London. This work addresses the barriers and policy changes required to make these systems economically viable for private sector investors. Alasdair has also given evidence to the London Plan Examination in Public on decentralised energy and was a member of the Department of Energy and Climate Change District Heating Sounding Board. He was a member of the UK Green Building Council Taskforce on Sustainable Infrastructure and the follow up taskforce to this, Legal Frameworks for Sustainable Infrastructure.

KEY PROJECT INFORMATION

Alectron Solar Farms

London's Secondary Heat Capacity Study London, UK

London Renewable Energy Feasibility Study London, UK

London First Decentralised Energy Study London, UK

London 2012 Olympic Park and Site-wide Infrastructure London, UK

London Thames Gateway Heat Network London, UK

Greenwich Peninsula Site Wide Energy Strategy London, UK

Langley Academy of Science, Sustainable Technology London, UK

Arup Building Sustainability Plan Cambridge, UK

Sustainable Development Commission *UK*

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BUROHAPPOLD ENGINEERING



Christopher Rhie is an Energy and Sustainability Planner in BuroHappold's Cities group. With a background in urban planning and environmental management, he has multifaceted experience with the implementation of energy and climate action initiatives within large, complex institutions. Chris is highly attuned to decision-making processes within multidisciplinary teams, and is especially effective at communicating sustainability principles among diverse audiences. He is currently working on master plans at George Mason University and an urban infill district in Northern Virginia, focusing on energy, infrastructure, and the development of sustainability frameworks. Prior to joining the firm, Chris was an energy analyst at the City of New York, where he coordinated energy efficiency audits and retrofits at over 300 municipal facilities. Operating under PlaNYC, the city's long-term plan for sustainability, he was the lead analyst on a \$100 million capital budget. Previously, he developed energy and climate benchmarking protocols for the City of Oakland, California.

KEY PROJECT INFORMATION

CHRISTOPHER RHIE

LEED AP ND EMIT ENV SP

POSITION

Energy and Sustainability Planner

SPECIALISM

Sustainability Consulting

QUALIFICATIONS

Bachelor of Arts, Political Science, Yale University (2007); Master in City Planning & Master of Science in Real Estate Development, Massachusetts Institute of Technology (2013)

ACCREDITATIONS

LEED Accredited Professional Neighborhood Development (LEED AP ND); Energy Manager in Training (EMIT); Envision Sustainability Professional (ENV SP)

MEMBERSHIPS

US Green Building Council (USGBC); American Planning Association (APA) New York Metro, Environment and Urban Design Committees; Society for College & University Planning (SCUP); Forum and Institute for Urban Design Young Fellow; Urban Land Institute (ULI)

BUROHAPPOLD

2014 – present

Arlington Courthouse Master Plan Arlington, VA

Destination Medical Center

Rochester, MN

New York City Economic Development Corporation RISE : NYC Competition New York, NY

Lower Manhattan Vision Plan

New York, NY

Urban Future Lab Resilient Technologies Exhibit*
New York, NY

PlaNYC Municipal Energy Efficiency Program* New York, NY

Oakland Energy and Climate Action Plan*

Oakland, CA

Atlanta BeltLine Real Estate and Economic Development Action Plan* *Atlanta, GA*

Boston Housing Authority Strategic Sustainability Plan* *Boston, MA*

George Mason University Master Plan Fairfax, VA

Rutgers University Physical Master Plan

New Jersey

Case Western Reserve University Master Plan
Cleveland, OH

University of the Sciences Facilities Master Plan *Philadelphia, PA*

*experience prior to joining BuroHappold

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B.4 Justice and Sustainability Resumes

Senior Associate

Jerome Paige is the principal in his firm, Jerome S. Paige & Associates, LLC, which specializes in forensic economics, energy policy & planning and organizational development.

Jerome has over 30 years of experience in leadership and management in higher education, the public sector, and non-profit organizations. He has held full-time academic and administrative positions at the University of the District of Columbia (UDC), the University of Baltimore (UB), and the National Defense University (NDU).

A 45-year resident of DC, Jerome has an ongoing professional interest in the relationship between changing economic conditions in DC and the changes in the policy issues the District faces. He is the author of several papers and reports on policy issues in DC such as housing development, neighborhood revitalization, financial control boards, economic development, supermarket development, public utilities, energy, citizen participation, and political structures.

JSP&A's energy clients have included the former DC Energy Office (DCEO), DC Department of the Environment (DDOE), Metropolitan Washington Council of Governments (MWCOG), DC Office of the People's Counsel (OPC) and the DC Public Service Commission (PSC). Projects for these clients have included comprehensive economic plans, energy assurance plans, performance benchmarks for the DC Sustainable Energy Utility, and evaluation of energy programs for DDOE, OPC and the PSC

Jerome currently serves on several boards and committees: DC Fiscal Policy Institute; Ward 4 Democrats; and the Civic League of North Portal Estates. His past memberships have included: DC Educational Licensure Commission; DC Rental Accommodations Commission (Vice Chair); Citizens Energy Advisory Commission: DC Community Humanities Council (Co-Chair); DC Historical Society; DC Consumer Utility Board (First Vice Char): National Parks and Conservation Association; DC Tax Revision Commission, Member; Ward 4 Committeeman to the DC Democratic State Committee; DC Zoning Code Advisory Committee; and Takoma Silver Spring Co-op Committees.

