

# CAMBRIAN ENERGY

## Company Profile

### *Overview*

Founded in 1980, Cambrian Energy Development LLC is one of the leading landfill gas-to-energy developers in the world. Cambrian is the most successful independent developer of landfill gas-to-energy projects in the United States with more than **50** projects completed and additional projects in various stages of development.

Cambrian has also developed other biomass-fueled projects, such as those using digester gas and biosolids (sewage sludge) and has additional such projects in development.

Cambrian is taking a collaborative role in working with some of the leading carbon and other emission brokerage organizations in the world in qualifying and marketing available voluntary emission reduction credits associated with its biomass-fueled projects, including voluntary carbon emission reduction credits.

Cambrian has developed or has acquired rights to advanced technologies applicable to its biomass-fueled projects that significantly enhance the economic results from its projects. These technologies include (i) internal combustion engine upgrades and modifications that lower the heat rate (improve efficiency), reduce emissions, extend maintenance intervals and increase engine-generator capacity, (ii) methodologies and equipment to enhance the rate of generation of landfill gas and digester gas and reduce the quantity of residual biomass materials (whether municipal solid waste or biosolids), and (iii) non-catalytic internal combustion engine exhaust emission reduction technology that meets existing and proposed emission requirements of the South Coast Air Quality Management District in Southern California.

Cambrian is recognized as among the most knowledgeable, innovative, creative and persistent developers in the alternative energy industry. Cambrian's personnel possess a unique blend of engineering, legal and financial skills that have led to its success in meeting the increasingly complex challenges that are entailed in the completion of landfill gas-to-energy projects in a world of stricter environmental regulation, deregulated energy markets and sophisticated financial structures. Those areas of expertise include the following:

- Working experience with all of the technologies that have been or are in the process of being commercially employed to convert landfill gas to higher value energy uses:
  - electric power (using reciprocating engines, gas turbines, steam turbines and organic Rankin cycle turbines)
  - cogeneration (sequentially producing electric power and one or more of heat, steam, hot water and cold water)
  - medium Btu gas
  - high Btu gas (i.e., pipeline quality gas)
  - LNG
  - CO<sub>2</sub>.
  
- Thorough understanding of operational and regulatory requirements affecting solid waste landfills which must be accommodated in the development of a landfill gas-to-energy project.
  
- Ability to identify, optimize and adapt one or more energy use technologies to the specific needs of end-use energy customers so as to provide economic advantages to both the customer or customers and to the energy project -- perhaps the most difficult feat to accomplish in an energy development project.
  
- Capability to work effectively with both regulatory permitting agencies and equipment vendors in finding technical approaches for equipment selection and implementation that will allow issuance of permits needed to meet both project needs and regulatory requirements.
  - Extensive experience in obtaining conditional use permits and building permits and in assisting in meeting permitting agency and community concerns that may involve topics such as air modeling (e.g. touchdown, and emissions), noise, traffic, and the use of landscaping and berms as visual screens and as a means for noise attenuation.
  
- Drafting of all necessary legal documentation, which usually include a Landfill Gas Lease or other Resource Lease, a Site Lease and an Energy Sale Agreement, that set forth the working relationships and responsibilities of each party to the energy project and address at a minimum the following issues:
  - Rights to collect and use landfill gas or other fuels (e.g. digester gas and biosolids).
  - All necessary land use rights and real property title rights, including ingress and egress easements, pipeline and power line easements, existence of all property title rights and other entitlements to successfully develop and, if necessary, secure financing for energy project.

