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| LISA A. SKUMATZ, Ph.D., Principal, SERA Principal  Skumatz Economic Research Associates, Inc. (SERA)  762 Eldorado Drive, Superior, CO 80027  Voice: 303/494-1178 email: [skumatz@serainc.com](mailto:skumatz@serainc.com) | LSkumatz |

**WORK HISTORY**

1994-Present - Principal, Skumatz Economic Research Associates, Inc., (consulting), Superior, CO

1998-Present - President, The Econservation Institute (Non-profit), Superior, CO, USA

1990-1994 - Vice President, NW Division, Synergic Resources Corporation (consulting), Seattle WA

1987-1990 - Research Economist, Seattle Solid Waste Utility (trash / recycling), Seattle, WA

1985-1987 - Research Economist, Pacific Gas & Electric Company (energy utility), San Francisco

1980-1985 - Energy Research Economist, Battelle Pacific Northwest Laboratories, Richland, WA

1978-1980 - Fellowship / Economist with Departments of Commerce / Bureau of Labor Statistics and Health, Education, and Welfare (now DHHS), Washington DC.

Previous - Teaching Assistant and Research Assistant, The Johns Hopkins University, Baltimore

Paid Intern - Ralph Nader’s Public Interest Research Group, Washington DC

Other - Town Trustee, Town of Superior, CO 2004-2014

Other – Graduate Faculty, University of Colorado Denver, Public Affairs, 2014-5

**EDUCATION**

Ph.D. Economics, The Johns Hopkins University, Baltimore, MD (econometrics)

M.A. Economics, The Johns Hopkins University, Baltimore, MD

B.A. Economics, The University of Wisconsin-Madison, Madison, WI

Sustainability Leadership and Implementation Certification, University of Denver and Natural Capitalism, 2011

**RESPONSIBILITIES, ACCOMPLISHMENTS, AND CAPABILITIES**

Dr. Skumatz brings more than 32 years of experience in solid waste policy and program design, evaluation, and modeling. For 21 years, Dr. Skumatz has been Principal of SERA, a research and consulting firm that specializes in solid waste and resource conservation work. SERA’s business focus includes “best practices” and quantitative policy and program work to identify effective and cost-effective sustainability initiatives at the local, regional, national, and international level. Her extensive expertise in policy and program analysis in recycling / solid waste has been recognized in the US and internationally – reflected in her project assignments but also in three “Lifetime Achievement…” awards and appointments/elections to numerous boards and panels. She has published 150 papers and articles. Lisa brings a mix of practical and forward-thinking solutions, backed by proven quantitative skills, creativity, and problem identifying-and-solving capabilities. She brings real-world data to all her work, and has the robustness of background to understand and frame the issues from the range of relevant perspectives.

**Modeling and Integrated / ZW Plans**: She has developed “zero waste” and “solid waste management” plans for communities and counties in the US. She uses information on community waste composition, tonnage levels, sectors, and other data to identify the most cost-effective portfolio of programs, incentives, and policies toward waste diversion and effective waste management – and estimates the cost to the city/county/state client and (cost and often rates) to the residential and commercial generators affected by the programs. SERA incorporates estimates of the avoided GHG and jobs / economic development for many of these clients. She has conducted state-level plan and goal development work for Massachusetts, Colorado, Oregon, Washington, and Iowa, and dozens of similar projects for Counties and municipalities across the US and Canada. She has developed a comprehensive solid waste forecasting and program analysis model that is “tailorable” for communities, which streamlines data collection and analysis of successful program / policy alternatives.

* **Selected Clients include**: State of Connecticut, Colorado CDPHE, Oregon WPLG, Massachusetts OEOA, Iowa DNR, EPA Headquarters and Regions 5 / 9 / 10; Alameda StopWaste, CA; Boulder County, City of Boulder, Eagle County, CO; UK-WRAP; Metro Vancouver, BC; Seattle Public Utilities, WA; Consortium of 15 Cities / Counties in CA; Anchorage AK; Pitkin County, CO; Mesa County, CO; Westminster, CO; Fort Collins, CO; Snohomish County, WA; and many other cities / counties.

**Funding, Incentives, and Rates**: Dr. Skumatz has conducted funding options analysis and recommendations work for zero waste, sustainability, solid waste, hazardous waste, energy, and other integrated planning work at the Federal and State level (Colorado, Washington, Iowa, Massachusetts, and Oregon) and for many counties and cities. She has assessed / developed options for funding programs and facilities, capital and operations / maintenance costs from more than 50 different types of sources including legislative initiatives, surcharges and deposits (toxics, landfills, and product stewardship), incentives, fines, rates, bonding, and others. The options include self-funding options that provide incentives (e.g. PAYT, commercial rates, program rates, etc.), and supporting this work, she is a skilled rates economist with expertise in examining cost of service / revenue requirement and incorporating rate designs that meet incentive, sufficiency, and other goals. She has conducted extensive work on Advanced Disposal Fees (ADFs) and extended producer responsibility (EPR) and their suitability at the local, county, state, and other levels – and has examined options for more than two dozen “problem” or opportunity materials. She has conducted rate studies for solid waste agencies across the US, including detailed work examining reactions to changes in rate structures and incentives associated with residential, commercial, and disposal facility fees and policies. She has evaluated rates, real time pricing, and incentive scenarios (including three sets of state-level regulator-imposed incentive approaches for investor-owned utilities). She has conducted innovative work on this topic across the US and Canada.

