STATEMENT OF

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President and CEO

Intelligent Transportation Society of America (ITS America)

BEFORE THE

Subcommittee on Highways and Transit

Committee on Transportation and Infrastructure

U.S. House of Representatives

HEARING ON

Improving and Reforming the Nation's Surface Transportation Programs

March 30, 2011

Chairmen Mica and Duncan, Ranking Members Rahall and DeFazio, and distinguished Members of the Subcommittee, I am honored to testify before you today.

My name is Scott Belcher, and I serve as President and CEO of the Intelligent Transportation Society of America (ITS America). ITS America is a 501(c)(3) nonprofit association which represents a national and statewide network of more than 1,600 organizations – including state and local transportation, transit and planning agencies, research institutions, and private sector firms ranging from automakers, transit and commercial vehicle suppliers to high-tech, telecom and infrastructure firms – that are all working to advance the development and deployment of intelligent transportation systems (ITS) to improve safety, mobility and the environment.

The ITS field includes a broad range of technologies that provide and manage information to improve the safety, efficiency, and performance of our transportation network. These technologies include electronic tags that allow travelers to pay tolls without slowing down, real-time traffic, transit and parking information to both manage congestion and diversity travel options, sensors on vehicles that alert drivers to dangerous situations, and much more.

As this Committee is well aware, our nation's transportation system faces significant challenges, from traffic fatalities and injuries, congested roadways, and rising gas prices to deteriorating infrastructure, increasing maintenance costs, and shrinking state and federal budgets.

Even with the recent decline in traffic fatalities more than 90 people will die on U.S. roads before the day is over, with many of these crashes being preventable. In addition to the human tragedy, the economic cost of traffic fatalities and injuries exceeds $200 billion each year.

Moreover, congestion on our roads is slowing down commerce, wasting precious time and fuel, generating harmful emissions, and creating frustrating and hazardous driving conditions. In our metropolitan areas alone more than 4.8 billion hours are lost sitting in traffic according to the latest Texas Transportation Institute (TTI) Urban Mobility Report, resulting in an estimated 3.9 billion gallons of wasted fuel and costing our economy more than $115 billion annually.

With a growing population challenging an already strained transportation network, and with many state and local agencies facing budgets shortfalls that prevent major new construction projects even in regions that have room to expand their highway capacity, it is clear that we cannot continue business as usual.

We need to do a better job of optimizing our existing highway capacity, actively managing traffic and incident response, improving access to transportation choices, and addressing roadway safety, all while keeping our infrastructure in a state of good repair and without busting the budget. While this may be a tall order, many agencies here and abroad are finding that ITS solutions are the best way to meet these objectives and get the most bang for the taxpayers' buck.

From "smart highways" that reduce gridlock and cars that help avoid crashes to freight management systems, stress-sensing bridges, and buses that provide real-time arrival and departure information to commuters, smart technologies are essential for getting the most out of our existing transportation system.

At a time when governments at all levels are being asked to do more with less, many cash strapped city and state agencies are turning to high-tech solutions to improve traffic flow, connect transportation modes, empower travelers to make informed choices, and even monitor their infrastructure to reduce maintenance costs and avoid another tragedy like the Minneapolis I-35W bridge collapse. Among other benefits, ITS makes it possible to:

- Adjust traffic signal timing and speed limits based on real-world conditions to improve traffic flow;
- Alert drivers of potentially hazardous situations in time to avoid crashes;
- Use a navigation system to find the best route based on current traffic or look up real-time transit alternatives with turn-by-turn directions and parking availability;
- Eliminate toll booth congestion through electronic or open road tolling systems, which can also enable variable road pricing, HOT lanes, and other innovative financing options;
- Optimize existing highway capacity using GPS, sensors and advanced navigation systems to facilitate safe and efficient Bus Rapid Transit and dedicated bus and truck lanes;
- Reroute traffic in response to road conditions, major events, and emergency situations;

- Ride a bus that turns traffic lights green on approach;
- Be guided to an empty parking space by a dynamic message sign or smart phone;
- Actively manage regional traffic and transit operations, incident and emergency response, and real-time traffic information through state-of-the-art Joint Traffic Operations Centers;
- Improve freight tracking, inspection, safety and efficiency;
- Give travelers real-time reports on traffic conditions, work zones, road closures, and even rain, fog or icy patches on the road ahead;
- Provide on-demand services like dynamic ridesharing using smart phone apps;
- Enable drivers to manage their vehicle's fuel consumption;
- Make public transportation more efficient, convenient, and reliable;
- Improve the efficiency of road maintenance including snow and ice removal; and
- Cost-effectively monitor the structural integrity of bridges and other infrastructure.