- Procedure to provide for accommodation of landfill gas collection system for commercial purposes while maintaining its ability to function to meet regulatory needs for control of landfill gas emission and migration.
  - Creation of structure to fully utilize any available tax incentives for the energy project, such as Section 29 tax credits and Section 45 tax credits.
  - Reservation of rights to quantify, qualify, market and realize economic value from potential voluntary carbon emission reduction credits.
  - Identification of parcel of land for construction of energy production facility.
  - Sale of end energy product to an energy customer on terms that provide for energy savings for the customer and sufficient economic return for the energy project.
  - Provisions to allow for the limited recourse debt financing of the energy project by institutional lenders while fully protecting the underlying interests of each landfill owner or other resource owner.
- Understanding the requirements to qualify for and to utilize tax incentives for landfill gas-to-energy projects, such as those set forth in Section 29 and Section 45 of the Internal Revenue Code.
- Cambrian was a partner in an entity that received one of the leading published Department of Treasury private letter rulings involving Section 29 tax credits.
  - Cambrian has participated in 3 major financings with a Fortune 50 U.S. company that monetized Section 29 tax credits for Cambrian and its partners.
- Understanding the requirements to qualify for and to realize economic value from available voluntary carbon emission reduction and other emission reduction credits associated with biomass-fueled projects, such as landfill gas, digester gas and biosolids conversion; maintaining strong working relationships with some of world's most experienced brokerage organizations for carbon and other emission reduction credits to realize maximum economic value from the marketing of such credits.
- Ability to prepare detailed financial models for proposed energy projects in formats that have proved acceptable (i) to institutional equity investors, (ii) to large, publicly-held co-development partners providing equity capital to projects, (iii) to project finance lenders, (iv) to owners and operators of landfills and other energy resource owners, and (v) to industrial end-use energy customers.
- Credibility and ongoing long-term relationships with nationally recognized firms experienced in various facets involved in implementing landfill gas-to-energy, digester-gas-to-energy and biosolids-to-energy projects, including the following types of organizations:

- Institutional equity investors for projects developed by Cambrian
- Nationally recognized co-developers with significant capital for equity investment
- Lenders of limited recourse project financing to landfill gas-to-energy projects
- National landfill gas engineering and operating firms
- National and international carbon and other emission credits brokerage firms
- Construction contractors experienced in installing energy facilities of all types
- Construction management firms
- Air permitting specialists
- Pipeline and power line contractors
- Energy equipment manufacturers and suppliers
- National energy marketing firms (e.g., electric power and gas trading firms and LNG marketing and transporting firm)

Cambrian's development activities have been truly national in scope. Projects have been developed in the following regions of the United States:

<b>WEST</b>	California, Hawaii, Washington
<b>SOUTHWEST</b>	Arizona, Texas
<b>MIDWEST</b>	Arkansas, Kansas, Minnesota
<b>SOUTHEAST</b>	Florida
<b>MID ATLANTIC</b>	Pennsylvania, Tennessee
<b>NORTHEAST</b>	New York, New Jersey, New Hampshire, Maryland

Cambrian also has experience in the development of international energy projects. It assisted in the preparation of feasibility studies, in energy sale negotiations and in energy development right negotiations for energy projects in Mexico, Nicaragua, Germany and the Philippines.

Cambrian attributes its success in developing energy projects to its adherence to a philosophy of maintaining an equitable sharing of the potential economic benefits from a project among the project participants. Cambrian believes that in implementing this philosophy, it creates working relationships that result in the greatest degree of cooperation among the interested parties in an energy project so as to enhance the likelihood for the successful long-term operation of that project.

### ***Historical Relationships***

Although Cambrian is now developing projects on its own, Cambrian historically co-developed its energy projects with a number of development partners. Most of those partners have been subsidiaries of large, publicly held utility or industrial companies. However, in instances where a particular landfill gas-to-energy project did not fit the investment profile for one of its primary development partners, Cambrian has been successful in completing the development of projects with smaller co-development partners.

During its more than 25 year history, Cambrian has co-developed its projects with four different primary development partners: Pacific Lighting Energy Systems, Solar Turbines Incorporated, NEO Corporation and the Algonquin Power Income Fund.

Since 2003 Cambrian has owned and operated projects either on its own or with additional equity investments received from other equity investors.

### **PACIFIC LIGHTING ENERGY SYSTEMS (1981 – 1986)**

In 1981 Cambrian entered into a contractual relationship with Pacific Lighting Energy Systems (“PLES”), which was a wholly-owned subsidiary of Pacific Enterprises, a \$5 billion publicly-held utility holding company that was the parent company of Southern California Gas Company. Cambrian became the exclusive marketing arm for Pacific Lighting Energy Systems in the development of energy projects in the landfill gas industry.

