



**Van Horn Consulting**  
*Energy, Economic, Regulatory  
& Environmental Consultants*  
Orinda, CA 94563

## PROFESSIONAL QUALIFICATIONS



Van Horn Consulting  
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## SUMMARY OF QUALIFICATIONS

Van Horn Consulting (VHC), a sole proprietorship located in the San Francisco Bay Area, provides expert assessments and analyses of energy and environmental markets, contracts, technologies, tariffs and regulations to support strategic decisions, business plans, the procurement of electricity, natural gas and emissions allowances, and to guide the development and deployment of future technologies and regulations.

Our professionals have consulted on a broad spectrum of issues concerning electricity, natural gas and emissions contracts, procurement practices, project and plant valuations, regulatory policies and market design, electric system supply planning, forecasts of market prices, economic modeling, power plant development, financing, divestiture, electricity and gas tariffs, technology cost and performance, R&D, cost-benefit tests, natural gas pipelines and storage facilities; stranded costs, Public Utility Commission reasonableness reviews, rate case testimony, integrated resource planning, and national energy, environmental and technology policies, including emission performance standards, New Source Review and markets for SO<sub>2</sub>, NO<sub>x</sub> and greenhouse gas (GHG) emission allowances. During 2007-2014, VHC served as an Independent Evaluator (IE) for electricity and natural gas Requests for Offers and bilateral contracting by California utilities.

Applying decades of experience, VHC provides strategic insight and advice to its clients.

Representative clients include:

<i>Alberta Department of Utilities</i>	<i>Orinda Union School District</i>
<i>American Electric Power</i>	<i>PacifiCorp Power Marketing</i>
<i>Amgen</i>	<i>PPL Corp</i>
<i>Arizona Public Service Company</i>	<i>Pacific Gas and Electric Company</i>
<i>Cinergy</i>	<i>Pacific Gas Transmission</i>
<i>Cogeneration Association of California</i>	<i>Pinnacle West</i>
<i>Colorado Independent Energy Association</i>	<i>Port of Long Beach</i>
<i>Consolidated Edison of New York</i>	<i>San Diego Gas &amp; Electric Company</i>
<i>Consolidated Natural Gas Transmission</i>	<i>Sithe Energies</i>
<i>CIGNA Insurance</i>	<i>Southern Company</i>
<i>City of Huntington Beach</i>	<i>Southern California Edison Company</i>
<i>Drummond Coal</i>	<i>SeaWest Wind Corp</i>
<i>Duke Energy</i>	<i>Tennessee Valley Authority</i>
<i>Electric Clearinghouse (Dynergy)</i>	<i>The Emissions Exchange</i>
<i>Electric Power Research Institute (EPRI)</i>	<i>Utility Air Regulatory Group</i>
<i>GreenFire Energy</i>	<i>Universal Studios</i>
<i>Harvard Management Corporation</i>	<i>U.S. Environmental Protection Agency</i>
<i>Korea Power Exchange</i>	<i>U.S. General Accounting Office</i>
<i>National Acid Precipitation Assessment Prog.</i>	<i>Wellhead Power Solutions</i>
<i>Northern California Power Agency</i>	



## Our Experts

### **Michael Katz, M.S., P.E.**

Michael Katz, Senior Consultant, has over 25 years' experience in electric and natural gas markets, risk management, strategic planning and operations of physical assets. As a consultant with VHC since 2006, Mike has served as the Independent Evaluator (IE) for both Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E) on a variety of Request For Offers (RFOs) and bilateral contract negotiations involving conventional, renewable, and combined heat and power resources. He has also evaluated generation and energy storage technology alternatives, developed a strategic electricity plan, provided insights about procedures and management for groups procuring power, developing storage, and for operating a new gas-fired power plant, examined implications of potential GHG emission performance standards and participated in regulatory proceedings, as well as providing strategic advice drawing upon his extensive utility management experience.