While many of these technologies are starting to be deployed across the country, recent studies have found that the U.S. is falling behind many Asian and European nations in the deployment of ITS technology, which these countries view as a key strategy for stimulating job creation and improving economy-wide productivity, government cost savings, and quality of life.

Japan's cooperative vehicle-highway communications system, called Smartway, combines GPS and sensor-based vehicle location data, real-time traffic information, audible warning systems, dynamic message signs, and other ITS applications to notify drivers about a crash ahead, slowing traffic in the left lane, a car merging from the right, and even alternate routes or travel options. At least 34 million Japanese vehicles have access to real-time, in-vehicle traffic information.

South Korea jumpstarted their ITS deployment by establishing four initial "ITS Model Cities" that implemented adaptive traffic signal control, real-time traffic information, public transportation management systems, and speed enforcement technology. At least 29 cities in South Korea have now deployed similar systems. In addition, nearly 10,000 buses and 300 bus stops have deployed real-time bus location and status notification systems.

The reauthorization of our federal surface transportation law represents a critical opportunity to spur innovation and jumpstart the large-scale deployment of ITS in the U.S. that will provide cost-effective solutions today while leaving behind a legacy for our children and grandchildren.

The Challenge: Doing More with Less

The evolution of intelligent transportation systems now provides a critical toolbox brimming with cost-effective solutions for transportation managers to more effectively operate and maintain the system. On average, ITS-enabled operational improvements provide an estimated 9 to 1 benefit-cost ratio according to the nonpartisan Information Technology and Innovation Foundation (ITIF), as compared to an estimated 2.7 to 1 benefit-cost ratio for the addition of conventional highway capacity. A few examples of cost-effective ITS solutions include:

- **Synchronized and Adaptive Traffic Signals,** which are estimated to return $40 in time and fuel savings for every $1 invested, reducing traffic delays from 15-40%, travel times by up to 25%, fuel consumption by 10%, and harmful emissions by up to 22% according to the Institute of Transportation Engineers and the Federal Highway Administration.
- **Real-Time Traffic Information:** The Government Accountability Office found the benefit-cost ratio to deploy and operate nationwide real-time transportation information systems to be 25 to 1, generating more than $30 billion in safety, mobility and environmental benefits from a $1.2 billion investment.
- **Incident Management Systems** including Safety Service Patrols, which significantly reduce incident response times and help clear crashes quickly and efficiently. In Atlanta, GA, the motorist assistance patrol and NaviGAtor incident management program resulted in savings of $187 million, yielding a benefit-to-cost ratio over 4:1. The Road Ranger Program in Florida was found to have a benefit-to-cost ratio of more than 25:1.
- **Electronic Tolling:** Electronic toll collection systems like E-ZPass, SunPass, FasTrak, and Good To Go! are helping drivers avoid lines at toll booths while reducing crashes resulting from traffic back-ups. The E-ZPass system reduced fuel consumption by almost 30 million gallons and eliminated nearly 265,000 metric tons of emissions in 2007 alone.
- **Weigh-in-Motion Truck Inspections:** The PrePass system, which reduces the time trucks spend idling at weigh stations by electronically verifying their safety records,

credentials and weight, has saved more than 31 million hours, 150 million gallons of fuel, 335,000 metric tons of emissions, and $2.3 billion in costs for trucking companies. Just this month Texas joined 29 other states that have deployed PrePass screening technology, and more than 400,000 trucks have enrolled in the PrePass service nationwide.

- **Structural Monitoring Systems** provide state and local agencies with cost-effective, precise and objective information about the condition of bridges and other infrastructure. In South Carolina, years of salt water corrosion appeared to have taken their toll on the Pee Dee and Santee River Bridges. Using advanced condition assessment technology, the state determined that both bridges were structurally sound, allowing for the safe deferral of a major bridge replacement project.
- **Smart Transit:** Salt Lake City's MAX Bus Rapid Transit (BRT) combines transit signal priority, real-time bus location information, advanced fare collection and wireless access, and a more efficient vehicle design to modernize the rider experience while keeping buses on schedule and improving efficiency. As a result MAX BRT has increased ridership by a third, reduced travel times by 15%, and linked to Utah's TRAX light-rail system to provide an efficient bus to rail connection. Lewiston, Idaho uses ITS software for automated scheduling and coordination of paratransit services, enabling dispatchers to track vehicles from pick-up to drop-off, improve route efficiency, and handle multiple transportation requests from different providers and funding sources. The system will provide better access to transportation for many elderly and disabled Americans, and is expected to pay for itself within the first twelve to eighteen months of full deployment.
- **Highway Ramp Metering,** which uses traffic signals at on-ramps to control the rate of vehicles entering the highway, has been shown to improve mainline traffic speeds, increase throughput, and reduce crash rates. In Minneapolis, MN, ramp metering increased mainline throughput by 30 percent and increased peak period speeds by 60 percent, yielding a 15:1 benefit-cost ratio. When the system was temporarily shut down as part of a study, highway speeds fell while vehicle crashes increased by 23 percent.