This relationship began shortly after the adoption of the Public Utilities Regulatory Policies Act in 1978 (“PURPA”), which was a federal statute that enabled the development of a great number of alternative energy projects that were intended to help solve the dependency on foreign oil that resulted in the energy crisis that existed in the United States at that time. In effect, PURPA compelled the regulated utilities to deal fairly with independent electric power projects in terms of both the purchase of power generated by such projects and the providing of certain other services on an equitable

basis. In addition, PURPA exempted alternative energy projects that met its guidelines from regulation as utilities under federal and state law.

During its relationship with PLES, which lasted through December 1986, Cambrian and PLES accomplished a number of industry firsts. Among those were the following:

- Development of the largest reciprocating power plants operating on landfill gas at 9,300 kilowatts each (Toyon Canyon Landfill, California and Penrose Landfill, California).
- Development of the largest number of landfill gas-to-electric power projects completed during this period (12 projects).
- Demonstration of the first motor vehicle powered from processed and compressed landfill gas (Penrose Landfill, California, 1984).

In 1998 all of the landfill gas-to-energy projects owned and operated by PLES were acquired by Ogden Energy Corporation in connection with the necessity to meet certain regulatory requirements pertaining to non-regulated activities in connection with the merger of Pacific Enterprises, the parent of PLES, with San Diego Gas & Electric Company to form Sempra Energy. Cambrian continues to participate in the projects now operated by Ogden Pacific Energy.

#### **SOLAR TURBINES INCORPORATED (1987-1989)**

In January 1987 Cambrian entered into a three-year development partnership with Solar Turbines Incorporated, which is a manufacturer of industrial gas turbines and is headquartered in San Diego, California. Solar Turbines Incorporated is a wholly-owned subsidiary of Caterpillar, Inc., which is a \$19 billion in annual sales, publicly-held New York Stock Exchange company.

During its development relationship with Solar Turbines Incorporated, Cambrian co-developed five (5) landfill gas-to-energy projects, including the first project to use a recuperated gas turbine operating on landfill gas (Santa Cruz Landfill, California).

During this relationship Cambrian also developed its first cogeneration project (Kapaa Landfill, Hawaii).

## NEO CORPORATION (1995-2001)

In 1995 Cambrian entered into a joint development relationship for landfill gas-to-energy projects with NEO Corporation, which is a wholly-owned subsidiary of NRG Energy, Inc. NRG Energy, Inc. is the seventh largest independent power producer worldwide. NRG Energy, Inc. is, in turn, a subsidiary of Northern States Power Company, which is a \$2.8 in annual sales publicly-held electric power utility based in Minneapolis, Minnesota. Northern States Power Company has announced that it is merging with New Century Energies, a Denver-based publicly-held utility with more than \$3.3 billion in annual sales, to form Xcel Energy, Inc.

As was the case with each of Cambrian's prior relationships with PLES and with Solar Turbines, NEO Corporation was just beginning to develop energy projects at the time it established its relationship with Cambrian. Cambrian has become the primary co-development partner with NEO Corporation to date.

During its relationship with NEO Corporation, Cambrian co-developed 18 landfill gas-to-energy projects with NEO Corporation.

Cambrian and NEO co-developed some of the largest and most difficult landfill gas-to-energy projects that were completed since the deregulation of the energy markets. Some of the noteworthy projects or accomplishments achieved during this relationship are as follows:

- Appearance before the California Public Utilities Commission by Cambrian during hearings involving the implementation of Assembly Bill 1890, the California deregulation of the electric power industry, to successfully secure an Order granting to landfill gas projects the right to receive a "must take" obligation from California utilities during the transition to a Power Exchange market for wholesale purchases of electric power. This was essential in securing financing of landfill gas-to-energy projects during this transition period.
- Development of 12,000 kilowatt electric power project using gas turbine and steam turbine technology and 3<sup>rd</sup> largest landfill in the United States (BKK Landfill, California – 1996)
- Development of (i) 6,400 kilowatt cogeneration project supplying electric power and hot water to Metropolitan Biosolids Center operated by the City of San Diego, and (ii) 3,800 kilowatt electric power project providing retail displacement of power to North City Water Treatment Plant operated by the City of San Diego,

both of which facilities are operated using landfill gas from the same landfill (Miramar Landfill, California -- 1997 and 1998).