Previously with Pacific Gas & Electric Company (PG&E), Mike led PG&E's Power Generation Department, where he managed 600 people who operated and maintained hydro and natural gas-fired units and sold electricity products into California electricity markets. He created a tight linkage between the operations and trading to maximize the value of PG&E's generation assets. In previous positions as Director of Generation Portfolio Management (1998) and Power Generation Business Planning (1996-1997) and in positions in Power Generation (1993-1995) and Electric Resources Planning (1983-1992), he:

- Led the team to develop systems and processes for selling electricity at lowest cost into California's newly created energy markets,
- Assembled and led an electricity trading team that evolved with rapidly changing market conditions, rules, and contract provisions,
- Created and presented investment and spending strategies for PG&E's portfolio of gas-fired, geothermal and hydro units,
- Developed value-based goals and performance metrics for the department,
- Led the asset selection initiative for the sale of gas-fired power plants,
- Created new performance metrics and goals for the business unit,
- Led the effort to phase-out the older gas-fired units,
- Managed a \$200 million budget and optimized spending strategies, resulting in annual, savings of approximately \$2 million/year,



- Prepared evaluations of generation technology options that considered the technologies' risk profiles and fuel diversity benefits,
- Prepared and presented testimony on the cost of generation options,
- Built electric resource plans considering both supply- and demand-side alternatives,
- Evaluated numerous utility investment options.

Mike graduated from the University of Massachusetts, Amherst with a B.S. in Civil Engineering and earned an M.S. in Mechanical Engineering from the University of California, Berkeley. He is a registered Mechanical Engineer in California, License No. M-023752.

### **Edward C. Remedios, Ph.D., MBA**

Ed Remedios, Senior Consultant, has over thirty-five years' experience in the electric, gas and petroleum industries. He spent 20 years in positions of increasing responsibility with PG&E, taking early retirement as the head of PG&E's Economics and Forecasting Department. His responsibilities included coordination of the corporate strategic plan, forecasting economic and market conditions and sales, and evaluation of projects. Dr. Remedios has forecasted electricity and natural gas markets and evaluated electric, gas and transmission tariffs. He has evaluated energy projects, contracts and financial arrangements, fuel supplies, renewable energy resources, energy efficiency and demand-side programs, generated sales forecasts, including econometric and end-use models, analyzed marginal costs, market power issues and acquisitions. He has examined gas market supply and demand in California and in the Northeast, electricity market power and operational issues in the WSCC and helped VHC prepare the Proponent's Environmental Assessments for the sale of four of PG&E's fossil units and its Geysers geothermal power plant. He has developed comparisons of electricity supply alternatives, including municipalization and Community Choice Aggregation, conducted detailed analysis of potential savings from switching between alternative tariffs, and assessed the relative costs of different approaches for financing additions to the electric distribution system within the Port of Long Beach. He has reviewed in detail the methods applied by SCE and by SDG&E in their evaluations and ranking of bids received under various RFOs for new power resources and recommended refinements, where needed. Dr. Remedios has testified before the CPUC concerning electricity tariffs, supply curtailments and the operation of the California electricity market.

He holds B.Sc. and Ph.D. degrees in Chemical Engineering from the University of Edinburgh, Scotland. He earned an M.B.A. with emphasis in Finance from the University of California at Berkeley.



## **Andrew J. Van Horn, Ph.D.**

Andy Van Horn, Principal and Managing Director, is an expert on the interactions of energy and environmental markets, regulations and technologies. Over the past 35 years he has advised industry clients, market participants, government agencies and research institutes by providing rigorous analysis, management counsel, expert testimony and litigation support. Andy helped develop the successful U.S. cap-and-trade market for SO<sub>2</sub> that reduced acid rain precursors and set the price for the first SO<sub>2</sub> allowance trade in 1992. He has evaluated California's greenhouse gas (GHG) emission allowance market design and rules, allowance auctions, holding limits and price containment mechanisms. He pioneered the development and application of integrated assessment models for the U.S. E.P.A. and the Electric Power Research Institute and prepared and delivered expert testimony regarding electricity and natural gas facilities, markets, contracts and rates in state and federal proceedings. Andy served as an Independent Evaluator (IE) for Requests for Offers for both SCE and SDG&E, advising and reporting on the utility's solicitation, evaluation, shortlist selection and contract negotiation processes. Today, he analyzes electricity and carbon allowance markets and assists firms in the commercialization of advanced technologies.