In addition to reducing costs and improving system performance, investing in smart technologies is important for spurring job creation and improving economic competitiveness. Researchers from ITIF and the London School of Economics found that investing in ITS creates a network

effect throughout the economy and stimulates job creation across multiple sectors, including the high-tech, automotive, information technology, consumer electronics, and related industries. In addition, an average of 50 percent of ITS project spending goes directly to wages and salaries according to U.S. DOT, as compared with 20 percent for new highway construction.

H.R. 995, *The Smart Technologies for Communities Act*

A critical step in advancing the deployment of 21st century technology solutions and spurring new innovation is the adoption of H.R. 995, the *Smart Technologies for Communities Act*, which would create a competitive pilot program in up to six geographically diverse communities across the U.S. to serve as model deployment sites for the large-scale integration of ITS, leveraging private sector investment and expertise to improve safety, mobility and the environment.

The *Smart Technologies for Communities Act* was recently introduced by U.S. Representatives Mike Rogers (R-MI) and Russ Carnahan (D-MO), who co-chair the bipartisan ITS Caucus. ITS America strongly supports the legislation and asks the Subcommittee to consider adopting the proposal as part of the surface transportation reauthorization bill.

In addition to providing U.S.-based deployment models for other state and local agencies that want to invest in ITS, these "smart communities" would serve as real-world laboratories for advanced ITS solutions that have near-term deployment potential such as mileage-based user fees that could vary by time of day, congestion level, or other factors; comprehensive performance management; real-time integrated traffic, transit, parking and multimodal traveler information; and a connected vehicle network which the U.S. Department of Transportation (DOT) estimates could potentially prevent or reduce the impact of 4 out of 5 unimpaired vehicle crashes, saving thousands of lives each year while providing significant environmental and mobility benefits and enabling a new generation of e-commerce and consumer applications.

Joining ITS America in endorsing this legislation are more than one hundred organizations including automakers, highway users, transit leaders, safety and environmental advocates, manufacturers and retailers, high-tech and telecom firms, transportation engineers, and other business, infrastructure and innovation leaders.

Supporters of the *Smart Technologies for Communities Act* include:

- **National organizations** such as AAA, the Alliance of Automobile Manufacturers, American Highway Users Alliance, American Public Transportation Association (APTA), American Public Works Association (APWA), American Traffic Safety Services Association, Association for Commuter Transportation, CTIA – The Wireless Association, Environmental Defense Fund, Information Technology and Innovation Foundation (ITIF), Information Technology Industry Council (ITIC), Institute of Transportation Engineers (ITE), National Association of State EMS Officials, National Electrical Manufacturers Association (NEMA), Natural Resources Defense Council, Retail Industry Leaders Association (RILA), and others;
- **More than a dozen Fortune 500 companies** including AT&T, Ford, General Motors, Harris Corporation, HNTB Infrastructure, IBM, Intel, Microsoft, Motorola, Qualcomm, Raytheon, Siemens, Verizon, Volkswagen and Volvo Group North America.
- **Numerous small businesses, mid-sized firms and large companies** ranging from Aldis, Econolite, Federal Signal, Global Traffic Technologies, and Iteris to Perceptics, PIPS Technology, Sensys Networks, Telvent and TransCore;
- **Leading research institutions** from the Nick J. Rahall, II Appalachian Transportation Institute in West Virginia and the University of Memphis in Tennessee to the Partners for Advanced Transportation Technology (PATH) at the University of California, Berkeley, and the University of Michigan Transportation Research Institute;
- **State and local agencies** ranging from the Florida MPO Advisory Council, Road Commission for Oakland County, Michigan, and Greater Valley Forge Transportation Management Association to the Utah Transit Authority, Metro Transit in Minneapolis, the City of Riverside, California, and the Minnesota DOT; and
- **Over a dozen ITS state chapters** representing hundreds of public agencies and private industry leaders across the U.S. including California, Connecticut, Florida, Michigan, New York, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin, as well as regional ITS chapters representing the Heartland, Midwest, and Rocky Mountain states.