**ALGONQUIN POWER INCOME FUND (2004 – PRESENT)**

In 2004 Cambrian entered into an agreement with Algonquin Power Income Fund (“Algonquin”) to acquire, own and operate 12 landfill gas-to-energy projects from NEO Corporation, most of which were originally co-developed by Cambrian and NEO Corporation. The acquisition of those projects by an entity co-owned by Cambrian and Algonquin closed in September 2004.

Algonquin is a publicly traded Canadian unit trust with more than \$800,000,000 in assets that invests solely in renewable energy and utility infrastructure projects (water and wastewater services).

Cambrian and Algonquin share the management responsibilities of the projects they acquired. Cambrian has primary responsibility for both expanding and, where beneficial, redeveloping the existing energy projects at the landfills where such projects are located.

## **CAMBRIAN PROJECTS**

### **CAMBRIAN OWNED AND OPERATED**

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
Woodville Landfill, Tulare County	CA	Electric Power	600 kW	December 1999
Woodville Landfill, Tulare County	CA	Electric Power	1,650 kW (additional capacity)	In Development
Teapot Dome Landfill, Tulare County	CA	Electric Power	1,650 kW	In Development
27 <sup>th</sup> Avenue Landfill, Phoenix	AZ	Electric Power	3,300 kW	In Development
Fort Smith Landfill	AR	Medium Btu gas		July 1999
Fort Smith Landfill (50% partnership with South-Tex Treaters, Inc.)	AR	High Btu gas	3 million cubic feet per day capacity	May 2006
1-C, 1-A and 1-D Landfills, North Arlington (Meadowlands Gas Treaters LLC)	NJ	High Btu gas	6,000,000 cubic feet per day capacity	September 2006
Biosoils of Southern California LLC, Colton (58% partner)	CA	Biosolids Management & Electric Power	1,200 tons per day of biosolids	In Development

### **CAMBRIAN/ DALLAS CLEAN ENERGY LLC**

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
McCommas Bluff Landfill, Dallas	TX	High Btu gas	9 million cubic feet per day capacity	November 2007

### **CAMBRIAN/ALGONQUIN POWER INCOME FUND**

**(JOINTLY OWNED AND OPERATED; ACQUIRED FROM NEO CORPORATION IN SEPTEMBER 2004)**

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
Prima Deshecha Landfill,	CA	Electric Power	6,100 kW	September 1999

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
Orange County				
Tajiguas Landfill, Santa Barbara	CA	Electric Power	3,000 kW	July 2000
Milliken Landfill, San Bernardino County	CA	Electric Power	2,500 kW	May 2003
Mid-Valley Landfill, San Bernardino County	CA	Electric Power	2,500 kW	May 2003
Colton Landfill, San Bernardino County	CA	Electric Power	1,260 kW	May 2003
Colton Landfill, San Bernardino County	CA	Electric Power	1,260 kW (additional capacity)	In Development
San Timoteo Landfill, San Bernardino County	CA	Medium Btu gas or Electric Power		In Development
Bordeaux Landfill, Nashville	TN	Cogeneration	1,900 kW 2,000 kW (Standby)	July 2000
Balefill Landfill, Lyndhurst	NJ	Electric Power	3,800 kW	August 1998
Kingsland Landfill, Lyndhurst	NJ	Electric Power	1,900 kW	February 1999
Balefill Landfill, Lyndhurst	NJ	High Btu gas or Medium Btu gas		In Development
Kingsland Landfill, Lyndhurst	NJ	High Btu gas or Medium Btu gas		In Development
Four Hills Landfill, Nashua	NH	Electric Power	3,100 kW	March 1996
Burnsville Landfill, Burnsville	MN	Electric Power	4,210 kW	May 1994
Flying Cloud Landfill, Eden Prairie	MN	Electric Power	4,890 kW	May 1995