**Selected Clients include**: Colorado CDPHE; Boulder County, CO; Alameda StopWaste, CA; King County, WA; Seattle, WA; US EPA; State of Massachusetts OEOA; Iowa DNR; Oregon WPLG; Clean Washington Center, WA; Metro Vancouver, BC; Mesa County, CO; Anchorage, AK; Pitkin County, CO; City/County of Denver, CO; San Jose, CA; San Francisco, CA; Santa Barbara, CA; Chandler, AZ, and many other cities / counties / authorities.

**Policy Analysis Work:** Dr. Skumatz’s policy work includes development of solid waste strategy at the national level (EPA / PAYT; UK’s WRAP); state level (IA, WA, CO, MA, OR, CA, and others), and sustainability work (for cities and counties in CA, CO, and elsewhere). Dr. Skumatz conducted statistical work to analyze the performance and cost impacts of single stream recycling for clients including AF&PA, Waste Management and private clients, a non-profit, Boulder County CO, Fort Collins CO, and others. She collected data from communities, MRFs and mills, and conducted detailed analyses to identify the tradeoffs, strengths, and weaknesses compared to dual stream programs, Dr. Skumatz helped establish recycling goals and supporting portfolios, policies, and associated funding; worked with stakeholders / task forces / legislators to achieve adoption and buy-in; and provided numerous briefings in association with these assignments. She estimated cost per MTCE for various energy and recycling strategies to guide national and local policy on climate change (used in CO, OR, many cities, and requested by Obama’s Transition Team). She has been a leader in national PAYT policy, and advised the UK (and specifically London) on PAYT. She assessed the performance of California’s AB939 legislation (costs and intended / unintended impacts) and recommended measurement, policy, and other changes. For the State of Colorado (and other states) she developed solid waste policy, measurement, and legislative recommendations, worked on the State’s Task Force to develop legislative policy for electronics waste, and developed a statewide “vision” for solid waste and recycling going into the future. For California, she developed key input for legislation on product stewardship at the State level. For a county in Colorado, she developed revised “green” commercial (and residential) building codes. She has also drafted ordinances and legislation on solid waste initiatives. She has developed sustainability, energy, solid waste, water, and air quality initiatives, policy and funding work at the local level for numerous clients.

* **Selected Clients include**: EPA, UK-WRAP, Colorado CDPHE, Boulder County, consortium of 15 California cities and counties, AF&PA, City of Seattle, Seattle/King County, Steel Recycling Institute, National Soft Drink Association, American Beverage Association, Fort Collins CO, Boulder County CO, SCE, CPUC, CIEE, and many others.

**Program Evaluation / Analyses, Impacts, and Data:** Lisa’s work has focused on evaluation of policy and strategy alternatives in solid waste management. She specializes in bringing specialized evaluation methods, including control groups / experimental design, multivariate statistical approaches, and other methods to provide defensible results and program attribution to her work. Most of her evaluation work is designed to support decision-making (at the community, state, or national level) about the development, design, refinement, and funding of policy and program / strategy options. She has specialized in gathering and analyzing data from “in the field” programs, assessing data from more than 1,000 communities to identify (using statistical models) what works best and in what types of situations. Her publications on quantitative program and policy performance are the most requested articles by the field’s trade journals, and her workshops and presentations are highly attended. She has conducted policy work analyzing PAYT, food scraps and organics, zero waste, education and social marketing, electronics waste, recycling legislation, single stream, economic alternatives to flow control, product stewardship and ADFs, funding alternatives, mandates and bans, rate and incentives design (residential, commercial, trash, programs), measurement / tracking alternatives, construction and demolition and wood waste, and many other topics. She has analyzed the incremental diversion and cost associated with more than three dozen recycling, and composting strategies, and used the work to craft best practices and identify “outlier” communities. In both the solid waste and energy fields, Dr. Skumatz has pioneered methods that are now “protocol” in multiple states.

* **Projects include work for**: States of RI, MA, NC, MN, CO; EPA (federal and Regions 5 and 9); 15 cities / counties in California, Metro Vancouver, BC; Westminster, CO, Boulder, CO; MN SWMCB, Seattle, WA; Porterville, CA; Gainesville, FL; Largo, FL; West Jordan, UT; Portland Metro, OR; Santa Clarita, CA; King County, WA; Akron, OH; Berkeley, CA; Santa Barbara, CA; Austin, TX; associations (NEMA, PSI, APC, NSDA, SRI), CA DTSC, non-profits (Reason Foundation), private clients, and others.