Expanding Access to ITS Solutions for State and Local Agencies

The *Smart Technologies for Communities Act* is critical for advancing the broad-scale deployment of ITS, but it is also essential that other states, cities, and local agencies across the country are able to model these communities' approaches and invest in smart technology solutions where appropriate to address their specific challenges. The current authorization bill does not provide any dedicated funding for technology deployment, but only funds ITS research.

While a dedicated formula-based program to fund ITS deployment and system operations would have significant advantages, an alternative approach given the current budgetary environment would be to **encourage state and local agencies to dedicate a percentage of their formula funding to improve system operations**, including for deployment and operation of ITS technologies to reduce traffic congestion, measure and improve system performance, improve safety and mobility, and address other local and regional transportation challenges.

In addition, ITS and operational improvements should be eligible for funding and integrated into any congestion reduction, highway safety, freight, transit, or other targeted programs authorized under the bill in order to encourage rapid, effective and low-cost performance improvements.

Improving Return on Investment through the Planning Process

To encourage cost-effective planning and investment decisions, a **cost-benefit analysis of major capital projects that includes ITS solutions and operational strategies** should be performed by state DOTs and Metropolitan Planning Organizations (MPOs) as part of their annual and long-range plans. Where a cost/benefit analysis shows a greater return on investment from ITS-enabled strategies than from other alternatives, these strategies should be integrated into transportation plans and projects and, where appropriate, implemented as standalone solutions for improving system performance and return on investment. In addition to strengthening the planning process, the new authorization bill should incentivize cost-effective technology solutions by **funding ITS and operational improvements at 100 percent Federal share** where state and local agencies can demonstrate a superior return on investment from these strategies.

Transitioning to a Performance-Based System

Combined with a focus on advancing 21st century technologies, the reauthorization bill should link federal funding to performance goals to ensure that transportation users receive an acceptable return on their investment. Technologies are available today that can collect and disseminate a wide variety of real-time traffic data, enabling transportation agencies to measure and manage the operational performance of their transportation system in addition to collecting data on highway safety and infrastructure conditions. Here is one potential approach:

- **National Goals** – To ensure accountability for federal funding, performance goals should be established in areas such as traffic fatalities and serious injuries, traffic congestion, travel times, infrastructure condition, and other appropriate measures to encourage states and metropolitan areas to set aggressive, achievable performance targets.
- **State and Local Targets** – To align state and metropolitan planning with national goals, each state DOT and MPOs should develop a performance management process, establishing short-term and long-range targets in areas including traffic fatalities and serious injuries, congestion levels, average travel times along key corridors, and infrastructure condition. To help state DOTs and MPOs meet these targets, the U.S. DOT should, after consultation with stakeholders, issue guidance on appropriate performance metrics to ensure uniformity of data, and provide recommendations on effective technologies and strategies for data collection and to achieve performance results.
- **Performance Incentives** – The U.S. DOT should establish a financial incentive program that will reward state and local agencies for achieving or exceeding national goals using a portion of funds set aside from the national highway system and surface transportation programs. The program should also provide technical assistance to agencies that lack the capability or expertise to collect and manage the necessary system performance data.
- **National Scorecard** – Data on state and metropolitan traffic fatalities and serious injuries, congestion levels, travel times, infrastructure condition, and other relevant measures should be published by U.S. DOT at least once annually as part of a *National Scorecard*. U.S. DOT should also publish an annual report on effective strategies that have been employed by state and metropolitan areas to reach or exceed performance targets, as well as mitigating factors that may have impacted performance outcomes.

Investing in Next Generation Research

In order to speed up the deployment of next-generation technology solutions and strengthen collaboration between the federal government, state and local agencies, private industry, universities, and key stakeholders, the reauthorization bill should increase funding for ITS research conducted through U.S. DOT's ITS Joint Program Office (JPO) from $110 million per year to a minimum of $150 million per year, and ideally closer to $250 million annually. While increasing funding for any programs is difficult in the current budget environment, the return on investment from speeding up the delivery of new technology solutions will far exceed the cost.