### **CAMBRIAN/NEO CORPORATION**

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
BKK Landfill, West Covina	CA	Electric Power	12,000 kW	December 1996
Yolo County Landfill	CA	Electric Power	2,400 kW	December 1996

Miramar Landfill (Metropolitan Biosolids Center), San Diego	CA	Cogeneration	6,400 kW & hot water	June 1997
Volusia County Landfill	FL	Electric Power	3,200 kW	July 1998
Visalia Landfill, Tulare County	CA	Electric Power	1,600 kW	July 1998
Northside Landfill, Spokane	WA	Electric Power	800 kW	July 1998
Miramar Landfill (North City Water Treatment Plant), San Diego	CA	Electric Power	3,800 kW	September 1998
Lopez Canyon Landfill, Los Angeles	CA	Electric Power	6,100 kW	December 1998
Fort Smith Landfill	AR	Medium Btu gas		July 1999
Prima Deshecha Landfill, Orange County	CA	Electric Power	6,100 kW	September 1999
Woodville Landfill, Tulare County	CA	Electric Power	600 kW	December 1999
Acme Landfill, Martinez	CA	Medium Btu gas		December 1999
Bordeaux Landfill, Nashville	TN	Cogeneration	1,900 kW & 2,000 kW (Standby)	July 2000
Tajiguas Landfill, Santa Barbara	CA	Electric Power	3,050 kW	July 2000
Milliken Landfill, San Bernardino County	CA	Electric Power	2,500 kW	May 2003
Mid-Valley Landfill, San Bernardino County	CA	Electric Power	2,500 kW	May 2003
Colton Landfill, San Bernardino County	CA	Electric Power	1,260 kW	May 2003
27 <sup>th</sup> Avenue Landfill, Phoenix	AZ	Medium Btu gas		July 1998

### **CAMBRIAN/ LAS ANIMAS LANDFILL GAS**

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
Johnson County Landfill, Shawnee	KS	High Btu gas	9 million cubic feet per day capacity	September 2001

## CAMBRIAN/ APPLIED LNG TECHNOLOGIES

PROJECT NAME	STATE	TYPE	SIZE	OPERATIONAL DATE
South Chollas Landfill, San Diego	CA	LNG	5,000 gallons per day capacity	Project Discontinued as Economically Infeasible

## CAMBRIAN/ PACIFIC LIGHTING ENERGY SYSTEMS

PROJECT NAME	STATE	TYPE	SIZE	OPERATIONAL DATE
Upland Landfill, Upland	CA	Electric Power	500 kW	December 1983
Penrose Landfill, Los Angeles	CA	Medium Btu gas High Btu gas		January 1984
Oxnard Landfills (4 landfills and owners), Oxnard	CA	Electric Power	3,500 kW	January 1985
Lompoc Landfill, Lompoc	CA	Electric Power	800 kW	March 1985
Bakersfield Landfill, Bakersfield	CA	Electric Power	1,700 kW	April 1985
Stockton Landfill, Stockton	CA	Electric Power	1,200 kW	July 1985
Gude Landfill, Rockville	MD	Electric Power	3,000 kW	August 1985
Penrose Landfill, Los Angeles	CA	Electric Power	10,000 kW	December 1985
Toyon Canyon Landfill, Los Angeles	CA	Electric Power	10,000 kW	December 1985
Crazy Horse Landfill, Salinas	CA	Electric Power	1,500 kW	March 1986
Santa Clara Landfill, Santa Clara	CA	Electric Power	1,500 kW	April 1986
Bonsall Landfill, San Diego	CA	Electric Power	1,500 kW	April 1986
Otay Landfill, San Diego	CA	Electric Power	1,700 kW	May 1986
Sheldon Arleta Landfill, Los Angeles	CA	Medium Btu gas		July 1988
Otay Landfill Extension, San Diego	CA	Electric Power	1,700 kW	June 1991
4 Oxnard Landfills Extension, Oxnard	CA	Electric Power	1,700 kW	June 1991

