



2.1 Market Sector Involvement – Describe your company's expertise in each of the following market sectors.

Currently **Chevron Energy Solutions** is authorized and qualified to do business as an Energy Services Company in the states of: Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, **Hawaii**, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, Utah, Virginia, Washington State, Washington D.C., West Virginia and Wyoming.

Many states and local governments have specific ESCO programs such as the one being planned for the State of Hawaii. Chevron ES is pre-qualified in a number of state programs which should serve as evidence of our commitment to state energy programs and successful implementation of guaranteed savings projects. For example, we are currently active in the following state programs:

Department of Energy, Department of Defense, State of Kansas (one of 8), State of Oklahoma, Mass Department of Capital Asset and Management, State of Missouri (1 of 8), State of Michigan, Colorado Buildings and Management, State of Nevada Public Works Board, USPS sole provider for the Pacific Area, State of Montana, State of Pennsylvania, State of Oklahoma, State of Arkansas, State of Minnesota, New York State Energy and Research and Development Authority, Washington State, State of Rhode Island, State Energy Office of North Carolina, and many more local jurisdictions.

In Colorado, Chevron ES has provided more than \$13-million self-funded improvements through Energy Performance Contracting for the State of Colorado—Department of Personnel and Administration's Capitol Complex buildings in Denver, Lakewood, and Grand Junction, a total of 20-buildings.

In Kansas we have worked with the State's Facility Conservation Improvement Program (FCIP) since it's inception in the mid- 90's. Since the FCIP's inception, Chevron Energy Solutions has been proud to be an FCIP Partner and has implemented nearly \$70 million in FCIP projects consisting of a mix of higher education, corrections, hospitals, municipal governments, community colleges and K-12 school districts. We've clearly demonstrated a willingness and ability to pursue projects in all areas of the State without limitation to geographic or vertical markets. In fact, to our knowledge, **Chevron ES has participated in every possible project walkthrough that the FCIP has invited us to**, making us the only FCIP Partner who can make this claim.

In California, where half of our organization is located, Chevron ES has participated in a number of state programs and has been certified by a number of political subdivisions and state agencies. For example, Chevron ES is certified by the California State University Systemwide program as well as the California Department of Corrections and the USPS for the region.

Based on the success that we have had for other state programs and the long running commitment energy efficiency and renewable power generation solutions we feel confident that we would be an engaged participant in the state's current program.





2.1.1 School Districts – Small (1-5 schools) or Rural Over 2 Hours from Major Metropolitan Area

Across the country Chevron ES is helping small and large school districts find hidden money that is currently being paid to utility companies. The projects below represent just a few of the small or rural school districts where we have done projects.

Rangely Public Schools, Colorado: Chevron ES is presently providing Energy Performance Contracting services in the Technical Energy Audit stage to Rangely Public Schools in Rangely, Colorado.

A partial list of small school districts where Chevron ES has provided EPC solutions:

- Harrison County, Gulfport, MS
- Jerome School District No. 261, Jerome, ID
- Lauderdale County School District, Meridian, MS
- Marion County School District, Columbia, MS
- Mollala River School District, Mollala, OR
- Neshoba County, Philadelphia, MS
- Roseville Community, Roseville, MI
- Wissahickon School, Ambler, PA
- Ringgold, New Eagle, PA
- Walled Lake, Walled Lake, MI

2.1.2 School Districts – Large

Mapleton Public Schools, Adams County, Colorado:

Project scope: \$4,381,741; Annual Energy Savings: \$140,936

The District was able to leverage guaranteed energy and operating cost savings to offset capital construction costs. Due to success of initial project, the District has also completed Phase II and Phase III, which included additional building automation and critical alarm monitoring points with added air conditioning to an additional elementary school.

San José Unified School District, San José, California

San José Unified School District entered into a unique partnership with Chevron Energy Solutions and Bank of America to establish what is believed to be the largest solar power and energy-efficient facilities program in K-12 education in the United States. Under the program, Chevron Energy Solutions, will design, build, operate and maintain a total of 5.5 megawatts of solar photovoltaic arrays at the district's schools, and will measure, verify and guarantee the solar energy system's performance.

- More than \$25 million in energy cost savings to the district over the life of the solar power system;
- District receives budget stability and predictability through known energy costs;
- No district capital investment required;
- 25 percent reduction in the district's demand for utility power;
- Reduction of 37,500 tons of carbon dioxide emissions, equivalent to planting 400 acres of trees.





A partial list of larger school districts where Chevron ES has provided EPC solutions:

- Bowling Green, Bowling Green, KY
- San Jose Unified School District, CA
- St. Louis School District, MO
- Williamson County Schools, TN
- Chambersburg, Chambersburg, PA
- Dinuba Unified School District, Dinuba, CA
- Orange Unified School District-Phases I-2, Orange, CA
- Saddleback Valley, Mission Viejo, CA
- Sunnyvale, Sunnyvale, CA

2.1.3 Higher Education Facilities – universities and major colleges

Chevron ES has been providing guaranteed energy savings projects to this market longer than any other major ESCO. Chevron ES (through legacy company Viron) is credited with implementing the first guaranteed energy savings project with Adrian College in Minnesota in 1981. Currently this market segment accounts for roughly half of all the work that we do.

Chevron ES is credited with implementing the largest performance contract in this market for the **University of Utah**. To date the university has received over \$60 million in energy efficiency upgrades.

In mid-2006, the California State University Board of Trustees approved the construction of a one-megawatt solar power installation at **Fresno State**. The solar project, consisting of 10 metal photovoltaic (PV) panel-topped canopies covering more than 700 parking spaces, is the largest installation of its kind at any university in the U.S. Chevron Energy Solutions designed, installed and commissioned the project. In addition, CES arranged financing via a Power Purchase Agreement (PPA). This project financial structuring enables the university to purchase electricity at a specified, competitive price over a 20-year term from a third party that owns and operates the solar installation. As a result, Fresno State can now budget accurately for its electricity, while paying market competitive utility costs. CES also designed and installed four electronic information kiosks at the College of Engineering, the Physics Department and two other locations; the kiosks enable students and others to view web-based real time data and graphical displays from the PV system.

The following page contains a table of other higher education facilities.





Chevron Energy Solutions Higher Education Projects		
Project Name	State	Total Project \$
St. Mary's College	California	1,754,600
Idaho State University	Idaho	5,768,131
Mesa CC	California	2,123,040
Miramar CC	California	4,959,074
College of the Canyons	California	1,401,649
San Mateo CC	California	31,000,000
Valley Community College	California	6,437,354
San Mateo CC (phase III)	California	16,577,092
Pierce CC	California	4,081,000
University of Kansas	Kansas	17,644,368
Kansas State University	Kansas	18,624,360
State Center CC (phase II)	California	864,621
Compton CC	California	1,670,128
Mt San Antonio CC (phase II)	California	12,128,937
University of Delaware	Delaware	392,681
Foothill DeAnza CC (phase II)	California	7,394,205
Irvine Valley CC	California	5,387,825
Utah Valley State College	Utah	9,463,424
University of Utah (4 phases)	Utah	44,000,000
Fort Hays State	Kansas	4,587,366
Asbury College	Kentucky	5,738,003
Ferris State University (phase II)	Michigan	749,216
Evergreen CC	California	3,296,038
Los Angeles CC	California	2,900,000
Mott Community College	Michigan	1,826,987
Pima County CC	Arizona	2,106,700
Chabot CC	California	1,376,140
Los Angeles City College	California	12,537,192
Mt San Antonio (phase 1)	California	5,772,820
Southwestern College	California	5,665,784
Las Positas CC	California	657,580
Valparaiso University	Indiana	1,988,091

CC – Community College

2.1.4 Higher Education Facilities – community colleges and small/rural colleges

Chevron ES is presently providing Energy Performance Contracting services in the Technical Energy Audit stage to Colorado Northwestern Community College in Rangely, Colorado. Other experience includes projects completed for the Los Angeles Community College District, Fort Hays State Community College – Kansas, Oakland University in Michigan and the Foothill DeAnza Community College District in California. A few other Community Colleges are shown below:





Chevron Energy Solutions Community College Projects	
Name	Work Provided
Cerro Coso Community College, Ridgecrest, CA*	Extensive lighting modifications, Direct Digital Control EMS, window film, ceiling fans
Chabot Community College Hayward, CA*	EMS campus-wide, T8 Lamp & Electronic ballasts, mercury vapor to metal halides; occupancy sensors.
Evergreen Community College, San José, CA	Extensive lighting modifications, EMS upgrades, New 600 Ton Water Chiller, Central Plant Modifications, Air Handling Units modifications
Foothill-DeAnza Community College, Foothill, CA*	Extensive lighting modifications, EMS, new chilled water loop, insulation, VAV controls, new water chiller
Las Positas Community College Livermore, CA*	EMS, Lighting, new ATV's, VFD's, occupancy sensors, economizer sections controls.
Los Angeles Community College, California	Extensive lighting modifications, EMS, air side conversion to VAV, new boilers, new water chillers in new central chilled water plant and chilled water loops, upgrade high voltage electrical system.
Charles Stewart Mott Community College, Flint, MI*	Extensive lighting modifications, enhance EMS, new DHW to replace steam boiler, additional dampers
Pima County Community College, Tucson, AZ*	Energy Management System, Comprehensive Lighting Systems Modifications

2.1.5 Cities/Counties – Large

Chevron ES has recently completed more than \$10-million in improvements via the Energy Performance Contracting process to Arapahoe County, Colorado.