Jerome's organizational development practice focuses on enhancing the ability of organizations

and individuals to improve their performance. He assists organizations in creating and demonstrating their value, brings a fresh perspective to organizational performance, and provides clear and easily graspable concepts leaders and managers can apply to ensure their organizations are mission driven, outcomes based, and results oriented.

Jerome is a Certified DiSC® Trainer. He has also completed the Levels I and II in the Integrative Restoration/ Yoga Nidra framework. As a "teacher in training", he provides meditation coaching services.



JEROME S. PAIGE

910 17th Street NW, Suite 311 Washington, DC 20006

202-726-3081 (Direct)) 202-610-0005 (Office) 202-610-4471 (Fax)

jerome@jsallc.com

www.justicesustainability.com

Education

Ph.D., Economics, American University

M.A., Economics, American University

B.A., Economics, Howard University



JUSTICE & SUSTAINABILITY ASSOCIATES, LLC

Revised 09/2014

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Justice & Sustainability Associates, LLCKey Personnel Experience

Diploma, Advanced Management Program, Information Resources Management College, National Defense University,

Fellow, American Council on Education,



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Revised 09/2014

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Justice & Sustainability Associates, LLC

Key Personnel Experience

Associate

Having lived in Hong Kong and British Columbia, Canada, Grace Chau came to the Washington, D.C. metropolitan area in 2009, in pursue of her Master's studies of Conflict Analysis and Resolution at the George Mason University. Her work focuses on community, organizational and environmental conflicts. She pays particular attention to the role narratives play in the formation and transformation of conflicts.

In addition to her expertise in conflict resolution, Grace brings over five years of Social Sciences research and project management experience to Justice & Sustainability Associates, LLC.

JSA Project Experience

Georgetown University Campus Plan Washington, DC

Assisted the process management of five working groups and acted as a secretariat for the Steering Committee for the Georgetown Community Partnership, a dialogue platform among the community, Georgetown University students and staff, as well as other actors on "Town and Gown" issues

Duke Ellington School of Arts

Assisted the conflict resolution process between the Georgetown residents and the Duke Ellington School of Arts, regarding the school's modernization plan.

11th Street Bridge Construction Management Program

Assisted the 11th Street Bridge Project's Community Communications Committee Meeting and community stakeholder engagement.

Other Project Experience (Selected)

Research Assistant Chinese University of Hong Kong, Department of Social Work

Managed research projects on Social Enterprises and Child Poverty. Conducted in-depth interviews with key informants and led large-scale household survey.



GRACE CHAU

Office

910 17th Street NW, Suite 311 Washington, DC 20006

Contact

571.477.1628 (Direct) 202.610.0005 (Office) 202.610.4471 (Fax)

grace@jsallc.com www.justicesustainability.com

Education

M.S. Conflict Analysis and Resolution George Mason University, VA B.A. Sociology and Psychology University of Victoria, British Columbia, Canada

Graduate Assistant George Mason University

Worked with stakeholders to develop strategies based on assessment. Implemented resolution strategies by crafting questions and cofacilitating workshops and dialogues. Conducted in-depth narrative analysis and evaluation of intervention. Co-authored publications and presentations based on findings.



JUSTICE & SUSTAINABILITY ASSOCIATES, LLC

Revised 03/2014

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Appendix C DBE PARTICIPATION PLAN

DNV GL is pleased to provide a proposal that exceeds the 19% DBE goal established for this project. The following table provides information about the proposed DBE subcontractor.

Table 5-1 DBE Participation Plan

DBE Subcontractor	Percentage of Contract
Justice & Sustainability Associates, LLC (JSA)	
910 17th Street NW, Suite 311	
Washington, D.C. 20006	
WMATA/DDOT DBE Certification No. 08-0682-1	20%
DSLBD CBE Certification No. LSR65238042016	
MDOT DBE Certification No. 08-655	
PG County, MD MBE Certificate#: 13-9339	

Appendix D ATTACHMENT B - CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

Following this page, DNV GL has provided a completed version of the Attachment B document included with the RFP.

RFP No. 15-010

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.

DNV GL Energy Services USA Inc.		
Typed Name of Vendor		
Betty Seto, Interim Head of Section, Sustainable B	Buildings and Communities	
Typed Name & Title of Authorized Representative		
DM a C		
- Butters	March 6, 2015	
Signature of Authorized Representative	Date	

Appendix E ATTACHMENT C - CONTACT INFORMATION SHEET

Following this page, DNV GL has provided a completed version of the Attachment C document included with the RFP.

RFP No. 15-010

ATTACHMENT C CONTACT INFORMATION SHEET

RFP/RFQ No.: 15-010 Federal Tax ID No.: 04-2555765

Name of Offeror: DNV GL Energy Services USA Inc.

Address of Offeror: 1560 Wilson Blvd, Suite 800, Arlington, VA 22209

Telephone No: 703,678,2900 Fax No.: 703,678,2901 Website: https://www.dnvgl.com/energy/
Name of Authorized Representative: Betty Seto

Mailing Address (If different from Above): 155 Grand Avenue, Suite 500, Oakland, CA 94612

Telephone No.: 510.891.0446 Mobile No.: 510.229.0397 Other: N/A

Email Address: Betty.Seto@dnvgl.com

Name of Contact Person for this RFP/RFQ: Betty Seto

Title of Contact Person: Interim Head of Section, Sustainable Buildings and Communities

Telephone No.: 510.891.0446 Mobile No.: 510.229.0397 Other: N/A

Email Address: Betty.Seto@dnvgl.com

About DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. We also provide certification services to customers across a wide range of industries. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping our customers make the world safer, smarter and greener.