### **CAMBRIAN/ CAT PAC II (SOLAR TURBINES AFFILIATE)**

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
Santa Cruz Landfill, Santa Cruz	CA	Electric Power	725 kW	November 1988
Sycamore Landfill, San Diego	CA	Electric Power	1,550 kW	December 1988
Orange County Landfill, Orange County	NY	Electric Power	2,700 kW	February 1989
San Marcos Landfill, San Diego	CA	Electric Power	1,550 kW	March 1989
Kapaa Landfill, Oahu	HI	Cogeneration	2,700 kW hot air	December 1989

### **CAMBRIAN/ ENERGY TACTICS**

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
Smithtown Landfill, Smithtown	NY	Electric Power	1,000 kW	July 1987
Onondaga Landfill, Onondaga	NY	Electric Power	1,200 kW	January 1988

### **CAMBRIAN/ PALMER CAPITAL**

<b>PROJECT NAME</b>	<b>STATE</b>	<b>TYPE</b>	<b>SIZE</b>	<b>OPERATIONAL DATE</b>
Burbank Landfill, Burbank	CA	Electric Power	800 kW	July 1988
Palo Alto Landfill, Palo Alto	CA	Electric Power	2,000 kW	September 1990

## **EVAN WILLIAMS**

Evan Williams is responsible for the structuring of Cambrian's energy projects. In doing so, Evan works with landfill owners and energy customers and their legal counsel to arrive at agreements that reflect a fair sharing of both responsibilities and benefits. These agreements must not only meet the financial expectations of the parties, but must also satisfy the requirements for a successful energy project development in the areas of regulatory compliance, permitting, tax law, real property title issues and financing.

Evan received his Bachelor of Arts degree from UCLA in 1965. He received his Juris Doctor from UCLA in 1968.

Evan is a principal in the law firm of Poindexter & Doutré, Inc. He also is a director of Glass Inc. International.

## **TUDOR WILLIAMS**

Tudor Williams is responsible for working with landfill owners so as to maximize the value of their landfill gas resource. In this capacity, he reviews the technical aspects of the landfill, the status of its landfill gas collection system, the potential availability of tax incentives for an energy project, the proximity to local energy users, the evaluation of the local energy market, and the selection of an energy conversion technology that will best suit the conditions at the project. Tudor also works with potential energy customers to negotiate pricing and explain the technical aspects for either direct utilization of landfill gas in their process or for the purchase of electric power and/or other energy products produced from landfill gas. In working with energy customers, Tudor must find value in the end energy use for both the energy customer and the project.

Tudor is nationally recognized as having broad expertise in all aspects of landfill gas development. He has presented a number of papers at landfill gas industry symposiums through the years on a variety of technical and business topics.

Tudor received his Bachelor of Science from UCLA in 1967. He received his Master of Science from UCLA in 1969 and was advanced to Ph. D. candidacy.

Prior to joining Cambrian, Tudor started a family of companies in the alternate energy area, covering such technologies as landfill gas conversion, cogeneration and waste heat recovery. He also worked at System Development Corporation and at Proctor and Gamble.

## **RHYS WILLIAMS**

Rhys Williams is responsible for assisting in the location and evaluation of potential energy customers for an energy project as well as for the preparation of the financial model for each energy option being evaluated for a project. Such financial models collectively constitute the decisional tool by which the key elements of the project are determined, including the selection and size of an energy conversion technology and the pricing of the energy to be purchased by an energy customer in a fashion that provides an equitable sharing of financial benefits available from the project among the landfill owner, the energy customer and the energy project developer.

The financial models prepared for each project are also essential in determining whether or to what extent debt financing may be available to enhance the financial returns for an energy project. Rhys is adept at working with the variable elements within the financial models to optimize the sharing of available financial benefits from a project among the participants.

Rhys received his Bachelor of Business Administration from the University of San Diego in 1999 where he graduated with honors from the School of Business. Rhys has also been admitted to the M.B.A. program at the University of San Diego. Prior to joining Cambrian, Rhys received his securities and insurance licenses and has developed his own financial services business.