A partial list of larger Cities/Counties where Chevron ES has provided EPC solutions:

- Alameda County, Oakland, CA
- Arapahoe County, Littleton, CO
- City of Bethlehem, Bethlehem, PA
- City of Falls Church, VA
- City of Fullerton, Fullerton, CA
- City of Garden Grove, Garden Grove, CA
- City of Jacksonville, Jacksonville, FL
- Florida - South Florida Water Management District

2.1.6 Cities/Counties – Small

Chevron ES works with a number of cities and counties across the country helping them implement energy cost saving measures and leveraging the energy savings to initiate infrastructure renewal projects.

A partial list of smaller Cities/Counties where Chevron ES has provided EPC solutions:

- Shawnee County, KS
- City of Millbrae, CA
- Ada County, Ada County, ID
- Rosewood Center, Owings Mills, MD
- Washtenaw County, Washtenaw County, MI
- Mesa County, CO (lighting pilot)





2.1.7 Medical/Hospital Facilities

The projects listed below represent projects done by Chevron ES and their legacy companies. This list continues to grow as we look to bring our experience to the healthcare market.

Project	Amount of upgrades made possible by the performance contract
Sacred Heart Hospital (PA)	\$1,508,724
Memorial Hospital of Salem County (PA)	\$663,000
Lowell General Hospital (MA)	\$2,374,160
Ogden Regional Medical Center (UT)	\$666,245
University of Kansas Medical Center (KS)	\$12,489,429
Noxubee General Hospital (MS)	\$1,019,003
Pershing Memorial (MO)	\$253,971
Rosewood Center (MD)	\$4,387,649
Veterans Administration Hospital (VA)	\$982,549
VISN 5 VA Hospitals (Washington D.C.)	\$12,661,811
VISN 16 VA Hospitals (OK, MS, TX, AR, LA)	\$9,124,764

2.1.8 State Department of Defense/Military Facilities

In addition to work that Chevron ES has done in state military facilities such as the Kentucky Department of Military Affairs (over \$1 MM in facility improvements), Chevron has a 50 person team dedicated to federal projects that include military facilities.

Recently, Chevron Energy Solutions brought online a new \$100MM central plant for the National Interagency Biodefense Campus (NIBC) at Fort Detrick in Frederick, MD. The new plant, which came on line April 1, will provide steam and chilled water to the NIBC, as well as acting as a sort of surge protector for the campus, evening out the flow of electricity from the grid so power fluctuations don't damage sensitive equipment. It's also capable of providing backup power for the campus for up to 72 hours.

The plant was built over 18 months, and workers laid 22 miles of underground electrical conduit and wiring, and four miles of pipe for steam and chilled water distribution. The plant was built on time and within budget and is the first of its kind utilizing an enhanced use lease contracting vehicle.

2.1.9 Correctional Facilities

Chevron ES has experience with all types of government facilities including corrections facilities. Working in these facilities requires a thorough understanding of the issues surrounding the procedures and processes and Chevron ES has that knowledge. Because prisons operate so differently than all other commercial





buildings, on so many levels, it is extremely important to communicate with the facility personnel and officers in order to gain an understanding of all the unique facility requirements. Some of these requirements include:

- Having tools inspected every time you enter or leave an area
- Keeping a project on schedule even when it is possible that work may be interrupted abruptly
- Making equipment and fixtures tamper proof
- When installing equipment knowing the difference between “correctional grade” and just heavy duty

Most importantly the Chevron ES team understands that **security** and **safety** will be the most important requirements. Chevron ES is sensitive to these requirements and will not interfere with the primary needs of the facility.

Several recent projects are highlighted below:

- **Arapahoe County Detention Center** – Currently in construction, this energy performance contracting project is part of the Arapahoe County Government EPC \$10-million project to improve facilities’ energy and water efficiency. Specifically, the detention center facility has benefited from new boilers, a state of the art Ozone laundry system that conserves water and detergents while improving quality, lighting, and retrofit of in-cell flush controls to a programmable system to save water and to help prevent inmate “vandalism” by limiting the number of flushes per hour.
- **Santa Rita Jail, Dublin, CA** – This project is on the cutting edge of generation and metering technology with a few traditional ECMs as well. The project combines one of the largest photovoltaics array of panels in the U.S., a 1 Mega-watt fuel cell and Chevron ES’ web-based metering platform, UtilityVision, to create a truly holistic solution for this County of Alameda facility.
- **Chuckawalla Valley State Prison, CA** – this 900,000 square foot facility will receive nearly \$10,000,000 in capital improvements through the Chevron ES performance contract.
- **Kentucky Department of Military Affairs** – This project includes over \$1 million in facility improvements.
- **Kansas Department of Corrections** – This \$1.8 M project encompasses 3 separate facilities. Our engineers designed and installed retrofits in 35 buildings on an aggressive schedule to meet customer timeframes.
- **State of Idaho** – This project, when constructed, will touch over 80 buildings at 7 different facilities and provide significant energy and cost savings to the state.

In addition to these highlighted projects, a Chevron ES legacy company, Viron Energy Services, has also performed energy services in correctional facilities for the State of Michigan, the State of Iowa, and the State of California. Chevron ES has also recently been notified that they have been selected to perform energy services under a performance contract for all of the State of Idaho prisons and the Northern Nevada Correctional Center in Carson City, Nevada.





2.1.10 Transportation Facilities (airport, harbor, highways, parking structure)

Chevron ES has had a number of minor projects with these facility types typically as a part of a much larger project. Our experienced project personnel have the knowledge and experience to implement energy saving solutions in these facility types.

2.1.11 Sports Complexes, Stadiums, Arenas, etc

Chevron ES has done work in facilities such as these. Some of these projects include:

- Moscone Center, San Francisco, CA
- Pine Bluff Civic Center, AR
- University of Kansas Allen Field House

2.1.12 Other Government Entities – recreation centers, library districts, data/communication centers, etc.

Chevron ES has performed projects in all of these facilities and others including park districts, symphony buildings, and wastewater treatment facilities.

2.1.13 Multifamily Buildings – high-rise or large buildings

See “Project References - Public Housing” below.

2.1.14 Multifamily Buildings – smaller scale multi-plex buildings

See “Project References - Public Housing” below.

2.1.15 Multifamily Buildings – mix of building types

Project References - Public Housing:

- Portsmouth Metro Housing Auth., Portsmouth, OH
- Tuscaloosa Housing Authority, Tuscaloosa, AL
- Amsterdam Housing Authority, New York
- Housing Authority of the County of Kern, California
- Lawrence Housing Authority, Massachusetts
- Meadville Housing Authority, Pennsylvania
- Monticello Housing Authority, New York
- Niagara Falls Housing Authority
- Omaha Housing Authority, Nebraska

2.1.16 Community Wide Efforts – multiple entities in partnership or other example

Rangely Community Partnership:

Chevron ES has provided local ESCO industry leadership in developing the present community-wide Energy Performance Contracting initiative with the **Rangely Community Partnership** in Rangely, Colorado. Community participants in this process include the Town of Rangely, Rangely Public Schools, Colorado Northwestern Community College, Rio Blanco County, Western Rio Blanco District Recreation Center, Rangely District Hospital, Rangely District Library, and Rangely Water Department.





Chevron ES draws upon past community-wide efforts experience with the Cascade Community Partnership in Idaho. Here, Chevron ES is working with a partnership that consists of city and county buildings as well as a medical center and local school district.

This community partnership concept is also in play with the leadership in Cascade, ID. The city, county, school district and medical facility have partnered to leverage each others energy savings to build a truly comprehensive project.

2.1.17 Judicial Facilities

Chevron Energy Solutions has worked in a number of judicial facilities including; Arapahoe County, CO and Alameda County, CA.