**PAYT**: Dr. Skumatz is the international authority on Pay As You Throw (PAYT), an incentive-based strategy for increasing recycling. Her solid waste clients include a wide range of communities and counties across North America, as well as the major US, Canadian, and UK solid waste authorities. She works with clients to develop practical, tailored PAYT options suited to their situation. These assignments include feasibility, design, implementation, and rates work for communities. For state and national agencies, she has conducted workshops, developed toolkits, websites, white papers, sample ordinances and legislation, frequently-asked-questions, rate models, and other research to assist communities in implementing PAYT. She has also provided testimony for state legislatures and others on PAYT. Her work demonstrating that PAYT and curbside recycling are more cost-effective and quicker than leading energy efficiency strategies to deliver GHG reductions (with similar job-creation effects) has changed the role of solid waste strategies in sustainability plans for communities across the US.

* **Projects include work for**: EPA (headquarters and Regions 8, 9, and 10); States of PA, IL, IA, WY, OH, CA, GA; UK’s WRAP; University in Santiago, Chile; Local Government Commission; ICMA; Maui County (HI); GVRD / Metro Vancouver, BC; Snohomish County, WA; Knox County, TN; Anchorage, AK; Sacramento County, CA; Cincinnati, OH; Gilroy, CA; Morgan Hill, CA, Orange County, CA; Berkeley, CA; San Francisco, CA; Ventura, CA; Oak Park, IL; Sunrise, FL; Largo, FL; Ft. Wayne, IN; Victoria, CRD, BC; and many others.

**Tonnage Forecasts, Set Outs, and Waste Characterization Analyses:** Dr. Skumatz has conducted decades of work developing forecasts of solid waste tonnages – overall and by waste stream, and for the residential, commercial, and C&D streams -- for communities, counties and states around the country. She has developed commercial waste characterization models, and conducted scores of set out and waste characterization studies to inform her work on comprehensive plans and program / policy analyses.

* Clients include State of Connecticut, Asheville NC, Seattle WA, Snohomish County WA, Metro Vancouver BC, State of OR, State of MA, and State of CO, Anchorage AK, Pitkin County CO, Boulder CO, Boulder County CO, Tukwila WA, USEPA, and many others.

**Market Analyses**: Dr. Skumatz has conducted detailed studies of market potential and existing markets for many solid waste streams (compost, processing capacity, CBOT, food, C&D, individual recyclables).

* Clients include King County WA, AF&PA, Portland Metro OR, Boulder County CO, Honolulu HI, Chittenden County VT, and others.

**Sustainability, Economic Development, “Green” Jobs, GHG Impacts:** Dr. Skumatz has conducted extensive work in the nexus for economics and resource management. This includes work in Colorado on the value of buried recyclables, the relative cost of recycling vs energy efficiency in GHG reduction, and many other projects. Some of her work was used by the Obama Transition team.

* **Selected Clients include**: Colorado CDPHE, EPA, PG&E, Xcel Energy, SDG&E, Boulder County, ACEEE, among others.

**Surveys, Market Research, and Data Collection:** Dr. Skumatzhas extensive experience in all phases of detailed survey design, statistics, and analysis for research and program evaluation purposes. The work has been used for community and policy research a well a state-level regulatory applications.

* Clients include Seattle WA, Mecklenburg County NC, Metro Vancouver BC, States of NY / ME / IL / CA / RI, Oregon DEQ, Boulder CO, Boulder County CO, Edgewater CO, Oak Park IL, Anchorage AK, Pitkin County CO, Tukwila WA, and many others.

**MEMBERSHIPS, APPOINTMENTS, AND HONORS**

Dr. Skumatz has received three Lifetime Achievement Awards for her work in solid waste measurement and policy analysis, at the international level (International Solid Waste Association of North America); national level (National Recycling Coalition) and state level (Colorado). She currently or previously has served on the Boards of the National Recycling Coalition (NRC, 12+ years on board), Solid Waste Association of North America (SWANA, Board of Colorado Chapter 2 years); Colorado’s Task Force on Electronics Waste, two state recycling association boards (CO, WA), the Executive Board of the Colorado Municipal League (government), and several county and regional recycling commissions. She was appointed to the “Harvard 2000” panel to identify market-based initiatives for environmental issues. She is a member of several professional energy, economics, and resource economist associations.

**PUBLICATIONS, PRESENTATIONS, AND WORKSHOPS - US AND INTERNATIONAL**

Her work has included assignments in most of the 50 states, across Canada, the UK, Japan, Chile, and New Zealand. She has presented papers (including keynotes) on solid waste, sustainability, or energy issues at more than 70 national conferences, 7 international conferences, more than 150 state and regional venues, and numerous academic conferences, and has prepared more than 100 conference papers or white-papers. Dr. Skumatz has given well over 100 US workshops / webinars for states and agencies. She has more than 75 publications in solid waste (75 more in energy), including work in peer-reviewed journals (*Waste Management; Solid Waste and Technology*), trade journals (*Resource Recycling*, *BioCycle*, others). She has appeared in the national “popular” press (*Wall Street Journal*, *New York Times*, *Consumer Reports, Kiplinger Financial,* *“Parade Magazine” Sunday newspaper insert*) and TV (*Fox Business News*, *Good Morning America*), and many local / regional radio stations and newspapers across the US. Dr. Skumatz has been an invited guest lecturer at Yale University, Brown University, Keio University (Tokyo), University of Wisconsin, University of Washington, Denver University, and elsewhere.