While the ITS JPO should maintain flexibility to pursue areas of innovation that have significant potential to solve critical transportation challenges, key focus areas should include accelerating the deployment of current and next generation solutions in areas such as connected vehicle technology; congestion management; the collection, management, and dissemination of real-time traffic and transportation system information; performance measurement; ITS-enabled financing alternatives including a potential mileage-based user fee; and ITS architecture and standards including harmonization of standards within the U.S., and between the U.S. and other countries, to promote interoperability of technologies and efficient data sharing between jurisdictions.

Conclusion

In past decades this nation built more transportation infrastructure to alleviate the increasing traffic in our communities. But today, with a shrinking Highway Trust Fund, limited room for additional roads and bridges, and growing public demand for safer, cleaner and more convenient transportation alternatives, we can no longer simply continue to build out our transportation system without leveraging the benefits of smart technology solutions.

As the Subcommittee drafts its surface transportation reauthorization bill, we ask that you consider ITS America's outlined recommendations which we believe will spur new innovation and advance the deployment of existing and emerging technology solutions that will help our states and communities address their transportation challenges, provide transportation users with a greater return on their investment, and help improve our nation's economic competitiveness.

I would invite any Subcommittee Members who are interested in learning more about these and other high-tech solutions to come to **Orlando, Florida this October 16 – 20**, where ITS America will host the **18th World Congress on ITS**. The World Congress comes to the U.S. once every three years, and is the largest transportation technology event in the world. This will be an opportunity to ride in cars that avoid crashes, witness demonstrations of the latest mobility, environmental and pricing technologies, tour high-tech transportation facilities across central Florida, and attend sessions featuring transportation technology leaders from across the globe.

For those who can't make it to Orlando or would like to get a sneak peak at the World Congress, you are invited to join ITS America for a **Transportation Leaders Reception and Technology Showcase** in the Cannon Caucus Room on the evening of **Wednesday, June 1st**.

Again, thank you again for inviting me to testify before this Subcommittee. I will be happy to answer any questions.

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

Truth in Testimony Disclosure

Pursuant to clause 2(g)(5) of House Rule XI, in the case of a witness appearing in a nongovernmental capacity, a written statement of proposed testimony shall include: (1) a curriculum vitae; and (2) a disclosure of the amount and source (by agency and program) of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) received during the current fiscal year or either of the two previous fiscal years by the witness or by an entity represented by the witness. Such statements, with appropriate redaction to protect the privacy of the witness, shall be made publicly available in electronic form not later than one day after the witness appears.

(1) Name:

Scott F. Belcher

(2) Other than yourself, name of entity you are representing:

ITS America

(3) Are you testifying on behalf of an entity other than a Government (federal, state, local) entity?

(YES) If yes, please provide the information requested below and attach your curriculum vitae. (resume attached)

NO

(4) Please list the amount and source (by agency and program) of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) received during the current fiscal year or either of the two previous fiscal years by you or by the entity you are representing:

2009 - $2.3 million, FHWA/ITS Joint Program Office (JPO)
2010 - $2.3 million, FHWA/ITS JPO
2011 - $250,000, FHWA/ITS JPO

Signature

3/28/11
Date

SCOTT F. BELCHER
President and CEO
ITS America

PROFESSIONAL EXPERIENCE

President and CEO, Intelligent Transportation Society of America **2007 – Present**
($6 - 10M; 30 employees)

ITS America represents the experience, perspective and interest of both the public and private sectors interested in promoting the use of technology to address transportation problems. The Society was incorporated in Washington, D.C. in 1990 as a not-for profit organization, and it was called for by Congress in 1991 to coordinate the development and deployment of the then newly emerging intelligent transportation systems in the United States. ITS America's members include federal, state, local and foreign government agencies; national and international companies involved in the development of ITS; universities and independent research organizations; and transportation associations. The Society has 24 affiliated state and multi-state chapters. Major responsibilities include:

- Participate in broad formulation of the Society's vision, mission, goals, objectives and related policies and develops and recommends new or revised policies as deemed appropriate.
- Liaise between the Society and its members, the U.S. Department of Transportation and the Board of Directors.
- Develop an annual business plan, a three-to-five-year strategic plan and succession planning processes for all levels of the organization.
- Maintain contact with appropriate regulatory and legislative bodies, associations, public service representatives and organizations to achieve ITS objectives and to enhance the image of ITS America.
- Seek to jointly develop policies and related advice and recommendations on ITS matters in cooperation with interested and affected organizations.
- Represent the Society in activities with its international partners, including ERTICO and ITS Japan, to support a successful World Congress and promote international cooperation.
- Serve as a principal spokesperson for ITS America and undertake speeches, appearances and other opportunities for contact with the various audiences involved with or interested in ITS or ITS America's programs.