For Alameda County Chevron ES retrofitted the following facilities:

- Hayward Hall of Justice – 191,228 sq.ft.
- Fallon Street Courthouse – 465,704 sq.ft.
- Wiley Manuel County Courthouse – 427,200 sq.ft.
- Fremont Hall of Justice – 108,000 sq.ft.

As a part of the project, Chevron ES installed a web-based load curtailment solution that would curtail the chillers in each building upon a signal from the utility, which would occur when there was an electrical grid problem.





2.2 Project Summary – List all Energy Performance Contracting projects developed and implemented by your firm within the past five years. Only include projects where work was directly conducted by your company. If it is relevant to list projects performed under contract to another firm, clearly identify the firm with overall responsibility for that project and the project's relevance to this RFP response.

Project Name	Facility Type	City & State	Project Size (Dollars)	Project Size (Square Feet)	Year Completed	Term of ESPC

Chevron ES has successfully undertaken hundreds of energy projects all over the country in the last five (5) years. In California alone we have a track record of over a hundred projects over that same time period.

Chevron ES has a significant number of performance based projects in its reference base over the past five years. To list them all here would push the page count over a reasonable limit. What we can show is a listing of projects that have similarities to the State's facilities. In addition to the table below we have included a 3-year summary of projects included in the Appendix.

Project Name/Facility Type	City & State	Total Project \$	Project Size (Sq Ft.)	Year Completed	Term of ESPC
Colorado Capitol Complex (Phases I & II)	Denver, CO	\$13,564,460	1,784,261	2007	20 yrs
Arapahoe County	Littleton, CO	\$10,100,000	1,200,000	2007	20 yrs
Mapleton Public Schools (Adams County)	Denver, CO	\$4,380,000	653,000	2001	10 yrs
Mesa State College	Grand Junction, CO	\$2,115,000	761,000	2007-	20 yrs
Meridian Schools, ID	Meridian, ID	\$6,329,325	2,451,357	2004	25 yrs
Idaho State University	Pocatello, ID	\$5,950,000	2,276,075	2004	25 yrs
Jerome School District ID	Jerome, ID	\$939,932	391,188	2003	25 yrs
Kansas Department Of Corrections	Topeka, KS	\$1,760,000	578,072	2005	20 yrs
City of Topeka	Topeka, KS	\$338,540	127,220	2006	20 yrs
KU Medical Center	Kansas City, KS	\$12,400,000	1,920,765	2003	20 yrs
Fort Hays State University	Hays, KS	\$4,724,072	1,836,022	2004	20 yrs
St. Louis Schools – Phase	St. Louis, MO	\$2,923,609		1998	10 yrs
State Of Nevada - Capitol Complex	Carson City, NV	\$1,948,736	651,412	2000	13 yrs
City of Carson City, NV	Carson City, NV	\$801,876		2002	10 yrs
University of Utah - Phase I	Salt Lake City, UT	\$5,236,394	5,600,000	2000	20 yrs
University of Utah - Phase II	Salt Lake City, UT	\$5,508,947	5,600,000	2000	20 yrs
University of Utah – Phase III	Salt Lake City, UT	\$13,000,000	5,600,000	2000	26 yrs
University of Utah - Phase IV	Salt Lake City, UT	\$9,600,000	5,600,000	2001	24 yrs
Utah Valley State College	Orem, UT	\$9,400,000		2005	20 yrs





The following pages contain projects which depict the information requested on projects Chevron ES has undertaken in the last five (5) years that provide a representative sampling of projects that are similar to the one being proposed for the County and State of Hawaii. We have selected these projects either because they were implemented at other Counties and State or because the project involved a similar scope of work as County and State of Hawaii, including central plant work and renewables. Please note that several of our projects listed are multi-phase projects, a strong testament to the long term relationships we develop with our customers and their satisfaction with our work. Letters of recommendation are available on several of these and other projects we have developed and installed for public agency customers.

2.3 Project References

For each project listed in Section 2.2, provide detailed information on Energy Performance Contracting projects your firm completed that can be used for references. Expand on the information provided in the previous section to give details on individual projects. Include the following information on each project as a minimum:

Project Identification: Owner name, city/state, facility type (hospital, school, college, city, county, etc.)

Contact Information: Names and contact information of Owner(s) representatives who can serve as references. Include phone numbers, email address, and any other means that can be used to contact representatives serving as references.

Project Type: Energy Performance Contract or other type

Project Size: Number of buildings and total project square footage

Project Dollar Amount: Total contract amount and the total project capital expenditure amount

Source of Funding: A description of the source of funding used for the project and the company's role (if any) in securing that funding

Project Dates: Actual dates of audit start and acceptance; Actual construction starting and ending dates

Contract terms: A description of the type of contract, financing arrangement, and contract term

Project Personnel: A list of the name(s) of individuals involved in the project, their role(s) and if these personnel will be assigned to Hawaii projects

Project Schedule: Indicate if project was completed on schedule and an explanation if not

List of Improvements: The types of retrofits and operational improvements implemented related to energy, water and other cost savings

Project Performance: The amounts of projected annual savings, guaranteed annual savings, and actual annual savings for each project in a table as shown below. Note that the project name must correspond with the project name listed in the Section 2.2 table

Project Name:

	Projected Annual Energy Savings	Guaranteed Annual Energy Savings	Actual Energy Savings Year 1	Actual Energy Savings Year 2	Actual Energy Savings Year 3	Actual Energy Savings Year 4	Actual Energy Savings Year 5
Units							
kWh							
kW							
MMBTU							
Gallons							





(Other)							
---------	--	--	--	--	--	--	--

Measurement and Verification: A brief description of the M&V approach for each project including which savings were stipulated, if any

Performance Guarantee: A description of the savings guarantee for each project and, if the guaranteed savings were not achieved, how the company compensated the facility owner for any annual shortfall (e.g. pay funds to meet the guarantee, etc.)

Additional Comments: Comments on any special features, services, conditions, creative approaches, special needs of customer, etc. that may be relevant to Hawaii State and County Agencies.





Colorado Capitol Complex – Phase I and II

Project Identification: Colorado Capitol Complex, Denver, Colorado
 Energy Performance Contract

Project Size: 19 Buildings – 1,784,261 sq ft

Project Value: \$13,564,460

Source of Funds: CitiCapital

Contract Terms: 19-Years

Technical Design Personnel: Scott Shulda – 913.748.8662



Project Schedule:

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	January 2003	August 2003
Phase I-Design/Implementation	January 2004	May 2005
Phase II-Design/Implementation	January 2005	December 2006
Monitoring	January 2007	January 2026

Reference:

Lance Shepherd, Architect
 Colorado Capitol Complex
 1313 Sherman Street, Suite 319
 Denver, CO 80203
 Phone: 303.866.3450
 Fax: 303.894.7478
 Email: lance.shepherd@state.co.us

List of Improvements:

Many modifications to the chilled water system

- Eliminate unnecessary bridge loops
- Eliminate unnecessary bypasses
- Eliminate tertiary pumps
- Correct piping design errors
- Install variable speed drives on secondary pumps
- Convert 3 way valves to 2 way operation
- Modify chiller sequencing
- Correct neutral bridge installation
- Relocate static pressure sensor
- Rebalance primary pumps

Install water side economizers

Install new energy efficient chillers

Replace cooling tower

Install new central boiler plant to eliminate purchasing of costly utility steam

Replace steam traps

Upgrade and expand energy management system

Unoccupied hours setback temperature

Eliminate unnecessary equipment operation

Outside air temperature lockouts

Add baseboard heat control

Chilled water reset

Condenser water reset

Hot water reset

Improve air side economizer control

Reset air handler discharge temperatures

Comprehensive lighting retrofit, including

- Convert all fluorescent fixtures to T8 lamps and electronic ballasts
- Replace incandescent fixtures with fluorescent fixtures
- Replace exit fixtures with LED exit fixtures
- Install reflectors to reduce lamp quantities
- Lamp and ballast disposal
- Replace mercury vapor fixtures with metal halide fixtures
- Replace toilets with low flow toilets
- Insulation and air sealing
- Energy training program





Insulate heat exchangers
 Repair condenser pumps
 Modify domestic hot water systems to permit shutting of steam during the summer
 Install variable frequency drives on pumps and air handlers
 Place city-water cooled equipment on chilled water loop
 Replace domestic water pumping station
 Automatic lighting controls
 Convert instant volume reheat air handlers to variable volume
 Replace old DX rooftop units with new chilled water units
 Retro commissioning
 Replace chillers in three separate plants
 Upgrade pneumatic air compressor system
 Improve pump room ventilation
 Repair existing chillers
 Install water meters to avoid server changes
 Replace steam boiler with hot water boilers
 Replace windows
 Install microturbine

Guaranteed Annual Energy Savings: \$608,733

Annual Non-Energy Savings: \$316,252

Achieved Summarized Savings:

Initial Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
	33,250,509	7,044	123,127	32,604,000	38,492			\$2,589,970
Annual Savings								
Year	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars*
Construction	9,432,206	15,789	-115,153		38,903	\$1,555,372	0	\$1,555,372
Yr 1, 1 st Quarter	787,147	15,038	-26,808	1,387,000	3,042	\$128,005	\$79,063	\$207,068

* Energy Savings + Non-Energy Savings = Total Annual Dollars Saved

* Although Non-Energy Savings occurred during construction, they were not calculated for the construction period

Measurement and Verification: IPMVP, 1997, Option A (Short term/periodic measurement after retrofit compared to base conditions.) IPMVP, 1997, Option C (Entire facility level compared before and after retrofit. Typ. w/ utility bills.)