**Skumatz Publications in Solid Waste**

*Dr. Skumatz has more than 150 publications (trade journals, conference papers, peer-reviewed publications). Skumatz is sole author or principal author for each. Her publications can be viewed at* [*www.serainc.com*](http://www.serainc.com)*.*

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| **Gary Horton, Associated Senior Consultant, SERA** Skumatz Economic Research Associates, Inc. (SERA)  762 Eldorado Drive, Superior, CO 80027  Voice: 303/818-5300 email: [hortong@live.com](mailto:hortong@live.com) |  |

**EDUCATION**

B.A., University of Denver, Business Administration

**WORK HISTORY**

2015- Associated Senior Consultant, SERA, Superior, CO

1980-2015 Western Waste Systems, Boulder, Colorado, various positions including President

1975-1980 La Primo Foods, Denver, CO, Accounting

**SUMMARY OF EXPERIENCE**

Gary Horton is a seasoned waste industry executive recently retired from Western Disposal Services, Inc. in Boulder, Colorado. In his various roles with the Company, including Vice President of Finance and President, Mr. Horton managed a private collection firm as it evolved from trash collection only to trash, recyclables and compostable organics collections – and to fully automated trucks and the introduction of a CNG transition. At various times he has overseen the operation of landfills, the processing of commercial recyclables and the production of compost and other organic materials from organics collected from both residential and commercial sources.

A big believer in cooperation between private business, local government and non-profits in developing comprehensive waste diversion programs, Mr. Horton played a key role in the development of the waste management activities in Boulder County and the cities located within the County.

During Mr. Horton’s tenure with Western Disposal, the company helped the City of Boulder and Boulder County design their waste hauler ordinances which required the use of Pay-As-You-Throw rates, the inclusion of free recyclables collection with trash collection and both free and minimal cost pricing models for organics collected from residents. The City of Boulder “trash” tax was developed and implemented with active participation from Mr. Horton. Mr. Horton also served on the board of the Boulder County Recycling and Composting Authority for many years.

Western Disposal was the successful bidder for the initial implementation of “single-hauler” residential programs in both Louisville and Lafayette. Mr. Horton was one of the presenters in those communities for question and answer meetings with local residents. Those were contentious meetings but they all resulted in residents feeling that they had been heard and listened to concerning the issue of losing the ability to choose their individual refuse hauler.

Mr. Horton began his career in public accountancy where he earned his Certified Public Accountants credentials, although he no longer practices as a CPA, that training laid the groundwork for a keen insight into cost analysis, rate design and operational analysis.

In addition to his activities in Boulder County, Mr. Horton served on the Board of Directors of the Colorado Association for Recycling for six years and served for five years on the Assistance Committee to the Pollution Prevention Advisory Board to the Colorado Department of Health and the Environment. That committee is charged with distributing money collected by the State of Colorado through Landfill rate surcharges to worthwhile recycling, composting and other waste diversion projects throughout the State of Colorado.

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| **Dana D’Souza, Project Analyst, SERA** Skumatz Economic Research Associates, (SERA)  762 Eldorado Drive, Superior, CO 80027  [dsouza@serainc.com](mailto:dsouza@serainc.com); 303/494-1178 | HeadshotDanaRed |

**EDUCATION**

1991 B.A. International Business, San Diego State, CA

1987 Alliance Francaise Language School, Paris, France

**WORK EXPERIENCE**

2008-present - SERA, Environmental / Project Analyst

2004-2010 Town of Superior Trustee, CO

1998-1999 - Accounting, Roche Pharmaceuticals, Boulder, CO

1991-1992 Accounts Receivable, National Pen Corporation, San Diego, CA

1991 Internship World Trade Organization, San Diego, CA

**RELEVANT PROJECTS**

Ms. D’Souza has conducted both quantitative surveys and detailed research on multiple projects for city / county, regulator, local, regional, and federal entities, energy utility, and other clients in her role as research analyst with SERA, Inc. She understands the nuances of data and how to get the most applicable and accurate information for the current project to be able to identify program impacts, successful designs, costs, and “best practices”. Through her interviews and research in case studies, she has experience in evaluating options for residential and commercial service provision, and he has evaluated the range of traditional (recycling, organics, hazardous waste) and harder-to-measure programs (education / outreach, product stewardship, etc.) A summary of project efforts is provided below.

Ms. D’Souza has conducted program review, case study, and benchmarking interviews with solid waste program staff across the country, including data on program design, costs, infrastructure, and diversion. She has collected data on the wide variety of recycling and solid waste programs across the US – including recycling, yard waste, source reduction, electronics, single stream recycling, education / outreach programs, and others. These data have been used to identify cutting edge programs and provide key data on the factors affecting program performance.