Executive Vice President and General Counsel, National Academy of Public Administration ($10.5M; 75 employees) **2004 – 2007**

The National Academy of Public Administration is a Congressionally-chartered non-profit whose Fellows provide trusted advice on issues of governance and public management. I served as the Chief Operating Officer and was responsible for the day-to-day management of the Academy. Major accomplishments included:

- Guided the Board of Directors through its first major strategic planning process; implemented an organizational name change; and drafted and oversaw the implementation of a major rewrite of the organizational bylaws.
- Developed a coordinated Congressional and federal agency strategy that resulted in multiple research contracts from new Appropriations Committee Subcommittees, Authorizing Committees and federal agencies. Expanded outreach to state and local governments and their representative associations.
- Played a significant role in diversifying the revenue stream and increasing revenue from $7 to $10.5 million. Worked with the Academy President to implement a series of financial controls that resulted in lower overhead rates and higher rates of return.
- Led the Academy search for a new headquarters. Negotiated all documents associated with the new lease. Managed the build-out of new space and move at 15% below budget.

Managing Director for Environmental Affairs and Assistant General Counsel, Air Transport Association of America ($23M; 70 employees) **1998 – 2003**

The Air Transport Association is a trade association that represents North America's largest airlines. While at ATA, I coordinated all significant domestic and international environmental and health and safety issues and initiatives. Major accomplishments included:

- Guided the ATA Board of Directors through a major strategic planning process to put in place a strategy for voluntary investment in environmental and safety compliance as a means of mitigating environmental compliance costs.
- Negotiated a number of precedential domestic and international business and environmental agreements on behalf of the airline industry. A number of these issues addressed both on and off-road vehicles.
- Managed a number of lawyers, support staff, outside counsel and a $4 million budget non-litigation budget. Managed outside counsel on multiple litigation matters having separate budgets.

Vice President and Deputy General Counsel, Joint Legislative Staff of the National Multi-Housing Council and the National Apartment Association ($7M; 35 employees) **1997 - 1998**

The National Multi-Housing Council is a trade association representing apartment owners, managers, developers, lenders, and service providers. The National Apartment Associations is a federation of 192 state and local affiliates, comprised of more than 51,000 multifamily housing companies. While on the Joint Legislative Staff I represented the multi-family housing industry before various state and federal legislative and regulatory bodies on such issues as tort reform, building code issues, bankruptcy reform, electric utility deregulation, fair housing and other commercial property matters.

Attorney, Beveridge & Diamond, P.C. **1991 - 1997**

Beveridge & Diamond is the preeminent environmental law firm in the United States. While at Beveridge & Diamond I represented private and government clients on general corporate and real estate matters, primarily focused on the acquisition and disposition of industrial facilities, business properties, commercial real estate, and commercial loans secured by real estate. Representation included assisting clients in the conduct of their due diligence, preparing all aspects of purchase and sale and financing documentation, negotiating contracts and leases, and representing clients in real estate closings. Counseled and represented a wide range of firm clients on regulatory compliance matters, including vehicle emissions regulations.

U.S. Environmental Protection Agency **1983 – 1988**

Employed by the U.S. Environmental Protection Agency in a series of positions of increasing responsibility. These positions included:

- Director, Advanced Technology Staff
- Special Assistant to the Assistant Administrator, Office of Administration and Resources Management
- Detailee to the U.S. House of Representatives, Appropriations Committee
- Lead Budget Analyst for the Office of Pesticide Programs

EDUCATION

University of Virginia School of Law, Juris Doctor, 1991
Georgetown University, Masters in Public Policy, 1985
University of Redlands, Bachelor of Arts, 1983

AFFILIATIONS AND AWARDS

California State Bar, 1991 - present
District of Columbia Bar, 1991 - present
American Bar Association, 1991 - present
American Society of Association Executives, 2004 - present
United States Masters Swimming, 1983 - present
Board of Directors: ITS America, 2007 - present
Board of Directors: World Congress Association, 2007 - present
Board of Directors: University of Redlands Alumni Association, 2005 - present
Woman's Transportation Seminar, Advisory Board, 2010 - present
Intelligent Transportation Systems Program Advisory Committee, 2008 - present
Council on Environmental Cooperation, Advisory Group on Sustainable Freight Transportation: 2009 - present