Comments: The Project started in May of 2002 with a goal of identifying potential energy conservation measures which was assumed to be around \$4,000,000. The Audit phase identified 35 Energy Conservation Measures that was reduced to 13 measures that met the maintenance and financial goals of DPA/Central Services. The Audit was conducted in 19 State Buildings located in Denver and Grand Junction with a total area of 1,784,261 square feet.

The Energy Conservation Measures being implemented include lighting improvements in 18 buildings, water conservation improvements in 13 buildings, upgrade/expand DDC controls in 14 buildings, chilled water system improvements at the Power Plant, Colorado History Museum and at 690 Kipling, install water side economizer at Colorado History Museum and 690 Kipling, replace chiller, pumps and towers at 1881 Pierce Street, replace district steam with gas fired boiler plant, install variable frequency drives on air handlers and/or pumps at the Capitol Building, Legislative Services Building and at the Power Plant, add insulation to the North Campus West Building, delete unused water meters at 1881 Pierce Street, implement oversight of an Energy Resource Conservation Manager in 19 buildings, and direct purchase natural gas for 8 buildings.



Many of these projects had been identified and listed as Control Maintenance Projects but have not been funded for many years due to higher priority projects and shortfalls in state revenue.





Shortly after implementation of Phase I began, the steam utility company expressed a desire to build, own and operate the plant. The State, with assistance of CES, negotiated a deal with the utility where the utility would pay for the cost of building and operating the boiler plant. As a part of this arrangement, the State is receiving energy cost reductions as if they had built their own plant. The benefits to the State for this arrangement are huge; the State's energy costs are the same as if they owned their own boiler plant, yet the utility in fact owns and operates the plant; over \$1.5 million of project funds were freed up for the State to spend on other capital needs.

Further energy savings opportunities were uncovered during the initial implementation of Phase I. These measures, coupled with the savings from the steam utility deal, enabled the implementation of the following scope: Water side economizers were installed in four additional buildings, variable speed drives were installed on pumps in two buildings, uninsulated heat exchangers were insulated in one building, domestic hot water/steam system improvements were implemented in six buildings, EMS controls were expanded/upgraded in six buildings, variable frequency drives were installed on air handlers in three buildings, a city water cooled compressor in the Capitol building was placed on the chilled water system, a city water pumping system in the Annex was replaced, automatic lighting controls were upgraded in the Centennial Building, New boiler plants were installed in the Labor Building and Museum, Constant volume reheat air handlers in the Museum were converted to variable volume, faulty condenser water pumps in the Museum were repaired, new rooftop units and an entire new chilled water system was installed at the Kipling street complex, a new chiller, backup chilled water pump, cooling tower and water side economizer were installed in the Power Plant, existing chillers were repaired in two buildings, the pneumatic air compressor system in the Power Plant was upgraded, a new pump room ventilation system was installed in the Power Plant, and the following was implemented at the Labor Building: water meters were installed to avoid sewer charges, single pane windows were replaced with double pane windows, and an 80 kw microturbine was installed.





Nevada State Capitol Complex

Project Identification: State of Nevada, State Public Works Board, Carson City, NV
 State Government Facility
 Energy Performance Contract

Project Size: 4 buildings - 651,412 total sq. ft

Project Value: \$1,948,736

Source of Funds: Installment Purchase Agreement – ABN AMRO

Contract Terms: 13-Year Guaranteed Energy Savings Project (Yr 1 only 4 months long
 months long – State Fiscal Year End)

Technical Design Personnel: Leo Ramsey, Project Engineer

Project Schedule: Feasibility Study - April – May 2000 - Project was completed on time



Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	May 2000	August 2000
Design/Implementation	October 2000	March 2001
Monitoring	March 2001	March 2014

List of Improvements:

Replaced Old Technology Lamps & Ballasts with Energy Efficient Lamps & Electronic Ballasts.
 Used Mirror Quality Specular Reflectors to direct light to direct light away from the fixtures.
 New High Efficiency Fluorescent Fixtures
 Changed Incandescent to Compact Fluorescent or Halogen
 Retrofitted Incandescent Exit Signs to LED
 Installed Occupancy Sensors to Control Lighting
 Installed Power System Conditioners
 New Hot Water Boilers
 Resetting Boiler Temperatures based on outside air Temperatures.
 Install Window Film
 Install Low Flow Water Devices
 Irrigation Control/Optimization
 Electrostatic Dispersion for Cooling Tower Water Treatment
 Time of Usage Upgrades

Reference:

Mr. Ward Patrick
 Deputy Manager
 State Public Works Board
 State of Nevada
 505 East King Street
 Carson City, NV 89701-3700
 Phone: (775) 684-4141
 Fax: (775) 684-4142
 E-mail: wpatrick@spwb.state.nv.us

Guaranteed Annual Energy Savings: Yr 1*: \$134,358 - escalates 2% annually for rate increases

*4 months long due to fiscal year end for the State of Nevada

Annual Non-Energy Savings: Yr 1: \$90,451 (not guaranteed)

Achieved Summarized Savings:

Initial Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
	12,444,884		307,640			\$1,139,931		\$1,139,931
Annual Savings								
Year	KWH	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars*
Construction	152,818		-18,779			(\$3,616)		(\$3,616)
1	708,430		11,910			\$64,384	\$90,451	\$154,835
2	2,112,622		15,277			\$167,291	\$98,453	\$265,744
3	1,880,885		9,284			\$154,727	\$100,400	\$255,127
4	1,745,762		17,967			\$152,719	\$102,384	\$255,103
5	1,714,777		34,710			\$131,977	\$96,644	\$228,621





* Energy Savings + Non-Energy Savings = Total Dollars Saved

Comments: The State of Nevada did not have the money in their capital budgets to upgrade some aged mechanical systems and to complete the upgrade of the FIB Museum building. They needed to find a alternative source of funds to complete this work. Performance Contracting provided the solution that would address their objectives.

Chevron ES was successful in finding over \$244,000 in annual savings from select buildings at the State Capitol Complex, the Nevada State Museum, and the Stewart Complex. This provided the cash flow to fund \$250,000 in upgrades for the FIB Museum remodel and \$174,000 for the boilers in buildings 17 and 160 at the Stewart complex.

Services Provided: Engineering analysis and design; construction management; commissioning, operator training, monitoring and verification of savings, and savings guarantee.





Michigan State Capitol Complex

Project Identification: Michigan State Capitol Complex
 Lansing, Michigan
 Energy Performance Contract

Project Size: 8 Buildings - 1,631,503 sq ft

Project Dollar Amount: \$4,199,702

Source of Funds: GE Capital Public Finance

Contract Terms: 11-Year Guaranteed Energy Savings Project
 Monitoring began in October of 1998



Technical Design Personnel: Doug Weiss, 913.563.3500

Project Schedule: Completed on schedule

PROJECT PHASE	Project Dates	
	Started	Completed
Detailed Energy Audit	September 1996	June 1997
Design/Implementation	August 1997	October 1998
Monitoring	October 1998	Ongoing

List of Improvements:

- Ballast Replacement and Ballast Disposal
- Activate Chilled Water Coils
- Exit Light Retrofit
- Retrofit Incandescent to Fluorescent
- Upgrade and Repair HVAC Controls
- Worst Zone Reset
- Heat Recovery
- Temperature Setback
- Variable Speed Drives
- T8 Lamps and Electronic Ballasts
- Specular Reflectors

Reference:
 Mr. Tom Krupiarz
 Contracting Officer
 State Of Michigan
 611 W. Ottawa Street
 4th Floor
 P.O. Box 30221
 Lansing, MI 48909
 Phone: 517.241.6184
 Fax: 517.241.6229
 takrupi@michigan.gov

Guaranteed Annual Energy Savings: Year 1: \$554,103 - Year 2: \$570,726
 Guarantee increases 3.0% each year to account for anticipated annual increases in utility rates

Annual Non-Energy Savings: N/A

Achieved Summarized Savings:

Initial Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
	63,625,687	132,519			129,136			\$3,864,552
Annual Savings								
Year	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars*
Construction	21,102,560	39,196			23,575			\$1,106,486
1	13,915,310	21,896			39,937			\$862,919
2	11,630,140	21,994			29,251			\$747,375
3	19,598,976	38,736			28,073			\$1,180,755
4	24,926,510	46,301			31,162			\$1,453,382
5	6,112,487	12,230			28,215			\$518,680

* Energy Savings + Non-Energy Savings = Total Dollars Saved

Measurement & Verification: IPMVP, 1997, Option C (Entire facility level compared before and after retrofit.
 Typical with utility bills.)