* *Connecticut Solid Waste Management Plan:* For this comprehensive plan, Ms. D’Souza is conducting stakeholder interviews around the State, gathering data for projecting tonnages, by material, for 20 years, and developing tonnage and cost impacts for programs in recycling, organics, and waste prevention.
* *Alameda 5 year Audit:* For this and similar previous projects, SERA gathered data and evaluated metrics that might help Alameda County meet and measure its success. Ms D’Souza researched, profiled and evaluated diversion strategies, policies, programs within Alameda County and across the nation and Canada, looking at various programs employed, performance, and best practices.
* *Colorado CDPHE “Roadmap…” and*  *Colorado CDPHE “Visioning” Project:* Ms. D’Souza gathered data on recycling and composting program access in communities across the State of Colorado. The data were used to identify the diversion rate in Colorado, the variety of ways in which recycling had been implemented in the State, and remaining gaps and opportunities for recycling in the State. She also conducted detailed interviews with state solid waste officials in three other “leading” recycling states (Oregon, California, and Iowa) to identify lessons useful in moving recycling forward in Colorado. She gathered benchmarking data to compare the situations in Colorado with these other states. The project was designed to identify practical steps Colorado could take to increase recycling in the State. This project was the basis for selecting target materials and program types for the State’s recycling grants program for several years. Ms. D’Souza was also responsible for logistics and organization tasks for this Colorado statewide project to conduct four stakeholder meetings to craft the “future vision of recycling in Colorado”. She identified and assessed possible locations and catering, and organized registration and other support assignments. The project used “Appreciative Inquiry” methods at the stakeholder meetings to identify a shared “vision” for a sustainable future in recycling for Colorado.
* *Commercial Recycling Toolkit:* Ms. D’Souza gathered data through web surveys, literature review and detailed interviews with engineers, city supervisors, haulers, and program managers regarding commercial solid waste programs and systems in major cities around the nation. She gathered data on programs, policies, tonnage, facilities, costs, and other factors to provide a comprehensive picture of national commercial programs. She coordinated and wrote a how to guide / description of the multitudes of programs available and their applicability and impact for various sizes and types of communities and detailed case studies from a variety of communities and types of programs. With this information, SERA also statistically analyzed the patterns of presence and types of programs by community characteristics prepared a user-friendly scenario analysis model that allows cities to receive information suitable commercial programs for their community and case studies, tailored for their community.

**Other projects include:**

* *Advanced Deposal Fees (ADF) – Product Stewardship & Funding*
* *Business & Household Interviews (*Anchorage, Pitkin County CO, Mesa County CO, City of Westminster CO, Edgewater CO).
* *Hauler / Business Benchmarking Interviews*
* *Commercial Alleys Program*
* *EPA Region 5 Best Practices in Food Waste Programs*
* *Inventory of State Solid Waste Programs and Policies*
* *Mandatory Recycling and Recycling Ban Options*
* *Mercury Content Data Collection and Analysis*
* *PAYT Community “Count” Database*
* *Set Out Surveys and Waste Composition Analysis*
* Compost Markets
* *Recycling Markets*
* *Biomass Feedstock and Facility Analysis*
* *Curb Your Carbon/Cool the Earth Social Marketing Project*
* *Minnesota Schools Recycling Evaluation*
* *The Broadlands Project:* *Measuring the Impacts of Social Marketing*

**PUBLICATIONS, PRESENTATIONS, AND WORKSHOPS:** Ms. D’Souza has given presentations and poster sessions on her energy, recycling, and sustainability work at conferences including the Behavioral Energy (BECC) conference, Colorado Association for Recycling, and National AESP, and ACEEE conferences. She has co-authored articles for the national magazine Resource Recycling and local recycling publications. During her term as an elected official, she was a representative to the Regional Council of Governments working with municipalities for a variety of sectors, including directing distribution of Federal Funds.

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| DAWN BEMENT, Environmental Analyst, SERA  Skumatz Economic Research Associates, (SERA)  762 Eldorado Drive, Superior, CO 80027  bement@serainc.com; 303/494-1178 |  |

**EDUCATION**

1988 B.S. Cellular Molecular Biology, University of Michigan, Ann Arbor, MI,

1990 Plant Science, Howard Community College, Columbia, MD,

**WORK / VOLUNTEER EXPERIENCE**

2005-Present SERA, Research Analyst

2004-2014 Recycling Conservation Advisory Committee Member, Superior, CO

1991-1993 Landscape Designer, Sun Nurseries, MD

1987-1990 Diabetes and Cancer Research, University of MI and University of MD

**PROJECT WORK:**

Ms. BeMent is a research analyst with SERA, Inc. On more than a dozen projects, she has conducted detailed surveys or interviews with participants, non-participants, stakeholders, program staff and others to identify program impacts, successful designs, costs, and “best practices”. She has conducted both quantitative surveys and detailed case study research for energy utility, regulator, city / county, and other clients. She is a skilled interviewer, with excellent capabilities obtaining cooperation with participants and non-participants alike for a wide range of program evaluation projects. She has successfully interviewed an array of stakeholders – households, commercial businesses, cities and state contacts, and others -- for residential and commercial programs in California, Minnesota, Colorado, and across the nation. She has also done extensive market research across all of the solid waste sectors. Her strengths include an understanding of how the information will be used, which helps make sure she conducts appropriate follow-up on complex analytical issues. She recently completed research on successful programs in food waste and yard waste programs, mandatory commercial program initiatives, Advanced Disposal Fees, and others. Ms. BeMent is very detail-oriented, and has performed a wide-range of data and statistical analysis. She has co-authored several papers, contributed to many others, and written many case studies. A summary of project efforts is provided below.