In his engagements, he has:

- Assisted firms with advanced technologies, including GreenFire Energy, Inc., the developer of an innovative, advanced geothermal power technology that uses supercritical CO<sub>2</sub> as the working fluid and has potential worldwide applications.
- Prepared and delivered a training seminar for the Korea Power Exchange on Carbon Emission Trading Systems and markets with emphasis on three country's systems.
- Developed and applied the California GHG Allowance Strategy Calculator to examine greenhouse gases (GHG) allowance acquisition strategies, holding limits, limited exemptions, purchase limits and market behavior under AB 32 and CPUC cap-and-trade rules. Contributed to mock GHG allowance auction simulations and developed market scenarios to understand the effects of the Air Resources Board's market design,
- Served as a member of VHC's Independent Evaluator team (2007-2014) to assess the bidding and valuation of offers and negotiations by San Diego Gas & Electric Company and Southern California Edison to procure renewables, demand-side, peaking, intermediate and baseload generation, combined heat and power, and Resource Adequacy (RA) capacity in Requests for Offers and bilateral contract renegotiations. He was the IE for SDG&E's 2009 All-Source RFO, involving the request, evaluation and negotiation of offers for seven products and for Southern California Edison's 2010 Spring Gas RFO, conducted in two sequential auctions,
- Analyzed electricity, natural gas, coal, technology and emissions markets and regulations for electric and gas utilities, natural gas pipelines, independent power producers and project developers, the Electric Power Research Institute (EPRI), the



U.S. Environmental Protection Agency (EPA), Department of Energy, the Utility Air Regulatory Group and the U.S. General Accounting Office,

- Developed and applied EPRI's first Integrated Resource Planning model (TELPLAN), as well as FINSIM, a pro-forma financial model; the national Utility Simulation Model for the EPA, NEMS 2050, an extension of the EIA's National Energy Modeling System to year 2050, and the Emissions Reduction Analysis Model (ERAM). He has applied state-of-the-art capacity expansion, production simulation and network power system models,
- Led the Environmental Markets Association's first national webinar on California's AB 32 and was one of three U.S. experts invited to CDM Tech 2007, an international conference on the Clean Development Mechanism (CDM) and GHG reduction projects held in Cartagena, Colombia,
- Analyzed cap-and-trade market designs and critiqued studies as part of California's efforts to develop greenhouse gas (GHG) regulations. Identified critical shortcomings in the CPUC's adopted load-based market design in 2006-2007, leading the CPUC to change its market design recommendation in March 2008,
- Co-delivered a 3-day seminar to EPA's Office of Research and Development on R&D evaluation and the assessment of technologies,
- Prepared a 20-year Electrical Master Plan and strategy for the Port of Long Beach, one of the world's busiest ports,
- Led EPRI's comprehensive economic and technical study of U.S. energy technologies and regulations from 2000 to 2050, examining effects of alternative national energy and environmental policies, including carbon taxes. Study results were presented to EPA's Assistant Administrator for Air and to White House staff.
- Testified about electricity and natural gas market operations, tariffs, contract terms and damages, economic and regulatory issues on behalf of Southern California Edison, Pacific Gas & Electric Company, CNG Transmission and independent power producers,
- Enabled the City of Huntington Beach to increase the assessed value of the Huntington Beach Power Plant before the California State Board of Equalization,
- Served as an expert advisor concerning wind, geothermal, natural gas, electricity and emission allowance contracts,
- Analyzed proposed 1977 & 1990 U.S. Clean Air Act Amendments, including New Source Performance Standards (NSPS), various "cap and trade" market design and New Source Review proposals. Analyzed cost and performance for pollution controls and technology R&D and projected changes in coal markets and technology choices,
- Prepared an Integrated Technology Assessment and economic analysis of alternative New Source Performance Standards for EPA and DOE. The results were taken to President Carter,
- Provided the price for the first public SO<sub>2</sub> emissions allowance trade in 1992,



- Forecasted emission allowance prices for the SO<sub>2</sub> cap-and-trade market and advised TVA, Southern Company and others.