Alameda County

Project Identification: Alameda County
 Oakland, CA
 Design-Build and UtilityVision®

Project Size: Santa Rita Jail - 800,000 sq.ft.
 Hayward Hall of Justice – 191,228 sq.ft.
 Fallon Street Courthouse – 465,704 sq.ft.
 Wiley Manuel County Courthouse – 427,200 sq.ft.
 Fremont Hall of Justice – 108,000

Project Value: Santa Rita Jail \$1,150,000
 UtilityVision Countywide project \$172,371

Source of Funds: Santa Rita Jail project - Internal County Financing & DSM Bidding (\$240,000 in rebates were secured on behalf of the County)

UtilityVision Countywide project - California Energy Commission Grant

Contract Terms: 3 years

Technical Design Personnel: Ron LaCombe, Monitoring Services Manager (913-563-3624)
 Rick Sweaney, Installation Manager (913-563-3595)
 Kirk Hollen, Construction Manager (510-682-6990)
 Ann Duggan, Project Manager – (415 733 4539)

Project Schedule: UtilityVision Countywide project - Completed on time.

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	NA	NA
Design/Implementation	April 2001	August 2001
Monitoring	NA	NA

Santa Rita Jail – Completed on time.

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	December 2000	January 2001
Design/Implementation	February 2001	July 2001
Monitoring	N/A	N/A

Reference:

Matthew G. Muniz
 Energy Program Manager
 County of Alameda
 1401 Lakeside Drive
 Suite 1115
 Oakland, CA 94612
 Tel 510.208.9518
 Email matt.muniz@acgov.org

List of Improvements:

UtilityVision Countywide:
 UtilityVision®
 Chiller Curtailment Controls

Santa Rita Jail:
 VFDs on cooling towers
 High efficiency chiller replacement
 Variable flow pumping conversion
 Energy Management System upgrade
 Utility Vision real-time metering platform
 Real time load shedding

Projected Annual Energy Savings: NA

Measurement and Verification: UtilityVision Countywide – NA
 Santa Rita Jail - Pre & post-retrofit electrical power measurements.





Comments:

UtilityVision Countywide - This project was implemented under the California Energy Commission's AB970 Grant Program: Demand Responsive HVAC & Lighting Building Systems. The project's goal was to install a web-based load curtailment project that would curtail the chillers in each building upon a signal from the CEC, which would occur when there was an electrical grid problem.

Santa Rita Jail Solar – The combined solar electric power and energy efficiency solutions were implemented through relationships with PowerLight and Chevron Energy Solutions. With solar electric generation, the jail reduced overall energy cost, and in particular, reduced purchases of expensive, peak energy from the local utility. With energy efficiency and demand side management technologies, the jail maximized the value of the solar investment, while at the same time modernizing the facility.

Alameda County's solar powered installation, equivalent to powering 1000 homes, spares the environment thousands of tons of harmful emissions such as CO₂, NO_x, SO_x, which are major contributors to smog, acid rain and global warming.

To date, the combined project has reduced the facility's peak summer demand consumption of grid-generated electricity by 35%. Already, over 2.5 million kilowatt-hours of annual electricity consumption are diverted from California's electric grid by the Santa Rita Jail project. These savings benefit all State consumers by reducing grid power purchases, most of which occur during peak electrical demand hours – at times when state transmission lines are the most constrained.

Based on current PG&E electricity rates, the total solar project savings for Alameda County are about \$425,000 in the first year of operation and \$15 million in net savings over the 25-year life of the project. Partial funding for the projects come from the California Energy Commission's (CEC) Emerging Renewable Buydown program, incentives from California PUC, and prior energy efficiency incentive payments. The County received a low interest rate energy efficiency loan from the CEC, and did not have to authorize any general fund revenues to finance its solar electric generation and energy efficiency projects. The project's electrical cost savings will pay the debt service for this loan.

"Energy is a vital resource. As it becomes increasingly expensive, other public agencies will follow Alameda County's lead and perform energy efficiency upgrades to help manage costs and revitalize aging facilities. Such leadership by the County not only serves to protect our environment, but also creates job opportunities in California for the growing energy efficiency industry." said Chevron Energy Solutions COO, John Mahoney.





Arapahoe County

Project Identification: Arapahoe County
 Littleton, Colorado
 Performance Contract

Project Size: 15 Buildings – 1,197,021 sq ft

Project Value: \$10,093,933

Source of Funds: Municipal lease, DSM program

Contract Terms: 12 year guaranteed savings

Technical Design Personnel: Scott Shulda, Project Manager
 Sonny Ha, Senior Project Engineer
 Mark Adams, Senior Project Engineer
 David Harrell, Controls Manager
 Justin Turner, Project Engineer
 Scott Swan, Project Engineer
 John Loveless (contract employee) Construction Manager



Project Schedule: On schedule.

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	April 2005	July 2005
Design/Implementation	November 2005	March 2007
Monitoring	April 2007	April 2010

List of Improvements:

- Replace 5 boiler plants
- Replace a cooling plant
- Lighting upgrades
- Water conservation
- Install new/upgrade energy management system
- Install VFDs on fans
- Install water softeners
- Install small A/C units to serve computer rooms
- Water side economizers
- Upgrade irrigation controls
- Programmable flush valve controls
- Laundry conservation
- Replace domestic hot water system
- Change natural gas utility provider
- Energy Resource Conservation Manager
- New Cooling Tower
- Retro Commissioning
- Replace Existing Ventilation with new VAV system

Reference:
 Bob Roby
 Deputy Director
 Facilities and Fleet Management
 Arapahoe County
 5334 South Prince St.
 Littleton, CO 80166
 Tel 303.734.5489
 Fax 303.730.7903
 E-mail RRoby@co.arapahoe.co.us

Guaranteed Savings: Year 1: \$632,694, escalated at 2.5% per year, includes \$90,000 per year maintenance reallocation.





Achieved Summarized Savings:

Initial Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
Year	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars*
Construction								
1								

* Energy Savings + Non-Energy Savings = Total Annual Dollars Saved

Measurement and Verification: IPMVP, 1997, Option A (Short term/periodic measurement after retrofit compared to base conditions.) IPMVP, 1997, Option C (Entire facility level compared before and after retrofit. Typ. w/ utility bills.)

Comments: With constraining budgets coupled with aging facilities in needed repair, Arapahoe County was able to work with Chevron ES to identify solutions to modernize and upgrade their facilities to address their operational issues. Replacement of the heating, cooling and air distribution systems, replacement of boiler plants, installation of water softeners, modernizing the building control systems, as well as an extensive lighting retrofit allows the County to address these issues and accommodate the needs of their community. The partnership with Chevron ES allows sole source responsibility with the development and implementation of the project, as well as guaranteed savings that facilitates project funding.