**Project Experience:**

* *Comprehensive Solid Waste Plans and Evaluations*: For these projects, Ms. BeMent helped collect and analyze solid waste data to assess, evaluate, and rank states and municipalities in solid waste performance, review patterns in legislation and policy, identify successful strategies and “best practices” at the state and local levels for moving diversion forward, conduct case studies, and collect data needed to estimate tonnage and costs for diversion.

Clients: Colorado CDPHE “Roadmap”, Boulder County Zero Waste Plan; Alameda County StopWaste, State of Connecticut

* *Colorado CDPHE “Roa*dma*p…Recycling & Diversion Forward”:*  Ms. BeMent gathered data on recycling and composting program access in communities across the State of Colorado, as well as the current recycling and diversion type of programs, drop-off versus curbside collection of recycling and yard waste, rates, bans, recycling and diversion rates, and policies. In order to help recycling move forward in the State, she helped identify “gaps” in the program. She also conducted detailed interviews with State solid waste officials in three other “leading” recycling states (Oregon, California, and Iowa) to allow comparisons of tipping fees, number of landfills, number of MRFs, and number of composting facilities as well as to identify lessons useful to increase recycling in Colorado.
* *Strategies to Move Successful Recycling Forward:* Ms. BeMent obtained and evaluated current rates, tonnages of MSW, recycling and yard waste, service levels, and participation for residential and commercial sectors within the County and in unincorporated areas. She also looked at program analysis, incentives, policies, environmental impacts, and outreach. Ms. BeMent conducted detailed case studies within the State and nationally, and identified strategies to help increase recycling and diversion in the residential and commercial sectors in the already-successful King County, WA.
* *Minnesota SWMCB Analysis of Commercial Recycling and Organics Diversion – In this project,* Ms. BeMentgathered data to estimate the commercial trash and recycling tonnages generated, cost of collection and disposal, and overall cost-effectiveness of commercial recycling programs across the State. She also compiled current and future solid waste goals and diversion rates for these same regions. She collected data on the generation and disposal tonnages of organics in the residential and commercial sectors of the State as well. Ms. BeMent also helped analyze the processing capacities of recycling and composting facilities across the State. Ordinances and regulations were assessed and then solid waste program recommendations were formulated and presented.
* *USDN Commercial Toolkit:* Ms. BeMent conducted interviews of municipalities to determine the operation of commercial recycling programs in their areas, to gain a better understanding of the predominant commercial waste stream components, costs, policies, existing regulations, solid waste incentives, the role of decision criteria, community support, infrastructure, and the “readiness” for commercial strategies. She then wrote-up extensive commercial program details with implementation-oriented descriptions of best practices, assessments of their performance, strengths and weaknesses, relative cost, suitability by typology, and community examples that were included in a “commercial toolkit” that provides data and case studies for programs with particular inputted characteristics of community typology.
* *Community / Hauler / Business Benchmarking Interviews for Colorado*: For projects in several communities, Ms. BeMent conducted interviews with City staff, businesses, haulers, or others to identify current programs, rates / fees, costs, and diversion performance. These data were used for benchmarking / comparisons to client communities, and to identify feasible programs to address service “gaps” in options for client communities across Colorado. She participated in similar work for Edgewater, Boulder County, Superior, Mesa County, Pitkin County, Loveland, and Longmont.
* *Community Solid Waste Program Inventory / Analysis:* Ms. BeMent conducted detailed interviews with engineers, city supervisors, and program managers regarding solid waste, recycling, yard waste, source reduction, and diversion program and systems in major cities around the nation. She gathered data on programs, policies, tonnage, facilities, costs, and other factors to provide a comprehensive picture of the solid waste system in the community. These data were used to help identify patterns in performance, produce benchmarking figures, and identify communities with “cutting edge” programs and policies.

*Other projects include:*

* *MN K-12 Schools Waste Management Program:*
* *Minnesota SWMCB Analysis of Commercial Cost, Billing, and Contracting*
* *NRDC Mercury Thermostat Disposal / Hard to Recycle for New York, Maine, Illinois, Rhode Island*
* *Commercial City-Wide Alleys Program*
* *The Broadlands Project:* *Measuring the Impacts of Social Marketing in Colorado*
* *EPA Region 5 Best Practices in Food Waste Programs*
* *Biomass Feed Stock Characterization and Evaluation*
* *Rate Analysis-Island County, WA*

**PUBLICATIONS and PRESENTATIONS:** Ms. BeMent has contributed to articles in *Resource Recycling* on composting and commercial recycling, as well as several articles for a local recycling committee and organization. She has also co-authored papers on various solid waste topics, as well as energy and sustainability. She has also presented on commercial recycling at CAFR and BECC conferences.