In addition, he has:

- Calculated economic damages regarding the operation of the Geysers geothermal power plants, based on technical assessments of the steam field, plant performance, steam supply contract terms and future market conditions,
- Co-chaired sessions on International Climate, U.S. Carbon Policy and Regional and State GHG Initiatives at the national Energy, Utilities and Environmental Conferences from 2006 to 2012,
- Conducted seminars for EPRI, EPA and others on Global Emissions Trading Systems, California's AB 32 and cap-and-trade program, U.S. national GHG legislation and market design, Integrated Technology Assessment, Clean Air Response: Strategic Issues & Markets, SO<sub>2</sub> Compliance Planning, the Behavior of Markets for Emission Allowances, Fuels and Technologies, R&D evaluation, and electricity Ancillary Services Markets,
- Evaluated merchant power and cogeneration plants for Duke Energy and Sithe Energies,
- Delivered expert testimony on the effects of natural gas tariffs and rate designs, including rolled-in vs. incremental rates, the economic and environmental benefits/costs of several interstate pipelines, and the reasonableness of contracts,
- Appeared before the FERC regarding Northeast gas demand and the economic viability of proposed natural gas pipelines,
- Advised clients on integrated resource planning, the selection of network power flow, production cost, planning and financial models, emission allowance prices and auctions, New Source Performance Standards and New Source Review,
- Helped PG&E divest six fossil-fired and geothermal power plants by preparing their Proponent's Environmental Assessments under CEQA,
- Testified before the FERC, the California Public Utilities Commission, the California Energy Commission, the Colorado PUC, in arbitration, in Superior Court and U.S. Bankruptcy Court.

Prior to founding Van Horn Consulting in 1987, Andy was a Director and Principal of Putnam, Hayes & Bartlett, Inc., a management consulting firm. Previously, he was Director of Energy Systems Planning at TERA Corporation, a consulting firm and wind farm developer during the 1980s, and Director of the Energy and Environmental Research Division at Teknekron Research, Inc., where he managed a group of 20 professionals. He held post-doctoral research fellowships at Harvard University, where he examined risks, costs and



benefits of energy systems, including nuclear power and liquefied natural gas, and at the Rutherford Laboratory in the U.K, where he co-organized an international summer school on Energy held at Oxford University and edited the book, “Aspects of Energy Conversion.”

Dr. Van Horn holds a Ph.D. in Physics from the University of California, Berkeley and a B.S. in Physics from Harvey Mudd College in Claremont, California.

## **Senior Consultants**

### **Kristine L. Chase, Ph.D.**

Kris Chase, Senior Consultant, has over 25 years of experience in the analysis of financial markets with a focus on banking, corporate finance, and the determination of market interest rates. Professor Chase is the former Director of the Center for the Regional Economy at Saint Mary’s College, where she teaches banking, finance and economic policy in the Executive MBA program and conducts research on economic and business-related issues. She has been a Fellow of the American Council on Education and past president of the national Economics Honor Society. Her research includes the structure and regulation of financial markets, such as the Federal Reserve’s and other public policies towards regulated industries.

She previously served as CFO and VP for Administration of Saint Mary’s College of California, leading the college’s successful issuance of a \$26 million bond for facilities expansion, as well as being responsible for facilities, IT, and HR. She served as an elected board member and chair of the Contra Costa Community College District, providing her with substantial public sector experience. She has worked with auditors, bond rating agencies, and financial consultants and serves as a member of accreditation teams for the Western Association of Schools and Colleges, focusing on financial aspects of the accreditation of colleges and universities. She earned a Ph.D. in Economics from the University of Maryland and holds a B.A. from the University of California, Davis.

### **Constance W. Miller, Ph.D.**

Connie Miller, Senior Analyst, is a mechanical engineer and quantitative analyst. She has conducted engineering analysis, data evaluation, database and programming support for the Air Strategy and Emission Trading Models, the Emission Reduction Analysis Model and for studies of competitive strategy and market power. She has projected emissions under alternative regulatory reform proposals and tracked emission allowance market transactions. Dr. Miller has also developed numerical and simulation models of physical and chemical





processes. Formerly, she was Staff Scientist at the Lawrence Berkeley Laboratory and Assistant Professor of Mechanical Engineering at the University of California at Berkeley. She holds a Ph.D. in Mechanical and Aerospace Engineering and M.Eng. and B.S. degrees in Engineering Physics from Cornell University.