Shawnee County, Kansas

Project Identification: Shawnee County
 Topeka, Kansas
 Performance Contract with Utility Vision

Project Size: 3 buildings - 465,052 sq ft

Project Value: \$7,563,370

Source of Funds: COP Bonds

Contract Terms: 20 years -- guaranteed savings

Technical Design Personnel: Tim Mense, Regional Operations Director
 Neil Craig, Senior Project Manager
 Chad Mestel, Project Engineer
 Todd Einck, Project Engineer
 Steve Schulte, Measurement & Verification



Project Schedule:

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	Oct 06	Feb 07
Design/Implementation	April 07	Ongoing
Monitoring		

Reference:

Mr. Rich Davis
 County Director
 Shawnee County, Kansas
 200 SE 7th St
 Topeka, KS 66603
 Phone: 785-233-8200
 Fax: 785-291-4901
 Email: rich.davis@co.shawnee.ks.us

List of Improvements:

Ozone Injection System at Corrections Laundry Facility
 Waste Oil Boiler and AHU for Vehicle Bay at North Annex
 Power Factor Correction and Utility Meter Consolidation
 Comprehensive Lighting Renovation
 Domestic Water Conservation
 Complete HVAC Mechanical Replacement at Courthouse
 County-Wide Energy Management System
 Boiler, Chiller and HVAC replacements at Corrections and North Annex
 Reconfiguration to VAV systems at Courthouse and Corrections

Guaranteed Annual Energy Savings: Year 1: \$267,030 (escalated at 3%)

Annual Non-Energy Savings: Year 1: \$21,749

Achieved Summarized Savings:

Initial Baselines	KWh	KW	MCF	Water (Kgal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
	2,099,478		5,764	9,139		\$267,030	\$21,749	\$288,779
Year	KWh	KW	MCF	Water (Kgal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars*
Construction								
1								

* Energy Savings + Non-Energy Savings = Total Annual Dollars Saved

Measurement and Verification: IPMVP, 1997, Option C (Entire facility level compared before and after retrofit. Typ. w/ utility bills.) IPMVP, 1997, Option A (Short term/periodic measurement after retrofit compared to base conditions.) Utility Vision installation at County Courthouse.





Asbury Theological Seminary

Project Identification: Asbury Theological Seminary
 Wilmore, KY
 Energy Performance Contract

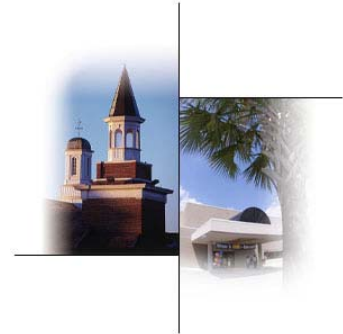
Project Size: 18 Buildings – 441,846 sq ft

Project Value: \$5,787,659

Source of Funds: Morgan Stanley

Contract Terms: 30-Years (arranged by client)

Technical Design Personnel: Bill Davis – 901.214.2100
 Renee Hooker – 901.214.2100
 Dwight Neibling – 913.563.3500
 Don Henson – 615.986.7820
 Rich Adams – 954.838.0701



Project Schedule:

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	March 2003	June 2003
Design/Implementation	November 2003	January 2004
Monitoring	May 2006	April 2021

List of Improvements:

- Attic Insulation
- Double Pane Windows
- Upgrade Cooling System in Offices
- Install Fan Coil Units
- New Fan Coil Units
- Inlet Vanes to VFD
- Modify AH for 100% Outside Air Economizer
- Multizone to VAV
- Replace Aging Mechanical Equipment
- Install VFDs on Existing VAV System
- Install New Energy Efficient Chiller
- Install/Upgrade EMS
- Lighting Retrofits
- New Construction of Central Plant

Reference:

Lanny Spears
 Director of Physical Plant
 Asbury Theological Seminary
 204 N. Lexington Avenue
 Wilmore, KY 40390
 Phone: 859.858.2296
 Fax: 859.858.2296
 Email: lanny_spears@asburyseminary.edu

-Installation of 3 three 550 ton Carrier chillers, three 350 boiler-horsepower Sellers Boilers, one BAC cooling tower, and the associated pumps, piping, and controls

Guaranteed Annual Energy Savings: \$183,419 (4% annual increase)

Annual Non-Energy Savings: N/A

Achieved Summarized Savings:

Initial Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
	8,311,355		321,755	8,674,482				
Annual Savings								
Year	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars*
Construction								
1	1,480,220		47,634			\$120,178	\$29,965	\$150,143

* Energy Savings + Non-Energy Savings = Total Annual Dollars Saved

Measurement and Verification: Savings Calculation Method: IPMVP, 1997, Option C (Entire facility level utility bill comparison before and after retrofit.)





Comments: As is the case with many institutions of higher learning in today's fiscal environment, the Asbury Theological Seminary did not have capital funds to provide the necessary upgrades to an aged physical plant and Seminary representatives could not recommend an expenditure of the reserves to fund the needed mechanical improvements unless all other alternatives had been exhausted. Chevron Energy Solutions was engaged by the Seminary to develop a budget neutral project designed to improve the campus infrastructure and ultimately upgrade and enhance indoor environments for the entire campus.

The \$5.7 million project included the following:

- Retrofitting all existing T-12 fluorescent lamps and magnetic ballasts with new, energy efficient T-8 fluorescent lamps and electronic ballasts.
- Installing an energy management system to control major mechanical equipment throughout the campus.
- Installing new or retrofitting water china including toilets, urinals, faucets, and showerheads with new energy efficient equipment.
- Removing over 120 2-pipe fan coil units at Crary-McPheeters and the Administration Building and installing new, 4-pipe fan coil units and controls.
- Demolishing the existing central boiler plant and building a new, ground-up Central Plant to provide heating and cooling. The Central Plant was designed and constructed to match and maintain the Campus' architectural design and esthetics. Features of the Central Plant included a gated delivery entrance, dedicated areas for shipping/receiving, carpentry, painting, a work shop area, along with the office space for the Maintenance Dept. Major equipment in the Central Plant includes three 550 ton Carrier chillers, three 350 boiler-horsepower Sellars Boilers, one BAC cooling tower, and the associated pumps, piping, and controls.





University of Utah

Project Identification: University of Utah – Phases I-VI
Salt Lake City, Utah

Energy Performance Contract

Project Size: 81 Buildings – 5,600,000 sq. ft.

Project Value: \$64,000,000

"Viron (Chevron ES) was the only company submitting a proposal that really understood that our goal was to build a central chilled water and high-temp plant and they put together a team that could accomplish that task.

Orfeo Kostrencich, Administrative Manager



Source of Funds: Client Financing

Contract Terms: 20-year Guaranteed Energy Savings Program – Signed: 11/19/98

Project Schedule: Completed on schedule

Project Phase	Project Dates											
	Phase I		Phase II		Phase III		Phase IV		Phase V		Phase VI	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
Energy Analysis	10/98	2/99	10/98	2/99	6/98	9/98	6/00	9/00	6/98	9/98	11/04	2/05
Design/Construction	2/99	7/00	7/99	8/00	3/99	7/00	1/01	10/01	1/01	10/01	2/06	6/06
Monitoring	7/00	ongoing	9/00	ongoing	N/A	N/A	11/01	ongoing	N/A	N/A	3/07	In Construction

List of Improvements:

Phases I, II, & IV Improvements:

- Installed high efficiency lighting modifications
- Installed new chillers
- Installed new cooling towers
- Installed new energy management system
- Upgraded old energy management system
- Installed variable frequency drives
- Installed variable speed chilled water pumping
- Converted air handlers to variable air volume
- Installed energy-efficient motors
- Changed constant air volume to variable air volume
- Variable-speed hot water pumping
- Installed programmable thermostats
- Installed new fume hood control system
- Implement high-temperature hot water reset at Central Plant

Phase III Improvements:

- Construction of a new 6800-ton chilled water plant

Phase V Improvements:

- Construction of a new 210 mmBTU high temperature hot water plant

Phase VI Improvements:

- Demolition/Abatement
 - Removed two (2) 65 MMBtu/hr Hot Water Generators
 - Asbestos removal/abatement, boilers and piping
- One Solar Taurus 70 Natural Gas Turbine
 - Rated at 6.0 MW site adjusted
 - 25-28 MMBtu/hr waste heat available

Reference:

Dave Henry, Associate Director
Utility Services
University of Utah
1795 East South Campus Drive
Building 350
Salt Lake City, UT 84112-9404
Phone: 801.581.3039
Fax: 801.581.4263
Email: dave.henry@fm.utah.edu





- 9 ppm NOx, utilizing Solar's SoLoNOx technology
- RENTECH WHRU
 - 100 MMBtu/hr total boiler capacity
 - 75 MMBtu/hr supplemental burner
 - Supplying 450 F High Temp Hot Water
- Substation Upgrades
 - New 12.47 kV switchgear, with Dual bus arrangement to facilitate maintenance
 - Main breaker for interconnection with Rocky Mountain Power
 - Breakers to feed Generator, existing 12.47 kV, 4kV and 7kV loads
 - Interconnection Protective Relaying
 - Removal of two (2) 46 kV to 4 kV utility transformers

Guaranteed Annual Energy Savings: \$1,650,000

Achieved Summarized Savings to Date: \$6,158,000

Comments: The University of Utah is a 150 year old State run University located in the hills overlooking downtown Salt Lake. It covers an area of 9.7 million square feet and 280 buildings. It has an enrollment of 26,000 students and is the second largest employer in the state of Utah. In the late 1990s, the University of Utah was faced with aging facilities and equipment that generated high utility bills yet did not meet the heating and cooling needs of the campus. Faced with millions of dollars in needed improvements, and insufficient funds, the university searched for an answer.