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| **Edward Boisson**  **Associated Consultant** | C:\Users\Ed\Dropbox\Business Development\Marketing\marketing branding and web\photos\BoissonE-101color_lo_res.jpg |

**SUMMARY**

Ed Boisson has 26 years of experience focused on recycling industry development. In 1988 he was the principal author of *Recycling Entrepreneurship: Creating Local Markets for Recycled Materials,* and ever since he has specialized in leveraging traditional business development tools, along with innovative public policy, to help expand the materials recycling and reuse industries. Mr. Boisson’s projects frequently involve gathering data and information from recycling businesses and programs to document key trends, barriers and opportunities, and then working with clients to identify strategies to achieve their goals. He has worked with states across the country on recycling market development projects, provided and/or coordinated the provision of technical and financial assistance services directly to recycling businesses, and he has prepared numerous studies analyzing recycling and reuse markets, programs and policies.

Mr. Boisson’s consulting experience includes 10 years as a Local Practice Leader with a large, national firm, and eight years as an independent consultant. As Executive Director of the Northeast Recycling Council in the mid-1990s, he coordinated regional market development efforts with 10 state agencies. As a staffer to the California Integrated Waste Management Board (now CalRecycle) in the early 1990s, Mr. Boisson researched recycling markets and served one-year stints Managing the Policy Office and of the Recycling Market Development Zone Loan Program.

**Connecticut Statewide Solid Waste Management Plan,** *Connecticut Department of Environmental Protection:* Mr. Boisson assisted in researching the state plan, with an emphasis on state-level “next step” recommendations, including market development, state incentives and policies, economic development zones, and similar non-traditional strategies

**WORK HISTORY**

2013-present Boisson Consulting, Principal, (Previously September 1998 – May 2004)

2004-2013 Leidos Engineering, LLC (Formerly SAIC and R.W. Beck, Inc.), Senior Consultant and Local

Practice Leader, Solid Waste Section

1999-2004 Boisson Consulting, Principal, (Previously September 1998 – May 2004)

1994-1998 Northeast Recycling Council, Executive Director

1990-1994 California Integrated Waste Management Board (Now CalRecycle), Manager, Policy Office and

Recycling Loan Program; Recycling Analyst

1988-1990 Gainer & Associates Consulting, Research Associate

**EDUCATION**

**M.S. Degree, Environmental Systems**, Emphasis in Environmental Resources Engineering, Humboldt State University, 1990

**B.A. Degree, Physics**, Minor in Politics, University of California, Santa Cruz, 1985

**Economic Development Professional Course Work**, National Development Council, 1994

**SELECT PROJECTS AND EXPERIENCE**

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| **Connecticut Statewide Solid Waste Management Plan,** *Connecticut Department of Environmental Protection*  **New York Scrap Tire Market Assessment, Strategic Plan and Annual Updates,** *New York State Department of Economic Development*  **California Scrap Tire Recycling Market Development Program Evaluation,** *California Department of Resources Recycling and Recovery (CalRecycle)*  **Economic and Environmental Analysis of Beverage Container Recycling/Stewardship Alternatives,** *Businesses and Environmentalists Allied for Recycling*  **Evaluation of Scrap Tire Recycling Incentive Policies,** *Ontario Tire Stewardship, Ontario, Canada*  **Analysis of Scrap Tire Extended Producer Responsibility and Incentive Systems,** *California Department of Resources Recycling and Recovery (CalRecycle)*  **Tire-Derived Product Business Assistance Program (TBAP) and Tire Outreach and Market Analysis Contract,** *California Department of Resources Recycling and Recovery (CalRecycle)*  **California Waste and Recycling Infrastructure Information Project,** *California Department of Resources Recycling and Recovery (CalRecycle)*  **Electronic Waste Recycling Cost Analysis,** *California Integrated Waste Management Board (now CalRecycle)*  **Electronics Product Stewardship Support,** *California Integrated Waste Management Board, California (Now CalRecycle)* **Oakland/Berkeley Recycling Markets Opportunity Assessment,** *Oakland/Berkeley Recycling Market Development Zone/City of Oakland Economic and Work Force Development Department*  **Evaluation of Market Development Opportunities Involving the Massachusetts Textile Industry,** *Chelsea Center for Recycling Economic Development*  **Evaluation of Feedstock Conversion Opportunities in Massachusetts,** *Chelsea Center for Recycling Economic Development, Massachusetts*  **Annual California Scrap Tire Market Reports,** *California Department of Resources Recycling and Recovery*  **California Plastic Film Recycling Initiative,** *California Integrated Waste Management Board (now CalRecycle)*  **California Glass Market Development Initiative,** *California Department of Conservation (now CalRecycle)*  **Conversion Technology Environmental and Market Evaluation,** *California Department of Resources Recycling and Recovery (CalRecycle)* **California Market Development Plan,** *California Integrated Waste Management Board*  **Recycling Entrepreneurship: Creating Local Markets for Recycled Materials and Business Plan Preparation,** *Gainer & Associates/Arcata Community Recycling Center*  **Analysis of Grant Opportunities to Support Expansion of Food Waste Anaerobic Digestion at a Waste Water Treatment Facility,** *East Bay Municipal Utility District* | **Integrated Solid Waste Management Plan Update, Recycling Market Analysis,** *County of Kaua‘i Public Works Department*  **Five Year Recycling Program Audit,** *Alameda County Waste Management Authority (StopWaste.Org)*  **Evaluation of Commercial Organics Collection and Processing System,** *City of San Jose, Environmental Services Department*  **Analysis of Mixed Waste Processing Facilities and Impact on Recovered Paper Quality and Quantity,**  *Confidential Client*  **Texas Recycling Data Initiative,** *State of Texas Alliance for Recycling*  **Local Program Sustainability – Planning and Technical Assistance,** *Pennsylvania Department of Environmental Protection*  **Recycling Investment Forums,** *Northeast Recycling Council, Southwest Public Recycling Association and Materials for the Future Foundation*  **Training Program for Economic Development Professionals,** *Northeast Recycling Council*  **Library of Financial Transactions,** *Northeast Recycling Council*  **Expert Witness, Recycling Industry Finance,** *U.S. Department of Justice, Tax Division*  **Recycling Economic Information Project,** *Northeast Recycling Council and U.S. Environmental Protection Agency (EPA)*  **Analysis of Brand Owner Opportunities to Boost Recycling,** *Unilever, Tetra Pak, Inc. and Annie’s Homegrown*  **Northwest Carpet Recycling Industry Development,** *Washington Department of Ecology, Washington*  **Manager, Recycling Market Development Zone Loan Program,** *California Integrated Waste Management Board (now CalRecycle)*  **Expert Witness, US Beverage Container Recycling Policies,** *US Senate Committee on Environment and Public Works*  **Product Stewardship Scoping Study,** *U.S. Environmental Protection Agency (EPA)*  **United States Beverage Container Stewardship Project,** *US Environmental Protection Agency with States Representatives from NC, MN and WI*  **Carton Recycling Policy and Market Research,** *Carton Council*  **National Financing Work Group,** *Northeast Recycling Council/National Recycling Coalition*  **Northeast Newspaper Publishers Regional Policy Work Group,** *Northeast Recycling Council*  **Quarterly Recycling Policy Coordination Conferences,** *Northeast Recycling Council*  **Interagency Task Force on Market Based Environmental Incentives,** *California Integrated Waste Management Board, California* |

**Christopher C. Hoofnagle**

**Associated Consultant, SERA**

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**EDUCATION**

**Master of Public Administration,** University of Colorado at Denver Graduate School of Public Affairs (2007)

**Bachelor of Science,** Emergency Administration and Planning, minoring in Political Science, University of North Texas (1995)

**WORK HISTORY**

*2012 – Present District and Association Manager Beach Resource Management, LLC*

Serves as consultant and Manager to Metropolitan Districts and Homeowner’s Associations providing consultancy in areas such as asset management and maintenance, water conservation and operations, policymaking, project management and financial planning.

*2002 –2012 Solid Waste Director Pitkin County, CO*

*1999-2002 Recycling Manager Pitkin County, CO*

Served as Chief Administrative Officer for County Resource Recovery Department. Responsible for all department programs including landfill, recycling, composting, etc.

*2008-Present Consultant to municipalities for solid waste management*

Worked as researcher with Colorado based consulting firms SERA, Inc. and Gracestone, Inc., on projects regarding use and management of construction debris, zero waste planning, solid waste master planning and operations streamlining.

**EXPERIENCE**

**General**: Mr. Hoofnagle has 15 years management and consulting experience in local government, solid waste management and organizational development. He has experience with various types of waste and recycling infrastructure development. He’s served as Director of Resource Recovery Department since 2002 for Pitkin County, Colorado, providing long range planning, administrative and budgetary oversight of all waste management and recycling programs, including landfilling, composting, aggregate recovery, household hazardous waste, metal, tires and traditional recycling, facilities management, customer service and regulatory record keeping. Mr. Hoofnagle does consulting to small governments and Metropolitan Districts since 2010 relating to waste management and recycling, water use and operations, policy development, asset planning, operations and maintenance. He holds numerous certifications including Manager of Landfill Operations-Solid Waste Association of North America and Manager of Recycling Operations-Solid Waste Association of North America.

**Planning and Program Development**: Mr. Hoofnagle has coordinated collaborative re-engineering process for process improvement with staff from all departments and sections as well as citizen advisory board input. Served as Budget Committee Chairman for Pitkin County Government responsible for development of Overall County budget of $43 million. Introduced new solid waste management techniques and philosophies leading Pitkin County Solid Waste Management Center to statewide recognition by the Colorado Department of Public Health and Environment including: co-locating solid waste management strategies, implemented recycling of aggregate materials at landfill site, led composting program concerning planning, permitting, and construction of facilities. Designed and implemented several community outreach programs including landfill master planning, recycling surveys, and rate structure studies for landfill services as well as public research and message delivery for Client governments.