Chevron Energy Solutions was competitively selected to implement energy efficiency measures at selected buildings on the campus. The original scope consisted of only 13 buildings. The main reason for doing a performance contract, per the universities requirements, were to see if enough savings could be generated to help fund all or part of a new central plant. The university wanted the projects to be self funded and for there to be no risk from the universities stand point. Chevron ES built a project that would touch 81 buildings with upgrades and improvements and would be completed in four years.

Chevron ES immediately formed a team of experts who could help address the chilled water and high temp application needs. The team from sales to engineering to our selected partners, all meshed well with the personalities of the university. The Chevron ES team then structured an approach, (presentation, engineering, procurement, partners...everything) around the university's main objective. Chevron ES' ability to bring together a very attractive financial package and to do what was promised was critical to the project's success.

The project consisted of 5 phases each building to generate savings to offset the costs of the central plant project. The \$44 million project was one of the largest energy performance contracts ever undertaken by a university. Improvements, which were completed in June 2002, ranged from equipment upgrades to the construction of a central chilled water/high-temperature water plant. Nearly 68,000 light fixtures were upgraded or replaced. Eighty-two variable-frequency drives for HVAC systems and 95 energy-efficient motors were installed. Three new chillers and two new cooling towers were put in place. Four hundred fume hoods received energy upgrades. More than 600 low-flow toilets replaced older fixtures that wasted water, and 1,441 low-flow aerators were installed on sinks. Hundreds of radiator valves were also fixed. Water savings from the improvements totaled 11.6 million cubic feet in about two years.

The new chilled water/high-temperature water plant serves the cooling and heating needs of the eastern part of campus. Chevron ES guaranteed excess savings to cover the plant's construction costs. The multi-year energy project also received funds from the Utah Energy Office to study the feasibility of the campus improvements and facilitate the procurement process.

Since energy savings reporting started in November 2000, the university has saved \$6.1 million in energy costs – \$400,000 more than projected. Energy and water usage on campus is expected to increase with new research and patient care facilities, some in the planning stages and others already operating. The university is looking to Chevron ES to implement more energy-saving improvements in the coming years to help meet this growing demand.





California State University, Fresno

Project Identification: California State University, Fresno
 Fresno, CA
 Photovoltaic "Solar" Shade Parking Project

Project Size: Approximately 5 acres, 10 arrays

Project Value: \$11,943,792

Source of Funds: Power Purchase Agreement (PPA), combined with a \$2,800,000 - SGIP Grant

Contract Terms: 20 year, Electrical Generation contract \$0.16/kWh with a 2% escalation

Technical Design Personnel: Ken Casey Sr. Business Development Manager
 Ram Ambatipudi Sr. Business Development Manager
 Tim Strobel, Senior Project Manager
 Pam Aytar, Project Manager
 Nita Patel, Cad IV Designer
 Art Ealba, Project Engineer IV

Project Schedule: December 2007

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	January 2006	June 2006
Design/Implementation	July 2006	January 2008
Monitoring	December 2007	December 2026



Reference:
 Dick Smith, Director of Utility Management
 California State University, Fresno
 2351 East Barstow Ave. M/S PO 88
 Fresno, CA. 93740-804
 Tel (559)278-4632
 Fax (559)278-7698
 Email dicks@csufresno.edu

List of Improvements:

Photovoltaic panels installed over 10 continuous steel arrays over 5 acres on the Fresno State University campus

Guaranteed Annual Energy Output: Six year output guarantee with 1,372,500 kWh in Year 1 decreasing by 1% per annum

Measurement and Verification: IPMVP, 1997, Option B (Continuous Measurement at system level, after retrofit compared to base conditions).

Comments: CES performed parking lot improvements as part of the project, as well as supplied the University (2) two educational kiosks located at the Parking lot site, as well as (1) flat panel information site in the Physics build and (1) flat panel information site in the Engineering build.





Idaho State University State of Idaho – Department of Public Works

Project Identification: Idaho State University
Pocatello, ID
Energy Performance Contract

Project Size: 39 Buildings – 2,276,075 sq ft

Project Value: \$6,418,480

Source of Funds: Bond Issue

Contract Terms: Design-Build

Technical Design Personnel: Scott Johnson, Project Manager
Mark Adams, Project Engineer
Sonny Ha, Project Engineer
Rod Hill, Project Engineer



Project Schedule:

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	April 2002	September 2002
Design/Implementation	October 2007	December 2007
Monitoring	July 2005	July 2021

List of Improvements:

- Double paned windows
- Install new overhead garage doors
- Replace electric DHW with natural gas-fired units
- Install new heat recovery
- Constant volume MZ to VAV
- Convert AHU and fume hoods to VAV
- Dual duct CAV to VAV
- VFDs on AHUs
- Install new energy efficient chiller
- New air cooled chiller
- Install new EMS
- Expand EMS
- Upgrade / repair existing HVAC controls
- Occupancy sensors
- Programmable thermostats
- Install new central boilers
- Electric baseboard heat to hot water baseboard heat
- Steam traps
- Electronic ballasts and T8 lamps
- Retrofit electronic ballasts, T8 lamps & specular reflectors
- New LED exit fixtures
- New metal halide fixtures
- Replace incandescent fixtures
- Incandescent to halogen
- MV to MH

Reference:
Darrell Buffaloe
Tel 208.282.4002
Fax 208.282.4618
Email buffdarr@isu.edu
Or
Syed Hashim
Tel 208.282.5869
Fax 208.282.4618
Email energy@isu.edu
502 North Fourth Street
Boise, ID 83702





Retrofit with screw-in compact fluorescent lamps
 Energy resource construction management
 UV – auto energy information & facility vision modules
 Install pipe insulation
 Domestic water conservation measures

Guaranteed Annual Energy Savings: \$543,000

Annual Non-Energy Savings: \$26,000 Lighting Inventory – Not Guaranteed

Achieved Summarized Savings:

Initial Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
	18,742,500	48,270	1,959,342			2,200,000		\$2,200,000
Annual Savings								
Year	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars*
1	2,972,690	2,980	327,762			\$230,370	\$62,544	\$292,914
2	3,614,830	3,979	67,626			\$174,566	\$29,414	\$203,980

* Energy Savings + Non-Energy Savings = Total Annual Dollars Saved

Measurement and Verification: IPMVP, 1997, Option A (Short term/periodic measurement after retrofit compared to base conditions.); IPMVP, 1997, Option C (Entire facility level compared before and after retrofit. Typ. w/ utility bills.); Stipulated





Foothill/DeAnza Community College District

Project Identification: Foothill/DeAnza Community College District
Los Altos Hills, California

Project Size: 2 Campuses 1,150,245 sq ft

Project Value: \$7,394,205

Contract Terms: 10 Years – Guaranteed Savings

Technical Design Personnel: Bill Brockenborough

Project Schedule:

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	February 1997	May 1997
Design/Implementation	February 1998	August 2000
Monitoring	August 2000	July 2002

List of Improvements:

- Chillers
- Insulation/weather proofing
- Energy management systems
- Economizers
- Air handling units
- Variable air volume
- Packaged/roof-top AC systems
- Lighting retrofit
- Reflectors
- Lamps
- Ballasts
- Exit signs
- Pool systems
- Cogeneration rehabilitation

Guaranteed Annual Energy Savings: \$364,016

Achieved Summarized Savings:

Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
	24,001,599	5,045	854,145					N/A
Annual Savings								
Year	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars**
1	6,192,203	1,139	219,886					\$470,423
2	6,816,989	1,086	282,894					\$506,434

** Energy Savings + Non-Energy Savings = Total Annual Dollars Saved

Measurement and Verification:

Comments: Energy efficiency incentives were secured through California State "Standard Performance Contract (SPC). The guarantee was terminated by the customer after 2 years because the ECMs were clearly performing above and beyond the guarantee level.



Reference:

John Schulze
Director of Facilities, Operations and
Construction Management
Foothill/DeAnza Community College District
Los Altos Hills, CA 94022
Tel 650.949.6156





Dinuba Unified School District

Project Identification: Dinuba Unified School District
 Dinuba, CA
 Performance Contract with Guarantee

Project Size: 2 High Schools, 2 Middle Schools and
 5 Elementary Schools – 550,000 sqft.

Project Value: \$13,100,000

Source of Funds: Loan, Local Bond, Debt Refinance,
 Utility Rebates, Energy Savings, Operational Savings, Critical Hardship Funding

Contract Terms: 15 Year w/ Guaranteed Savings

Technical Design Personnel: Rebecca Wetzstein, PE – Project Engineer III
 Dan Waldo, PE – Project Manager
 Jonathan Brown, PE – Project Engineer III
 Pat Foley – Senior Construction Manager
 Mark Hall – Construction Manager



Reference:
 Jerry Sessions
 Superintendent
 Mark Garza
 Director of Facilities and Maintenance
 559-595-7280
 Dinuba Unified School District
 1327 East El Monte Way
 Dinuba, CA 93618

Project Schedule: Ahead of Schedule

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	November 2004	May 2005
Design/Implementation	June 2005	August 2006
Monitoring	October 2005	January 2006

List of Improvements:

- Lighting Retrofit District-wide
- New Gymnasium and Exterior Lighting
- Photocells and Occupancy Sensors
- Packaged Unit Replacement
- Wall-mounted Heat Pump replacement
- Hydronic to Direct Expansion Redesign and Retrofit and Associated Electrical Upgrade
- Hydronic 2pipe to Hydronic 4pipe Redesign and Replacement of Water and Air Systems
- Direct Digital Control Energy Management System
- District-wide High Priority Roofs and High School Medium Priority Roofs
- Energy Education
- Extended Warrantees
- Maintenance Contract and Training

Guaranteed Annual Energy Savings: Year 1: \$195,370 with 3% Escalation per year

Annual Non-Energy Savings: Year 1: \$50,000 with 3% Escalation per year

Projected Savings:

Initial Baselines	KWh	CCF	Energy \$	Non-Energy \$	Total Dollars
	4,075,828	47,060	\$790,422	75,000 +	\$865,422
Annual Savings					
Year	KWh	CCF	Energy \$	Non-Energy \$	Total Dollars*
1	1,283,101	77	\$195,370	\$50,000	\$245,370
2	1,283,101	77	\$201,231	\$51,500	\$252,731
3	1,283,101	77	\$207,268	\$53,045	\$260,313

* Energy Savings + Non-Energy Savings = Total Annual Dollars Saved





Measurement and Verification: IPMVP, 1997, Option A (Short term/periodic measurement after retrofit compared to base conditions). Lighting will be directly measured- before and after measurement and all other ECMs savings will be stipulated.

Comments: Dinuba Unified School District has implemented an energy equipment upgrade program that will save the District over \$195,000 in annual energy costs. In addition to energy savings, the program will enhance the learning environment for teachers, students, and staff by improving the indoor air quality and optimizing light levels. This comprehensive energy equipment upgrade program will standardize equipment to reduce maintenance cost while also providing teachers with greater control over their classroom environment. Through this program, Dinuba USD has also demonstrated that a small District with limited resources can be good stewards of our environment by reducing greenhouse gas emissions and improve the central valley's air quality.





CHAMBERSBURG AREA MIDDLE SCHOOL – PHASE I

Project Identification: Chambersburg Area Middle School, Chambersburg, Pennsylvania
 Energy Performance Contract

Project Size: 1 Building - 180,000 sq. ft.

Project Value: \$2,397,281

Source of Funds: Internally Funded

Contract Terms: 10-Year Guaranteed Energy Savings Contract

Technical Design Personnel: Robert Kownurko, Senior Project Manager – 215.699.0300
 Paul Grisafi, Project Manager – 215.699.0300
 Philip DiPaola, Construction Manager – 215.699.0300



Project Schedule: Engineering and construction completed on schedule.

Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	April 2000	December 2000
Design/Implementation	December 2000	September 2001
Monitoring	October 2001	October 2011

List of Improvements:

- Install energy management system
- Install new chiller
- Install new cooling tower
- Install new boiler plant with eight boilers
- Install new unit ventilators
- Install new air handling units
- Install new hot water pumps
- Install new chilled water pumps
- Install new ceiling
- Install new rooftop unit
- Water Conservation measures
- Install new T-5 fixtures in Gyms
- Retrofit lighting to T-8 lamps, electronic ballasts



Reference:

Ed Peters
 Supervisor of Buildings and Grounds
 Chambersburg Area School District
 482 South Main Street
 Chambersburg, PA 17201
 Tel 717.261.3405
 Fax 717.261.3410
 Email peteredw@chambersburg.k12.pa.us

Guaranteed Annual Energy Savings: \$112,816 (guarantee escalates 3%/year due to rising energy costs)

Excess Savings: Excess savings from previous years will carry forward in future years.

Annual Non-Energy Savings: N/A

Rebate: One time rebate from Water Company in the amount of \$118,000

Achieved Summarized Savings:

Initial Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$		Total Dollars
	2,727,821	9,979	3,961	268,918		\$226,485		\$226,485
Annual Savings								
Year	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Excess Savings \$	Total Dollars*
Construction	262,936	479	581	11,047,960		\$44,704	**\$118,000	\$162,704
1	1,376,621	3,571	-21,137	17,410,000		\$109,635	\$162,704	\$272,339
2	1,169,292	3,768	-33,042	18,323,990		\$105,698	\$159,523	\$265,221
3	1,050,447	3,414	-29,507	18,040,843		\$103,268	\$149,020	\$252,288





4	886,396	3,066	-19,172	18,028,072		\$104,295	\$132,601	\$236,896
5	70,568	165	-1,007	2,074,354		\$10,178	\$126,976	\$137,154

* Energy Savings + Non-Energy Savings = Total Annual Dollars Saved (yr 1 includes construction period savings) **Water company rebate.

Measurement and Verification: IPMVP, 1997, Option C (Entire facility level utility bill comparison before and after retrofit.) UtilityVision®, an on-line energy metering and information system enables the client to view real-time energy information, as well as view 15-minute load profile data and graphs for each meter.

Comments: Services included: engineering analysis and design, construction management, commissioning, operator training, monitoring and verification of savings guarantee, savings guarantee, and warranty guarantees





Williamson County School District

Project Identification: Williamson County School District, Franklin, Tennessee
 Energy Performance Contract

Project Size: 27 Buildings - 2,590,301 sq. ft.

Project Value: \$5,668,038

Source of Funds: 10-Year Municipal Lease

Contract Terms: 10 years

Technical Design Personnel: Ed Meinking, Project Manager – 913.748-8800

Project Schedule: Project completed on schedule.



Project Phase	Project Dates	
	Started	Completed
Comprehensive Energy Analysis	May 1999	November 1999
Design/Implementation	January 2000	August 2000
Monitoring	August 2000	July 2010

List of Improvements:

- Boiler tune-up
- Install economizer controls
- Modify/install/upgrade energy management system
- Complete lighting retrofit (including exit light retrofits)
- Install new cooling tower
- Install new boilers
- Installed low flow shower heads
- Domestic water conservation measures
- Install auto fill/drain system
- Install new HVAC rooftop units

Reference:

Mr. Mark Samuels
 Director of Maintenance
 Williamson Co. Schools
 112 Bridge Street
 Franklin, TN 37064
 Phone: (615) 472-4974
 Fax: (615) 794-7482
marks@wcs.edu

Guaranteed Annual Energy Savings: \$876,981

Annual Non-Energy Savings: N/A

Achieved Summarized Savings:

Initial Baselines	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars
	42,721,130		656,200	62,905,476			N/A	\$3,267,742
Annual Savings								
Year	KWh	KW	CCF	Water (gal)	Steam (lbs)	Energy \$	Non-Energy \$	Total Dollars*
Construction	7,634,161		-26,060	11,733,028				\$501,587
1	11,015,926		42,167	15,469,325				\$780,313
2	11,715,349		38,942	16,447,221				\$853,639
3	11,745,353		68,618	20,365,670				\$919,617
4	11,551,312		87,639	21,252,821				\$940,839
5	11,118,502		74,868	18,477,737				\$900,822
6	11,445,277		77,710	15,394,618				\$927,062

* Energy Savings + Non-Energy Savings = Total Annual Dollars Saved

Measurement and Verification: IPMVP, 1997, Option C (Entire facility level compared before and after retrofit. Typ. w/ utility bills.)

Comments: The performance contract approach has worked well in Williamson County Schools. By entering a performance contract the Williamson County School Board created energy awareness in the





school community and became better stewards of the environment. In addition to the direct benefit to the facilities perhaps the most beneficial part was the greater understanding of where the utility budget is used and how to significantly impact the bottom line by simply taking control of your usage. From fiscal year 2000 through fiscal year 2005 Williamson County Schools realized \$4,228,006 utility cost avoidance.

